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valor
Process Preparation

Mentor®
A Siemens Business

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DESIGN TOOL

PRODUCT NPI
(DFM)

FABRICATION NPI

ASSEMBLY / TEST
PROCESS NPI

ASSEMBLY / TEST
PLAN

ODB++

WHAT?

HOW?

- Product data cannot be transferred **directly** to the line
- Valor Process Preparation generates **manufacturing execution instructions** for automated and manual stations, including:
  - ✓ BOM validation
  - ✓ Stencil design
  - ✓ Line balancing
  - ✓ SMT, Test and Inspection programming
  - ✓ Generation of documentation / work instructions

A complete **ANALYSIS, MODELING** and **SIMULATION** environment for maximizing the efficiency of the design-to-manufacturing flow

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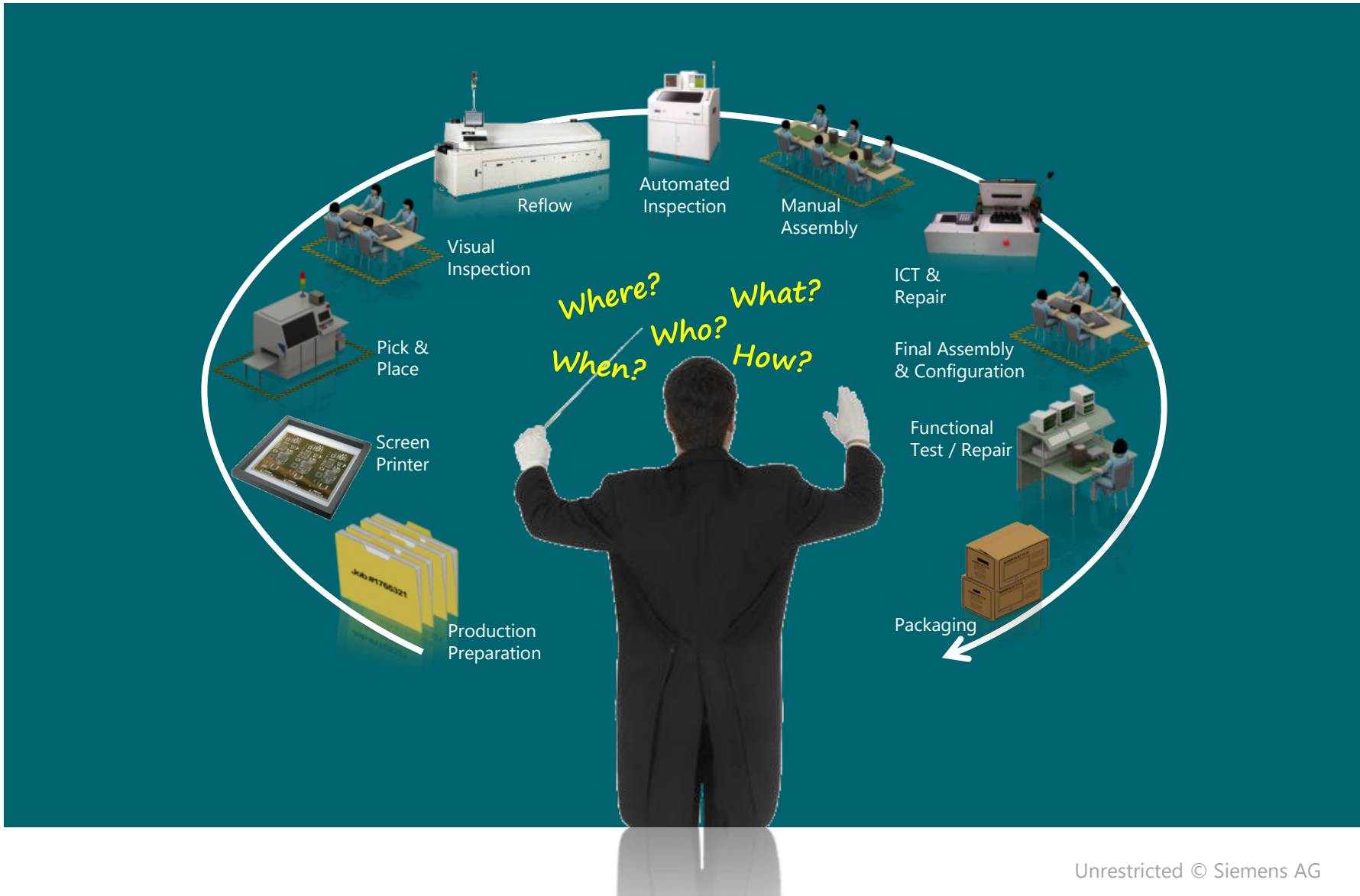
Accelerate NPI

- ✓ Increase engineering efficiency by using a single tool for all process engineering tasks
- ✓ Eliminate redundant preparation work with Learning Libraries (machine shapes, rotation etc.)
- ✓ Increase efficiency through automation and use of templates (for work instructions, data import parsers, etc.)

Increase line utilization

- ✓ Maximize off-line preparation to eliminate on-line trial and error delays



A complete **ANALYSIS, MODELING** and **SIMULATION** environment for maximizing the efficiency of the design-to-manufacturing flow

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Preserve manufacturing know-how

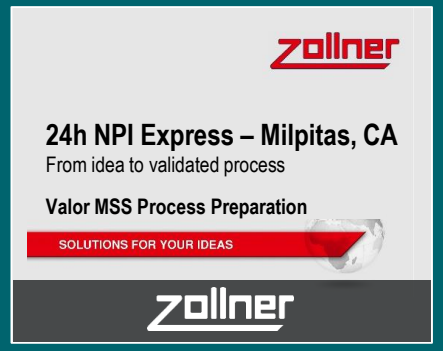
- ✓ Consolidate organizational best-practice flows
- ✓ Centralized part libraries incl. rotation neutralization and machine shapes
- ✓ Custom data preparation flows can be defined, enforced, and re-used

Product portability

- ✓ Leverage ODB++ to seamlessly move production between lines and factories – eliminate engineering time and increase quality of end product

Customer testimonials

- ✓ Reduced line setup time by 70%
- ✓ Machine uptime increased by 50%
- ✓ Changeover time reduced from 50 minutes to 13 minutes
- ✓ Annual savings of $1.4M



24h NPI Express – Using Valor tools in Germany to prepare work orders for production in the US – saving time and implementing "follow the sun" methodology

Time from BOM/AVL to production-ready programs and documentation reduced from 3-5 days to 1-2 days

Building the digital product model

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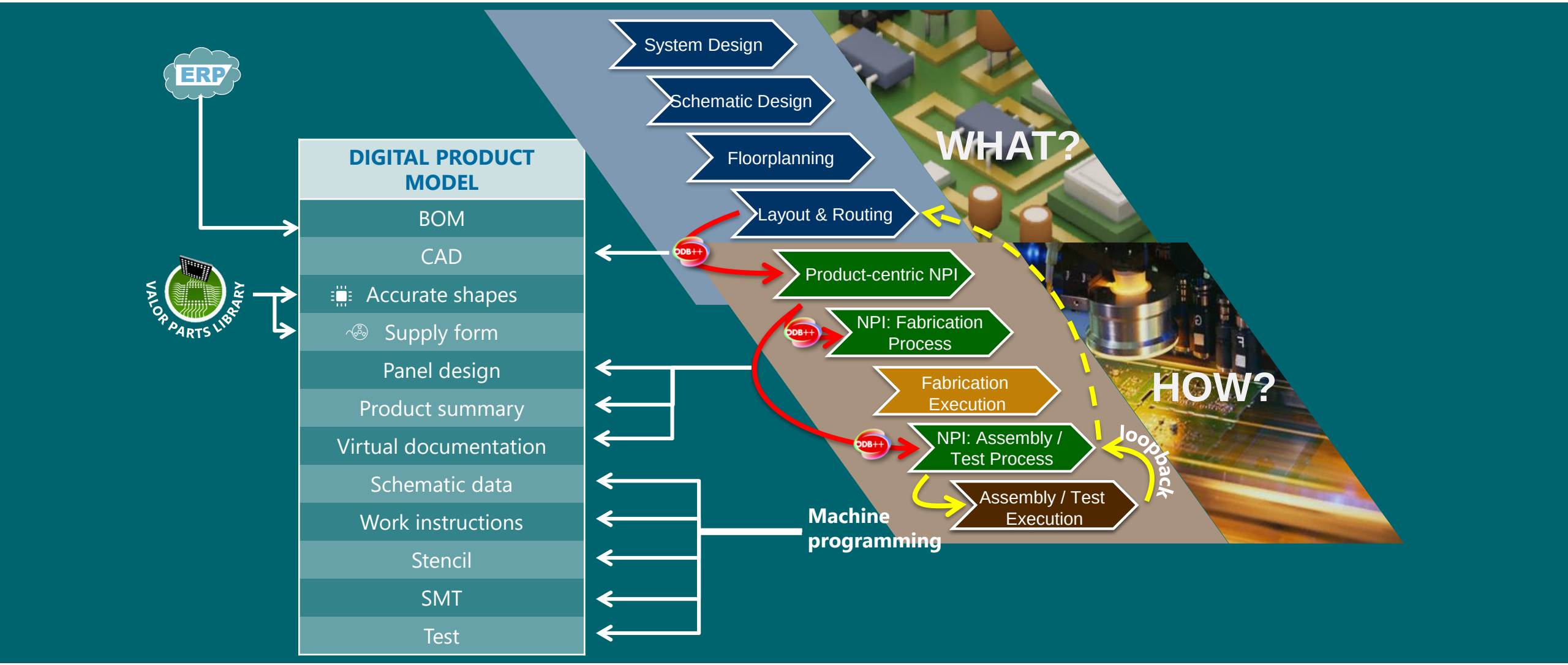

