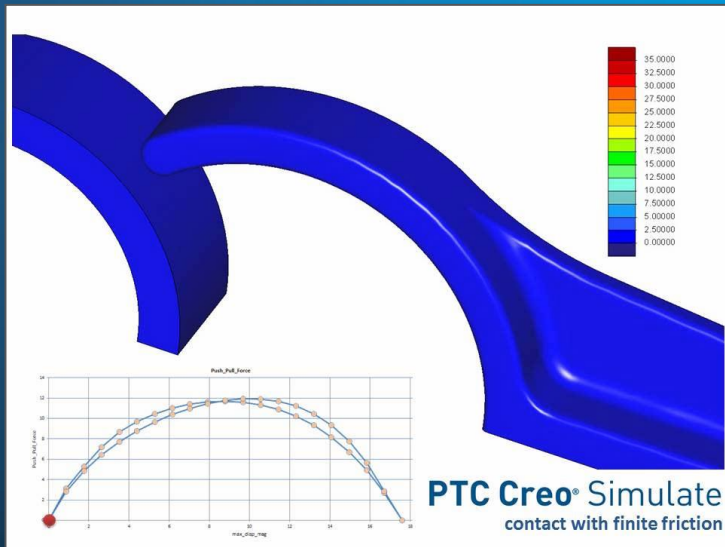
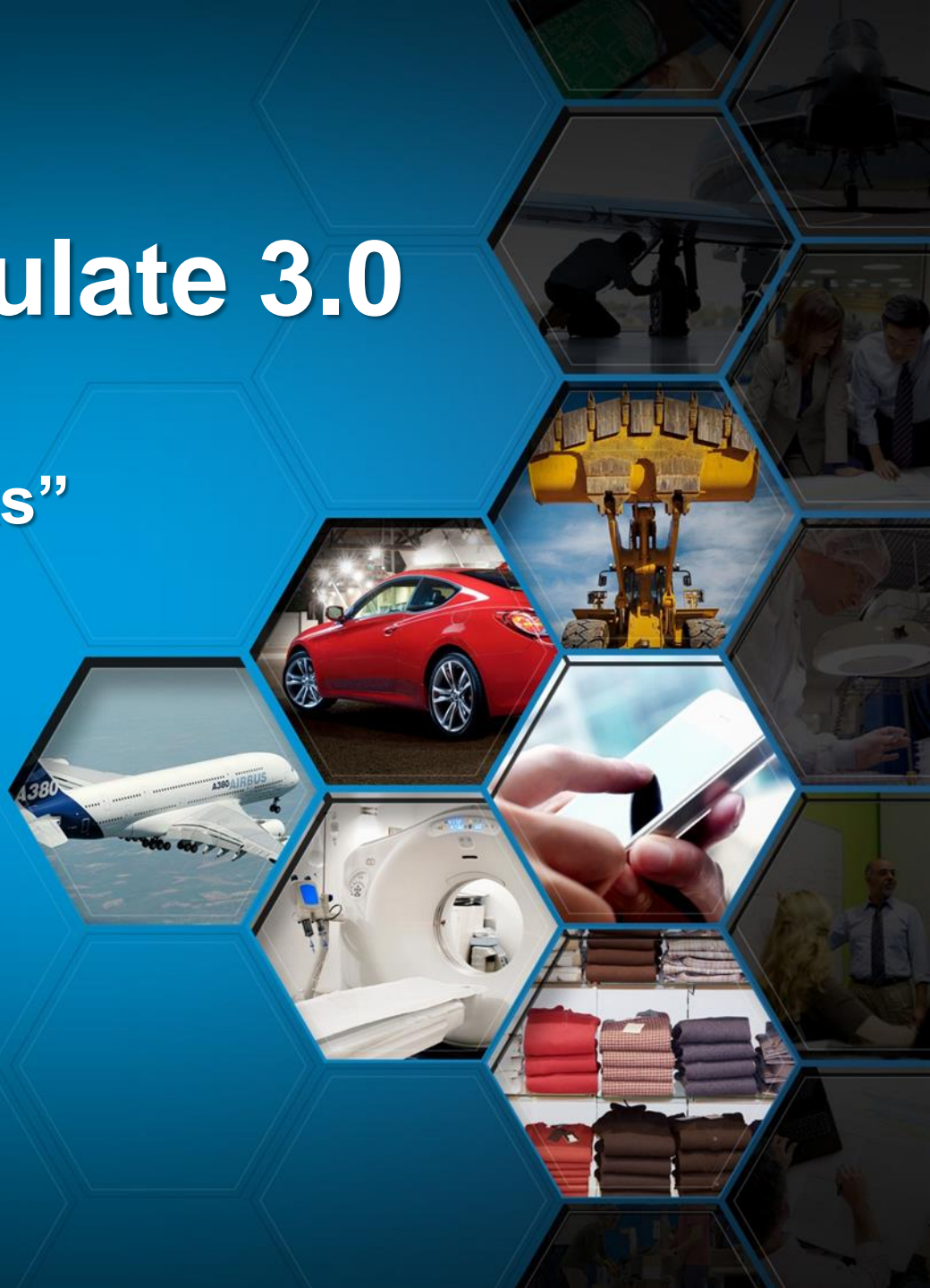


PTC Creo Simulate 3.0

- News
- 10 “Tips & Tricks”



Urs Simmler
MCAD Simulation Specialist
PTC (Schweiz) AG

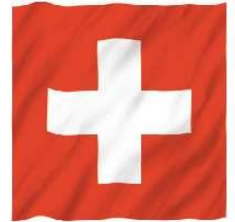




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- Focused on PTC-Simulation Products
- Presales, Training, Consulting, ...
- 27+ Years Simulation-Experience (19 Years with PTC)

- PTC Creo Simulate 3.0:
with Live -Demo

News

- PTC Creo Simulate 3.0:
with Live -Demo

10 "Tips & Tricks"

- PTC Creo Simulate 3.0:

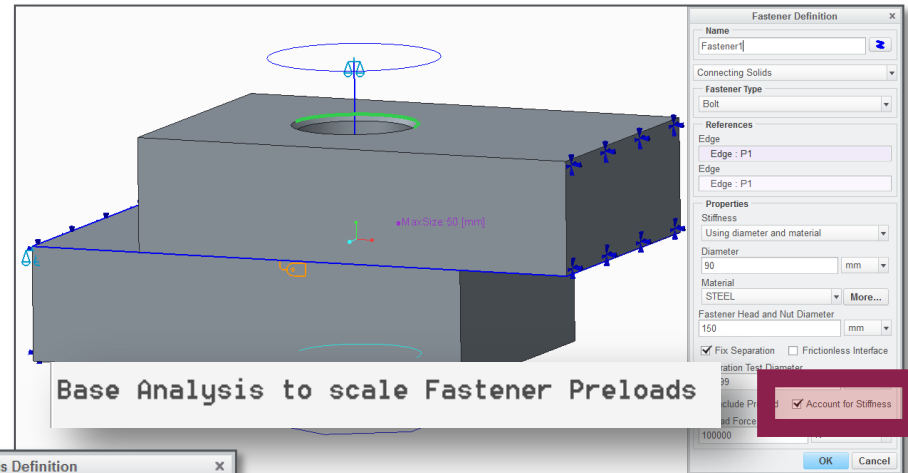
"Best Practice"-CD

- Questions

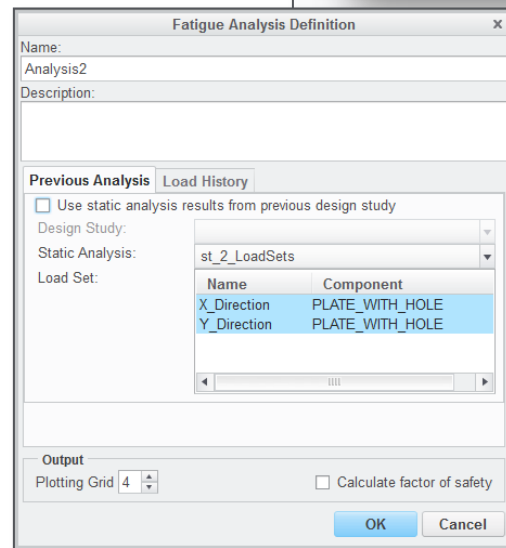


PTC Creo Simulate 3.0: News

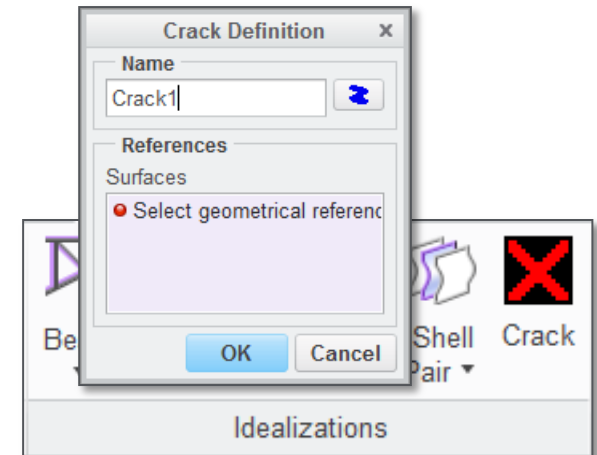
> Automatic preloads for fasteners



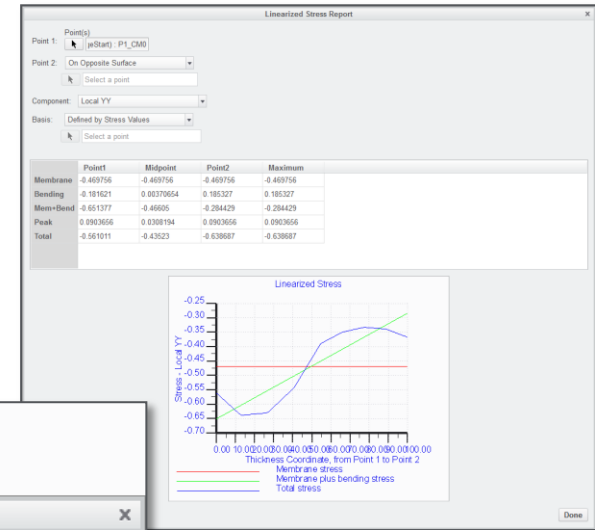
> Fatigue Analysis with Multiple Load Sets



