

Trust is good, Check Mate is better

Kasper Brok, Wim Ottenhoff

June 1th, 2021

Solution
Partner

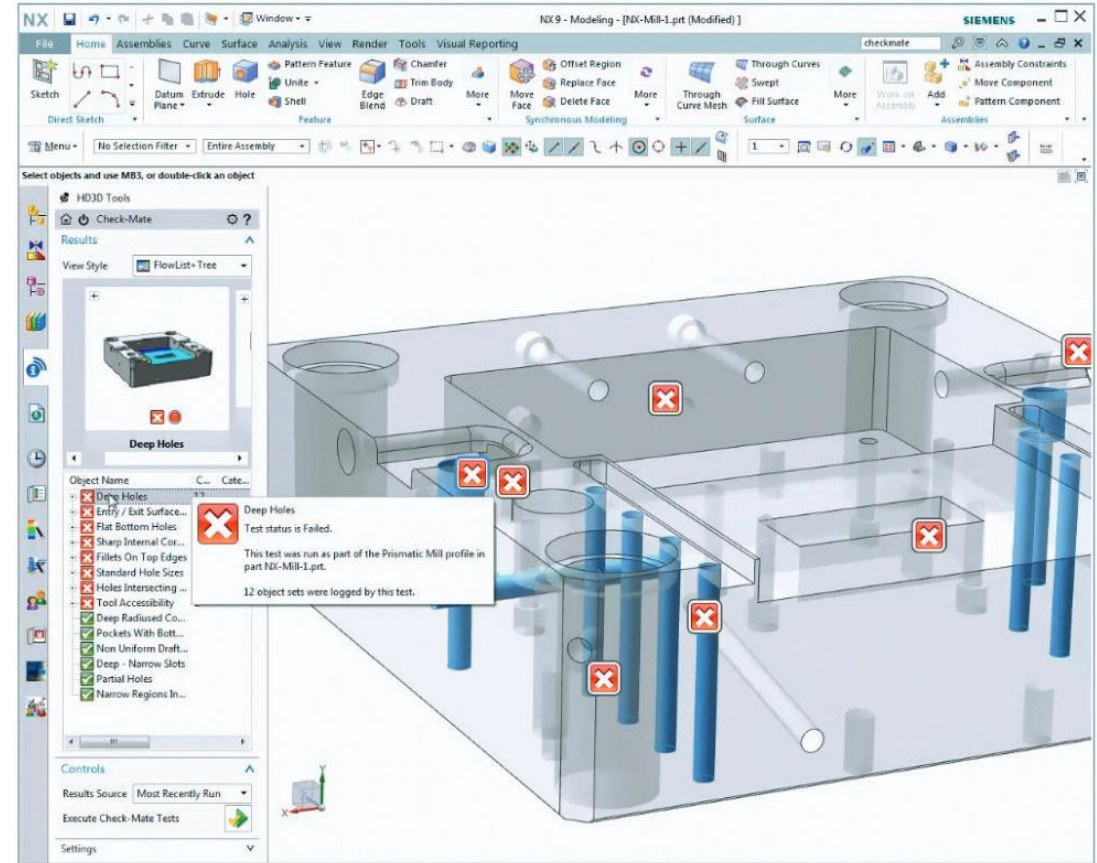
PLM

SIEMENS

What is Check Mate?

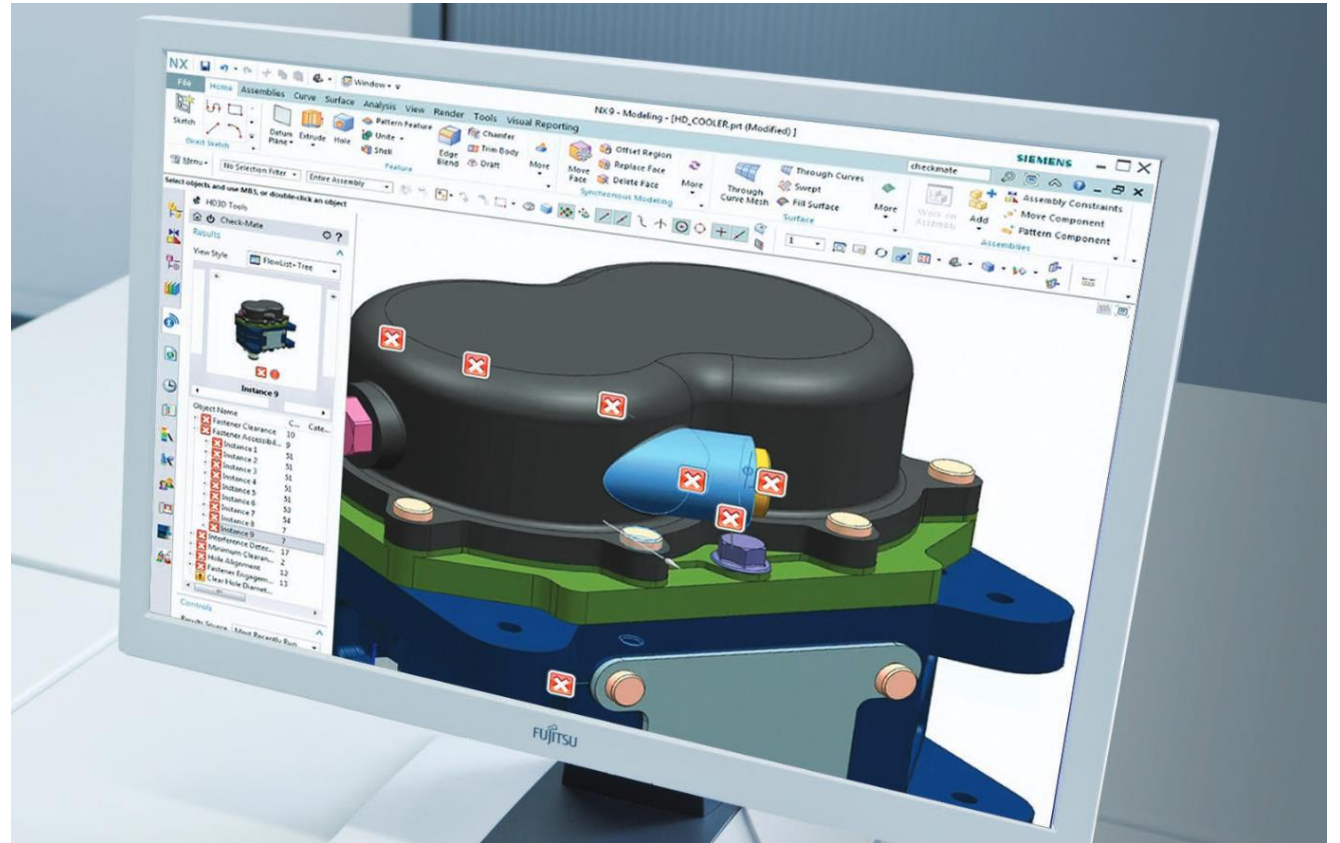
- Checks NX-parts for compliance to company and other (ISO) standards
 - Visual feedback
 - Report generation
 - Different classes
 - Customisation
- Add-on for NX

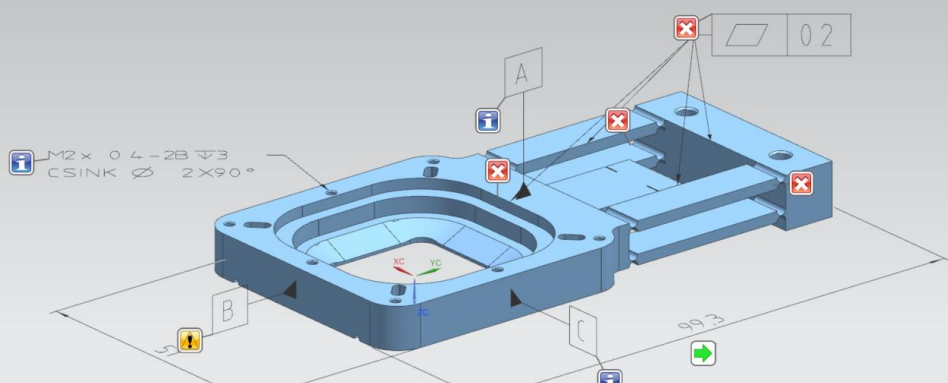
NX Check Mate
helps to improve
the quality of your
Design Definition



