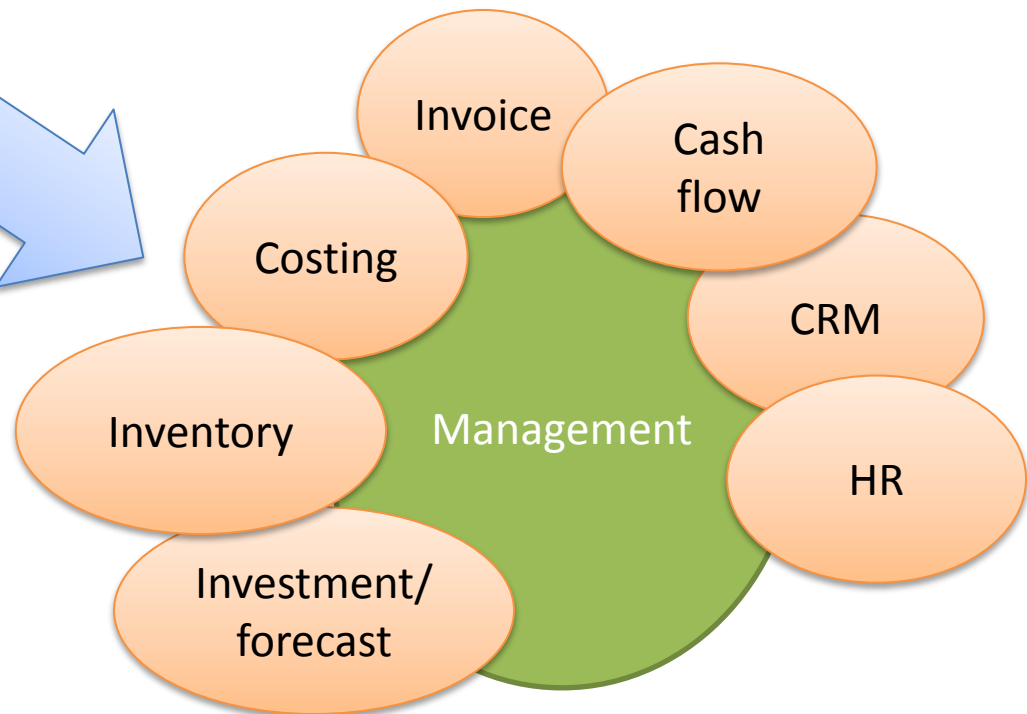
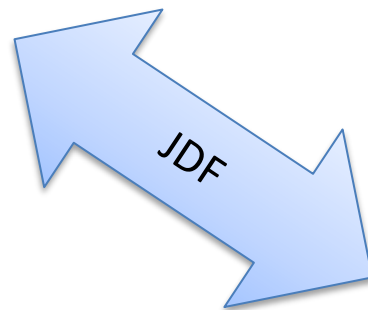
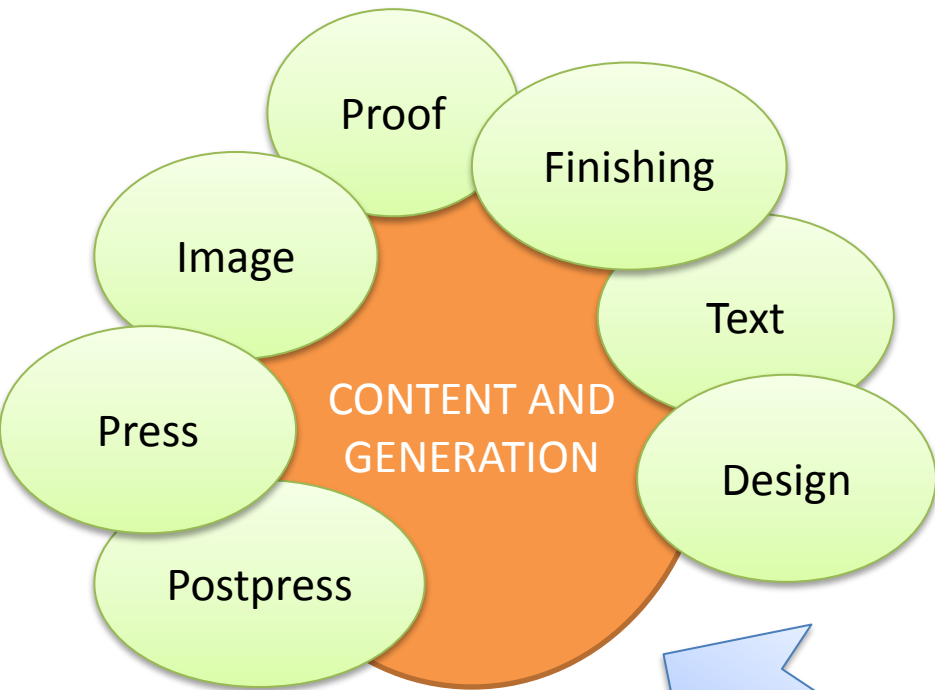


JDF

Job Definition Format

What is JDF?

- It is an XML driven file format for seamless integration between different action centers in the print production system. Check the diagram in next slide.

