Welcome to our PADS world tour!
Beograd, 13.10.2016.

Steve Gascoigne

- Mentor Graphics initiative to present PADS major new release
- This could not happen without our partners
- Around 35 locations in EMEA / 15 distribution partners
- 4 in the CADCAM territory (Zagreb, Ljubljana, Budapest, Beograd)
- Why do we need resellers?

- Support in your Language
- Close to customers
- Each market has a different expectation, design complexities or specialisation
- CADCAM has a reputation on the market and the bandwith to support you closely

- Thanks for attending today in Beograd!
- You automatically get a chance to ….

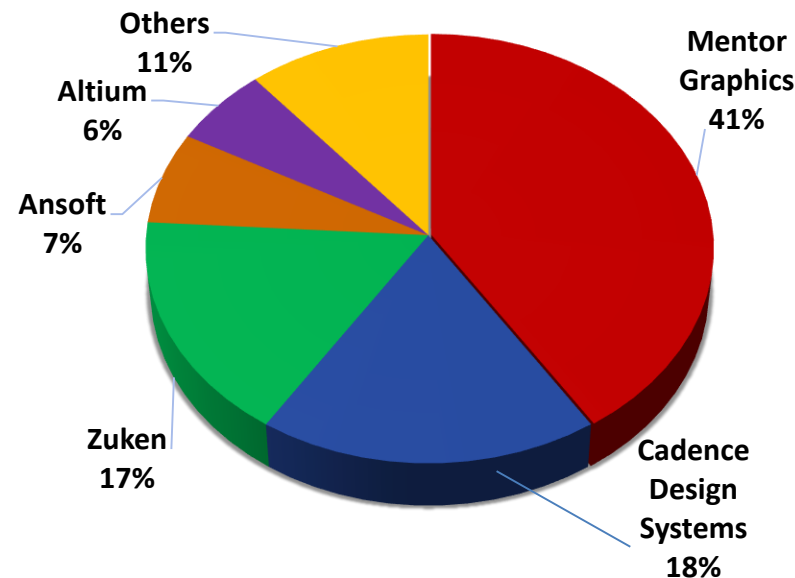Win a Fitbit Blaze!

Must be present to win!

Mentor Graphics Corporation

PCB Market Share, Worldwide

- Founded in 1981
- Enabling PCB design since 1984
- Headquarter in Wilsonville, Oregon
- FY2015 revenues $1.2B
- 5500 employees
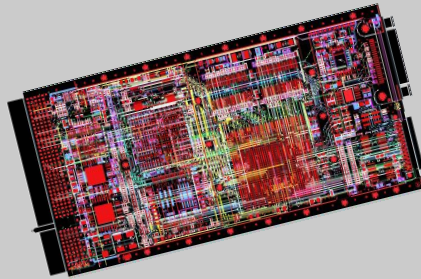- PCB market leader
- R&D investment leader
- Award-winning support

Others 11%

Altium 6%

Ansoft 7%
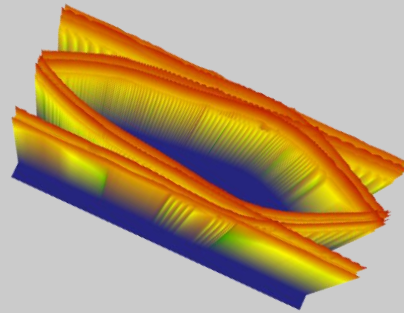
Mentor Graphics 41%

Zuken 17%

Cadence Design Systems 18%

*Source: Gary Smith EDA, 2014

Delivering Scalable Solutions for PCB Systems Design
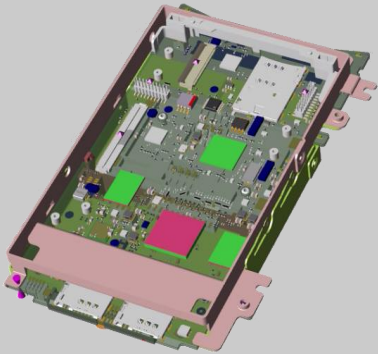
Xpedition
Enterprise PCB Design

PADS
Project-based PCB Design
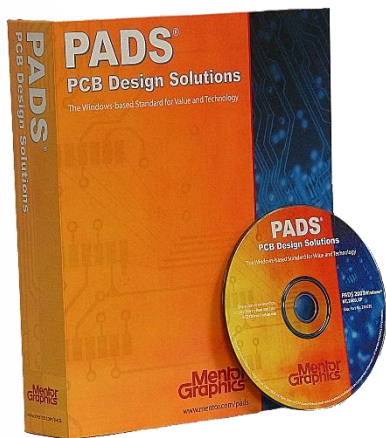
HyperLynx
PCB Analysis & Verification

Valor
PCB Assembly, Test, &
Manufacturing Execution

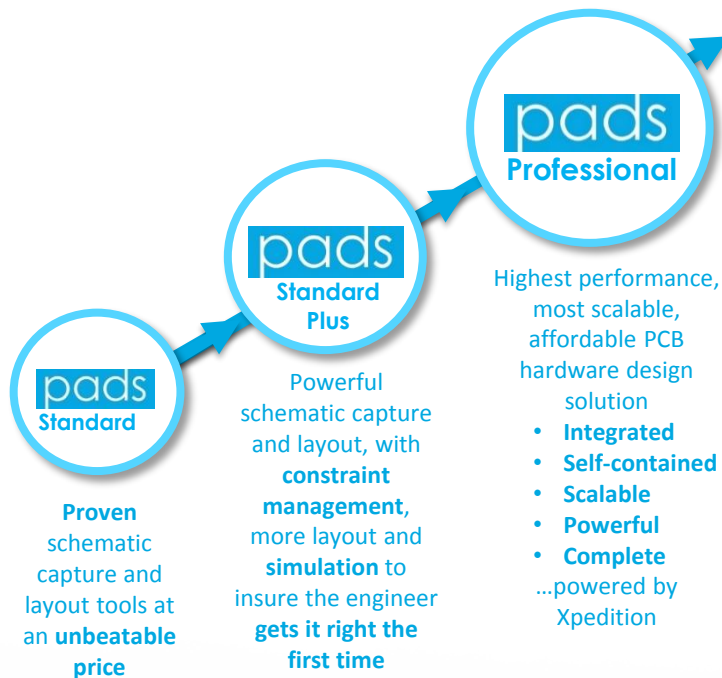# The PADS Evolution
From Desktop PCB to Electronics Product Creation
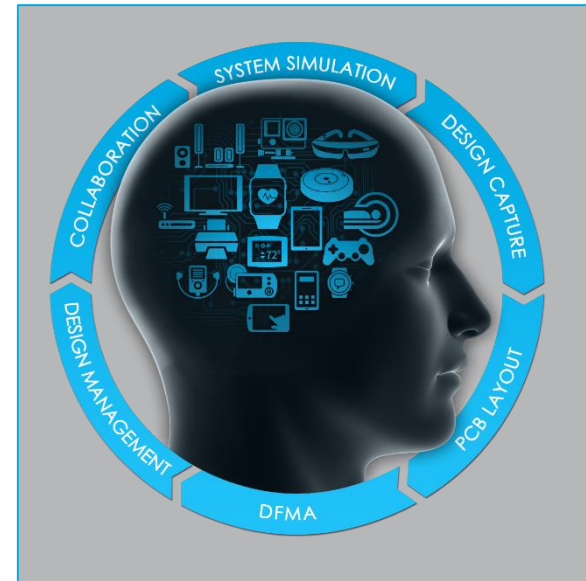
< 2014
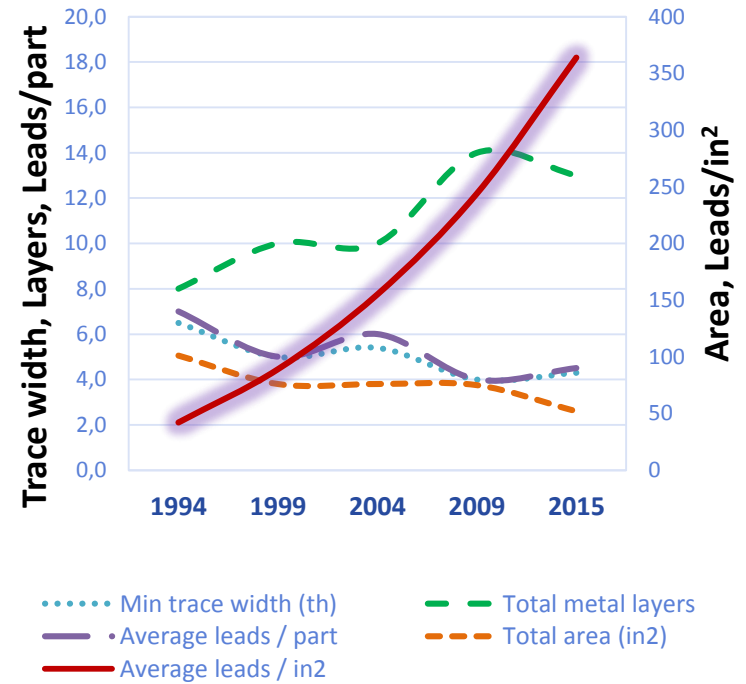### "Desktop PCB Design"

