NASA-ESA Product Data Exchange Workshop
Kent Space Center, 29 April - 1 May 2009

NX PCB.xchange

ECAD / MCAD / CAE Collaboration

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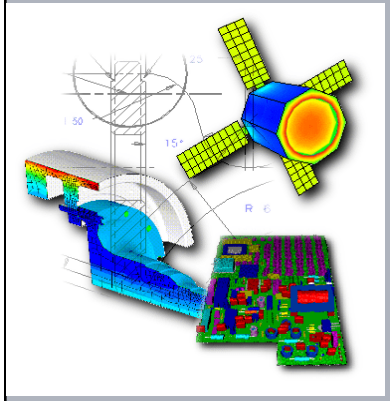
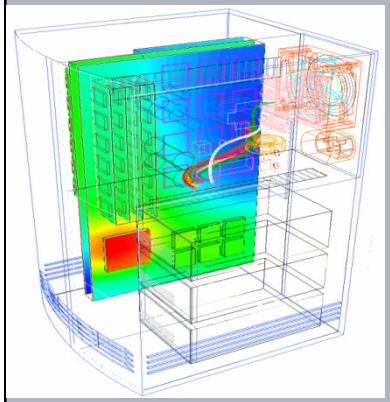
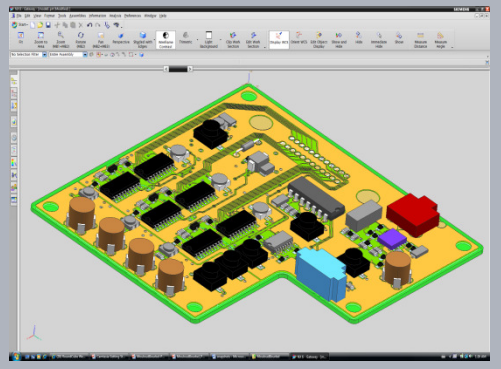
Maya Heat Transfer Technologies Ltd.

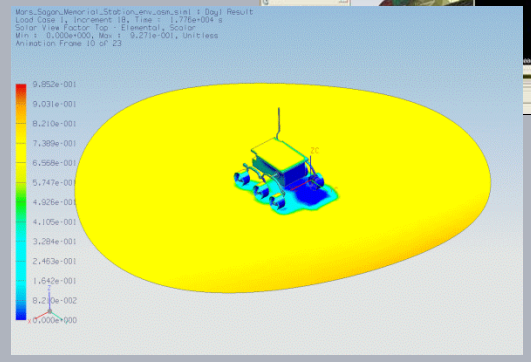
www.mayahtt.com

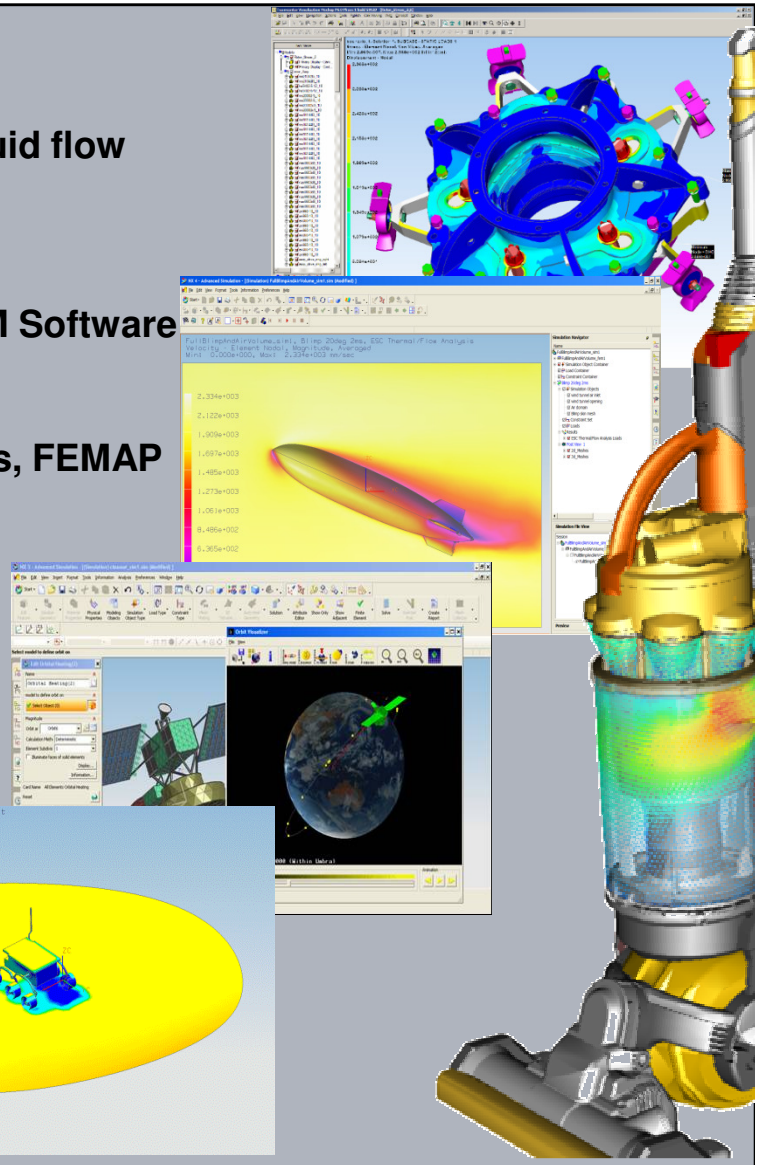
- Leading supplier of advanced thermal, fluid flow and structural analysis software.
- Long-term partnership with Siemens PLM Software
- Our products are fully integrated in I-deas, FEMAP and NX











