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INNEO® That's IT.

PTC Creo Roadmap

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PTC

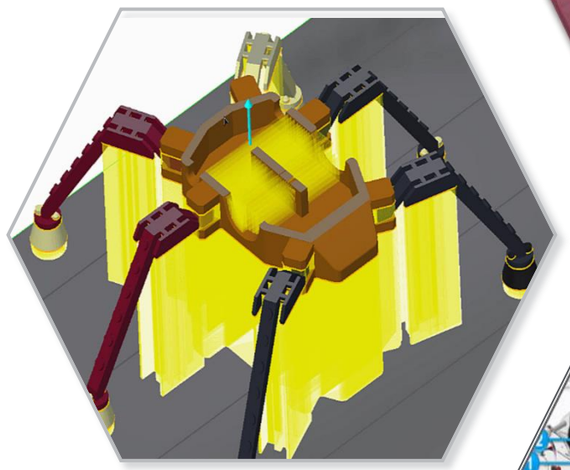
15. Bayreuther 3D - Konstrukteurstag
16.09.2015

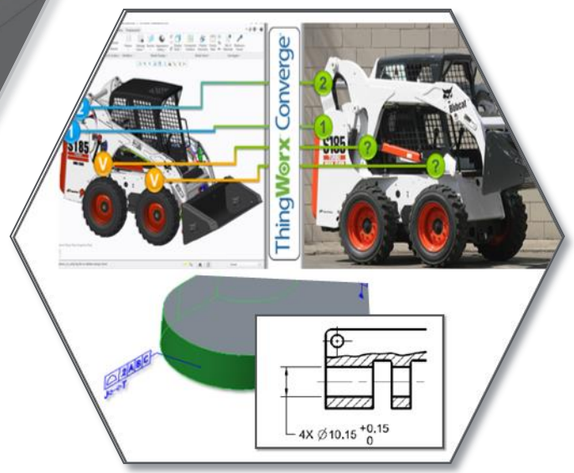
PTC Creo Roadmap

Review of PTC Creo 3.0

New Since June 2014

PTC Creo 4.0 and Beyond





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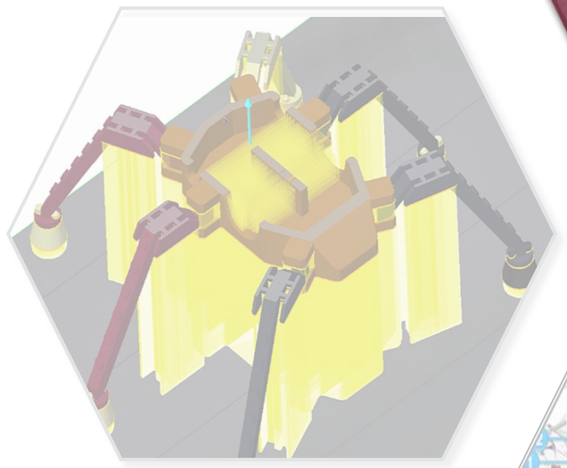

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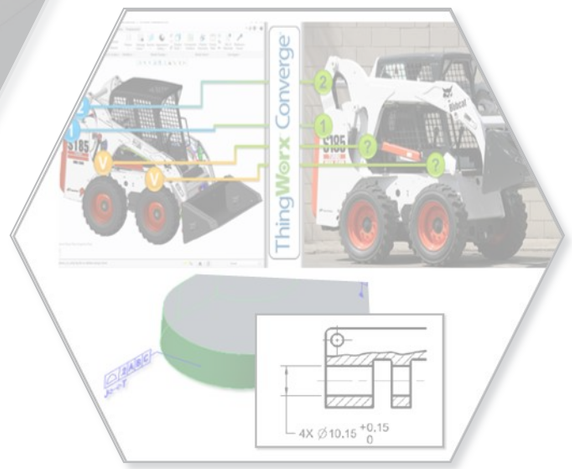
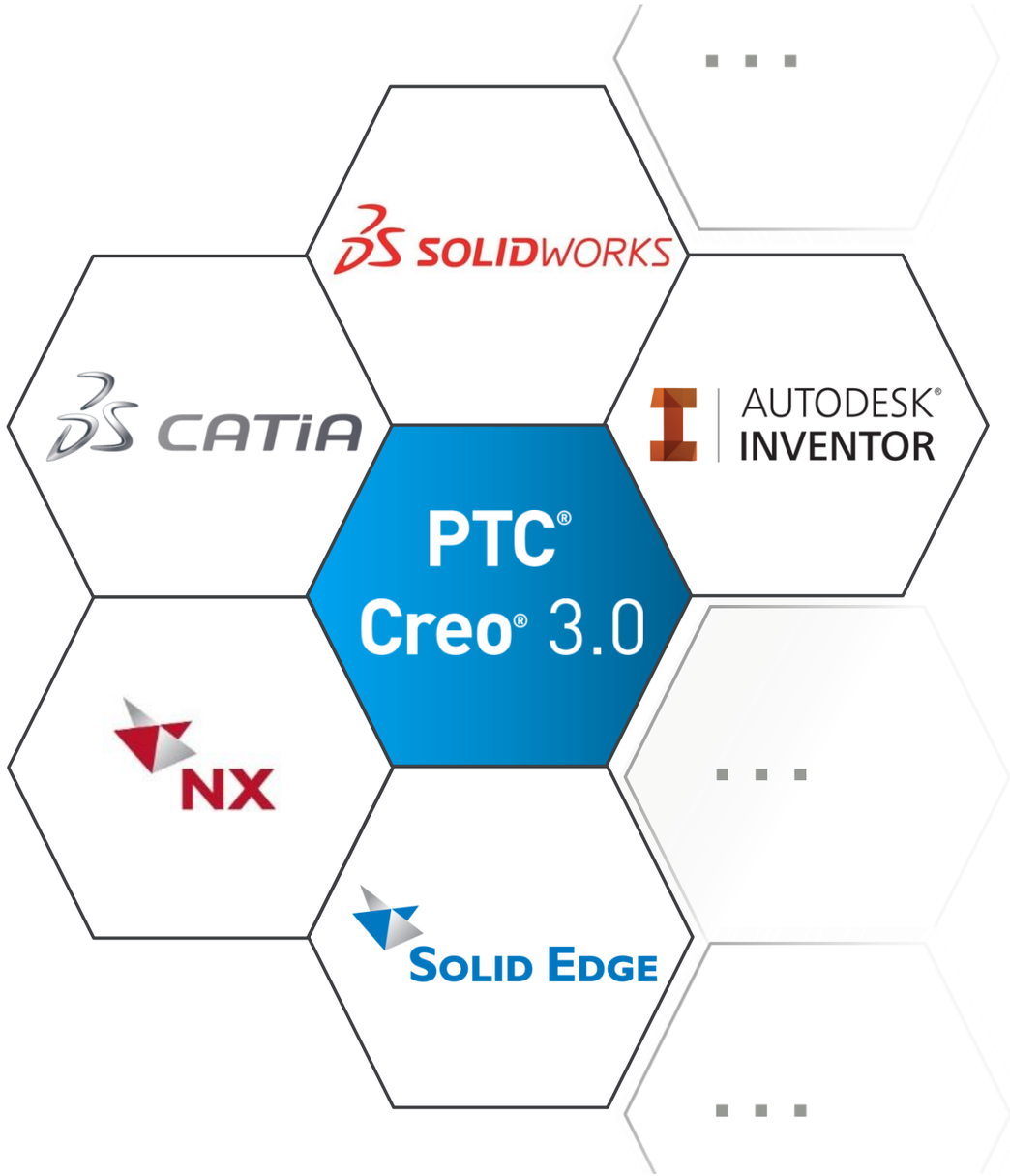


PTC Creo 4.0 and Beyond

Unite Technology

Enabling Optimal Multi-CAD Collaboration and Consolidation

- ***Import*** common 3D CAD formats
  - SolidWorks, CATIA, NX, Inventor, Solid Edge
- ***Open*** key 3D CAD formats
  - SolidWorks, NX, and CATIA
- ***Automatically update*** new versions of non-PTC Creo data within your designs
- ***Save As*** key 3D CAD formats
  - SolidWorks, NX, and CATIA



How Unite Technology Can Help You

Consolidate CAD systems to improve quality, speed time to market and lower costs for both Engineering and IT

CONSOLIDATION

BEST IN CLASS COMPANIES ARE 35% MORE LIKELY TO STANDARDIZE ON ONE CAD SYSTEM[1]

59% OF PEOPLE HAVE DIFFICULTY MANIPULATING IMPORTED MODELS[2]

COLLABORATION

Support more effective product development and drive on-time delivery by working more efficiently with other departments, suppliers or development partners.

[1] *Working with Mulit-CAD? Overcoming the Engineering Collaboration Bottleneck – Aberdeen Group*

