

# PTC® Live Global

## PART 203 - Increase Your Productivity!

Connect PTC Creo View and PTC Creo Parametric

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## Company Introduction

 CADS.Engineering

PTC® Live Global

# We create Software

PTC® PartnerAdvantage

### CADS.Engineering

- PTC Gold development partner
- Complementary solutions in CAD environments

### CADS.Medical

- Planning and 3D visualization solutions
- Research and development
- Automated manufacturing
- Development of distributed systems

### CADS.Service

- Training
- Optimization and automation software
- Embedded systems

### Philosophy

Customized software requires a structured approach with the necessary know-how. As a development partner, we take the extra step and incorporate ourselves into the entire planning and project process.

### Competence

Powerful, user-friendly applications based on cutting edge technologies are our passion. CADS develops innovative software solutions in the area of 3D visualization, network systems and manufacturing.

### Technologies

Hardware acceleration and 3D graphics:

- OpenGL, DirectX, Cuda, Cg, Unity, Creo View + Parametrics

Sophisticated user interaction:

- JavaFX, WPF, JSF, Primefaces, CSS & HTML, QT, Unity

Stable implementation of complex processes:

- C/C++, C#, .NET, Swift, Java, PHP, Unity, Creo Toolkit, Windchill

## Medical Solutions

### Panda

With the "Panda" project we set ourselves the target of pursuing new and innovative ways in implant planning and production.

The following core areas are covered:

- The standardized administration and implementation of the entire process from the initial contact with individual physicians to the production of implants
- Dynamic strength and durability calculation
- Quality optimization through statistical model bones
- Implant sketching and design without cad interaction
- Automatic generation of bore and cut cutting gauges
- Secure access to all functions via mobile device or web browser
- Automatic generation of a production code specified by the implant design



• Spline Rigging



• Automatic design and production



• Manufacturing control

## Engineering Solutions



• Creo Parametric®

• Creo View®

### EPS – Engineering Process Sampler

The Engineering Process Sampler is a bi-directional interface between Creo View® and Creo Parametric®. By combining the respective strengths of Creo View® and Creo Parametric®, new vistas of application emerge. Through them, one not only saves time during the design phase, the processes themselves are effectively controllable to an extent which is to date unprecedented. Within two mouse clicks it is possible to view colliding components and their surroundings in a given CAD system.