Introduction and agenda

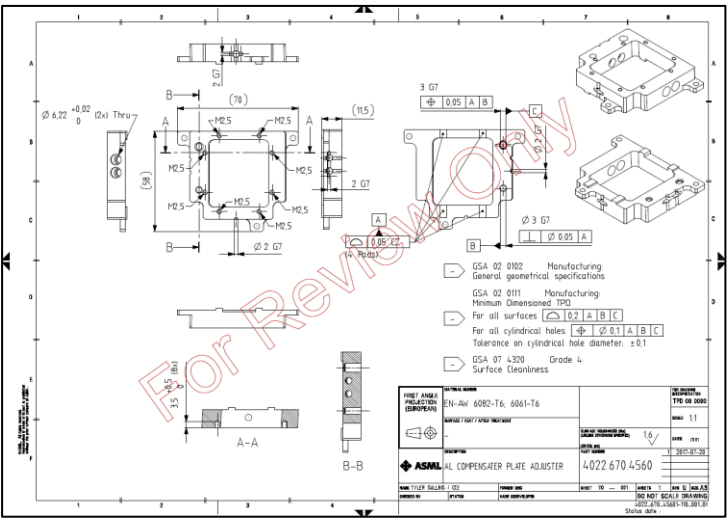
1. Why use Check Mate
2. Check Mate at ASML
3. Setup and start
4. Customize your own
5. Requirements
6. Questions