[2] PTC survey of 7,000 manufacturing organizations, October, 2011

CAD Consolidation with Unite Technology

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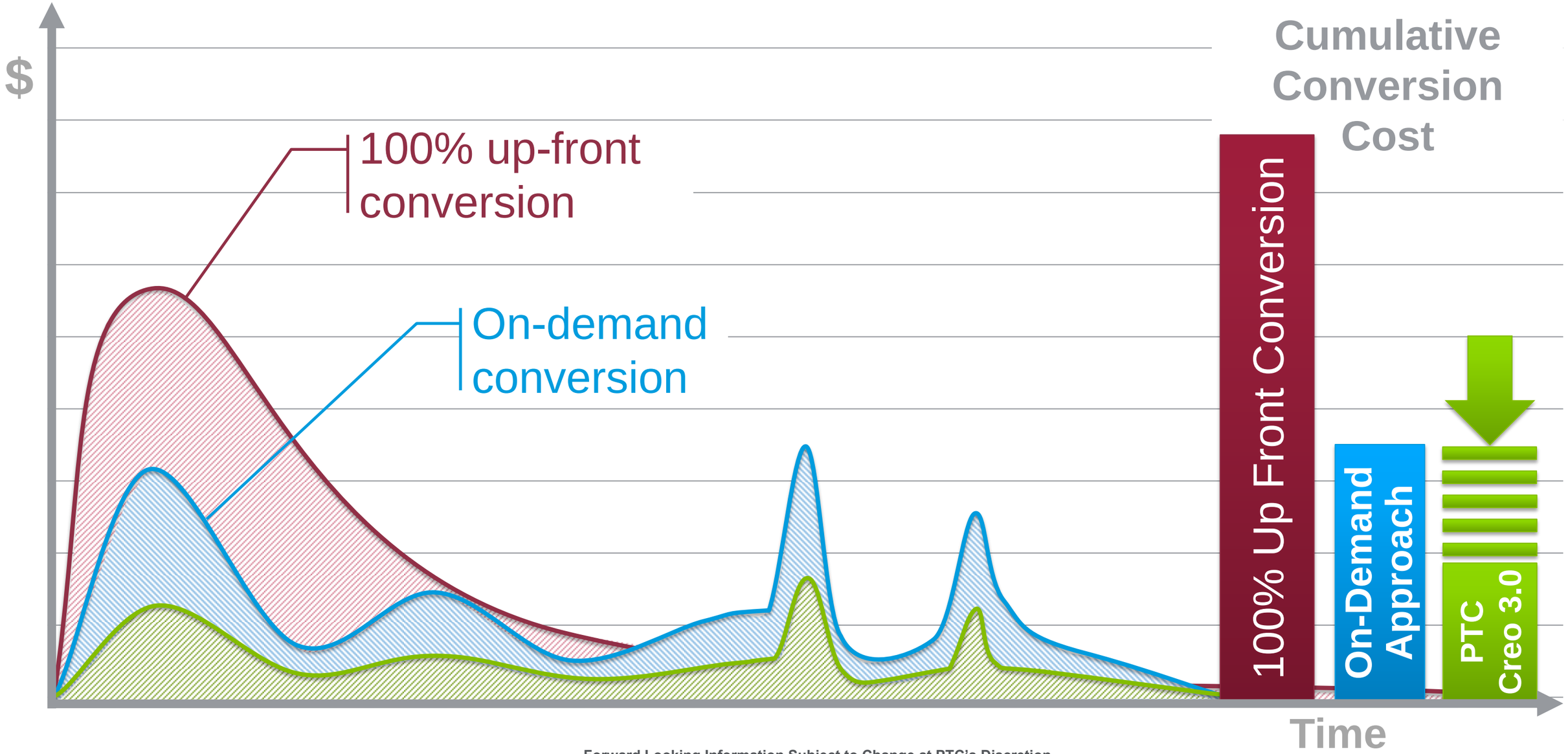
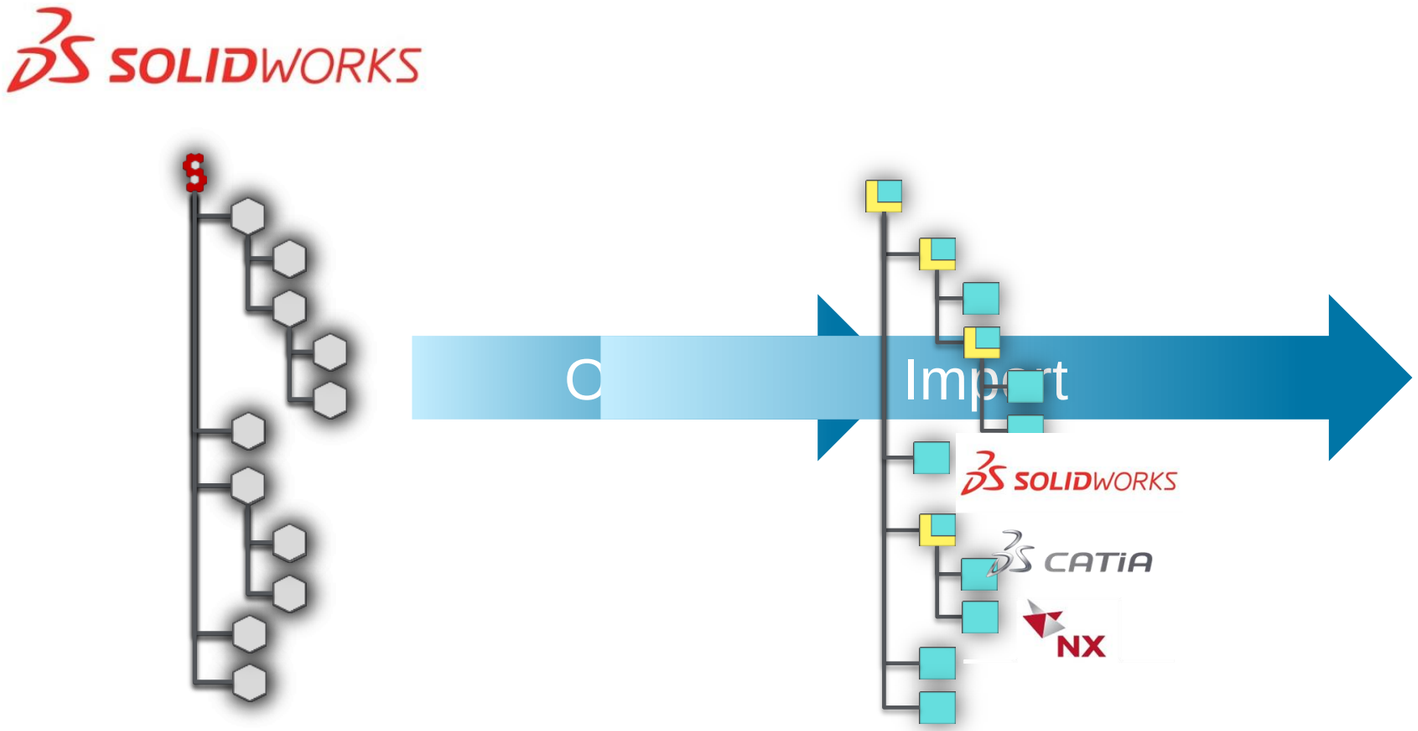
BEST IN CLASS COMPANIES ARE 35% MORE LIKELY TO STANDARDIZE ON ONE CAD SYSTEM[1]

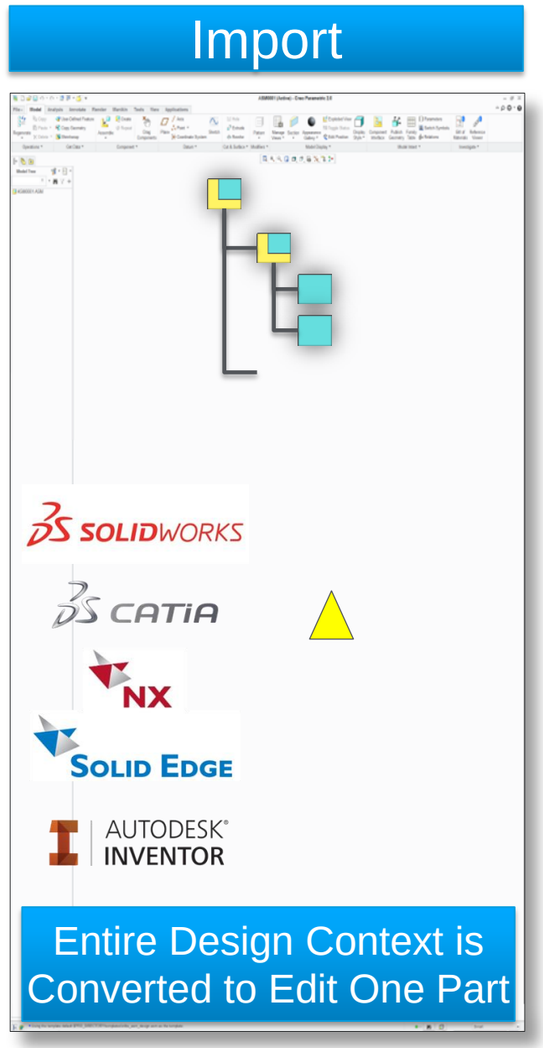
Unite Technology Addresses the Challenges of Data Migration

Save time and money with an effective convert as needed workflow

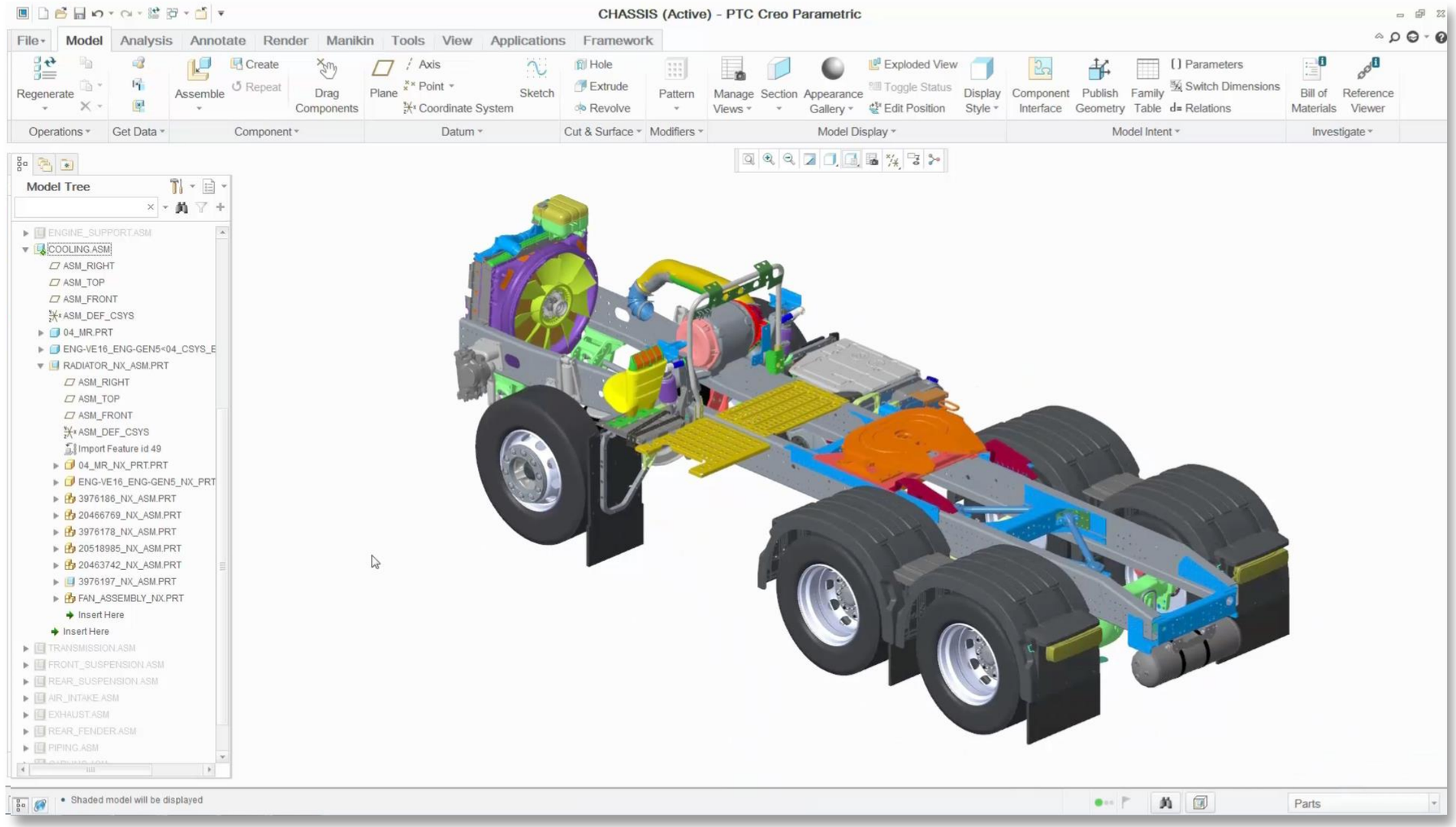


CAD Consolidation with PTC Creo 3.0





PTC Creo 3.0 Consolidation Video



Enable Effective Collaboration with Unite Technology

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- ***Open*** key 3D CAD formats
  - SolidWorks, NX, and CATIA
- ***Automatically update*** new versions of non-PTC Creo data within your designs
- ***Save As*** key 3D CAD formats
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59% OF PEOPLE HAVE DIFFICULTY MANIPULATING IMPORTED MODELS[2]

COLLABORATION

Support more effective product development and drive on-time delivery by working more efficiently with other departments, suppliers or development partners.

