Xerox School-to-Career
Digital Production Printing Course Guide and Supplemental Learning Material

Xerox NuveraEA
FreeFlow Web Services and FreeFlow Makeready

(v5.0)

xerox

NOTE

The learning material in this Course Guide has been selected and written to help facilitate knowledge transfer and skill development of digital production printing technologies and processes. The approaches to learning are many and there is no one particular way to teach or learn. Please feel free to use additional methods (presentation, web, video, text, live and recorded) to help deliver the information in a manner that best meets the needs of you and your audience. If you have comments, edits or additional information you believe will be beneficial to this program please submit your input to Peter Muir, pmuir@bizucate.com, +1 215 234 4498.

Thank you!

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PRESS

COURSE MAP
Xerox School-to-Career Production Printing Systems Curriculum

Section 1

Competencies	Learning Plans	Performance Assessments
Outlining Workflows	Introduction to Workflows	Components of RIP & Print Engines
•	•	•
Prepare Equipment	Preparation Procedures	Preparation
•	•	•
Web Services	•	Production
•	Production Procedures	•
Make Ready	•	Operations and Troubleshooting
•	Variable Print Workflows	
RIP & Print Engines	•	
•	Troubleshooting Workflows	
Finishing		
•		
Variable Data		
•		
Troubleshooting		

Section 2

Learning Activities

Individual and group classroom activities and hands-on lab exercises to reinforce student success. Real world sample files included in the course.

Section 3

Industry Knowledge

Current and relevant terminology, processes and supporting industry specific information to further practical learning opportunities

The contents of this course can help students become more marketable. Combinations of industry information, cutting edge technology and business driving workflows all come together in this course geared to teach students the necessary skills and knowledge.

The course will help students understand:

- Why digital production printing is one of the fastest growing markets
- How digital production printing technology works
- How people are using digital production printing technology to create documents with business driving results
- How you can help create efficient and profitable digital production printing workflows

TABLE OF CONTENTS

Section 1
Course Guide
Digital Production Printing,
FreeFlow Web Services and FreeFlow Makeready

NOTE: The learning material in this Supplemental Guide has been selected and written to help facilitate the learning of digital production printing technology and processes. The approaches to learning are many and please feel free to use additional methods (presentation, web, video, text, live and recorded) to help deliver the learning that best meets the needs of the audience. If you have comments, edits or additional information you believe will be beneficial to this program please submit your input to Peter Muir, pmuir@bizucate.com, +1 215 234 4498. Thank you!

Course Information

Project Type: Course

Suggested Credits: 2

Contact Hours: 54 (potential)

Developers and Authors: Peter I. Muir, Bizucate Inc. and Jonathan W. Iwanski, Fox Valley Technical College

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Type of Instruction

	Suggested Contact Hrs	Credits
Classroom Presentation	18	1
On-Campus Lab	36	1
Totals	54	2

Prerequisites

1. Obtain Course Guide and read section 1

2. Attend first learning session prepared with any questions.

Target Population

Individuals and teams interested in performing the skills required to utilize digital production printing technology within today's graphic communication workflows. Also: college, technical college, high school, state/federal retraining programs, and correctional students concerned with learning how to use digital production printing technology to help them increase their knowledge base and, thus, employability.

Description

The lesson plans provided include practical exercises and learning opportunities accompanied by theory. Provides fundamental knowledge relating to how digital production printing technology works, where it fits in the marketplace and what applications can be produced using said technology. In addition, practical exercises will teach how to set up, operate, maintain, and finish printed pieces from the output device within commercial, in-plant, and data center workflows.

Supplies

1. Accompanying Sample Files CD

2. XeroxSchool-to-CareerCourseGuide.pdf

3. Workstation or laptop. Manufacturer: Any. Source: Workstations provided at workshop

4. Print Engine: Xerox NuveraEA

5. RIP: FreeFlow Print Server

6. Finishing equipment: In Line or Near Line system

7. Optional: Xerox FreeFlow Web Services and Xerox FreeFlow Makeready

Introduction

The amount of digital printing happening around the world grows exponentially each year. More so than any other printing process. Fast turn around, black-and-white, color, short run and variable data printing are some of the many benefits to digital printing. These benefits effect every aspect of printing from costs to workflow to material and products making digital printing one of the most powerful factors in today's communication continuum.

This course is intended to teach the fundamentals of digital printing by exploring it's "hows" and "whys." Knowing how something works prepares people to complete a specific task. Knowing why people chose one technology over another helps to understand the business impact of those choices.

The content of this course and its curriculum has been structured within the context of PrintED's Digital Production Printing Competencies and highlights the use of Xerox digital production printing solutions. The lessons and exercises complement the Digital Production Printing Competencies published by PrintEd and contribute to the greater requirement for the student to become PrintED Certified upon completion of this program.

There are three sections to this course. This is the First Section. It contains a course guide, a blueprint if you will, of the educational path you will follow to reach a complete understanding of Xerox's contribution to the entire digital print process: transmitting, preparing, producing, finishing and distribution a job. The Second Section is a deeper exploration of print concepts and topics through learning activities mentioned in Section One. Sections One and Two are intended for both student and instructor to use as learning tools. Section Three contains additional background information an instructor can share with students about the business impacts (time and money) of digital printing.

Combined, these three sections will lead you to the knowledge and skills you need to appreciate and produce digitally printed material.

Your choice to learn more about digital production printing contributes, not only, to the success of the technology but also yourself and the businesses you will work for. Sharing the knowledge you acquire with others will carry on your journey in understanding digital print.

This curriculum relies on the instructor having Xerox training on the basic use of the software and hardware used to support the lessons plans and activities. This base understanding will enable the instructor to provide perspective and guidance through the learning modules. Additionally, this formal printing and solutions knowledge will enable you to deviate from the suggested learning modules and exercises so you can supplement and/or replace course content/exercises that may be more appropriate for your targeted audience.

Peter Muir, President, Bizucate Inc.

External Standards for a Xerox Solution

I. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; Free-Flow Web Services and FreeFlow Makeready), describe the workflow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., prepress and RIP functions) to output (i.e., print engine and finishing).

II. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; Free-Flow Web Services and FreeFlow Makeready), demonstrate the preparation of the equipment for production.

III. Given Xerox FreeFlow Web Services, list and describe its basic components and capabilities.

IV. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; Free-Flow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Web Services.

Indicators:

I. Set up a catalog.

II. Create a user and assign access rights.

III. Order a job from the catalog using the internet.

IV. Submit a job via the internet.

V. Given Xerox FreeFlow Makeready, list and describe its basic components and capabilities.

VI. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; Free-Flow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Makeready.

Indicators:

I.   Scan a job.

II. Merge two existing jobs together into one document.

III. Prepare a suite of jobs for production (i.e., paper selection; imposition; finishing).

IV. Perform late stage editing (ie., reorder pages; change imposition; page numbering).

V.   Set labeling to differentiate one job from another.

VI. Create a tabbed job.

VII. Clean and adjust function a document.

VIII.   Save a job ticket for reprinting and re-ripping.

IX. Save document to PDF and to TIFF image file.

X.   Adjust registration.

VII. Given a complete RIP FreeFlow Print Server and a Print Engine Xerox NuveraEA, list and describe the basic components of each.

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Engine.

Indicators:

I. At RIP: FreeFlow Print Server: Create a queue.

II. At RIP: FreeFlow Print Server: Create a Stock in the library.

III. At RIP: FreeFlow Print Server: Assign stock to a tray.

IV. At RIP: FreeFlow Print Server: Create and modify a job ticket.

V. At RIP: FreeFlow Print Server: Save job to file, save job to CD.

VI. At RIP: FreeFlow Print Server: Review Job Properties.

VII. At RIP: FreeFlow Print Server: Review Queue Properties (Closed vs. Open).

VIII. At RIP: FreeFlow Print Server: Send a job to the queue (e.g., scan; client via printer driver; client via web).

IX. At Print Engine: Xerox NuveraEA: Load paper.

X. At Print Engine: Xerox NuveraEA: Print a job (single- and double-sided).

XI. At Print Engine: Xerox NuveraEA: Finish a job.

XII. At Print Engine: Xerox NuveraEA: Make adjustments for image quality.

XIII. At Print Engine: Xerox NuveraEA: Perform preventative maintenance on the engine

XIV. At Print Engine: Xerox NuveraEA: Perform basic machine maintenance (i.e., adjust feeders, change toner, empty toner waste bottle, and rectify a paper jam).

IX. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; Free-Flow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate troubleshooting techniques.

Indicators:

I. FreeFlow Web Services.

II. FreeFlow Makeready.

III. RIP FreeFlow Print Server.

IV. Print Engine Xerox NuveraEA.

V. Finisher.

Program Outcomes:

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Core Abilities:

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

C. Work cooperatively in a team environment.

D. Communicate in ways that honor diversity.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Competencies, Linked Exit Learning Outcomes & Performance Standards

Competency

1

Outline Potential Digital Print Production Workflows from Input to Processing to Output

Properties
Domain: Cognitive
Level: Analysis

Linked External Standards

I. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready), describe the workflow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., FreeFlow Makeready and RIP functions) to output (i.e., print engine and finishing).

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

Linked PrintEd Digital Production Printing Competencies

A. 3, 4, 21, 22

Performance Standards

You will demonstrate your competence:

- By preparing and giving a presentation on workflow.

- By developing a flowchart of the workflow process.

- Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready).

Your performance will be successful when:

- You give a presentation to the class. ["presentation", in this course guide, represents a singular or group effort in no particular method that enables the presenter(s) to share learned information and skills with others.]

- Workflow diagram depicts all of the items in the process.

- Workflow diagram shows the relationship of one step to another.

- Workflow diagram shows a clear understanding of the topic.

- Workflow diagram shapes are used correctly.

- Workflow diagram is neat and well organized.

Learning Objectives

What you will learn as you master the competency:

- ❏ Define "workflow".
- ❏ Define "input".
- ❏ Define "processing".
- ❏ Define "output".
- ❏ Compare different solutions.
- ❏ Examine various possible inputs.
- ❏ Discuss different processing techniques.
- ❏ Describe various outputs.
- ❏ Outline a print-based digital workflow process.
- ❏ Examine requirements of various customers.
- ❏ Analyze potential job/program types (e.g., monochrome or color / static or variable).
- ❏ Examine different possible designs.
- ❏ Determine estimated costs.
- ❏ Project turn-around time.
- ❏ Examine content (e.g., images and illustrations, text and numbers).
- ❏ Describe preflighting.
- ❏ Practice digital proofing.
- ❏ Describe setting color expectations.
- ❏ Discuss Prepress Workflow Solution.
- ❏ Describe output.
- ❏ Describe finishing.
- ❏ Develop shipping plan.
- ❏ Verify receipt and/or action.
- ❏ Describe the submission of a job through a web browser portal.
- ❏ Define "job planning".
- ❏ Define "estimating".
- ❏ Define "scheduling".
- ❏ Define "billing".
- ❏ Explain how these business and production functions fit into today's workflow.
- ❏ Describe the methods of sending a job to the queue.
- ❏ Describe the process of loading paper.
- ❏ Describe the process of printing a job.
- ❏ Describe the process of finishing a job.
- ❏ Describe the types of adjustments that can be made for image quality.
- ❏ Describe the importance of calibrating the print engine and RIP.
- ❏ Describe the importance of preventative maintenance on the engine.

Competency
2

Prepare Equipment
for Production

Properties
Domain: Psychomotor
Level: Adaptation

Linked External Standards

II. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready), demonstrate the preparation of the equipment for production.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Linked PrintEd Digital Production Printing Competencies

A. 1, 2, 7, 9, 11, 12, 19, 20, 22, 24

Performance Standards

You will demonstrate your competence:

- By preparing and giving a presentation on your given solution.
- By creating one Digital Production Printing Guidebook describing the environmental, RIP, print engine, and safety preparation procedures (i.e., one focusing on RIP procedures and one focusing on engine procedures).
- Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready).

Your performance will be successful when:

- You give a presentation to the class. ["presentation", in this course guide, represents a singular or group effort in no particular method that enables the presenter(s) to share learned information and skills with others.]
- You explain the importance of equipment preparation as it relates to image quality.
- You explain the importance of equipment preparation as it relates to productivity.
- You explain the importance of equipment preparation as it relates to cost.
- You explain the importance of equipment maintenance as it relates to image quality.
- You explain the importance of equipment maintenance as it relates to productivity.
- You explain the importance of equipment maintenance as it relates to cost.

- You explain the importance of creating and following a shop safety procedures program.
- Procedural guide outlines steps in preparing an environment, RIP, Engine, and safety checks for running a digital production printing shop.
- You demonstrate procedures outlined in your Digital Production Printing Guidebook.
- You check temperature and relative humidity.
- You turn engine and RIP on.
- You load appropriate substrate for jobs.
- You check finishing equipment, as necessary.
- You calibrate RIP and engine.

Learning Objectives

What you will learn as you master the competency:

- ❏ Define "digital printing".
- ❏ Define "electrophotography (i.e., 'EP')".
- ❏ Define "ink-jet".
- ❏ Compare ion-charge deposition to electron-charge deposition.
- ❏ Define "magnetography".
- ❏ Explain thermal transfer.
- ❏ Explain thermal dye sublimation.
- ❏ Describe electro-coagulation.
- ❏ Analyze jobs that utilize one-, two-, and/or four-color digital printing.
- ❏ Compare potential advantages and/or disadvantages to using different types of file formats (e.g., source files; postscript; post RIP'd; PDF).

- ❏ List the steps necessary for equipment preparation.
- ❏ List common preparation errors and their potential consequences.
- ❏ Discuss the advantages to systematic preparation techniques.
- ❏ Explain the importance of calibration and characterization.
- ❏ Describe the different substrates intended for offset printing versus digital printing.
- ❏ Identify safety considerations for digital press operations.
- ❏ Discuss the differences between colorants used in digital printing versus offset lithography.
- ❏ Review advantages and disadvantages to digital printing.
- ❏ Review advantages and disadvantages to offset printing.
- ❏ List scenarios when digital printing is a superior choice to offset printing.
- ❏ List scenarios when offset printing is a superior choice to digital printing.

Competency
3

Demonstrate the Capabilities of a Branded Web Submission Service

Properties
Domain: Psychomotor
Level: Practice

Linked External Standards

III. Given FreeFlow Web Services, list and describe its basic components and capabilities.

IV. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Web Services.

Linked Program Outcome

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Linked PrintEd Digital Production Printing Competencies

A. 22, 25

Performance Standards

You will demonstrate your competence:

- By preparing and presenting a demonstration of FreeFlow Web Services

- Given FreeFlow Web Services

Your performance will be successful when:

- You give a presentation to the class. ["Presentation", in this course guide, represents a singular or group effort in no particular method that enables the presenter(s) to share learned information and skills with others.]

- Presentation includes overview of FreeFlow Web Services components and capabilities.

- You address the role of FreeFlow Web Services in a digital print production workflow.

- You explain PDF creation and file submission.

- You discuss creation of a storefront.

- You address hosting files.

- You address security.

- You comment on the connection of FreeFlow Web Services to FreeFlow Makeready.

- Presentation identifies the role of individual and organizational productivity to overall workflow

- Presentation is linked to the company's profitability.

Learning Objectives

What you will learn as you master the competency:

- ❏ List the basic capabilities of FreeFlow Web Services.
- ❏ Describe the capabilities of the FreeFlow Web Services
- ❏ List the basic components of FreeFlow Web Services.
- ❏ Describe the basic components of FreeFlow Web Services.
- ❏ Discuss the impact of FreeFlow Web Services on productivity and profitability.
- ❏ Set up a catalog.
- ❏ Create a user and assign access rights.
- ❏ Order a job from the catalog using the internet.
- ❏ Submit a job via the Internet

Competency
4

Demonstrate the Capabilities of Branded Prepress Workflow Solution

Properties
Domain: Psychomotor
Level: Practice

Linked External Standards

V. Given FreeFlow Makeready, list and describe its basic components and capabilities.

VI. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Makeready.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Linked PrintEd Digital Production Printing Competencies

A. 22, 25

Performance Standards

You will demonstrate your competence:

- By preparing and giving a presentation on and demonstration of FreeFlow Makeready.

Your performance will be successful when:

- You give a presentation to the class. ["Presentation", in this course guide, represents a singular or group effort in no particular method that enables the presenter(s) to share learned information and skills with others.]
- Presentation includes overview of FreeFlow Makeready components and capabilities.
- You address the role of FreeFlow Makeready in a digital print production workflow.
- Presentation outlines inputs (i.e., hard copy, scanning, and electronic files (e.g., PostScript, PDF, JPEG, PostRIP, etc.)).
- You preview documents.
- You compose documents.
- You impose documents.
- You save to the library.
- You save a job ticket for reprinting and re-ripping.
- You save a document to PDF and TIFF image file.
- You adjust registration using Light Table feature.
- You Despeckle and Deskew a scanned document.

- You create a tabbed job.
- You use set labeling to differentiate one job from another.
- You prepare for specific finishing.
- You comment on the connection of Xerox Free-Flow Web Services to FreeFlow Makeready
- Presentation is linked to individual's productivity.
- Presentation is linked to productivity of the organization.
- Presentation is linked to the company's profitability

Learning Objectives

What you will learn as you master the competency:

- ❏ List the basic capabilities of FreeFlow Makeready
- ❏ Describe the capabilities of FreeFlow Makeready
- ❏ List the basic components of FreeFlow Makeready.
- ❏ Describe the basic components of FreeFlow Makeready
- ❏ Discuss the impact of FreeFlow Makeready on productivity and profitability.
- ❏ Scan a job
- ❏ Merge two existing jobs together into one document.
- ❏ Prepare a suite of jobs for production (i.e. paper selection, imposition, finishing).
- ❏ Perform late stage editing (i.e. reorder pages, chance imposition, page numbering).
- ❏ Use labeling to differentiate one job from another.

Competency
5

Demonstrate the Basic Components of a RIP and a Print Engine

Properties
Domain: Cognitive
Level: Analysis

Linked External Standards

VII. Given a RIP: FreeFlow Print Server and a Print Engine (Xerox NuveraEA), list and describe the basic components of each.

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Print Engine.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Linked PrintEd Digital Production Printing Competencies

A. 5, 6, 8, 10, 16, 22, 23, 24, 25, 26, 27, 28, 29

Performance Standards

You will demonstrate your competence:

- Given a RIP: FreeFlow Print Server and a Print Engine: Xerox NuveraEA.
- When shown a picture or standing in front of a RIP and Print Engine.
- Given a spec sheet for a RIP and Print Engine.
- Through output of a series of printed jobs (monochrome and color, if both are present).

Your performance will be successful when:

- You identify major parts and subsystems.
- You discuss the differences between RIPs.
- You discuss the differences between print engines.
- You output a poster.
- You output a business card.
- You output a postcard.
- You output a brochure.
- You output a book.

Learning Objectives

What you will learn as you master the competency:

- ❏ Proof within a digital printing work flow.
- ❏ Describe differing types of proofing within a digital printing work flow.
- ❏ Analyze the basic components of a RIP and a print engine.
- ❏ Compare the basic components of a RIP and a print engine.
- ❏ Define "Raster Image Processor (i.e., RIP)".
- ❏ Describe a RIP.
- ❏ List the components of a RIP.
- ❏ Describe the components of a RIP.
- ❏ Identify the components of a RIP.
- ❏ Compare one RIP to another and note the positives and negatives of each under different circumstances.
- ❏ Examine the significance of the Raster Image Processor (i.e., RIP)in the digital printing work flow.
- ❏ Evaluate a RIP's functionality differences from other methods.
- ❏ Evaluate a RIP's significance to the digital printing work flow.
- ❏ List different types of file formats that can be sent to a RIP.
- ❏ Define different types of file formats that can be sent to a RIP.
- ❏ Give examples of different types of file formats that can be sent to a RIP.

- ❏ Evaluate the effectiveness of varying situations within the different types of file formats that can be sent to a RIP.
- ❏ List the components of a print engine.
- ❏ Describe the components of a print engine.
- ❏ Identify the components of a print engine.
- ❏ Describe types of finishing equipment.
- ❏ Compare one of the RIP and print engine.
- ❏ Read and follow print engine to another and note the positives and negatives of each under different circumstances.
- ❏ Demonstrate the capabilities a job ticket.

Competency

6

Demonstrate Finishing as Used in Today's Production Digital Print Workflows

Properties
Domain: Psychomotor
Level: Adaptation

Linked External Standards

I. Given a Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlowWeb Services and FreeFlow Makeready), describe the work flow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., FreeFlow Makeready and FreeFlow Print Server to output (i.e., print engine and finishing).

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Linked PrintEd Digital Production Printing Competencies

A. 13, 14, 15, 17, 18, 22, 29, 30, 31

Performance Standards

You will demonstrate your competence:

- By preparing and giving a presentation on finishing.
- Given a desktop, in-line, or near-line finishing system.
- Through preparing a series of finished documents.

Your performance will successful when:

- You give a presentation to the class. ["Presentation", in this course guide, represents a singular or group effort in no particular method that enables the presenter(s) to share learned information and skills with others.]
- You prepare a poster (no finishing).
- You prepare business cards (cuts).
- You prepare a brochure (trim).
- You prepare a book (tape bind, stitch, perfect bind, offset stack).
- You prepare a tabbed book.
- You prepare a postcard (cut).

Learning Objectives

What will you learn as you master the competency

- ❏ Define "finishing" as it relates to production printing.
- ❏ Describe types of in-line bindery and finishing solutions.
- ❏ Describe how to fold, cut, stitch, trim, drill, bind, emboss, deboss, foil stamp, etc.
- ❏ Discuss differences between in-line finishing and near-line finishing.
- ❏ Discuss different ways to finish (e.g., cut, trim, etc.) various documents (e.g., poster, brochure, etc.).

Competency 7

Produce a Simple Variable Information Job

Properties
Domain: Psychomotor
Level: Adaptation

Linked External Standards

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Print Engine.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Linked PrintEd Digital Production Printing Competencies

A. 22, 32, 33, 34, 35, 36

Performance Standards

You will demonstrate your competence:

- By preparing and giving a presentation on the business opportunities and production aspects of variable data printing.
- Given a RIP: FreeFlow Print Server and Print Engine Xerox NuveraEA.
- Given a design file.
- Given a database file.
- Given variable data software.

Your performance will be successful when:

- You give a presentation to the class. ["Presentation", in this course guide, represents a singular or group effort in no particular method that enables the presenter(s) to share learned information and skills with others.]
- You prepare a variable data print job.
- You print a variable data print job.
- You finish a variable data print job.

Learning Objectives

What you will learn as you master the competency:

❑ Define "variable data printing".

❑ Examine the business opportunities associated with variable data printing.

❑ Compare static and variable data workflows.

❑ Give specific examples of variable data printing products.

❑ Compare and contrast production considerations of a variable data job with a static job.

❑ Prepare a list of considerations to be utilized when preparing and producing variable data jobs to aid in planning and troubleshooting.

Competency

8

Demonstrate Troubleshooting Techniques

Properties
Domain: Psychomotor
Level: Practice

Linked External Standard

IX. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; and FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate troubleshooting techniques.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Linked PrintEd Digital Production Printing Competencies

A. 22

Performance Standards

You will demonstrate your competence:

- By preparing and giving a presentation outlining troubleshooting techniques concerning FreeFlow Web Services; FreeFlow Makeready; RIP: FreeFlow Print Server and Print Engine: Xerox NuveraEA.

- By troubleshooting an actual problem devised by your instructor.

- Given a complete Xerox Solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster).

Your performance will be successful when:

- You give a presentation to the class. ["Presentation", in this course guide, represents a singular or group effort in no particular method that enables the presenter(s) to share learned information and skills with others.]

- Presentation outlines troubleshooting techniques for FreeFlow Web Services.

- Presentation outlines troubleshooting techniques for FreeFlow Makeready.

- Presentation outlines troubleshooting techniques for the RIP: FreeFlow Print Server; and Print Engine: Xerox NuveraEA.

- You troubleshoot and repair (as appropriate) a problem arising from instructor's directed input.

- You escalate to field support (as appropriate).

Learning Objectives

What you will learn as you master the competency:

❏ Evaluate best times to use different printing techniques in varying situations.

❏ Discuss the importance of troubleshooting specific Web Submission solutions.

❏ Explain troubleshooting process for Xerox Free-Flow Web Services.

❏ Discuss the importance of troubleshooting a specific Prepress Workflow Software Solution.

❏ Explain troubleshooting process for Xerox Free-Flow Makeready.

❏ Discuss the importance of troubleshooting the RIP.

❏ Explain troubleshooting process for RIP: Free-Flow Print Server.

❏ Discuss the importance of troubleshooting Print Engine.

❏ Explain troubleshooting process for Print Engine: Xerox NuveraEA.

❏ Discuss the importance of troubleshooting Finishing.

❏ Explain troubleshooting process for Finishing.

Digital Production Printing

Learning Plans

Learning Plan

1

Introduction to Digital Production Printing and Workflows

Overview

If you compare the digital production printing market to that of traditional printing, one of the biggest differences is the rate of growth. Digital production printing in growing at double digit rates (more than 10%); while traditional printing is growing in the single digits (less than 10%). For the foreseeable future there will be a growing need for employees that can operate and manage digital production printing equipment within commercial printing companies, in-house printing facilities, and many other production environments.

Time and time again, the people who own production digital printing equipment are seeking out trained and motivated people that can not only operate the equipment but also understand they are a critical part of the business's ability to run the equipment efficiently as well as cost-effectively, a vital component to any organization's success.

You can play that essential role. The time spent in this course will introduce you to the people, processes, technology and strategies that make up the workflows of successful production digital printing organizations. Listen, learn, and share your experiences and ideas; your questions and insight are a large part of the learning process, and with your help you can make it even more fun and beneficial for you and your classmates. Ultimately mastering this material will prepare you to be even more successful in the world beyond these walls.

Learning Activities:
Supplemental Learning Material

Learning Plan 1: Introduction to Digital Production Printing Workflows see page 138

Industry Information:
Supplemental Learning Material

Learning Plan 1: Introduction to Digital Production Printing Workflows see page 208

Target Competency and Linked Exit Learning Outcomes

1. Outline potential digital print production workflows from input to processing to output.

Linked External Standards

1. Given a complete Xerox solution (e.g., RIP: Free-Flow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web to Print and FreeFlow Makeready), describe the workflow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., FreeFlow Makeready and FreeFlow Print Server functions) to output (i.e., print engine and finishing).

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

Learning Activities

__1. Write down your definition of workflow as it pertains to a graphic communications workflow.

» Learning Cycle: Motivation

__2. Participate in a class discussion centering on the class' collective definitions.

» Learning Cycle: Motivation

__3. Use other means to define workflow (e.g., internet, book, Digital Production Printing Resource Guide, etc) and compare your research to your existing definition.

» Learning Cycle: Comprehension

__4. Participate in a class discussion centering on the class' new definitions for workflow.

» Learning Cycle: Comprehension

__5. Print the workflow diagram poster (Workflow-Poster.pdf) and review all the parts of it (i.e, steps, definitions, roles and responsibilities, sections that are missing, sections that don't have to be there, etc.).

» Learning Cycle: Motivation

__6. Participate in a discussion about the ability/inability to map all workflows.

» Learning Cycle: Comprehension

__7. Discuss the decisions the creator of the poster took. Discuss what was included as well as left out. Discuss how the poster can help to teach operators, sales people, customer service people, and customers of the company that provides the documented workflow.

  » Learning Cycle: Comprehension

__8. In teams of two or three (as directed by instructor) map the workflow of the lab environment you have access to within your learning environment. Your instructor will offer minimal input. We want to know what you think. Arrive at a collective workflow map within the group and note the varying consensus points.

  » Learning Cycle: Practice

__9. As a group, discuss how you approached the task and what you chose to include in the workflow diagram and what to leave out and why.

  » Learning Cycle: Practice

__10. Discuss the points where consensus was difficult to reach, and those easily agreed upon.

  » Learning Cycle: Practice

__11. Identify potential workflow bottle necks as well as workflow efficiencies (if any). Make sure to include some aspect of the business workflow (cost to operate).

  » Learning Cycle: Practice

__12. Present an electronic visual depiction of the lab workflow and definitions of steps within the workflow to the class.

  » Learning Cycle: Application

__13. Contact a local printing company or in-plant print facility and arrange for a tour.

  » Learning Cycle: Practice

__14. Interview key members in the workflow.

  » Learning Cycle: Practice

__15. Prepare a workflow diagram and description of the workflow (including variable data workflow aspects as appropriate) for the company visited.

  » Learning Cycle: Application

__16. Present the workflow analysis to the class.

  » Learning Cycle: Application

__17. As a class choose one of the workflows for in depth analysis; bottleneck identification, efficiency recognition, and suggestions for improvement (including input from all members of the class).

  » Learning Cycle: Practice

__18. Provide the printing company with the resulting workflow analysis reporting workflow map, analytical conclusions and recommendations as determined by the entire class.

  » Learning Cycle: Application

Assessment Activity

- Complete "Production (Prepress, Press, Postpress): Diagram of Potential Workflows" assessment.

Learning Plan

2

Preparation Procedures for Production Printing

Overview

Do you often just jump in the car and drive? Or do you check the oil, the air in the tires, the gas level, and clean the windshield before going anyplace? If you were going down to the corner store you may skip these procedures; however, if you were going on a cross-country trip it may be wise to consider those tasks as part of what will make a successful journey.

Production digital printing is not new, and a lot can be learned from those who have gone before. One of the most frequent lessons/ pieces of advice you will encounter is to take time and great care when preparing the production workflow. The sooner you recognize and respect the importance of preparation the sooner you will achieve an efficient and profitable workflow. Also regular care and maintenance of the equipment and establishing optimal settings to get the best possible results, tare commonly heard suggestions. Less service or repair will be needed over time and the quality of the output will remain higher longer allowing you be more productive.

In this section of the course, you will actively learn about the importance of, and procedures for, preparing a production digital workflow. As you learn the steps and procedures, you will be asked to create your own personal way to get those procedures done. Review your ideas with the class and instructor, and they will help you keep your production print environment running smoothly.

Learning Activities:
Supplemental Learning Material

Learning Plan 2 Preparation Procedures for Production Printing see page 146

Industry Information:
Supplemental Learning Material

Learning Plan 2 Preparation Procedures for Production Printing see page 216

Target Competency and Linked Exit Learning Outcomes

2. Prepare equipment for production.

Linked External Standards

II. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) , demonstrate the preparation of the equipment for production.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Learning Activities

__1. Participate in class discussion about the importance of digital production printing workflow preparation and procedures including the following: environment; RIP; print engine; safety considerations; in addition to impacts to image quality, productivity, repeatability, consistency, and cost.

» Learning Cycle: Motivation

__2. In groups of two or three, create a Digital Production Printing Guidebook that focuses on environment, RIP, engine, and safety preparation procedures. Sections should include:

I. Environmental Preparations: Temperature and humidity

II. RIP Preparations: On and without error. Files prepared properly and ready to be ripped

III. Engine Preparations: On and without error or jams, toner filled and waste toner emptied

IV. Substrate Preparations: Conditioned, appropriate trays loaded

V. Finishing Preparations: Finisher is on, without error, no jams

VI. Calibration Procedures: RIP and engine are calibrated

VII. Safety Considerations

» Learning Cycle: Comprehension

__3. Present your group's procedures to a local printing company or in-pant and discuss any similarities or differences.

> » Learning Cycle: Comprehension

__4. Make appropriate edits to your group's Digital Production Printing Guidebook as a result of the meeting.

> » Learning Cycle: Practice

__5. Remark on instructor's overview of the digital workflow and preparation procedures. Overview will include environmental, RIP, Engine, substrate, and finisher. Final procedural review will include calibration and safety considerations.

> » Learning Cycle: Comprehension

__6. Demonstrate the preparation procedures outlined in your Digital Production Printing Guidebook.

> » Learning Cycle: Application

__7. Discuss the productivity and profitability ramifications of not following preparation procedures.

> » Learning Cycle: Application

Assessment Activity

- Complete "Preparation" assessment.

Learning Plan

3

Production Printing Procedures

Overview

There's plenty of technology out there. It can do amazing things if you take the time to learn how it works, how to use it, and how to care for it. In this section you will learn about how to effectively use digital production printing software and hardware—the same equipment you will come across as you enter the workforce. In the workplace of today, jobs and salary levels are influenced by what you know and how you demonstrate it. As we work through this section, it will not be enough to simply learn how the technology works. You must also consider how the technology can help businesses save time and make money. Linking these two thought processes together will make you a very knowledgeable and valuable digital production print specialist.

Learning Activities:
Supplemental Learning Material

Learning Plan 3: Production Printing Procedures see page 148

Industry Information:
Supplemental Learning Material

Learning Plan 3: Production Printing Procedures see page 226

Target Competency and Linked Exit Learning Outcomes

3. **Demonstrate the capabilities of a branded Web Submission Services.**

Linked External Standards

III. Given FreeFlow Web Services, list and describe its basic components and capabilities.

IV. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Web Services.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Target Competency and Linked Exit Learning Outcomes

4. **Demonstrate the capabilities of branded specific Prepress Workflow Solution.**

Linked External Standards

V. Given FreeFlow Web Services, list and describe its basic components and capabilities.

VI. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of Manufacturers specific Prepress Workflow Solution.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors

Target Competency and Linked Exit Learning Outcomes

5. Demonstrate the basic components of a RIP and a print engine.

Linked External Standards

VII. Given a RIP: FreeFlow Print Server and Print Engine Xerox NuveraEA, list and describe the basic components of each.

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Engine.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Target Competency and Linked Exit Learning Outcomes

6. Demonstrate finishing as used in today's production digital print workflows.

Linked External Standards

I. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; and FreeFlow Makeready) , describe the workflow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., FreeFlow Makeready and FreeFlow Print Server functions) to output (i.e., print engine and finishing).

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Learning Activities

FreeFlow Web Services

__1. Research and define FreeFlow Web Services.

» Learning Cycle: Motivation

__2. Participate in class discussion about the capabilities and components of Xerox FreeFlow Web Services and how it can impact the productivity, cost, and potential profitability of an organization.

» Learning Cycle: Motivation

__3. Prepare and deliver a presentation on the capabilities, components, and productivity and business impacts of FreeFlow Web Services.

» Learning Cycle: Comprehension

__4. With the aid of your instructor, submit a job from a PC using password security.

» Learning Cycle: Practice

__5. With the aid of your instructor, create a user and assign access rights.

» Learning Cycle: Practice

__6. With the aid of your instructor, create a document catalog and choose to run a static job using a sample file.

» Learning Cycle: Practice

__7. With the aid of your instructor, demonstrate the reported time and financial information reported.

» Learning Cycle: Practice

__8. With the aid of your instructor, create a PDF through FreeFlow Web Services at a client work station using a sample file

» Learning Cycle: Practice

__9. With the aid of your instructor, post a file and print from DocuShare using a sample file.

» Learning Cycle: Practice

__10. Without the aid of your instructor, submit a job from a PC using password security.

» Learning Cycle: Application

__11. Without the aid of your instructor, create a user and assign access rights.

» Learning Cycle: Application

__12. Without the aid of your instructor, create a document catalog and choose to run a static job using the Workflow Poster Sample File.

> » Learning Cycle: Application

__13. Without the aid of your instructor, demonstrate the reported time and financial information reported.

> » Learning Cycle: Application

__14. Without the aid of your instructor, create a PDF through FreeFlow Web Services at a client work station using the Post Card Sample file, post a file and print from DocuShare using the Brochure Sample file.

> » Learning Cycle: Application

FreeFlow Makeready

__15. Research and define FreeFlow Makeready.

> » Learning Cycle: Motivation

__16. Participate in class discussion about the capabilities and components of FreeFlow Makeready and how it can impact the productivity, cost, and potential profitability of an organization.

> » Learning Cycle: Motivation

__17. Prepare and deliver a presentation on the capabilities, components and productivity and business impacts of FreeFlow Makeready.

> » Learning Cycle: Comprehension

__18. With the aid of your instructor, scan hardcopy into workflow and adjust clean and adjust function.

> » Learning Cycle: Practice

__19. With the aid of your instructor, reorder pages and use set labeling for scanned job and save to library.

> » Learning Cycle: Practice

__20. With the aid of your instructor, preview a document in FreeFlow Makeready using a sample file.

> » Learning Cycle: Practice

__21. With the aid of your instructor, impose a document for output using a sample file.

> » Learning Cycle: Practice

__22. With the aid of your instructor, save the file from previous activity to the Document Library

> » Learning Cycle: Practice

__23. With the aid of your instructor, make adjustments to file to allow for finishing needs (e.g., single-sided, double-sided, tabbed, stitched, trimmed, punched, etc.) using the sample file.

> » Learning Cycle: Practice

__24. With the aid of your instructor, merge two documents together with FreeFlow Makeready using sample files.

» Learning Cycle: Practice

__25. With the aid of your instructor, remove and add a page number to a document using a sample file.

» Learning Cycle: Practice

__26. With the aid of your instructor, use set labeling to feature of FreeFlow Makeready and add a slipsheet, cover and insert to a sample file.

» Learning Cycle: Practice

__27. With the aid of your instructor, make adjustments to front to back registration using the registration feature and a sample file.

» Learning Cycle: Practice

__28. Without the aid of your instructor, scan hardcopy into workflow and adjust clean and adjust function.

» Learning Cycle: Application

__29. Without the aid of your instructor, reorder pages and use set labeling for scanned job and save to library.

» Learning Cycle: Application

__30. Without the aid of your instructor, preview a document in FreeFlow Makeready using the Business Card Sample File.

» Learning Cycle: Application

__31. Without the aid of your instructor, impose a document for output using the Business Card Sample File.

» Learning Cycle: Application

__32. Without the aid of your instructor, save the file from previous activity to the Document Library.

» Learning Cycle: Application

__33. Without the aid of your instructor, make adjustments to file to allow for finishing needs (e.g., (single-sided, double-sided, tabbed, stitched, trimmed, punched etc.) using the Business Card Sample File.

» Learning Cycle: Application

__34. Without the aid of your instructor, merge two documents together with FreeFlow Makeready using the Brochure and Business Card Sample File.

» Learning Cycle: Application

__35. Without the aid of your instructor, remove and add a page number to a document using the Book Sample File.

» Learning Cycle: Application

__36. Without the aid of your instructor, use set labeling feature of FreeFlow Makeready and add a slipsheet, cover and insert to the Book Sample File.

> » Learning Cycle: Application

__37. Without the aid of your instructor, make adjustments to front to back registration using registration adjustment feature and Business Card Sample File.

> » Learning Cycle: Application

__38. With the aid of your instructor, use clean and adjust function to make adjustments to scanned file.

> » Learning Cycle: Practice

__39. Without the aid of your instructor use clean and adjust function to make adjustments to scanned file.

> » Learning Cycle: Application

__40. With the aid of your instructor, save a job ticket for reprinting and re ripping using a sample file.

> » Learning Cycle: Practice

__41. Without the aid of your instructor, save a job ticket for reprinting and re ripping using Business Card file.

> » Learning Cycle: Application

__42. With the aid of your instructor, create and save a job as a PDF and also as a TIFF image for later use using a sample file.

> » Learning Cycle: Practice

__43. Without the aid of your instructor, create and save a job as a PDF and also as a TIFF image for later use using the Brochure Sample file.

> » Learning Cycle: Application

RIP & Print Engine

__44. Research and define a RIP and Prepress Workflow Software.

> » Learning Cycle: Motivation

__45. Participate in class discussion about the capabilities and components of a RIP and FreeFlow Print Server and how it can impact the productivity, capability, cost, and potential profitability of an organization.

> » Learning Cycle: Motivation

__46. Research and define a print engine (e.g., Xerox NuveraEA).

> » Learning Cycle: Motivation

__47. Participate in class discussion about the capabilities and components of a print engine (e.g.,Xerox NuveraEA) and how it can impact the productivity, capability, cost, and potential profitability of an organization.

>> Learning Cycle: Motivation

__48. Prepare and deliver a presentation on the capabilities, components, and productivity and business impacts of a RIP and Workflow Software.

>> Learning Cycle: Comprehension

__49. Prepare and deliver a presentation on the capabilities, components, and productivity and business impacts of print engine (e.g.,Xerox NuveraEA).

>> Learning Cycle: Comprehension

__50. With the aid of your instructor, create a queue, choose a paper stock and assign the stock to a particular tray, create and save the job ticket and save the job to a file and to CD using the RIP (Workflow Software) and a sample file.

>> Learning Cycle: Practice

__51. Without the aid of your instructor, create a queue, choose a paper stock and assign the stock to a particular tray, create and save the job ticket and save the job to a file and to CD using the RIP (Workflow Software) and the Workflow Poster sample file.

>> Learning Cycle: Application

__52. With the aid of your instructor, review the job properties and queue properties and produce 10 of the Workflow Poster file on 12"x18" uncoated cover stock.

>> Learning Cycle: Practice

__53. With the aid of your instructor, output 10 Workflow Posters on 12"x18" uncoated text stock.

>> Learning Cycle: Practice

__54. With the aid of your instructor, produce 30 sheets of the Business Cards file on 8.5"x11" uncoated cover.

>> Learning Cycle: Practice

__55. With the aid of your instructor, edit the job from previous activity to be output 2 up on 11"x17" uncoated cover stock.

>> Learning Cycle: Practice

__56. With the aid of your instructor, print 15 sheets from previous activity.

>> Learning Cycle: Practice

__57. With the aid of your instructor, produce 25, 50 and 100 sheets of the Business Card on 8.5x"11" cover.

>> Learning Cycle: Practice

__58. With the aid of your instructor, edit the job from the previous activity to be 2 up on 11"x17".

» Learning Cycle: Practice

__59. With the aid of your instructor, output 25 sheets of the Business Card from the previous activity.

» Learning Cycle: Practice

__60. With the aid of your instructor, record the timing of all jobs.

» Learning Cycle: Practice

__61. With the aid of your instructor, produce 22 of the Brochure files on 8.5"x11" white uncoated text with colored slipsheets between jobs.

» Learning Cycle: Practice

__62. With the aid of your instructor, print 22 sheets of the Brochure file on 8.5"x11" uncoated "colored" text stock and offset stack.

» Learning Cycle: Practice

__63. With the aid of your instructor, produce 17 sheets of the Post Card on 11"x17" uncoated cover.

» Learning Cycle: Practice

__64. With the aid of your instructor, produce 17 sheets on 11"x17" coated cover.

» Learning Cycle: Practice

__65. With the aid of your instructor, produce 10 of the Book File using 8.5"x11" coated cover for the cover and 8.5"x11" text for the body.

» Learning Cycle: Practice

__66. With the aid of your instructor, insert tabbed pages for each chapter.

» Learning Cycle: Practice

__67. Without the aid of your instructor, review the job properties and queue properties and produce 10 of the Workflow Poster file on 12"x18" uncoated cover stock.

» Learning Cycle: Application

__68. Without the aid of your instructor, output 10 Workflow Posters on 12"x18" uncoated text stock.

» Learning Cycle: Application

__69. Without the aid of your instructor, produce 30 sheets of the Business Cards file on 8.5"x11" uncoated cover.

» Learning Cycle: Application

__70. Without the aid of your instructor, edit the job from the previous activity to be output 2 up on 11"x17" uncoated cover.

» Learning Cycle: Application

__71. Without the aid of your instructor, print 15 sheets of the job from the previous activity.

» Learning Cycle: Application

__72. Without the aid of your instructor, produce 25, 50 and 100 sheets of the Business Card on 8.5x"11" cover.

» Learning Cycle: Application

__73. Without the aid of your instructor, edit the job from the previous activity to be 2 up on 11"x17".

» Learning Cycle: Application

__74. Without the aid of your instructor, output 25 sheets of the Business Card.

» Learning Cycle: Application

__75. Without the aid of your instructor, record the timing of all jobs.

» Learning Cycle: Application

__76. Without the aid of your instructor, produce 22 of the Brochure files on 8.5"x11" white uncoated text with colored slipsheets between jobs.

» Learning Cycle: Application

__77. Without the aid of your instructor, print 22 sheets of the Brochure file on 8.5"x11" uncoated "colored" text stock and offset stack.

» Learning Cycle: Application

__78. Without the aid of your instructor, produce 17 sheets of the Post Card on 11"x17" uncoated cover.

» Learning Cycle: Application

__79. Without the aid of your instructor, produce 17 sheets on 11"x17" coated cover.

» Learning Cycle: Application

__80. Without the aid of your instructor, produce 10 of the Book File using 8.5"x11" coated cover for the cover and 8.5"x11" text for the body.

» Learning Cycle: Application

__81. Without the aid of your instructor, insert tabbed pages for each chapter.

» Learning Cycle: Application

Finishing

__82. Research and define finishing.

> » Learning Cycle: Motivation

__83. Facilitate a discussion about the capabilities and components of finishing and how it can impact the productivity, capability, cost, and potential profitability of an organization.

> » Learning Cycle: Motivation

__84. Discuss the benefits and limitations of in-line, near-line and off-line finishing techniques.

> » Learning Cycle: Motivation

__85. Prepare and deliver a presentation on the capabilities, components, and productivity and business impacts of a finishing solution within a digital production printing operation.

> » Learning Cycle: Comprehension

__86. With the aid of your instructor, produce 10 of the Workflow Poster file on 12"x18" uncoated cover stock.

> » Learning Cycle: Practice

__87. With the aid of your instructor, output 10 Workflow Posters on 12"x18" uncoated text stock.

> » Learning Cycle: Practice

__88. With the aid of your instructor, produce 30 sheets of the Business Cards file on 8.5"x11" uncoated cover.

> » Learning Cycle: Practice

__89. With the aid of your instructor, edit the job to be output 2 up on 11"x17" uncoated cover.

> » Learning Cycle: Practice

__90. With the aid of your instructor, print 15 sheets.

> » Learning Cycle: Practice

__91. With the aid of your instructor, trim cards with minimum cuts.

> » Learning Cycle: Practice

__92. With the aid of your instructor, produce 25, 50 and 100 sheets of the Business Card on 8.5x"11" cover.

> » Learning Cycle: Practice

__93. With the aid of your instructor, edit the job to be 2 up on 11"x17".

> » Learning Cycle: Practice

__94. With the aid of your instructor, output 25 sheets of the Business Card.

> » Learning Cycle: Practice

__95. With the aid of your instructor, record the timing of all jobs.

> » Learning Cycle: Practice

__96. With the aid of your instructor, trim cards of 25 8.5"x11" and 11"x17".

> » Learning Cycle: Practice

__97. With the aid of your instructor, compare number of cuts.

> » Learning Cycle: Practice

__98. With the aid of your instructor, produce 22 of the Brochure files on 11"x17" white uncoated text with colored slipsheets between jobs.

> » Learning Cycle: Practice

__99. With the aid of your instructor, print another 22 sheets of the Brochure file on 11"x17" uncoated "colored" text stock and offset stack.

> » Learning Cycle: Practice

__100. With the aid of your instructor, stitch, fold and trim.

> » Learning Cycle: Practice

__101. With the aid of your instructor, produce 17 sheets of the Post Card on 11"x17" uncoated cover.

> » Learning Cycle: Practice

__102. With the aid of your instructor, produce another 17 sheets on 11"x17" coated cover.

> » Learning Cycle: Practice

__103. With the aid of your instructor, trim cards with minimum cuts.

> » Learning Cycle: Practice

__104. With the aid of your instructor, produce 10 of the Book File using 8.5"x11" coated cover for the cover and 8.5"x11" text for the body.

> » Learning Cycle: Practice

__105. With the aid of your instructor, trim, punch and spiral bind from previous activity.

> » Learning Cycle: Practice

__106. With the aid of your instructor, produce 10 of the Book File using 8.5"x11" coated cover for the cover and 8.5"x11" text for the body.

> » Learning Cycle: Practice

__107. With the aid of your instructor, produce another 10 inserting tabbed pages for each chapter.

> » Learning Cycle: Practice

__108. With the aid of your instructor, tape, Perfect or Spiral bind (use any and all and compare time, materials and quality of output).

> » Learning Cycle: Practice

__109. Without the aid of your instructor, produce 10 of the Workflow Poster file on 12"x18" uncoated cover stock.

> » Learning Cycle: Application

__110. Without the aid of your instructor, output 10 Workflow Posters on 12"x18" uncoated text stock.

> » Learning Cycle: Application

__111. Without the aid of your instructor, produce 30 sheets of the Business Cards file on 8.5"x11" uncoated cover.

> » Learning Cycle: Application

__112. Without the aid of your instructor, edit the job to be output 2 up on 11"x17" uncoated cover.

> » Learning Cycle: Application

__113. Without the aid of your instructor, print 15 sheets from the previous activity.

> » Learning Cycle: Application

__114. Without the aid of your instructor, trim cards with minimum cuts.

> » Learning Cycle: Application

__115. Without the aid of your instructor, produce 25, 50 and 100 sheets of the Business Card on 8.5x"11" cover.

> » Learning Cycle: Application

__116. Without the aid of your instructor, edit the job to be 2 up on 11"x17".

> » Learning Cycle: Application

__117. Without the aid of your instructor, output 25 sheets of the Business Card.

> » Learning Cycle: Application

__118. Without the aid of your instructor, record the timing of all jobs.

> » Learning Cycle: Application

__119. Without the aid of your instructor, trim cards of 25 8.5"x11" and 11"x17".

> » Learning Cycle: Application

__120. Without the aid of your instructor, compare number of cuts from the previous activity.

> » Learning Cycle: Application

__121. Without the aid of your instructor, produce 22 of the Brochure files on 11"x17" white uncoated text with colored slipsheets between jobs.

> » Learning Cycle: Application

__122. Without the aid of your instructor, print another 22 sheets of the Brochure file on 11"x17" uncoated "colored" text stock and offset stack.

> » Learning Cycle: Application

__123. Without the aid of your instructor, stitch, fold and trim work from previous activity.

» Learning Cycle: Application

__124. Without the aid of your instructor, produce 17 sheets of the Post Card on 11"x17" uncoated cover.

» Learning Cycle: Application

__125. Without the aid of your instructor, produce 17 sheets on 11"x17" coated cover.

» Learning Cycle: Application

__126. Without the aid of your instructor, trim cards from previous activity with minimum cuts

» Learning Cycle: Application

__127. Without the aid of your instructor, produce 10 of the Book File using 8.5"x11" coated cover for the cover and 8.5"x11" text for the body.