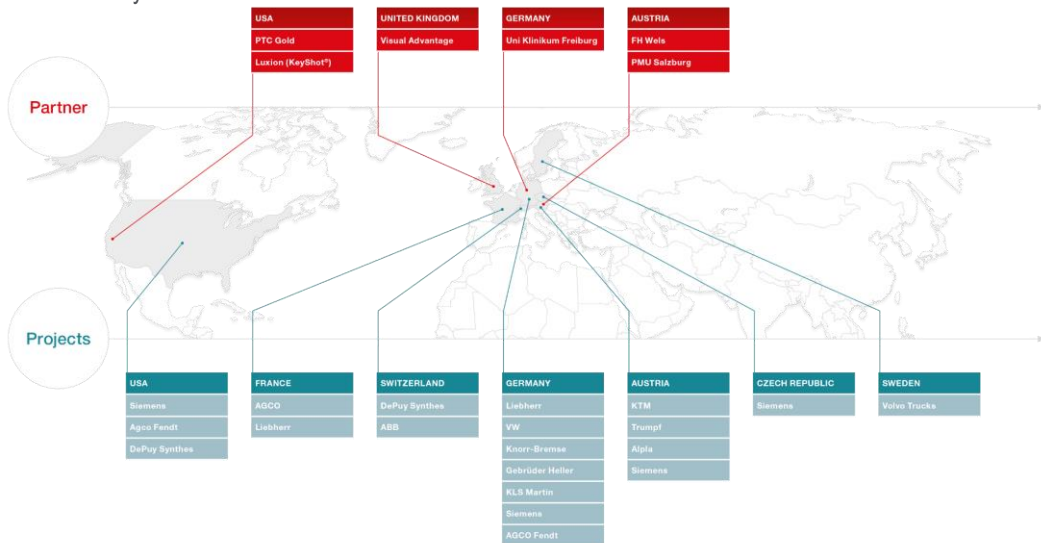
### EPP – Engineering Process Publisher

EPP enables Windchill administrators, under the use of low hardware-resources and time, to generate visualizations of large amounts of Windchill data. CADs EPP offers Windchill administrators the possibility to apply specifications, from which only the structure files for Creo View® have to be generated. This results in a significant reduction concerning the amount of data, which in consequence also reduces the workload for the hardware.

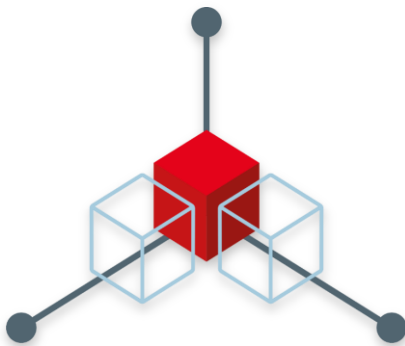
### EPC – Engineering Process Clash

With this method one can monitor collisions of individual parts throughout the product life cycle. The collision information is gathered, processed and displayed to all clients according to their assigned roles. Collision identification is optimized and made possible by the Creo View® Interference Detection system, making it CAD independent as well as highly performant when working with huge assemblies.

## Global CADS activity



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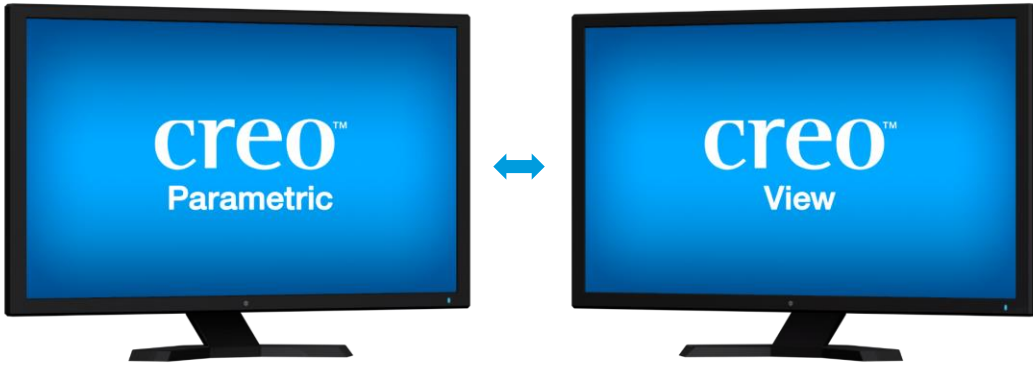


## EPS – Engineering Process Sampler

Connect PTC Creo View with PTC Creo Parametric

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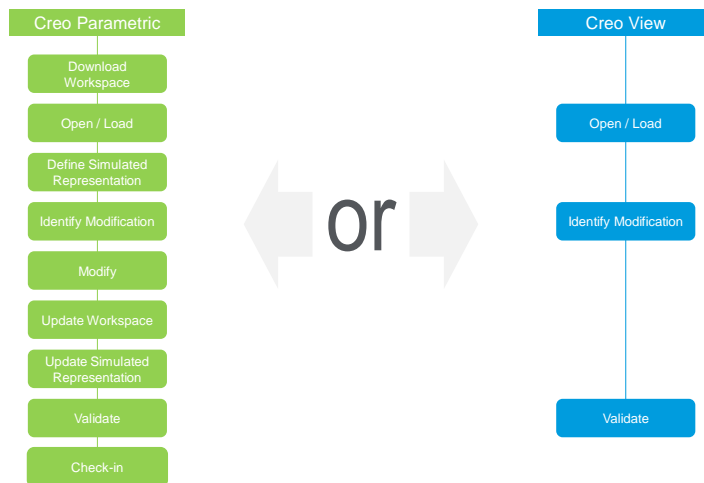
Connect PTC Creo View with PTC Creo Parametric



The Engineering Process Sampler is a bi-directional interface between PTC Creo View® and PTC Creo Parametric®. By combining the respective strengths of the products, many new possibilities have been created.