Collaboration with Unite Technology

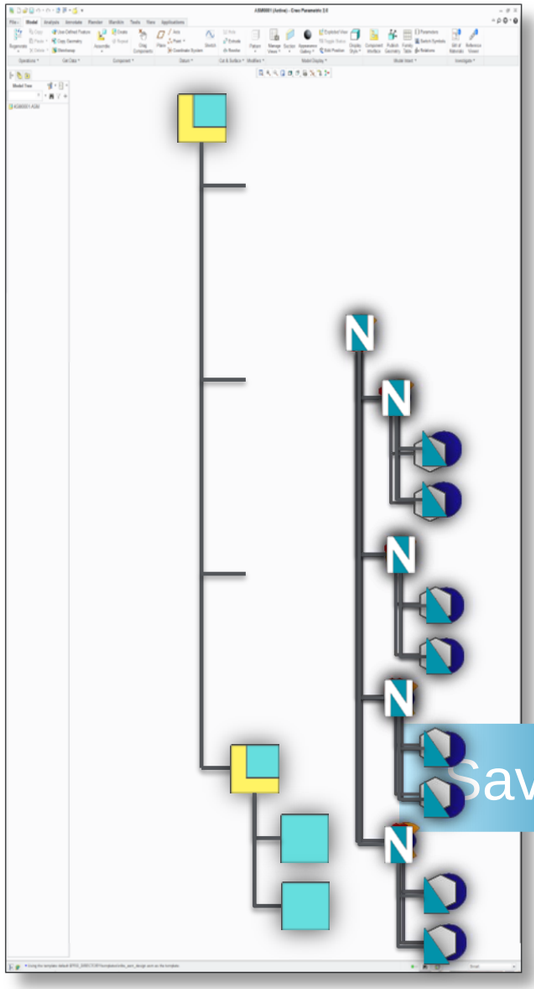
SOLIDWORKS

CATIA

NX

Update

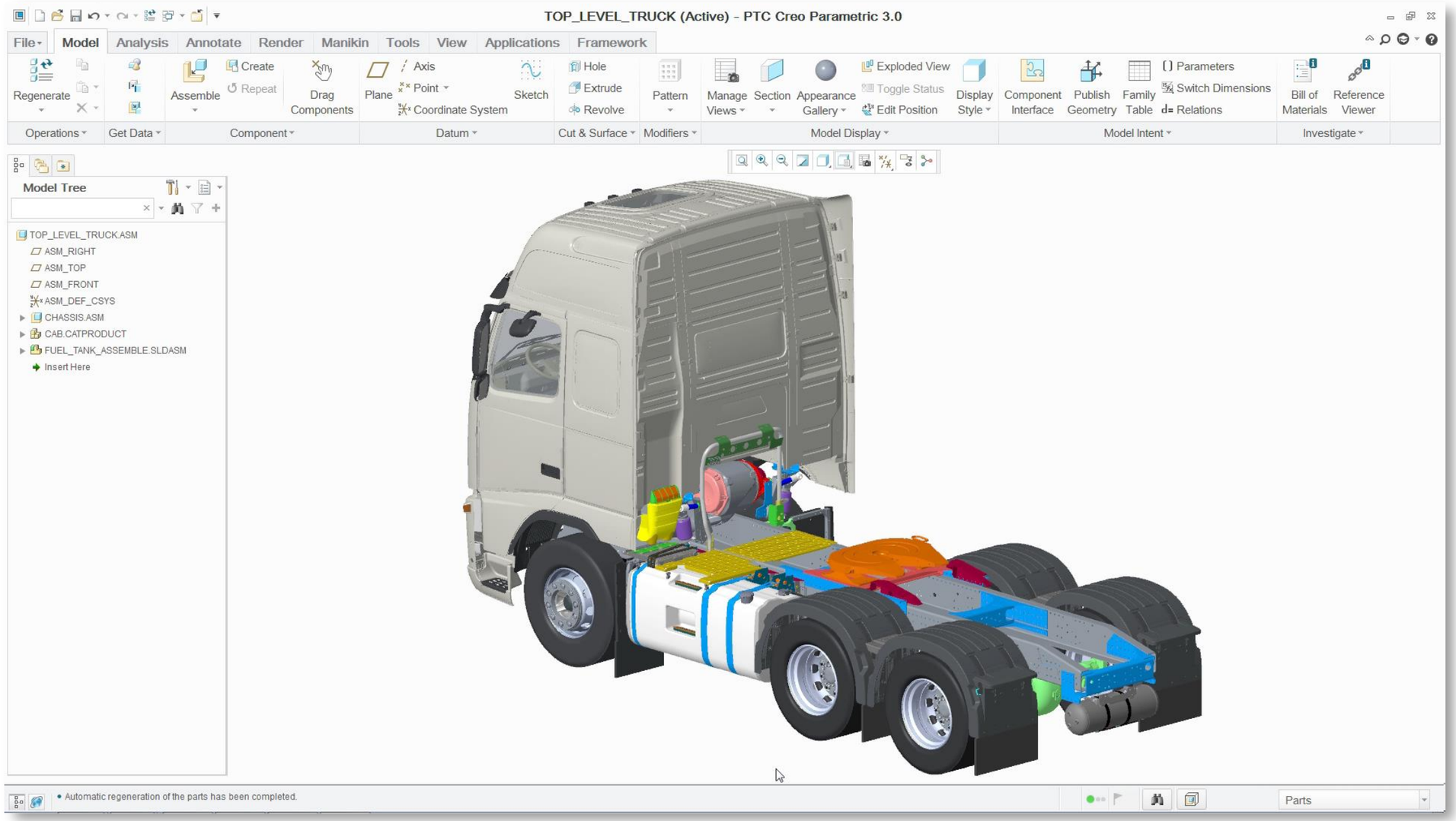
PTC Creo® 3.0



- Non PTC Creo Data:
  - Updated natively
  - Managed natively

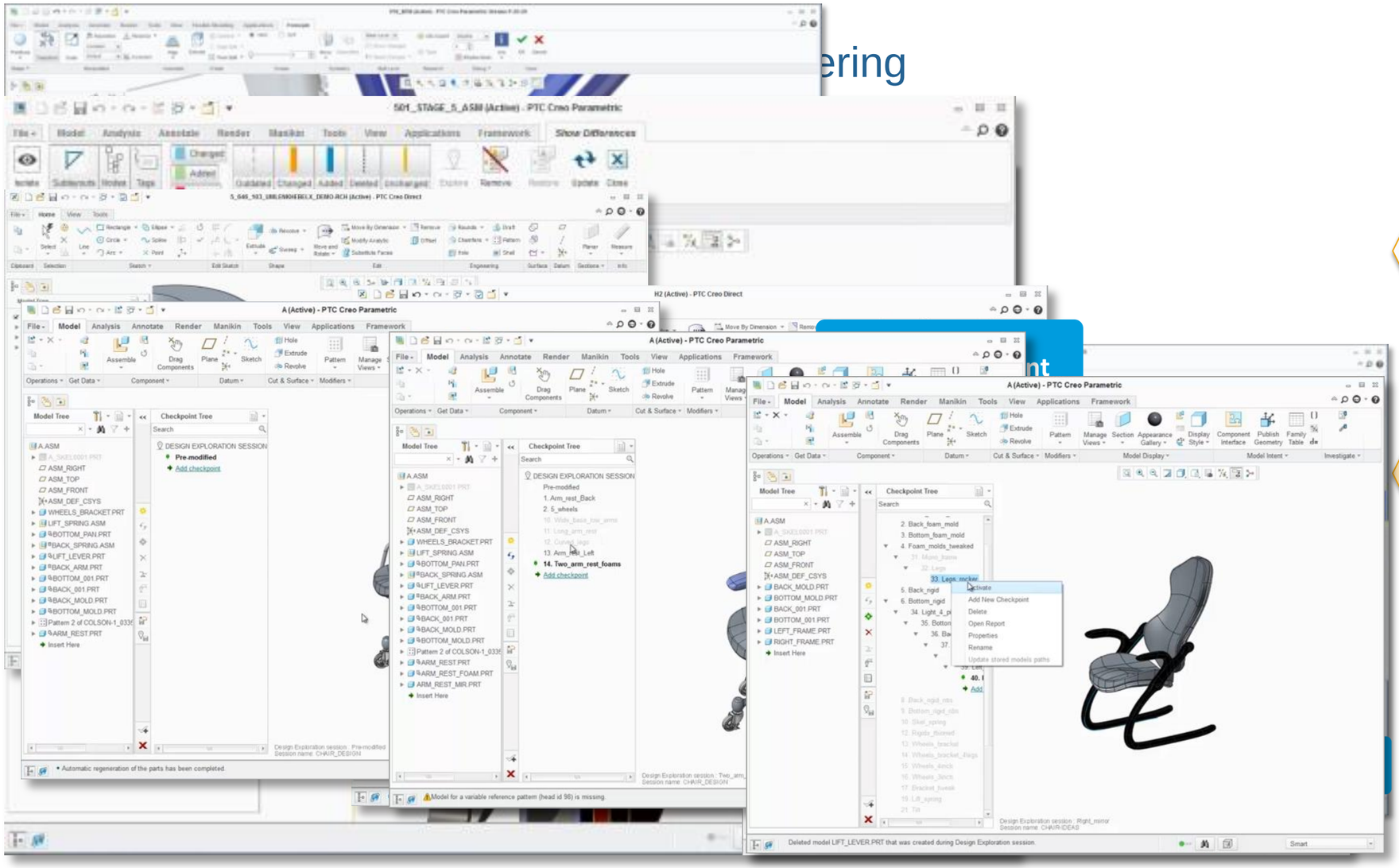
Save As

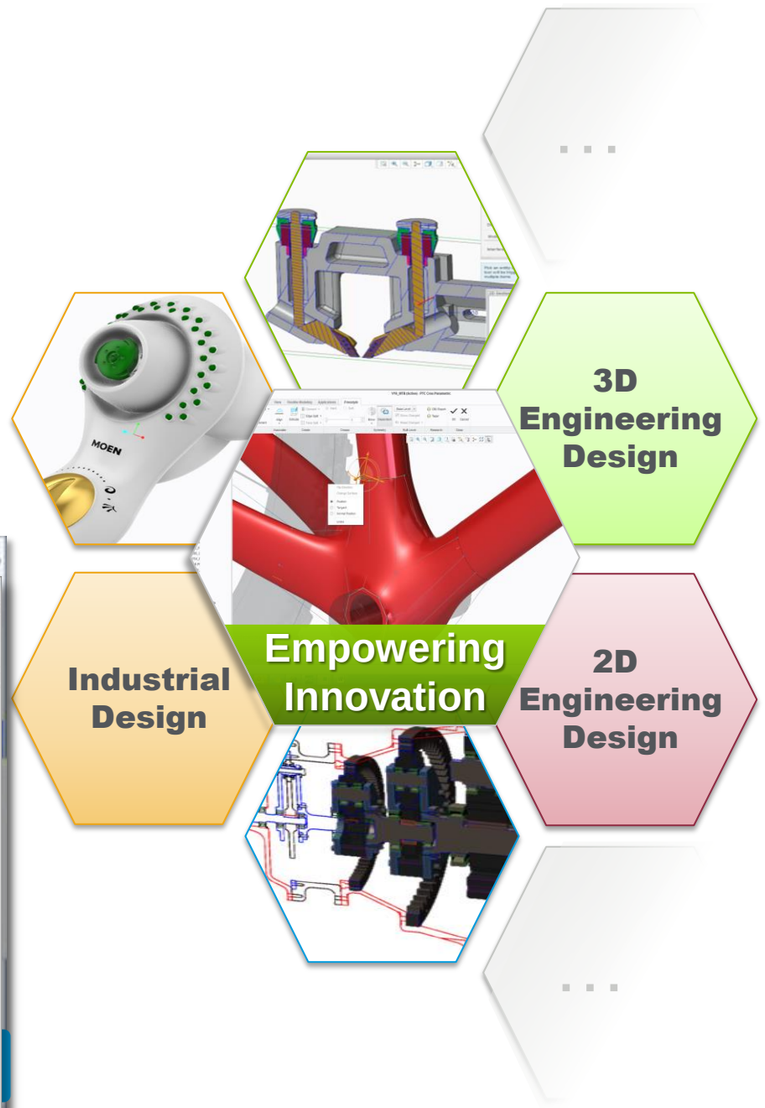
PTC Creo 3.0 Collaboration Video



Empowering Innovation with PTC Creo 3.0

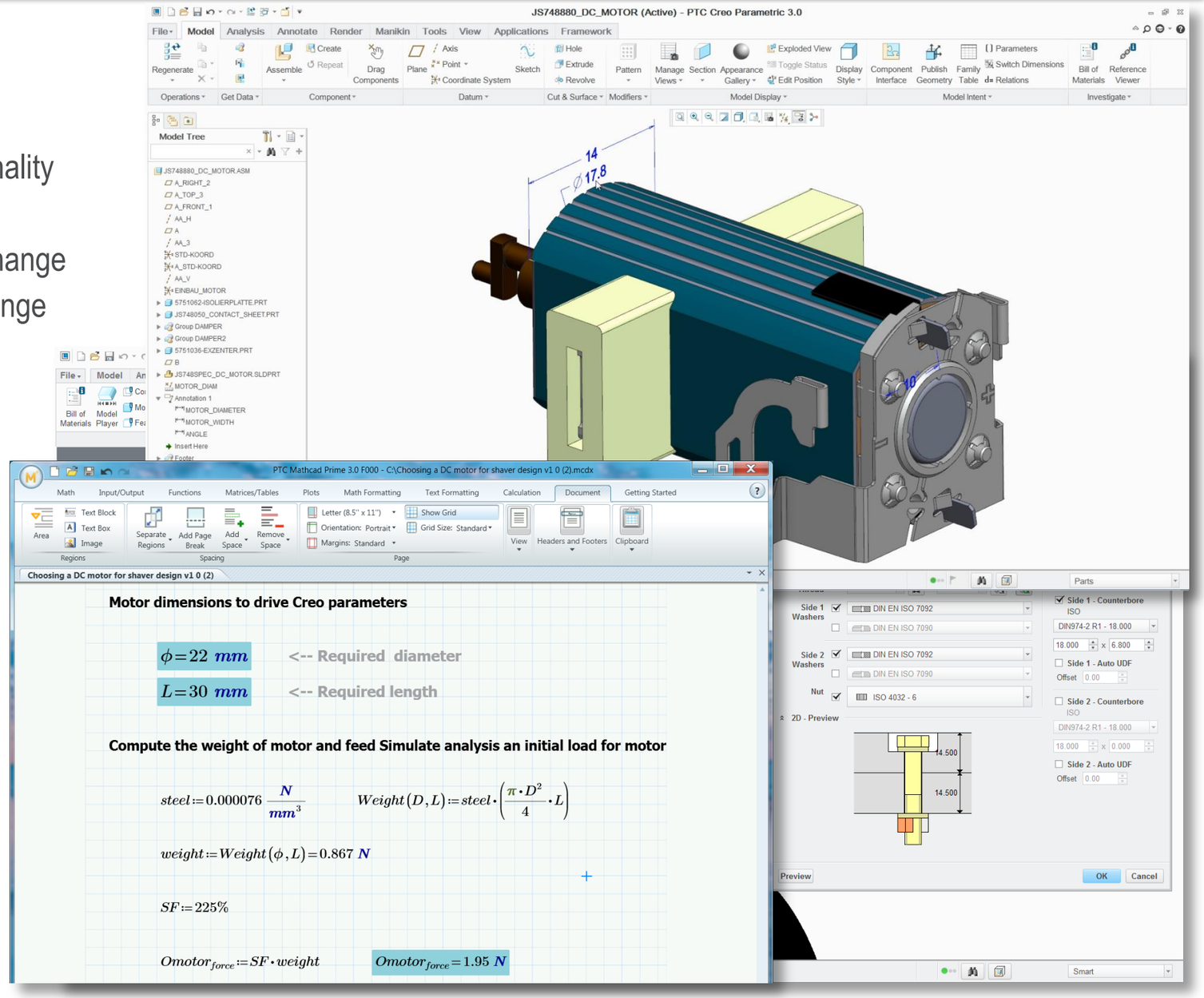
- Freestyle Blends Freeform Design with Parametric Control





