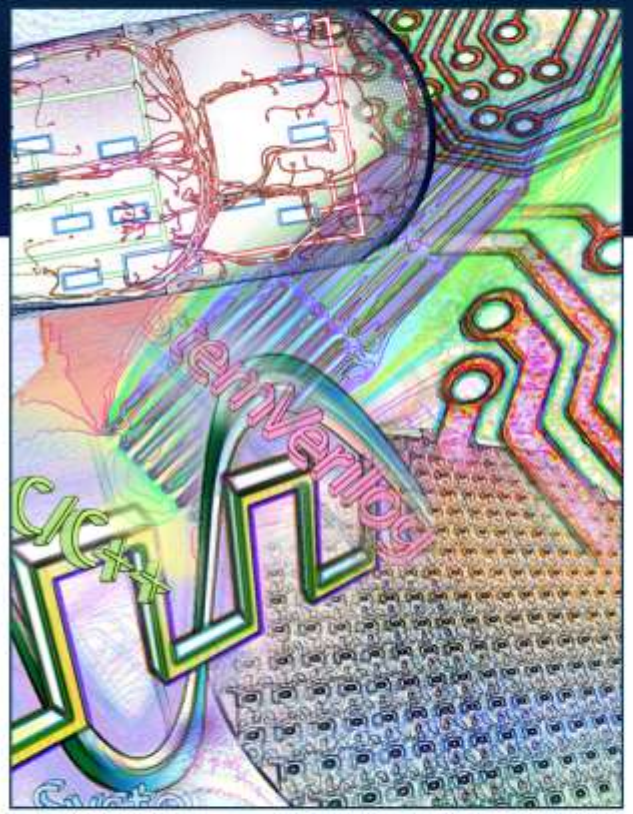


Expedition Enterprise Product Update

Steve Gascoigne

Application Engineer Consultant

Global Distribution Channel

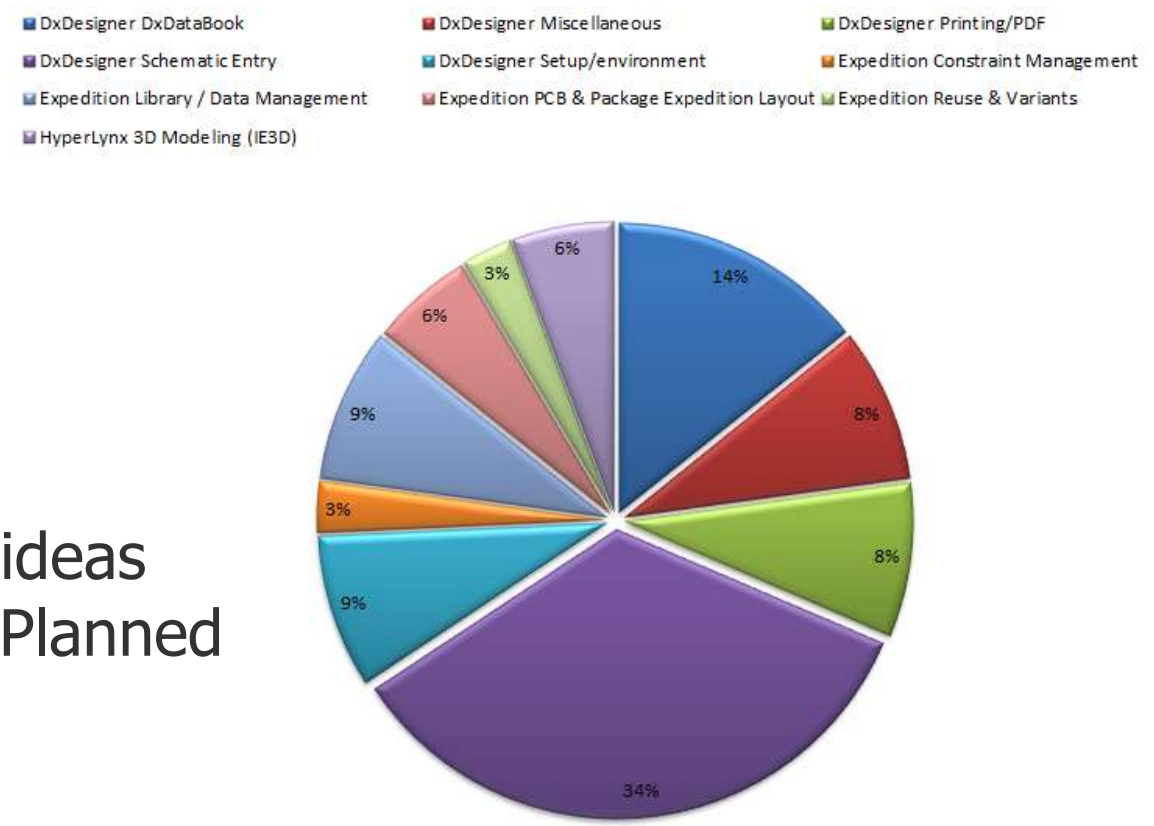
November 2012

Mentor Graphics

Presentation Overview

- EE7.9.3 release update
- Planned releases (EE7.9.4/5)
  - Mentor Ideas
  - DxDesigner
  - DxSystems Designer
  - Expedition, CES
  - DMS
  - FPGA Design

35 Customer Ideas Delivered in EE7.9.3

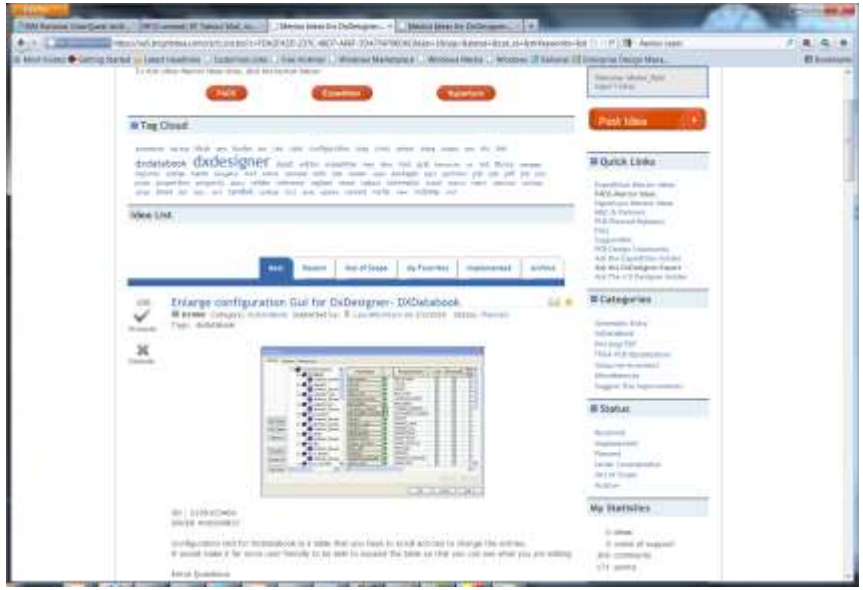


- At least 8 ideas targeted for 7.9.4
- At least 15 strategic ideas currently marked as Planned

DxDesigner, DxDataBook
Addressing the Top Ideas

EE 7.9.3

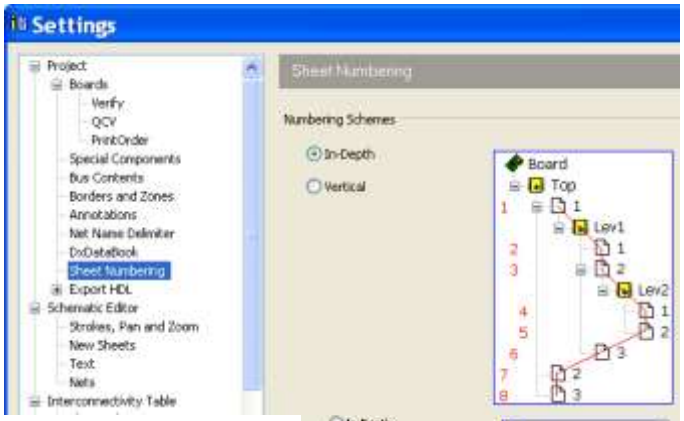
- Top Ideas on DxDesigner web site
  - D1868 – Enlarge the configuration GUI for DxDataBook
  - D1749 – Want pin numbers displayed when placing parts from DxDataBook
  - D1647 – Global filter for cross-probing

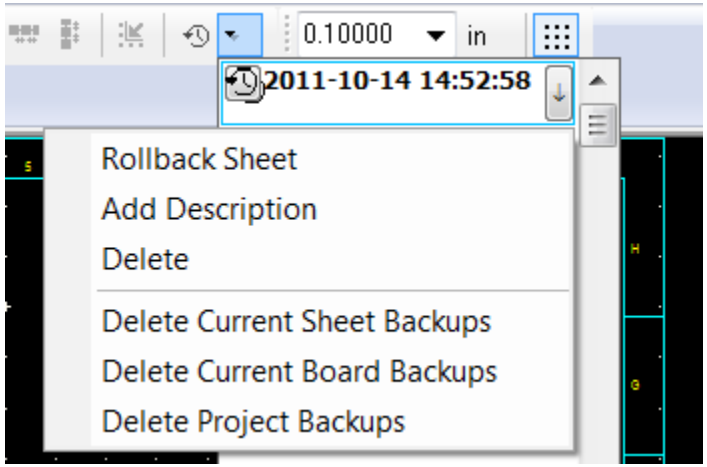


DxDesigner
Schematic Editor Enhancements

EE 7.9.3

- Sheet numbering / print order
- Autobackup
- Sheet backup / rollback

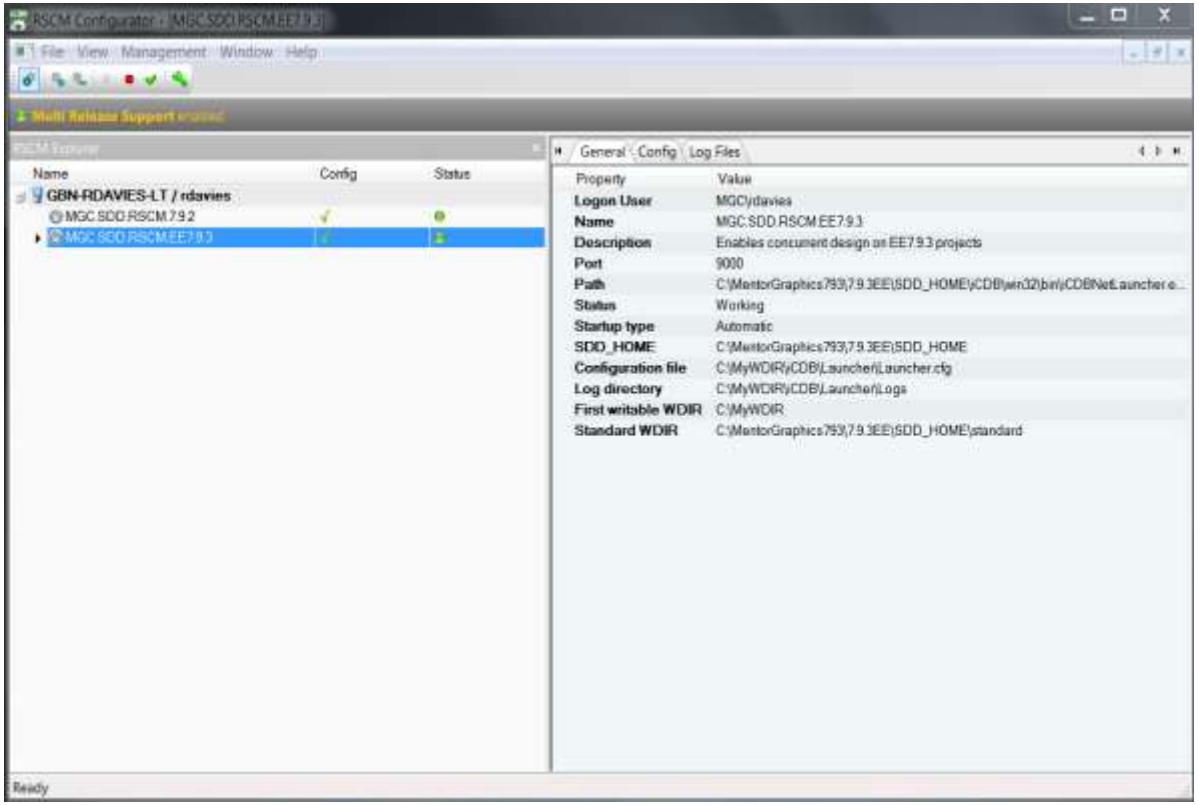




Infrastructure
RSCM

EE 7.9.3

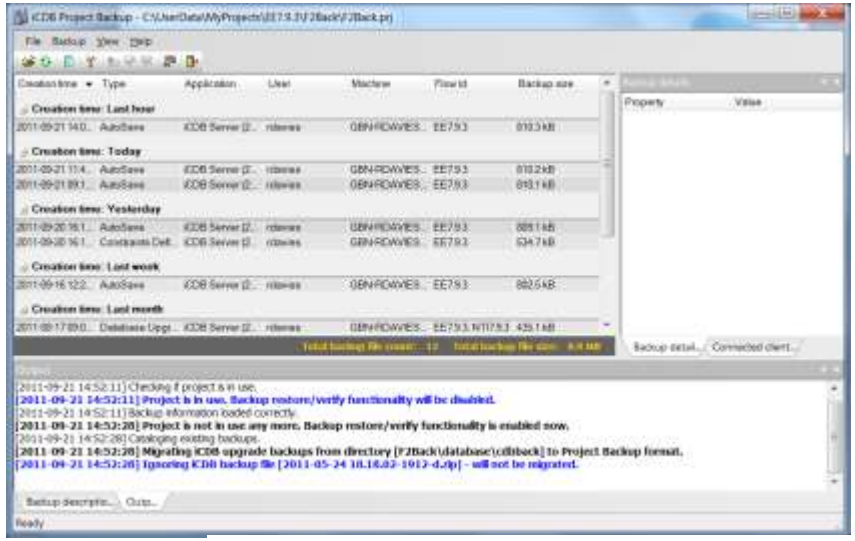
- RSCM/iCDB Server improvements
  - RSCM Configurator to handle multiple versions of Server
    - Setup OS for user log on
    - Setup pathmaps.cfg