Harmonized process through a single engineering tool

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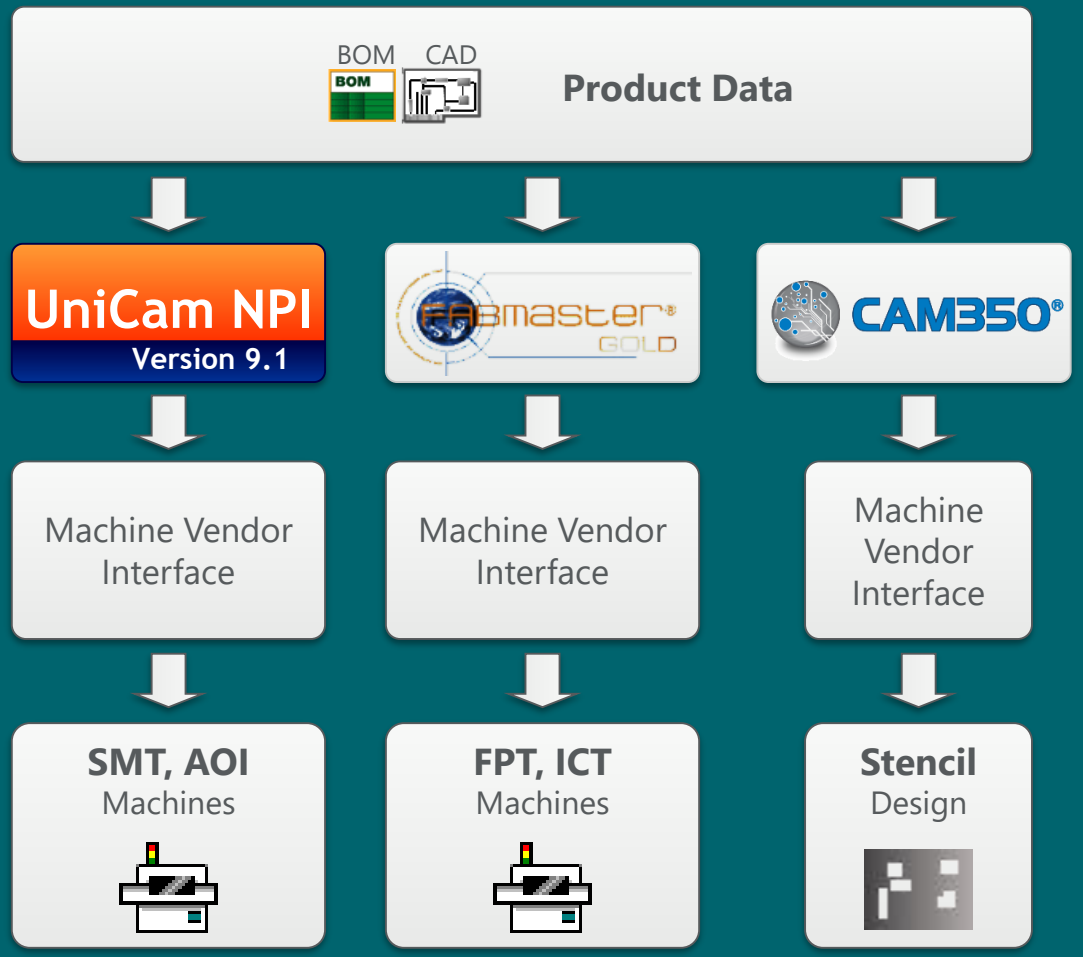
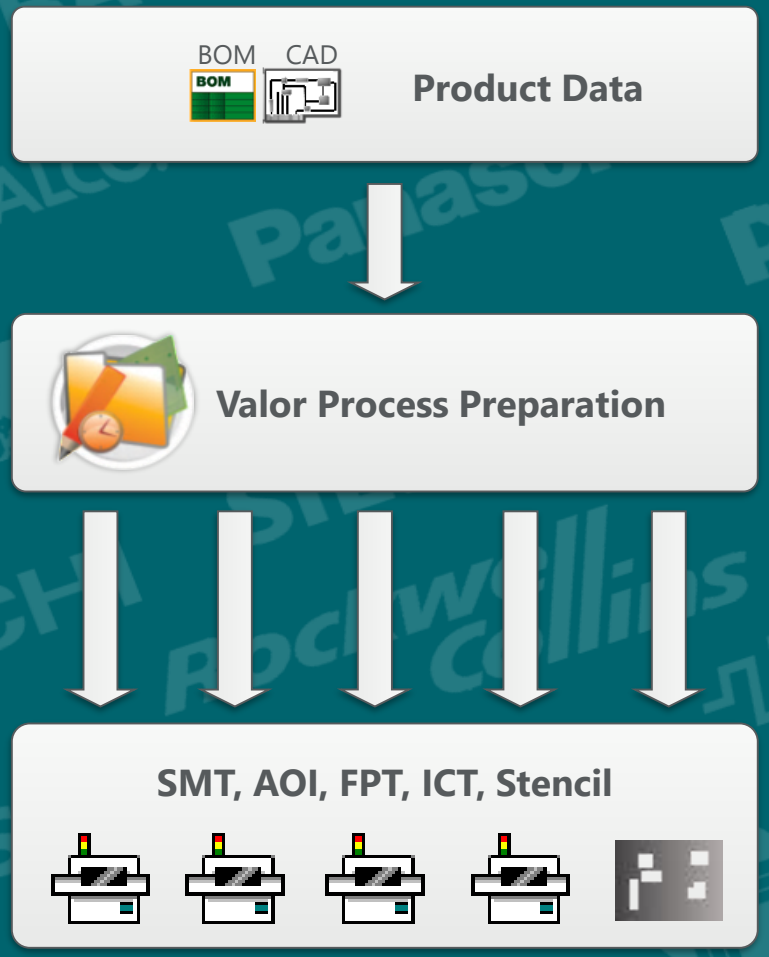