PTC Creo Parametric Productivity Improvements

- New Getting Started Experience
  - Revamped Help, using custom Google search functionality
  - Startup Tutorials shipped with the product
  - Additional tutorials downloaded through Learning Exchange
  - 100+ What's New Videos available on Learning Exchange
- Integrated Hardware Libraries
  - Nuts, Bolts, Washers, Screws
  - Auto hardware selection
  - Auto counterbore
  - Pattern placement
- New PTC Mathcad Integration
  - Mathcad Express is shipped with every seat of PTC Creo Parametric.
  - Embed Mathcad worksheet in any PTC Creo part or assembly
  - Connect input/outputs from Mathcad to parameters in PTC Creo Parametric

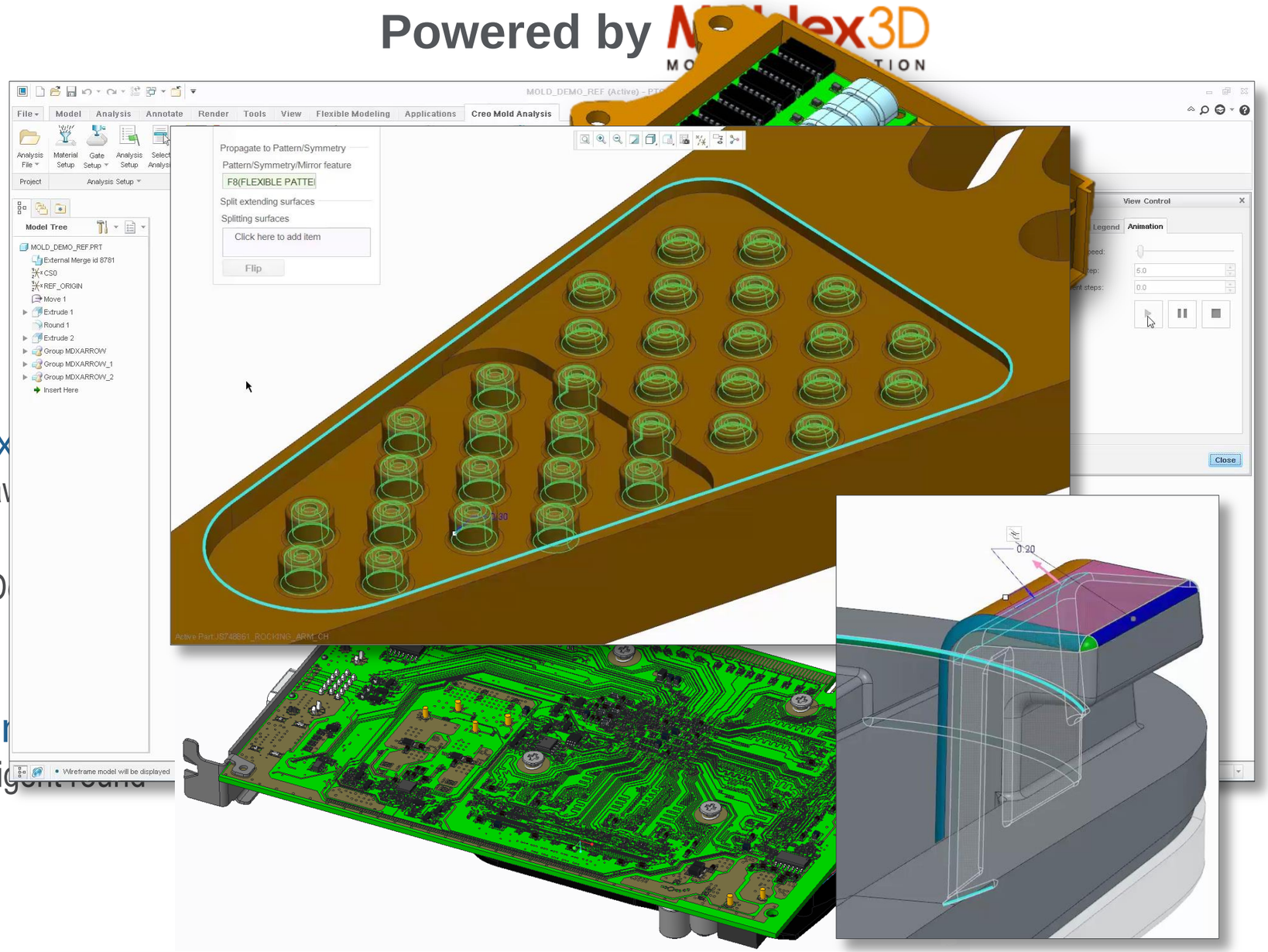


PTC Creo Parametric Productivity Improvements

INNEO® That's IT. PTC® Live Global

Powered by Moldex3D

- Mold Filling Analysis
  - Powered by Moldex3D
  - New basic capabilities embedded in every seat of PTC Creo Parametric
  - New, more advanced PTC Creo Mold Analysis Extension
- PTC Creo ECAD Collaboration Ex
  - ECAD assembly type – PTC Windchill av
  - Flex Board support
  - **New with M040 -** Copper Areas, User-D Areas.
- PTC Creo Flexible Modeling Exter
  - Tangency propagation control with intelligent round and chamfer handling
  - New Flex Pattern



PTC Creo Roadmap

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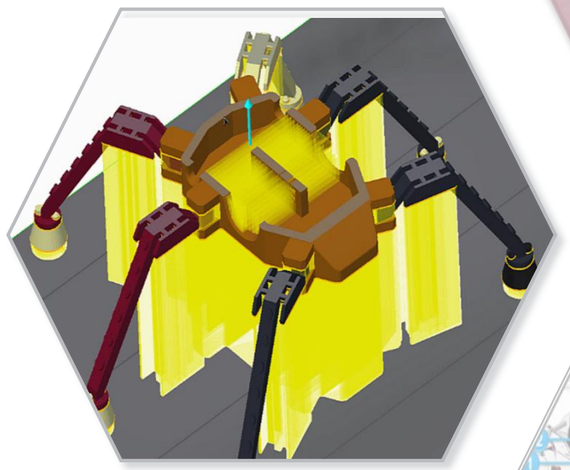
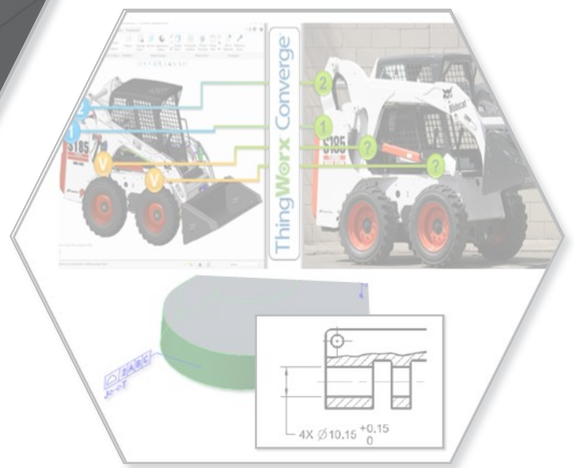
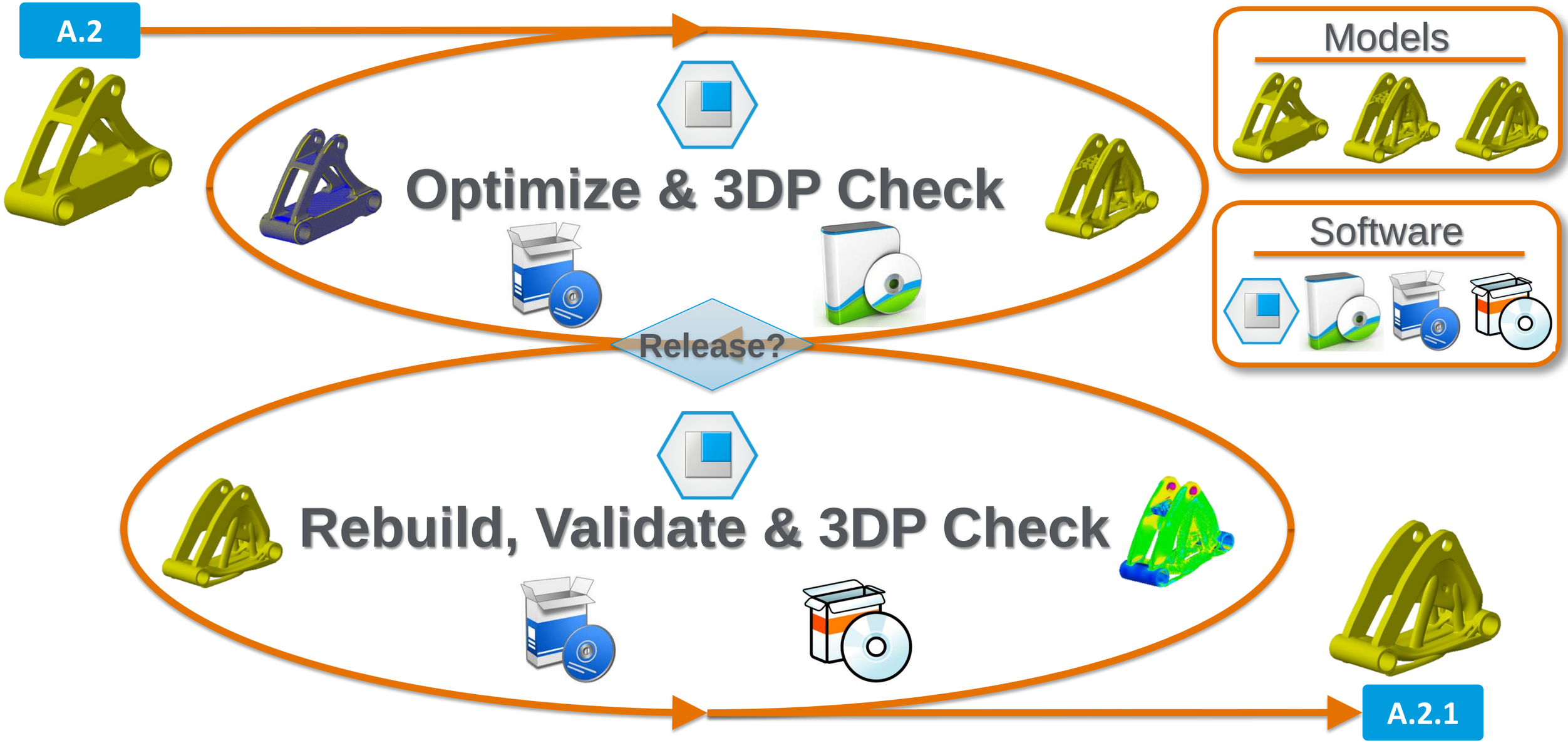
New Since June 2014

