GLOBAL PLATFORM MANUFACTURING PLANNING WITH PTC WINDCHILL

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June 9th, 2016

AGENDA

- PTC – IOT Manufacturing Journey
- Global Platform in Manufacturing Journey
- Global Platform Manufacturing in MPMLink 11.0

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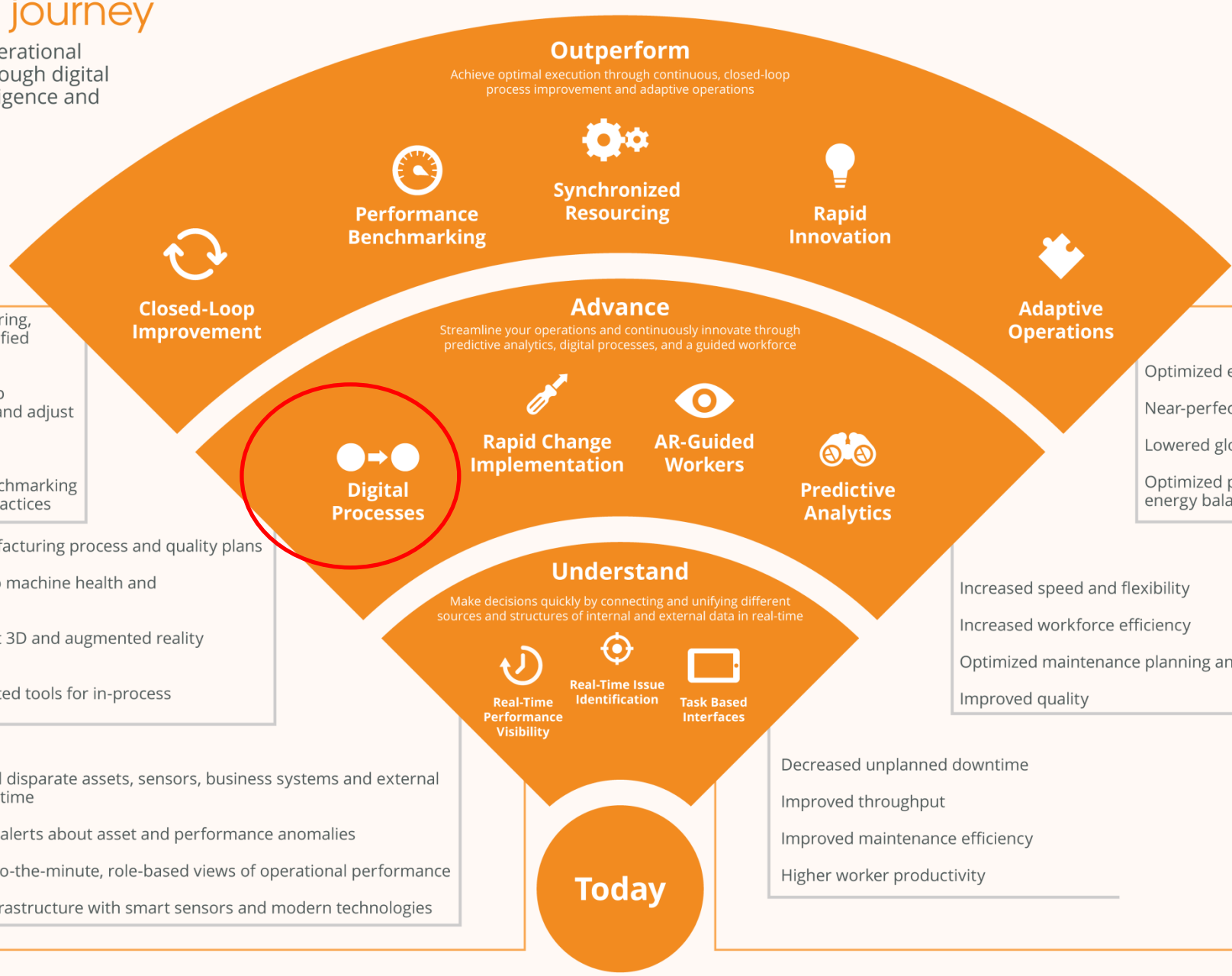
A WAVE OF TRANSFORMATION IS COMING TO MANUFACTURING

manufacturing journey

Continuously improve your operational performance and flexibility through digital manufacturing, real-time intelligence and predictive analytics.



