Using the IBM Technical Document Management and Delivery (TDMD) solution with Maximo

February 11, 2008
Agenda

- Technical Document Management and Delivery (TDMD) Solution Overview
  - John Snow, VP, Marketing & Business Development, Enigma Inc

- Maximo and Enigma Working Together
  - Ken Donnelly, Strategy & Market Management, IBM
Agenda – TDMD Solution Overview

- Enigma Background
- Specific Maintenance Challenges
- Overview of the IBM-Enigma TDMD Solution
  - Capabilities
  - Components
  - Benefits
- Conclusion
Enigma Information Retrieval Systems

Enigma:
The leading provider of software solutions that accelerate the installation, service and support of complex equipment.

Enigma Creates:
Comprehensive maintenance solutions providing critical technical content, with direct links to departmental and back-office business systems.

Enigma Provides:
Streamlined maintenance processes that increase equipment uptime and improve the efficiency and consistency of service and support.

Enigma Benefits:
Maintenance technicians, engineers and parts managers – the largest job categories in the world.

Enigma optimizes aftermarket service and support.
Enigma — Solutions for Top Global Brands

Aerospace & MRO  
Dealer Networks  
Department of Defense  
Other Sectors

United Airlines  
JAL  
KLM  
Iberia  
Goodrich  
Bombardier Aerospace  
Rolls-Royce

Ford  
Volvo  
DaimlerChrysler  
IR  
Bobcat  
Navsea Planning Group

U.S. Army  
National Guard  
BAE Systems  
AM General  
DRS Technologies  
Bank Hapoalim

Enigma develops cross-industry solutions.
**Maintenance Pain Points – Content Related**

**Aviation, Rail, Transit, Freight and Defense**

**Capital Equipment**
- Equipment Downtime (asset utilization)
- Unique Configurations (serial no. BOM)
- Unscheduled Maintenance (delays/ quality)
- Regulatory Compliance (cost/ delays)

**Engineering**
- Work Packages/ Job Cards (delays)
- Content Revisions – what changed (delays)
- Multiple Data Formats (quality/ consistency)
- Undocumented Events/ Mods (fines)

**Maintenance**
- Large Workforce (training/ consistency)
- Complex Maintenance Tasks (delays)
- Paper Driven (time consuming/ error prone)
- Incomplete/ Outdated Content (delays)

**Inventory**
- Incorrect Parts (cost/ delays)
- Alternate Part Numbers/ Sources
- Inventory/ Logistics (cost/ delays)

---

Addressing content issues is critical to gaining operational advantage.
TDMD – Value Proposition

- Increase Equipment Uptime
  - Engineering – Improve accuracy and accelerate delivery of information
  - Mechanics – Fast, integrated maintenance workflow

- Decrease Operations Costs
  - Reduce data management and processing time – lower costs
  - Automated processes improve maintenance consistency – reliable scheduling
  - Fast, accurate and easy-to-use systems decrease misorders and inventory cost

- Increase (Regulatory) Compliance & Safety

- Increase Customer Satisfaction

Accelerate maintenance – increase uptime
Automate systems – reduce cost
TDMD – Information Management

<table>
<thead>
<tr>
<th>Content Creation</th>
<th>Content Management</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEM – As Designed</td>
<td>Input to DM</td>
<td>Line Maint</td>
</tr>
<tr>
<td>Airline – As Maintained</td>
<td>Revise &amp; Manage</td>
<td>Base Maint</td>
</tr>
<tr>
<td>1 – 10 Users</td>
<td>Approval Cycle</td>
<td>Shop Maint</td>
</tr>
<tr>
<td>10 – 100 Users</td>
<td>Stage/Package</td>
<td>Engineering</td>
</tr>
<tr>
<td>100 – 1000s Users</td>
<td>Publish</td>
<td>Purchasing</td>
</tr>
</tbody>
</table>

- Supports Complex Environment – Many Content Sources & Destinations
  - Frequent revisions/ publishing – PDF, RTF, Word, SGML/XML
  - Multiple content dependencies – customer changes on top of OEM revisions

- Supports Business Needs – Improve Efficiency & Quality
  - Unified infrastructure – faster, more accurate and more reliable
  - Integrated workflows – streamline maintenance and execution
  - Automates content validation and delivery – improves quality and compliance
Fully automated workflows drive efficiency and consistency.
IBM & Enigma – Maintenance Solution Footprint

WebSphere Commerce Suite

Inventory & Procurement

Catalog Spare Parts Orders

Manage/Approve

Publish/Deliver

Job Cards, Service Info

Configuration, Scheduling, Records

Closeout/Maint. Notes

Maintenance Planning

Support/Engineering

Spare Parts Orders

Catalog

Commerce Suite

Product Center

IBM & Enigma

DB2

DM/CM8/P8

Tivoli Maximo

Lotus

Collaboration

Illustrations

Parts Lists

Manuals

Bulletins/Updates

Maintenance Activities

Information Management Software | Enterprise Content Management
TDMD – Benefits

- Increase Equipment Uptime
  - Optimized, integrated maintenance and engineering workflow

- Decrease Operating Costs
  - Industry proven solutions based on modern IT architecture (COTS, SOA, etc.)

- Industry Standards Compliant
  - ATA 2200, S1000D, etc.

