



Dr Michael Rygol
VP, PLM Solution Management

- B.Eng in Microelectronics, PhD in Robotic Vision
- With PTC for 21 years (including DIVISION)
- Responsible for PTC's Visualization Solutions
- Roles in field applications, R&D, Product Marketing and Product Management
- Based in Bristol, UK

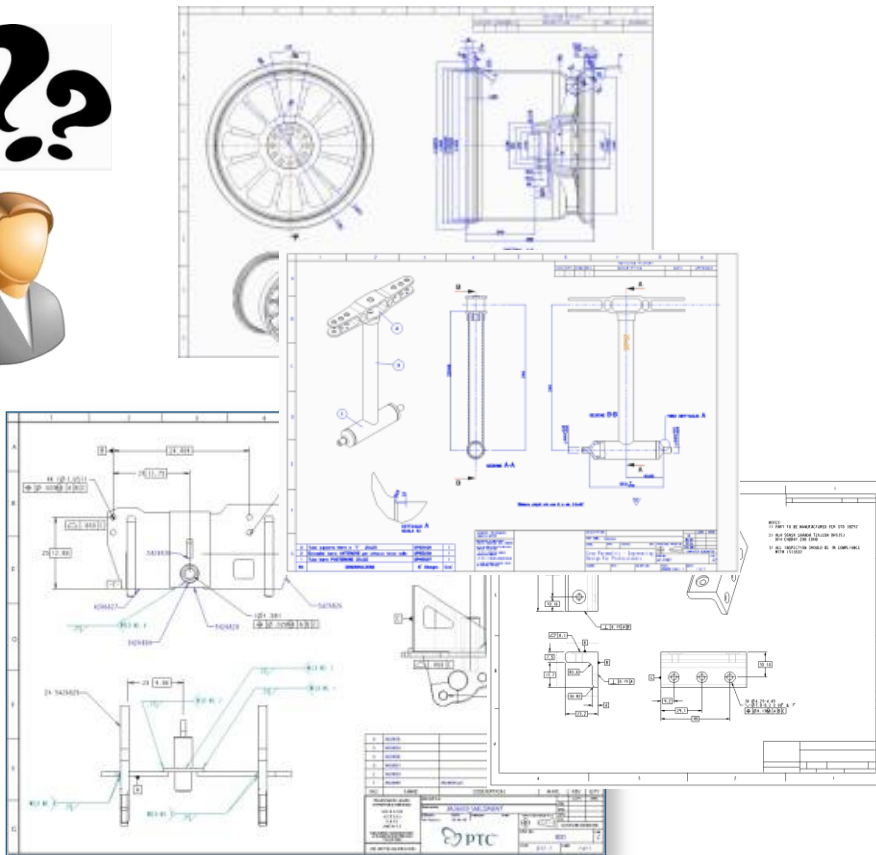


Mark Nielsen
Pre-sales Technical Specialist

- Working on Model Based Definition since 2001
- Master of Science in Mechanical Engineering
- With PTC for 20 years (formerly with Rasna)
- Pre-sales technical specialist
- Based in Los Angeles, CA

- The Value of Model Based Design to the Enterprise
- PTC's solutions to support the Model Based Enterprise
- Demonstration





Challenges

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- Difficult to “read” and understand
- Time consuming to create drawing, organize views, sections, details, etc.
- Unaware of out of date information
- Uncontrolled copies
- Difficult to capture design history, changes and innovation for review

Negative Consequences

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- Unable to understand intended shape
- Unable to work digitally
- Unable to ‘view’ item in context

Metrics

.....

- Time to create and detail drawings
- Time required by others to understand the shape or assembly procedure
- Change Requests and Rework due to incorrect data



After Scenario

Single Source of Truth for Design Data Model
Model and all supporting data accessed from a single point

Compress Product Development Cycle
Speed up understanding of complex parts and assemblies

Higher Product Quality
Reduce product non-conformance, re-work & support over lifecycle

3D models, Animations and Sequences
Visualization reduces learning curve & rapidly increases understanding

Reusable Data
User markup, feedback and knowledge capture

Access Control & Watermarking
Content, user, role and item specific access limitations