How to get there

Combine engineering, manufacturing, quality and service data into a unified digital thread

Enable physical-digital closed-loop processes to constantly improve and adjust operations

Implement consistent KPIs and corporate-wide performance benchmarking to identify and implement best practices

Digitally design your manufacturing process and quality plans

Apply predictive analysis to machine health and quality processes

Employ intuitive, in-context 3D and augmented reality to guide workers

Incorporate smart, connected tools for in-process quality validation

Connect diverse and disparate assets, sensors, business systems and external data sources in real-time

Broadcast real-time alerts about asset and performance anomalies

Simplify data in up-to-the-minute, role-based views of operational performance

Enhance existing infrastructure with smart sensors and modern technologies

Results

Optimized enterprise-wide operations

Near-perfect quality

Lowered global manufacturing costs

Optimized production, maintenance, and energy balancing

Increased speed and flexibility

Increased workforce efficiency

Optimized maintenance planning and execution

Improved quality

Decreased unplanned downtime

Improved throughput

Improved maintenance efficiency

Higher worker productivity

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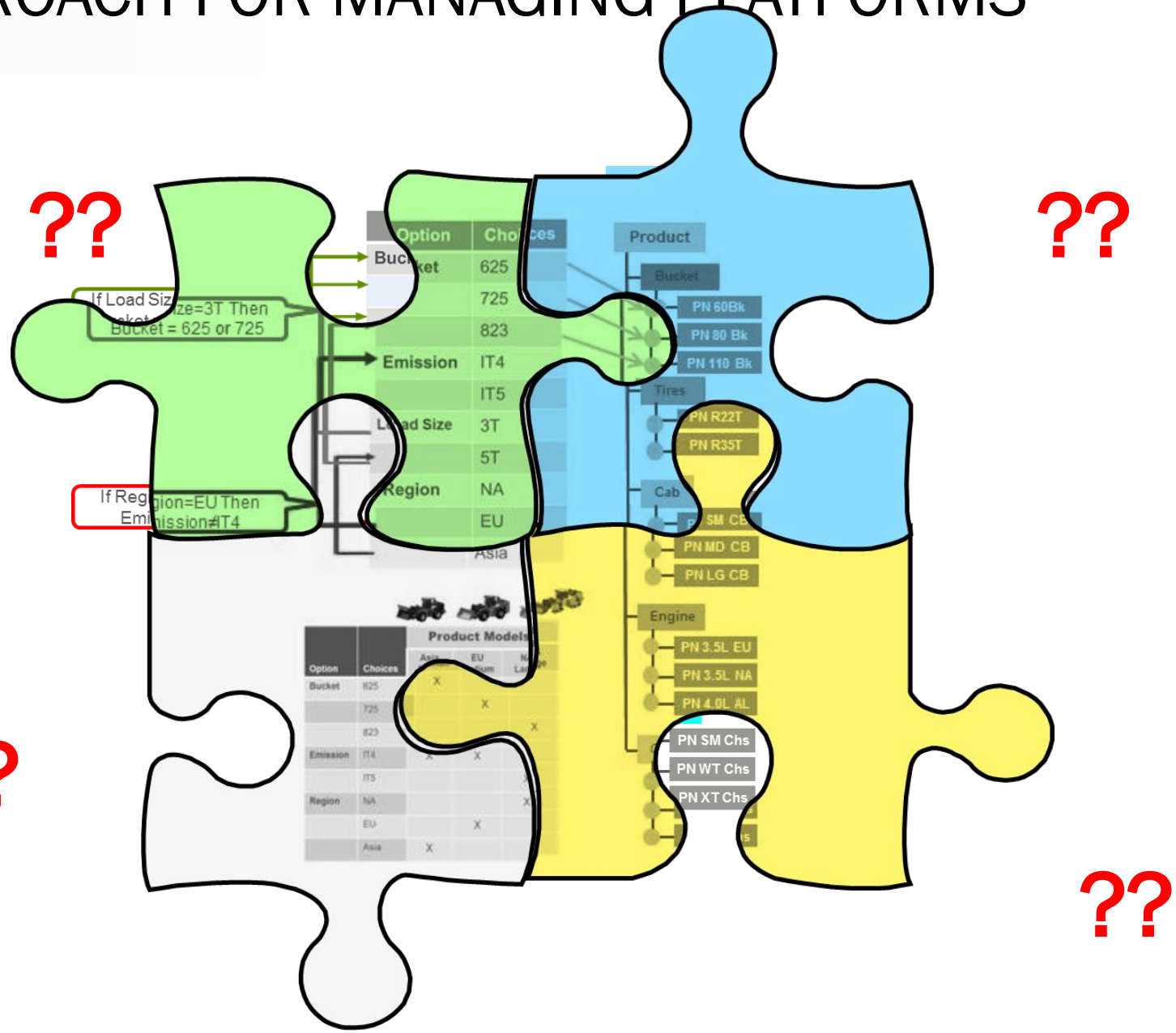
THE PUZZLING APPROACH FOR MANAGING PLATFORMS

