Managing the Digital Thread Across Global Deployments

Bruce Bookbinder, Product Marketing, Aras
Bruce Bookbinder, Aras Corporation

Global Product Data Interoperability Summit | 2019

• Aras Corporation, Product Marketing Manager
• GE Power, Enterprise PLM Strategy, Master Data Management Leader
• Avon Products, IT Director; Product Development Applications and R & D
• Reader’s Digest, Developer, DBA, Technical Trainer
• Control Data Corporation, Developer
• Kidder Peabody, Developer

• Pace University, MS Computer Science
• State University of New York, BS Computer Science
Focus on Digital Thread

72 percent of manufacturing companies surveyed by PwC said they are dramatically increasing their level of digitization and expect to be able to be ranked as digitally advanced by 2020, compared with just 33 percent today. These companies are committing US$907 billion per year — about 5 percent of revenues — toward greater connectivity and smarter factories.

- Industrial Manufacturing Trends 2018-19, By Marian Mueller, Steve Eddy, Reinhard Geissbauer, Barry Jaruzelski
70 percent of respondents in a 2019 McKinsey survey said the scope of their organizations’ transformation efforts were “Multiple business units and/or functions” or “Enterprise-wide”.

Five moves to make during a digital transformation - McKinsey Digital
What Benefits Are Companies Looking For?

Productivity gains:
Deliver on-time product launches

The ability to rapidly respond to changing customer demands:
Improve product quality and support

Market expansion:
Support new markets, new service business models, create new product offerings

Development of a feedback loop for Next Generation Products:
Lay the foundation for next generation product development. Configuration and operating information can be shared backwards in the lifecycle to enable improved product designs, manufacturing processes and quality tests
Global Enterprise Deployments with Aras

Global Product Data Interoperability Summit | 2019

- Aerospace
- Automotive
- Defense

Complex Products and Processes
Multiple Teams and Tools
Distributed Global Presence
Large Supply Chains

- High-Tech Electronics
- Industrial Manufacturing
- Medical Devices
Traditional PLM

Knowledge and Action

TRADITIONAL PLM

DEFINE
DEVELOP
BUILD

SILOED TOOLS

SUPPLY CHAIN

SERVICE & MAINTAIN

LAUNCH
OPERATE

Knowledge and Action
Managing the Digital Thread with Aras

Global Product Data Interoperability Summit | 2019

Next Generation

- SILOED TOOLS
- SUPPLY CHAIN
- SERVICE & MAINTAIN

TRADITIONAL PLM

Knowledge and Action

DEFINE
DEVELOP
BUILD
OPERATE

Next Generation Knowledge and Action
Managing the Digital Thread with Aras

Next Generation

SECURITY

CONNECTIVITY

COLLABORATION

TRADITIONAL PLM

DEFINE

DEVELOP

BUILD

OPERATE

Knowledge and Action

SECURITY

CONNECTIVITY

COLLABORATION

TRADITIONAL PLM

DEFINE

DEVELOP

BUILD

OPERATE
SECURITY
Secure Access for Global Teams: a “Big Three” US Automotive OEM

- 5,000+ engineers: 1 platform
- Manage change throughout the lifecycle for all brands
- Unified teams across vehicle and propulsion
- Complex access controls: Users, Programs, Permissions
- Integrate with legacy systems for CAD, PDM
- Complex search, large amounts of data
Secure Test Information Management: a Leading European Aerospace OEM

- 30,000 users: engineering, manufacturing, test, quality, and the supply chain
- First app: Web-based test information management
- Vision: deliver product definition beyond engineering
- Manage test information across multiple teams and tools
- Provide visibility into test activities for key stakeholders
- Multi-site operation, including the extended enterprise
### Security: Role-Based Permissions