Most Electronic Systems Design Environment Today…

The long and tedious way…

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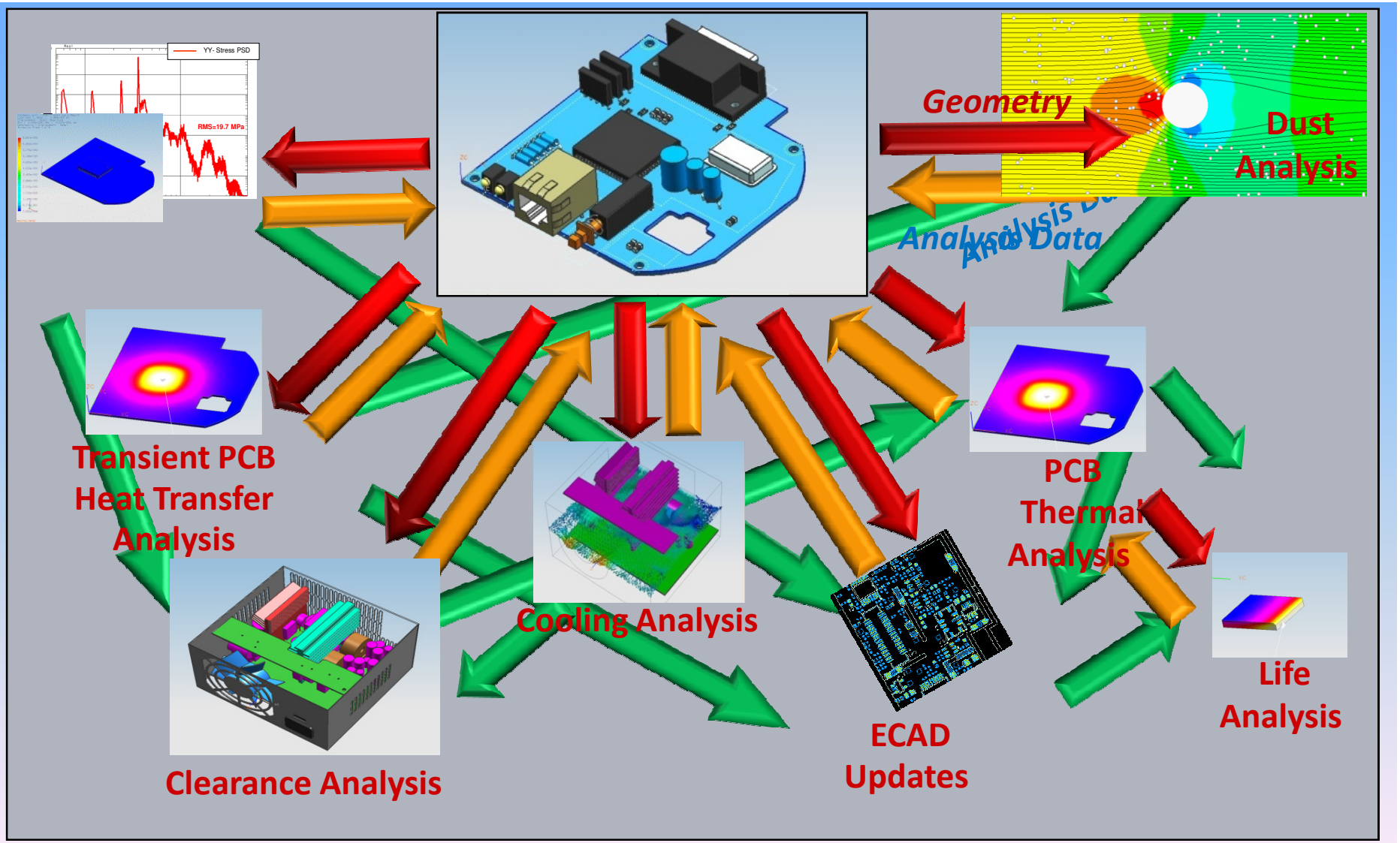