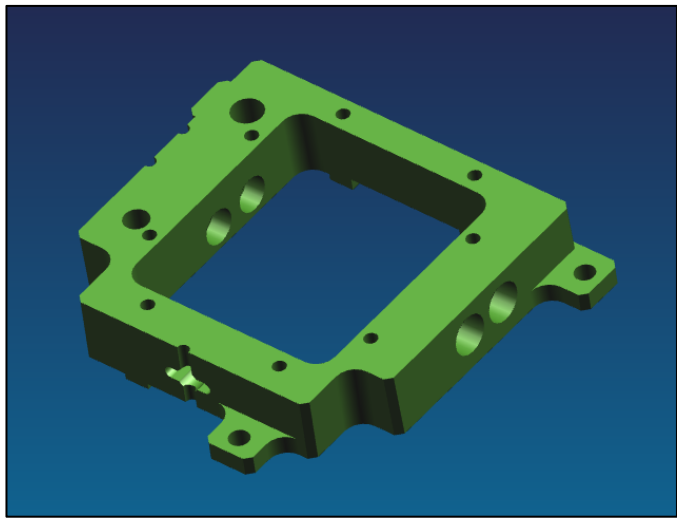


1. Why use Check Mate?

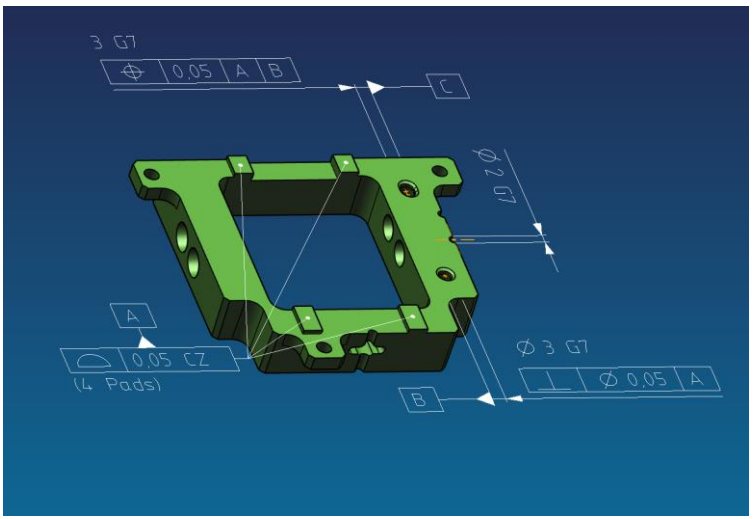
Focus shift from drawing to 3D-model



Drawing

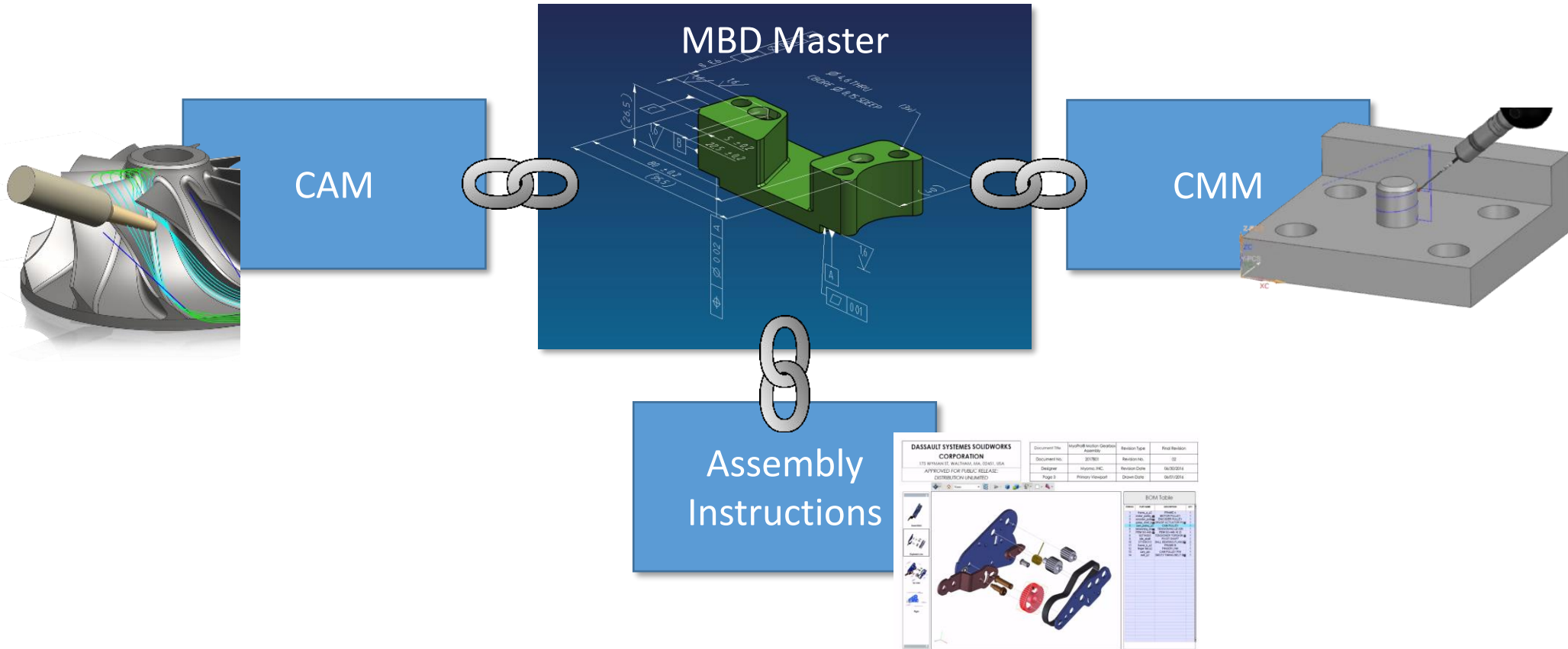


3D Model

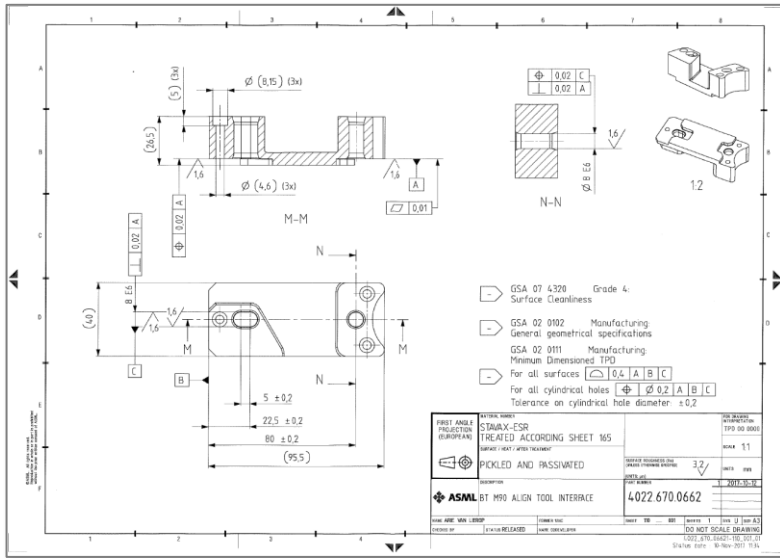


Model Based Definition

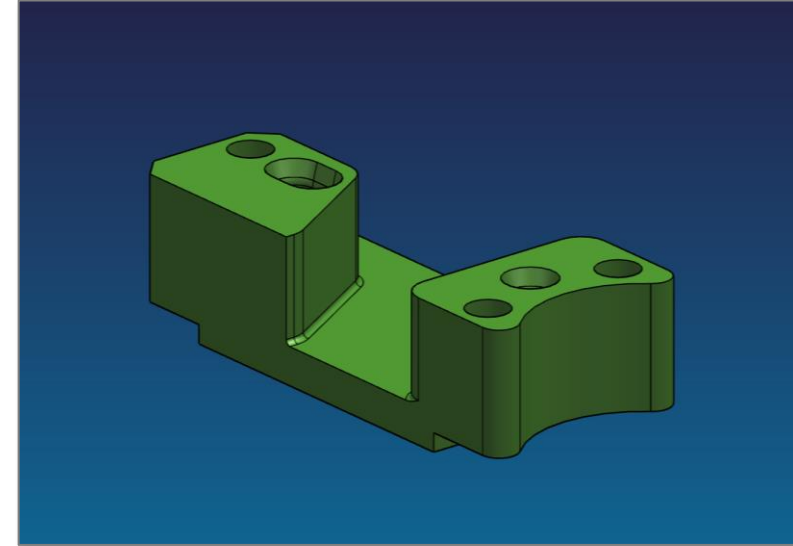
Design flaws have a big impact on downstream reuse



How about design definition (TPD) quality?

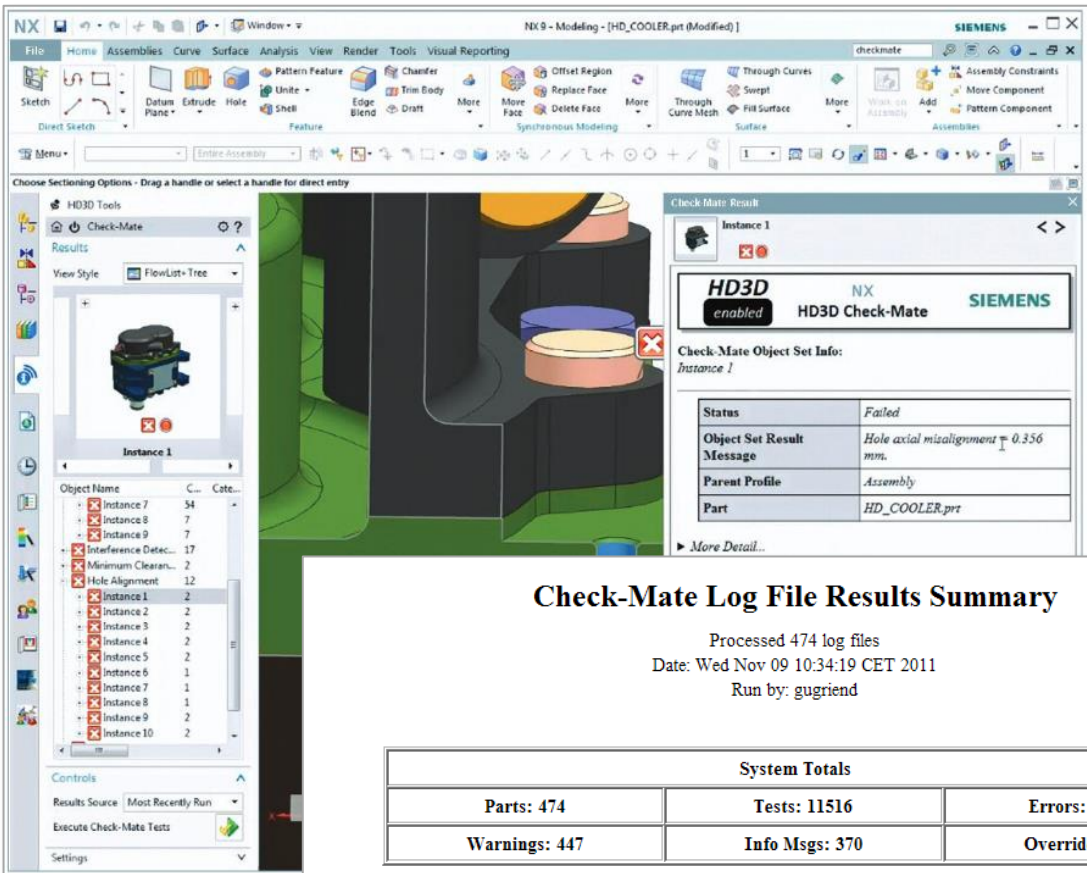


- Long history
- Clear drawing standards
- Part of design review



- Short history
- No CAD-model standards
- Not part of design review

Monitor the quality of your design definition with Check Mate



Checkmate
helps to improve
the quality of the entire
design definition (TPD)

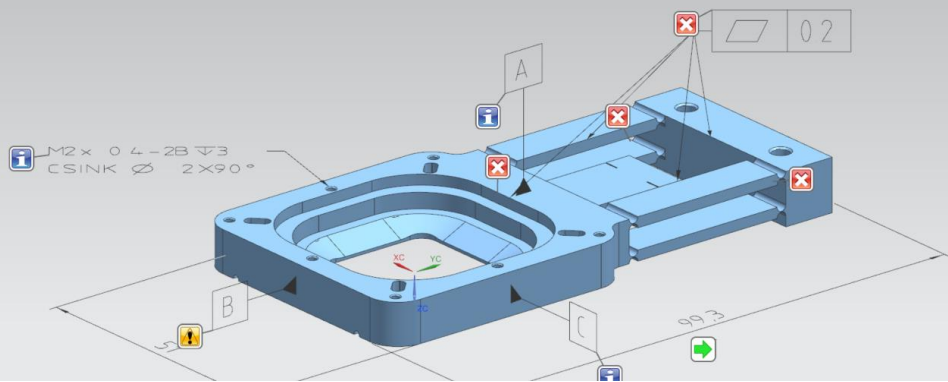
Check-Mate Log File Results Summary

Processed 474 log files
Date: Wed Nov 09 10:34:19 CET 2011
Run by: gugriend

System Totals		
Parts: 474	Tests: 11516	Errors: 517
Warnings: 447	Info Msgs: 370	Overrides: 0