2015
"PADS Solutions"

2016
"Product creation platform"

pads Standard

Proven schematic capture and layout tools at an **unbeatable price**

pads Standard Plus

Powerful schematic capture and layout, with **constraint management**, more layout and **simulation** to insure the engineer **gets it right the first time**

pads Professional

Highest performance, most scalable, affordable PCB hardware design solution
- **Integrated**
- **Self-contained**
- **Scalable**
- **Powerful**
- **Complete**

…powered by Xpedition

SYSTEM SIMULATION
DESIGN CAPTURE
COLLABORATION
PCB LAYOUT
DESIGN MANAGEMENT
DFMA

PCB Systems Complexity is Exponentially Increasing
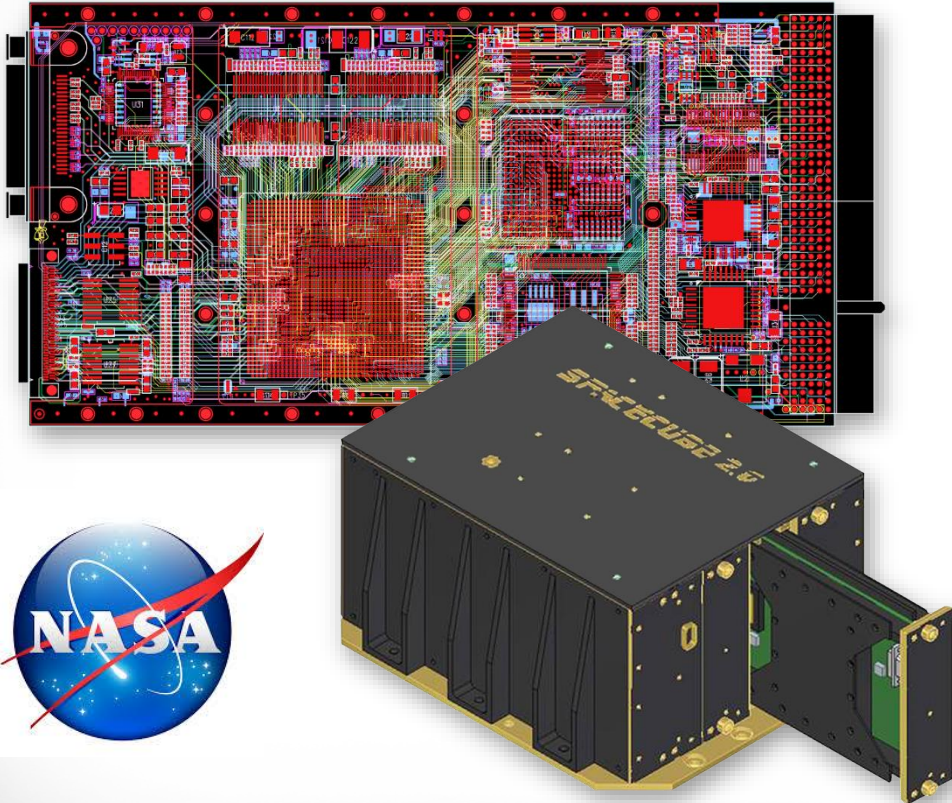
Design Complexity Requires Multi-domain Trade-offs

Mechanical

Time

Form housing

Cost

Reliability

Density

Thermal

Power integrity

Supply chain

Routability

Manufacturability

Signal integrity
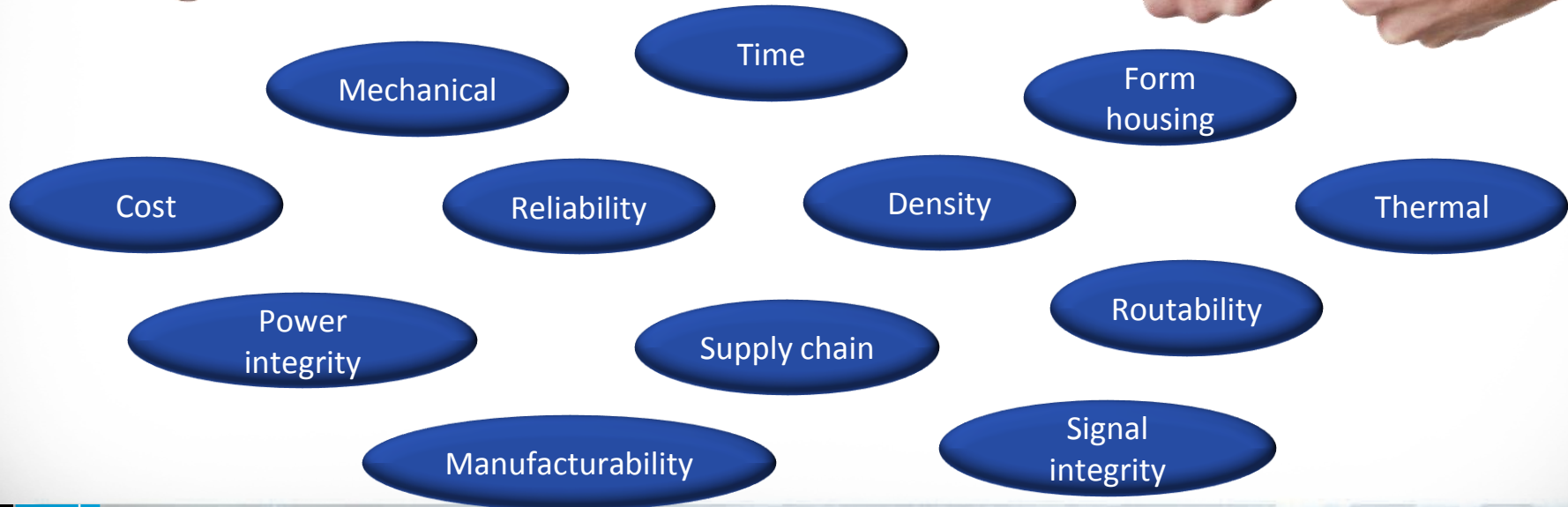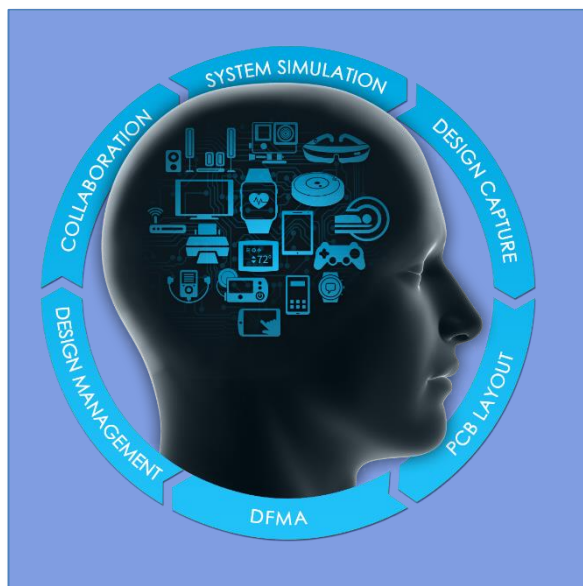
"Product Creation Platform"

