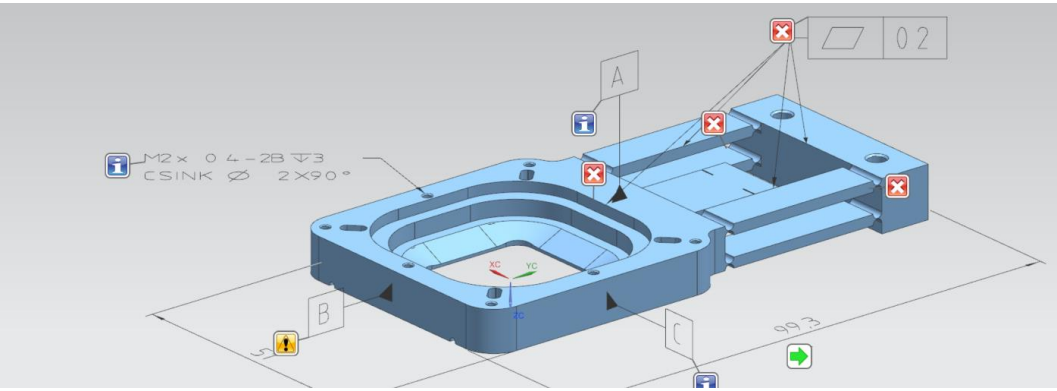


Trust is good, Check Mate is better

Kasper Brok, Wim Ottenhoff

June 1th, 2021

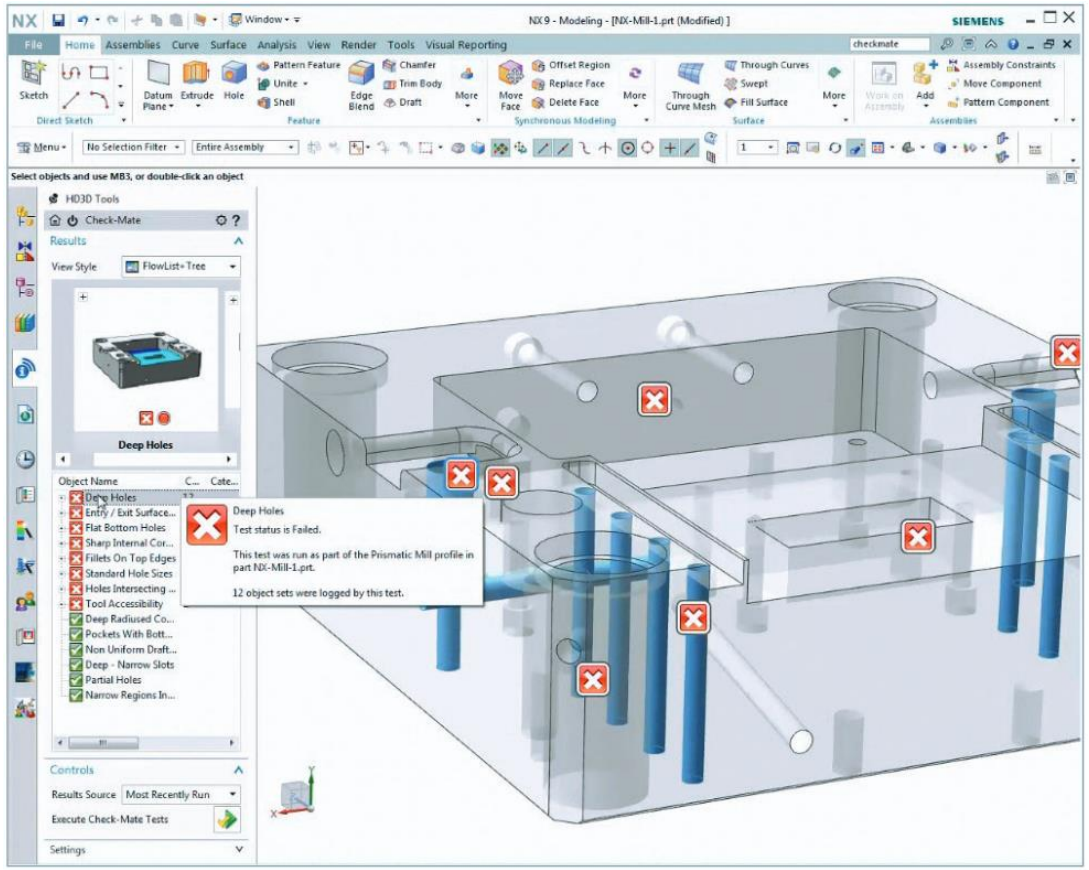
Solution Partner PLM

SIEMENS

What is Check Mate?

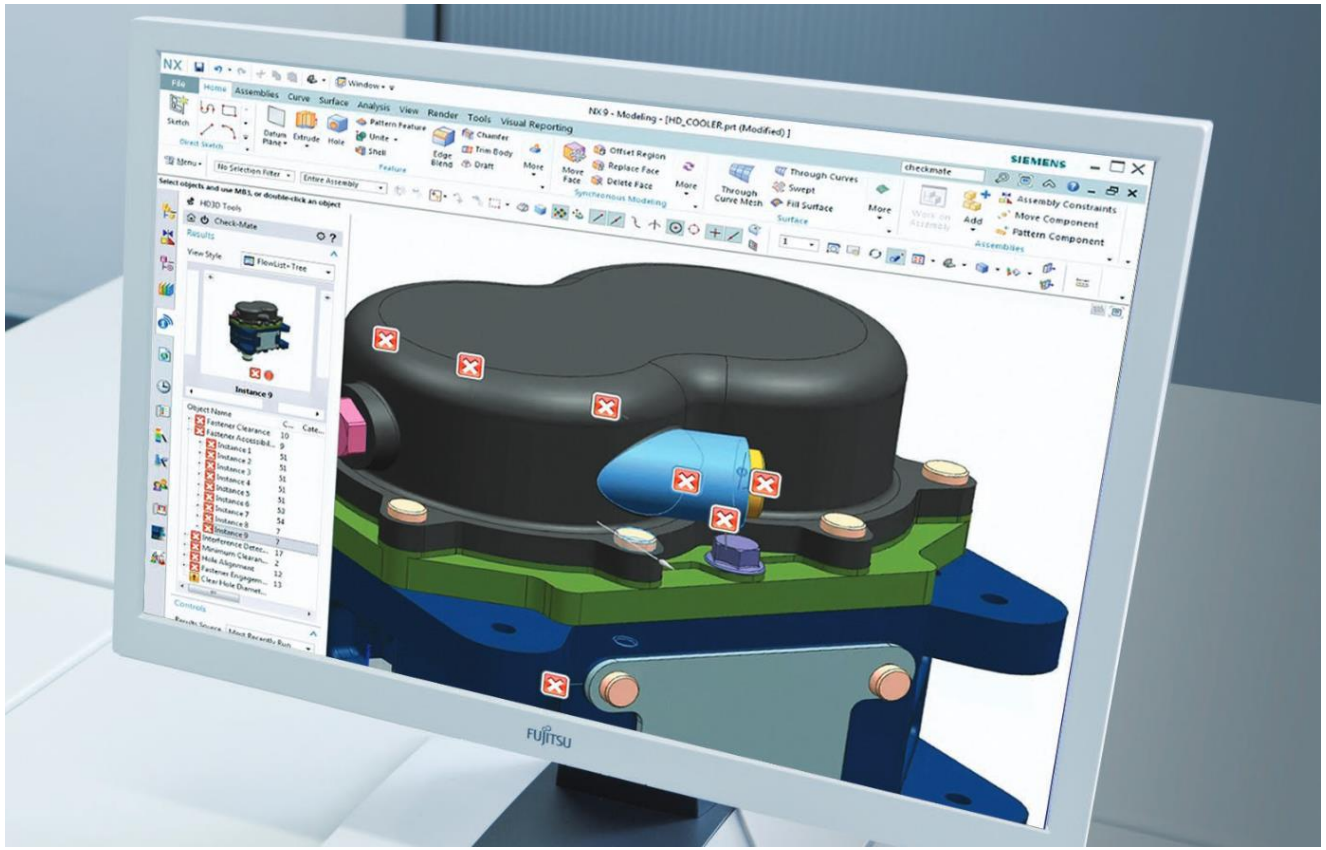
- Checks NX-parts for compliance to company and other (ISO) standards
  - Visual feedback
  - Report generation
  - Different classes
  - Customisation
- Add-on for NX

