PTC®

the product development company

Creo® : University Plus

Sadržaj paketa i tehnička specifikacija

PTC Academic Program

PTC®

Site license

creo™
A PTC Product

Applications:	Functions:
Creo Parametric	Integrated, parametric 3D CAD/CAM/CAE software that allows users to move between 2D and 3D design data.
Creo Direct	Fast, flexible 2D direct modeling software that gives you the most flexibility with 3D geometry.
Creo MCAD View	Quickly view, interrogate and distribute mechanical CAD models to gain valuable engineering design insight.
Creo Simulate	3D virtual prototyping so you can test a range of structural and thermal properties.
Creo Schematics	2D routed systems diagramming solution for wiring, piping and hydraulics.
Creo Illustrate	Allows you to easily convey complex product and procedures graphically with 3D illustrations.
Creo Sketch	Simple, freehand 2D drawing software for capturing ideas and quickly creating them as if you were sketching.
+ Creo Elements/Direct	Comprehensive, direct 3D design and 2D drafting software for faster more flexible design process.

Also included:

- Training Resources for Professors
  - Free face-to-face training class at a PTC Training location
  - 3 FREE seats of Precision LMS extensive eLearning Libraries for faculty or adjunct staff
  - Free tutorials and manuals in pdf. to compliment your training class
- Updates and technical support: 24hours/5days

planetptc COMMUNITY

A vibrant online user community

LearningExchange Beta

Free online tutorials published by users

creo™
A PTC Product

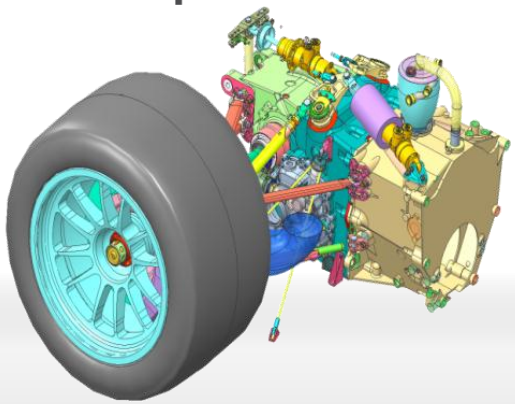
Also Included:

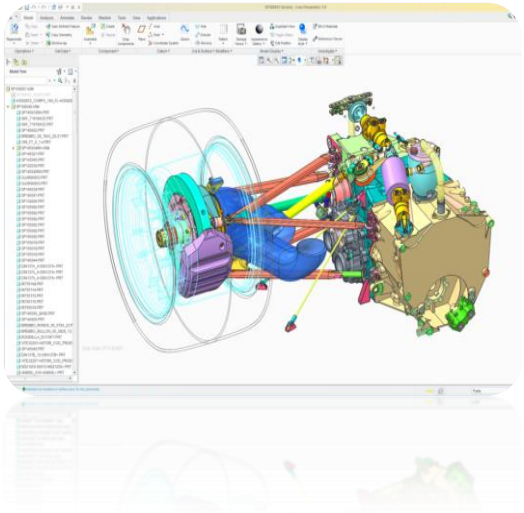
- PTC offers a FREE license to students
  - One-year licenses can be downloaded and used at home to prepare for class, complete homework or work on group projects: **www.ptc.com/go/creoforstudents**
  - Technical Support : www.ptc.com/go/academic-support
  - Compatible version with the classroom licenses
- Creo Schools Edition – Modules include:
  - Creo Parametric
    - CAD Basic Features
    - Creo Advanced Rendering Extension
    - Creo Legacy Migration
    - Creo Flexible Modeling
    - Creo Simulation (lite)
    - Creo Behavioural Modeling
    - Creo Mechanism Dynamics
    - Creo Expert Machinist (lite)
  - Creo Direct

Creo Parametric

- **Part Modeling**
  - All the functionality you need for part modeling, surfacing, and sheetmetal
- **Mechanical Design and Simulation**
  - Virtually simulate reactions to acceleration and weight
- **Mechanical Analysis**
  - Predict and analyze structural, thermal and fatigue performance
- **Design Detailing**
  - Create 2D and 3D measured drawings and bill of materials
- **Manufacturing**
  - Robust NC programming capabilities for production machining and analysis
- **One User interface**
  - No need to teach additional user interfaces or purchase additional 3rd party products

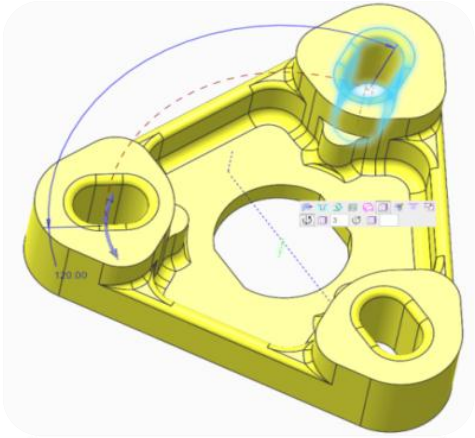
creo™ parametric

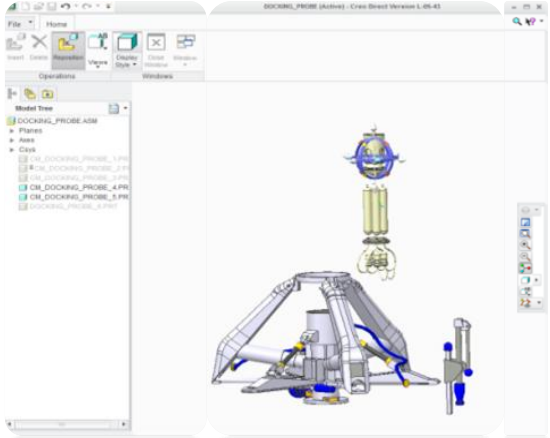




Design for casual users

- **Capabilities**
  - Fast, flexible geometry
    - Extrude, revolve, sweep, patterns, etc.
    - Optimized user interface
  - Unconstrained 2D, sketching
  - Support for parts, assemblies
- **Benefits**
  - Faster and easier conceptual design, detailed design, CAE/tooling workflow
  - Easily share and work with multi-source 3D CAD data

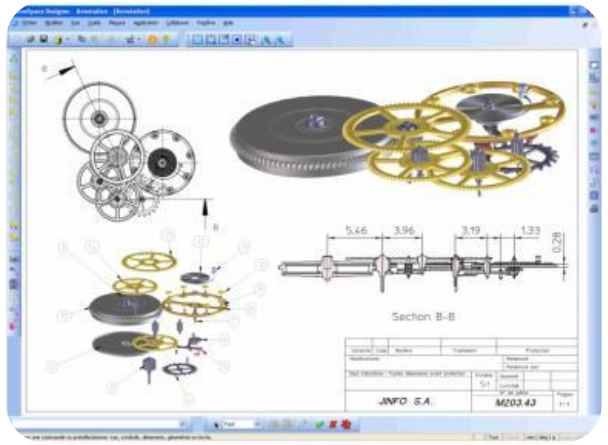




Creo Elements/Direct

Fast creation and modification of 3D/2D models by direct manipulation of geometry

- Capabilities
  - Simple, Powerful, Precise
  - Explicit Modeling/Flexibility
  - Environment performance 2D
  - POS Integration
- Benefits
  - Reduced development time
  - Easy to use and learn
  - Promotes innovation and quality
  - Simplifies the use of multi-CAD

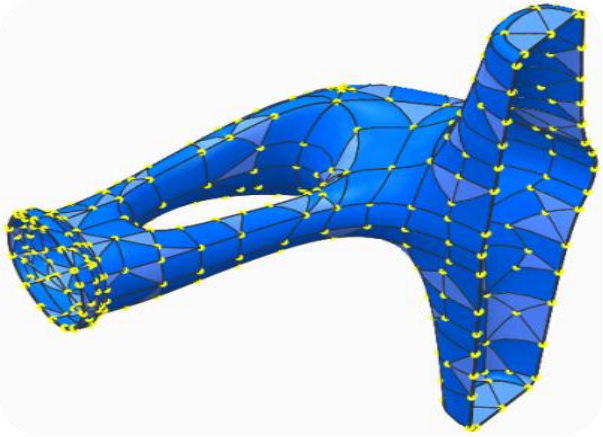


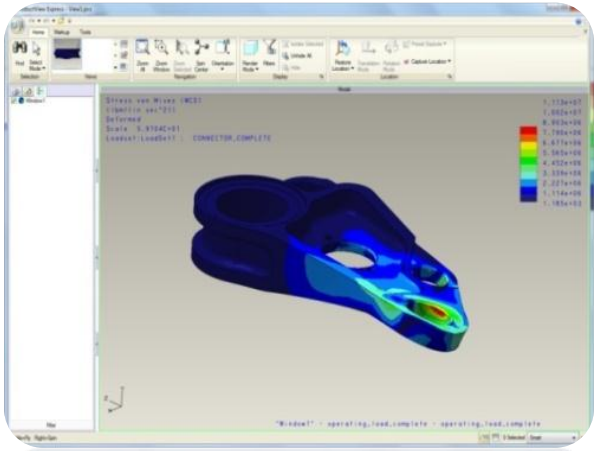
Creo Simulate

Better quality and performance

- **Capabilities**
  - Structural simulation
  - Steady-state thermals, fluxes, etc.
  - Solids, beams, shells, etc.
  - Integrated workflow, UI
  - Advanced idealization tools
  - Add-ons available

