

# Tech Ops Maintenance Revisions—Improving Management and Adoption

ATA e-Business Forum –  
May 18, 2010

enigma



ATA e-BUSINESS PROGRAM

# Impact of OEM revisions on ERP/MRO



AIR TRANSPORT ASSOCIATION

- Processing OEM revisions in a timely manner should be a major compliance rule!
- Accurate and synchronized technical content determines if an ERP/MRO solution succeeds or fails.
- Accuracy and synchronization depend on accelerating revision management.
- Airlines & MROs — Most have an operational MRO solution but do not integrate to technical content.
- Compliance and speed go hand-in-hand when technical content is synchronized and accurate.

# Agenda



AIR TRANSPORT ASSOCIATION

- Current maintenance operations
- Impact of OEM revisions
- Challenges preparing for the future
- Nirvana is now
- Investment & risks

# Current maintenance – airlines & MROs



AIR TRANSPORT ASSOCIATION

- Line and base maintenance use different sets of documents.
- Paper is (still) the primary info source for mechanics.
  - Job cards, maintenance records, etc.
- Tech pub organization vs. job card authors.
  - Separate departments
  - Separate sets of documents
- Very limited IT investment over the last 10 years.
  - Primary focus has been inventory planning & maintenance scheduling

# Base maintenance vs. line maintenance

## ■ Base maintenance

- Primarily scheduled activities.
- Relies on MRO system and job cards.
- Job card production is manual/slow.
- Out-of-date content results in delays and fines.

## ■ Line maintenance

- Primarily unscheduled and non-routine activities.
- Relies on tech pubs content.
- 7-12 different manuals to be consulted.
- Out-of-date content increases downtime and costs.

# MRO and technical content is out-of-sync



AIR TRANSPORT ASSOCIATION

- Frequent OEM revisions vs. slow airline updates
- Tech pubs and job card/MRO systems are out-of-sync
  - Job cards are out-of-sync and out-of-date with the AMM/EM/CMM and SB's of the OEM etc.
  - MPL and AIG guides and recommendations are out-of-sync and out-of-date.
  - MPD is out-of-sync and out-of-date.
- Material requirements are produced from unsynchronized sets of information.
  - Uses old and more expensive parts.
  - Results in complex and expensive planning processes.

# Facts about airline technical content - 1



AIR TRANSPORT ASSOCIATION

- Technical content serves the second largest workforce in an airline.
- A 5 year-old fleet has over 5 million pages of content to maintain.
- Technical content drives almost every process in the ERP/MRO system.
- Several thousands of job cards to maintain.
- **Technical content is frequently revised but slowest to be updated.**

# Facts about airline technical content - 2

- 30-70% of OEM manuals are supplied in PDF format
  - There is no standardization for PDF
- PDF and SGML/XML manuals are (usually) managed in different systems (e.g. AMM and IPC)
  - Viewers for PDF and SGML/XML content are different and users need to work with 2-5 systems in parallel
- Links between SGML/XML and PDF manuals do not exist.
  - References between manual types (e.g. AMM to PDF SRM) require each manual to be opened separately to see the reference

# Facts about airline technical content - 3



## Average AMM Revision

- 8000 PGBLKs/ 15000 TASKs
- 30-80 new PGBLKs/ 400-600 TASKs
- 0-10 deleted PGBLKs/ 0-20 TASKs
- 1000-2000 revised PGBLKs/ 2000-3000 TASKs

## Average IPC Revision

- 12000 FIGUREs
- 200-300 new FIGUREs
- 10-20 deleted FIGUREs
- 3000-5000 revised FIGUREs (50-80% due to effectivity)
- 2000 PNRDATA changes

- Average WDM revision includes ~ 50 revised files
- Average EM revision includes ~ 50 revised files

# Challenges to integration



AIR TRANSPORT ASSOCIATION

- OEM and MRO shops—different agendas.
- Aging fleets—a lot of disorganized (historical) data.
- Aging workforce
  - Implementing change is difficult.
  - Improving an inexperienced workforce.
- Regulatory agencies
  - No clear regulations for digital systems.
  - No international standards or agreements.

