



LIVEWORX

A NEW ERA IN PRODUCT LIFECYCLE INNOVATION

SESSION ID: PL1118B

TAKING YOUR MODULAR PLATFORMS TO THE NEXT LEVEL WITH DYNAMIC POSITIONING

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AGENDA

- Why a Platform Strategy?
- How PTC can help
- A Configure-to-Order use case
- (a little) Product Roadmap

Today, when companies think about introducing a new product, they **don't** think about making one product.....



THEY THINK ABOUT MAKING A FAMILY OF PRODUCTS

EMBRACING PRODUCT DIVERSITY

Assemble to Stock



Assemble to Order



Configure to Order



Engineer to Order



Windchill platform capabilities delivers the right market offerings with reduced complexity and cost.

BUSINESS DRIVERS

Platform Strategy payoffs

Market Demands



Enter new markets,
meet diverse
customer
requirements at scale,

Improved operating margins



Increased manufacturing
throughputs
Faster time-to-market

Reduced Cost of Poor Quality



Promotes high-levels
of Reuse
Repeatable processes

Sustainability

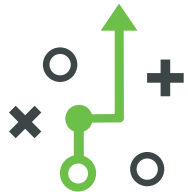


Extended product
effective use with
improved serviceability

CHALLENGES

Implementing a Platform Strategy is hard

Organizational



Enterprise Alignment,
Ownership of strategy,
architecture, modules and
interfaces
Introduction of new roles &
responsibilities

Time



Requires long-term planning,
Role out of updated
processes,
Adoption of new best-
practices

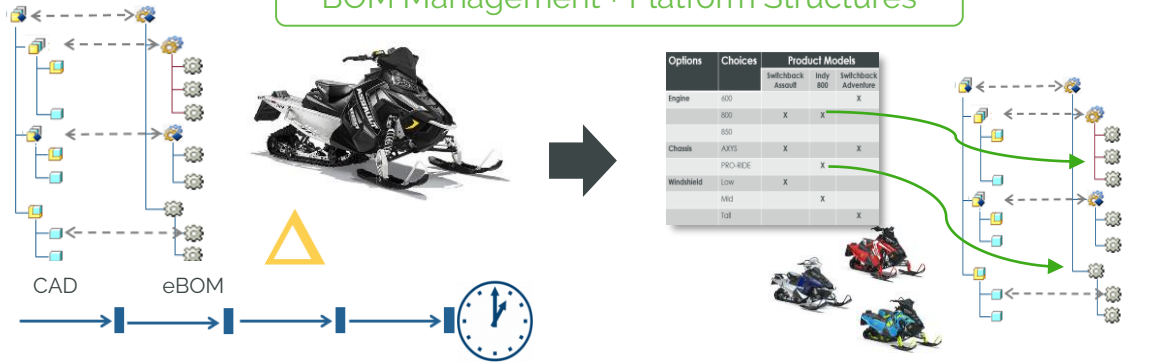
Discipline



Managing change and impact
across the entire platform,
Plan for future Innovation

WINDCHILL PLATFORMS AND THE DIGITAL THREAD

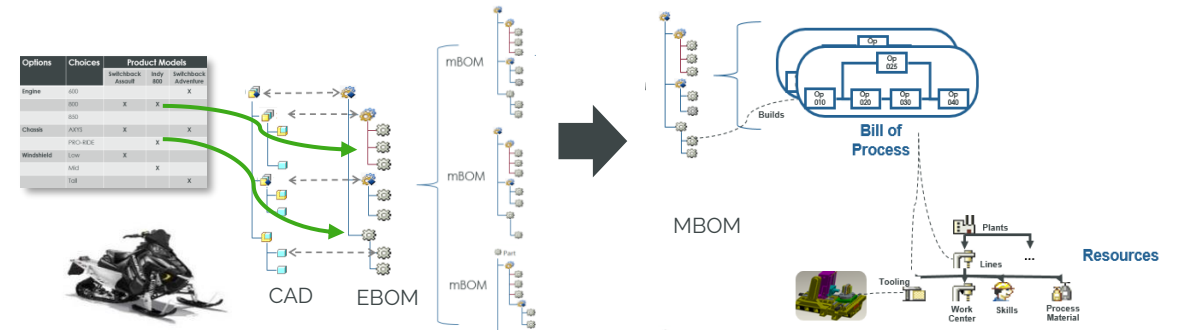
BOM Management + Platform Structures



Manage and link CAD/BOM/Visualization for a modular EBOM structure

Plan product families, manage options and generate variants for multi-year product structures.

