

Automated Configuration Management System (ACMS)

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21 May 98

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Briefing Outline

- Background
 - Current Army Environment and Problems
- ACMS
 - Task
 - Methodology
 - Summary
- Next Steps
- Task Force Recommendations

What is Configuration Management (CM)

“A management process for establishing and maintaining consistency of a product’s performance, functional, and physical attributes with its requirements, design and operational information throughout its life. ...”

(MIL STD 2549)

Current Engineering Data Statistics

AMC has:

- 6 Technical Data/Configuration Management System (TD/CMS) and 5 Joint Engineering Data Management Information Control System (JEDMICS) sites
- 8 Million images
- 5,000 Engineering Change Proposals (ECPs) / yr
- 8,500 spare parts reprocrements / yr

Current Army Environment

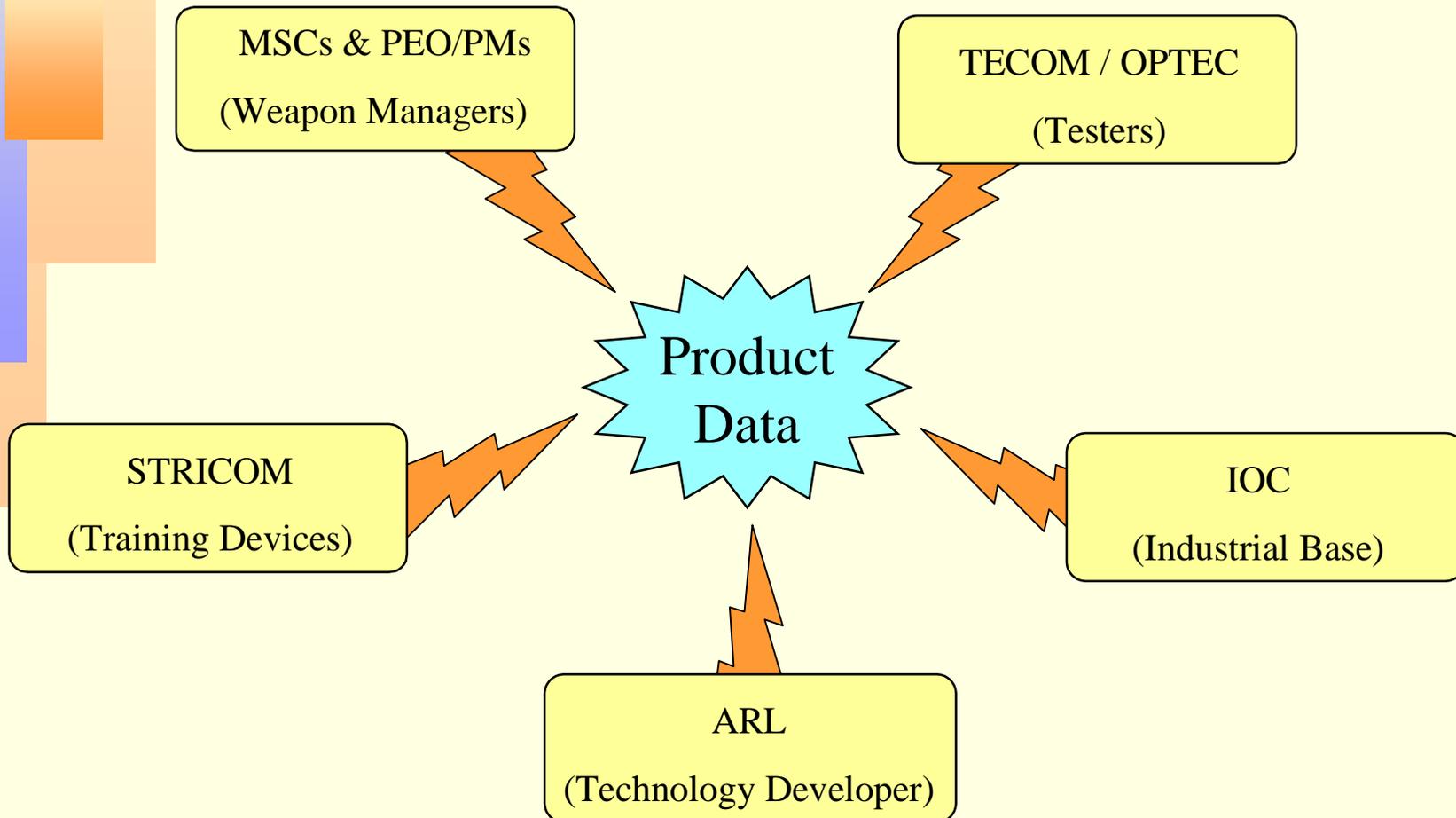
Facts

- Army legacy digital product data is primarily stored in "unintelligent" raster format
- Contractors are developing "intelligent" data that cannot be managed by TD/CMS
- TD/CMS can't manage multiple product baselines
- CITIS implementations tend to be program unique (digital delivery of product data)

Resulting Problems