» Learning Cycle: Application

__128. Without the aid of your instructor, trim, punch, and spiral bind.

» Learning Cycle: Application

__129. Without the aid of your instructor, produce 10 of the Book File using 8.5"x11" coated cover for the cover and 8.5"x11" text for the body.

» Learning Cycle: Application

__130. Without the aid of your instructor, produce another 10 inserting tabbed pages for each chapter.

» Learning Cycle: Application

__131. Without the aid of your instructor, tape, perfect, or spiral bind (use any and all and compare time, materials and quality of output).

» Learning Cycle: Application

Assessment Activities

__1. Complete "Production (Prepress, Press, Postpress): FreeFlow Web Services" assessment.

__2. Complete "Production (Prepress, Press, Postpress): FreeFlow Makeready" assessment.

__3. Complete "Basic Components of a RIP and Print Engine" assessment.

__4. Complete "Production (Prepress, Press, Postpress): Finishing" assessment.

Learning Plan

4

Variable Print Production Workflows

Overview

Traditionally printing has been limited to producing the same image over and over again to meet quantity needs because of its use of a printing plate.. When digital production printing technology was developed (ink jet and toner based), it initially enabled shorter runs and faster turn around times and has since evolved to allow dynamic content. These capabilities have frequently made digital printing the preferred method over the less adaptable/flexible processes (offset, flexo, gravure, and screen) in terms of schedule and budget.

Production digital printing has the ability to make every picture, word, or element different from one page to another. Variable Data Printing is one of the phrases used to describe this ability. Instead of printing a series of postcards and then putting the recipients' addresses on them, you now have the ability to produce the postcard and put the address on it at the same time.

In this section, you will learn about Variable Data Printing and how it continues to be a key differentiator in digital production printing environments. By understanding how the workflows and technologies work you will be more valuable to the organizations you choose to work with.

Learning Activities:
Supplemental Learning Material

Learning Plan 4: Variable Print Production Workflows see page 194

Industry Information:
Supplemental Learning Material

Learning Plan 4: Variable Print Production Workflows see page 237

Target Competency and Linked Exit Learning Outcomes

7. Produce a simple Variable Information job.

Linked External Standards

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Print Engine.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Learning Activities

__1. Research and define variable information (data) printing.

> » Learning Cycle: Motivation

__2. Participate in a class discussion about the capabilities and components of a variable information workflow and how it can impact the productivity, cost, and potential profitability of an organization.

> » Learning Cycle: Motivation

__3. Discuss the differences between a static and variable workflow along with the preparation and output considerations within a variable data workflow.

> » Learning Cycle: Motivation

__4. Prepare and deliver a presentation on the capabilities, components and productivity and business impacts of a variable information (data) workflow within a digital production printing operation.

> » Learning Cycle: Comprehension

__5. With the aid of your instructor, demonstrate the creation and output of a variable information job using a database, a design file, variable information software, RIP, engine and finisher.

> » Learning Cycle: Practice

__6. Using the Postcard job, an Excel file of names and addresses, a variable data integration solution (FreeFlow Web Services, Atlas PrintShop Mail, XMPie UCreate, or any other), a RIP: FreeFlow Print Server and Print Engine: Xerox NuveraEA, produce a simple variable data job by placing the names and addresses of the Excel file onto the Postcards and output them on 11"x17" coated cover stock.

> » Learning Cycle: Application

__7. Trim postcard to prepare for mailing, but DO NOT MAIL!

> » Learning Cycle: Application

Assessment Activity

__1. Complete "Production (Prepress, Press, Post-press): Variable Data Printing" assessment.

Learning Plan

5

Troubleshooting Print Production Workflows

Overview

In the beginning of this course, you learned about the importance of preparing the workflow for digital production printing. Sometimes, to our dismay, even the best plans can go awry. In this section, you will learn a series of troubleshooting techniques for each part of the workflow. These techniques will help you identify what's potentially wrong and what can be done to fix it.

When the job needs to be produced quickly and the workflow is stopped because something isn't working, it disrupts the entire workflow, wastes time and costs money. Efficient and effective troubleshooting will enable you to help your organization keep the workflow running and running profitably.

Learning Activities:
Supplemental Learning Material

Learning Plan 5: Troubleshooting Print Production Workflows see page 198

Industry Information:
Supplemental Learning Material

Learning Plan 5: Troubleshooting Print Production Workflows see page 242

Target Competency and Linked Exit Learning Outcomes

8. Demonstrate troubleshooting techniques.

Linked External Standards

IX. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate troubleshooting techniques.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Learning Activities

__1. Research troubleshooting techniques for brand-ed Web Submission Services.

  » Learning Cycle: Motivation

__2. Research troubleshooting techniques for brand-ed Prepress Workflow Solution.

  » Learning Cycle: Motivation

__3. Research troubleshooting techniques for the RIP (FreeFlow Print Server).

  » Learning Cycle: Motivation

__4. Research troubleshooting techniques for the print engine (Xerox NuveraEA).

  » Learning Cycle: Motivation

__5. Research troubleshooting techniques for the finishing systems

  » Learning Cycle: Motivation

__6. Participate in a class discussion about the impor-tance of having access to troubleshooting informa-tion.

  » Learning Cycle: Comprehension

__7. Practice troubleshooting techniques.

  » Learning Cycle: Practice

__8. Discuss how troubleshooting can positively im-

pact the productivity, capability, cost, and potential profitability of an organization.

> » Learning Cycle: Comprehension

__9. Prepare and deliver a presentation on troubleshooting techniques within a digital production printing operation.

> » Learning Cycle: Practice

__10. Practice a series of Job, RIP, Engine and Finishing troubleshooting techniques under the watchful eye of your instructor (who will change paper types in drawers (size, weight, coating, color), open doors, jam paper, loosen connections, change job parameters, etc., during this stage of the learning process).

> » Learning Cycle: Practice

__11. Discuss the importance of recording everything, whether it was noticed, how it was fixed, and how to avoid the same issue in future.

> » Learning Cycle: Comprehension

__12. Identify troubleshooting opportunities created by your instructor.

> » Learning Cycle: Application

__13. Discuss with the class what's wrong and what the potential solutions are to correct the issue.

> » Learning Cycle: Application

__14. Make corrections and reattempt to successfully

attain the required output.

> » Learning Cycle: Application

Assessment Activity

Complete "Operations" assessment.

Performance Assessment Tasks

Performance Assessment Task

1

Basic Components of a RIP and Print Engine

Environment: Lab
Strategy: Performance
Evaluators: Instructor

Target Competency and Linked Exit Learning Outcomes

Competency

5. **Demonstrate the basic components of a RIP and a print engine.**

Linked External Standards

VII. Given a RIP: FreeFlow Print Server and a Print Engine: Xerox NuveraEA, list and describe the basic components of each.

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Engine.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Directions

When shown a picture or standing in front of a RIP, you will be asked to do the following:

1. Identify major parts and subsystems.

2. Discuss the differences between one RIP and another (e.g., CPU clock speed, hard drive space, RAM, software functionality, hardware modifications, etc.).

3. Discuss the differences between one print engine and another (e.g., speed, maximum sheet size, minimum sheet size, number of colors, RIP, substrate transport subsystems, substrate delivery and stacking areas, control GUI, finishing subsystems (if any), power supply, etc.).

Basic Components of a RIP and Print Engine

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.
- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. YOU IDENTIFY MAJOR PARTS AND SUBSYSTEMS.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. YOU DISCUSS THE DIFFERENCES BETWEEN RIPS.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. YOU DISCUSS THE DIFFERENCES BETWEEN PRINT ENGINES.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. YOU OUTPUT A POSTER.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. YOU OUTPUT A BUSINESS CARD.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. YOU OUTPUT A POSTCARD.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
7. YOU OUTPUT A BROCHURE.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
8. YOU OUTPUT A BOOK.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Performance Assessment Task

2

Preparation

Environment: Lab
Strategy: Demonstration
Evaluators: Instructor

Target Competency and Linked Exit Learning Outcomes

Competency

2. Prepare equipment for production.

Linked External Standards

II. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready), demonstrate the preparation of the equipment for production.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Directions

You will be asked to deliver a presentation focusing on the importance of preparation and maintenance of equipment as they relate to image quality, productivity, and cost. You will create a procedural guide on preparing RIP/engine for output and demonstrate these procedures for your instructor.

Preparation

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.
- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. YOU GIVE A PRESENTATION TO THE CLASS.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. YOU EXPLAIN THE IMPORTANCE OF EQUIPMENT PREPARATION AS IT RELATES TO IMAGE QUALITY.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. YOU EXPLAIN THE IMPORTANCE OF EQUIPMENT PREPARATION AS IT RELATES TO PRODUCTIVITY.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. YOU EXPLAIN THE IMPORTANCE OF EQUIPMENT PREPARATION AS IT RELATES TO COST.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. YOU EXPLAIN THE IMPORTANCE OF EQUIPMENT MAINTENANCE AS IT RELATES TO IMAGE QUALITY.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. YOU EXPLAIN THE IMPORTANCE OF EQUIPMENT MAINTENANCE AS IT RELATES TO PRODUCTIVITY.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
7. YOU EXPLAIN THE IMPORTANCE OF EQUIPMENT MAINTENANCE AS IT RELATES TO COST.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
8. YOU EXPLAIN THE IMPORTANCE OF CREATING AND FOLLOWING A SHOP SAFETY PROCEDURES PROGRAM.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
9. PROCEDURAL GUIDE OUTLINES STEPS IN PREPARING AN ENVIRONMENT, RIP, ENGINE, AND SAFETY CHECKS FOR RUNNING A DIGITAL PRODUCTION PRINTING SHOP.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
10. YOU DEMONSTRATE PROCEDURES OUTLINED IN YOUR DIGITAL PRODUCTION PRINTING GUIDEBOOK.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
11. YOU CHECK TEMPERATURE AND RELATIVE HUMIDITY.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
12. YOU TURN ENGINE AND RIP ON.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
13. YOU LOAD APPROPRIATE SUBSTRATE FOR JOBS.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
14. YOU CHECK FINISHING EQUIPMENT, AS NECESSARY.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
15. YOU CALIBRATE RIP AND PRINT ENGINE.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Performance Assessment Task

3

Production:
Prepress, Press and Postpress

Environment: Lab
Strategy: Demonstration
Evaluators: Instructor

Target Competency and Linked Exit Learning Outcomes

Competency

1. Outline potential digital print production workflows from input to processing to output.

Linked External Standards

I. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready), describe the workflow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., FreeFlow Makeready and RIP functions) to output (i.e., print engine and finishing).

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

Target Competency and Linked Exit Learning Outcomes

Competency

3. Demonstrate the capabilities of FreeFlow Web Services.

Linked External Standards

III. Given FreeFlow Web Services, list and describe its basic components and capabilities.

IV. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Web Services.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Target Competency and Linked Exit Learning Outcomes

Competency

4. **Demonstrate the capabilities of a FreeFlow Makeready.**

Linked External Standards

V. Given FreeFlow Makeready, list and describe its basic components and capabilities.

VI. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Makeready.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Target Competency and Linked Exit Learning Outcomes

Competency

6. **Demonstrate finishing as used in today's production digital print workflows.**

Linked External Standards

I. Given a complete Xerox solution (e.g., RIP: Free-Flow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready), describe the workflow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., FreeFlow Makeready and RIP functions) to output (i.e., print engine and finishing).

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Target Competency and Linked Exit Learning Outcomes

Competency

7. Produce a simple Variable Information job.

Linked External Standards

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Engine.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Directions

Diagram of Potential Workflows:

You will deliver a presentation outlining your definition of workflow from a production and business perspective within today's digital production print environments (both commercial print and in-plant). Your presentation will provide an executive level as well as a production level review that outlines where content comes from, how it gets prepared, printed, and finished. In addition, you will be asked to provide an explanation of how specific solutions (i.e., RIP, prepress workflow software, and print engine) fit into a workflow.

FreeFlow Web Services:

You will deliver a presentation covering FreeFlow Web Services components and capabilities. You will address the role of FreeFlow Web Services in a digital print production workflow, PDF creation and file submission, creation of a storefront, hosting of files, and security. You will discuss connection of FreeFlow Web Services to FreeFlow Makeready. You will link your discussion to the productivity of the individual and organization as well as the profitability of the company.

FreeFlow Makeready:

You will deliver a presentation covering FreeFlow Makeready components and capabilities. You will address the role of FreeFlow Makeready in a digital print production workflow, inputs (from hard copy scanning, and electronic files (e.g., PostScript, PDF, JPEG, PostRip, etc)). You will preview, compose, and impose documents. You will demonstrate how to save to a library, adjust registration, and prepare for specific finishing. You will explain how and where FreeFlow Makeready can connect to FreeFlow Web Services. You will link your discussion to the productivity of the individual and organization as well as the profitability of the company.

Finishing:

You will prepare and deliver a presentation on the finishing solution within a production printing operation including; capabilities and components along with productivity and business impacts. You will define in-line, offline, and near-line finishing. You will describe various finishing techniques: stacking, stitching, punching, cutting, trimming, die cutting, embossing, debossing, perfect bind, spiral bind, and case bind.

You will finish a set of jobs according to specifications: trim cards, stitch fold and trim, trim punch and spiral bind, tape, perfect, or spiral bind.

Variable Data Printing:

You will prepare and deliver a presentation on variable data workflow within a digital production printing operation including; the capabilities and components along with productivity and business impacts. You will define variable data printing and the business opportunities it presents. You will define the difference between a static and variable print workflow. You will integrate the variable information into a static job creating a variable job then complete the job on the appropriate engine and finish it.

Diagram of Potential Workflows

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You give a presentation to the class.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. Workflow diagram depicts all of the items in the process.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. Workflow diagram shows the relationship of one step to another.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. Workflow diagram shows a clear understanding of the topic.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. Workflow diagram shapes are used correctly.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. Workflow diagram is neat and well organized.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Xerox FreeFlow Web Services

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You give a presentation to the class.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. Presentation includes overview of FreeFlow Web Services components and capabilities.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. You address the role of FreeFlow Web Services in a digital print production workflow.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. You explain PDF creation and file submission.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. You discuss creation of a storefront.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. You address hosting files.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
7. You address security.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
8. You comment on the connection of FreeFlow Web Services to FreeFlow Makeready	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
9. Presentation is linked to individual's productivity.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
10. Presentation is linked to productivity of the organization.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
11. Presentation is linked to the company's profitability.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

FreeFlow Makeready

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You give a presentation to the class.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. Presentation includes overview of FreeFlow Makeready components and capabilities.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. You address the role of FreeFlow Makeready in a digital print production workflow.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. Presentation outlines inputs (i.e., hard copy, scanning, and electronic files (e.g., PostScript, PDF, JPEG, PostRIP, etc.)).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. You preview documents.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. You compose documents.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
7. You impose documents.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
8. You save to the library.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
9. You save a job ticket for reprinting and re-ripping.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
10. You save a document to PDF and TIFF image file.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
11. You adjust registration using the FreeFlow Makeready tools and features	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
12. You clean and adjust function a scanned document.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
13. You create a tabbed job.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
14. You use set labeling to differentiate one job from another.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
15. You prepare for specific finishing.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

CRITERIA	RATINGS			
16. You comment on the connection of FreeFlow Web Services to FreeFlow Makeready	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
17. Presentation is linked to individual's productivity.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
18. Presentation is linked to productivity of the organization.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
19. Presentation is linked to the company's profitability.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Finishing

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You give a presentation to the class.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. You prepare a poster (no finishing).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. You prepare business cards (cuts).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. You prepare a brochure (trim).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. You prepare a book (tape bind, stitch, perfect bind, offset stack).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. You prepare a tabbed book.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
7. You prepare a postcard (cut).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Variable Data Printing

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.
- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. YOU GIVE A PRESENTATION TO THE CLASS.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. YOU PREPARE A VARIABLE DATE PRINT JOB.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. YOU PRINT A VARIABLE DATE PRINT JOB.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. YOU FINISH A VARIABLE DATE PRINT JOB.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Performance Assessment Task

4

Operations

Environment: Lab
Strategy: Demonstration
Evaluators: Instructor

Target Competency and Linked Exit Learning Outcomes

Competency

8. Demonstrate troubleshooting techniques.

Linked External Standards

IX. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate troubleshooting techniques.

Linked Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Linked Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Directions

FreeFlow Web Services:

You will prepare FreeFlow Web Services to host a series of three files as designated by your instructor. All three files must be posted in an online catalog. You will access these three files from a remote workstation via the web and print all files with different print and finishing requirements, as directed by your instructor. As the operator, you will verify the job was submitted by recalling the appropriate queue from a remote workstation and the RIP. Your instructor will view the online catalog, your three jobs listed there, and the three jobs in the queue from a remote workstation and the queue.

FreeFlow Makeready:

Your instructor will hand you an 8.5x11, hard copy stack of pages. You will turn this stack into one file, reorder the pages, impose the job, and create a new PDF file that can be finished as a.5x8.5, saddle-stitched booklet.

In addition, you will take two electronic files, merge them together, and create from them a repaginated file.

Lastly, you will send a series of jobs to appropriate queues utilizing varying print options. Your instructor will verify the files were set-up appropriately using proprietary Prepress Workflow Solution.

FreeFlow Web Services

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You give a presentation to the class.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. Presentation outlines troubleshooting techniques for FreeFlow Web Services	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. Presentation outlines troubleshooting techniques for FreeFlow Makeready.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. Presentation outlines troubleshooting techniques for the RIP and print engine.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. You troubleshoot and repair (as appropriate) a problem arising from instructor's directed input.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. You escalate to field support (as appropriate).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

FreeFlow Makeready

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You turn hard copies provided by instructor into a file.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. You reorder the pages within the file.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. You impose the job.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. You store the job.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. You create a new PDF file.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. PDF file can be finished as a 5.5x8.5, saddle-stitched booklet.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
7. You merge two electronic files.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
8. You create a repaginated file from merged electronic files.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
9. You send a series of jobs to appropriate and corresponding queues using varying print options.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
10. The files are appropriately set-up using FreeFlow Makeready as verified by your instructor.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

RIP/Engine

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You produce a series of jobs (e.g., business cards, brochures, postcards, etc.) with specific finished outcomes.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. Procedural steps in creating a queue are observed by instructor.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. Sending of job to RIP is observed by instructor.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. Your printer preparation, including calibration, is observed by instructor.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. You meet all finishing-equipment-specific finishing procedures as defined by instructor.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Troubleshooting

Scoring Standard

- All criteria must earn a "Proficient" rating to demonstrate competence.

Rating Scale

- Proficient: Meets criteria.

- Introduction: Does not meet criteria.

CRITERIA	RATINGS			
1. You give a presentation to the class.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
2. Presentation outlines troubleshooting techniques for FreeFlow Web Services	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
3. Presentation outlines troubleshooting techniques for branded FreeFlow Makeready	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
4. Presentation outlines troubleshooting techniques for the RIP: FreeFlow Print Server; and Print Engine: Xerox NuveraEA.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
5. You troubleshoot and repair (as appropriate) a problem arising from instructor's directed input.	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT
6. You escalate to field support (as appropriate).	INTRODUCTION	LIMITED	CAPABLE	PROFICIENT

Complete_____

Name _____ Date _____

Evaluator's Signature _____ Date_____

Comments:

Digital Production Printing Syllabus

Instructor Name: Insert instructor name here
Instructor Office: Insert office room number here
Class Information: Insert class meeting information here
Number of Weeks: Insert total class time here

Course Description

Entails practical exercises and learning opportunities accompanied by theory. Provides fundamental learning relating to how digital production printing technology works, where it fits in the marketplace, what applications can be produced using this technology, and how to set up, operate, maintain, and finish printed pieces from the output device within commercial, in-plant, and data center workflows.

Target Population

Individuals and teams interested in performing the skills required to utilize digital production printing technology within today's graphic communication workflows. Also: college, technical college, high school, state/federal retraining programs, and correctional students concerned with learning how to use digital production printing technology to help them increase their knowledge base and, thus, employability.

Prerequisites

1. Obtain Course Book and read Section 1 of the course.

2. Attend first learning session prepared with any questions.

Textbook

Developers and Authors: Peter I. Muir, Bizucate Inc. and Jonathan W. Iwanski, Fox Valley Technical College. Year: 2012.

Supplies

1. Accompanying Sample Files CD

2. XeroxSchool-to-CareerCourseGuide.pdf

3. Workstation or laptop. Manufacturer: Any. Source: Workstations provided at workshop

4. Print Engine: Xerox NuveraEA

5. RIP: FreeFlow Print Server

6. Finishing equipment: In Line or Near Line system

7. Optional: Xerox FreeFlow Web Services and Xerox FreeFlow Makeready

External Standards

I. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready), describe the workflow from input (i.e., scanned job submission and a digital file submission) to processing (i.e., FreeFlow Makeready and RIP functions) to output (i.e., print engine and finishing).

II. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready), demonstrate the preparation of the equipment for production.

III. Given FreeFlow Web Services, list and describe its basic components and capabilities.

IV. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Web Services.

V. Given FreeFlow Makeready, list and describe its basic components and capabilities.

VI. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of FreeFlow Makeready.

VII. Given a RIP: FreeFlow Print Server and a Print Engine: Xerox NuveraEA, list and describe the basic components of each.

VIII. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate the use of the RIP/Engine.

IX. Given a complete Xerox solution (e.g., RIP: FreeFlow Print Server; Print Engine: Xerox NuveraEA; FreeFlow Web Services and FreeFlow Makeready) and a suite of test jobs (e.g., business card; post card; brochure; book; poster), demonstrate troubleshooting techniques.

Program Outcomes

A. Demonstrate technical skills and knowledge of digital production printing within simulated work environments.

B. Analyze the financial and scheduling impacts of maintaining and operating digital production print technology.

Core Abilities

A. Demonstrate adaptation to change.

B. Use critical and creative thinking to solve problems, resolve conflicts, make decisions and complete tasks.

C. Work cooperatively in a team environment.

D. Communicate in ways that honor diversity.

E. Demonstrate personal integrity through ethical and responsible behaviors.

Competencies

1. Outline potential digital print production workflows from input to processing to output.

2. Prepare equipment for production.

3. Demonstrate the capabilities of Xerox FreeFlow Web Services.

4. Demonstrate the capabilities of Xerox FreeFlow Makeready.

5. Demonstrate the basic components of a RIP: FreeFlow Print Server and a Print Engine: Xerox NuveraEA.

6. Demonstrate finishing as used in today's production digital print workflows.

7. Produce a simple Variable Information job.

8. Demonstrate troubleshooting techniques.

Section 2

Learning Activities Supplemental Learning Material
Digital Production Printing,
FreeFlow Web Services and FreeFlow Makeready

NOTE: The learning material in this Supplemental Guide has been selected and written to help facilitate the learning of digital production printing technology and processes. The approaches to learning are many and please feel free to use additional methods (presentation, web, video, text, live and recorded) to help deliver the learning that best meets the needs of the audience. If you have comments, edits or additional information you believe will be beneficial to this program please submit your input to Peter Muir, pmuir@bizucate.com, +1 215 234 4498. Thank you!

1. Learning Plan 1: Introduction to Digital Production Printing and Workflows

Suggested tasks for Learning Activities 1-18

Competencies matched to specific tasks (Format Explanation- Learning Plan 1, Competency 1 = 1.1)

1.1. Workflow Definition

1.1.1. Instructor provides a general overview of the generic flow of work in a typical production environment. Also outlines the progression of a product from raw materials to finished goods

1.1.2. Instructor describes process to create a cereal box or poster

1.1.3. Students write out their working definition of workflow

1.2. Definition Discussion

1.2.1. Instructor leads large group discussion focusing on the definition of each step in a workflow

1.2.2. Create groups of 3-4 to discuss and report output workflow

1.3. Compare Definitions

1.3.1. Students look up "workflow" and "digital workflow" in an on-line search engine

1.3.2. Students look up graphic communications & workflow definitions in printing resource book

1.3.3. Students record new/additional information to existing definitions

1.4. New Definition in Digital Context

1.4.1. Instructor leads large group discussion on student findings

1.4.2. Groups of 3-4 discuss research and come up with common themes to report

1.5. Print Workflow Poster and Review All Parts

1.5.1. Instructor guides students to where poster file resides on server and through the workflow to output

1.5.1.1. Note the printing procedure and processes mentioned here as they will be repeated many times throughout the course.

1.5.1.2. Locate WorkflowPoster.pdf on workstation and open in Adobe Acrobat. The job is currently 12x18" in size. Through this exercise we will reduce it to a more popular 11x17" size. You can choose to print either size as you wish.

1.5.1.3. Menu > File > Print Setup

1.5.1.3.1. Paper: Size: Tabloid (11x17")

1.5.1.3.2. Paper: Source: Automatically Select

1.5.1.3.3. OK

1.5.1.4. Menu > File > Print

1.5.1.4.1. Printer: Name: Xerox NuveraEA

1.5.1.4.2. Paper Handling: Page Scaling: Fit to Printable Area

1.5.1.4.3. OK

1.5.1.5. At Print Server and Engine

1.5.1.5.1. Verify 11x17" paper is loaded in one of the trays

1.5.1.5.2. Managers: Printer: Locate the Feeder and Tray that has the 11x17" stock loaded in it and right click > Properties

1.5.1.5.2.1. Verify the Size/Color is 11x17" all others should be set to default (Type: Plain, Weight: 75, Coating: Uncoated)

1.5.1.5.3. If the Queue chosen to print to is a hold queue, you will see the job under the Current Tab: Inactive Jobs

1.5.1.5.4. Managers: Job: Current: Locate the WorkflowPoster.pdf and right click > Properties and verify the settings for the job match the appropriate Tray.

1.5.1.5.5. You may not see the job in the Managers: Job because the job may have already printed if all
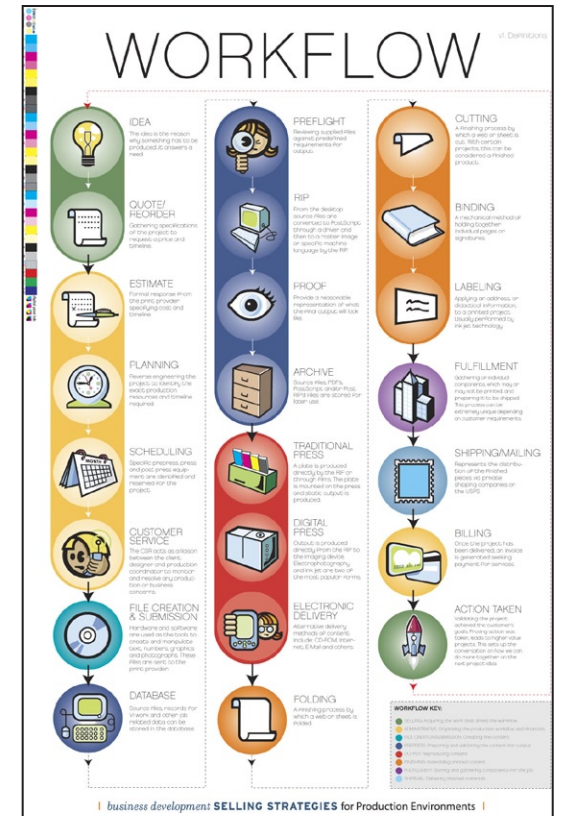
WorkflowPoster.pdf

the conditions were met.

1.5.1.5.6. After the job has run, go to Managers: Job and go to the Completed tab (in some installs the Completed tab is disabled to ensure the job data has been purged). Locate the WorkflowPoster. pdf job and right click > Properties > Settings > Destination choose Save and a location and a Save Format: PDF so the job can be reprinted from the RIP then click OK.

1.5.1.6. Reprint the Job from RIP to verify the process

1.5.1.6.1. Go to Services: Print from File > View > Directory > Saved Jobs and locate WorkflowPoster. pdf and right click > Properties > Settings > Quantity change it to print a poster for each student, then click Print

1.5.2. Have groups of students output the poster and discuss the content of the poster and any issues they might have encountered
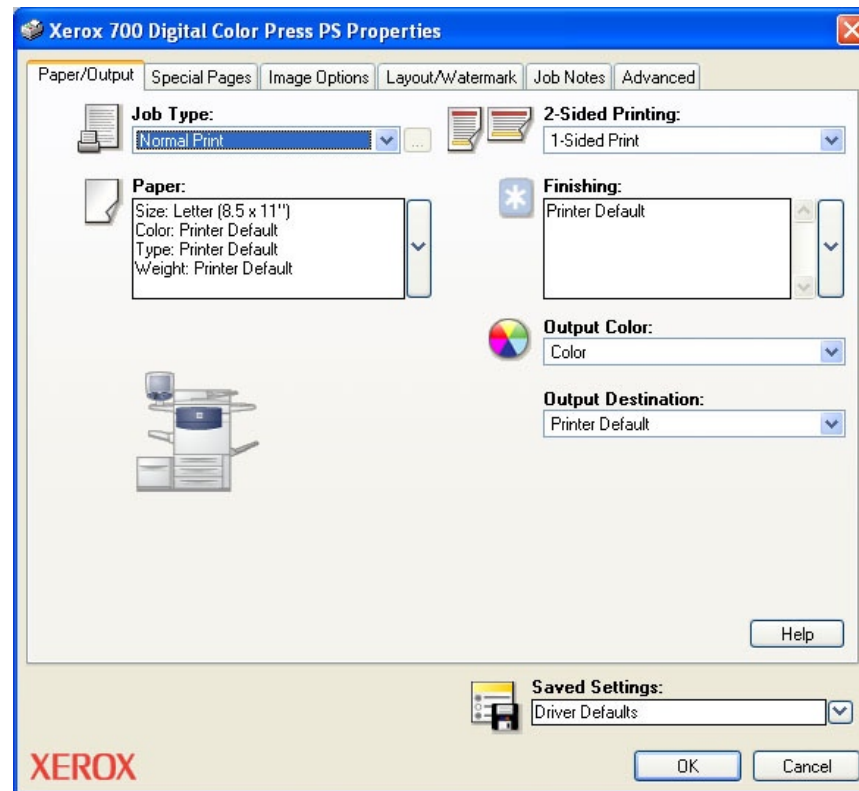
Sample Workstation Print Dialog Box
(Will change based on version, platform and specific RIP/Engine combination)

1.6. Mapping Workflows

1.6.1. Small groups create a workflow map and report to large group

1.6.2. Map out major workflow points on whiteboard and identify gaps/eliminate excessive steps

1.6.3. Discuss the ability/inability to map all workflows and why

1.7. Decision Making Process

1.7.1. Small group activity to draw out the thought process that took place by the poster creator

1.7.2. Ask questions of small group: How would this poster help various employees like sales, pre-press, press operator and finishing personnel?

1.8. Mapping Our Workflow

1.8.1. Provide an example of a person that needs to fill a car with gas (ask students to identify the steps involved in the process)

1.8.2. Appoint a "scribe" in each group and provide time to complete mapping of the workflow within the lab

1.9. Workflow Discussion

1.9.1. Each group should pick out key elements of the internal workflow

1.9.2. Each group should ask, record and discuss "At what points does the customer come into the workflow?"

1.9.3. Each group should ask, record and discuss "How valuable are the requirements for the final product to design and production?"

1.10. Consensus

1.10.1. As a large group discuss the conclusions made in small groups

1.10.2. Ask, record and discuss "What else can impact the workflow?" (Availability of materials, information, volume of work, etc).

1.10.3. Discuss where consensus was difficult to reach and why

1.11. Workflow Bottlenecks

1.11.1. Small groups review workflow and identify points where work could stop or slow

1.11.2. Write common bottleneck points on white board and discuss

1.11.3. Include production and business impacts to the workflow

1.12. Electronic Visual Depiction

1.12.1. Using the entire class, work through the process steps, defining each

1.12.2. Ask the question: "How would you contrast this electronic flow of information and steps versus say, a painting contractor that is going to paint the interior of a new home?"

1.12.3. Create an electronic depiction of the workflow (use MS Word, MS PowerPoint, Adobe Illustrator, Adobe InDesign)

1.13. Tour Printing Facility

1.13.1. Choose a printing firm that has both conventional and electronic production if possible. Ask the tour guide to explain workflows of each

1.13.2. Ask students to write down key differentiations they observe

1.13.3. Observe and record the people, processes and technology within the workflow

1.14. Interview Key Workflow Participants

1.14.1. Have students ask each person their background as it relates to their job

1.14.2. Ask the tour guide: "Who has the most difficult role in the workflow and why?"

1.15. Workflow Diagram

1.15.1. Have groups of students work together to document and create a chart of the workflow at the business (as they saw it)

1.15.2. Ask the question: Do you think all organizations have the same workflow? Why/why not?

1.16. Present Observed Workflow

1.16.1. Group presentations. Instructor notes/discusses differences in viewpoints along the way

1.16.1.1. Ask the question: Who had the most interesting job? Who needed the most training and skill to do their job? Which area was most dependent on another?

1.17. Vote for In-Depth Analysis

1.17.1. All students vote individually which workflow depiction of the Printer should be used for an in-depth analyses

1.17.2. Discuss why the one chosen received the most votes

1.17.3. Use a significant portion of class time and have small teams identify bottlenecks, efficiencies, suggest improvements. Report out and record in a format that will be presentable to the business.

1.18. Presenting Back to the Organization Visited

1.18.1. Prep business about class assignment. Have a representative come to class to review workflow findings. Format discussion so small groups report on individual areas via a spokesperson. Make sure to allow representative to interact with presentations.

1.18.2. Present business with a token of appreciation for contribution to class learning. Perhaps help to co-write a press release about the value of the tour and the lessons learned and the importance of your workflow.

1.18.3. Ask students the following question: What impact would the suggestions we came up with have on this business if implemented?

2. Learning Plan 2: Preparation Procedures for Production Printing

Suggested tasks for Learning Activities 2-7

Competencies matched to specific tasks (Format Explanation- Learning Plan 2, Competency 1 = 2.1)

2.1. Workflow Preparation Discussion

2.1.1. Instructor reviews each production point and the importance of preparation for each specific area with class.

2.1.2. Assign small groups to identify key preparation areas (Environment, RIP, etc).

2.1.3. Ask question: Do you think it is a good idea to have a checklist for workflow preparations? Why or why not? If you think it is a good idea, where would you have this checklist located?

2.2. Digital Production: Printing Guidebook

2.2.1. Provide examples of guidebooks used for the consistent creation and efficient production.

2.2.1.1. See Digital Printing Guide folder on Course CD.

2.2.2. Allow groups to plan out their guidebook in what they feel is the most effective format. Provide computers and due date for work assignment.

2.2.3. Must be electronically formatted for potential output. Make sure they know their work could be presented to a printing company for review.

2.2.4. Be sure to include environment, RIP, engine and safety preparation procedures.

2.3. Presenting Guidebook to Printer

2.3.1. Contact multiple printers so that you have enough for several student designs. Ensure business leadership is on board with what you are trying to accomplish. List contact person/title for each location and encourage students to contact them to get information necessary for tailoring workbook.

2.3.2. Review student work; suggest revisions; have re-submit for approval before small groups present to firms.

2.3.3. Set date/times. During presentations, solicit feedback. Make sure items in 2.2.4 are discussed and notes are taken on each.

2.4. Revisions to Guidebook

2.4.1. Instructor works with each small group to ensure edits are discussed, documented and placed. (This is potentially one complete class).

2.4.2. Contrast each groups work. No right or wrong processes. It depends on the printer and their workflow.

2.5. Instructor Overview of Workflow and Preparation

2.5.1. Review learning to date regarding workflow and preparation.

2.5.2. Discuss missing elements to good workflow and preparation.

2.5.3. Instructor adds appropriate detail on equipment calibration, maintenance and safety.

2.6. Demonstrate Procedures

2.6.1. Students and instructor go through step-by-step procedures for preparation at various workflow areas. Students either take notes or have a checklist in hand.

2.6.2. After demonstrating each process, students repeat steps on their own.

2.7. Implications of Not Preparing Properly

2.7.1. Split class into two groups. One group discusses productivity implications of lack of preparation. Second group discusses profitability implications of poor or no preparation.

2.7.2. Groups report to entire class.

3. Learning Plan 3: Production Printing Procedures

Suggested tasks for Learning Activities 1-131

Competencies matched to specific tasks (Format Explanation Learning Plan 3, Competency 1 = 3.1)

FreeFlow Web Services

3.1. FreeFlow Web Services

3.1.1. Use a search engine to find information about a Xerox branded print production workflow and record your own definition of what it is

3.1.2 Use the following link to Xerox FreeFlow Web Services information: http://www.xerox.com/digital-print-ing/workflow/freeflow/web-services/enus.html

3.1.3. Detailed Documentation Referenced in these Learning Activities can be found: http://www.support.xerox.com/go/results.asp?Xtype=docs&prodID=FF_Web_Services&Xlang=en_US&Xcntry=USA&prodName=FreeFlow%20Web%20Services

3.1.4. Contact a printing firm that has a similar Web Submission Services solution and equipment and interview their digital output operator about the benefits, capabilities and components of the Web Submission Services available to them.

3.2. Capabilities and Components of FreeFlow Web Services

3.2.1. Utilize small group discussion to understand Web Submission Services.

3.2.2. Review FreeFlow_Web_Services_Print Buyer Guide.pdf located at http://download.support.xerox.com/pub/docs/FreeFlow_Web_Services/userdocs/any-os/en/FreeFlow_Web_Services_PrintBuyerGuide.pdf

3.2.3. Ask groups to brainstorm and list at least 5 impacts of FreeFlow Web Services on productivity and profitability.

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FreeFlow™ Web Services
Print Buyer Guide

Web Services

Xerox FreeFlow Web Services Print Buyer Guide

3.3. Presentation on FreeFlow Web Services

3.3.1. Utilize research and discussion to prepare a small group presentation.

3.3.2. Presentation can take on many forms. Live, recorded, remote, etc.

3.3.3. Each group could present one feature or component of Web Submission Services instead of the entire solution

3.3.4. Alternative: Ask a local Xerox representative to present to the class.

3.4. With Instructor, Submit a Job Using FreeFlow Web Services

(Subsequent steps assume you have purchased and installed FreeFlow Web Services on your server)

3.4.1. Review page 1-12 of the FreeFlow_Web_Services_Print Buyer Guide.pdf

3.4.2. Go to a computer workstation with intranet web access and submit a file from the internal network to the print production workflow.

3.4.3. Follow Page 12 FreeFlow_Web_Services_Print Buyer Guide.pdf to order a Print Job using the Print Documents from Your Computer wizard

3.4.4. Note process for future use

    3.4.4.1. The exercise will guide you through the process of submitting a document from your computer through FreeFlow Web Services. You'll specify the location of the file, the Job Type, Properties, Preview and Adding of the Job to the Cart and Checking Out.

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FreeFlow™ Web Services
Print Service Provider Guide

Web Services

Xerox FreeFlow Web Services
Print Service Provider Guide

3.5. With Instructor, Create a Web Submission Services Customer, Users, Assign Rights and Print Documents from a Computer to FreeFlow Web Services

3.5.1. Read Section 5: Account Setup on Pages 63-87 of FreeFlow_Web_Services_PrintServiceProviderGuide. pdf found at http://download.support.xerox.com/pub/docs/FreeFlow_Web_Services/userdocs/any-os/en/ FreeFlow_Web_Services_PrintServiceProviderGuide.pdf

3.5.2. Utilize the FreeFlow Web Services server and log in as a Print Provider

3.5.3. Add a User following the steps outlined on Pages 63-87 of FreeFlow_Web_Services_PrintServiceProvi-derGuide.pdf

3.5.3.1. The exercise will guide you through the process of using the Users Panel to view and modify all information concerning Users in each Print Buyer Organization

3.6. With Instructor, Create a Catalog with Templates within FreeFlow Web Services

3.6.1. Read Section 7: Business Flow: Templates on Pages 143-154 of FreeFlow_Web_Services_PrintServicePro-viderGuide.pdf to see how to create a new Template

3.6.2. Read Section 6: Store Setup on Pages 89-116 of FreeFlow_Web_Services_PrintServiceProviderGuide.pdf to see how to create a Catalog of Templates to be published to the Print Buyer's Web Site

3.6.3. Utilize the FreeFlow Web Services server and log in as a Print Provider

3.6.4. Add new Templates for N2-bizcard, N2-brochure and N2-moving-PostCard (found in the Xerox S2C_ Sample Files) and create a catalog for an N2Deisgn Print Buyer following the steps outlined in Section 6 Pages 89-116 of FreeFlow_Web_Services_PrintServiceProviderGuide.pdf

3.6.5. Note process for future use.

3.6.5.1. The exercise will guide you through the process of creating a series of Templates and publishing them to the Print Buyers website for web ordering purposes.

Xerox FreeFlow Web Services
Accounts Setup

3.7. With Instructor Identify Time and Financial Information Reporting within FreeFlow Web Services

3.7.1. Read Section 7: Job Business Flow: Job Types Page 127 of FreeFlow_Web_Services_PrintServiceProvider-Guide.pdf to understand how to Track Jobs within FreeFlow Web Services

3.7.2. Utilize the FreeFlow Web Services server and log in as a Print Provider

3.7.2.1. Select Tasks > Track Jobs. You can search on time and price related options.

3.7.2.3. You can create an Excel Report. Read Section B starting on page 281 of FreeFlow_Web_Services_PrintServiceProviderGuide.pdf to understand how to export an Excel pricing file for time and cost analysis

3.7.2.4. Instructor provides sheet to record job information and turn in

3.7.2.5. Students log information, submit and instructor reviews correct responses

3.7.2.6. Note process for future use.

3.7.2.7. The exercise will guide you through the process of creating a series of reviewing critical information used in Job Tracking

3.8. With Instructor Create a PDF Using FreeFlow Web Services

FreeFlow Web Services has the ability to receive many file types and create PDF files from them. Besides PDF, FreeFlow Web Services can also receive: JPEG, TIFF, Gif, PS, EPS, MS Word, MS PowerPoint (PPT, PPS), MS Excel (XLS, XLT, XLW, XLC), Adobe Illustrator (AI), Adobe Photoshop (PSD), Adobe InDesign (INDD)

3.8.1. Utilize FreeFlow Web Services to submit and convert an MS Word Document to a PDF

3.8.1.1. Login to Web Services as a Print Buyer

3.8.1.2. Under Order Jobs > Print Documents from Your Computer > Start Order

3.8.1.3. Browse and Locate John Muir Quote.doc (located in Xerox_S2C_Sample Files) and Open

3.8.1.4. Choose Poster Job Type and Add File to Cart and Checkout

3.8.1.5. Accept the default addresses

Most people are on the world, not in it - having no conscious sympathy or relationship to anything about them - undiffused, separate, and rigidly alone like marbles of polished stone, touching but separate

-John Muir

JohnMuirQuote.doc

3.8.1.6. The .doc file is converted to a PDF

3.8.1.7. You can login as a Print Provider and now preview and print the job

3.8.1.8. Note process for future use.

3.8.2. The exercise will guide you through the process of producing a PDF through the FreeFlow Web Services workflow

3.9. With Instructor Post a File and Print a File from Content Management Software Through FreeFlow Web Services

3.9.1. Read Pages 35-37 in FreeFlow_IntegrationGuide.pdf found here http://download.support.xerox.com/pub/docs/FreeFlow_Web_Services/userdocs/any-os/en/DWS57V7.0E-02_FreeFlow_IntegrationGuide.pdf to understand how to link DocuShare to FreeFlow Web Services and Print from DocuShare to FreeFlow Web Services

3.9.2. Follow the Steps on Page 37 of FreeFlow_IntegrationGuide.pdf to login to DocuShare and choose FFWS Print

3.9.2.1. Once submitted Login to FreeFlow Web Services as a User and choose a Job Type appropriate to the job and Edit the Properties accordingly

3.9.2.2. Review the Job before Placing Order and Complete the Order

3.9.3. Note process for future use

3.10. Students Submit a Job from FreeFlow Web Services

3.10.1. Using notes from 3.4, work in groups of 3 to accomplish without instructor input

3.11. Students Create a Web Submission Services Customer, Users, Assign Rights and Print Documents from a Computer to FreeFlow Web Services

3.11.1. Using notes from 3.5, work in groups of 3 to accomplish without instructor input

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DWS15V7.0E-02

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FreeFlow® Web Services
Integration Guide

FreeFlow® Web Services

Powered by Press-sense·
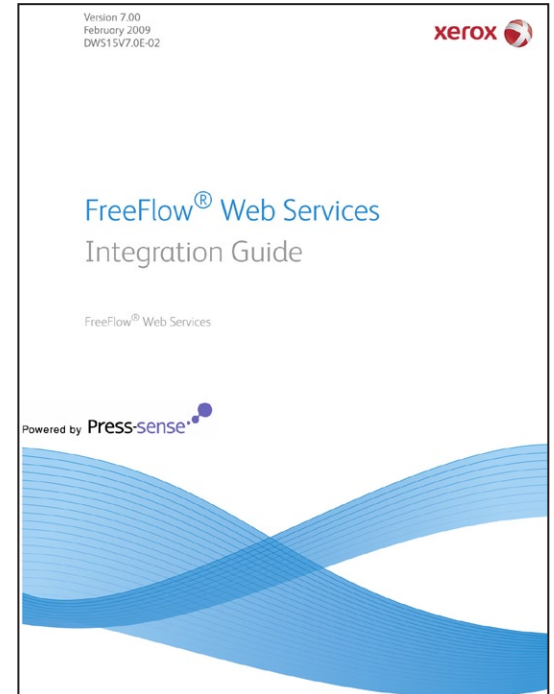
Xerox FreeFlow Web Services Integration Guide

3.12. Students Create a Catalog with Templates within FreeFlow Web Services

3.12.1. Using notes from 3.6, work in groups of 3 to accomplish without instructor input

3.13. Students Identify Time and Financial Information Reporting within FreeFlow Web Services

3.13.1. Using notes from 3.7, work in groups of 3 to accomplish without instructor input

3.14. Students Create a PDF Using Branded Web Submission Services and Post a File and Print a File from Document Management Software Through FreeFlow Web Services

3.14.1. Using notes from 3.8 and 3.9, work in groups of 3 to accomplish without instructor input
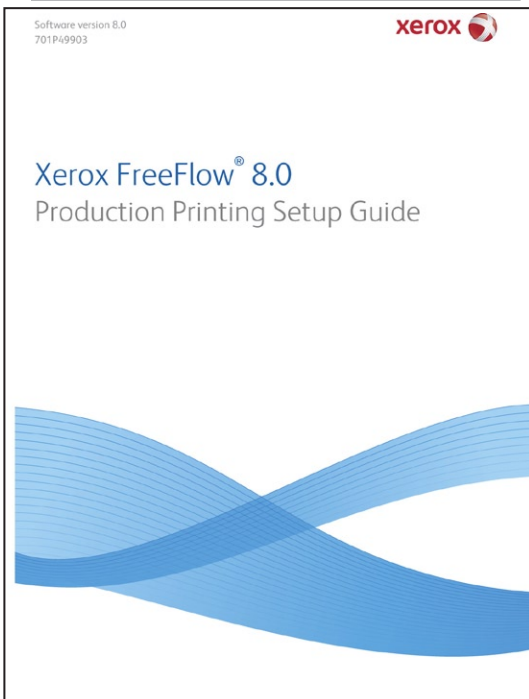
FreeFlow Makeready

3.15. FreeFlow Makeready

3.15.1. Use a search engine to find FreeFlow Makeready information and record your definition of what it is

3.15.2. Use the following link to FreeFlow Makeready general information: http://www.support.xerox.com/go/results.asp?Xtype=docs&prodID=FF_Makeready&Xlang=en_US&Xcntry=USA&prodName=FreeFlow%20Makeready

3.15.3. Detailed Documentation Referenced in these Learning Activities can be found: http://download.support.xerox.com/pub/docs/FreeFlow_Makeready/userdocs/any-os/en/FF80_ProductionPrintingGuide.pdf

3.15.4. Additional Exercises for FreeFlow Makeready will be referenced from the http://download.support.xerox.com/pub/docs/FreeFlow_Makeready/userdocs/any-os/en_GB/701P49053_FF_Makeready_QRG.pdf located in the Xerox FreeFlow Makeready Folder within the Xerox S2C_Product Info Folder

3.15.5. Contact a printing firm that has a FreeFlow Makeready solution and equipment and interview their digital output operator about the benefits, capabilities and components of FreeFlow Makeready.

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701P49903

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Xerox FreeFlow® 8.0
Production Printing Setup Guide

Xerox FreeFlow 8.0
Production Printing Setup Guide

3.16. Discussion about FreeFlow Makeready

3.16.1. Instructor reviews information with class

3.16.2. Small group discussions on productivity and profitability impacts of FreeFlow Makeready

3.16.3. Each group highlights their findings

3.17. Prepare and Deliver a Presentation on FreeFlow Makeready

3.17.1. Groups of four people take one topic each and prepare three (3) points from each area (capabilities, components, productivity, business impact) to present to class

3.17.2. Alternative: Have local Xerox representative make a FreeFlow Makeready presentation to class

3.18. With Instructor, Scan Hardcopy Job into Workflow and Print It

3.18.1. Read Introducing Scan and Print a Black and White or Color Original on pages 3-1 to 13-12 in 701P49053_FF_Makeready_QRG.pdf.

3.18.2. Print BcateResourceGuide.pdf on the Xerox NuveraEA from Adobe Acrobat to use as a hardcopy original for scanning exercises. Or other document of your choosing.

    3.18.2.1. 8.5"x11" output, Single Sided

3.18.3. Follow the steps outlined on Pages 3-1 to 3-6 to Scan a Job and Print Using FreeFlow Makeready

    3.18.3.1. In Scan section make choices for number of sides to scan, page size of original, mode, image orientation and more

    3.18.3.2. In Print section choose Xerox NuveraEA and make appropriate selections for number of copies, job type, stock sizes, output location finishing options and more.