BOM Transformation & Process Planning



Associatively Transform EBOM to MBOM and EBOM to SBOM with Options and Logic

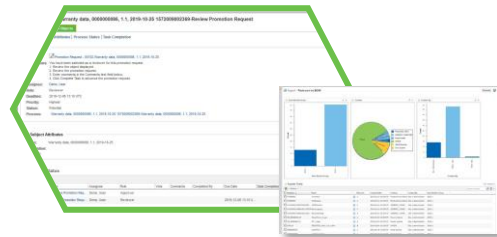
Concurrently Develop Mixed-Model Assembly Process Plans, AR for visualizing process plans

AR/Visualization



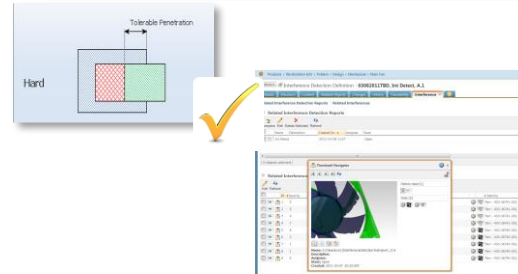
Variant-Specific AR Design Review and Visualization

Change Management



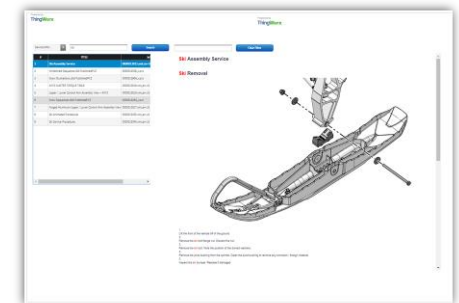
Manage Changes across the product lifecycle

Interference Detection



Variant-Specific DMU/ Interference Analysis

Service Planning



Service & Parts Information, Authoring and AR for Service

PRODUCT PLATFORM STRATEGIES

Assemble-to-Stock



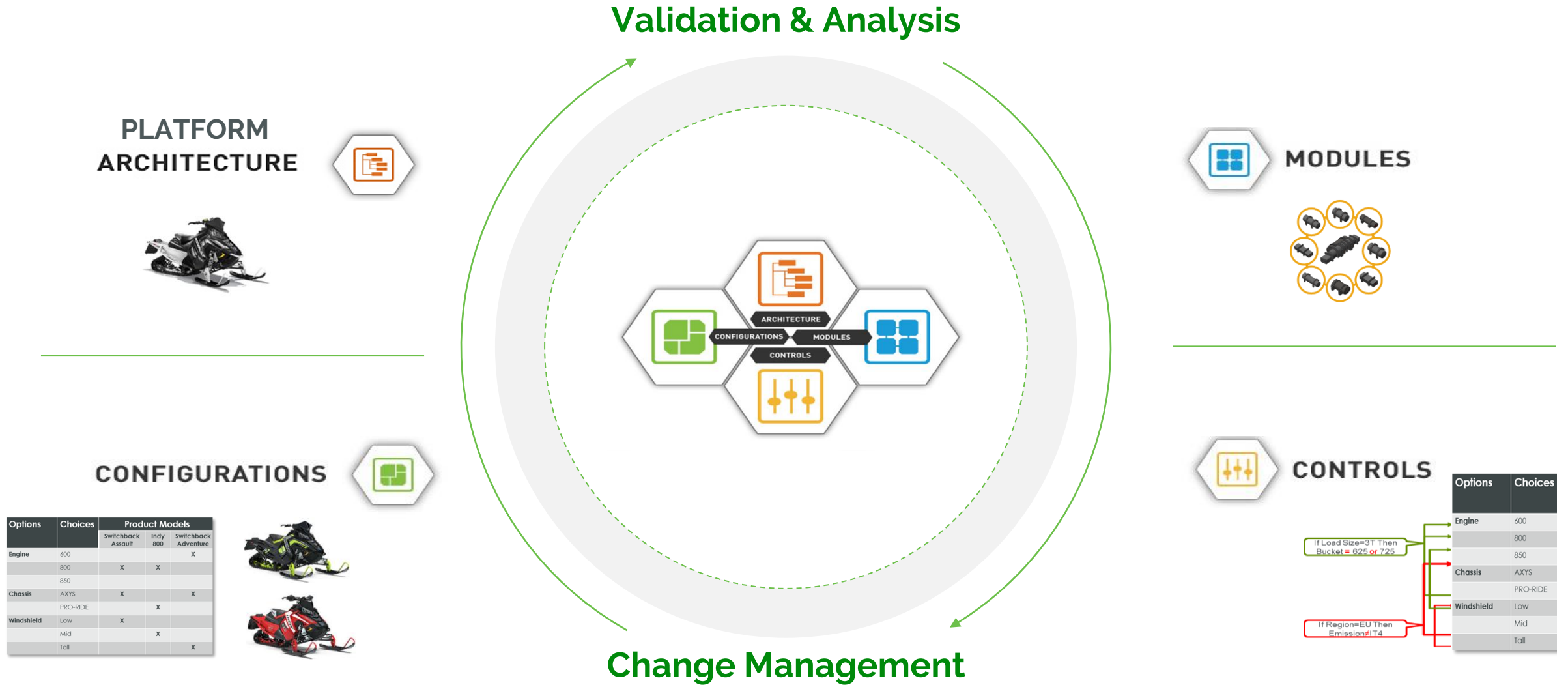
- Products you find on the “shelf”
- High volume
- Pre-defined and pre-built based on market forecasts