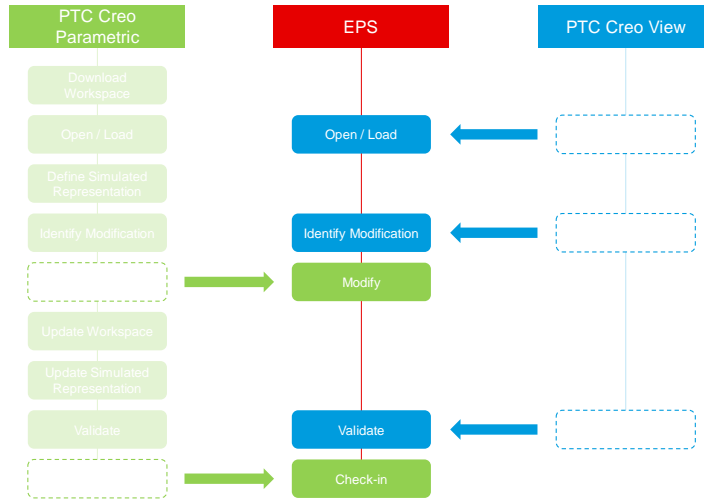
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The current workflow choice situation



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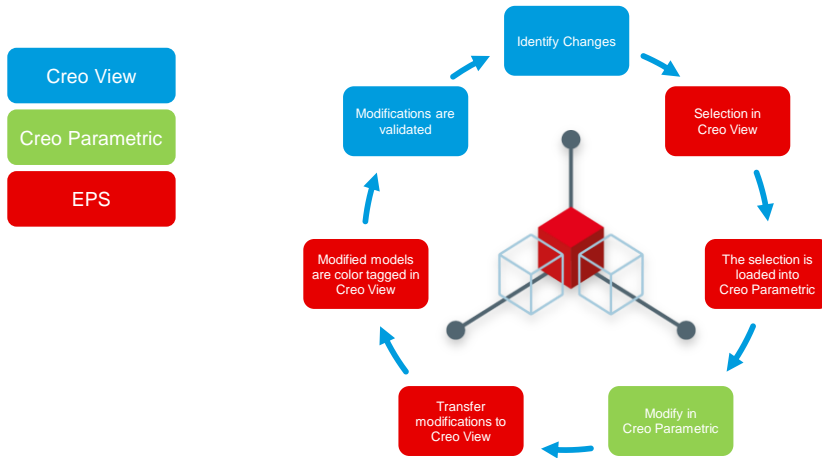
The EPS enhanced workflow



The EPS enhanced workflow



How it works



How it works – Technical Description

1. Identify Changes

The designer identifies the parts intended to be changed by way of the Creo View standard functionality

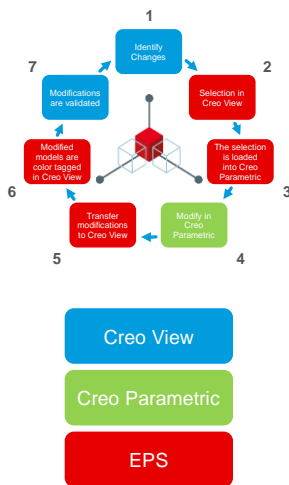
2. Selection in PTC Creo View

The designer selects the parts or assemblies which are to be transferred with the selection tools in PTC Creo View. As an additional aid, the designer has the option of implementing the automatic selection using the EPS neighborhood search functionality. In doing so, the selected model's immediate neighborhood is selected and automatically color tagged according to the EPS color code.