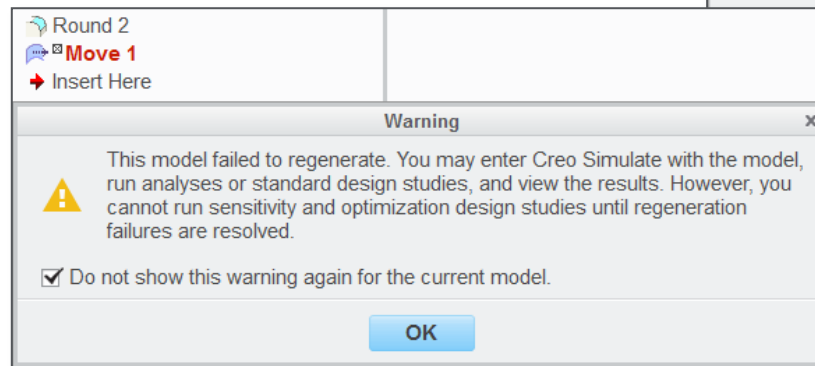
> Stress intensity factor measures for cracks



> Improved UI for linearized stresses



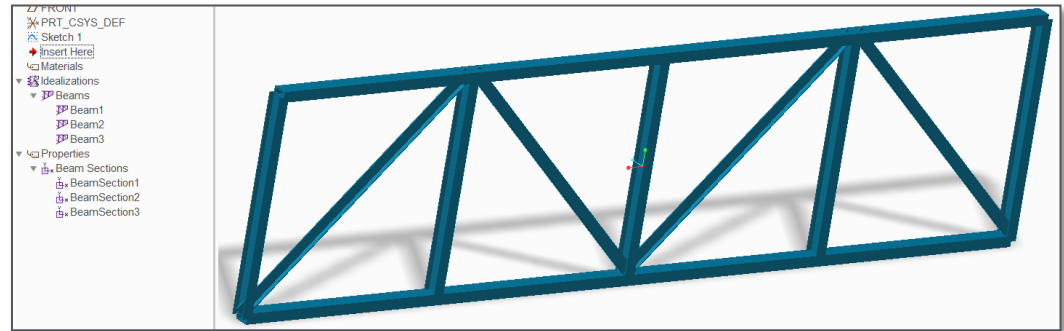
> Can enter Simulate with failed features



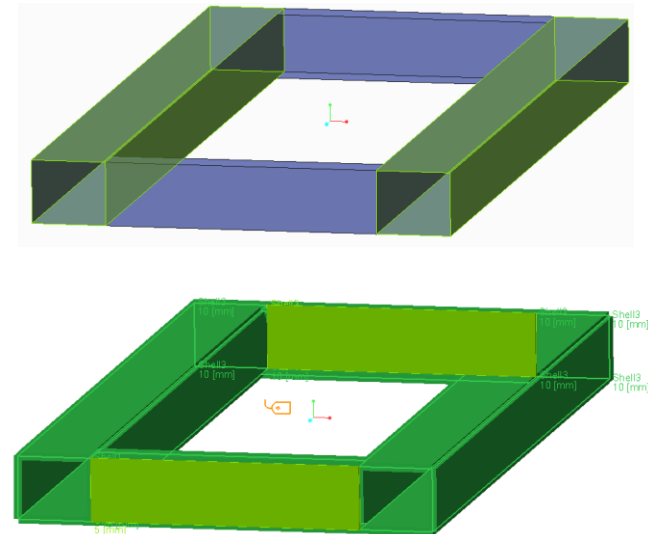
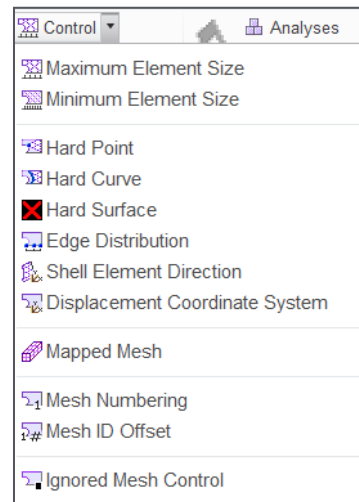
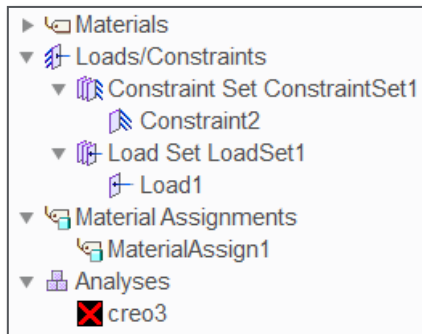
> Faster entrance into Simulate from Creo Parametric & Creo Direct



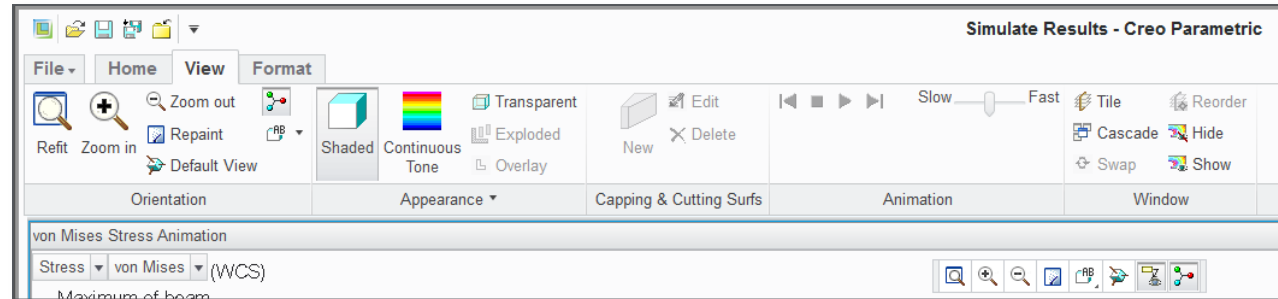
- > Beams, shells, fasteners displayed as solid geometry



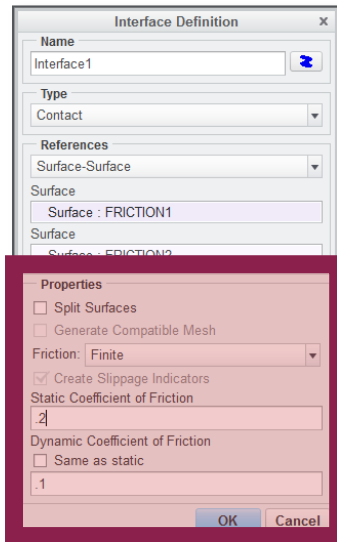
- > In addition there are many other small, less impactful features added to Creo 3.0



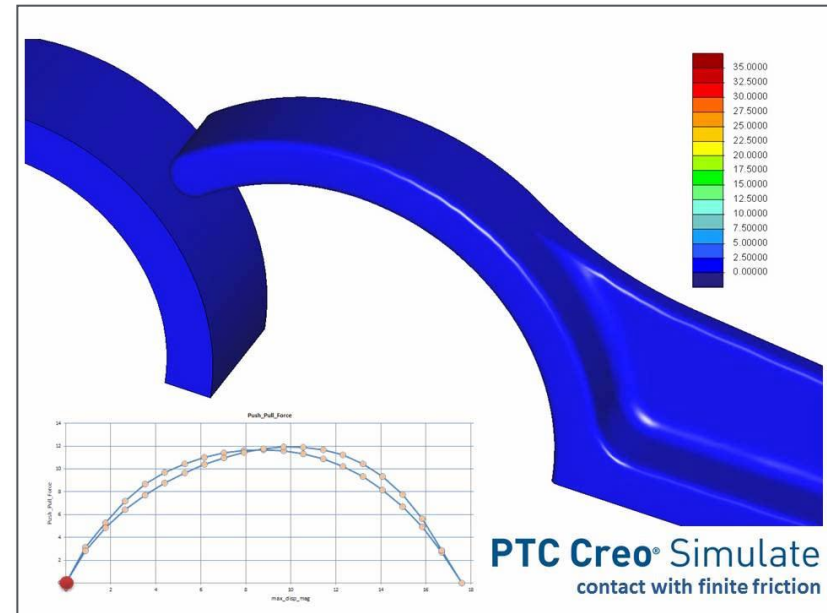
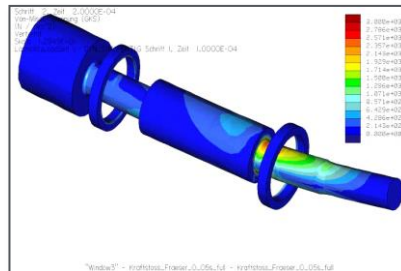
> New Ribbon-based UI for Results



