



Global Summit 2025 New Orleans

Speed up your MBD

Jan Stothfang

Jazz up your Knowledge | Innovate in Harmony | Transform Tomorrow

Jan Stothfang

CEO at B&W Software

- 20 years of ProE and Creo admin experience
- 10 years CEO at B&W
- MBD enthusiast



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B&W Software

PTC Development Partner

- Independent Provider of PTC Creo add-ons
- Based in Erlangen (Germany)
- 16 employees



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What to expect in the next 40min

- **Introduction**
- **Motivation**
- **MBD – How to Start?**
 - **Classify models**
 - **Prepare model infrastructure**
 - **Manage Meta Data**
 - **Annotate**
 - **Color Code**
 - **Export**
- **Live presentation**
- **Outlook**



Motivation vor MBE / MBD

Enterprise

Manager

- Time to market
- Save money
- ROI



Administrator

- Harmonize
- Standardize
- Simplify



User

- Speed up
- Use automation
- Minimize standard tasks



Software provider

- Improve MBD workflow by providing a software platform that is
 - Flexible and easy to use
 - Connected and easy to set up and administer
 - Affordable



MBD

How to start?



Scope

Simplified MBD/MBE Process

Model-Based-Enterprise

Model-Based-DEFINITION (Creo Parametric) Scope

Prepare

Infrastructure

- Start parts
- Comb States
- Rules & Settings

Properties

- Language
- Meta Data
- Material

Enrich

Annotations

- Geom related
- Geom unrelated

Anno types

- Texts
- GD&T
- Symbols
- Surf finish

Validate

Verify PMI
against rules,
definitions and
standards

Publish

Export

- STEP 242
- Creo View
- 2D PDF
- 3D PDF
- QIF
- XML
- ...

Consume

Human

- 3D Viewer
- Paper

Machine

- NC Software
- Inspection software
- Validation software
- IoT
- ...

MBD – Workflow

How to start a MBD model in Creo?

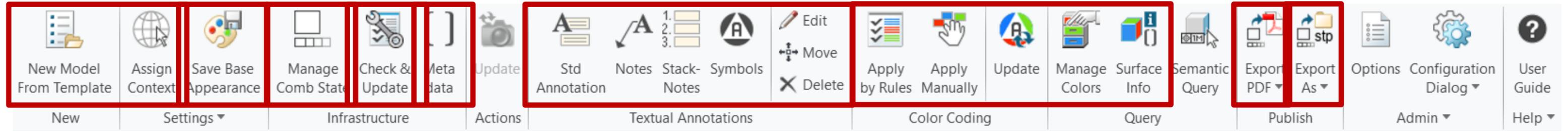
- **Start from scratch**
 - Use a ‚Template‘
 - You are fine 😊 (...for the moment...)
- **Re-use an existing part**
 - From Library, copy from existing, download from internet, ...
 - You may miss a lot of items like Combined States, Layers, Orientations, Parameters, ...

Immediate questions

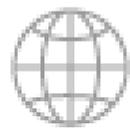
- **What if the template changes or does not satisfy my requirements?**
- **How many templates do I need?**
- **How do I add all my missing items?**
 - **How do I even know what I need?**



SmartMBDTools



- Context Management
- Combined State Management
- Check & Update
- Meta Data Management
- Textual Annotations
- Color Coding
- 2D PDF Export



Context Management

- Capabilities
 - New Model from Template
 - Add model parameter and its dedicated value
 - File name validation
 - Assign Context
 - Change value of Context parameter
- Benefits
 - More specific automation and user support
 - Simplify workflow for new models and drawings

The image displays two overlapping dialog boxes from the SmartMBDTools software. The top dialog, 'Assign Context - SmartMBDTools', shows a 'Context Parameter' set to 'BUW_CONTEXT' and a table of model names and their assigned contexts. The bottom dialog, 'New Model from Template - SmartMBDTools', shows options for 'Part', 'Assembly', or 'Drawing', a 'Context selection' tree, and a 'File naming' field.

