T·Systems·
Aerospace Supply Chain Engineering Enablement

Design Authority through Integrated Collaboration
Martin Frenzel
T-Systems International
<table>
<thead>
<tr>
<th></th>
<th>Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T-SYSTEMS PLM</td>
</tr>
<tr>
<td>2</td>
<td>COLLABORATION – WHAT IT'S ALL ABOUT</td>
</tr>
<tr>
<td>3</td>
<td>MANAGING ENGINEERING ENVIRONMENTS</td>
</tr>
<tr>
<td>4</td>
<td>T-SYSTEMS SOLUTIONS</td>
</tr>
<tr>
<td>5</td>
<td>Q+A</td>
</tr>
</tbody>
</table>
**T-Systems – your global partner with global resources.**

**GLOBAL PRODUCT DATA INTEROPERABILITY SUMMIT | 2013**

---

**INTERNATIONAL PRESENCE**
- OFFICES IN OVER 20 COUNTRIES,
- GLOBAL DELIVERY CAPABILITY

**MARKET POSITION**
- NO. 1 ICT PROVIDER IN GERMANY
- NO. 2 PROJECT SERVICES IN GERMANY
- NO. 1 MANUFACTURING IN EMEA

**REVENUE**
- €10 BILLION*
- *2012 FIGURES

**EMPLOYEES**
- APPROX. 52,700 (29,300 IN GERMANY, 23,400 OUTSIDE GERMANY)*
- *2012 FIGURES

---

*2012 FIGURES

---

**Copyright © 2013 Boeing. All rights reserved.**

**Copyright © 2013 Northrop Grumman Corporation. All rights reserved.**

**GPDIS_2013.ppt | 3**
Based on today’s challenges, we have established five core beliefs.

- **T-Systems delivers flexible ICT cloud solutions and pricing models for dynamic markets.**
- **T-Systems enables companies to work across enterprise boundaries and geographical borders.**
- **T-Systems ensures employees can access their data anytime, anywhere and from any device.**
- **T-Systems provides effective solutions for data security and governance.**
- **T-Systems takes corporate social responsibility seriously.**
Managing the PLM world

END TO END SERVICES AND SOLUTIONS FOR THE WHOLE PRODUCT LIFECYCLE.
1. T-SYSTEMS PLM
2. COLLABORATION – WHAT IT’S ALL ABOUT
3. MANAGING ENGINEERING ENVIRONMENTS
4. T-SYSTEMS SOLUTIONS
5. Q+A
Complexity in collaboration – what it’s all about
<table>
<thead>
<tr>
<th></th>
<th>Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T-SYSTEMS PLM</td>
</tr>
<tr>
<td>2</td>
<td>COLLABORATION – WHAT IT'S ALL ABOUT</td>
</tr>
<tr>
<td>3</td>
<td>MANAGING ENGINEERING ENVIRONMENTS</td>
</tr>
<tr>
<td>4</td>
<td>T-SYSTEMS SOLUTIONS</td>
</tr>
<tr>
<td>5</td>
<td>Q+A</td>
</tr>
</tbody>
</table>
ROADMAP

The basis for collaboration is to transfer information to a partner and back.

All industries share similar collaboration requirements.

Cluster them into a service catalogue.

Implementation is basically customizing some very flexible standard software.
**Managing complexity – wishful thinking?**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>ASPECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period of exchange</td>
<td>Synchronous</td>
</tr>
<tr>
<td></td>
<td>Asynchronous</td>
</tr>
<tr>
<td>Data Size</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Small</td>
</tr>
<tr>
<td>Security</td>
<td>classified</td>
</tr>
<tr>
<td></td>
<td>unclassified</td>
</tr>
<tr>
<td>Mode of communication</td>
<td>online</td>
</tr>
<tr>
<td></td>
<td>offline</td>
</tr>
</tbody>
</table>

[ ... ]

**WHY NOT?**

IMPLEMENT A COLLABORATION ENVIRONMENT USING A SHOPPING LIST?

---

Copyright © 2013 Northrop Grumman Corporation. All rights reserved.
Managing complexity by standardization and openness

SOLUTION

Set of

- standardized
- interlocking
- open

products or product packages.

Toolset is plugged together according to the service catalogue.

80% OUT-OF-THE-BOX, 18% CUSTOMIZING, 2% CONTINUOUS IMPROVEMENT
Agenda

1. T-SYSTEMS PLM
2. COLLABORATION – WHAT IT’S ALL ABOUT
3. MANAGING ENGINEERING ENVIRONMENTS
4. T-SYSTEMS SOLUTIONS
5. Q&A
Aspects of standardization and openness

WE NEED …

- Industrial standards and guidelines for compatibility and openness

T-SYSTEMS OFFERS …

- Long-term experience in standard data models (JT, STEP)
- Active participation in standardization committees
WE NEED ...

- Obey standards for security and classified data handling (e.g. ISO 27001)

T-SYSTEMS OFFERS ...

- Security and data protection expertise
- Proven in numerous projects – the German government trusts us!
WE NEED ...