Assemble-to-Order



- Assembled based on individual sales order
- Moderate to high volume
- Based on pre-defined set of available discrete modular choices

BEST PRACTICE - TYPICAL MODULAR PLATFORM ELEMENTS



Options	Choices	Product Models		
		Switchback Assault	Indy 800	Switchback Adventure
Engine	600		X	X
	800	X		
	850			
Chassis	AXYS	X		X
	PRO-RIDE		X	
Windshield	Low	X		
	Mid		X	
	Tall			X

Options	Choices
Engine	600
	800
	850
Chassis	AXYS
	PRO-RIDE
Windshield	Low
	Mid
	Tall

Logic rules shown in the diagram:

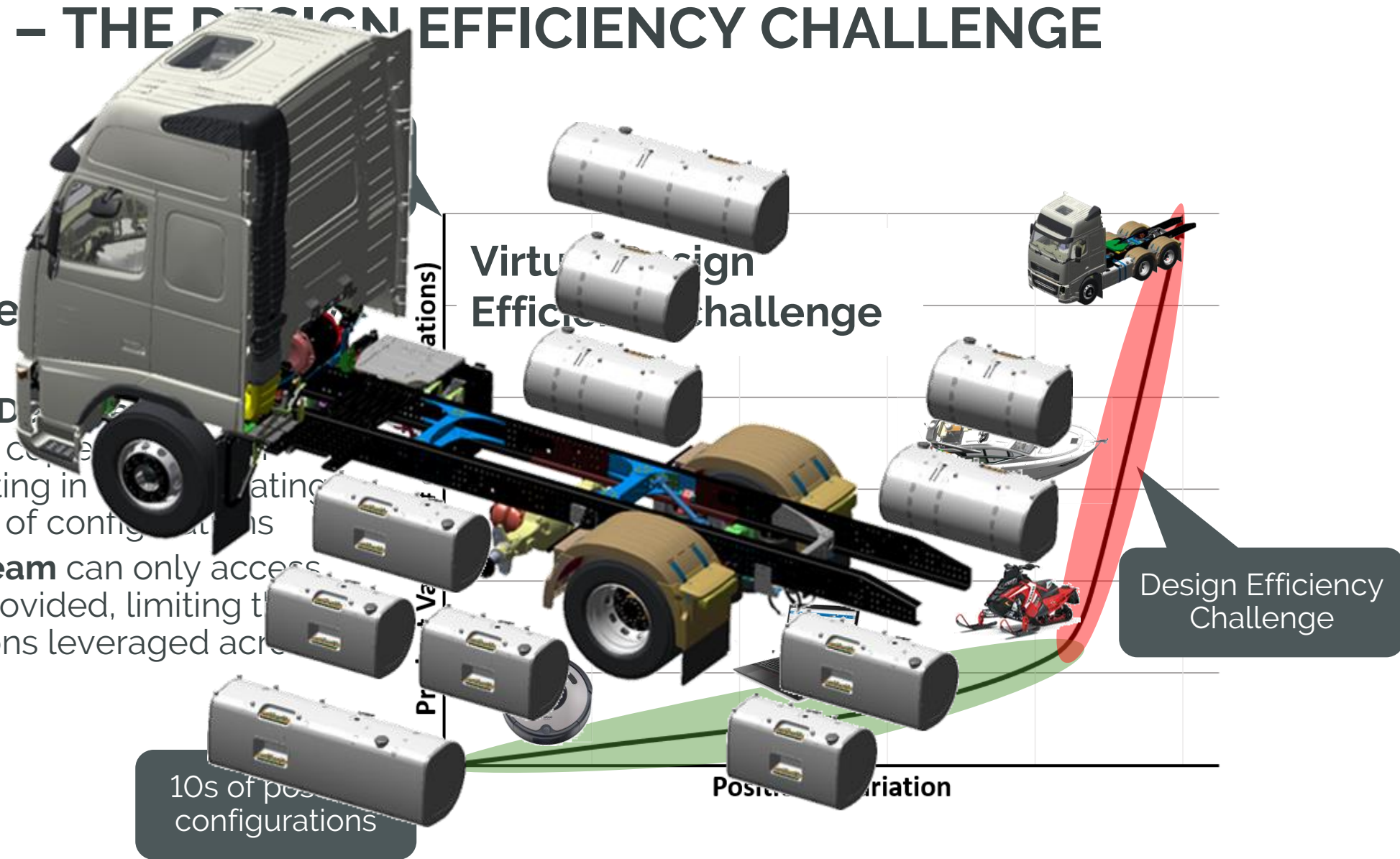
- If Load Size=3T Then Bucket = 625 or 725
- If Region=EU Then Emission=IT4