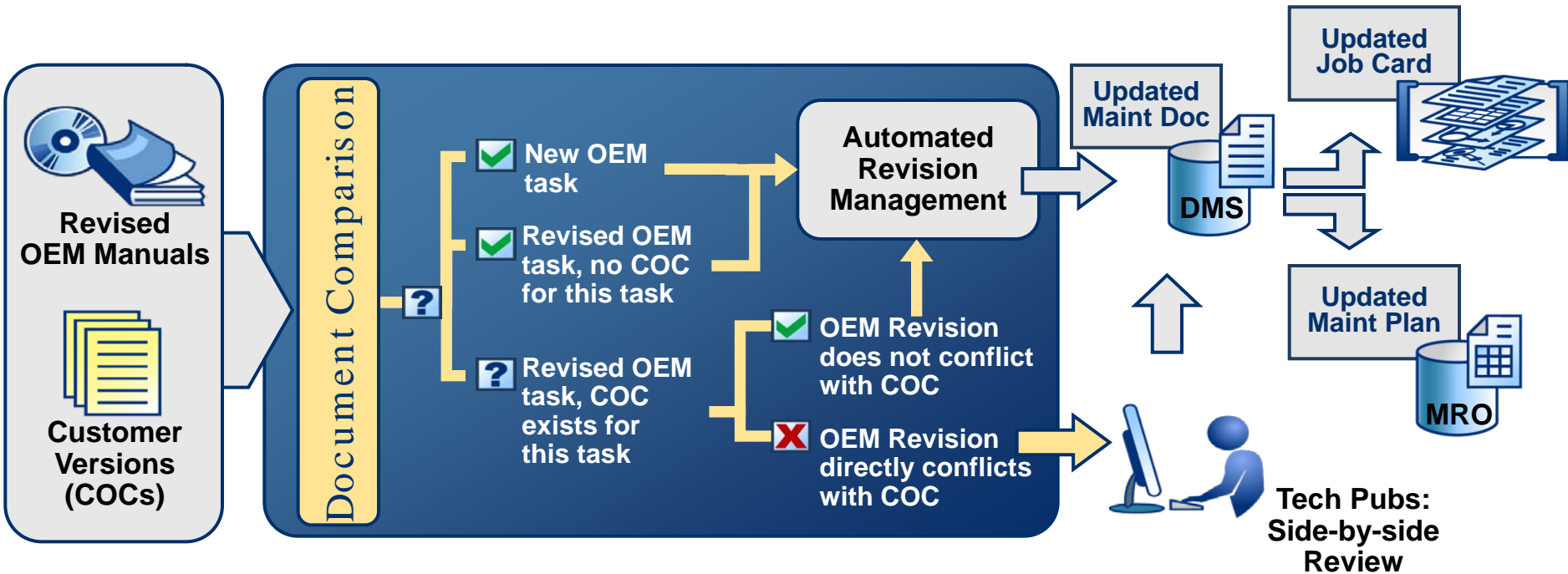
# Revision management process guidelines



AIR TRANSPORT ASSOCIATION

1. Automated—fast content turnaround.
2. Standardized—Minimal customization.
3. Modular—separation of workflows.
  - Revision management
  - Reconciliation (auto-merge and manual)
  - Approval
  - Publishing
4. Audit—traceability for content sources and actions.