Our Vision…

Best-in-class Electronic Systems Mechanical Design/Analysis Environment

Complete & Managed ECAD/MCAD/CAE Workflows for PCBs & FPCs

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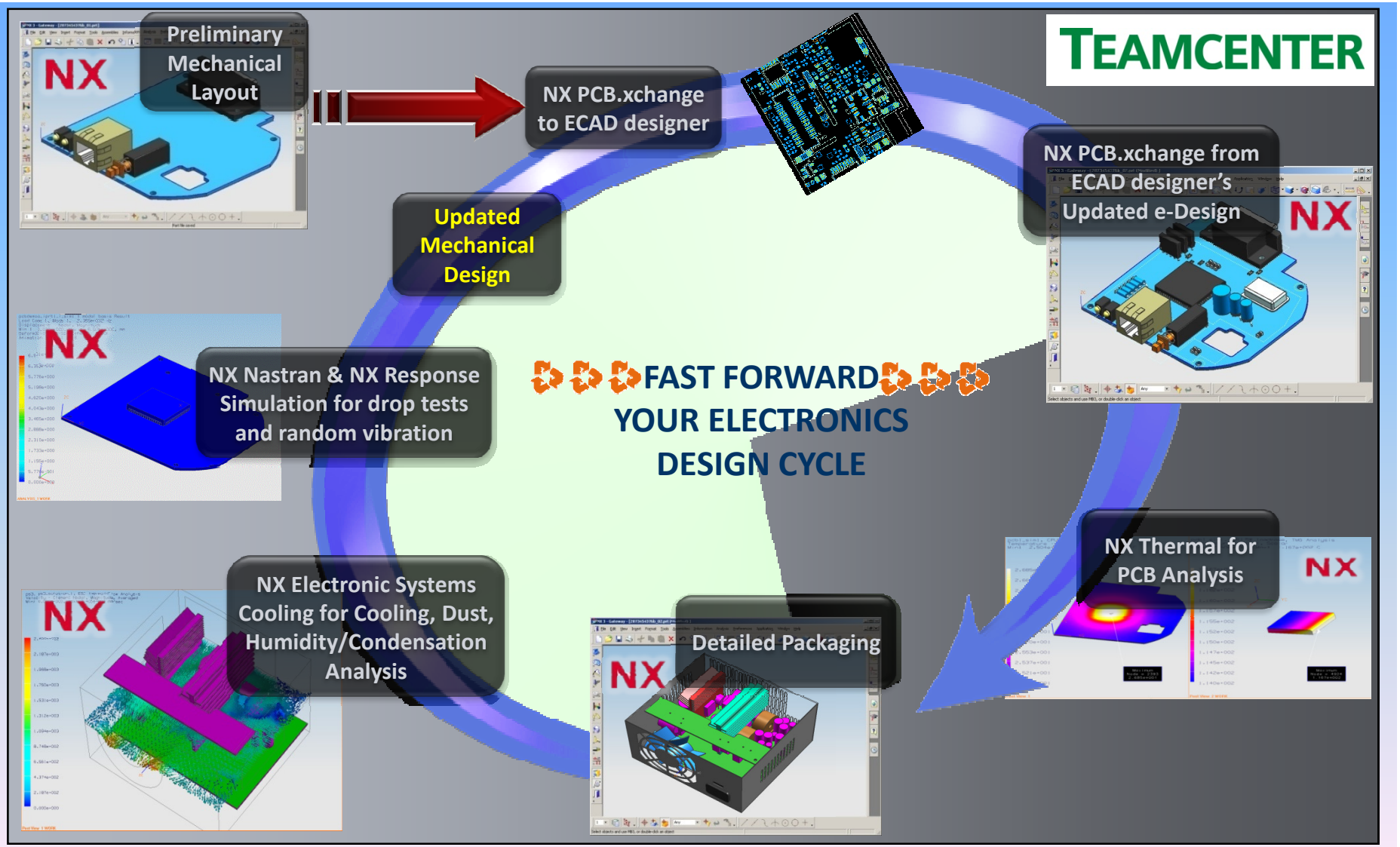
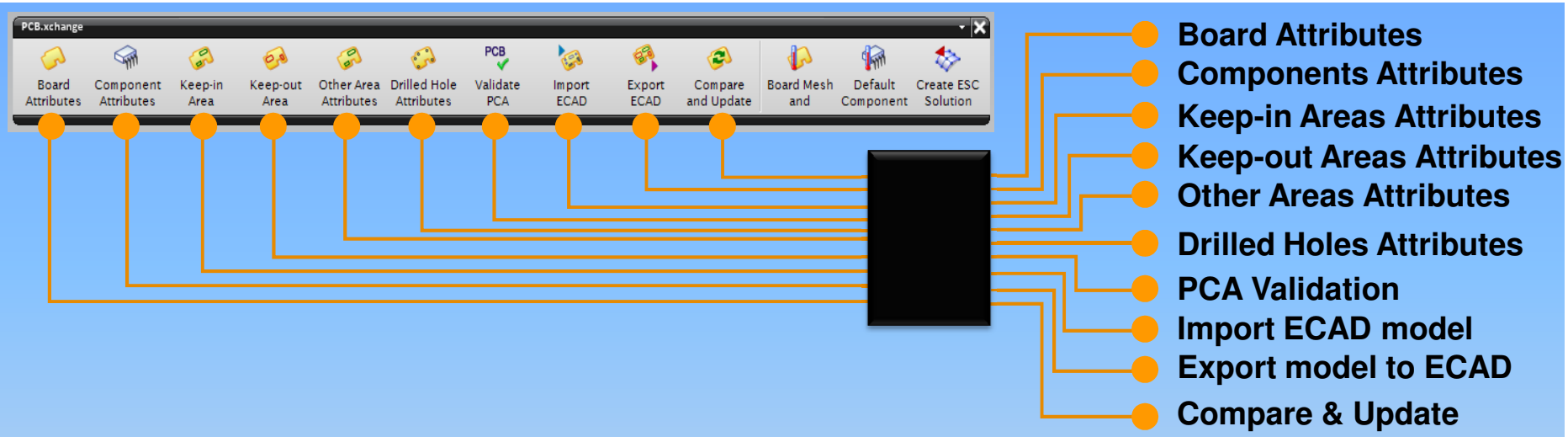