PTC's solution manages modular platform "elements"

PLATFORMS – THE DESIGN EFFICIENCY CHALLENGE

■ The Virtual Design Efficiency Challenge

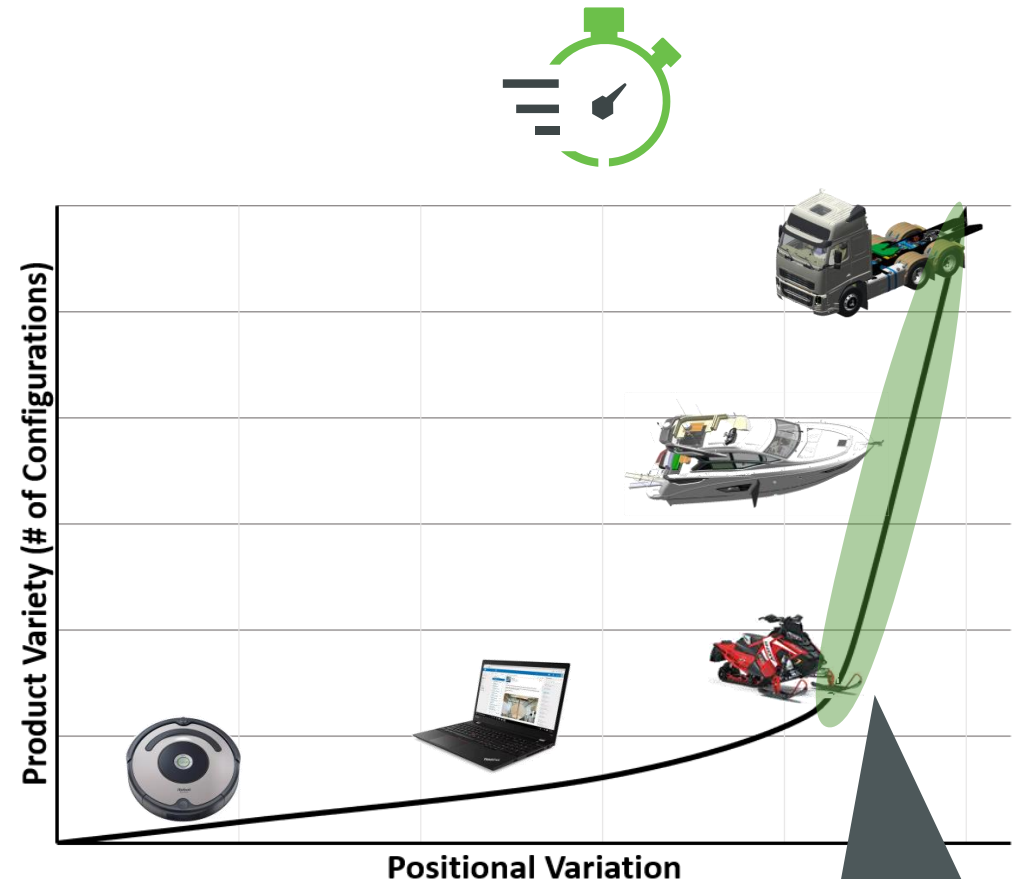
- **Engineers** and **Designers** manually place components and elements resulting in a limited number of configurations
- The **Product Team** can only access the solutions provided, limiting the range of solutions leveraged across the enterprise