PTC Creo 4.0 and Beyond

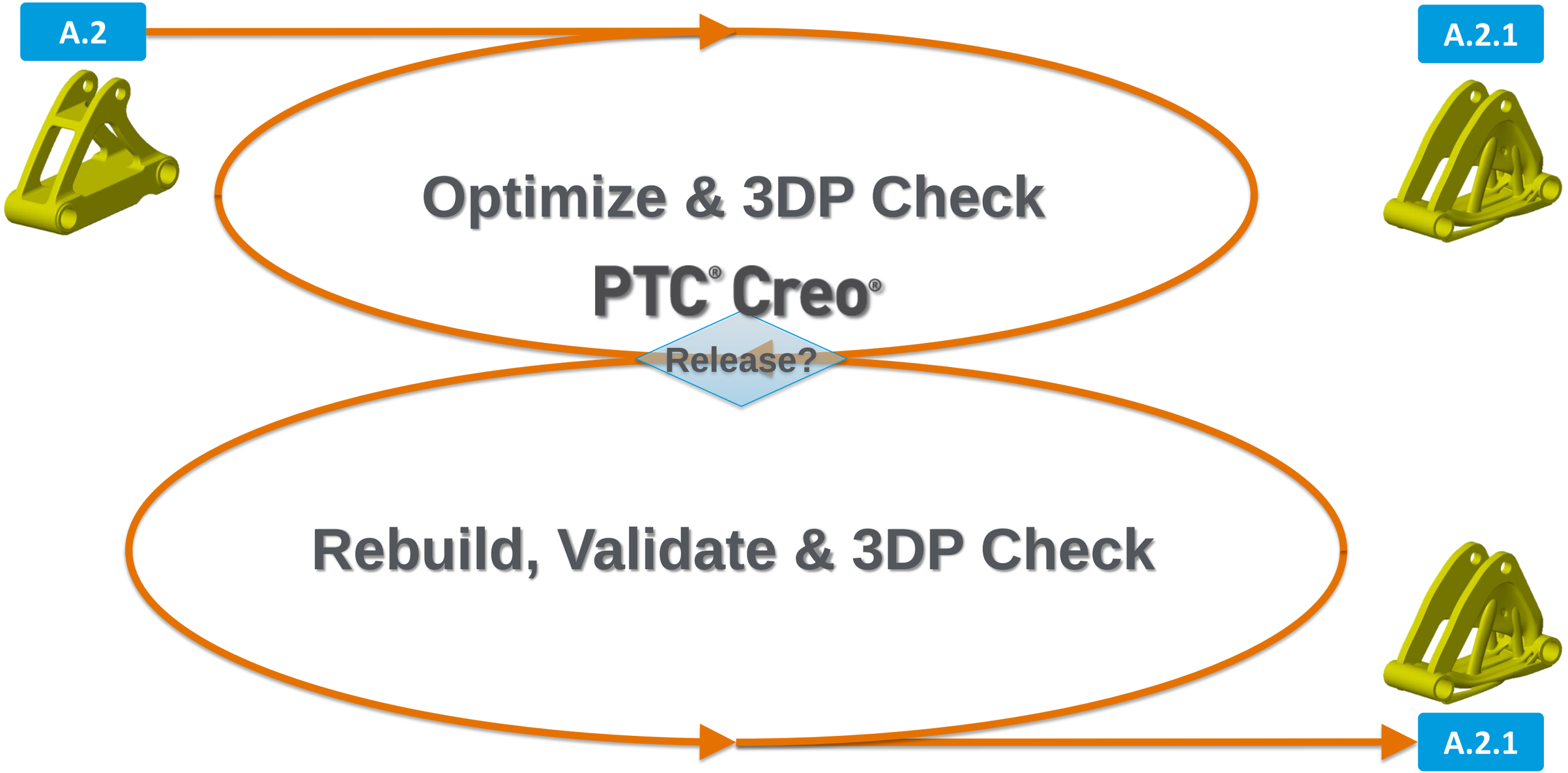




3D Printing – Challenges and Opportunities



3D Printing – A Better Way



3D Printing – A Bold Strategy, Enabled by a Strategic Partnership

Design for Additive Manufacturing, A Vision Shared by:

PTC®

Stratasys
FOR A 3D WORLD™

3D Printing – A Bold Strategy, Enabled by a Strategic Partnership

PTC will Enable our Customers to Design, Simulate, Optimize, Check for and Correct 3D Printing Issues…all in PTC Creo

In PTC Creo 3.0 M040 (NOW!):

- Preview 3D Printing issues
- Understand build times & material usage, assign colors, visualize support materials
- Print directly to Stratasys Connex Printers

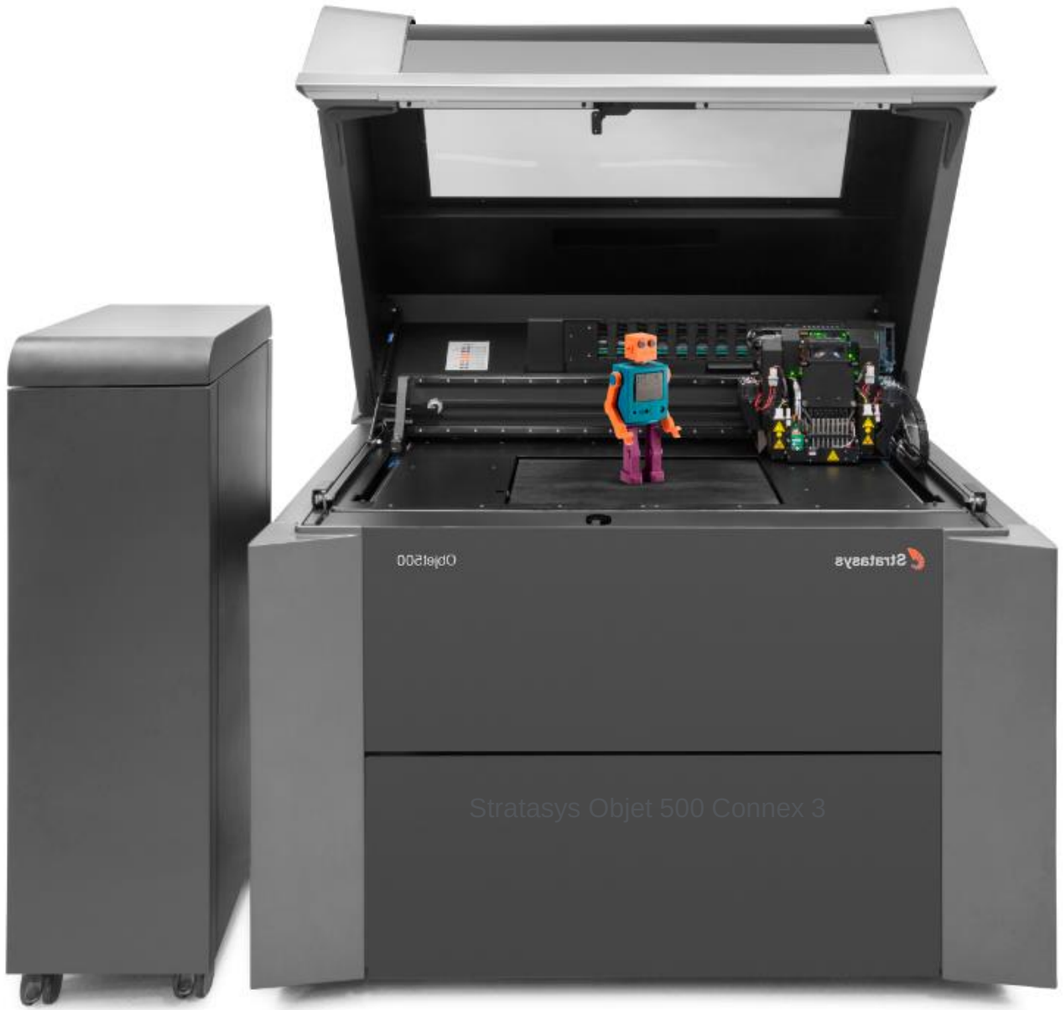
Vision for PTC Creo 4.0 and Beyond:

- **Improved Innovation** – Fewer design iterations
- **Design Freedom** – New 3d design tools to leverage free complexity of 3D Printing
- **Optimised Designs** – Reduce weight & material usage without compromising function