Assign Context - SmartMBDTools

Context Parameter: BUW_CONTEXT

Table Contents

	Model Name	Assigned Context
<input type="checkbox"/>	✓ STYLES_TEST_BODY	Plastic parts
<input type="checkbox"/>	✓ STYLES_TEST_ADAP	Plastic parts
<input type="checkbox"/>	✓ STYLES_TEST_MODUL	Plastic parts
<input type="checkbox"/>	✓ STYLES_TEST_SEAL_1	Metal machining parts
<input type="checkbox"/>	✓ STYLES_TEST_SEAL_2	Metal machining parts

New Model from Template - SmartMBDTools

Mode selection: Part, Assembly, Drawing

Context selection:

- Department
 - R&D
 - Plastic parts
 - Sheetmetal
 - Metal machining parts
 - Tool Design
 - Cavity
 - Plate
 - CopyRefPart
 - Machining
 - CopyRefPart
 - Customer
 - Customer East
 - Customer North

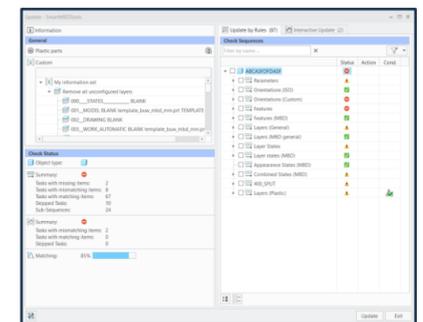
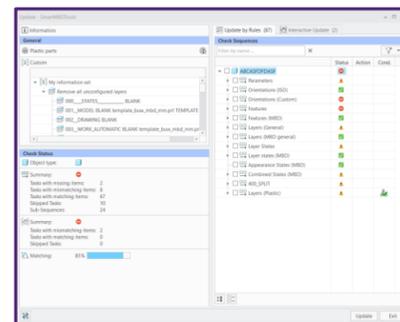
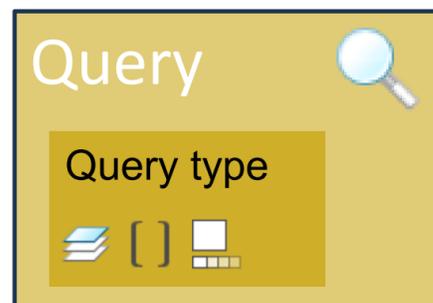
File naming: Enter new file name ...

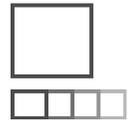
Buttons: Create, Cancel



Check & Update

- Workflow
 - User starts Check & Update
 - (optional) Command sequence is executed
 - Model is checked according to Queries (depending on Context)
 - User dialog is presented
 - Tasks & Actions are listed
 - User selects tasks and starts updating process
 - Software runs the Update Tasks
 - User dialog is presented with results





Combined States Management

- Capabilities
 - In Navigator pane
 - Combined State creation support
 - Filter mechanism (Collections)
- Benefits:
 - Improved workflow and overview
- Work in progress
 - Update to configured settings
 - Sitemap support
 - Support for dedicated annotation planes and features

The screenshot displays the software interface for managing combined states. The top pane, 'Current Context', shows 'Plastic parts'. Below it, the 'Combined State Collection' pane lists various states, with 'DEFAULT ALL' selected. The 'Settings' dialog box is open, showing configuration options for the selected state.

Setting	Value
Name:	DEFAULT ALL
Orientation:	DEFAULT
Simplified Rep.:	Master Rep
Appearance State:	DEFAULT APPEARANCE STATE
Layer State:	Most Recently Used
Cross Section:	No Cross Section
Annotation Plane:	FLAT TO SCREEN
Display	
Annotation Display	Driven by Comb State
Suppl Geom Display	Driven by Layer
Attributes	
<input checked="" type="checkbox"/> Display Tab	
<input checked="" type="checkbox"/> Publish to Creo View	
<input type="checkbox"/> Use in Sitemap	

[] Meta Data Management

- Capabilities
 - Context dependent list
 - Create missing params
 - Set designations
 - Provide selection lists
 - Value checking
 - Value functions
- Benefits:
 - See above