- End-to-End Solution for Maintenance Information
  - Integration of IBM Content Management and Enigma 3C

- Fast ROI
  - Aggressive price point
**Agenda**

- Technical Document Management and Delivery (TDMD) Solution Overview
  - John Snow, VP, Marketing & Business Development, Enigma Inc

- Maximo and Enigma Working Together
  - Ken Donnelly, Strategy & Market Management, IBM
Agenda - Maximo and Enigma Working Together

- IBM Maximo for Aviation MRO
- MRO Industry Experience – IBM Maximo
- Examples of where Maximo and Enigma work together
- Rolls Royce Case Studies
  - Maximo
  - Enigma
Maintenance, Repair and Overhaul (MRO) for Aviation

Line Maintenance
- Company
- 3rd Party

Overhaul Maintenance
- Company
- 3rd Party
- OEM

Component Rebuild
- Company
- OEM
- 3rd Party

Maximo for Transportation
Maximo Asset Configuration Manager

Maximo Asset Management
Maximo Asset Configuration Manager
Maintenance, Repair and Overhaul (MRO) for Aviation

**MRO Plus:** IBM Service Management for all assets

- **Line Maintenance**
  - Company
  - 3rd Party
  - Maximo for Transportation
  - Maximo Asset Configuration Manager

- **Facilities**
  - Maximo Asset Management

- **Overhaul Maintenance**
  - Company
  - 3rd Party
  - OEM
  - Maximo for Transportation
  - Maximo Asset Configuration Manager

- **Technology Assets**
  - Tivoli Asset Management for IT

- **Ground Support Fleet**
  - Maximo for Transportation

- **Component Rebuild**
  - Company
  - OEM
  - 3rd Party
  - Maximo Asset Management
  - Maximo Asset Configuration Manager
# IBM Maximo for Aviation MRO

<table>
<thead>
<tr>
<th>MRO Activity</th>
<th>Planning</th>
<th>Engineering &amp; Maintenance</th>
<th>Inventory &amp; Procurement</th>
<th>Service Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Engineering</td>
<td>IBM Maximo Asset Configuration Manager</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance &amp; Service Planning</td>
<td>IBM Maximo for Transportation</td>
<td></td>
<td></td>
<td>IBM Maximo for Service Providers</td>
</tr>
<tr>
<td>Maintenance Operations</td>
<td>IBM Maximo Asset Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part &amp; Tool Management</td>
<td>IBM Technical Document Management &amp; Delivery (TDMD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities Maintenance</td>
<td>IBM Maximo for Transportation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Maximo – Aviation MRO Solutions

- Addresses business challenges of:
  - Traditional Airlines
  - Low Cost Carriers
  - Charter/Regional Airlines (Tier 2 & 3)

- Provides MRO, asset and service management support for:
  - Airlines
  - 3rd Party Maintainers
  - Original Equipment Manufacturers

- Includes enhanced Workflow
  - Event Driven
  - Context-based
  - Escalation Manager

- Consolidates point solutions for MRO and Asset Management
- SOA Enabled
- KPI, Reporting and Analysis Tools
MRO Industry Experience – IBM Maximo

- Leader in Enterprise Asset Management
  - Globally #1 – 14.7% Market Share *
  - Consistent leader in Transportation, Facilities Management and Aerospace & Defense

- 40 Aviation Customers
  - Aires SA, Northwest Airlines, Shanghai Airlines, KLM Cargo, Southwest, Alitalia, Alaskan Airlines

- A&D Customers that include:
  - 11 of the 12 major A&D companies

- Civilian and Military Agencies

- Over 100 Airports globally

* - based on ARC Advisory Group 2007 EAM Report
Examples of where Maximo and Enigma work together

Planning

Shop Floor

Spare Parts Inventory

Component Rebuild Shop

Maximo

Enigma
## Aviation Case Study – Rolls Royce (Civil Aerospace)

<table>
<thead>
<tr>
<th>The Company</th>
<th>Rolls Royce (Civil Aerospace)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Aircraft Engine Component Care</td>
</tr>
<tr>
<td></td>
<td>• Maintain 54,000 aircraft engines</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Challenge</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• To reduce component repair turnaround times</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Minimize Component Care service cost to Rolls-Royce</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To improve customer service satisfaction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Solution</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Maximo Asset and Work Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Maximo Workflow and the automation of the Component Care Logistics process</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Benefits</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Significant reduction in component turnaround times</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• SLA compliance - increased customer satisfaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Single source visibility of components</td>
<td></td>
</tr>
</tbody>
</table>
## Rolls-Royce – UK Ministry of Defense (MOD)

<table>
<thead>
<tr>
<th><strong>Project</strong></th>
<th>Provide a maintenance, repair and overhaul information solution for the RB199 engines (powering the Tornado aircraft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Challenge</strong></td>
<td>Improve maintenance efficiency, reduce errors and improve audit trails of completed tasks</td>
</tr>
</tbody>
</table>
| **Solution** | Digital Air Publication – provides all repair bases with the necessary service and repair information needed to support the engine centrally or remotely. Includes manuals such as maintenance, overhaul and illustrated parts catalog  
  • Streamlined UI (search, navigate, linking between documents/manuals…)  
  • Automated printing of maintenance, assembly and/or installation procedures for a particular engine module (or a partial/complete engine build) – filtered by serial/tail number |
| **Benefits** |  
  • Improved workflow and information access delivers greater maintenance efficiency and accurate audit trails  
  • Digital Air Publication is now the sole approved source for the technical maintenance information related to the RB199 engine |
Questions?

- Technical Document Management and Delivery (TDMD) Solution Overview
  - John Snow, VP, Marketing & Business Development, Enigma, Inc.
  - 781-265-3636
  - JohnSnow@Enigma.com

- Maximo and Enigma Working Together
  - Ken Donnelly, Strategy & Market Management, IBM
  - 941-358-8505
  - Ken.Donnelly@us.ibm.com
Thank you!