

PTC® Live Global

CUST 308 - Moving Day

Moving information from drawings into the 3D Model

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Agenda

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- Introduction
- Retrospection
 - Evolution of 2D drawing management
- Classification within the MBD process
- Braun's approach for moving parameters into the 3D model
 - Challenges
 - Goals
 - Implementation
- Demo and examples



- **Stephan Prosser, Senior Application Engineer**
 - Braun employee since 14 years
 - Responsible for administration and strategic deployment of PTC Windchill
 - Specialist for PTC Windchill and PTC Creo/View
 - Active member of PTC/User since 2001
- **Jan Stothfang, CEO**
 - 20 years at Braun - responsible for PTC Creo Parametric deployment
 - Specialist for core modeling, 2D drawings and 3D documentation
 - Since August 2014 CEO at B&W Software
 - Active member of PTC/User since 1996
- **P&G Service GmbH (former Braun GmbH)**
 - Manufacturer of small electronic appliances
 - Since 2006 part of Procter & Gamble
 - European Headquarter in Kronberg, Germany
 - Manufacturing sites in Germany, Ireland, Mexico, China



- **B&W Software**
 - Since 1997 in Erlangen, 11 employees
 - A leading provider of PTC Creo Parametric apps and PTC partner
 - Industry solutions (EMX, PDX, AFX, IFX)
 - Knowledge Based Engineering (Smart Assembly, Smart Design Server)
 - SMART tools (SmartElectrode, SmartUpdate, Smart3DExport, ...)
 - Individual tailored TOOLKIT applications
 - Sales and distribution through PTC and local reseller
 - Over 3000 customers worldwide



- Evolution

- Since centuries the 2D Drawing is considered as the result of a Designers work
- Early data management systems focused on drawings as primary object
- Still a lot of data management systems are based on managing 2D PDF as technical specification for a product
- Ongoing and silent change to manage more and more information from the 3D Model in addition to the 2D drawing

- Current status

- Managing data within multiple objects can lead to inconsistency and costs
 - Ordering the wrong material due to parameter definition in different parameters and systems
 - Manufacturing the wrong geometry due to the ‚As Stored‘ trap

- Consequence

- Issue during audits and ISO certification
- Road block to MBD



- The goal: Eliminating data inconsistency

- Make sure that there is a single source of information (geometry, descriptive information and meta data)
- In a 3D world there is only one option to collect all geometry relevant data in one place:

The 3D model

- The benefits:

- Automatic processing of information in downstream processes (NC, Inspection, Simulation,...)
- Elimination of redundant information maintenance
- Windchill BOM elements (WTParts) can inherit information from the 3D model only

- The consequence: Some information need to move

- The challenges:

- When is ‚Moving Day‘?
- What information needs to move?
- How can this be achieved?



- **Geometry:**
 - Geometry and dimensions
 - Already moved – when you started using a 3D CAD system
- **Descriptive information:**
 - Notes, Tolerances, Symbols, ...
 - Already on the move – affects the display of the drawing
- **Meta data:**
 - Parameter
 - Needs to move – affects the background processes and drawing table
 - **Today's topic**



- **How to deal with existing/legacy drawings?**
 - Drawings that describe multiple parts (i.e. color variants)
 - Drawings where multiple parts or assemblies are shown
- **What role does PTC Windchill play in the game?**
- **How to indicate that the 3D model is the master sources?**
- **Who is responsible?**
- **When is the best timing for the move?**
- **..... many more**



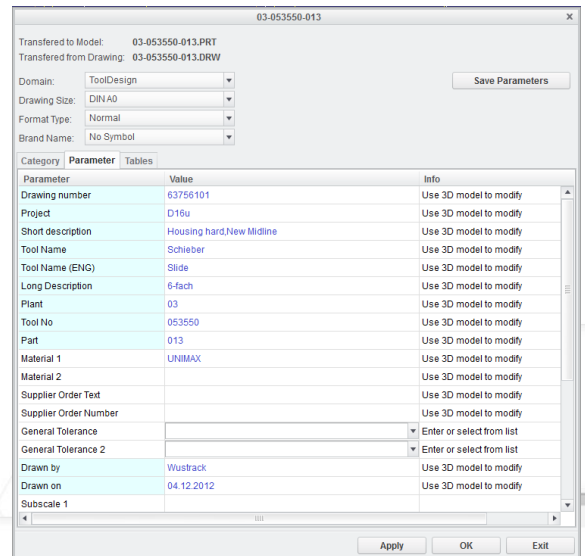
- **Analysis of use cases, scenarios and requirements**
 - New 3D objects and new 2D drawings
 - Existing/legacy 2D drawings
- **Requirements resulting from the analysis**
 - Easy-to-use process for new parts, assemblies and drawings
 - Eliminate drawings that describe multiple parts (i.e. color variants)
 - Clear management of „Master Model“ on multi object drawings
 - Clear visual indication within the drawing table what the information source is.
 - Designer shall be responsible for the move
 - Simple handling of existing ‚2D drawing - 3D object‘ combinations.
 - Special cases need to be covered
- **Additionally identified benefits**
 - Improved search results in PTC Windchill.