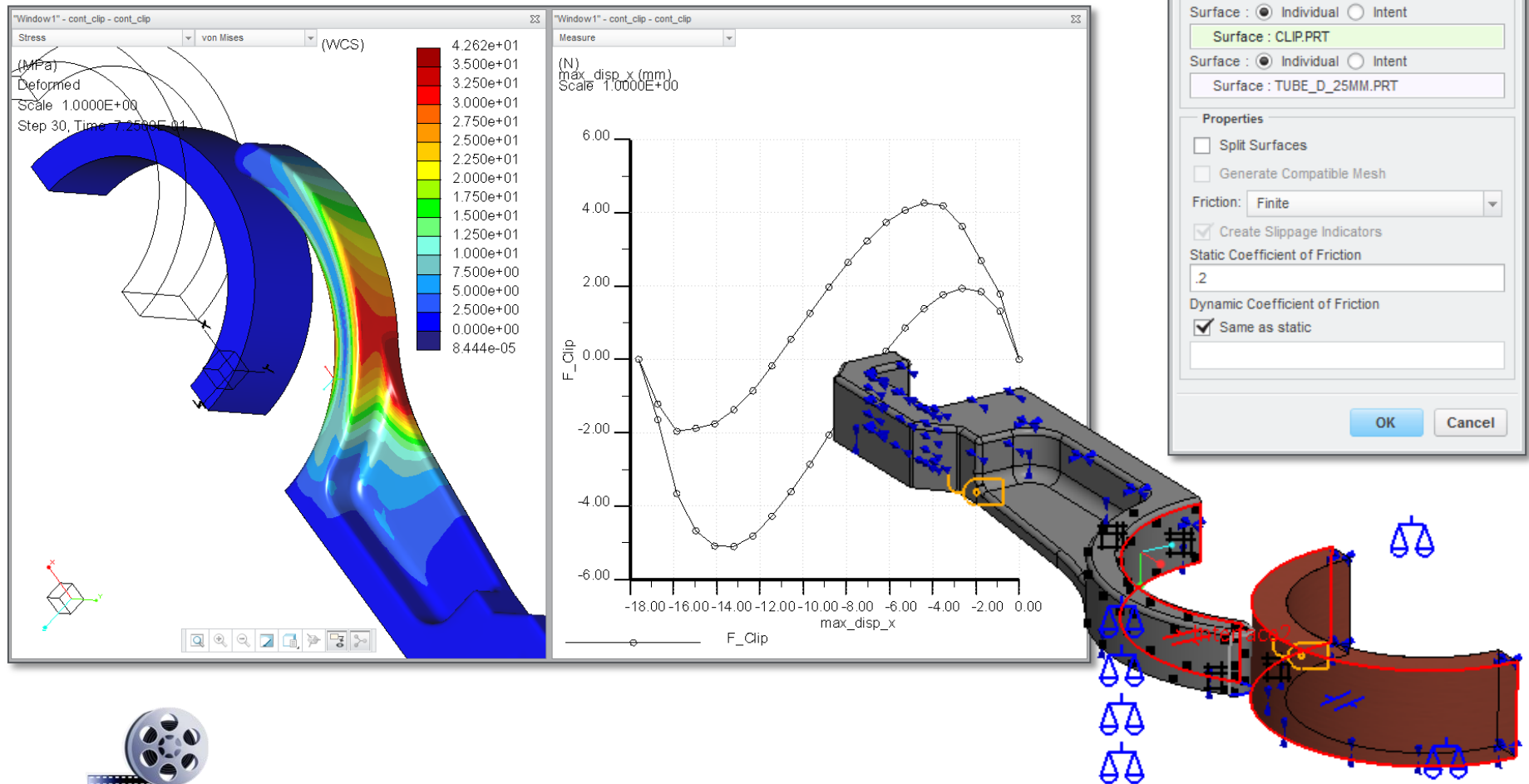
> Contact with sliding finite friction



> Faster dynamic analyses



Clip Analysis: LDA / Contact with finite Friction





PTC Creo Simulate 3.0: 10 "Tips & Tricks"

1. [Meaningful “config.pro”-Options](#)
2. [Replace Templates in Installation Directory](#)
3. [Inheritance-Feature to create a dependent Copy](#)
4. [Constrain the Center of a Hole](#)
5. [Temperature-dependent Material Properties](#)
6. [Hydraulic Pressure Load](#)
7. [2D-Pressfit Analysis](#)
8. [Mapkeys in Postprocessor](#)
9. [Use deformed Model in Creo Parametric](#)
10. [Result-Export for Creo-View](#)

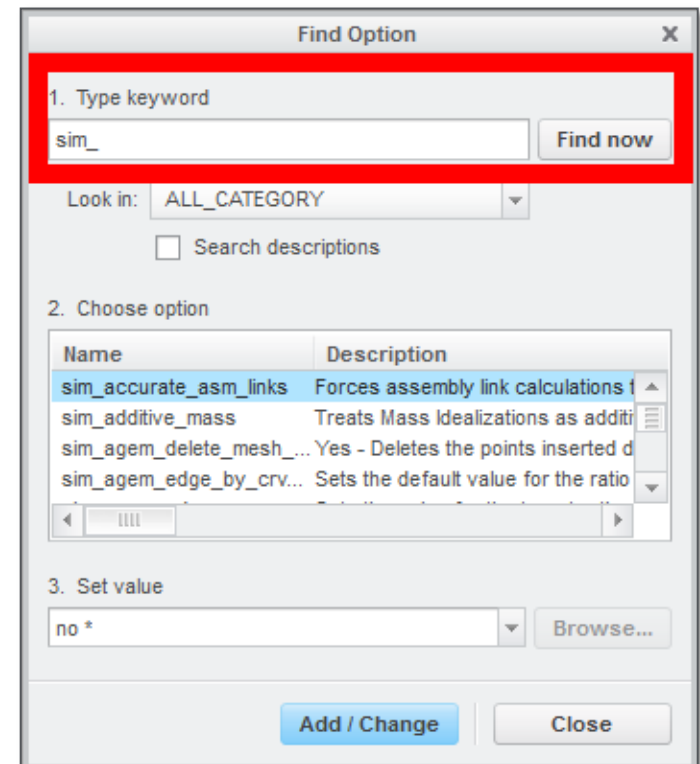


1: Meaningful “config.pro”-Options



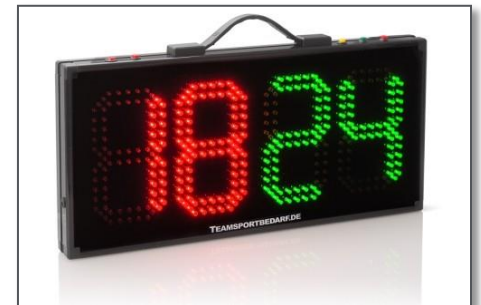
Speed up the Model-Setup / Postprocessing with meaningful “config.pro”-Options

- `sim_pp_legend_levels` 15
- `sim_pp_template_dir` D:\PTC\admCreo3\bibliothek\mechanica
- `sim_pp_background_color` white
- `sim_display_current_csys_triad` YES
- `sim_display_z_buffered` NO
- `sim_results_on_first_pass` YES
- `sim_solver_memory_allocation` 8192
-