The information for a Platform is created and managed **separately!**

In a **jigsaw** puzzle of company systems



TRYING TO SOLVE THE PUZZLE FOR THE ENTERPRISE

PRODUCT LIFECYCLE

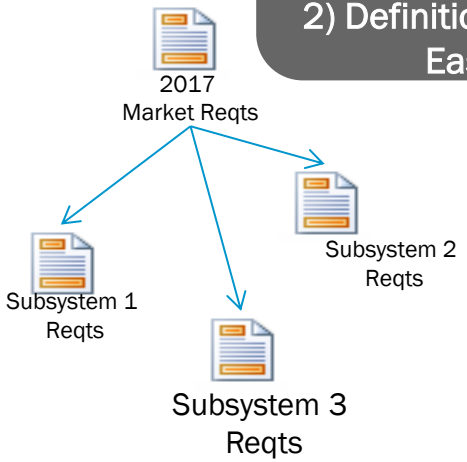
Plan | Concept | Design | Validate | Produce

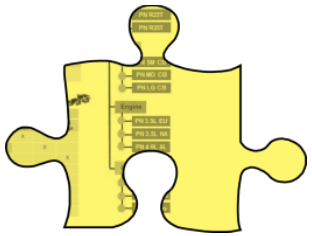
Strategic Issues

1) No Sandbox to Design Configurable Product

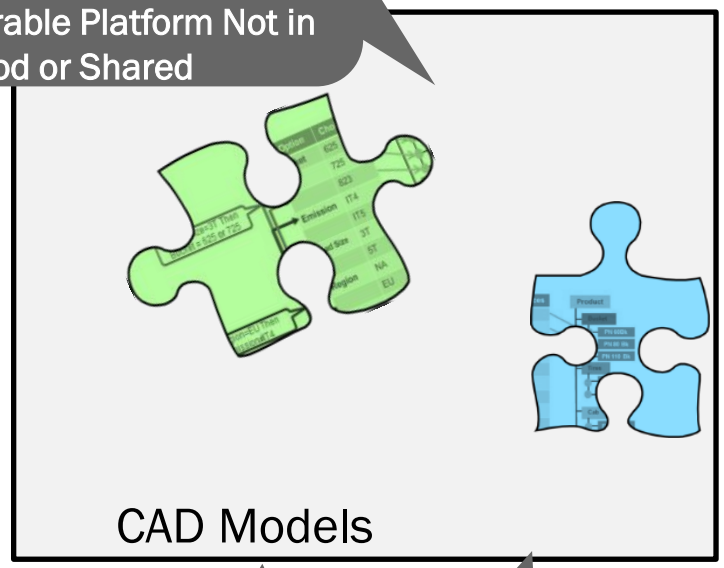
2) Definition of Configurable Platform Not in Easily Understood or Shared

Delayed Time to Market
- Delayed offerings
- Difficult to update





E-BOMs



CAD Models

PLM

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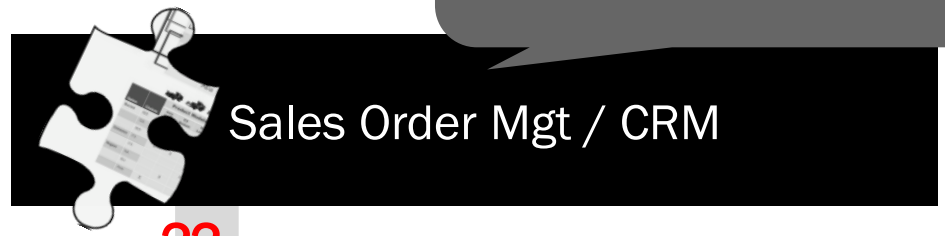