Overall Testing Results

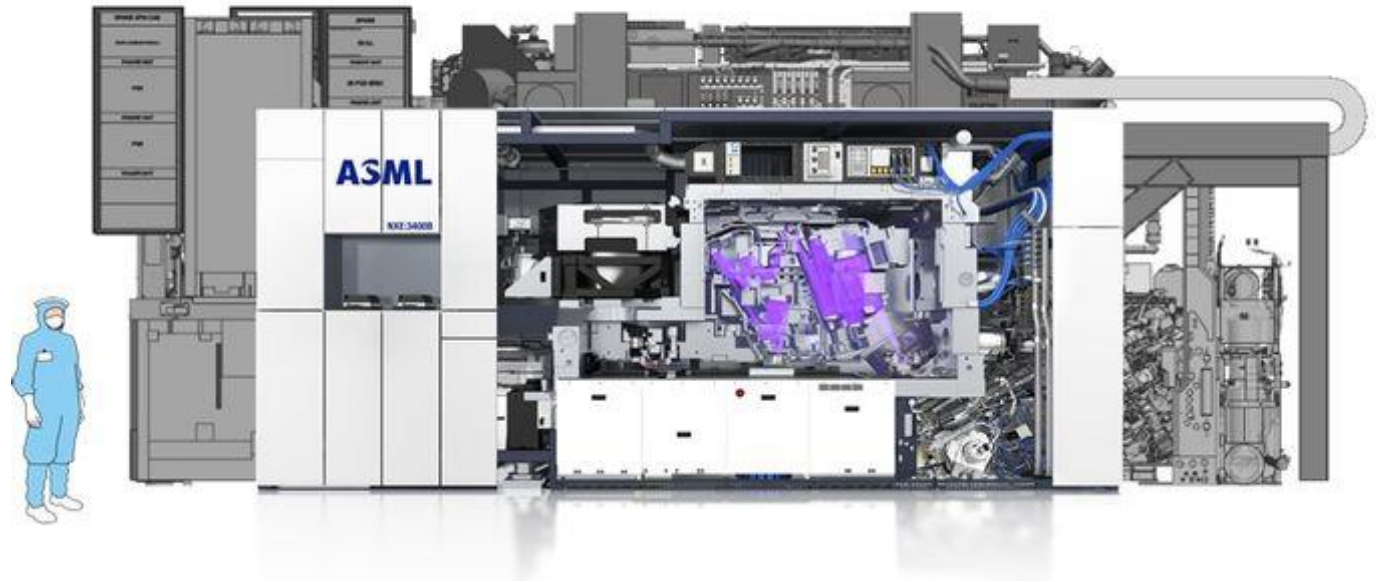
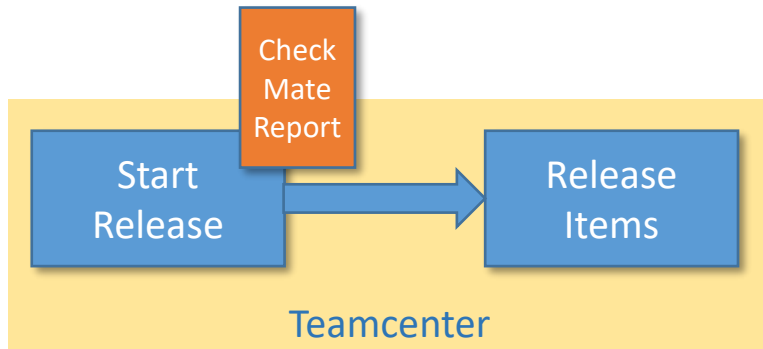
Number of parts that pass 29 Number of parts with warnings 303
Number of parts that fail 338 Number of parts that have info 445



2. Check Mate at ASML

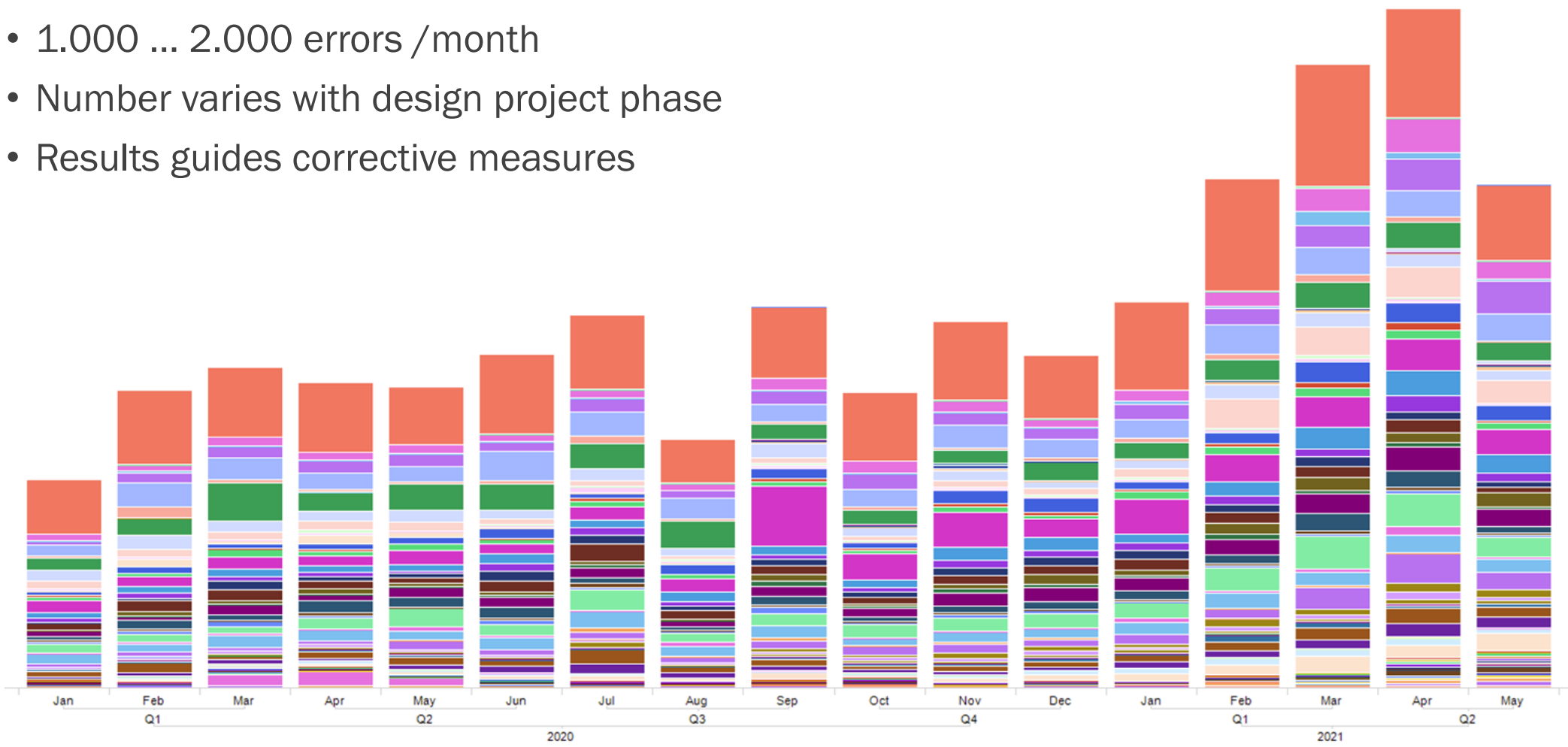
- Pressure to improve quality of design definition
 - Impact on supply chain efficiency
 - Introduction of Model Based Definition
- ASML uses Check Mate a few years
 - Part of release process Teamcenter
 - Feedback for engineers