Infrastructure
iCDB Project Backup

EE 7.9.3

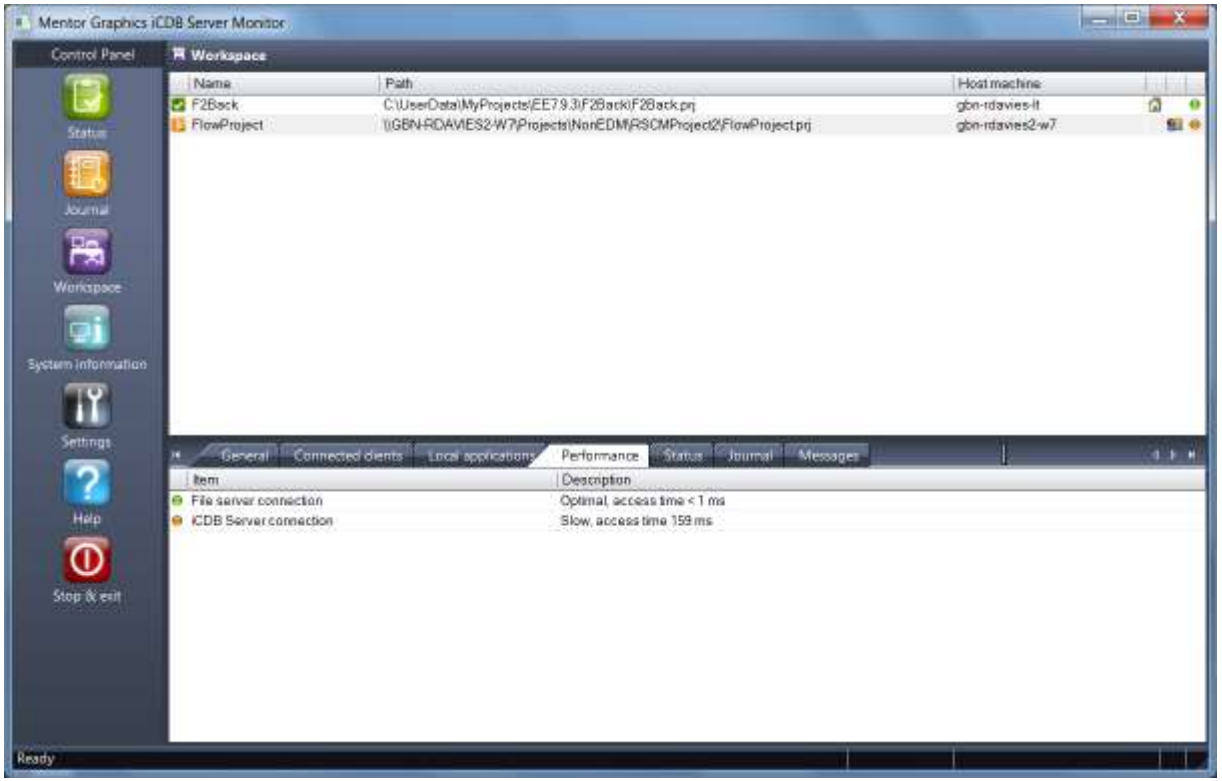
- Include Expedition PCB data in the backup
- Recognize DxDArchive in Project backup
  - Provide option to restore from Archive
- Provide REPAIR PROJECT and REPAIR BACKUP options
  - iCDB will attempt to repair the database
- Provide "Project Support Package" function
  - Gather necessary files in a zip archive
- Provide Cleanup option to be used in Project Backup
  - Remove unnecessary log/report files
- Provide functionality to run a Backup on demand



Infrastructure
iCDB Monitor

EE 7.9.3

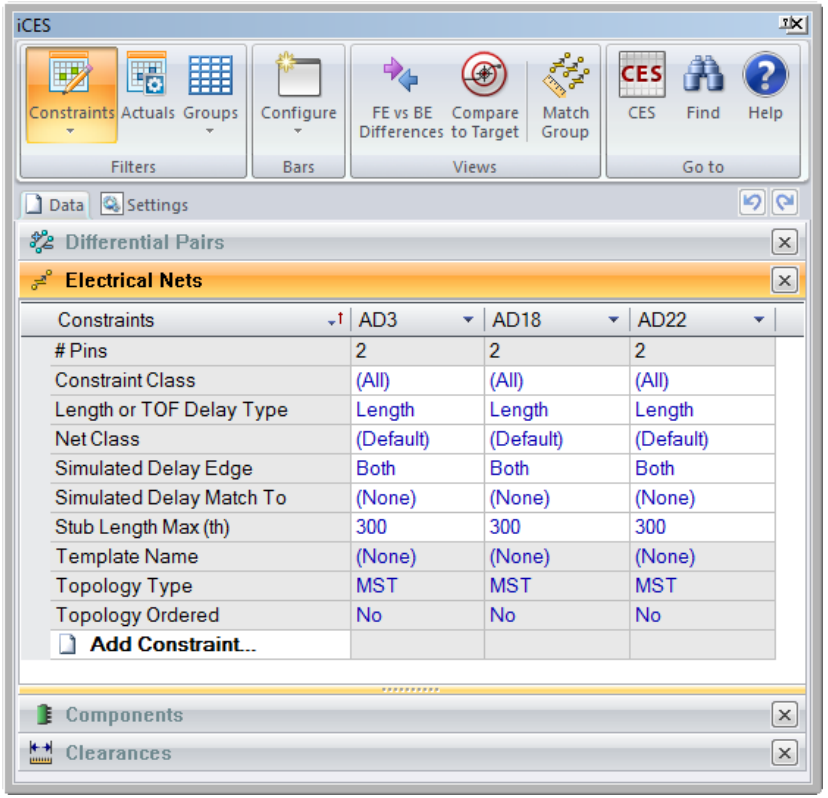
- New workspace view
  - Shows additional information about connected clients
  - Includes performance of iCDB Server connection and file server connection



Introducing iCES

EE 7.9.3

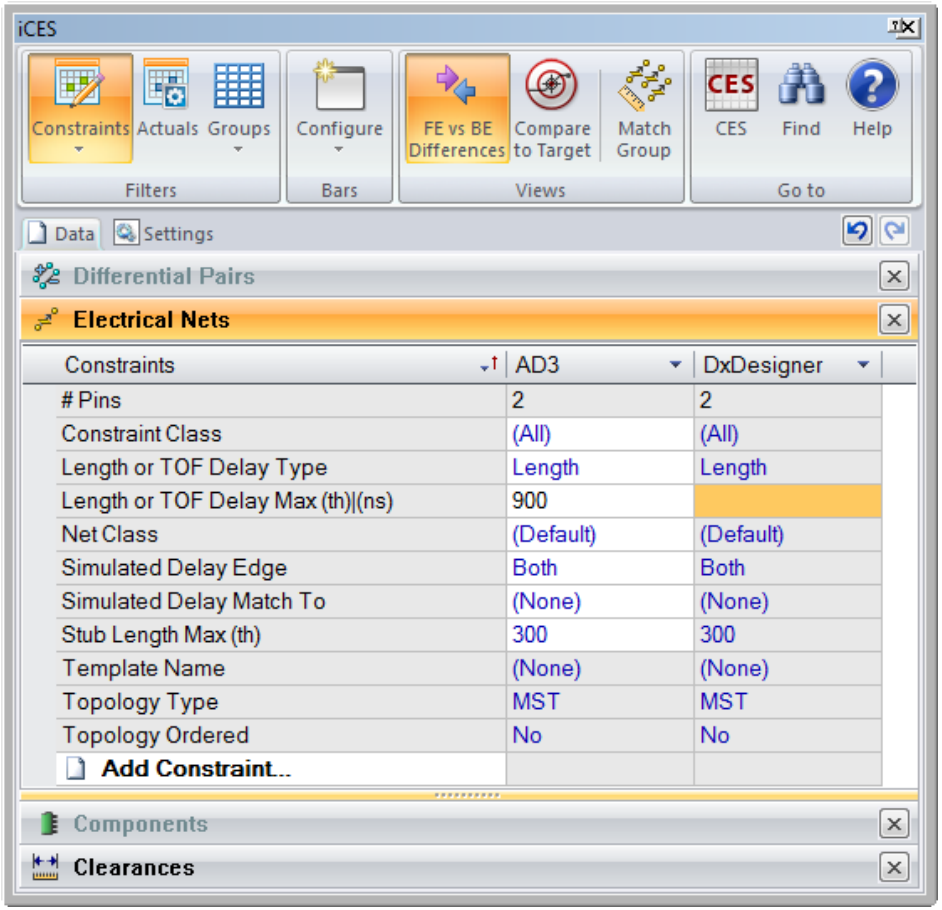
- The next step in evolution of constraint management
- View or edit most commonly-used constraints within the host PCB editing tool
- Context-driven operation
  - Constraint data for the object(s) selected within the host
- Optimized to view relevant data
  - Can easily refine the view to further optimize
- Easy to learn / easy to use
- Add-in to a PCB design tool
  - Hosted by DxDesigner & Expedition in initial release



iCES
Integrated Value

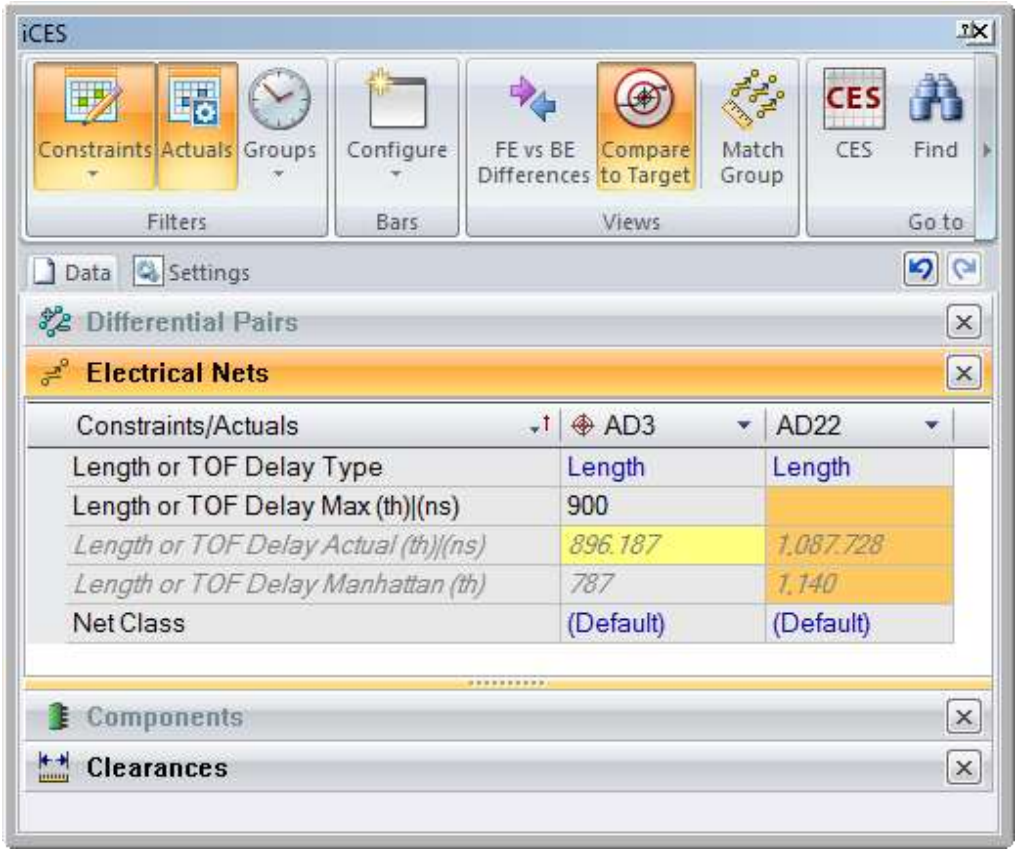
EE 7.9.3

- Productivity booster for DxDesigner, CES & Expedition PCB
  - Intuitive to learn
  - Easy to use
  - Find & edit constraints faster than CES
- Shorten design cycle time
  - Real-time access to relevant constraint data
  - Unique features enabled thru add-in architecture