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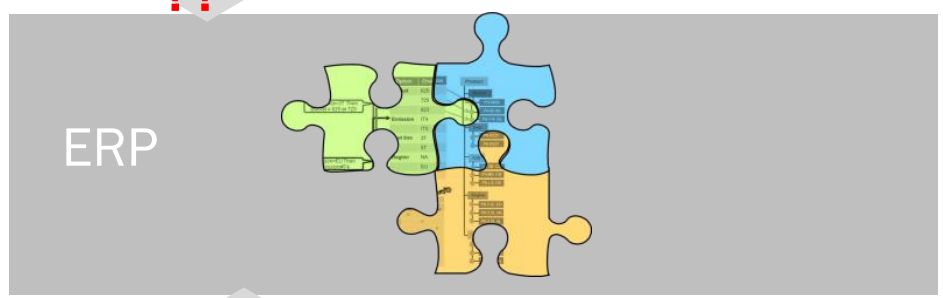

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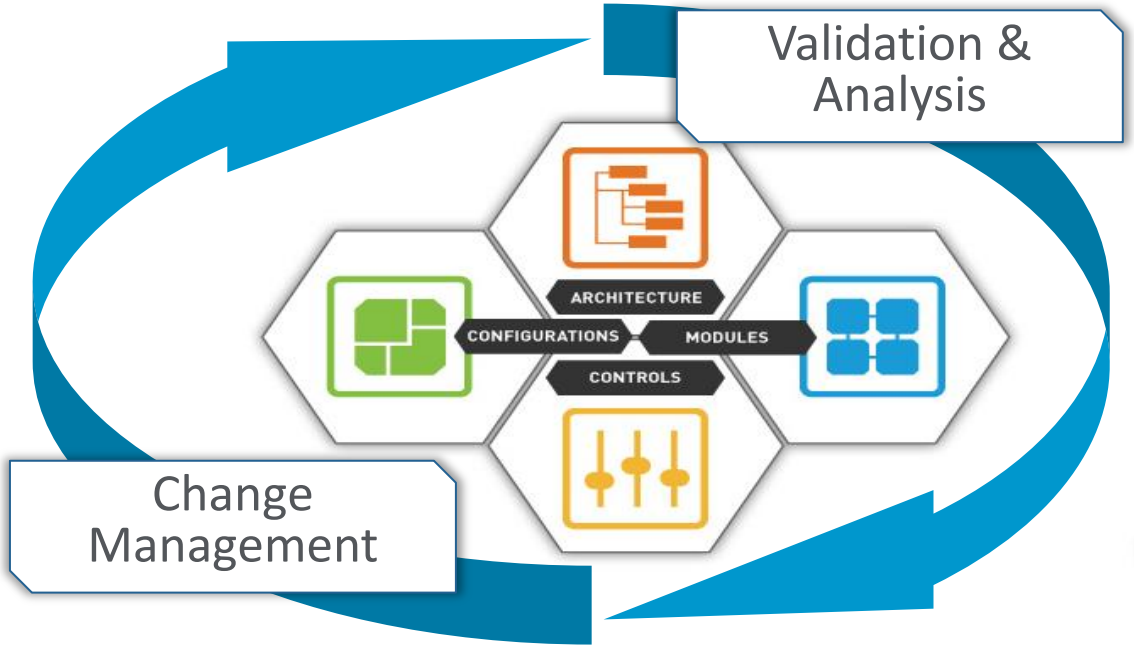
BOMs and
ned Expressions

Unable to Validate by Configuration
- Virtual Fit
- Target Cost
- BOM + Compliance

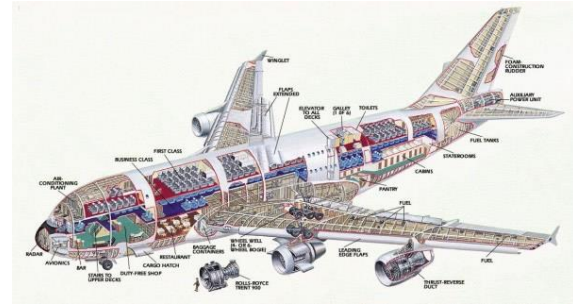
Error-Prone Production Planning by Configuration
- Forecast Volumes
- Mfg Operations

GLOBAL PLATFORM APPROACH



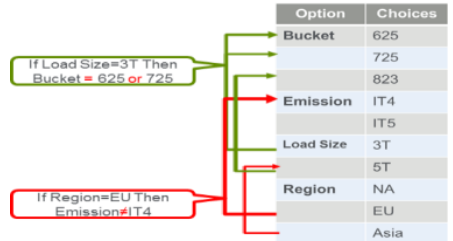
PTC's solution manages modular platform "elements"