2: Replace Templates in Installation Directory



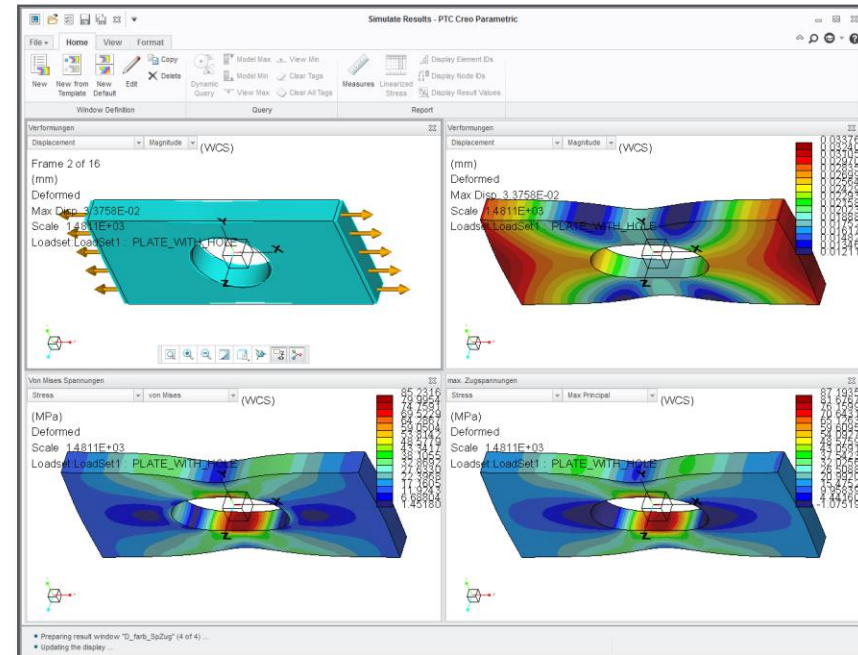
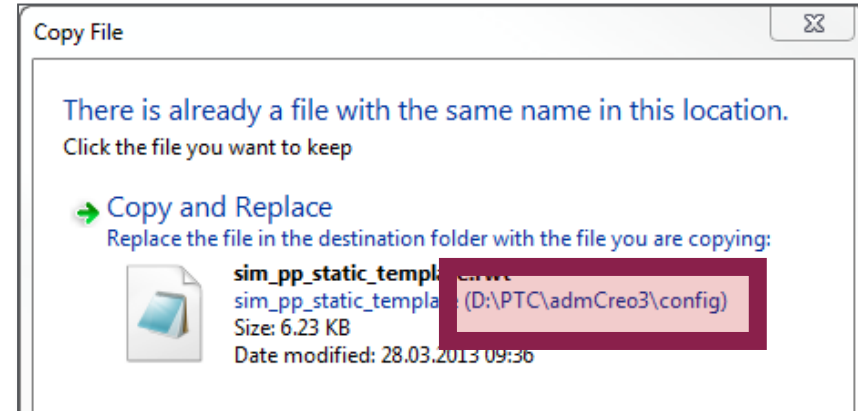
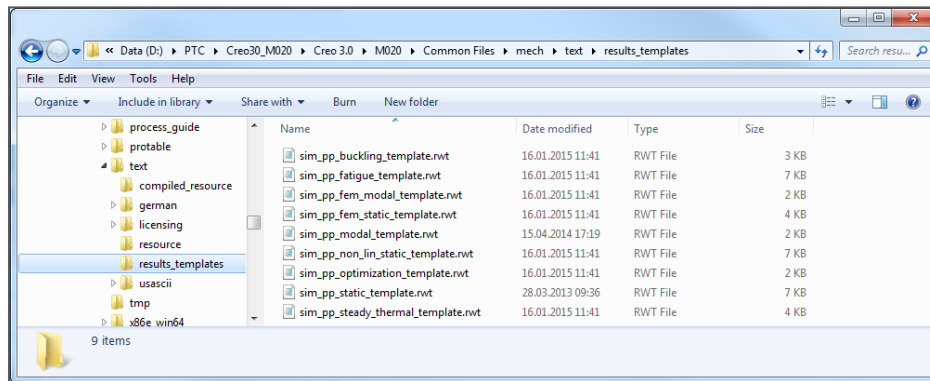
2: Replace Templates in Installation Directory

Meaningfull Templates are accelerating the Postprocessing

- `sim_pp_static_template.rwt`
- `sim_pp_non_lin_static_template.rwt`
- `sim_pp_modal_template.rwt`
- Examples:

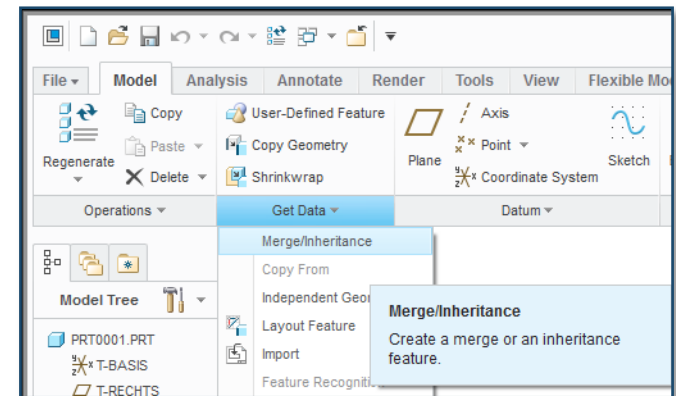


– D:\PTC\Creo30_M020\Creo 3.0\M020\Common Files\mech\text\results_templates

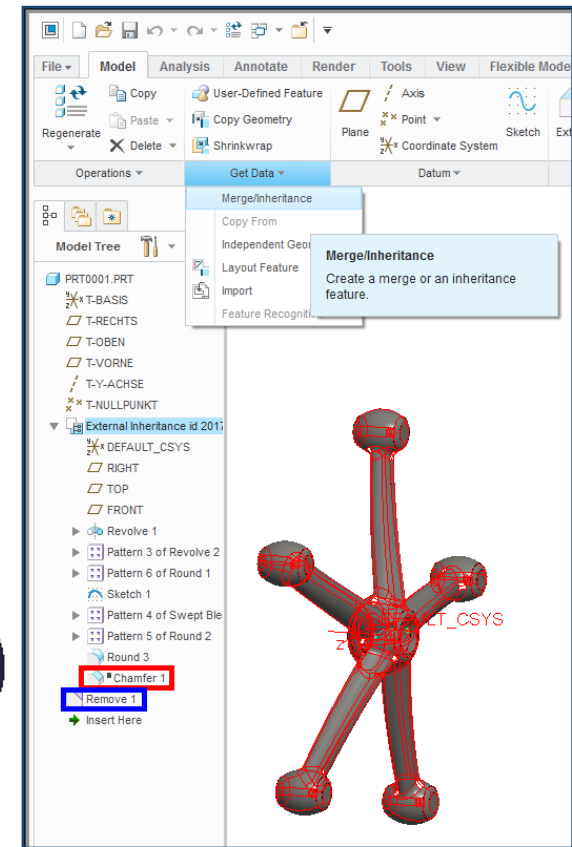
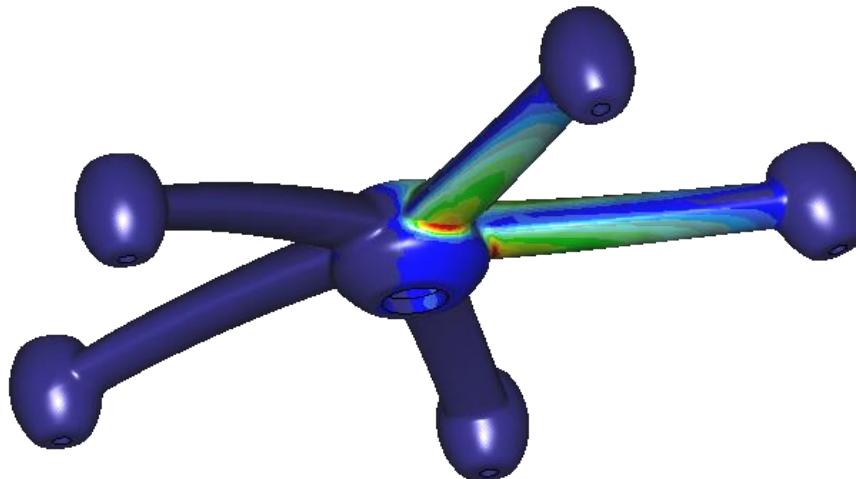




3: Inheritance-Feature to create a dependent Copy

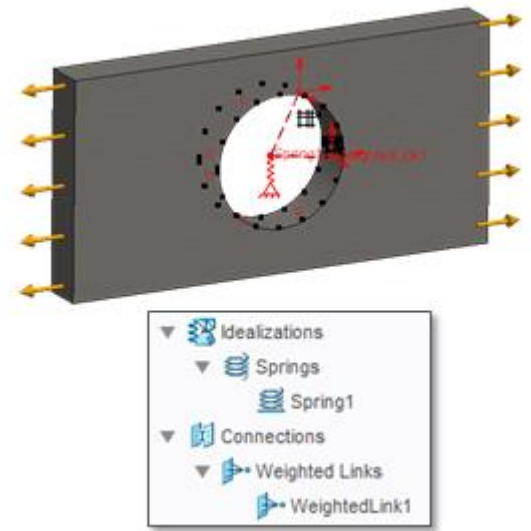


- PTC Windchill PDMLink will take care about this Relationship
- Use Flexible Modelling Extension (FMX) for Simplification