#### Context:
Global Product Data Interoperability Summit | 2019

#### Table:

<table>
<thead>
<tr>
<th>Role/Permission</th>
<th>500 W</th>
<th>80 W</th>
<th>170 W</th>
<th>225 W</th>
</tr>
</thead>
<tbody>
<tr>
<td>User A</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>User B</td>
<td>❌</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>User C</td>
<td>❌</td>
<td>✔</td>
<td>✔</td>
<td>❌</td>
</tr>
</tbody>
</table>

#### Diagram:
- (Person Icon) [User A] (Checkmark)
- (Person Icon) [User B] [Checkmark]
- (Person Icon) [User C] [Checkmark]
## Security: MAC – Mandatory Access Control – Policy

<table>
<thead>
<tr>
<th></th>
<th>500 W</th>
<th>80 W</th>
<th>170 W</th>
<th>225 W</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2</td>
<td>✓</td>
<td></td>
<td>×</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Security: Environment-Based
Security: Project-Based (DAC – Domain Access Control)
Security: Sophisticated Collaboration Scenarios

- Program+Role Permissions

- Permissions for Items which are part of a project with users having specific project roles
CONNECTIVITY
Connected Systems for Quality: a $2B+ US Medical Device Company

- Fulfill requirements for design history file (DHF), document approvals, change control, and UDI
- Manage system proliferation to realize holistic quality
- Regulations across the US and China
- Consolidate and manage product configuration baselines across multiple teams
- “PLM is an important part of the quality system process and solutions architecture”
Connected PLM & QMS: a Japanese High-Tech & Medical Device Provider

- One, centralized system for PLM and QMS
- Improved compliance and audit-readiness
- Expand access for enterprise teams
- Customizable to meet legacy requirements and new ones
- CAPA, Design Control, Production / process control, Document Control
- Easily output one consolidated PDF for audit purposes
Connectivity: Shared User Interfaces

Global Product Data Interoperability Summit | 2019
Connectivity: Federated Data
Connectivity: Document Snapshots
COLLABORATION
Secure Collaboration: a Top Japanese Heavy Industry / Aerospace OEM

- 1,000+ users across multiple companies
- Streamline both technical and business processes
- Share process innovations across industry groups

- Support design, development, and production
- Implemented as platform-as-a-service for strategic agility
- Security features enhance business expansion overseas
Collaboration Advances On-Time Delivery: A Global High-Tech OEM

- Meet growing demand for devices and cloud offerings
- Support hardware configuration and design
- Advance on-time design handoff to over 90%
- Manage continuous change and improvements across hardware, tooling, and processes
- Involve more stakeholders in the change process
- Provide for effective communication across teams
Secure Extended Enterprise Access

- Connects external partners to engineering data, while providing secure access control for IP

- Support multiple architectures for collaboration:
  - OEM + Design & Build Partners
  - System Suppliers / Design Suppliers
  - Build to Print Suppliers & Tooling Suppliers
Collaboration: Secure External Access – Data Synchronization
Collaboration: Secure External Access – Web Services

Global Product Data Interoperability Summit | 2019

Main Company

Internal User

Internal Server

Firewall

DMZ

Web Services

Portal Client

External User

Web Service

Aras Web Client
Deployment Example – Kawasaki Aerospace

Kawasaki Aerospace

In-session CAD

Data Sync

Aras PLM – Internal Server

Internal Data

Internal Users

Aras Web Client

Aras CATIA V5 Connector

Partner Data

Internal DB

Data Sync

Aras PLM – Partner Server

Partner 1 Data

Partner 2 Data

Partner DB

DAC

Partners

Partner 1

Aras Web Client

Aras CATIA V5 Connector

Partner 2

Aras Web Client

Aras CATIA V5 Connector
Next Step – Kawasaki Aerospace

Global Product Data Interoperability Summit | 2019

- Internal Server
- External Server
- DMZ
- Internal User
- Partner Company
- Partner Server (Aras)
- Firewall
- Partner Company
- Partner Server (Other PLM)
- API
- INTEGRATION
Conclusion: The Enterprise Digital Thread
THANK YOU