PLATFORM ARCHITECTURE



MODULES

CONTROLS



Option	Choices
Bucket	625
	725
	823
Emission	IT4
	IT5
Load Size	3T
	5T
Region	NA
	EU
	Asia

CONFIGURATIONS

Option	Choices	Product Models: Asia Small	EU Medium	NA Large
Bucket	625	X		
	725		X	
	823			X
Emission	IT4	X	X	
	IT5			X
Region	NA			X
	EU		X	
	Asia	X		

CONFIGURABLE PRODUCTS – ATO ORDER FLOW

PRODUCT LIFECYCLE

Plan | Concept | Design | Validate | Produce | Support

Based upon program requirements, identify Options, Choices, important configurations for product

1

2017 Market Reqts

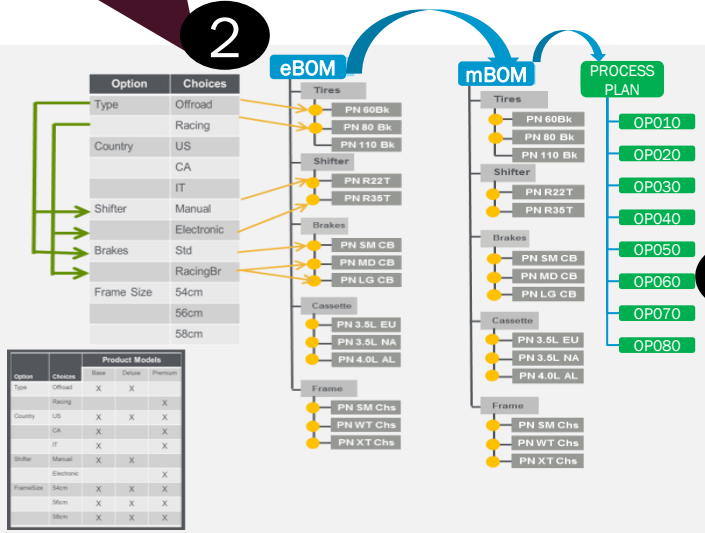
Subsystem 1 Reqts

Subsystem 2 Reqts

Subsystem 3 Reqts

Develop Platform-based Product Design

2



CAD Models, Configurable E-BOMs + M-BOMs + Process Plan

PLM

Upon Release, Pass Available Options and Rules to Sales Configurator

3

3

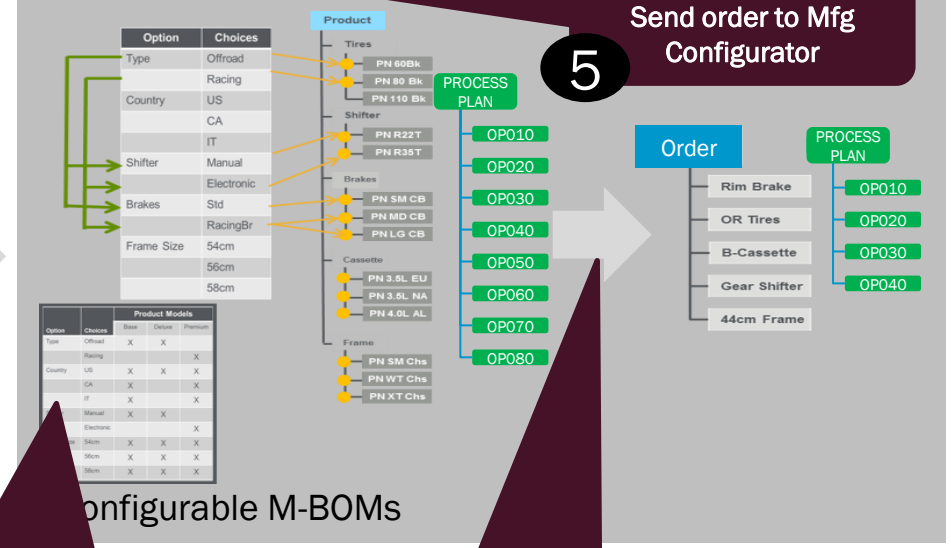
Sales Order Mgt / CRM

Create sales orders in Sales Configurator

4

Send order to Mfg Configurator

5



onfigurable M-BOMs

ERP

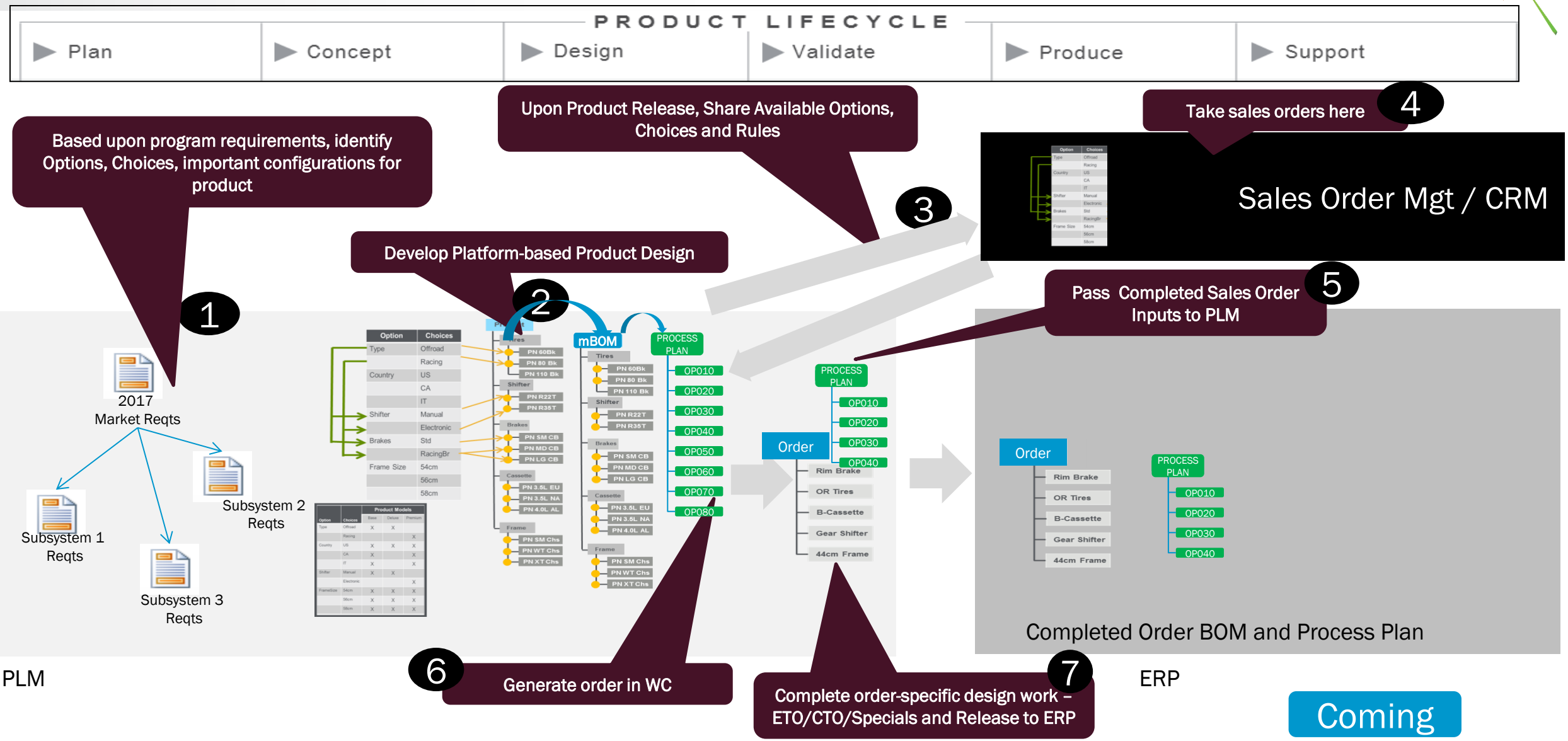
Upon Release, Share Configurable Platform to Mfg configurator