Product Creation Challenges
From Concept-to-Delivery

CONSIDERATIONS

CONCEPT

Component Selection	Manufactur-ability	IP Integration	Mechanical	Thermal	Power	Electrical Integrity	Analog/ Mixed-Signal

REQUIREMENTS

Ecosystem Collaboration	Library & Data Management	Design Capture	Thermal Analysis	Layout	MCAD/ECAD Integration	Electrical Simulation	Manufacturing Compliance
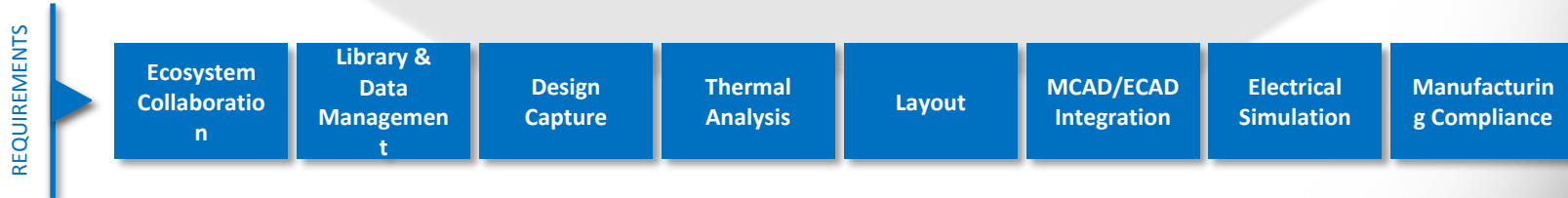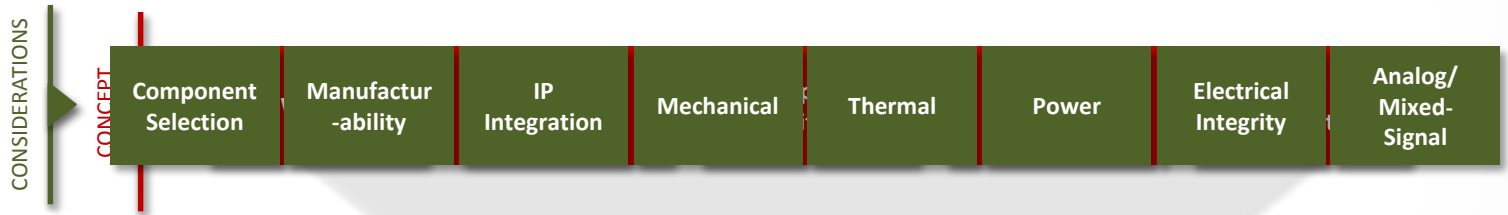
PADS Delivers
Product Creation

Constraint Management

FPGA/PCB Optimization
PADS I/O Optimizer
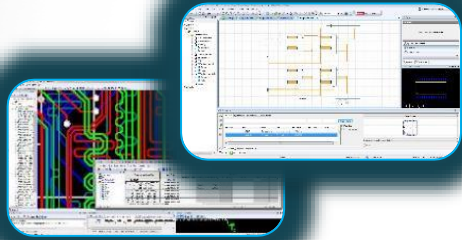
Schematic Capture and PCB Place and Route
PADS DXDesigner, PADS Layout, and PADS Router
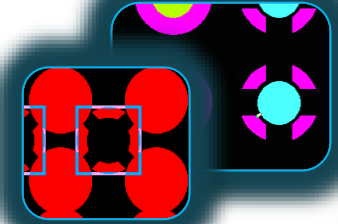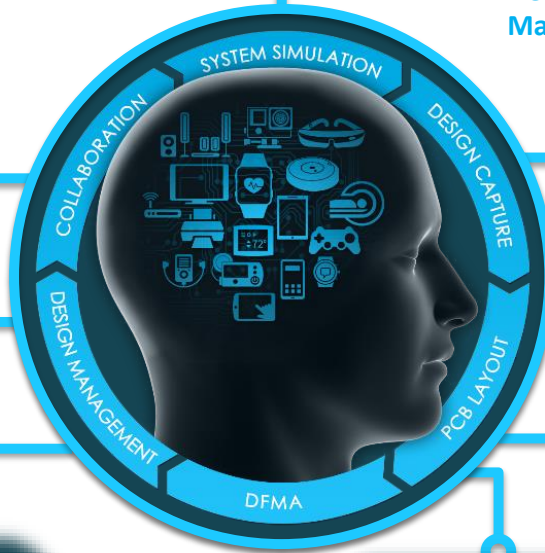
Design-for-Manufacturing
PADS DFMA

Component Data Management
PartQuest, PADS DXDatabook
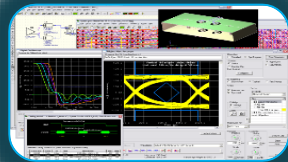
**Topology Exploration and Signal Integrity**
HyperLynx LineSim and BoardSim
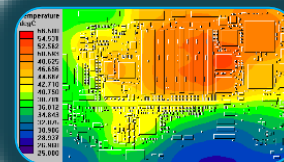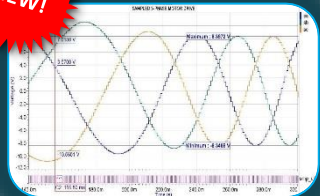
Thermal Analysis
HyperLynx Thermal

ECAD-MCAD Collaboration
PADS Collaborator

PADS World Tour

www.cadcam-group.eu

PADS Extends
AMS and High-speed Analysis for Product Creation

NEW!
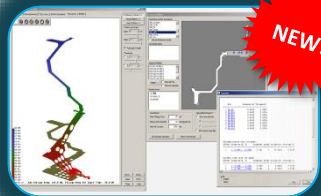
Voltage Drop
PADS HyperLynx DC Drop

SYSTEM SIMULATION

COLLABORATION

DESIGN CAPTURE

DESIGN MANAGEMENT

PCB LAYOUT

DFMA

NEW!
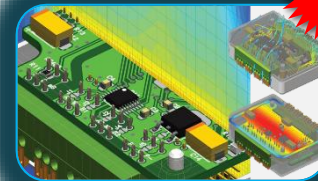
Electronics Cooling
PADS FloTHERM XT