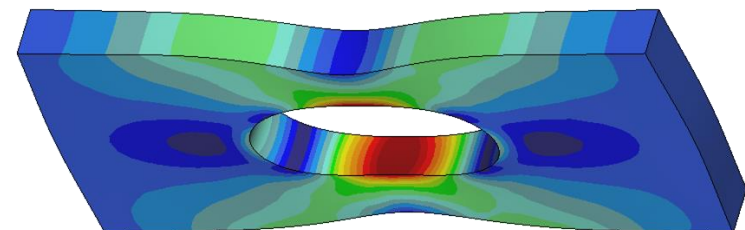
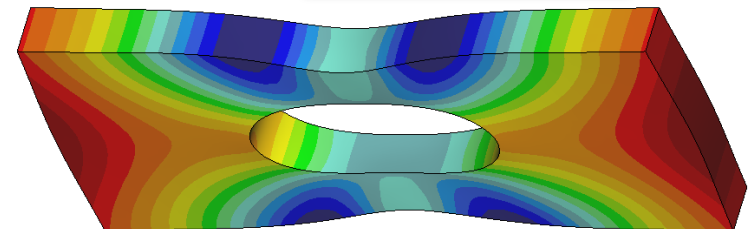
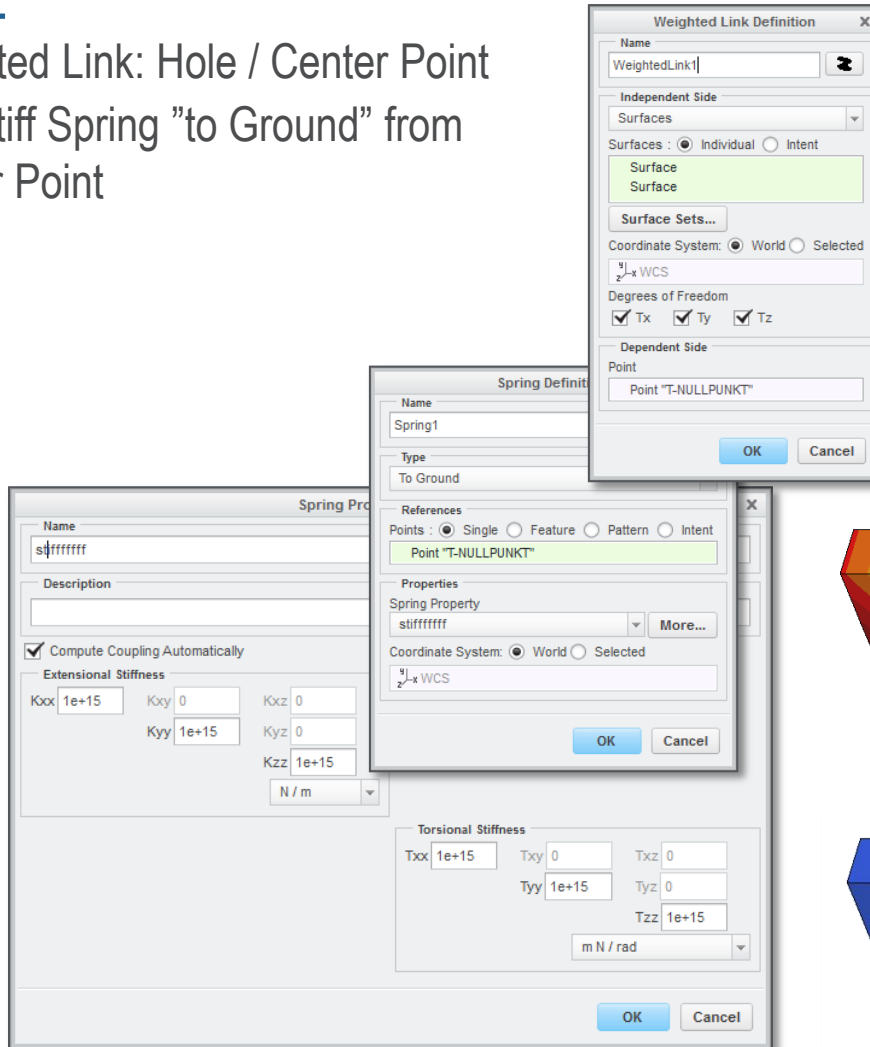
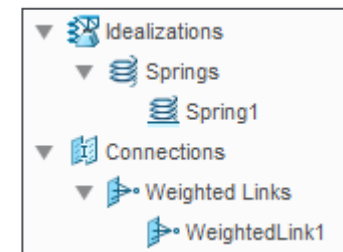
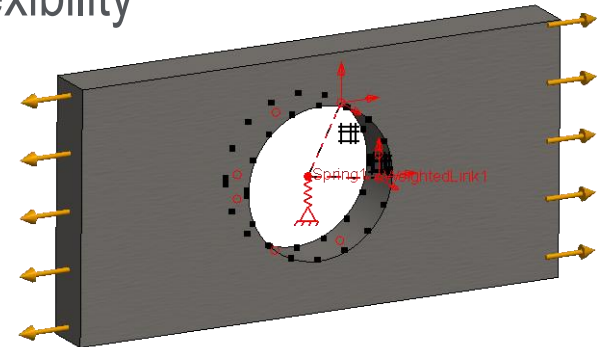
4: Constrain the Center of a Hole



4: Constrain the Center of a Hole

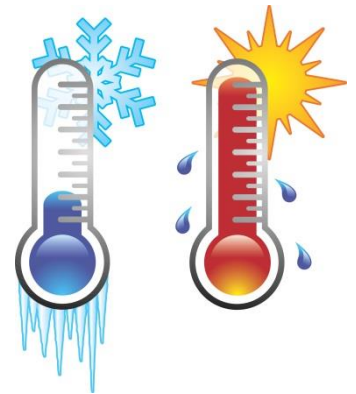
Hole can be constrained in the Center without losing Flexibility

- By using:
 - Weighted Link: Hole / Center Point
 - Very stiff Spring "to Ground" from Center Point





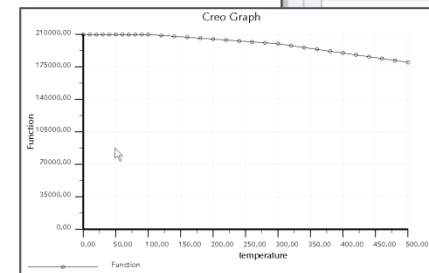
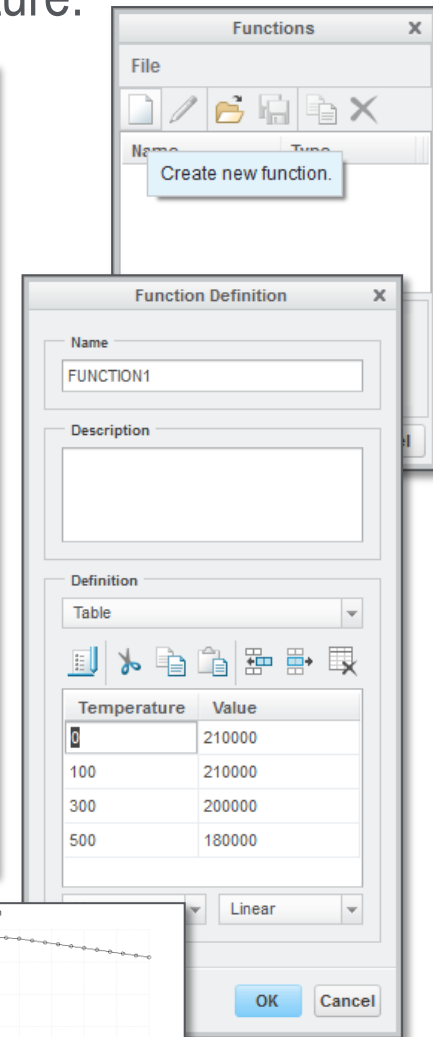
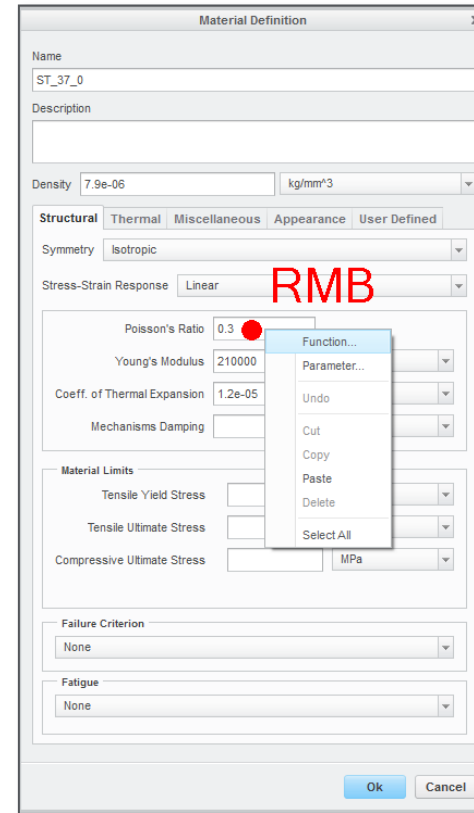
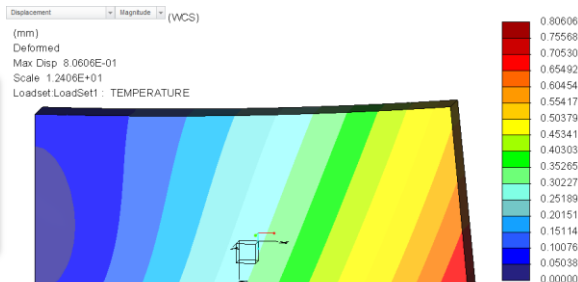
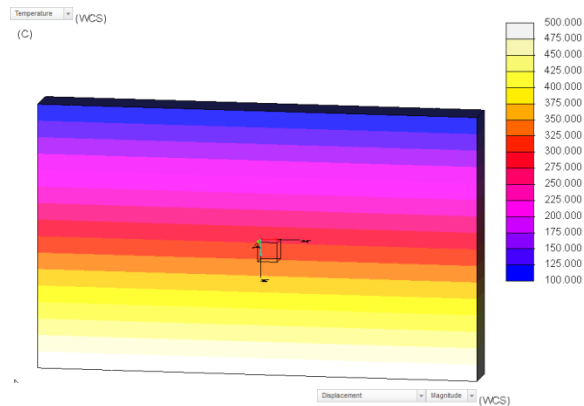
5: Temperature-dependent Material Properties