6

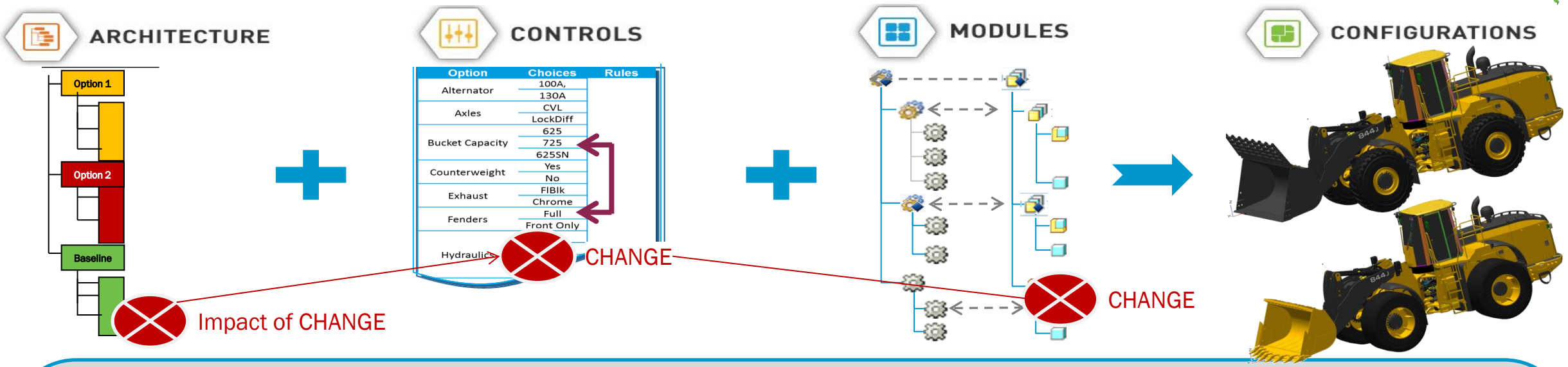
Generate SON and Order BOM from Configurable BOM

Available in 11.0 M010

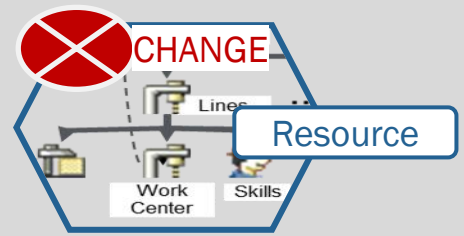
ORDER FLOW – ETO/CTO/SPECIALS PROCESS



PTC GLOBAL PLATFORMS: CONFIGURATION MANAGEMENT



Analyze & Validate
every configuration



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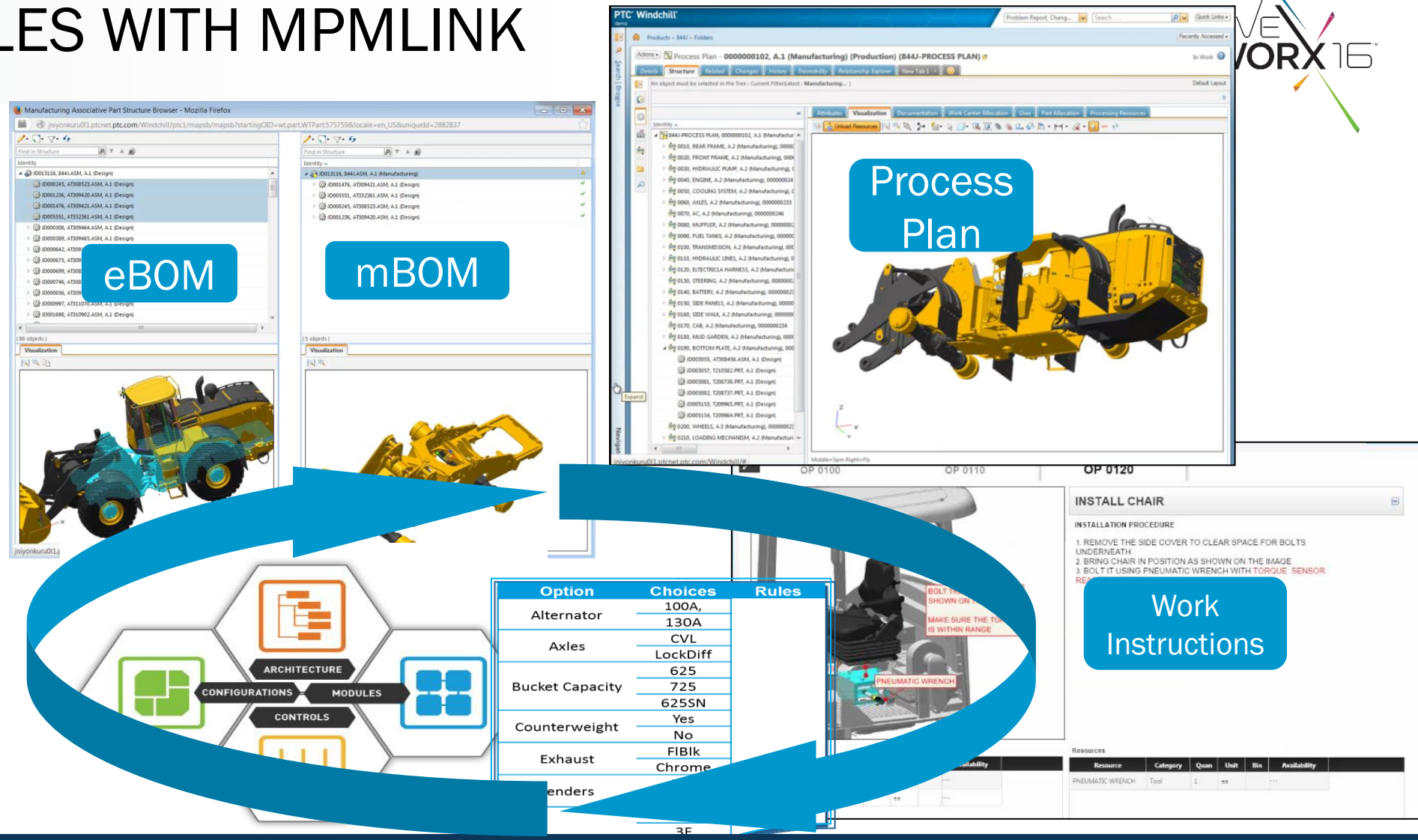
OPTION AND RULES WITH MPMLINK