- Forces new producers to "re-invent" lost data intelligence - geometry and metadata
- Army incurs additional cost for conversion of data to raster format
- Depots must rely on other unofficial data sources to support repair and modifications
- Repetitive unique solutions are expensive and provide little interoperability

Army Interoperability Needs



Analysis

- Army does not do all aspects of CM as well as it should. Current automated system (TD/CMS) can't handle all user needs.
- Army must switch from a “drawing” to “product” perspective.
- Army must provide access to all product data required (not just the two dimensional images of record) to support a product throughout its life cycle.
- Complete life cycle access to product data is only possible if the Army practices cradle to grave configuration management of product data.

Solution

Need an automated configuration management system that:

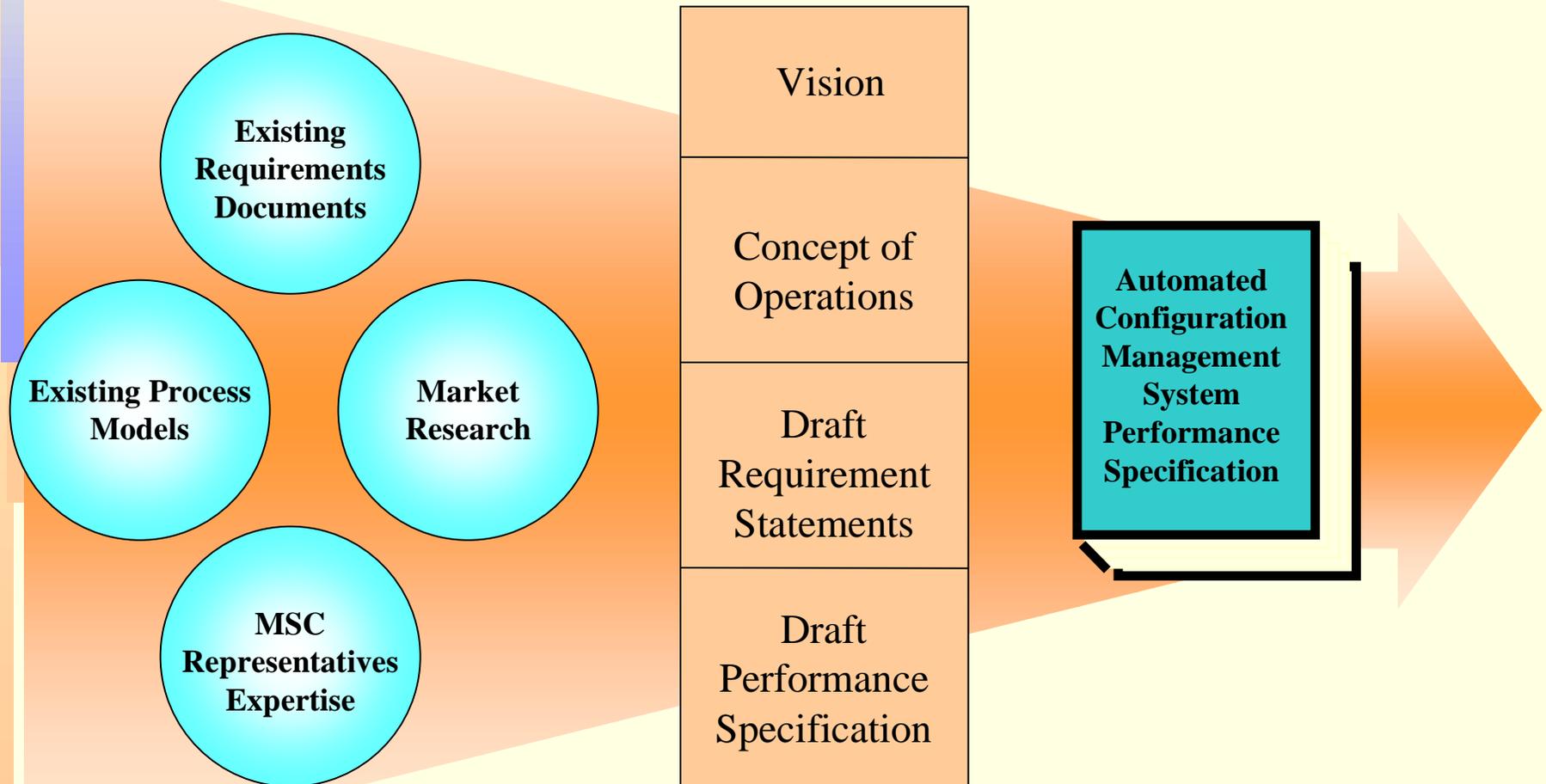
- Knows about all product related data
- Can accept and manipulate “intelligent” data and manage multiple product baselines
- Is compatible with Industry practices
- Provides a standard means for the delivery of digital product data
- Supports Acquisition Reform objectives
- Allows for interoperability between sites
- Uses Commercial-off-the-Shelf technology