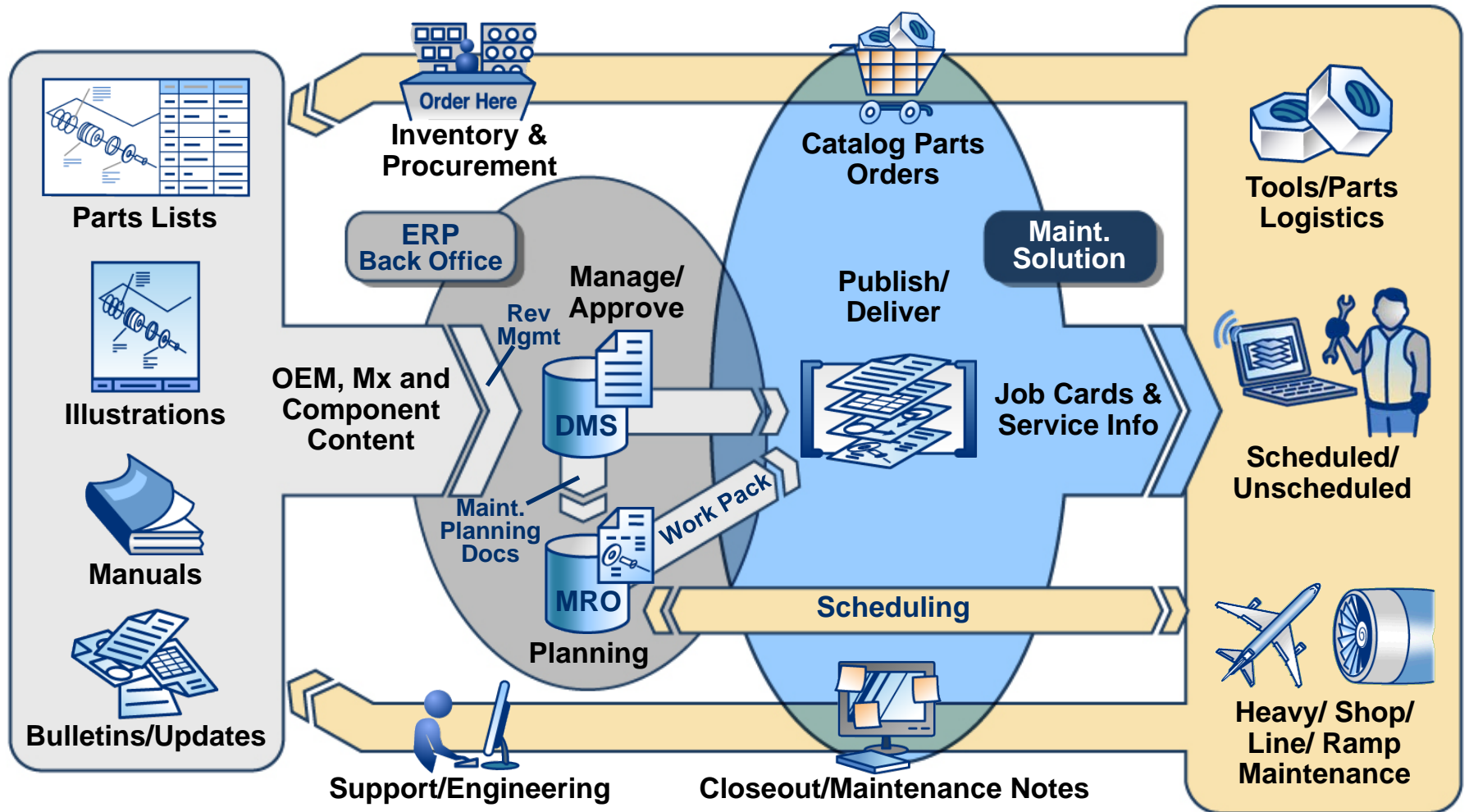
# Nirvana is Now – Revision Management



- Compare content (revised vs existing)
- Generate change reports
- Publish revised manuals (include OEM and Customer changes)
- Automatically update Job Card and Maintenance Plan



# Nirvana is Now – Complete System



# Opportunities & Risks



AIR TRANSPORT ASSOCIATION

- Systems are deployed – today.
- Regulatory constraints and lack of guidance around adopting modern technology.
- Very big ROI.
- Limited industry resources with deep IT knowledge.
- Limited IT resources with deep industry knowledge.

Thank You



AIR TRANSPORT ASSOCIATION

# enigma

Please visit our web sites:

[www.enigma.com](http://www.enigma.com)

<http://uptimeblog.enigma.com>