- **Benefits**
  - Increase innovation by simultaneously designing and simulating results of design variations
  - Fewer physical prototypes
  - Shorter design cycle
  - Obtain real-world performance data

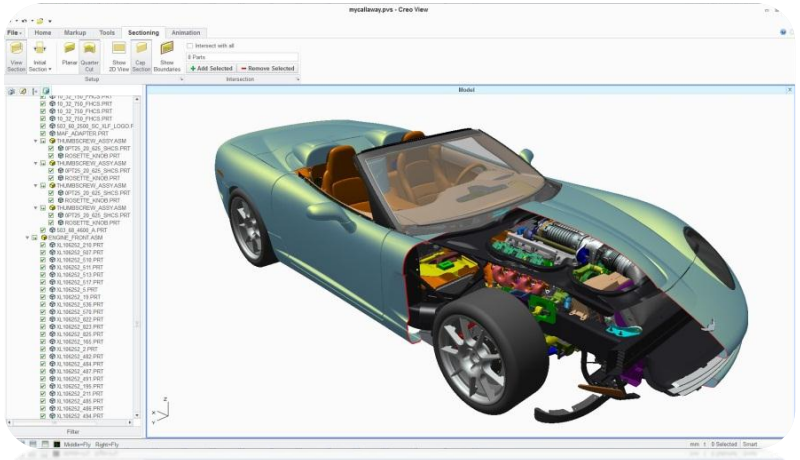


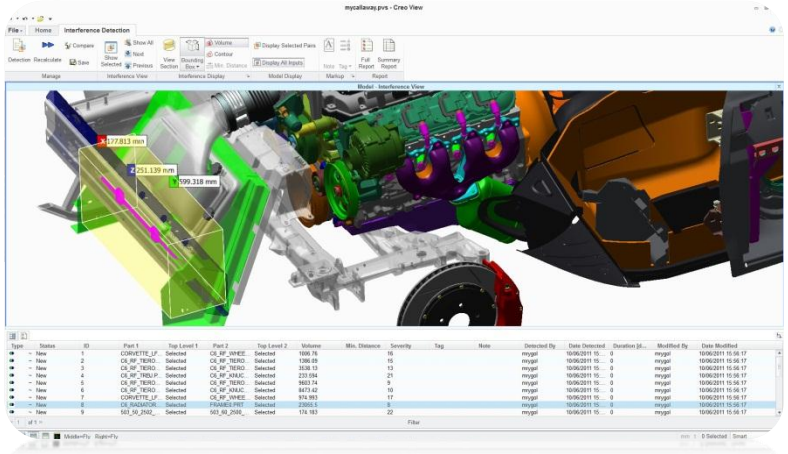


Creo View MCAD

Faster design assessments

- **Capabilities**
  - View, markup, annotate
  - Measure, interrogate models
  - Filter visual information
  - Use >180 file types
- **Benefits**
  - Accelerate the design process
  - Reduce IT infrastructure overhead
    - Single tool to view many types of detailed product data
  - Easily share visual information



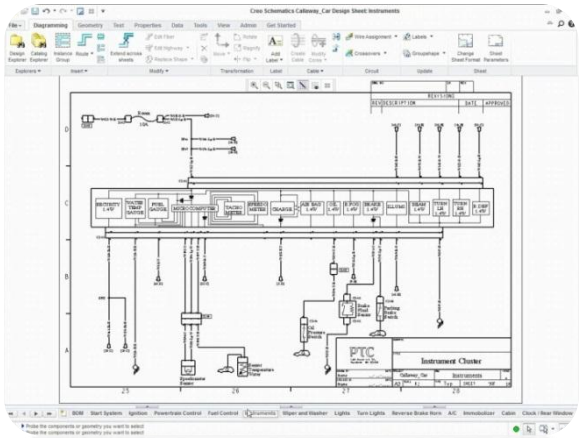


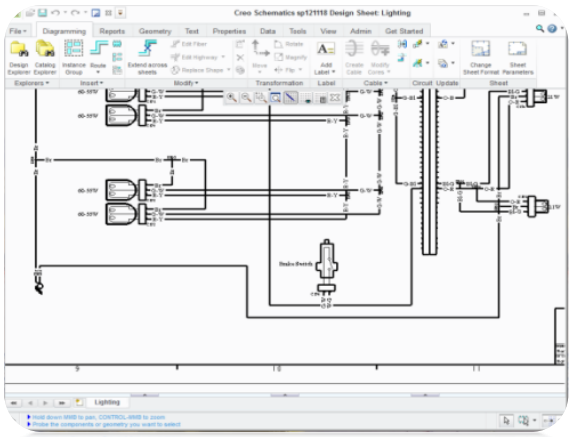
Creo Schematics

Faster system & detailed design

- **Capabilities**
  - P&ID, wiring, hydraulic, HVAC, pneumatic schematics
  - 3D piping, cabling
  - Custom properties
  - Central libraries, share symbols/best practices

- **Benefits**
  - Automates 2D info in 3D model
  - Removes errors from transfer, verification



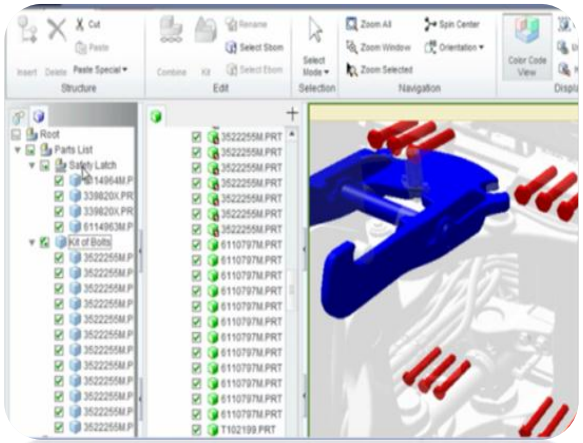


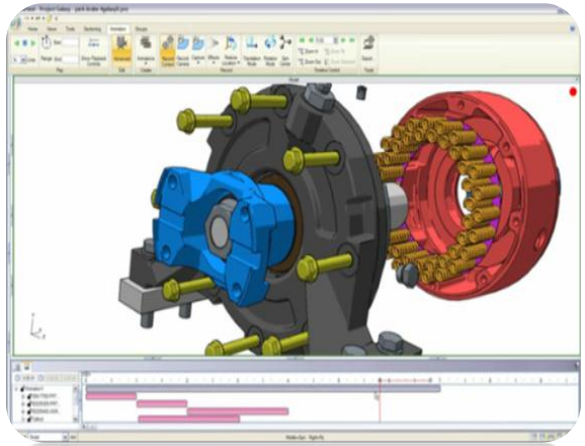
Creo Illustrate

Better technical information

- **Capabilities**
  - Rich, interactive illustrations, animations, procedures
    - eBOMs → sBOMs
    - Dynamic sectioning
    - Parts lists, call outs
  - Illustrate dynamic sectioning to present internal assembly components

- **Benefits**
  - Create visual representations of service parts and kits to increase accuracy

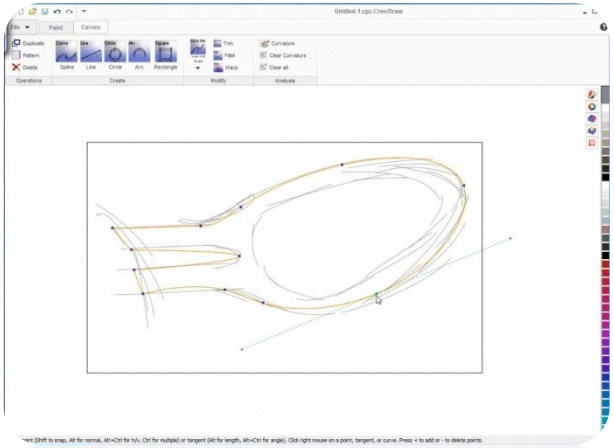


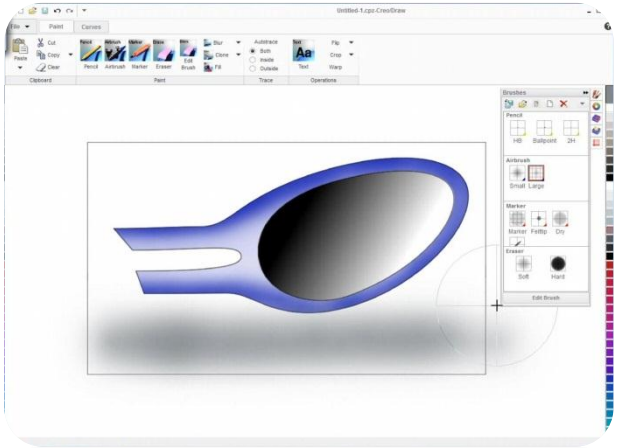


Creo Sketch

The easiest and fastest way for more students to contribute their ideas graphically