NEW!
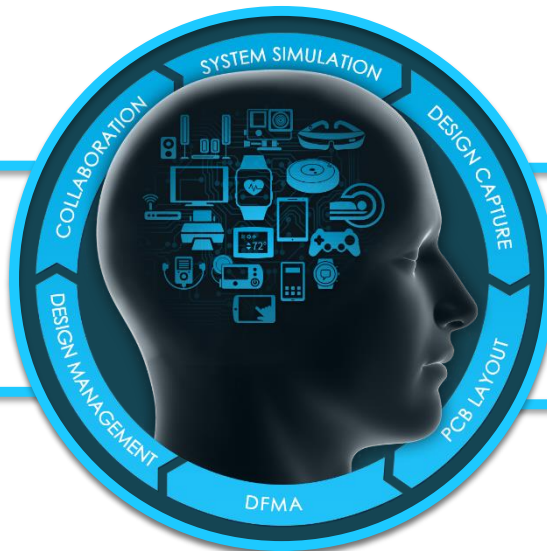
Analog Mixed-Signal
PADS AMS Design Suite

NEW!
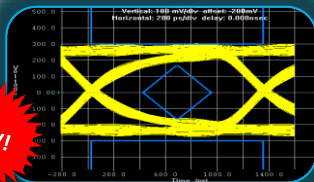
DDRx Analysis
PADS HyperLynx DDR

NEW!
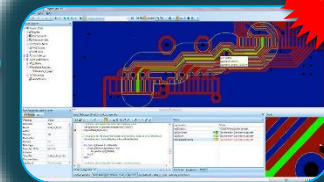
Electrical Design-Rule-Check
PADS HyperLynx DRC

Mentor Graphics

pads

Driving Competitive Advantage

PADS AMS Design Suite
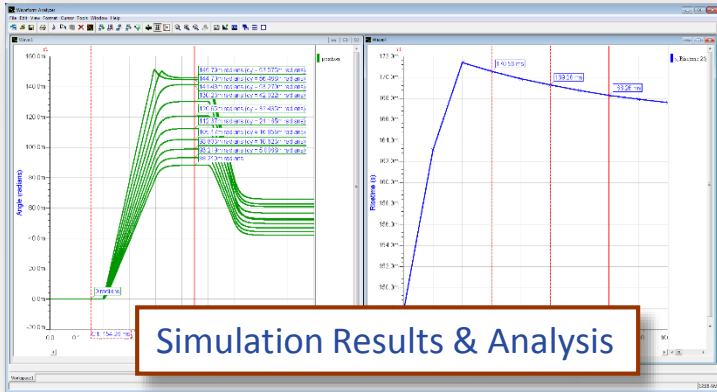
Simulation Results & Analysis

SPICE

VHDL-AMS
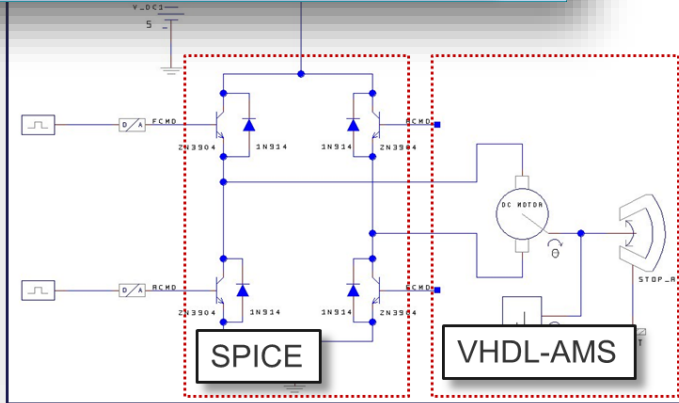
- ✓ Ensure intent, performance, and reliability of analog / mixed-signal (AMS) circuits
  - Produce electronic product designs faster and easier with single environment and flow
- ✓ Seamless and accurate representation of both electronic and electromechanical circuit elements
  - Power and flexibility of VHDL-AMS, an IEEE standard, and comprehensive SPICE capabilities
- ✓ Complete solution for schematic design, circuit simulation, and high-speed topology exploration
- ✓ Advanced analysis included for behavioral verification, scenario exploration, and optimization
- ✓ Unmatched price / performance

PADS AMS Cloud

NEW!
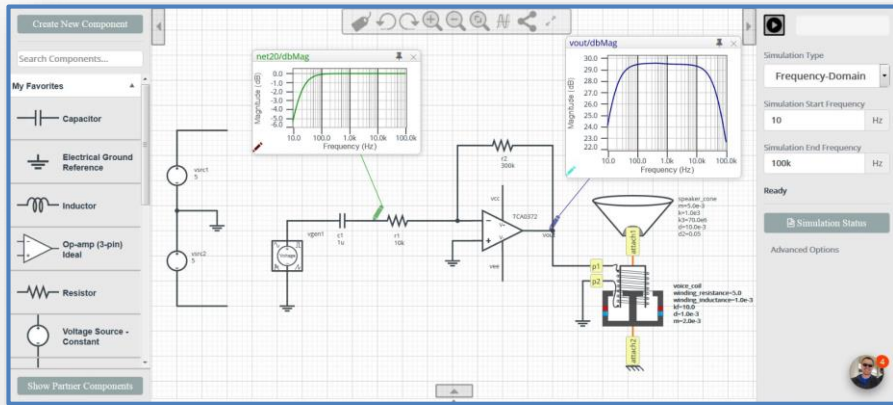
- ✓ Explore and analyze circuit concepts and designs
  - Electronics and mechatronics
- ✓ FREE, cloud-based circuit exploration / simulation environment and community for PADS users
- ✓ Advanced simulation and modeling
  - Analog, digital, mixed signal and electromechanical systems
- ✓ Circuit transfer from Cloud to Desktop environment
  - Eliminate need to redraw circuit

PADS HyperLynx DC Drop

NEW!

- ✓ Avoid unexpected circuit behavior by identifying power-delivery issues early

- ✓ Validate power supply impedance to optimize power distribution networks (PDNs)

- ✓ Assess voltage drop by quickly and accurately identifying areas of excessive current density

