What’s New in PADS 9.0?

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Product Marketing Manager
Agenda

- Front-end
  - PADS Logic
  - DxDesigner
- PADS Layout & Router
- Mentor Ideas
- Extended Capabilities with PADS
- Technology Roadmap
PADS Front End
PADS Logic 9.0 - Update from Library

- **PADS Logic**
  - Update from Library
  - Allow user to compare and/or update the design to the library
  - All library and schematic instances will have time stamps
## Part Type Comparison

<table>
<thead>
<tr>
<th>Item</th>
<th>What is compared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Stamp</td>
<td>Time differential (schematic vs. library)</td>
</tr>
<tr>
<td>Part Type Details</td>
<td>Logic Family, Number of gates, Number of connector pins, Number of Signal pins</td>
</tr>
<tr>
<td>Gate Details</td>
<td>Number of Logic Decals, Logic Decal names, Number of electrical pins on gate, Gate swap class</td>
</tr>
<tr>
<td>Gate Pin Details</td>
<td>Pin number (alphanumeric if defined), Pin name, Pin type, Pin swap class</td>
</tr>
<tr>
<td>Signal Pin Details</td>
<td>Pin Number (alphanumeric if defined), Net name</td>
</tr>
<tr>
<td>PCB Decal Assignment</td>
<td>The assigned PCB Decal name on each part is contained within the list of PCB Decal alternates for the Library part type. Flag as warning on each part but this cannot be updated.</td>
</tr>
<tr>
<td>PCB Decal pin Count</td>
<td>Number of pins in the PCB Decal assigned to each connector part is equal to the number of connector pins defined for the part type. Number of pins in the PCB Decal assigned to each normal part is equal to or greater than the highest electrical pin number used in the gates defined for the Library part type. Flag as warning on each part but this cannot be updated.</td>
</tr>
</tbody>
</table>
PADS Logic Decal Comparison

<table>
<thead>
<tr>
<th>Item</th>
<th>What is compared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timestamp</td>
<td>Time differential (schematic vs. library)</td>
</tr>
<tr>
<td>Gate Decal details</td>
<td>Number of attribute labels, attribute label name, number of text, number of terminals.</td>
</tr>
<tr>
<td>Terminal details</td>
<td>Pin decal name assigned to each terminal.</td>
</tr>
</tbody>
</table>

Attribute Comparison

<table>
<thead>
<tr>
<th>Item</th>
<th>What is compared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Value strings (case insensitive)</td>
</tr>
<tr>
<td>Presence (attribute name added or deleted)</td>
<td>The attributes present on a part type and/or part are compared and a full accounting of the differences is reported.</td>
</tr>
</tbody>
</table>
DxD2007 In Production

DxD2007 Release
- Significant Investment
- Infrastructure is built on solid foundation
- Platform for future development
- Enabler for the delivery of New incremental functionality
  - *Highly Productive Environment*
  - *Team Collaboration*
  - *New Technology*


*Planning for 2009 Product content shared to assist in planning deployment*
DxDesigner 2007.5

- Assign Reference Designators by block
  - Add Prefix, Suffix, Starting Value
DxDesigner 2007.5

- Stacked Tabs Window Management
  - Enhanced docking
DxDesigner 2007.5

DxDesigner Product Enhancements

- **Ease of use:**
  - Select objects by overlap
  - Net Name delimiters (, []
  - Cell Selection in Schematic
  - DxDataBook
    - ASCII configuration file
  - Improved Global Signal handling
  - New User API
DxDesigner Diagnostics 2007.5

- Similar to MS-Outlook Diagnostics
  - One click to fix any found issues/problems
  - 10 different diagnostic checks (and fixes)

Design Diagnostics Report
Date: Thursday, January 15, 2009

Backup created in C:\demos\frontback\DesignIntegrityCheckerBackup\Backup 15-01-09 (01.00)

Test: Invalid Nets
Error: Invalid unconnected net found 'VLMI_RASN' Fixed.
Time: 3 seconds

Report summary:
Fixed errors: 1
HyperLynx Analog 2007.5

Enhancements

- Modeling
  - Improved drag-and-drop of symbols to model files
  - PSpice model converter

- More symbols and models
Out-of-the-Box Improvements

- **New documents**
  - DxDesigner 2005.x to DxDesigner 2007.5 Transition Guide
  - DxDesigner 2007.5 – PADS Layout Design Guide
  - Updated tutorial