INTRODUCING WINDCHILL SMART PLATFORMS

WC 12.0.2.0

- Building on top of the powerful platform foundation, Windchill 12 introduced Windchill Smart Platforms
- Smart Platforms delivers dynamic positioning enabling designing, visualizing, and validating across the range of virtual product configurations
 - **Engineers** and **Designers** can now create, visualize and manage the entire product platform
 - **Product Team** members can view available configurations by simply selecting the logic and seeing the viewable



Virtual Design Enabled with Smart Platforms

WINDCHILL SMART PLATFORMS

- Windchill can intelligently build and visualize new product variants directly **without the need to create all the manual copies in CAD** to manage variations in **position**



PLATFORM ARCHITECTURE

Capture design intent directly through new positioning architecture



CONTROLS

Use rules to control assembly logic including positioning



MODULES

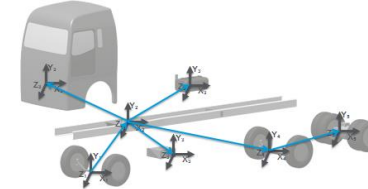
Expose positioning intent directly from CAD construction geometry



CONFIGURATIONS

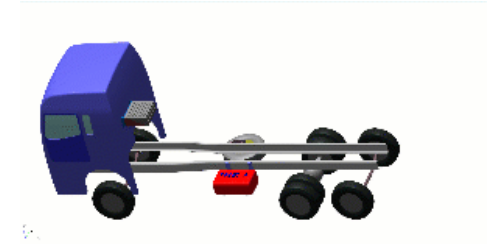
Modules will be positioned dynamically based on architecture and logic resulting in visualization available in many locations - Visualization Tab, Creo View, or persisted into Design Context for Opening in CAD

