Building Practical Workflows

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NAPL is a not-for-profit trade association providing companies with the strategies, insights, and guidance to make informed business decisions, minimize risk, anticipate change, and profitably grow their business.

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If you get the chance – stop by the booth #862 and say hello!

The Workflow Zone

Production is more efficient work when your busy
People are more productive when they are busy
How do you get into the zone?
What keeps you out of the zone?
4 Steps to a Better Workflow

1- Identify, Measure & Fix Bottlenecks
   workflow is STEP, finding bottlenecks & fixing Measurements, 6 bottlenecks and solutions
   Increase productivity 15-25% (one more job/shift)

2- Managing Quality / Color
   Process control, running to spec's

3- Create Islands of Automation
   applications, servers, DFE's

4- Build Super-efficient Workflows
   CIP4, JDF ≠ MIS, JDF: Good, bad and ugly

Workflow is Equipment

Film based workflows

Computer to plate (CTP) or to Press (CTPP)

Digital Printing (non-impact)
Workflow is Staff, Training & People

Front end workflows
(sales, estimating, CSR)

Production workflows - (prepress, printing, finishing)

Streamlining Steps = Faster Turnaround

Traditional Offset Workflow

Digital Workflow

1-3 day turnaround

2 to 10 day turnaround

Building Practical Workflows
#1 - Find Your Bottlenecks & Fix

**Production Bottleneck**
- Speedy Gon Mistake-Prone
- Output
- 70% correct
- 30% rework

**Preflight Bottleneck**
- Missing data
- Preflight

**Estimating Bottleneck**
- Estimate created
- Planner reviews any problems?
- Scheduling reviews any problems?
- Boss reviews any problems?
- Sales reviewed any problems?
- Customer reviews any problems?

Look For Piles

**Flatbed**
- 4 color/hr.

**Retouching**
- 6 color corr/hr.
- 12 color corr/hr.
- Imagesetter
- 12 seps/hr.

**Copier**
- 10 ppm

**Drum**
- 16 color/hr.
Flowchart Signs

Too Many Arrows

Too Many Decision Box

Measurement Complaint

Can’t Measure Digital Performance?
- Sometimes 15 min. to preflight other times 4 hours
- Sometimes its 8 minutes for one scan or 8 hours
- 1 file print 4 seps/ hour another 4 hrs for one separation

Too much variability (measure) -> make smaller categories

More Specific Measurement Categories
- Not all scans - 35 mm scans, 4x5, 8 x 10 etc.
- Not all pages - 1200 dpi, 2400 dpi / b&w vs color
- Not all preflight - Preflight for xyz prepress, abc design
May be Wrong Measurement

Output / Hour
- scans/hour
- preflight/hour
- film output/hour
- proofs/hour
- retouched/hour
- printed pages /hour

Output / hr measures doesn’t tell the whole story
- Mistakes, problems, issues occur (rework or spoilage)
- Output / hour can look artificially good without rework

Ratio’s best measure
- Percent of sales dedicated to payrole (i.e. 25%)
- Chargeable press time (i.e. 65%)
- Bad plates / good plates (i.e. 5%)
- $ Sales / employee (i.e. $125K)
- Rework $ as a percentage of sales $ (i.e. 1.5%)
- Average time to make-ready (i.e. 15 minutes)

Static Vs Moving Bottlenecks

[Diagram showing different stages of the workflow with corresponding times and resource allocation]
Address 1st & 2nd Bottlenecks

4 - Color/hr. -> 6 Color Corr/hr. -> 10 Copies/hr. = 4pgs/hr

Add scanner
8 - Color/hr. -> 6 Color Corr/hr. -> 10 Copies/hr. = 6 pg/hr.

Add 2nd computer
8 - Color/hr. -> 8 Color Corr/hr. -> 10 Copies/hr. = 8 pg/hr.