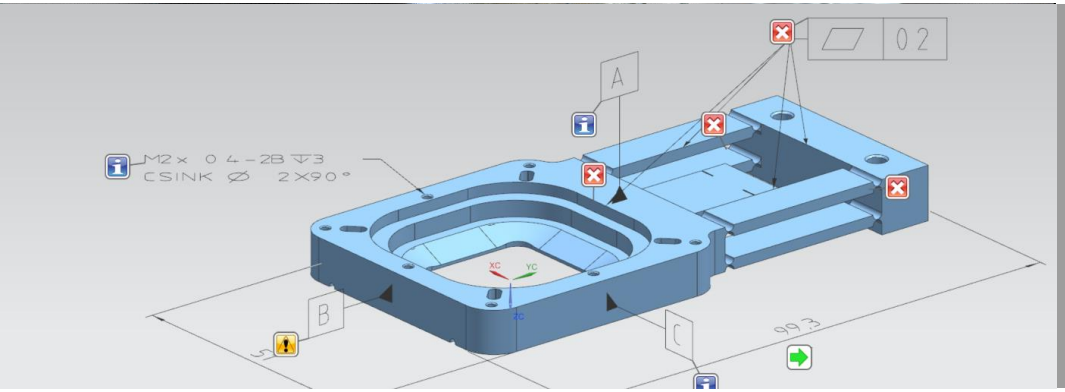
NX Check Mate
helps to improve
the quality of your
Design Definition



Introduction and agenda

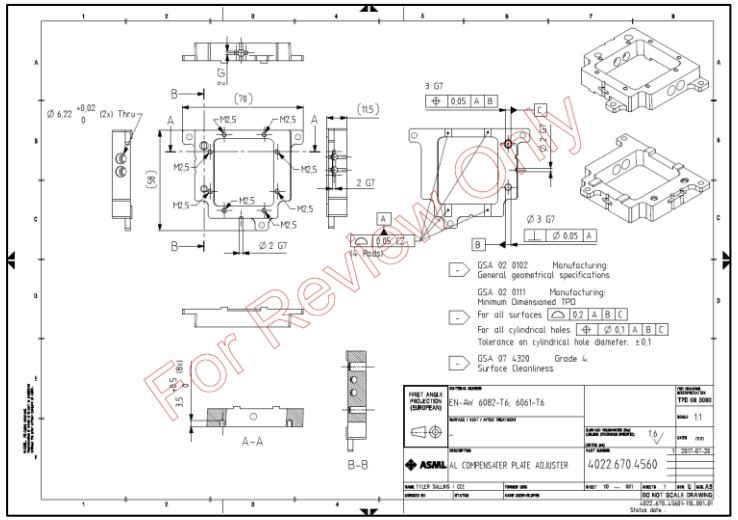
1. Why use Check Mate
2. Check Mate at ASML
3. Setup and start
4. Customize your own
5. Requirements
6. Questions



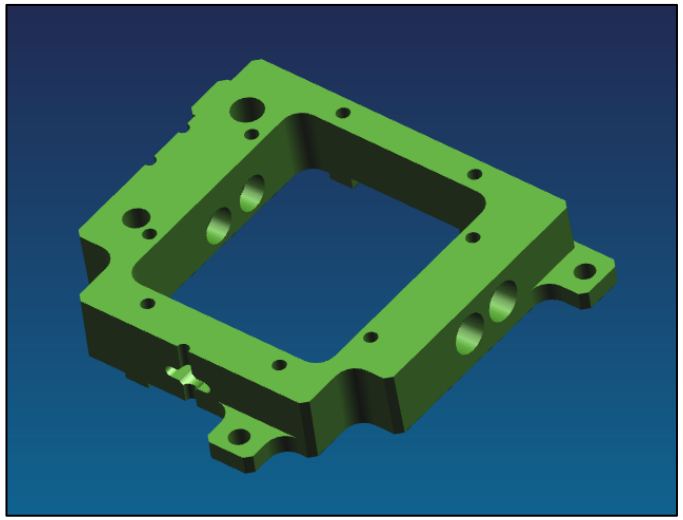


1. Why use Check Mate?

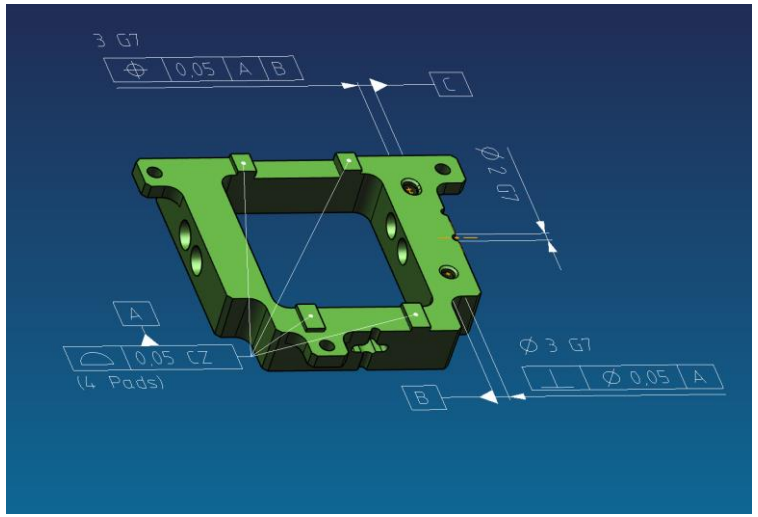
Focus shift from drawing to 3D-model



Drawing

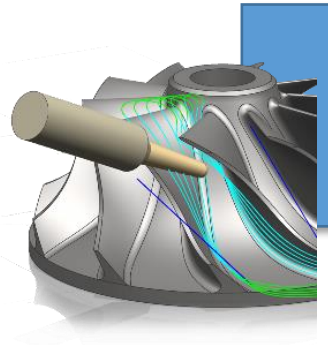


3D Model



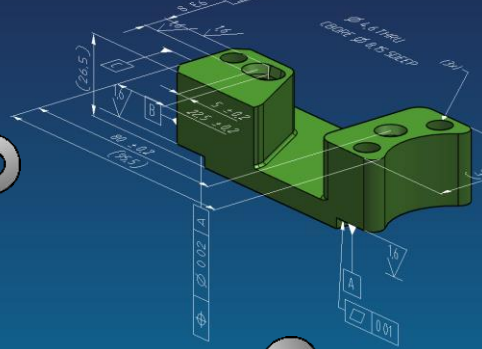
Model Based Definition

Design flaws have a big impact on downstream reuse

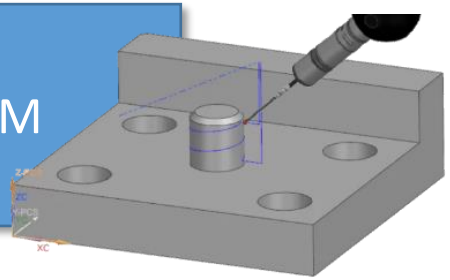


CAM

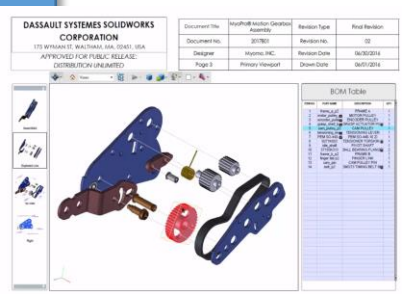
MBD Master



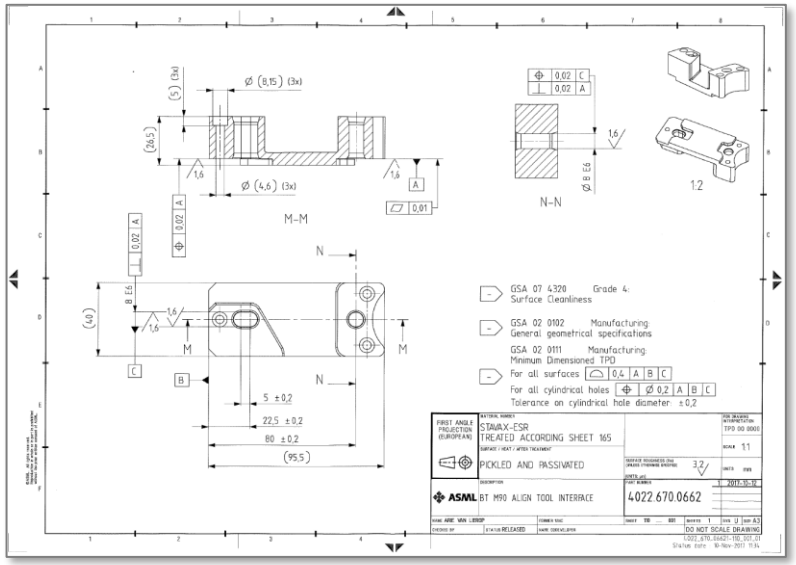
CMM

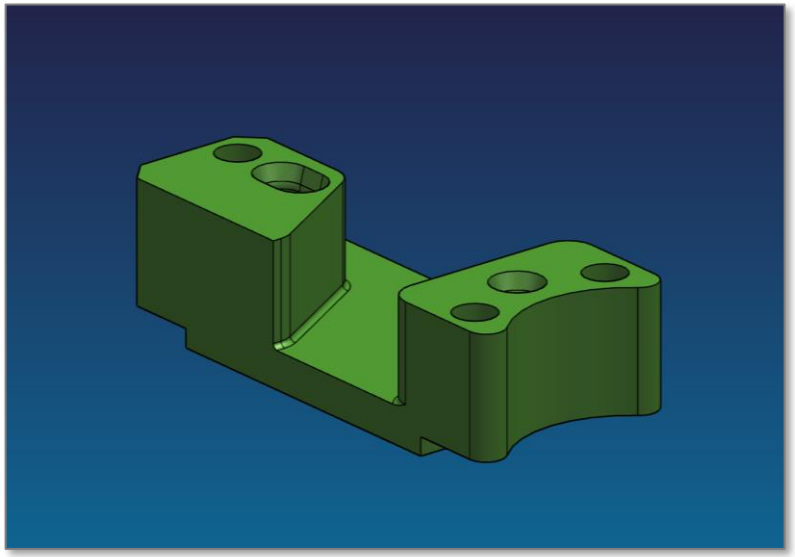


Assembly Instructions



How about design definition (TPD) quality?