- Capabilities
  - Rapid ideation from anyone in your class
  - Quick and rough sketches or finished artwork
  - Capture and share your 2D designs easily and directly leverage the data in other Creo apps
- Benefits
  - Replace hand drawn sketches for concept design, industrial design, illustrations and design reviews





Creo Parametric Modules

Creo Parametric Modules

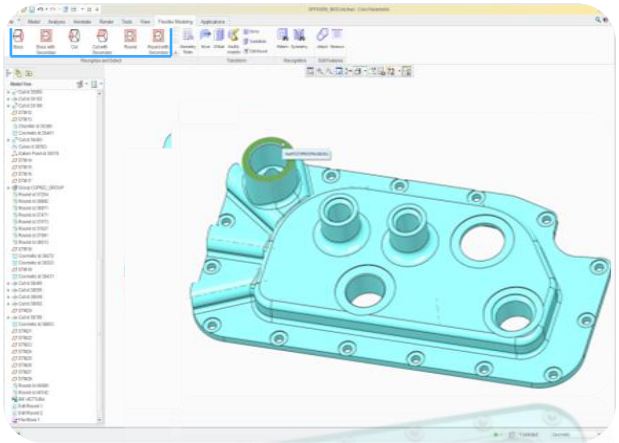
- **Conception – Design**
  - Creo Parametric Flexible Modeling
  - Creo Parametric Freestyle
  - Creo Parametric Expert Framework
  - Creo Parametric Advanced Assembly
  - Creo Parametric Interactive Surface Design
  - Creo Parametric Piping and Cabling
  - Creo Parametric Advanced Rendering
  - Creo Parametric Manikin
  - Creo Parametric Manikin Analysis
  - Creo Parametric Toolkit Customization
  - Creo Parametric Legacy Data Migration
  - Creo Parametric ECAD – MCAD Collaboration Extension
- **Analysis – Simulation**
  - Creo Parametric Simulation Extension
  - Creo Parametric Advanced Simulation
  - Creo Parametric Fatigue Advisor
  - Creo Parametric Tolerance Analysis
  - Creo Parametric Behavioral Modeling
  - Creo Parametric Mechanism Dynamics
  - Creo Parametric Spark Analysis
- **Tools – Manufacturing**
  - Creo Parametric Complete Machining
  - Creo Parametric Tool Design
  - Creo Parametric Prismatic & Multi-surface Milling
  - Creo Parametric Production Machining
  - Creo Parametric NC Sheetmetal
  - Creo Parametric Computer-Aided Verification
  - Creo Parametric Plastic Advisor
  - Creo Parametric Expert Moldbase
  - Creo Parametric Progressive Die
  - Creo Parametric Complete Mold Design

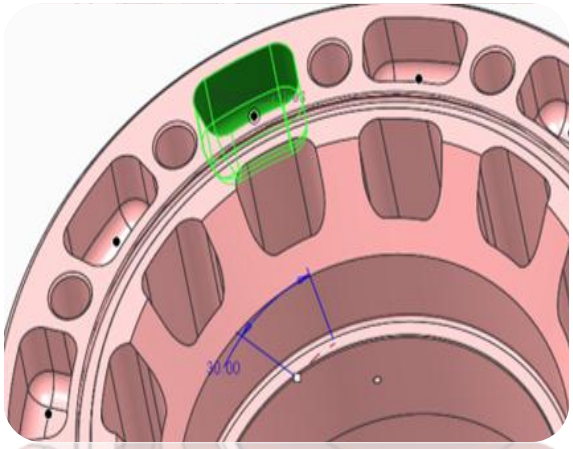
NEW: Creo Flexible Modeling Extension

back

- Fast, flexible 3D direct editing within parametric environment. Allows users to easily select and edit a range of geometry and features without losing any design intent

- Highlights
  - Easy selection of geometry, including surfaces and shapes
  - Fast geometry editing includes move, remove, attach, change, round, and more
  - Precise control of editing cylinders, cones, etc.
  - Simultaneously change multiple entities



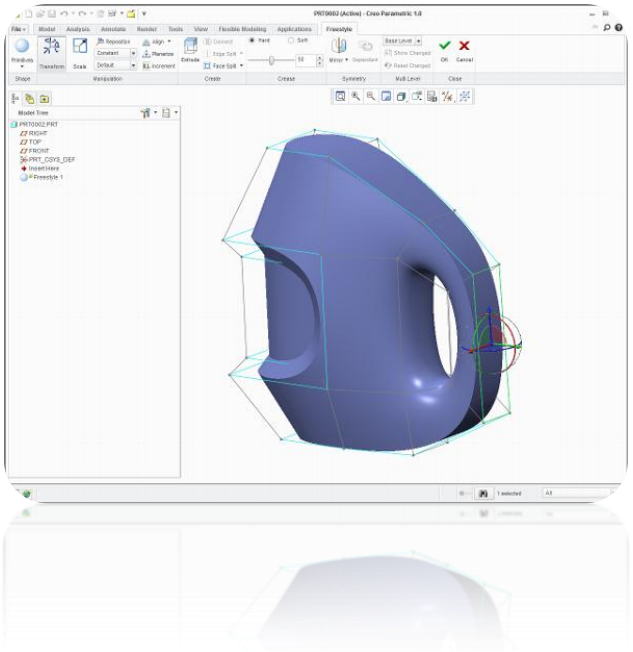


NEW: Freestyle Modeling

back

- Freestyle is a new tool for quick and easy freeform surface creation. You can quickly build models up from an initial primitive shape and then edit them by manipulating a control mesh

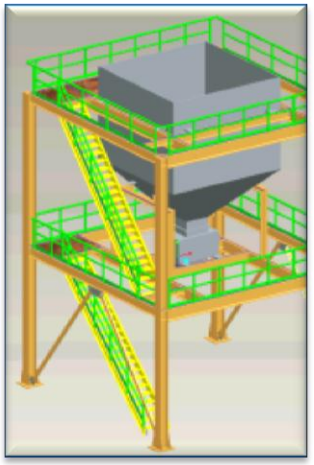
- Highlights
  - Extrude/connect/split Faces and Edges
  - Crease Edges, Faces and Vertices
  - Delete Faces or Edges
  - Align Faces or Edges to plane
  - Planarize Faces, Edges or Vertices
  - Provide support for dependent and independent symmetry



Creo Expert Framework Extension

back

- Speeds up and simplifies the creation of bolted or welded metal structures by the addition of powerful dedicated features, dynamic assistant and libraries of components & profiles
- Highlights
  - Automatic creation and redefinition of structure components using dynamic assistants: profiles, accessories, sub-assemblies
  - Automatic creation of connections between parts
  - Creating and redefining automatic screwed connection
    with preparation of parts: drilling, threading
  - Automatic Substitution of components without reference loss
  - Automatic generation of drawing representations

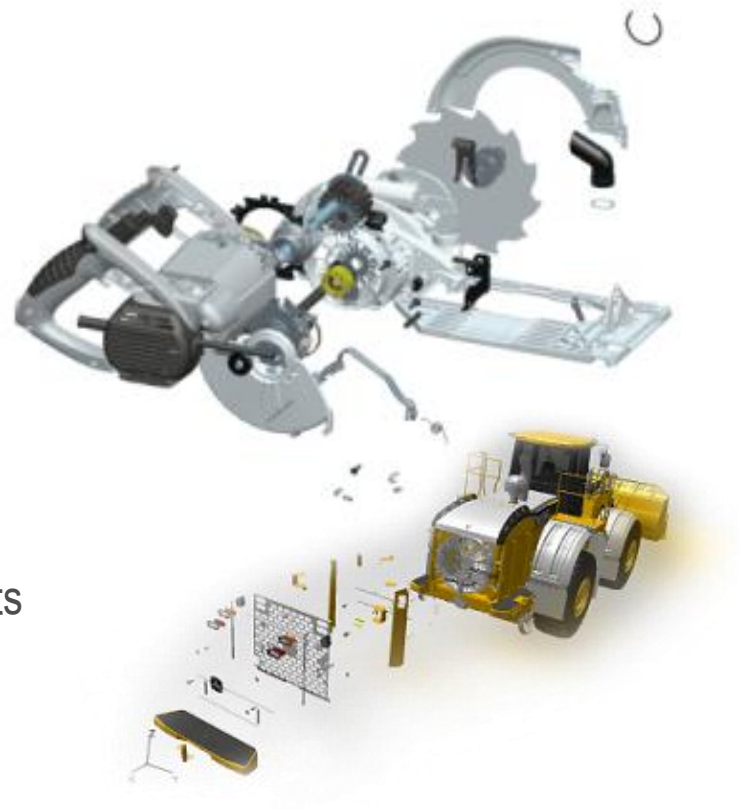


Creo Advanced Assembly Extension

back

- Allows efficient methodologies of creating and managing an array of components and sub-assemblies. Enhances the productivity of distributed teams with capabilities for design criteria management, top-down assembly design, shared geometry between models and assembly process planning