PCB.xchange



- **Toolset for NX Users to Collaborate with ECAD Users**
  - ✓ Eliminates Tedious Manual Work and Related Modeling Errors
  - ✓ Enables a Much Faster Iterative Design Turnaround Time
- **NX PCB.xchange Features a Unique "Compare & Update" Collaboration Capability**

  At each iteration:
  - ✓ Identify/select changes you want to update from ECAD to NX
  - ✓ Auto-create comparison report of ECAD/NX BOM between versions

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PCB.xchange

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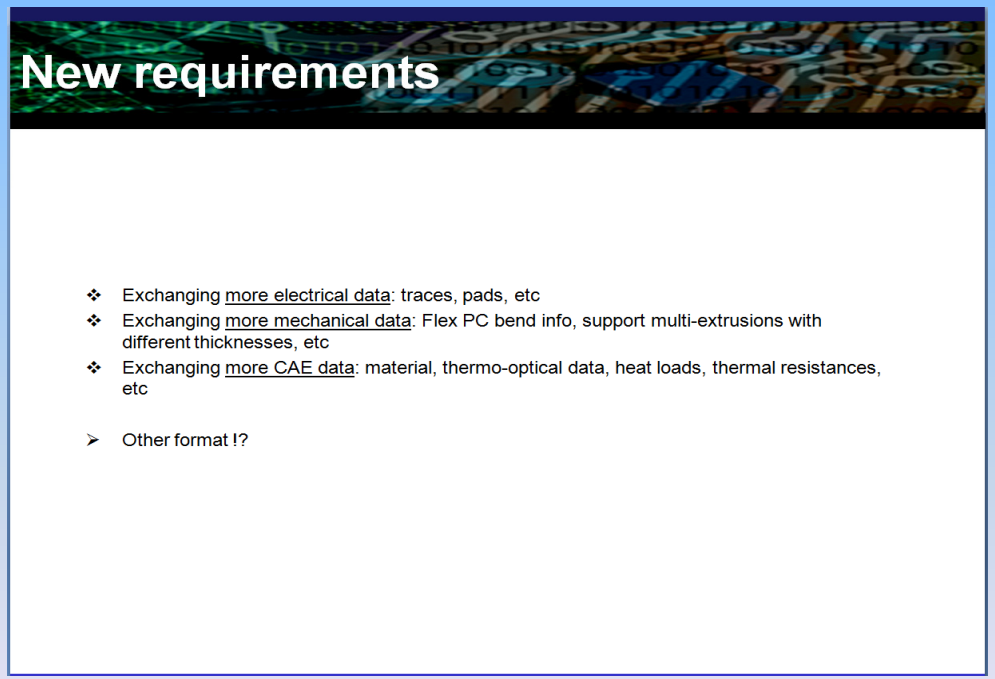
Questions asked at the 9th PDE workshop (2 years ago):

- **Solutions for the new user requirements ?**
- **Overcome limitations of IDF "Intermediate Data Format" versions 2 & 3 ?**



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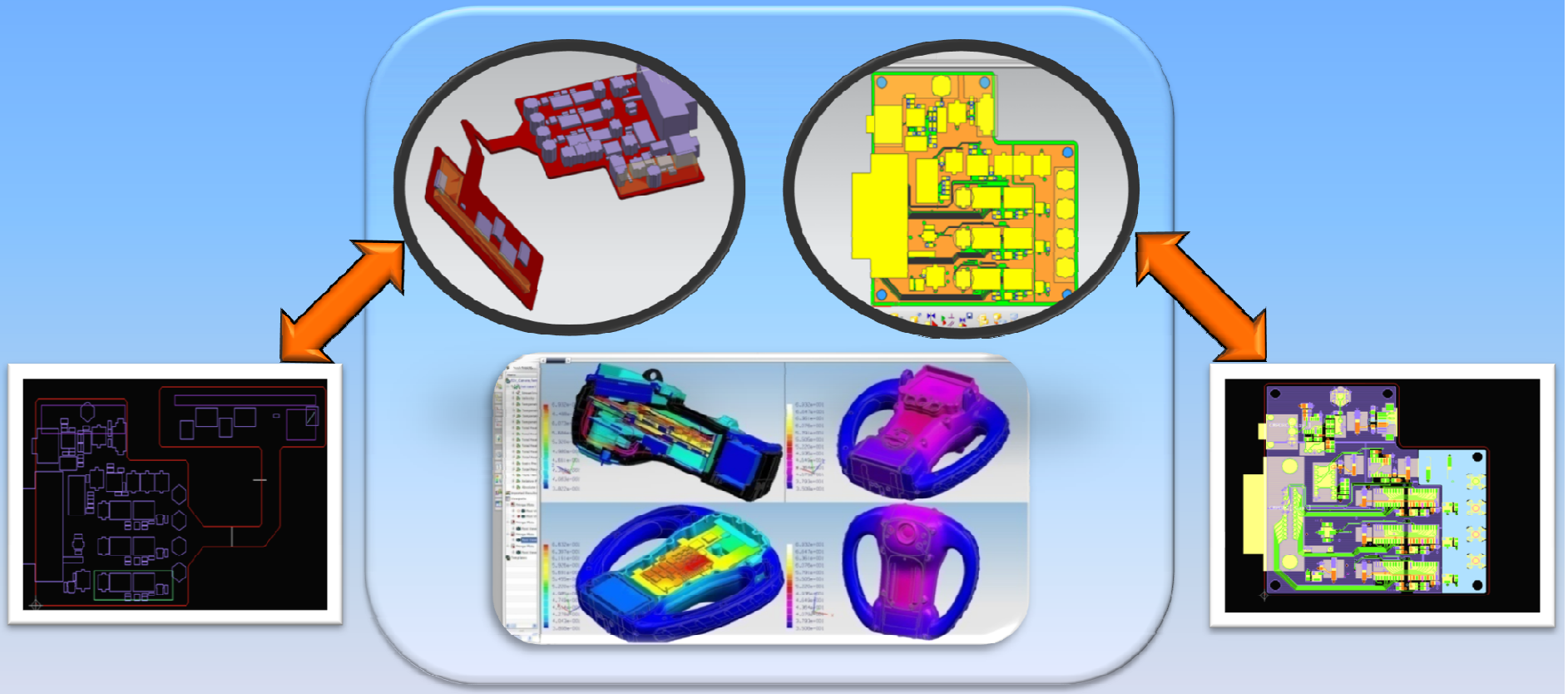
PCB.xchange