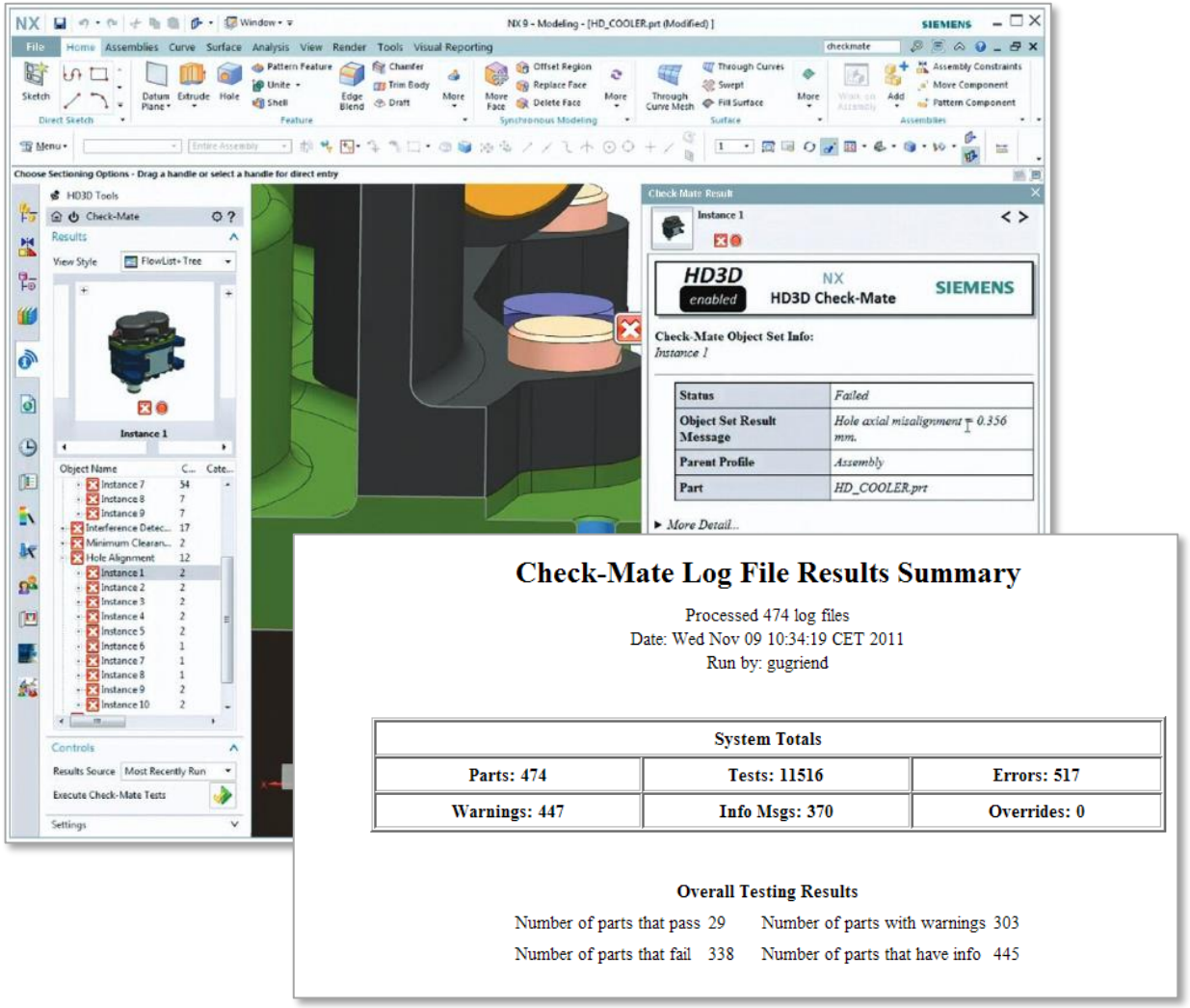




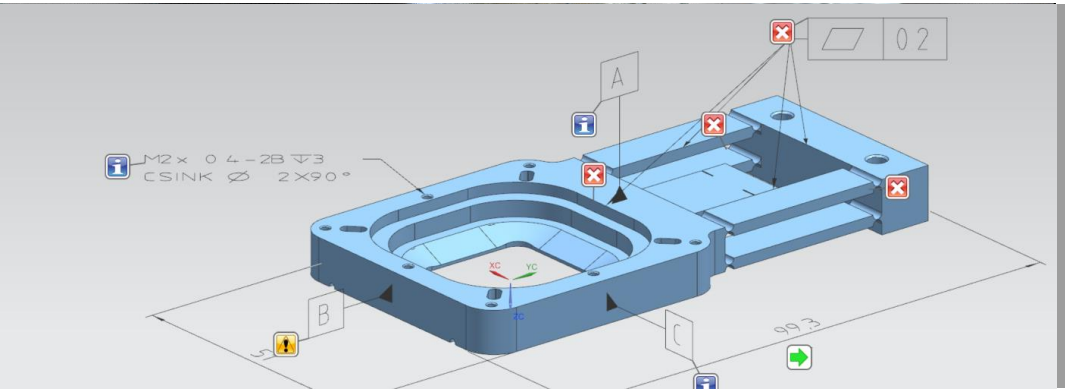
- Long history
- Clear drawing standards
- Part of design review

- 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)

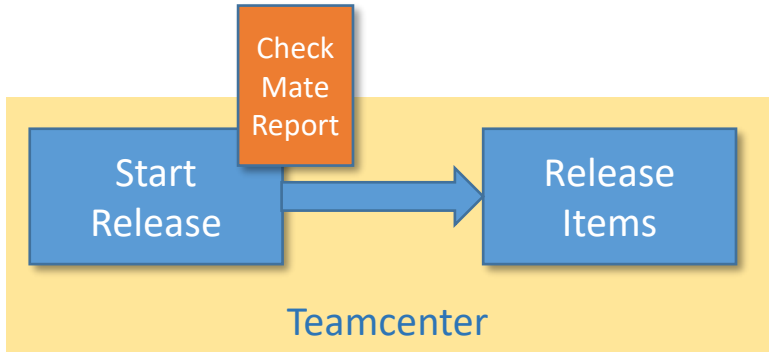


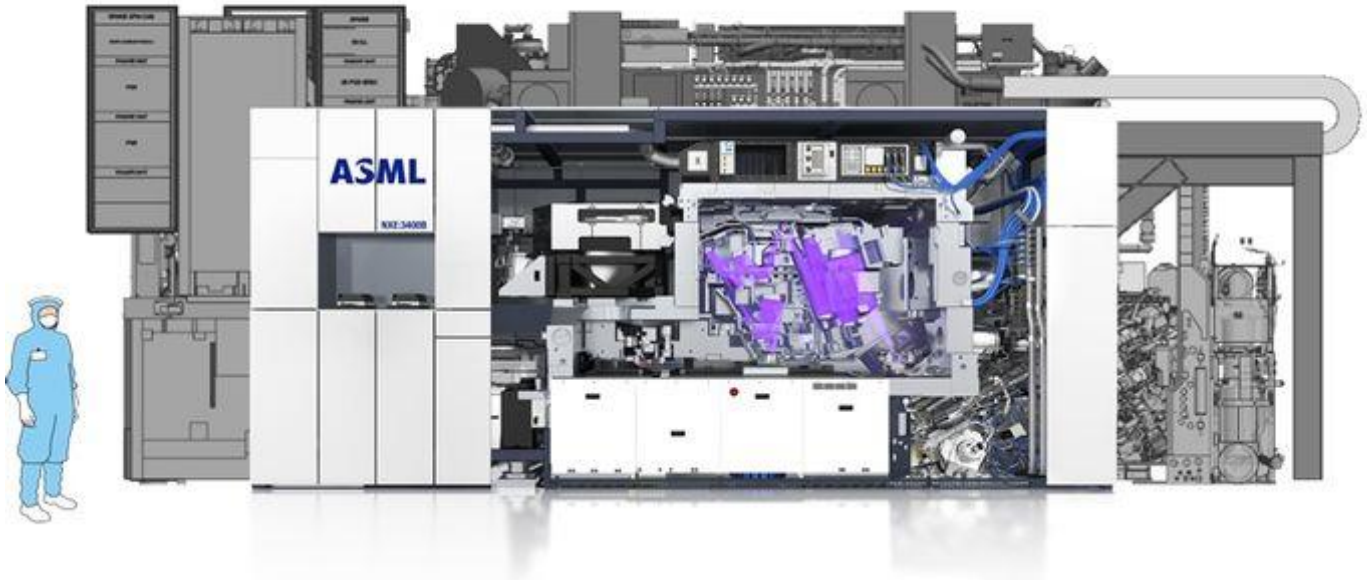
2. Check Mate at ASML

Check Mate at ASML

- Pressure to improve quality of design definition
  - Impact on supply chain efficiency
  - Introduction of Model Based Definition