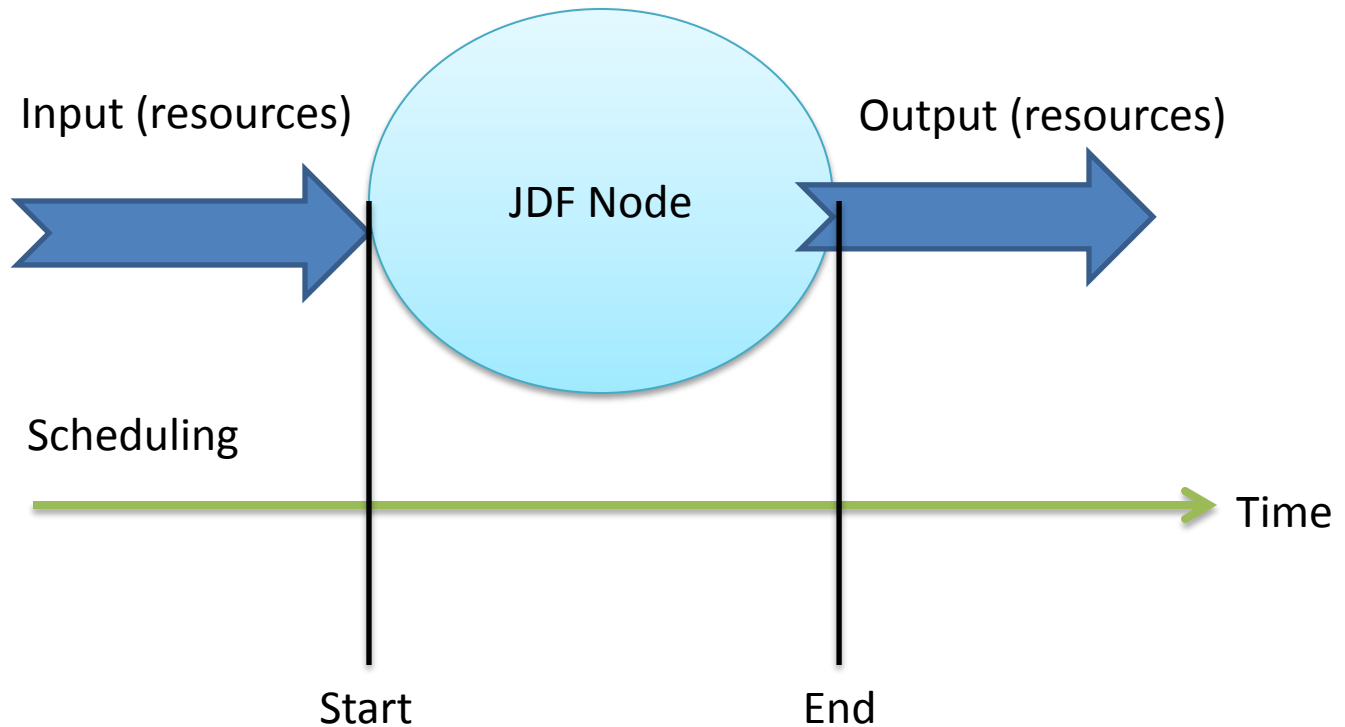


Adopted from: The guide to JDF
Digital Dots Technology Guide
(Available freely online)

Why JDF?

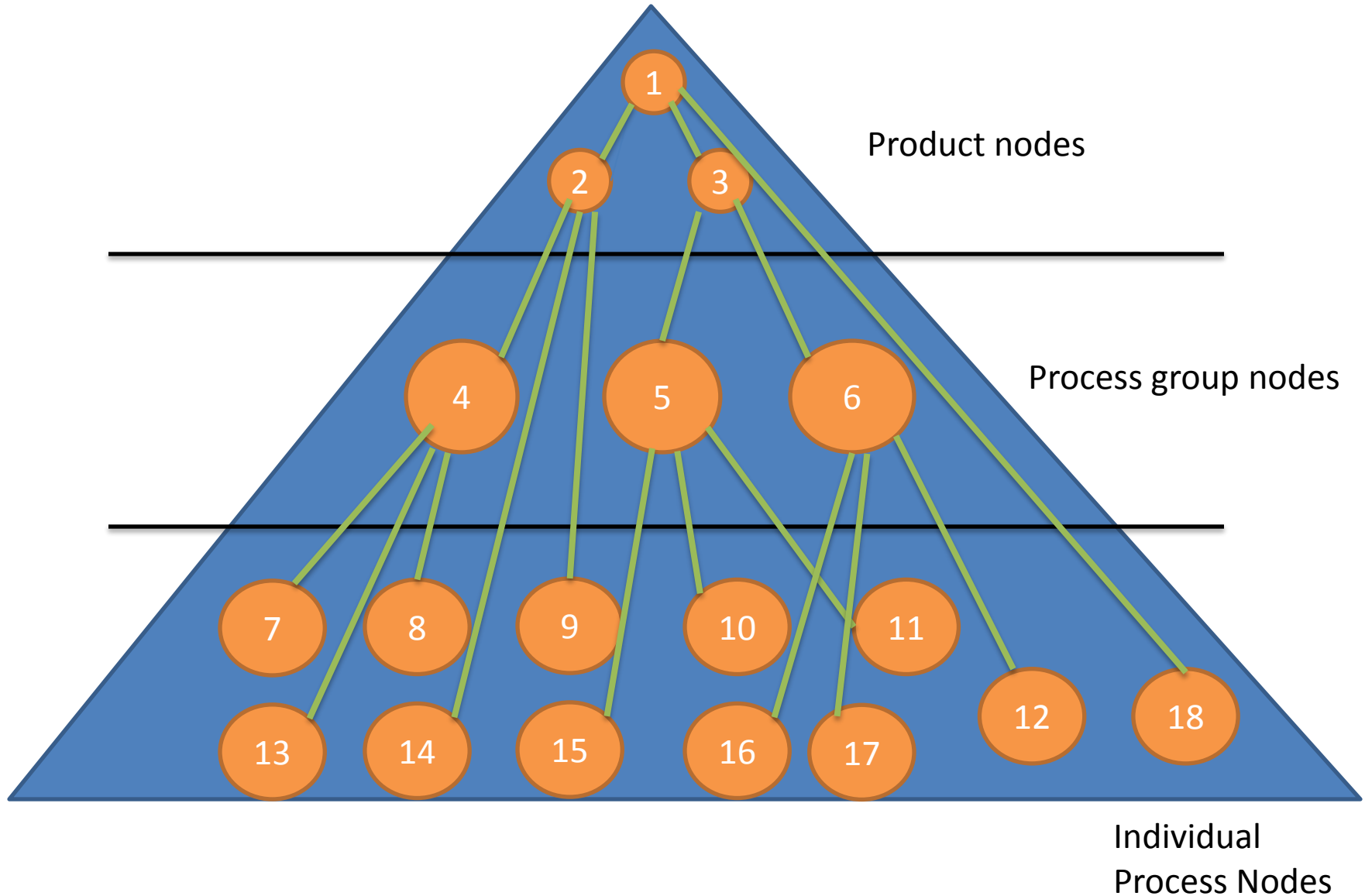
- Process automation
- Extensibility
- Digital conversation between process nodes
- Efficiently screening between messages/information and content for print publishing