6 Bottlenecks & Solutions

Production rework
Administration or preflight rework
Physical plant layout
Estimating
MIS or IS
Photoshop
### Rework Hidden Bottleneck

**Production rework**
- Output
- 70% correct
- 30% rework
- Speedy Gon Mistake-Prone

**Admin. rework**
- Missing data
- Preflight
- CSR
- Customer call
- Customer call

### Preflight Bottleneck

- Sales PU 1-2 hrs
- Car / desk 1-2 hrs
- Customer Contact 2-3 days later

- CSR pile 2-4 hrs
- Order Entry 1-2 hrs
- Preflight pile 2-3 hrs
- Preflighted 1-2 hrs

- Planning pile 2-3 hrs
- Planned 1-2 hrs
- Estimator pile 2-3 hrs
- Estimated 1-2 hrs

**Problems Found!**
3 Fast Response Preflight Solutions

Automate & standardize PDFs

Can automate PDF creation
create settings (i.e. press, monitor)
Send to creators
Print to watched folders
set up on a dedicated machine
everyone creates PDFs the same way
Send “settings file” for Distiller
Send PDF/x files
PDF/x1a and PDF/x3 are used as “BlindExchange” formats
Popular with publishers such as Time and BusinessWeek

PDF->HTML conversions

Variety of tools and suppliers
Vertis complete solution to transform print catalogs to web, build db and shopping cart
Others
- PDF Online
- PDFToHTML
- Click to Convert
- Amber PDF converter
- PDF to HTML
- Adobes online PDF converter
- GlobalShareware
- PDF Ripper

Source: Images Vertis, 340 converters pdfzone.com

Plant Layout

Original plant layout

New equipment added
- Scanner, imagesetter, proofer

Reorganize base on workflow
- Less accumulation in piles
- Less damage in transport
Estimating / IS Support

Too many people & steps
Solutions
spreadsheets
templates
price list

MIS
production
MIS
production
MIS
production
MIS
production

CD
Repair CD
production
Repair CD
production
Repair CD
production
Repair CD
production

Problem - computers crashing
Solutions - Create repair tools on each desk (NDD, disk first aid) with instruction

Photoshop Bottlenecks

Bottlenecks can be surprises
Assume newer is better but not always

Different versions of Photoshop and the OS result in different levels of performance

Sometimes older software has less features but faster for what you do!

Fastest
Slowest
OS 9 PS 6
OS 9.2 PS 7
OS Panter CS 1
OS Tiger CS 2

Source: www.adobeforums.com/cgi-bin/webx?13@316.oPakeG3EQao.8@.3bbbeddc/0
2nd -> Managing Quality / Color

Usually equipment calibrated when installed
But not checked again until a problem develops
  May print for days or months wasting time and materials
All equipment drifts in performance
  some very slowly - monitors & scanners
  others fast and wide - toner devices, inkjets
Better solution is to check regularly aka process control
Determine acceptable and unacceptable drift -
  based on equipment, customers demands, and staffs motivation
Easy to check regularly
  Once a month, chart, monitor
  Catch problems earlier and fix

Implementing Process control

All equipment drifts in performance
  some very slowly - monitors & scanners
  others fast and wide - toner devices, inkjets
The solution = Process control
  measuring targets to check if equipment is working properly
Problems - Need formal tolerances for drift
Solutions:
  1 Create tolerances for acceptable drift
     Pick a measure (dot percent, density, △E) & measure
     Determine acceptable and unacceptable drift
     Proofer, Imagesetter, CTP, press
  2 Create of procedures for inspections
     Inform everyone, chart, monitor
  3 Schedule inspections
     2ce day, 1 week, 1 month
Color Management

For CMS need: CMS software, spectrophotometer, colorimeter, densitometer

Advantages of CTP

- Increase quality on press
  Up to color faster, less paper waste and spoilage
- Increase productivity of prepress
  Do more work with less people
- Streamline your workflow
  Grow you business profitability
- Reduce turnaround time required for jobs
- Increase your competitiveness
  Strengthen your ability to survive long term
Run to Spec’s

To print in high quality and reduce errors need to adhere to specifications
Spec’s include
- Digital file prep: program support, resolution, fonts,
- Color / Production: dot gain, ink density, grey balance

Some of the spec’s are for the service provider
SWOP, GRACoL, SNAP, Bridges

Some spec’s are for the creator and customers
Photoshop determines color space, dot gain, resolution
Acrobat determines compression, font embedding