The screenshot displays the 'Annotate - SmartMBDTools' application. On the left, a 'Context Tree' shows a hierarchy: Department > R&D > Plastic parts (highlighted with a star). The main area features a 'Parameter List' table with columns: Label, Value, f(x), Source, Designate, and a status column. The table contains several rows, with 'Article number' having a red background and a red exclamation mark icon, indicating an error. A 'Status' dialog box is open in the foreground, listing three error messages: 'Parameter does not exist!', 'Parameter is not designated!', and 'Value does not match the format regular expression pattern!'. The dialog also shows attributes for the 'Released on' parameter: Name: R_DATE, Label: Released on, and Description: Enter a date (TT.MM.JJJJ). At the bottom right, there is a 'Set designations' button and an 'Apply' button.

Label	Value	f(x)	Source	Designate	Status
Article name	Cap			<input checked="" type="checkbox"/>	S
Article number	123451			<input checked="" type="checkbox"/>	E
Material (row 2)	-			<input type="checkbox"/>	S
Project	Saturn			<input checked="" type="checkbox"/>	S
Created on	10.01.2022			<input type="checkbox"/>	E
Created by	Jan Stothfang			<input type="checkbox"/>	E
Released on	-			<input type="checkbox"/>	E
Released by	Max Mustermann			<input type="checkbox"/>	E

Status dialog box content:

- ❗ Parameter does not exist!
- ⚠ Parameter is not designated!
- ❗ Value does not match the format regular expression pattern!

Attributes:

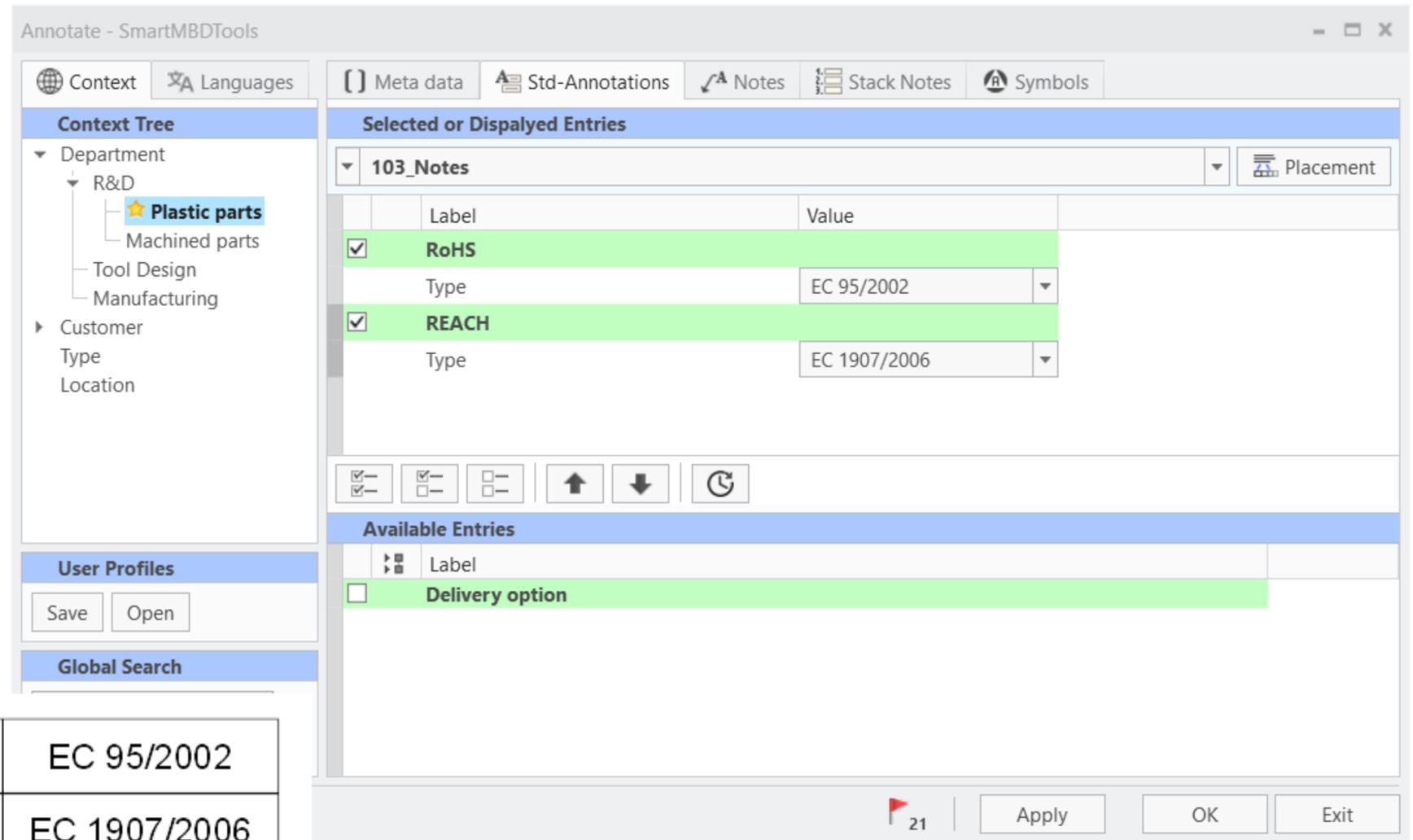
Name: R_DATE
Label: Released on
Description: Enter a date (TT.MM.JJJJ)