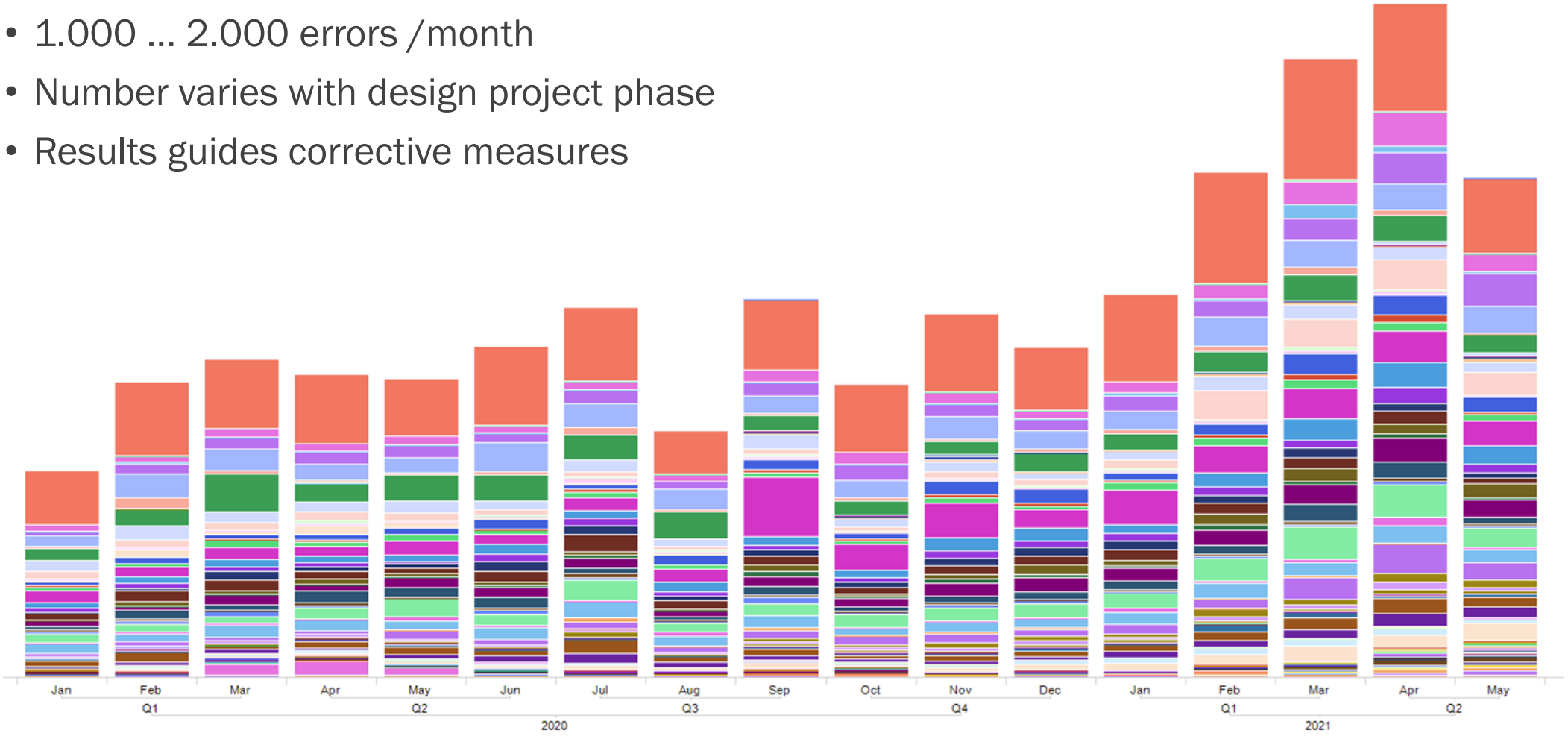
- ASML uses Check Mate a few years
  - Part of release process Teamcenter
  - Feedback for engineers





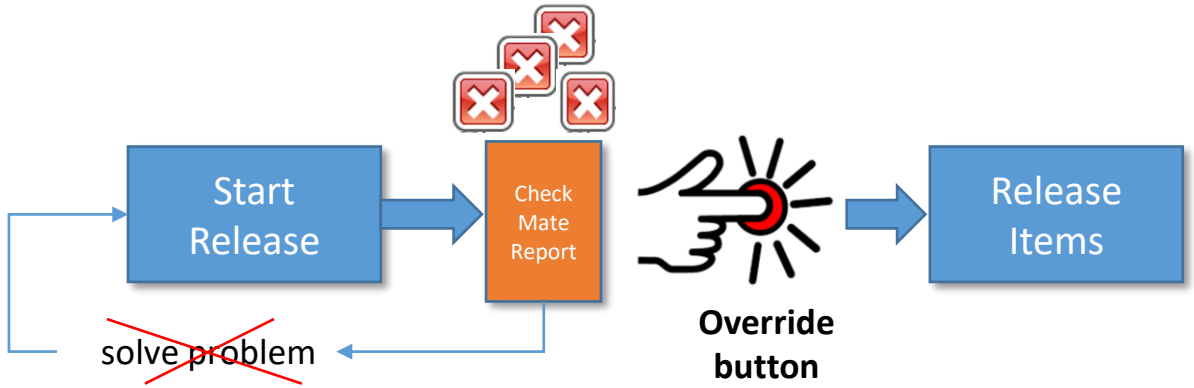
ASML custom report tool

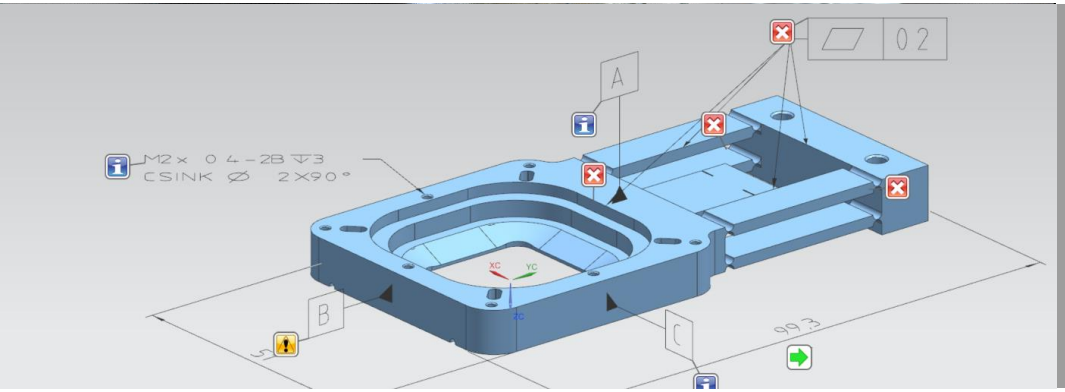
- Report on monthly number of Check Mate errors per type
- 1.000 … 2.000 errors /month
- Number varies with design project phase
- Results guides corrective measures