- Highlights
  - Definition of interchangeable components
  - Creation of Families and Programs in assemblies
  - Creation of User Defined Functions
  - Advanced Management of Motion Skeletons
  - Advanced Sharing Management of geometry, dimensions and parameters between models
  - Control of references between components
  - Automated assembly lines and associated documents

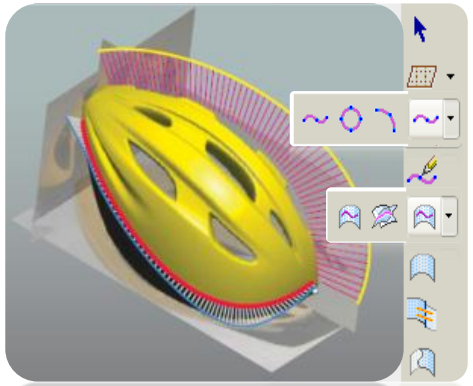


Creo Interactive Surface Design Extension

back

- Create highly precise and distinctly aesthetic product designs, high quality curves and free surfaces for industrial design and/or complex geometries

- Highlights
  - Import and scaling of 2D sketches
  - Dynamically create/edit curves and free surfaces
  - Continuity in tangency and curvature
  - Quality control of curves and generated surfaces
  - Perfect integration with parametric models from Creo

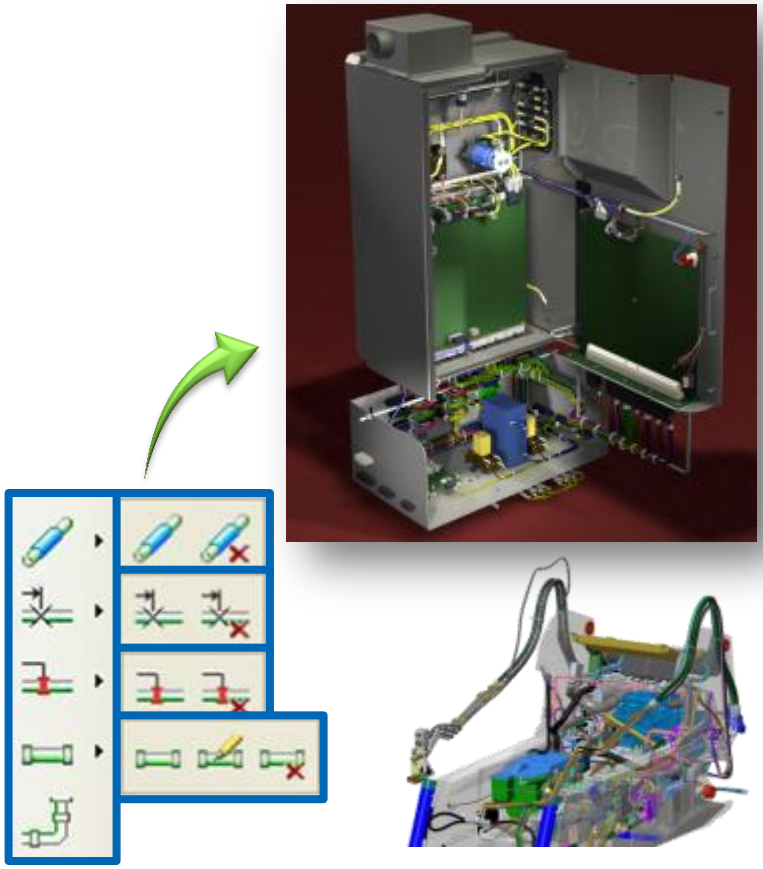


Creo Piping and Cabling Extension

back

- Set of features and libraries for the routing of cables and pipes in their 3D environment, with verification of consistency with the 2D routing scheme (DCP)

- Highlights
  - Routing of 3D cables and hoses
  - Library of connectors and accessories
  - Routing manual, semi-automatic or automatic
  - Piloting of the piping specification/automatic selection of the elements
  - Automatic classification with flaw
  - Automatic harness beam/creation of the form board



Creo Advanced Rendering Extension

back

- Enables the generation of high quality photorealistic images to better understand the final product in its environment

- Highlights
  - Integration of the object in its environment
  - Management of textures, bumps, drop shadows, reflections, light sources
  - Algorithms of "ray tracing" for true representation of deformations related to translucent materials and also multiple reflections
  - Save images in main formats: TIFF, JPEG
  - Can be used in conjunction with the Animation Module

Creo Manikin Extension

back

- Allows users to insert, customize and manipulate 3D human models in the design standard to validate the ergonomics

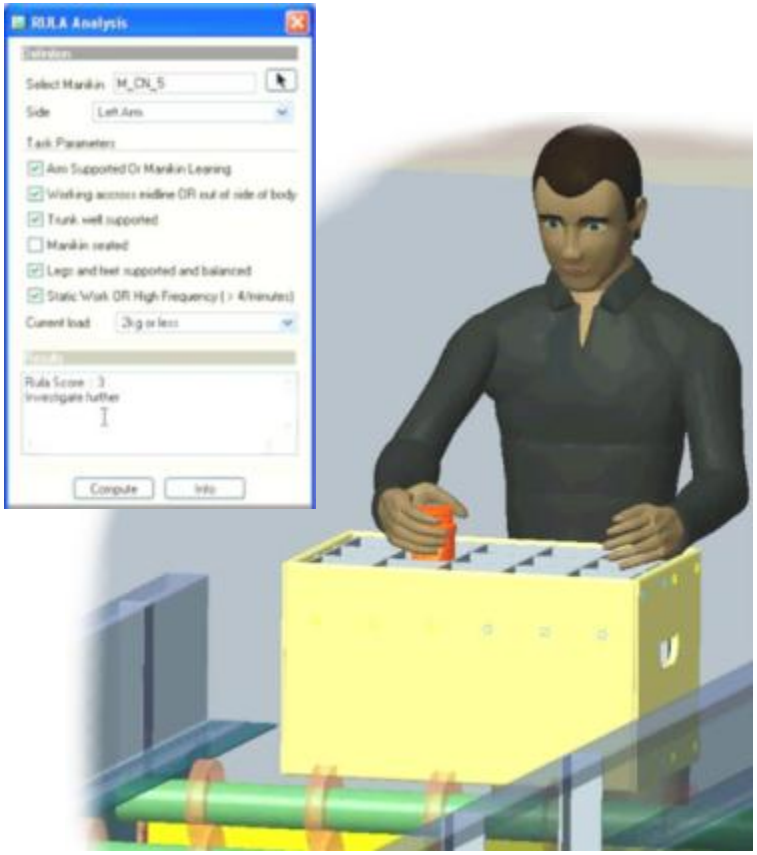
- Highlights
  - Manikin library and postures
  - Placement and dynamic manipulation of manikins with respect to limitations of their joints
  - Definition of links between components and members of the manikin
  - Generation of accessibility envelopes
  - Generation of the cone of vision and visualization of the product from users perspective

Creo Manikin Analysis Extension

back

- Adds to Creo Manikin Extension the ability to analyze and validate some ergonomic rules as supported by the maximum loads depending on the morphology and position of work

- Highlights
  - Analysis of handling tasks: lifting, lowering, pushing, pulling, carrying guidelines and health and safety ergonomic standards in force
  - Validation of compliance of the design with guidelines of health and safety and with operative ergonomic standards



Creo TOOLKIT Customization API

back

- Environment and API programming development of specific applications and customizations of Creo Parametric

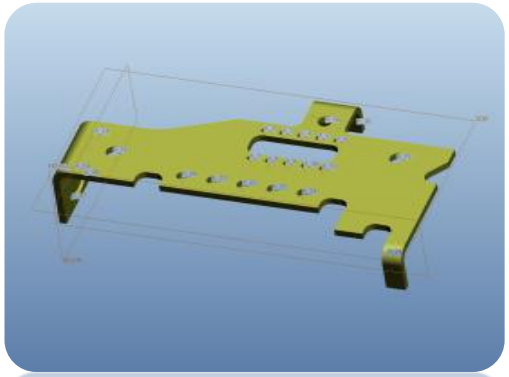
- Highlights
  - Programming API to achieve native applications in Creo Parametric
  - Direct access to kernel functionality
  - Creating menus and specific dialog boxes
  - Creating/editing rooms, functions, settings
  - Extraction and presentation of information: names, parameters, measures
  - Application protection/Commercial Broadcast

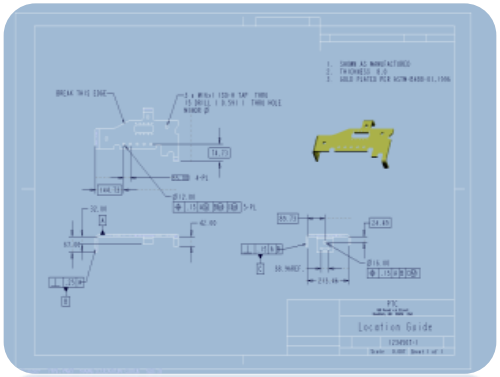
Creo Legacy Data Migration Extension

back

- Enables Creo Parametric users to associate 2D drawings to 3D models imported from a 3rd party CAD system. Helps automate the process of mapping and linking the 2D drawings to the 3D model