That's ACMS!

Task

Army Materiel Command (AMC) tasked the Engineering Data Management Systems (EDMS) Functional Coordinating Group (FCG) to prepare a Performance Specification for an Army standard automated configuration management system that would meet the Army's current and future needs.

Methodology



PDM Functionality

- Product Structure/Bill of Materials
- Configuration Management
- Work/Process Flow Management
- Vaulting
- Program Management
- Imaging Services
- Parts Classification

Note: PDM systems tend to be highly customizable because of the vary nature of the product and the environment in which they operate. Few PDM systems provide the full range of functionality given above. All systems perform some functions better than others.

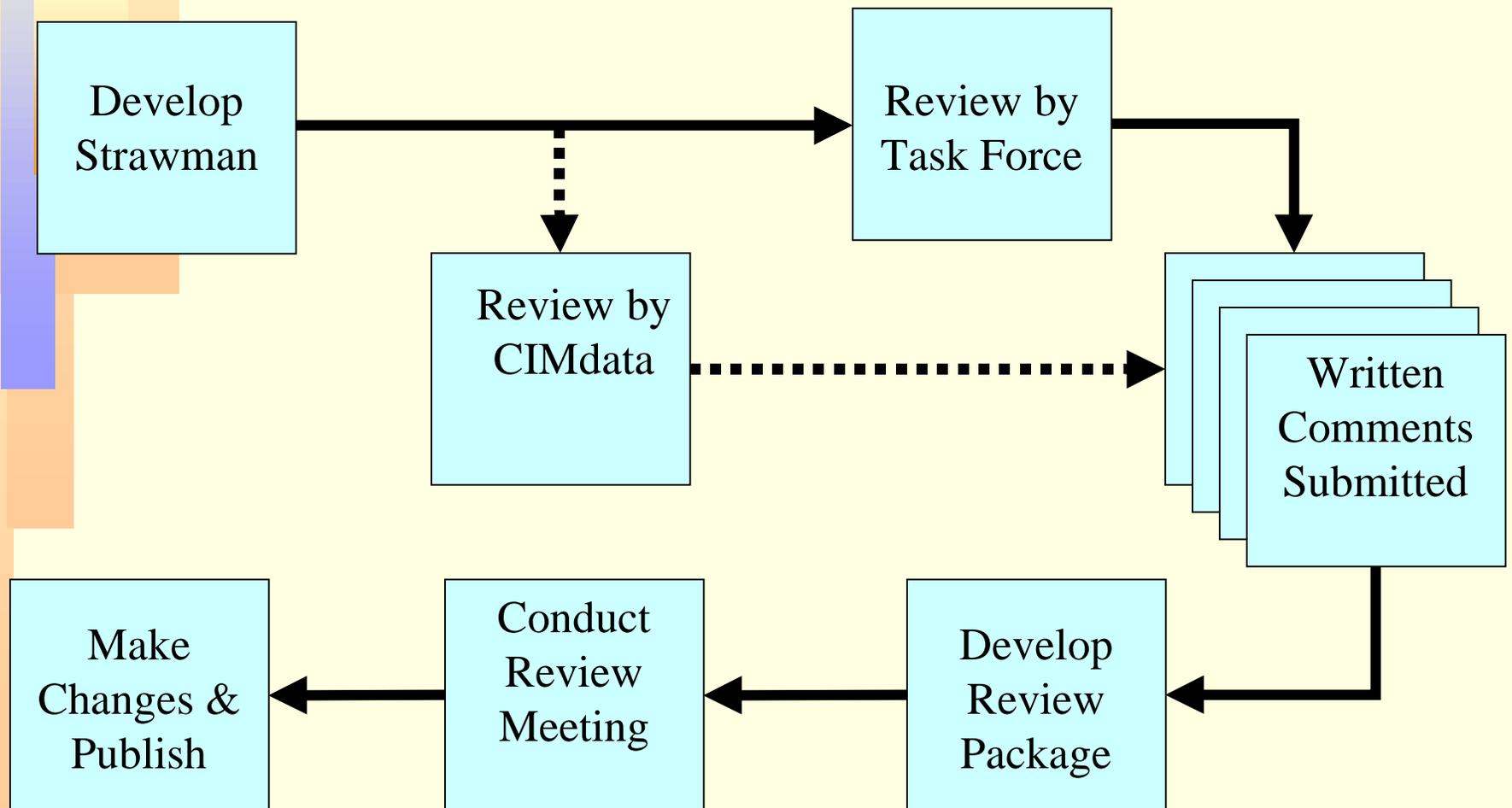
PDM Benefits

Typical PDM benefits reported by Commercial Sector

- Reduction in number of Engineering Changes 55-80%
- Reduction in Engineering Change processing time 35%
- Reduction in design/development costs 50%
- Reduction in design cycle time 20-40%
- Reduction in the number of parts 42%
- Reduction in the number of paper copies 40-90%
- Reduction in the number of document control staff 30%
- Reduction in document release time 60%
- Reduction in document request time 99%
- Reduction in manufacturing costs 30%



Review Process



ACMS Vision

ACMS will:

- Provide the **required data** when it is needed and in a form that the user can apply to accomplish the mission.
- Operate in a diverse Army environment, integrate with other MSC business processes, and communicate with other MSC, government and industry information management systems.

Required Data

Required data is all product data, consisting of documents and metadata, required to specify, design, analyze, manufacture, maintain, sustain, test, inspect and dispose of the product over its entire life cycle.

Documents

- Drawings
- Reports
- Databases
- Application software
- Engineering designs
- etc.