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



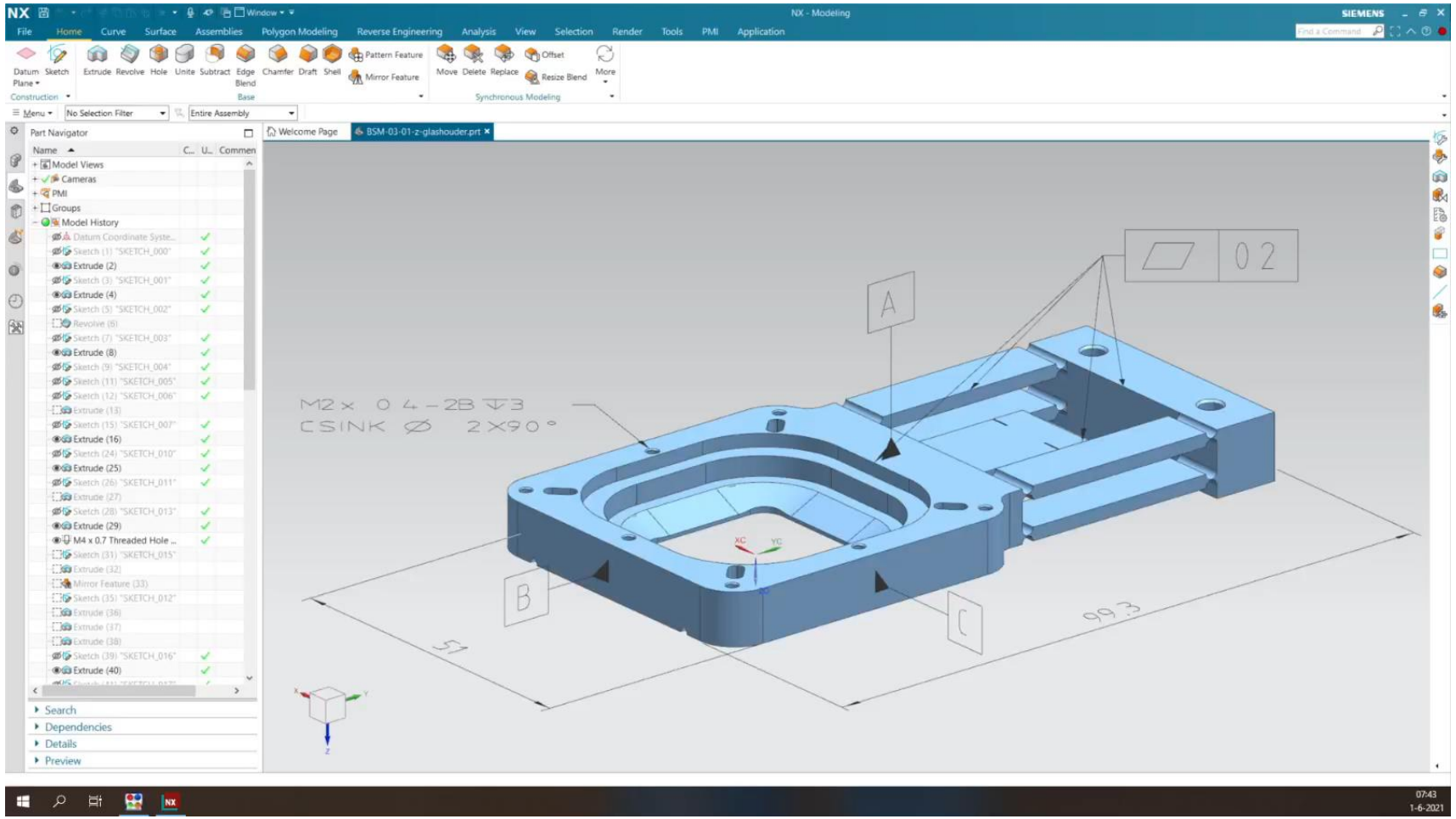


3. Starting with Check Mate

Setup and start with Check Mate

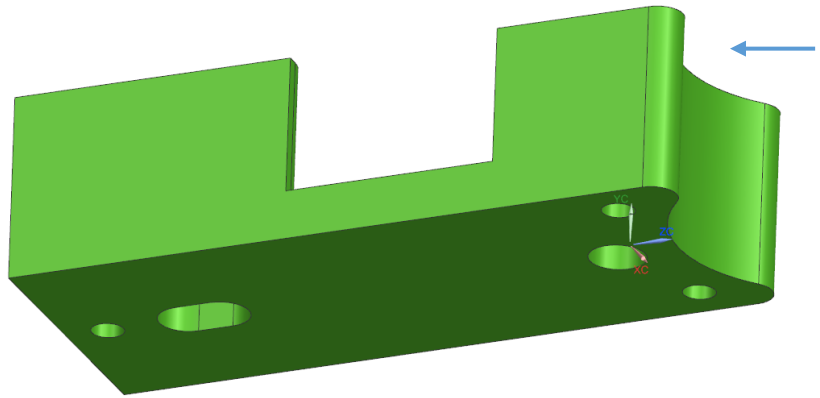
- More than 300 OOTB checkers
  - Check Feature Rollback
  - Sketch Fully Constrained?
  - Check Component Reference Sets
  - Check Dimension with Manual Text
  - Suppressed Features
- Different types
  - Error
  - Warning
  - Information
- Integration with Teamcenter
- Hold on release workflow

Setup and start with Check Mate (2)