iCES
Core Features

EE 7.9.3

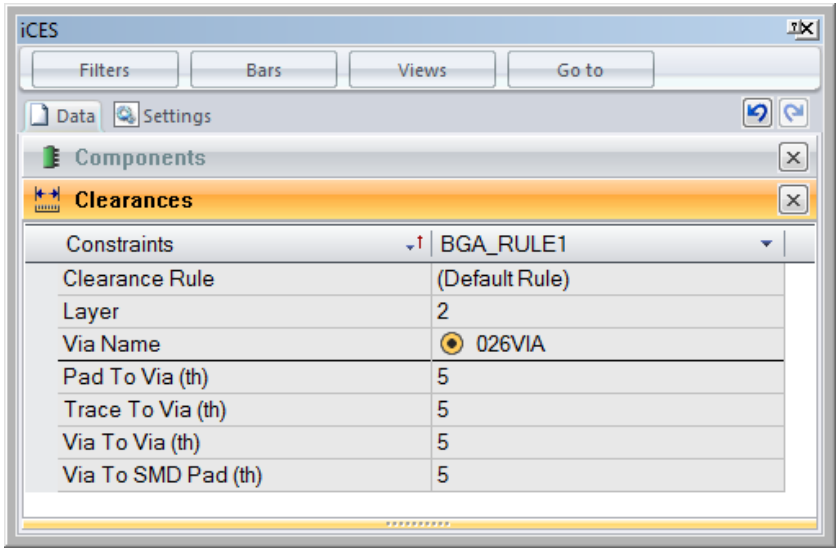


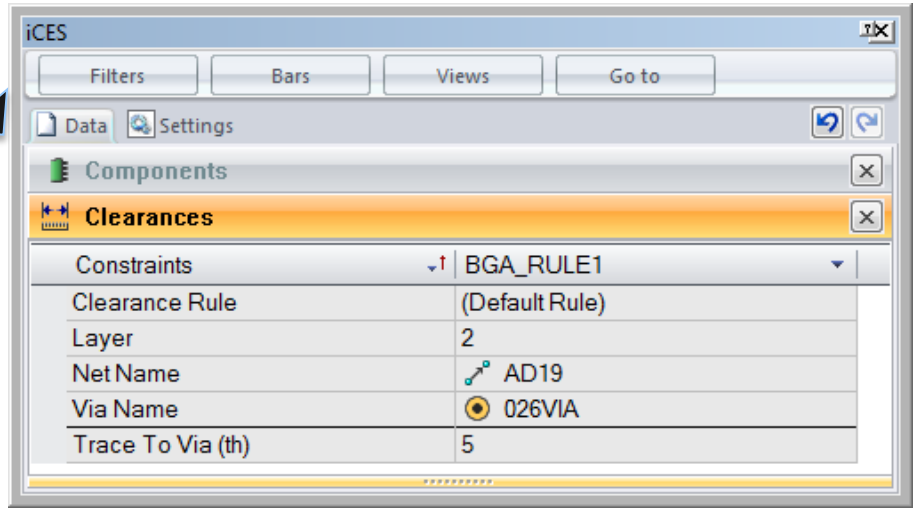
- Modern, dock-able, configurable GUI
- Simple & powerful filtering
- Basic constraint editing
  - View
  - Edit
  - Add
  - Viewing Actuals
- Advanced constraint editing features
  - Front-end vs. Back-End
  - Compare to Target
  - Match Groups
- Concurrency support
  - XtremePCB support

iCES
Clearances Support

EE 7.9.3

- New bar to display clearances
- View clearance rules for single object
  - To other objects
- View clearance rule between two objects
- View actual distance
- Supports most common objects
  - Traces, Vias, Pads

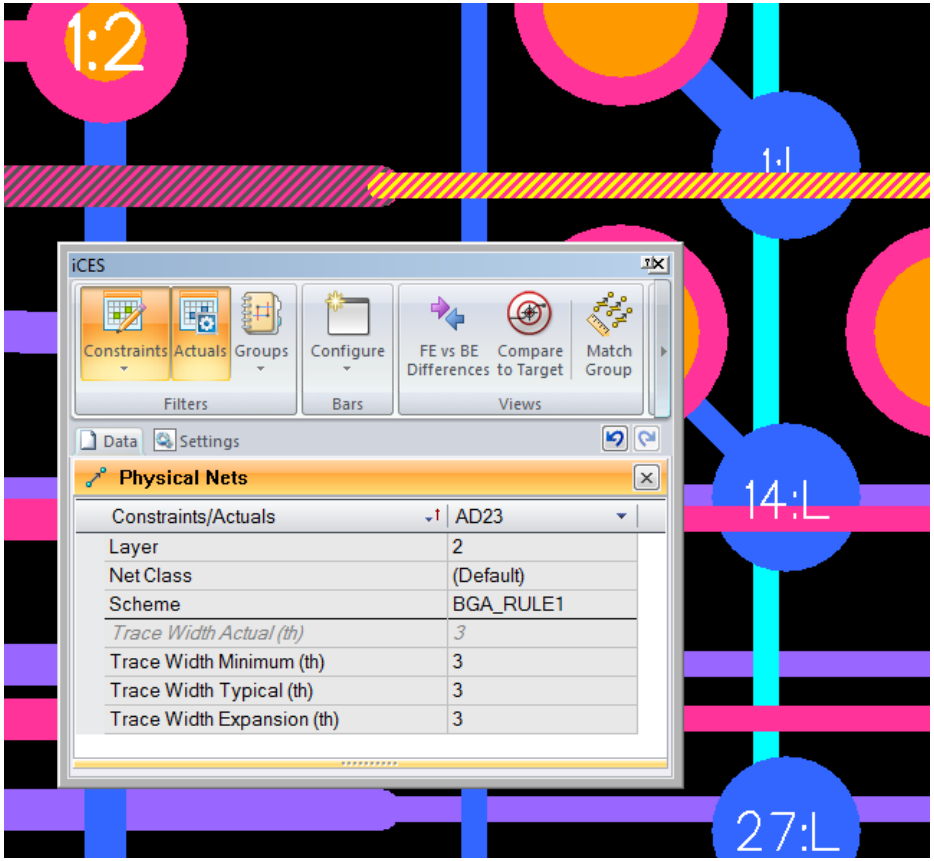




iCES
Widths Support

EE 7.9.3

- Ability to view trace widths
  - On physical nets only
- Includes new group "Trace Widths" and displays
  - Layer
  - Net Class
  - Scheme
  - Minimum
  - Typical
  - Expansion (if defined in CES)



- Actuals supported
- Feature designed to be used on nets/segments on a single layer

DMS
7.9.3 Overview

EE 7.9.3

DMS Desktop GUI

- DMS welcome page
- DMS perspectives
- Improved search window
- Improved information (object details) window
- Intuitive search references

Administration

- Auto installation of Tomcat
- Creation of catalogs/objects from catalog objects

DMS Designer

- Login from DxDataBook
- Library researcher enhancements
- Part request copy

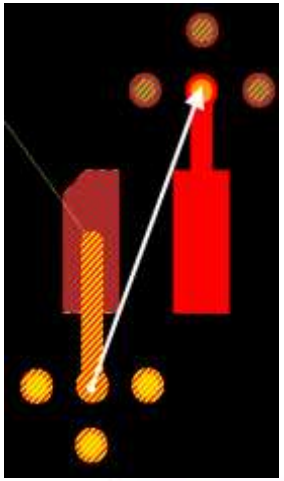
Library process

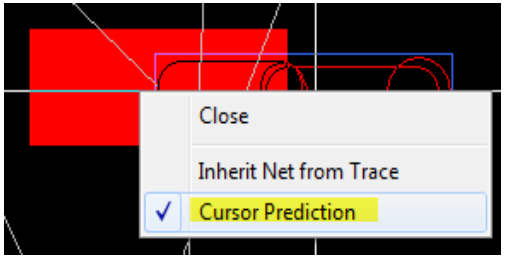
- Library flow manager enhancement
- Improved PDF generation
- Support long pin numbers

Expedition PCB
Copy Trace

EE 7.9.3

- Copy Trace with Cursor Prediction
  - New RMB menu item to turn Cursor Prediction off
  - No prediction if source & target outside of graphical view
- Improved support for mix of (un)connected objects
- Improved support for "dx=X,Y" keyin

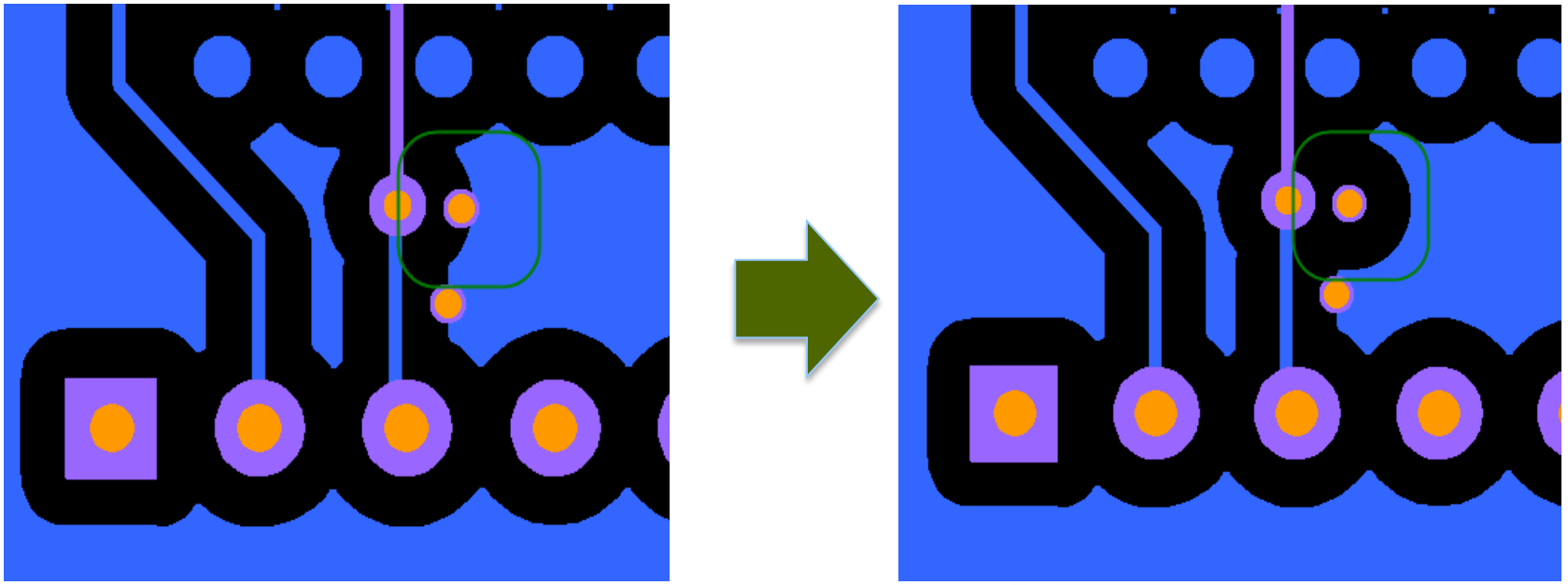




Expedition PCB
Dynamic Planes

EE 7.9.3

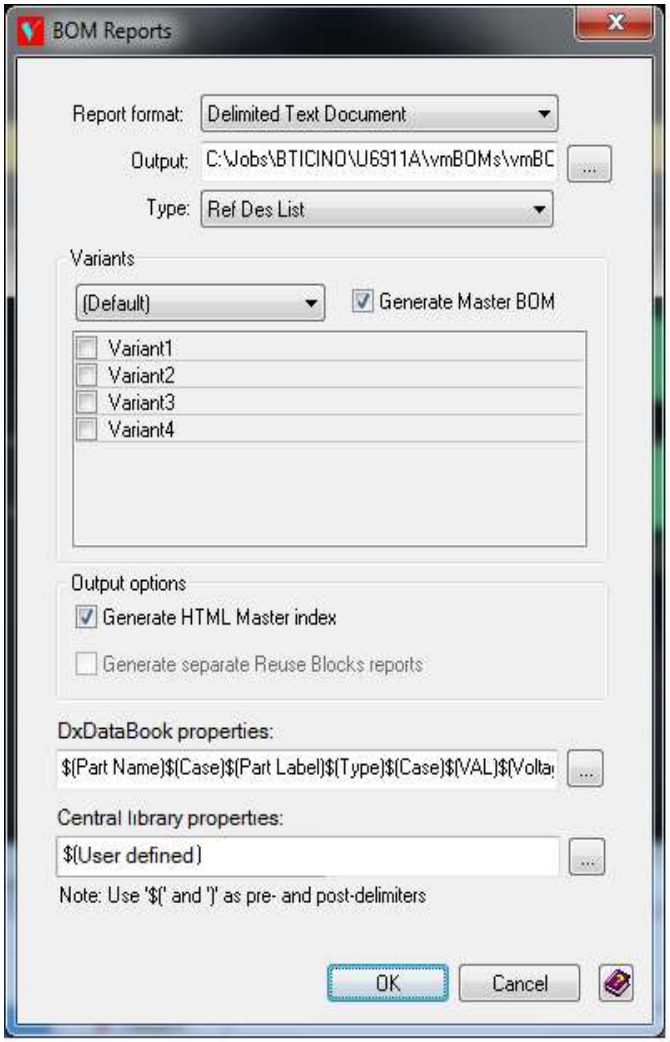
- Buried connections
  - No connect when pad origin is outside of user-input plane shape
  - Now applies to plane sub-shapes
- Improved DFM when a connected pad is on the edge of a clearance area.