ASML



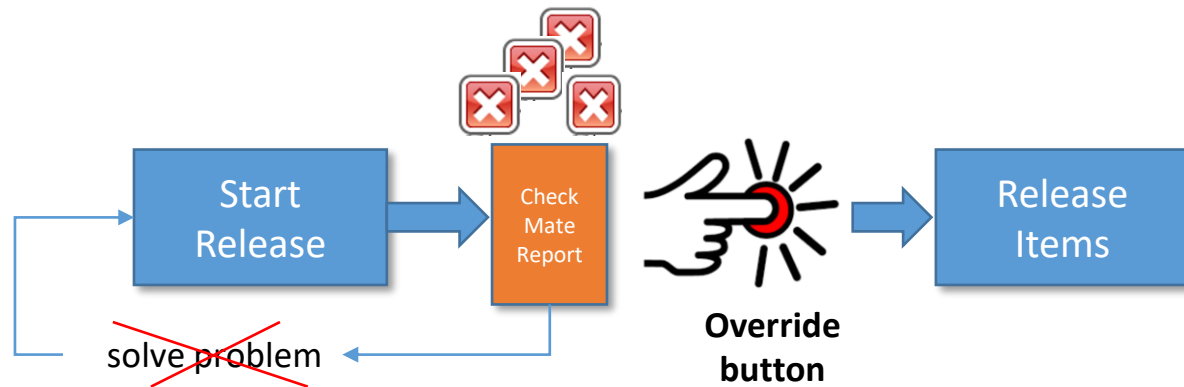
ASML custom report tool

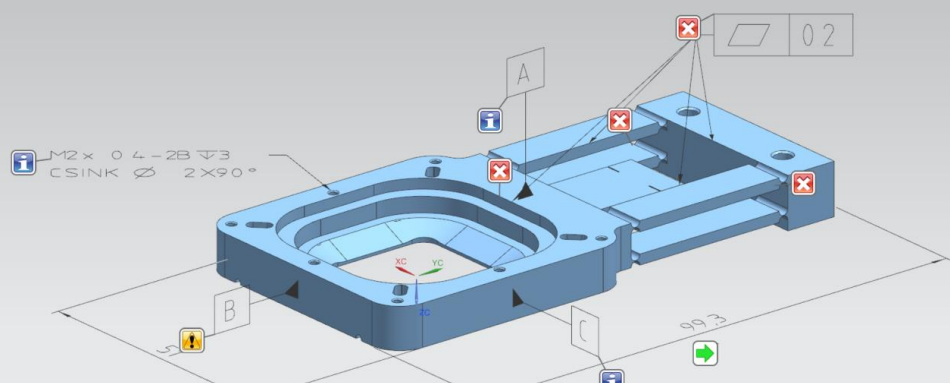
- Report on monthly number of Check Mate errors per type
- 1.000 ... 2.000 errors /month
- Number varies with design project phase
- Results guides corrective measures






The ASML Check Mate project

- Too many errors not solved by Engineer!
 - Pressure to release design
 - No time to correct
 - Existing design: not my fault
 - Does not understand error or impact



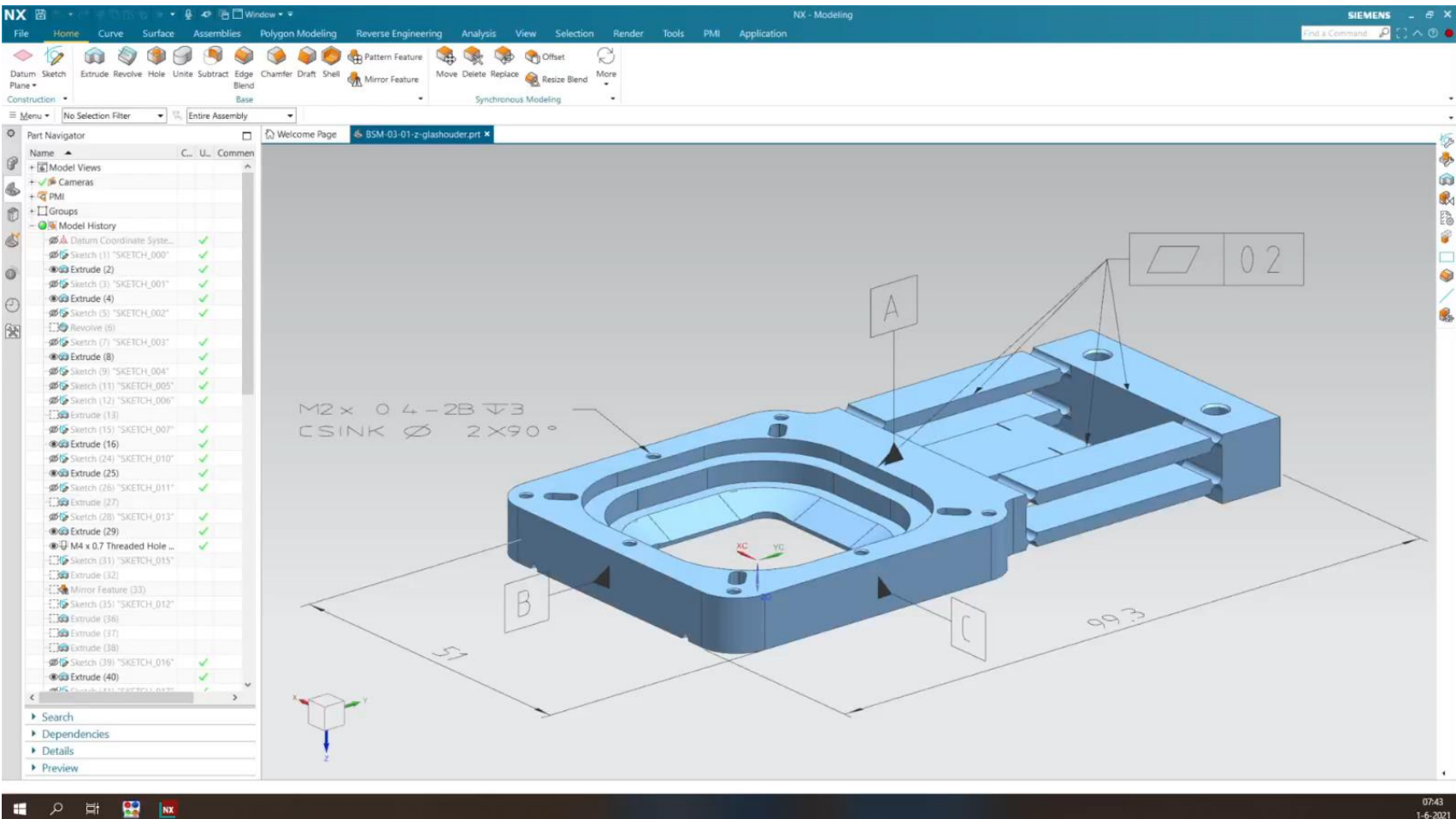


3. Starting with Check Mate

- More than 300 OOTB checkers
 - Check Feature Rollback
 - Sketch Fully Constrained?
 - Check Component Reference Sets
 - Check Dimension with Manual Text
 - Suppressed Features
- Different types
 -  Error
 -  Warning
 -  Information
- Integration with Teamcenter
- Hold on release workflow

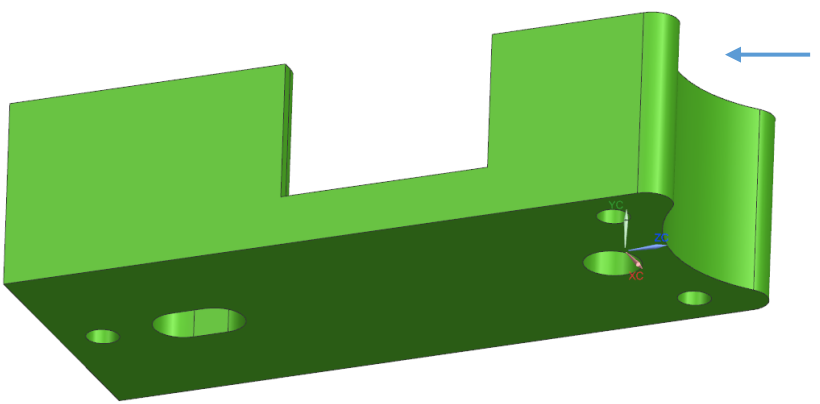



Setup and start with Check Mate (2)