5: Temperature-dependent Material Properties

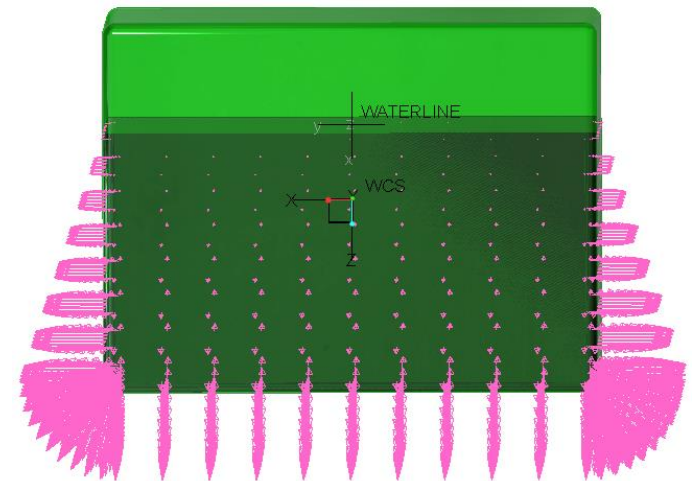
The following Material Properties can be dependent from Temperature:

- Poisson's Ratio
- Young's Modulus
- Coeff. Of Thermal Expansion
 - Press the Right Mouse Bottom (RMB)





6: Hydraulic Pressure Load

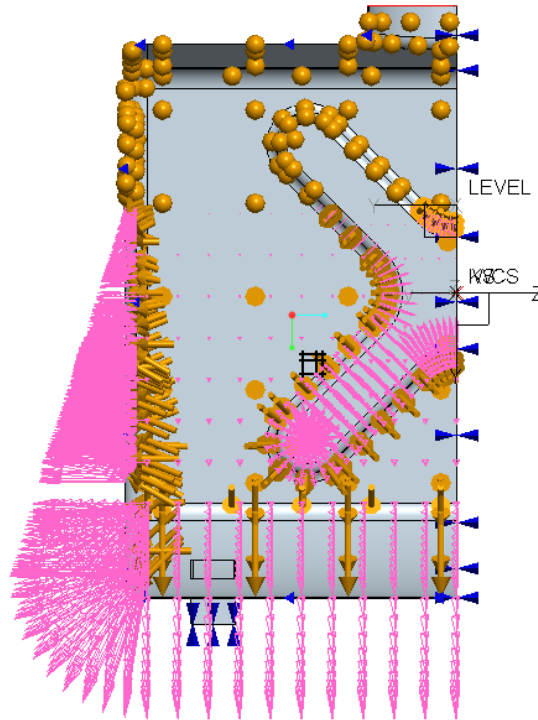
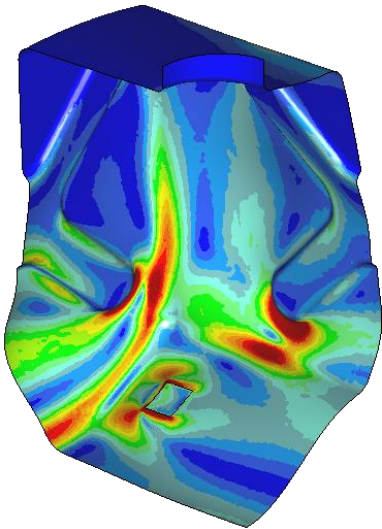


Setup Hydraulic Pressure Load with a Symbolic Function

- For hydraulic pressure use the formula:

$\text{if}(z > 0, z * 1\text{e-}9 * 9810, 0)$

- Unit-Sys: mmNs
- $1\text{e-}9 \text{ t/mm}^3$ Density of Water
- 9810 mm/s^2 Gravity on Earth



Function Definition

Name
hydr_pressure

Description

Coordinate System
☐ World ☒ Selected
y
z-x CoordSys "LEVEL"

Definition
Type
Symbolic

Symbolic Expression
 $\text{if}(z > 0, z * 1\text{e-}9 * 9810, 0)$

Available function components ...

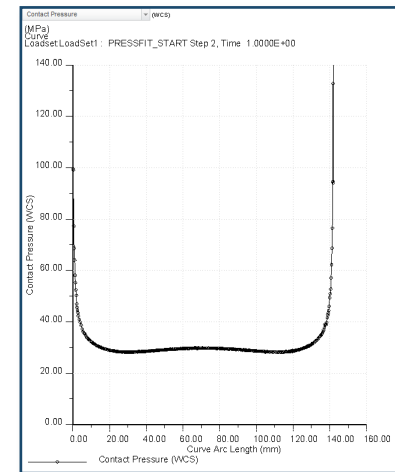
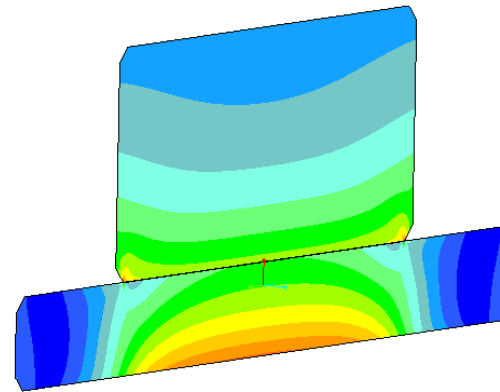
Warning
Angular coordinates, arguments of trigonometric functions, and values returned by inverse trigonometric functions are interpreted as radians.

Review OK Cancel



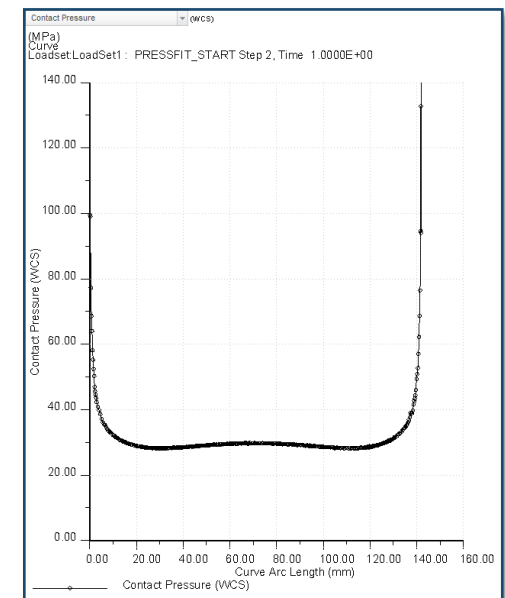
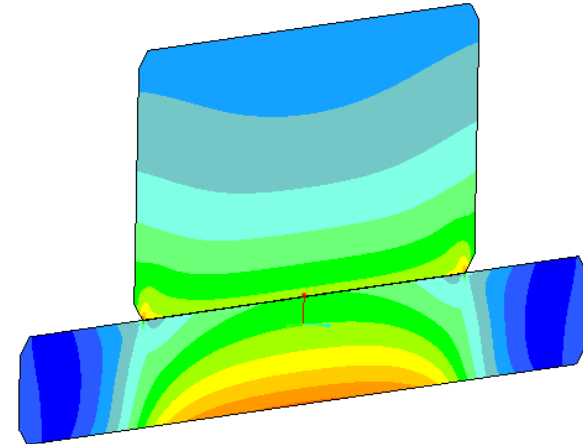
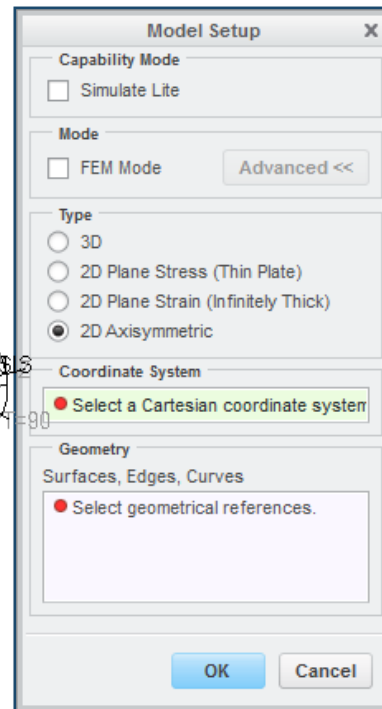
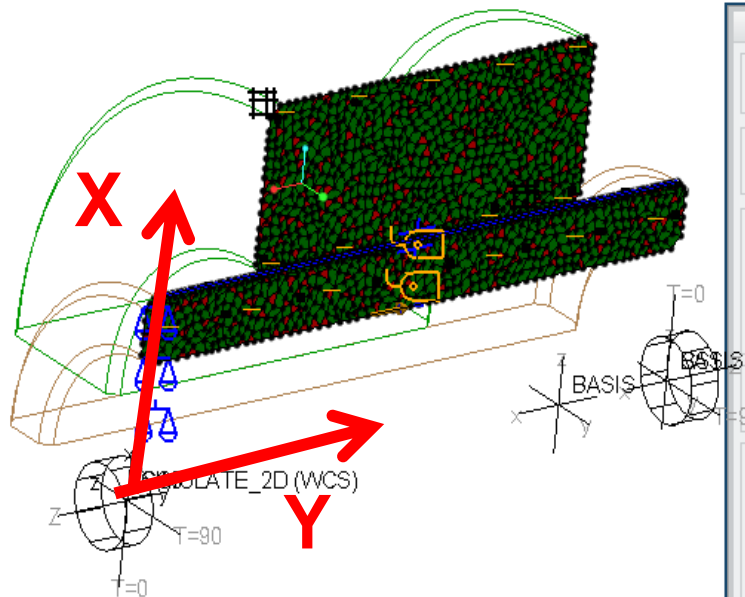