BEFORE: Product model created multiple times



AFTER: Time-to-production reduced by more than 20%

Single data model covers multiple processes and vendor platforms

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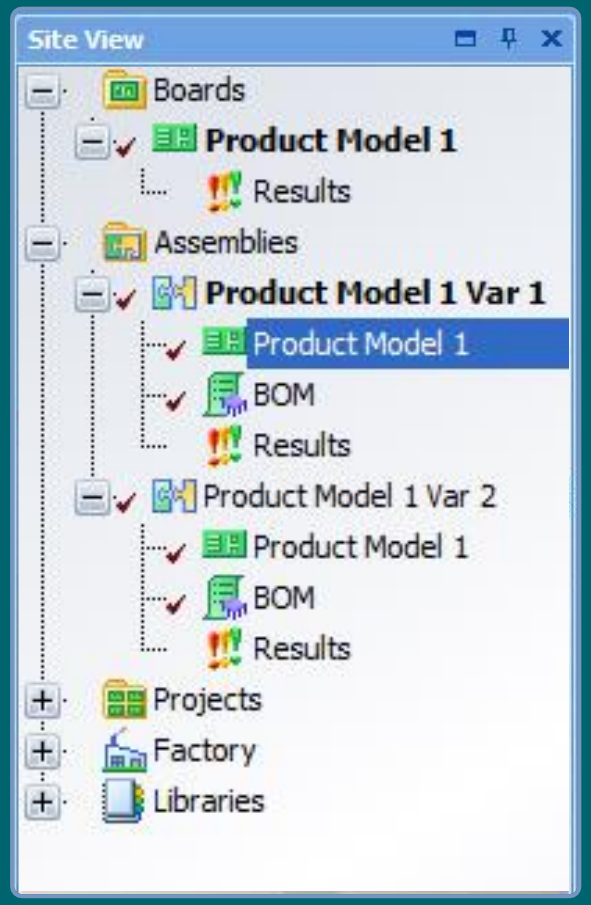
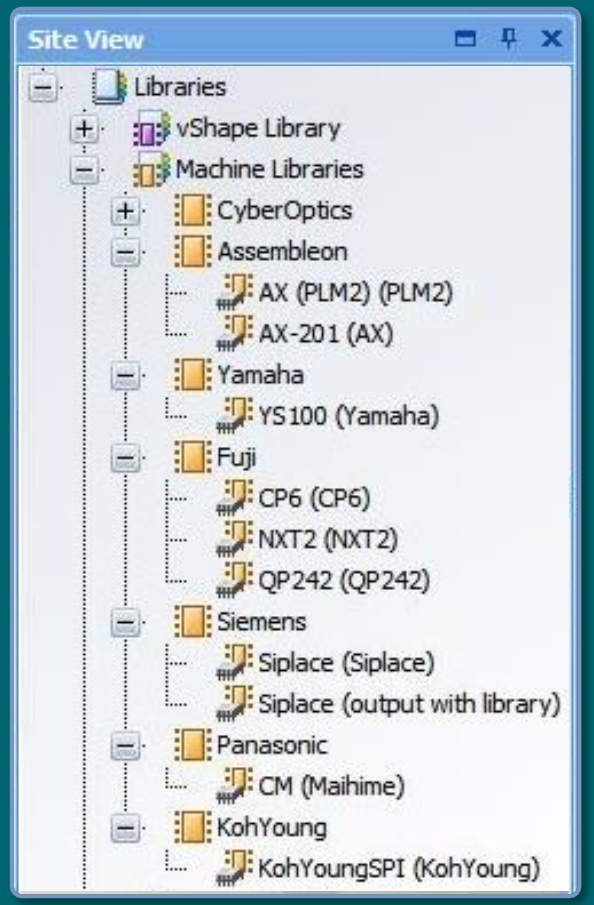
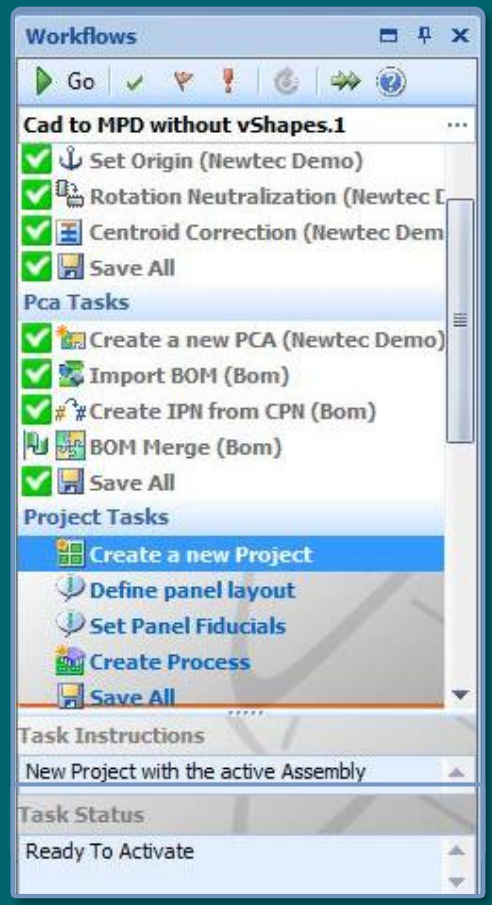


Hierarchical view of assemblies,
Including support for multiple instances



Machine shapes can be
generated on demand



Customizable workflows allow multiple
users to share projects and track their status

Optimize SMT program portability with patented machine shape auto-generation

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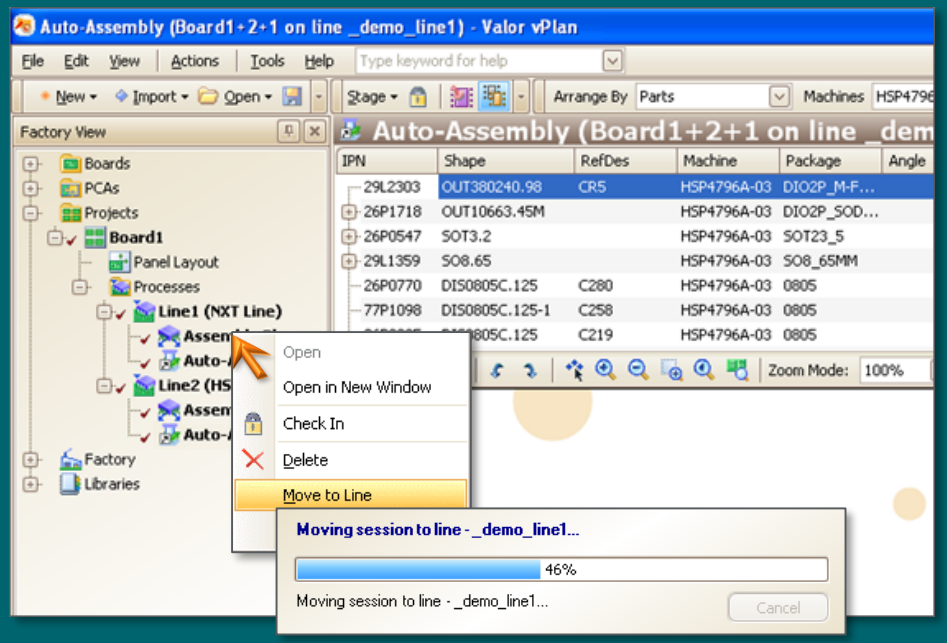
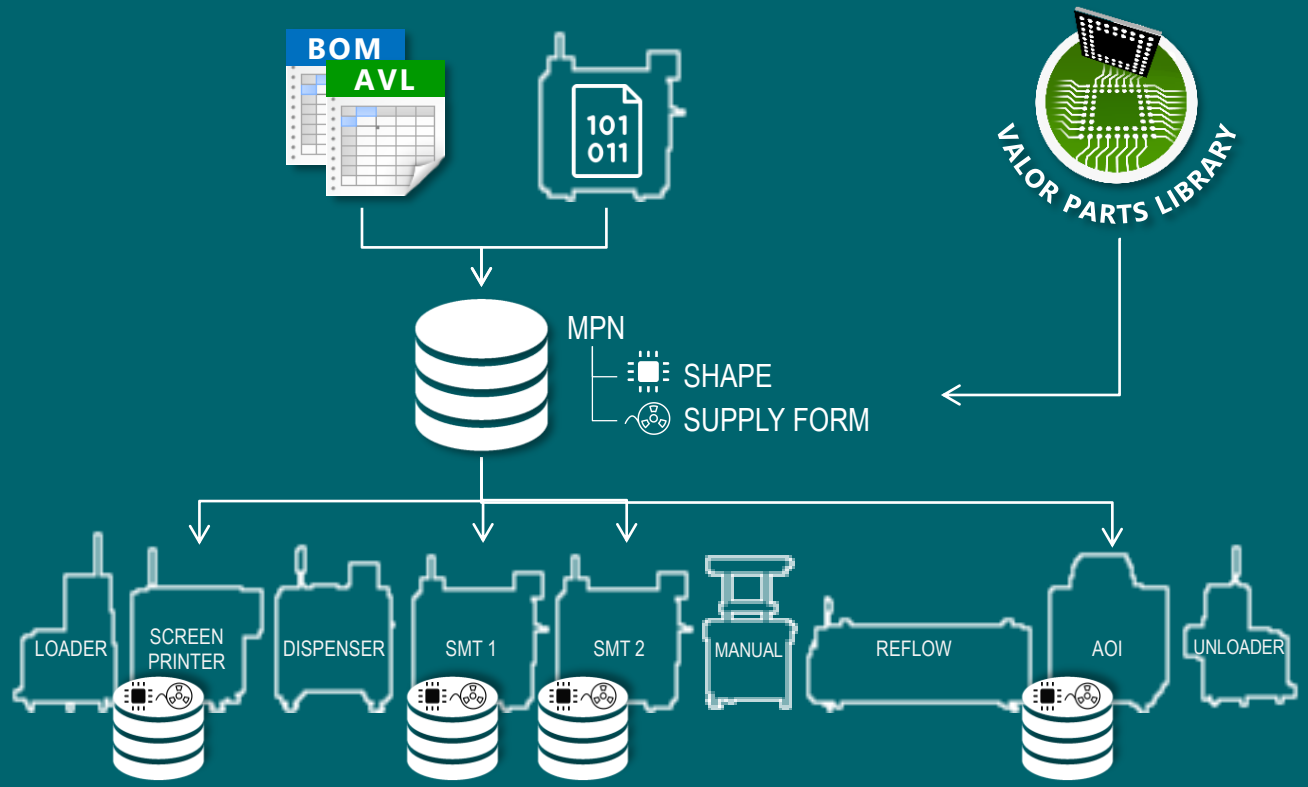
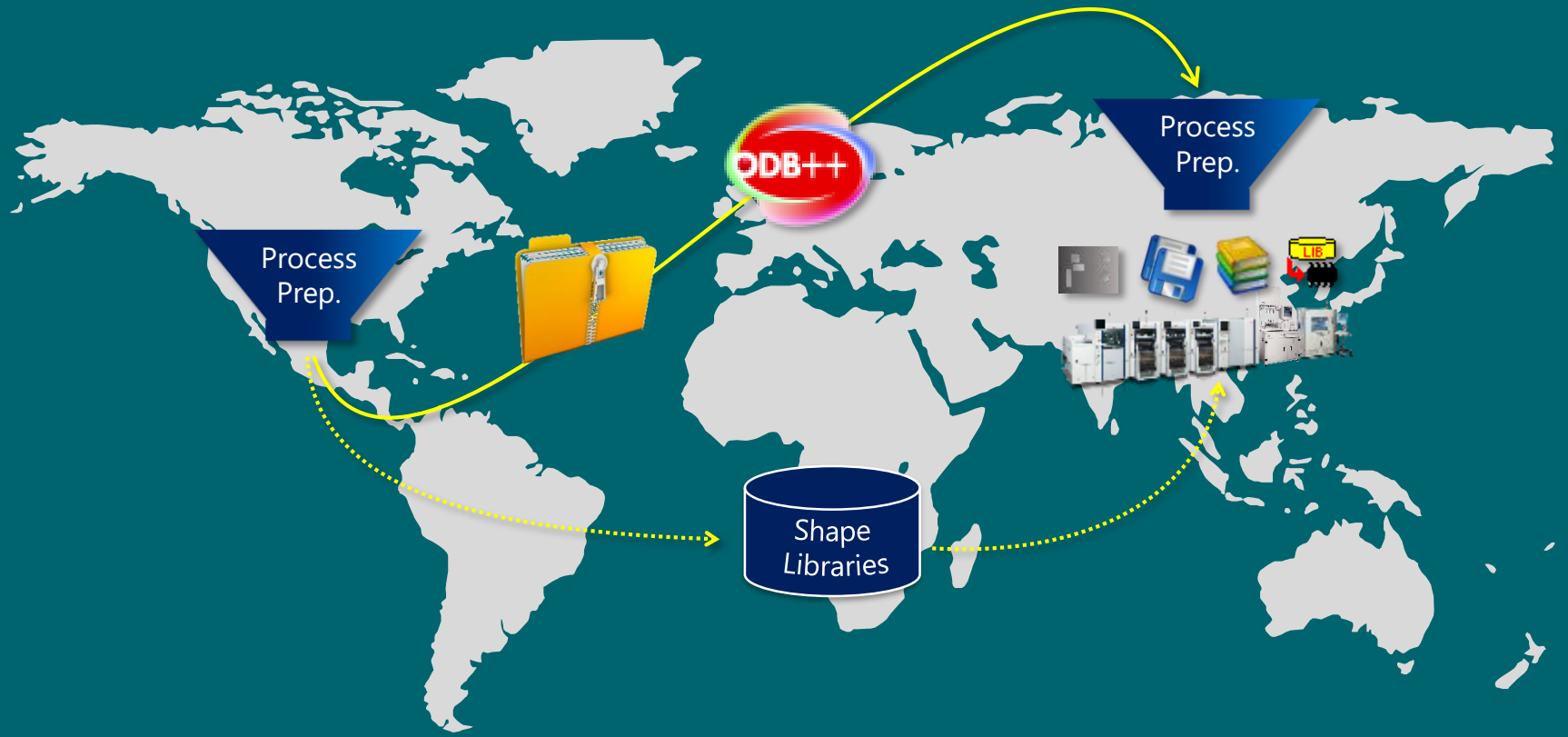




