Parts management with SAP Engineering Control Center in the Multi CAD environment

Integration of CADENAS with SAP
17th CADENAS Industry forum 2016
Jonathan Bächle
Augsburg March 9, 2016
## Agenda

<table>
<thead>
<tr>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts management with SAP</td>
</tr>
<tr>
<td>Interaction of PARTsolutions, CAD and SAP</td>
</tr>
<tr>
<td>Creation of standard parts and purchased parts in SAP</td>
</tr>
<tr>
<td>Retrieval of existing parts - search methods</td>
</tr>
<tr>
<td>Management of parts from different CAD systems</td>
</tr>
<tr>
<td>Summary</td>
</tr>
</tbody>
</table>
What do our customers want?

- Standardization / harmonization of parts – Put things straight and get organized to avoid confusion:
  - Quick retrieval and reuse of parts instead of designing new construction models
  - Quick access to correct and up-to-date standard parts and purchased parts
  - Reduced construction effort
  - Best possible utilization of the parts in the construction process and in downstream processes, e.g. CAM, simulations, large assemblies
  - Reduction of process costs, e.g. for procurement, substitute parts management, change processes, storage

- Information as a basis for decisions:
  - Make-or-Buy
  - Costs
  - Availability / stock

Manage your parts methodically correct, in an organized way, for decisions!
What do designers want?

- Access to up-to-date 3D models of several manufacturers (standard and catalog parts), in conformity with your own CAD method
- Quickly find parts and solutions - instead of searching for them:
- Efficient user interfaces – up-to-date technical and business information at one glance:
  - CAD data (geometry, weight, ...)
  - ERP data (preferred parts, availability, ...)
    - Is it possible to replace the part with a similar one?
    - Which parts must not be used?
    - Which parts are the cheapest?
    - Which parts are available / in stock?
- Simple classification of individual parts – preferably in an automated way
SAP Engineering Control Center | SAP's Integration Platform
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, Email, Software, ...

360° product view including mechanically, elektronics, 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

- PLM Product Lifecycle Management
- Integration Mechanics CAD
- Integration Electrical/electronics CAD
- SAP material master
- SAP – BOM Bill of materials
- SAP – DMS Document management
- Servicing Functional locations/Equipment
- SAP Change management
- SAP Change management
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 tools assemblies via SAP material classifications
Fundamental interaction of CADENAS PARTsolutions with CAD and SAP

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

**CAD**
- Use of known models
- Create native geometry
- Create Document
- Storage of geometry

**SAP**
- Parts are not in PARTsolutions
- Parts from PARTsolutions
- Documents
- BOMs
- Masterdata
  - Classification
  - Characteristics

Information to PARTsolutions-Link-DB:
- 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

Data for 2D and 3D CAD
### Anwendungsszenarien

<table>
<thead>
<tr>
<th>Szenario</th>
<th>Nutzen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use of catalog parts, New creation in SAP</td>
</tr>
<tr>
<td></td>
<td>- More than 600 different catalogs</td>
</tr>
<tr>
<td></td>
<td>- Standard and purchased parts can be directly included into the respective CAD system</td>
</tr>
<tr>
<td></td>
<td>- Newly created part as a document in SAP</td>
</tr>
<tr>
<td></td>
<td>- OPTION: linkage to material</td>
</tr>
<tr>
<td>2</td>
<td>Transfer of the classification to SAP upon check-in</td>
</tr>
<tr>
<td></td>
<td>- While saving, the part information is transferred to the document, material, classification</td>
</tr>
<tr>
<td>3</td>
<td>Reuse of a part</td>
</tr>
<tr>
<td></td>
<td>- Search in PARTSolutions or in SAP</td>
</tr>
<tr>
<td></td>
<td>- Full text search, geometrical similarity, material, search for all objects</td>
</tr>
<tr>
<td>4</td>
<td>Suche nach ähnlichen Teilen</td>
</tr>
<tr>
<td></td>
<td>- Geometrical similarity search in PARTsolutions, PLMSynchro also allows for searching for individual parts in PARTsolutions</td>
</tr>
</tbody>
</table>
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´ catalog. Updates are done 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
- Execute search for parts from CAD using ++partSolutionsNX, e.g. by geometrical similarity search
General process flow
Example: CAD system NX
Scope of functions ++PARTsolutions