- More Electrical / Mechanical / Analysis Data supported
- Modeling and Exchanging Rigid and Flexible PCs
- Better Collaboration

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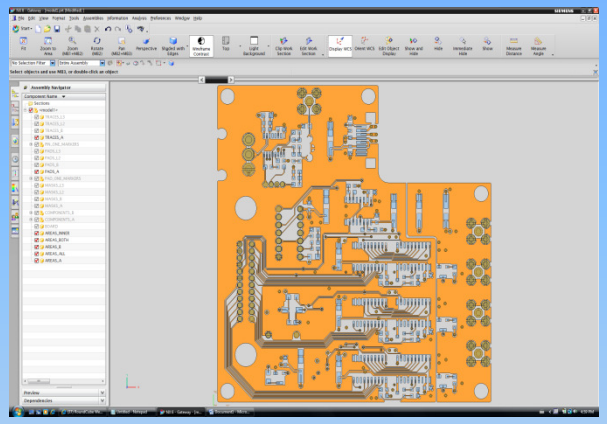
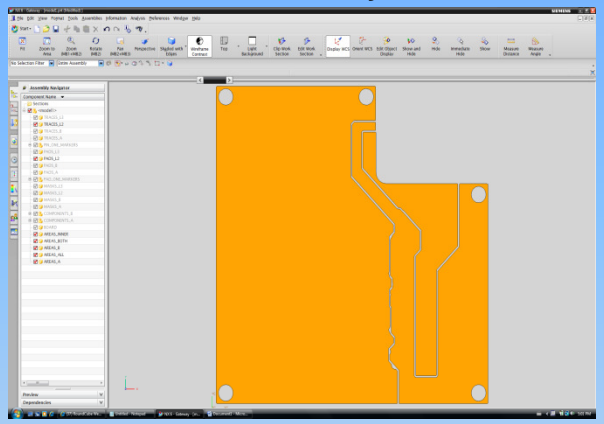
More Electrical Data