- **DxDesigner usability enhancements**
  - Symbol Wizard back in DxDesigner
  - DxDesigner Link launched from DxDesigner
PADS 9.0

- Released: May 2009
- Key objectives:
  - 3D Viewer
  - Rounded and chamfered pads
  - Enhanced Layout / Router integration
  - Differential pair and Accordion improvements
  - Accordion keepouts
  - Integration with visECAD and CAMCAD
    - Support of new neutral ECAD file format
  - New Outputs
    - IPC356
    - Flat DXF
  - Thermal Analysis
  - Single-sided board verification
  - Modeless layer visibility commands
  - Automation
  - Quality improvements
PADS 9.0 – 3D Viewer

- Reads Geometry.Height attribute
- Will display traces and vias
- Upgradeable to read in 3D models and enclosures
PADS 9.0 – Additional Pad Shapes

- Rounded and Chamfered Pads
  - Component, via, jumper pads
  - RoHS requirement
  - High voltage
  - PCAD to PADS user request
PADS 9.0 - Layout / Router Integration

- Simplified switching between Layout and Router
  - From PADS Layout to PADS Router:
    • Saves and closes PADS Layout database
    • Launches and loads PADS Router
  - From PADS Router to PADS Layout:
    • Saves and closes PADS Router database
    • Launches and loads PADS Layout
PADS 9.0 - Differential Pair Improvements

- **Diff Pair Smoothing**
  - Shorter, cleaner, higher yield
  - Better performance

- **Diff Pair Tuning**
  - Options, Tune/Diff Pairs
PADS 9.0 - Accordions with Arcs

- Key requirement for high-speed designs
PADS 9.0 - Accordion Keepouts

- New Keepout type
- Recognized during auto and Interactive routing in PADS Router
- **Not** verified by DRC
- Less blocked channels
- Better routing results!
PADS 9.0 – CAMCADC Integration

- “Push-button” transfer of design from PADS Layout to CAMCADC
- Option to use CAM processed data or design data
PADS 9.0 – VisECAD Integration

- Support passing of Collaboration data
- Topics
- Issues
- Markups
- Import
- Export
PADS 9.0 - IPC-D-356 Netlist Output

- **IPC356 Netlist**
  - Generic netlist format used by board manufacturers to verify the board netlist against the source CAD data
  - Mentor developed functionality
  - User no longer needs to use customer written, unsupported VB script
- Flat DXF Export
  - More user control of output data
  - Smaller files
  - Easier integration with mechanical tools
  - Old DXF output is default “Standard”
PADS 9.0 – Analysis

- “Push-button” transfer of design from PADS Layout to:
  - HyperLynx BoardSim
  - HyperLynx Power Integrity
  - HyperLynx Thermal
PADS 9.0 - Single Sided DRC

- **Single-sided Board Verification**
  - Allows connectivity checks for designs with non-plated drill holes
  - No more “false” DRC violations
PADS 9.0 – Modeless Layer Visibility Commands

- Z (#) will manipulate layer visibility
- ZS – save visibility settings
- ZS – restore layer visibility

- D – Document Layers
- O – Outer Layers
- C – Current Layer
- SMT – Solder Mask Top
- SMB – Solder Mask Bottom
- PMT – Paste Mask Top
- PMB – Paste Mask Bottom
- ADT – Assembly Drawing Top
- ADB - Assembly Drawing Top
- SST – Silkscreen Top
- SSB - Silkscreen Bottom
- * - All Layers
Crash detection and trapping

- Error report automatically captured and packaged for easier reporting to CSD
- Functionality is evolving
PADS 9.0 - Automation

- **PADS Router Automation Enhancements**
  - Automation objects and methods that existed in PADS Layout now introduced in PADS Router
    - Connection
    - Trace
    - RouteSegment
    - Text
    - Drawing
    - Polyline
    - Circle
PADS 9.0 - Design Import

- Ever evolving
  - Regularly updated & available for FREE on SupportNet
  - With PADS 9.0, translators will also ship with the product

- Easy to use
  - Can convert more than one schematic/PCB and Library at a time
Extending the PADS Flow
Extended Capabilities with PADS

- 3D Viewer
- visECAD
- CAMCAD
- HyperLynx Thermal
- HyperLynx BoardSim
- HyperLynx Power Integrity
PADS 9.0 – 3D Viewer

Upgradeable Functionality

- View Follow
  - 3DV View follows the design system view (zoom, pan)