Nodes in JDF



Adopted from: Kuehn W, (2008): ADVANCED MODELING OF NETWORKED PRINT PRODUCTION BY USE OF XML-BASED JOB DEFINITION AND JOB MESSAGING COMMUNICATION. *Proceedings of the 2008 Winter Simulation Conference*

Nodal representation of JDF



# Nodes	Meaning
1	A journal
2	Papers
3	Cover
4	Production of cover
5	Production of black and white pages
6	Production of color pages
7	Cover design
8	Cover image production
9	Finishing process
10	Plate making
11	Printing of black and white pages
12	Printing of color pages
13	Color matching
14	RIP-ing color pages

Practice (Optional)

- A printing job has a cover and 12 pages to print. 6 pages are color rest are black and white. It will be center pinned. It will be delivered by evening cargo. Try to make a nodal representation of this.

Recommended reading

Chris Tuijn, "Improving and streamlining the workflow in the graphic arts and printing industry," Proc. SPIE 5008, Color Imaging VIII: Processing, Hardcopy, and Applications, (13 January 2003); doi: [10.1117/12.473895](https://doi.org/10.1117/12.473895)

Job Ticket

- What it is?
 - It is the description of entire (printing) job described in a template format. The template is supplied by print-provider and include following items
 - PDF conversion setting (Job Options)
 - Preflight profile
 - Ink and paper stocks to be used
 - Type of binding.....so on

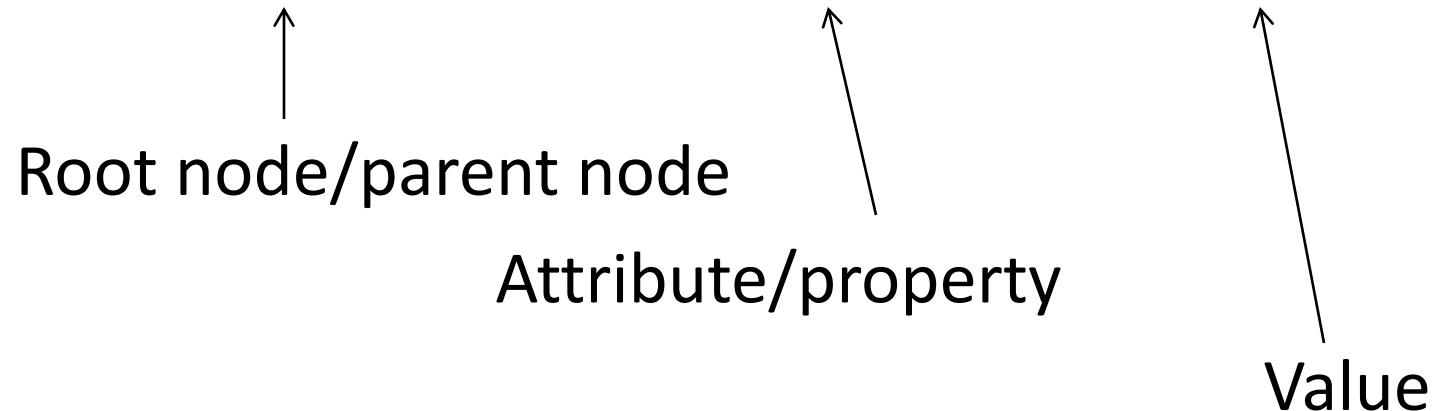
How it looks like?

- JDF is derived as an XML based presentation that contain the nodes (previously described) and associated attributes.
- Think something like an object oriented programming like
 - Node_name.property: (values)

JDF value extraction

- An example. Say the job name is PrintBook_HiPress. A possible declaration in JDF may look like

ProductNode.DescriptiveName:PrintBook_HiPress



Try to analyze this one yourself

Job Ticket Generator: JDF Node (Works With: PDF)

Enabled

Node Name
Job Ticket Generator: JDF

Description

Output Data Format

- JDF (with File URL to PDF)
- JDF (with Local File to PDF)
- Zip (JDF + PDF)
- Mime (JMF + JDF + PDF)
- JDF (with Network share to PDF)

Category

- Basic Settings
- Layout Settings
- Cover Sheet Settings
- Finishing Settings
- Inter Sheet Settings
- Tab Settings
- Image Quality Settings
- Customer Information
- Job Download

IMPORTANT: Before using this node

+ Add New Per Page Settings Delete Per Page Settings Import Mapping Table Export Mapping Table

