Great Ideas Competition

War-Winning Capabilities … On Time, On Cost

WR-ALC’s LEAN Depot Management System (LDMS)

Marcee Mickler
402 EMXSS/MXDEA
13 Nov 07

Integrity - Service - Excellence
EMXG Overview

- Mission
  - Provide combat ready avionics parts & services to the warfighters

- Infrastructure
  - 700,000 sq ft

- Manpower
  - 1434

- FY07 Units Produced
  - 78,637

LDMS

- 1000+ Active Users
- 580,000+ Part Orders
**Bottom Line Up Front**

LDMS is Progressively Saving Time

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Hours Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>3,789 hours</td>
</tr>
<tr>
<td>2003</td>
<td>13,177 hours</td>
</tr>
<tr>
<td>2004</td>
<td>23,330 hours</td>
</tr>
<tr>
<td>2005</td>
<td>27,844 hours</td>
</tr>
<tr>
<td>2006</td>
<td>31,070 hours</td>
</tr>
<tr>
<td>2007 (Jan-6 Oct)</td>
<td>24,002 hours</td>
</tr>
</tbody>
</table>

**Total Savings:** Over 123,000 hours!

**and Time…is Money!**

**Cost Avoided:** $16.5M

80% Reduction!
LDMS Evolution

Supply
AWP, Material Issue, Exchange processing

Reports
Reporting, analysis

Planning
Work Control Documents, BOM, material forecasting

Admin
General Admin, IPB Maintenance

MDC
Records Maintenance, Order Parts

R&M
(Reliability & Maintainability) (Eng)

Scheduling
End Item Induction

LDMS.Net

2001 2002 2003 2004 2005 2006 2007
LDMS System Architecture

LDMS Client-Side Applications

- **MDC**
  - Records Maintenance data, orders parts

- **Admin**
  - General administration, IPB Maintenance

- **Reports**
  - Reporting, analysis

- **Supply**
  - Material issue, exchange processing, receipting

- **Planning**
  - Workbooks, BOM, material forecasting

- **Scheduling**
  - End item induction

- **AWP**
  - AWP induction and removal

- **R&M**
  - System reliability and maintainability

**Approved Air Force System that minimizes the need for dual data entry.**
How Is LDMS Different?

- **Designed with the Technician in Mind**
  - Frequent collaboration between designers and technicians

- **Tracks by Serial Number**

- **Data is live**
  - Not reliant on archived information

- **Search Capabilities**
  - Easy to find information quickly

- **Encourages technicians to use the tool**
  - Automatically prints out required forms
    - maintenance tags, parts ordering forms, awaiting parts forms
  - Automates parts ordering

- **Enforces Configuration Control**
Key LDMS Features

• Documentation Generation
  – Automates paperwork
  – Reduces errors
  – Saves time
  – Saves money

271,000 tags/year!
Old Parts Ordering Process

1. Hundreds of maintenance technicians fill out paper forms.

2. Tens of thousands of paper forms are generated each year. Forms have to be maintained for years.

3. Tens of data entry clerks input the forms into the supply system.

Labor Intensive Process!
New Parts Ordering Process

1. Hundreds of maintenance technicians order parts electrically.

2. Tens of thousands of orders are generated each year and stored in an industry standard database. Each order is time stamped.

3. LDMS eliminates the need for data entry clerks by feeding the order directly to the supply system.

80% Reduction!

LEAN Process!
### Old Parts Ordering Process

**Technicians**
- **Parts Ordering Forms**
- **Data Entry Clerks**
- **Supply System**

**Labor Intensive Process!**

### New Parts Ordering Process

**Technicians**
- **LDMS**
- **Supply System**

**LEAN Process!**

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**AFSO21**

*All Forces Strong Too: For The 21st Century*

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**Operations Facility Number (OFN)**
- **Ordering Process**
- **O/P Number**
- **DEL DEST**
- **CON MGT**
- **F. ADDITIONAL INFORMATION**