Annotate – Std Annotations

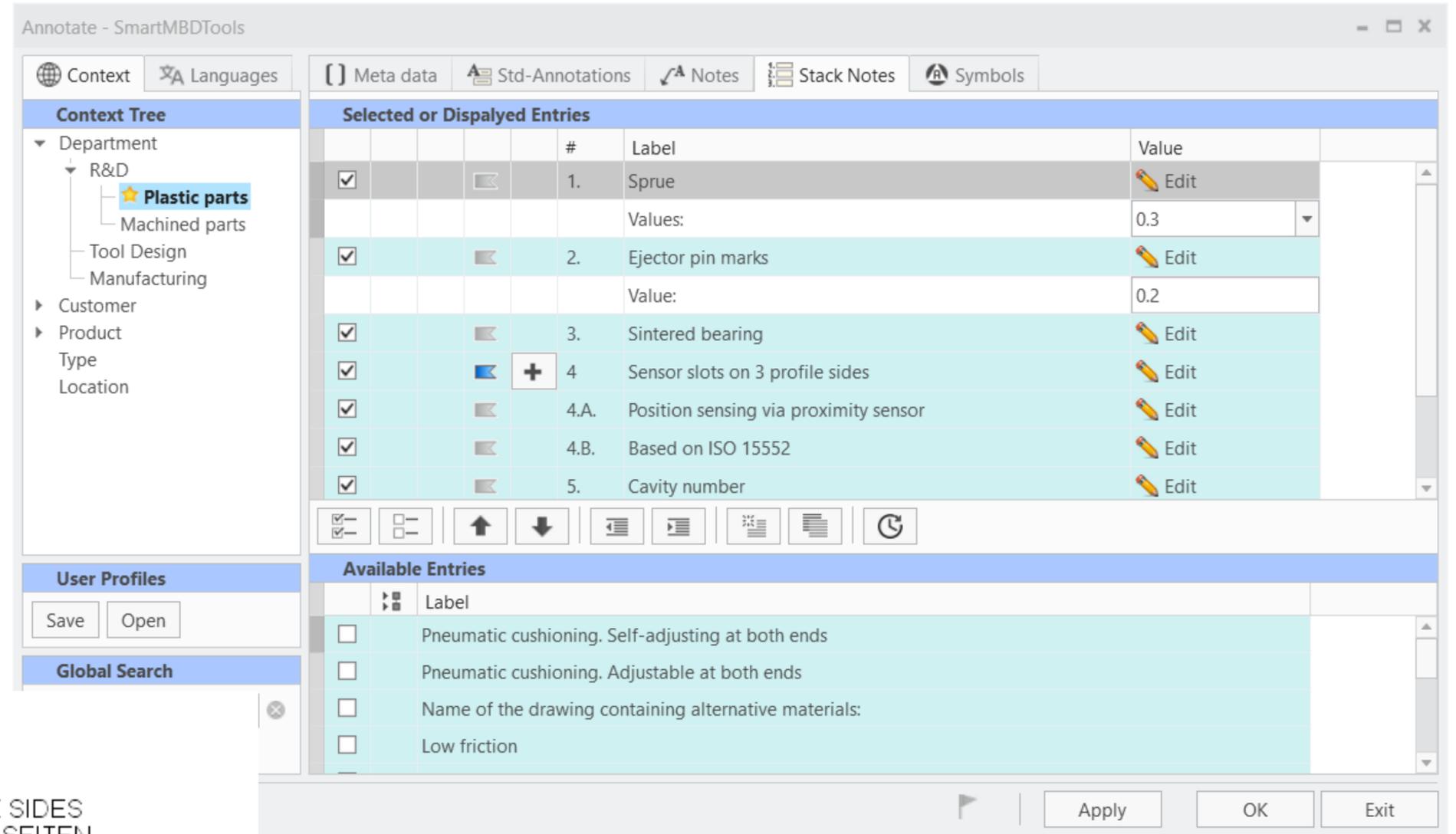
- Capabilities
 - Automatic placement to predefined locations
 - Flat-to-screen
 - Based on Creo symbols (fully customizable and reusable)
 - Value input or selection
 - Sorting
 - User profile support
 - 2D and 3D
 - Multi-Language support