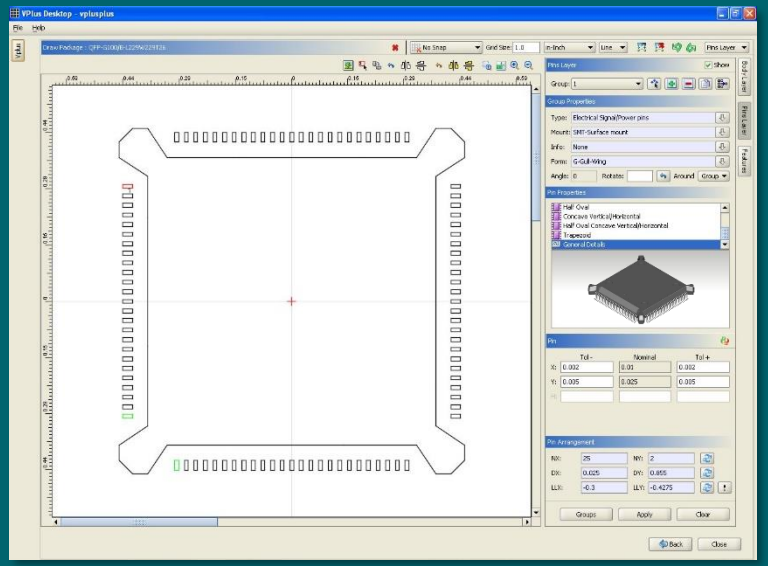
- Part libraries can be created for each machine directly from the Master Parts Library
- Users can create/modify custom parameters to enhance part/shape data
- Native machine programs can also be imported and quickly converted into alternate machine formats

Enable simple work-order portability



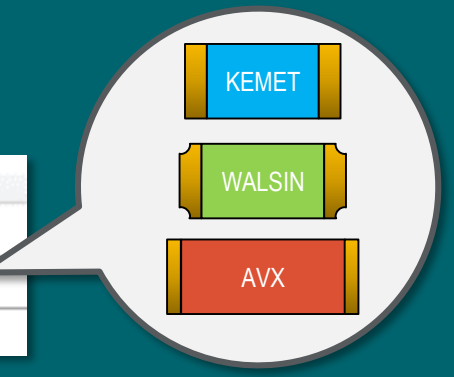
- Single product model can drive all manufacturing of a product worldwide
- Product NPI tasks can be done once at corp. competence centers
- Only process NPI needs to be repeated at each mfg. environment.

Valor Parts Library (VPL)



- ISO9001-certified library covering over 35 million part numbers
  - ✓ Accurate shape data
  - ✓ Pin contact area
  - ✓ Component classification (JEDEC)
- Enables accurate virtual-prototype build

	Item	CPN	Manufacturer	MPN	VPL-Package
1	1	G8316005-244	KEMET	C1210C22K5RAC-LWR	DSO-C2/X-L60W32T25
2			WALSIN	1210B22K5KKCT-CRM	DSO-C2/X-L60W31T3
3			AVX	10125C224KATA2A-KOL	DSO-C2/X-L64W25T3



Shapes of alternate parts in the AVL can be easily compared for inconsistencies

(example: the parts above provide the same electrical function, but require different pad layouts)

“Virtual Sticky Tape” – Improve SMT productivity with offline placement simulation