WC 12.0.2.0



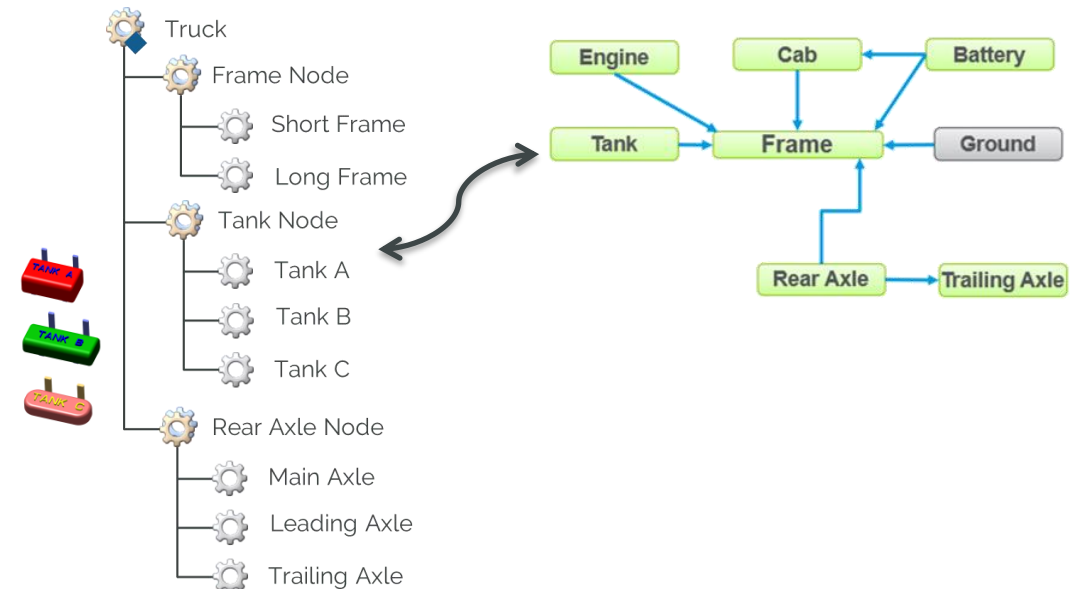
150% - GENERIC OVERLOADED BOM

WHAT



VIRTUAL PRODUCT ARCHITECTURE

HOW



DEMO

The screenshot displays the Windchill CAD software interface. The top navigation bar shows the current product path: Products > Volvo Truck AVP 1027. The main workspace is divided into two primary sections: a hierarchical structure tree on the left and a 3D model view on the right.

Structure Tree (Left):

Identity	Name	Assigned Us...	Assigned It...
Root Node - SPT2022, SPT2022, A.6 (Design)	SPT2022		
010100022, ATTACHMENTS, A.7 (Design)	ATTACHMENTS		
010100017, CABIN, A.1 (Design)	CABIN		
010100025, CABLING, A.1 (Design)	CABLING		
010100026, COOLING, A.7 (Design)	COOLING		
010100000, ENGINE, A.7 (Design)	ENGINE		
010100005, EXHAUST SYSTEM, A.7 (Design)	EXHAUST SYSTEM		
010100009, FRAME, A.7 (Design)	FRAME		
010100023, FUEL TANKS, A.7 (Design)	FUEL TANKS		
020100047, FUEL TANK FRONT BRACKET, A.6 (Design)	FUEL TANK FRONT BRACKET		
030100056, FUEL TANK FRONT BRACKET 1, A.3 (Design)	FUEL TANK FRONT BRACKET 1		
020100046, FUEL TANK MAIN, A.7 (Design)	FUEL TANK MAIN		
030100052, FUEL TANK 480 L, A.5 (Design)	FUEL TANK 480 L		"480 L"
030100054, FUEL TANK 480 L NOSTEP, A.4 (Design)	FUEL TANK 480 L NOSTEP		"480 L No St..."
030100051, FUEL TANK 620 L, A.5 (Design)	FUEL TANK 620 L		"620 L"
030100055, FUEL TANK 620 L NOSTEP, A.5 (Design)	FUEL TANK 620 L NOSTEP		"620 L No St..."
030100053, FUEL TANK 870 L, A.5 (Design)	FUEL TANK 870 L		"870 L"
020100048, FUEL TANK REAR BRACKET, A.6 (Design)	FUEL TANK REAR BRACKET		
030100057, FUEL TANK REAR BRACKET 1, A.3 (Design)	FUEL TANK REAR BRACKET 1		
010100001, GEARBOX, A.7 (Design)	GEARBOX		
010100024, PIPING, A.1 (Design)	PIPING		
010100021, SUSPENSION, A.7 (Design)	SUSPENSION		
010100002, TRANSMISSION, A.7 (Design)	TRANSMISSION		