CAPABILITIES

- Ability to configure mBOM and Process Plan with Options and Rules
- Ability to propagate Option and Variants from eBOM to MBOM, Process Plans and Work Instructions
- Ability to plan manufacturability of each configuration
- Extend the new Options and Rules features (advance options) to MPMLink Objects



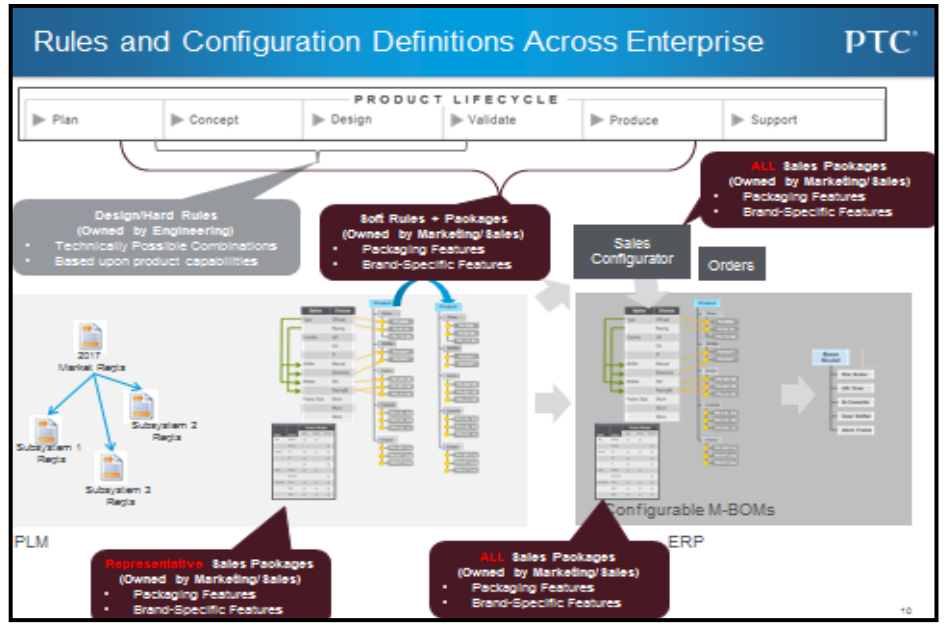
BENEFITS

- Improve Product Data quality with less manual input
- Reduce NPI with better configuration change management
- Less scrap by allowing manufacturability validation of each configuration

WINDCHILL 11 – ENTERPRISE SYSTEMS INTEGRATION FOR OPTIONS & VARIANTS

- What to Share
  - Publishing Platform Information Externally
    - Align with Change & Configuration Mgt Processes
      - Platform release to production systems
      - Governed by Change Process
    - Types of Release of Platform Definition
      - Full Release
      - Updates based upon Changes
  - Publishing Platform Definition
    - Configurable E-BOM or M-BOM Structure or Process Plan
    - Options & Choices, Option Set with Local Rules
    - Logic associated with Configurable Structure
    - Associated Change Notices
  - Publishing Updated Platform Definition
    - Updates to all Configurable Structure items
    - Updated Option Set with Local Rules
    - Associated Change Notices

Platform Operations
- Product configuration logic sharing to the enterprise



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