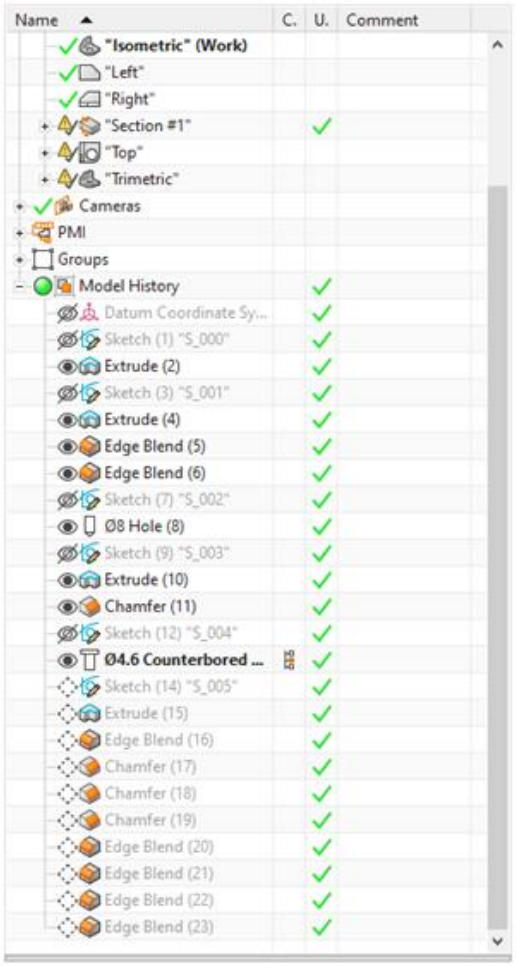


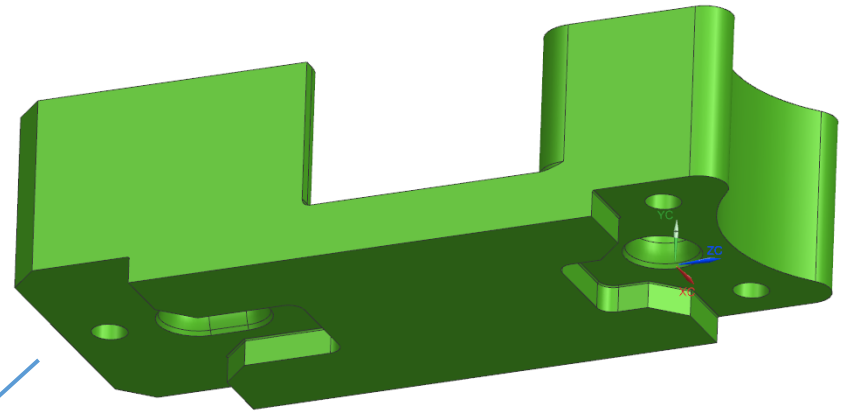
Example check Model

- Changed part, but not updated to last feature



Incorrect model

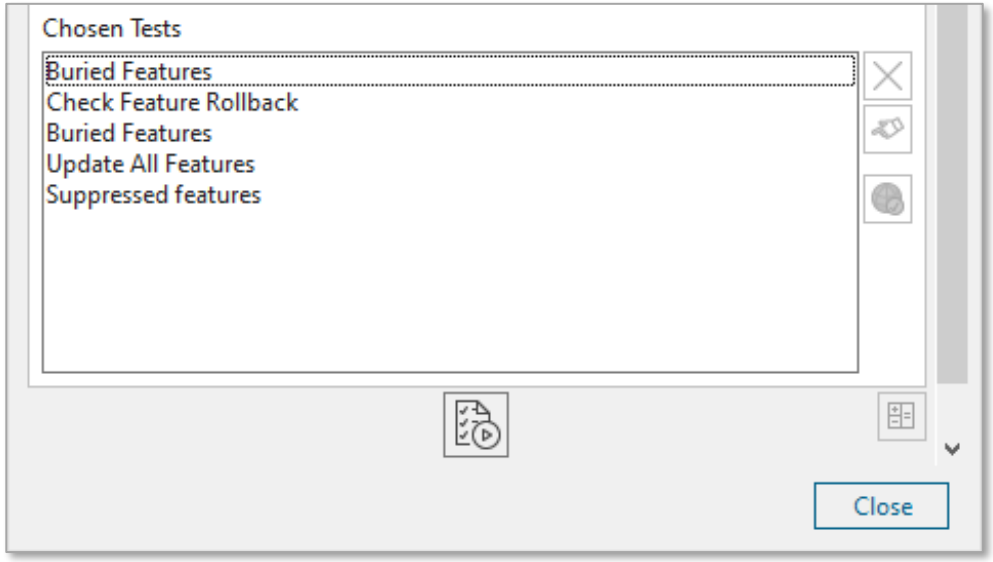


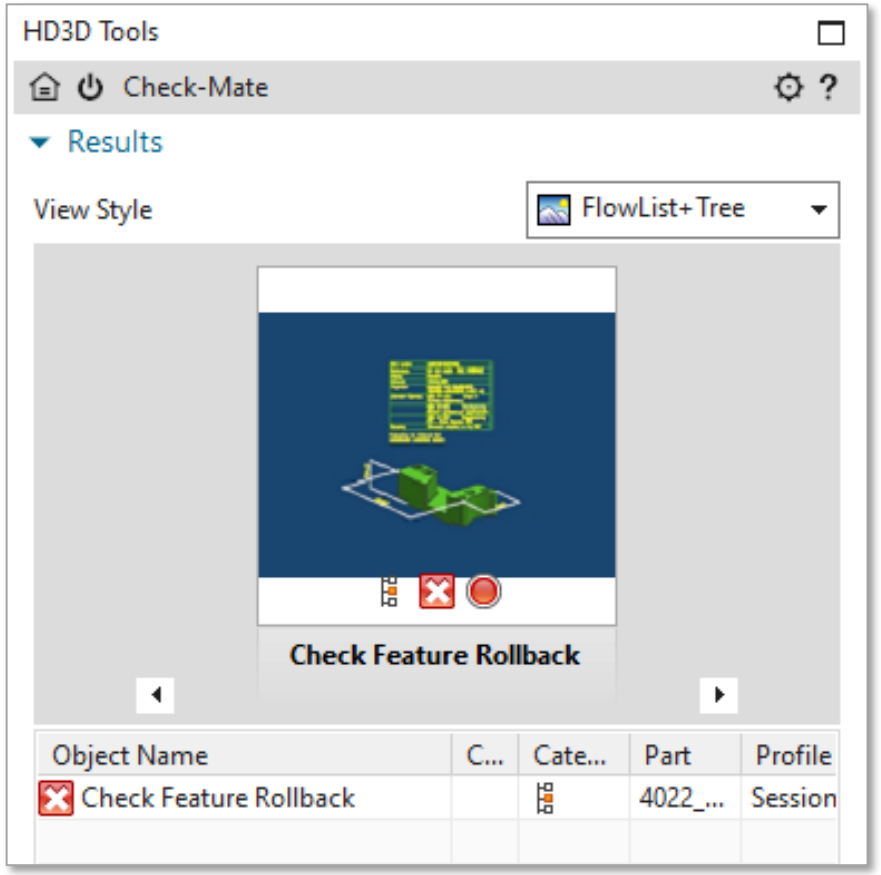


Correct model without rollback

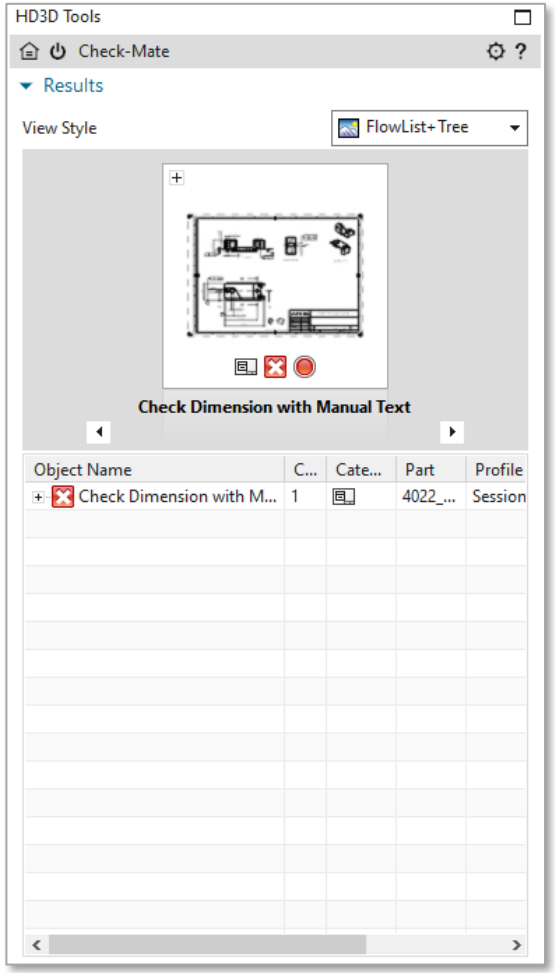
Example check on Model

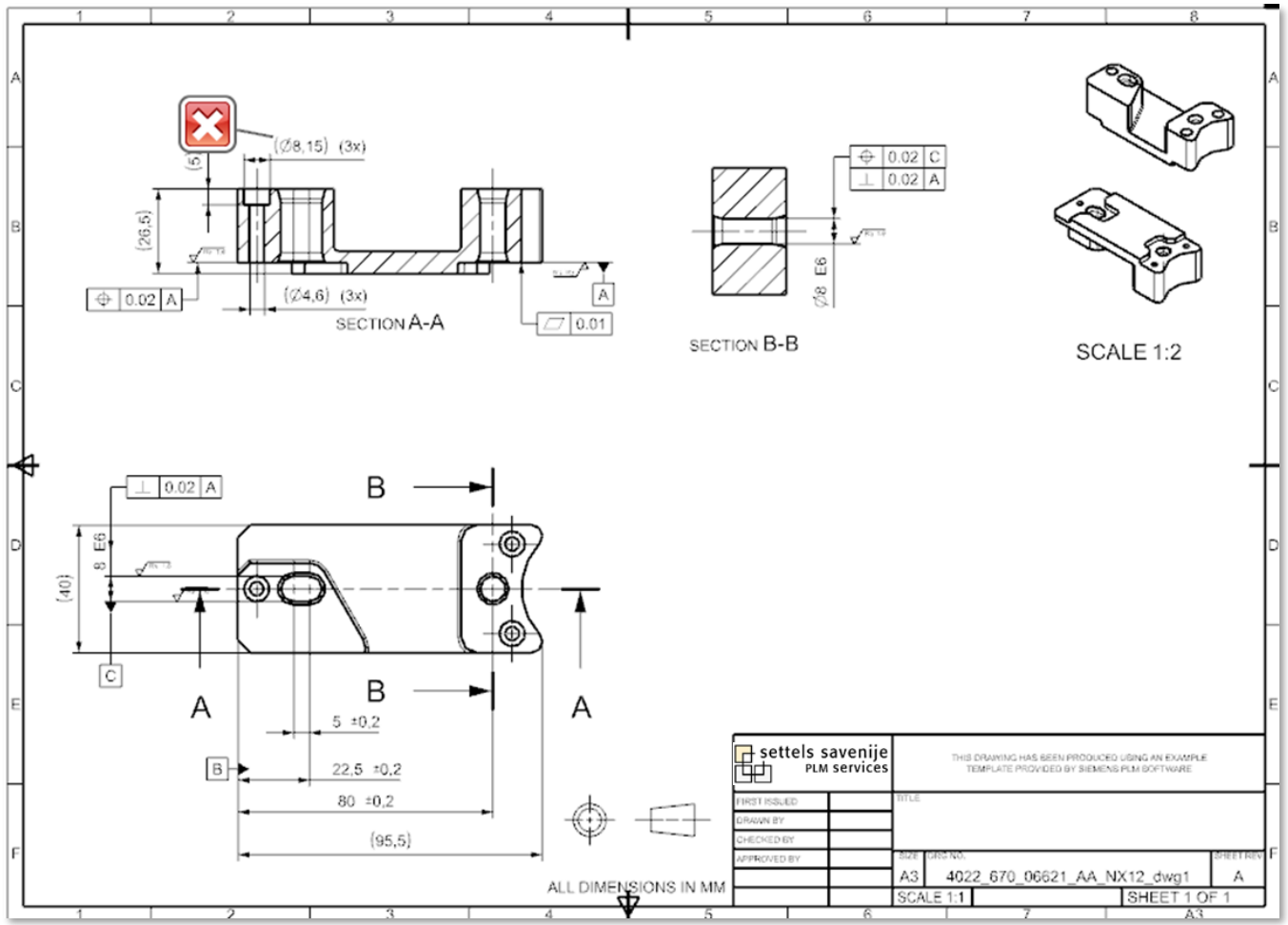
- Checkmate on Feature Rollback





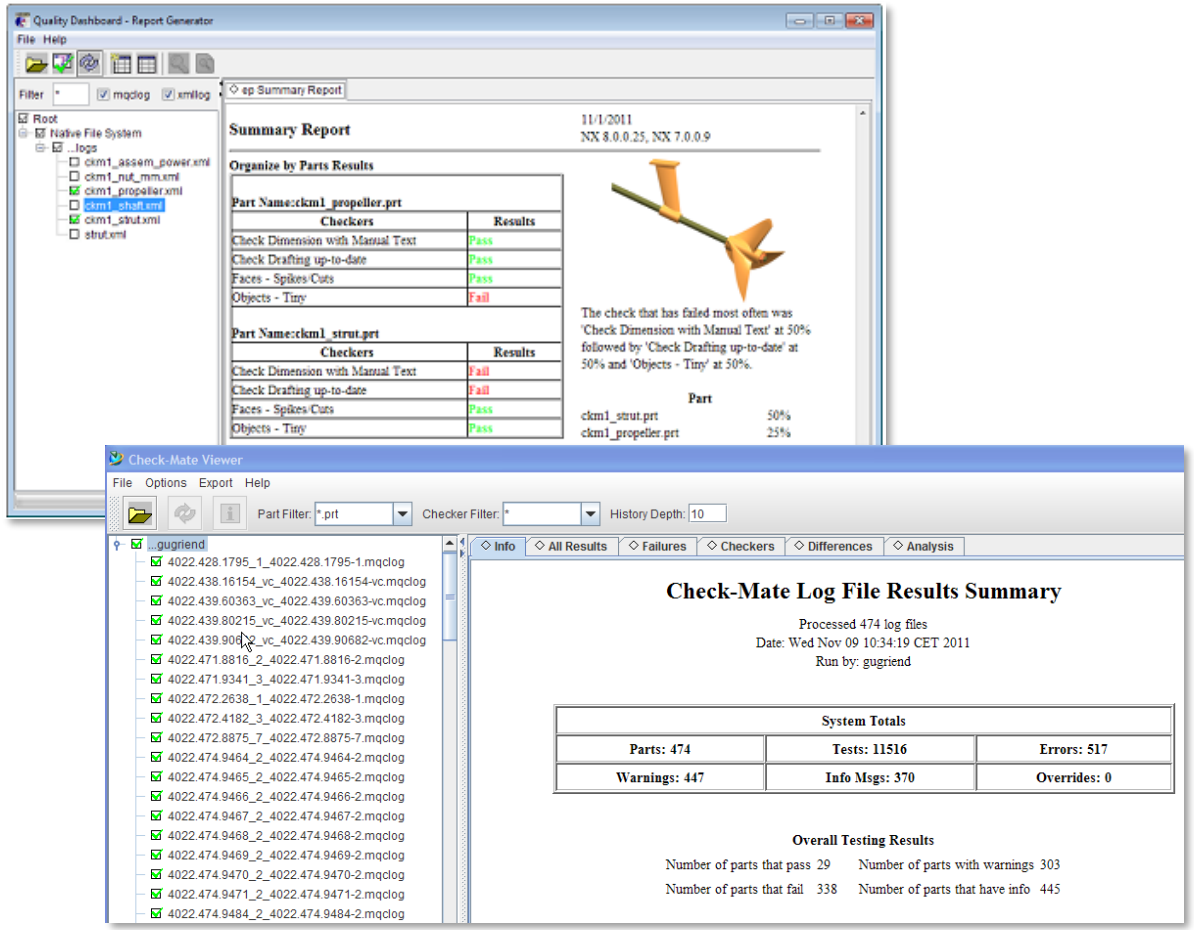
Example check Drafting

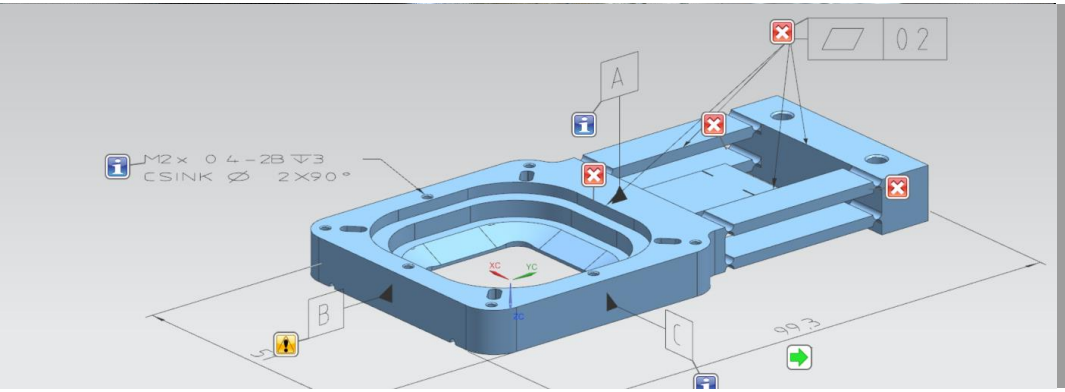




Quality dashboard

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

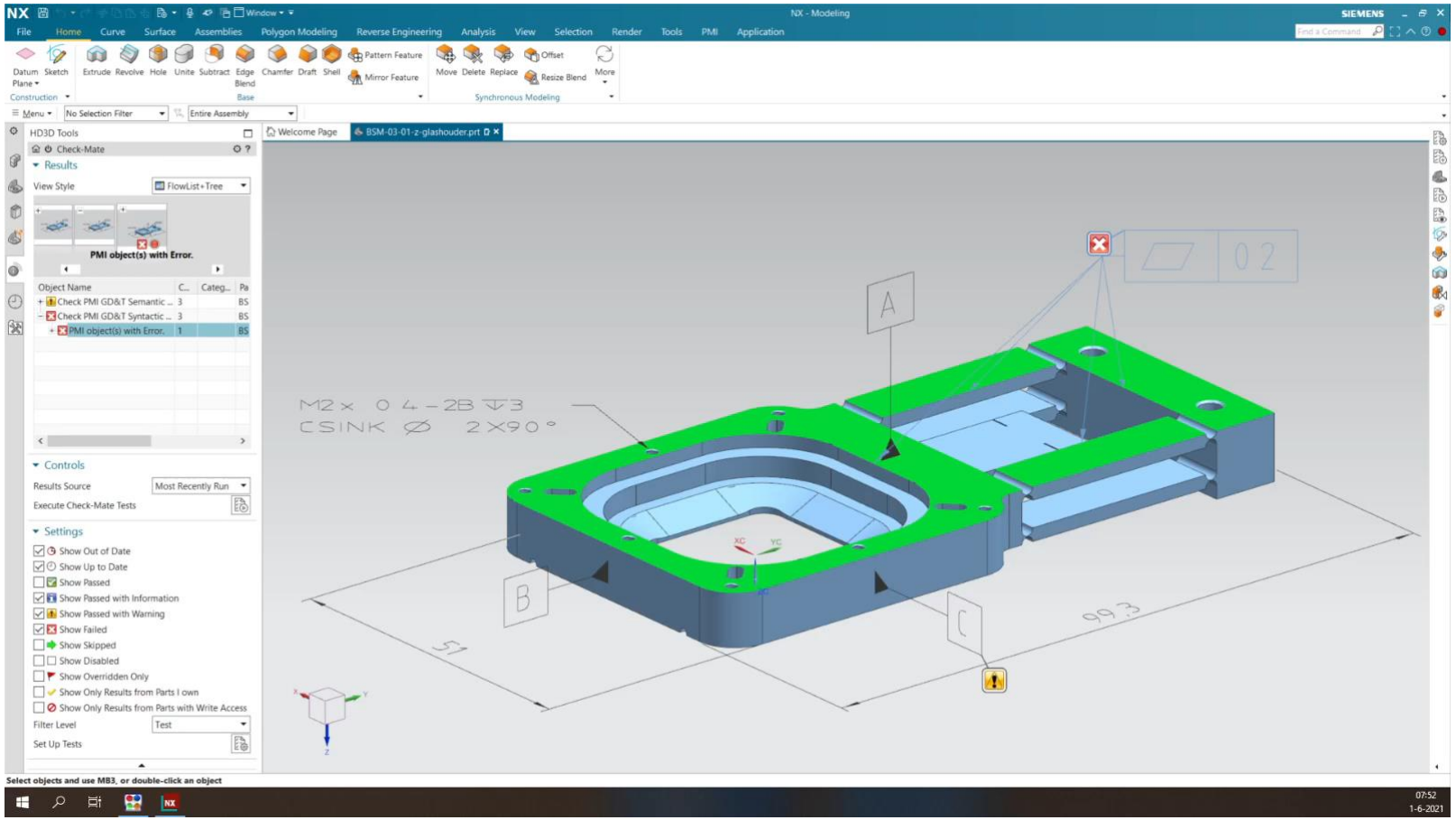


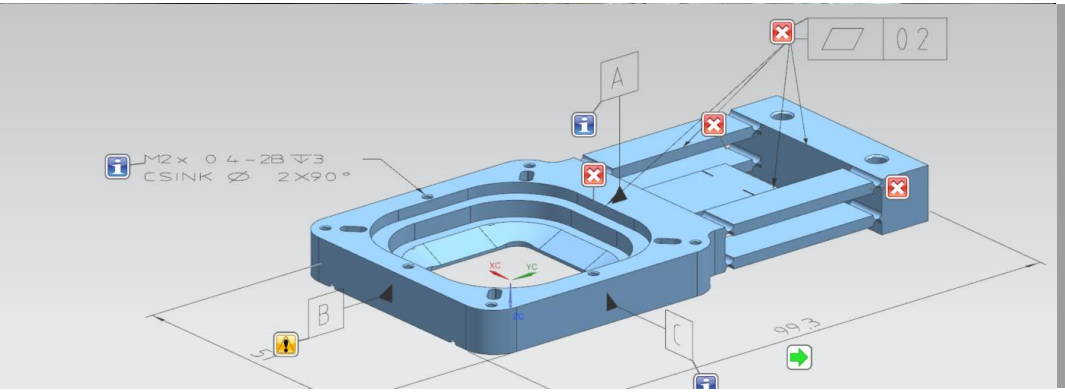


4. Customizing Check Mate

Customizing Check Mate

- Configure profiles
- Configure checkers
- Create/edit checkers