**Time/Date of Delivery**
- **H. DELIVERY TIME**
- **I. NOMENCLATURE**

**AFMC Form 95, Aug 97**

**Control Number**
- **PROJECT**
- **C/F A/F D/R**
- **REQ**
- **DEL DATE**
- **ADY CODE**
- **D/E PR I/R C/R D/E L/P U/A/S**

**Requester Time/Date**
- **B. KILL CALLED TO**
- **TIME**
- **VERIFIED BY**
- **TIME**

**Stock Number**
- **NSC NIIN MMC U/I QUANTITY**

**Sub Number**
- **DOCUMENT NUMBER**
- **Funct ACCT DATE SERIAL NO. DMD**

**Part Number/Manufacturing Code/Remarks**
- **E. T.O. REF/FIGURE/INDEX**

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**Labor Intensive Process!**

**LEAN Process!**
How is the LDMS Data Used?

- End Item Repair History
- Alternate Fixes
- Piece Part Information
- Unit Configuration

Technician

End Item Repair History
- Indentured Parts Lists
- Piece Part Consumption
- Bad Actors
- CNDs

Engineering

Piece Parts Information
- End Item Repair History

Field Systems

Flow Days
- Man-hour Expenditure
- Replacement Part Cost
- Piece Part Consumption
- Unit Status
- Order Status
- Stocking Levels

Shop Management
LDMS Maintenance Data Collection

MDC Module records over 130 distinct data elements!

- Job # for each asset
- Field Information
- Repair Information
- Parts Information
LDMS MDC – Bad Actor Detection

• Automatically warns the technician opening the job of the potential bad actor

• A Bad Actor flag is displayed on the job while the job is in work.

• Improves weapon system reliability

Automatic Bad Actor detection each time a job is created.
Detailed maintenance history is available from both field & depot.

**End Item History Report**

<table>
<thead>
<tr>
<th>Maint Action#1</th>
<th>Part #</th>
<th>Serial #</th>
<th>Start: 12/10/06</th>
<th>Completed: 12/20/06</th>
<th>ETI Out: 05/14</th>
<th>Cond:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIELD MAINTENANCE (Eagle Eye)</strong></td>
<td>JCN-00341931-13</td>
<td>Serial #:</td>
<td>Job #: 150983</td>
<td>Control #:</td>
<td>ETDoc #:</td>
<td></td>
</tr>
<tr>
<td><strong>350 Tag</strong></td>
<td><strong>902-115</strong></td>
<td><strong>NRTS: 15</strong></td>
<td><strong>ETI In: 05/14</strong></td>
<td><strong>WD: 0</strong></td>
<td><strong>ETDoc #:</strong></td>
<td><strong>GDR:</strong></td>
</tr>
<tr>
<td>Rx #1</td>
<td>Tech: N/A</td>
<td>Date: 12/10/06</td>
<td>Tester: ESTS</td>
<td>Failed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure: DC 50, FAILED FOR OFF, RELoad ED OF P OF, PAT, DCS.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrective Action: INM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rx #2</td>
<td>Tech: N/A</td>
<td>Date: 12/10/06</td>
<td>Tester: ESTS</td>
<td>Failed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure: T/LV, BOTTOM COVER COMES OFF.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrective Action: INM</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rx #3</td>
<td>Tech: N/A</td>
<td>Date: 12/10/06</td>
<td>Tester: ESTS</td>
<td>Failed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure: UNIT IS AMP FOR 42, WE SWAPPED THE DC 50 WITH 0342270, NEW DC 50 FOR THIS UNIT IS 2732558900002, 0342270 WENT ON WITH DC 50 24505352200102</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrective Action: INM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Maint Action#12**