Material RoHS compliant <i>Material RoHS konform</i>	EC 95/2002
Material REACH compliant <i>Material REACH konform</i>	EC 1907/2006



Annotate – Stack Notes

- Capabilities
 - Numbered notes list
 - Based on Creo notes
 - Custom notes
 - Flag support
 - Automatic placement (3D)
 - Flat-to-screen
 - Multi-Language support

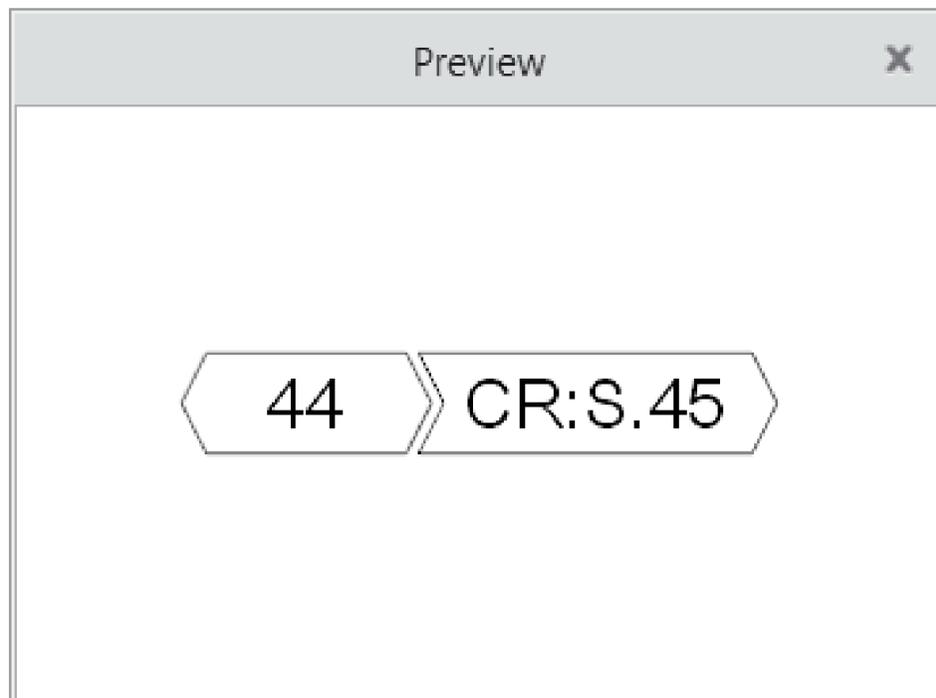


- 3. SINTERED BEARING
SINTERLAGER
- [4] SENSOR SLOTS ON 3 PROFILE SIDES
SENSORNUTEN AUF 3 PROFILSEITEN
- 4.A. POSITION SENSING VIA PROXIMITY SENSOR
- 4.B. BASED ON ISO 15552
BASIEREND AUF ISO 15552
- 5. Cavity number
max. 0.1 mm raised
Formnestzahl
max. 0.1 mm erhöht



Annotate – Symbols

- Capabilities
 - Graphical selection
 - Value selection lists
 - Multi-Language support
 - Immediate preview



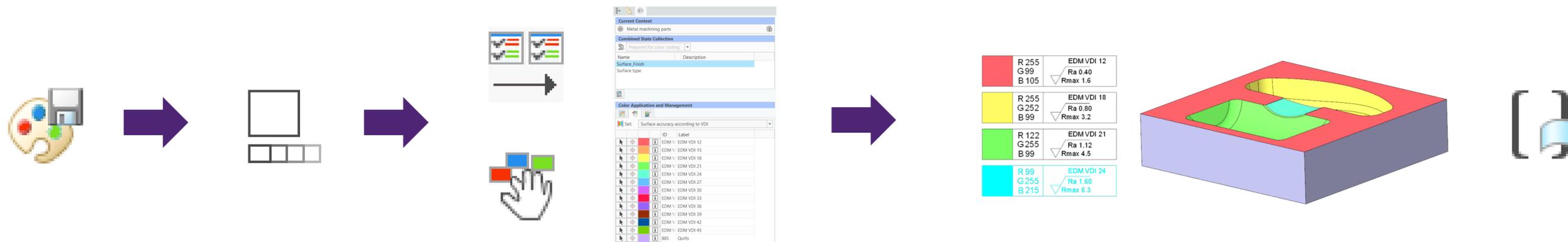
The screenshot shows the Annotate - SmartMBDTools software interface. The main window is titled "Annotate - SmartMBDTools" and has a menu bar with "Context", "Languages", "Meta data", "Std-Annotations", "Notes", "Stack Notes", and "Symbols". The "Symbols" panel is active, displaying a grid of available symbols. The "Context Tree" on the left shows a hierarchy: Department > R&D > Plastic parts (selected). The "Adjustable Values" table is visible at the bottom right.

Label	Value
Tag	44
Criticality level 1	CR - Critical
Criticality category 1	S.
Criticality class 1	45
Basic tag	Show
Criticality Designator	Show
Criticality Designator 2	Hide



Color Coding

- Workflow
 - User saves Base Appearance (original color state)