7: 2D-Pressfit Analysis



Pressfit Simulation of a rotated Assembly can be performed in 2D

- Setup 2D-Axisymmetric Model
 - Use Coordinate System (Y=Rot-Axis / X=Rad-Dir)
 - All Topology is in 1st Quadrant (+X / +Y)





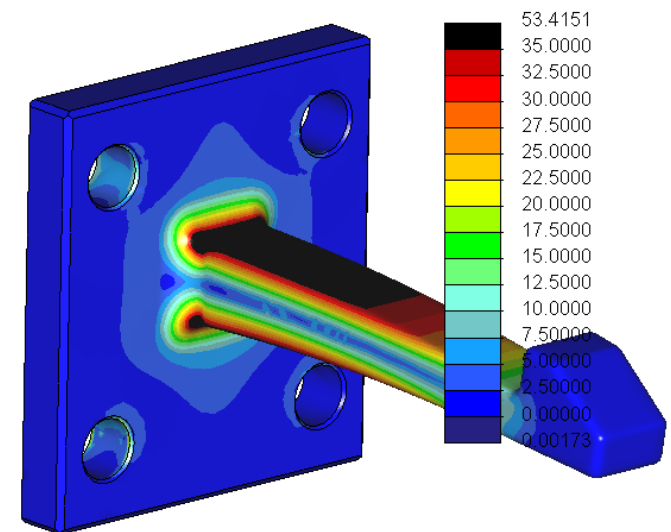
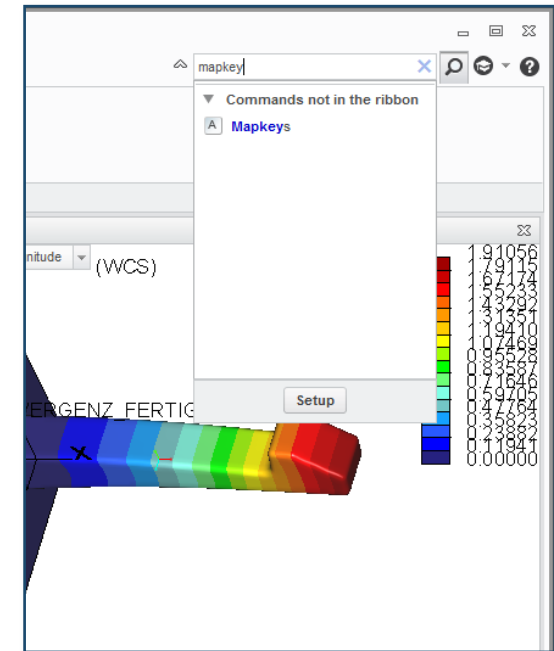
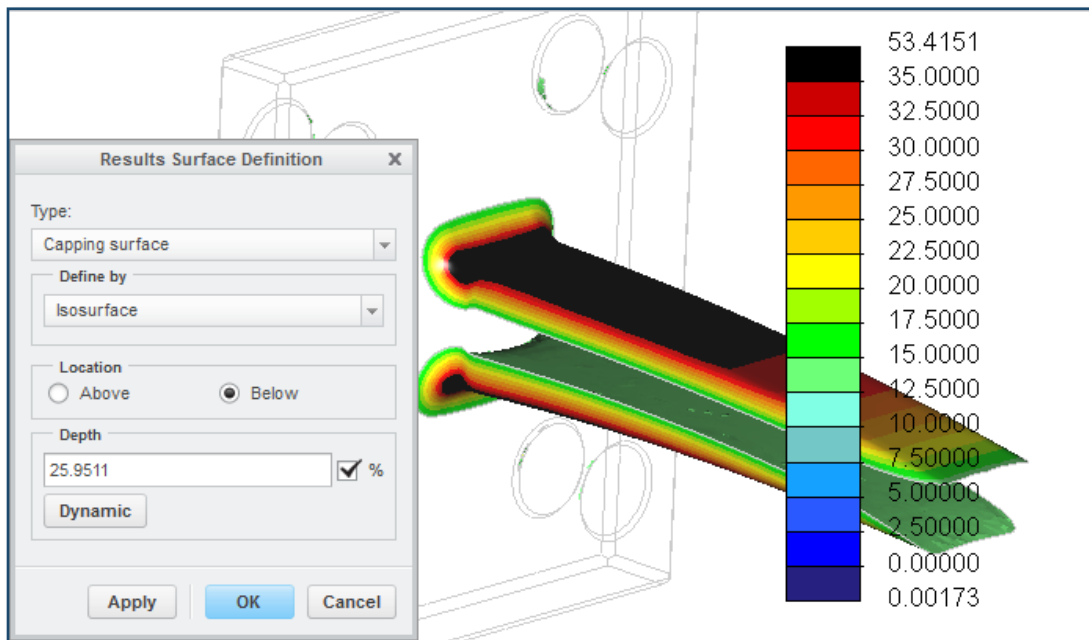
8: Mapkeys in Postprocessor



8: Mapkeys in Postprocessor

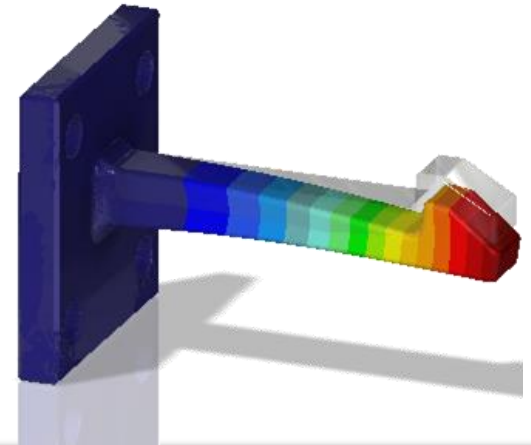
Mapkeys are accelerating the Postprocessing

- Create Mapkeys for repeatable Actions in the Postprocessor such as:
 - Capping Iso-Surfaces (AF)
 - Legend Formatting (LA)
 -