Benefits of the Stratasys – PTC Solution

Streamlined Workflow

Accessibility

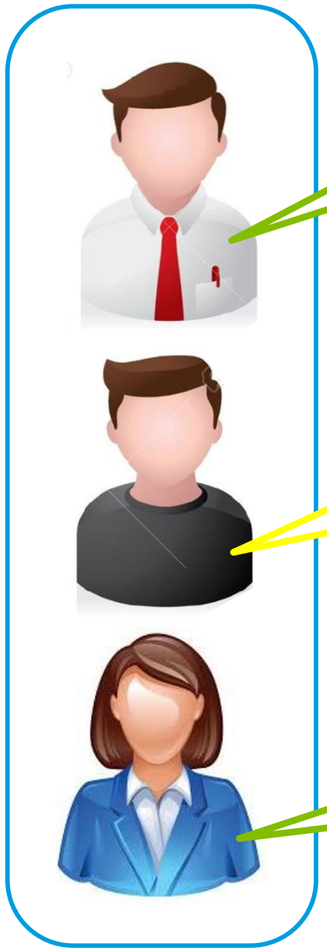


End-to-End Connectivity

CAD to Printer Integration

Managing PTC Creo in a Growing Organization

PTC Creo Administrator



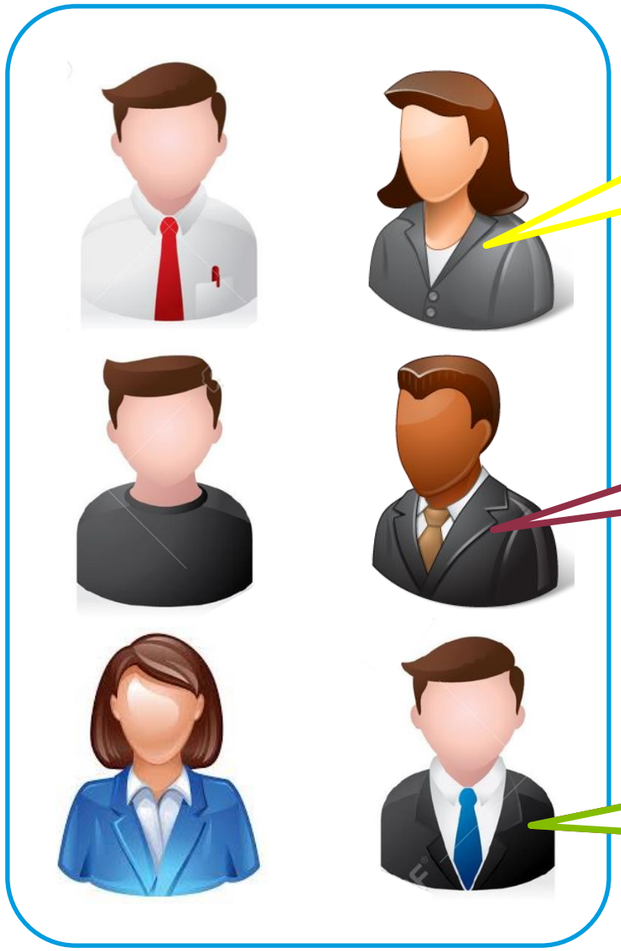
Power User
Highly Efficient
No Issues

New User
Learning Quickly
Struggling with
Rounds

Good User
Average Efficiency
Coachable

Managing PTC Creo in a Growing Organization

PTC Creo Administrator



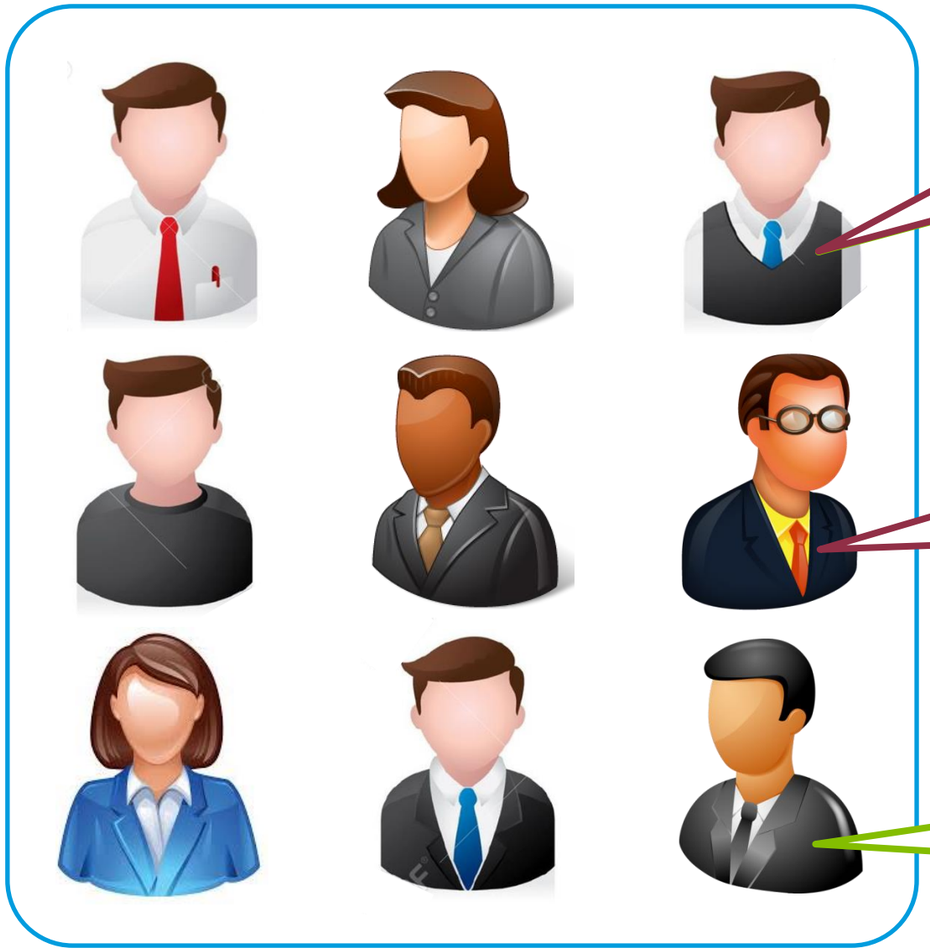
New Graduate
Quick Learner
Inefficient but doesn't realize it.

New User from NX
Inefficient
Struggling

Experienced User
Efficient
Over-states
Software Issues

Managing PTC Creo in a Growing Organization

PTC Creo Administrator



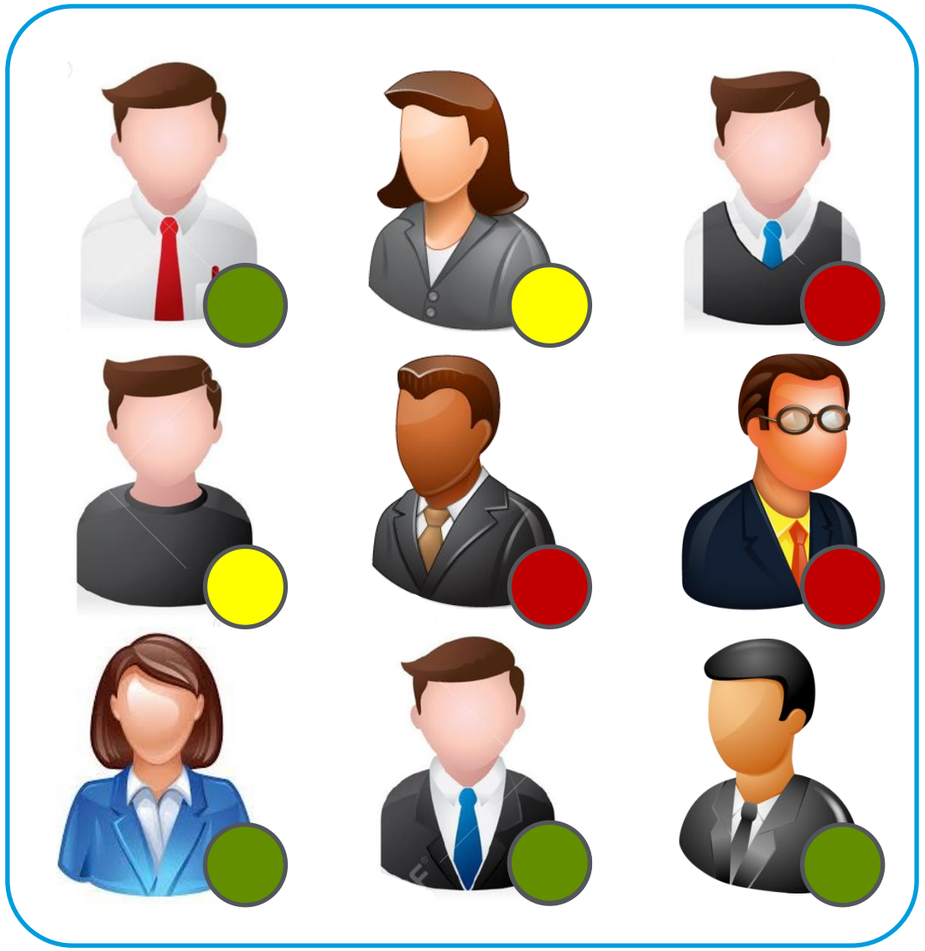
New Employee Having Stability Problems but Doesn't Report Them

New User from SolidWorks Struggling with Assembly Mode

New Employee Unexpected Power User

Managing PTC Creo in a Growing Organization

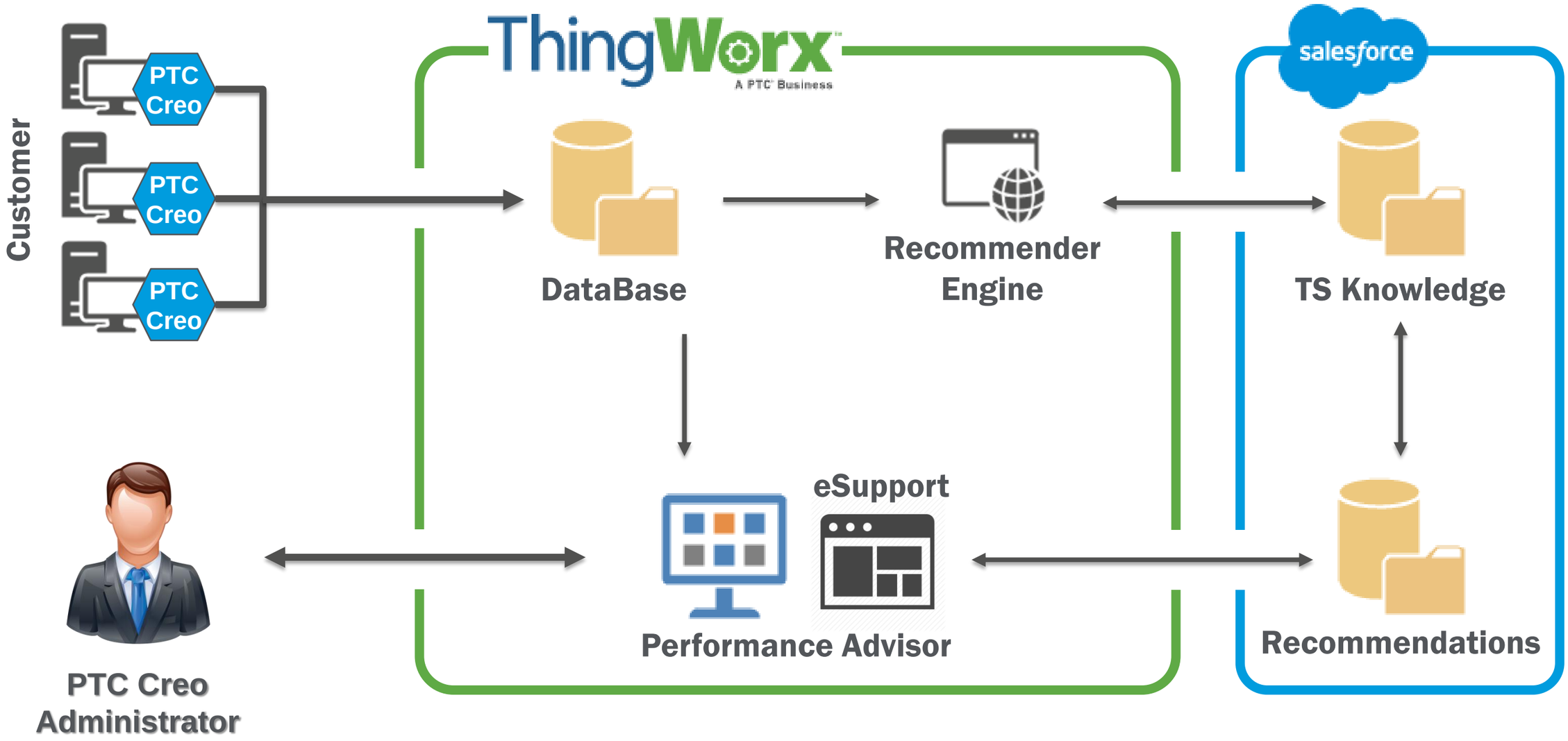
PTC Creo Administrator



- **Great!**
- **Need a Little Help**
- **Need a Lot of Help**
- **Don’t Know**

Managing PTC Creo in a Growing Organization

What if…PTC Creo Apps Were Smart and Connected…?



Introducing Performance Advisor for PTC Creo

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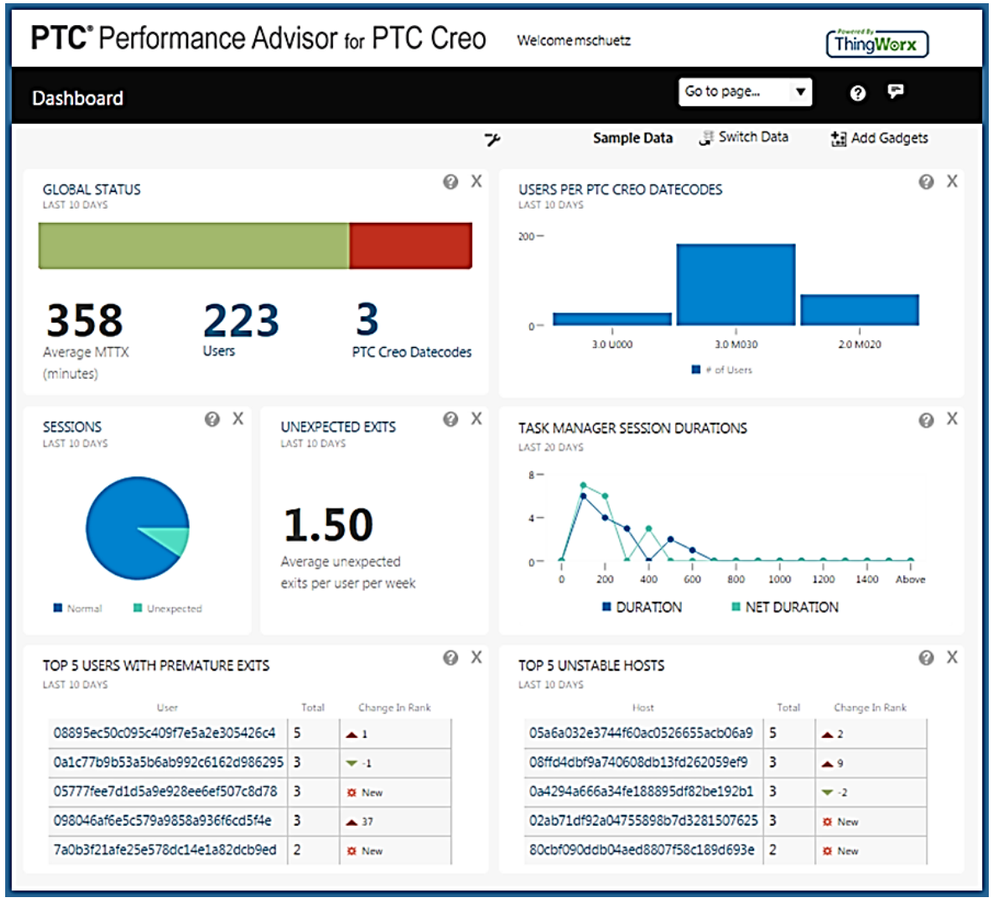
PTC Creo Real-Time Monitoring to Maximize Uptime and Provide Proactive Technical Support