- Highlights
  - Improves detailed design productivity by enabling users to fully leverage legacy data
  - Saves time and increases quality by reducing errors from manual translations
  - Future model changes are immediately reflected in the drawing
    - Automatically recreates and places views
    - Automated updating of drawing dimensions when the model changes



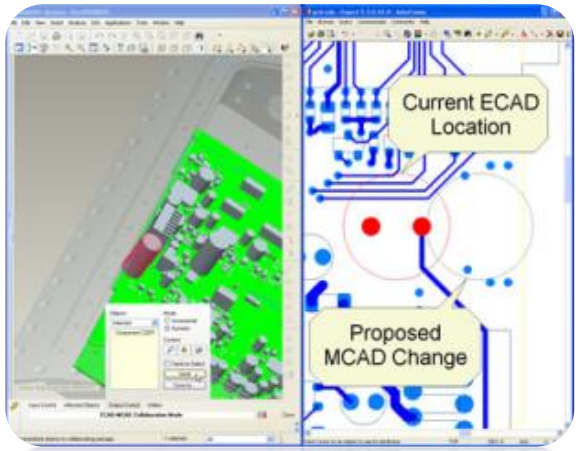


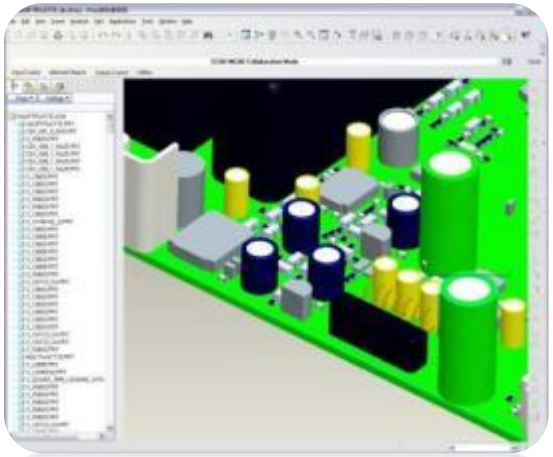
Creo ECAD – MCAD Collaboration Extension

back

- Provides the necessary tools for a collaborative design in real time between Mechanic CAD (MCAD) and Electronic CAD (ECAD)

- Highlights
  - MCAD / ECAD combined collaborative design
  - Management of incremented modifications
  - Proposition, pre-visualisation, acceptance or rejections of the modifications in a synchronous or asynchronous way



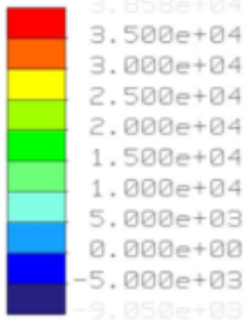


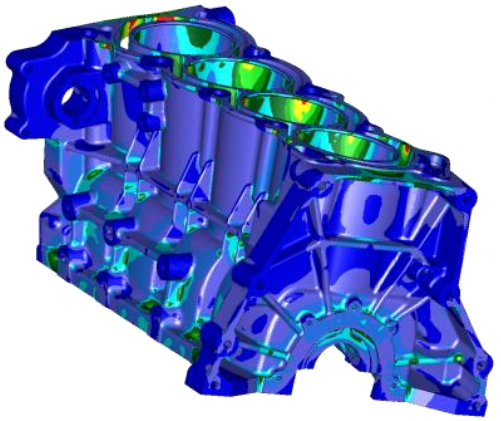
Creo Simulation Extension

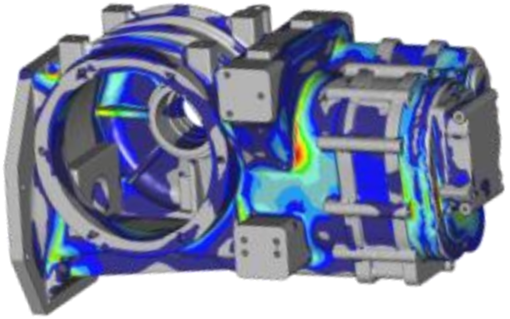
back

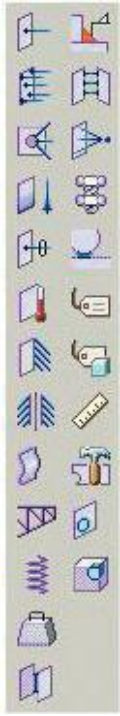
- Used to validate the behaviour and mechanical strength of parts and assemblies subjected to external loads: forces, pressures, temperatures, deformations

- Highlights
  - Structural and thermal analysis of parts and assemblies
  - Taking into account the characteristic of materials
  - Definition of charges, locks and assembly links
  - Automatic mesh with P-elements and automatic control of the convergence of the results
  - Calculation of specific stresses, strains, frequency
  - Presentation of results as graphs and/or animations







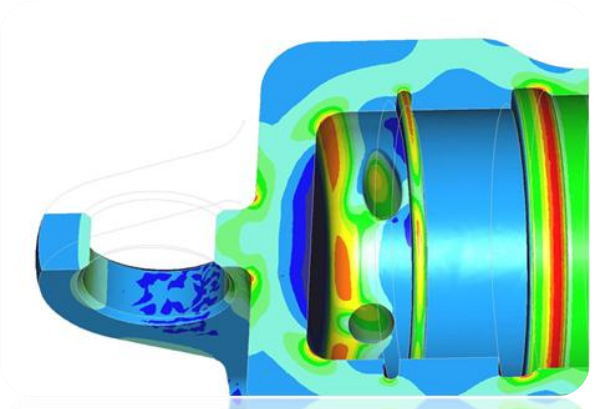


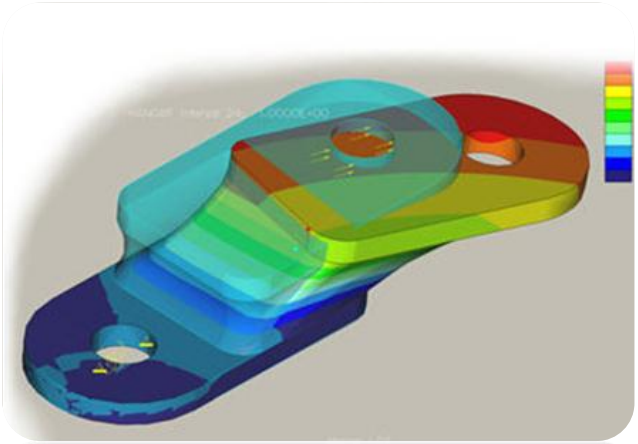
Creo Advanced Simulation Extension

back

- Enables users to fully evaluate and optimize their designs and improving product quality. Provides advanced simulation capabilities for handling the most complex cases: nonlinear distortions, hyper elastic materials

- Highlights
  - Simulation of hyper elastic materials, anisotropic laminated orthotropic and composite
  - Managing large displacement nonlinear and pre-stressed
  - Advanced connections: pre-stressed bolts
  - Dynamic and thermal transient analysis
  - Friction at the contact points



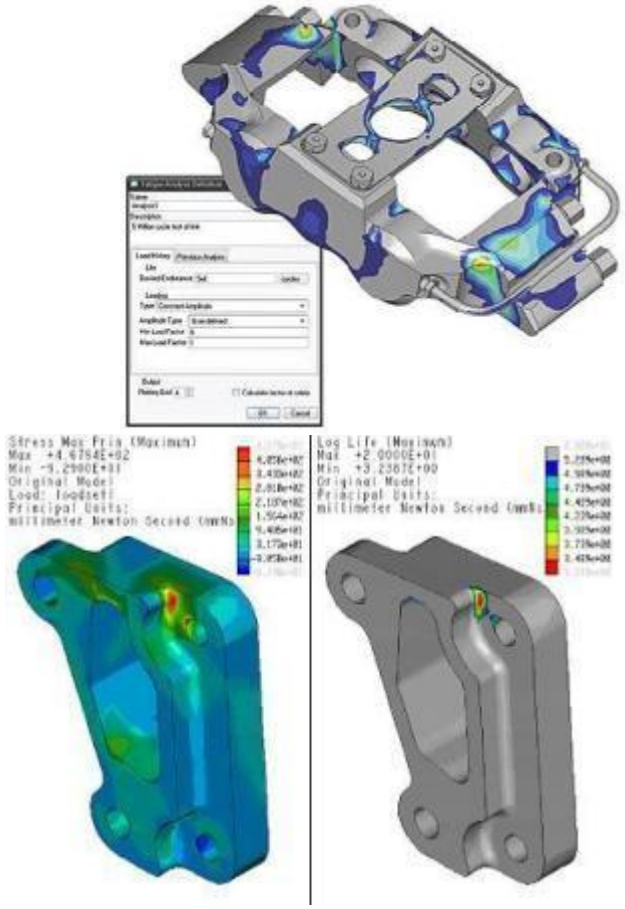


Creo Fatigue Advisor Extension

back

- Adds to Creo Parametric - Simulation Extension the ability to simulate and validate the behaviour and strength of components subjected to repeated loading on a long period of time