Page Range Path 1

Parameter Name	Metadata Keys	Job Ticket Paths
PPS Print Type	job:printtype	
PPS Binding	job:bind	
PPS Paper Catalog ID	job:paper.catalogID	
PPS Paper Name	job:paper.name	/JDF/ResourcePool/LayoutPreparator
PPS Paper Source	job:paper.source	
PPS Paper Type	job:paper.type	
PPS Paper Size	job:paper.w, job:paper.h	
PPS Paper Weight	job:paper.weight	
PPS Paper Color	job:paper.color	
PPS Paper User Color	job:paper.usercolor	
PPS Use Perforated Paper	job:paper.useperforated	
PPS Paper Tab Type	job:paper.tabtype	
PPS Number of Inserts	job:paper.copies	
PPS Staple	job:staple	
PPS Punch Setting	job:punch.setting	
PPS Punch	job:punch	
PPS Finish Stapling	job:staple.finishstapling	

Job Ticket Reference

Search

- /JDF/ResourcePool/Media/@Clas ^
- /JDF/ResourcePool/Media/@ID
- /JDF/ResourcePool/Media/@Stat
- /JDF/ResourcePool/LayoutPrepar
- /JDF/ResourcePool/LayoutPrepar
- /JDF/ResourcePool/LayoutPrepar
- /JDF/ResourcePool/LayoutPrepar
- /JDF/ResourcePool/LayoutPrepar
- /JDF/ResourcePool/LayoutPrepar
- /JDF/ResourcePool/LayoutPrepar
- /JDF/ResourcePool/RunList/@Cl
- /JDF/ResourcePool/RunList/@ID
- /JDF/ResourcePool/RunList/@NF
- /JDF/ResourcePool/RunList/@St
- /JDF/ResourcePool/RunList/Layo
- /JDF/ResourcePool/Component/
- /JDF/ResourcePool/Component/
- /JDF/ResourcePool/Component/
- /JDF/ResourcePool/Component/
- /JDF/ResourceLinkPool/MediaLir

Strongly Recommended

- Please visit the following Konica Minolta initiative for better understanding of job ticket generation process

<https://docs.dispatcher-phoenix.com/en/process/production-print/kmi.jdf-generator/>

CIPM

- **Computer Integrated Printing Manufacturing**
 - A framework for digitized printing services
 - It is a handshaking between Information Technology (IT) and Manufacturing Technology (MT)
 - Aimed for better communication and automation towards increasing productivity and efficiency of printing presses

Types of CIPM

- DNPS – **D**igital **N**etworked **P**roduction **S**ystem
 - All the communications are event-driven
 - Systems are loosely coupled to the events
 - Highly flexible model (**advantage**)
 - Need to upgrade machineries and existing systems in order to implement DNPS (**disadvantage**)

Types of CIPM

- JDF/CIP4
 - A job description format developed by The International Cooperation for Integration of Process, Prepress, Press and Postpress (CIP4)
 - Systems are integrated using JDF and **Job Message Format (JMF)**
 - Built on an open, standard, modulated architecture (**advantage**)
 - No need to upgrade entire systems (**advantage**)
 - Need JDF compatible machines (**disadvantage**)

CIPM Framework

- **Network installation** – the established connections between all the machines and system nodes.
- **Electronic job ticket** – contains and carries all the pertinent information and specifications.
- **MIS** – management information system for production and management scheduling and monitoring

CIPM Requirements

- Functional requirements –
 - Information management: collect, storage, manipulation and retrieval of information
 - Decision support: delegation and implementation of different decisions at different levels; from top level management decisions to middle or bottom level shop floor decisions.