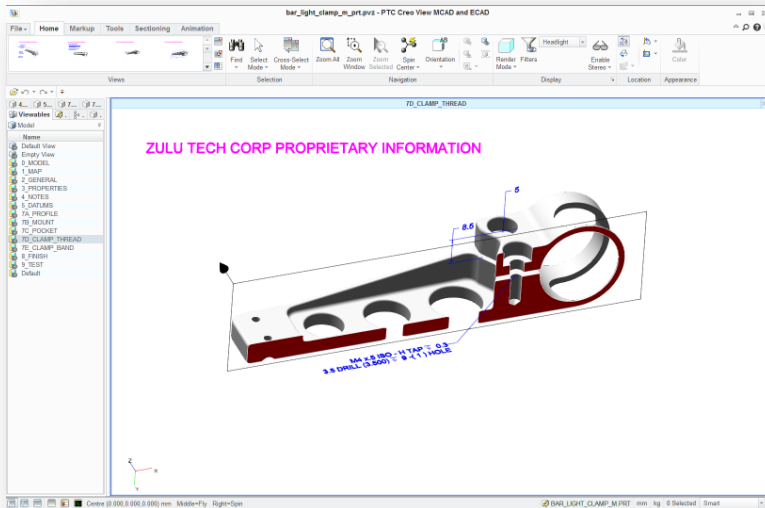
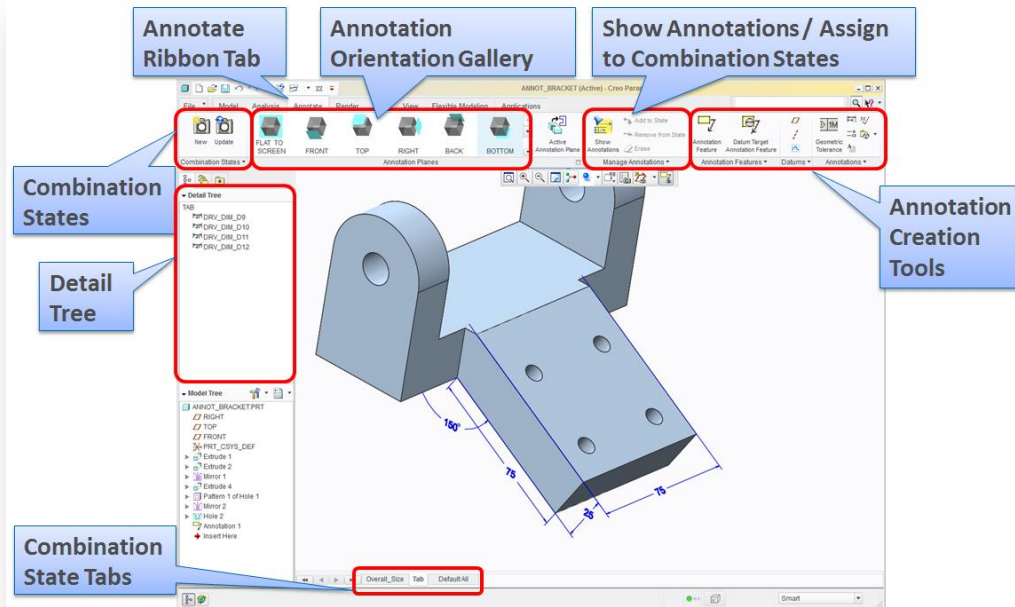
Positive Outcomes

- Reduction in model detailing time and cost
- Reduction in product non-conformance
- Full access to all Engineering product information

Justification

- **Required capability to bid or attain new government programs**
- **Reduce Product Development costs**
- **Streamline the procurement process**

Role specific Annotation environment in PTC Creo Parametric



View all PMI and view States
View sections, offset sections
Supports:

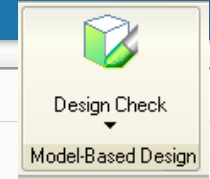
Creo Parametric
CATIA V5
Siemens NX

Deliver and consume Model-based Designs in
PTC Creo View

PTC Solution Capabilities

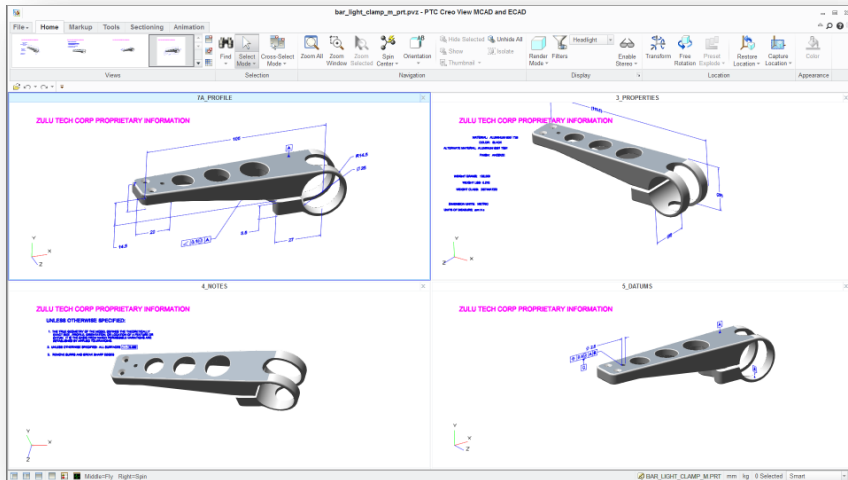
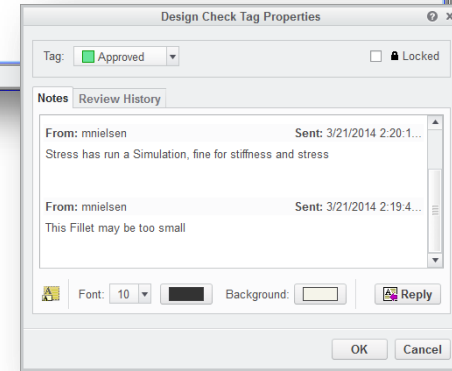
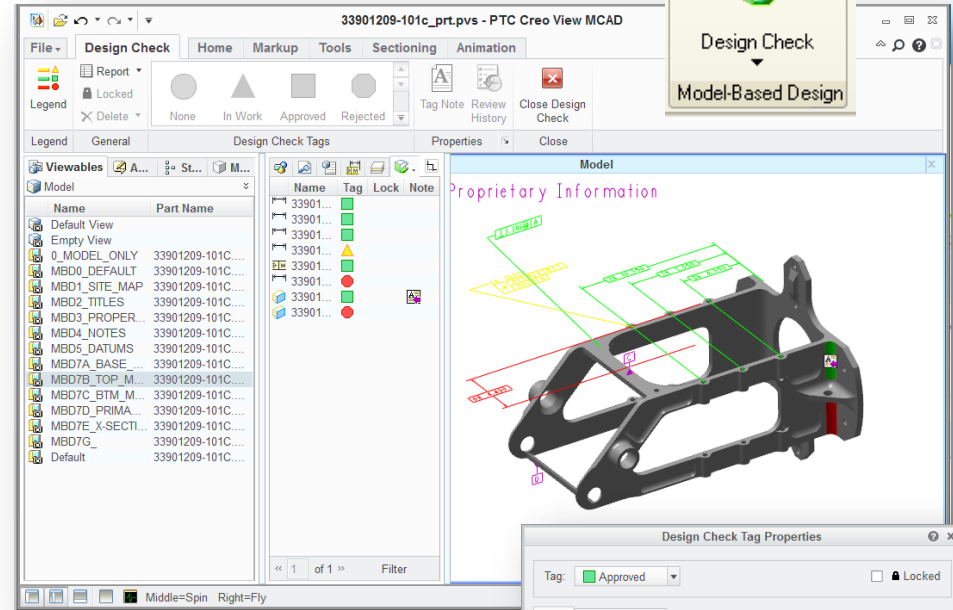
Efficient Communications with PTC Creo View Design Check

PTC® Live Global



User markup, feedback & knowledge capture with PTC Creo View Design Check

Streamlining communications between manufacturing and engineering



MBE Model Based Enterprise Best Practices

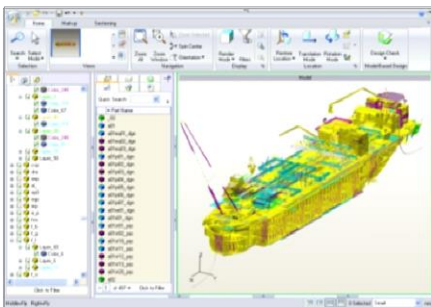
- Improve Mechanical Data Visualization and Collaboration