- Highlights
  - Use the results of structural simulation
  - Predicted damage or break
  - Calculates the index of confidence based on its lifecycle
  - Uses proven technology: nCode
  - Interface with third party products

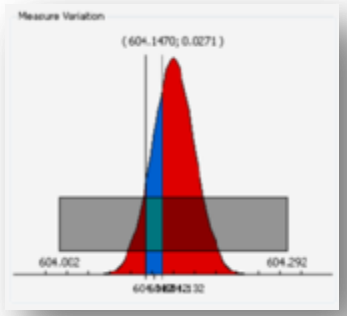


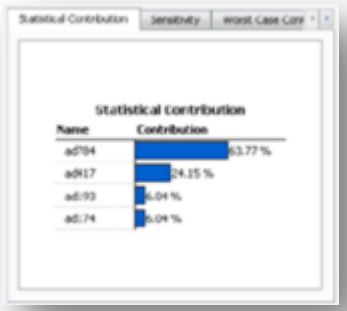
Creo Tolerance Analysis Extension

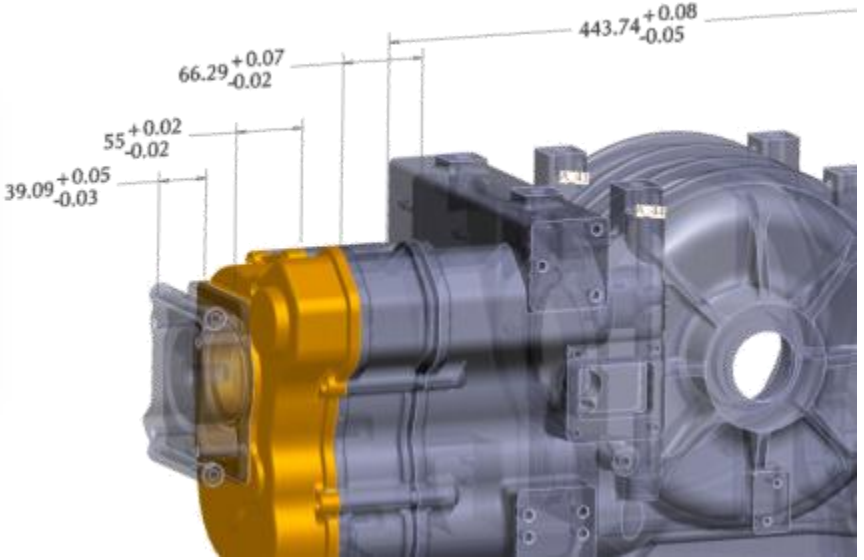
back

- Allows users to quickly analyze and optimize the tolerances and the chain dimensions of parts and mechanisms to improve the functioning and to reduce manufacturing costs.

- Highlights
  - Analysis and optimization of chain dimensions of parts and assemblies
  - Direct use of design dimensions and/or 3D annotations
  - Analysis of real statistical variation, of the sigma quality and of the individual sensitivities





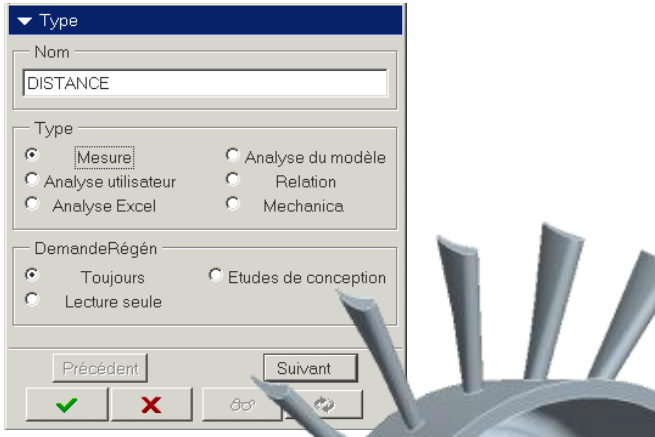


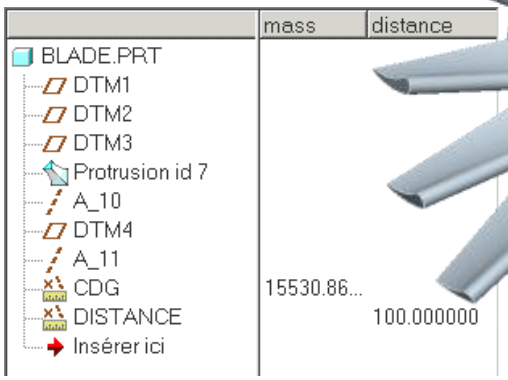
Creo Behavioural Modelling Extension

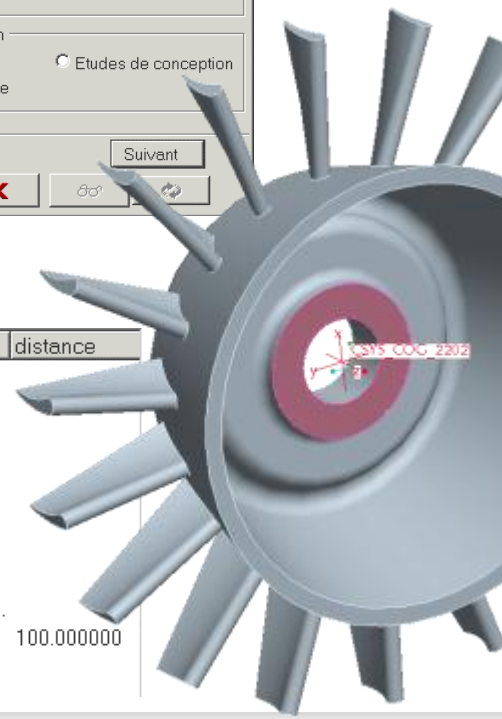
back

- Integrates design requirements (behaviour and final measurements) in the models in order to optimize the final result through a 100% automated iterative process on the input parameters

- Highlights
  - Development and use of analytical functions from Creo Parametric and/or external analysis
  - Automatic search of solution/optimization
  - Sensitivity evaluation of the model for understanding the impact of changing input parameters on the final result
  - Connection with external applications





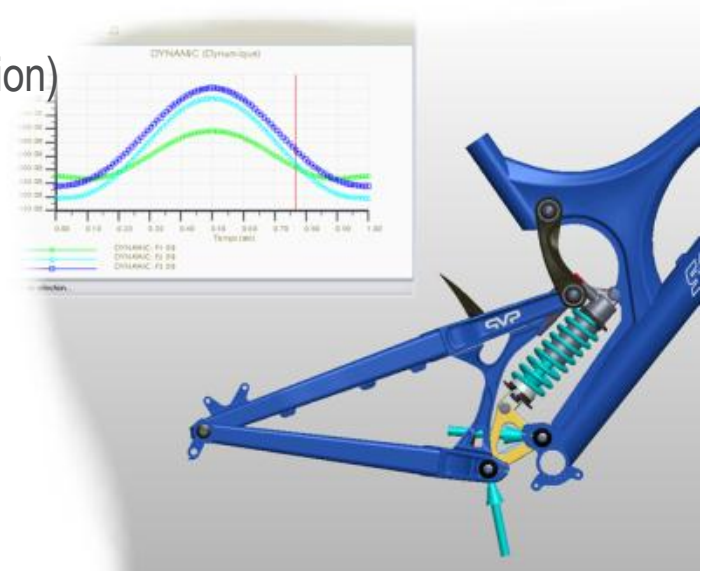


Creo Mechanism Dynamics Extension

back

- Allows users to simulate and validate the behaviour of a mechanism realistically taking into account the mass of its components, forces, inertia, friction, springs, joint reactions

- Highlights
  - Taking into account the mass of the components and the gravity
  - Definition and management of specific elements of dynamic simulation: springs, gears profiles
  - Definition and management of friction, damping and rebound
  - Calculation of efforts from the links
  - Transfer of loads to the structural validation (Creo Simulation)

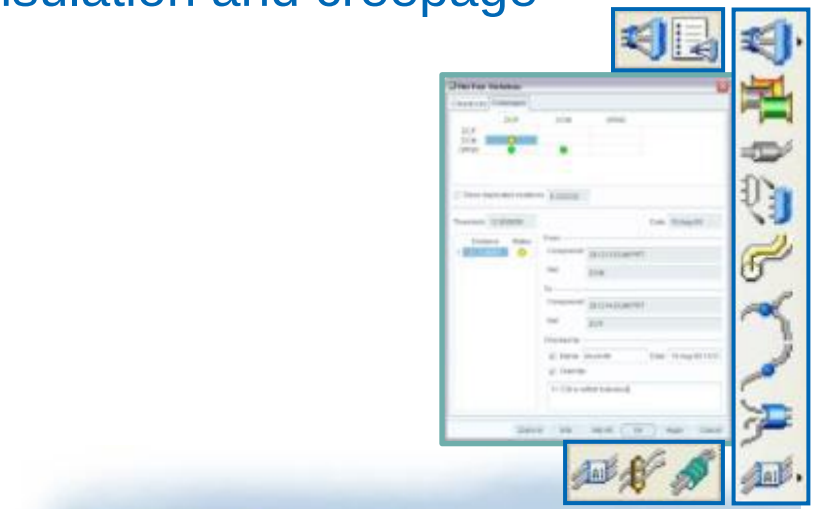


Creo Spark Analysis Extension

back

- Used to detect and document the risks of electrical arcing in an electromechanical analysis by 3D games insulation and creepage