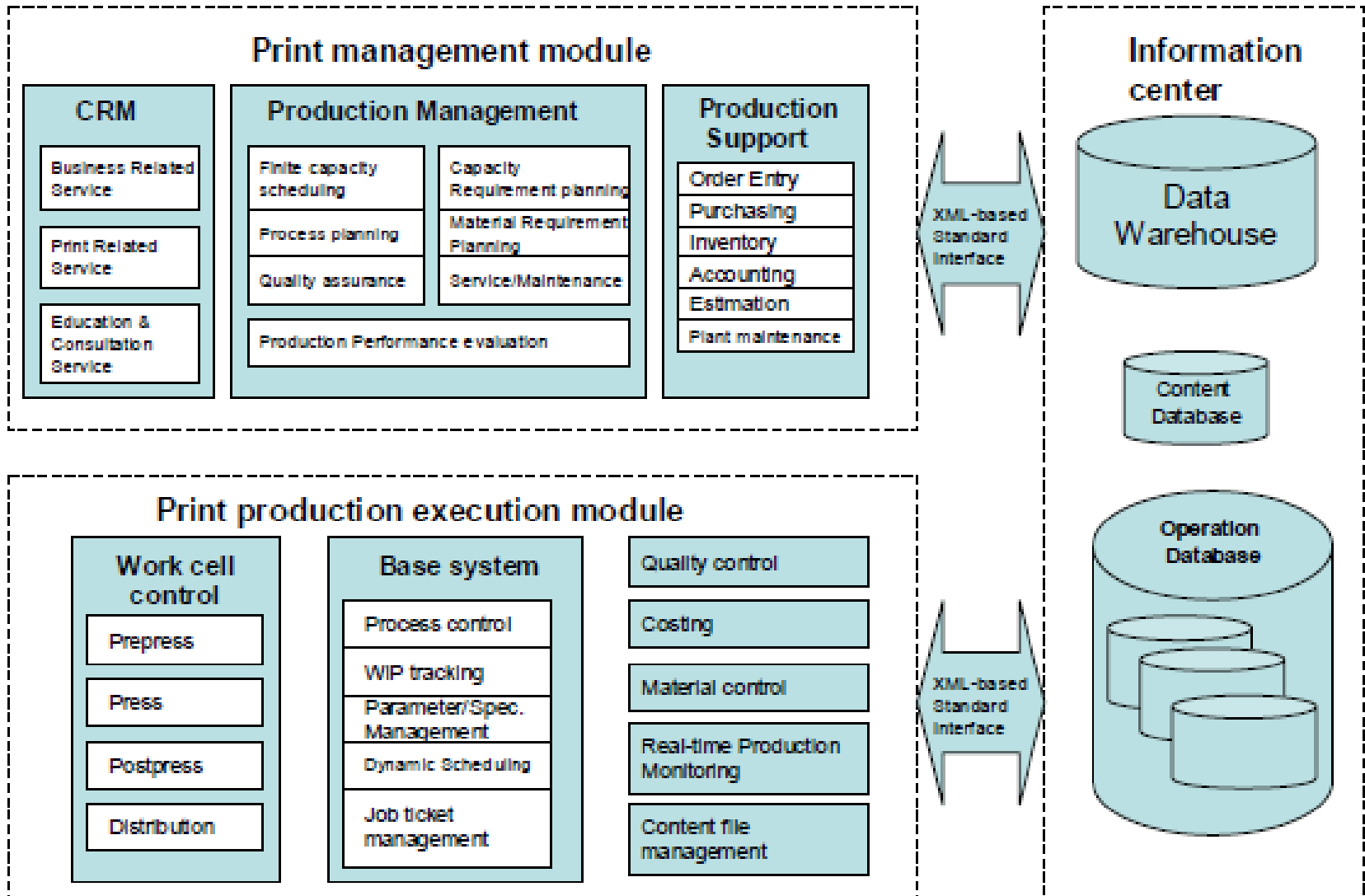
CIPM Requirements

- Process management – **WORKFLOW**
 - Process description
 - Process state transition
 - Process routing
- CRM – Internet and web technologies driven

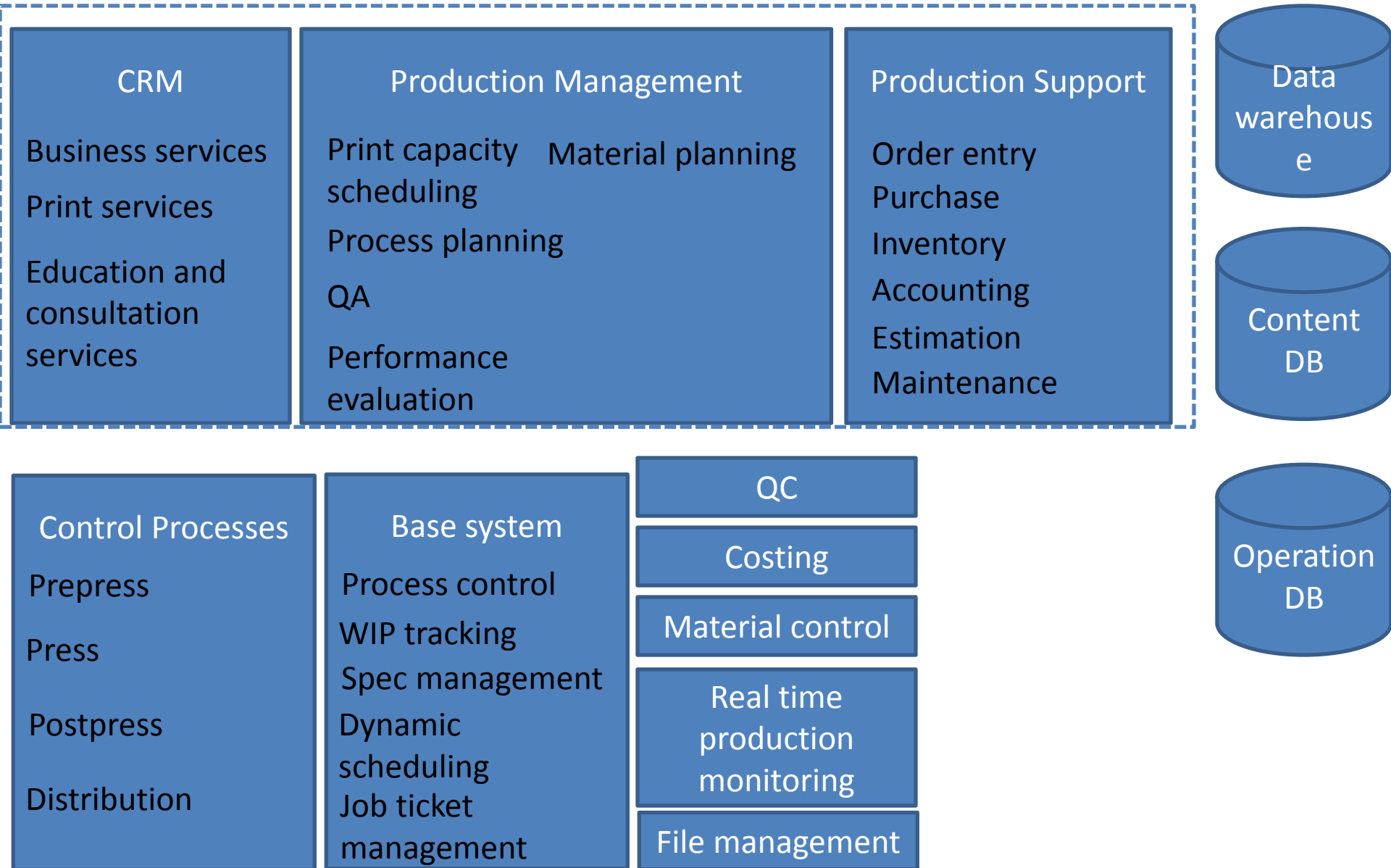
CIPM Requirements

- Architectural requirements
 - **Flexibility**
 - **Compatibility**
 - **Control policies**
 - **Incremental development**