    3.18.3.3. Select Scan and Print to start the copying process

    3.18.3.4. Note process for future use

    3.18.3.5. Leave scanned RDO file open on the FreeFlow Makeready workstation

BCateResourceGuide.pdf Sample File

3.19. With Instructor, Reorder Pages of a Scanned Job

3.19.1. Within FreeFlow Makeready use previously scanned job to reorder pages.

    3.19.1.1. In the Document Structure pane on the left side, click on a page and drag it from current location to the new location. Click above and below the page to see the preview on the right and make sure page is in requested location

3.19.2. Instructor demonstrates to students and checks for understanding

3.19.3. Small groups use computers/files to carry out task with instructor guidance

3.19.4. Note process for future assignment

3.19.5. Leave scanned open on the FreeFlow Makeready workstation

3.20. With Instructor, Preview a Scanned Job

3.20.1. Within FreeFlow Makeready use previously scanned job

    3.20.1.1. To preview the scanned job look to the bottom of the preview window on the right and click on the left or right arrow to preview and scroll through the job

3.20.1.2. You can zoom in and out using the zoom tools on the lower right of the preview window tool bar.

3.20.2. Instructor demonstrates proper path to preview a job

3.20.3. Small groups use computers/files to carry out task with instructor guidance

3.20.4. Note process for future assignment

3.20.5. Leave scanned open on the FreeFlow Makeready workstation

3.21. With Instructor, Impose a Document using Branded Prepress Workflow Solution

3.21.1. Within FreeFlow Makeready use previously scanned job and impose a new document

    3.21.1.1. Go to > File > Production Print

3.21.1.2. Using the appropriate driver for printer and choose the Imaging/Job Setup > Job Type and choose the appropriate page layout options to create the new Imposition

3.21.2. Instructor demonstrates proper technique to impose a document

3.21.3. Small groups use computers/files to carry out task with instructor guidance

3.21.4. Note process for future assignment

3.21.5. Leave scanned open on the FreeFlow Makeready workstation

3.22. With Instructor, Save File to FreeFlow Makeready Document Library

3.22.1. Create a new storage area and save files and open files to this cabinet.

3.22.1.1. File > Document Library

3.22.1.2. The Document Library allows you to manage saved jobs and files within FreeFlow.

3.22.1.3. To create a new Cabinet click the New Cabinet Icon on the toolbar (second from the left) and give the Cabinet an appropriate name and location.

3.22.1.4. You can now save files and open files to this cabinet

3.22.2. Instructor demonstrates proper technique to save a document to library

3.22.3. Small groups use computers/files to carry out task with instructor guidance

3.22.4. Note process for future assignment

3.22.5. Leave scanned open on the FreeFlow Makeready workstation

3.23. With Instructor, Adjust File for Finishing Using FreeFlow Makeready

3.23.1. Within FreeFlow Makeready use previously scanned job

3.23.1.1. File > Production Print

3.23.1.2. Using the Xerox NuveraEA, choose the appropriate tab to make adjustments for finishing (add covers, impose, shift image, choose specific paper stocks, adjust image quality and more.)

3.23.2. Choose driver and make adjustments for finishing (add covers, impose, shift image, choose specific paper stocks, adjust image quality and more.)

3.23.3. Instructor demonstrates proper technique to make adjustments for finishing

3.23.4. Small groups use computers/files to carry out task with instructor guidance

3.23.5. Note process for future assignment

3.23.6. Leave scanned open on the FreeFlow Makeready workstation

3.24. With Instructor, Merge Documents using FreeFlow Makeready

3.24.1. Within FreeFlow Makeready use previous scanned job

3.24.1.1. Insert Menu > File

3.24.1.2. You can now choose another file to open within FreeFlow Makeready. You can decide where to put the new document within the existing one (at the beginning, at the end, between two specific pages)

3.24.1.3. Once the new file has been inserted a new Section will appear in the Document Structure window. You can move the entire section or individual pages by clicking and dragging on the appropriate icons.

3.24.2. Instructor demonstrates proper technique to merge documents

3.24.3. Small groups use computers/files to carry out task with instructor guidance

3.24.4. Note process for future assignment

3.24.5. Leave scanned open on the FreeFlow Makeready workstation

3.25. With Instructor, Remove/add Page Number within FreeFlow Makeready

3.25.1. Within FreeFlow Makeready use previously scanned job

3.25.1.1. Insert Menu > Page Numbers

3.25.1.2. This screen will allow you to determine the font, size, location, specific pages that will get the new page number. Choose the appropriate options an insert the new page numbers.

3.25.2. Instructor demonstrates proper technique to change page numbers

3.25.3. Small groups use computers/files to carry out task with instructor guidance

3.25.4. Note process for future assignment

3.26. With Instructor, Set Labels, Add Pages and Insert to File

3.26.1. Read about using Set Labeling in 701P49053_FF_Makeready_QRG.pdf pages 13-1 to 13-12.

3.26.2. Set Labeling feature enables the addition of variable content to documents such as covers, inserts, slip sheets and objects

3.26.3. With the instructor, follow the exercise on pages 13-1 to 13-12 of the 701P49053_FF_Makeready_QRG.pdf

    3.26.3.1. You can use the SampleLabelFile.doc and Form Letter.doc in the Xerox S2C_Sample Files

3.26.4. Instructor demonstrates proper technique to use set labeling, add pages, add addresses and objects

3.26.5. Small groups use computers/files to carry out task with instructor guidance

3.26.6. Students practice different applications

3.26.7. Note process for future assignment

3.27. With Instructor, Make Adjustments to Front to Back Registration Using FreeFlow Makeready

3.27.1. The Registration Adjustment Feature allows for the adjustment of front to back registration when printing 2 sided facing documents.

3.27.2. With the instructor, follow the exercise that uses the Light Table Feature to adjust front to back registration on pages 8-8 to 8-10.

    3.27.2.1. You can scan the BizucateResourceGuide.pdf file and use the file created from the scan.

3.27.3. Instructor demonstrates proper technique to use FreeFlow Makeready to view the page displayed and the page behind it to adjust front to back registration

3.27.4. Small groups use computers/files to carry out task with instructor guidance

3.27.5. Students practice different applications

3.27.6. Note process for future assignment

3.28. Students Scan Hardcopy Job into Workflow and Make Deskew and Despeckle Adjustments

3.28.1. Using notes from 3.18, work in groups of 3 to accomplish without instructor input

3.28.2. Each student practices process

3.29. Students Reorder Pages of a Scanned Job

3.29.1. Using notes from 3.19, work in groups of 3 to accomplish without instructor input

3.29.2. Each student practices process

3.30. Students Preview a Scanned Job

3.30.1. Using notes from 3.20, work in groups of 3 to accomplish without instructor input. (Note file change to N2-bizcard_2sided)

3.30.2. Each student practices process

3.31. Students Impose a Document using FreeFlow Makeready

3.31.1. Using notes from 3.21, work in groups of 3 to accomplish without instructor input

3.31.2. Each student practices process (Note: next assignment includes output from this one)

3.32. Students Save File to FreeFlow Makeready Document Library

3.32.1. Using notes from 3.22, work in groups of 3 to accomplish without instructor input

3.32.2. Each student practices process
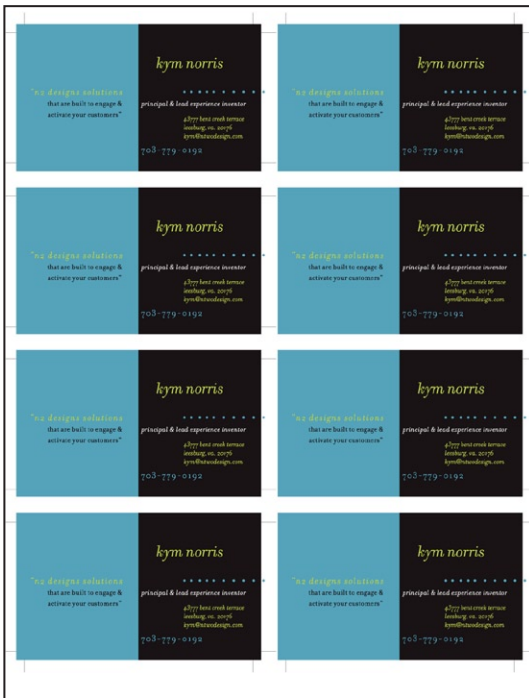
N2-bizcard_2sided.pdf front

3.33. Students Adjust File for Finishing Using FreeFlow Makeready

3.33.1. Using notes from 3.23, work in groups of 3 to accomplish without instructor input

3.33.2. Each student practices process

3.34. Students Merge Documents using FreeFlow Makeready

(Note: Files changed to N2-brochure and N2-bizcard_2sided)

3.34.1. Using notes from 3.24, work in groups of 3 to accomplish without instructor input

3.34.2. Each student practices process

3.35. Students Remove/add Page Number within FreeFlow Makeready

3.35.1. Using notes from 3.25, work in groups of 3 to accomplish without instructor input (Note: Use MBGC-workbook)

3.35.2. Each student practices process

revised-n2-brochure.pdf

3.36. Without the Instructor, Set Labels to Add Pages and Insert to File

3.36.1. Using notes from 3.26, work in groups of 3 to accomplish without instructor input (Note: Use book sample file)

3.36.2. Each student practices process

3.37. Without the Instructor, Make Adjustments to Front to Back Registration Using the FreeFlow Makeready

3.37.1. Using notes from 3.27, work in groups of 3 to accomplish without instructor input (Note: Use book sample file)

3.37.2. Each student practices process
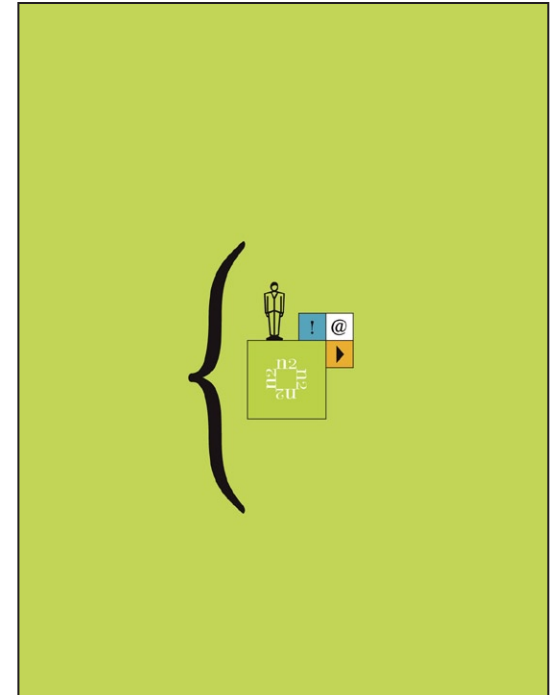
MBGC-workbook

3.37.3. Don't Forget!

    3.37.3.1. Make document double sided

    3.37.3.2. Format > Document Properties > General

3.37.3.3. General > Sides Imaged > 2 Sided

3.38. With Instructor, use a Clean and Adjust function of a Scanned File

3.38.1. Read Starting FreeFlow Makeready and Scan and Print a Black and White or Color Original on pages 3-2 to 3-3 in 701P49053_FF_Makeready_QRG.pdf.

3.38.2. Follow the steps outlined on Pages 3-2 to 3-3 to Scan a Job and Print Using FreeFlow Makeready

    3.38.2.1. In Scan section make choices for number of sides to scan, page size of original, mode, image orientation and more

    3.38.2.2. In Enhance Image section choose Deskew (eliminates skew) and Despeckle (removes stray pixels)

    3.38.2.3. Select Scan and Print to start the copying process

3.38.3. Small groups use computers/files to carry out task with instructor guidance

3.38.4. Note process for future assignment

3.39. Students use a Clean and Adjust function of a Scanned File

3.39.1. Using notes from 3.28, work in groups of 3 to accomplish without instructor input

3.39.2. Each student practices process

3.40. With Instructor, Save Job Ticket for Reprinting/Re-ripping

3.40.1. Within FreeFlow Makeready Rescan BizucateResourceGuide.pdf.

    3.40.1.1. Now that you have scanned the job and have printed or saved it the way you like (double sided, portrait, reverse collate and so much more) you have the ability to save all the settings that go into the

make up of that file—its called a Job Ticket. Job Tickets can be saved, modified and reapplied later to another job or series of jobs.

3.40.1.2. File > Production Print

3.40.1.3. All of the Job Setup Settings you see can be saved in a job ticket by clicking on the Save Job Ticket as...at the bottom left of the screen.

3.40.1.4. You can now recall that job ticket, modify it or save it for later use.

3.40.2. Instructor demonstrates proper technique to save and apply a job ticket.

3.40.3. Small groups use computers/files to carry out task with instructor guidance

3.40.4. Note process for future assignment

3.41. Students Save Job Ticket for Reprinting/Re-ripping

3.41.1. Using notes from 3.40, work in groups of 3 to accomplish without instructor input

3.41.2. Each student practices process

3.42. With Instructor, Create and Save A FreeFlow Makeready Job as a PDF and a scanned TIFF

3.42.1. Within FreeFlow Makeready Rescan BizucateResourceGuide.pdf

3.42.1.1. Now that you have scanned the job you can save the job under File Menu > Save As

3.42.1.2. You can choose a PDF or a TIFF (RDO)

3.42.1.3. You can now recall that PDF or RDO and use it in FreeFlow Makeready or another workflow.

3.42.2. Instructor demonstrates proper technique to save a PDF or RDO file.

3.42.3. Small groups use computers/files to carry out task with instructor guidance

3.42.4. Note process for future assignment

## 3.43. Students Create and Save A Prepress Workflow Solution Job as a PDF and a TIFF (RDO=Raster Document Object)

3.43.1. Using notes from 3.42, work in groups of 3 to accomplish without instructor input

3.43.2. Each student practices process

RIP and Print Engine

3.44. Research and Define a RIP (Raster Image Processor) and Xerox print server

3.44.1. Use a search engine to find RIP and Xerox Print Server definitions and record what you find.

3.44.2. Contact a printing firm that has digital equipment and talk with their digital output operator

3.45. Capabilities and Components of RIP and Xerox Print Server

3.45.1. Utilize small group discussion to understand RIP and Xerox Print Server

3.45.2. Ask groups to brainstorm and list at least 5 impacts on productivity and profitability

3.46. Research and Define a Print Engine

3.46.1. Use a search engine to look up definitions of specific Print Engine and record what you find

3.47. Discuss Capabilities and Components of a Xerox Digital Print Engine (Xerox NuveraEA)

3.47.1. Hand out a pre-printed spec sheet with the attributes of a Xerox digital print engine. Have class work in groups to cross-map the attributes to the individual print engine. Report out as a group and discuss.

3.47.2. See Xerox NuveraEA.pdf

3.47.3. Visit local printer with the print engine descriptions and have the operator describe their features and benefits.

3.48. Presentation on RIP and Xerox Digital Print Server

3.48.1. Students write a one page document describing the features, benefits, capabilities, components productivity and business impacts of a RIP and Xerox Print Server

3.48.2. Students work in teams of 3 or more to make a creative poster describing the aforementioned benefits and capabilities productivity and business impacts

3.49. Presentation on Xerox Digital Print Engine (Xerox NuveraEA)

3.49.1. Students work in teams of 4-6 and write out highlights of the Xerox digital print engine (Xerox NuveraEA). Instructor goes around room asking for one highlight from each group until all highlights are exhausted.

3.49.2. Alternate Idea: Have the local Xerox representative do a presentation to the class.

3.50. With Instructor, Create a Print Queue and a Paper Stock; Assign Paper Stock to a Tray; Save a Locally to burn on a CD later

3.50.1. Create a Print Queue

3.50.1.1. A printer queue is a list of print jobs that await an available printer, need further programming, or are being held by an operator for some reason. Queues can be programmed to control certain aspects of the job: Format, Destination, Stock types, sizes and colors, Finishing, Slip sheets, Image quality and Image editing to name a few

3.50.1.2. Create a queue and assign it the options of your choice

3.50.2. Create a New Paper Stock

3.50.2.1. Create a named paper stock and add it to the library.

3.50.3. Assign a Stock to a Tray

3.50.3.1. Assign the stock to a particular tray

3.50.3.2. Save a Print File to the RIP

3.50.3.3. Print the WorkflowPoster.pdf file from a client workstation to the Print Server RIP
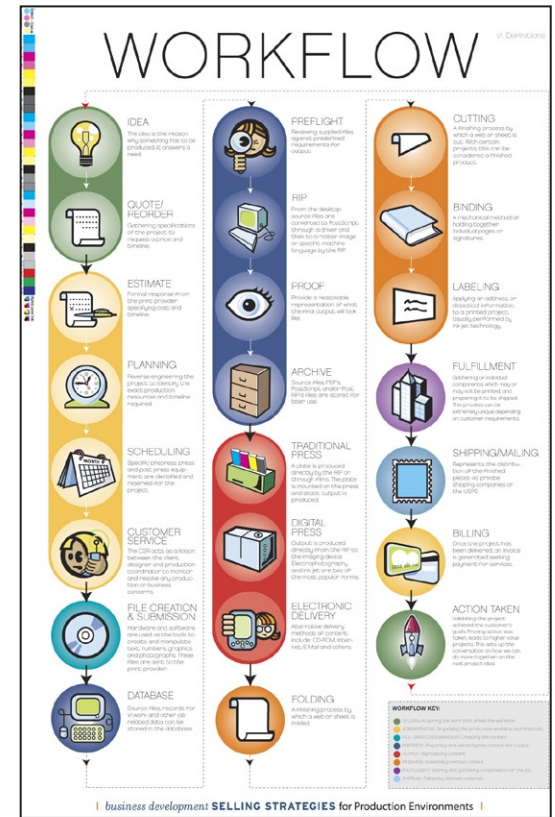
WorkflowPoster.pdf

3.50.3.4. Using the Xerox Print Server workstation and computer, instructor demonstrates how to accomplish this task

3.50.4. Student practice sessions with learning sheet showing steps

3.50.5. Note process for future assignment

3.51. Students Create a Print Queue and a Paper Stock; Assign Paper Stock to a Tray; Save a Locally to burn on a CD later

3.51.1. a.   Using a computer and software, students work in small groups to accomplish this task, utilizing notes they took in demonstration without the instructor.

3.51.2. b.   Check work by either output or going back to see if files exist

3.51.3. c.   Student practice sessions with learning sheet showing steps

3.52. With Instructor, Review job properties and queue properties and Output 10 Workflow Poster file on Uncoated Cover Stock

3.52.1. Load Tray 2 of the print engine with 12"x18" uncoated cover stock and make the appropriate Adjustment to the Printer > Paper Trays

3.52.2. Following the steps in 3.51, go to the Saved WorkflowPoster.pdf

3.52.3. Print 10 WorkflowPosters.pdf by adjusting the Quantity and change the Size to 12"x18"

3.52.4. Work in teams of 3 to follow necessary steps.

3.52.5. Note process for future assignment

3.52.6. Visit a printing operation with file and have them go through the steps, with students following along, to output the posters

3.53. With Instructor, Output 10 WorkflowPoster.pdf on uncoated text

3.53.1. Following the steps in 3.52, now change the paper to 12"x18" text weight. Work in teams of 3 to follow necessary steps.

3.53.2. Visit a printing operation with file and have them go through the steps, with students following along, to output the posters.

3.53.3. Note process for future assignment.

3.54. With Instructor, Output 30 sheets of N2-bizcard_1 sided.pdf

3.54.1. Open N2-bizcard_1 sided.pdf and print from a client workstation to the FreeFlow Print Server

3.54.2. Following the steps in 3.52, now change the product to business cards and output them on 8.5"x11" uncoated cover text. Work in teams of 3 to follow necessary steps.

3.54.3. Visit a printing operation with file and have them go through the steps, with students following along, to output the cards.

3.54.4. Note process for future assignment

3.55. With Instructor, Change N2-bizcard_1 sided.pdf Format to 2-up on 11"x17" Uncoated Cover Stock

3.55.1. Follow Steps in 3.52, change stock to 11"x17" uncoated cover stock and choose 2 Up, Portrait and Repeated

3.55.2. Instructor demonstrates how to change the specifications on computer.

3.55.3. Allow students to practice changing specifications and see output.

3.55.4. Note process for future assignment.

N2-bizcard_2sided.pdf front

3.56. With Instructor, Print 15 Sheets of N2-bizcard_1 sided.pdf

3.56.1. Instructor demonstrates the change to specifications and quantity and how to output (including change of stock in feeder trays!).

3.56.2. Students produce the correct format with groups of 3 working together.

3.56.3. Note process for future assignment.

3.57. With Instructor, Print Various Quantities of Business Cards

3.57.1. Using the file from 3.56 Instructor shows how to output various quantities of business cards (25, 50 and 100 sheets).

3.57.2. Instructor demonstrates how to change quantities in Print Properties.

3.57.3. Time each run from the moment the engine starts to run until the last sheet comes out and record the data

3.57.4. Students practice outputting different quantities on card stock

3.57.5. Note process for future assignment.

3.58. With Instructor, Change to Business Card Job N2-bizcard_2 sided.pdf to (2-up 11"x17")

3.58.1. Open N2-bizcard_2 sided.pdf and print from a client workstation to the RIP and print them 2-up on 11"x17" uncoated cover stock and 2 Sided, 2 Up, Portrait and Repeated.

3.58.2. Instructor demonstrates how to make changes on computer screen.

3.58.3. Identify and load correct stock in paper tray.

3.58.4. Note process for future assignment

3.59. With Instructor, Output 25 sheets of N2-bizcard_2 sided.pdf (2-up 11"x17")

3.59.1. Instructor selects one student to use computer screen to initiate output

3.59.2. Working in groups of three (3), each group follows procedures to produce the required number of sheets.

3.59.3. Note process for future assignment.

3.60. With Instructor, Record Timing for All Jobs

3.60.1. Instructor demonstrates/reviews where to find production information

3.60.2. At RIP Job Manager Select the job you want to view the timing of and all data is there in the Job Log.

3.60.3. Information should be recorded by students and discussed in terms of 1 sided, 2 sided printing vs. 8.5"x11" and 11"x17" output.

3.60.4. Note process for future assignment

3.61. With Instructor, Produce Slip-Sheeted Job

3.61.1. From a client workstation, print the N2-brochure.pdf file to the hold queue on the RIP

3.61.2. At the RIP, open the Print Properties for the N2-brochure.pdf and choose to print a quantity of 22, 2 sided on 8.5"x11" uncoated text with colored slip sheets (whichever color you have on hand) in between each job.

3.61.2.1. Follow appropriate procedures to insert a slip sheet.

3.61.3. Verify correct stock is physically in paper tray and Printer Manager paper trays are correct.

3.61.4. Instructor reviews and demonstrates how to set job up and output on Xerox Digital Printer

3.61.5. Student groups perform task with instructor guidance.

3.61.6. Note process for future assignment
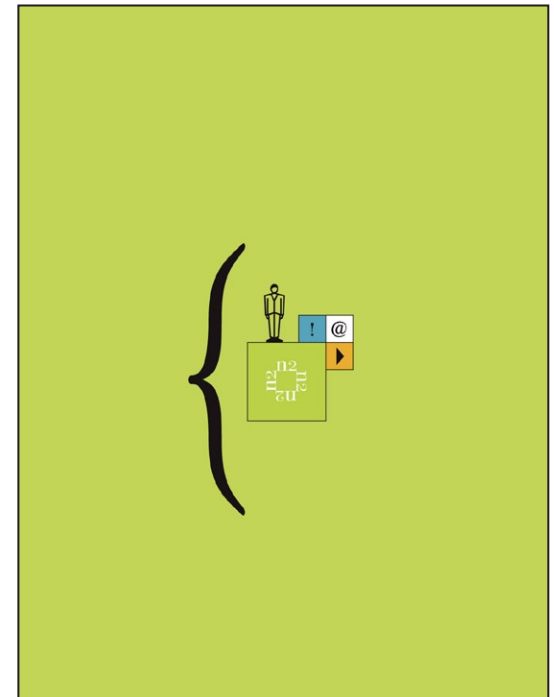
revised-n2-brochure.pdf

3.62. With Instructor, Produce Slip-Sheeted Job AND Offset Stack

3.62.1. Use the N2-brochure file from 3.61 and keep all the same settings while adding Offset stacking to the finishing.

3.62.1.1. This exercise assumes you have the ability to Offset Stack with the current finisher you have installed.

3.62.2. Instructor reviews and demonstrates how to set job up for offset stacking and output on Xerox Digital Printer

3.62.3. Verify correct stock is physically in paper tray and Printer Manager paper trays are correct.

3.62.4. Student groups perform task with instructor guidance.

3.62.5. Note process for future assignment.

3.63. With Instructor, Produce 17 Sheets of Post Cards on 11"x17" Uncoated Cover Stock

3.63.1. From a client workstation, print the N2-moving-postcard.pdf file to a hold queue.

3.63.2. At the RIP, open the Print Properties for the N2-moving-postcard.pdf and choose to print a quantity of 22, 2 sided, 2-up on 11"x17" uncoated cover stock.

3.63.3. Verify correct stock is physically in paper tray.

3.63.4. Instructor reviews and demonstrates how to set job up and output on Xerox Digital Printer

3.63.5. Student groups perform task with instructor guidance.

3.63.6. Note process for future assignment

3.64. With Instructor, Produce 17 Sheets of N2-moving-postcard.pdf on 11"x17" Coated Cover

3.64.1. At the RIP, open the Print Properties for the N2-moving-postcard.pdf and choose to print a quantity of 22, 2 sided, 2-up on 11"x17" coated cover stock.
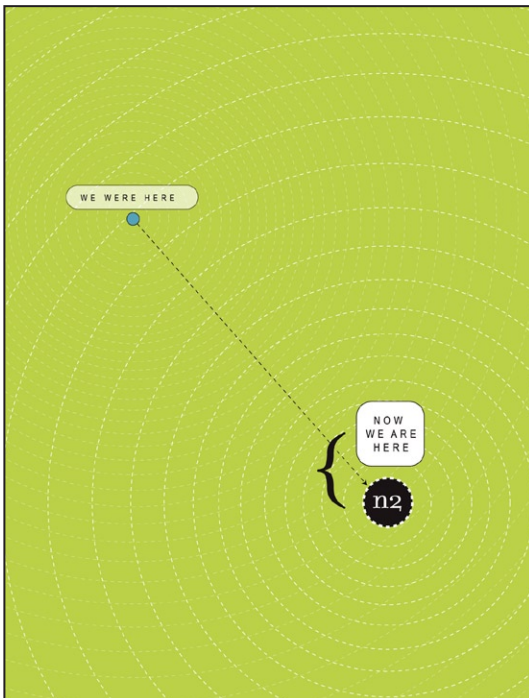
N2-moving-PostCard.pdf front

3.64.2. Verify correct stock is physically in paper trays

3.64.3. Instructor reviews and demonstrates how to set job up and output on Branded Digital Printer

3.64.4. Student groups perform task with instructor guidance. Compare the output of the coated cover stock to the uncoated cover stock. Note and record the differences between the two physically and visually.

3.64.5. Note process for future assignment.

3.65. With Instructor, Produce Book Job with Coated Cover and Uncoated text for the Inside Pages

3.65.1. From a client workstation, print the MBGC-workbook.pdf file to the hold queue on the RIP.

3.65.2. At the RIP, open the Print Properties for the MBGC-workbook.pdf and choose to print a quantity of 10, 2 sided; on 8.5"x11" uncoated cover stock for the cover and 8.5"x11" uncoated text weight stock for the body and Offset Stack each set.

3.65.2.1. Under Stock > Size/Color > US Letter 8.5"x11", Type Weight > 75 GSM (this is for the body)

3.65.2.2. Under Output > Basic Settings > 2 sided, Output tab > Finishing Stapling > Offset Stack Each Collated Set

3.65.2.3. Under Special Pages tab > Make Front Cover and Back Cover the Same, then Choose Front Cover, Size/Color > US Letter, Type/Weight > 120 GSM

3.65.3. Verify correct stock is physically in paper trays and Printer Manager paper trays are correct.

3.65.4. Instructor reviews and demonstrates how to set job up and output on Xerox digital printer

3.65.5. Student groups perform task with instructor guidance.

3.65.6. Note process for future assignment
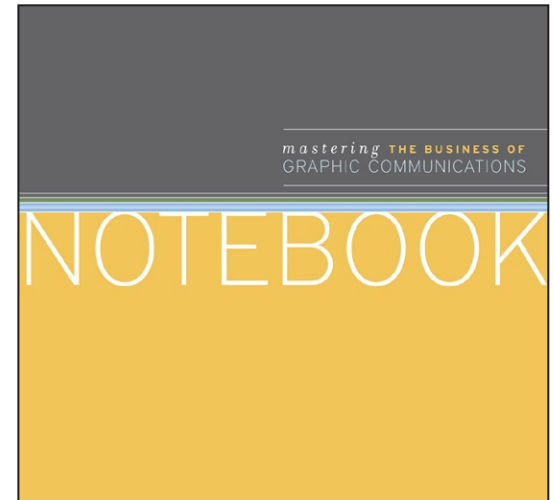
MBGC-workbook

3.66. With Instructor, Insert Tabbed Pages in Book and Print 1

3.66.1. At the RIP, open the Print Properties for the MBGC-workbook.pdf and choose to print a quantity of 10, 2 sided; on 8.5"x11" uncoated cover stock for the cover and 8.5"x11" uncoated text weight stock for the body, Offset Stack each set and insert Pre Cut Tabs between chapters

3.66.1.1. Under Stock > Size/Color > US Letter 8.5"x11", Type Weight > 75 GSM (this is for the body)

3.66.1.2. Under Output > Basic Settings > 2 sided, Output tab > Finishing Stapling > Offset Stack Each Collated Set

3.66.1.3. Under Special Pages > Make Front Cover and Back Cover the Same, Size/Color > US Letter, Type/Weight > 120 GSM

3.66.1.4. Under Special Pages > Inserts > Size/Color > Size: Tabs 9.5"x11", Type Weight: 120 GMS.

3.66.1.4.1. Place tabs after pages 2, 6, 12, 18, 24 and 30.

3.66.2. Note: This job is a landscape oriented finish, choose to place the tabs on the bottom of the book and not the top.

3.66.3. Verify correct stock is physically in paper trays and Printer Manager paper trays are correct.

3.66.4. Print 1 book with tabs.

3.66.5. Instructor reviews and demonstrates how to set job up and output on Xerox digital printer

3.66.6. Student groups perform task with instructor guidance.

3.66.7. Note process for future assignment.

3.67. Students Review Print Properties and Produce 10 Workflow Poster Files on 12"x18" Uncoated Cover Stock

3.67.1. Using notes from 3.52, work in groups of 3 to accomplish without instructor input

3.67.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.67.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.67.4. Output checked by instructor.

3.68. Students Review Print Properties and Produce 10 Workflow Poster Files on 12"x18" Uncoated Text Stock

3.68.1. Using notes from 3.52, work in groups of 3 to accomplish without instructor input

3.68.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.68.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.68.4. Output checked by instructor.

3.69. Students Print 30 sheets of N2-Bizcard_1 Sided on 8.5"x11" Uncoated Cover

3.69.1. Using notes from 3.54, work in groups of 3 to accomplish without instructor input

3.69.2. Students review Job and Queue properties and set up file on Branded digital printer.

3.69.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.69.4. Output checked by instructor.

3.70. Students Change N2-bizcard_1 sided.pdf Format to 2-up on 11"x17" Uncoated Cover Stock

3.70.1. Using notes from 3.55, work in groups of 3 to accomplish without instructor input

3.70.2. Students review Job and Queue properties and set up file on Branded digital printer.

3.70.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.70.4. Output checked by instructor.

3.71. Students Print 15 Sheets of N2-bizcard_1 sided.pdf

3.71.1. Using notes from 3.56, work in groups of 3 to accomplish without instructor input

3.71.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.71.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.71.4. Output checked by instructor.

3.72. Students Print Various Quantities of N2-bizcard_1 sided.pdf (25, 50, 100) on 8.5"x11" Cover Stock

3.72.1. Using notes from 3.57, work in groups of 3 to accomplish without instructor input

3.72.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.72.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.72.4. Output checked by instructor.

3.73. Students Change to Business Card Job N2-bizcard_2 sided.pdf to (2-up 11"x17")

3.73.1. Using notes from 3.58, work in groups of 3 to accomplish without instructor input.

3.73.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.73.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.73.4. Output checked by instructor.

3.74. Students Output 25 sheets of N2-bizcard_2 sided.pdf (2-up 11"x17"

3.74.1. Using notes from 3.59, work in groups of 3 to accomplish without instructor input.

3.74.2. Students review Job and Queue properties and set up file on Xerox digital printer

3.74.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.74.4. Output checked by instructor.

3.75. Students Record Timing of All Jobs

3.75.1. Using notes from 3.60, work in groups of 3 to accomplish without instructor input.

3.75.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.75.3. Students, working in groups, should record and discuss information in terms of 1 sided, 2 sided printing vs. 8.5"x11" and 11"x17", coated and uncoated, heavier vs. lighter weight output.

3.75.4. Instructor should review the discussion.

3.76. Students Produce 22 N2-brochures.pdf on 8.5"x11" Uncoated Text With Colored Slip-Sheets

3.76.1. Using notes from 3.61, work in groups of 3 to accomplish without instructor input.

3.76.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.76.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.76.4. Output checked by instructor.

3.77. Students Produce 22 N2-brochures.pdf Slip-Sheeted Job AND Offset Stack

3.77.1. Using notes from 3.62, work in groups of 3 to accomplish without instructor input.

3.77.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.77.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.77.4. Output checked by instructor.

3.78. Students Produce 17 Sheets of N2-moving-PostCard.pdf on 11"x17" Uncoated Cover Stock

3.78.1. Using notes from 3.63, work in groups of 3 to accomplish without instructor input.

3.78.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.78.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.78.4. Output checked by instructor.

3.79. Students Produce 17 Sheets of N2-moving-PostCard.pdf on 11"x17" Coated Cover Stock

3.79.1. Using notes from 3.64, work in groups of 3 to accomplish without instructor input.

3.79.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.79.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.79.4. Output checked by instructor.

3.80. Students Produce 10 MBGC-workbook.pdf With Coated Cover and Uncoated text for the Inside Pages

3.80.1. Using notes from 3.65, work in groups of 3 to accomplish without instructor input.

3.80.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.80.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.80.4. Output checked by instructor.

3.81. Students Insert Tabbed Pages in MBGC-workbook.pdf and Print 1

3.81.1. Using notes from 3.66, work in groups of 3 to accomplish without instructor input.

3.81.2. Students review Job and Queue properties and set up file on Xerox digital printer.

3.81.3. Students, working in groups, select proper number of sheets and set up correct stock in paper trays.

3.81.4. Output checked by instructor.

Finishing
3.82. Research and Define Finishing

3.82.1. Students do a web search for a description of finishing as it relates to the printing industry

3.82.2. Visit a printing firm with a large bindery/finishing area or a digital printing firm that makes books and other bound materials

3.82.3. Have students prepare a paragraph describing what finishing is in printing

3.83. Discuss Finishing in the Context of Digital Printing

3.83.1. Break students into five (5) groups and give each group one topic related to finishing (components, capabilities, productivity, cost, and profitability). They are to discuss and prepare to report out to the large group with at least 3 items.

3.84. Discuss Benefits and Limitations of In-line, Near Line and Off-line Finishing

3.84.1. First define each as they are used in industry today and document benefits and limitations.

3.84.2. Facilitate a discussion about why companies choose to do none, one or more.

3.84.3. Host a presentation by a company that has digital production with in-line finishing.

3.84.4. Host a presentation by a company that makes off-line finishing equipment for the digital printing company.

3.85. Student Presentations on Finishing

3.85.1. Have the 5 groups previously identified make their presentations. In presentations, they must have selected in-line, near-line or off-line finishing and explained their reasoning for their choice

NOTE: Identical Exercises from the previous section are used here. In the last section the main focus was to introduce the student to the RIP and the Print Engine. In this section the output is more important. Each job produced in this section will be more about the finished output. Some jobs will not require any finishing while others, may need a stitch, heavier stock or a spiral bind. Additional practice is encouraged at all times. The initial exercises are again instructor led while the exercises toward the back of this section are for the students to do on their own. Feel free to use different sample files, change the output number, paper stocks and finishing methods based on availability or area of focus.

3.86. With Instructor, Produce WorkflowPoster.pdf on 12"x18" Uncoated Cover Stock

3.86.1. Reference 3.52 for steps to complete.

3.86.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager

3.86.3. Print posters, check for issues in output and compare against order. Label and set aside for review.

3.87. With Instructor, Produce WorkflowPoster.pdf on 12"x18" Coated Cover Stock

3.87.1. Reference 3.52 for steps to complete. Be sure to switch to Coated Cover stock.

3.87.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.87.3. Print posters, check for issues in output and compare against order. Label and set aside for review.

3.87.4. Compare the differences in output between the coated and the uncoated cover stock.

   3.87.4.1. How do they look different? How do they look the same? Would you be inclined to pay more for one than the other? How would you opinion change if the content of the poster was a photograph? Was the finishing labor intensive? If so why, if not why not?

3.88. With Instructor, Produce 30 Sheets N2-bizcards_1 sided.pdf on 8.5"x11" Uncoated Cover Stock

3.88.1. Reference 3.54 for steps to complete.

3.88.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.88.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.88.4. How would the order change if it the quote was for 300 instead of 30? What if the final requirement was 300 cards? Be sure to specify the final output and not just the output in the middle of the process.

3.89. With Instructor, Change N2-bizcard_1 sided.pdf Format to 2-up on 11"x17" Uncoated Cover Stock

3.89.1. Reference 3.55 for steps to complete.

3.89.2. How do the steps you took affect the overall time, and the labor? What about the cost? Should the customer do this? Why didn't they just design the original file this way? How would this be different if they were 2 sided cards?

3.90. With Instructor, Print 15 Sheets of N2-bizcard_1 sided.pdf 2-up on 11"x17" Uncoated Cover Stock

3.90.1. Reference 3.56 for steps to complete.

3.90.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.90.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.91. With Instructor, Finish the Job: Trim 2-up Cards on Cutter down to Individual Business Cards

3.91.1. Instructor introduces students to cutter, reviewing all features and safety precautions. The core of this function will not change even though you may have multiple cutter manufacturers and models. The goal is to trim the press sheets down to final business cards.

3.91.2. Instructor sets up cutter to trim cards with efficiency

3.91.3. Instructor trims stack of cards.

3.91.4. Student volunteers trim stacks of cards.

3.91.5. Dispose of waste paper in the proper manner.

3.91.6. How will this process change if the job was two sided? How will it affect the efforts of the cutter? What if the front to back registration is off?

3.92. With Instructor, Print Various Quantities of N2-bizcard_1 sided.pdf (25, 50, 100) on 8.5"x11" Cover Stock

3.92.1. Reference 3.57 for steps to complete.

3.92.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.92.3. 25 sheets of cards are output and checked by instructor

3.92.4. Repeat steps for other quantities needed

3.92.5. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.93. With Instructor, Change to Business Card Job N2-bizcard_2 sided.pdf to (2-up 11"x17")

3.93.1. Reference 3.58 for steps to complete.

3.93.2. With reference to finishing, how much more important is front to back registration now? What if the system did not have the ability to make front to back registration adjustments? What would you tell the customer?

3.94. With Instructor, Output 25 sheets of N2-bizcard_2 sided.pdf (2-up 11"x17")

3.94.1. Reference 3.59 for steps to complete.

3.94.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.94.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.95. With Instructor, Record Timing for All Jobs

3.95.1. Reference 3.60 for steps to complete.

3.95.2. Instructor demonstrates/reviews where to find production information.

3.95.3. Information is recorded on computer screen with students inputting data and observing in classroom setting.

3.95.4. How does ganging (multiple up) help the job to be completed? What are some of the problems associated with ganging? Are there ways around it?

3.96. With Instructor, Trim All Business Cards with 8.5x11 sheets and 11x17 sheets

3.96.1. Instructor and students set up cutter to trim cards with efficiency and safety.

3.96.2. Volunteer students trim stacks of cards and another volunteer records the amount of time to produce the final job.

3.96.3. Dispose of waste paper in the proper manner.

3.96.4. Repeat process for 11x17 sheets.

3.96.5. Track number of cuts for both jobs.

3.96.6. How can the number of cuts affect the job? Is there a more efficient way to do this? If so, what it is it and why don't more people do it?

3.97. With Instructor, Compare Number of Cuts

3.97.1. Review how jobs were set up and produced.

3.97.2. Review number of cuts necessary.

3.97.3. Review the amount of waste and time.

3.97.4. Instructor should facilitate a discussion with the class comparing and contrasting the issues surrounding ganging, trimming and time.

3.98. With Instructor, Print 22 Finished N2-brochure.pdf files Imposed on 11"x17" White Uncoated Text with Colored Slip Sheets Between Sets

3.98.1. Reference 3.61 and 3.62 for steps to complete.

3.98.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.98.3. Print brochures, check for issues in output and compare against order. Label and set aside for review.

3.98.4. How does setting this job change when producing a finished brochure instead of 2 sided sheets?

3.99. With Instructor, Produce 22 sets N2-brochure.pdf on "Colored" Text Stock and Offset Stack

3.99.1. Reference 3.61 and 3.62 for steps to complete.

3.99.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.99.3. Print brochures, check for issues in output and compare against order. Label and set aside for review.

3.99.4. Compare the output from the previous job to this one. How does the "color" of the paper affect the output? What kinds of considerations need to be reviewed with a customer?

3.100. With Instructor, Finish the Brochures by Stitching, Folding and Trimming

3.100.1. If device is equipped with in-line finishing operations, go to computer and set up job to finish with correct sizes and complete in line.

3.100.2. If printing device is not set up for in-line finishing, then proceed to following steps

3.100.3. Instructor and students set up stitcher/folder to stitch, fold and trim the job

3.100.3.1. Watch for marring and scuffing of toner on the substrate as it is fed through some friction feed stitcher/folders

3.100.4. If the job is to be done manually, stitch the pages, fold the job and trim of the face (front) of the brochure along with the head and foot if you wish.

3.100.5. Dispose of waste paper in the proper manner.

3.100.6. Record timing of each process.

3.100.7. Discuss the labor differences, time impacts, cost issues associated with each method of binding. Consider that is the only kind of application you will be running all the time in your shop. Consider you only get that job once in a rare while. How would that change the way you think about the work?

3.101. With Instructor, Produce 17 Sheets of N2-moving-postcard.pdf 2 Up on 11"x17" Uncoated Cover

3.101.1. Reference 3.64 for steps to complete.

3.101.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.101.3. Print postcards, check for issues in output and compare against order. Label and set aside for review.

3.102. With Instructor, Produce 17 Sheets of N2-moving-postcard.pdf 2 Up on 11"x17" Coated Cover

3.102.1. Reference 3.64 for steps to complete.

3.102.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.102.3. Print postcards, check for issues in output and compare against order. Label and set aside for review.

3.103. With Instructor, Trim Post Cards with Minimal Cuts

3.103.1. Instructor and students set up cutter to trim Uncoated cards with efficiency and safety.

3.103.2. Volunteer students stack trimmed postcards and another volunteer records the amount of time to produce the final job.

3.103.3. Dispose of waste paper in the proper manner.

3.103.4. Repeat process for the Coated cards.

3.103.5. Track number of cuts for both jobs.

3.103.6. Compare the time to cut the postcards to the time it took to cut the business cards? How are they similar? How are they different? How could the job be done more cost effectively? What about the waste, can anything be done about that?

3.104. With Instructor, Produce 10 MBGC-workbook.pdf Jobs with Coated Cover and Uncoated Text for the Inside Pages

3.104.1. Reference 3.65 for steps to complete.

3.104.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.104.3. Print books, check for issues in output and compare against order. Label and set aside for review.

3.105. With Instructor, Trim, Punch and Spiral Bind Books

3.105.1. Use the output from 3.104.

3.105.2. Do safety check on trimmer

3.105.3. Instructor sets up cutter to trim books with efficiency

3.105.4. Instructor trims and stacks sheets making up books

3.105.5. Dispose of waste paper in the proper manner

3.105.6. Instructor demonstrates use of punch

3.105.7. Students use spiral binding equipment to bind books under guidance of instructor

3.105.8. Can this project be produced as requested? If not, why not? What can be done to solve a problem that occurs? How can the job be designed more effectively? What other binding methods could be used?

3.106. With Instructor, Produce 10 MBGC-workbook.pdf Jobs with Coated Cover and Uncoated Text for the Inside Pages

3.106.1. Reference 3.65 for steps to complete.

3.106.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.106.3. Print books, check for issues in output and compare against order. Label and set aside for review.

3.107. With Instructor, Produce 10 MBGC-workbook.pdf Jobs with Coated Cover, Uncoated Text for the Inside Pages and Tabs Between Chapters

3.107.1. Reference 3.66 for steps to complete.

3.107.2. Instructor and students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager.

3.107.3. Print books, check for issues in output and compare against order. Label and set aside for review.

3.108. With Instructor, Tape, Perfect Bind and/or Coil Bind Books

3.108.1. Using the output from 3.106 and 3.107 and available in-line, near line and/or offline equipment bind the books together with the tabs.

3.108.2. Follow all safety rules when using trimming and binding equipment.

3.108.3. Visit a printer that has binding capabilities (such as perfect binding) for a demonstration on how they can bind the same books.

3.108.4. How is the printing company finishing workflow different from yours? How is it similar? Which is better to produce this job in-line or off line finishing, if so why? If not, why not?

3.109. Students Produce WorkflowPoster.pdf on 12"x18" Uncoated Cover Stock

3.109.1. Reference 3.52 and 3.86 for steps to complete.

3.109.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.109.3. Print posters, check for issues in output and compare against order. Label and set aside for review.

3.110. Students Produce WorkflowPoster.pdf on 12"x18" Coated Cover Stock

3.110.1. Reference 3.52 and 3.87 for steps to complete.

3.110.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.110.3. Print posters, check for issues in output and compare against order. Label and set aside for review.

3.111. Students Produce 30 Sheets N2-bizcards_1 sided.pdf on 8.5"x11" Uncoated Cover Stock

3.111.1. Reference 3.54 and 3.88 for steps to complete.

3.111.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.111.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.112. Students Change N2-bizcard_1 sided.pdf Format to 2-up on 11"x17" Uncoated Cover Stock

3.112.1. Reference 3.55 and 3.89 for steps to complete.

3.112.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.113. Students Print 15 Sheets of N2-bizcard_1 sided.pdf

3.113.1. Reference 3.56 for steps to complete.

3.113.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.113.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.114. Students Trim All Business Cards with 8.5x11 Sheets and 11x17 Sheets

3.114.1. Students set up cutter to trim cards with efficiency and safety.

3.114.2. Students will operate trimming equipment without the assistance of the instructor.

3.114.3. Dispose of waste paper in the proper manner.

3.114.4. Repeat process for 11x17 sheets.

3.114.5. Track number of cuts for both jobs.

3.115. Students Print Various Quantities of N2-bizcard_1 sided.pdf

(25, 50, 100) on 8.5"x11" Cover Stock

3.115.1. Reference 3.57 and 3.92 for steps to complete.

3.115.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.115.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.116. Students Change to Business Card Job N2-bizcard_2 sided.pdf to

(2-up 11"x17")

3.116.1. Reference 3.58 and 3.93 for steps to complete.

3.116.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Branded digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.116.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.117. Students Output 25 sheets of N2-bizcard_2 sided.pdf (2-up 11"x17")

3.117.1. Reference 3.59 and 3.94 for steps to complete.

3.117.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Branded digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.117.3. Print cards, check for issues in output and compare against order. Label and set aside for review.

3.118. Students Record Timing of All Jobs

3.118.1. Reference 3.60 for steps to complete.

3.118.2. Student demonstrates/reviews where to find production information.

3.118.3. Information is recorded on computer screen with students inputting data and observing in classroom setting.

3.118.4. How does ganging (grouping) help the job get completed? What are some of the problems associated with ganging? Are there ways around it?

3.119. Students Trim All Business Cards with 8.5x11 sheets and 11x17 sheets

3.119.1. Students set up cutter to trim cards with efficiency and safety without input fro the instructor.

3.119.2. Dispose of waste paper in the proper manner.

3.119.3. Repeat process for 11x17 sheets.

3.119.4. Track number of cuts for both jobs.

3.120. Students Compare Number of Cuts

3.120.1. Review how jobs were set up and produced.

3.120.2. Review number of cuts necessary.

3.120.3. Review the amount of waste and time.

3.120.4. Consider you are the owner or manager, how would you do things differently?

3.121. Students Print 22 Finished N2-brochure.pdf files Imposed on 11"x17" White Uncoated Text with Colored Slip Sheets Between Sets

3.121.1. Reference 3.61, 3.62 and 3.98 for steps to complete.

3.121.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.121.3. Print brochures, check for issues in output and compare against order. Label and set aside for review.

3.122. Student Produce 22 sets N2-brochure.pdf on "Colored" Text Stock and Offset Stack

3.122.1. Reference 3.61, 3.62 and 3.99 for steps to complete.

3.122.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.122.3. Print brochures, check for issues in output and compare against order. Label and set aside for review.

3.123. Students Finish the Brochures by Stitching, Folding and Trimming

3.123.1. If device is equipped with in-line finishing operations, go to computer and set up job to finish with correct sizes and complete in line.

3.123.2. If printing device is not set up for in-line finishing, then proceed to following steps

3.123.3. Students set up stitcher/folder to stitch, fold and trim the job without assistance from the instructor.

3.123.3.1. Watch for marring and scuffing of toner on the substrate as it is fed through some friction feed stitcher/folders

3.123.4. If the job is to be done manually, stitch the pages, fold the job and trim of the face (front) of the brochure along with the head and foot if you wish.

3.123.5. Dispose of waste paper in the proper manner

3.123.6. Record timing of each process.

3.124. Students Produce 17 Sheets of N2-moving-postcard.pdf 2 Up on 11"x17" Uncoated Cover

3.124.1. Reference 3.64 and 3.101 for steps to complete.

3.124.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Branded digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.124.3. Print postcards, check for issues in output and compare against order. Label and set aside for review.

3.125. Students Produce 17 Sheets of N2-moving-postcard.pdf 2 Up on 11"x17" Coated Cover

3.125.1. Reference 3.64 and 3.102 for steps to complete.

3.125.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Branded digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.125.3. Print postcards, check for issues in output and compare against order. Label and set aside for review.

3.126. Students Trim Post Cards with Minimal Cuts

3.126.1. Students set up cutter to trim Uncoated cards with efficiency and safety without assistance from the instructor.