- ✓ Fast, accurate results, tightly integrated with PADS
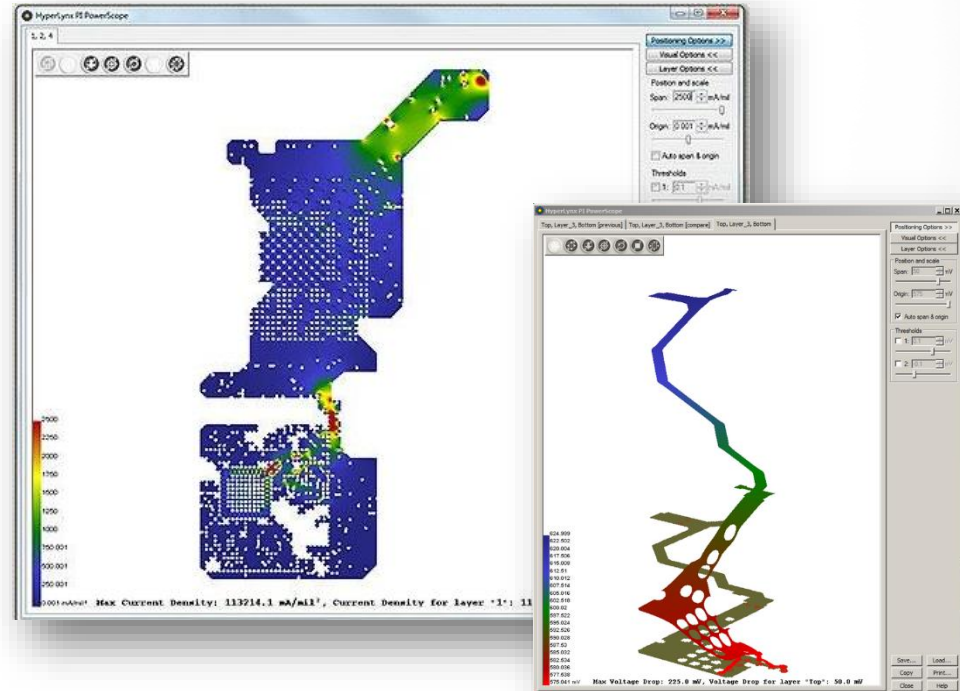
PADS HyperLynx DDRx
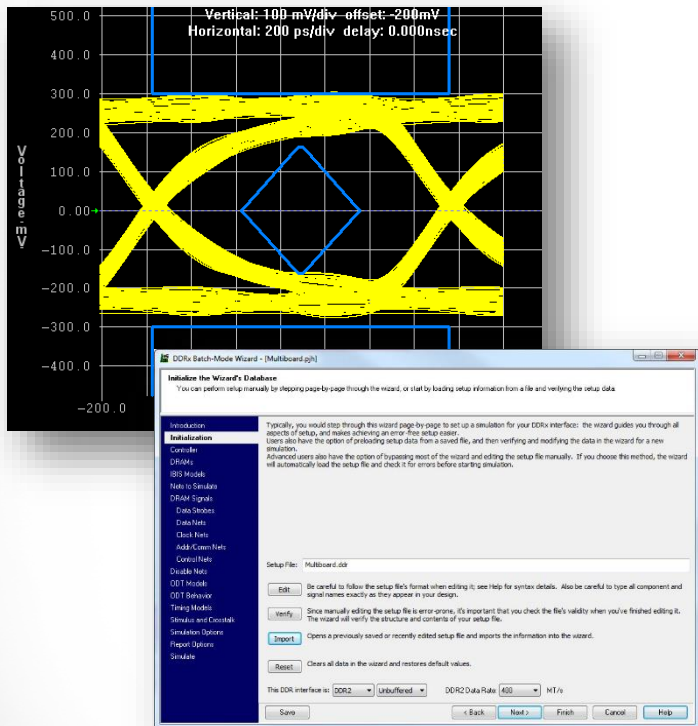
- ✓ Identify and solve Signal Integrity and timing challenges specific to DDRx designs

- ✓ Resolve typical SI impairments
  - Overshoot/undershoot
  - Ringing

- ✓ Identify DDRx timing issues
  - Setup/hold
  - Derating
  - Skew
  - Data bus margins
- ✓ Unparalleled technology for mainstream PCB design

PADS HyperLynx DRC

NEW!

✓ Rules-based approach vs traditional simulation to identify non-CAD constraints
  - Fast time-to-results
  - Simple setup for complex challenges

✓ Out-of-the-box checks for
  - EMI
  - Signal integrity
  - Power integrity

✓ Visual results, easy identification of violations integrated with PADS PCB

PADS FloTHERM XT

NEW!

- ✓ Allows hardware engineers to perform thermal analysis

- ✓ 3D computational fluid dynamics (CFD) solution supports steady state and transient analysis

- ✓ Easily import mechanical objects such as product enclosure & heat sinks

- ✓ Perform thermal analysis with enclosure earlier in the design cycle

Schematic Capture

✓ Quickly and intuitively capture design intent

- Place, connect, and integrate

✓ Powerful features and capabilities for design capture from simple to complex

- Hierarchy
- Constraint definition
- Component management
- Variant management

✓ Advanced interconnect capabilities and integration with simulation
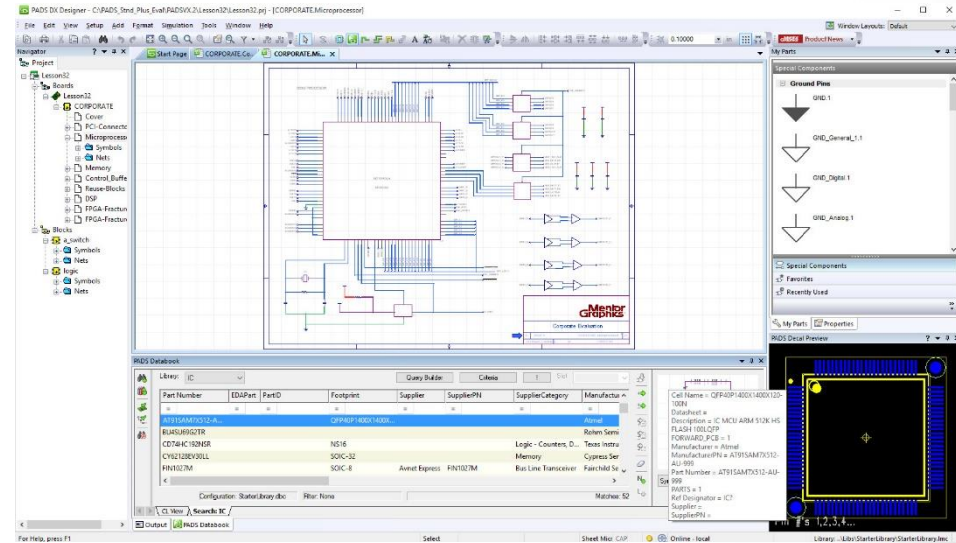
Component Management
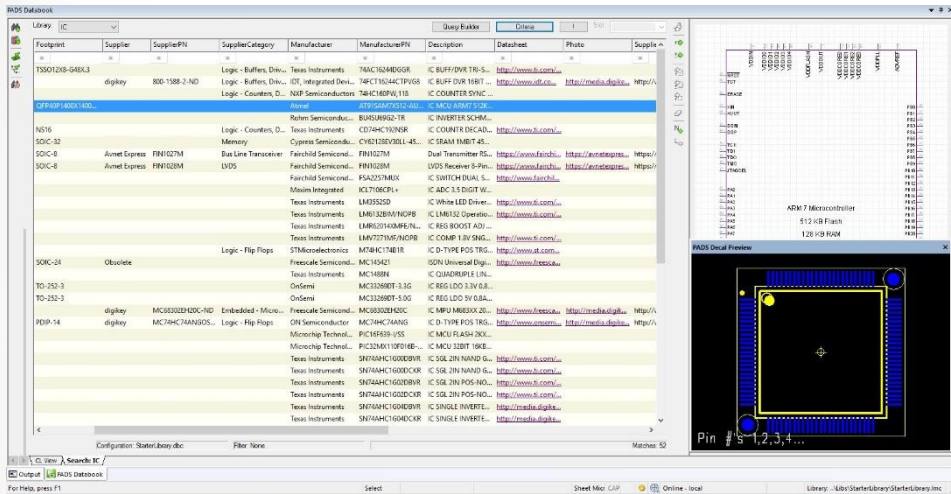
- ✓ Enables intelligent part selection
  - ▪ Eliminate inconsistencies and errors

- ✓ Allows multiple design teams to manage their component data from a centralized database

- ✓ Quickly search for and easily locate needed parts based on parametric device data