- 3D Model Import:
  - Imports 3D replacement geometries for parts on the PCB

- Auxiliary File Import:
  - Imports files containing data external to the design. Ex: Mechanical assemblies, casings, etc.
visECAD: Product Highlights

**Advanced viewing and collaboration solution provides in-depth access to product design data**

- Easy to use yet extremely powerful
- User-tracked mark-up and red-lining for collaboration
- Supports board and panel views
- Advanced measurement ability Protects IP
- Able to cross-link and display schematic, layout and/or BOM data
- Physical and electrical design comparison
The CAMCAD Manufacturing Flow creates value for both Design and Assembly Customers

- ** Seamlessly interfaces PCB Design to Assembly with the CAMCAD Suites**
- ** Enables precise communication and collaboration among all stakeholders involved in product creation from design to manufacturing with visECAD**
HyperLynx SI

- Solve signal integrity problems on your designs
  - Signal Quality
  - Crosstalk
  - Timing
- Solution space exploration
  - Pre-route
  - Post-route
- Board verification
  - Whole board
  - Single nets
- Industry-leading ease of use
- Industry-leading technology
  - Parallel interfaces
    - DDR1/2/3 Wizard
    - Terminator wizard
  - SERDES
    - Fast Eye™, S-parameter simulation, advanced loss modeling, SPICE integration
HyperLynx PI

- Solve power integrity problems on your designs
  - DC voltage drop
    - Identify areas of high current density, need for more copper/vias
  - Decoupling
    - Identify power distribution network impedance over all frequencies
    - Determine optimal number of caps, placement, mounting, and stackup
  - Noise propagation
    - From IC power pins
    - From signal vias
- Solution space exploration
  - Pre-route
  - Post-route
- Board verification
- Industry-leading ease of use
HyperLynx Thermal

- Identify hot spots on your PCB design
- Solution space exploration
  - Start from scratch
  - Post-placement
  - Post-route
  - Explore effects of:
    - heat sinks, heat pipes
    - screws, wedge locks
    - additional layers
    - component placement
- Simulates all major heat-transfer mechanisms
  - Conduction, including effects of board copper
  - Convection, both forced and natural
  - Radiation
- Create designs free from thermal problems
  - Faster time-to-market
  - Better long-term product reliability
Mentor Ideas

- All enhancement requests are now entered via the ‘Mentor Ideas’ site: [http://mentorideas.brightidea.com/](http://mentorideas.brightidea.com/)
- Links now added to PADS Logic, Layout and Router
  - Add screenshot
- Enhancements added from Mentor Ideas in PADS 9.0:
  - 3D Viewer
  - Accordions with arcs
  - Accordions keepouts
  - Rounded and chamfered pads shapes
  - Better DXF output
  - IPC356 net list
  - Remove old Ideas
Quality – What We Have Learned

- We continue to work on product quality!
- Environmental issues to look at
  - Graphics cards
  - Dual monitors – need same resolution
  - USB dongle and bios settings, drivers
- BMW command improved
  - Crash detection utility will capture error and BMW file to attach to Service Request
- ASCII export/import to detect/correct database errors
- Long license files have caused crashes
Technology Roadmap
PADS Technology Pipeline

**2007.4**
- HL – Analog Introduction
- EZwave Integration
- DxDesigner 2007.2 Integration
- IO Designer 7.3 Integration
- HL – Signal Integrity Integration
- Variant Manager
- DxDesigner 2007.3 integration

**9.0**
- Rounded pads in layout
- HL Thermal Integration
- 3D viewer
- CAMCAD integration
- VisECAD integration
- DxDesigner 2007.5
- IPC356 and Flat DXF
  - New P&P

**2009**
Main Release Theme

**2010**
Usability/New Functionality
New Functionality

- CES for PADS
- IOD for PADS
- VHDL
- FPGA integration
- ECAD/MCAD Integration
- Library Management
- ODB++

- DxDataBook for PADS
- Revision Control
- Library Wizard
- Update from Library, Layout
- Searchable PDF
- Bridge-net
Summary

- **PADS Flow**
  - Improved integration
  - Customer driven enhancements
  - Improved ease-of-use and reliability

- **More power than ever on your desktop**

- **Extended capabilities enable advanced technologies**
  - Signal, power, and thermal analysis
  - Collaboration tools
  - Manufacturing optimization
  - 3D viewing

- **Clear product development roadmap**
Thank You!

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