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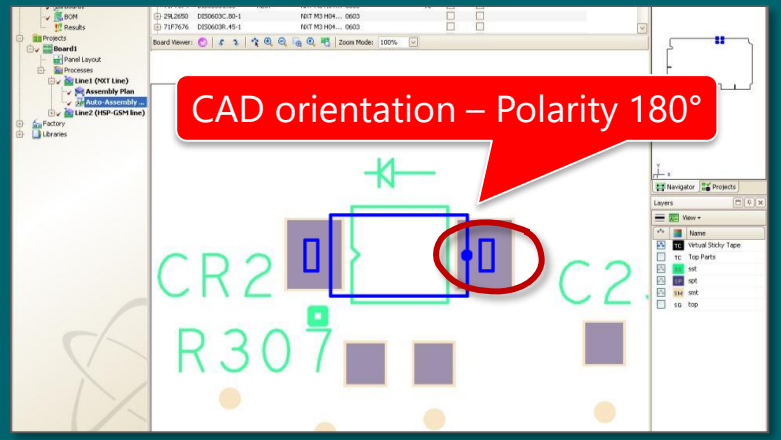
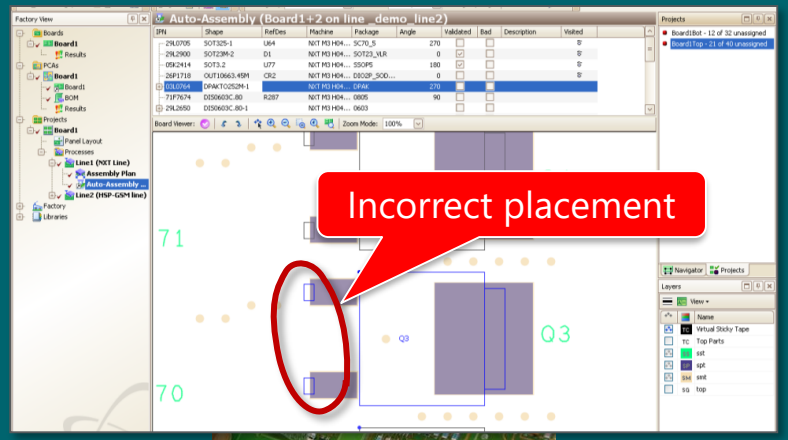
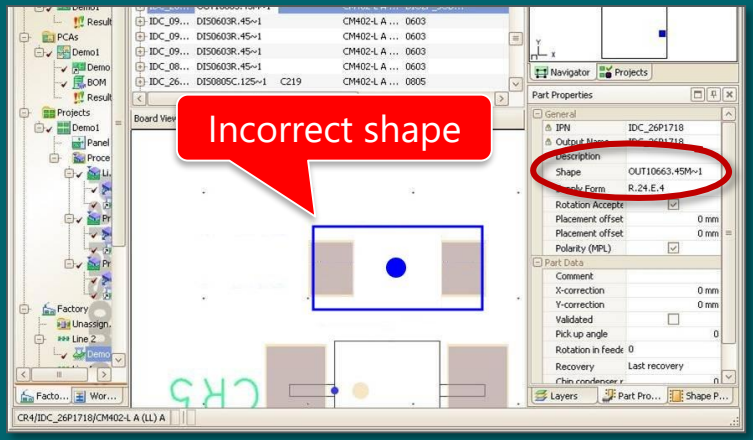
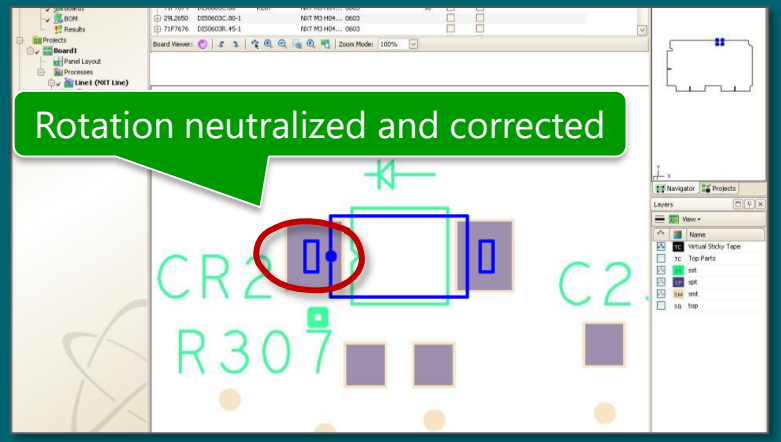
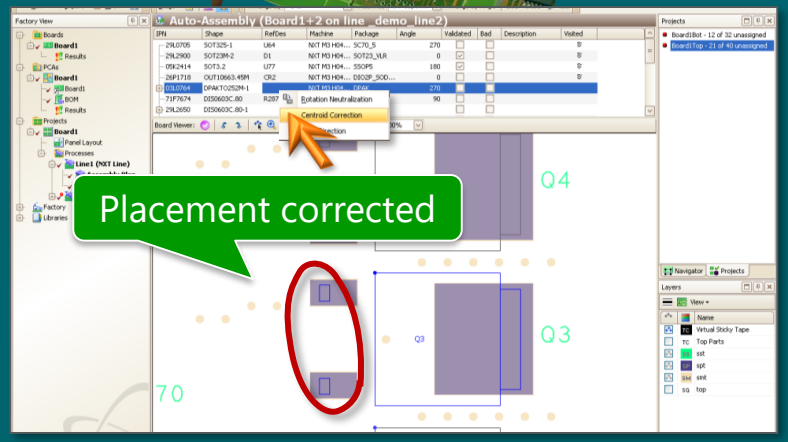
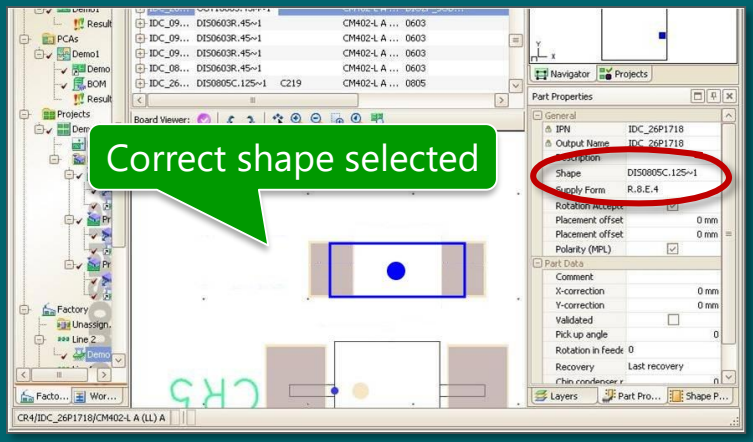






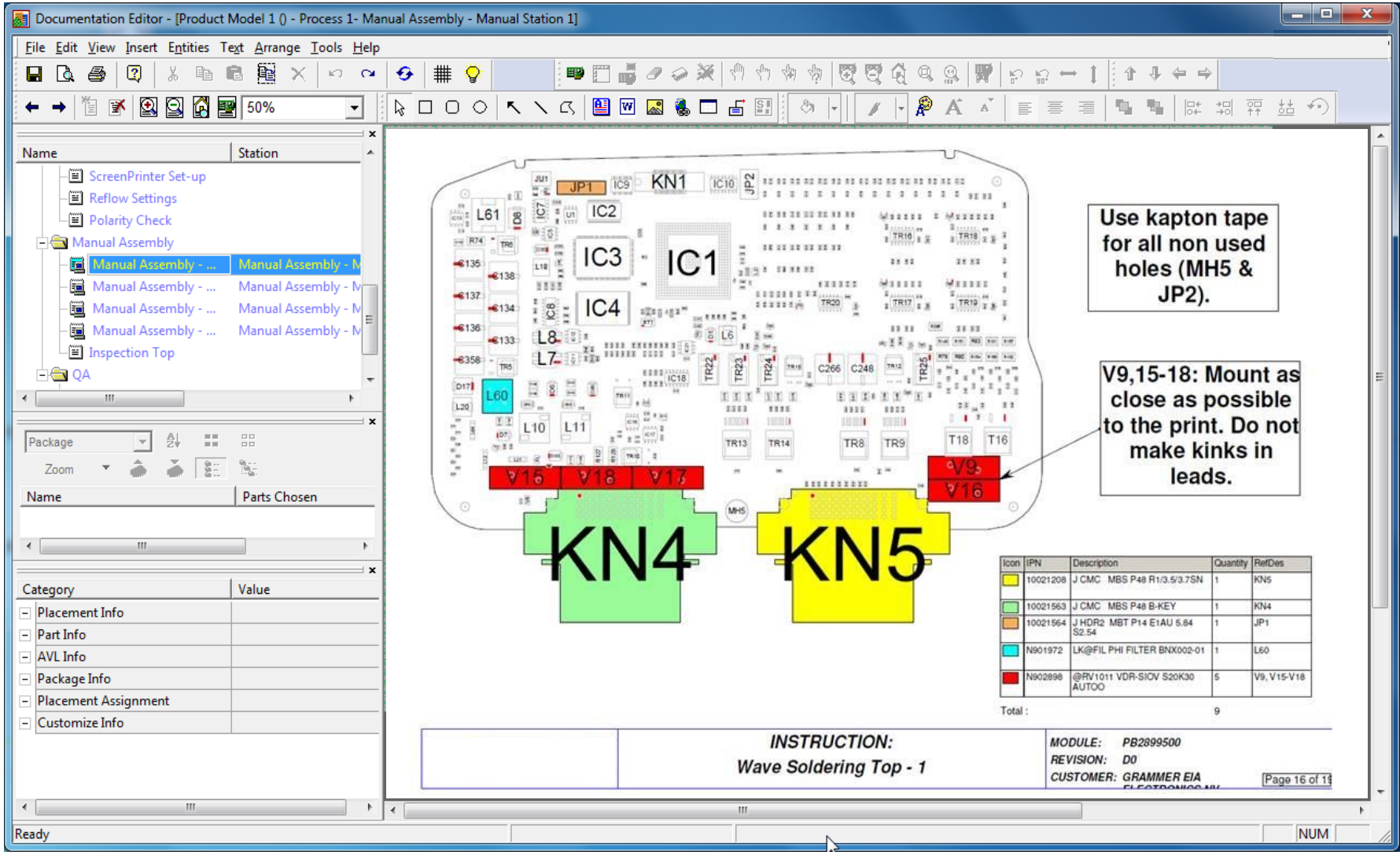






Documentation creation

- Built-in and user-defined templates for static and interactive documentation
- Include any design, product model, SMT, Test, and other production information
- Can include embedded images and files (e.g. JPG, PDF)