- **Capabilities**
  - Detects and reports system data & performance issues
    - Quality Agent data
    - Session Logger data
  - Delivers proven recommendations from the PTC Tech Support Knowledge Base
  - Future tools/sensors:
    - Hardware and Driver support information
    - Client Inspector
    - Feature Usage and Adoption
    - License Management

- **Benefits**
  - Increase product development operational productivity
  - Lower product development costs
  - Lower the cost of IT through reduced issue volume and reduced time doing non-value-add activities
  - Optimized asset management



PTC Creo 2.0 M150+

PTC Creo 3.0 M030+

PTC Creo Roadmap

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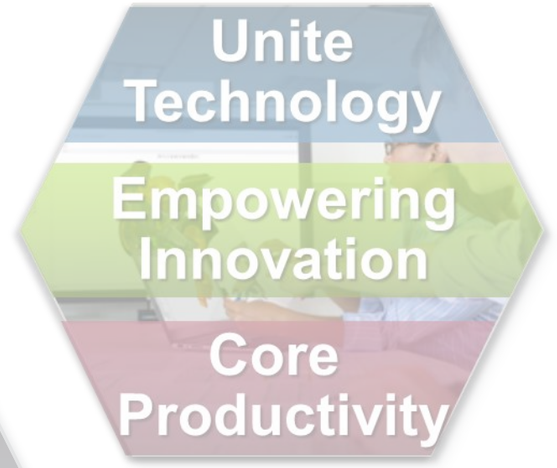
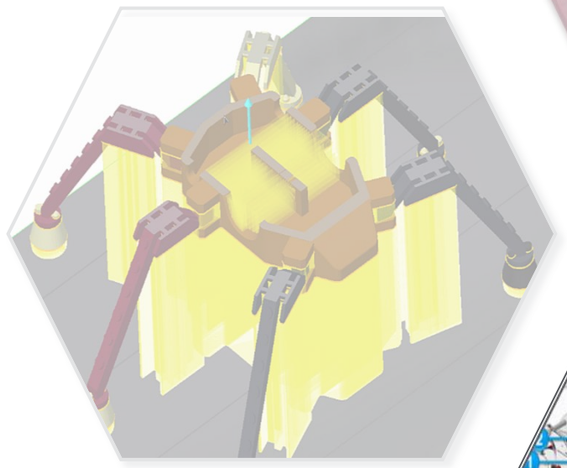
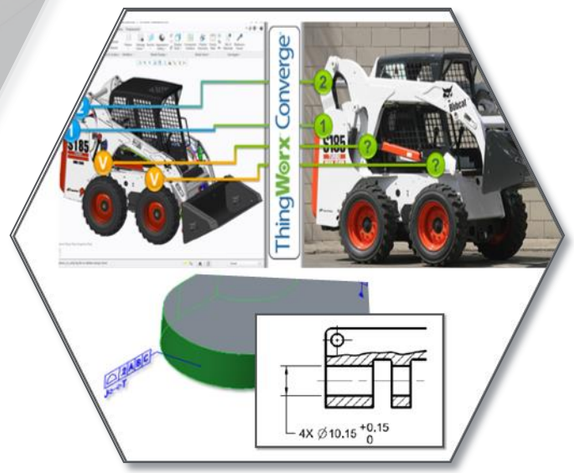
New Since June 2014

PTC Creo 4.0 and Beyond

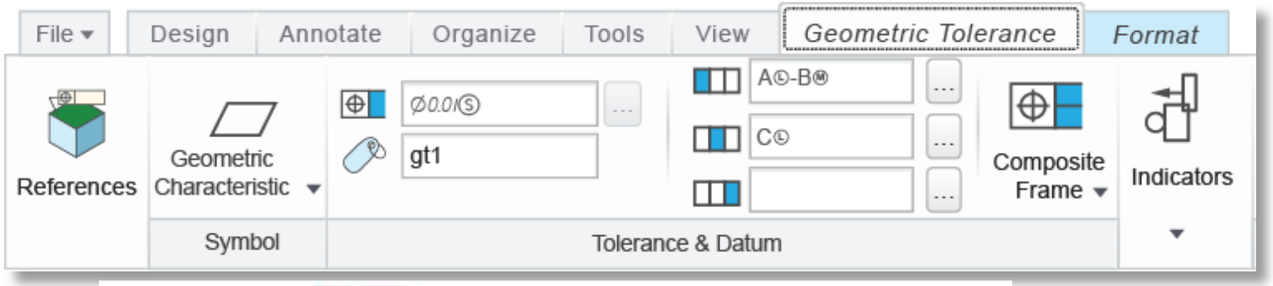


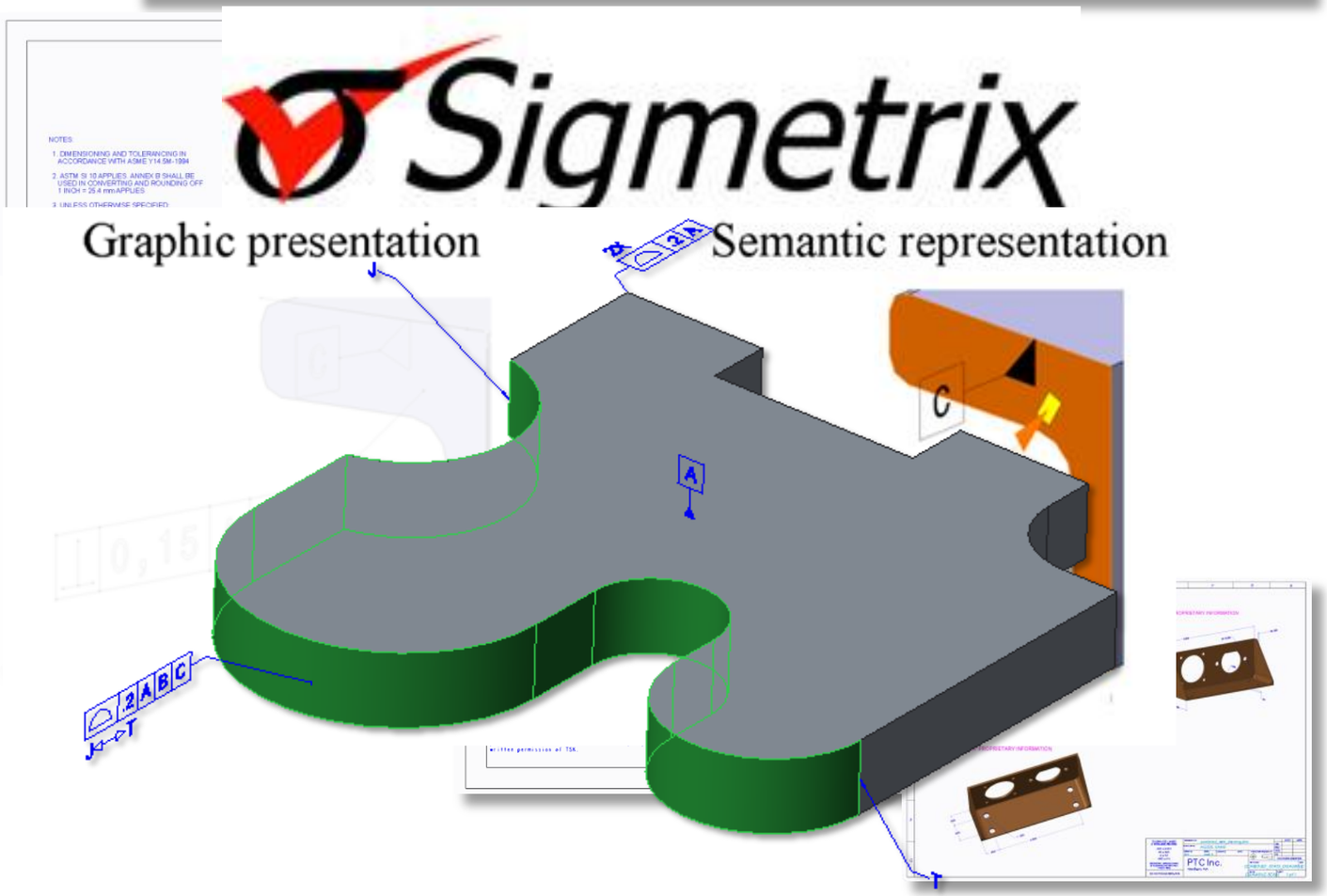




Model Based Enterprise Support in PTC Creo 4.0

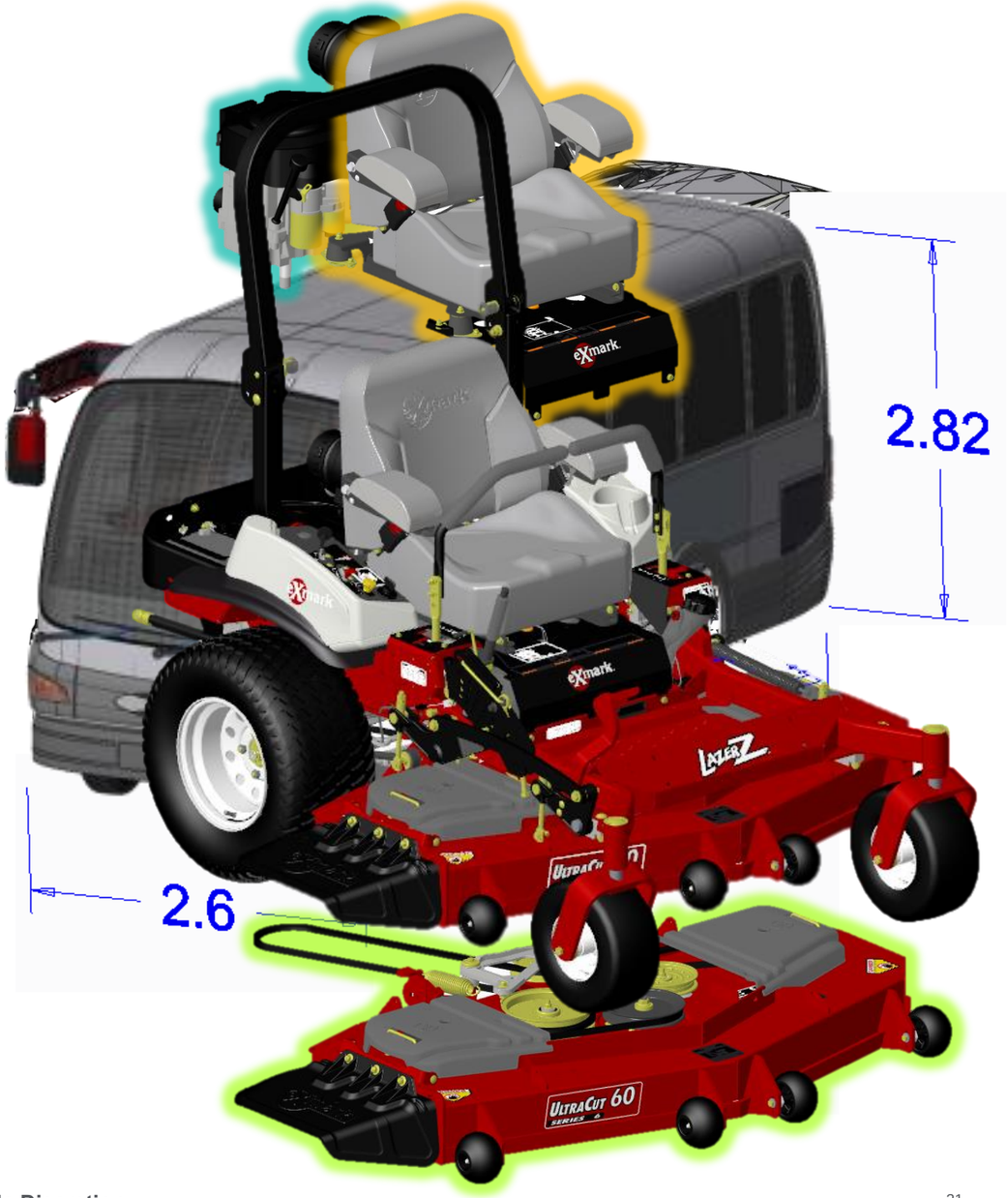
- Build Standards-Compliant 3D Annotated Models
  - Standards Support and Workflow improvements
    - ASME Y14.5-2009
    - ISO 1101-2012
  - Semantic Validation of GD&T
  - Validation of Geometric Constraints on Models
- Share Semantically Validated Models
  - STEP AP242 support for Semantic PMI
  - WYSIWYG publication to PTC Creo View
- Seamlessly Create Derivative 2D Artifacts
  - Combination State Printing
  - Associative Combination State Drawing Views