Key MCAD Viewing & Collaboration Capabilities

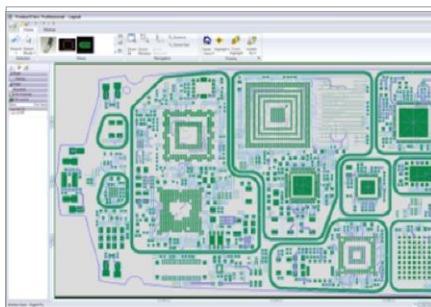
Organized view of complex design models	All PMI – Process and Manufacturing information associated to one file	Reduce design cost and delivery of complete product definition
Create 3D models, animations & sequences	Visualization of complex assembly process simplified for easy understanding and use	Elimination of complex installation and assembly drawings
Visually compare 2D drawings and 3D models	Overlay different CAD iterations highlighting differences: added, moved or missing info.	Understand intentional changes, find unintentional ones to Improve Quality
Capture early feedback and design comments	Capture design comments from cross functional teams in a single place	Eliminate late stage changes by allowing comments and review early in the process

PTC Creo View Capability Highlights

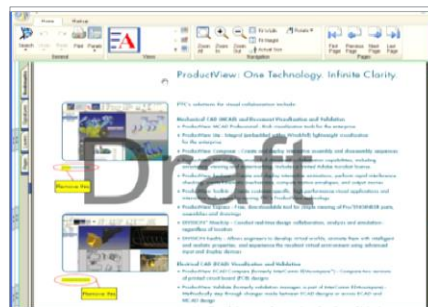
High Performance Visualization and Digital MockUp



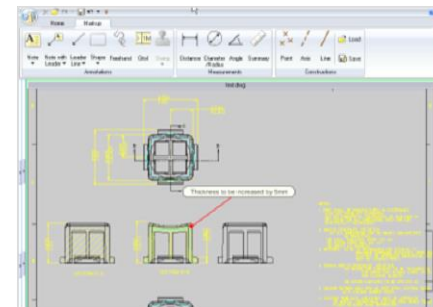
3D models, structure, meta-data



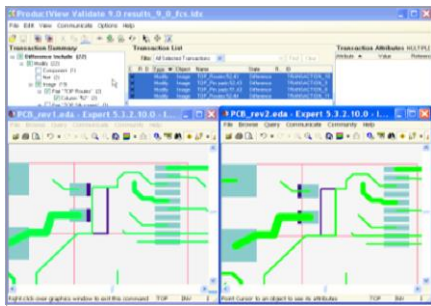
Electrical PCBs



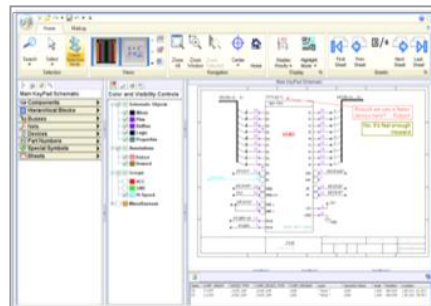
PDF documents



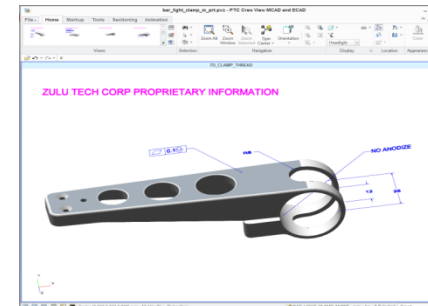
View, markup, print, compare and watermark 2D drawings