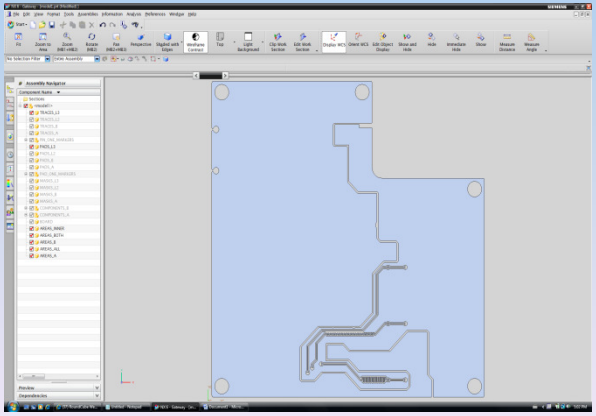
Top Layer



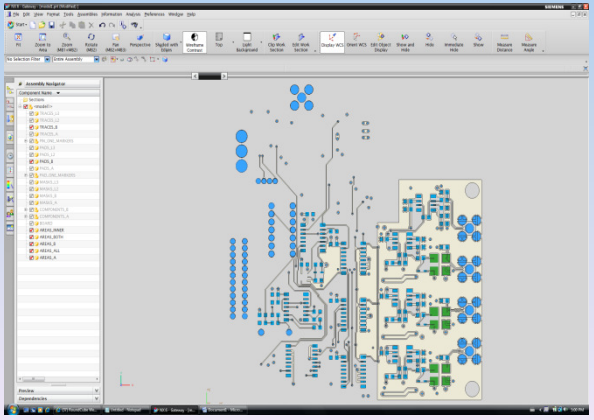
Internal Layer 1



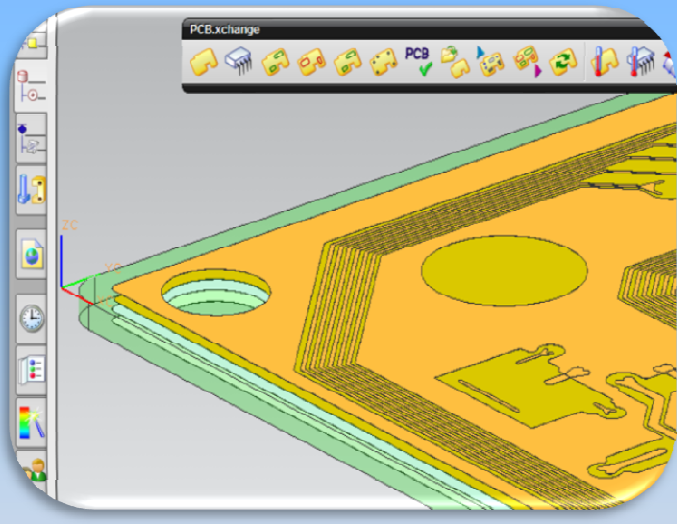
Internal Layer 2



Bottom Layer



- Conductive Layers
- Option to import internal layers



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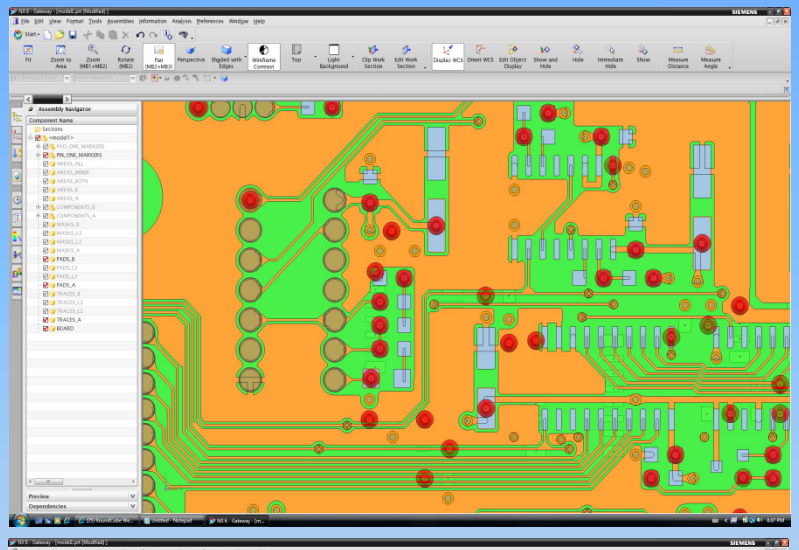
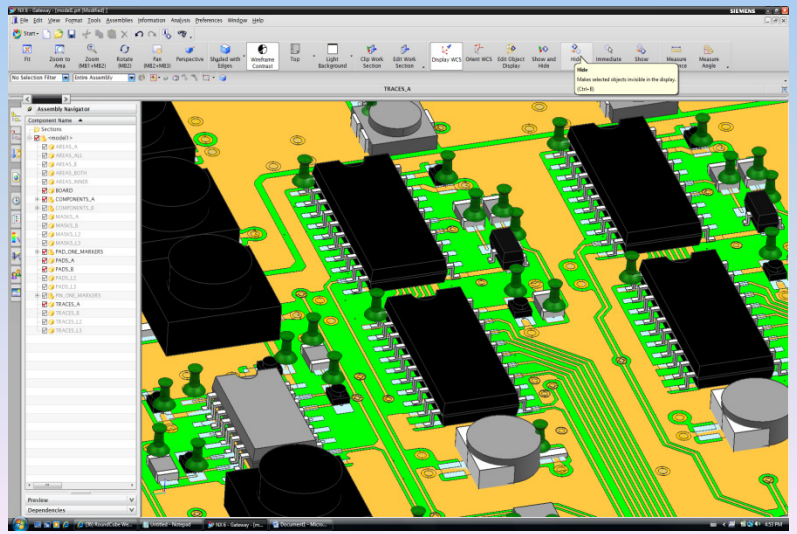
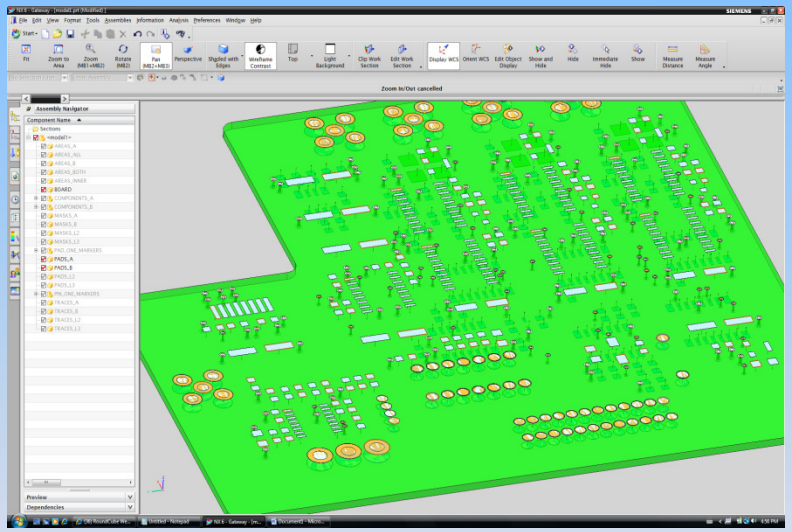
More Electrical Data