Assembly Performance in PTC Creo 4.0 and Beyond

- Better, Faster Whole-Product Design Context
  - Stream graphics directly from PTC Windchill
  - See entire product without downloading a single object
  - Browse assembly structure instantly – while graphics load
  - No Publication Overhead Required
    - PTC Creo keeps graphics information up to date automatically
    - High speed GPU compression & tessellation
- More Useful, Consolidated Graphics Rep
  - Assemble using graphics rep
  - Take measurements using graphics rep
  - Use annotated Graphics Rep on a Drawing in a “Locked” Annotation State
- Automatic Kinematic Assembly Detection & Regeneration
  - Regenerate large assemblies built in modules incredibly fast
  - Large assemblies regenerated as a set of rigid bodies when appropriate



Physical and Digital Worlds

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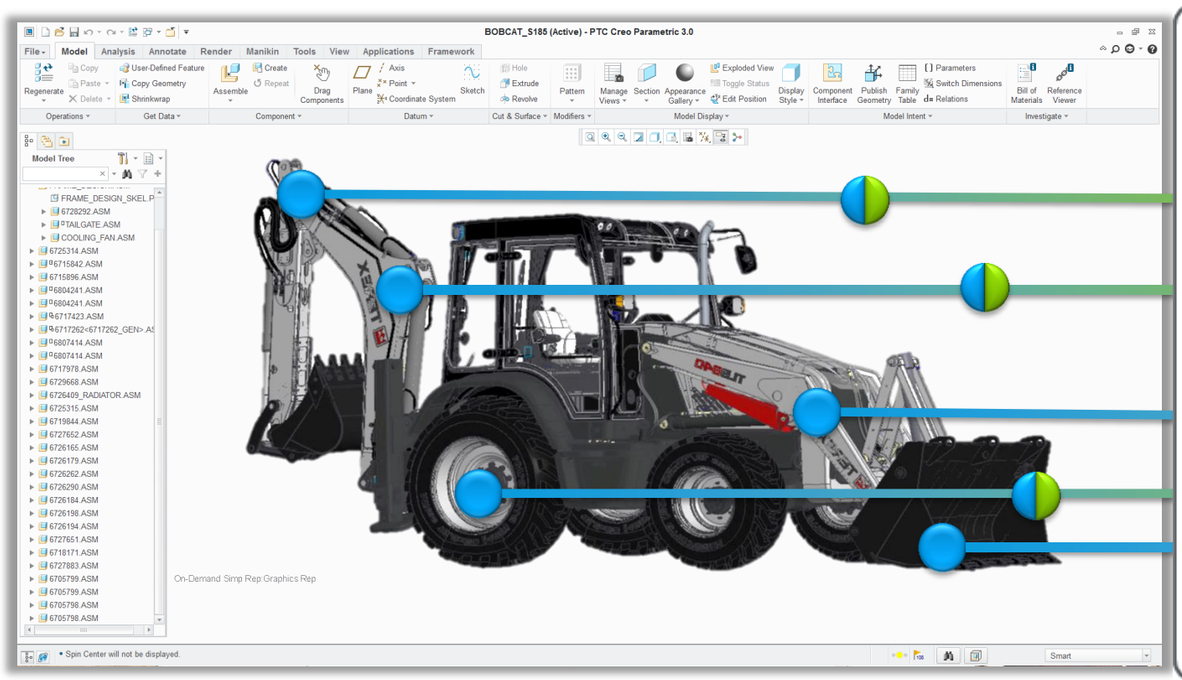
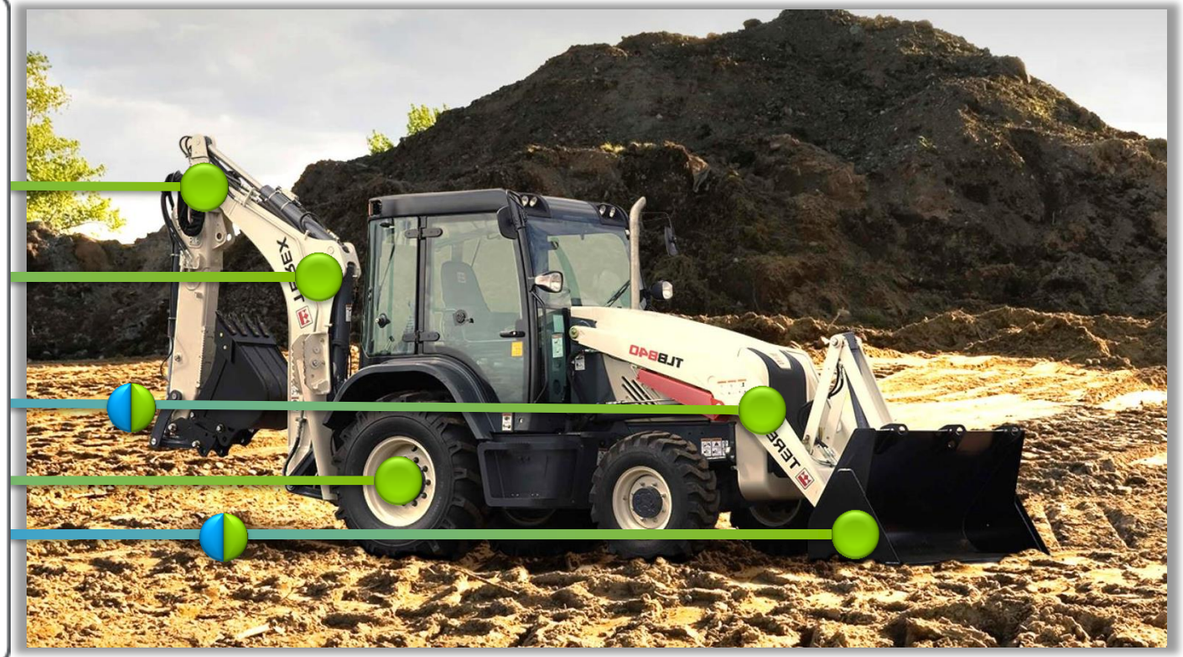
Digital Prototyp | **Digital Twin** | Physical Product



ThingWorx® Converge®



Physical and Digital Worlds

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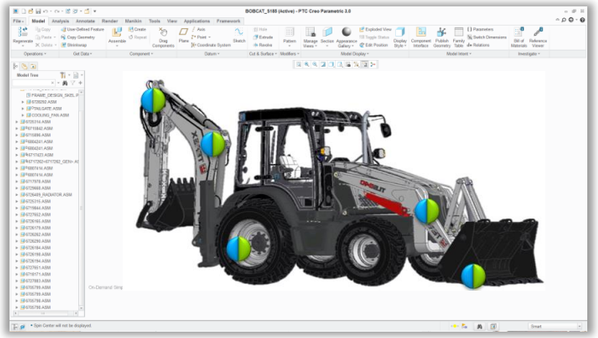
Digital Twin

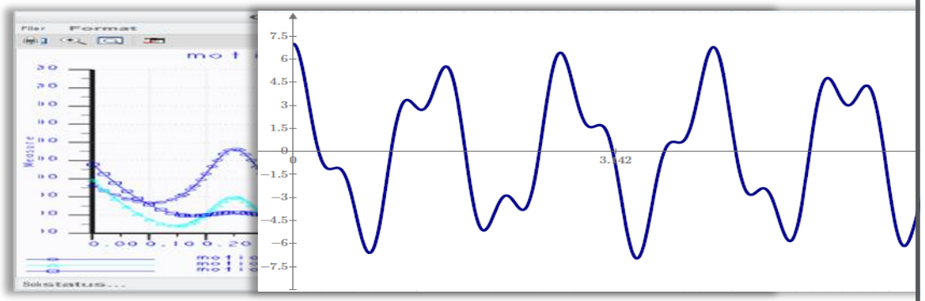
On-Machine



Engineer's Desktop

Validating Engineering Assumptions with Real-World Usage Data

Digital Prototype

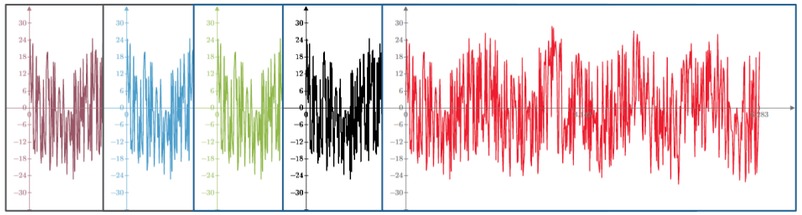


Assumption

PTC® Mathcad®

ThingWorx Converge

Product Population



Reality

Virtual Sensing

Key Differentiable Value of the PTC Creo-Enabled Digital Twin

Real Sensor Data

Smart, Connected Product Design with Digital Twin & Virtual Sensing

PTC® Creo® ThingWorx

Detailed Design Activities

- Mechanical/Elect/Software design

Place Sensors

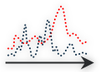
- Semantic sensor libraries
- Associative I/O attributes

Common Product and Sensor Data Structure

Initiate Thing's profile

- Name, structure, etc.
- Visualization data
- Design data (size, weight, etc.)
- Sensor Data Profile

Initial DT Simulations

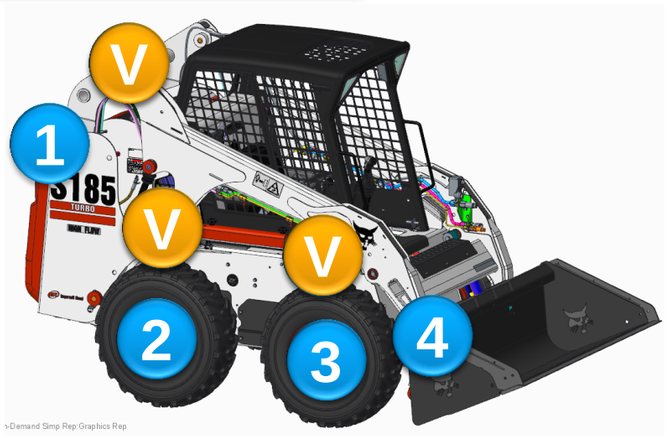


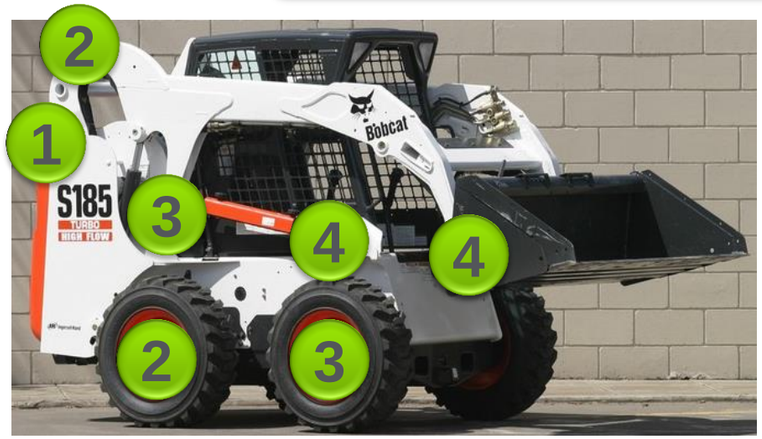
- Calculate expected sensors outputs
- **Optimize sensor choices, placement & use with Virtual Sensing**

Digital Twin Simulations Complement Collected Data

Design Dashboards

- Prepare/test with simulated data
- Optimize data presentation/processing





PTC® Live Global

PTC® PRODUCT & SERVICE ADVANTAGE®