- ✓ Verify parametric data integrity of all components in the entire design

- ✓ Integrated within the PADS DX Designer environment

Constraint Management

✓ Powerful and easy-to-use constraint system in a common, integrated environment
- Create, manage, and verify

✓ Common constraint management system across schematic entry, layout, and routing

✓ Multi-level design rules for electrical and manufacturing requirements
- Core fabrication to high-speed

✓ Validate layout against design intent

Pre & Post Layout Signal Integrity
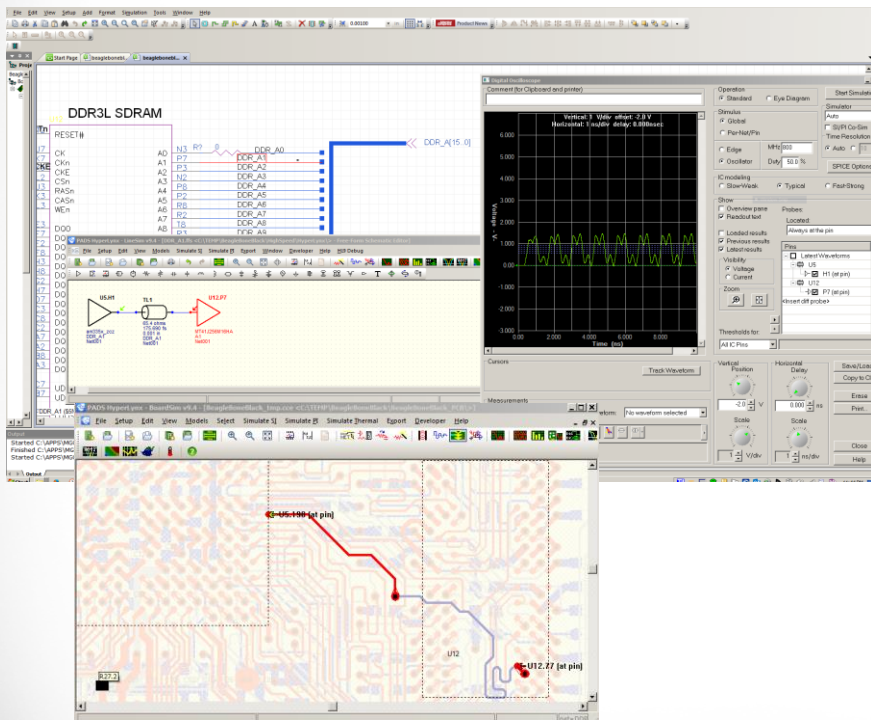
✓ Simulation environment to analyze, solve, and verify signal integrity
  - Pre-layout topology exploration
  - Post-layout place & route validation

✓ Explore & analyze
  - Trace width and lengths
  - Board stack-up and materials
  - Optimize component selection
  - Transmission lines and layer changes
  - Termination strategy

✓ Identify signal quality
  - Ringing, overshoot, undershoot

✓ Design proven technology, affordable, and integrated

PCB Layout

- ✓ Production proven layout for any design
  - ▪ Digital, analog, mixed, RF, COB

- ✓ Easy to learn, use, and deploy

- ✓ Multi-level design rules

- ✓ Constraint driven interactive and auto-routing

- ✓ 3D design and visualization

- ✓ Scalable PCB design, advanced capabilities, and highly integrated flows
  - ▪ Schematic, constraints, simulation & analysis, 3D design

PCB Router

- ✓ Intelligent interactive and automatic routing

- ✓ Constraint driven routing methodology
  - Clearance, trace widths, via sizes, layer restrictions

- ✓ Supports high-speed rules
  - Maximum/minimum lengths
  - Matched lengths
  - Differential pairs
  - Virtual pins and electrical nets

- ✓ Advanced controls for push and shove, plowing, obstacle avoidance, design constraints

- ✓ Powerful routing technology providing a greater level of control

Chip on Board (COB)

✓ Advanced capabilities for the design of Chip-on-Board and other bare die designs

✓ GDSII import for the creation of die components

✓ Quickly create and modify wirebonds and substrate bond pads

✓ Base die design capabilities for the mainstream engineer
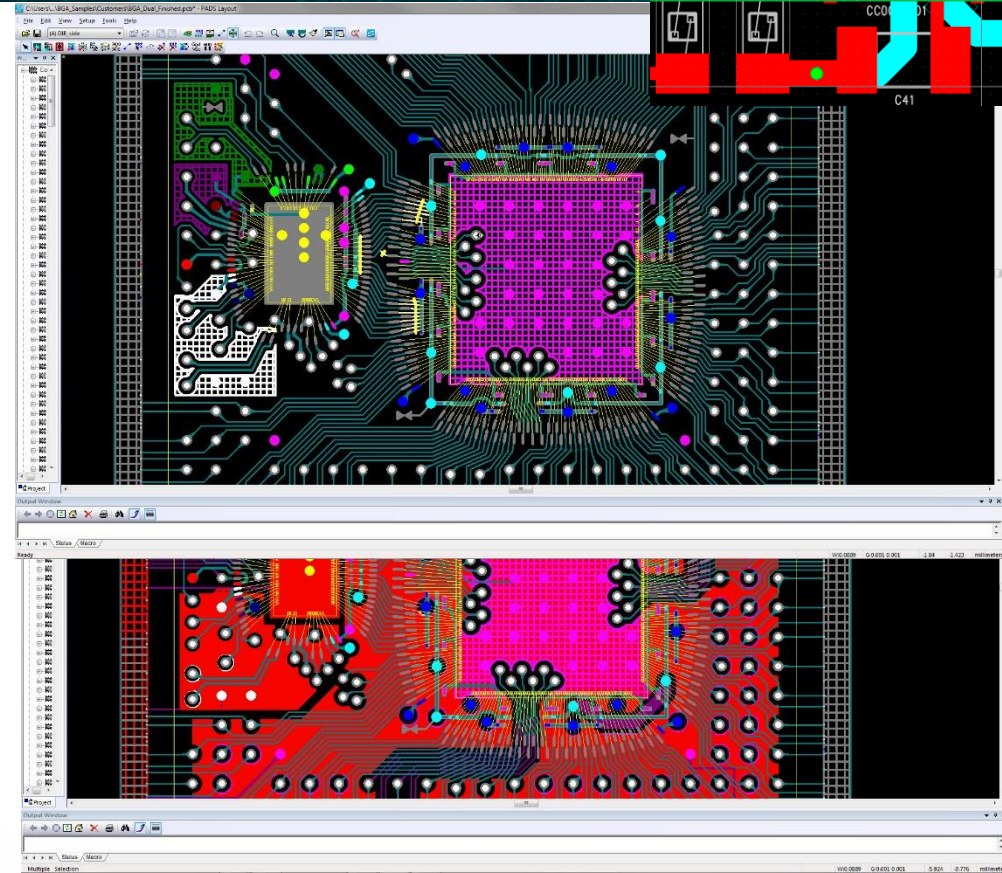
3D Design and Visualization

✓ Photo 3D visualization with placement with conflict detection

✓ STEP Import/Export, PDF

✓ Concurrent 2D – 3D Placement

✓ 3D Clearance checking
  - Board and mechanical objects
  - Dynamic graphical feedback
  - Batch DRC for entire design