Run to numbers

Print Characterization Chart

<table>
<thead>
<tr>
<th>Paper/ Substrate</th>
<th>CMYK Line Screen</th>
<th>CMYK Plus Spot</th>
<th>CMYK Plus Solid Ink Density</th>
<th>CMYK Plus Print Contrast</th>
<th>Plus Total Dot Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades 1 and 2 premium gloss coated</td>
<td>23%</td>
<td>1.70</td>
<td>2.45</td>
<td>1.02</td>
<td>35-40</td>
</tr>
<tr>
<td>Grades 1 and 2 premium matte coated</td>
<td>150-175</td>
<td>300-320%</td>
<td>1.60</td>
<td>1.29</td>
<td>1.02</td>
</tr>
<tr>
<td>Premium text and cover coated</td>
<td>150</td>
<td>250%</td>
<td>1.30</td>
<td>1.13</td>
<td>1.05</td>
</tr>
<tr>
<td>Grade #1 coated</td>
<td>150</td>
<td>250%</td>
<td>1.65</td>
<td>1.35</td>
<td>1.05</td>
</tr>
<tr>
<td>Grade #3 coated (SWOP)</td>
<td>120</td>
<td>250%</td>
<td>1.50</td>
<td>2.25</td>
<td>1.05</td>
</tr>
<tr>
<td>Supervar SCA</td>
<td>183</td>
<td>250%</td>
<td>1.35</td>
<td>1.40</td>
<td>1.05</td>
</tr>
<tr>
<td>Supervar SSC/SCC</td>
<td>200</td>
<td>250%</td>
<td>1.35</td>
<td>1.10</td>
<td>1.05</td>
</tr>
<tr>
<td>Uncoated offset</td>
<td>110</td>
<td>250%</td>
<td>1.25</td>
<td>1.00</td>
<td>1.12</td>
</tr>
<tr>
<td>Baseprint (base)</td>
<td>65</td>
<td>250%</td>
<td>1.25</td>
<td>1.00</td>
<td>1.12</td>
</tr>
<tr>
<td>Baseprint (beaver)</td>
<td>150</td>
<td>250%</td>
<td>1.25</td>
<td>1.00</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Sources: SWOP, GRACoL, SWOP, and other industry groups

www.swop.org/certification.html
Building Practical Workflows

3rd -> Build Islands of Automation

Use application automation
- Acrobat, Photoshop, Illustrator batch functions

Off load tasks to servers & DFE’s
- Server: DAM, MIS, OPI, PDF creation
- DFE: ICC profiles, In Rip trapping, imposition

Unattended automation across devices
- CTP systems that offer CIP3 and ink key presetting
- MIS software for job estimation, tracking, billing
- Template driven design driving digital presses

Goals
- Increase production productivity, decrease production costs, increase convenience (value) for customers

Why automate (Warning not for anyone with heart problems:)

- Bad communication to estimating results in inaccurate quotes, long turn times, re-planning and lost work or non-chargeable rework.
- Sales and CSRs waste too much time on paperwork or looking for information.
- Poor internal communication – resulting in non-chargeable rework
- Reporting AA’s and customer changes, is inconsistent, resulting in lost revenue
- Lack of up-to-the-minute business data available when making critical decisions.
- Priorities not defined, results in bottlenecks, job delays, excess overtime
- Jobs get “lost”, resulting in delivery delays and unhappy customers.
- Shop floor data collection is slow, incomplete and/or inaccurate, making estimating, costing / pricing difficult.
- No inventory system. Materials are used without being identified with a job, or posted to the job at the wrong cost.
- There is no process to track and/or post waste.
- Invoices are late, unclear & inaccurate with missing material, alteration & shipping
- Non-integrated systems require redundant data entry making sharing of information and collaboration difficult, increasing mistakes error.
- Company’s financial status is often a surprise at the end of an accounting period!

Source: EFI ABC’s of Print MIS
Value = Convenience = On Line

Examples New Web Services

Ready-page.com
Husband and wife design company
Creates catalogs, brochures & corp id material
And accepts files submitted via web browser
Automatically, 24/7, they create PDF’s, preflight and send back soft proofs

Message
You don’t have to be a “big guy” to offer web based services
Both MIS and production workflows will become more automated

These two workflows have some overlap but also require very different tasks

JDF will allow more collaboration

Expensive high end systems will be used by larger companies

While smaller companies use 2 different systems

**CIP3**

CIP3 (Inter. Cooperation for Integration of Prepress, Press and Postpress)

1st attempt to automate the process used PPF = Print Production Format to preset equipment (press ink keys)

**CIP4** (Inter. Coop. for Integration of Process, Prepress, Press & Postpress)

Job Definition Format (JDF) a independent standard

JDF is XML data inside a PDF file that includes:

- eCommerce: web based input (quoting/ordering) and output (email)
- Pre-press & press: process control and color management
- Connections to MIS: estimating, tracking, billable time,
- Postpress: finishing & shipping room
#4 Build Super-efficient Workflows:
Puts the pieces together