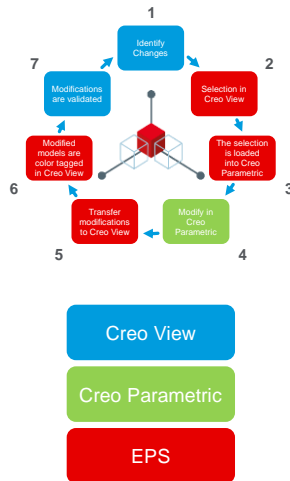
3. The selection is loaded into PTC Creo Parametric

During this process, the previously selected models within the product structure are analyzed and the main components (components situated at a certain level within the structure) are added to the current workspace. It is not absolutely necessary that the top node of a CAD model exists, since the principal components are detected dynamically.

The main component is then, depending on its position in respect to the top level node, incorporated into a temporary model. If all main components are incorporated, the selected parts are loaded as "Master" into a simplified depiction of the temporary model. The remaining models in the simplified depiction have the status "Exclude", which ensures that only the required models are added to the workspace.



## How it works – Technical Description



### 4. Modify in PTC Creo Parametric

The designer can modify the intended assemblies and parts as usual in Creo Parametric.

### 5. Transfer modifications to PTC Creo View

The active assemblies or the active part are saved as a Creo View file and implemented within the PTC Creo View model. Simultaneously, the modified models are analyzed. Assemblies are evaluated according to added or deleted components, single parts are inspected for geometric changes and upon detection modified in the PTC Creo View model accordingly. After all modifications are transferred, affected models are highlighted using the EPS color code.

### 6. Modified models are color tagged in PTC Creo View

After all modifications are transferred, affected models are highlighted using the EPS color code and should they not be visible, blended in. Even if a model in the product structure has been incorporated in several places, its duplicates are also blended in and color coded.

### 7. Modifications are validated

The designer can validate the surrounding geometry changes in the overall model using the PTC Creo View standard functionality and the EPS neighborhood search.

## The Multi-Session Extension: EPS Messenger System



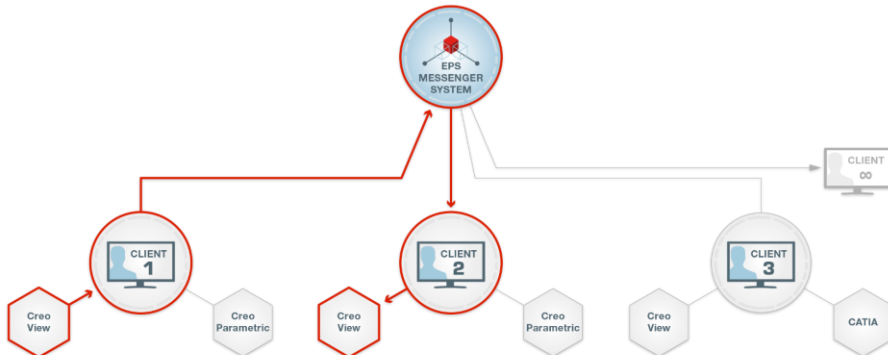
The Multi-Session Extension: EPS Messenger System