3.126.2. Dispose of waste paper in the proper manner.

3.126.3. Repeat process for the Coated cards.

3.126.4. Track number of cuts for both jobs.

3.127. Students Produce 10 MBGC-workbook.pdf Jobs with Coated Cover and Uncoated Text for the Inside Pages

3.127.1. Reference 3.65 and 3.104 for steps to complete.

3.127.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Xerox digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.127.3. Print books, check for issues in output and compare against order. Label and set aside for review.

3.128. Students Trim, Punch and Spiral Bind Books

3.128.1. Use the output from 3.127

3.128.2. Do safety check on trimmer

3.128.3. Student sets up cutter to trim books with efficiency

3.128.4. Instructor trims and stacks sheets making up books

3.128.5. Dispose of waste paper in the proper manner

3.128.6. Instructor demonstrates use of punch

3.128.7. Students use spiral binding equipment to bind books under guidance of instructor

3.128.8. Fooled you the first time, what are you going to do to produce this for your instructor. Surprise them and show them how creative you can be. Bind the book and show to your instructor.

3.129. Students Produce 10 MBGC-workbook.pdf Jobs with Coated Cover and Uncoated Text for the Inside Pages

3.129.1. Reference 3.65 and 3.106 for steps to complete.

3.129.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Branded digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.129.3. Print books, check for issues in output and compare against order. Label and set aside for review.

3.130. Students Produce 10 MBGC-workbook.pdf Jobs with Coated Cover, Uncoated Text for the Inside Pages and Tabs Between Chapters

3.130.1. Reference 3.66 and 3.107 for steps to complete.

3.130.2. Students review necessary raw materials necessary to produce the order and load paper trays of the Branded digital printer and make appropriate changes to the Paper Trays in the Printer Manager independently without the assistance of the instructor.

3.130.3. Print books, check for issues in output and compare against order. Label and set aside for review.

3.131. Students Tape, Perfect Bind and/or Coil Bind Books

3.131.1. Using the output from 3.106 and 3.107 and available in-line, near line and/or offline equipment bind the books together with the tabs.

3.131.2. Follow all safety rules when using trimming and binding equipment.

3.131.3. Visit a printer that has binding capabilities (such as perfect binding) for a demonstration on how they can bind the same books.

4. Learning Plan 4 –Variable Print Production Workflows

Suggested tasks for Learning Activities 1-7

Competencies matched to specific tasks (Example- Learning Plan 4, Competency 1 = 4.1)

4.1. Variable Data Printing

4.1.1. Use a search engine to find variable data printing information

4.1.2. Contact a printing firm that has equipment to produce variable data printing and talk with their digital output operator for a description

4.2. Variable Information Workflow

4.2.1. Utilize small group discussion to understand Variable Data workflow and printing

4.2.2. Ask groups to brainstorm and list at least 5 impacts on productivity, cost, growth and profitability

4.3. Static and Variable Workflow Differences and Output Considerations

4.3.1. Visit a digital printing shop and talk with the press operator about variable data printing compared to static printing

4.3.2. Ask a company executive about the impact and potential of variable data printing on the business compared to static printing

4.3.3. Have a production supervisor speak to the class about the world of digital output

4.4. Presentations by Students on Digital Printing Aspects Listed

4.4.1. Divide the students into 5 groups and assign one of the topics

4.4.2. Students utilize research and discussion to prepare a small group presentation on one specific aspect

4.4.3. Alternative: Ask a Variable Data Software sales representative to present topic at class

4.5. Create a Variable Data Print Job Using Elements Described

4.5.1. Using a sample database file and design file, instructor should show the creation of a database and integration of design into a VI job

4.5.1.1. Setup will change based on VI solution, can use a free working demon from Atlas PrintShop Mail (http://www.atlassoftware.com/Download/Demo/Index.aspx)

4.5.2. Instructor can get assistance from a VI expert (consider contacting company who produces classroom software) in variable data output to set up files and prep for demonstration

4.5.3. Instructor demonstrates how to set up file with data base, design file, RIP and output device, either using web submission or static file

4.5.4. Students track workflow components for review at a later date

4.5.5. Class discusses all the aspects of this type of production, including pros and cons and potential uses

4.6. Produce a completely integrated variable data job

4.6.1. Using N2-moving-PostCard.pdf sample file and a simple excel spreadsheet of students names and addresses from the class

4.6.2. Ensure all raw materials are available and loaded into each system (RIP and Engine)

4.6.3. Submit and retrieve file

4.6.4. Check for accuracy (merge/purge)

4.6.5. Place in queue

4.6.6. Match up file with print output, check for alignment

4.6.7. Test run a record in proper format desired

4.6.8. Make adjustments as necessary

4.6.9. Complete print run of postcards, checking format and print quality periodically

4.7. Trim Post Card

4.7.1. Do safety check before proceeding

4.7.2. Set up trimmer for most efficient cutting

4.7.3. Trim postcards

4.7.4. Stack and return to instructor

5. Learning Plan 5 –Troubleshooting Print Production Workflows

Suggested tasks for Learning Activities 1-14

Competencies matched to specific tasks (Example- Learning Plan 5, Competency 1 = 5.1)

5.1. Troubleshooting FreeFlow Web Services

5.1.1. Use a search engine to find information on troubleshooting FreeFlow Web Services

5.1.2. Contact a printing firm that has equipment to produce digital printing and talk with their digital output operator on how they trouble shoot this type of work

5.1.3. Refer to manufacturer's website and check on troubleshooting

5.2. Troubleshooting techniques for FreeFlow Makeready

5.2.1. Use a search engine to find information on troubleshooting FreeFlow Makeready

5.2.2. Contact a printing firm that has equipment to produce digital printing and talk with their digital output operator on how they trouble-shoot FreeFlow Makeready in their digital workflows

5.2.3. Refer to FreeFlow Makeready website for information on troubleshooting

5.3. Troubleshooting FreeFlow Print Server

5.3.1. Use a search engine to find information on troubleshooting FreeFlow Print Server

5.3.2. Contact a printing firm that has equipment to produce digital printing and talk with their digital output operator on how they trouble-shoot RIP's in their digital workflow

5.3.3. Refer to XeroxFreeFlow Print Server web site for information on troubleshooting

5.4. Troubleshooting Print Engines

5.4.1. Use a search engine to find information on Print Engine troubleshooting

5.4.2. Contact a printing firm that has digital equipment and talk with their digital output operator about how they trouble-shoot their print engine

5.4.3. Record processes they follow

5.4.4. Refer to Xerox website for information on troubleshooting

5.5. Troubleshooting Finishing Equipment

5.5.1. Use a search engine to find information on troubleshooting digital print finishing equipment or find manufacturers of off-line digital finishing and submit questions on troubleshooting via their web portal.

5.5.2. Contact a printing firm that has finishing equipment to produce digital printing and talk with their digital output operator on how they troubleshoot their finishing equipment

5.5.3. Refer to Xerox website for information on trouble shooting

5.6. Access to Troubleshooting Information

5.6.1. Divide class into small groups and ask students to describe troubleshooting as it relates to digital printing, Ask the question: What do we trouble-shoot when printing digitally?

5.6.2. Put question on whiteboard: What is the one element that we are usually dealing with in digital or variable data printing? Hint: Being able to find problems quickly is important.

5.6.3. Have students discuss the various ways businesses can trouble-shoot problems. (Sample Answers: Consult with another printer; Check the web for user groups; Contact manufacturer, etc.)

5.7. Practice Troubleshooting

5.7.1. Provide class with bogus data base and/or corrupt file and ask to find out if there is a problem and, if so, what is it?

5.7.2. Visit a digital printer and have them demonstrate a problem file and what they do. Also have them tell war stories and impact on business

5.7.3. Invite a digital technician in for a presentation on output troubleshooting

5.8. Discussion of Troubleshooting Impact on Business

5.8.1. Have class discussion, listing all the positives of troubleshooting on whiteboard

5.9. Troubleshooting Techniques Presentation

5.9.1. Have a technician demonstrate the various techniques to pinpointing a potential or real problem with data, files or equipment

5.9.2. Provide a quiz to students to test comprehension

5.9.3. Make up poster on troubleshooting and produce it in digital format

5.9.4. Do a live web-search in class to find troubleshooting techniques

5.10. Practice Troubleshooting On Live Jobs

5.10.1. Using all previous files designed and output, have the instructor change an element in each. Have students do projects again to see if problems are discovered, at what point, and how long it took to correct

5.10.2. Use all the variables available and have groups of students try to stump other groups with jobs that they alter

5.11. Importance of Recording Information on each Job and Documenting Troubleshooting Methods in Each

5.11.1. Small group discussion and report out to full class

5.11.2. Discuss the importance of recording what occurred and how it impacted the workflow

5.12. Identifying Troubleshooting Opportunities

5.12.1. Play "stump the team"…i.e. instructor intentionally alter a job, a file, paper, etc. and students have to find the problem

5.12.2. Have a customer (outside printer) send a file and job instructions. See how long it takes to find the problem and (as a group of students) determine how you would handle it with client

5.13. What's Wrong and What's the Solution

5.13.1. Play "stump the team"…i.e. Students intentionally alter a job, a file, paper, etc. and other students have to find the problem

5.13.2. Discuss what was done to alter the job and what can be done to identify the problem, correct the problem and avoid the problem in the future

5.14. Correct Files and Output Correctly

5.14.1. Have a capstone variable data print job with binding for a fictitious client. The job should have some flaw coming in

5.14.2. After finding the problems in files, determine corrective actions (maybe even send the file back to the client)

5.14.3. Important to produce and finish the job correctly as a capstone project

Section 3

Industry Information Supplemental Learning Material
Digital Production Printing,
FreeFlow Web Services and FreeFlow Makeready

NOTE: The learning material in this Supplemental Guide has been selected and written to help facilitate the learning of digital production printing technology and processes. The approaches to learning are many and please feel free to use additional methods (presentation, web, video, text, live and recorded) to help deliver the learning that best meets the needs of the audience. If you have comments, edits or additional information you believe will be beneficial to this program please submit your input to Peter Muir, pmuir@bizucate.com, +1 215 234 4498. Thank you!

Foreword

There is nothing more important than an excellent education, and the graphic communication industries understand and strongly support educational opportunities for potential and current participants. One of the most respected graphic arts educational initiatives is the PrintEd program.

PrintEd is a national accreditation and certification program for graphic communications courses of study at the secondary and post-secondary levels. The curriculum is derived from industry standards and graphic communication professionals representing every aspect of the field.

PrintED was developed in 1986 by the Printing Industries Association of Georgia (PIAG) at the request of the Georgia Department of Education to provide a set of skill standards for the state's printing programs. In 1990, Printing Industries of America (PIA) adopted the Georgia program as a national industry-approved accreditation program. GAERF, Graphic Arts Education and Research Foundation, assumed management of PrintED in 2000.

To successfully train students to work effectively GAERF covers all printing processes and has now expanded into digitally-focused printing environments. One of the Foundation's responsibilities is to develop materials and methods of instruction that help students learn concepts and competencies that ensure their ability to operate any vendor's digital press. Maintaining vendor-neutrality is of paramount importance in this new initiative.

GAERF is committed to addressing the major challenge that will profoundly impact our industry's future: the availability of a skilled and dedicated workforce. This new digital accreditation is an important milestone.

Frank Romano
Professor Emeritus
Rochester Institute of Technology

Introduction

If you compare the digital production printing market to that of traditional printing, one of the biggest differences is the rate-of-growth. Digital production printing is growing at double-digit rates (more than 10% per year); while traditional printing (offset lithography) is growing in the single-digits (less than 10% per year). Today there is, and tomorrow there will be, a growing need for specialists that can operate and manage digital production printing equipment within commercial printing companies, in-house printing facilities, and many other professional environments.

Time and again, the people who own production digital printing equipment are asking for trained and motivated people who can not only operate the equipment, but also understand they are an important part of a larger business climate. The ability to run the equipment efficiently as well as cost-effectively is critical to any organization's success.

The PrintEd program put you well on your way to becoming an asset to both the technical workflow as well as the business's bottom line. The time spent in this course will introduce you to the people, the processes, the technology, and the strategies that make up the workflows of successful production digital printing organizations. Listen, learn, and share your experiences and ideas. Your perspective is a critical part of the lessons you and your classmates will take away. Your involvement can make it fun, interesting, and beneficial for everyone while developing the skill that will make you even more successful in the world beyond these walls.

In addition to workflow, you will learn about how to:

- Prepare your environment so you will be ready to produce what your customers need, when they need it

- Submit, prepare for production, RIP (Raster Image Processor), print and finish digital print jobs

- Produce variable data work

- Troubleshoot various parts of the workflow

This course will cover more than the basics of how to operate within a digital production environment. You will also learn about the business processes and how it is interwoven with production workflow to create a successful digital production environment. You will also learn how your role can be the key in making everyone successful.

Competencies, Linked Exit Learning Outcomes, and Performance Standards

Learning Plan 1: Introduction to Digital Production Printing and Workflows

Overview

Workflow is process involved to get work done. In a digital production printing environment it can entail the way work is "sold", created, received, processed, output and finished. You could look at just the production aspects or just the business aspects. However, learning a workflow within the context of its effect on the business as a whole and visa versa is a vital part of building an effective and profitable print operation. By analyzing a workflow you can get a better idea of how it's working, where you fit, and what could be improved for greater efficiency or capability.

Once you have a firm understanding of the flow of work you will be able to better understand your role and the many opportunities available for you to become an essential part of the team.

1. Outline potential digital print production workflows from input to processing to output.

Defining Workflow

There is no "perfect" or universal definition for workflow. It means many things to many people. Ask a graphic designer, marketer, printer or manufacturer of software or hardware and you will hear many different definitions. An individual's personal definition of workflow is kind of like their professional DNA, essentially a unique combination of commonly occurring variables. Where workflow starts and ends, the steps in between, the technology involved, the tasks done, the kind of people, and why they do it, are some of the biggest variables.

As stated in the overview, a good general definition is; the people, processes, technology and strategy that get work done. Looking at a business and the way they define their workflow should give you a good understanding of how the workflows through the shop. An elementary understanding of the flow will make it easier to asses a particular workflow's strengths and weaknesses as well as their impact of the business's costs and profit potential. One very basic approach to review a workflow is to examine the people, processes, technologies and strategies in terms of:

- What goes into the workflow (input)
- How the input is processed
- What is produced at the end (output).

Input

There are many possible inputs to a workflow. It could entail the order, the request to get something printed, the files created for printing, digital images, photos to be scanned, text to be written and more. The input consists of the instructions and content that drives the workflow.

Processing

Within the workflow there are processes occurring. These processes are the steps and procedures that occur in a workflow to complete a task and move the job forward to the next step.

Output

Output refers to the final products that result from the digital print process. Most often it is a printed piece that has had some sort of finishing A book, a poster, a report, a flyer, etc are some common examples. Other outputs can include a PDF file that can be reprinted or shared with others for "on screen" viewing. The output is the net result of the workflow. It should represent exactly what was requested in the input.

Comparing Different Workflow Domains

There are many kinds print environments and for each at set of distinct considerations that affect their workflow. The two most commonly identified print domains are commercial printers and in-plant print operations. Both exist for the purpose of producing graphic communications; however, commercial printers do it for a profit while in-plants are usually part of a corporation or organization and are focused on cost savings, quick turn around or internal security.

A commercial print workflow receives work from, or creates work for, external customers. They also are responsible for invoicing and receiving payment from custom-

ers. An in-plant most often receives orders and produces products for internal customers that are all employed by the same company and pay from cost center's or department budgets. In some of these environments there may not be a formal sales staff or production staff to receive and produce the work. On rare occasions some in-plants will take in commercial work in an effort to fund current and future internal objectives. Some in-plants will charge an internal cost or "charge back" for work produced while many in-plants don't track the cost to produce and only apply some type of financial justification for the process. Communicating the lower cost of production while also providing a convenient service can help justify their value to the organization they work for.

Outline a Print Based Digital Workflow

There are a number of ways to map a workflow. Some will review the steps from when the file is received all the way to when it is output. Some will go deeper and look at the reasons for the job, the sales/order process, and follow it through to when the order is billed and shipped.

Often it is when there are bottlenecks or a hold up in the workflow that an organizations will step back and examine their processes. Some will reverse their perspective and review the workflow from the back to the front or from the problem point and steps preceding it.

Many successful printers take a preventative approach and regularly examine their workflow. Starting at the beginning they will go through the workflow anticipating potential issues and working to make the flow at efficient and cost effective as possible.

Some workflows are very manual. Each task needs to be completed by someone and handed off to the next step. Other workflows may be significantly or completely au-

tomated with very little human intervention occurring. For example, someone who would like to get a reprint of a brochure goes to a website and requests 500 more. The request triggers the billing of the job, the scheduling of the work in a digital queue, resource allocation for press time, paper and finishing and when they are all there the job will run and thanks to an inline finisher, the printed and finished brochures come off the back of the machine and are ready for distribution to the intended audience.

As you can tell there are many ways to approach a workflow. Depending on how workflow gets defined, you may have multiple workflows working at once. There is no one failsafe analysis process. But the minimal goal of a workflow analysis should examine the people involved in the process, what they do, how they do it and what technology is used to make it happen.

In the examination process it is critical to consider the needs of the requesting group or customers to be sure the final product meets their needs. Often the appropriate needs analysis is not completed resulting in unsatisfactory output and a return to the workflow to repair the issues. Ultimately a waste of time and money. An effective approach is to start at the end first—the final output -- and work your way back up through the process. This method demonstrates the 5 "P's" of business: Proper Planning Prevents Poor Performance.

Some common factors important to the customer include the time it will take to produce the job, the cost of the job, the quality of the final output and the finishing of the piece. These should be kept in mind at every stage of the workflow.

Potential Job/Program Types

Toner based digital production printing fall under a few major categories that cover most production printing

1. Monochrome (black only)

2. Highlight Color (typically black + an additional color)

3. Color (most often 4 color process)

4. Static Content (same content over and over)

5. Variable content (text and/or images change on the page from one to the next)

   Unlike traditional offset, gravure, flexography or screen printing, digital printing has no fixed image carrier. The content can change on the page or from page to page. All digital printing could be said to be capable of varying the content but typically when the words "variable" or "personalized" are being used the content of each page or document is being changed based on specific data of the recipient and that changes from one to the next.

6. Ink jet based digital production printing can be

   Monochrome (black only)

   Color

      Process color (4 color)

      More color

         CMYK

         CCMMYK

CMYKOrangeGreen

Etc.

Small format

Document based

Large format and/or Wide format

Posters and so much more

Different Design Types

Documents, Posters, Statements, Brochures, Books, Menus, Collaterals, Letters, Post Cards, the list goes on and on.

Many types of documents can be produced by digital print equipment. Once the type of document is known often the substrate, printing technology and finishing methods are discussed as part of the planning phase of the job.

Estimated Costs

Costs to produce the job start with the kind of environment and the choices that organization takes when it comes to dealing with costs.

In-Plant

Costs of an operation in an in-plant usually include the labor, the lease payment on the equipment, the service of all equipment and the consumables (paper, staples, glue, etc). Sometimes those costs are broken down per job and a "charge back" value is assigned to the job. The charge-back value usually entails a cost of consumables and costs to produce the project using specified equipment.

Some in-plant environments don't track such information and don't charge back anything for services rendered. It's difficult to assess value of the operation if they don't actively participate in determining the facility costs to the company to have the equipment and people available and assign some portion of that to the work that is produced.

Commercial Print

Commercial printing companies often follow the BHR (Budgeted Hourly Rate) method of determining job costs and then add a percentage to those costs to determine the sale price. Printing companies are divided into cost centers. Three of the most popular cost centers are pre-press, press and post-press. Some companies assign additional areas, like data handling, fulfillment and warehousing. Other companies lump many into just the "cost of doing business."

By assigning cost centers the labor, cost of the equipment and a fair portion of all of the other overhead (insurances, cost to make the sale, additional non-revenue generating things) can be broken down for each job. This method is very common and often more accurate than the costing methods that don't track the overhead of the major cost centers in a job's workflow.

The Business Side of Printing

Costing Solutions

There are commercially available costing systems that are stand alone as well as part of a larger Management Information System (MIS) available to all. Some companies choose to create their own using MS Excel or just a general ledger. No matter the method as long as costs being tracked it can be understood.

Turn Around Time

Turn around time refers to the time it takes to complete an order in the shop. The time it takes a job to be turned around will depend on factors such as: type of job, steps involved in producing it, finishing requirements, shipping requirements and more.

Job Content

All production print jobs have content. Most all content in today's digital work can be broken down to two things, Art and Text. The art can be further broken down into vector (illustrations and line work) and bitmap (photos to be scanned and digital photos). The text for a job can contain the letters and numbers that will go on the page.

Preflighting

Preflighting is the process of checking a job and its parts before printing. Proactive preflighting is determining what needs to be done to create and produce the job, then share it amongst all parties in an effort to foresee problems that may arise and take a proactive role to design the job within those parameters. Reactive preflighting is identifying what's potentially wrong with the job and deciding what to do once a problem is identified.

The client or the creator is contacted, the issue or list of issues is reviewed, and how to resolve them is decided. Sometimes the designer will make the fix and resubmit, while other times the preflighter may fix the issue if they can. Beware, once you touch someone else's file you are responsible for its integrity from that point forward. An additional round of proofs should be required after all changes, but often does not occur and the prepress people are responsible for the incorrect output. In some organizations the amount of time to correct the problems is not recuperated. Some organizations believe in giving this away while others struggle to try to recapture lost costs.

Color Expectation Setting

Color is subjective, not all people see color the same way. Color reproduction has many forms. On computer screens, captured by digital cameras, output to a press or printing device and more. Not all systems capture and reproduce color the same way and not all systems have the same range of colors or gamut.

Successful digital production print environments strive to consistently reproduce color and monochrome work and set expectations with customers on what is capable and repeatable and what is not. When the same job is output to two different technologies often the color may look different. With an attention to consistency, and adjustments to one or both processes, two different output devices may be able to reproduce color closely. Without the commitment to consistency, and making the adjustments, the color may never look the same.

Effort should be taken between the producer of the print and the reviewer of the printed piece to be sure both parties understand the capabilities and shortcomings of the system.

Make-Ready

In traditional offset printing, make-ready is the set of steps that occur before the press starts printing. Loading the paper, hanging the plates, adding the ink to the ink fountains, adjusting the ink and water balance are all parts of the make-ready procedures. With today's more automated offset presses make-ready times are getting shorter and shorter. Auto plate loading, "on press" ink tubes, automatic color and registration adjustments are just a few of the more automated processes available today.

Digital presses have their own make-ready procedures. Adding paper and colorants, calibration and paper handling adjustments are just some of the steps. Make-ready procedures will vary from device to device and one environment to another.

Output

As digital production printing equipment runs, the output is what is received into the tray, stacker or re-rolled. As the digital files and commands go into the front end of a digital press, commands in the language tell the printer where to put the colorant on the substrate and the output is the result of the process.

Finishing

Finishing is the process by which the output is stacked, folded, cut stitched, trimmed, bound, punched, collated and on and on. Finishing represents the final steps performed on the output to prepare the print job for its final form and destination to an audience.

Finishing is Digital Presss can come in the form of in line (connected to the print engine), near-line (in the same room and nearby to the Digital Press), or off-line finishing (generally in a different location (sometimes off site) from the printing equipment.)

Shipping Plan

After a job is output and finished it needs to be delivered to the final recipient. Sometimes this can come in the form of an interoffice mail system, private shipping company or national postal system.

Shipping requirements are as important as finishing requirements during the planning stages of any print job. Lack of proper planning when it comes to shipping can impact the quality and cost of any job.

Verify Receipt and/or Action

So often in the world of printing, a print shop will measure its success when it produces a job at the planned budget, time frame and quality and bills that customer for the work.

Some companies are taking a different approach; they are attempting to become a bigger part of the customer's workflow by not just producing the print but also gauging the usefulness of the print as a larger part of communications. Sometimes the verification can come in the form measuring whether someone acted on an offer. A coupon is one example. It's not just printing the coupon, but suggesting their use and helping to integrate them into a campaign, designing it and measuring how many were used in relation to how many were produced. Today's printers don't have to do all of this, but it's one way to become more valuable to the customer. If more time were spent in helping to drive the customer's business, and done successfully, there is an opportunity to expand the relationship between the customer and the service provider.

Web Submission of a Job

In the old days the way a job got to a service provider was via the US Postal system or private shipper. Designers completed the electronic job and shipped a disc to the service provider to preflight and output.

Email was an intermediary form of submitting work, but the file sizes tended to be too large and too numerous. Newer technology like FTP (File Transfer Protocol) and now dedicated websites with a digital drop box, allow the designer to send the job electronically, speeding up the submission process.

Utilizing the web allows people to specify all the parts of the order and even the commerce aspects of the job in

some cases. The greater the automation the greater the ability to make the process easier and quicker.

Job Planning

Job planning is the overall process of identifying what resources will be necessary to complete a job. Substrates, printing and finishing methods, costs, and concerns are all part of the planning process. Whether done over the phone, in person or electronically via the web by taking the time to put together a plan and following it increases the probability of success of the job.

Estimating

The process of determining the resources, timeframes and costs of each job is known as estimating. Usually an estimate comes after a quote is requested. It can be delivered to the customer over the phone, via email, by web or in person.

Scheduling

Scheduling occurs after a customer has accepted an estimate. Resources for the job are then requested and planned. By scheduling the work properly, the service provider can be sure to get the work done in the promised amount of time and at the least cost.

Accurate scheduling helps keep the work moving thorough the shop. Whether done manually or automated using an MIS (Management Information System), the job needs to be accurately scheduled.

Billing

Billing is the stage of the workflow when the customer is billed for the job cost. In an in-plant this can come in the form of a charge back. Too often some service providers don't accurately bill because they don't track all the work done to produce the job or the billing happens long after

the work is completed. Delays in billing and payment can increase cash flow problems for commercial companies.

Producing a Job

The description of producing a job in a digital production print workflow can entail, but isn't limited to, the following steps: A customer identifies the need to print and puts a request for estimates out for the design and production of the job. After preparing acceptable estimates the job is created by a designer and sent to the service provider. The service provider receives the job physically or electronically and preflight's the job according to the specified job requirements. If problems are identified they get resolved. Once the job is prepared the job is sent to the RIP to be processed and converted into the machine language that drives the print engine. The print engine is prepared by calibrating, loading appropriate paper and making sure there is enough colorant to produce the job. The job is run and finished according to the requirements, then shipped and billed accordingly.

Image Quality Adjustments

Image quality adjustments can happen in many places within the workflow. During the design of the job an image can be tone and color corrected through the lighting adjustments before the digital photo is taken or also in prepress software such as Adobe Photoshop. Depending on the features available in the RIP, the entire job, page, element on a page or even specific pixel could be adjusted before the job is output. Unlike traditional offset presses that have minimal but final color correction using the ink keys on press, digital presses don't have any, or at least very little, adjustment controls during the output stage. It's best to make adjustments in prepress or during the design stages of the job.

Another simple control for image quality in many digital workflows is in the quality of substrate chosen for the job. A good substrate will allow an even and consistent distribution of colorant across the sheet and from sheet to sheet.

Calibration

The process of calibration is a preparation procedure that can help maintain consistency within the RIP and print engine. By calibrating on a consistent basis the RIP and print engine will be regularly checked and adjusted to be sure they are doing what is required of them over and over. Calibration will adjust input and output values so drifts that occur over time can be adjusted for. By not calibrating good color can be reproduced, but it may not be reproducible on a consistent basis.

Preventative Maintenance

Preventative or proactive maintenance on all hardware and software as well as the print production environment itself will help to assure the availability and performance capability of all parts of the process. By not maintaining the print production systems and the environment they may not perform predictably or at all.

Learning Plan 2: Preparation Procedures for Production Printing

Overview

Do you often just jump in the car and drive? Or do you check the oil, the air in the tires, the gas level, and clean the windshield before going anyplace? If you were going down to the corner store you may skip these procedures; however, if you were going on a cross-country trip it may be wise to consider those tasks as part of what will make a successful journey.

Production digital printing is not new, and a lot can be learned from those who have gone before. One of the most frequent lessons/ pieces of advice you will encounter is to take time and great care when preparing the production workflow. The sooner you recognize and respect the importance of preparation the sooner you will achieve an efficient and profitable workflow. Also regular care and maintenance of the equipment and establishing optimal settings to get the best possible results, tare commonly heard suggestions. Less service or repair will be needed over time and the quality of the output will remain higher longer allowing you be more productive.

In this section of the course, you will actively learn about the importance of, and procedures for, preparing a production digital workflow. As you learn the steps and procedures, you will be asked to create your own personal way to get those procedures done. Review your ideas with the class and instructor, and they will help you keep your production print environment running smoothly.

Prepare Equipment for Production

Equipment Preparation, Maintenance and Safety Procedures

The key to consistent, repeatable and maintainable workflows that include the people, processes, technology and strategies, is to have a plan and follow it. An established plan makes it easier to complete a job as well as, measure and adjust as necessary if an undesired outcome occurs. Without a plan when inconsistent performance occurs it can be difficult to figure out the problematic area or areas.

Preparing and maintaining the equipment will increase its lifespan and reduce its overall maintenance costs. The machines will also be available more often because of lfewer unplanned problems and maintain a consistent image quality level because regular testing allows for changes in standards to be readily noticed and rectified.

Included in preparation and maintenance procedures should be a section on safety procedures. Repetitive stress injuries, burns, shocks and cuts can all be avoided if a procedure is tested and put into place to avoid injuries. Without a plan an operator can inadvertently touch something or stress something that can hurt them.

Printing Technologies

There are many printing technologies available today. By understanding how each works and what each requires to consistently operate you will have a better understanding how to prepare and maintain each.

Digital Printing

Digital printing has many definitions. In today's offset lithographic workflows, a digital prepress department images printing plates using lasers driven by RIPs. Some would argue this is digital printing and some would

argue it's not. In a literal sense the plate is prepared using a digital file. But there are those who argue it's not about how the image got on the plate, but how it goes from the plate to the blanket and the blanket to the substrate. Some people just like to be right. Does it always have to be clearly defined. At times that helps, but at other times sometimes the definition is more important than the word itself.

Digital printing today typically uses a RIP to drive a print engine that utilizes: toner, dyes, inks, or other colorants that are directed to the substrate by the RIP and the print engine. Without a digital file and a RIP a digital printing device wouldn't be able to function. In digital printing there is generally no fixed image carrier, like a printing plate, each image that can be produced can be different than the one before it. This enables variable data printing.

Electrophotography or Xerography

Uses a charge on a belt or drum to attract a colorant (toner). The image is transferred from the belt to the substrate and then heat and/or pressure can be used to set the image to the substrate.

In some cases Electrophotography may use a flash fusing process that is light based and not heat based. It enables a faster; often much faster toner based printing process.

The types of applications that can be produced are numerous. Documents, bills and statements, posters, collaterals, books and manuals, letterhead, business cards are just a few examples.

Electrophotography is a good process for short runs or longer runs of personalized print where the name, address and/or message and imagery may change form one to the next.

Ink Jet

Ink jet technology comes in two major classifications: Drop on Demand and Continuous.

Drop on Demand technology works on a principle that a RIP will tell a thermal plate to heat up or a piezo electric crystal to deform causing a change in pressure in an ink jet head. That change in pressure will force a drop of ink from the head that is destined for the substrate once it leaves. The quality of this technology is often very high while the speeds may not be as fast. There is one head for each color.

Continuous ink jet uses a constantly vibrating piezo electric crystal to send a continuous stream of ink from the head to the substrate. A charge is applied to the stream immediately after it leaves the head. If nothing else acts on the stream it is destined for the substrate. But if an opposite charge is applied to the stream, by the RIP telling a charge plate, it will be pulled down to a collection screen and no longer be destined for the substrate. There is one head for each color. The speeds of continuous ink jet can be very fast although the quality may not be as high as drop on demand.

Ink jet technology today is used for desktop printers, wide format printers and in a few cases production level ink jet presses. Ink jet is a very versatile printing process that can create posters, signs, documents, envelopes, statements and much more.

Ink jet technology can be used in conjunction with offset technology, enabling variable information to be applied to an offset shell. An offset press can be used to print 20,000 post cards while an ink jet device can be used to apply the name and address to the post card. Another example of this is to use ink jet to apply the address to the front of a magazine that was printed via offset technology.

Ion or Electron Charge Deposition

An image is created with the use of an electron cartridge which creates a negative charge on a nonconductive surface. The nonconductive surface consists of a drum which attracts a magnetic toner. The toner is then fixed to the substrate with a cold fusion process. A static electric charge is used to draw the toner particles from the drum onto the substrate. A high pressure roller fuses the toner to the substrate. Also know as ionography or electron charge deposition printing.

- From International Paper's Glossary (http://glossary.ippaper.com/default.asp?req=glossary/term/1208&catitemid=)

A printing technology used in high-speed page printers. It is similar to laser printing, except instead of using light to create a charged image on a drum, it uses a print head that deposits ions. After toner is attracted to the ions on the drum, the paper is pressed directly against the drum fusing toner to paper. Quality approaches that of a laser printer; however, the ink has not been embedded as deeply, and the paper can smear more easily.

- From TechWeb (http://www.techweb.com/encyclopedia/defineterm.jhtml?term=ion+deposition)

Magnetography

Uses magnetic fields to attract the colorant to a drum then pass it to the substrate for flash fusing. The magnetographic print engine consists of an array of electromagnets that forms a magnetic image on the surface of a metal drum. The image is exposed to toner for developing and the developed image is then transferred to the substrate where the toner particles are permanently flash-fused. During one drum revolution, the image is developed, transferred to the substrate and then the drum is erased to prepare it for the next image. This process enables extremely fast and reliable continual

printing that is ideal for high volume, variable text and on-demand applications.

- From www.xytron.com/nipson8000AP.html

Thermal Transfer

A thermal transfer printer is a non-impact printer that uses heat to register an impression on paper. A thermal transfer printer has a print head containing many small resistive heating pins that on contact, depending on the type of thermal transfer printer, melt wax-based ink onto ordinary paper or burn dots onto special coated paper. A microprocessor determines which individual heating pins are heated to produce the printed image. The print head spans the entire width of the paper or medium to be printed on. Thermal transfer printers are popular for printing bar codes, labels, price tags, and other specialty print jobs. There are two types of thermal transfer printers: direct thermal and thermal wax transfer.

- Direct thermal: The direct thermal printer prints the image by burning dots onto coated paper as it passes over the heated print head. Direct thermal printers do not use ribbons. Early fax machines used direct thermal printing.

- Thermal wax transfer: This type of printer uses a thermal transfer ribbon that contains wax-based ink. Heat is applied to the ribbon using a thermal print head that melts the ink transferring it to the paper where it is permanent after it cools. A typical thermal transfer ribbon consists of three layers: the base material, the heat melting ink, and the coating on the print side of the base material. The coating and base material help keep ink from adhering to the print head which can cause poor print quality. Monochrome and color thermal transfer ribbons are available. It is recommended that the print head be cleaned between each

ribbon change with a cotton swab and isopropyl alcohol.

- Phase Change Thermal Wax: Uses solid inks (Tektronix Phaser) and thermal heads heat the inks to a liquid and passes through the head and cools back into a solid on the substrate.

- The cost of a thermal transfer printer varies depending on the size of the printer and the features included. The cost of consumables such as paper, ribbons, and print heads is about the same for both types of printers. The print quality depends on the printer, the ribbon, the paper, and the environment such as where the printer is stored, the temperature, and the humidity.

- From WikiPedia http://en.wikipedia.org/wiki/Thermal_transfer_printer

- From Wikipedia (http://en.wikipedia.org/wiki/Dye-sublimation_printer)

A dye-sublimation printer (or dye-sub printer) is a computer printer which employs a printing process that uses heat to transfer dye to a medium such as a plastic card, printer paper or poster paper. The process is usually to lay one color at a time using a ribbon that has color panels. Most dye-sublimation printers use CMYO colors which differs from the more recognized CMYK colors in that the black dye is eliminated in favor of a clear overcoating. This overcoating (which has numerous names depending on the manufacturer) is effectively a thin laminate which protects the print from discoloration from UV light and the air while also rendering the print water-resistant. Many consumer and professional dye-sublimation printers are designed and used for producing photographic prints. Sublimation is when a substance transitions between the solid and gas states without going through a liquid stage; dry ice is an example. In a dye-sublimation printer the printing dye is heated up until it turns into a gas, at which point it diffuses onto the printing media and solidifies. Prior to printing, the dye is stored on a cellophane ribbon. The ribbon is made up of three colored panels (cyan, magenta, and yellow) and one clear panel which holds the lamination material for the overcoating. Each colored panel is the size of the media that is being printed on; for example, a 6" by 4" dye sub printer would have four 6" by 4" panels. During the printing cycle, the printer rollers will move the media and one of the colored panels together under a thermal printing head, which is usually the same width as the shorter dimension of the print media. Tiny heating elements on the head change temperature rapidly, laying different amounts of dye depending on the amount of heat applied. After the printer finishes covering the media in one color, it winds the ribbon on to the next color panel and partially ejects the media from the printer to prepare for the next cycle. The entire process is repeated four times in total: the first three lay the colors onto the media to form a complete image, while the last one lays the laminate over top. This layer protects the dye from resublimating when handled or exposed to warm conditions.

Electro-Coagulation

An electro-coagulation printer uses an electrode control unit to drive electrodes which are aligned in proximity to a rotation drum having a conductive ink film on its surface. The electrodes are respectively electrified to partially coagulate the conductive ink film to form ink dots on the surface of the rotation drum, so that the ink dots are transferred onto a paper. Herein, the electrode control unit receives print data from a host device by way of an interface. Gradation data representing gradation values for one line of the electrodes are created based on the print data and are output in a serial manner. The serial gradation data are converted to parallel data cor-

responding to the gradation values, which are held and controlled in output timing. Based on the gradation values, pulse signals are generated to drive the electrodes respectively.

AKA Elcography or (Elcorsy from a specific vendor) http://www.elcorsy.com/an/press/gatft3.html

- From PatentStorm (http://www.patentstorm.us/ patents/6428671.html)

One, Two, Four or More Color Digital Printing

- One Color: Simplest form of print (digital or traditional): One colorant is applied to the substrate to create text or images. The most common "color" is black. Some technologies allow predetermined "spot" colors or even custom colors to be made. In single color printing the color does not join any other color and sits on the substrate by itself

- Two Color: A simple way to add impact to a job. In traditional printing this can be achieved by adding a second ink to the substrate by passing through an additional print unit or passing it through a second time. In digital printing, some ink jet manufacturers support two color printing devices where black is usually one color and the second color is from a library of custom colors (Red, Green, Blue, Yellow, etc.). For toner based printing some manufacturers have created a "highlight" color printing device that allows the application of a second toner two the substrate. Most often the second color DOES NOT interact with the first and only adjoins (or abuts) the second color. In some rare cases for images a "duo tone" effect can be created where the second color halftone screen is applied on top of the first creating a larger tonal range. Instead of black (first color) or

blue (second color) separately both colors are applied on top of one another allowing for a longer tonal range and wider range of colors albeit not as great as four color process.

- Four Color Process: The word "process" refers to four colors being screened (broken into a binary representation of a continual process) and placed on top of one another to create a larger range of colors (gamut). Instead of four separate colors you now have hundreds or even thousands of possible color combinations. The combined binary screens of cyan, magenta, yellow and black give the allusion of many more colors.

- More Color Process: Some manufacturers will add additional colors to CMYK. Others will add a second hit of Magenta and Cyan in a six color process (used on inkjets primarily and not toner) CcMmYK. This creates a larger color gamut and a greater opportunity to sell more ink. Another More Color process is to use Pantone's patented Hi-Fi or High Fidelity printing that uses Orange and Green in the process mix. The combination of CMYKOG creates a larger color range, greater opportunity to sell more ink, AND greater complexity to the workflow in the form of color and process management, expectation setting and resetting. This is not generally a toner process although one or two manufacturers have presses able of doing six color process. It is more common with ink jet technology and usually one buys a system like this because of this capability. Six or more process colors is not very common in traditional offset printing.

Different Types of Job File Formats

There are many file formats that can be used for individual job elements like pictures and graphics and other

forms of data. TIF, EPS, PICT, GIF, PNG are just a few.

Job Files represent the entire job: layout, art, text and numbers. There are four popular job files used today. There is no "best" among them because each job file type has different benefits and limitations. Choosing one job file type is often a result of considering many things like: number of files to manage, ability to edit, ability to view, file size and recognition by other workflows.

- Source Files: Represents all the individual job elements. Layout, art files and data files are all separate. This job file type is easiest to edit, assuming you have access to the software and version that created it. One downside is that it is difficult to manage all the elements along with the individual file sizes.

- PostScript: In a production environment, PostScript was, and still is, a popular choice. PostScript is Adobe's Page Description Language. The command lines within the file tell the RIP and engine what to do. Most often PostScript has all the elements of the job layout, art and text combined into one file. This file can get quite large. Occasionally some will choose to produce a PostScript file that does not have the image data within it. The images themselves will reside in the RIP. As the file gets printed, the low resolution placeholders are replaced with the high resolution data. PostScript files are not easily edited. Some very knowledgeable PostScript programmers can go into the lines of code and make changes to the file to fix or change what needs to be done.

- PDF: A PDF is an object oriented file format. It's produced by taking the source files and generating PostScript (or a similar PostScript like programming language). The file is then interpreted and an object oriented file is produced using Adobe Ac-

robat Distiller or other third party PDF creation software. A RIP interprets PostScript, creates an object list and then rasterizes the file. A PDF file has not been screened. As an object oriented file, it can be previewed using Acrobat Reader on any platform, minor edits can be performed, pages can be isolated reordered or rotated, objects on a page can be isolated moved and edited using bitmap or vector editing programs. The PDF file has been optimized to be smaller during the creation phase and can be compressed even further to create an even smaller file, but sometimes at the loss of image quality.

- Post Rip'd: The RIP (Raster Image Processor) converts the Page Description Language (PDL) into machine language that will drive the print engine its connected to telling it when to put a drop of ink down (ink jet) or charge a particular area so it attracts a colorant (toner based print). The end result of a RIP can also be saved as a file called a Post RIP'd file. Often these files are proprietary (specific to a particular manufacturer). For instance, EFI creates a Save for Fast Reprint file, Creo a Ready To Print file, and Xerox an FRF file. All of these are a Post RIP'd file produced by each maker of the RIP. These files can be recalled and loaded into the RIP and printing starts immediately (or almost immediately). Lengthy and time consuming processing does not have to occur because that works already been done. These files can be HUGE and they rarely are edited, but when you need to reprint a job PostRIP'd files can make the process go quickly.

Steps Necessary for Equipment Preparation

There are often multiple pieces of equipment in a digital print production workflow. Prepress workstations, RIP work stations, proofing devices, print engines and finishing systems are just a few. Each manufacturer will recommend how to prepare equipment for daily and job to job work as well as preventative maintenance to keep the equipment running. The best production environments will take that base list of preparation suggestions and build their own specific to their people, their processes, their technology—their workflow.

RIP Preparation

Some steps may include, but are not limited to: Turn on, optimize for defragementation, check connection to network, connection to print engine, enough free space to perform daily tasks, enough memory to RIP types of jobs, software loaded and updated (each update of software is an invitation to variation).

Engine Preparation

Some steps may include, but are not limited to: environment check and adjust (temperature and humidity along with any other particulates in the air), engine on, paper loaded, press calibrated (adjusting to return to known state), hardware firmware updated, check for wear and tear, check substrate feed, path and delivery.

Finishing System

Some steps may include, but are not limited to: environment check and adjust (temperature and humidity along with any other particulates in the air), device on, hardware firmware updated, check for wear and tear, check substrate path, finishing function (fold, punch, stitch, cut bind, coat) and delivery.

Common Preparation Errors

The environment is not within recommended operating parameters. High/Low temperature and excessive/not enough humidity can impair the feed, passing, imaging and finishing of many digital print production workflows.

Wear and tear on devices can cause imaging and feeding issues. By not calibrating a print engine, the state it's in may produce acceptable prints, but they may not be consistent to the way the device produced them previously. Printing test pages can confirm that the device is producing acceptable output, objectionable artifacts can be identified before a real production run occurs.

Systematic Preparation Techniques

Following a prescribed and tested method of preparation procedures, makes it easier for the environment to run consistently shift to shift, day to day month to month and from one operator to another. Consistency can keep the workflow moving predictably. By following specific procedures, should something unexpected occur or changes need to be implemented, the process can be reviewed and modified to identify the problem or make the change.

Importance of Calibration and Characterization

Calibration within a digital print production environment depends on the manual or automated adjustments to the input/output values so the reproduction system produces a consistent output run to run and shift to shift.

Characterization within a digital print production environment often entails sending a target or known value through the process and identifying the capability and

limitations of the system. By characterizing a system you have a snapshot in time how it behaves with a known value. By calibrating you're better assured that output will occur consistently.

Substrates Intended for Offset and Digital

The term "substrate" is used instead of paper because you can print on more than pulp based paper. Printing on plastic or board (corrugated) are other substrates commonly used. If paper is all that is to be printed in a workflow then "paper" is an acceptable description for what's being printed on.

Offset printing and digital ink jet printing can use a wider variety of substrates than digital toner based printing. Weight, caliper (thickness), finish (coated, uncoated), brightness, opacity, amount of recycled vs. virgin fibers, reaction to heat, moisture content, salt content are some of the variables in one process vs. another. One of the difficulties in matching the output from one technology to the other (using the same substrate) is how the substrate will react to each reproduction system—many times they don't behave the same way.

Adhering to print engine manufacturer's recommendations, testing behaviors, printability and consistency of a substrate within a digital print production process is a safe bet on how to have a smoother running workflow.

Also creating a substrate guide for customers so they can see how their colors or type will look when printed in a specific workflow will help set achievable expectations early and hopefully minimize objections that can come up later.

Colorants

A colorant is a politically correct way of saying ink or toner. Colorant, like substrate, is a generic way of dis-

cussing the method of making an image appear.

Not all colorants are the same. Traditional print and ink jet both use "ink" yet even within offset lithography there are many attributes that can make one ink different than another. Tack (stickiness), Viscosity (resistance to flow), Hue angle (what it does to light) are all part of the color reproduction process.

Inks used in offset lithography and ink jet have an ability to adhere more readily to a wider range of substrates while toner has the ability of being "immediately" dry once it passes through the fuser.

Although the colorants may be different, effort can be made to simulate the look, feel or color when matching from one process to another.

Safety Considerations of Digital Presses

Heat, moving parts and electrical charges are three of the major safety considerations in digital printing systems. Things fall in, or can get caught or snagged. Hands can be burned, or you can receive an electrical shock easily if you don't know what you are doing. Always heed safety warnings and follow the manufacturers recommended safety considerations.

Repeatable stress injuries should also be considered as part of a safety discussion. Bending over to clear a jam, pick up a lift of paper, load paper, standing in one place for an extended period are some of the long term injuries that can occur from repetitive work. Check with manufacturers on their warnings and then write your own safety and preparation guides. That way you can update them based on your needs.

Advantages of Offset and Digital Print

Some offset advantages include: reduced cost to run more print of the same job and wider substrate latitude

and larger sheet/web sizes.

Some Digital Print advantages include: Reduced cost for shorter runs; ability to personalize each and every element; print on demand; reduced obsolescence; and the ability to print on preprinted stock.

Disadvantages of Offset and Digital Print

Some offset disadvantages include: High cost and time to prepare the process; equipment operator expertise; inability to personalize print; high equipment cost for certain pieces.

Some digital disadvantages include: Need for experienced operators to get consistent quality; equipment cost for certain pieces; inability to print on same substrates as offset; ability to consistently produce large colorant coverage areas; and the ability of the colorant to adhere to certain substrates.

Scenarios to go Digital

Fast turn around, lower cost for short run of fixed images, print on demand, reduce obsolescence and ability to change each image using variable data printing.

Scenarios to go Offset

Need for many of something, particular substrate attributes that can't be handled by digital, preprint fixed images, reduced cost when producing many of the same thing, increased turn around due to improvements in press Prepress Workflow Solution.

Learning Plan 3: Production Printing Procedures

Overview

There's plenty of technology out there. It can do amazing things if you take the time to learn how it works, how to use it, and how to care for it. In this section you will learn about how to effectively use digital production printing software and hardware--the same equipment you will come across as you enter the workforce. In the workplace of today, jobs and salary levels are influenced by what you know and how you demonstrate it. As we work through this section, don't be satisfied simply learning how the technology works. You must also consider how the technology can help businesses save time and make money. Linking these two thought processes together makes for a very knowledgeable and valuable digital production print specialist.

Demonstrate the capabilities of FreeFlow Web Services

FreeFlow Web Services capabilities and components

See www.xerox.com for further research

FreeFlow Web Services on Productivity and Profitability

As workflows continue to become automated and digital the more that can be done to enable customers to do more of the work themselves and send the work in digitally will help to make the production workflow more efficient and control costs.

Whether its helping a customer send a job in, or creating a public or private storefront to enable many to pick and choose what they would like, time needs to be spent on planning how new automated workflows should be planned and implemented. The benefits of shortened order entry, preparation, and production, should go hand in hand with customers who are happier about getting what they want, when they want it, and at a price point that is acceptable.

FreeFlow Web Services is an enabling part of the process to help get the work into the shop.

FreeFlow Web Services and FreeFlow Makeready

A connection from one step of a workflow to another is critical to the efficiency and productivity of a workflow. Having customers prepare jobs properly and send them or choose them from a predetermined catalog in FreeFlow Web Services enables orders and jobs to be entered into the workflow. FreeFlow Makeready enables the operators to scan jobs, make PDF's, impose jobs, set label, reposition pages, create tabs and more. By having a unified approach, interface and handoff between these two processes will help keep the workflow flowing.

PDF Creation

All print jobs start from source files. Source files represent the individual pieces of a job. The images, illustrations, text and numbers are all parts of the job. In a digital workflow some of the source files will come out of software applications like Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Microsoft Publisher or Adobe Illustrator, Adobe Photoshop, Adobe InDesign or QuarkXPress. These files contain the layouts and content to make a printed job.

If the creator chooses they can print from any and all those applications to a printing device. Each application has its own nuances how it will handle content compared to other applications. Printing from one applica-

tion to another does not always ensure consistent output of the same content. An image printed from Adobe Photoshop can look different than the same image placed in QuarkXPress and printed. At this stage it's not a matter of which is better—but acknowledging that different applications handle content differently.