✓ Designers can now visualize their PCB from a real-world perspective
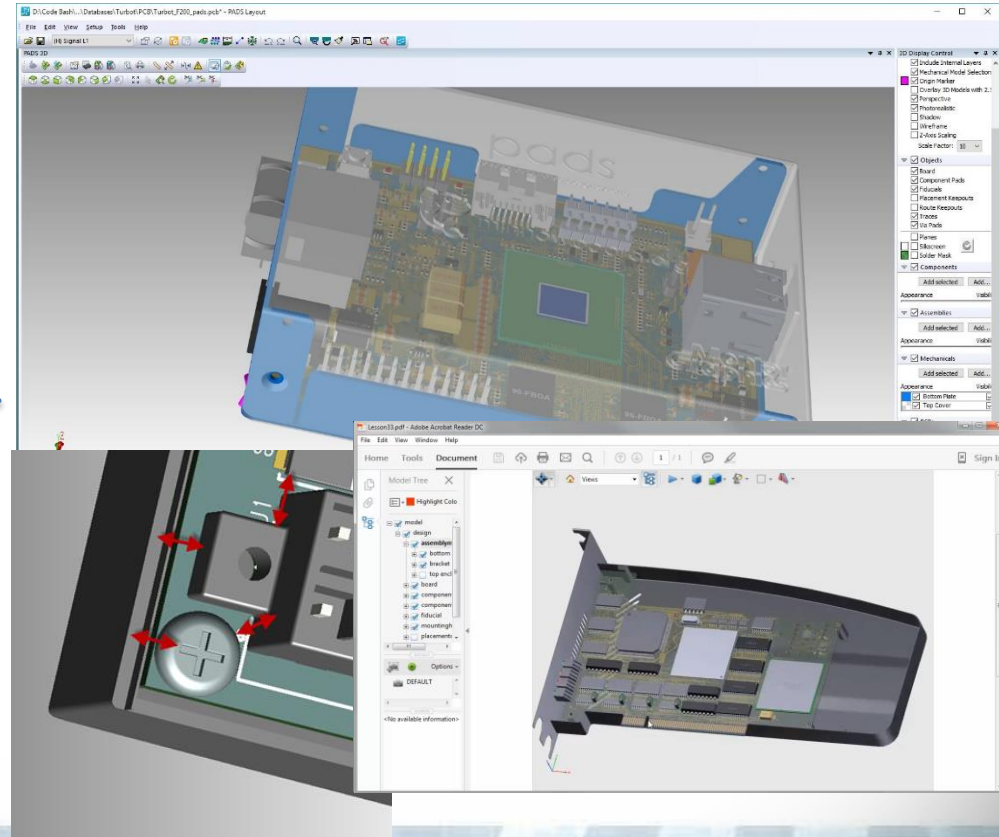
MCAD Collaboration
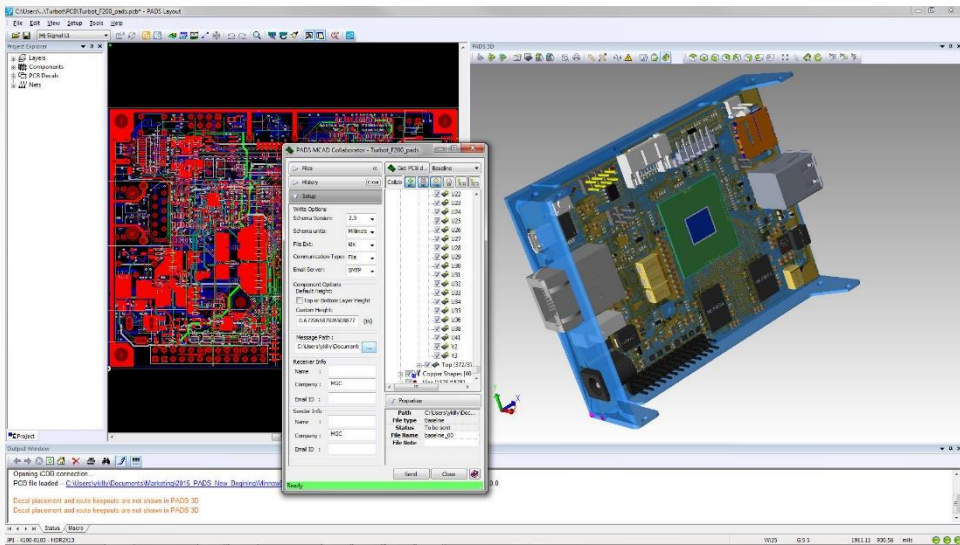
- ✓ Real-time collaboration between electrical and mechanical teams
  - Fast and dynamic collaboration on "what-if" scenarios and changes

- ✓ Instantly see the impact of a proposed change
  - Approve or Reject the modification

- ✓ Based on ProSTEP iVIP standard
  - Support for popular mechanical tools

- ✓ Reduce design time and avoid re-spins of both PCB and mechanical designs

Thermal Analysis

✓ Easy to use thermal analysis to identify board level temperature issues

✓ Supports conductive, convective, and radiation cooling

✓ Placement controls to separate high-power components

✓ Tightly integrated with PADS, allows PCB designers to detect thermal issues early
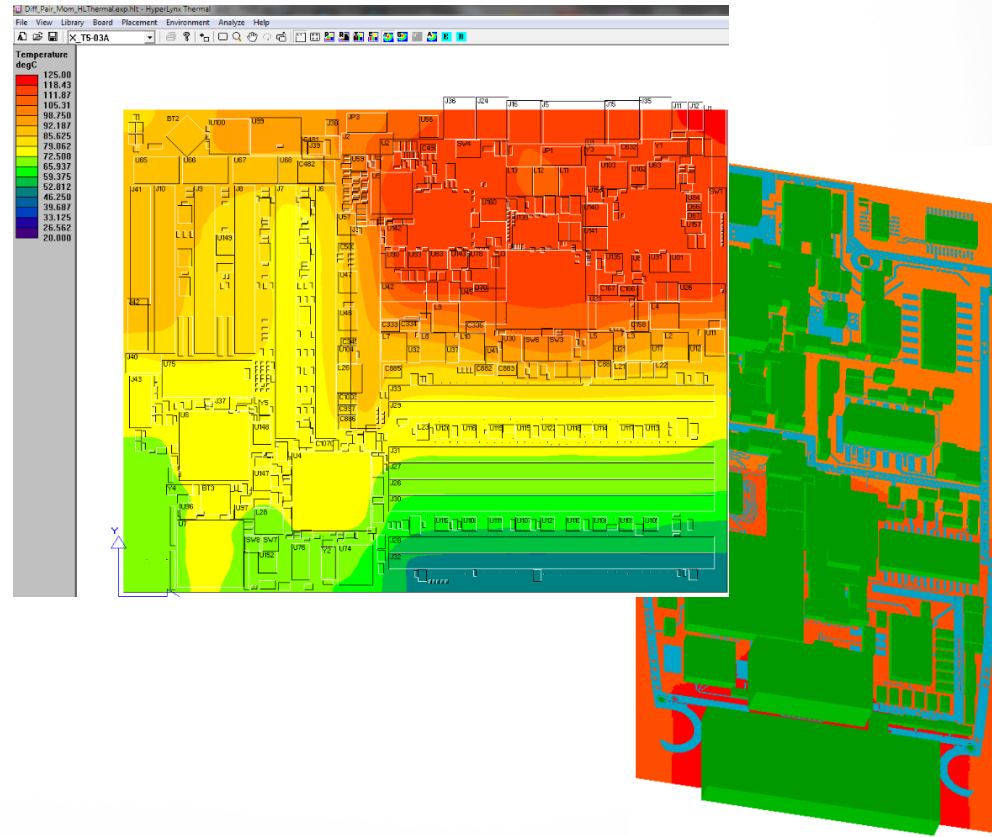
Design Archive
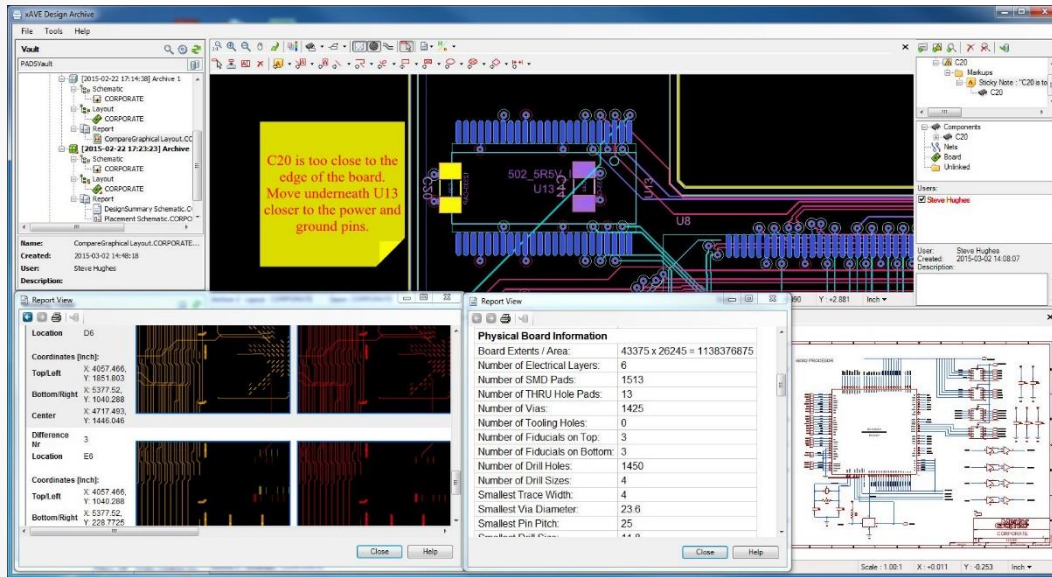
- ✓ Environment to archive, compare versions, generate reports, and collaborate
  - Store design data in a secure vault on PC or network