General Network Architecture



The Multi-Session Extension: EPS Messenger System

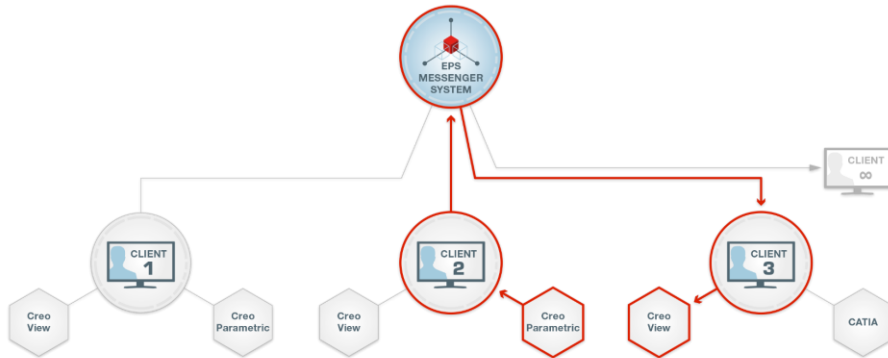
Workflow scenario 1





The Multi-Session Extension: EPS Messenger System

Workflow scenario 2



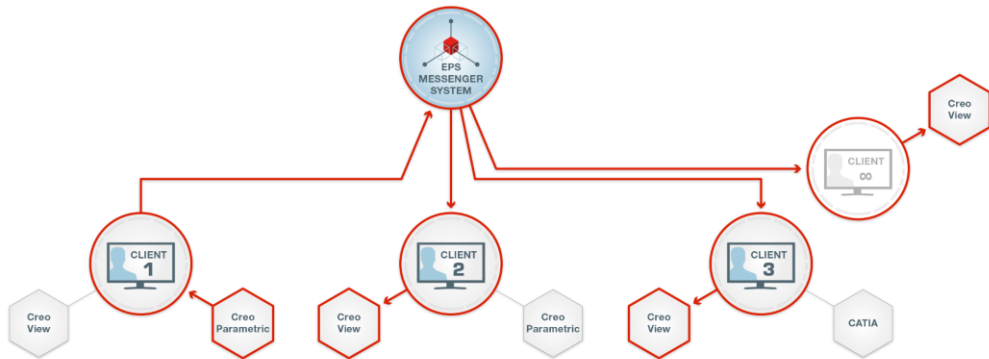
The Multi-Session Extension: EPS Messenger System

Workflow scenario 3



The Multi-Session Extension: EPS Messenger System

Workflow scenario 4



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Benefits and capabilities

- Bi-directional interaction between PTC Creo View MCAD® and PTC Creo Parametric
- Dynamically adjustable neighborhood search
- Color emphasizing of selected and/or used components
- New parts and assemblies can be added to the pre-existing PTC Creo View structure
- Surrounding assemblies can be exported from PTC Creo View MCAD® e.g. Step with shallow structure
- EPS-Multisession:
  - The ability to connect multiple PTC Creo Parametric® installations within one EPS-Session
  - Real-time visual communication
  - Chroniced design and modification process
  - Automatic notification of modifications performed by other users
- Real-time collision detection within the overall context e.g. piping assemblies
- Supports positioning assemblies and non-CAD upper structure assemblies (Level can be set)

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### Problems this solutions solves

- Long waits are avoided when opening assemblies
- Workspace size is reduced and RAM load is curtailed
- The data transfer load is cut down because only required parts and assemblies are downloaded and accessed
- Substantial interface and environment management alleviation for designers (Sim.Rep.)
- Unnecessary iterations and complex design solutions are avoided
- The manual detection of surrounding assemblies in CS is not needed
- Eradicated waiting period for modifications to be updated within the overall context (visualization process)
- Isolated working or not being checked-in while working is not possible, thus ensuring data is always up to date
- The visualizer is alleviated by the use of Pos.ASMs and the reduction of iterations

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### Added value for the customer