Customer Interface
- Quoting, File Submission, Preflight, Order Status, Job History Info,
  Pricing, Proofing, Revision Control, Tracking, Billing

Business Process
- Estimating/Pricing, Order Enter & Job Planning, Scheduling, Purchasing, Machine Monitoring & Tracking, Shipping, Accounting, Inventory Tracking, Job Reporting

Operations / Production
- In-RIP / In-server functionality (CMS, JDF), Variable Data Tools, Content Management, Job Ticketing, Tracking, Preflight, Proofing, Web Management, Print, Finish, Distribute

JDF for super-efficiencies

JDF is an XML-based format standard
Based on the CIP3's Print Production Format (PPF) and Adobe's Portable Job Ticket Format (PJTF).
Includes JMF, the messaging format of JDF and functions as an interface between the production equipment and MIS Systems
Provides a job tracking functionality and could be used to establish a queue, or determine its status
JDF adds a "header file" to the PDF file
It describes the job, and includes info such as the customer name, billing data, and shipping instructions.
It also includes job specs such as page size, number of pages, cover, color, binding, content format (PDF, etc), deadline, and even packing instructions.
JDF not limited to large companies

You don’t have to have a MIS system to take advantage of JDF technology
- MIS systems help track and measure productivity and cost & improve billing
- JDF will be added to MIS systems
- But many printers do not use MIS systems, and have no plans to make such an investment
- Just because not using MIS does not mean can’t take advantage of JDF technologies

JDF with or without MIS

1. JDF controlled by MIS
   - Management Information System
   - Order Input
   - Pre Press
   - Press
   - Post Press

2. Serial JDF control
   - Order Input
   - Pre Press
   - Press
   - Post Press
**Example: JDF without MIS**

A Duplo DC645 finisher - slits, cuts and creases paper up to 120-lb. cover in a single pass

Used near-line or in-line (digital press), it can be managed by Symbio software (Objective Advantage cost around $5,000)

After printed the operator places the stack into the infeed of the DC-645

Symbio sends a JDF file to the finisher
From the JDF information or bar codes, the slit, cut and crease functions are automatically set.

A 13-min manual task is cut to less than three minutes.

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**CIP4 / JDF is an end to end solution**

Source: Heidelberg
Part 1: Product Definition Interface & Intent

1st communication between print customer and printer
Could be online via estimating or bids or quoting process
Or JDF templates created by service providers
PrintTalk used for definition of the business transaction
JDF information automatically placed inside PDF files
Digital cameras, page layout

Tools used by the buyer create an intent ticket, which is then submitted to vendor(s)
Part 2: Process Definition
- MIS managed environment
- MIS created initial job (ID and Ticket)
- May need to preflight JDF information
- MIS creates “Process” nodes or “Gray Boxes”
- Production Manager expands Gray Boxes to Process nodes
- JMF used for feedback

MIS / JDF template workflow
1. Create JDF template
   - Embed preflight
   - CMS profiles & PDF settings
2. Create and verify PDF schedule
3. Submit files
4. MIS system
   - Job jacket created
   - Schedule created
   - Job tracking started
   - Feedback from shop floor data collection begins
5. Print Production
   - Automatic Ink keys
   - Auto finishing options
   - Create invoice
6. Receive job

Source: Heidelberg
Good News / Bad News About JDF

**Good News - Years of effort being placed on the language and equipment to work**

**Good - interop tests show**
- Beta sites are working & getting ROIs

**Bad news**
- Generally requires new equipment
- Greater need for upfront production planning
  - JDF info from clients will need to be preflighted and corrected
  - Job planners, CSRs, MIS staff will need to learn internal equipment capabilities (prepress, press, postpress) and JDF

**Good News (Most likely)**
- New customer preflight and server JDF preflight tools will most likely appear

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**A tale of 3 JDF workflows**

- MIS creates JDF template → Customer sends PDF (JDF) → CSR order entry preflight → Prepress file prep preflights → MIS JDF preflights → production
- Customer sends → Server PDF / JDF preflight → production
- Customer sends JDF preflight → Server → production
More sources of info

My newsletter
Digital Technology Trends Emailed upon request
How do you get it?
Give me your card & write Newsletter on the back

Other Sources:
www.napl.org/randeconcil.aspx
R&E Council and Digital Smart Factory
www.CIP4.org
www.ipa.org
www.HowieFenton.com

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