- **Pin & Pad no1 information**



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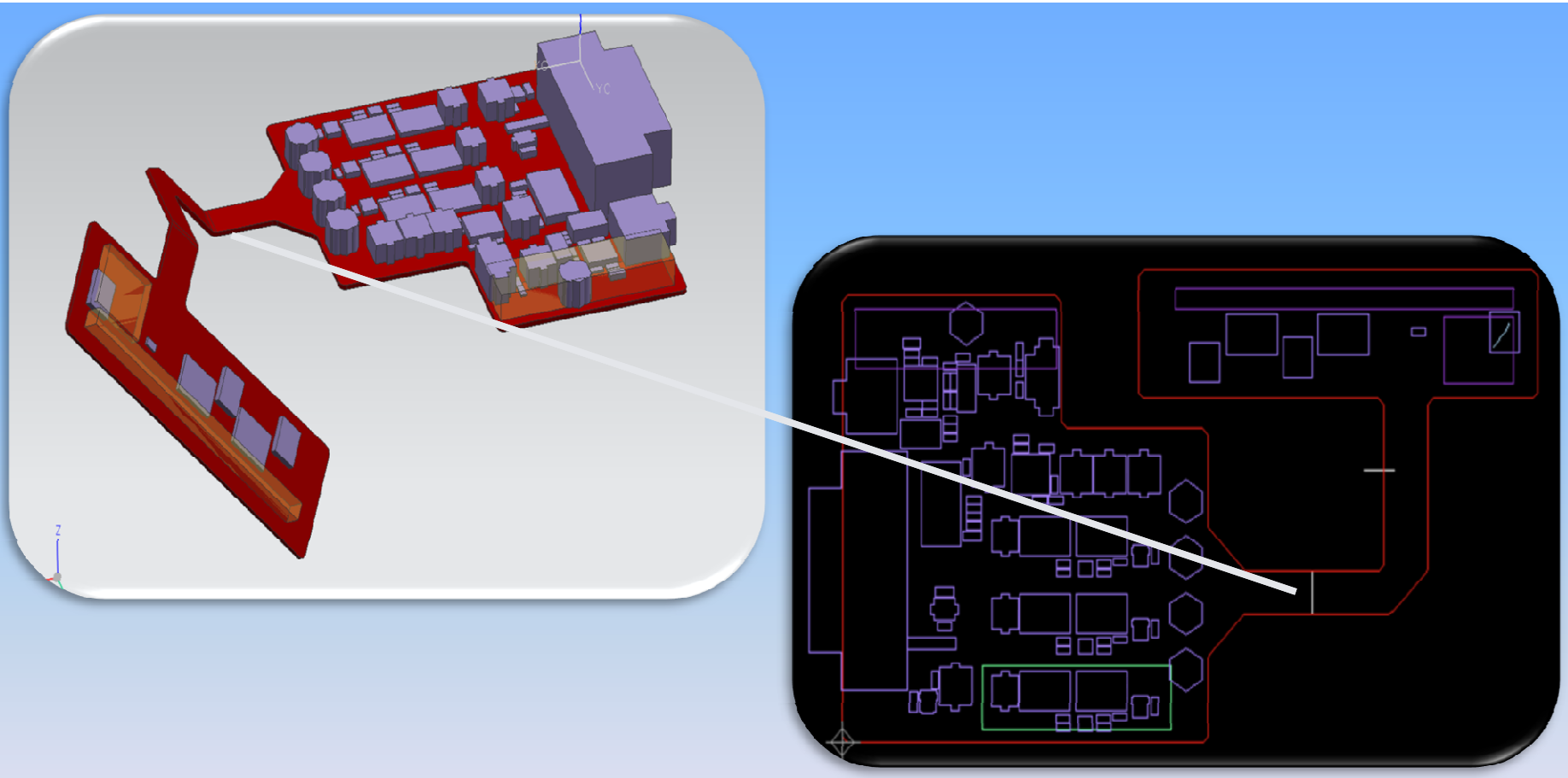
More Mechanical Data



- ✓ Imports & exports bend information
- ✓ Automatically creates bend features and constraints components and areas to the board

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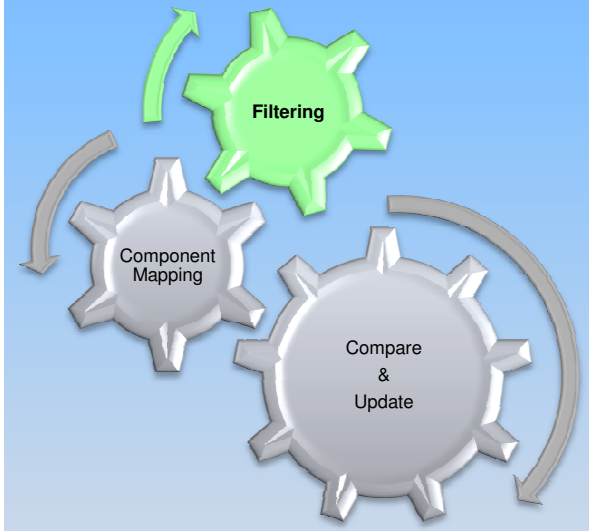
Data Filtering