Complete testability analysis (DFT) of PCAs

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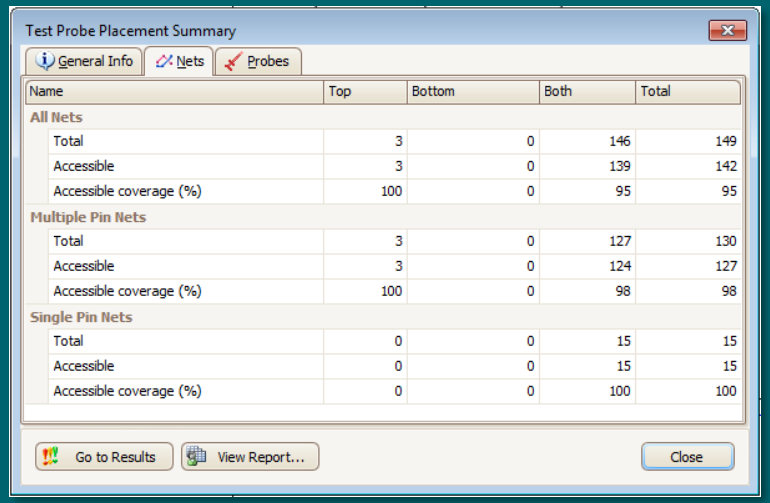
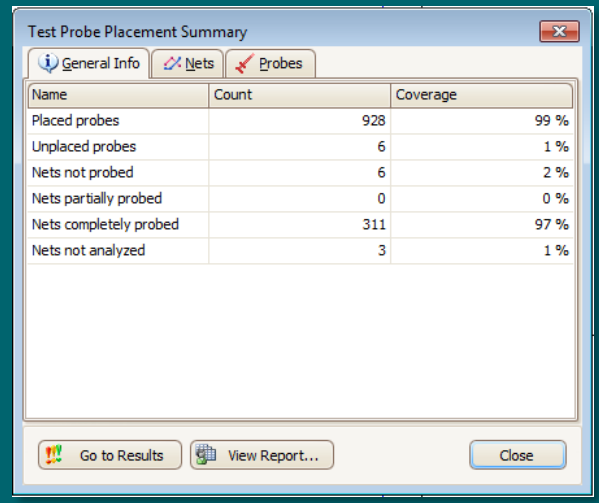
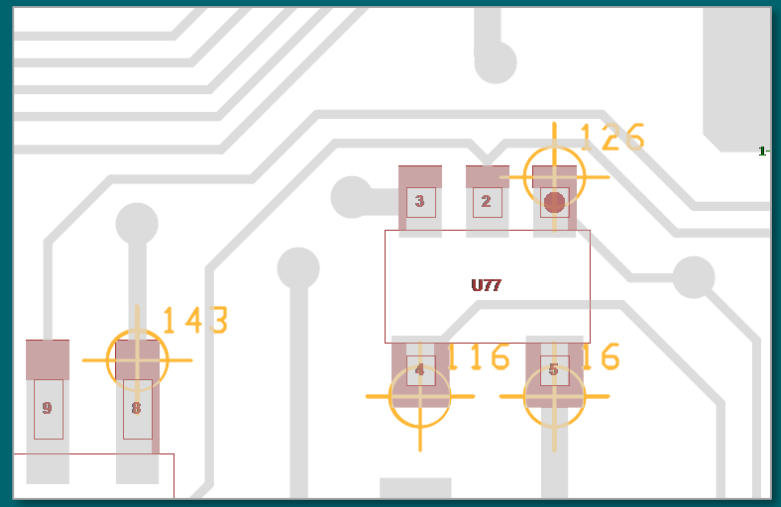
- Identification of high risk areas
- Feedback to design about inaccessible points
- Comprehensive yield analysis to quantify testability







Tester and inspection programming

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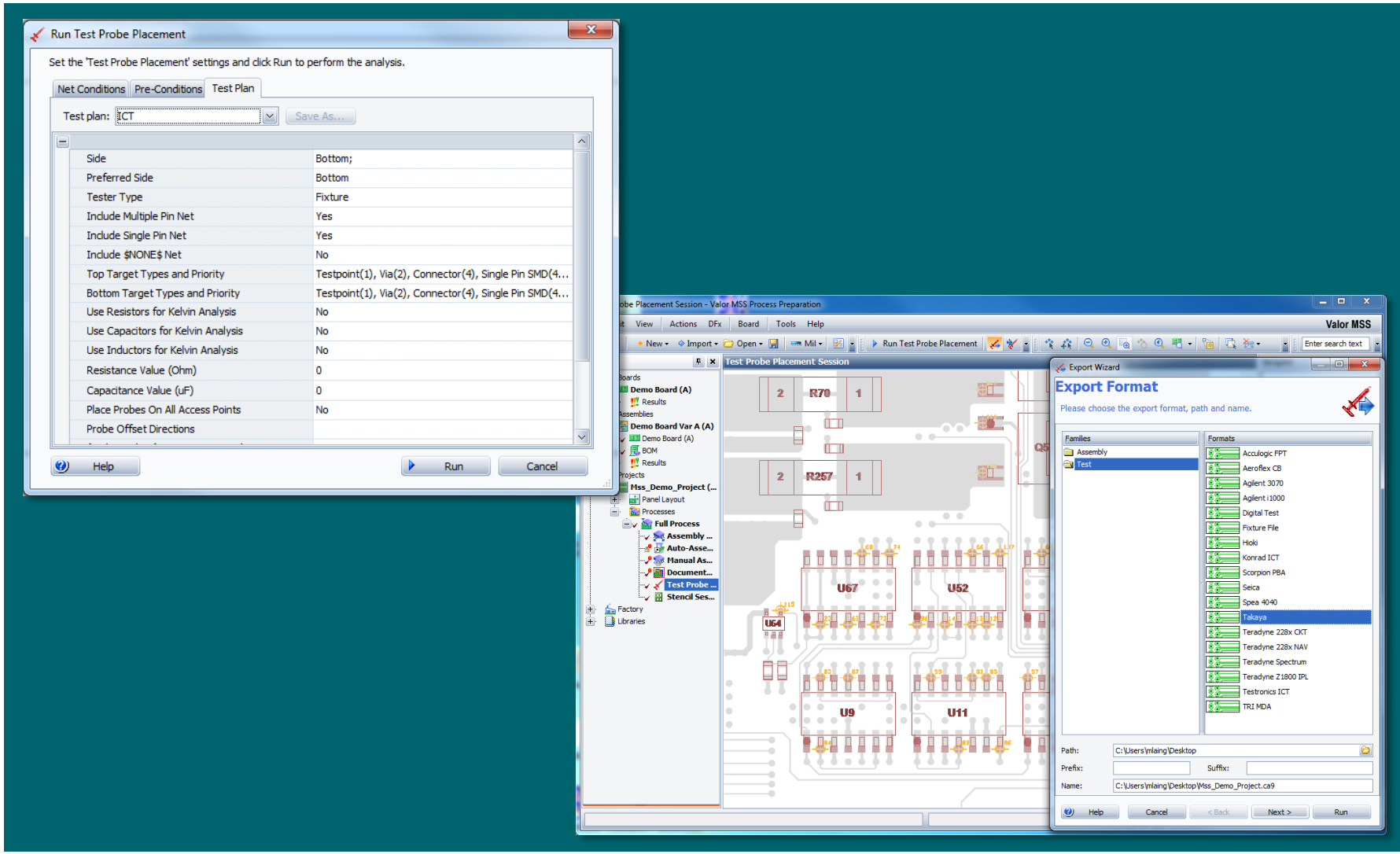
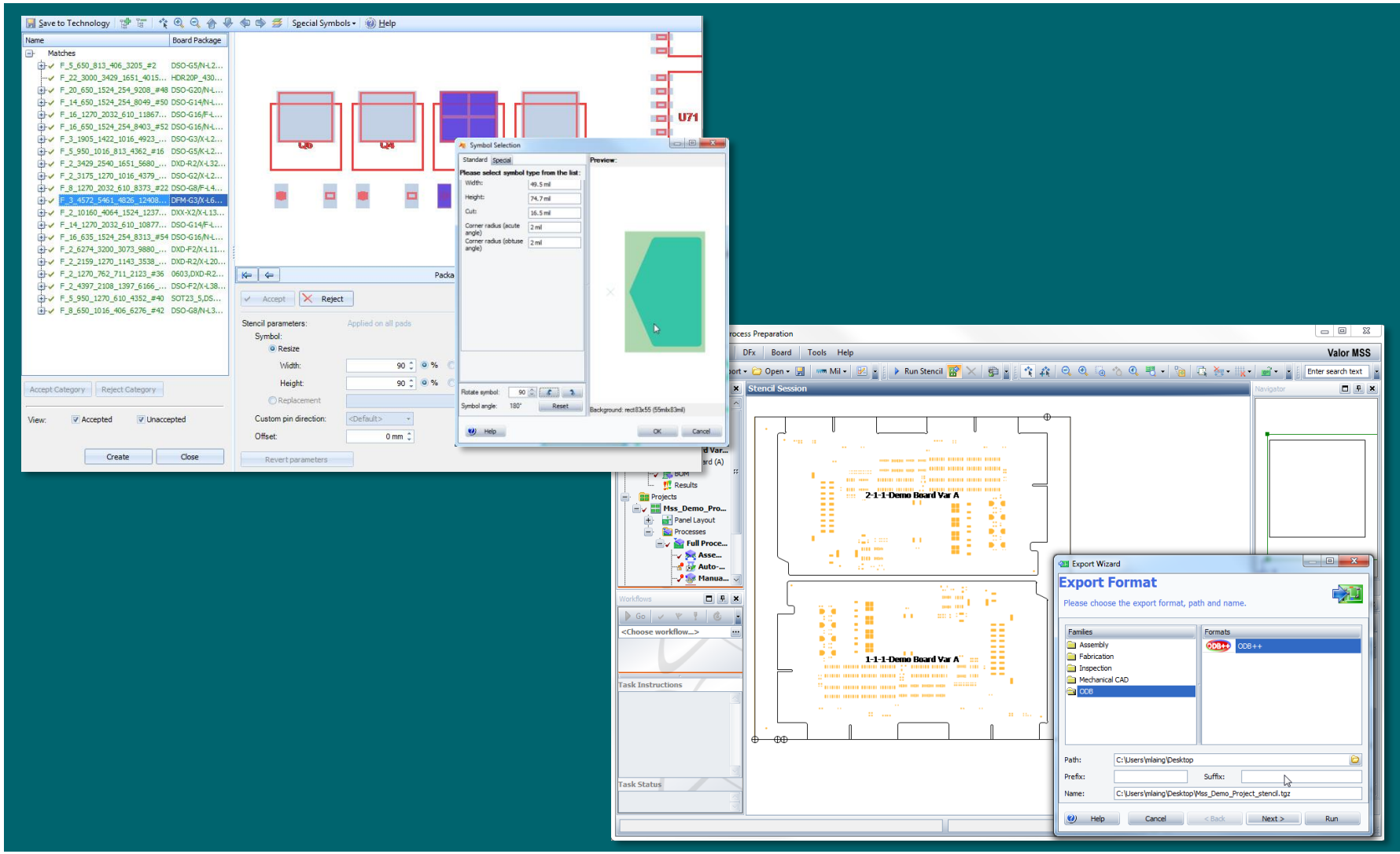
- Automated test probe selection and positioning based on available access to each electrical node
- Full reporting of placements including reason codes for inaccessible points
- Leading industry tester formats supported
- AOI & AXI tester programming
- Programs take into account the location of AOI/AXI machines on the line and components that should be placed up to that point