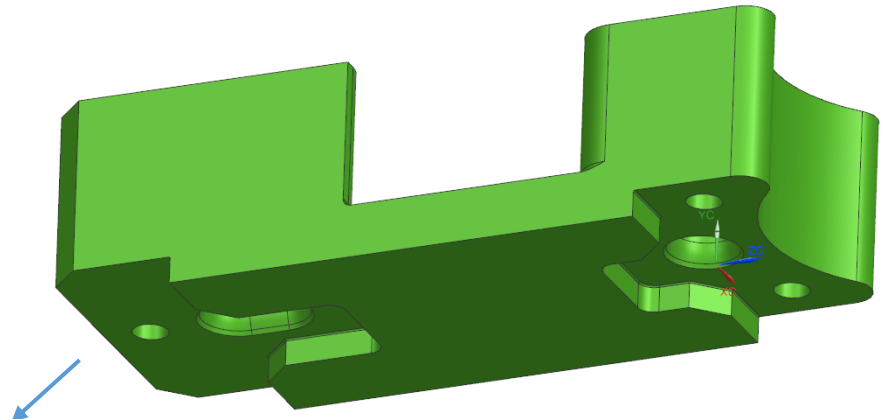
Example check Model


- Changed part, but not updated to last feature



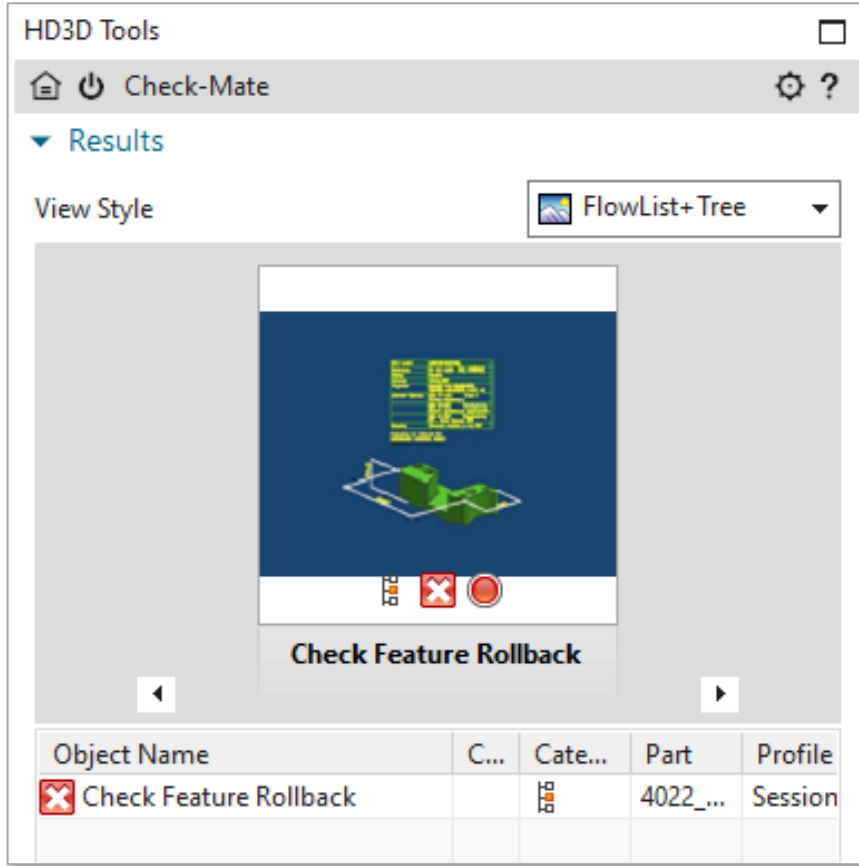
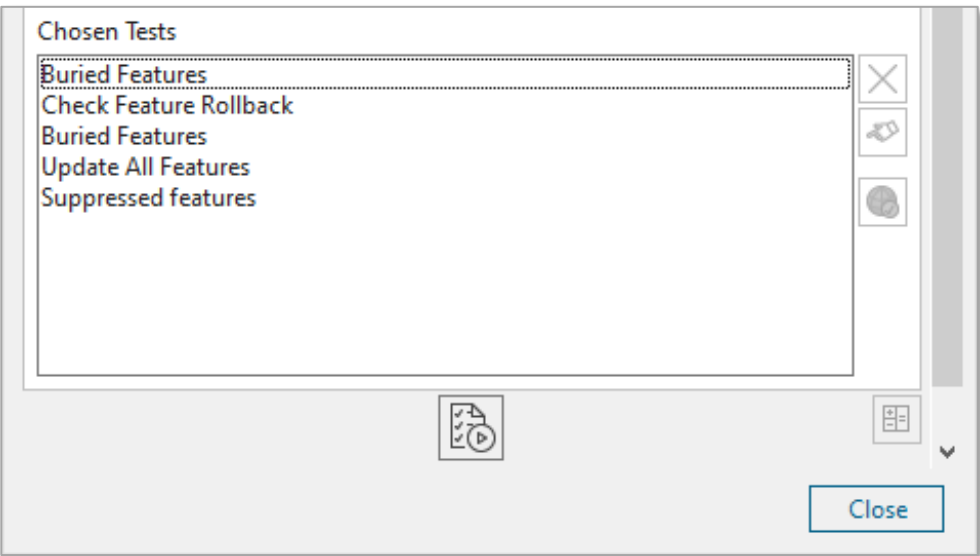
Incorrect model 

Name	C.	U.	Comment
Isometric (Work)			
Left			
Right			
Section #1		✓	
Top			
Trimetric			
Cameras			
PMI			
Groups			
Model History			
Datum Coordinate Sy...		✓	
Sketch (1) "S_000"		✓	
Extrude (2)		✓	
Sketch (3) "S_001"		✓	
Extrude (4)		✓	
Edge Blend (5)		✓	
Edge Blend (6)		✓	
Sketch (7) "S_002"		✓	
Ø8 Hole (8)		✓	
Sketch (9) "S_003"		✓	
Extrude (10)		✓	
Chamfer (11)		✓	
Sketch (12) "S_004"		✓	
Ø4.6 Counterbored ...	ERR	✓	
Sketch (14) "S_005"		✓	
Extrude (15)		✓	
Edge Blend (16)		✓	
Chamfer (17)		✓	
Chamfer (18)		✓	
Chamfer (19)		✓	
Edge Blend (20)		✓	
Edge Blend (21)		✓	
Edge Blend (22)		✓	
Edge Blend (23)		✓	



Correct model without rollback 

- Checkmate on Feature Rollback



Example check Drafting

HD3D Tools

Check-Mate

Results

View Style: FlowList+Tree

Check Dimension with Manual Text

Object Name	C...	Cate...	Part	Profile
✖ Check Dimension with M...	1		4022_...	Session

SECTION A-A

SECTION B-B

SCALE 1:2

ALL DIMENSIONS IN MM

settels savenije PLM services		THIS DRAWING HAS BEEN PRODUCED USING AN EXAMPLE TEMPLATE PROVIDED BY SIEMENS PLM SOFTWARE	
FIRST ISSUED		TITLE	
DRAWN BY			
CHECKED BY		SIZE	DWG. NO.
APPROVED BY		A3	4022_670_06621_AA_NX12_dwg1
		SCALE 1:1	SHEET 1 OF 1

Quality dashboard

- Check mate Quality dashboard
 - OOTB dashboard
 - Generating reports
- Check-mate Viewer
 - Batch control
- Custom report tools
 - Custom tools running from XML data

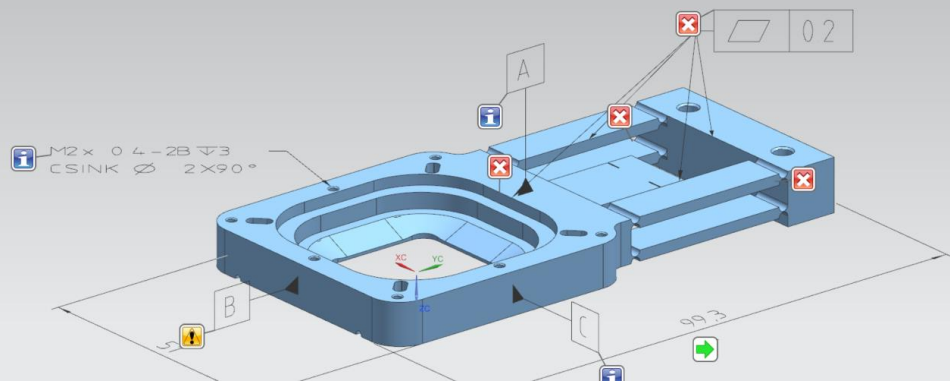
The image displays two overlapping software windows. The top window is titled "Quality Dashboard - Report Generator" and shows a "Summary Report" for the date 11/1/2011, NX 8.0.0.25, NX 7.0.0.9. It features a file explorer on the left and a main content area with two tables of results for parts "ckm1_propeller.prt" and "ckm1_strut.prt". The "ckm1_propeller.prt" table shows "Check Dimension with Manual Text" (Pass), "Check Drafting up-to-date" (Pass), "Faces - Spikes-Cuts" (Pass), and "Objects - Tiny" (Fail). The "ckm1_strut.prt" table shows "Check Dimension with Manual Text" (Fail), "Check Drafting up-to-date" (Fail), "Faces - Spikes-Cuts" (Pass), and "Objects - Tiny" (Pass). A 3D model of a propeller is shown to the right. A text box notes that the most frequent failure is "Check Dimension with Manual Text" at 50%, followed by "Check Drafting up-to-date" and "Objects - Tiny" at 50% each. A small table at the bottom right shows failure percentages: "ckm1_strut.prt" at 50% and "ckm1_propeller.prt" at 25%.