 - User selects a ‚configured‘ Combined State
 - User chooses Rule-based and/or Manual surface selection
 - Software performs automatic actions
 - Surface coloring
 - Associative legend symbols
 - Surface parameters





Color Coding

- Capabilities
 - In navigator pane
 - Rule-based selection
 - Rules depending on Context and Combined State
 - Wide variety to define rules
 - Manual selection
 - Regular and advanced selection tools
 - Automatic actions
 - Color application
 - Associative legend symbol creation
 - Surface parameter application

	R 255 G 99 B 105	EDM VDI 12 Ra 0.40 Rmax 1.6
	R 255 G 252 B 99	EDM VDI 18 Ra 0.80 Rmax 3.2
	R 122 G 255 B 99	EDM VDI 21 Ra 1.12 Rmax 4.5

Color Application and Management			
		ID	Label
<input checked="" type="checkbox"/>		740	All inheritance feature surface
<input checked="" type="checkbox"/>		Import	EDM VDI 12 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 15 IMPORT
<input checked="" type="checkbox"/>		Import	EDM VDI 18 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 21 IMPORT
<input checked="" type="checkbox"/>		Import	EDM VDI 24 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 27 IMPORT
<input checked="" type="checkbox"/>		Import	EDM VDI 30 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 33 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 36 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 39 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 42 IMPORT
<input checked="" type="checkbox"/>		EDM V	EDM VDI 45 IMPORT