- ✓ View archived schematic and layout in a powerful design review environment
  - Comprehensive redline and markup capabilities

- ✓ Full graphical and data comparisons
  - Create differences report between two archives (versions)
  - HTML-based reports for easy distribution to others

- ✓ Streamline the design process by protecting managing design data

Design for Test

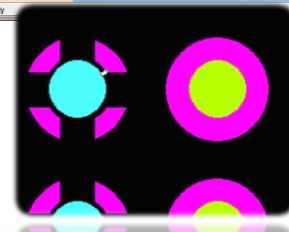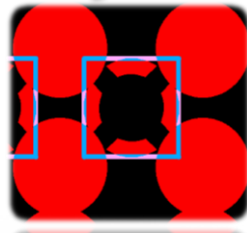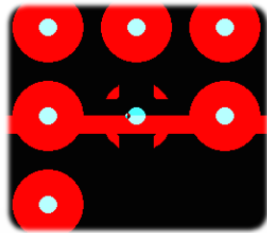- ✓ Ensure testability is "designed in"
- ✓ User definable Test Point rules
  - Via size definition
  - Probe size and spacing rules
  - Board side
  - Component and/or via pads
  - Test Point grid
  - Number of Test Points per net
- ✓ Allows reuse of fixtures after ECO's
- ✓ Optimize product quality by ensuring 100% testability for all nets
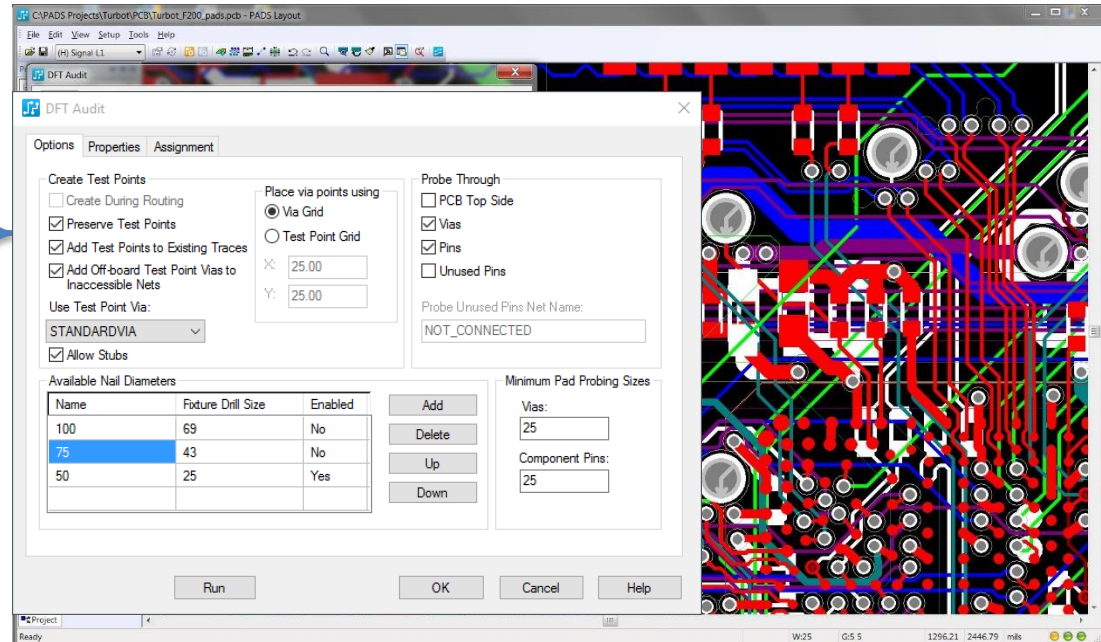
DFMA

✓ Fabrication and assembly analysis built into PCB design environment

✓ 100 most common fabrication and assembly checks

✓ Correct identified issues in PCB layout prior to sending to manufacturing

✓ Reduce design cycle time by minimizing iterations between design and manufacturing

Customer Success with PADS

"5 out of 5 Stars"
for integrated HyperLynx in PADS flow

Efficient Design-for-Manufacturing

60% faster time-to-results

Accurate Thermal Analysis

Produce products of higher complexity
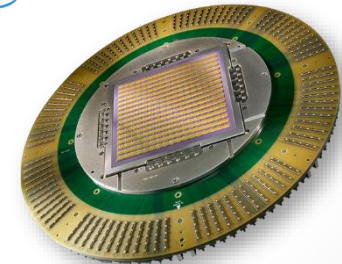

Tackles complex design challenges

Our Mission: Delivering Competitive Advantage

WE ENSURE <u>NOTHING</u> STANDS BETWEEN BEST IDEAS AND THE FINISHED PRODUCT.

PADS Delivers

1   Product Creation Platform for electronics systems, from concept to creation

2   Powerful technologies built on Mentor's market-proven PCB technologies

3   Scalable solutions as your needs and design challenges grow

4   Easy-to-implement, easy-to-use, and highly affordable

SYSTEM SIMULATION

COLLABORATION

DESIGN CAPTURE

DESIGN MANAGEMENT

PCB LAYOUT

DFMA

What is PartQuest?

PADS World Tour

www.cadcam-group.eu

Thank you!

www.pads.com

www.cadcam-group.eu