Expedition PCB
Variant Manager Output

EE 7.9.3

- In 7.9.2, only DxDataBook properties were available for output
- In 7.9.3, additional Central Library properties, including user-defined properties, are available
  - Available within Variant Manager BOM output
  - Same list selection as for DxDataBook properties

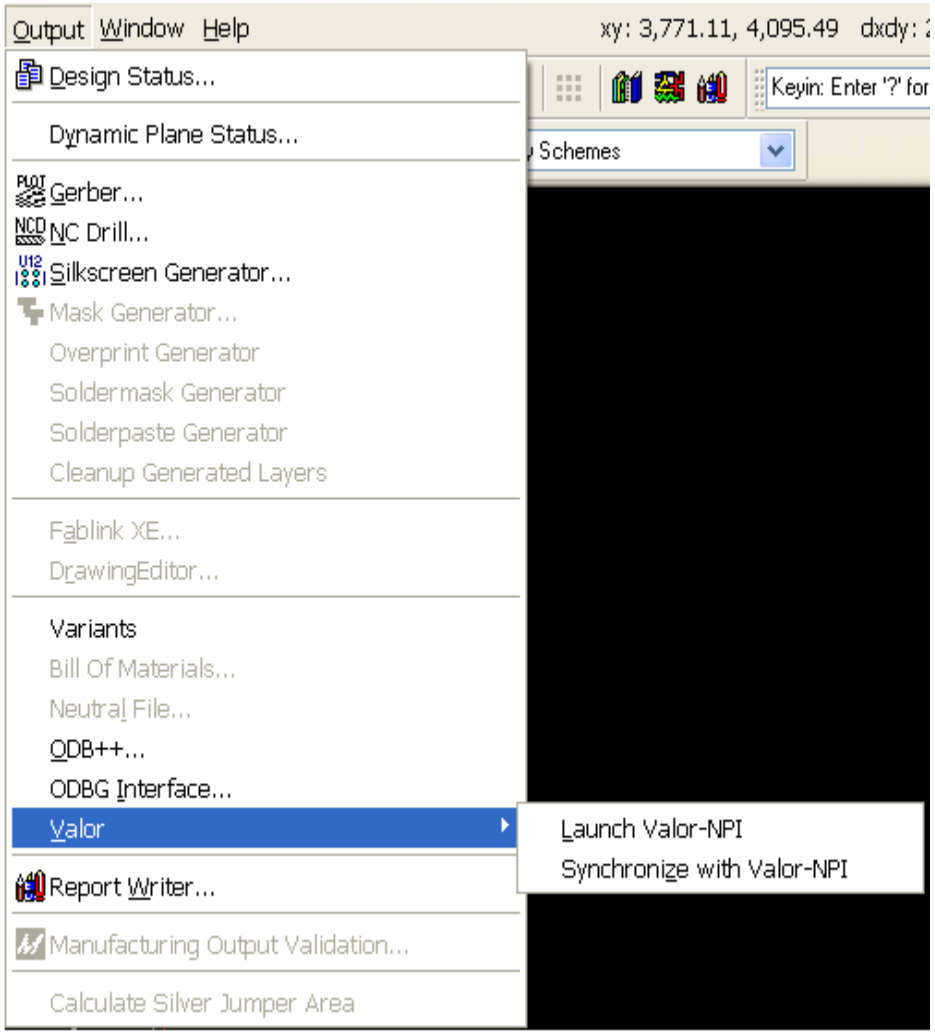


Expedition PCB
Valor NPI Integration

EE 7.9.3

- DFF, DFA and DFT analysis within the Expedition flow
- Cross probe between Valor NPI and Expedition PCB
- Review analysis results in Hazards

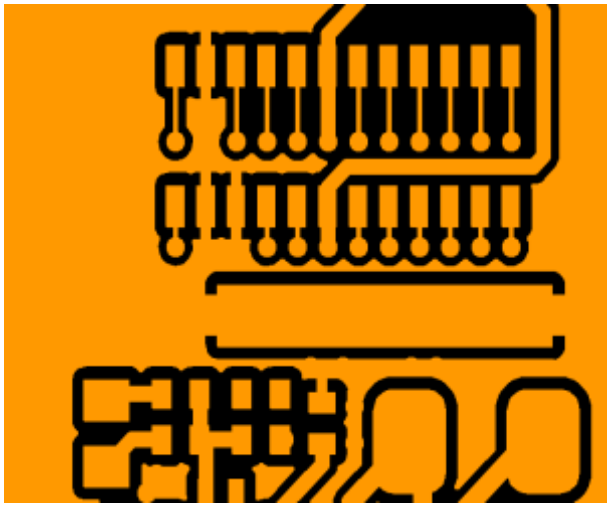
- Minimize iterations with manufacturing
  - Valor NPI users average 57% *fewer* revision spins than non-Valor users
- Fewer major production issues
- Time savings in release schedule
- Optimize hand-off to manufacturing with ODB++



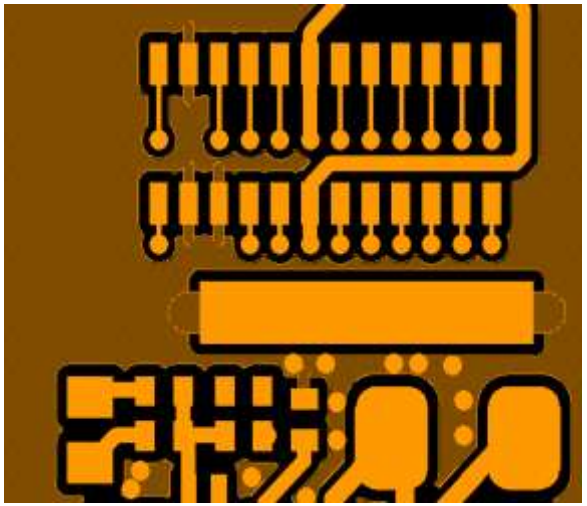
Expedition PCB
Plane Metal Display

EE 7.9.3

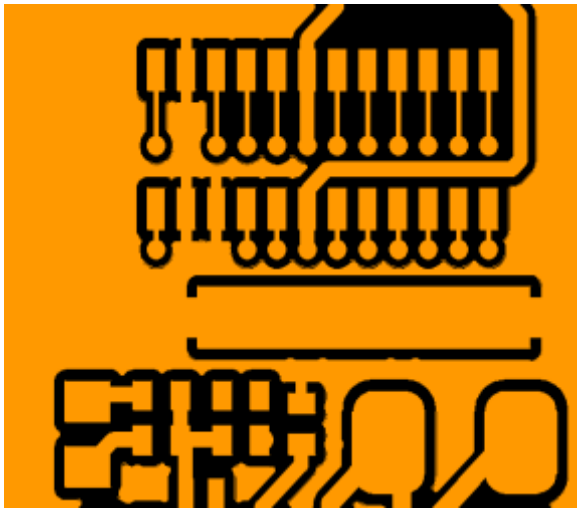
- Improved static metal display



State: Dynamic



State: Static with Pattern



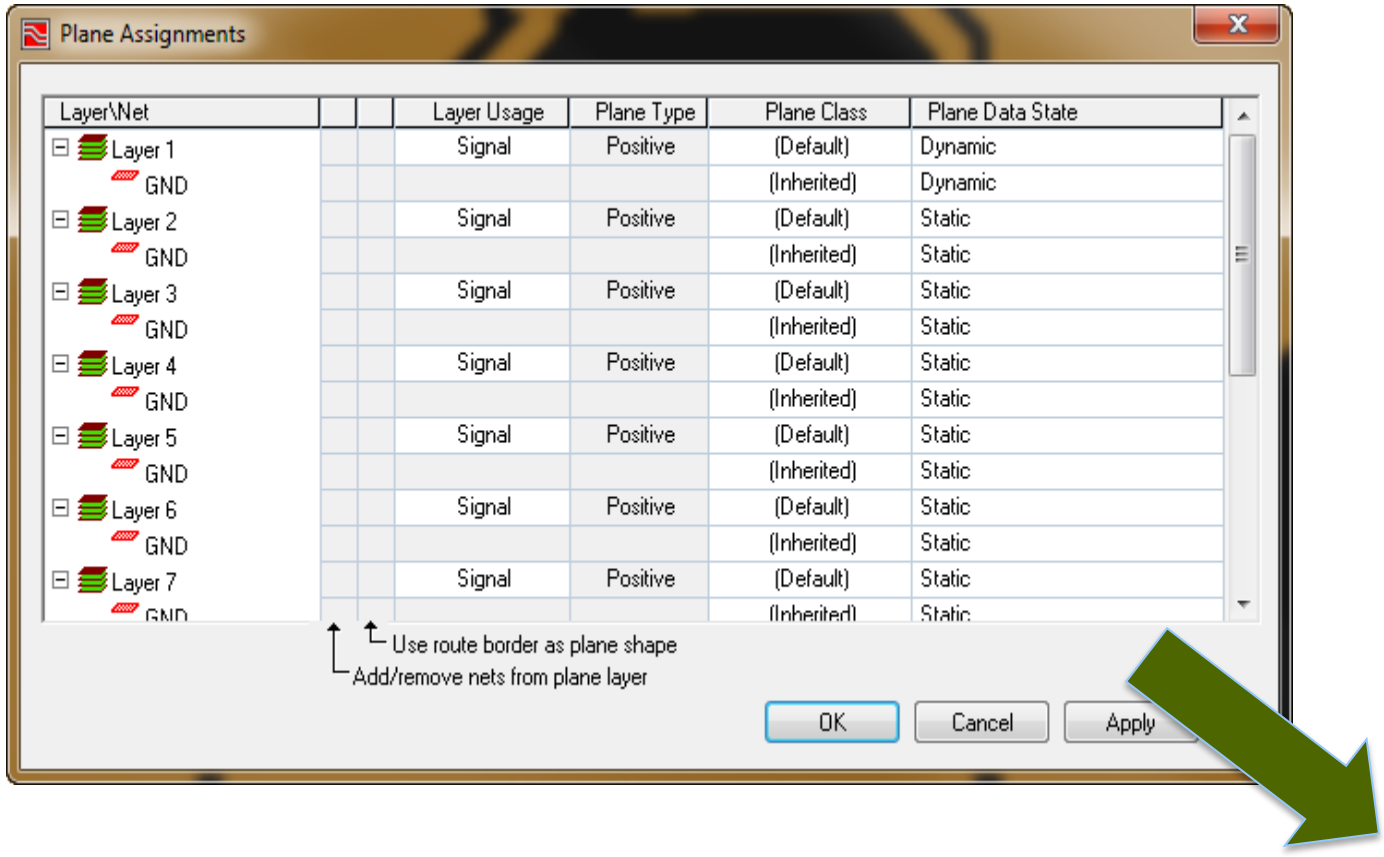
State: Static with Forced Solid

- Static Patterns indicate metal is not dynamic
- Expedition PCB/Viewer/Browser can now display static metal as Solid

Expedition PCB
Plane Assignments GUI

EE 7.9.3

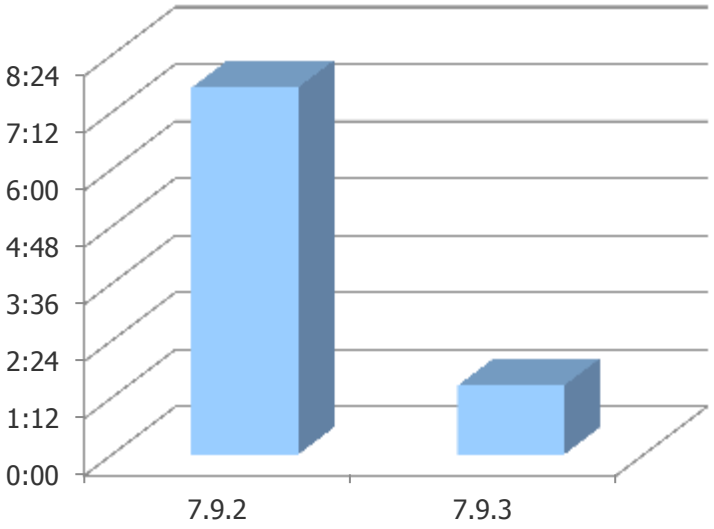
- Plane Assignments GUI is now stretchable
  - Display more layers/nets in a larger area



Expedition PCB
Improved Performance

EE 7.9.3

- Improved performance of Expedition and Xtreme PCB startup
  - IC Package designs with huge numbers of component pins
  - 7.9.2: 7:43 mins vs 7.9.3: 1:27 mins
  - Up to 80% improvement
- Improved performance also seen with:
  - Forward Annotation
  - Xtreme
  - Setup Parameters
  - Features that require a design re-load.