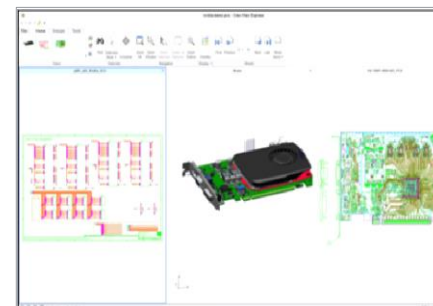
Review ECAD design changes



Electrical schematics

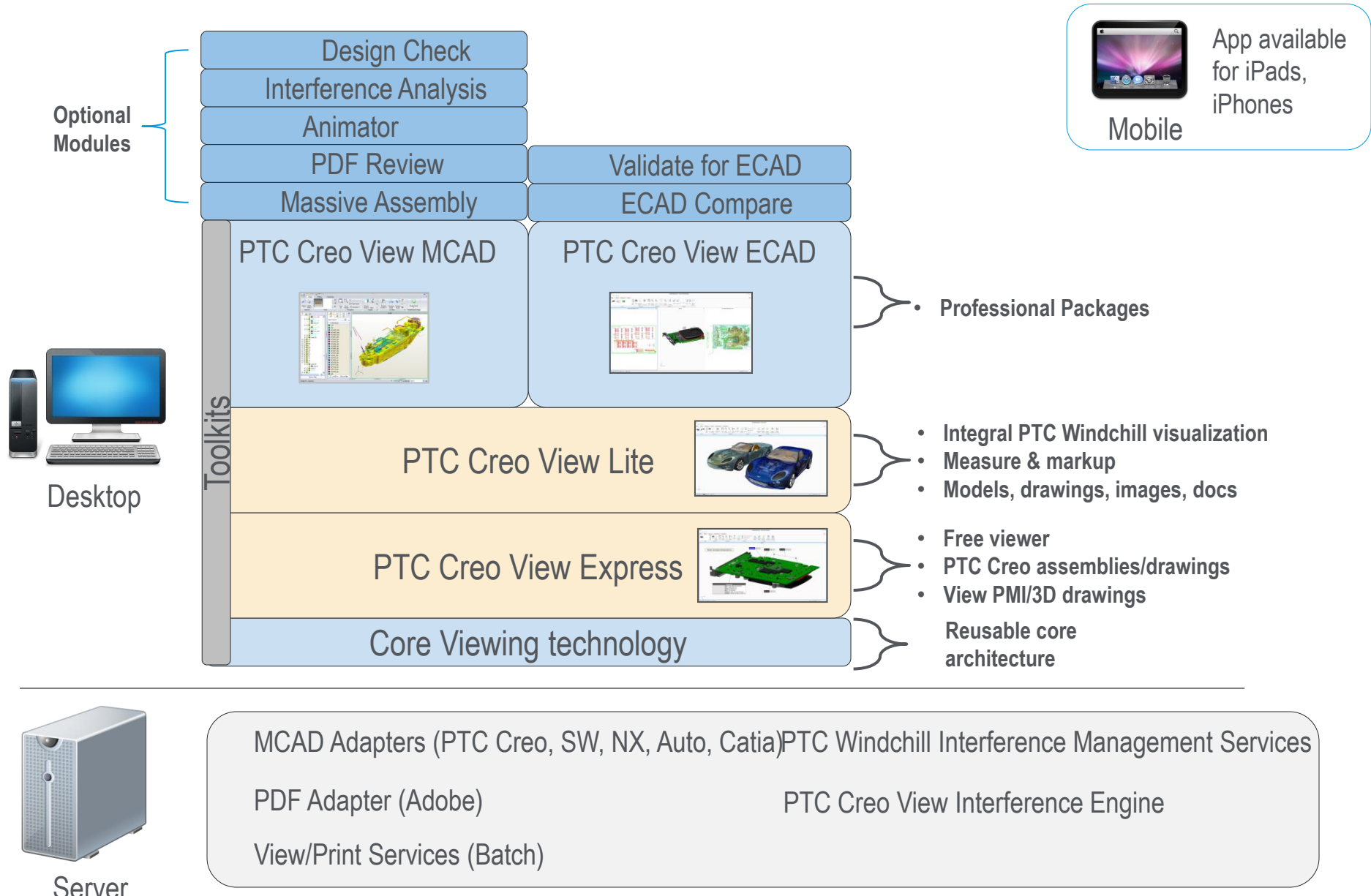


Model-Based Designs



Multi-discipline navigation

Integral with PTC Windchill or standalone



Integral with PTC Windchill for enterprise visualization

The screenshot displays the PTC Windchill 10.0 interface. At the top, the title bar reads "Windchill 10.0" and "Auto-ACE-VM Automotive Processes Explorer". The breadcrumb navigation shows the path: "Products > StreetScooter A12 - A16 > Folders > 002 - Full Vehicle Documentation > 04-Engineering Structure > Upper Structure". The main content area is titled "Car - CA12X00000000, Full Vehicle, A.2 (Engineering)". Below this, there are tabs for "Details", "Structure", "History", "Related Objects", "Changes", "Where Used", "Traceability", "AML/AVL", "Representations", "Context Related", and "Product Analytics". A toolbar contains various actions like "Insert Existing", "Remove", "Check Out", "Undo Checkout", "Check In", "My Checkouts", "Paste", "Copy", "Views", "Display", "New", "Add to", "Filter", "Current Filter", and "Saved Filters".

The "Find in Structure" panel on the left shows a tree view of the product structure. The selected item is "ZYXX106080_01, Upper Front Structure, A.2 (Engineering)". Below it, several sub-components are listed, including "CA12L10601201, CA12AL1406012, A.1 (Design)", "CA12R10601201, CA12AR1406012, A.1 (Design)", "CA12X10600201, CA12AX1306002_Structure fi", and "CA12X10603601, CA12AX1406036, A.1 (Design)".