The settings used in one application or another will impact the quality and general output of any file. Instead of printing a source file, you could create a PostScript file and use that file to create a PDF (Portable Document Format) file using Adobe Acrobat Distiller or a third party PDF creation software.

Adobe Acrobat Distiller converts PostScript page description language into an object oriented file format. Settings used within Distiller can compress the file, adjust or mark color for later changes, optimize the file for more efficient output and more.

The quality of the PDF greatly depends on the quality of the source file, the settings in creating the PostScript, the settings within Acrobat Distiller and how the PDF will be used in the end. By reviewing these steps you can wind up with a PDF that's perfectly prepared for an intended use. Skip this step and you can easily have a PDF that does not produce what you want or need.

If done properly, the PDF will do as intended and be viewable and printable within the workflows you set it up for.

File Submission

Getting files into today's digital print production workflows can come in many forms. You can:

- Put the files on a disc or jump drive and send job to printing facility via shipping agency or USPS. Once received load the files onto a workstation for preflighting.
- Send files to service provider via an FTP site. Once received load the files onto a workstation for preflighting.
- Submit the files through a branded or public store front. Once received load the files onto a workstation for preflighting.

What you send to the service provider depends on how they set up their workflow. Some may request all source files (art, text and fonts), some may request PostScript (common driver or recommended driver should be discussed and reviewed), some may request a PDF (recommendations for source file application settings, PostScript and Distiller settings will reduce later variability) and others may request a Post RIP'd file. The last is fairly rare unless a specific workflow has been set up to create and ship the large files.

At some point during this stage, both parties need to agree on a proofing process to be sure what was created and last viewed is what was received and will be reproduced. That can be in the form of an on screen PDF or a hard copy proof.

Creation of an Electronic Storefront and Hosting Files

The internet isn't about only shopping anymore. Internet 1.0 was about providing information to people. Internet 2.0 has been enabling people to create places where people can find you, shop from you, buy from you and be satisfied by you...without ever meeting you.

Commercial printing companies are creating both public and customized (specific to a given customer) store fronts to enable their customers to do business in new ways.

Solutions like a storefront usually occur by three methods: (1) Build it on your own from the bottom up, (2) rent it using an ASP (Application Service Provider) model or (3) buy the entire solution outright. There is no best method, but the three choices allow company's the opportunity to get into this opportunity with minimal effort.

Through a storefront solution a customer can send their completed job to the service provider to be output for a one time job. But if the job is one that occurs regularly with no changes or little changes the job could be hosted in an electronic catalog or repository. The customer or even their customers can be enabled to go to the catalog and order jobs from there.

Security

Computing today presents opportunities for people to create mayhem or steal from others. The corruption or stealing of data happens every day. Therefore, it's a good idea for any company that enables outside access to data to have a very strict security process. Firewall's, anti-virus and anti-spam efforts need to be a critical part of a digital production workflow strategy. Without addressing security there are possibilities of people gaining access to secure data and crippling the relationship between the service provider and their customer.

Demonstrate the capabilities of FreeFlow Makeready

Inputs to Today's Workflows

When it comes to digital production workflows today there are quite a few "inputs" to be aware of. Most of which can be broken into four major types: hard copy originals, digital images, and digital illustrations and job files.

- Hard Copy Originals: these can come in the form of preprinted pages that are scanned into a workflow with a document scan system and accompanying software to edit the scanned document (reorder pages, add pages, remove pages, merge documents together, page level editing, etc.)

- Digital Images: pixel based images that are the result of a scan or more popularly they are the result of the use of a consumer or professional level digital camera. By using today's digital cameras there are many digital images available directly from cameras or from third party image library or stock photography companies.

- Digital Illustrations: vector based images are the result of the use of vector editing programs like Adobe Illustrator. Vector artwork is resolution independent and can be freely scaled without impact to image quality. Vector illustrations can also be obtained from stock image companies as well.

- Job Files: represent the source files for a digital job. It can include the page layout file (QuarkXPress, Adobe InDesign, Microsoft PowerPoint, Microsoft Publisher) and the supporting artwork and fonts that go along with the job.

Demonstrate the basic components of FreeFlow Print Server

RIP

A RIP (Raster Image Processor) is a critical part of a digital print production workflow. A RIP converts a PDL (Page Description Language) (Adobe PostScript is today's most popular PDL), to machine language commanding the print engine to print. Without a RIP a print engine will sit idle without knowing what to do.

Not all RIPS are created equal. The basic function of a RIP usually entails three major steps. A RIP:

- Interprets the PostScript and validates what is coming into the RIP is a valid PDL.
- Creates an object list. A PDL is a programming language made up of hundreds and thousands of command lines. By creating an object list from the PDL a RIP uses its memory to recreate the letters, objects, page and positioning of all the elements.
- Drives the device. This final step represents the RIP telling the print engine to get to work.

Desktop and some small printers that sit on the floor have a RIP built into their hardware. A chip within the printer performs the RIP functions.

Larger printing devices could have a RIP built in, but are more likely to have a RIP connected to them. The RIP can either be software based (you provide the computer for the software RIP) or hardware based (the RIP contains both the hardware and software that performs the RIP functions.) Processor Speed, amount of RAM, size of hard drive are all factors that influence the hardware capability of the RIP.

Newer and newer RIPs perform many more functions than the basic three listed above. Depending on the manufacturer, brand and model of RIP some of the additional functions of today's RIP can include but are not limited to:

1. Color management

2. Archival functions

3. Internet connectivity

4. Document, page, object and individual pixel editing

5. File type handling

6. Job management

7. Workflow management

8. Queue/Hot Folder creation and editing

9. Substrate Management

10. Engine maintenance management

Comparing RIPS

When comparing on RIP to another review the features, functions and capabilities of each. If the RIP is for a specific function define the current and future tasks and purchase based on those needs. Some functions of a RIP may never be needed but will need to be paid for.

RIPs Significance in a Digital Print Production Workflow

The RIP is a critical enabler and bottle neck in today's digital workflows. Even files that are not made properly and contain memory intensive tasks and complex functions can be handled easily by some of today's RIPs. But not all RIPs are created equal. Some RIPs can not keep up with the rigors of digital print production workflows.

Digital print production workflows usually entail many jobs, complex jobs especially when it comes to the memory intensive tasks of variable data programs.

RIPs and File Formats

PostScript, PDF and Post RIP'd files are common files handled by today's RIPs.

Additional file types associated with individual picture or object files within a print job can be broken into two

categories bitmap (made of device dependent pixels) and vector (made of device independent mathematical values).

Bitmap Files include: TIFF (popular for high res photos and images), JPEG (popular as a compressed file format for photos and images), PICT (usually the result of copying and pasting between software applications), BMP (a Windows bitmap file) , PNG (successor to GIF as a highly compressed file (often used for the World Wide Web), GIF (compressed image format (limited color palette) used for the web). These are some of the more popular bitmap image files, but not al inclusive.

Vector Files include: EPS is the most popular vector file. It's capable of supporting both vector data and bitmap data. Vector artwork represents the line drawings and illustrations of today's artwork. If it's vector only it can be scaled to any size without loss of image quality. Although the file size may be small, EPS files often are more difficult to process in the RIP due the equations that describe the art.

File Formats and RIP Processing Time

When it comes to printing files in today's' workflows it's not always about the speed of the engine. The RIP has to processor the job data and be able to prepare it quickly so the print engine can start printing the job. It's easy to create files that are very processor intensive. High resolution TIFF images, lots of compressed JPEG's and complex EPS files can really bog down the speed of a RIP. By today's standards RIPs are more powerful than ever to handle the complexities of many jobs. But files that won't print due to complexity or amount to be RIP'd still happen in today's workflows.

Companies that benchmark equipment and identify what to do in software applications, how to create and save files and send them to service providers, often enjoy the benefit of smoother workflows because they till their customers what they want rather than hoping they get what they need.

Print Engines

Print Engines come in all different shapes, sizes and capabilities.

The printing technology is one major difference between print engines. Ink jet technology vs. electrophotographic (xeroxgraphic) technology is a major differentiator. Ink Jet technology uses a liquid ink that is direct to the page using drop on demand and continuous ink jet methods. Drop on demand is slower but high quality, while continuous ink jet is much faster but lower quality. This technology continues to improve in terms of speed, quality and capability. We will primarily be focusing on Electrophotography for the moment.

Electrophotography (Xerography)

Electrophotography (laser printing) uses a charge to tell the colorant where to go. Most often Electrophotography utilizes dry toners but some manufacturers have made choices to suspend the toner in a liquid vehicle. There are many proprietary names for these colorants, but for purposes of education, we will call them toner.

The process consists of 6-7 steps (depending on who's defining it). Here's how Wikipedia describes it: http://en.wikipedia.org/wiki/Xerography

1. Charging An electrostatic charge is uniformly distributed over the surface of the drum by a corona discharge with output limited by a grid. There are several methods for depositing charge on the surface of a drum (or belt) photoreceptor; these include: bias charging rolls, corotron,

scorotron ("screened" corotron), etc..

2. Exposure The document to be copied is illuminated and passed over a lens, so that its image is projected onto the drum at exactly the same speed that the drum turns. In a laser or LED printer, a thin beam of light is modulated by the controller. Where there is text or image on the document, the light will not penetrate to the drum; the opposite is true where there is no image. The light that penetrates releases the charge on the drum, but only where there is no image. The resulting charge that remains on the drum is called the 'latent' image and is a positive of the original document.

3. Development During development, the drum passes over a 'toner fountain' where toner particles are attracted to the electrostatic latent image on the drum surface. Thus, a visible toner image is created. Please note that toner is actually a particle of carbon having no electrostatic property of its own. In order to render a charge it must be mixed with a component known as carrier which is, essentially, iron filings. The mixture of toner and carrier together is called developer. The iron filings have an uneven surface to which the toner can adhere itself. The type of charge created when developer is mixed is known as a triboelectric charge. As is evident in any heavily charged atmosphere, there will be errant particles that will adhere themselves to the drum at undesired locations. This can result in poor copy quality or 'dirty' copies.

4. Transfer Paper is passed between the drum and the transfer corona. Because oppositely charged particles attract, the toner image is transferred from the drum or belt surface to the paper once the transfer corona applies its opposing charge.

5. Peeling Electric charges on the paper are partially neutralized by the detack saw. As a result, the paper is peeled off from the drum or belt surface.

6. Fixing or Fusing The toner image is permanently fixed to the paper using either a heat and pressure mechanism or a radiant fusing technology to melt and bond the toner particles to the medium (usually paper) being printed on.

7. Cleaning The drum is discharged and any remaining toner that did not transfer in Step 6 is removed from the drum surface by a rotating brush or a wiper blade under suction. In most cases, this 'waste' toner is routed into a special toner compartment for later disposal; however, in some systems, it is routed back into the main toner compartment for reuse. This process can possibly lead to a reduced overall toner efficiency through a process known as 'toner polluting' whereby concentration levels of toner/developer having poor electrostatic properties are permitted to build up in the fresh toner compartment, further reducing the overall efficiency of the toner in the system.

Number of Colors

There are one color, two color, four color and more color electrophotographic engines. One color devices are typically black, but some do use a spot color toner as one color. A highlight color technology is usually a two color electrophotographic engine with one color usually being black and another color (blue, red, green, orange and on and on as the other color). Four color electrophotographic engines are also referred to as "Color" printers. They utilize process subtractive color printing allowing

Cyan, Magenta, Yellow and Black to give the illusion of many other colors. Occasionally some manufacturers have added additional colors to the typical four process colors in effort to extend the color gamut or range of colors capable by the device. Pantone has a proprietary process called Hexachrome that utilizes CMYK + Orange and Green. Some ink jets use this process or additional applications of cyan or magenta.

Feeding Technology

Just like offset presses, electrophotographic presses can be web fed or sheetfed. Don't be fooled. Some may look web fed, but they really have a roll feeder that cuts the roll into sheets BEFORE it goes into the printer. Web fed or sheetfed each has its advantages and disadvantages.

One big benefit of roll fed devices is the ability to load a large amount of paper for uninterrupted printing. Another benefit to roll feed is that there is a lower likelihood of a "paper jam". The side guide may need adjusting but that's a lot less effort.

If you've got a sheet fed digital press a benefit is the possibility of printing on finished sheets (posters or book pages) that don't require further cutting or trimming. But the trend in some cases is to print on larger sheets for bleed and multiple up. A downfall of sheetfed presses is the need to constantly feed paper or substrate (at least for the faster printers).

Digital Press Speed

The speed of digital presses continues to go faster and faster. Most often measured in pages per minute (8.5"x11" or A4), sheet fed black and white printers can go up to 180+ to 288+ pages per minute, depending on the original sheet size. Sheetfed color laser printers can print up to 110+ pages per minute (8.5"x11" or A4).

Web fed black and white digital presses can go up to 900+ pages per minute while new advances in web fed digital color presses can go up to 490+ pages per minute.

These speeds are for reference only and a greater list of press speeds can be assembled and compared. The moment that list is compiled the data on it will be out of date. So it's better to understand how people compare the engines and do so yourself.

Resolution

The resolution or addressability of a print engine is measured in DPI. In ink jet printing it refers to the number of ink droplets per inch it is capable of putting on the substrate. In Electrophotography the DPI refers to the maximum number of laser spots or pixels in a linear inch. Sometimes this measurement isn't always the same in both directions. Some electrophotographic print engines have resolutions from 300x300, 600x600, 1200x1200, 2400x2400, 2400x1200, 1200x600. The greater the resolution the greater the ability of the print engine to resolve fine detail.

Sheet Size or Web Width

Sheet fed digital presses have seen some presses print on as large as a 22.5" x 14.5". Depending on the finished size of these larger press sheets allow the ability to put more than one page on a sheet. Further finishing (cutting or folding) may be required but it does save time and cost differently. One of the largest web width used in web fed digital presses is 18 inches.

When comparing one engine to the next you will want to understand the maximum sheet size or web width as well as the minimum of both as well. You'll want to know what constitutes a "click" or service charge for a particular sheet size. Some presses charge a click as the maximum sheet size. If that's the case you may want to

get more information on the sheet. This is worth further investigation.

Substrate Weight, Thickness and Finish

Substrates are often measured by weight measured in pounds or grams. Substrates can also be measured by the caliper or thickness of the sheet. You'll want to know the range of weights and thicknesses the press engine can handle.

The finish of a substrate may be smooth, matte or textured. It is smooth because of the paper making process or by applying a coating to the sheet. Different print engines can handle different finishes. It will be important to know the range of finishes the print engine can handle.

Recommended Media

Does the manufacturer of the engine provide a recommended list of substrates that works well on the machine? What's on the list? If you purchase that type of substrate from the list does it effect "up" time or "down" time of the press. Can the difference in process be demonstrated?

Successful printers look for a manufacturer who does provide a recommended substrate list. The time it takes to do the research on what works can be precious time you need to be up and running. But, don't forget to regularly test the system and see what works in your environment. Just because a substrate works in one environment or engine does not mean it will work for all.

Automated Density/Color Control

Many digital presses today use systems within the engine and the RIP to help control the density (lightness or darkness on a black and white press) and color (resulting effect of multiple color densities can provide different

colors). Calibration is a process of returning the engine to a known state. Some closed loop systems will calibrate the engine then allow you to adjust it once it is in a known calibrated state.

If the engine does not have a closed loop system does it provide you with manual controls to let you control it to get the consistency you need in your workflow.

Substrate Transport

Each engine must move the paper from the stack in the paper drawer, through the engine, possibly twice for duplexing or perfecting (printing on the second side), and potentially through a fuser before delivery of the sheets to a tray or in line finisher.

Substrate Feeding and Delivery

Unlike traditional sheet fed presses that have a lift of paper on the supply side, digital presses have drawers that paper can be fed from. The amount of paper and the sizes of them depend on the number, capacity and capability of the drawers. Some digital presses give you the ability to add paper supply drawers to them to increase your media "pick" points.

Some devices have additional pick points that allow you to insert pages that have already been printed and include them in the finished set. This is often called a post fuser inserter. By adding sheets after the fuser it saves them from the intense heat that can affect the image that's on them. Sometimes sheets in this tray may have been printed using Electrophotography or offset lithography.

The delivery or where the substrate comes out of a digital press varies depending on the capability and options of the machine. Some simply stack the printed pages in a delivery tray, some deliver it to a stacking tray with a

removable cart, some further "finish" the substrate by offset stacking (each set is stacked offset of the next set), stitching (stapling), or binding it in other ways like a perfect bind (glued) or saddle stitched (staple through the center). Each delivery point has capabilities and limits as to how many can be placed there and in what form the finished substrate is in.

Components of a Print Engine

- RIP: Depending on the configuration, the RIP may be an internal part of the print engine or a tethered workstation nearby. Without a RIP, a digital print engine is nothing more than a large paper storage system.

- Substrate Supply: The drawers or trays that hold the substrate before printing.

- Transport Technology: The technology that moves the substrate through the engine and finishers.

- Imaging System: Contains the laser, the belt or drum where the image is formed, the toner bins, the waste toner carrier, and the fuser.

- Delivery: Tray, Stacker or Finisher where the printed substrate is delivered.

Types of Finishing Equipment

Finishing Equipment Typically comes in three forms: Off Line, In Line and Near line. In Line systems are connected to the print engine. Near line systems are physically close by, not connected and sometimes smaller than off line systems. Off line systems are in their own area away from the printing system.

Types of finishing equipment can include: folding, cutting, binding, stitching, punching, drilling, embossing, debossing, scoring, laminating, collating, perforating, inserting and more.

Comparing Print Engines

When comparing print engines, it's best to think of the end use first. What types of products do you plan to produce? How many will you need? How often will you need to produce them? What level of quality is desired? How many Colors? What type of substrate will you use? How will it be finished? How much time do you have? What type of labor do you have? What's the variety of the types of projects you plan to produce? What is the longevity of the output? How will it be used? There are many more planning questions, but some if not all of these should be addressed when considering the differences between print engines. Here, the premise Proper Planning Prevents Poor Performance, is very viable.

Types of Proofing

In a digital production workflow, proofing means many things to many people. When someone wishes to talk about proofing, it's good practice to ask them to define what they mean by proofing so no assumptions need to be made. Often the miscommunication and lack of expectation setting when it comes to printing and proofing can be avoided if people took an active role in defining what they want and what is provided.

A proof often refers to some type of output that represents what a digital file will look like when output. Proofs can be done on screen (soft or monitor based proof), on laser printers, ink jets, dye sublimation systems, thermal wax. Often a proof is produced on a system that IS NOT the final output device. If the proof is produced on the device that will do the final run it is referred to as a press proof. A big benefit to production digital printing is the fact that a proof can be produced on the same device that can do the final press run.

Although some companies may not choose to do this due to the fact they would prefer the print engine to be producing final output and not cycling up and down for proofs.

A proof sets an expectation. Be clear in defining what is and what is not represented by the proof and how it compares to the final output process. Ink jet technology has become the most preferred method of proofing for offset press printing, although Electrophotography is an option along with monitor based proofing to. The proofing process, at minimum, should allow the reviewer to check the file for spelling, position, basic or more critical color, finished size and more.

Some of the requested features of a proofing solution include, but may not necessarily be limited to: Ability to calibrate, ability to simulate other systems, similar colorants or ability to simulate colorants, ability to print on a variety of substrates, ease of use, training to use, ability to upgrade, ability to finish similarly, ability to print on the second side and more.

For a good read on Proofing, check out EFI's The ABC's of Proofing. http://www.edsf.org/img/ABCs_of_Proofing.pdf

Defining "Finishing"

Finishing means many things to many people. It is in your best interest to ask you audience how they define it first so you can baseline your audience's understanding before providing your own.

Finishing, in digital production printing, most often refers to the steps that occur after the image has been placed on the substrate. It's also referred to as the post press phase. Finishing can be manual or automated, done in the same line as the printing system (in line) or by other equipment after taking the printed pieces to it

(off line and near line). It can be as simple as a fold or complex as a hard cover bound book.

Most often finishing is one of the most labor intensive or at minimum substrate intensive tasks in the production of a printed piece. It can be time consuming as well as problem prone if proper planning is not followed. The most important step in finishing is planning. The type of substrate and the finishing procedures need to be planned properly so the number of "set up" sheets are not exceeded and a number of good sheets go to waste.

In variable data printing, finishing is extremely important since each piece is now unique (a personal name, message or image) and if something should go wrong in finishing the recipient will not receive their printed piece.

International Paper goes into more depth on the following finishing functions: Die Cutting, Embossing, Foil Stamping, Folding, Laminating, Numbering, Padding, Perforations, PS Tape, Punching, Scoring and Binding. http://glossary.ippaper.com/default.asp?req=knowledge/category/32&catitemid=32

Further discussion on defining can be found: http://desktoppub.about.com/od/finishing/Finishing_and_Distribution.htm

Types of In Line Finishing

- Stitching: a stitch (staple) in the corner or side
- Saddle Stitching: A stitch in the center of a fold
- Folding: Substrate is folded one or more time in a variety of ways. V fold, C Fold, Z Fold, Gate Fold
- Hole Punching: A punch is driven through the sheet or sheets to prepare it for a mechanical bind (GBC or 3 Ring)
- Stacking: Offset stacking enables off line finish-

ing steps to know where one set ends and another begins

- Perfect Binding: A series of pages are gathered, glued and a cover is placed on the glued block

- Trimming: One sided trimming usually trims off the face or the right side of a booklet. A three sided trim cuts of the head (top), face (right side) and foot (bottom) of a book block giving a very clean edge to all sides.

Finishing Digital Print

The types of finishing for digital printing are not that different from traditional print. Grain direction (the way the paper grain runs), cracking, toner adhesion and scuffing are some of the signs to watch out for when finishing pieces that have been printed electrophotographically. Sometimes a coating (printed layer) or laminate (film layer) is applied to add scuff resistance and wear capability to the finished piece.

Posters, booklets, letters, folders, envelopes, books, brochures, tickets, and many more products can be created using traditional off line and in line finishing.

Learning Plan 4: Variable Print Production Workflows

Overview

Traditional printing has focused on producing the same image over and over until you had enough to meet a need. Thanks to the printing plate it enabled long runs of "static" or same content to be produced. When digital production printing technology was developed (ink jet and toner based), it enabled shorter runs and faster turn-around times. This efficiency in time and Prepress Work-flow Solution made a case for some work to be produced on digital production printing equipment. Yet, digital production printing equipment has another ability tra-ditional printing (offset, flexo, gravure, and screen) does not--the valuable option to change the content while the machine is running.

Production digital printing has the ability to make every page, picture, word, or element different from one to the Variable Data Printing is one of the phrases used to describe this ability. Instead of printing a series of post cards and then putting the recipients' addresses on them, you now have the ability to produce the post card and put the address on it at the same time.

In this section, you will learn about variable data print-ing and how it continues to be a key differentiator in digital production printing environments. By under-standing how the workflows and technologies work you will be more valuable to the organizations you choose to work with

Defining Variable Data

Variable Data means many things to many people. It is in your best interest to ask you audience how they define it first, so you can baseline your audience's understanding before providing your own.

Variable Data can be defined as printing unique (each one is different) documents, letters, cards, books, posters etc. where text and/or images are different on each one. By designing a form, linking it to a database and a digital printing device each "page" can contain personalized information. A simple example would be a mail merge where the address and the salutation match the address and name. An example of a more complex variable data job would be a product catalog where the information in the catalog is specific to the types of products a particu-lar customer is interested in.

The Wikipedia Definition for Variable Data Printing can be found at: http://en.wikipedia.org/wiki/Vari-able_data_printing

For a good read on Variable Data, check out EFI's ABC's of Variable Data Print: http://edsf.org/img/ABC-sofVDP-lores.pdf

Business Opportunities for Variable Data

In a world full of traditional presses that print the same image over and over, variable data printing allows a new type of valuable printing to be created. By changing the text and/or graphics on each page the output can have a higher value placed on it. A mailing can be organized ac-cording to postal codes and then output allowing greater value to be placed on the output because it is already sorted, saving time so the postal system does not have to do the work.

Audience attention is short and traditional marketing efforts to gain attention have been complicated by the sheer number of messages flying around. By designing a unique piece as part of a campaign or program it can help to catch the attention of an audience based on the personal information.

Managing a database is an additional service that can be offered to customers. Linking the database to a variable data job and outputting it can increase the potential services that can be billed to the client.

Variable Data Printed Products

Variable Data Printing can be applied to many different types of printed documents. Changing a name, an image, an address, or a logo can make the piece unique to a particular audience.

A short list, but far from complete, of printed jobs that can have variable data applied to their design include: Letters, Brochures, Catalogs, Transactional Statements, Promotional Transactional Statements, Post Cards, Regionalized/Personalized Marketing Collaterals, Books, Photo Books, Calendars, Greeting Cards and Posters.

A great example of a companies capitalizing on variable data printing is Shutterfly.com, Blurb.com and LuLu.com. Each company has a unique way of approaching the value of variable data print and obtaining payment from producing variable data print.

Production Considerations for Variable Data vs. Static Print

A variable data job, just like static print, starts with a design. It helps greatly when people design jobs that are optimized for digital print. Typical design considerations include: Finished Size, End Use, Substrate, Printing Technology, Fonts, Software for Images and Illustrations, Software for Page Layout, along with specific settings in each software.

10 Issues that Affect Variable Data Workflows

On the following items, identify, assess, and communicate limitations and expectations to all parties involved in the workflow. This information needs to set the expectations of all those involved.

1. Characterization of Print Engine, RIP and Variable Data Application

   Memory or number of field limitation

      Consider image files

      File type

      Color space

      Image manipulation

      Resolution

   How will the RIP interpret the variable information?

   Honor forms data or other proprietary static and variable information integration

   Complexity of data

2. Expectation setting, characterization of the variable data application

   How long does it take to RIP and prepare x number of records based on conditional a, b, c etc?

   What image file formats is most efficient?

   Is this the proper application for this job?

   What "level" of variable data is this?

      Complexity of the job: Simple mail merge or totally custom document

      What new kinds of preflight characteristics

should we be aware of?

Database input

Handling of static elements

3. Job Design

What are my design guidelines?

Have I minimized my variable field sizes?

Have I minimized the number of fields?

Is this job optimized to RIP efficiently?

Preflight

Art and layout

Database

Integration

What is the estimated time for RIPing, printing?

Does this job take other elements of a variable work-flow into account?

File prep

Preflight

Post Press

Shipping

4. Job verification and tracking

Variable output, containing unique data, must be tracked

Job submission

Spooling

RIP

Printing

Finishing

Sorting

Shipping

Damaged or aborted pieces need reprinting

Reprints need to be tracked as well

The nature of the record determines the importance of verification

5. Finishing and reprints

How is this job going to be finished?

Does this job require sorting and mailing?

How are reprints handled in relationship to sorting?

6. Crash recovery

What happens if there is a failure within

Client computer

Integrating application

RIP

Print engine

If there is a failure does the system recover automatically?

Where does it recover from/to?

7. File and spool size issues

For purposes of RIPing, Finishing, and Crash Recovery, it is usually not appropriate (or even possible) to send the job in one large block of records

How is the job segmented into records to optimize time while maintaining an efficient workflow?

What is the size of the job?

How much paper is used per chunk?

Is there enough available to minimize interruption by loading?

What is the average number of records within a block?

I.e. 500-1000

8. Data integrity and logic

Databases need to be scrubbed (preflighted)

Missing fields

Case sensitivity

Field definition/content

Length

Expression/rules definition

Does data need to be casted?

Casting changes data from one format to another

What is the resulting format?

Is the logic correct?

Are all fields present?

9. Managing immense number of objects

Variable data jobs can involve thousands of objects

Managing the pieces can be very challenging

Image data (if any) and text data

Is there an easier way to do the task?

Storage and bandwidth have to be considered

Can the RIP actually keep track of all the objects it needs to?

10. Poor estimating and job planning

Regardless of the amount of prep work, often minor details go overlooked

When this is realized do we learn from the experience?

Variable data jobs can vary is size, scope, and complexity

Use experiences as internal and external learning tools

Will this application handle the level of complexity being planned for this job?

Learning Plan 5: Troubleshooting Print Production Workflows

Overview

In the beginning of this course, you learned about the importance of preparing the workflow for digital production printing. Sometimes, to our dismay, even the best plans can go awry. In this section, you will learn a series of troubleshooting techniques for each part of the workflow. These techniques will help you identify what's potentially wrong and what can be done to fix it.

When the job needs to be produced quickly and the workflow is stopped because something isn't working, it takes time and costs money. Efficient and effective troubleshooting will help you help your organizations keep the workflow running and running profitably-thanks to your efforts!

Trouble Mantra

The easiest way to avoid problems is to practice preventative maintenance. Proactively preparing and testing the environment and systems you use on a regular basis keeps you and your workflow in tip top shape. From environment checks to digital press maintenance and calibration and from file creation to submission, to preparation, to RIPing, to printing and then finishing—by regularly tracking what's working; you can be better prepared for when things don't work.

Before Calling for Help - Determine the Problem

There are many resources for assistance. One of the biggest lessons learned when it comes to downtime and support is an accurate description and determination of the problem. Is the problem with a file and the RIP? Or the print engine? Maybe it's paper stuck in the paper path or the toner is out? Perhaps the finisher is out of staples. Then there's the classic—a loose or unplugged wire. Always try to determine the problem before calling for help.

1. Job Fault

   Requirement of the Job cannot be met

2. Printer Fault

   An issue with the print engine or RIP

3. Client Problems

   Problems with the remote station connecting to the network. Will depend on Mac or Windows.

4. Print Quality Problems

   Issues with the print engine, substrate and requested output

5. Font Problems

   Issues with the absence or presence of specific fonts, or the output font is not correct or does not match expectations

6. Inoperable System Problems

   Issues that stop the engine or Rip from operating

7. Job Flow Problems

   If a job is submitted to the printer, but does not print

8. Job Integrity Problems

If the job does not print as expected

9. Substrate Tray Problems

Substrate in tray and tray settings do not match job parameters

10. Page Description Language (PDL) Problems

Issues identified from the incoming PDL

11. Productivity and Performance Problems

If the job takes longer to process than expected

12. Problems When Saving a Job

If the job will not save to the print server

Maintenance Procedures to Review

A. Environment Check

    I. Temperature, Humidity, Particulates in the air

B. Power Up and Shut Down

C. Consumables

D. Cleaning

E. Software, RIP, Engine and Finishing Specifications

F. Paper Stock Specifications

G. Adjustments

H. Running Diagnostics

I. Recycling

Troubleshooting Areas

A. Source File Creation

    I. File does not print

    II. File does not print as expected

B. File Submission

    I. File does not leave workstation

    II. File is not received via network

C. Production Preparation

    I. Issues in image, illustration or page preparation

D. RIP

    I. File won't RIP

    II. File takes too long to RIP

    III. RIP'd output not expected

E. Print Engine

    I. Image Quality Problems

    II. Clearing Paper Jams

    III. Clearing Finisher Jams

    IV. Paper Curling

    V. Poor/Slow System Performance

F. Finishing

    I. Jams

    II. Improper finishing

Troubleshooting Guidelines

When it comes to troubleshooting the most obvious issue should be checked first. From there, proceed further up and down the workflow to identify the troublesome area. To list all the possible issues here and make each student responsible for knowing them would be counter productive to learning. When issues arise, identify the issues, record the issue, and review documentation (both manufacturer and your own) for possible solutions. When all other possibilities are exhausted contact the manufacturer for help and support

Recommended Resources for Continuous Learning

in Graphic Communications and Beyond

Contact Peter Muir with questions, comments additions or edits to the list.

pmuir@bizucate.com • +1 215 234 4498

Organizations Worth Checking Out

Adobe

- www.adobe.com
- www.adobe.com/education/training/main.html
- Classroom in a Book Series for all Adobe Products

AIGA

- American Institute of Graphic Arts
- www.aiga.org

AIIM:

- Association for Information and Image Management
- www.aiim.org

AMA

- American Marketing Association
- www.marketingpower.com

Apple Color Sync

- www.apple.com/macosx/features/colorsync/

Creativepro.com

- www.creativepro.com

DMI

- Design Management Institute
- www.dmi.org

DMA

- Direct Marketing Association
- www.dma.com

Enfocus

PDF Creation, Preflight, Editing and Management

- www.enfocus.com

GAIN

- Graphic Arts Information Network
- www.gain.org

HP

- www.hp.com
- www.hp.com/sbso/productivity/office/direct_marketing_guide.html

International Paper

www.ippaper.com/pr_pocketpal.html

ICC

- International Color Consortium
- www.color.org

IdeaAlliance

- www.idealliance.org

IPA

- Association of Graphic Solution Providers
- www.ipa.org/

Markzware

- Preflight Software Manufacturer
- www.markzware.com

NAA

- Newspaper Association of America
- www.naa.org

NPES

- Association for Suppliers of Printing, Publishing and Converting Technologies
- www.npes.org

NAPL

- National Association for Printing Leadership
- www.napl.org

PlanetPDF

- PDF Resource Site
- www.planetpdf.com

PODi

- Print On Demand Initiative
- www.podi.org
- www.podi.org/library
- www.podi.org/newsletter

Printing for Less

- PrintingforLess.com

U.S. Postal Service

- http://www.usps.com/directmail/

WhatTheyThink.com

- Top industry resource for many kinds of information
- www.whattheythink.com

Xerox

- www.xerox.com
- Industry Solutions

X-Rite

- www.x-rite.com
- Color Guide and Glossary
- Understanding Color Communications

Specifications and Standards Bodies

ANSI

- American National Standards Institute
- www.ansi.org

CGATS

- Committee for Graphic Arts Specifications
- www.npes.org/standards/cgats.html

CIP4

- Cooperation for the Integration of Processes in Prepress, Press and Post Press
- www.cip4.org

DDAP

- Digital Distribution of Advertising for Publications
- www.ddap.org

DISC

- Digital Image Submission Criteria
- www.disc-info.org

GRACol

- General Requirements for Applications in Offset Lithograph
- www.gracol.org

JDF

- Job Definition Format
- JDF for "smart factory" workflow automation
- www.cip4.org

SWOP

- Specifications for Web Offset Publications
- www.swop.org

SNAP

- Specifications of Non Heat Set Advertising Printing
- www.naa.org/SectionPage.cfm?SID=138

Publications to Keep You Up to Speed

American Printer

- www.americanprinter.com

CRM

- www.destinationcrm.com

Digital Imaging

- www.digitalimagingmag.com

Digital Output

- www.digitaloutput.net

Digital Publishing Solutions

- www.dpsmagazine.com

Graphic Arts Monthly

- www.gammag.com

In Plant Graphics

- www.ipgonline.com

Printing Impressions

- www.piworld.com

Addendum 1

Expanded Variable Data Planning, Design and Production
for Digital Production Printing

NOTE: The learning material in this Supplemental Guide has been selected and written by Dr. John Leininger, professor Clemson University, to help facilitate the learning of digital production printing technology and processes.

Recommended Resources for Completion include: Instructor, mac/pc workstation, Adobe InDesign, FileMakerPro and internet connection (optional, if instructor provides online resources).

The approaches to learning are many and please feel free to use additional methods (presentation, web, video, text, live and recorded) to help deliver the learning that best meets the needs of the audience. If you have comments, edits or additional information you believe will be beneficial to this program please submit your input to Peter Muir, pmuir@bizucate.com, +1 215 234 4498. Thank you!

Changes in the Way We Communicate

The lifeblood of any business is customer awareness. You could have the best product in the world. It might be head-over-heels better than the competition, but if the customer does not know about it they will never purchase it. Today, we have cable/satellite TV, billboards, newspapers (although their numbers are dropping), magazines (the number of specialized magazine titles is growing), the mail, radio (AM, FM, HD, XM/Sirius radio, and Internet radio), smart phones, email, and web pages for companies who are looking to promote their products. If you go back 50 years there was TV, radio, newspapers, magazines, and billboards. What is really significant is the limited number of options back then with TV and radio—there might have been 3 or 4 stations available. Today, there are hundreds. In radio there are stations just for people who love country music, for people who want to listen to talk radio, a station not just for sports but for a particular sport like football, basketball or baseball—and not just during the season.

The first thing to realize is that the number of channels by which a company can choose to advertise has grown exponentially. The promotion channels have also become more defined and specific. This is a good thing if you want to sell to a specific group and a bad thing when the product needs to be marketed to the general public like a brand of soda or a pizza chain. The second significant change is that the Internet has given consumers a cost effective way to interact with the company or with other people with similar interests.

The last component that has forever changed the process of communicating in a marketing world is the vast amount of data that is being collected on every business and individual across the country and around the world. As a company begins to keep track of your purchasing history, they can determine your preferences, and the likelihood that you will make a purchase this month, next month or next year. Every time you fill out a survey or visit a web page, they can collect more information. If you have ever rented a DVD from Netflix, ordered a book from Amazon, or purchased an app from iTunes you will see a suggestion of other purchases that might be of interest to you. These recommendations are all based on the patterns and purchasing behavior of other consumers similar to you. Data is the new tool to target any marketing piece.

Basic Linear Communication Model

The traditional model that most advertising communications follow is a standard model regardless of the channel being used to communicate the message. It starts with the "Sender" (the company looking to promote a product or service) who creates a "Message" (the advertising campaign) that is distributed to the "Receiver" (which could be another business or the end consumer). It is as simple as one person talking to another person.
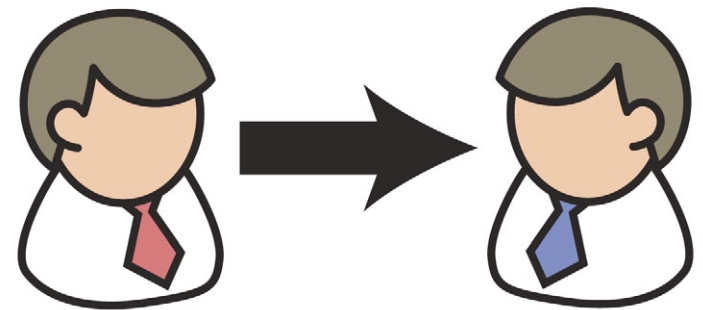
Communication One Way
Traditional marketing communications was one way from sender to receiver

Evolving Communications Model

It is not really new to add the concept of "Feedback" to the Basic Linear Communications Model described above, but it seems to be happening more these days. People have been doing this for years when they have a discussion with the manager in a store or restaurant to complain about service or when they registered a complaint by writing a letter to the company or their management. What is happening today is people are being empowered with access through the Internet. If you had a bad flight on a specific airline, an employee was rude or unwilling to help, or you could not find a product in a store, you can easily complain directly to the company and other people can see these complaints. When it is one customer talking in a letter, it is easy to dismiss the complaint. When it is posted for the world to see, the company has to pay attention. This new communication channel can work both ways, allowing a company to use the Internet to interact with the customer on a personal level.
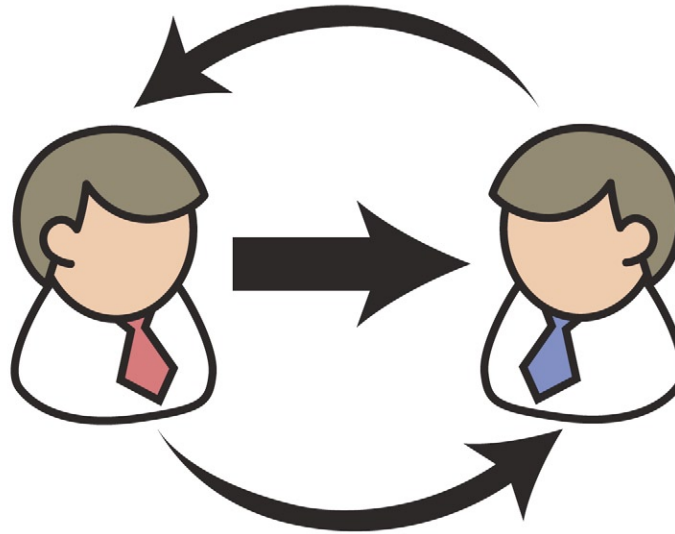
Communications with Feedback
The Internet and social media allows the customer to comment directly to/about the company and the company can now dialog with the customer

Multi-Channel Leads to Printers Embracing "Cross Media"

As discussed earlier, there are many channels that can be used in today's world to connect with the customer. The average consumer receives roughly 3,000 marketing messages in a day, typically pays attention to about 50 of these, and might remember four. (Postal Union, 2007) This means that the design and implementation of any company's marketing campaign is critical to successfully gaining the customer's attention. Another lesson businesses have learned is if you do a little research and target the right people at the right time, you can reach the individuals more likely to purchase the product or service. If you were to send a new car promotion to a person who just purchased a new car, that would make no sense—the odds are low that they would be looking for another car so quickly. But if you could remind the new car owner of an upcoming preventative maintenance visit—that's much more relevant. Companies can track their sales to a specific customer and know what, when, and how much they are likely to purchase based on the past and by matching the pattern to a similar demographic group. It may take some time and incur extra expenses to refine a list, but if it is done right, the increased cost will be offset by the reduced print/postage/distribution/hosting costs and typical larger response percentage.

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Every year the Direct Marketing Association (DMA) studies the response rates for mail and email campaigns. In 2011, they reported the following results in the DMA Statistical Factbook for response rates with a direct mail campaign:

- Mailing to previous customers had an average response rate of 18.4%.

- Mailing to customers that know about the organization/company had an average response rate 2.9%.

- Mailing out a campaign to a totally new customer who has never purchased from the company or received a mailing from them in the past had an average response rate of 2.4%.

For email campaigns the DMA Statistical Factbook stated:

- Overall emails tracked to all industries have a click rate (people opened an email) of 2.85%.

- Note: This is not typically considered a response rate like the above mailing percentages. With emails the percentage of people responding is only a percentage of the click rate and might be as low as .5% of the original list. The data that is gathered for mail and email is reported differently and can sometimes make it difficult to make valid comparisons.

It is important to know before you start what the customer considers a response. It might be a sale or just having them complete an information card and sending it back to the company. As the world economy tightens, the company selling their services/products has become more focused on the "Return-on-Investment" (ROI) from the marketing campaign. Truly, they are focused on the bang-for-the-buck of every marketing channel they have chosen. If past campaigns have resulted in a 3% response rate, then by targeting the right people and personalizing the message the print provider might be able to raise the response rate by a few percentage points. They should then be willing to spend the extra time and money to increase their sales.

Cross media marketing combines multiple channels to reach the customer. One of the reasons one channel may only get a 2% response rate is because the customer may not be paying attention to that channel. Cross media lends itself to a multi-touch campaign because the second reason the customer might have missed the first message is they never looked at it or were too busy to stop and read the message. Several recent studies verify the added punch you can receive when you use multiple channels and add social media. Chick-fil-A achieved a 279% response rate by combining multiple channels and social media. Typically, when you hear a response rate over 100% it means people are reporting a percentage of a percentage. The Chick-fil-A study was done properly and figured out a way to use social media to enhance the initial response rate through networking; it truly was 279% of the original mailing list. You can check out this case study at www.dukky.com. The concept has been replicated many times now and the creative marketing service providers are developing new combinations.

The Conversation—The Art of Listening, Learning and Sharing

The diagram above was created by Brian Solis and illustrates the large channels of distribution available to communicate a message in today's world. The reality here is that a print provider can no longer see their job as just putting ink or toner on paper. There are additional channels in which information can be shared–print is just one.

What is Considered a Response?

A response means different things to different companies. You need to find out what the customer is expecting. Depending upon the response they are looking for, your job could be as simple as printing a static piece and prepping it for the US Postal Service or you might become the company that tracks the results of the campaign.

Possible Responses

- Returning contact information
- Requesting more information
- Making a purchase/increase sales
- Calling a 800 phone number
- Using a coupon
- Referring a friend
- Posting a comment or review
- Attending an event
- And more

- Generate a new lead for a possible sale
- Making an appointment to meet with a company representative
- Making a donation/pledge
- Responding to an email
- Logging on to a website or to a personalized landing page
- Posting a link on their own social media site
- Clicking on an advertisement
- Keeping the product/brand top-of-mind

Looking at the list of possible responses, you have to recognize that there is a big difference between making a purchase and returning contact information. Ultimately, if you want to establish the ROI for a customer, you will need to find the connection to the dollar value. So if you are looking at a response as generating a new lead you need to determine the typical conversion rate from a lead to a sale and then the value of the sale. If they are typically repeat customers, you should also calculate the lifetime value of turning a lead into a customer. This requires communications between a print provider and the customer at a much higher level than when print was static.

Creating a Unique Communication Piece

If you are creating a strategy for the customer to market their product, you need to design a campaign that stands out as unique with a clear and relevant message for the customer. There typically needs to be a clear call to action (calling an 800 number, going to a web page, order by a certain day, a two for one special, a special discount percentage) that is meaningful for the customer. How can you help the company selling their service or product so they standout from the competition? The changing role of the printer provider is to become more like a "Marketing Service Provider" or a "Marketing Solutions Provider" (MSP) where they are helping to plan, implement, track, and measure the results of the campaign. Print providers, both in-house and those with their own business' are technology focused and can bring a unique set of tools and applications together to serve their customer. Some people think the term MSP is getting old or being overused, but for this purpose, it clearly describes the evolving role that successful print providers are embracing to better serve their customers. The value-added services help considerably to generate additional revenue as print volumes go down for commercial businesses and in-house organizations can go beyond justifying their existence to become more involved in adding value to the organization they are employed by.

Course Exercise: Track Your Marketing Messages

For one week, track your own exposure to marketing messages through mail, email, the Internet (surfing the web and your social media time) and simple signage.

1. Collect all your mail for a week and sort it as far as what you opened, what you throw away/recycle and what you might have actually responded to. Consider and discuss why you opened what you opened, what made it different than the others you received?

2. Look at all of your email for a week. How many total emails did you get–across all accounts? How many did you open? How many did you respond to? How many did you never consider opening? Consider and discuss why you clicked on what you opened, what made it different than the others you received?

3. On your way to and from school or work, how many signs, billboards, and banners did you see? (Do not count traffic signs.) If you do this two days in a row, you might see some things you missed the first day. Consider and discuss the shear number and the different messages including the ones you would normally pay attention to and the ones you would dismiss.

4. Pick two hours of Internet time (they do not have to be together) that you would normally spend on the computer and count every ad you come across during each hour. Consider and discuss what you have chosen to ignore. Many of these ads, such as the ones that show up when you start a YouTube video, but for these two hours count every single ad (you will most likely be very surprised).

5. Consider and discuss how many messages, regardless of the channel, were targeted at you personally? What were the messages that appealed to you most and why? Discuss which channel delivered the most messages you wanted to hear about? You may actually find ads that show up on the Internet are related to past searches you made—that would be a personalized ad.

6. Step back from the exercise and consider how the way in which we communicate and the channels used to do so are changing. As you move forward, discuss the knowledge and skills necessary to be more successful as an individual and as an organization in the ever-changing multi-channel world.

Variable Data Can Enhance the Communication

Every company is becoming more accountable for the money they spend in production, purchasing, marketing, sales, and management. A print provider needs to consider this relevant within their own organization, but also realize that the product they deliver to a customer has to have a solid return-on-investment for the company purchasing it. This becomes more relevant when a print provider is trying to offer variable data print as opposed to traditional static print done on a lithographic press. The per sheet printed cost is higher for digital printing and the design cost can be significantly more expensive with variable data (where a static piece might have used 3 photographic images—a variable data piece could use 30 or 100 with the same basic design). In the past, the customer knew they had to advertise, but since many printers could do the job, they could usually price shop and find a low bidder. Convincing these companies to spend twice as much on their marketing material is an uphill battle for the print provider. It is not just showing them that the printed material is helping their sales, the print provider has to show that the use of variable data offers a better return on their marketing investment than the traditional static print had in the past. When you are printing a static piece it will always be more economical to print smaller numbers on a digital press. As the quantity grows, there is a point where conventional printing becomes more cost effective (see the diagram above). When you find a unique use of variable data that has an impact on the final sales, there is a justification to run the job on a digital press regardless of the run length.
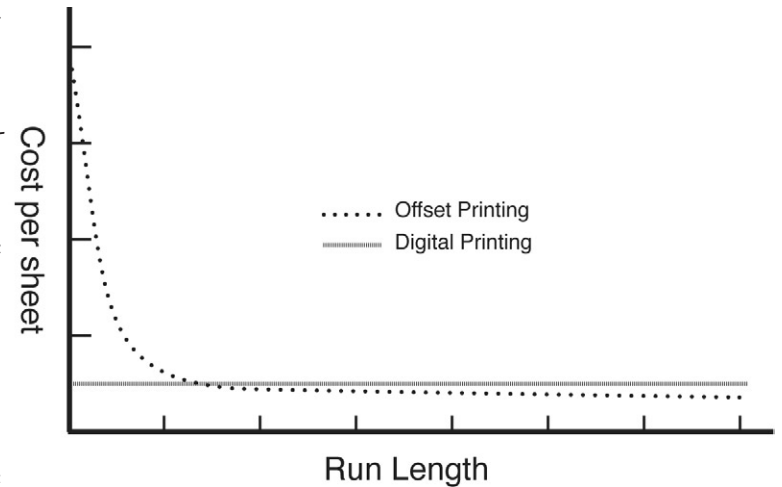
Offset Lithography vs. Digital Print

Offset printing has high make-ready costs (plates/labor) and is more expensive for short runs, increase the number printed and the cost to make the process ready is absorbed more into each impression. Digital printing does not have costlier make-ready and has a lower cost to produce just one or a few, but as the number printed increases there is no reduction in cost per unit.

Whether it is a long or short press run on a digital press, it is always important to clean out the bad addresses and customers who you know are unlikely to purchase the product or service. Consider this scenario for a printer offering variable data to a customer. Which is better for the customer and which is better for the printer?

- A print provider deigned, prepared and mailed 10,000 pieces at a cost of $.60/piece (for this example this will include mailing costs) for the cost of $6,000. If the mailing generates a 2% response in sales (that would be 200 sales) of the total mailing, the result would be a marketing cost per sale of $30.

- If another print provider spent more money purchasing a more directed mailing list and a little more time refining the list, then they personalized the design to target these people, and only mailed 6,000 pieces of mail at a cost of $1.00/piece (once again this is including the mailing costs) the total cost is $6,000. If a variable data piece generates a 6% response in sales (360 sales) of the total mailing, the result would be a marketing cost per sale of $17.

