Fascination with Integration

DSC Software AG
Parts management with SAP Engineering Control Center and PARTsolution from CADENAS

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CADENAS Industry Forum | March 15-16, 2017 in Augsburg
DSC Software AG

Facts and figures

- 150 employees
- Expertise
  - 350 SAP PLM projects
  - Manufacturing industry, aerospace & defense, automotive
  - Medicinal equipment, engineering
- Competences
  - Consultation and implementation of PLM processes and CAD integrations
  - CAD data migration
  - Integration of engineering in logistics, cooperation externs
- SAP development partner for
  - SAP Engineering Control Center
  - SAP Engineering Control Center interface to NX
- Strong partnerships
Selected references
Solutions for product development – “Our guiding principle”

Brainstorming | Conception | Product development | Planning | Production | Service
---|---|---|---|---|---
Visualization

Portfolio

Projects

Processes

Product data & structures

Authoring systems

PLM & PPM basic functions:

- Search
- Master data management
- DMS
- QM
- Reporting
- Visualization
- Authorizations
- Compliance …
Integrating product life phases, processes, product data and systems optimally

### Mechanical construction
- CATIA V5
- Inventor
- SolidWorks
- Solid Edge
- NX

### Electrical / electronic construction
- EPLAN
- ECAD*

### CAD Service Layer
- SAP Engineering Control Center
- SAP 3D Visual Enterprise

### SAP Product Lifecycle Management or SAP ERP applications
- Idea
- Development
- Planning
- Production
- Service

### Possible future standard integrations
- Currently available: Integration of Altium Designer, CADENCE Allegro, CADENCE OrCAD, Mentor DX/Expedition, etc.

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Available since July 2016 also for
SAP Engineering Control Center
Cockpit for Technical Information and Processes in SAP

- **Comprehensive Integration Platform**
  Consistent integration of authoring systems along the value chain, e.g. MCAD, ECAD, Office, e-mail, software, ...

- **360° product view** including mechanics, electronics, software, simulation etc.

- **Ideal user interface for authors**
  Easy and intuitive utilization of rich SAP data

- **ONE integrated system for PLM and ERP**
  Efficient working environment
  Automated workflows and processes
  Consistent engineering processes and logistics processes
SAP Engineering Control Center
SAP for Engineering
What can SAP Engineering Control Center do?
Integration platform and cockpit for technical information and processes in the SAP system
Parts management with SAP
What do designers want?

- Access to current 3D models from different manufacturers (standard and catalog parts), conform to the company’s own CAD methods
- Finding (instead of looking for) suitable parts and solutions
- High-performance user interface – current technical and commercial information at a glance:
  - CAD information (geometry, weight, …)
  - ERP information (preferred parts, availability, …)
    - Can the part be replaced by a similar one?
    - What parts must not be used?
    - What parts are the best-priced?
    - What parts are in stock / on hand?
- Simple classification of own parts – preferably automatic
Why parts management in SAP?

- SAP – ONE system for the company-wide management of master data
- Management of parts AND product-related documents
- ONE classification system for the organization and re-use of information:
  - Graphical search of objects by the SAP class search
  - Search by characteristics / functions
  - Full-text search
  - Search by linked objects
  - Search by part usage
- Linkage of documents provides information
Retrieve and reuse parts

Example: Retrieve standard parts / catalog parts or individual parts by using the SAP material classification

- Hierarchical and graphical search
- Result lists that can be filtered
- Open linked documents in CAD
Retrieve and reuse parts

Example: find tool assemblies using SAP material classifications
Interaction between CADENAS PARTsolutions, CAD and SAP
Interaction between CADENAS PARTsolutions, CAD and SAP

**CADENAS PARTsolutions**
- Parts are not in SAP
- Parts in SAP

**CAD**
- Use of known models
- Create native geometry
- Metadata

**SAP**
- Parts are not in PARTsolutions
- Parts from PARTsolutions
- Material master
- BOMs
- Documents
- Master data
- Classification
- Characteristics

**Link-DB**
- Information to PARTsolutions LinkDB:
  - DIR no.
  - MAT no.
CADENAS PARTsolutions
Business data and technical data in one user interface

Up-to-date SAP data of the part

Display of class structures

Search in characteristics

SimilarParts

Data for 2D and 3D CAD
Management of standard and purchased parts in SAP?