Product Plans

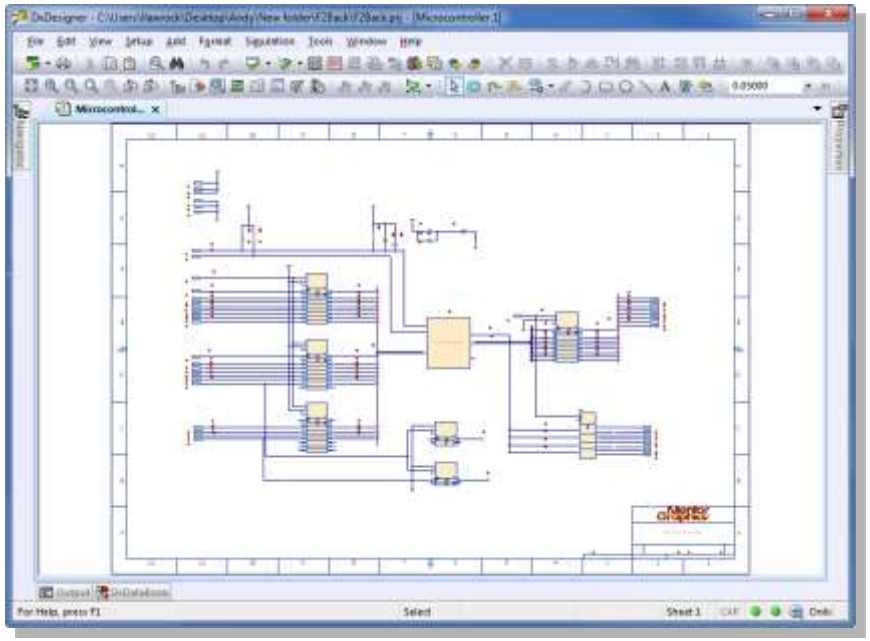
- DxDesigner
  - Usability mission
    - Improved out-of-the-box experience
    - Usability improvements
  - Documentation (PDF)
  - Compound symbols
- DxSystems Designer
- Expedition, CES
- DMS
- FPGA Design

DxDesigner Usability Mission

- Customer value
  - Enable engineers to focus on produc development and not on tool usage
  - Address needs of casual users
  - Reduce learning curve
    - Minimize training effort and cost
  - Increase productivity
  - Lower the bar for tool unification across the organisation
    - Easier administration
    - Enables reuse
    - Benefits of better flow integration
    - More synergy between departments

DxDesigner
Areas of DxDesigner Improvements

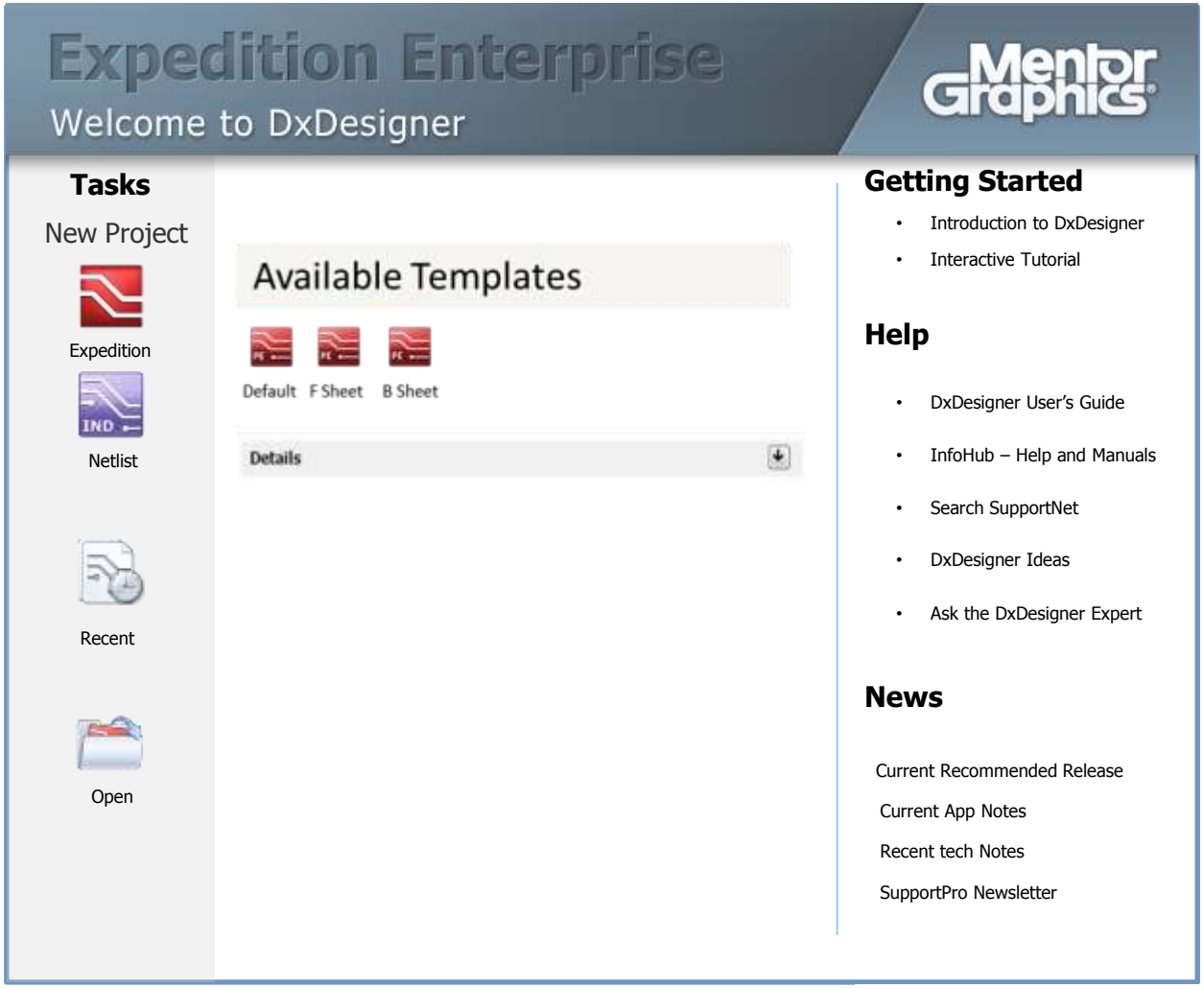
- DxDesigner usability improvement project throughout 7.9.4, 7.9.5 and beyond
  - Graphics improvements
  - Editor enhancements
  - Usability enhancements
  - Ultra-modern look and feel
    - Common across all platforms
  - Out of the box (OOTB) configuration enhancements
    - Also includes start-up screen
  - Documentation enhancements



DxDesigner
Start-up Screen

EE 7.9.4

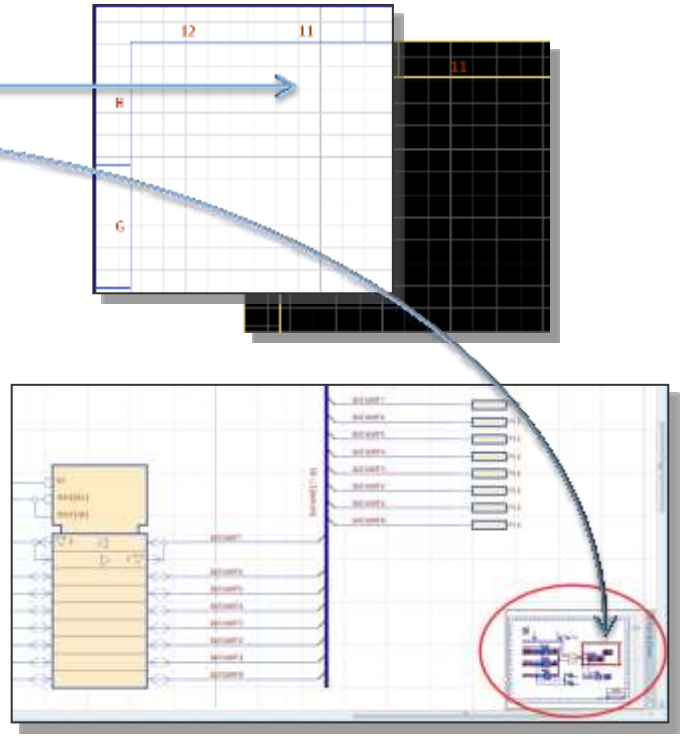
- Quick access to tasks and useful information



DxDesigner
Usability Improvements

EE 7.9.4

- Graphics improvements
  - New grid
  - Pan & zoom
    - Super view window
    - Improved panning -smooth move
  - Layered graphics (foreground/background)

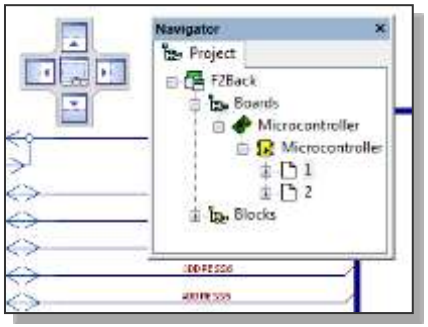


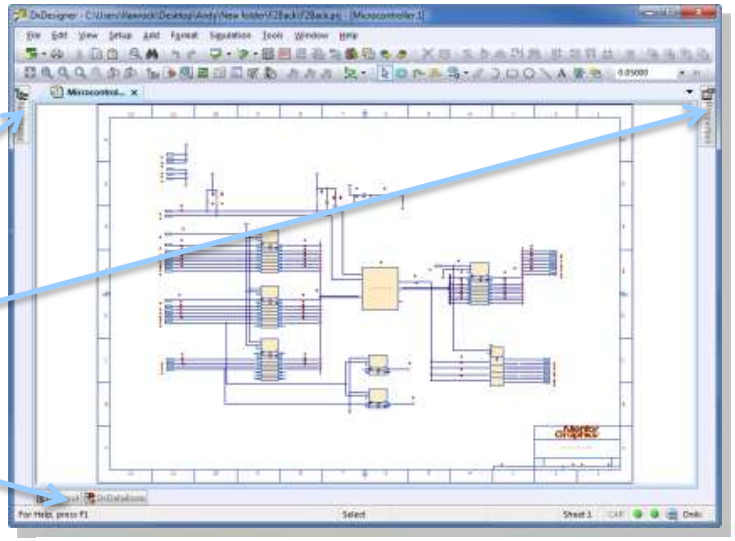
- Improved text management
  - In-line & multi-line editing
  - System fonts exposure
- Dynamic graphic violation highlight and fix
  - Batch mode (dynamic in 7.9.5)
  - Highlights and fixes text overlapping with:
    - Nets, symbol graphics, properties and other text etc.
- Improved routing (wiring model)
  - Continuation of efforts from 7.9.3 throughout 7.9.4, 7.9.5 and beyond
  - Rubber banding nets/symbols avoiding violations and overlaps

DxDesigner
Usability Improvements

EE 7.9.4

- Ultra-modern Windows-like layout on all platforms
  - 24-bit color depth toolbars
  - Window layout
    - Docking/undocking
  - Sliding windows
    - Auto hide