- Service-oriented architectures to re-use functionality in various contexts

T-SYSTEMS OFFERS ...

- Dedicated PLM Middleware PDM WebConnector for HD PLM integration
Aspects of standardization and openness

Global Product Data Interoperability Summit | 2013

WE NEED ...

- Predefined processes and workflows
- Customized for collaboration and integration use cases

T-SYSTEMS OFFERS ...

- Orchestrated services for
  - data exchange and collaboration
  - integration of multiple provider and consumer systems
  - migration/coexistence
- Intelligent clients to export and import structured data to PLM systems
WE NEED ...

- Collaboration packages
  - Pre-customized
  - Approved

T-SYSTEMS OFFERS ...

- Aerospace collaboration package based on Aras Innovator
T-Systems Participation in CPO

The CPO is a voluntary self-commitment for industrial and IT companies, aiming at implementing or offering highly integrative solutions for seamless data processes in PLM.

INITIAL CPO VERSION 1.0 WAS DEVELOPED IN COOPERATION WITH:

- BMW
- DAIMLER
- DASSAULT SYSTÈMES
- IBM
- ORACLE
- PTC
- SAP
- SIEMENS PLM
- T-SYSTEMS
- VOLKSWAGEN

MORE THAN 60 COMPANIES ARE ALREADY COMMITTED.

SOURCE: PROSTEP IVIP

T-SYSTEMS IS AN ACTIVE SUPPORTER OF THE CPO AND IS PART OF THE CPO CORE TEAM 2013
T-Systems HD PLM integration

**STANDARD**

- Integration for max. 2 – 3 levels
- Static exchange regulations
- Strong influence of backend systems on implementation
- Restricted scope
  - within one company
  - pure domain oriented workflow

**HD – HIGH DEFINITION**

- Addresses all business and technical levels
- Dynamic, extremely flexible exchange processes
- Highly independent from backend systems
- Broad scope
  - crossing company borders
  - cross-domain workflow and processes

Global Product Data Interoperability Summit | 2013

BOEING is a trademark of Boeing Management Company

Copyright © 2013 Boeing. All rights reserved.

Copyright © 2013 Northrop Grumman Corporation. All rights reserved.

GPDIS_2013.ppt | 19
T-Systems Solution COM/PDM

Global Product Data Interoperability Summit | 2013

**EXPORT FROM PLM SYSTEM**

- Dedicated user interface independent from PLM system
- Select data according to configurable attributes
- Visualize data and finalize scope
- Select target directory or
- Select receiver from partner database
- Create data package including transfer information sheet
- Automatically send data to receiver using secure netbased communication platform like rvsEVO®

**IMPORT INTO PLM SYSTEM**

- Dedicated user interface independent from PLM system
- Compare selected incoming data package with content in PLM system
- Preview geometry files contained in package
- COM/PDM displays differences in structures and evaluates them as warnings or errors according to company business rules
- User decides how to resolve conflicts

**AVAILABLE FOR:**
- TEAMCENTER UA
- WINDCHILL
- ARAS INNOVATOR
- ENOVIA VPM V4
T-Systems Solution: Aerospace Collaboration Package

Aerospace Collaboration Package

- Partner/OEM
- CATIA

- DEX Toolset
  - COM/PDM
  - PDM WebConnector

- CAD Connector
  - PDM Workbench
  - Customizing

Import/Export of PLM structure data incl. all relevant information

Load and modify configured structures

Provide standardized services for data exchange or for PLM synchronization

Dedicated attributes, item types, methods

Customizing
BENEFITS

- VERY FAST RAMP-UP TO REDUCE COSTS AND TIME TO MARKET
- OEM APPROVED COMPONENTS AND BUSINESS PROCESSES
- CLEAR COSTS DUE TO FIXED LICENSING MODEL
- READY TO USE
- OPEN FOR ENHANCEMENTS
- GATEWAY TO SUPPLIER’S INTERNAL PLM LANDSCAPE
T-Systems major partners

Global Product Data Interoperability Summit | 2013
Agenda

1. T-SYSTEMS PLM
2. COLLABORATION - WHAT IT'S ALL ABOUT
3. MANAGING ENGINEERING ENVIRONMENTS
4. T-SYSTEMS SOLUTIONS
5. Q&A
Summary

Global Product Data Interoperability Summit | 2013

COLLABORATION IS COMPLEX

REDUCE COMPLEXITY BY STANDARDIZATION AND OPENNESS

CUSTOMIZATION OF STANDARD PRODUCTS RATHER THAN INDIVIDUAL DEVELOPMENT

T-SYSTEMS PROVIDES CUTTING EDGE OPEN STANDARD PRODUCTS FOR A SECURE COLLABORATION ENVIRONMENT
QUESTIONS?

Martin Frenzel
T-Systems International GmbH
Fasanenweg 5
70771 Leinfelden-Echterdingen
Germany

E-Mail: martin.frenzel@t-systems.com
Tel. +49 711 999 7052

JOIN US AT THE
VENDOR EXHIBITION
BOOTH #36