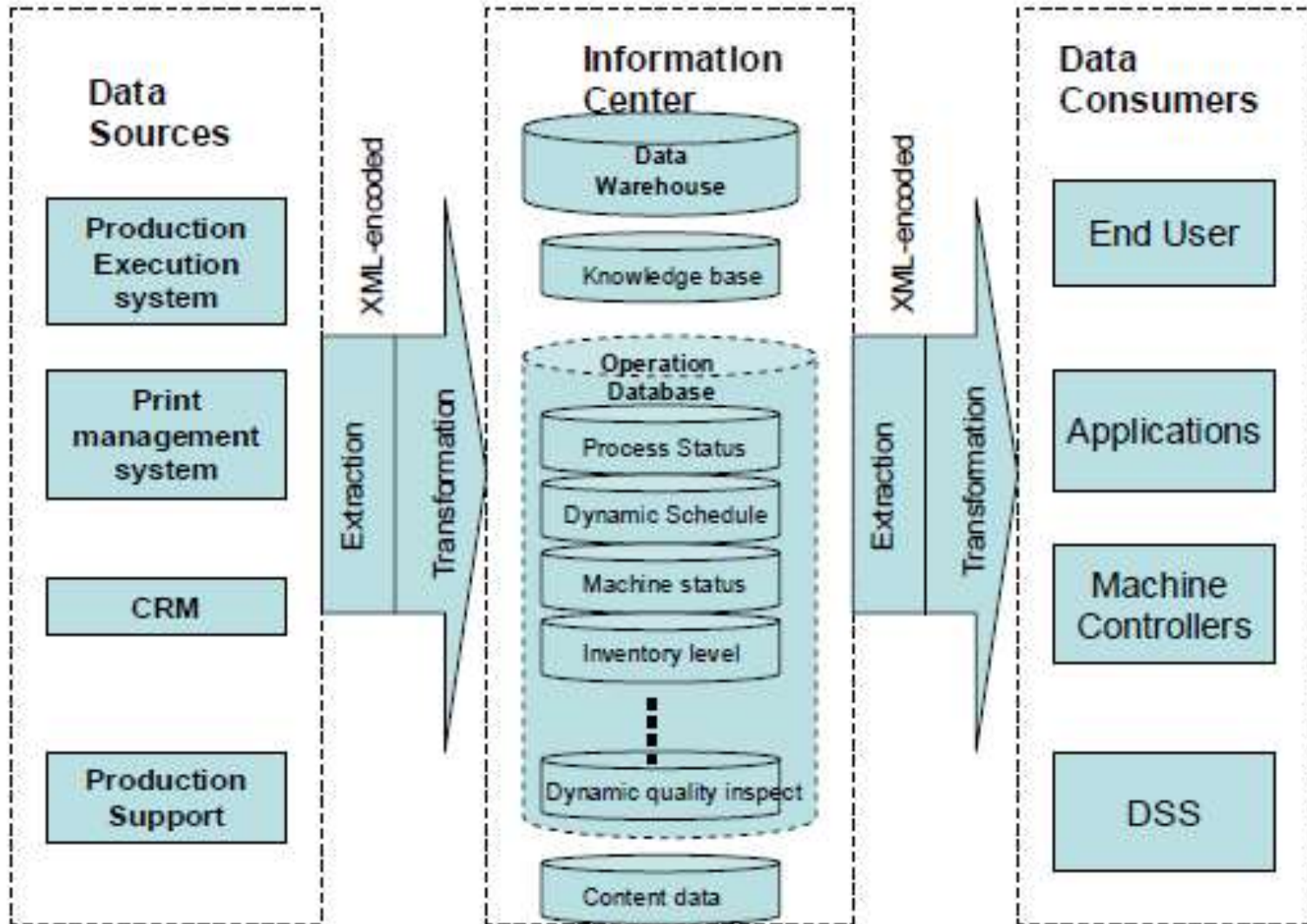
CIPM Architecture



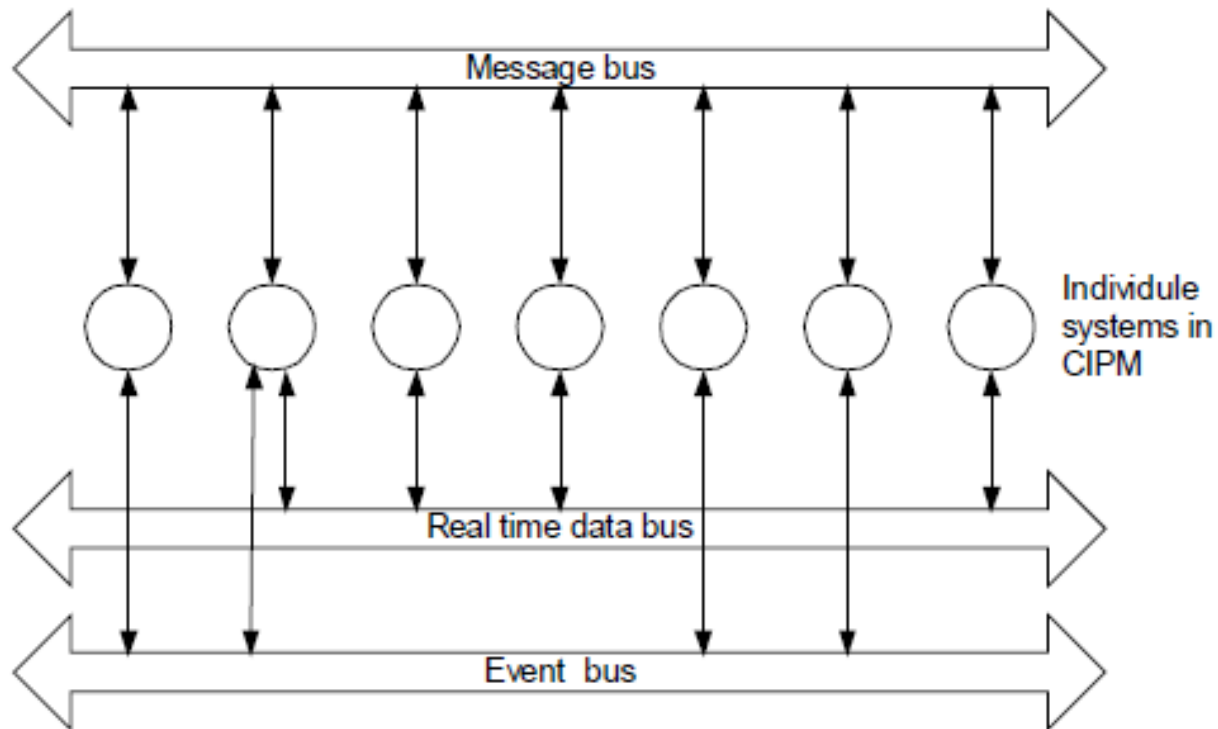
CIPM Architecture (FOR READING PURPOSE ONLY)