Which is better for the print provider?

The print provider is charging the same amount to the customer, but there are less consumable materials used in the production process in the second option and the print provider has a higher value-added percentage in the sale. They are also giving the customer a more valuable campaign.

Which is better for the customer?

It is easy to see that the customer will have sold more product with a significant increase in sales (360 from 200), but is even more significant for the customer is that when a person purchases once from them, they are likely to purchase more. When print providers and their customers recognize the lifetime value of a customer, the benefit can be substantial. This is a concept a marketing service provider (MSP) understands and a print service provider (PSP) often overlooks.

So the Return-On-Investment (ROI) for the customer is really the return-on-the-print-investment. Did the print provider create something that helped the bottom line for the customer? It is virtually impossible for the print provider to prove the ROI without the support of the customer. How does the print provider know what the response rate was if the customer had not been tracking it in the past? Does the customer even track it today? This is another opportunity for the print provider to offer an additional value-added service of tracking the responses. There are many different strategies for setting up a tracking model to measure the ROI of the piece. This will be covered later.

Mailing, Marketing and Database Management as a Necessary Core Competency for Success

If you talk about many successful business it has a set of core competencies that make the company unique and competitive in a specific marketplace. If a company starts adding things that do not fit this model, many customers will not accept it (ie. McDonald's started to serve pizza in the mid-nineties and it failed miserably). But if the company evolves over a period of time to logically and naturally add competencies that support the original competencies, they will stick. Many print providers today have added digital printing to their workflow over a period of time (10 to 15 years) and others are just now adding it to their production workflow. Now that digital printing has matured, the companies just adding it to their workflow now may feel it is not what they have been doing for the last 50 years; it is a change from their core competencies. The companies that have been evolving see it as a natural change and they are just constantly adding tools to their toolbox to satisfy the needs of the customer.

Variable data has been around for years; it really is not a new concept. What has brought variable data into a new realm for the print provider is digital printing. Traditional offset lithographic presses, flexographic presses and gravure printing produce static images, and at best there was some basic use of variable data when names and addresses were digitally printed, using inkjet, onto the envelope or catalog cover in the bindery. Digital printing opened the door for the print provider to personalize the message based on information in a database. The text can be personalized with the customer's name, address related information, but if the company keeps track of other data, the entire text message can be personalized throughout the piece. Images (illustrations and photographic images) can be selected based on the known characteristics of the customer. The more you know, the more personalized it can become. The process will be covered in greater detail later, but the point is that print providers needed to add several new skill sets to their toolbox. Designing for variable data is a bit different than designing for a static printed piece. Managing databases and all of the data assets that need to be plugged in to the customer's piece may not be completely new to a print provider, but it most likely is at a level far above anything they had done before. A new process that ties the database and variable content together in the printed piece is writing rules to trigger the variable data. Additionally, the print provider needs to learn more about mailing since they now have to process the data, and more about marketing since they were bringing a new concept to the customer who did not know how to capitalize on this advantage of variable data.

Once the print provider adds variable data to their print workflow, database management, designing for variable distribution, mail prep and data asset management become new core competencies and a new opportunity develops from these new skill sets. That new opportunity is cross media. Variable data is just as relevant when using the Internet, mobile devices, and email as it is in print. So, for the printers that are evolving, variable data is the next step. The term many people have used for this transition is that the printer is changing from a "Print Service Provider" (PSP) to a "Marketing Service Provider" (MSP). Print providers have always been helping companies market their products or services. The evolution to digital and variable data, just spread out the playing field and gave the print provider an opportunity to expand their services to existing customers and to attract new clients with their new skill

sets. Many print providers have actually changed the name of their company in the last 5 to 10 years to remove the perceived limitation the customer had of their capabilities. Even in-plant print shops have branded their department to show their customers they offer more than just print.

Designing for Variable Data

When you start to design for variable data, you need to start with several things in mind that a designer typically does not think about. What data and digital assets (line art, charts, photos) are available? If you want to personalize the piece, you need to develop a strategy to bring in relevant text and graphic images throughout the piece. There are print providers that use someone's name at the beginning of the piece and several times throughout the piece and consider this personalization. This might have impressed people several years ago, but it is really does not enhance the piece in a significant way with today's consumer. There are ways to personalize the data, making it more relevant, if all you have is a name or address that will be discussed later in database management. There are times when the variable nature of the piece should be evident to the reader and other times the fact that the piece is variable is actually subtle, the images change based on relevance and the individual viewer would not know the difference unless they compared it side by side to another sample.

Real world example of a straightforward variable data piece:

A clothing catalog company tracked the purchases that their customers made and recognizes that one individual only purchases male casual clothing and hiking apparel. They create a personalized catalog that focuses on these products and might have one or two pages at the end of the catalog with some additional specials. There is no hiding the fact that this catalog was tailored to them.

Real world example of a subtle variable data piece:

A furniture company kept track of the furniture that a couple looked at during a visit to their showroom. They marked down the last three units they sat in before leaving. A personalized letter thanking them for their visit and a 4-color brochure with six of their hottest selling furniture choices is enclosed and to the couples delight three of the six images were the pieces they were focused on during their recent visit. They realize they must have really good taste if 3 of the 6 hottest selling pieces were the ones they picked.

Personalizing the piece also depends on the goals and objectives of the variable data piece. Below is a list of various goals that companies have when creating a marketing piece for variable data. The goals change depending upon the type of communication the company is trying to initiate. It also might change when you combine it with cross media. The other issue that is dictated by the goals and objectives is how you plan to track and measure the end results.

Types of Communication Strategies Enhanced by Variable Data

Informational—the purpose of the communication is to inform–to provide knowledge of specific events or situations that has been gathered or received by communication. The communication could let the recipient know about a sale, an event, or to show new features of a product. Variable data can make the information more tailored to a particular recipient who may have bought a specific product, be interested in a specific event or even considering joining a YMCA. The information can be made more noticeable, relevant and valued by the recipient when using variable data to plan, design and produce personalized communications.

Educational—the purpose of this communication is to educate the recipient and help them grow their knowledge and possibility their skill set too. White papers, guides, text books and more are examples of educational content. Variable data can be used to make the learning experience more available by allowing for customized course pack text books, multi channel educational platforms that include print and electronic communications and more.

Transactional—communications become transactional when sending some type of bill or invoice, or when a business transaction is taking place. A cell phone bill listing your calls, the invoice for a recent order, or a boarding pass for an airline flight are each examples of a transactional document. When advertising and promotional messages are combined with transactional information the type of communication can become a transactional promotional or transpromo communications. Transpromo is a form of variable data printing that will continue to grow as long as people choose to receive printed statements. Advertising on the same page with the transactional information can be created and used to sell again or even sell something new never heard of or bought before. Most people decide to open their bills or print their boarding passes. Some examples of transactional and transpromo communication include: airport parking discounts on a boarding pass, car rental discounts on a credit card bill showing car rentals during the past month, or coupons for cell phone accessories on a phone bill.

Whether the goal is to inform, educate or cross sell, the types of communications we're familiar to seeing and the ones we didn't even know about, can be designed to grab our attention and influence us to act in a certain behavior thanks to the capabilities of variable data printing and the opportunity presented by higher value design.

Goals and Objectives for Creating a Variable Data Piece:

The goals or objectives of a variable data piece, whether printed or sent electronically through email, over the Internet, or through mobile devices, drives the design and determines the way the results will be tracked and measured. If the goals or objectives are not clearly defined, it is difficult to determine the final outcome. Understanding why a company is trying to communicate with their customer is critical in determining the data you need to work with, the images you need to use in the piece, and the overall design of the variable data piece. This is not an exhaustive list of various goals and objectives, but it is a list to start the thought process between the print service provider and the customer.

- Build relationships
- Increase response rates/inquiries about a product or complete product line
- Showcase capabilities
- Keep the company "top of mind" for future consideration
- Survey customer to better understand their need for future services
- Get a meeting with the customer (high-level prospect)
- Create brand recognition
- Reduce overall cost of customer acquisition
- Create a more eye-pleasing reproduction for small branch companies that cannot each cover the cost of a designer
- Reduce document obsolescence and waste through printing only what you need when you need it rather than printing shells and versioning

- Reduced postal costs
- Improve customer's perception of the brand in the marketplace
- Reduce volume of printed pages by focusing the catalog/brochure to the audience instead of a large one-catalog/brochure-fits-all
- Reduce turnaround time
- Respond quickly to customers
- Determine which marketing channels deliver the best results
- Give store locations direct access to marketing collateral material
- Increase sales penetration within current customer companies
- Generate awareness and interest within a select group of prospective companies
- Highlight a toolbox of economical marketing services with trackable results and proven return on investment

Designing for a Variable Data Piece as Opposed to a Static Piece

There are certain design considerations worth learning more about when designing and printing with a particular printing process. Designing for digital toner-based printing is not the focus of this addendum but if you would like to learn more about how to design and benchmark digital printing you can use the following resources to get you started:

Web Resources for Designing for Digital

American Printer Article
http://americanprinter.com/digital-presses/printing_designing_digital_print/

Digital Arts Article
http://www.digitalartsonline.co.uk/features/?featureid=3228555

CreativePro.com Article
http://www.creativepro.com/article/printing-tips-designing-for-digital-presses

EFI ABCs of Digital Printing PDF (in Resources folder on Course Files CD)
http://bit.ly/ABCofDigitalPrint

Xerox iGen4 Job Preparation Guide for Designers PDF (in Resources folder on Course Files CD)
http://bit.ly/iGenGuideForDesigners

Transcontinental 10 Tips for Digital Print Design PDF (in Resources folder on Course Files CD)
http://bit.ly/TransconDesignforDigital

The Art and Science of Digital Printing: The Parson's Guide to Getting it Right
https://buy.xerox.com/product.aspx?pid=62

When you are designing for a variable data piece, you need to consider other factors like how will different photographic images fit in a specific window or how the text will fit into a text block of a certain length. If the text from the database make the text block too long, or if an image is cutoff due to the size of a placeholder because the design and content wasn't analyzed then the benefit of the personalized piece can be lost quickly. Some variable data applications will adjust the type size to make it fit, but then the text from one part of the design might not match the text (size and line spacing) from another section of the piece. The variable data application can also resize various photos to fill boxes as needed, but if you have not planned correctly, there may be additional white space where you did not plan for it. Failing to plan a variable data job will increase your chances of having more problems than benefits. Proactive planning, having an awareness of technology capabilities, correct data base contents and a good call to action can go a long way to helping you design for more actionable variable data print.

A Few Best Practices for Setting up and Designing a Variable Data Project

1. Size all of your photographs and line art in Photoshop to fill the area you are planning to personalize. If you are planning a square picture frame, make them all square and sized to 100%. If you are planning an irregular text runaround, plan the photo image areas to be similar so the text wrap ends close to the same place.

2. Keep the text line length between 7 to 10 words and turn off hyphenation to avoid improper hyphenation and poor line ending with large white spaces at the end of the line. Avoid justifying your type.

3. Create a record with the longest text string in every field and a second record with the shortest string in each field. Check the paragraph in the proofing mode to see how the textbox flows and fits with the two extremes. Make sure there is enough space if there are long fields and it does not create a void if there are short fields.

   Example: (1st sample has long field lengths, 2nd sample has shortest field lengths)

Record #	First Name	Last Name	Favorite Fruit	City/State
1	Bartholomew	Roethlisberger	Pomegranate	Mooselookmeguntic, ME
2	Ty	Lee	Fig	Ada, OK

4. Certain programs have trouble with transparency in the layout; always check a proof if it will perform correctly (it is best to check on the actual print engine, what processes through one RIP may not work on another RIP). It may look OK on the computer screen, but show up as distorted text when placing the text over a photo or vignette. It might help to work with "Overprint Preview" turned on (but sometimes it is still too subtle to see on the screen).

5. Keep the message simple; do not try to explain everything. If you are trying to point them to an 800 number, a general URL (GURL), a personalized URL (PURL), a QR code, or certain offer–all of these at once can be confusing. Make sure you are not competing for their attention.

6. What do you do if a data field is empty? You need to have a plan if a data field is empty in the database that you are linking to the variable data piece. It might be as simple as a default text phrase or a default image built into a rule statement, or you can replace blank fields in the database with an appropriate text string or photo link.

7. The quality of the data is critical to the success of any variable data piece. It is not the only factor and may not be the most critical, but if the address information is not right, the piece will not have a chance to make the sale. If the data in the fields is not correct, you could alienate the recipient instead of drawing them closer to a response. Invest in good data and do a diligent job on cleaning up the data you have.

8. Do not ignore the postal requirements (limitations) as you start to plan out the design. It is critical that the address block, barcode, postage indicia, and return address are properly formatted and positioned, or the piece might be unmailable or lose any chance of a discount from the USPS for prepped business mail.

9. Think about how you are going to track the responses. You can embed a record number someplace on the printed piece, place a barcode on the piece, code it by color, etc. It needs to be part of the design process.

Potential Options for Tracking Responses

- Have the customer turn in the coupon and keep a barcode on the coupon to track responses (each coupon can be a different offer)

- Personalized universal resource locator (PURL—but this also adds the task of tracking the responses to the PURLs for determining the value of a second level response) or General universal resource locator (GURL)

- Simple web address with counters that redirect the person automatically to the standard web page

- Different PO Box response address on the return envelope for each group

- Different 800 numbered call-in extensions for each group

- Different colored response cards (or just a different color headline)

- Different percentage discount on the coupon for different groups

- Place a unique 2D barcode on the coupon or response card

- Give the customer a validation code for the order that identifies their group or make it unique to them

- Assign different customer service representatives (CSRs) to each of the groups you plan to track

10. Proof the various options to make sure the images properly insert in the variable text and image blocks. It is important to remember you need to proof the alternatives, not all of the combinations (this is covered later).

11. When you receive a database file and other data assets from the customer, never open the original file. Always make a copy and work off the copy so there is a file to go back to if there is ever a discrepancy in the quality of the data (ie. if the names and addresses are mixed up, did it come that way or did the specialist do it).

Setting Up a Control and Experimental Group

A case study is the descriptive overview of a past Variable Data Print (VDP) campaign for a customer where the results are outlined based on the customer's expectations and desired results. Why would someone promote a case study? Several industry trade associations that are focusing on VDP have yearly competitions for the best case study. In addition, equipment and software vendors make tools available for the print provider to be successful by promoting other successful projects. Case studies can be very helpful in cultivating customers and ideas (especially if the case study is in a related market to the customer's need), but there are three major flaws with promoting VDP with case studies (see below). Keep in mind that each case study is a sample of a company's best use of VDP. No one would promote a case study with little or no growth in customer value.

3 Flaws of the Case Study Methodology

First Flaw

The first flaw in the case study process is that typically, the case study is only done once the print provider finds the job to be successful and believes that promoting this success will help bring them more attention as a successful VDP provider. If a hardware or software vendor promotes a case study, it is pretty safe to assume that they have gone out to find the most successful examples. This in no way diminishes the success and value of these printed promotional mailings or PURL campaigns, but it can give unreasonable expectations for the printer or customer. It is like a weight loss program or a get rich-quick in real-estate infomercial on TV, where the fine print says, "your results may vary."

Do you think any company would show a case study where the production costs doubled and the measured responses had no significant change? Do you think the companies who are promoting a really powerful and successful case study ever had a job that failed? If you talk to enough print providers that have gotten into the VDP market, you will quickly learn that virtually everyone has suffered VDP failures, as well as successes.

Second Flaw

A second flaw in the case study process is the failure to accurately include all of the costs of the process. Adding VDP to a company's sales tools is not the same as adding more production capabilities with the purchase of a new six-color 40" press or a new platesetter. In these cases, you are simply working to bring in more market share and capture more work you are used to producing. The printing industry is evolving and digital printing is becoming a staple in all sizes and types of printing establishments and departments. With the purchase of these digital devices (with a higher per sheet production cost than offset), the print provider is looking for options to promote this technology to their customers. Shorter runs become more cost effective on digital devices (due to virtually "zero" makeready time). With VDP, the run length is essentially a run of "one" and if done right, it can increase the value. It is not the goal here to establish the potential of VDP, instead the intent of this document is to create the tools to justify the benefits; therefore, people need to accept the reality that personalized mail or web pages do get more attention from the reader. It is important to be sure to include all of the expenses into the analysis for a case study.

Is the developmental overhead cost being absorbed? This includes the cost of the additional selling and training necessary for the customer, and sometimes the designer of the piece, to produce by VDP; the additional cost of reworking pieces caught in the binder and finishing process; the cost of tracking the results; the cost of postage penalties (this inevitably happens to virtually every print provider at some point in the process, no matter how well they plan); etc. Some print provider lump these into general overhead costs, but clearly some of them can be targeted directly at the process and sometimes at a specific customer or job. Since most people sell/provide VDP on a value-based proposition, and not on an hourly rate, they are not as tight with the numbers in the reporting process. Any study, whether it is a case study or controlled study, should strive to include all relevant costs to determine the true value.

Third Flaw

The third flaw found in case studies is a failure to track the results in comparison to a standard. Since most case studies are done after the process is complete and success is evident, the sample work is only being viewed on its own success and does not in any way establish that the use of VDP had any real impact, or if it was just a better promotion, or happened to be mailed at the right time. In judging a recent group of case studies for a trade association, only 1 of the 28 actually established a valid comparison group by sending out a small random percentage of the mailing as a static piece. The results can change on any given mailing or PURL, based on the economy, the time of the month (or year if it might have a relationship to a yearly event like Christmas, the elections, the 4th of July, the end of the school year, etc.).

In most cases additional planning and thought goes into a VDP promotion; it is possible that the design is just better and has an improved outcome. Additionally, you cannot see a low percentage of return and figure that it was a failure. At a conference session on the value of VDP, a participant commented that in the past, they would deliver a job and when they were done with it, they have to hope the response was large enough that the customer would come back. They said they were worried about a mailing they had just completed and only had a 2.75% response rate. This might only have been possible with VDP. It is possible that there would only be a 1% response rate without VDP, but no one will ever know since they did not track the results of anything but the VDP option.

Course Exercise: Reviewing Case Studies

There are 2 case studies on the Xerox School2Career CD (in the Resources Folder you will find a Sample Case Studies to Review Folder and links to two other case studies available from the Adobe website are listed below. Read and review the case studies and pull out the following information from the cases studies as you read them and be prepared to discuss them.

1. What was the defined goal of the campaign?

2. Did they state a specific number or percentage they were trying to achieve?

3. Did they have a control group?

4. How did they identify the target group to which they were going to market?

5. Did they report the results in a meaningful way with specific percentages or numbers?

Xerox Case Studies to Review

Miami University Case Study— Miami University and b+p+t communication solutions, graduating with Honors Program (Xerox 1:1 Lab)

Salem College— 1:1 cross-media campaign boosts college's enrollment 11% and helps printer expand business (Xerox 1:1 Lab)

Not all case studies address the issues in a clear and informative way. Look for additional case studies online to see some comparison. A few suggestions would be looking at Adobe's case study list: (http://www.adobe.com/products/vdp/casestudies/) and specifically look at the "Copy General" case study and "Reynolds DeWalt" case study.

Read each case study addressing the same five questions. Writing a case study on a successful campaign can be a tremendous tool to help the customer understand what can be done, but it needs to be informative and offer the proper facts to support the success statement. This has to do with the defined goals, the structure of the study, and the way the results were measured and presented.

Creating Your Own Case Studies

Working with a Controlled Study

If every print provider established a control group for every VDP promotion, they would be able to make a clear statement to the customer on the actual value for the VDP option. Additionally, they would be able to show the customer the financial impact resulting from the increased cost of the VDP promotional or PURL. One thing that goes hand-in-hand with this advantage is that it will also clearly show the customer when there is no benefit, so print providers will need to address the different elements of the VDP alternative to maximize the results. This may seem obvious, but why wouldn't a print provider want to know if what they were doing was effective? The more one can fine-tune the process, the more marketable and intuitive the process will become. Another reality is, as more print providers get involved with the VDP process, the competition will increase in the successful design of VDP promotions. Also, as customers become more sensitive to receiving VDP promotional in the mail or through PURLs, print providers will need to become more sophisticated to continue to stimulate the customer.

How to Create a Controlled Study

In order to generate a controlled study there are three critical points that need to be addressed. These are sampling of control and experimental groups (randomly assigning individual records to the control group and experimental group(s) which is critical to make this statistically sound), tracking the results, and establishing the value of a response (this also means you need to actually establish what a is response).

Control and Experimental Groupings

The control group needs to be set up as a static process. Whenever someone's name would be used it would need to leave out "Dear Customer," or changed it to something appropriate for the topic (ex. "Dear Student," for a mailing to

college students). If there is variable content based on the individual's data record, a default insert would need to be created for each data location. All images would need to default to a set picture. The idea is to simulate what would happen if the piece was mailed as a static piece printed multiple up on a large offset press, and then cut apart to mail.

The experimental group can be as simple as adding the VDP fields and photograph selections based on the customer data file, or you could be tracking the results to find out whether the color of the paper made a difference. Other factors might include using a self mailer vs. an envelope, or if employing a contest or give-away really makes a difference.

Print providers are focusing on improving their production process with various quality control measuring systems to track bottlenecks and problem areas. The concept there is that you cannot determine what you need to fix before you determine how to measure it and analyze the results. There is no difference here, although many print providers may have thought the customer had been doing this all along. It has become clear that the average customer does not know the value of a response or how much their last promotion actually helped the bottom line. This is an opportunity for the print provider to expand their operations and take a more marketing-centered role in the success of their customer. If you move deeper into VDP you will need to present your company more as a marketing service and add the tools to measure the results for your customer. Printing is a manufacturing industry that offers a product to serve the needs of the customer; this is simply allowing the process to evolve to better serve the customer.

Setting up a 555 Experimental Design

If you want to establish a defined procedure for measuring the results of variable data, you need to create at least two groups; a control group that emulates a static piece and an experimental group that changes the strategy from past procedures. Adding a third option might be more telling as to what is really making the difference. In the real world, most businesses are betting that the new variable-data piece is going to do better than the static piece, so they do not want to send 50% of the mailing static and 50% variable. By assigning a random number of 1 to 100 to each record, you then write a rule that selects only 5% of the group (random numbers 1 through 5) to get the static mailing, another 5% (random numbers 6 through 10) for a second group that receives the mailing with the text personalized but the photos are static and a third 5% (random numbers 11 through 15) that is full variable with photos and text being variable. A good rule of thumb is to use 5% or 200 pieces, whichever is higher, for the control group. If the mailing was 10,000 pieces then 5% (500) would be an acceptable count, but if the mailing was 600 pieces 5% would only be 30 pieces and the number is too small for a statistically valid analysis. In that case, you should use 200. The best way to get 200 random records out of 600 is to assign random numbers from 1 to 3 and send a static piece to any record that has a 1 in the random number field.

The rule statement establishes a control group with the first statement by looking for a random number equal to or less than 5 and placing a default text and photo in the piece. If the random number is above 5, the rest of the rules are applied. For the second group (random numbers 6–10) you change only the text and not the photographic images and for the third group (random numbers 11–15), everything becomes variable. This way if you track all three groups, you can determine if the variable data truly gave a lift to the response rate and whether the variable text or

full variable (text and graphics) made a bigger increase. You could also change the 2nd and 3rd group to a different offer or a design change to see if it might be making a difference.

So how are you going to track the responses for each of the three groups? This typically depends on the mechanism that the customer will use to respond to the offer and what exactly is considered a response. Each campaign is different and sometimes it takes a bit of creative thinking to determine a practical way to track responses without sensitizing the audience. Some offers try to encourage response by offering a prize (ex. an iPad2) and after some analysis, the customer finds out the people only responded for the prize and cared little about the product or service they were selling. The other issue that is critical for successful tracking is that the print provider needs to work hand-in-hand with the customer to accurately gather the result. Why would they want to do that? It is just as important for the print buyer or marketing VP to be able to show success to their management. The next time they go for an increase in budget or even a raise, solid documentable results can help lock in an increase. Success in any marketing campaign comes from a partnership between the print provider and customer.

Proofing Takes on a Different Meaning with Variable Data

When you are working with variable data, proofing the piece is just as critical as it is when you are working with a static printed piece. The problem is there are many more versions to view and ensure things do not go wrong. So the need for preflighting (examining the details of the file for format, font, resolution, color, missing links and improper file formats) has not changed, and everyone should understand the process and tools to validate the file to print. You may have more photographs and artwork to check, but you need to be just as diligent as you would for a single page printed in any marketing piece.

When you start working with variable data, checking a proof is a more complicated problem. Let's say you had a simple variable data mailing piece to send out to 25,000 alumni of a college, which included the person's name, address, and three additional fields of personal information and two picture boxes and a logo that needs to show up on certain alumni and not on others.

1. The year they graduated—from 2000 to 2011;

2. What type of degree they received—BA, BS, MA, MS, EdD, PhD;

3. Whether they were in the honors college or not

4. A picture window that changed with 6 possible options

5. A picture window with 10 possible options

6. A logo that changed based on whether they had donated to the university in the past year.

There were 6 places where variable data/images are being inserted above and there would be over 17,000 possible variations not counting the name and address. If you counted the name and address you have truly made each one unique and you would have to proof all 25,000 to proof every combination and make sure everything is working.

This would be cost prohibitive. So what do you do if you want to proof the options? It goes back to best practices, but what you need to do is create a set of records in the database to proof that have every variable used at least once. For the sample above, you would then only need to proof 12 options (number of years in the graduation field). Since the largest number of variables in one field of location was 12 and you can see all of the different variable options on these twelve sheets. So you have to proof the alternatives, not all of the combinations. Once you know the information is being presented correctly for each variable, they will work together. See the sample test database for this example below.

Possible Variable Combinations = 17,280 (but it only takes 12 records to proof)

NameFirst	NameLast	Year of Graduation	Degree	Honors	Photo Block #1	Photo Block #2	Gave Last Year
Duncan	MacLeod	2000	BA	Yes	Image1.eps	Photo1.eps	Yes
Will	Power	2001	BS	No	Image2.eps	Photo2.eps	No
Penny	Lane	2002	MA	Yes	Image3.eps	Photo3.eps	Yes
Georg	von Trapp	2003	MS	No	Image4.eps	Photo4.eps	No
Ben	Franklin	2004	EdD	Yes	Image5.eps	Photo5.eps	Yes
John	Leininger	2005	PhD	No	Image6.eps	Photo6.eps	No
Crystal	Ball	2006	BA	Yes	Image1.eps	Photo7.eps	Yes
Dick	Van Dyke	2007	BS	No	Image2.eps	Photo8.eps	No
Al	Dente	2008	MA	Yes	Image3.eps	Photo9.eps	Yes
Bud	Light	2009	MS	No	Image4.eps	Photo10.eps	No
Matt	Tress	2010	EdD	Yes	Image5.eps	Photo1.eps	Yes
Bill	Board	2011	PhD	No	Image6.eps	Photo2.eps	No
Ella	Vader	blank	blank	blank	blank	blank	blank

Number of options per field   12 X 6 X 2 X 6 X 10 X 2 = 17,280 Combinations

The task of proofing these 12 sheets is critical. You need to look for extra spaces (or missing spaces between static and variable text), proper sizing on the images in picture boxes or artwork being inserted, text wraps, hyphenation issues, text overflowing text boxes or to another page, proper font usage, font color, and special characters. Proofing the address for proper formatting for the USPS is also critical and will be discussed later. Another task that can be

added to check the database test file is to intentionally leave a field blank to see what happens if a field is blank by accident. There needs to be a default value that can fill the text string or a default photo image to fill in the picture box if the field turns up empty, has a typo, or will not match a link in the rule statement. The last issue you need to be looking for is an added field or a dropped field. If the file had been converted into a comma separated variable file (CSV) before it was delivered and there was a comma in the data field itself (say in an address field like 307 Monaco Circle, Clemson, SC 29631), it may have added a field and pushed the other data back so the wrong thing will be printing in the next inserted text box. A field might be dropped because of a blank field or an error in a logic rule to trigger the variable information. The key to minimizing added and dropped fields is to make sure the database is properly formatted and you have cleansed the data completely.

Press Concerns

When you are working with variable data, the interaction between the variable data software and press is critical and dependent on the complexity of the job. The interaction can be as simple as a postcard printed 4 up on a sheet with a different name and address, one picture, and one piece of line art changing to a 32 page booklet on retirement investments with over 100 pieces of variable information changing the text flow, pie charts, and graphs on virtually every page throughout the booklet. The first would not challenge most digital press RIPs and the print speed would not be effected. The second would be challenging and require the software, RIP, and press be optimized for the most efficient production possible. File size becomes critical and creating the appropriate PDF or learning to work with a specific file format like Xerox's Variable-data Intelligent PostScript Printware (VIPP) or PODi's Personal Page Markup Language (PPML) will be critical to the production workflow. This is not a topic an operator has a big part in deciding what to use; it has to do with the initial setup of the equipment and the interface between the software and hardware.

It is critical that the print provider recognize not just the current needs of their customers and the equipment, but focuses on what the customer will need in the future. Print providers have approached the purchase of equipment and RIPs with a limited view and found themselves purchasing a more powerful RIP 18 months later to handle the increased volume and complexity of the variable data work. One thing everyone can count on with variable data is that what is hot this year will be routine next year, and there will be more complicated and complex variations next year. The bar is constantly being raised; it used to be as simple as using someone's name in the piece to be amazing and catch someone's attention. Today that is routine and might even be considered commodity variable data (almost anyone can do that now with software as basic as Microsoft Word).

Post-Press Concerns

Just as when you are designing a static production piece, the layout/imposition of the piece is typically driven by the post press capabilities of the production facility. When considering the finishing aspects, it has a lot to do with whether the finishing will be taking place in-line (as part of the press throughput) or off-line. Digital printing does not have to wait for the ink to dry like offset lithography, so it is not uncommon for presses to feed directly into a folder or a collator and then on to a stitcher or perfect binding finishing station. This allows a printer to produce a

finished bound book at the end of the press. This is very advantageous for the printer that does large volumes of the same type of work. It is very time efficient and very cost efficient since the entire process becomes automated and there is no waiting time between production steps. For printers that are dealing with a variety of output options, sometimes postcards, sometimes booklets, or brochures, or newsletters, or promotional mailing, or transactional document, etc. it would be cost prohibitive to have all of the different finishing units hooked into one digital press. Every time you were using one finishing unit, the others would be idle and would not generate any revenue. Working off-line may be more cost effective if there is a variety of work running through the press and postpress areas of the company.

Some organizations that produce both static and variable data pieces will have two separate finishing areas. In the static area it's about getting all the work done as quickly and efficiently as possible. In the variable data finishing area it's about each piece having the potential to bring in a specific response. Machines are purposely run slower, care in handling, feeding and monitoring is taken. And should something happen to a particular piece–say a letter is crushed in the folder–if it can't be smoothed out and fixed by hand then a new piece will be created. Why the extra care? That piece could be a $10,000 alumni donation from a former alum that had a good year.

There are several other issues that have some unique concerns when working with digital printing or variable data. Below are some sample concerns that show up in the cutting, folding, collating and binding stages of production.

Cutting

One concern with digital presses that needs to be addressed is the accuracy of the image placement on the sheet and it is further complicated when there is printing on the front and the back of the sheet. When a sheet of paper is run through an offset press the sheet is pulled or pushed into a precise position just before it enters the printing section of a press. The registration from sheet to sheet and from the front to the back of the sheet is measured in thousandths of an inch when you print by offset lithography. On a digital press, there is a bit more variation. Some of the top of the line digital presses do better than the low-end devices, but there is typically more variation from sheet to sheet, and from the front to the back. You might find variations of 1⁄16" and when you flip the sheet and print on the back, it will double. This has an impact on the design of the piece and how close you want to trim to the image. It might not be a good idea to set up a sheet of business cards with a butt cut (no trim between cards) when the variation could create different size margins on either side of the trimmed card. You should run a test on the digital device with vertical and horizontal lines running close to the end of the sheet printed on both sides to see if they line up front to back, and then trim the lines off the sheet to see the amount of variance you can expect with that equipment.

Another issue that is unique to cutting the printed sheet down when working with variable data is that you typically need to keep the sheets in order. Let's use 3.5" X 5" postcard mailing of 10,000 for an example. If the job was being printed on an 11" X 17" press sheet and you could get 9 up on the sheet, you would be able to run just 1,112 sheets to produce the 10,000 postcards, but they would all have to be cut apart and piled up in to one continuous stack of 10,000 to be placed in mail trays to receive the USPS postal discounts. The technique for this is a different

layout than any offset lithographic printer would have used in the past. The layout is called "Cut & Stack," and most variable data software programs can impose the job to make this a simple process. Without thinking, people would layout the sheet as shown in the diagram, the first sheet in the pile prints left to right and down like we all read (it is postcard #1 to #9 on the first sheet), but when you cut the pile of 1,112 sheets apart, you would have to collate everything. With Cut & Stack as shown on the right, the top sheet prints postcard #1 in the top corner, and post-card #1,113 right next to it. Postcard #2 would be located on the second sheet top left corner (right behind postcard #1 when they are stacked). If the postcards are cut into 9 separate piles and stacked in order, the postcards would run from 1 to 10,000 in order. If the run length required multiple stacks for cutting, the software accommodates that as well allowing you to specify the number of sheets per stack for cutting.

Cut and Stack Layout (unique imposition order)

Stack and Cut
Imposition layout for a postcard mailing.

Folding

Folding issues with digital printing does not really change due to variable data. Toner tends to crack on the fold. It can be minimized if it is scored first, but it can still be a problem since the toner is sitting on top of the sheet and does not get absorbed into the sheet like offset ink does. Additionally, toner may scratch or scuff while passing through the folder, so it is critical the pressure settings be as accurate as possible on the folder rollers.

One concern that must be addressed when folding a variable data piece is that the ruined sheets should be reprinted and reinserted into the workflow. Depending on the postal discounts and USPS requirements, failure to replace the jammed torn printed sheets could trigger a rejection when the USPS tests the preparation of the mail using MER-LIN (more on this later in the mail section of this module). Additionally, if they are not replaced, you will not be completing the customer's order. In the past the printer would just deliver extras to the mail house addressing the mailing, but now that the printer is producing the mail piece in the USPS presorted order, they need to make sure they deliver the mail in to the USPS in the proper order and in the proper containers.

Inserting with Multiple Signatures

In the bindery process, there may be multiple signatures involved in the production piece. It may not be totally variable, but it is much more common that there are multiple versions of each signature (ie. for a customer that only purchases male clothes and another customer only purchases female clothes). If you collected the same product catalog from everyone in your neighborhood, you would find out that there are multiple versions. The operator must constantly maintain the proper setup or the signatures could be swapped and the catalog would fail. The first signature might be personalized and printed with a digital press and the additional signatures are selected based on past purchases.

When inserting digital signatures, you have the same concern mentioned under folding. Toner based sheets have a tendency to scuff or scratch as the signatures run through the inserter.

Distribution

When print providers were delivering static print to a mail house to address and mail the piece, they were never concerned with the distribution process. Some print providers specialize in co-mingling the mail to achieve a higher level of postal discounts (if you have over 150 pieces of mail in a processing category, you can get a discount from the USPS for that tray of mail). Co-mingling is mixing two or more mailings with the same parameters (ie. 4" X 6" postcards) that group the mail into trays that allow for higher discounts—more on this in the mail section. The Ballantine Corporation outlines the process on their web page and has a 5 minute video that explains the process (http://www.ballantine.com/2008/07/01/commingling-direct-mail/).

Other ways printers can save money for the customer if the volume is high enough is to ship the mail to a local post office. The USPS offers certain discounts if you drop the mail off at the local post office (they do not have to ship it in their trucks). If you are trying to send "Customized MarketMail®" (CMM—look up what the USPS says about

CMM at https://www.usps.com/business/customized-market-mail.htm) with the USPS and you have less than 150 pieces in a tray, you might find yourself sending a "Priority Mail" box to the local post office to accept the mail and process it locally. CMM cannot run through the high speed mail processing equipment and has to be hand sorted. Learning the options is part of servicing the customer.

Samples of Customized MarketMail®

Another option some printers are dealing with in today's Internet world is to distribute the file to a location closer to the delivery point and have them print it. This is being done all around the country and around the world. It might be done by a print provider with multiple locations, or by companies who have agreed to partner together for mutual benefit. Clearly the best example of this is the "International Printer's Network" (IPN). A company applies to become a member of this group and work nationally and internationally to connect with other print providers around the world. The local print provider knows the nuances of the culture and community and targets the printed piece to fit the audience. What might be acceptable in one culture, (the US) might be totally offensive in another culture (say China). The IPN started in 1993 and now has over 200 members worldwide. Visit their web page (http://www.ipnglobal.com) to get a better handle on the value of "distribute and print" as opposed to "print and distribute." This is probably the most sophisticated use of "distribute and print," but there are other print providers on a smaller scale using this concept to achieve a competitive edge.

Ultimately it all comes down to cost and delivery schedule. Why would someone mail a letter 1st Class with the USPS instead of using FedEx—it is much cheaper. But FedEx will guarantee delivery by tomorrow morning. Is it worth the money? It costs money to co-mingle mail, to work with "Customized Market Mail," or to set up a "distribute and print" partnership. Knowing the options and understanding the cost issues is what gives the print provider the opportunity to determine the best option for the customer and offer them a value-added service for which they are willing to pay.

How Does a Customer Typically Pay for Print?

Traditionally, the print provider contracts with a customer, produces the job, and is billed/charged back after delivery. This has become a problem for many print providers when customers are slow to pay their bills. Some print providers offer a discount if the customer pays quickly. A common practice is "2/10 net 30"—this means the buyer is expected to pay within 30 days of the invoice date, but they can receive a 2% discount if they pay within 10 days of the invoice date. An evolutionary change taking place, because of print being sold over the Internet, is to charge a credit card as the job is shipped. This really helps a commercial printer with their cash flow, and the commercial printer no longer has to hound the customer after 30, 60 or 90 days to pay their bill.

Another common practice is for in-plant printers to simply work with an internal charge back system. These print centers work on a charge back system that redistributes the money internally inside a company. Generally, they will offer the service at a much more competitive price than a commercial printer, but they may have limited equipment. It is just as important that an in-plant print shop tracks and assigns a value to all they do. If the work was produced off-site there would be a street value to the job and that should be known, tracked and used as a comparison point when deciding to keep work in or send it out.

There may also be contracts or agreements where a commercial printer is essentially on retainer for a customer and automatically prints and charges back to a master account for the services. These are typically set up based on long-term contracts where the commercial printer is giving the customer a significant discount for getting all of their business.

As the economy has become more uncertain, print providers are finding out how awkward the first option is, especially when a printer has delivered the product and then the company declares bankruptcy or goes out of business. Every year, commercial printers have to write off bad accounts. The term associated with the lag time between delivery and payment is referred to as "Receivables." It is money that is on the books, but not in hand. Most people that start a business never think much about this and sometimes fail to manage it properly. It can hurt the printer's credit rating if they cannot pay their suppliers on time because they have not received payment from their customer.

Data is Critical for Success

The importance of good data has already been covered, but how do you know if you have good data? How do you improve on the data? Where can you find more appropriate data if you find you do not have enough or it is not ac-

curate? Before getting into the details, data needs to be broken down into two general categories—delivery information (a mailing address, an email address, a social media link), and targeted personal information. The targeted personal information is what gives the variable data a unique marketing advantage, but if the delivery information is wrong, there is no marketing information delivered. So in this section we will break down the discussion and activities into these two categories. One is no more important than the other. They both have to work, and therefore, you need to understand how to properly deal with both elements of data.

One other factor related to the data is specifically the data assets, meaning the photographic and line-art images. When we referred to targeted personal information, the initial thought is dealing with the database, but there will be fields in the database to link the photographic images and line-art to the appropriate image boxes in the variable data piece. The images are digital files or digital data; again the quality of the data here is just as critical as the text in the database fields. If the photographic image or logo is sized wrong or has the wrong resolution, the delivery information and targeted personal information will be worthless. For the most part, the issues with data assets are no different than a static print job, so although it is just as important as the delivery information and targeted personal information, it will not be covered here in any detail.

Where Does Data Come From?

Data can come from several places depending upon the project, and some may be better than others. Typically, the best source of data is the historical customer data of the company that the variable data piece is being designed for. If the company has kept good detailed records, you will be able to predict which customers are the most likely to purchase something this week, this month, or this year. The problem most print providers face is that most companies do not keep accurate data and may not be tracking past activities, or maybe they just cannot effectively access the information. Other data can be purchased from list companies or private organizations that are selling their list to generate revenue. If you know significant demographic characteristics of the customer, you can actually request a list of similar individuals. Say you know that the average customer is between 25 and 35, male, owns their own home, makes between $45,000 and $75,000 a year, is single and purchased a new car within the last year. You can request a list of a 1,000, 10,000, 100,000 or more names and addresses that fit that same set of characteristics. If you know that people with those attributes typically purchase the product you are promoting, people on the purchased list should be more likely to purchase the product than a general public promotion mailing. So the more you know about the customer, the more targeted your message can be, and a reasonable expectation that the response rate will be higher.

Data can also be collected on the web from a site where the viewer is signing up for more information. This data can be good or bad depending upon why they signed up in the first place. If someone is signing up because they think they might be able to win an iPad or they were going to get a free gift in exchange for registering you might not be getting qualified responses, or they may not have input all of their data correctly.

No matter how you collect it, data should always be checked and verified to focus on the right message for the right people delivered in the requested channel.

When you have an existing list of customers and want to try to personalize the information further, you can send the data into a list company and ask them to append it with additional data. These list companies keep track of about 500 different attributes on consumers (do you own or rent, have a pet, is there someone in the house active in the military or a veteran, the number of children in the house, ages of everyone in the household, etc.). They gather the information from census data, public records, birth announcements, obituaries, etc. There are dozens of companies that offer this service, and although the print providers could use any one, the companies that show up at printing trade events are listed below along with links to their resource web pages. These list companies have white papers that talk about the benefits of profiling the customer and targeting the marketing piece. When you are asking them to append the original record with more detail, the cost depends on the number of records and the number of attributes you are asking for detail. As your count goes up there is a volume discount, as the number of attributes goes up the price goes up.

List Companies

USADATA—http://www.usadata.com/resource-center.html

AccuData—http://www.accudata.com/Resources.6.lasso

Melissa Data—http://www.melissadata.com/resources/index.htm

InfoUSA—http://www.bizmoknows.com/

DataFlux—http://www.dataflux.com/Resources/DataFlux-Resources.aspx

Earlier there was a statistic from the Direct Marketing Association that the average response rate for customers where a purchase/donation relationship already exists is an 18.4% average response rate, and for a cold call the average response rate is 2.4%. If a company spends the money to profile their customer base and find more people with the same characteristics, the response might not be 18.4%, but it should help to pull in more than 2.4% from people you have never contacted before. Spending time and money on enhancing the data can pay off with reduced print and postage costs (you can eliminate people you know are most likely not going to make a purchase) and should be increasing response percentage. Enhancing the data is an investment in future success, but just like a complicated financial investment, you need to research it and make sure there will be a pay off. Will the data create a higher response rate, or will it help the bottom line in sales? A lot of people miss the point on what variable data is all about; it is not the variable data that sells more product, it is the offer or the value of the product that causes the sale. Variable data is the tool that keeps the reader reading, that draws in the attention of the reader. So the key is to determine what will have that impact; the best way is through experience and sampling. Test the ideas out on small groups. It might even be practical to test 3, 4 or 5 different formats to see which one works best. The use of variable data does not guarantee results, it really only opens the door to get the consumer more involved.

It is not uncommon for a customer to say they do not have accurate data or relevant data to target variable data text and images. If it is not possible to purchase this data from a list company, it may be possible to help the customer

begin to collect the data from their current customers. This might be as simple as training the service representatives to be more observant, or to create a checklist when interacting with the customer, or it might be part of a campaign to reach out to the customers and ask them for more information. This can be done by offering a "carrot" if they respond with some feedback. Some carrots you might have seen in mailings or email offers is a chance for a free iPad or a trip, or a chance at a new car in the mall. One print provider created a marketing plan for their customers with the goal in mind of generating interest in the service they could offer and to learn more about their customer. They offered a free "Cruise for 2" to Mexico and had a 47% response rate from their customers and held an open house to pick the winner. They also gathered a lot of relevant information on 340 customers for future marketing efforts and sold several campaigns to their customers to do the same for them. The solutions are not always in a book; sometimes it just takes a creative team to bring value to the data process.

Starting with the Data Available

When you are creating a variable data piece, you have to find out what data is available. If you start with the design and then plan to go find the data you may have gaps or find out that you do not have certain information about the customer that you would have thought was available. Let's use a mailing to alumni of a college or university for an example. What does the college know about them? Keep in mind they may know a lot about them that is private and cannot or should not be used. What is practical also depends on what the objective is for the marketing piece. If it is to solicit donations to the scholarship fund or say the class project, they could tap into the alumni's history of giving to the university. Have they been contributing continuously since they graduated, or have they only given every few years but not every year, or have they never made a donation to the university. Once you have identified the information, you have to determine what else you can link to it. Again with the alumni example, if you knew they graduated in 2005, think about what types of photographic images you can link to that year. Maybe a big football game they won that year or a concert held on campus or big snow storm that closed the school. One of the most powerful uses of variable data is to take existing data you know about someone and link it to something else that becomes relevant. If you know their birthday you can determine their Zodiac sign, their birthstone, the day of the week they were born, or just how old they are as of the day the piece was mailed. You start with data, but finish with a creative use and relevant links from the existing data.

Managing the Data for the Customer

There are many issues that should be addressed here, but the first is managing how you receive the data from the customer. Are they going to transfer the database electronically, send you a CD, or send it to you on paper? The file format can become an issue. One of the most common formats to send a database file to someone is as a comma separated variable (CSV) file format, but there are dozens of formats that might be used. Make sure you can open the file format they want to send to you, or a better practice is to give them a list of specific file format options they can use. One of the best practices when dealing with data received from a customer is to make a permanent copy of the original file before you ever open the file. Never open the original file. If there is an error in the file when you produce the final job, this might be your only proof that it came to you with the error and you did not corrupt

their data. One example was when the customer cleaned up the database before sending it to the print provider and dropped one person's first name out and it created a chain reaction and moved everyone's first name to the record before their name. On the final piece they were delivering to the customer, every piece had the wrong first name printed on the address. It was not the print provider's fault and they had proof because they had the original file saved to compare it to.

Use a Database Application (not Excel)

It is starting to drop off, but most print providers that started working with variable data in the past 10 years were using Microsoft Excel. This may be economical, but Excel is not a database, it is a spreadsheet. There are many horror stories from printers using Excel where they deleted a critical piece of information or dropped a field and it corrupted the entire database, not just one person's record. There are many applications that can be used for database management. For beginners a better option than Excel includes Microsoft Access, FileMaker Pro, and FoxPro. These are true database applications and their function protects and saves the data with every keystroke. They also allow you to do many things to enhance the data with complex calculations and rules that cannot be done in a spreadsheet. These applications also allow the user to merge multiple databases together to create more relevance in the personalization (this will be covered later). When the variable data jobs grow in size and complexity, print providers may need to start to work with a more robust database applications like MySQL or Oracle, which will be able to process the files faster. These applications potentially have a lot more capabilities then the desktop applications, but they take a bit more expertise to use in the application. As you upgrade to a new database option, it is relatively easy to export the data from the old format to the new options.

Setting the Stage for Managing Data

Recognizing the opportunity–Print providers can offer a service to their customers by contracting the task of managing the database for the customer. It has been mentioned earlier that many customers do not have strong databases; typically there is no one in their company that has the ability to manage the databases. This is an opportunity for the print provider to provide another value-added service to their offerings.

Recognizing the goal and expectations of the customer–In order to properly manage the customer's database, you need to understand what they intend to do with the data, not just on a marketing campaign you might be working on with them, but how they might be able to make it a more valuable resource for their company. The print provider could study the database, to determine for the customer's sales force, who are the customers most likely to purchase something this month or next month, or maybe the print provider could link right into their "Management Information System" (MIS) so they can automatically generate invoices and inventory. If a company decides to manage the database for their customers, they are partnering even deeper with the customer and becoming a critical asset to their success.

Recognizing the tasks you need to embrace–What does your company need to learn about databases to make the process a valuable service a customer would pay for? There are trade associations that focus on database management,

user groups for most of the major database applications, and online tutorials that can help develop the skills needed to offer this value-added service through college classes and at local community colleges.

You are becoming a partner in their success–When the customer shares their database with the print provider, they are opening the scared book and letting the print provider look at the heart of their business. You are becoming a partner in their success, and you may have to sign confidentiality agreements or take extra steps to protect their data.

Recognizing the importance of tracking and measurement to establish success and validity in your service to the customer– Success is not a vague interpretation of the results; the print provider needs to be able to show the customer the value of a well-managed database. The print provider needs to continually measure the results and test the options to show the customer the value of the service.

What is it worth to a printer–If you look at the pie chart of a sample direct mail budget, the print production is typically about 19% of the overall cost of the job. If the print provider adds the art and preparation of the job since it is variable data, and managing the mailing list, (including processing the data and prepping the actual mail piece for delivery to the USPS) the print provider now is responsible for 49% of the budget for the direct mail piece. All of these elements can be a natural extension of the print provider's core competencies.