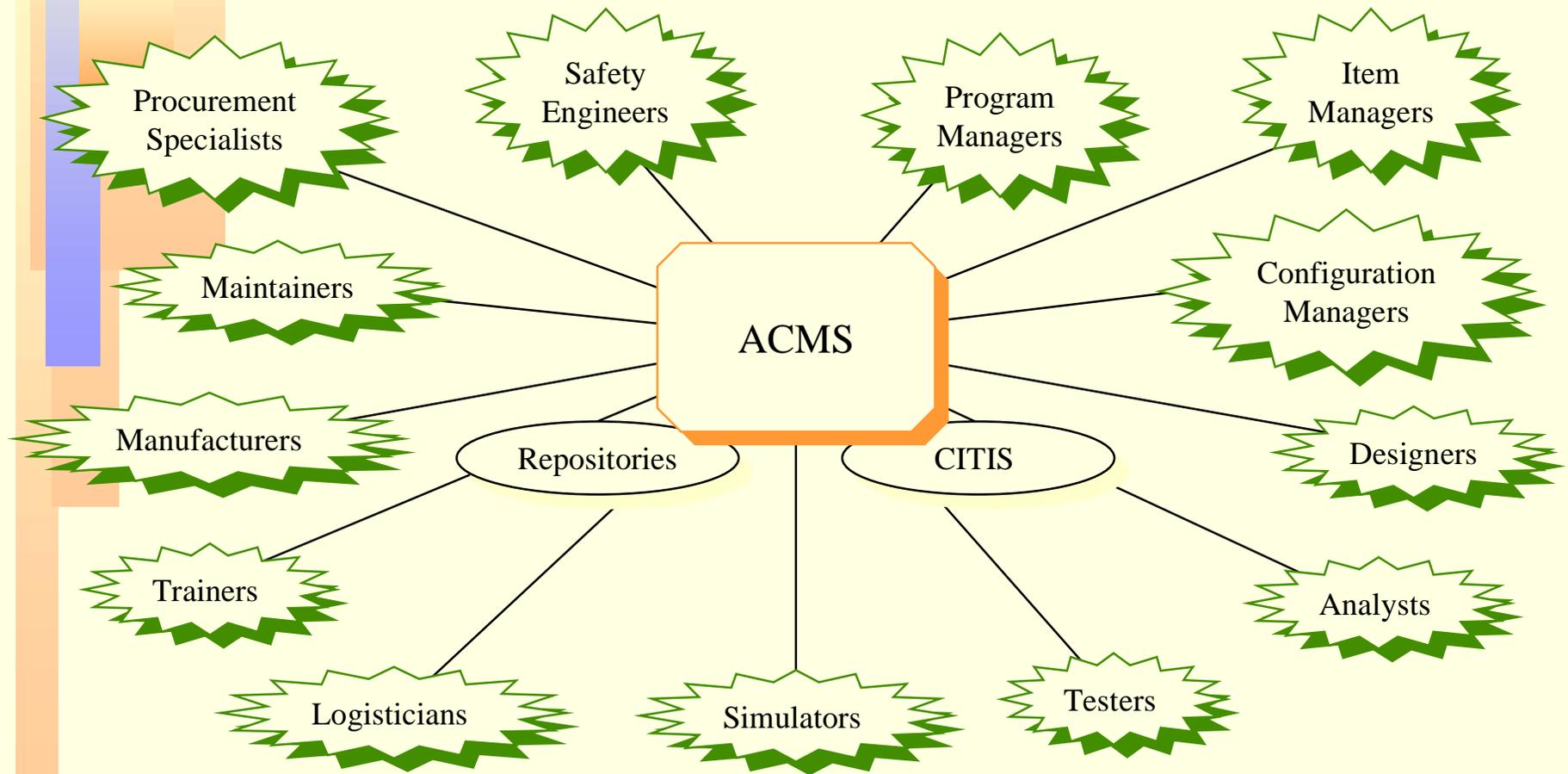
Metadata

(data about the documents)

- Identifier
- Document location
- Revision level
- Owner
- Author
- Relationship to products
- Relationship to other documents
- etc.



ACMS User Communities



ACMS Operational Requirements

Product Data Management

- Product Data Control
- Workflow Management
- Product Structure Management
- Program Management
- Imaging Services
- Data Translation
- System Administration

Configuration Management

- CM Data exchange
- Configuration Planning
- Configuration Identification
- Configuration Audit
- Configuration Control
- Status Accounting

Tech Loop

- Tech Loop Creation and Maintenance
- Support Tech Loop Reviews
- Generate Tech Loop Reports



Product Data Management

- Product Data Control
 - data storage
 - access control
 - data locating
 - release and metadata management
 - audit history
- Workflow Management
 - workflow definition
 - workflow execution
- Product Structure Management
 - product structure creation and maintenance
 - viewing and reporting
- Program Management
- Imaging Services
- Data Translation
- System Administration
 - user authorization and management
 - distributed data environment management
 - archive, backup and restore management
 - tailoring
 - system security and monitoring
 - performance monitoring



Status Accounting

3.1.2.6 Status accounting requirements

3.1.2.6.1 Record field configuration. ACMS shall provide the capability to record, retrieve, and display "as built" and "as modified" configurations resulting from the installation and removal of assemblies, components, parts, and material whether serialized or tracked by lot or batch.



Support Tech Loop Reviews

3.1.3.2 Support Tech Loop reviews

3.1.3.2.1 Compare baselines. ACMS shall provide the capability to compare baselines established as part of a Tech Loop review and identify differences (see Configuration Control Requirements "Store Baselines" and "Perform Baseline Compare").

3.1.3.2.3 Support HAZMAT screening. ACMS shall provide the capability to assign, record, and display metadata and unique identifiers in support of the hazardous material screening during Tech Loop review (for example, electronic bulletin board, status forms, internal messaging, alternate solutions).