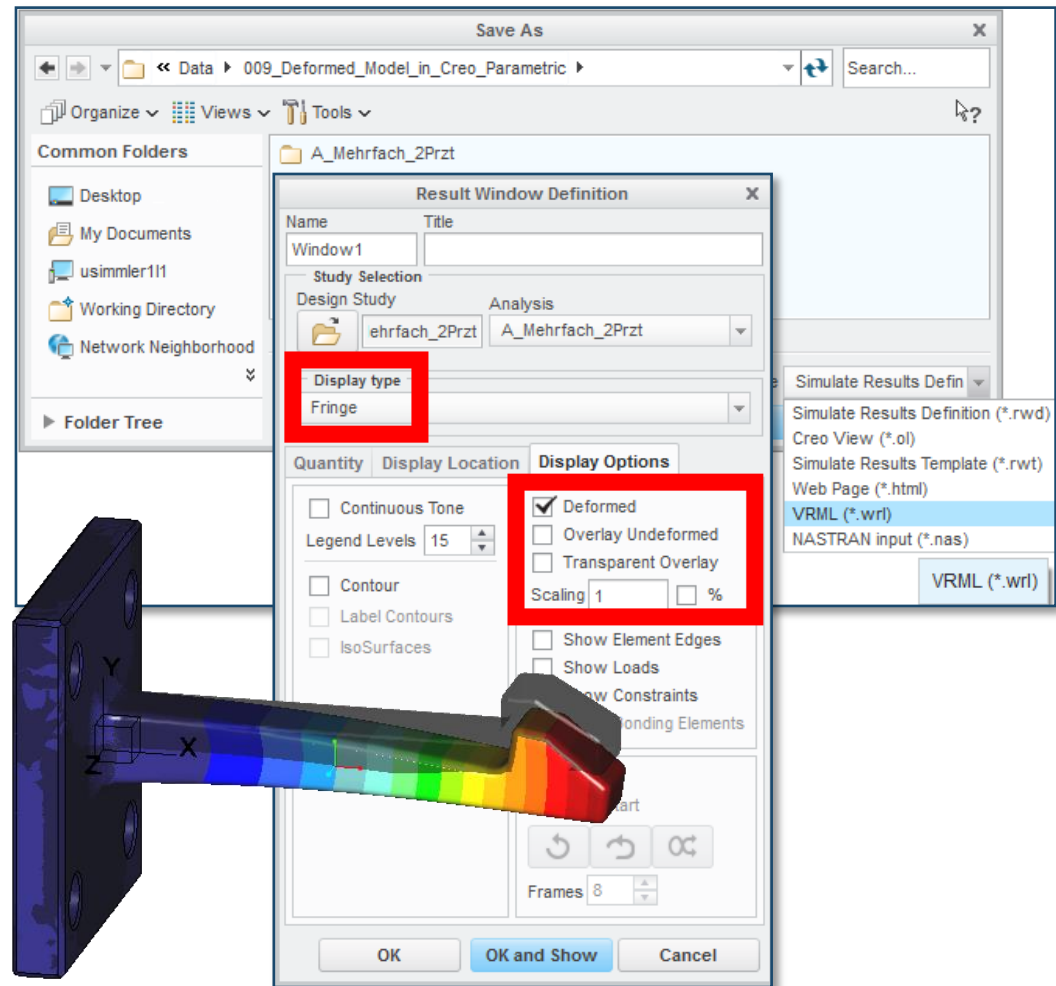
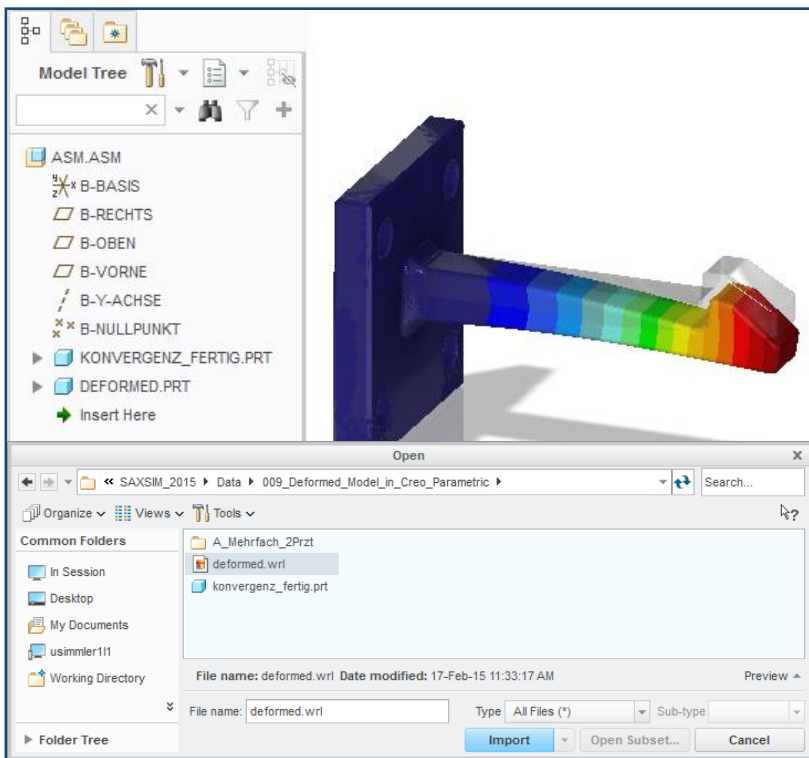


9: Use deformed Model in Creo Parametric



deformed Model can be saved in the Postprocessor as VRML (.wrl)

- Assemble VRML in Creo Parametric for:
 - Clash detection
 - Clearance Analysis





10: Result-Export for Creo-View



- PTC Creo View (Express)



Static Analysis of a Chair Component covering 7 "Tips & Tricks"

- Meaningful "config.pro"-Options
- Replace Templates in Installation Directory
- Inheritance-Feature to create a dependent Copy
- Constrain the Center of a Hole
- Mapkeys in Postprocessor
- Use deformed Model in Creo Parametric
- Result-Export for Creo-View





now you are
ready to go for
gold !!!

;-)



You will find a copy of the PTC Creo Simulate 3.0 “Best Practice”-CD in your Seminar Documentation



The image shows the cover of the PTC Creo Simulate 3.0 “Best Practice”-CD. The background is a dark blue hexagonal grid. The top left features the PTC logo and the tagline “PRODUCT & SERVICE ADVANTAGE®”. The main title “PTC Creo Simulate 3.0 ‘Best Practice’-CD” is prominently displayed in the center. Below the title, there are three main visual elements: a 3D model of an office chair, a 3D stress analysis of a mechanical part, and a 3D model of an Airbus A380 airplane. To the right of these is a vertical strip of hexagonal images showing various industrial and commercial scenes. At the bottom left, the name “Urs Simmler” and title “MCAD-Simulation Specialist” are listed, along with contact information. In the bottom center, the text “‘Ctrl’+L Full Screen Mode” is displayed. The bottom right corner features the “creo™” logo and a navigation bar with buttons for “Lite Basic” and “Essentials Advanced”. A small number “1” is visible in the bottom right corner of the cover.

PTC® PRODUCT & SERVICE ADVANTAGE®

PTC Creo Simulate 3.0 “Best Practice”-CD

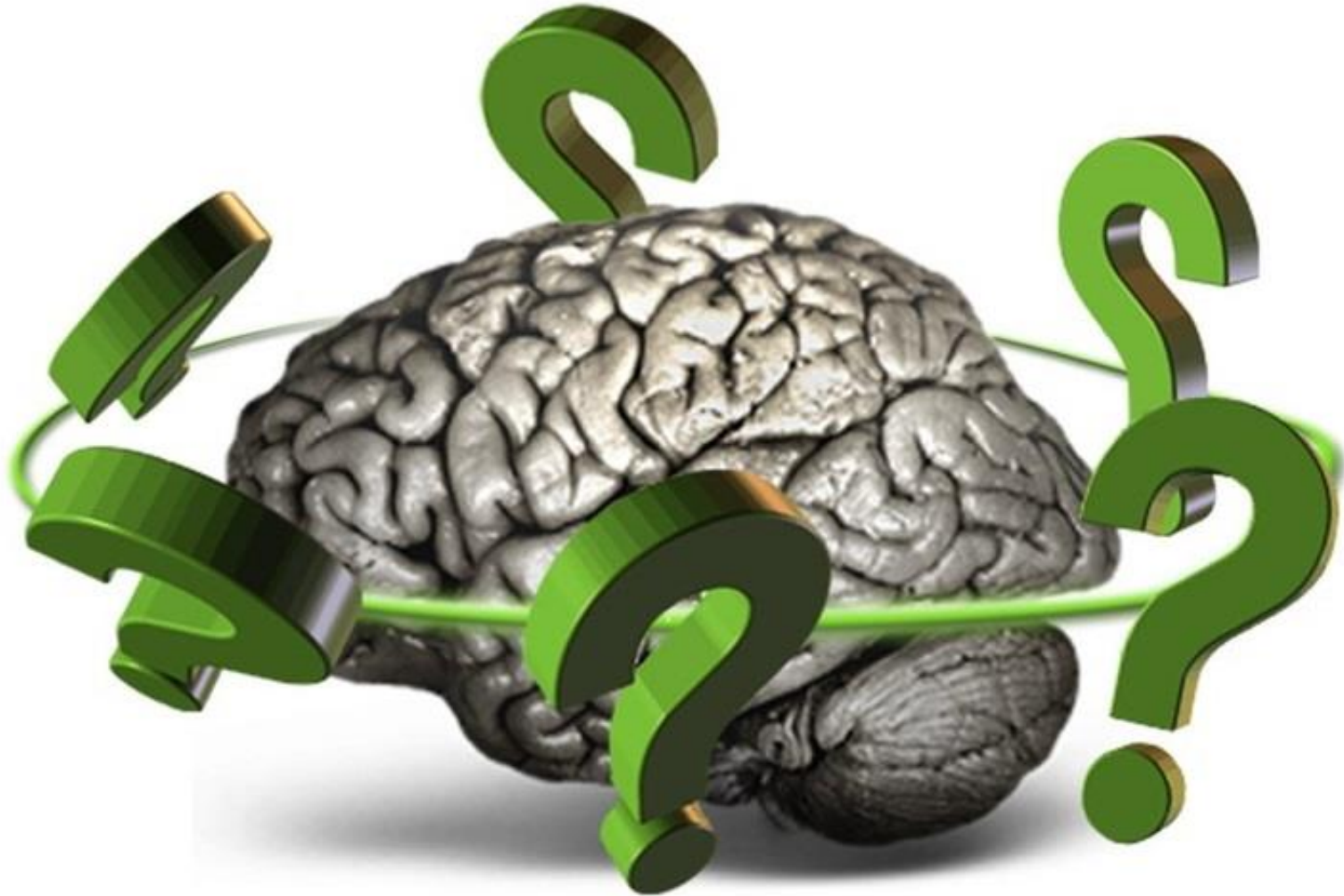
Urs Simmler
MCAD-Simulation Specialist
2015, Urs Simmler, MCAD-Simulation Specialist, PTC (Schweiz) AG

“Ctrl”+L
Full Screen Mode

creo™

1

Lite Basic Essentials Advanced





Thank You