CIPM Information System



System Integration in CIPM

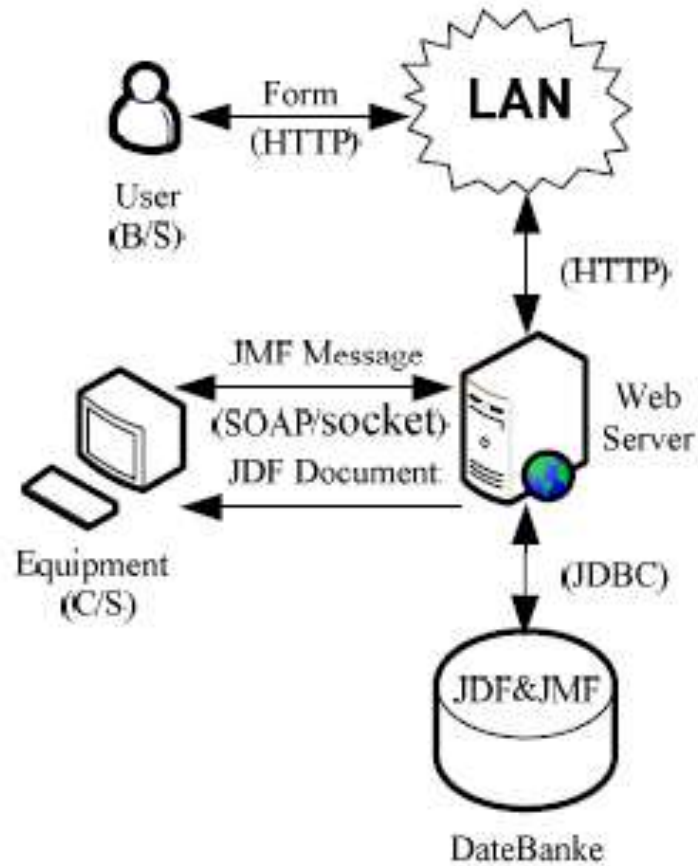


Management Information System (MIS)

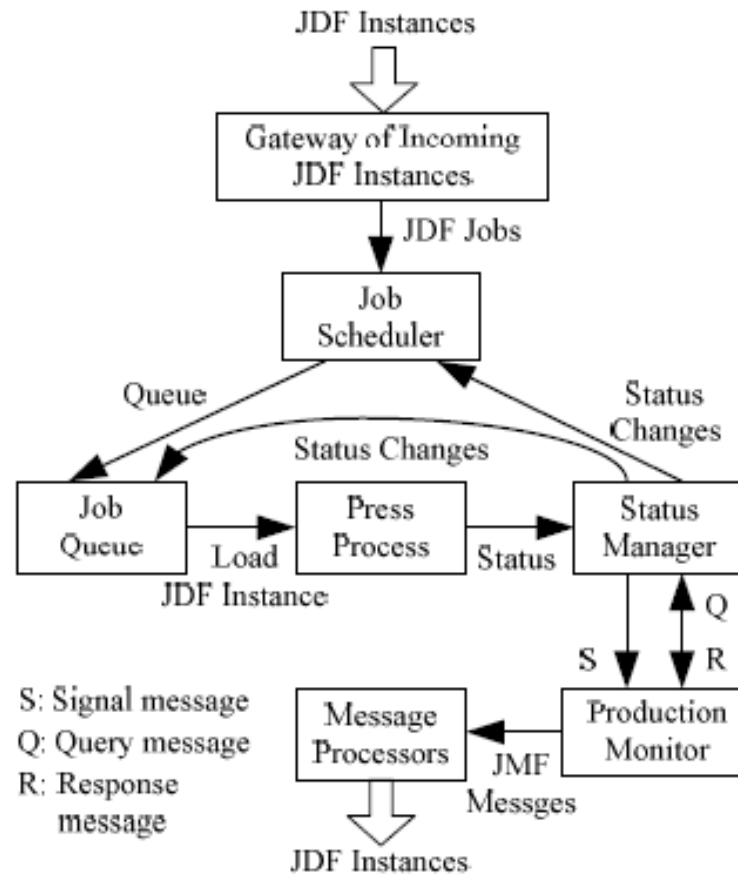
- MIS systems: often, work centers will already be working with some MIS systems for their bookkeeping, planning, stock management etc. Therefore, it is imperative that a workflow server can share data with respect to defined products. The big challenge, however, is to map the MIS representation to the structure of the workflow server. [1]