- Starting CADENAS PARTsolutions from the CAD system
- Search with PARTsolutions / PARTdataManager:
  - Graphical search
  - Attribute search
  - Full text search
  - Via SAP info such as part number
  - Geometrical similarity search
- Check: part exists / does not exist in SAP
Find a part in CADENAS PARTsolutions and open / use it in NX

- If a part has been selected for opening or adding, a check is performed to determine whether it exists in SAP:
  - Part does not exist in SAP:
    - Function "An CAD übertragen" generates the geometry and the part is created as SAP document according to the number and name conventions:
      - The CAD original is stored on the SAP Content Server.
  - Part exists in SAP:
    - Part is directly checked out from the SAP Content Server and opened in CAD or added to the assembly.
Neuteilanlage

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 in CAD
OPTIONAL: Creation of a material master in SAP when creating a new part from PARTsolutions and creation of a link to 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 (requires PARTsolutions / base module ERP LinkDB).

PARTsolutions metadata from document properties are mapped on fields of the SAP material master if an automatic material master creation process has been implemented in SAP.

Function for cyclic matching of data between the LinkDB and SAP available if the material master has been subsequently linked with a document info record (requires ERPsolutions/db Professional).

In PARTsolutions / base module ERP LinkDB roles, views, and permissions can be configured. For instance, a "traffic light" is configured. Parts highlighted in green are preferably added while parts highlighted in red may no longer be used.

PARTsolutions/base module ERP linkdb enables you to display information from SAP in further columns in the user interface of CADENAS PARTsolutions.
Finden und Wiederverwenden von vorhandenen Norm- und Katalogteilen

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

Process sequence

1: Start PARTSolution
2: Search
3: Select
4: Add
Geometrical similarity search

- Fingerprints and preview images as well as a list according to the degree of similarity enable the user to select the appropriate part:
- Geometrical search and parts comparison of all standard and purchased parts as well as checked in, company-internal individual parts.
- Geometrical design assistant. In the design process is constantly checked whether identical or similar company-internal parts are available in the company or whether there are identical or similar standard and purchased parts.
Geometrical similarity search

Creation of a digital fingerprint

Digital fingerprint
Approx. 1 kByte
Procedure of the geometrical similarity search

1: Search

2: No similar parts found

2/25/2016 | Parts management with SAP Engineering Control Center in the Multi CAD environment

3a: Selection Part

3b: Provision of the part

4: Open / position
Scope of functions ++PARTsolutions

Geometrical similarity search

- Several search functions, e.g.
  - Search with the aid of 2D sketches
  - Search with catalog selection systems
  - Search with external geometry
  - Background search
  - Topology search
++PARTsolutions | Index Browsing in SAP ECTR
Table and technical preview
Geometrical similarity search
PLM synchronization

- This also own parts are with the Geo search PARTsolutions found the parts information from SAP are synchronized by PARTsolutions
MultiCAD

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

Hexagon bolt M10 x 50

- Solid Edge
- NX
- PTC Creo
- Solid Works
Additional value through process integration

- Easy access to a large pool of standard parts and purchased parts and which is maintained by the manufacturers
- Increased reuse rate thanks to a user-friendly search mask
  - Integrated 3D preview on the parts
  - Powerful search of attributes
  - Geometrical similarity search for 3D models
  - Display of current SAP information support the targeted selection
- Efficient construction of a parts library by simple installation of new standard and supplier parts in the CAD data format according to SAP Document Naming Conventions
- Optimized catalog update for PARTsolutions with versioning support enabled by a SAP-driven where-used list
Intelligent part management – what’s necessary?

- ONE system for the provision of up-to-date and saleable standard parts and catalog parts for the common CAD systems
  - ✔ CADENAS PARTsolutions

- ONE system for the management and release / change control of individual parts and purchased parts with integrations for the common CAD systems
  - ✔ SAP Engineering Control Center interface to CAD, such as NX

- ONE solution for the integration of the standard part and catalog system with SAP
  - ✔ ++PARTsolutions

- ONE system for the control of purchase processes and production processes and engineering processes
  - ✔ SAP
Questions?
Many thanks for your attention!

www.dscsag.com

Jonathan Bächle
jonathan.baechle@dscsag.com
+49 721 9774 100