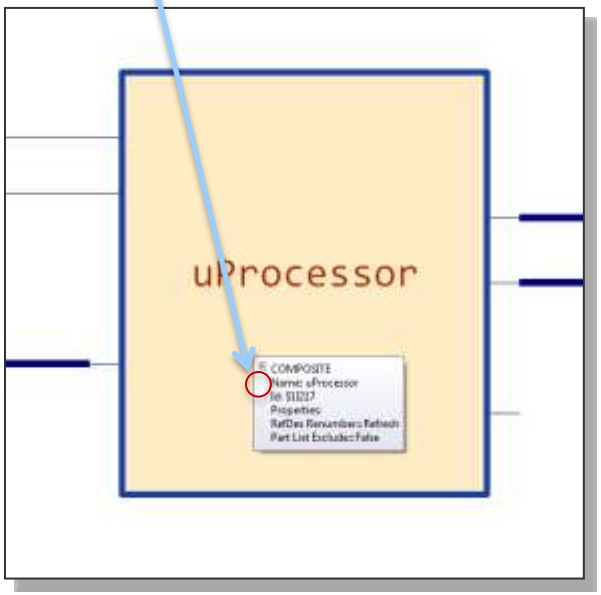


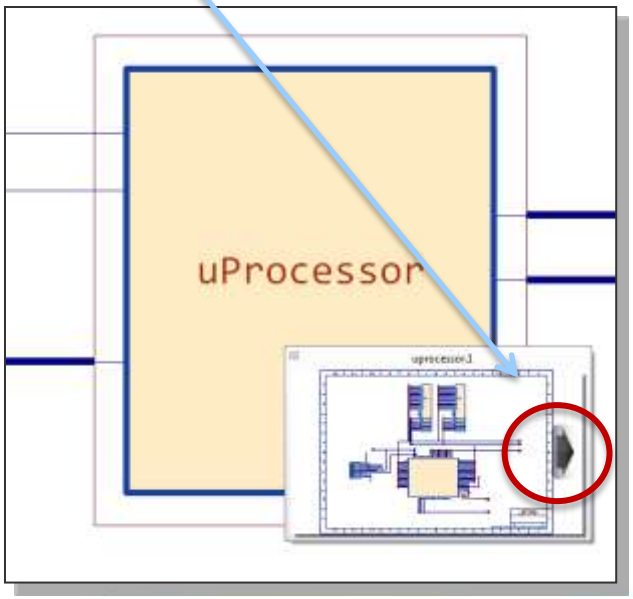


DxDesigner
Tool Tip Hierarchical Preview & Navigation

EE 7.9.4

- Thumbnail view of the underlying hierarchical block for easy navigation to the schematic contents
  - Select "+" in tool-tip to view thumbnail
  - Double click thumbnail to open schematic
    - Click the arrow to navigate to other sheets

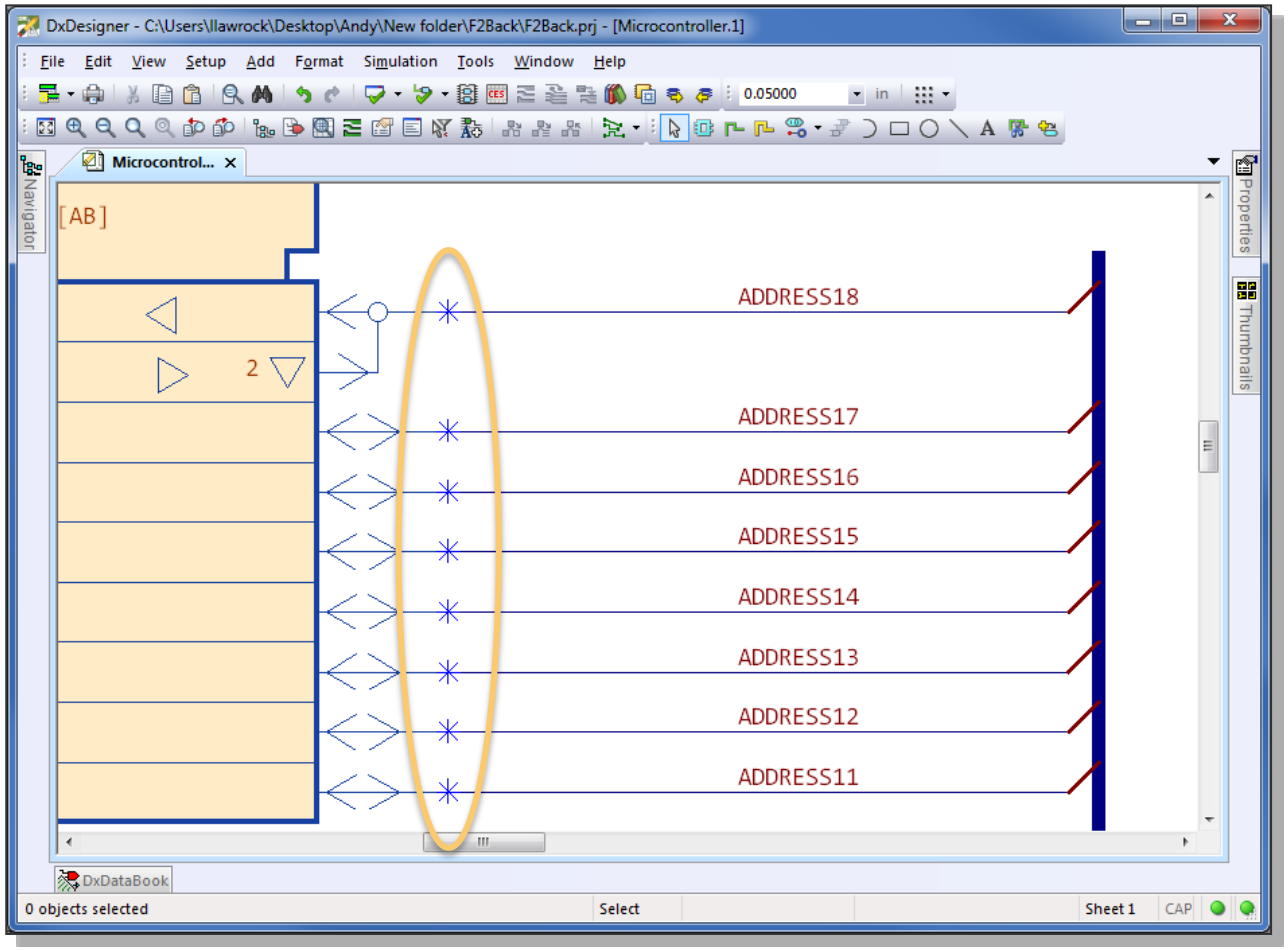




DxDesigner
Connectivity Advisor

EE 7.9.4

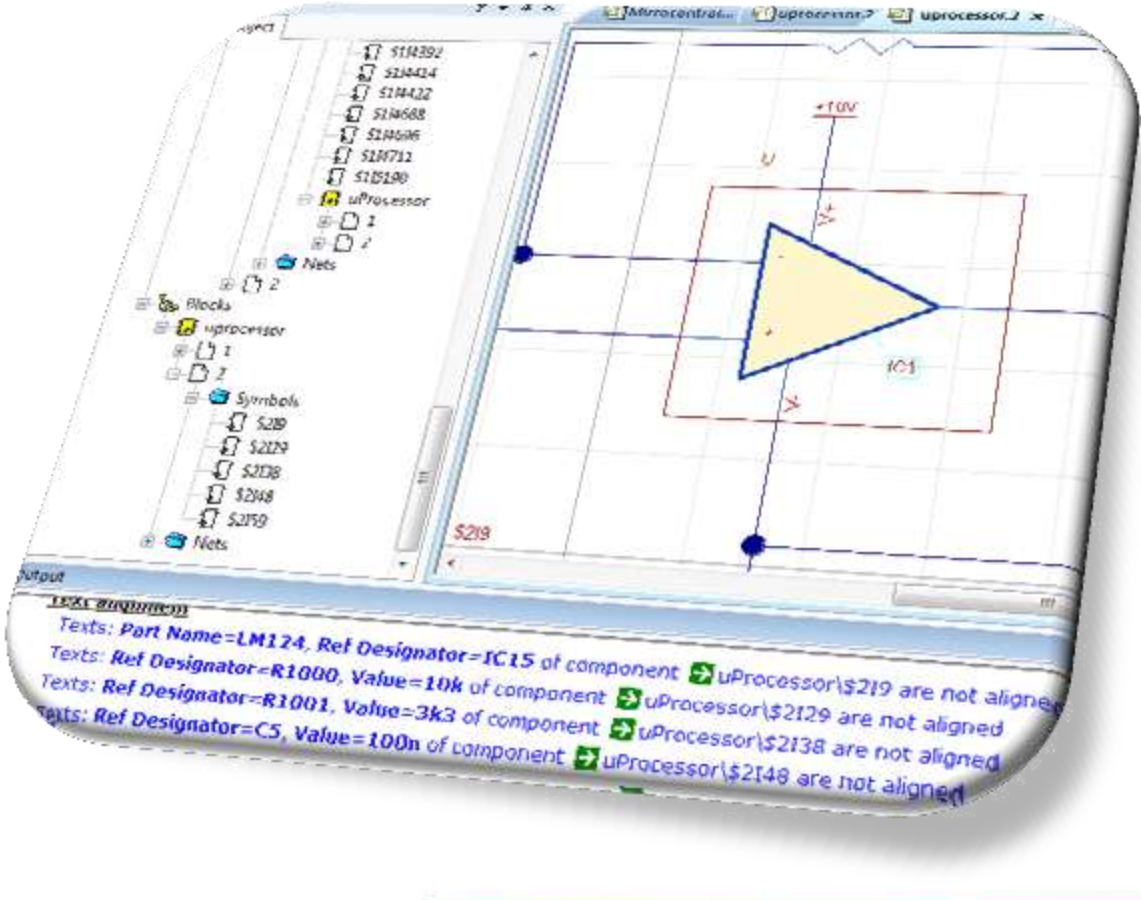
- Visual indication as user closes in on complex net/bus connections



DxDesigner
Graphics Rule Checker

EE 7.9.4

- Included batch checks:
  - Off grid report
    - Off grid nets
    - Off grid pins
  - Net overlap
    - Overlapping objects report
    - Object overlap
  - Text report
    - Text alignment
    - Text owner



DxDesigner
Usability Improvements

EE 7.9.5

- Improved graphics/layout
  - Grab handles
  - Graphics scaling
  - Symbol placement via Visio-like categorized panels (DxDataBook)
- Maintainability
  - Integrated symbol editor
  - Compound symbol definition

Product Plans

- DxDesigner
- DxSystems Designer
- Expedition, CES
  - Expedition / Xtreme 7.9.4 focus
  - CES
  - NPI
- DMS
- FPGA Design

Comprehensive Approaches to Systems Design

EE 7.9.5

Single-board Projects

Mentor Solution: DxDesigner

- Single-PCB centric
- Engineering, logic, schematic at the board-level

Multi-board Systems

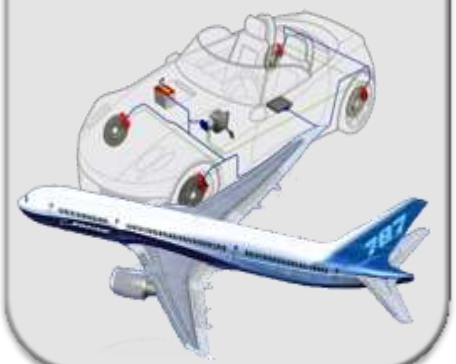
Mentor Solution: DxSystems Designer

- Multiple PCBs connected with cables and/or backplanes
- Functionality defines the system, the PCBs & the required sub-system interconnect