[1] Chris Tuijn, "Improving and streamlining the workflow in the graphic arts and printing industry," Proc. SPIE 5008, Color Imaging VIII: Processing, Hardcopy, and Applications, (13 January 2003); doi: 10.1117/12.473895

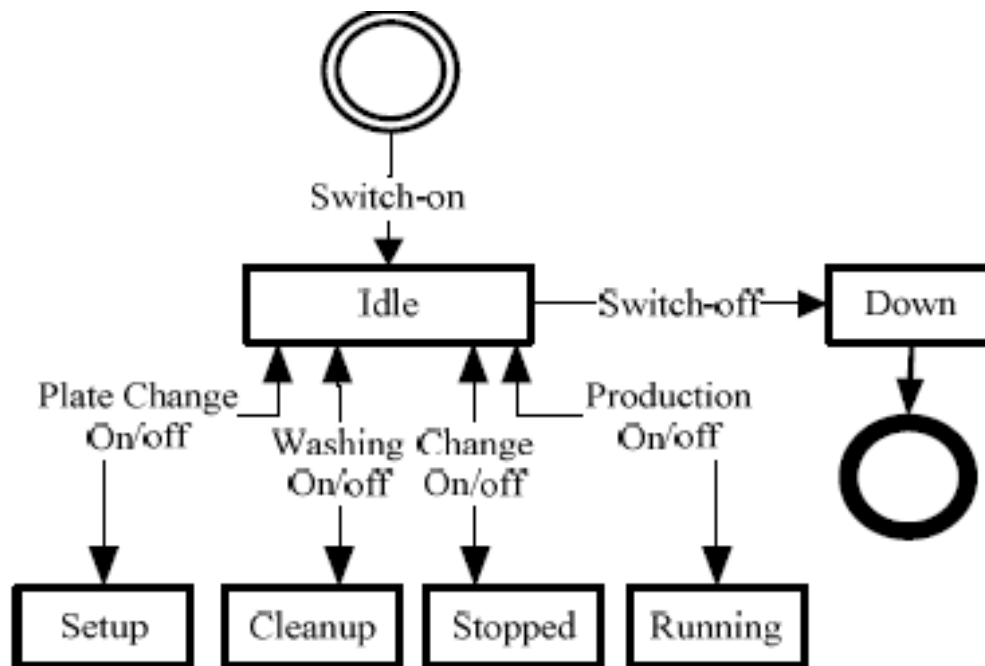
JDF-based MIS [2]



Components of MIS [2]



Device status model [2]



Key:

Production: Paper on &(a Print unit & ink ductor on)

[2] *JDF-based Integration Solution for Pressroom*, Luo Ru-bai, Zhou Shi-sheng, Gao Xiao-jing, Zhao Jin-juan, 2008 International Conference on Computer Science and Software Engineering

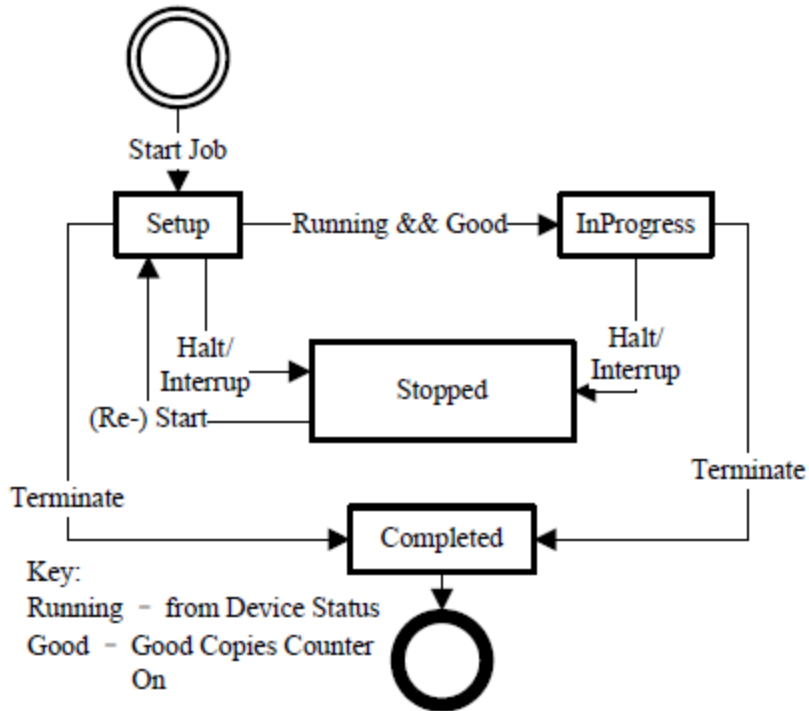
Component services of MIS

- Gateway
- Job Scheduler
- Job Queue
- Press Process
- Status Manager
- Production Monitor
- Message Processor

JMF Signal Message (example)

- <JMF Version="1.3" SenderID="Offset1" TimeStamp="2008-06-01T16:27:00+08:00" ... >
- <Signal ID="M1" Type="Status">
- <DeviceInfo Speed="0" **DeviceStatus**="Cleanup"
- **StatusDetails**="CylinderWash" PowerOnTime="2008-06-01T16:02:00+08:00" CounterUnit="Sheets">
- <JobPhase JobID="MD-1234" JobPartID="XAUT-12-PRINT-01" **Status**="Stopped" **StatusDetails**="interrupted"
- StartTime="2008-06-01T16:02:00+08:00" Amount="1000"
- PercentCompleted="50" TotalAmount="2000"
- QueueEntryID="X01" Waste="0"/>
-
- </JMF>

Job Phase Model



Status	DeviceStatus	StatusDetails
Setup	Setup	Waste
Inprogress	Running	Good Waste
Stopped	Stopped Cleanup	Interrupted
Completed	Idle Down	-