- Highlights
  - Analysis of isolation distances: the shortest path in the space between two components
  - Analysis of creepage: shortest path likelihood of arcing in the space between two free components and/or along conductive surfaces of components
  - Specifications for components, surfaces and networks
  - Automatic generation of reports

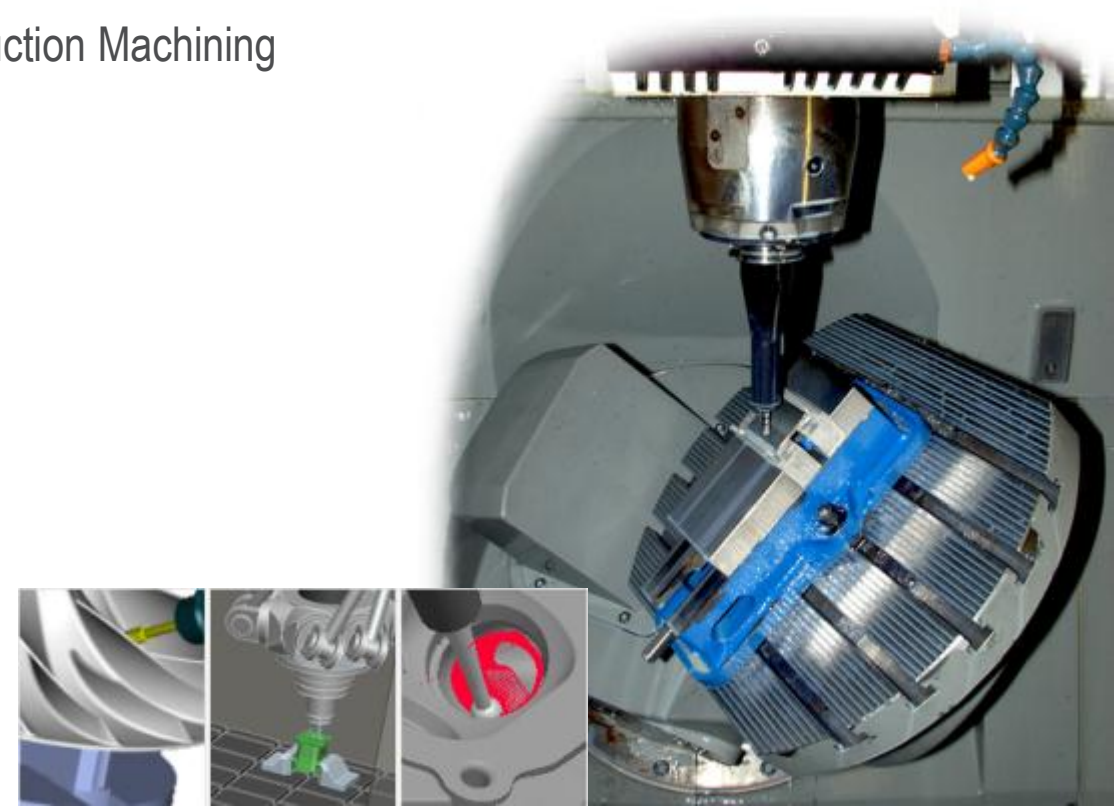


Creo Complete Machining Extension

back

- Programming machining paths in 5-axis milling, turning, multi-axis turning centers, wire EDM 4 axis, with the use of direct and associative of Creo models

- Highlights
  - Includes all features of Creo Production Machining
  - Continuous 5-axis milling
  - 2-4 axis turning/Turning Centers
  - EDM 2-4 axes
  - Supports high-speed machining
  - Generation/Display toolpaths
  - Simulation of material removal
  - Post-processor generator



Creo Tool Design Extension

back

- Allows you to quickly create the most complex molds, in single or multiple cavities, taking into account the withdrawal and keeping the links with reference components

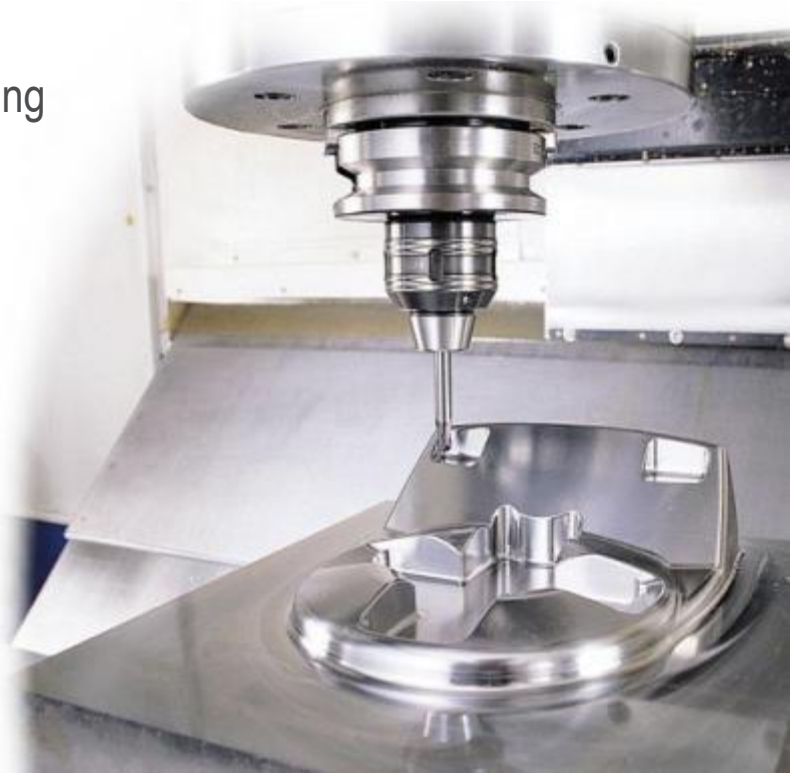
- Highlights
  - Analysis of mold draft, undercuts and thickness
  - Definition of axes factor withdrawed or by odds
  - Semi-automatic extraction of the tight parties: footprints, drawers, cores
  - Library of "basic" components and shell mold
  - Perfect associativity with the model defined in BE, even in case of addition or withdrawal, protrusions, undercuts or rounds

Creo Prismatic and Multi – surface Milling Extension

back

- Programming pathways for machining in 3 axis milling, including the use of Creo direct and associative models

- Highlights
  - Operates direct and associative parts and assemblies in Creo
  - 3-axis multisurface milling, with 4 and 5 axis positioning
  - Supports high-speed machining
  - Generation/visualization of the tool path
  - Simulation of material removal
  - Post-processor generator

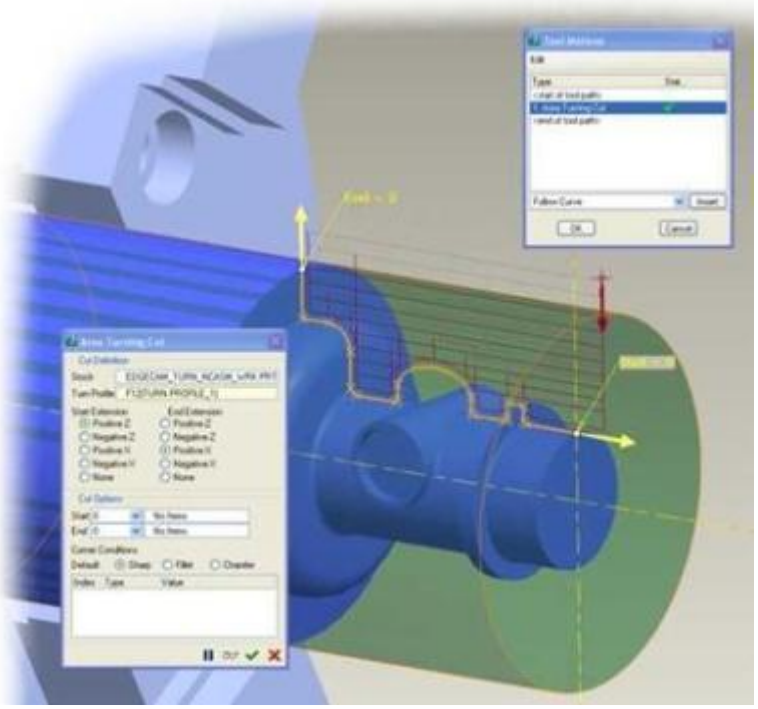


Creo Production Machining Extension

back

- Programming routs in 3-axis milling, 4 axis turning and wire EDM 4 axis machining, with the use of Creo direct and associative models