The bottom window is titled "Check-Mate Viewer" and displays a "Check-Mate Log File Results Summary". It shows a list of log files on the left, each with a green checkmark. The summary on the right indicates that 474 log files were processed on Wednesday, November 9, 2011, at 10:34:19 CET, by user "gugriend". A table titled "System Totals" provides the following data:

System Totals		
Parts: 474	Tests: 11516	Errors: 517
Warnings: 447	Info Msgs: 370	Overrides: 0

Below this table, "Overall Testing Results" are shown:

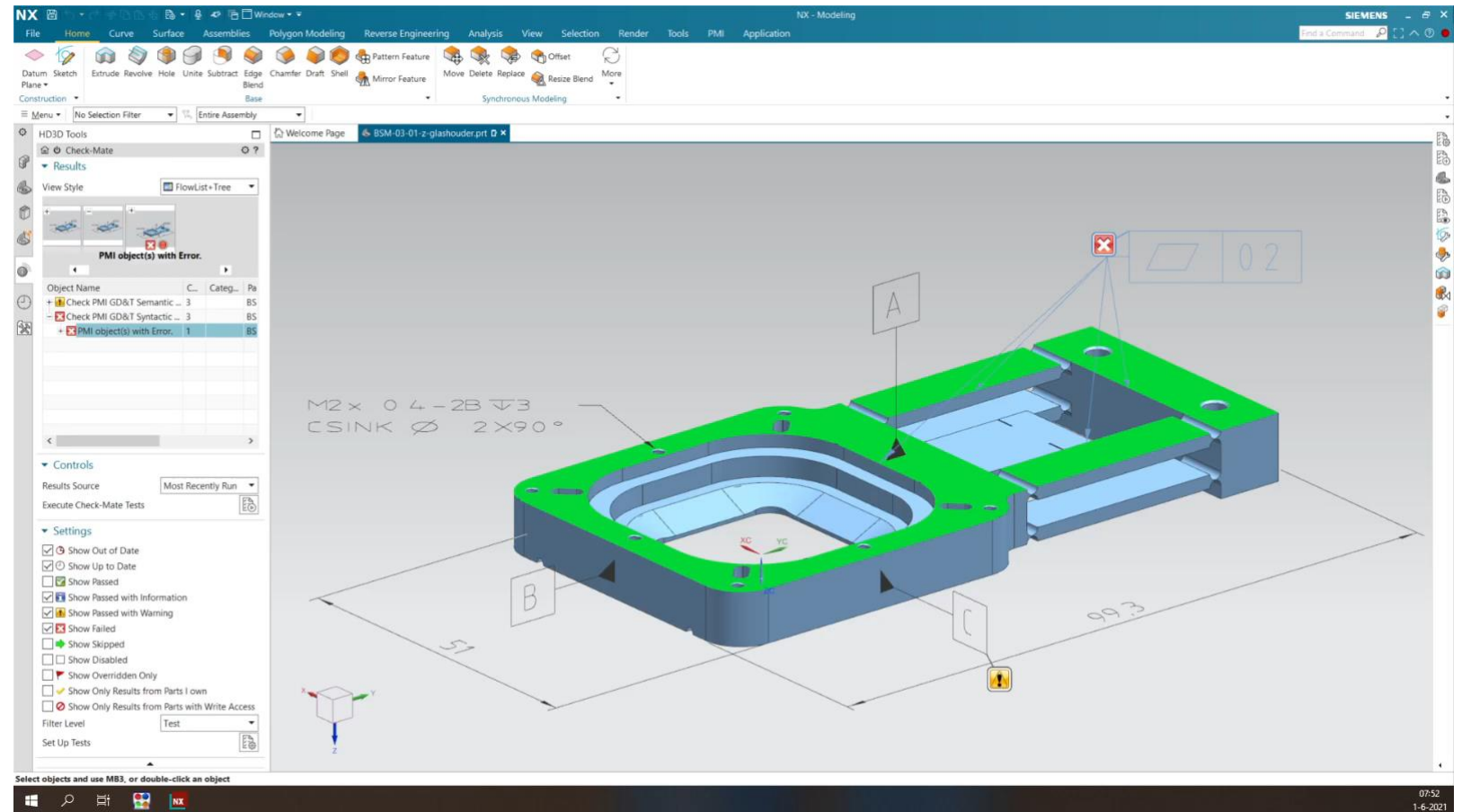
Number of parts that pass 29	Number of parts with warnings 303
Number of parts that fail 338	Number of parts that have info 445

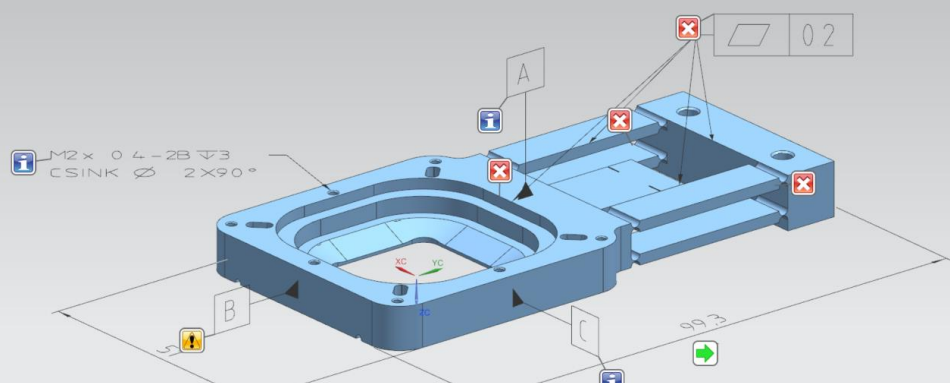


4. Customizing Check Mate

Customizing Check Mate

- Configure profiles
- Configure checkers
- Create/edit checkers





5. Licenses and training

Requirements License

Reference	License name	Cost	Yearly
NXS10635	<p>Product Validation</p> <ul style="list-style-type: none">• To run existing checks delivered with Check Mate• License included in several NX design bundles (see overview next slide)• Required number of licenses = # of users that need to be able to run Check Mate in parallel	€ 1.242	€ 313
NX30100	<p>Product validation Authoring (optional)</p> <ul style="list-style-type: none">• Changing existing check• Creating your own checks• Gives access to Knowledge Fusion functionality• Required # number of licenses = one per site	€ 17.610	

Alternative to purchasing NX30100: outsource the creation of custom checks

Overview NX design bundles with Check Mate

- Check Mate included in a number of Mach bundles

		CAD							Ind.des	Automotive	Tooling	Industry Solutions				Simcenter 3D				Addons						
NX41000	NX Mach Advantage - addons LIMITED! (NL)																									
NX10101	NX Mach Designer (NL)																									
NX90107	NX Layout																									
NX91100	Mach 1 Product Design (NL)																									
NX91110	Mach 1 Product Design (FL)																									
NX92100	Mach 2 Product Design					✓																				
NX93100	Mach 3 Product Design					✓																				
NX92300	NX Cool Shape Design Bundle																									
NX93300	Mach 3 Industrial Design					✓																				
NX93110	NX Mach 3 Additive Design with Convergent					✓																				
AS5010	AS/DS Entry Bundle					✓																				
AS50501	Automotive Supplier Engineering Bundle					✓																				
AS50511	Automotive Supplier Advanced Engineering Bundle					✓																				
NX93200	Mach 3 Mold Design					✓																				
NX93210	Mach 3 Progressive Die Design					✓																				
NX14120	NX Mach Context Designer (NU)																									
NX94112	NX Mach 4 Marine Craft Design																									
NX91113	Mechatronics Concept Designer																									
NX12610	Line Designer																									
NX12620	Line Designer Library Admin																									
NX30504	NX Design Simulation (add-on)																									
SC12500	Simcenter 3D Engineering Desktop																									
SC12510	Simcenter 3D Engineering Desktop Add-On																									
SC13500	Simcenter 3D Structures																									
SC13510	Simcenter 3D Structures Add-On																									
													Available as Floating Add-On													
																	Available as Sticky Add-On									
																	Token Pool & Token Value									
Validation																										
Product Validation (Check Mate Runtime)		ug_checkmate																								
Product Validation Authoring (Check Mate Author)		ug_checkmate, ug_kf_author																								
																	NX30100				NXS10635					