Key Elements of ACMS Performance Specification

- Section 3 Requirements
 - Operational
 - Product Data Management
 - Configuration Management
 - Tech Loop
 - Interface
 - External
 - Internal (none)
 - User
 - Ownership and support
 - Operational Environment
 - Client workstation
 - Network
 - Server

Key Elements of ACMS Performance Specification

■ Section 6 Notes

- Identifies requirements that can't be met by COTS today
- Identifies requirements that are
 - enterprise wide
 - enterprise wide but require tailoring to meet site specific environment
 - command unique

Key Elements of ACMS Performance Specification

- Appendices

- A - ACMS Concept Overview
- B - ACMS Support of Army Product and Data Life Cycles
- C - ACMS Support for Select Business Processes
- D - Glossary
- E - Acronyms



External Interface

3.2.1 External interface requirements

3.2.1.1 Process data information packets. For requirements pertaining to exchanging MIL-STD-2549 Data

3.2.1.3 Provide generic API. ACMS shall provide a published and supported Application Program Interface (API) that allows external applications to invoke all ACMS functions.

DEAS, CADENCE, Interleaf, MS Word, WordPerfect, Microstation, MS Excel, OrCad, CAM 350, Anvil, Mentor, EMS, MS Project and MS Power Point. (See paragraph 6.2.4. This requirement must be tailored by the implementing command at the time of acquisition.)

3.2.1.5 Interface with MEARS. ACMS shall be capable of dynamic interface (see Appendix D) with the Multi-user Engineering Change Proposal Automated Review System (MEARS) to exchange engineering change actions and associated metadata.

3.2.1.6 Interface with ECALS. ACMS shall be capable of dynamic interface with the Engineering Changes at Light Speed (ECALS) system to exchange engineering change actions and associated metadata.

3.2.1.7 Interface with CARS. ACMS shall be capable of dynamic interface with the Computer Aided Requirements System (CARS) to exchange engineering change actions and associated metadata.

3.2.1.8 Interface with PC-JEDMICS. ACMS shall be capable of dynamic interface with the Personal Computer-based JEDMICS (PC-JEDMICS).



User Interface

3.2.3 User interface requirements

3.2.3.1 Provide on-line help. The ACMS user interface shall provide context-sensitive, indexed, and searchable on-line help to users.

3.2.3.5 Provide web-browser interface. ACMS shall provide a web-browser user interface with full ACMS functionality.



Long-term ACMS Requirements

Paragraph Number	Requirement Title
3.1.1.1.3.5	Navigate non-host site product structures
3.1.1.1.3.6	Search non-host site product structures
3.1.1.1.3.7	Provide non-host site product data retrieval
3.1.1.5.1	Add translators
3.1.1.5.3	Provide automatic translation services
3.1.1.5.4	Provide default translation parameters
3.1.1.5.5	Translate product data
3.1.1.7.2.2	Manage multiple PDM systems
3.1.2.1.1	Process data information packets
3.2.1.1	Process data information packets
3.2.1.16	Interface with JCALS Workflow Manager



Performance Specification

- Defines functional requirements
- Follows industry direction of “product focus” vs “document focus”
- Prepared by the CM experts within Army
- Suitable for evaluation and procurement of a Product Data and Configuration Management system
- Enables interoperability and standardization among Army organizations



Summary

- The lack of good data management capabilities is costing the Army a lot of money.
- Good Configuration Management is the key to data access and currency
- The ACMS will gain control over data and Army products; and will provide the capability to improve our business processes
- Private industry experience shows significant cost savings can result

Next Steps

- Publish ACMS Performance Specification
- Build “customer” and “stakeholder” support
- Develop economic impacts
- Plan the implementation of ACMS
- Obtain Resources to accomplish the above

Publish Specification

- Publish as an Army Specification
 - AMCOM as the preparing activity
 - EDMS FCG as the agent
- Forward to DoD for their consideration as a DoD Specification

Build “Customer” and “Stakeholder” Support

■ Already Briefed

- Army Paperless Office IPT
- Army Information Management Users Conference
- IOC/ACALA Acquisition Reform Day
- JEDMICS Users' Meeting
- Logistics Community Manager
- Logistics Systems Re-Invention Office