Current Context
Metal machining parts

Combined State Collection
Prepared for color coding

Name	Description
Surface_Finish	Surface type

Color Application and Management
Set: Surface accuracy according to VDI

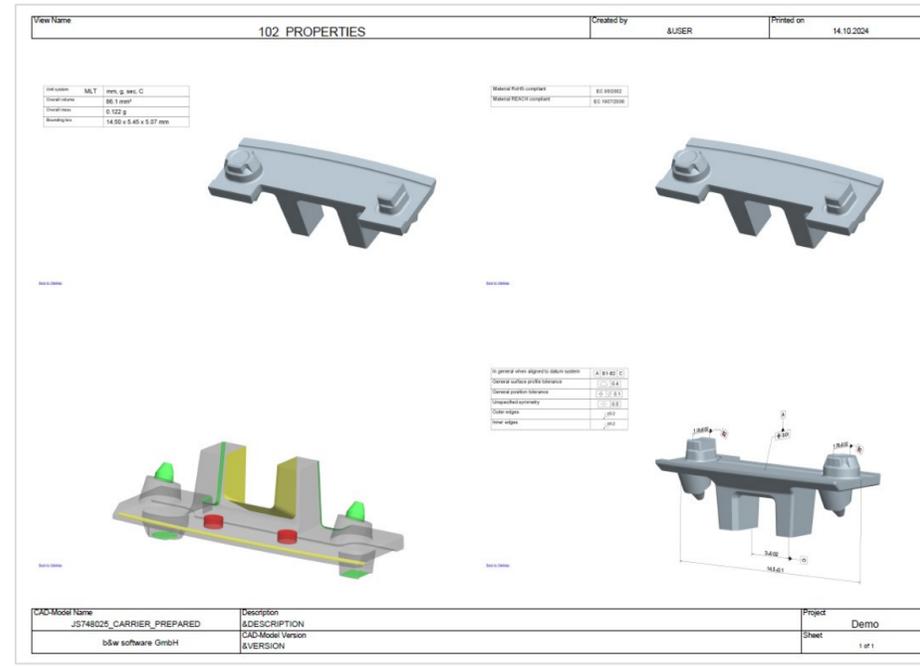
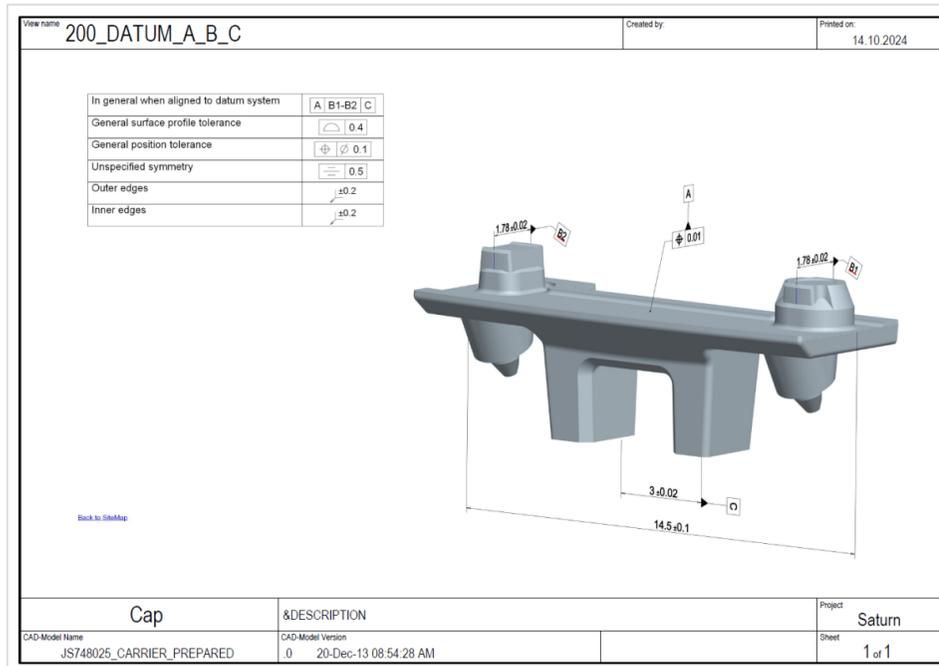
			ID	Label
			EDM V	EDM VDI 12
			EDM V	EDM VDI 15
			EDM V	EDM VDI 18
			EDM V	EDM VDI 21
			EDM V	EDM VDI 24
			EDM V	EDM VDI 27
			EDM V	EDM VDI 30
			EDM V	EDM VDI 33
			EDM V	EDM VDI 36
			EDM V	EDM VDI 39
			EDM V	EDM VDI 42
			EDM V	EDM VDI 45
			885	Quilts