Required training and programming skills

- For using Check Mate: basic knowledge of NX is sufficient
- For creating your own checks: knowledge of programming is required

```
...
parameter n name, parameter n value,
...

#-
$specified_objects << mqc_selectEntitiesWithFilters(
    select_by_entity_type, select_by_entity_type:,
    select_by_layer,      select_by_layer:,
    select_by_attribute,  select_by_attribute:,
    select_by_color,      select_by_color:,
    select_by_line_width, select_by_line_width:,
    select_by_line_font,  select_by_line_font:,
    select_by_entity_name, select_by_entity_name:,

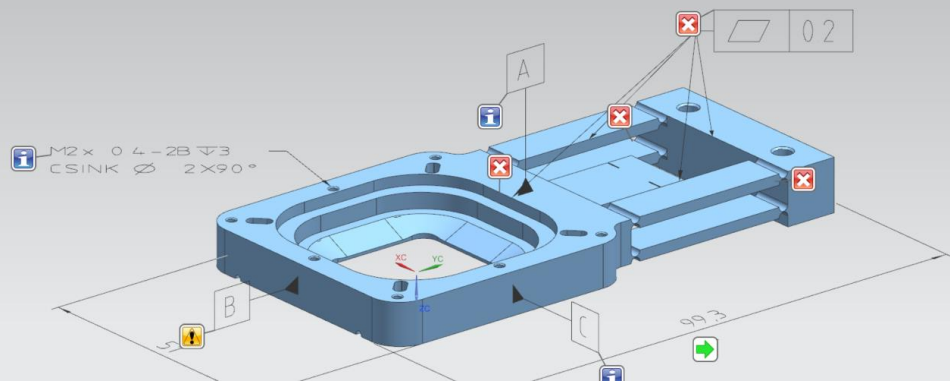
    filter_by_entity_type, filter_by_entity_type:,
    filter_by_layer,      filter_by_layer:,
    filter_by_attribute,  filter_by_attribute:,
    filter_by_color,      filter_by_color:,
    filter_by_line_width, filter_by_line_width:,
    filter_by_line_font,  filter_by_line_font:,
    filter_by_entity_name, filter_by_entity_name:,

    ignore_blanked?,     ignore_blanked?;,
    ignore_occurrence?,   ignore_occurrence?;
);

#+
$specified_objects << mqc_selectEntitiesWithFilters(
);

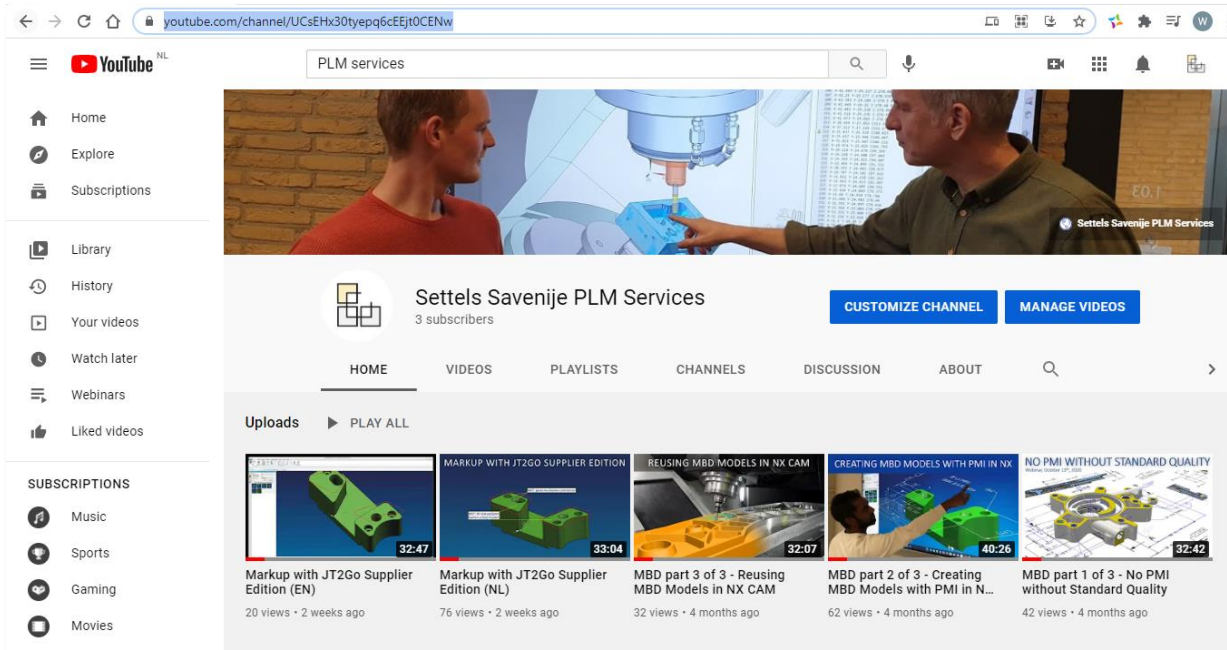
#-
#Log these entities.
ug_mqc_log( LOG_INFO, $specified_objects, $usr_msg );
};
```





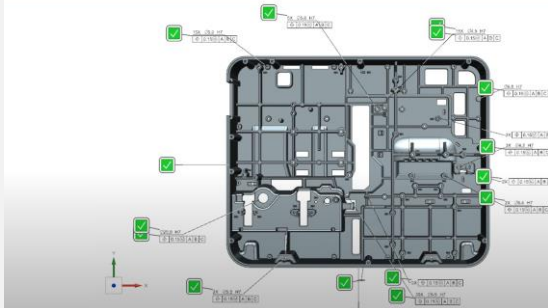
6. Questions

- Q&A of the webinar will be added to the handout
- Handout: www.sttls.nl/plm-events
- Video registration: [YouTube channel PLM Services](#)



Upcoming events

SPEED UP YOUR DESIGN WITH NX MBD



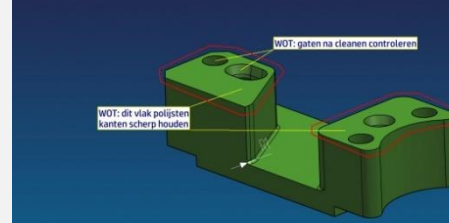
End of June

Details will be published at:

www.sttls.nl/plm-events

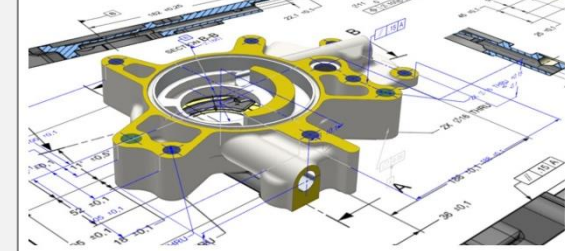
Past events

MARKUP WITH JT2GO SUPPLIER EDITION



NO PMI WITHOUT STANDARD QUALITY

Webinar, October 13th, 2020



REUSING MBD MODELS IN NX CAM



CREATING MBD MODELS WITH PMI IN NX



Watch the videos at our [YouTube channel](#)



Want to know more? Wim Ottenhoff, Managing Consultant, +31 6 22158720

thank you for your attention

WHEN BUSINESS, PEOPLE & TECHNOLOGY NEED AN IMPULSE