The main visualization area shows a 3D CAD model of a mechanical part with technical specifications. The text "ZULU TECH CORP PROPRIETARY INFORMATION" is overlaid on the model. The model includes dimensions and annotations such as "M3x0.5 ISO - H TAP ± 0.000 2.5 DRILL (2.500) THRU 2 PLACES", "Ø 2.5", "Ø 12", "Ø 14", "Ø 17", "6", "30", "75", and "90".

At the bottom left, a box titled "Structure of Information" lists the following items:

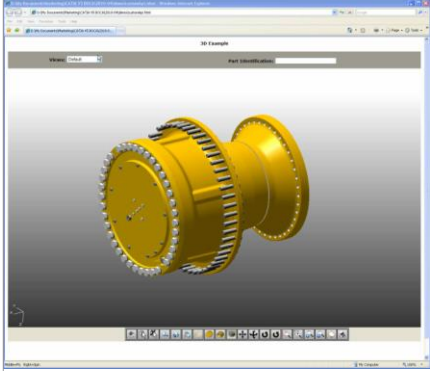
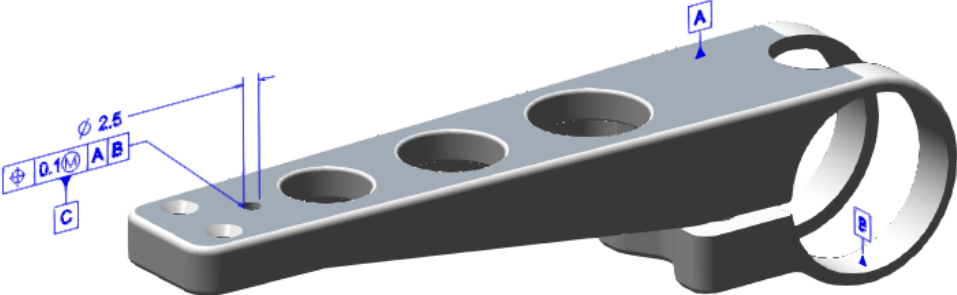
- Documents
- CAD-Data
- Parts
- Requirements
- ...etc.

At the bottom right, a box titled "Visualization" lists the following features:

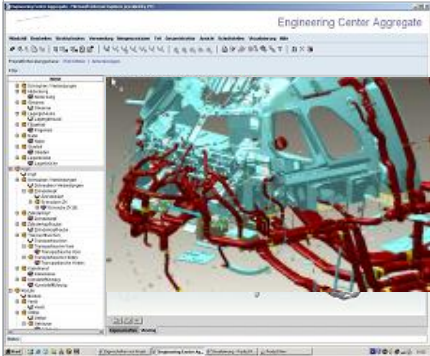
- Real-time configuration-aware Visualization
- Cross-highlighting, Promity Searches etc.
- Attributes, Classification Information

Present Model-based Designs within Presentations

ZULU TECH CORP PROPRIETARY INFORMATION



PTC Creo View Web Toolkit for embedding in web pages



PTC Creo View Java Toolkit Building custom Java apps

4_NOTES

5_DATUMS

7A_PROFILE

Demonstration

Mark Nielsen

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