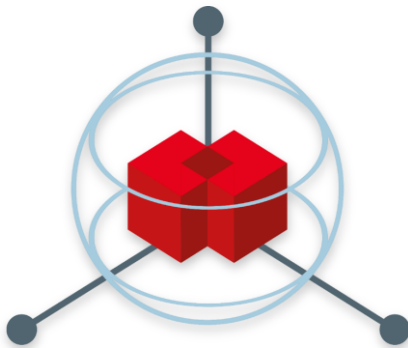
- Massive reduction of activation and download time
- Safeguarded simultaneous engineering process
- Early detection of collisions, for example, modifications which affect multiple types
- Enhanced collaboration
- “Design in context” functionality
- Multiplied “design in context” functionality with EPS Multisession
- Design reviews with multiple departments/locations within the overall model and immediate visualization of required modifications
- Modifications are easily identified and saved (color coding)
- The data load reduction relieves the entire system (PTC Windchill)
- Support for fluid collaborations between designers, departments, locations and countries

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### Intended use cases

- Quickly validate design changes and drafts in the overall model
- Easily check design variations in different models
- Visually search for parts and assemblies in PTC Creo View and instantaneously edit them in PTC Creo Parametric
- Easy creation and updating of working environments e.g. cable and connected piping assemblies
- Create concept assemblies in PTC Creo View which were priorly never constructed in a CAD system
- Visually search for parts and assemblies in PTC Creo View instead of searching for part numbers in the PDM System
- Visually understand relationships between objects
- Visually identify components

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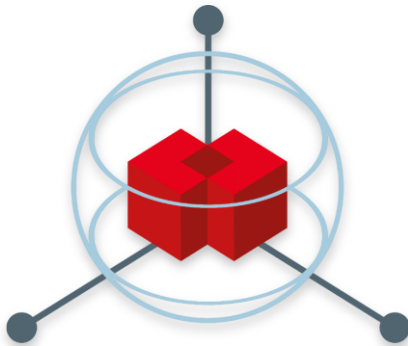


## EPC – Engineering Process Clash

Monitor collisions of individual parts throughout a product's life cycle

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## EPC Introduction



- With this method one can monitor collisions of individual parts throughout the product life cycle. The collision information is gathered, processed and displayed to all clients according to their assigned roles. Collision identification is optimized and made possible by the PTC Creo View® „Batch Interference Analysis“ system, making it CAD-System independent as well as highly performant when working with huge assemblies.
- Additionally, an EPS-Plugin is available with which collisions can directly be opened in PTC Creo View®, the neighborhood can be collected and subsequently the subset can be modified in PTC Creo Parametric and checked-in again.

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## Features

**Client**

- Automatic grouping of collisions
- Email workflow
- Color-coded classification
- Color-coded collision depiction within the overall context including autozoom
- Comments
- Set filters
- Project and model management respectively
- Product structure navigation
- Depict and autozoom
- Search functionality
- Manual grouping
- Appointment groups
- Optimized interference graphs
- Interference graph monitoring
- Dynamic reloading of parent assemblies

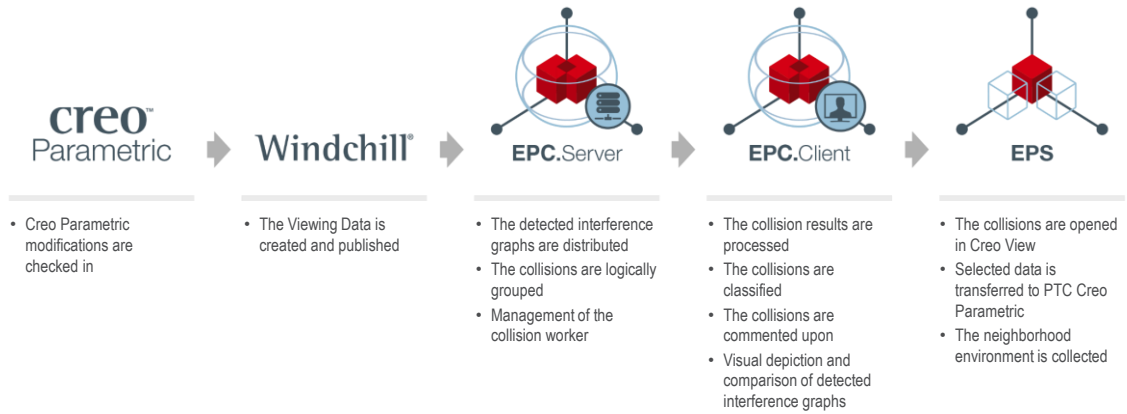
**Server**

- Distributed collision depictions
- Collision depiction management
- Queue Management
- Logical grouping of collisions
- Dynamic collision grouping
- OnDemand collision depiction creation with EPS

