ALM at Rockwell Collins

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Presented by Paul Streit
By the numbers

Rockwell Collins at a Glance

- **Revenues**: $8.12B
- **Employees**: 30,000
- **Sales**:
  - Interior Systems: 35%
  - Commercial Systems: 28%
  - Government Systems: 28%
  - Information Management Services: 9%
- **Government/Commercial**:
  - Government: 28%
  - Commercial: 72%
- **Global Sales**:
  - International: 47%
  - United States: 53%
- **Major locations in 30 Countries**
Who we are

Core Competencies

Integrated avionics
Communications
Navigation
Displays and surveillance systems
Connected aircraft solutions
Flight support services
Integrated mission and training solutions
Flight control
Cabin seating and interior systems
Global service and support
Our Businesses – and Who They Serve

- **Commercial Systems**
  - Aircraft manufacturers
  - Airlines and business aviation

- **Government Systems**
  - U.S. Dept. of Defense
  - Foreign militaries
  - Aircraft and helicopter manufacturers

- **Information Management Services**
  - Airlines and business aviation
  - Airports
  - Rail and critical infrastructure

- **Interior Systems**
  - Aircraft manufacturers
  - Airlines and business aviation
Who we are

A Global Presence

- International engineering, manufacturing and sales
- Major locations in 30 countries
- Service and support network spanning more than 150 countries
ALM Defined

A project-centric engineering tool platform that combines tool capabilities with collaboration technologies in a single, integrated environment

- Functional areas
  - requirements management
  - workflow automation
  - change tracking
  - continuous build and test
  - knowledge management
  - review and approval
  - software CM

- Major objectives
  - global collaboration
  - real-time dashboards
  - project-centric organization
  - extensibility and configurability
  - lower tool costs
  - increase productivity
Product Data Lifecycle
Product Data Lifecycle with ALM alignment
ALM Surprises

- Engineering wanted help aligning their practices, and the timing was right with an all-new platform.
- Even with several levels of scalability options in the plan, we found ourselves challenged to maintain performance.
- Demand for modern engineering tools far exceeded our estimates.
- Engineering wanted to capture and share knowledge.
- Web-based tools are capable of more functionality than we imagined.
- Our users’ appetite for more never faded.
Our ALM is Actually Two Environments

▪ “ALM-lite” is for non-product development
  – Preceded full ALM by a year; whet engineering’s appetite, and prepared us to support full ALM
  – Rapidly embraced by 1000+ tool developers, and IT and shared service teams

▪ Full ALM for product development, both commercial and government
  – RC-standard workflows to support rigorous processes
  – Project-centric onboarding and data migration services
  – Standard quality measures and metrics

Over 2 million collaborations or comments
Positioning for Unanticipated Business Needs

- Co-development with customers, subcontractors, and partners
- Some Electrical and Mechanical design work
  - Project mgmt, requirements mgmt, knowledge capture, and Agile
- Distributed configuration management
- Agile
- Integration of Quality with D&D
- Integration of Certification with D&D
- DevOps
- Build and test automation
- Automate the flow of SW releases from ALM to PDM

Agile scrum usage for all ALM users grew from 25% to over 50% in three years
ALM Needs and Challenges

- Cloud - potential for lower infrastructure costs and greater DFARS compliance
- Cybersecurity
  - vulnerability scans of third party software embedded in our products
  - determine where common libraries and components are used
- Global collaboration - how do we continue to improve while protecting sensitive data?
- Hardware/software relationship in the PLM context
- Scalability - maintain performance while growth continues
- Customization vs configuration
  - Our ALM architecture is modular, but it has become very complex
  - How far should we go with unique capabilities?

Over 1 million workflow records (over 12% auto-generated)
Intersection between ALM and PLM

- Software release automation is our best example
  - Our first major tie between ALM and PDM

- Several factors increase the complexity
  - Certification and compliance requirements
  - Limited APIs of PDM systems
  - Release process tuned to the needs of hardware

- We want our solution to support controlled builds
  - ALM’s build automation capability brings us closer
  - We may have to “front” PDM with a software repository so builds can reference PDM-controlled objects

- Our objective is to dramatically shorten cycle time and reduce labor for software releases

1400 project teams manage their work in ALM
Summary

▪ ALM has transformed how we create software, improving our...
  – ability to collaborate globally
  – cost trajectory
  – productivity
  – ability to adapt to a variety of new needs
  – position to tie software and hardware engineering

▪ Looking ahead, we’ve got a number of areas to manage
  – scalability must remain a focus while we’re growing
  – managing growing data security requirements
  – satisfy an appetite for more while limiting customization
  – sustainable ties to other enterprise systems that add value

Over a third of Rockwell Collins employees have used ALM in the last year
Management Theory Says...

CULTURE EATS STRATEGY FOR BREAKFAST AND TECHNOLOGY FOR LUNCH AND THEN...

Thank You! Questions?