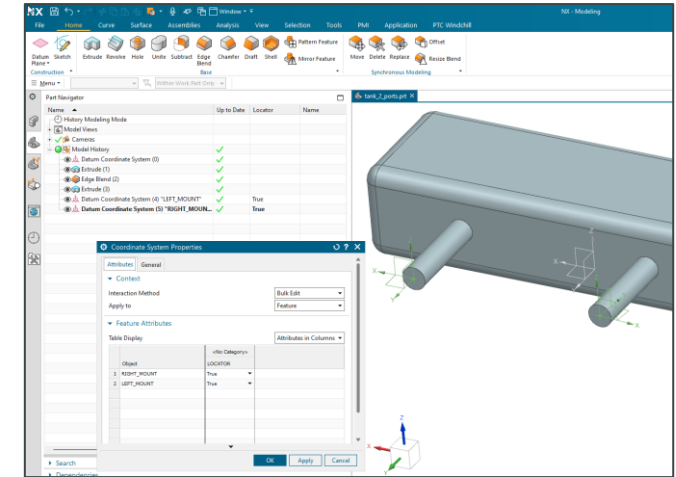
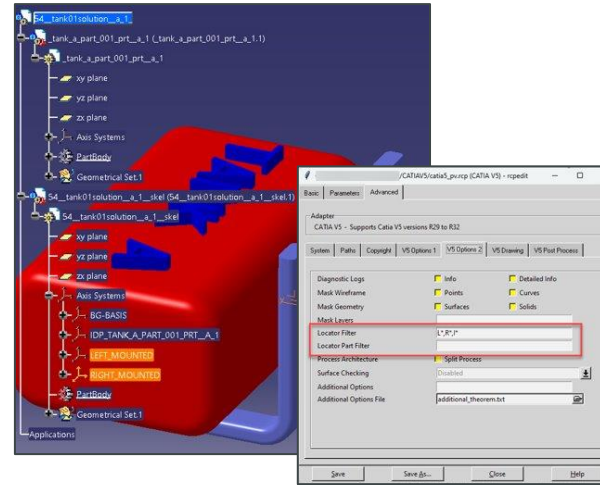
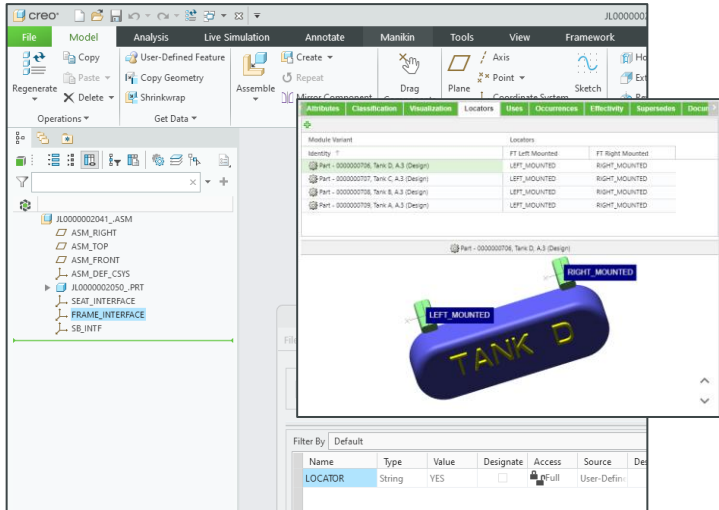
3D Model View (Right):

The 3D model shows a truck chassis with various components highlighted in different colors. A coordinate system (X, Y, Z) is visible at the bottom left of the model view. The model is rendered in a perspective view, showing the front and side of the chassis.

Navigation and Tools:

The interface includes a search bar at the top right, a navigation pane on the left, and a toolbar with various tools for editing, viewing, and managing the CAD data. The bottom status bar shows the current time as 9:20 PM on 9/30/2022.

NOW AVAILABLE IN MULTIPLE FLAVORS!



- Available since Windchill 12.0.2.0
 - Creo View 8.0
- Locator support for Skeleton Coord Sys.
 - Creo View 8.1

- Supports Skeleton Coord. Systems only
- Requires:
 - THEOREM CADverter 25.4.01
 - WWGM 12.1.2.0 (avail since Dec 2022)

- Locator Support
 - Creo View 10.0 (coming June 2023)
- Additional work required to support Open filtered configuration in NX

CONFIGURE-TO-ORDER



- Products can be fully designed with configuration rules
- Allowing for high degrees of variability and creation of custom parts using complex logic algorithms
- Each order configured & validated by PLM using rules established by Engineering
- Examples:
 - Commercial refrigerators
 - Wind turbines
 - Elevators

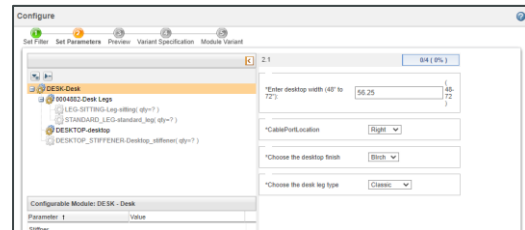
having variables like length and width or number and type of floors drive unique configurations.