■ Plan to Brief

- Dr. Fallin

■ Could or Should brief

- AMC Logistics community
- AMC CIO
- AMC CG

Develop Economic Impacts

- MEA has agreed to assist the Task Force by beginning to document some of the economic impacts ACMS could have
- JEDMICS is funding MEA to document their economic analysis and has agreed to have MEA help us out
- MEA will start by
 - quantifying economic impacts associated with problems we have identified in the current Army environment and then
 - performing FEA/COEA to quantify costs and benefits of ACMS

Plan the Implementation of ACMS

- CBDCOM PDM Implementation Status
- CECOM PDM Implementation Status
- TACOM ACMS IPT
- Proposed AMC ACMS Implementation Strategy



TACOM IPT Status

20 May 1998

Patricia Martinez - TACOM WRN

Tank-automotive & Armaments **COM**mand

Committed to Excellence



Vision

- The vision is to acquire an ACMS which is seamlessly integrated with an Integrated Data Environment (IDE) in support of integrated business processes.



Mission

- The mission of the IPT is to serve as TACOM's functional proponent for the development and implementation of ACMS and assure that all business processes and functional requirements are identified in order to successfully select, field, and maintain the system.



Objectives

- Develop a strategy to reengineer business processes to take advantage of ACMS capabilities.
- Support a paperless acquisition process
- Reduce costs associated with Engineering Data Management
- Develop a plan to migrate legacy data to ACMS structure
- Insure all customers' and suppliers' requirements are coordinated



Strategy

- The IPT will use available commercial products to achieve its objectives.
- Insure that the ACMS system will meet the requirements of the performance specification prepared by AMC's functional working group and appropriate for all three TACOM sites.
- Insure compatibility with appropriate industry standards, DoD CALS and STEP. Ensure interoperability with other available commercial ACM systems.
- Closely coordinate with the existing security working groups on security of data.
- Coordinate requirements and strategy with other MSCs through the AMC EDMS FCG.



IPT Membership

Membership will be comprised of subject matter experts in affected business processes from the following:

- TARDEC
 - ARDEC
 - ACALA
 - CIO
 - PEO-GCSS
 - DSA
 - IMMC
 - ACQ Center
 - PM EDMS (advisory member)
- As Needed:
- Depots
 - DLA
 - Other external partners from Government and Industry



Status

- Market Survey - May 98
- Solicitation - August 98
- Award - Jan 99
- System Production 2000



What's Next

- Acquire Funding
- Become pilot site for AMC implementation



ACMS



EDMS PMO Recommended Implementation Strategy

- Strategy
- Milestones
- Funding Requirements



ACMS



Strategy

- The EDMS PMO will issue a contract task for a full analysis of available COTS/ GOTS packages with system(s) and implementation recommendations.
 - Task issued on GSA FSS or BPA contract.
 - EDMS FCG Task Force invited to participate in SOW preparation.
- The EDMS PMO will lead the evaluation of recommendations including application software test for system(s) selection.
 - EDMS FCG Task Force invited to participate in the evaluation and selection.
- The EDMS PMO will brief the solution to the FCG and to AMC HQ.
- The EDMS PMO will issue an implementation/integration contract for:
 - HW/SW Purchases (as required).
 - Tailoring for ARMY and MSC unique requirements
 - Data Conversion
 - Installation
 - Training



ACMS



Milestones and Funding

- ANALYSIS MILESTONES

- 5 weeks for contract award
- 1 month for contractor preparation
- 6 months for contractor analysis
- 2 months for government evaluation and selection

- FUNDING REQUIRED

- Analysis/recommendation task - \$xxx
- Implementation funds must be pursued parallel to the analysis task.

Task Force Recommendations

- Task Force has approved the ACMS Performance Specification and recommends publishing with limited coordination
- AMC approve the recommended ACMS Implementation Strategy
- AMC determine funding methodology (implementation depends upon funding availability)

Task Force Recommendations (cont.)

- AMC, EDMS FCG and EDMS PMO to brief CG, TACOM
 - obtain concurrence on implementation strategy
 - agreement to be first site from central implementation plan
- AMC issue policy guidance
 - that requires the use of the ACMS Performance Specification and the central implementation plan for all new AMC CM, DM and PDM systems acquisitions
 - for contractual application in the acquisition of electronic data

For Additional Information

Visit the ACMS Web site

www-iaa.ria.army.mil/ai/eng_data/acms/acms_frameset1.html

Better! Faster! Cheaper!