Platform-centric Systems

Mentor Solution: Capital Platform

- Interconnect defines the system
- Complete aerospace or automotive projects



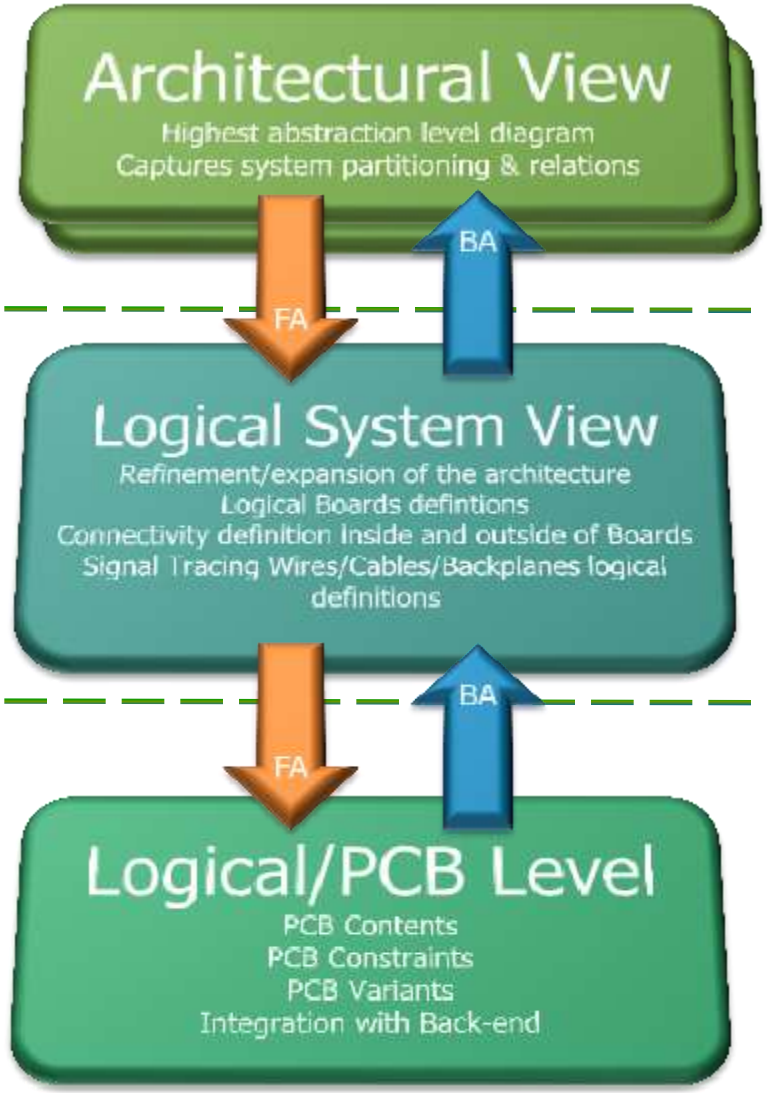
DxSystems Designer
Overview

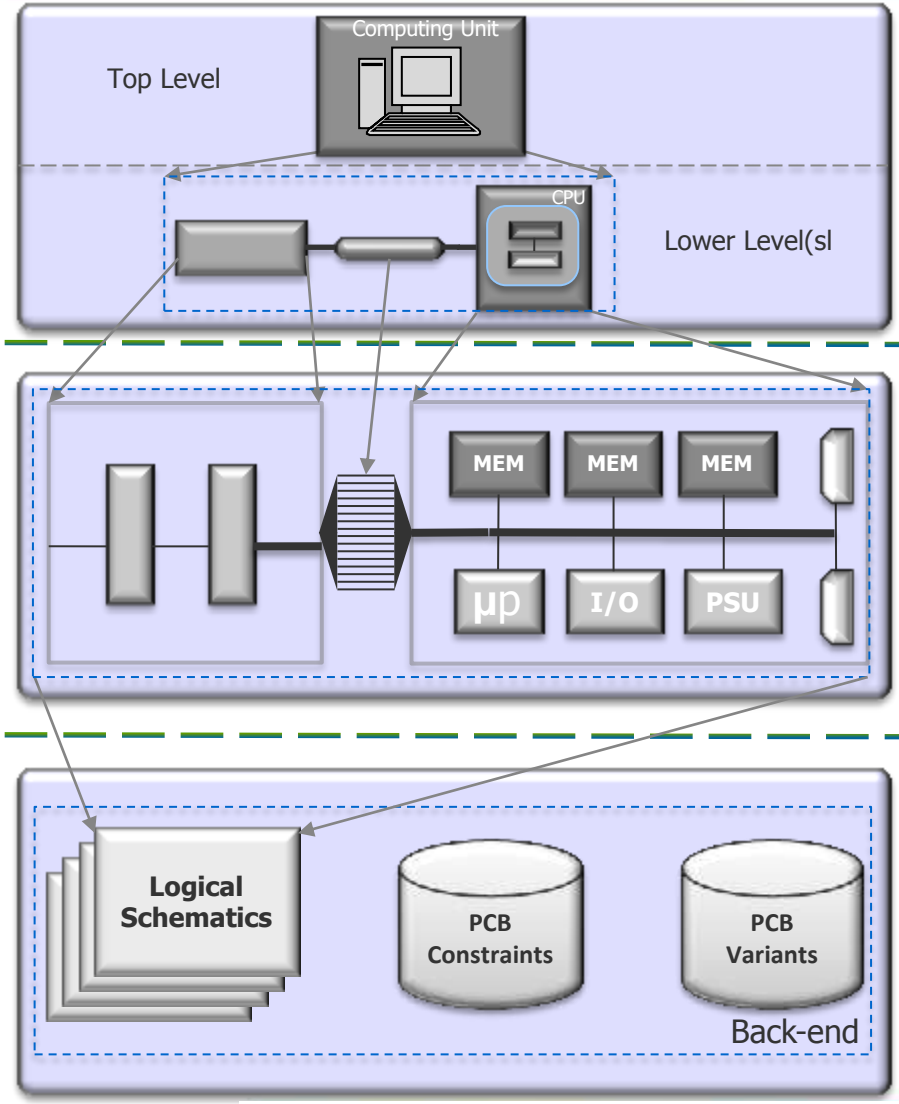
EE 7.9.5

- DxSystems Designer captures the **hardware description of the system**
  - Starting from the architectural level through the logical system level down to the logical/PCB level including the logical definition of:
    - Wires, cables and backplanes
  - DxSystems Designer is targeted at the hardware implementation space
  - DxSystems Designer is not a functional simulation or a hardware/software co-verification development environment

DxSystems Designer
Structure Overview

EE 7.9.5





Product Plans

- DxDesigner
- DxSystems Designer
- Expedition, CES
  - Expedition / Xtreme 7.9.4 focus
  - CES
  - NPI
- DMS
- FPGA Design

Release Themes

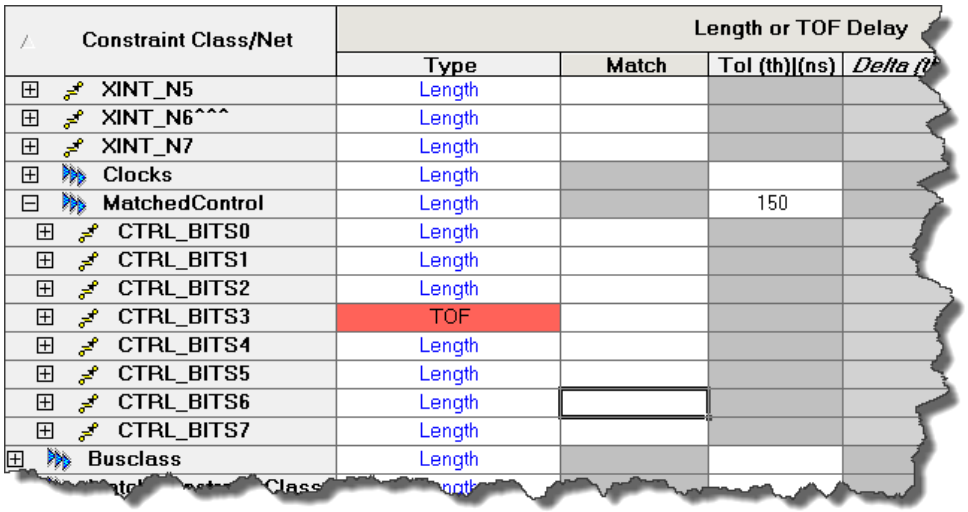
EE 7.9.4

- Expedition / Xtreme PCB 7.9.4 focus:
  - Intelligently communicating design intent
    - From engineering to layout
    - From PCB design to manufacturing
  - Improving productivity
    - HDI routing
    - RF design

CES
Intelligently Communicating Design Intent

EE 7.9.4

- Layout actuals process improvements
  - Simpler process reduces user errors
  - New format & mechanism used throughout flow
  - Settings to allow automatic update and export of actuals
  - Progress dialog added to front-end for Import Actuals
- Improved match group violations
  - Reduces possibility of user error when using hierarchical match groups
  - Automatic update of parent delay types when children are changed
- CES diagnostics run from Expedition can fix more errors



Manufacturing – Export ODB++
Intelligently Communicating Design Intent

EE 7.9.4

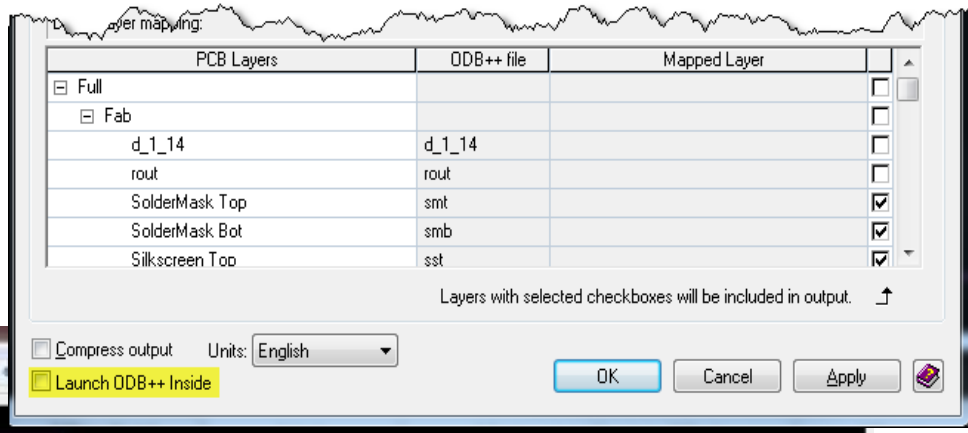
- More intelligent ODB++
  - Correct generated silkscreen layer naming
  - Mounting hole tolerances
  - Board embedded contours output when ODB++ generated from panels
  - Mounting hole net connectivity
  - User layer identified as ODB++ layer type document
- Streamlined ODB++ generation
  - Defaults for user layers

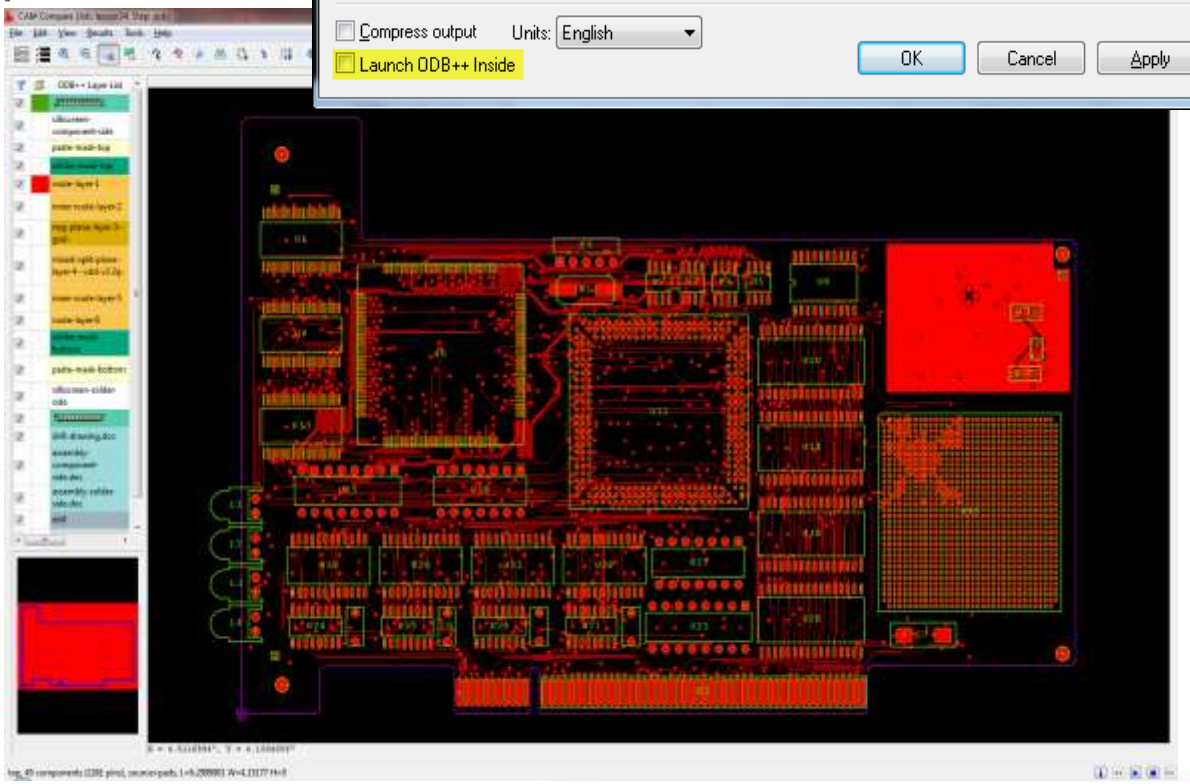
Manufacturing – ODB++ Inside

Intelligently Communicating Design Intent

EE 7.9.4

- Export ODB++ now launches ODB++ Inside
  - An ODB++ viewer included with Expedition PCB