CADENAS PARTsolutions supplements the existing PLM process:

- Access to standard part catalogs and to more than 600 manufacturers’ catalogs. Updates are made by the manufacturers.
- Create standard parts, purchased parts and repeat parts from PARTsolutions as CAD parts and store them in SAP.
- Manage SAP information (mat. status) in PARTsolutions.
- Conduct search for parts from CAD using ++partSolutionsNX, e.g. by geometric similarity search.
Finding and (re)using parts

1. Start PARTsolutions from NX
2. Select part
3. Document exists in SAP?
   - NO: Report DIS no. to PARTsolutions
   - YES: Load to working directory & install in CAD
4. Load to working directory & install in CAD
5. Store NX geometry (file)
6. SAP Content Server

Geometry

Create DIS

Report DIS no. to PARTsolutions
New parts creation process
New parts creation process

Find a part in CADENAS PARTsolutions and create a new part in SAP

3. Process starts automatically:
   - Create DIR in SAP
   - Create NX geometry
   - Store NX document in Content Server
   - Provide document in NX
   - Enter Doc-ID in Linkdb

4: Open / Add to CAD
Managing parts in SAP

Parts created with CADENAS are managed in SAP as documents

- Store as document
- Different document types for each CAD system
- Link with material possible
- Classification of document and / or material
Scope of ++PARTsolutions

- OPTIONAL: Creation of a material master in SAP during the creation of a new part from PARTsolutions and link with the document info record of the part. The SAP document key and the SAP material key are automatically entered in the LinkDB of CADENAS PARTsolutions.

- If an automatic material master creation process is implemented in SAP, PARTsolutions metadata from the document properties is also mapped to fields of the SAP material master.

- If the material master is later linked with a document info record, a cyclic comparison of data between the LinkDB and SAP can be set up.

- In PARTsolutions, roles, views, and rights can be configured. For example, a “traffic-light signal” can be configured. Green-highlighted parts are preferred, or red-highlighted parts must no longer be used.

- PARTsolutions enables you to use further columns to display information from SAP in the user interface of CADENAS PARTsolutions.
Reusing components
Finding and reusing existing standard and catalog parts

Find a part in CADENAS PARTsolutions and open / use it in NX

Process sequence

1: Start PARTSolution

2: Search

3: Select

4: Add
Replacing one component by another
Replacing a component
Replacing components / Instance or all instances

Part not in SAP
Part in SAP
Geometric similarity search
Creating a digital fingerprint

Digital finger print
Approx. 1 kByte

CADENAS PARTsolutions Geo-DB
Procedure of the geometric similarity search

1: Search

CAD

CADENAS PARTsolutions

Geometric search wizard synchronizes template with existing content

2: No similar parts found

PARTsolutions Geo-DB

Display Result list

3a: Selection Part

3b: Provision of the part

SAP Content Server

4: Open / position

PARTsolutions

Edit search criteria or create new part
Using geometric similarity search from within CAD
Scope of ++PARTsolutions

Geometric similarity search

- Different search functions, e.g.
  - Search with the help of 2D sketches
  - Search with catalog selection systems
  - Search with external geometries
  - Background search
  - Topology search
MultiCAD

- Search from PARTsolutions
- PARTsolutions knows from which CAD system it was started
- Prefiltered search via the corresponding document type
- In SAP, multiple documents are assigned to one material master

Hexagon bolt M10 x 50

- Hexagon bolt M10 x 50
  - Solid Edge
- Hexagon bolt M10 x 50
  - NX
- Hexagon bolt M10 x 50
  - PTC Creo
- Hexagon bolt M10 x 50
  - Solid Works
Example
Creating a component with Solid Edge

Another file format exists for the selected part
Example
Creating a component with Solid Edge

Several file formats and documents exist in SAP

Several documents are linked to a material master
Added value through process integration

- Simple access to a large pool of standard and purchased parts maintained by the manufacturers
  - Higher level of reuse through user-friendly search mask
  - Integrated 3D preview of the components
  - High-performance search by attributes
  - Geometric similarity search for 3D models
  - Display of current SAP infos supports competent selection
- Efficient setup of a parts library through simple creation of new standard and purchased parts in the respective CAD data format in accordance with SAP document naming conventions
- Optimized catalog update for PARTsolutions with versioning support by means of SAP-driven where-used list for parts
Intelligent parts management – what does it need?

✓ ONE system for providing current and marketable standard and catalog parts for common CAD systems
   CADENAS PARTsolutions

✓ ONE system for the management and release/change control of own and purchased with integrations for common CAD systems
   SAP Engineering Control Center interface to CAD, e.g. NX

✓ ONE solution for the integration of the standard and catalog system with SAP
   +++PARTsolutions

✓ ONE system for the control of purchasing processes, production processes and engineering processes
   SAP
Questions?
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Many thanks for your attention
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