- Highlights
  - Includes all features of Creo Prismatic and Multi-Surface Milling
  - 3-axis milling (4 and 5 position)
  - Filming 2-4 axes
  - EDM 2-4 axes
  - Supports high-speed machining
  - Generation/Visualization of the tool path
  - Simulation of material removal
  - Post-processor generator



Creo NC Sheetmetal Extension

back

- Allows nesting and machining semi-automatic sheet metal parts by punching, nibbling, laser cutting or plasma

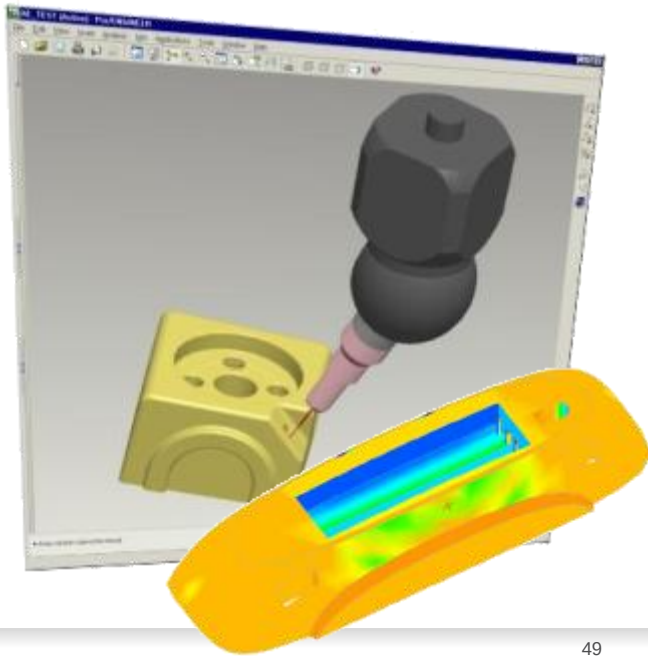
- Highlights
  - Nesting work pieces
  - Rating Falls
  - Punching/nibbling/stamping
  - Laser cutting or plasma
  - Programming tool paths
  - Simulation of material removal
  - Associativity with the model reference
  - Post-processor generator

Creo Computer – Aided Verification Extension

back

- Control by probing three-dimensional models with geometric tolerances set on CAD models. Comparison of records obtained points on physical models with their numerical Creo definitions

- Highlights
  - Coordinate measuring machines for quality control of manufacturing/geometric tolerances defined in Creo Option to exit from programs in DMIS format
  - Operation of scatter observed on the physical models to analyze the deviations compared to numerical models in
  - Inspection reports

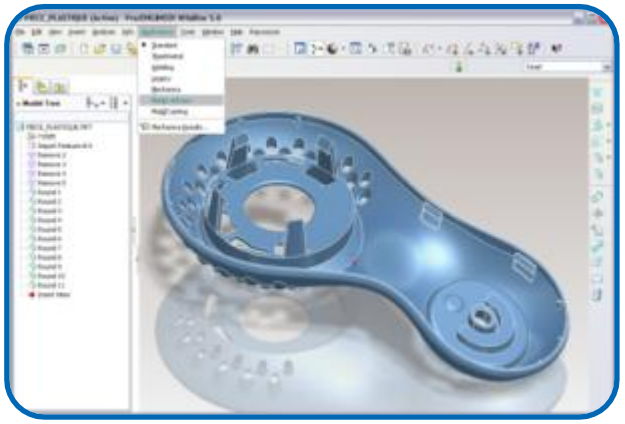


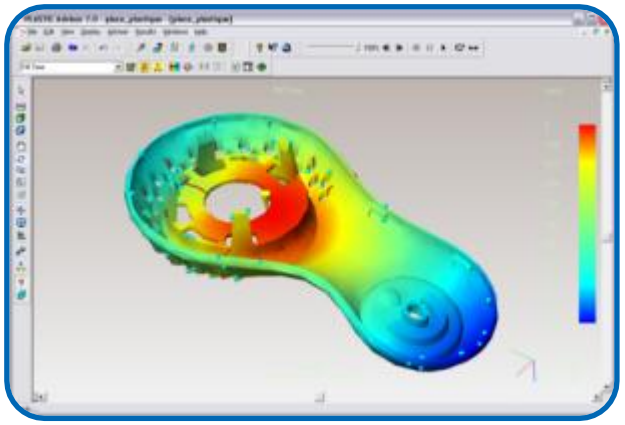
Creo Plastic Advisor Extension

back

- Allows to obtain a rapid diagnosis of the feasibility of plastics injection molding and testing the impact of materials and injection conditions on the final result

- Highlights
  - Customizable Material Library that contains thousands of references
  - Set manual or automatic Injection points
  - Calculate fast and 100% automatic the increase of the filling, the pressure drops, the temperature changes
  - Uses Moldflow technology





Your part can be easily filled with acceptable quality using the current injection locations.

Creo Expert Moldbase Extension

back

- Enables the rapid creation and automated shell molds, most complex dynamic wizards and libraries of specific components

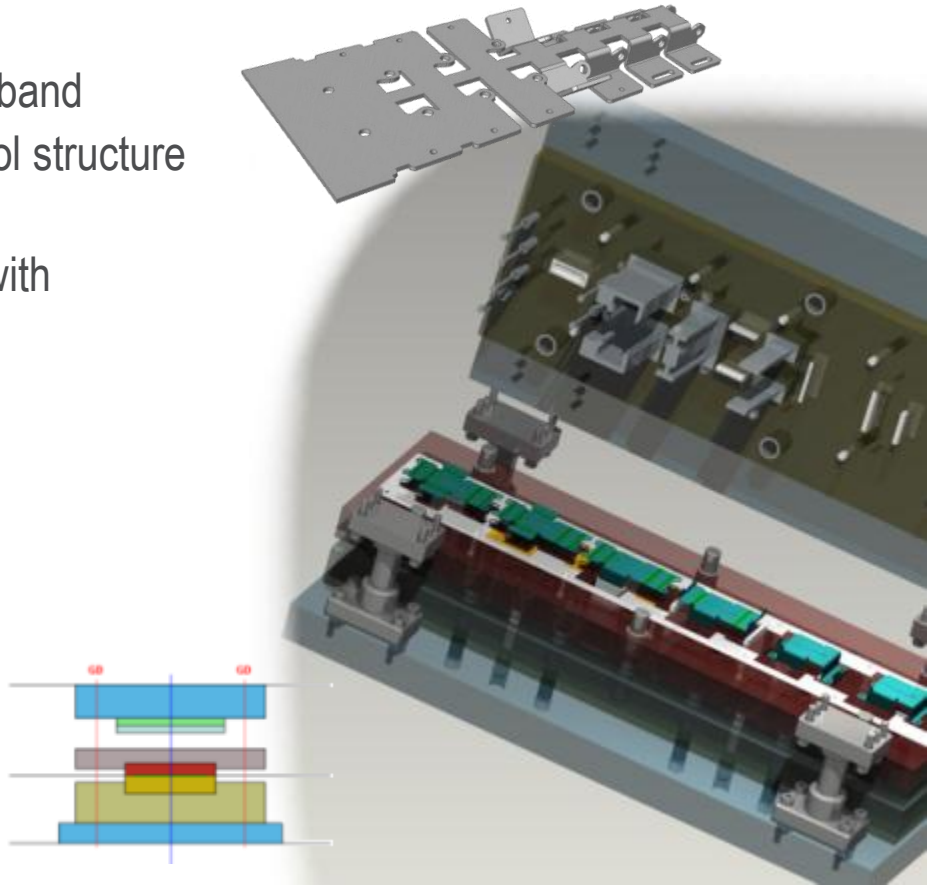
- Highlights
  - Creation and/or dynamic redefinition of the shell using 2D dynamic assistants
  - Libraries of hardware and specific components with placement assistants
  - Automatic generation of 3D assemblies
  - Automatic generation of 2D drawings
  - Definition of ejectors, injection, cooling circuits
  - Simulation of the mold opening

Creo Progressive Die Extension

back

- Enables the rapid and automated creation of cutting tools (tools to follow) to wizards and dynamic libraries of specific components

- Highlights
  - Definition of the manufacturing sequence/set band
  - Creation and/or dynamic redefinition of the tool structure using 2D dynamic assistants
  - Libraries of screws and specific accessories with placement assistants
  - Automatic creation of punches and dies
  - Automatic generation of 3D assemblies
  - Automatic generation of 2D drawings
  - Tally charts



Creo Complete Mold Design Extension

back

- Special offer grouping Creo Tool Design and Expert Moldbase Extension for rapid creation of a single or multi-cavity mold and any associated structure: shells, screws

- Highlights
  - Evaluate mold draft, undercut and thickness problems
  - Definition of axes factor withdrawal or by odds
  - Semi-automatic extraction of contoured parts: Core/Cavity, drawers
  - Component Library
  - Design/redesign of Moldbase with the help of dynamic assistants
  - Automatic generation of drawings
  - Perfectly associated with models defined in BE