<table>
<thead>
<tr>
<th>Part #</th>
<th>Serial #</th>
<th>Start: 05/11/06</th>
<th>Completed: 07/01/06</th>
<th>ETI Out: 05/14</th>
<th>Cond:</th>
</tr>
</thead>
<tbody>
<tr>
<td>317-382-115</td>
<td>99</td>
<td>Job #: 37-0189</td>
<td>Control #: 214577A</td>
<td>ETDoc #: 61256605</td>
<td>CDR: Fail</td>
</tr>
<tr>
<td><strong>350 Tag</strong></td>
<td><strong>JCN</strong></td>
<td><strong>Serial #:</strong></td>
<td><strong>Job #:</strong></td>
<td><strong>Control #:</strong></td>
<td><strong>ETDoc #:</strong></td>
</tr>
<tr>
<td>Rx #1</td>
<td>Tech: KENNY, KENNY</td>
<td>Date: 05/15/06</td>
<td>Tester:</td>
<td>Failed</td>
<td></td>
</tr>
<tr>
<td>Failure: POWER SUPPLY FAIL IN 2110</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrective Action: INM</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Defective A10**

<table>
<thead>
<tr>
<th>Part #</th>
<th>Serial #</th>
<th>Qty:</th>
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</thead>
<tbody>
<tr>
<td>50021-10-17</td>
<td>159</td>
<td>1</td>
</tr>
</tbody>
</table>

**Install A19**

<table>
<thead>
<tr>
<th>Part #</th>
<th>Serial #</th>
<th>Qty:</th>
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</thead>
<tbody>
<tr>
<td>50021-10-17</td>
<td>159</td>
<td>1</td>
</tr>
</tbody>
</table>
LDMS Configuration Management

- LDMS contains the Air Force Illustrated Parts Breakdowns (IPB) for each end item it tracks.
- Prevents technicians from ordering unapproved parts!

Critical to Operational Safety, Suitability, and Effectiveness (OSS&E).
Capturing TCTO Compliance

- LDMS identifies end items that need modification or have a pending TCTO.
- LDMS prompts technicians to verify modification was done when job is closed.
- Modification history is available for each end item.
- NO MOD left behind!

Helps ensure mods and TCTOs are performed as required.
LDMS Planning Module

Helps planners create Work Control Documents in a SNAP!

Helps planners create Work Control Documents in a SNAP!

Standard Library of Predefined Steps
## LDMS Material Management

**Visual Mgmt Features**

- Helps prioritize work
- Not issued in 3 days
- Not issued in 2 days
- Issued within 1 day

Immediately shows supply clerk which piece parts are coming in and where they go.
The R&M module quickly analyzes systems & identifies cost drivers & high failure end items, modules, & components.
• Analysis by reference designator can show reliability problems caused by environmental factors, design flaws, and even improper ESD handling.

A Reference Designator identifies the physical location of a failed part.
LDMS Reports

- Reports are provided for all aspects of LDMS including:
  - Shops/RCCs
  - Employees
  - Maintenance data
  - IPB data
  - Parts usage
  - Production
  - AWP
  - Orders
  - R&M
  - Supply

- All reports have numerous filtering options and are exportable to text, HTML, RTF, PDF, and MS Excel.

A sophisticated reporting module provides access to LDMS data.
LDMS Security

- **User Login** – CAC is the primary user authentication mode. Supports user ID and password for those without CAC (contractor sites).

- **Role Level Security** – Controls access to LDMS functions based on job.

- **System Level Security** – Controls access to LDMS data by aircraft system. Allows contractors to see failure data for specific systems but not others.

- **Organizational Restrictive Access** – Controls access to functions based on user’s organization.

LDMS provides four levels of security.
LDMS.Net was designed for field sites and provides web access to LDMS data.

- Provides maintenance data collection and reporting.
- Easy to input data from different locales
- Provides complete control over who can access and modify it.
- Could be deployed to ALL sites doing repair for the Air Force.
- Expect deployment in the future.
Conclusion

• Automates Processes
  – Enforces OSS&E
  – Reduces errors
  – Eliminates waste

• Increases Aircraft Availability
  – Reduces CNDs, MICAPs

• Reduces Maintenance Costs
  – Increases productivity
  – Reduces carcass requirements

LDMS is a Tool for Success!