Stencil design

- Automatically create stencils from product model
- Customizable rules and aperture properties
- Output to ODB++ or Gerber 274X



Value-Add Services

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❖ Valor Process Preparation deployment service

- ➢ *Lean Process* consulting - Get the tools implemented and fine-tuned to YOUR environment
- ➢ Customization and fine tuning of machine shape auto-generation rules

❖ Process automation

- ➢ Leverage Valor Process Preparation's comprehensive API to streamline data flow from design to manufacturing

❖ Manufacturing Cost Simulator & Quote Builder

- ➢ Uses data available from Valor Process Prep. to generate accurate manufacturing cost simulation
- ➢ Based on BOM, factory cost model and design complexity
- ➢ Optional: integration to 3rd-party component cost providers (e.g. SiliconExpert, DigiKey)

Design Complexity Factor	Rating
1. Single sided	
2. Double sided	
3. For each 200 placements per side	
4. For each 5 BGA's per side (>0.8mm pitch and >25mm^2)	
5. For each 3 uBGA's per side (<0.8mm pitch and <25mm^2)	
6. > 8" in the X dimension	
7. > 8" in the Y dimension	
8. For each 2 LGA's per side	
9. For each 10 QFN's > 10mm^2 per side	
10. For each 5 QFN's < 10mm^2 per side	
11. For each 10 QPF's > 20mil pitch per side	
12. For each 5 QFP'S < 20mil pitch per side	
13. Finish consideration (Enig > HASL > Silver > OSP)	
14. RoHS consideration	
15. Layer count / copper weight	
16. Rigid flex PCB	
17. Press fit connectors (count / type)	
• 1-5 Easy	
• 6-10 Intermediate	
• 11-15 Difficult	
• 16+ Very Complex	
18. Component density (parts/square inch)	
Total	

#1 in support

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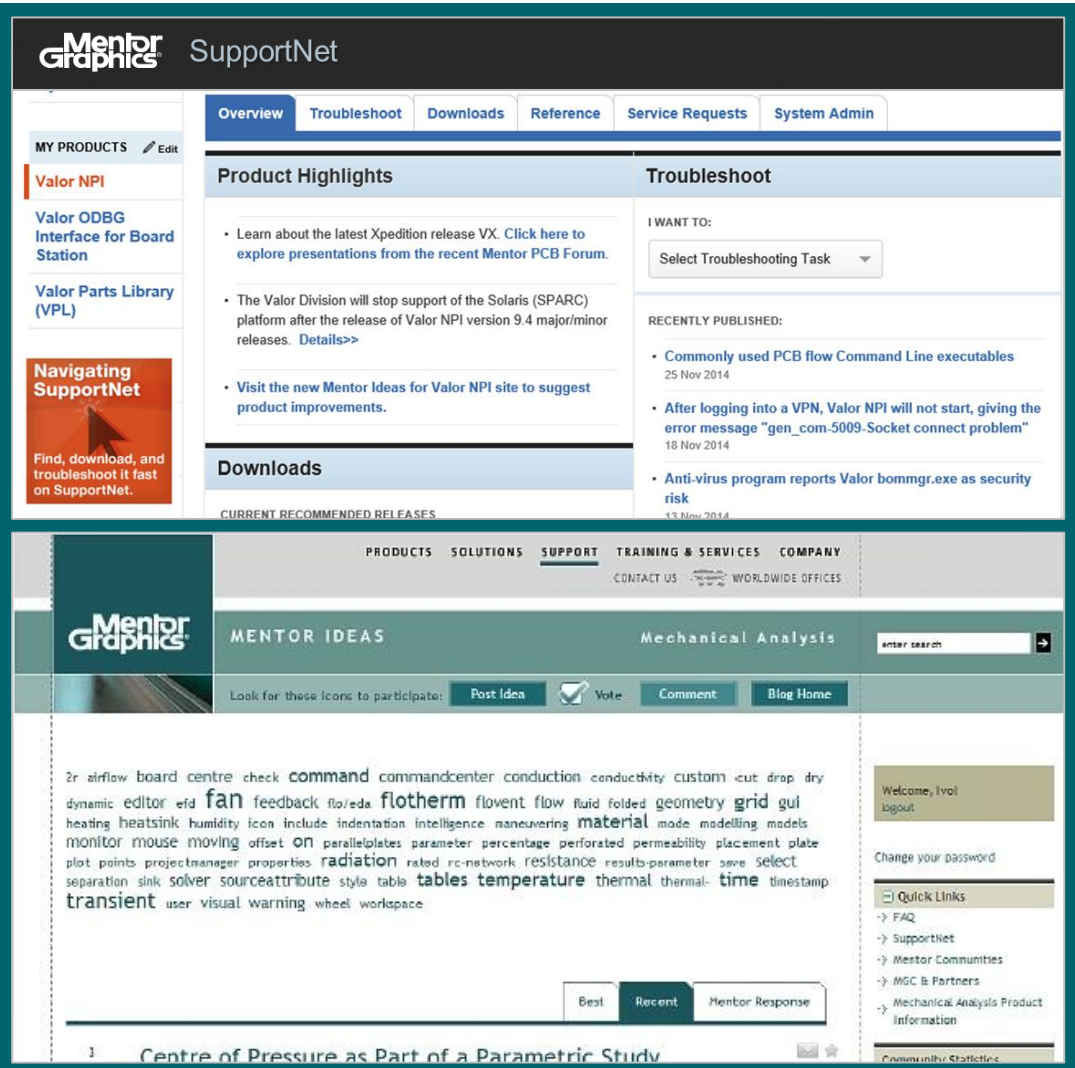
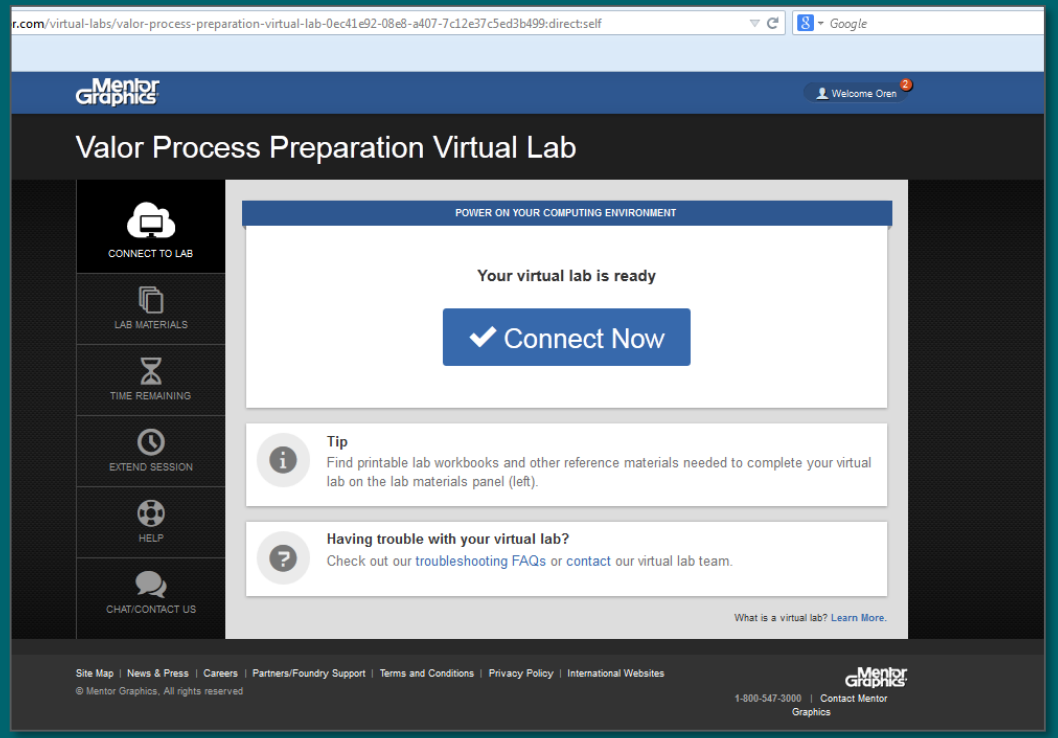
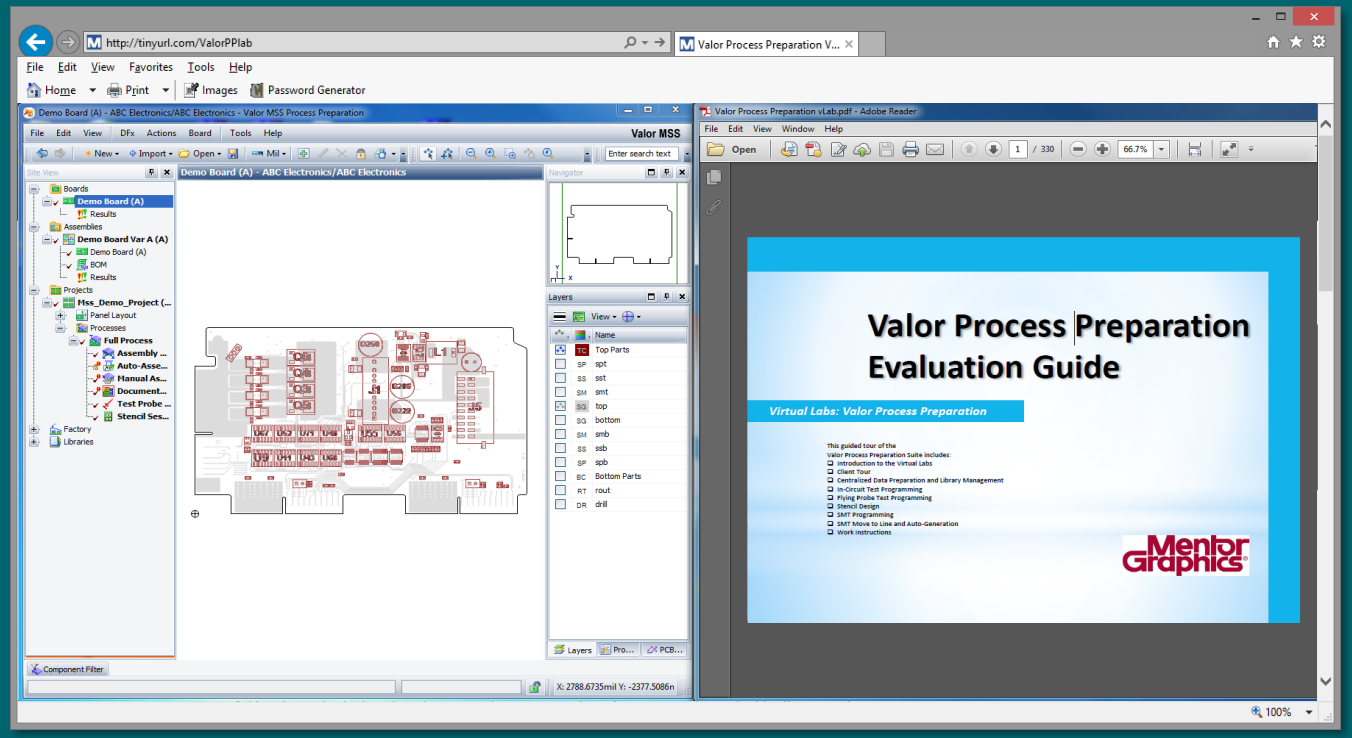
- **SupportNet -** Open to all customers under support:
  - ✓ TechNotes
  - ✓ Best Practices
  - ✓ Tutorials
  - ✓ Quick Tips
  - ✓ Software distribution portal
  - ✓ Marketing Materials
  - ✓ Support requests from customers