CONFIGURE TO ORDER - SCENARIO

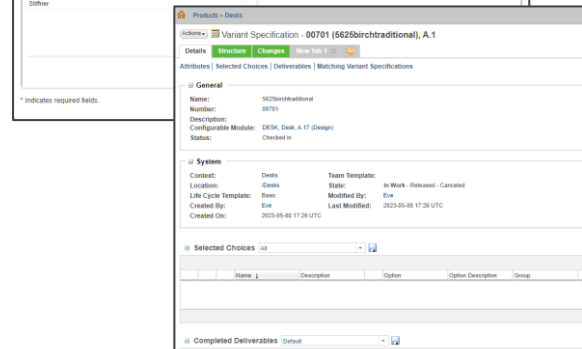
- Office Furniture Manufacturer
- Deliver custom office/home desk solutions
- For specific model customer can choose from:
 - Desktop surface width (50"-72")
 - Select for a set of Desktop finishes
 - Stiffener added based on selected width
 - Specify cable hole location (L,R,C)
 - Choose from available leg styles



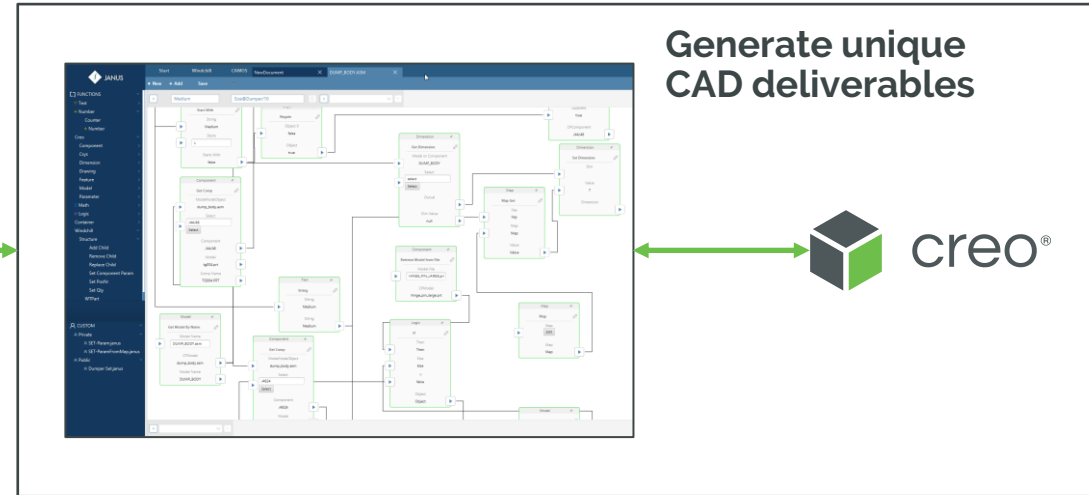
FULFILL DESK ORDERS USING ADVANCED LOGIC



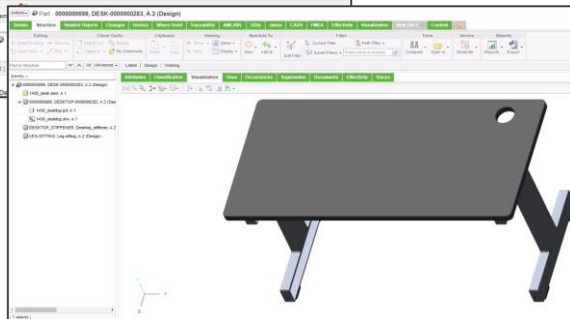
Configure Variant



Retrieve Variant Spec,
Configurable Product,
related CAD





Generate unique
CAD deliverables



Update Variant BOM
with variant specific
CAD

DEMO



STEP 1:
**DEFINE YOUR
CONFIGURATION LOGIC**

WANT TO LEARN MORE ABOUT JANUS?

CADS ENGINEERING GMBH

For more information

please visit us on

www.cads-engineering.com

or email us

office@cad-engineering.com



(A LITTLE) **PRODUCT ROADMAP**

ROADMAP – DYNAMIC POSITIONING

Nested BOM Architecture

- Support development of BOM architecture & positioning at lower levels in the product structure
- Enable re-use/reference in higher level products

Variant Generation

- Create Standalone variant BOM
- Capture positioning driven from Architecture at time of creation
- Enhance checks to avoid duplication

BOM Transformation Support

- Integrate BOM architecture into the BOM transformation process
- Preserve/re-use positioning



QUESTIONS?

Thank you! You can find me at:



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@thesteveshaw



<http://linkedin.com/steve-shaw-658821>



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