2D PDF Export

- Capabilities

- Export from selected Combined States
- Placement: One per sheet or multiple per sheet
- WYSIWYG
- Template support for Parameter callout based on Context



Current Context
Plastic parts

Combined State Collection
Print Starting 1 and 2

- 100_TITLEBLOCK
- 101_SITEMAP
- 102_PROPERTIES
- 103_NOTES
- 104_CHANGES
- 200_DATUM_A_B_C

Combined State settings
Display style: Shading
Color status: On

Template settings
Template Set: Default
Page orientation: Landscape
PDF page size: A4
View size: A4

Export Close

Live demo

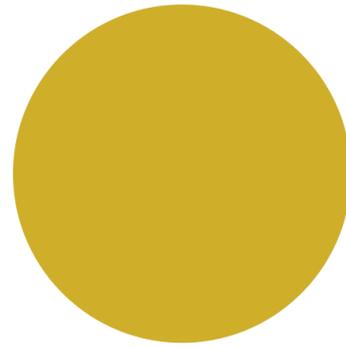
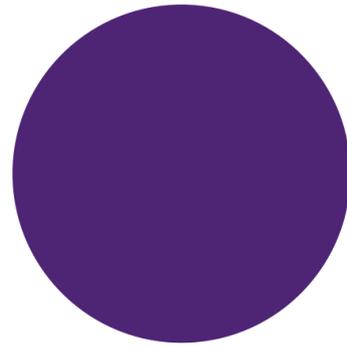
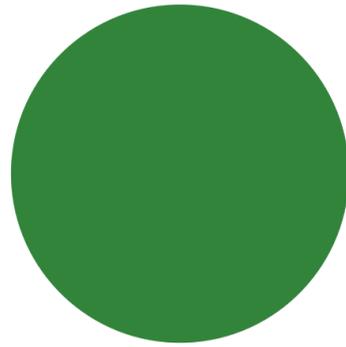
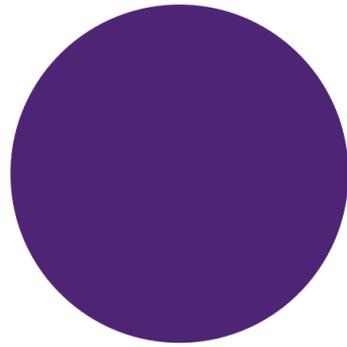
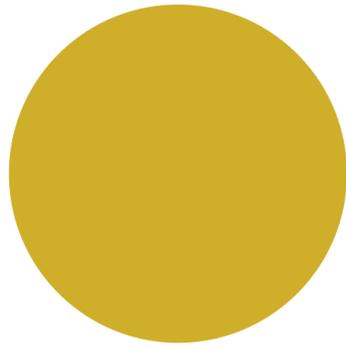


creo[®]

Outlook

- Full Integration of Annotate module (configuration side)
- Capability enhancements to the current modules
 - 3D tables
 - Advanced bore recognition
 - More Export Capabilities (data packages)
 - ...
- Potentially add more modules
 - PMI Verification
 - ... any needs?















Thank you!

Jan Stothfang

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B&W Software

