Customer Experience: Autodesk® Vault in Collaboration with PLM and DMS Systems

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Agenda

- Introduction
- Outotec
- Processes
- Autodesk Vault@Outotec
- Initial Situation / Requirements
- Conceptual Design
- Implementation
- Summary
Alexander Vogl - Outotec

- **Degree**
  - Informatics at University of Applied Science Kaiserslautern

- **Experiences**
  - IT Engineer - Product Data Management – 3 years
  - Application Engineer @ Outotec – 4 years
  - Senior Application Engineer @ Outotec @ Autodesk – 2 years

- **Projects**
  - Rollout global Engineering Software
  - Implementation Product Data Management System / Plant Data Management
  - Implementation of a distributed CAD
  - Engineering Databases

Alexander Vogl- [http://www.linkedin.com/pub/alexander-vogl/7a/5a6/351](http://www.linkedin.com/pub/alexander-vogl/7a/5a6/351)
Degree
- Geoinformatic and Surveying at University of Applied Science Neubrandenburg

Experiences
- Developer @ c-plan – 3 years
- Software Development Manager @ c-plan / Autodesk – 5 years
- Technical Business Analyst / Consultant @ Autodesk – 2 years
- Consultant Data Management @ Autodesk – 2 years

Projects
- Manufacturing
- Infrastructure
- Design/Automotive

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Class Summary

- Sharing Experiences

- Explain Customer Business Process
  - Autodesk® Vault – EDM (Engineering Data Management)
  - PDM (Product Data Management)
  - DMS (Document Management System)

- Explain System Architecture and Implementation Approach
Outotec
Company Presentation

- Youtube Link
  http://youtu.be/1f-c1UaR0_8
Global operations and supplier network

- Competence and R&D centers in 18 countries
- Sales and service centers in 27 countries
- Deliveries to 80 countries
- Global subcontractor/partner network
- Thousands of suppliers for engineering and construction, manufacturing, components, raw materials and services
- 90% of manufacturing sourced from external suppliers
Outotec Technologies

Natural resources (ores, minerals, biomass, oil shale/sand, water)

Minerals processing
- Communion
- Dewatering
- Physical separation
- Thickening and clarification
- Analyzers and process automation
- Tailings treatment

Metallurgical processing
- Sintering and pelletizing
- Smelting and refining
- Direct and smelting reduction
- Calcination
- Roasting and off-gas handling
- Leaching and solution purification
- Solvent extraction
- Electrefinishing and electrowinning
- Process control

Industrial minerals/Concentrates
- Copper
- Nickel
- Zinc
- Cobalt
- Precious metals
- Aluminum
- Ferroalloys
- Pellets/Sinter
- DRI/HBI/Pig Iron
- Sulfuric acid
- Water
- Shale oil
- Char
- Energy

Secondary resources (scrap, e-waste, lead battery and other recyclates, phosphates etc.)

Chemicals processing
- Sulfuric acid plants for acid and fertilizer production

Water treatment
- Neutralization, effluent treatment, drinking water

Energy production
- Combustion and gasification, heat recovery, gas handling, bio energy, oil sand and oil shale processing

Services
- Technical services, modernization solutions, operation and maintenance, spare parts solutions, shutdown services
Processes
Flow of Structure

- As defined in Product Management
- As Quoted
- As Sold
- As Manufactured
- As Maintained
- As commissioned
Flow of Structure

- As defined in Product Management
- As Quoted
- As Sold
- As Manufactured
- As commissioned
- EDM
- PDM
- DMS
Autodesk Vault @ Outotec
Vault @ Outotec

- Managing the Engineering Data
- Replicated environment (Database and Filestore)
- 5 sites over the world
  - Brazil
  - Canada
  - 2x Germany
  - India
- 16 different Vaults
- 1.1 Million Files / 520 GB
- Over 1000 Licenses of Autodesk Products
Initial Situation / Requirements
High Level Requirements

- Global harmonize business process
- Optimize communication between different business system (PDM, EDM, DMS)
- Optimize data exchange (collaboration)
- Global Library
- Numbering
Requirements Numbering

- Unique Numbering
- Central Number Creation
- Support Items and Drawings
- Support Vault Operations
- Central Number Register
Requirements EDM-PDM

- Model with Meta Data in PDM
- Drawing as PDF-file
- BOM
- Automated, Transfer initiate by Life Cycle state change
- Asynchronous
- Bi-Directional
Requirements EDM-DMS

- Model with Meta Data in DMS
- Drawing as PDF file
- Optional DWG
- Automated, Transfer initiate by Life Cycle state change
- Release Drawings into Vault
- Asynchron
- Bi-directional
Common Agreements for Interface Layer

- XML based Interface
- Unique Numbering
- Filter
- Asynchronous
- Document and Item
- Configuration in Autodesk Vault
- Property Mapping
- Combination of Data Sets
  - PDF&XML (DMS, PDM)
  - PDF&XML&optional DWG (DMS, PDM)
  - BOM (PDM)
Implementation
Implementation - Tools

- Use Cases - UML
- Swimlane - BPML
- Test Cases
- Test Data
Implementation - Technology

Vault Integration via JobServer

Integration Layer

Vault

External Application

EXE

EXE

Vault

DMS

PDM

Vault
Methodology Outbound (PDM, DMS)

- **Vault**
  - Manual Call By User
  - Automated Call By State Change

- **JobServer**
  - Receive Task
  - Create Required Data

- **Integration Layer**
  - Available for EDM, PDM
Methodology Inbound (DMS)

PDM, DMS
- Manual Call By User
- Automated

Integration Layer
- Required Data
- Available for EDM
- Create JobServer Task

Job Server
- Process Data into EDM
Summary

- Iterative Process
- Flexible Changes possible by using XML as Integration Layer
- Using XML Templates as Configuration
- Using SQL Server base Technology for Replication – Numbering
- Mass Data, asynchron, scaleable by Job Server
Key Learnings from Outotec perspective

- Having a full documented and developed data model in the early project phase saves implementation time and cycles.
- Share and distribute information to all relevant resources is an essential need for success.
- Solid concept for Handling/importing of legacy data needed.
- Rollout step by step not all at once.
Learnings from Autodesk Perspective

- Key Learnings from Autodesk Perspective
Q&A
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