- **Timing and planning**
 - Silent move (drawing by drawing on user request)
 - Do not touch legacy data – Only move when the drawing needs to be changed
- **Preparation**
 - Creating a software specification
 - User communication
 - Windchill requirements planning
- **Implementation**
 - Enhancement of existing TOOLKIT program ‚Braun Parameter Manager‘



- **Braun Parameter Manager**
 - TOOLKIT software powered by B&W
 - Started as drawing format manager many years ago
 - Now available in parts, assemblies and drawings
 - Now managing
 - Start-Objects and ,domains'
 - Drawing types
 - Drawing formats and size
 - Drawing tables and position
 - Parameters
 - Parameter management includes
 - Multi language support
 - Drop down list selection
 - Value checking



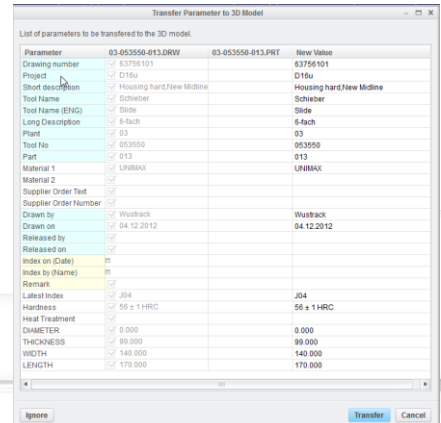
Scenarios

- **New 3D model**
 - All relevant parameters are created within this object (start model)
 - Parameter values are entered and modified via a TOOLKIT UI (Braun Parameter Manager)
- **New 2D drawing**
 - Parameters are dependently copied from the 3D object that is used in the drawing and values displayed in drawing table
 - modification of parameter values only in 3D object
 - As long as drawing objects are still checked into the database, they need to have meta data
 - Clear management of ,active' drawing model (in case of multiple drawing models)



Scenarios

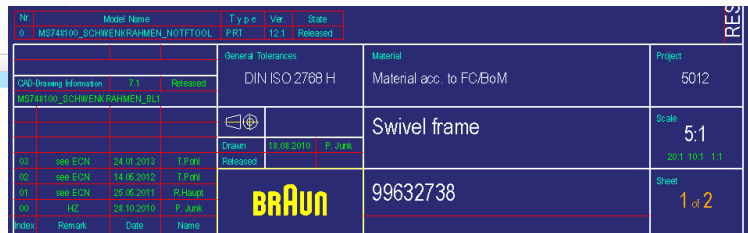
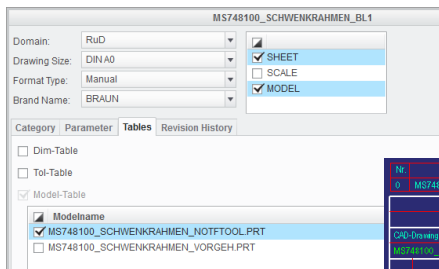
- Existing 2D drawing with a single 3D object attached (80% case)
 - When the user opens the Braun Parameter Manager, all drawing parameters are transferred to the 3D object and locked for modification at drawing level.
 - Both objects are modified and need to be saved and checked in.
- Existing 2D drawing representing a range of objects (5% case)
 - Inconsistent meta data → needs to be resolved anyway
 - Shall be eliminated by duplicating the 3D objects and drawings
- Existing 2D drawing with multiple drawing models (15% case)
 - Avoid where possible
 - Clear management of ‚active‘ model by Braun Parameter Manager



Implementation at Braun

Clear indication of ‚ACTIVE‘ drawing model

- User controlled drawing parameter containing the ‚active‘ model
 - Does not switch when user switches the active drawing model on the drawing
 - Value is shown in a separate table on the drawing
 - Controlled by user via Parameter Manager



Indication in drawing table where the parameter value comes from

- Color coded entries in the drawing table
 - Parameter Manager controls the value source and the drawing tables
 - According to the setting different tables are placed containing different text properties

Index	Remark	Date	Name
001	03.03.2015	A	Rev
002	23.09.2014		Wstr
003	16.09.2014		Wstr
004	01.07.14		Wstr
005	11.06.2014		Wstr
006	29.07.2014		Wstr
007	16.07.2014		Wstr

CAD Model Information	D.1	Released	Released	51 ± 1 HRC	Project
CAD Drawing Information	D.1	Released			
General Tolerances	1.2083 ESU		Project		
Material	Bearer plate		Scale	2:1	
Finish	Moldbar		Sheet	12	
Release Date	13.05.2014		Wstrack	1 of 1	
Released By	03-053600-050		Sheet		
Released For	97100601 BM Sealplate		1 of 1		

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