Direct Mail Sample Budget
Creative = 11.88%
Art and Preparation = 10.3%
Print Production = 19.0%
Mailing List = 13.04%
Computer Processing = 1.73%
Mailing Preparation = 4.94%
Misc. = 14.31%
     (Ad Agency, Consultant, Contingency)
Postage = 25.55%
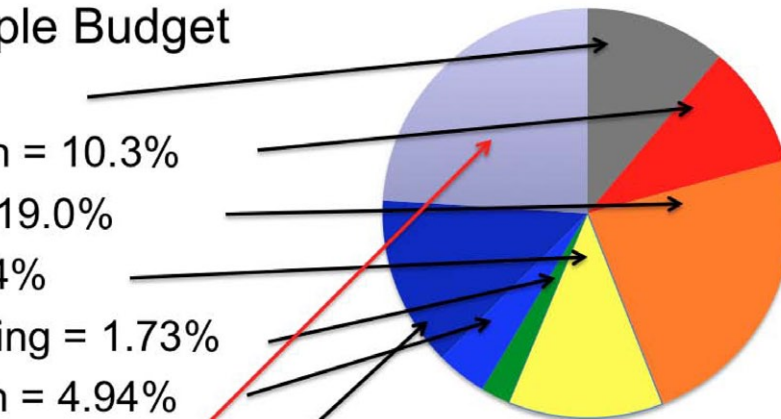
DMA 2011 Statistical Fact Book
The Definitive Source for Direct Marketing Benchmarks
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Cleansing the Delivery Data

Just like most things in a print providers company, the cleansing of data received from customers can be outsourced, but again, if the service can be brought in-house, the print provider has more control of the production time, quality of the service and typically generates more revenue for their commercial establishments. In-plant print shops can better integrate with their IT departments by holding workshops that stress the importance of quality data.

When it comes to delivery data what does the print provider need to fix? If it is an email list or social media links, the use of list companies becomes critical. Email addresses and social media links can change quickly and may go out of date, or there might be one character wrong in the string and seldom has a logical solution to correct the error. List companies have reference lists tied to existing databases. You can upload a database and append the individual's email or social media links. There are privacy rules that need to be followed and the list companies usually will monitor this for you, which means you may have an address, but be unable to bring in their email address.

Addressing the Can-Spam Law

If a printer gets involved with working on email and social media campaigns they need to become familiar with the Can-Spam Law (http://business.ftc.gov/documents/bus61-can-spam-act-compliance-guide-business). Depending on the type of business (ie. financial, healthcare) you might need to be familiar with other laws. The best resource to review is *Managing Your Business Database* by Theresa Kushner and Maria Villar. The penalties are significant, and the print provider cannot assume the customer has addressed all the issues in the Can-Spam Law.

When dealing with postal addresses, you need to look at what type of things might need to be fixed and then figure out the best way to fix the problems. Sometimes it may be something that can be done in the database program, other times you may need a special application to address the problem. Typical address issues are listed below:

What Do You Need to Correct in an Address?

- Missing or wrong street, directional, prefix, suffix
- Missing gender indicator
- Country, city, state, or ZIP or postal code missing or in conflict
- Missing secondary address information
- Misspelled words like "street" or "avenue" ("steet" or "aveneu")
- Improper state abbreviation
- Trailing space after a name or address
- Inconsistent filling of fields
- Company legal name and reference name

Increasing Accuracy and Decreasing Mailing Costs

To receive USPS postage discount you need to address the following issues (all of these can be done with one of the commercial mail prep software applications available on the market)

CASS™–Coding Accuracy Support System is a system set up by the USPS to standardize the address format. It has standard abbreviations for street suffix and directional (ex. North, South, East, West). CASS™ is a critical process that sets up the process for all further analysis to validate all of the addresses.

DPV®–Delivery Point Validation is a process the USPS now requires after a list has been run through CASS™ to assure that it is a valid address where someone lives. CASS™ just makes sure that the address is properly formatted, but it could be a vacant lot where a house might be built (when a neighborhood is built, all of the lots are identified by the USPS) or there might just be a gap in the numbering on a block for some reason. CASS™ cannot detect this, but DPV® checks to make sure there are no issues with a specific address.

LACSLink®–There have been many rural addresses that were not standardized and this created a problem with services like 911 emergency services. LACSLink® is a system to assign properly formatted addresses so that each address can be identified with a GPS system.

NCOALink®–National Change of Address is a process that is managed by the USPS to check addresses for people moving who left a forwarding address. The purpose is to reduce the cost of delivering the mail to the wrong address. NCOALink® is updated weekly and will catch any recent changes in the address and correct the file for the customer. The USPS requires that any mailing being submitted for a postal discount be run through the NCOALink® registry within the past 95 days.

Additional services from the USPS that you can take advantage of to improve the accuracy of the address list are:

AEC I–Address Element Correction I is a process where undeliverable mail (addresses that would not CASS or DPV or showed up as a unknown address in NCOA) can be uploaded to the USPS and it is run through a process to look for errors in the data that might be stopping the address from being standardized. It could be something as simple as a misspelling in the street name or even in the street suffix (ie. when street is spelled steet, it will fail to standardize in CASS, will not DPV and is not an NCOA issue so the address is deemed undeliverable).

AEC II–Address Element Correction II is a process where the undeliverable address is actually sent to the local post office for the local USPS personnel to review in order to recognize what has changed at a specific address on their route. This process has a high correction rate, but can take weeks to be returned.

ACS–Address Correction Service is a post mailing service that sends a correction notice to the mailer for address changes that need to be made to the mail list. There are several ways to set up and use this option from the USPS.

The USPS is willing to offer postage discounts to anyone that prepares the mail in such a way that it saves the post office time and money. This is called "work sharing" and the amount of work you save the USPS totally dictates the amount of discount you receive on each mail piece. It would be great if you could tour a USPS Mail Processing Center to see exactly what happens, but simply understanding what has to happen to a letter once you drop it in a mail box if you are sending it to a different state can shed some light on the value of "Work Sharing." The typical letter that is dropped in the blue mailbox outside of the post office will have to go through approximately five different sorting machines before it eventually makes it into the USPS Postal Carrier's bag for delivery to the address on the envelope. When preparing the mail for delivery using one of the commercially available postal software applications, the print provider can reduce the number trips a mail piece passes through the sorting machine to four, three, two, or even reduce it down to one pass. If there are 150 pieces of mail going to specific local post office for delivery, they can be placed in a mail tray and the post office where the mail is dropped off simply ships the tray right to that post office. The local post office process it once and it goes into the postal carrier's delivery truck in the order he or she drives around the neighborhood. All the USPS has to do is ship it and process it once.

Where a first class letter dropped in the blue box outside the USPS will cost $.45 to process, if you can deliver a tray of mail with 150 pieces to a local post office with a unique 5 digit zip code that has been CASS certified, run through DPV, and been run through NCOA, and it will only cost $.35 for First Class, $.185 for Standard Mail, and $.111 for Non-Profit Standard Mail. The price change from $.45 is what the print provider can save the customer and they can charge for the service of preparing the mail for "Work Sharing" discounts.

There are numerous mail prep software applications out on the market; below is a list with links to their web pages. Some work as a desktop application on your computer and connect to the vendor's web site when there is special processing needed, other options are working through Cloud computing so it requires an Internet connection to use. All of these applications are basically sophisticated database applications with look up tables to calculate the postal information needed to properly prepare the mail referencing the USPS CASS™, DPV®, LACSLink®, NCOALink®, AEC I and AEC II, and ACS databases. All of these mail prep software applications have the ability to prepare the documentation you need to submit to the USPS in hardcopy or for electronic file submission. Some of the software allows the print provider to determine when it is more cost effective to ship or deliver a portion of the mail to a local post office rather than to their local standard mail processing facility. Since it is already a database, you can do most anything in this database to clean up the data or to enhance the data with complex calculations. There are some print providers that use the mail prep software as their database program to manage customer files.

Mail Prep Software Application Providers

- AccuZip: http://www.accuzip.com/

- AES systems Postal Software: http://www.aescass.com/

- BCC Mail Manager: http://www.bccsoftware.com/

- Lorton Data Software: http://www.lortondata.com/

- Melissa Data MAILERS+4: http://www.melissadata.com/

- Satori Software: http://www.satorisoftware.com/

- SmartSoft Accumail: http://www.smartsoftusa.com/

The software to process a mail list for discounted postage for the USPS is more expensive so there is a demonstration video on the CD. View the "Video Demonstration of Running a List through Mail Prep Software."

Validating the Mail Prep

MERLIN™ Program (an acronym for the **M**ail **E**valuation **R**eadability **L**ookup **IN**strument) is a tool that is used by the USPS to assist with the acceptance of discount rate mailings. When a print provider brings the mail to the post office, they will run a sample of the mailing through MERLIN™ and depending upon what is wrong and to what extent, the mailing might be rejected. What MERLIN™ is checking for is to find out if the mail can be processed on the USPS high speed processing machines (can it read the type and barcode) and if the list actually ran through a mail prep program that used CASS, DPV and NCOA. MERLIN™ tests the density of the type and barcode on the mail piece, compares the address to the barcoded information to make sure they match, checks for skew (angling of the text or barcode), the length height, weight, thickness, and the proper routing information for postal delivery for the discounts being requested. There are many horror stories from print providers and mail houses on mailings that had a problem and the cost for extra postage was in the thousands of dollars. It would cost too much to reprint, so the print provider has to pay the penalty (and they cannot charge the customer if it was their fault). Once a print provider crosses paths with huge postal error, they learn to double check and triple check their work or some stop mailing all together (they decide the increased revenue is not worth the risk).

Cleansing the Personal Information in the Database

What types of things need to be fixed in a database when you are focused on the personal information rather than the delivery information? This is the process of checking for format errors and gaps in the data to make sure that when you personalize the mail or email marketing piece, you are not turning the customer off with bad data. Below is a list of things that are addressed in a database to make sure the data produces the right result.

Formatting options or problems–depending upon how the data in the database was input or if it was transferred from one program to another, you may have extra spaces before or after a word, there might be unwanted characters added, (ie. %20 or ~ or #) or characters might have been dropped (ie. résumé becomes resume). Other formatting concerns might be consistency in phone number format (ie. they might have been written 864-656-3447 or (864) 656-3447 or 864.656.3447 or 8646563447). There may be some significant name formatting issues (ex. von Trapp or McCain or Van Dyke) that need to be addressed. Sometimes there might be a space between names and other times not (ex. Jean Anne or Jeananne). Another significant place you may see problems is in an email address. Most of the time emails are not case sensitive, but that does not stop a company wanting their company name to show up in all caps (ex. john@IBM.com or john@BUY.com). Some of these formatting issues can be addressed in a general database program. Some are best done with specialized lookup tables of known preferences. It can be done as a service of the Internet or software can be purchased to improve the list internally.

Genderizing–If the gender of the person is not known, genderizing is the process of looking at the person's first name and comparing it to a lookup table to decide if they are male or female. If the name is ambiguous like Pat, Fran or Lee because of a shortened name, or because it could be either way the program identifies it as questionable. When you combine it with new variances on older names, names from different countries, it gets even more awkward. Regardless the origin, there will be names that neither you or the computer programs will be able to determine as male or female, so when preparing the variable document there needs to be an alternative when using a salutation or selecting an image based on gender.

Creating logic rules for triggering variable text or images–Logic rules can be written in the database or in the variable data application. Logic rules are the triggers for insertion of variable text or a variable image in the variable piece. It might be a simple choice in the database field (ie. member vs. non-member) but it could trigger multiple text insertions and dramatically change the appearance of the piece. More will be covered under writing rules and scripts.

Deduping–Looking for multiple records for the same person can accumulate in any database due to small differences in the name or address information. Cleaning up the database and standardizing elements allow for a better comparison to search for duplicate records. When multiple versions of a variable piece are produced, it wastes both print and postage. When an individual receives multiple pieces in the mail, it defeats the mission of variable data to make the reader believe that the piece was created uniquely for them. Deduping can be done in the database or mail prep programs; there are multiple tools that help to look for duplicates across multiple addresses (ie. work and home) depending upon the audience that is being targeted.

List suppression–There can be various reasons for suppressing names from a list. It might be at the recipient's request (most people are familiar with the "Do Not Call" list), or research has shown that a certain group of people will not purchase a product, or people that live in a certain area of the city/state/country that will not permit the offer. It might be practical to remove people from the mailing list that are moving a lot when their address might not be updated regularly like people that are in college, or in the military, The purpose of suppressing names is to reduce the cost for print and postage to people that are not appropriate recipients of the offer.

Email appending–Most list companies now offer the option of checking and appending email lists to existing databases. It is not uncommon for people to have multiple email addresses and people change their email address when they change jobs, change Internet service providers, or they might just drop an old email address because they are receiving too much spam. The use of cross media has increased the need to develop a complete database that includes not just a correct address but also the properly formatted address and email information.

Enhancing the Database

There are tools the database manager can use to personalize the data better. You might start with something like someone's birthday (DOB); from that, they can determine the person's age as of a certain date, identify their Zodiac sign, determine the day of the week they were born, determine their age when they were married or when they graduated from college. This is done by writing rule statements or creating some type of complex calculation. Below is an example of a rule for determining the person's Zodiac sign. It is a nested set of IF statements that looks at the person's birth date and compares it to a range of dates, and if the first comparison does not work it moves on to next comparison until it has looked at the entire year. The second sample shows the calculation that can determine someone's age as of a specific date (the day you expect the variable data piece to be delivered) from their date-of-birth (DOB). This statement determines how many years, months and days it has been from their birth date. It is shorter than the Zodiac IF statement, but it can produce significant personal information and the calculation can be adapted to determining the number of years/months/days from someone's high school or college graduation or the day they got married.

Sample Rule Statement to Identify Zodiac Sign

If (Month (DOB) = 1 and Day (DOB) ≥ 21 and Day (DOB) ≤ 31; "Aquarius" ;

If (Month (DOB) = 2 and Day (DOB) ≥ 1 and Day (DOB) ≤ 19; "Aquarius" ;

If (Month (DOB) = 2 and Day (DOB) ≥ 20 and Day (DOB) ≤ 29; "Pisces " ;

If (Month (DOB) = 3 and Day (DOB) ≥ 1 and Day (DOB) ≤ 20; "Pisces" ;

If (Month (DOB) = 3 and Day (DOB) ≥ 21 and Day (DOB) ≤ 31; "Aries" ;

If (Month (DOB) = 4 and Day (DOB) ≥ 1 and Day (DOB) ≤ 20; "Aries" ;

If (Month (DOB) = 4 and Day (DOB) ≥ 21 and Day (DOB) ≤ 30; "Taurus" ;

If (Month (DOB) = 5 and Day (DOB) ≥ 1 and Day (DOB) ≤ 21; "Taurus" ;

If (Month (DOB) = 5 and Day (DOB) ≥ 22 and Day (DOB) ≤ 31; "Gemini" ;

If (Month (DOB) = 6 and Day (DOB) ≥ 1 and Day (DOB) ≤ 21; "Gemini" ;

If (Month (DOB) = 6 and Day (DOB) ≥ 22 and Day (DOB) ≤ 30; "Cancer" ;

If (Month (DOB) = 7 and Day (DOB) ≥ 1 and Day (DOB) ≤ 22; "Cancer" ;

If (Month (DOB) = 7 and Day (DOB) ≥ 23 and Day (DOB) ≤ 31; "Leo" ;

If (Month (DOB) = 8 and Day (DOB) ≥ 1 and Day (DOB) ≤ 22; "Leo" ;

If (Month (DOB) = 8 and Day (DOB) ≥ 23 and Day (DOB) ≤ 31; "Virgo" ;

If (Month (DOB) = 9 and Day (DOB) ≥ 1 and Day (DOB) ≤ 21; "Virgo" ;

If (Month (DOB) = 9 and Day (DOB) ≥ 22 and Day (DOB) ≤ 31; "Libra" ;

If (Month (DOB) = 10 and Day (DOB) ≥ 1 and Day (DOB) ≤ 22; "Libra" ;

If (Month (DOB) = 10 and Day (DOB) ≥ 23 and Day (DOB) ≤ 31; "Scorpio" ;

If (Month (DOB) = 11 and Day (DOB) ≥ 1 and Day (DOB) ≤ 21; "Scorpio" ;

If (Month (DOB) = 11 and Day (DOB) ≥ 22 and Day (DOB) ≤ 30; "Sagittarius" ;

If (Month (DOB) = 12 and Day (DOB) ≥ 1 and Day (DOB) ≤ 21; "Sagittarius" ;

If (Month (DOB) = 12 and Day (DOB) ≥ 22 and Day (DOB) ≤ 31; "Capricorn" ;

If (Month (DOB) = 1 and Day (DOB) ≥ 1 and Day (DOB) ≤ 20; "Capricorn" ;

"it is a mistake"))))))))))))))))))))))))))))

Age from the Actual Day of the Year to the Specific Date

GetAsNumber(Year(Get(CurrentDate)) -

Year(DOB) - Case(Get(CurrentDate) <

Date(Month(DOB); Day(DOB); Year(Get(CurrentDate))); 1; 0)) & " Years, "

&

GetAsNumber(Mod(Month(Get(CurrentDate)) -

Month(DOB) + 12 - Case(Day(Get(CurrentDate)) <

Day(DOB); 1; 0); 12)) & " Months, "

&

GetAsNumber(Day(Get(CurrentDate)) -

Day(DOB) + Case(Day(Get(CurrentDate)) >=

Day(DOB); 0; Day(Get(CurrentDate) -

Day(Get(CurrentDate))) <

Day(DOB); Day(DOB); Day(Get(CurrentDate) -

Day(Get(CurrentDate))))) & " Days"

Relational Databases and How it Can Enhance Data

Databases can be linked together to create a larger pool of data to draw upon to create personalization. On the training CD there are three databases to work with, the first is the "Main Database" with the starting information about an individual. The second is a database about different State attributes (ie. State bird, State flower, etc.) titled "Alittle_about_States" and a third database titled "In_the_year" which has recorded various information about things that happened between 1950 and 2011 (ie. Best Picture, who won the World Series, the price of a gallon of gas, etc.). The database about States would be linked (connected) to the "Main Database" based on the state abbreviation from the mailing address. The database about with the list facts from each year for 1950–2011 will be linked to the year from the person's birthday. The original database had 10 fields other than the record number, but when the databases are tied together in an assigned relationship (called a relational database) the number of variables to allow for personalization has grown substantially. There are 24 fields in the "In_the_year" and 18 in the information about the State. That means that they combine the information and all of the fields available. You started with 10 and now have 52 fields of data available to bring into a variable data document. On the next page is the image of seven databases being linked to a main customer database.

Using relational databases to enhance the information available to create relevant personalization is a powerful design tool for the print provider. Creatively linking data to the original database can be a differentiating factor in how successful one printer is compared to another when working with variable data. A print provider can create their own unique databases dealing with local customs, terminology for a specific field or industry, on topics dealing with things people purchase (ie. cars, boats, RVs, motor cycles, etc.).

Relational Databases
Linking multiple databases together to create relevant personalization.

Purchasing Data from a List Company

Another method of enhancing an existing database is to upload the database to one of the list companies that were mentioned earlier and request additional personal data. These companies track over 500 different attributes. Below is a list of different companies and their web links for white papers that talk about profiling the customer. If a printer can get a list of 1,000 of the customer's customers the list company can compare the personal demographic data of all of the individuals and find out common factors that make the list unique. Are the best customers male or female, a certain age, do they rent an apartment or own a home, do they have a certain income level or did they go to college? The list company can find similarities and then find another 1,000 names (or 10,000 or a 100,000 names) with the same characteristics. Once they return the list to the print provider it can be linked back to the original database and allow the printer to target the personalization with more relevance to the product or service being offered for sale.

There is a video recording of the process of purchasing a list from one of the list companies. View the video and then visit one of the list companies' websites listed below and look at all the data they have available to link to customers' files.

List Companies

USADATA—http://www.usadata.com/resource-center.html

AccuData—http://www.accudata.com/Resources.6.lasso

Melissa Data—http://www.melissadata.com/resources/index.htm

InfoUSA—http://www.bizmoknows.com/

DataFlux—http://www.dataflux.com/Resources/DataFlux-Resources.aspx

Course Exercise: Databases

Watch the video demonstration of the process of converting Excel spreadsheet files to a database file format (the demonstration is done using FileMaker Pro). If the file is converted it is linked to two additional databases through a relational field (common to the new database and the original database) and then the "IF" statement above and complex rule are added to the database. Once you have viewed the video recording see your instructor for access to the files to work through the following procedures:

1. Add your contact information to the database, including your name and address (type your address into https://tools.usps.com/go/ZipLookupAction!input.action to determine your CASS certified address including your Zip+4) and Date of Birth.

2. Follow the directions on the training video to create a new field based on the year of the birth date. This will be used to link one of the other databases to the "Main Database."

2. Merge the two additional databases to the main database as demonstrated in the video (go back to view the procedure as many times as you need to). Bring over the "Best Picture" field from the merged database titled "In_the_year" and the state Bird for from the merged database "Alittle_about_States" as demonstrated in the video.

3. Copy and paste the Zodiac If Statement from the Word file into the main database file to build off the database Date-of-Birth (DOB) field. Again follow the video presentation on the CD available from the instructor. Then copy and paste the complex calculation into a new database field as shown in the training video and look at the results in the database once you save the calculation.

4. Look for any duplicate files in the database by creating a unique dup field as demonstrated in the database training video.

5. Show your work to your instructor and be prepared to discuss the steps, the outcome and the overall value of linking the data together into a relational database.

Course Exercise: Creating a Variable Data Project

On the CD are two folders with all the material you need to complete two variable data projects in XMPie. You can download a full featured demo of XMPie from the web for either Mac or PC at http://www.xmpie.com/?id=1274. The only limitation is you can only output 5 copies. The students can put it on their computer. In the tutorial folder there is a PDF file with directions, an Asset and Resource folder along with the InDesign file. They have included a starting file and a sample of the finished completed file. The first is "Happy Birthday Campaign" and the second is campaign called "Join EDU." Between these two projects you will experience many of the features of XMPie, but for beginners it is more of an opportunity to see the options of what can change in a variable data piece.

Course Exercise: Ongoing Learning by Enhancing the Program

Each implementation and use of this Addendum material Expanded Variable Data Design, Planning and Production will be different. The experiences of each instructor and student will be different than any others.

1. Your challenge, and opportunity, is to critique the material and approaches used to deliver this program and describe what worked, what can be done better and how to do it.

2. On your own, in a team or as a class plan, develop and design a Marketer and Designers Guide to Variable Data Printing. Help them see the opportunity of variable data printing in conjunction with other communication channels and how it can help them develop a greater relationship with their existing customers and how to win new ones too.

3. With the help of your instructor share your guide with marketers and designers and get feedback on how they received the information just like we did in step 1. Make any corrections to the material and share it with the industry as a web page, blog, white paper and even as a book. One of the greatest ways to learn is to share what you know and listen to how it helped people do the same. Listen for how to do it better, make changes as you see fit and share it some more.

Citations

- 2007, Postal Union, Think Customers, Not Campaigns, Four Best Practices in Relationship Marketing.
- DMA 2011 Statistical Fact Book, The Definitive Source for Direct Marketing Benchmarks, © February 2011
- Solis, Brian. Social Media Channels Diagram, http://www.mikekujawski.ca/2008/08/19/social-media-channels-diagram-newly-updated/

Print On Demand Initiative Glossary of Variable Data Printing Terms (www.podi.org)

Affinity Group Marketing

Targeting small groups of individuals who have similar characteristics or needs.

Application

1. A specific digital printing job: "This application is a great example of promotional VDP."

2. A general category of printing jobs: "Web fulfillment is a rapidly growing application for VDP."

3. In general, a software program: "Microsoft Excel is a useful application for cleaning up incoming data."

Attrition

Reduction in a company's customer population that happens as a result of normal turnover or because of some specific event — perhaps a good competitive offer or a failure on the part of the company. (Also known as churn)

Authoring Tool

A software package that allows the creation of variable information jobs by defining layouts that include variable and, usually, static elements.

Banding

Creating groups of customers or prospects based on selected criteria.

Bangtail

A promotional envelope with a second flap, which is perforated and designed for use as an order blank.

Bounce Back

An offer enclosed with mailings sent to a customer in fulfillment of an order.

Business Intelligence Software

Software that provides different views of company data, through such methods as filtering and recognizing patterns. This allows businesses to make better decisions.

Campaign Management Software

A tool that facilitates marketing automation by coordinating the segmentation of the customer database and the development of offers. It links data analysis with program execution.

Channel Manager

Software that enables a company to capture relevant information from every point of customer contact, pass it to the central information repository, perform meaningful analysis, and finally send key data back to every point of contact for execution.

Churn

see Attrition

Classing

Assigning value to groups of customers or prospects based on selected criteria.

Cleansing

Removing from a database any data that is incomplete, incorrect or corrupt. (Also known as Scrubbing)

Coding

Identifying devices used on reply devices to identify the mailing list or other source from which the address was obtained.

Collaborative Filtering

A Web interactive channel through which a company can collect information about its customers by monitoring what pages are visited on its Web site and where the most time is spent.

Collateral Management

A system that records details of the various marketing materials (printed and electronic) for use in any campaign. It enables customer contact staff to access the exact materials to which a customer has been, or should be exposed.

Component

A part of a page, (e.g. image, graphic or text) which may need to be printed on various pages in a VDP print run. (Also known as Element or Page Element)

Component Caching

A method of improving VDP production efficiency by avoiding redundant re-RIPping of reusable elements. Without Component Caching, the element (this "page component") must be re-RIPped every time it appears. But if a system does offer Component Caching, the component is RIPped only once, and the resulting press-ready bitmap is saved in the system, so it can be imaged anytime during the print run.

Conditional Processing

The ability, in a VDP system, to automatically change a page's layout or content based on specific fields in the in-coming data stream, using logic rules. Example: a picture field might be specified as "If Gender=M print redcar.tif, otherwise print whitecar.tif."

Contact History

A record of the interaction a company has had with the customer over time and the outcomes of those interactions.

Content Management

Use of managed text, images, and pages to create a unique message for each customer.

Continuous Relationship Marketing

See Customer Relationship Management

Corporate System Application (CSA)

See Enterprise Resource Planning

Cost per Piece

The traditional measure of the cost of a direct mail marketing job: "How much did it cost me for each piece I dropped in the mail for this campaign?" But in comparing two printing methods, cost per piece is only meaningful if all other factors are equal.

Cost per Response

The goal of a marketing campaign is to get responses or orders, so the proper parameter for measuring the cost of a direct mail job is cost per response, or cost per dollar of sales, or some other results-oriented measurement. This point is important in the business of VDP, because VDP costs more per piece than conventional offset printing. The VDP page must justify its cost by producing better results.

Customer Information Repository

See Data Warehouse

Customer Acquisition

The marketing goal of acquiring new customers — selling to people who were not already customers.

Customer Relationship Management (CRM)

1. The overall process of marketing, sales, and service within any organization

2. The practice of identifying, acquiring and retaining the best customers to produce profitable growth.

3. A dialogue with customers consisting of sequenced messages timed to individual needs and opportunity. (Also known as Continuous Relationship Marketing, Relationship Management or Relationship Marketing)

Customer Retention

The marketing goal of keeping your customers from going to the competition. The rule of thumb is that it costs five to ten times less to keep a customer than it does to acquire a new one. This is a major impetus behind the move to Customer Relationship Management.

Customization

See Personalization

Data Driven Graphics

Graphics, such as charts, which are generated by sending the raw numerical data to the DFE or RIP rather than creating individual charts in advance for each document in a print run. A digital printing system that can produce data driven graphics reduces the workload and bandwidth requirements for the earlier components of the system.

Data Mart

A subset of the information contained in a data warehouse.

Data Mining

Searching large volumes of data looking for patterns that accurately predict behavior in customers and prospects.

Data Model

A structured way of viewing a set of data — the design of the tables and their corresponding relationships in a relational database that are needed to support a vertical industry.

Data Warehouse

1. An information infrastructure that enables businesses to access and analyze detailed data and trends.

2. A separate store of transactional data that provides a single integrated view of the customer. (Also known as Customer Information Repository).

Database Management System (DBMS)

Software used to create and maintain a database. Provides a layer of transparency between the physical data and application programs.

Database Marketing

The use of customer profiles contained in a database to market to customers.

Database Publishing

A process for managing, creating and publishing content through extensive use of database systems and content creation tools.

Decision Support Systems

Software application that helps to analyze data contained with a customer database. (Also known as Executive Information Systems, EIS)

De-duplication

Removing duplicate records from a database, especially when two or more databases have been merged to form a single larger list.

Digital Asset Manager

A software package that organizes, tracks and manages digital assets such as graphics, logos, pictures and text.

Digital Front End (DFE)

see RIP.

Digital Printing

Printing technology (laser printer, inkjet printer, digital press, etc) that can produce printed sheets directly from a computer file, without going through some intermediate medium such as a film negative or an intermediate machine such as a plate-making machine.

Direct Mail Advertising

Any promotional effort using the Postal Service for distribution of the advertising message.

Direct Marketing

A direct communication to a customer or business that is designed to generate a response in the form of an order, a request for further information, or a visit to a store or other place of business. (Also called Direct Response Advertising)

Direct Response Advertising

See Direct Marketing

Doubling Day

A point in time established by previous experience when 50% of all returns to a mailing will normally be received.

Element

see Component

Enterprise Resource Planning (ERP)

Multi-module application software that helps a company manage the important parts of its business such as product planning, parts purchasing, inventory management, supplier interaction, customer service, order tracking, finance and human resources.

Enterprise Customer Management (ECM)

The concept of moving ownership of the customer up to the enterprise level, and away from individual departments.

Events

Significant happenings in either the life of the customer (e.g. marriage, birth of child) or externally to the relationship with the customer (e.g. competitor activity) that may affect purchasing habits. Event-triggered communications are an important application of promotional VDP.

Executive Information Systems, EIS

See Decision Support Systems

Extract File

A subset of a large database used for analysis, often formatted as a flat file for downloading to a personal computer or workstation.

Frequency Marketing

A marketing program that recognizes and rewards customers based on their purchasing behavior. (Also known as Loyalty Programs)

Geocoding

Analysis of geo-demographic data such as ZIP codes, counties, regions, etc.

Hard Benefit

A program benefit that the customer would otherwise have to pay for (e.g. free air travel, free hotel lodging, etc.) See also Soft Benefit.

Householding

The grouping of individuals by household or relationship patterns.

Interactive Marketing

Marketing products or services via the Internet.

Kill Bad Name (KBN)

Action taken with undeliverable addresses.

Lifetime Value ("LTV") of Customer

Viewing the value of a customer in terms of how much product or service he will purchase during his lifetime, not just on the current transaction. By focusing on LTV, a marketer gets a much more realistic picture of the value of keeping customers loyal.

Loyalty Programs

See Frequency Marketing

LTV

see Lifetime Value.

Marketing Automation

Automating the business processes involved in marketing: campaign definition, creation, and execution; market segmentation and targeting; collecting and analyzing response, and feeding back the response into the system.

Marketing Campaign Lifecycle

The full cycle of events in a marketing campaign including planning, execution and assessment.

Marketing Velocity

The speed of cycling through the marketing process — all of the steps in the Marketing Campaign Lifecycle.

Mass Customization

The ability to cater to a "market of one," printing tailored to an audience of one specific individual.

Needs-based Differentiation

How customers are different, based on what they need from the enterprise. Two customers may buy the same exact product or service for two dramatically different reasons.

Open Database Connectivity (ODBC)

An industry standard method of connecting to a database to request and receive data records.

One-to-One Marketing

Marketing process through which a business identifies its individual customers, differentiates among those individuals, interacts with customers and records responses, and customizes communications for individual consumers. Popularized by Don Peppers and Martha Rogers, Ph.D., in their series of "One To One" marketing books.

Online Analytical Processing

An application that looks for trends and patterns in corporate data in real-time.

Online Transaction Processing (OLTP)

An application that assists in the processing of a transaction and provides all the necessary information to complete the transaction. (e.g., the program running in front of the telephone operator when a consumer calls and orders a product from a catalog. The operator needs access to product information (what colors does that come in?), pricing, availability, delivery options, etc.)

Page Caching

Processing all the static elements on a VDP job only once and saving the result for reuse on every page in the print job. The variable elements for each sheet are then merged with the cached page to make the final printed piece.

Page Element

see Component

Personalization

Customizing a document by varying the text, graphics and layout to meet the needs of an individual consumer. (Also known as Customization)

Portable Document Format (PDF)

A file format created by Adobe Systems based on its PostScript® page description language. PDF files are platform- and device-independent, and are much easier to "port" from one user's system to another without errors arising. PDF files are created and supported using Adobe's "Acrobat" software tools; also, many other vendors have announced development of tools that support and expand the use of PDF in graphic arts production.

PostScript

The de facto standard page description language for the graphic arts, created by Adobe Systems. PostScript instructions created by application software and the printer driver are sent to a PostScript output device to describe the page the user wishes to have output.

Product Holding

What products a customer has purchased and what products they currently hold.

Product Usage

How the customer uses a product.

Promotion

Marketing communication activities that further the awareness, acceptance and sale of merchandise or services.

Propensity Scores

Scoring, based on past customer history, which portrays the likelihood a customer will perform a certain action.

Pull Marketing

Communications with a customer that are originated by the consumer.

Purge

The process of eliminating duplicates and/or unwanted names and addresses from one or more lists.

Push Marketing

Communications with a customer that are originated by the company.

Raster Image Processor

see RIP.

Recurring Content

See Reusable Component

Reflow

Dynamic hyphenation and justification of a text block caused by insertion of variable content. (Also known as Rejustifying)

Re-justify

see Reflow

Relational Database

A database built using the relational model, based on tables linked by a common key. Relational databases do not have any predefined access paths, and the order of records within each table is arbitrary.

Relationship Management or Relationship Marketing

see Customer Relationship Management

Response Rate

In a direct mail campaign, the percentage of recipients who responded. Response rate is a vital measurement of the success of any such campaign. The rule of thumb in the US and Europe is that typical response rate is 2%, but estimates in various industries range from a fraction of a percent to 4-5%. A major goal of promotional VDP is to generate higher response rates.

Response Tracking

Recording responses received in answer to a marketing campaign.

Reusable Component

Component reused within a personalized print job. (Also known as Recurring Content)

RFM Market Analysis

Segmenting customers based on Recency, Frequency, and Monetary value of transactions.

RIP

1. noun: Acronym for Raster Image Processor: Hardware or software that converts a page description from some abstract language into a "raster image" — a precomputed pattern of individual bits that are ready to be imaged on a digital output device: laser printer, imagesetter, digital press, etc. In the graphic arts industry, "RIP" almost always (but not always) refers to something that reads PostScript.

2. verb: To convert a page description file to bits, using a RIP. The RIPping process is also called rasterizing.

SAS (Statistical Analysis System)

A comprehensive statistical and graphical package that includes modules for several types of specialized analysis.

Sales Force Automation

Automating the business processes involved in sales such as contact management, information delivery, and proposal configuration. Note: in 1998, the industry Sales Force Automation Association renamed itself CRMA: Customer Relationship Management Association. This reflects a trend that's important to the VDP industry: marketers are increasingly recognizing the importance of managing the entire customer relationship over a lifetime, not just through a single sales process, and CRM requires frequent communication, which often uses VDP.

Scoring

A technique that uses a model to predict future behavior. The score assigned to each individual in a database indicates that person's likelihood of exhibiting a particular behavior.

Scrubbing

See cleansing

Segmentation

Dividing customers into groups, each with common demographic attributes.

Soft Benefit

A program benefit that strengthens the customer's sense of special status and does not generate significant expense to the sponsor (e.g. discounts, advance notification of sales, special shopping hours, etc.) See also Hard Benefit.

Suppressions

Indicators to not communicate with a particular consumer or group of consumers.

Transactional

Representing or recording a business action of financial exchange.

Variable Data Printing (VDP)

A digital print run where each printed page is somewhat different, with the variations usually determined by relating page content to customer information in a database. (Also known as Variable Information Printing or VIP.)

Variable Information (VI) or Variable Information Printing (VIP)

see VDP.

Versioning

A form of short-run printing, where different versions of a document may go to different geographical areas or people with different income levels. Versioning can be done on a press that does not have VDP capability, because hundreds or thousands of identical sheets are printed for each "version" of the job.

Workflow

The decisions, steps and information paths taken in creating and outputting a digital document. In current graphic arts usage, "workflow" may be used loosely, sometimes including materials, processes and data as well as specific operator procedures.

Addendum 2

Managing a Digital Printing Operation

for Digital Production Printing

NOTE: The learning material in this Supplemental Guide has been selected to help facilitate the learning of digital production printing technology and processes.

Recommended Resources for Completion include: Instructor, this guide, mac/pc workstation, digital production printing lab/operation and internet connection (optional, if instructor provides online resources).

The approaches to learning are many and please feel free to use additional methods (presentation, web, video, text, live and recorded) to help deliver the learning that best meets the needs of the audience. If you have comments, edits or additional information you believe will be beneficial to this program please submit your input to Peter Muir, pmuir@bizucate.com, +1 215 234 4498. Thank you!

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Introduction

What This Addendum Is and What It Is Not

The Managing a Digital Print Operation Addendum was developed to help introduce students to the world of print management. Many who learn how to operate digital production printing technology and obtain a job in a printing organization often become the managers of a printing environment.

This addendum provides an overview of the management mindset, strategic positioning and general day-to-day activities within a print shop that should be managed for efficiency, cost effectiveness and overall success.

Although this addendum touches many topics and provides a great deal of knowledge, it does not begin to scratch the surface of skill development in all the potential areas a manager could be responsible for such as: strategic planning, human resources, accounting, estimating, resource planning, customer service, graphic design, sales, marketing, production, postal requirements, finishing, project management, maintenance, safety and more.

Experience is the greatest skill builder and working with digital production printing technology, in a print environment, can provide you with many opportunities to grow your knowledge, skill and interests.

This addendum will make you more aware of the world of opportunity enabled by an interest in where digital production printing technology is placed, how it's used, what it's used for and how it can all be done better with a management mindset.

Management Mindset

Whether you are your own boss or you are working for a large organization there is and always will be the need to manage.

> "Management is the act of getting people together to accomplish desired goals and objectives using available resources efficiently and effectively. Management comprises planning, organizing, staffing, leading or directing, and controlling an organization (a group of one or more people or entities) or effort for the purpose of accomplishing a goal. Resourcing encompasses the deployment and manipulation of human resources, financial resources, technological resources and natural resources."   -Wikipedia

Oftentimes people envision management as an individual or group of people who reside above the day-to-day operations of an organization. Depending on how a particular organization is structured (number of employees, reporting structure, departmental structure) management may be the glue to hold the operation together and lead it to the desired goal or it could also be the glue that bogs the process down, holds the organization back from accomplishing the goal or even growing and deciding on new goals.

A mindset is a belief; belief about yourself and your most basic qualities. A management mindset is all about getting to the goal as efficiently and as effectively as possible. You don't have to be a manager to have a management mindset,

as an individual a management mindset can help you get things done. Organizations who hire people with management mindsets not only get things done efficiently and effectively but it can also free up time to allow the organization to explore new areas of opportunity and growth.

Who and What Gets Managed?

In the management definition above, resources to be managed can include human, financial, technological and natural resources. Another way to think of the resources is the organization's workflow. Although there are many definitions for workflow we decided for this course that workflow would refer to the people, processes and technology working together to produce the products and/or services of an organization. Management is how workflow gets done. It's the decisions to automate, add technology, let go of an old process, recognize an individual for their value to the organization, order more raw materials to get future work done and on and on. Technology alone doesn't make an organization more successful. Someone needs to make the decisions about what to do and that's where a manger or at least someone with a management mindset can help.

Where Does Strategy Fit In?

There never seems to be enough time in the day to get everything done. One of the biggest complaints by organizations about why they hadn't taken time to further develop their long-term strategy for success is that they didn't have time–they were busy working *in* the business. Successful businesses regardless of size, the ones that are growing and rolling with necessary changes to be successful in an industry, are wired for change. Instead of dealing with change because they have to, these organizations make change the norm. These businesses take time to work *on* the business in addition to working in the business.

Let's review two different environments where you could find yourself applying the knowledge and skills you can learn from this course. A commercial print operation exists to provide print and related services for a profit. Whether they are producing business cards, letters, packaging or publications they are in the business to make money. They range in size from one person to hundreds of employees. The majority of the companies are under 20 employees and $5,000,000 in sales. An in-plant print operation exists within a larger vertical industry business, such as a university, a hospital, an insurance company, a state government and more. In-plants exist primarily to service the print and related communication needs of the organization as a whole. There are many differences between these two types of environments where digital production printing technology can be found but knowing how technology operates is a small part of the overall business function.

Someone with a management mindset can help each of these types of businesses best utilize the resources and allow for more than just getting the work done–they can enable strategic planning that can allow the organization to go beyond where there are today. Management makes the difference between working *in* vs. working *on* the business. We want you to be able to do both–better.

Strategy and Tactics

There are many management methodologies and styles that can be applied to a production print environment. Our goal in this Addendum is not to claim any one as "better" than another or one that must be followed "or else." We would like to give you the tools and perspectives in which you can further explore the management possibilities of how an organization operates. Strategy and tactics are two of those tools and perspectives.

Working *in* the day-to-day business represents the tactics or processes and actions that need to occur for a workflow to meet its goals. Working **on** the business as a whole represents the strategy or objectives and purpose of the organization. Typical management methods would suggest strategy resides at the top and tactics are what happens at the bottom. Another way to think of strategy and tactics is to see them existing together at each and every level of an organization. Dr. Eliyahu Goldratt's Theory of Constraints defines:

> Strategy – as the answer to the question "what for" and "why" (objective, purpose)

> Tactics – as the answer to the question "how" (process, actions)

Considering strategy and tactics in this way allows you to explain/explore **what** is to be achieved in the business, **why** and the common sense logic on **how** to get there. Whether you are observing a business already in business or planning one from the ground up: management time spent on strategy and tactics can help you get the most from the business as a whole.

Your Greatest Management Opportunity

This Addendum is broken into two parts:

> Part 1 is about Strategic Thinking

> Part 2 is about the Day-to-Day Management of the Operation

Just focusing on the day-to-day won't provide the broader view of where you can go and how to do it better. But the inverse is true too. If all you do is think about the big picture and where you can take the organization–nothing gets done.

The majority of commercial and in-plant operations focus too much on the day-to-day and are often not doing that as efficiently as they could be and they also do not take the time to think more strategically. These two trends are your greatest management opportunity:

> *Help businesses to be more efficient and strategically relevant to their customers.*

Real World Scenarios to Consider

The focus of this course material is to help you understand what it takes to manage a digital printing operation. To help you better understand the kinds of environments you can find yourself in as manager, **consider the following three scenarios and refer back to them often** to help you frame the context of what you're learning in the course and how you can apply it in the real world.

1. Small Commercial Print Shop

You are not only the manager of the print shop, but you are also the owner too. Your role as manager is one of many as you also act as entrepreneur, strategic thinker, sales person, customer service, operator, prepress specialist, bindery operator and shop janitor.

2. Larger Commercial Print Shop

You are part of a larger commercial print shop managing the production floor. You are part of a larger organization where your work is specific to getting the production of printed material done. Typically, you and the prepress manager makeup the team that gets what the company produces–done.

3. In-Plant Print Shop

You are the manager of an in-plant print shop within a larger organization. Similar to the small commercial print shop you may be working alone or with a small group of people. Most often, it will be you and between 2-10 people.

Part 1: Strategic Thinking

6 Frames of a Strategic Thinker

A manager needs to be able to understand the big picture while also dealing with how to get work done. In larger organizations you may be able to work with teams to achieve the goals while in smaller businesses it may be just you. In either scenario it helps to have strategic perspective on "what could be" as opposed to just "what is." The 6 Frames of a Strategic Thinker can help you consider more than one perspective when you look at a particular problem or opportunity in the organization you manage. You are not expected to be an expert after reviewing each of these frames in this course. Understand the definition of each one and what you could do with the outcome after exploring each frame. When you work on the exercises later in the course you will see how each frame can reveal something most would not have considered. Identifying problems and dealing with them is a requirement of a manager; but creating opportunities and developing ways to go after them; is not a common approach of this role in business. This makes it your opportunity to learn about it and add it to your knowledge as you develop your skills.

1. Strategy

A strategy is a plan of action. Someone who uses this frame of thinking can consider the following questions to help further develop the organization or at least their role in it:

- Does the current direction of the company/department align with where you want it to be?
- Does the current direction align with current customer needs?
- Does the current direction align with new customer needs?
- If so, how's it going? What are the roadblocks?
- If not, how come? What will it take to move in that direction?

The outcome of this frame of thinking can be an appreciation for the organization as a whole, identifying where the current state and potential future state could be. It can also reveal a lack of strategy and an opportunity to help establish one through your management approach.

2. Product/Service Offering

The products produced or services offered to current, past and potential clients. This represents what an organization/department does. Someone who uses this frame of thinking can use the following questions to further develop the organization or at least their role in it:

- What is the most profitable product/service? What is the least profitable? (In-plants can consider the cost to produce a product or offer it along with the perception of value to their internal customer or even in direct relationship to driving business as a whole for the organization (church, university, nature conservancy, etc.)).

- What do you sell the most of? Why? Is it profitable enough? Does it lead to more profitable work? (In-plants should note the amount of a particular type of work and be prepared to justify its cost to the organization they are employed by)

- Do you take the time to consider what new products or services you could offer? Why, why not?

- If you could add any one product or service, what would it be? Why? How does it align with current/future customer needs?

- What can be done to find out if what you deliver to your customer meets/exceeds their needs? What more can be done even if you think you are already doing that?

- What else does your customer need (not know they need it) that you could be offering?

The outcome of this frame of thinking can be an understanding of what is currently being produced/developed by the organization. It can also provide a reference point for those you interact with in the organization. Knowing how many and how much a product/service costs, as well as the profit margin for it, goes a long way to better prioritizing what to focus your management efforts on.

3. Marketing

Marketing can be about creating processes that identify what people want and lets them know you can do it for them. Oftentimes product/service offering can be a part of marketing but we call it out as its own frame because of the importance and relevance of it to the business. Someone who uses this frame of thinking can use the following questions to further develop the organization or at least their role in it:

- Do you have a marketing process? How do you identify what people want/need?

- Is the marketing process measurable and repeatable? If not, why not?

- Do you actively identify and continue to find out what customers and prospects need/want?

- How do people hear about you? How do they know what your company/department can do for them?

- What are the perceptions of what you do for them?

- Have you considered using a marketing approach to help your customers grow their business? If not, why not? If so, what's next?

The outcome of this frame of thinking can give you an understanding of what the organization is doing to win new customers and keep the ones that they have. The presence of a process can help consistently deliver on customer value and needs or identify areas of improvement. As a manager, you need to have enough of the right kind of work and marketing your business/department is how to get it.

Marketing   Sales

Product/
Service
Offering

Workflow

Strategy

Finance

6 Frames
of a Strategic Thinker

4. Sales

Sales is about creating business transactions that gives people what they want or what they didn't know they could have. Someone who uses this frame of thinking can use the following questions to further develop the organization or at least their role in it:

- How do you get the work you produce? How do you win business?
- How does the work you do win come into the business/department?
- Do you have a sales process? If not, why not?
- Is the sales process measurable and repeatable? What if it was?
- What do you lead with in your sales efforts? Why would someone do business with your organization?
- How do you get to what makes your organization more profitable/successful?

The outcome of this frame of thinking is critical to understanding how you get the work you will do. Whether direct sales, internet presence, internal network presence or walk-up counter, there has to be a way to set the expectations for customers to give them what they are asking for, when they want it and how they want it. Selling is the commitment to get the work done. As a manager, your sales process represents the expectations someone has and is willing to pay/wait to get it.

5. Workflow

Workflow includes the people, processes and technology that makes profitable/successful work happen. Someone who uses this frame of thinking can use the following questions to further develop the organization or at least their role in it:

- Do you have a documented workflow process? How far out does it go? Where does it end?
- Is the workflow process measurable and repeatable?
- Where are the bottlenecks in your existing workflow?
- What holds you back from doing more in less time at less cost?
- What could you spend (time, money) and be more efficient at the work you do?
- How can you use this type of thinking to go after business from your customers?

The outcome of this frame of thinking is where the greatest management focus is usually placed. The planning, scheduling, estimating, production, finishing, shipping, billing, staffing, supplying, insuring, inspecting and more are done as part of your role in workflow. Focusing on efficiency, reduction of errors and duplication along with the use of automation can help your workflow management efforts be even more successful.

6. Finance

Finance represents the cost of doing business and the reporting of profit/loss (or justification of existence for in-plants). Someone who uses this frame of thinking can use the following questions to further develop the organization or at least their role in it:

- How do you track the costs of the operation?
- How do you set the pricing (departmental charge backs for in-plants)?
- How do you set/interact with the budgets for each area of the business/department?
- Is there a documented procurement process?
- Is the procurement process repeatable and measurable?
- What is the primary financial driver? Savings, profits, value, other?

The outcome of this frame of thinking can give you the financial picture many don't know or are afraid to discuss. At a time when print is challenged by more and more mediums of communication it's critical to be able to cost justify why print. As a manager, at minimum, you need to be able to lead the cost analysis and justification discussions; but you can also start to explore how what your company/department can do could help the customer/organization to be more successful than just cost savings alone.

Course Exercise: Initial Meetings and Peeling the Onion

1. The instructor identifies one local in-plant print shop and one commercial printer and asks each if they would be willing to come to class and spend 2 hours sharing aspects of their business related to the 6 Frames of a Strategic Thinker. The particular person who is willing to do the interview should be at least a manager of a particular area/department of the business. A plant tour is suggested in a later exercise.

2. Once identified, students will complete an initial background review of the company using the world wide web and group discussions to answer the following as best they can at this point: Who they are? What they do? Who they do it for? How they do it? Why they do it? Where they're going? What you observed and what could be offered as ideas to continue/improve the management of the business? The result of this initial research should help students better understand the organization who is coming to be interviewed.

3. At an agreed time, the interview takes place. During the interview students take turns asking questions from the 6 Frames of a Strategic Thinker.

4. After the interview has concluded students take their notes from the interview and go back to their initial background review information and fill in additional information about the business paying particular attention to the question: What you observed and what could be offered as ideas to continue/improve the management of the business?

5. The instructor can facilitate a discussion around what was researched, observed and further processed. Any open questions can be captured for later research and discussion.

6. Throughout the remainder of the course you will refer back to this organization and continue to develop your management approach using their business as a reference.

7. Repeat the process with the other business not initially interviewed. When complete this exercise, students have researched, had interviews and processed the interviews, with both a commercial print shop and an in-plant print department.

Each interaction and every bit of information captured can help you peel back the layers of a business and provide you with both a big picture and a look at what goes on day-to-day in a commercial and in-plant operation.

Alignment to the Mission and Goals of the Organization

A part of strategic thinking for a manager is to remember that the department you manage is part of a larger organization. Whether that organization is a small or large commercial printing company or an in-plant print department a manger needs to be aware of the goals of the organization as a whole.