5. Licenses and training

Requirements License

Reference	License name	Cost	Yearly
NXS10635	Product Validation • 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	Product validation Authoring (optional) • 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

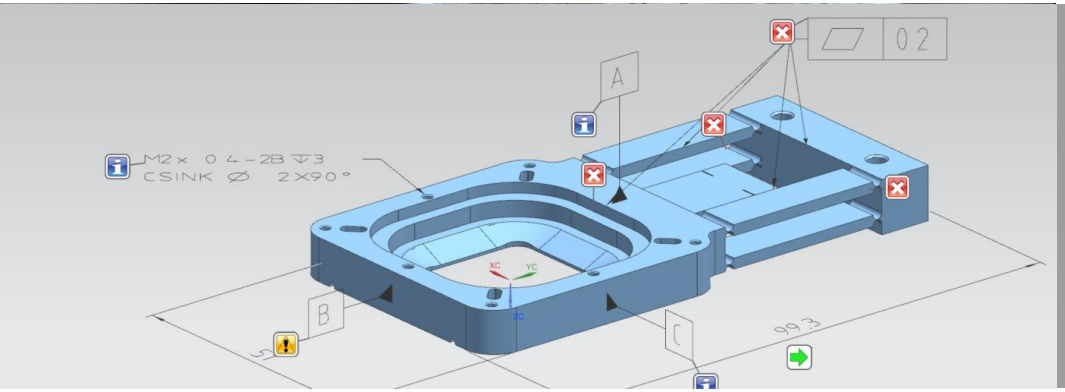
- Check Mate included in a number of Mach bundles

		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						✓	✓		✓	✓	✓	✓	✓	✓	✓		✓					✓		✓			NXS10635	
Product Validation Authoring (Check Mate Author)	ug_checkmate, ug_kf_author																										NX30100		

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

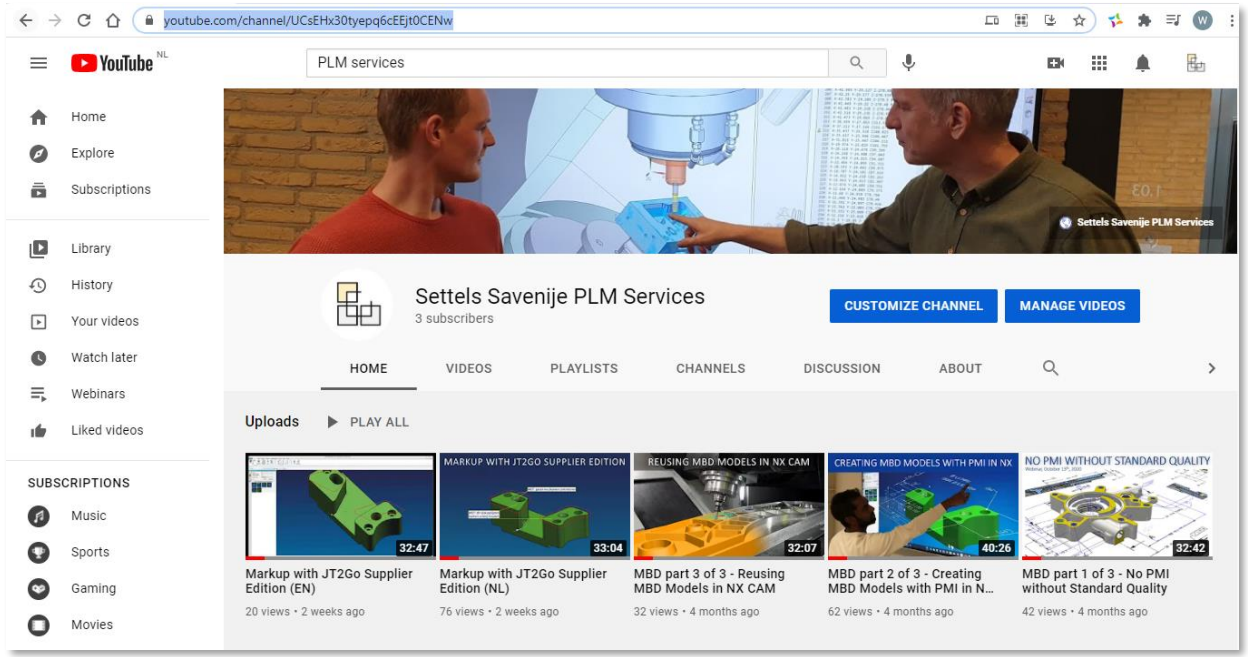
```
            ...
            parameter n name, parameter n value,
            ...

        #-
        $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_occurence?,     ignore_occurence?:
                                );
#+
        $specified_objects << mqc_selectEntitiesWithFilters(
                              );
#-
        #Log these entities.
        ug_mqc_log( LOG_INFO, $specified_objects, $usr_msg );
    };
```



6. Questions

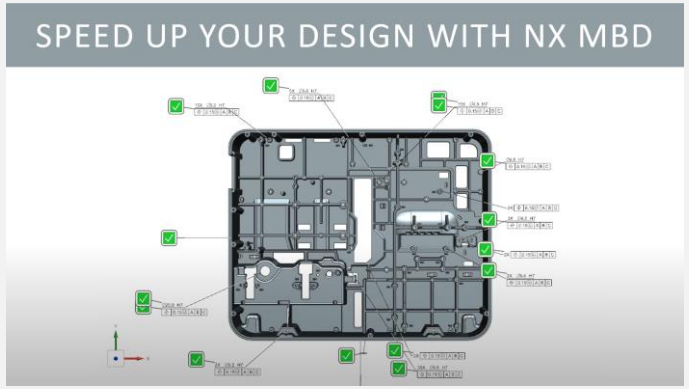
Question & Answer

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



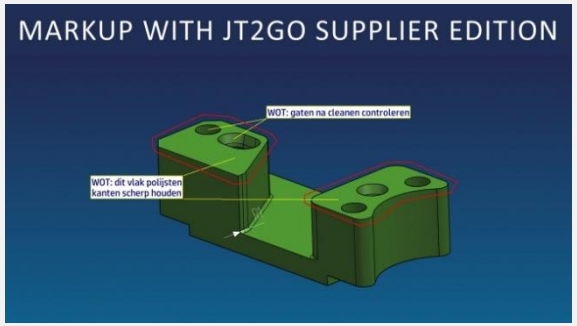
More information on Model Based Definition

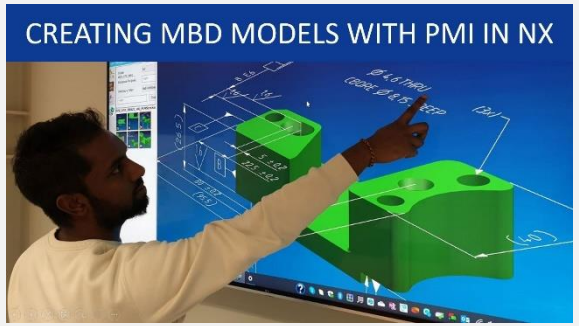
Upcoming events



End of June
Details will be published at:
www.sttls.nl/plm-events

Past events





Watch the videos at our YouTube channel

settels savenije
PLM services

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

thank you for your attention

WHEN BUSINESS, PEOPLE & TECHNOLOGY NEED AN IMPULSE