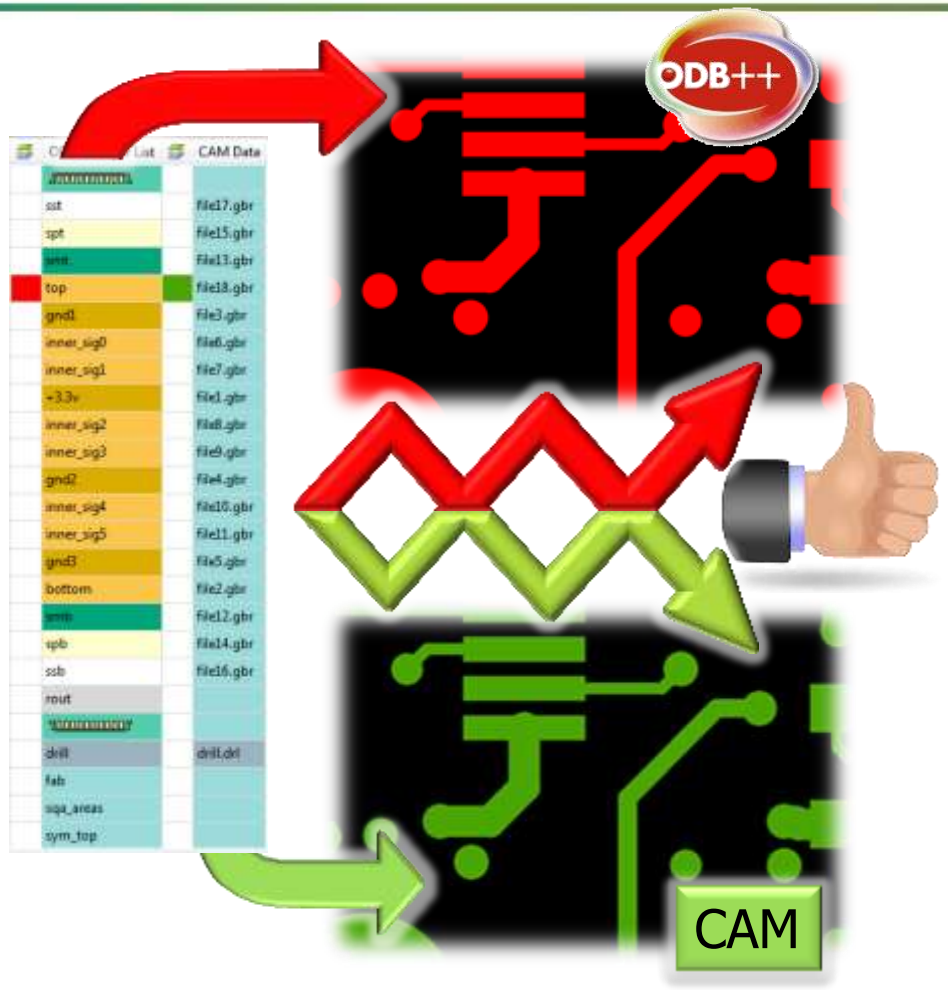




Manufacturing – CAM Compare

Intelligently Communicating Design Intent

EE 7.9.4



- Compares ODB++ to traditional CAM
  - Gerber 274X – Design Data
  - Excellon – Drill Data
- Confirms EDA netlists for correctness
  - Both ODB++ and IPC-D-356A
- Enables a smooth transition to ODB++
  - Reduce time-to-market
  - Minimize the NPI cycle
- Maintain design integrity
  - Improve quality by preventing errors before they happen
- Streamline communication
  - Seamless integration between design and manufacture
- Reduce data storage requirements
  - Integrated data with no redundancy

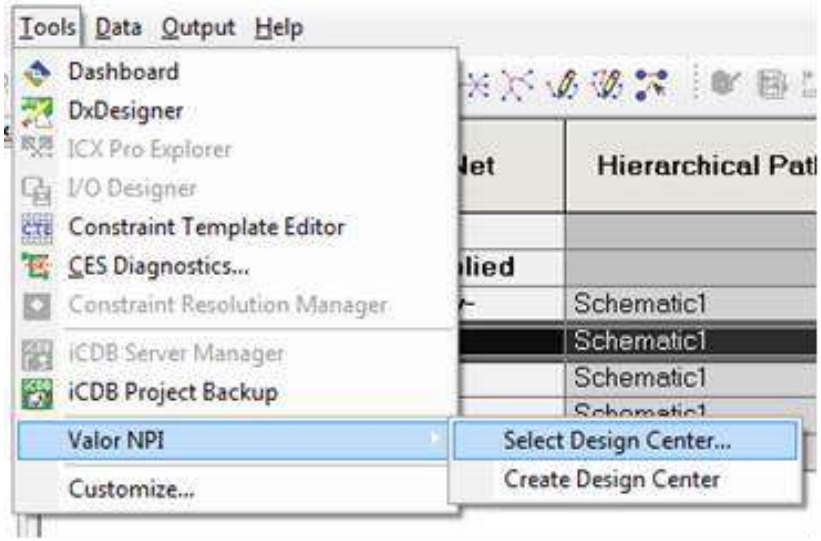
Now included with Expedition PCB

Valor NPI Design Center in CES

Intelligently Communicating Design Intent

EE 7.9.4

- Valor NPI Design Center defines reusable setup
- Select or create Design Center in CES
- Persistence of Design Center across Valor NPI runs



Expedition PCB
Improving Productivity

EE 7.9.4

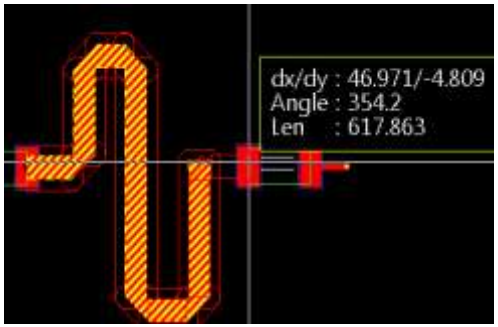
- Easier manipulation of HDI via stacks with Dynamove
  - Move as a complete stack
  - Move individual vias from within the stack
  - Single or multi-via stacks
  - Supported in Expedition PCB & Xtreme PCB

RF Meander Enhancements
Improving Productivity

EE 7.9.4

- Enhanced RF meander routing
  - Fast creation of 2 point meanders
    - Odd angle and off grid connections

  - Meander plane clearance simplified
    - Co-linear meander segments combined
  - Smart editing of meanders
    - Maintaining bend angles and miters during segment move
    - Snapping meander ends to component pins
    - User controlled removal of bends



  - Meander "effective length" control

Product Plans

- DxDesigner
- DxSystems Designer
- Expedition, CES
- DMS
  - 7.9.4 Content Summary
  - Simulation Model Integration
  - 3rd Party Integration (EDX)
  - EDX Based DMS Library Cache Update
  - Library Process Improvement
- FPGA Design

DMS 7.9.4 Planned Content

EE 7.9.4

Usability Enhancements

- Viewable part hierarchy updates upon part release
- Partition sorting for easier component mapping
- Continued load after single part failure

Variant Manager Interface Enhancements

- Integration improvements with Variant Manager
- Part replacement for Variants from DMS (BETA)

Performance/Cache Updates

- Adding support to Modify Pins for symbols with more than one mapping
- Adding support to Modify Pins to recognize specific symbol versions

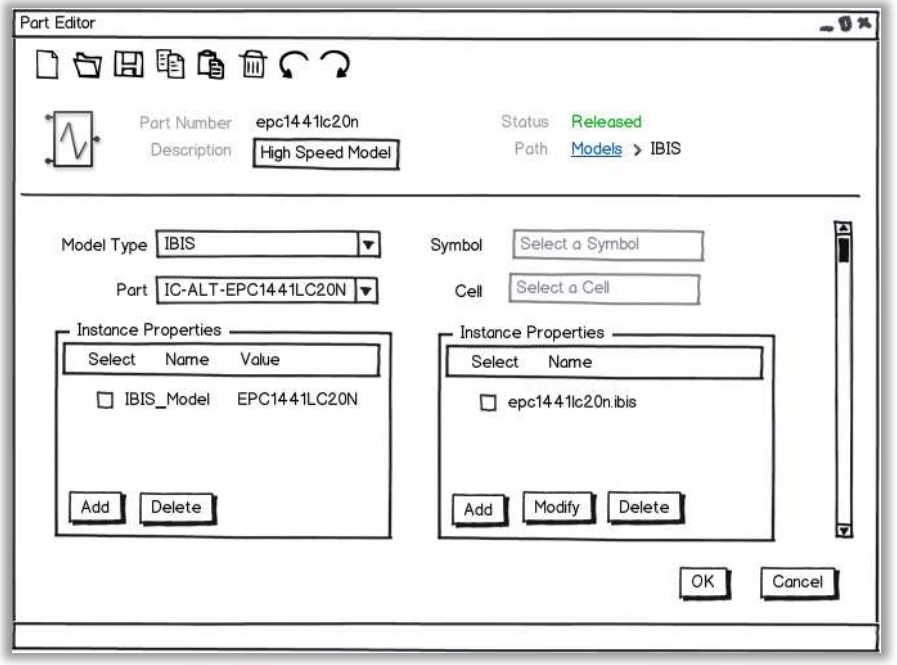
Reuse Block Management

- Checks to limit simultaneous edits on reuse block

DMS
Simulation Model Integration

EE 7.9.5

- Provide an ITK (Integration Tool Kit) to support the addition of simulation models to the library
  - Model to Part registration allowing for the addition of simulation models without impacting the PCB library
  - Model editor registration
  - Out of the box support for the HyperLynx analysis models
- Adds value to the existing PCB library
  - Simulation experts can add models without impacting the existing library data
  - Users can "like" models to indicate approval



3rd Party Integration (EDX)

EE 7.9.5

- EDX is Mentor's Enterprise Data Exchange Format
  - Version-independent data format for design and library data
  - Single file to systematically exchange between Expedition Enterprise and 3rd party systems
- EDX generation of:
  - Component/Supplier Data
  - WIP Partlist (BOM) Integration
  - Part Request Integration
  - Library Distribution

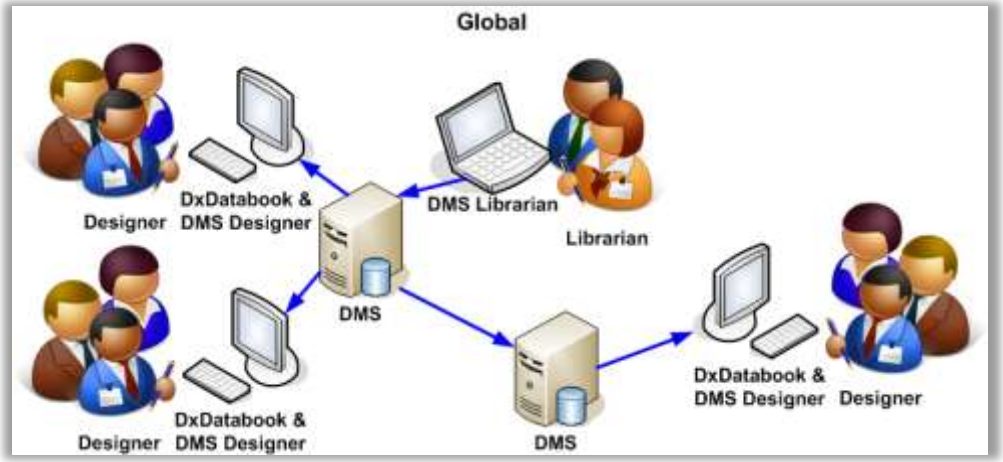
- Promotes more direct, consistent integration with 3rd parties

SILICONEXPERT TECHNOLOGIES

DMS
Library Process Improvements

EE 7.9.5+

- Improved integration with EE Editors
- Automatic part creation
- Simplified library environment
- Improved library verification
- Added support for library version management



Product Plans

- DxDesigner
- DxSystems Designer
- Expedition, CES
- DMS
- FPGA Design
  - I/O Designer
  - Precision

I/O Designer: EE 7.9.4

EE 7.9.4

- New FPGA Vendors Device Libraries & S/W Support
  - Xilinx ISE 13.4
    - Zync devices - new
    - Artix 7l devices - new
  - Actel Designer 9.1 SP4
  - Altera Quartus 11.1 SP2
    - Arria V devices - new
- Newly integrated HDL parsers: VHDL, Verilog
  - Matching MGC FPGA design solutions (e.g. Precision)
- Unraveling enhancements
- Symbol generation enhancements
- Internal VREF support

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