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## EPC – Workflow Depiction

Concept



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Further Information

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## Companies who already use EPS:

**SIEMENS****Siemens AG**

The Siemens AG is an integrated technology group with the four main business fields energy, medical technology, industry as well as transportation and urban infrastructure. Today, the Siemens Group is represented in 190 countries and is one of the largest companies in the electrical engineering and electronics sectors.

**LIEBHERR****Liebherr AG**

The Liebherr family business was founded in 1949 by Hans Liebherr. The great success of the first mobile, easy to assemble and affordable tower crane was the foundation of the company. Today, Liebherr is one of the largest construction machinery manufacturers in the world, with more than 41,000 employees in over 130 companies worldwide.

**FENDT****AGCO GmbH / Fendt**

The AGCO-Corporation is one of the world's largest manufacturers and providers of tractors and farm machinery. AGCO's scope of products range from tractors, combine harvesters, forage and seed drills to fertilizer spreader and tillage equipment.

**VOLVO****Volvo Trucks**

The Volvo Trucks company is a Swedish truck manufacturer and simultaneously a major part of the Volvo AB corporation. The company is currently the world's second largest manufacturer of heavy trucks. Volvo Trucks is represented in over 130 markets around the world.

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## EPS Moduls and Core Features

**Feature Outline:**

- Transfer single parts
- Transfer assemblies
- Add additional parts/assemblies
- Neighborhood search throughout the entire product structure
- Add new parts and assemblies as a new element within the Creo View structure
- Add new parts and assemblies to the pre-existing Creo View structure
- Incorporation of components within different Creo View models (Monitor modifications performed on various types)
- Creo View model substitution – context dependent
- Automatic workspace context detection
- Configuration option for Creo View models referenced to projects
- Automatic workspace refresh
- Assembly elements support (cabeling, piping)
- Top-Level assembly preview in real-time
- Last session recovery
- Temporary assemblies utilization
- Integration in Windchill® or the PDM-System

**EPS-Module and Requirements**

- EPS Foundation
  - \* Creo Parametric, Creo View and Windchill (and Visualisation Data)
- EPS Light Client
  - \* Creo View (and Visualisation Data) and EP-Messenger
- EP-Messenger
  - \* No pre-requisite
- EPS-Clash Integration
  - \* Windchill, Creo View, Creo View Interference Analysis Batch, EP-Messenger and EPC (Engineering Process Clash, this is another form CADS developed Solution)
- EPS-WTCacheExt
  - \* Creo Parametric, Creo View, Windchill and EPS-Foundation

**Platform Support**

- Pro Engineer Wildfire 4.0
- Creo Elements Pro 5.0
- Creo Parametric 1.0 – Creo Parametric 3.0
- Creo View (MCAD) 10.0, Creo View 3.0 and prior
- CATIA V5 R 19 and later
- Windchill 9.1 – Windchill 10.2
- Microsoft Windows 7, Microsoft Windows XP,

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## Comparison: Creo Parametric 3.0 Light Graphics vs. EPS

Functionality	Light Graphics	EPS / Creo View
Assemblies Features	YES	YES
Measure	YES	YES
Neighborhood Search	NO	YES
Visualization update, without Check in	NO	YES
Validation of changes in different sub assemblies	NO	YES
Positioning Assemblies	NO	YES
Cross Section	NO	YES
Interference Analysis	NO	YES
Geometrie Analysis	NO	YES
Supports non CAD Upper structure	NO	YES

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