- **Mentor IDEAS:**
  - ✓ Easy way to provide feedback and improvement suggestions
  - ✓ Vote to affect the priority of proposed enhancements



Virtual lab





http://tinyurl.com/ValorPPlab

Integrated to TCM as the process repository

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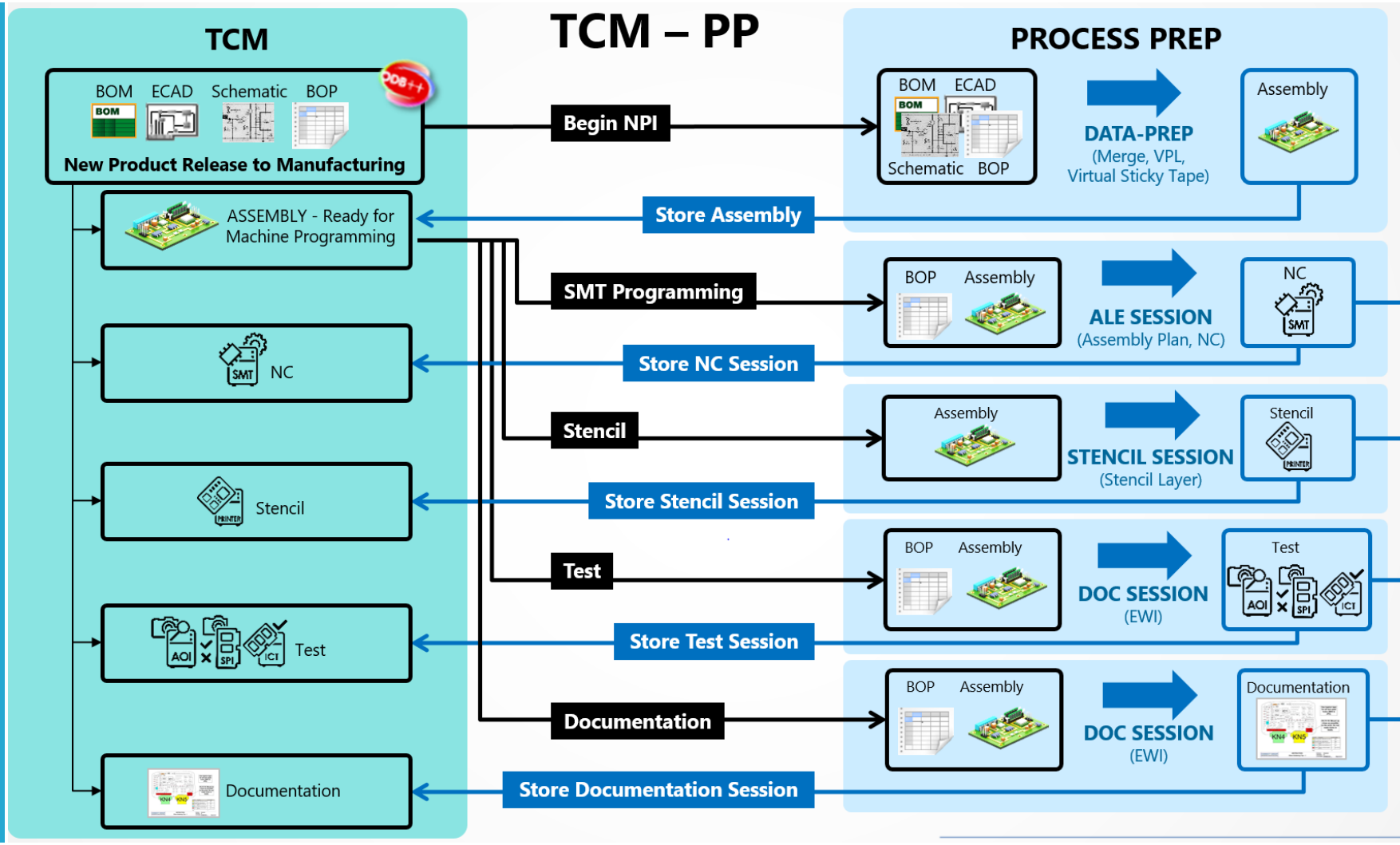
- Increase manufacturing planning efficiency by leveraging Teamcenter Manufacturing as the overall process repository
- Prepare process plans for New product Introduction (NPI)
- Identify the impact of design changes on box build lines
- Deliver updated work instructions



BUSINESS CHALLENGE

- Improve NPI time and cost
- Standardize engineering flow
- Improve global manufacturing flexibility

BUSINESS RESULTS

40%	2X	$0.4M
ENGINEERING TIME SAVED	FASTER NPI	ANNUAL SAVING

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Thank You

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