The mission of an organization can be defined as the very big long-term purpose or end-result. It provides the context for developing the company's strategies. Goals are smaller than the mission but collectively they give, clarity, direction and focus to achieving the mission.

Printing Company Mission Statements

- To serve customers with the highest quality graphic communication solutions and printed products produced precisely to their requirements.

- To provide old-fashioned service, meeting customers needs quickly and accurately, effectively addressing them with world-class technology.

- We specialize in the development and operation of integrated design-to-distribution print management programs to help North American-based service organizations attain their respective objectives.

- We strive to inspire customer loyalty through building lasting relationships, keeping promises made, and being an integral part of our customer's team. Our commitment to providing the highest quality print solutions, excellent customer service and attention to detail is shared by employees at every level of our company.

Corporate Mission Statements with In-Plant Print Departments

- University: By blending the liberal arts and sciences, professional studies, interdisciplinary learning, and collaborations in and out of the classroom, students learn to thrive in diverse and challenging environments.

- Pharmaceutical: Make a difference in the lives of people globally through our innovative medicines, vaccines, biologic therapies, consumer health and animal products. We aspire to be the best health care company in the world and are dedicated to providing leading innovations and solutions for tomorrow.

- Insurance: To combine aggressive strategic marketing with quality products and services at competitive prices to provide the best insurance value for consumers.

In these examples you can see the difference between a commercial print shop, printing as a business vs. an in-plant print shop that is part of an organization doing something else as its main goal.

Bringing it All Together for Your Success as a Manager

Successful managers make sure the efforts of their department support the day-to-day customers as well as the over-all mission of the organization. Losing sight, or never being aware of the mission and goals of the overall organization can lead to a disconnect or missing opportunity. In some organizations a lack of alignment can mean possible or eventual failure. What makes an in-plant unique is that the customers they serve are all part of the same organization. **Service your customers and you can survive, provide them something they can't get anywhere else and you can keep them almost indefinitely–that works for in-plants and commercial print shops.** An awareness of this alignment to the mission and goals of your customers is how you can achieve strategic relevance.

Course Exercises: Vertical Exploring

1. Break the class into groups of 3-4 students. Assign each group two vertical markets such as: Automotive/Financial, Higher Education/Energy, Tourism and Travel/Healthcare, Food and Beverage/Insurance, Public Sector/Real Estate, Manufacturing/Retail or similar combinations.

2. For each vertical market have each group research and develop a definition of the vertical markets they were assigned.

3. Choose one vertical and discuss and capture a list of internal documents that could be printed by an in-plant or a commercial printer to aid in the day-to-day functioning of the business.

4. For the same vertical discuss and capture a list of external documents that could be printed by an in-plant or commercial printer to aid in the day-to-day communication with existing customers and potential customers.

5. Within your groups, compare and contrast the impact of producing the work inside by an in-plant or outside by a commercial printer.

6. In your groups, discuss the importance of the print provider aligning themselves to the mission and goal of their customer.

7. Finally, as a group, organize your information into a 10 minute presentation and present it to the class.

Optional extra credit is to do the same for the other vertical market and discuss the differences between the two markets.

Strategic Relevance

In challenging economic times how much you spend and what you get for it are always top of mind. When business is good cost and value are still important too. At some point someone may ask the question, "What are we getting for what we're spending." Should an organization decide not to use the commercial print shop, the shop may lose a job or perhaps all of the business from that customer. Depending on the amount of work it could be devastating. On the other hand, in an in-plant, if a CFO or Financial Director or anyone else for that matter, asked the question, "What are we getting for what we're spending" failure to respond could mean closing the department all together.

A question that drives many successful print shop managers is "What am I doing to prove the value of my shop/plant/department to my customers today and everyday?" The answer to that question is all about strategic relevance. If you can prove why you're worth it, people will continue to do business with you; in fact they will tell others they should do business with you too.

Delivering on strategic relevance often starts with a plan. Commercial print shops would include strategic relevance as part of their business and marketing plan. An in-plant is part of a larger organization that has it's own business and marketing plan that most likely does not call out the in-plant specifically. In these cases a manager could create a justification plan that includes similar goals, strategies and tactics of a business plan similar to a commercial printer. It's important that the plan not only aligns with the organizations needs, but also addresses current and future customer needs too.

The time taken to develop/update a business plan for an organization goes back to the importance of taking time to work **on** the business. The planning process can help outline and reveal issues and opportunities. It can help gather support and develop new relationships. A familiar business adage is appropriate here:

Failing to plan is planning to fail.

As we introduced you to the management mindset and strategic thinking we let you in on a secret when it comes to many printing businesses–they often don't take the time to plan and consider the future. There are a few companies who are wired to think like this. They eat, sleep, breathe aligning to their organizations and customers needs and are excited about what they can do for their customers as they constantly innovate to remain competitive. But these are the vast minority.

It is not our intention, in this Addendum, to make this into a strategic business course but we do want to highlight the areas of opportunity for you to learn about as you go out and work in these environments. Similar to the 6 Frames of a Strategic Thinker we are in including a sample Business Plan (commercial print) Justification Plan (in-plant) for you to review. You aren't expected to understand everything included in it for now or by the end of this course. But as a new user of digital production printing technology the organizations that employ you should use something like this to assure their strategic relevance to their customers.

Sample Business/Justification Plan Outline

1. Executive Summary

- Where you are and where you want to be?
- How will you grab interest? Or will they want to put "it" down?
- Write this part last... the process of developing the plan will help you write this section
- Contents could include: Mission statement, when the business began, founders and functions, number of employees, location of the business and any branches, description of the facilities, products/services offered, summary of growth/cost benefit, facts on the future (detailed by the rest of the plan)

2. Market Analysis

- Knowledge about the industry you're in
- Industry description and outlook
- Target market information
- Market test results (results only here)
- Lead times (initial and repeat)
- Evaluation of competition

3. Company/Department Description

- High-level look at how all the different elements of your business fit together
- Primary factors that make the business successful
- Marketplace needs you are trying to satisfy
- How you will satisfy those needs
- List individuals/organizations with these needs
- List primary success factors...why you will have an advantage over others

4. Organization and Management

- Departmental organization structure: Chart it out, who does what?
- Profiles of management team and qualifications
- Board of Directors: Key inside supporters and outside influencers

5. Marketing and Sales Management

- Detailed process for creating and keeping customers
- Define your marketing strategy: Market penetration strategy, Growth strategy, Channels of Distribution Strategy, Communication Strategy
- Define your sales strategy: Sales force strategy, Sales activities

6. Service and/or Product Line

- What are you selling/providing?
- Detailed description of product/service from the customer's perspective: including ability to meet customers need and advantages over the competition and development stage of future products/services
- Information related to product life cycle: including where is product/service in its life cycle and potential factors that can influence the life cycle
- Copyright/patent/security information
- Research and development activities

7. Funding Request

- Amount needed to start/expand the business/department if needed
- Different funding scenarios including best and worst case scenarios
- Include current and future funding requirements for 3-5 years, how you will use the funds, long-range financial strategies you are planning that could have an impact on funding, amount you want now and in the future, time period for repayment/recapture

8. Financials

- Developed only after the market analysis and identifying the goals you want to achieve
- What it costs to do what you do and want to do in the future?
- Historical Financial Data: Income statements, balance sheets and cash flow statements (budget impact statements, budget balance sheet, impact/benefit to organizational budget)
- Prospective Financial Data: Forecasted Income Statements, Balance Sheets, Cash Flow Statements and Capital Expenditure Budgets (projections should match funding requests) Graph it if you can

Resources

U.S. Small Business Administration

www.sba.gov/category/navigation-structure/starting-managing-business/starting-business/writing-business-plan

Xerox's Guide to Achieving Strategic Relevance

Xerox created a guide to help their customers to capitalize on the opportunity to be more strategic in the *Guide to Achieving Strategic Relevance.* The guide helps a successful in-plant/commercial operation, anticipate the needs and wants of their organization and provide a product/service mix that efficiently and cost effectively meets them while maintaining high standards for quality and satisfaction of their customers.

We have summarized the 5 Steps to Achieving Strategic Relevance here to help you consider where you might to start thinking about how to make your role and your organization more successful.

These steps are merely a starting point; developing your own process around making your organization strategically relevant is the journey worth taking. These efforts can link the day-to-day management of an operation to the long-term opportunities to grow and be successful for you and your organization.

1. Consider Your Customer

- Do you know who your customers are?
- How do you identify them?
- How often do you really engage with them beyond the ordering process? Beyond the satisfaction card?
- What effort do you put into building better relationships with existing customers or seeking out new potential users?
- Your customers–both current and future–are the core of a successful profit strategy
- Discuss existing strategies for learning more about your customer's needs: Identify what has worked and what hasn't. Identify customer service strategy strengths and weaknesses. Share how your existing product/service mix fit into your customer service strategy. Use this as an opportunity to learn and share.

2. Understand the Market

- Before you can assume to anticipate your customer's needs you need to understand their/your industry and you should consider researching and learning about:
  - » Daily tasks
  - » Products/Services they work with/develop
  - » Trends in their industry
  - » Their challenges
  - » Your customer's position within their industry

- What resources are available to you on where you could find this information?

- Does market information already inform how you engage your customers?

- How could you use this market information to change your current strategy?

- Are there new opportunities in the market you're overlooking, not aware of or haven't considered yet?

3. Develop a Plan

- The information you gather about your customer and their market can be used to structure a plan to grow your strategic relevance

- Measured steps should be used to identify goals, the tactics/changes needed to achieve them, how those tactics/changes will be implemented and the best methods to measure your progress.

- The *Xerox Guide to Achieving Strategic Relevance* suggests you investigate and develop your plan to include

  » Value statement

  » Business evaluation

  » Develop goals, objectives and tactics

    a. Use SMART objectives that are: Specific, Measurable, Achievable, Realistic and Time Based

  » Marketing to Succeed

    a. 4P's of Marketing: Product, Pricing, Placement, Promotion, (Partnership)

    b. Determine product/service needs

    c. Produce products/services that meet needs

    d. Price competitively

    e. Promote successfully

  » Close the sale

4. Market your Services

- All of your efforts working towards improved positioning within your in-plant will be for not if you can't properly market your services

- However, the manner you choose to do so should also be influenced by the new information you've acquired about your customer and market

- What do you currently do to market your services?

- What has worked and what has proven to be unsuccessful?

- Are there any new channels of communication you are interested trying to market your services?

    » QR Codes, PURL, Twitter, open house, guide development

- Do you have a marketing schedule? Why/why not?

5. Expand your offerings

- Maximize your current holdings as an in-plant—access, security, convenience and much more—by creating a product/service mix that exceeds your customer's needs is the final step in achieving strategic relevance

- Or if you are a commercial operation maximize the benefits of outsourcing to include—freeing up internal resources, market competitiveness, external perspective and more to help your customers value your strategic position in helping the individual and organization succeed

- This is where your knowledge of your existing capabilities combined with your new understanding of your customer will make you much more capable of determining how to expand your current offerings

- What could you offer your customers that you don't currently offer them? Why? What will it take? What can hold you back?

    » Think in Killer Apps

        a. Applications that are remarkable to receiver, sender or both and tied to measurable ROI

        b. Applications that include a story of return, value, awareness...something that can be...should be told to others

        c. Uses an approach(es) that fits an audience or individuals need at that moment

Course Exercise: Creating a Strategic Relevance Plan

1. Break the class into groups of 3-4 students. Evenly assign each group either a local in-plant print operation or a commercial printing company.

2. Have each group assume the role as manager of the organization and outline a Strategic Relevance Plan to justify the organization to its customers and shareholders/owners/parent company.

3. Use the Sample Business Plan/Justification Plan outline to help analyze and prepare your plan.

4. Each group presents the plan to the class and the instructor facilities conversations around each group's research, choices, assumptions and plans.

5. Optional: Share what has been prepared/learned with the actual organizations and ask them to provide feedback to the class.

6. Optional: Consider using organizations that may not be local to target a particular vertical market of interest to the group or a particular type of commercial print company serving a specific group of customers.

Managing a Digital Print Ope

Hardware

Software

Consumanbles

ASP Solutions

Financials

Resources

5002 125 2485

Cost/Price Analysis

Contract Negotiation Admin

Budget Alignment

Potential Customers

Existing Customers

Conte Creato

Department & Organization

Relationships

eration

Employees

Production
Workflow

PrePress

Press

Scheduling

PostPress

Planning

Distribution

Estimating

Payment

Hiring/Firing

Advancement

Day to Day
Operations

Training

Job
Descriptions

Personnel
Reviews

Product/Srvc
Partners

Part 2: Day-to-Day Management

When it comes to the day-to-day activities of a manager the actual responsibilities can vary greatly depending on the type of organization (in-plant or commercial), size of the organization (from 1-100+), type of customer served (internal or external and from operations to C-Level), type of services and products offered (black and white and color digital printing, offset printing, design services, variable data analysis and integration, finishing options), budgets and so much more.

In some environments the manager may be the lead, or even only employee. In other environments the manager may oversee one or more employees. Knowing what needs to get done, being able to get it done, managing others to do it and having a willingness to look ahead at what may need to be done in the future are qualities of great managers.

Major Workflow Factors

Major factors for workflow management include: People, Processes, Technology, Time and Cost of each step in the workflow. You can use these five factors to map, measure and manage the necessary steps to provide the products/services of your organization.

1. **People:** Who does the work within the workflow

2. **Processes:** What are the specific tasks to complete the work in the workflow

3. **Technology:** What technology resources are necessary to get the work done in the workflow

4. **Time:** How long will it take to complete the work within the workflow

5. **Cost:** How much will it cost to be able to do the work in the workflow

We have identified a core set of daily management responsibilities/tasks that are common among many in-plant and commercial print operations. For each we will describe the responsibility/task, why it's important and what some of the day-to-day practices can include.

1. Managing Strategic Plan

Business Plan (For Profit) / Justification Plan (In-Plant)

What is it?

The Business Plan/Justification plan, as we have discussed in Part 1 of this addendum, is about the strategic mindset, tactical approach to individual and organizational success all rolled up into a living breathing plan.

Why is it important?

Having this plan can help look beyond the day-to-day and consider what could be and what it will take to get there.

Day-to-Day Practices

Taking the time to review the business and write a business plan/justification plan needs to factored into a manager's responsibility. Usually there is a large block of time to complete the initial plan but additional time should be scheduled, weekly/monthly/quarterly to review the plan and actions being taken to deliver on the plan. Also the plan should be evaluated as part of an ongoing process to insure the plan is being followed, is relevant and accurate. Any changes/updates to the plan should be captured and communicated to all of the key stakeholders.

Current and Future Offerings

What is it?

Current and Future Offerings is about researching new products/services you can offer to your customers and researching more efficient/cost effective ways to produce the work that is provided by your organization.

Why is it important?

Understanding the products/services your offer your current customers is only part of a managers responsibilities. Identifying new products and services your team can provide to existing and new customers keeps you thinking about your relevancy to your customers. It also aids in the future planning research and considerations of the resources covered below.

Regularly evaluating your workflow (people, processes and technology) for efficiency and cost effective operation is one of the greatest attributes a manager can have in addition to strategic thinking and time management.

Day-to-Day Practices

Weekly/Monthly take the time to meet with current customers and evaluate the ability of your organization to meet their current needs. Discover future needs they may have as well as share ideas with them about products and services they didn't know you could produce/provide for them. You can't only focus on the customers you have, you need to consider the ones you don't have but would like to do business with too. Some argue it's even more important to meet with non-customers/prospects so you can learn about who they are and their needs and see if your current or future offerings can help them. Both existing and future customers are important to the day-to-day running of an operation.

Having daily/shift specific standard operating procedures (SOPs) for you and your employees helps identify what should be done to achieve the goals of the operation. Establishing a workflow benchmarking process is critical to the efficiency and cost effectiveness of your operation. Weekly/monthly you can review the ability of all those involved to complete their SOPs and make adjustments as necessary if something changes or needs to change in the workflow.

Primary daily activity areas of the operation that should/could be covered by SOP's and a workflow benchmarking process can include:

- **Administrative:** Selling, Planning, Scheduling, Estimating, Customer Service and Billing

- **Prepress:** Design, Submission, Asset Management, Data Integration, Preflighting, RIP, Proofing and Archiving

- **Output:** Output to traditional and digital printing technology along with electronic delivery are part of the output activity possibilities

- **Finishing:** Fold, Cut, Stitch, Trim, Glue, Bind, Label, Emboss/Deboss, Fulfillment and more

- **Shipping:** Distribution of the finished work internally or by private shippers or the postal system

- **Maintenance:** Scheduled preventative care and reactive preparedness to keep all parts of the workflow running smoothly

Besides using SOP's to benchmark the efficiency of the day-to-day operations a comparison to other similar organizations that can provide the same/similar services should be conducted by the manager. Non-competing organizations often share best practices for running an efficient and cost effective workflow. Another way to benchmark your organization is to prepare a job basket of similar items/services you produce and shop them around to other organizations. By being the customer you may not see all aspects of the workflow but you can evaluate the customer facing side that includes: time, cost, quality and level of customer service.

2. Managing Resources

Consumables

What is it?

Consumables are necessary resources that get used up in the operation of the day-to-day running of the organization. Some consumables include:

- Paper/other substrates that get printed on

- Ink/toner colorants used to create the image to be printed

- Bindery materials: wire (staples), coils, glue, tape, laminate, shrink wrap,

- Shop supplies: towels/rags, cleaning solutions, clean up sheets, deglazers, fountain solution, anti-offset powder, lubricants

Why is it important?

Understanding the costs and planning for the availability to have all consumables on hand are important to the day-to-day and forecasting of future needs of the operation based on estimated amounts of work.

Day-to-Day Practices

Listing all consumables, measuring consumable usage and waste, ordering of consumables and making sure enough is on hand to do that days work are a critical shop management task.

Hardware

What is it?

Hardware includes all the physical technology needed to be able to provide the core services and products of an organization.

Some types of hardware include:

- Desks, chairs, shelves, tables lights etc.
- Phones
- Computer CPU's
- Cables, Cords and Wire
- Monitors
- Scanners
- Printers
- Presses
- Cutters
- Folders
- Glue stations
- Color measurement devices (Densitometers and Spectrophotometers)
- Dollies, Palette Jacks, Fork Lifts
- Delivery trucks

Why is it important?

You can't have a print shop without many of the items listed above. Efficiently operating, measuring effectiveness, providing preventative maintenance schedules, determining effective lifespan, capability and cost are all part of the importance of managing your hardware.

Day-to-Day Practices

Starting with a list of current hardware resources, measuring effectiveness compared to task at hand, determining operating cost, replacement cost and maintenance schedule needed are some of the daily tasks for managing the hardware in a print operation.

A shop manager needs to keep abreast of new hardware technologies and assess capability, cost and value when acquiring new/used equipment.

As part of cost analysis a shop manager should be able to evaluate finance plans to acquire/maintain, operating expense projections and needed labor expense to operate.

A manager should be prepared when a critical piece of hardware experiences an unplanned failure. Having a redundancy plan and a tested problem resolution procedure in place will help to keep the organization running even if something happens unexpectedly.

Software and Application Service Provider (ASP) Hosted Solutions

What is it?

Software includes all the programs installed on computer hardware purchased to get the work done within the workflow. General office, administrative and accounting software can include word processing, spreadsheet, presentation, project management, accounting, planning and scheduling software used to get specific day-to-day functions done. Production software can include design, preflight, variable data, database, imposition, proofing, color management, raster image processor, press, finishing and mailing software.

Application Service Provider (ASP) hosted solutions can also be called cloud based solutions. In these cases the software isn't resident on a dedicated workstation in the shop but is hosted elsewhere and an organization pays a transactional or monthly/yearly rental fee to the solution provider to be able to use the solution with only a workstation, internet connection and a web browser.

Why is it important?

Software can make certain processes easier, simpler and more automated. Software is often computer platform and operating system dependent and versioned. Having the correct software available to support day-to-day operations while also keeping up with new versions can be challenging. Software can be a very costly part of the operation.

ASP business models have enabled significantly lowered up front costs to keeping up with changing needs and software versions. But often the solution can cost more over a longer period of time and may not be able to be customized for a particular operation, application or customer need. A benefit of the ASP model is that upgrades can happen more shamelessly and invisibly to the user because it isn't as impacted by the platform and operating system.

Day-to-Day Practices

Costs to acquire and maintain current versions of software need to include, ongoing testing to evaluate new platform/operating system versions, training, necessary hardware upgrades as well as changing customer needs and software capability.

Proactive education of internal employees and external content creators whose files wind up in the shop can go a long way to reducing software limitations and problems. Linking these efforts to a proactive testing efforts to deal with upgrades and functionality differences can turn a problem many need to deal with into an opportunity to get better content from customers.

Ongoing training and best practices for software usage by each employee should be encouraged. The more an employee knows and shares make a more in-depth wealth of knowledge available to all inside and outside the workflow.

3. Managing Financials

Ongoing Cost and Price Analysis

What is it?

Depending on the size of your organization you may or may not have someone or a team to help with the day-to-day business side of your business. Accounts Payable and Receivable, Expense Tracking, Payroll, Taxes, Weekly/Quarterly and Annual Filings and so much more.

When it comes to the day-to-day management of a printing organization someone also needs to keep track of the cost of operating the production side of the business. Whether costing is activity based, using a budgeted hourly rate system or some other method a manager needs to know what it costs to run their operation. The people, processes and technology that make up your ability to do business all have a cost. Besides tracking the costs to have them available you also need to include the cost of operating for a particular type of work (paper, production, finishing, shipping), or schedule (rush or reasonable turn around time), or labor (simple job requiring very little labor or a complex job that needs a lot of effort). These things impact the cost.

Why is it important?

In-plant print operations should track their costs and assign a fair market value price, including a discount for internal production if available, to the work produced and charge it back to a particular budget center. Part of this process is not only knowing the cost of operation but also the price of getting the work produced outside the organization. The more a manager runs their in-plant like this the more relevant and realistic the organization can align with the value they provide to their internal clients.

A commercial print operation tracks all the same costs and more and needs to assign a fair market price to justify being in business. Hopefully the price not only covers the costs of doing the work but also enables a modest profit to be made too.

Too many organizations do not accurately track the costs of their operation and determine a justifiable value for a price. This is critical to your success and the success of your organization!

Day-to-Day Practices

Costs of labor, technology, software, maintenance, training, consumables, substrate, finishing, shipping, insurance and more should be tracked daily. Pricing should include the costs to produce that job + a portion of the overhead of the entire organization and potentially a profit margin as well for commercial businesses.

Many newer Print Management Information Systems can help keep track of daily and job-by-job costs. Having a

solid grasp of your costs and the market pricing for those products and services can make a big difference in your planning and strategy development.

Budget Management

What is it?

Whether an in-plant print shop working off an assigned budget to their department or a commercial operation working on their own calculated budget for the current and future state of the business setting a budget and sticking to it can help you plan for success.

Why is it important?

After understanding costs and pricing in the previous section, an in-plant print operation should take the time to accurately reflect the operating cost of their operation as well as include future investments in people, processes and technology to help the department stay ahead of their customers needs. Working from accurate financial data can help you influence the budget assigned to your department. Being able to justify an investment based on accurate financial data and projected benefits goes a long way to growing your department.

A commercial print operation should use budgeting in a similar way to help forecast costs of operating today and tomorrow.

Time spent on these efforts will help you gain a deeper perspective and appreciation for what you can do for your customers and what it takes to provide it to them.

Day-to-Day Practices

Generating and analyzing accurate financial reports. Meeting regularly with the groups who help track and predict larger financial spending and sharing your operating costs and value you bring to your customers is an invaluable manager practice. If you can link the cost of a particular project or capability to saving the company money or growing the bottom line you position yourself as an asset to the organization, not a financial liability.

Quarterly you should spend time looking to the future of your business and your customers business and determine if the budget you are following will help you meet your goal or if it needs to change. If it needs to change use your Business Plan/Justification Plan to help influence the size of the budget you get to work with.

Negotiating Pricing, Services and Administrating Contracts

What is it?

When you purchase hardware, software, consumables, services and more you have the opportunity to negotiate with the company who wants to do business with you. Accurate costs, well thought needs and marketplace analysis can help prepare you for a mutually beneficial business relationship with those who sell you the products and services you need to run your business.

Why is it important?

Too often a lack of understanding current and future state, customer needs and costs leads to poorly prepared meetings with suppliers, vendors and partners. The more informed you are about what's going on in your business and in the marketplace at large the more opportunity you will have to choose a partner who wants to work with you and provide world class customer service and products at prices that work for you.

Day-to-Day Practices

Quarterly review all of your supplier/partner relationships to make sure you are getting what you paid for as well as understand if there is a better way of getting what you need done. Continually meet with customers to stay atop their current and future needs to help you ask the right capability and cost questions to your supplier. Take the time to keep abreast of new technologies and processes that can enable the work you are doing to be completed more cost effectively. If you haven't already, add a value to the customer section in your research. Some things can't be easily placed in a spreadsheet or assigned a simple number. A customer who continually sends you new customers making you more profitable deserves to be recognized differently and perhaps you can show them appreciation for what they are doing. It's hard to do that if you don't track the value of what you do for your customer.

All of this information combined provides a broader understanding of the business opportunity and you can influence the price and/or service you get based on this.

4. Managing Relationships

Within the Department/Company

What is it?

Represents the relationships between individuals in the department and company.

Why is it important?

The more a team/organization gets along the more likely people will find the workplace an enjoyable and rewarding place to be. Managers can help foster and possible alienate relationships with employees and coworkers. Encouraging individuals and teams to be aware of management needs and align their efforts to those needs can aid in the synergy in the organization. But if the direction of management isn't in line with where employees believe the organization could go then internal relationships can be pained.

Day-to-Day Practices

Understanding the needs of customers and management can help you foster and encourage the alignment of your employee's relationships with the organization as a whole.

With Customers

What is it?

Represents the relationships individuals and organization has with current customers.

Why is it important?

Beneficial, rewarding and enjoyable relationships between customers and the company they choose to do business with are a cornerstone of any retention effort. The experience a customer has with individuals and the organization as a whole can keep them coming back as well as recommending the organization to others.

Day-to-Day Practices

Constantly challenging yourself, your team and you organization to value and care for each and every customer relationship will help you and your organization be successful. Identifying customers needs and helping them achieve and at times go beyond is a way to delight the customer which can keep them coming back. Consider developing a customer relationship building and retention campaign to help gather data on what keeps customers coming back and what else can be provided to them that they may not know enough about.

With Prospects

What is it?

Represents the relationships individuals and the organization has with current customers.

Why is it important?

Servicing existing customers and not taking the time to develop new relationships with new customers can stunt any organizations growth. It's easy to become complacent providing the same service to the same customers without ever trying anything new. Identifying ways to reach out and connect with new customers can challenge you and your organization to be something more, not only to new customers but for existing customers too!

Day-to-Day Practices

Connecting with those responsible for marketing and sales and discussing ways to connect with new customers can benefit all those involved. This should be done weekly or more often. Assuming it's being taken care of is not a wise production management choice. You need the business from customers to provide you with the work that gets produced by your workflow. Winning new customers who have been clearly communicated to about achievable expectations and what's needed to get high quality, cost effective, fast turn around services makes your job easier. Challenge yourself and your team to create strong relationships with new customers. They can be the lifeblood of the future of your organization.

With Content Creators

What is it?

Represents the individuals and organizations that create content that gets submitted to your department or company for output.

Why is it important?

These are the people who directly impact the quality of your work. If a designer designs a well planned and correctly prepared file then your job is easier. If someone who doesn't know how to design along with the minimum requirements for work submitted to your company then the quality of the output will be low and the relationship can be a challenging one.

Day-to-Day Practices

Proactive education and expectation goes a long way to gaining the trust and interest from designers. Winning their interest in making correct design choices can make the difference between consistently leaving on time each day or being stuck late fixing something that could have been done right the first time.

Creating file prep guides, expectation booklets, sample applications and more and sharing via face to face interactions in seminars, on the website, in sales calls and beyond fosters the learning and communicating of achievable expectations.

Content can be identified by interviewing customer service, prepress, press and post press employees about what commonly comes in from designers that causes issues. Take the issues and turn them into valuable design ideas with the necessary requirement as part of the lesson.

With product/service suppliers and partners

What is it?

Represents the relationships with those who provide you with technology, software, consumables and maintenance in your workflow.

Why is it important?

Good relationships with supplier/partners help keep an organization running efficiently. Poor relationships where you or your organization are upset with a supplier/partner because of something they may or may not have done doesn't help to build good relationships. Sometimes you and your organization can be the difficult one. Asking for more than what is capable or not doing your part of the service only creates opportunities for the workflow to be ineffective.

Day-to-Day Practices

Regular meetings with suppliers/partners about what you and your organization can do to help them deliver their product/service to you can be a surprising breath of fresh air for a supplier. Proactive customers asking how they can better help the supplier do what they need to do is not a common as some may think. Helping your supplier do business with you can influence them to treat you even better than some of their more troublesome customers.

Creating service level agreements that clearly define what is the responsibility of both parties can not only serve as a contractual agreement but it also helps set expectations up front rather than when a problem arises.

5. Managing Employees

Job Descriptions

What is it?

A job description describes the skills and knowledge required by an applicant to be able to perform a particular role in an organization. Roles and responsibilities in a job description can describe the relationships to others in the organization and how their role relates to your position. A job description can go beyond describing the current state or work expected and include goals that are looking to be achieved by the organization or department.

Why is it important?

As a manager, having well developed job descriptions can help you hire, manage, promote and sometimes even let go of a non-performer. The job description helps an employee understand what can be asked of them. Oftentimes the work an individual does can expand beyond the description but regularly reviewing descriptions with employees and the day-to-day tasks they are performing can help provide you a better understanding of the organization and the value an employee can be providing to their employer.

Day-to-Day Practices

If no job descriptions exist for an existing organization coach the employees on developing a job description for their role and review it with them to better understand how you both perceive what they do and provide for their efforts. If job descriptions do exist, review them for accuracy and relevancy and ask the employee to edit them and review together. You could even challenge existing employees to create job descriptions for roles that aren't currently supported but could be valuable if they existed. The exercise can help all involved better understand the current work being performed and what may not being done that should be.

Hiring/Firing and Other Points in an Employee Handbook

What is it?

When it comes time to hire someone you need to be able to describe not only their role and responsibilities of the position but also the organization as a whole and how it operates. An employee handbook can aid in communicat-

ing critical organizational and individual responsibilities, requirements, benefits and policies to new hires.

Here is a sample of major headings and subheadings in a sample employee handbook:

- **Overview and Employment Relationship:** Welcome message, history, mission, values, goals, code of conduct and business ethics, confidentiality, non-competes and disclaimers

- **General Employment Information:** Equal opportunity employer policy, employment eligibility, promotions, personnel file policy, harassment and discrimination policies and reporting procedures

- **Attendance at Work:** Working hours and overtime, break and lunch periods, attendance expectations and telecommunication policy

- **Workplace Professionalism and Company Representation:** Dress code, smoking policy, drugs and alcohol policy, safety and security, parking, visitors, conflicts of interest and travel policy

- **Compensation and Benefits:** compensation schedule, recording time worked, benefits eligibility, health/dental/vision insurance, 401(k) plan, bonuses, workers compensation, unemployment, expense reimbursement and retirement

- **Employee Time Off From Work**

- **Use of Company Equipment and Electronics**

- **Monitoring in the Workplace**

- **Performance Expectations and Evaluation**

Why is it important?

The list above is not a complete list and some of the contents may not be appropriate for your organization, but the research that goes into creating an employee handbook can help every manager navigate the benefits and pitfalls of managing people. An employee handbook is not a management book. But it does outline critical information that represents the value of the role as well as the need to set expectations up front and during the life of an individuals employment.

Day-to-Day Practices

If your organization has a human resources group then the responsibility for an employee manual often falls on them to create and manage. But you not only need to be familiar with the content but you may need to review it with specific employees from time to time.

If you have a small organization without someone taking the role of human resources that responsibility may fall upon you. The creation of a manual may take time but once created it can be easily edited and updated...and you can make sure they get distributed electronically and in print!

The content in the sample employee manual and ideas on how to develop your own can be found here: http://humanresources.about.com/od/handbookspolicies/a/sample_handbook.htm

Management Style

What is it?

Represents characteristic ways of making decisions by managers relating to their subordinates or employees.

Why is it important?

There are many ways to manage. Some would argue there are too many. When you become responsible for someone other than yourself in business you need to decide how you will interact with him or her. Clearly communicating your method and your expectations are two key foundations to any management style. Below are 5 classic management styles. None are "the best." Why you may choose one method over another can depend on the manager, the employee, the task at hand or the necessary outcome.

- **Autocratic:** Leader makes all decisions unilaterally.
- **Permissive:** Leader permits subordinates to take part in decision making and also gives them a considerable degree of autonomy in completing routine work activities.
- **Consultative:** Essentially dictatorial; however, decisions take into account the best interests of the of the employees as well as the business.
- **Democratic:** Manager allows employees to take part in decision making: therefore everything is agreed upon by the majority.
- **Laissez-faire:** Leader as mentor and stimulator while staff manages their own area of business.

Day-to-Day Practices

Identify what your management method is. Do your best to communicate the method and your expectations to your employee and ask that they honestly provide input about how your style is helping them to achieve the expectations you set out. Some people need to be told what to do while others like to find their own way. It depends on a great deal of variables. As long as you are communicating with all those impacted then you are letting them know your expectations and willingness to help them reach the goal.

Performance Reviews

What is it?

Represents a review process by which the manager constructively points out an employee's strengths and weaknesses and give them a path for growth.

Why is it important?

Too often managers don't take the time for performance reviews. If you don't take the time to let the employee know what they are doing well and what they can be doing better in a constructive way they won't know whether they're doing a good job or not.

Day-to-Day Practices

Performance reviews should be based on a formal set of goals communicated and agreed upon between the employee and the manager. A job description rarely defines a set of goals. Either develop them together with the employee or clearly communicate and confirm they understood what you expect from them. Always have your employees evaluate themselves and use their review as the basis of yours. Doing so can help you connect with the current and potential an employee sees in themselves. If there is something you want to criticize about an employees performance roll your criticisms into the next round of goals.

An easy way to gain respect form your employees is to take a performance review seriously. If you don't they won't and they may not find your role very valuable as a manager. Don't forget you should be reviewed too-not only by upper management but by your employees too!

Training

What is it?

Represents the formal and informal learning for an individual, department or organization. A formal training development process can include:

- Training needs analysis
- Training content design
- Effective training methodologies
- Training delivery and action planning
- Training evaluation and follow up

Why is it important?

Similar to a performance review, if training is taken seriously it can increase the value and contribution of an employee back to the organization as a whole. If no training ever occurs you don't grow.

Day-to-Day Practices

Based on the individual, their job description and their actual efforts, workflow processes and goals of the organization a training needs analysis can be conducted to identify areas of opportunity for a training program to help achieve the goal. Encouraging individuals to learn on their own and directing them toward areas that are critical to organization growth you can help an individual learn on their own.

Giving the task of learning a new program, process or way of doing something you could challenge an employee not only to want to learn how to do it but also teach others what was learned along the way. Encouraging learners to be teachers helps to keep learning going by passing it on.

Internal training can help your organization grow more efficient, effective and creative. Encouraging and facilitating learning between your organization and your customers and potential customers can change the entire dynamic between both parties. You can be perceived as a valuable organization that enables the increased knowledge and skill development of your customers. Additionally, your customers can become more creative and interested in trying new things you can help them do. Both parties can grow form this approach.

Learning can be classroom style, based in a newsletter, housed on a website, delivered in a webinar and printed in a book. People learn in different ways. Develop engaging content and share it with others in more than one medium.

Advancement

What is it?

Represents the opportunity for an individual to move up in an organization.

Why is it important?

Companies are constantly challenged to find valuable employees for their organization. Sometimes they need to fill a new position but often they are challenged to fill a position created when someone left the company all together.

Having an advancement process enables and encourages individuals to grow and move up in the organization. Without an advancement process some employees stay in the same position for too long. It's not that someone can't keep doing the same job forever, but sometimes people who stay in the same job experience a performance drop due to boredom in their role.

An advancement process can help retain good employees and keep them from leaving the organization all together.

Day-to-Day Practices

As part of an employee's performance goal setting and review the advancement process should be discussed. Is he employee interested in growing and moving up or around in the organization? Is there something they would like to do that doesn't exist at present? If not, what if you helped them create it?

You got into a management role because you wanted to advance yourself. You should be thinking about who on your team can take your place should you decide to move around or up in the organization.

6. Managing Production Workflow

Estimating

What is it?

Represents a formal response from the print provider to the customer specifying cost and time line. If accepted, the estimate will be used to drive the billing process later in the workflow.

Why is it important?

Accurate estimates help an organization run efficiently and profitably. The estimate clearly sets expectations for the service to be delivered. Inaccurate estimates may miss critical costs, not reflect accurate drying time for glue and more. Lost time and money and dissatisfied customers can result in poor estimating methods.

Day-to-Day Practices

Whether the process is done manually, with software or automated based on preset business rules the ability to provide quick turn around estimates for internal planning and external expectation setting needs to happen quickly every day for every job.

The ability to pull up historical customer information and previous job histories can make for a more accurate estimate. Connecting the estimating process to a management information system can enable greater access to information and speedier response times.

Planning

What is it?

Reverse engineering the project to identify the exact production resources and time line required.

Why is it important?

Accurate job planning assures that the right resources will be available at the right time to get the work done. Planning is all about resource allocation for every day, every hour, every minute for every job.

Day-to-Day Practices

Regularly reviewing scheduling and resource capability can help with critical job planning. It can make the difference between winning a job and having to turn it away.

Ongoing research and testing should be performed to evaluate newer automated software and ASP planning solutions.

Scheduling

What is it?

Specific prepress, press and post press equipment are identified and reserved for the project.

Why is it important?

Once a job is scheduled all resources are dedicated to be able to meet the schedule and cost estimates of the job. Without accurate scheduling idle press time or idle workflows can occur while a bottleneck in the workflow is cleared and the schedule is realigned.

Day-to-Day Practices

In some organizations this process is completely automated. Taking the time to evaluate web-to-print and integrated management information systems is critical to your role as a manager and providing an accurate schedule to your employees and customers.

Prepress

What is it?

Represents the processes and procedures that occur between the creation of a print layout and the final printing. Some of the major functions in prepress include:

- **File Transfer:** The method and format for sending content from the creation stages to the production stages.
- **Preflight:** Assures the proper content has been prepared, saved and sent for output according to the print providers specifications.
- **RIP (Raster Image Processor):** Hardware/software that converts creative files to PostScript page description language, converts it to a raster image and controls the printing technology to output the file.
- **Output:** After the files are RIPed, the printing device images the file.
- **Proof:** Provides a reasonable representation of what the final output will look like.
- **Archive:** The process of saving the electronic file components for later use.

Why is it important?

Without a super efficient prepress department you could have customer jobs stacking up on the server waiting to be preflighted and idle press and finishing equipment.

Day-to-Day Practices

Once all prepress functions and standard operating procedures have been established and optimized, the day-to-day running of a prepress department is driven by the schedule and type of work to be produced. Planning for rush work, potential workflow failures and routine maintenance are critical for a manager to consider.

More of the day-to-day management practices can include:

- Regular testing of the existing workflow and investigating more optimized ways to get the work done
- Encouraging employees to keep open communications and optimize the processes they are responsible for
- Endure the connection between the customer, customer service representative and the prepress technician are clear and open. Should anything arise on the client side or the operation side all parties should be informed.
- Reviewing best practices for receiving files from clients
- Regular review of potential issues with submitted jobs and turning them into proactive messages to designers and customers
- Regular tracking of labor and reviewing the cost of operation to the cost (commercial)/chargeback (in-plant) of any additional work performed not included in the original quote
- Regular research of new technologies that can optimize prepress functions
- Verify that proofing methodologies offered align with customer need, expectation and budget
- Ongoing research into archiving best practices and linking the archiving of jobs to cost savings and potential revenue generation activities
- Ongoing research on how to optimize prepress functions and the potential to put more on the content creator using a prepress rules enabled web to print solution

Press

What is it?

The press represents the device that makes the printed image happen. Some traditional presses require an image carrier to be created in the form of a plate, cylinder or screen that is fixed on the press and enables the press to make many impressions of the image. Digital presses (toner and ink jet) create the image on the fly. A few of the same pages, many pages with different information on them and even many pages with personalized information on them are easy for digital printing technology.

Why is it important?

This function creates one of the most important assets of what you offer to your customer. Managing digital presses vs. traditional analog presses are similar. Many make the difference sin the technology a greater issue than it needs to be. Well-trained operators, documented and tested preparation, operation and maintenance procedures are the foundation of a good pressroom.

Day-to-Day Practices

As with many functions of the workflow, depending on the actual offering and number of employees a manager could be involved in running the press or just managing the team and workflow that the press operates.

Some of the day-to-day management tasks in the pressroom can include:

- Tracking of time to prepare, run, clean up the press
- Establishing and enforcing a preventative maintenance schedule
- Interfacing with suppliers and vendors of press technology regarding new equipment, maintenance of existing equipment and dealing with unforeseen problems that arise
- Establishing best practices that include consistent procedures that ensure consistent output
- Quality tracking and error analysis
- Linking of knowledge learned in best practices and error analysis should be shared internally and externally with customers and non-customers to enable more efficient, predictable and less costly operation
- Management of all consumables used daily and predicting for future need including paper and other substrates, ink and toner, cleaning solutions and rags and more
- Testing and establishment of imposition forms that optimize press and prepress

PostPress/Finishing

What is it?

Finishing represents all of the processes after printing and before shipping.

Why is it important?

A proactive manager that establishes clear and consistent procedures throughout the workflow has to deal with less problems in finishing. If something comes off the press and is wrong, it's not worth finishing. If the problem isn't discovered and more work to finish the job (cutting, folding, gluing) is completed the cost of the problem rises. What comes into the finishing department needs to be right. What leaves the finishing department has to match the expectations of the customer.

Finishing can contain some of the most physically/mechanically intensive steps in the workflow next to printing. Making sure operators are trained, quality input is received and all procedures are optimized makes for less costly errors in the workflow.

Day-to-Day Practices

Some of the day-to-day management tasks in the postpress/finishing can include:

- Optimizing finishing procedures and ensuring all preventative and routine maintenance are being carried out
- Having clear expectations of what is supposed to be received by finishing, what should occur and what will be handed off communicated to all in the workflow.

- Interfacing with suppliers and vendors of finishing technology regarding new equipment, maintenance of existing equipment and dealing with unforeseen problems that arise in daily operation

- Management of all consumables used daily and predicting for future need including wire, glue, boards, blades, rollers and more

Distribution

What is it?

Represents the distribution of the finished pieces internally or externally via private shipping companies or the USPS.

Why is it important?

Having an efficient and cost effective method of distributing the work you produce is critical to their operation. Keeping up with shipping/distribution requirements and taking the time to test and modify processes can not only save money for the operation but the savings can be passed on to the client in some cases due to optimizing the process for the shipper.

Day-to-Day Practices

Some of the day-to-day management tasks in the distribution can include:

- Regular research into changes in shipping requirements from private shippers or the postal system

- Testing of new shipping technologies and methodologies

- Establishment of efficient and cost effective procedures for preparing finished pieces to be shipped

- Tracking labor and other costs of shipping

- Ensuring the customer received the job in the expected time and the shipping did not compromise the job quality

Payment

What is it?

Refers to the verification that the cost of the job was understood, accepted and paid for.

Why is it important?

Both commercial operations and in-plants need to justify their work by tracking their costs. Those costs + profit need to be repaid in the commercial world and in an in-plant the costs need to be communicated to the one asking for the work and to the one who validates your budget. If you can't justify your work and be paid for it you can't remain in business.

The costs of some jobs can be high, especially when specialty substrates, finishing and even postage are considered. When you get paid is critical to being able to cover costs and be ready to accept the next job. If you can't be paid or funded then your operation can't continue

Day-to-Day Practices

- Verifying cost of each job
- Making sure invoices/chargebacks are accurate and timely
- Providing flexible payment options for customers that still allow fiscal responsibilities to be covered
- Reviewing Accounts Receivable to make sure the work completed is being paid for
- Resolving any customer related issues that can impact amount/timeliness of payment

Workflow Analysis and Improvement

The people, processes and technology represent the necessary parts of an organization's workflow and enable the organization to be able to produce the organizations products or services. Optimizing the process can free up time, save costs and allow for the analysis of newer products and services to be offered.

Improving on a workflow begins with its analysis. From front to back, back to front, following the customer's job or following the business of the organizations involved–there are many ways to analyze a workflow.

Xerox's Guide to Achieving Operational Excellence

Xerox created a guide to help their customers analyze and improve their workflow in the *Guide to Achieving Operational Excellence.* The guide helps an organization achieve operational excellence. Simply put, operational excellence is an approach to continuous improvement that empowers employees and optimizes existing activities to deliver on the needs of customers in the most efficient and effective way possible. The guide uses a combination of Lean Manufacturing [waste reduction + eliminating unplanned redundancy] and Six Sigma [improve performance + eliminate process variation] business strategy.

We have summarized the 5 Steps to Achieving Operational Excellence here to help you consider where you might want to start thinking about how to analyze and improve your workflow.

These steps are merely a starting point, developing your own process around making your workflow super-efficient and cost-effective is one of the most eye opening and important responsibilities of being a manager. Your efforts can link the day-to-day management of an operation to the long-term opportunities to grow and be successful for you and your organization.

1. Understand Your Goal

- Figure out what you want/need to improve
    - » Examine your operations at all levels
    - » Gather Information
    - » Create Project Charter [statement of scope, objectives and participants in a project]
- Considerations
    - » Where can you find the information by which you can determine your weaknesses and areas in need of improvement?
    - » How often do you seek this information currently?
    - » Why is this sort of elementary assessment important at an early stage?
- Tools
    - » Supplier, Input, Process, Output, Customer Diagram
    - » High- Level Process Map
    - » Project Charter Worksheet: Opportunity or Problem Statement, Business Impact, Goal Statement, Project Scope, Team Selection, Project Plan
- Sources for Early Metrics
    - » Quality of product & process (billing, workflow, etc)
    - » Delivery
    - » Internal operations
    - » Service
    - » Costs

2. Measuring Your Current State

- Before you can begin improvements you must establish a basis for comparison using measurements of your current state
- Considerations
    - » What measurements are associated with the areas you identified in step 1 as weak or in need of improvement?
    - » Do you have the tools and benchmarking in place to gather this initial information?
- Process Capability
    - » Can be a quantifiable determination derived from an in depth examination of statistical concepts but

in this case a simple qualitative approach is enough

» How much work can you handle?

» How quickly can you get it done?

» Does it vary by day, week, season?

» Are you limited by your current equipment or other resources?

- Tools

    » Control Chart

3. Analyze Your Data

- Once you've gathered your numbers you need to analyze their contents by running them through a few detailed processes

- Considerations

    » What effect do you anticipate the statistical revelations will have on your existing workflow?

    » Have you noticed any patterns already while gathering the initial information?

- Using the diagrams and maps you should have completed in the previous steps you should dig into their results. Pulling each element apart to examine its effect on the greater processes will hopefully reveal the weaknesses, waste and redundancy that are slowing your workflow.

- Tools

    » Customer Value Ads (CVA) + Business Value Ads (BVA) + Non-Value Ads (NVA) =Process Cycle Time

    » Optimize CVA, Minimize BVA, Eliminate NVA

    » Value-Add Analysis

    » Fishbone Diagram (Cause and Effect Diagram) and Spaghetti Diagram (Distance Travel Chart)

    » Improve Your 5S: Sort > Set In Order > Shine > Standardize > Sustain

4. Develop Your Plan

- Now that you've clearly identified your current state of operations, including your weaknesses, waste and redundancy you can build a plan to achieve full operational excellence

- Through the data analysis process you and your team should have noticed not only the problems but realized some potential solutions. This is the time to flesh those ideas out further.

- Considerations

    » Are there elements that may not be picked up in statistical models?

- The project team should bring a diverse perspective to this process. While numbers "don't lie" there are nuances that your team should be able to factor in to the final plan for improvement.

- Tools

    » Brainstorming Sessions

    » Benefit/Effort Matrix (key ideas to focus on)

    » Criteria-Based Matrix

    » "To Be" Process Map (document improved process)

    » Failure Mode and Effects Analysis (establishing worse case scenarios and what to do about them)

5. Analyze Your Data

- With plan in hand you should now implement your plan with the same level of awareness and attention to cause and effect as you employed in the development phases

- Considerations

    » What are some procedural efforts that can be made to increase the likelihood your plan will remain effective and relevant?

    » What are some potential roadblocks to continued success?

- Suggested Practices

    » Manage the change being implemented

    » Automate your workflow

    » Drive out costs, drive up efficiency

    » Explore additional processes/analysis for further improvements

- Tools

    » Action Plan (documents what will be done, by when, by whom, what the final outcome looks like and identifies any potential roadblocks and how they will be mitigated)

Course Exercise: Bringing it All Together

1. Given a series of what-if management issues, develop at least two or more recommendations to deal with the issue at hand. Include management effort, employee effort, metrics to measure the improvement/fix and a plan on how to avoid the issue in the future.

2. Given a hypothetical print shop, identify key areas for optimization, cost savings, product/service development and business opportunity. Prepare a recommendations report and present your findings to the class.

3. Given a local commercial print shop, analyze the operation from job in to job out. Map out the current management responsibilities and processes. Identify areas of management optimization and opportunity to improve the operation. Prepare a recommendations report and present it to the commercial print shop management. Report back to the class the reception of your proposed ideas.

4. Given a local in-plant print shop and analyze the operation from job in to job out. Map out the current management responsibilities and processes. Identify areas of management optimization and opportunity to improve the operation. Prepare a recommendations report and present it to the in-plant management. Report back to the class the reception of your proposed ideas.

Resources

- Xerox's Guide to Achieving Strategic Relevance
- Xerox's Guide to Operational Excellence

Recommended Guides to Create

- Problem Resolution Procedures
- Hardware Maintenance Log
- Workflow Map
- Standard Operating Procedures
- Employee Handbook
- Vendor Evaluation Spreadsheet
- Customer Relationship Management Database
- Job Tracking Database (including costs and scheduling)