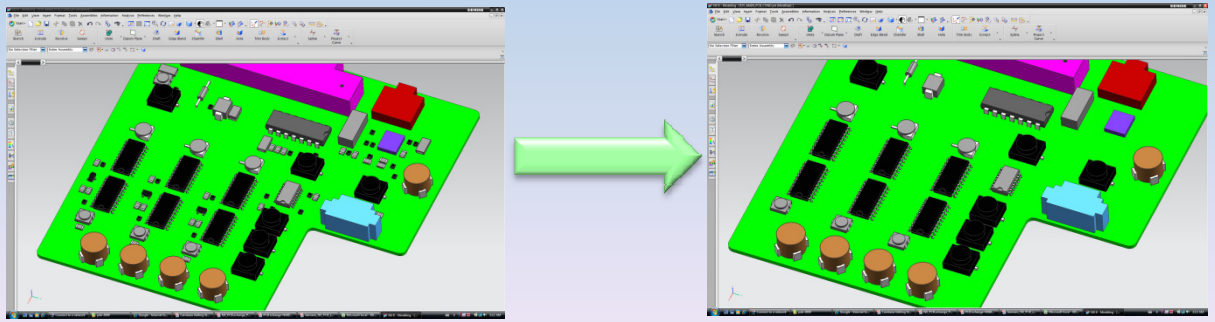
- **You don't always want to exchange features and components**

For example:

- Eliminate small pin holes
- Eliminate small surface mount components, (no impact on the mechanical layout)
- Eliminate passive components (do not generate heat)

- **Filtering could be done when exporting or importing data**

- **Pre-defined and User-defined filter rules**



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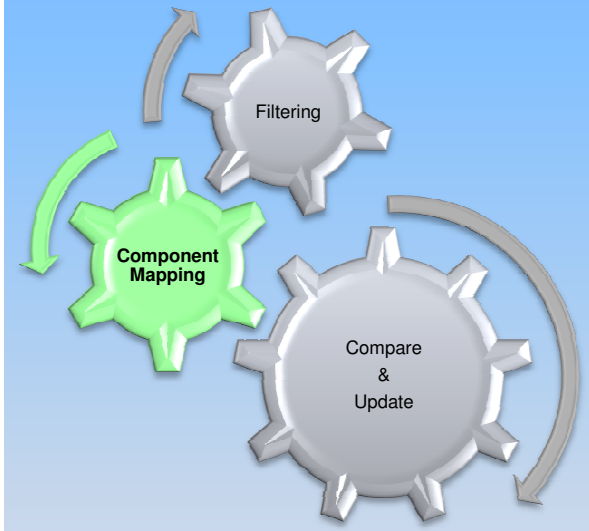
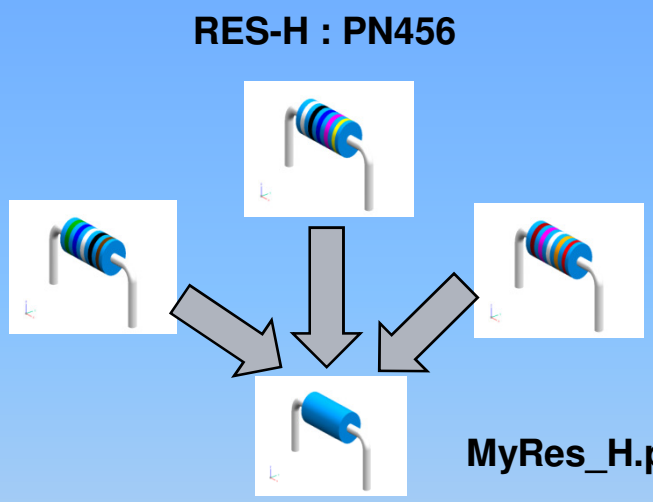
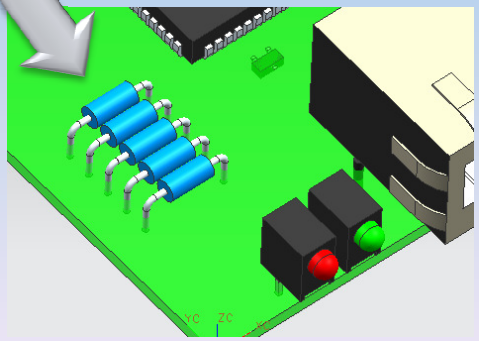
Component Mapping





User's Libraries

One NX part in the library
Different Part Number Attributes



- **To maintain different naming conventions**
- **To reduce size of component libraries**
- **Component Part Numbers are maintained**
- **Component mapping could be performed in both ways**
- **Mapping to a specific NX part**
- **Reference Sets could be used**

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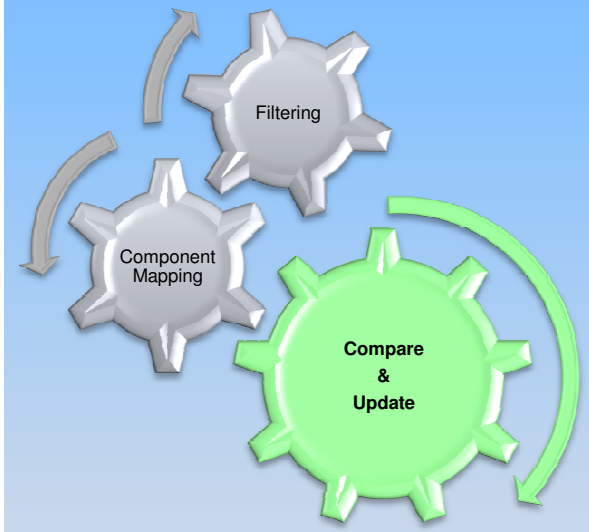
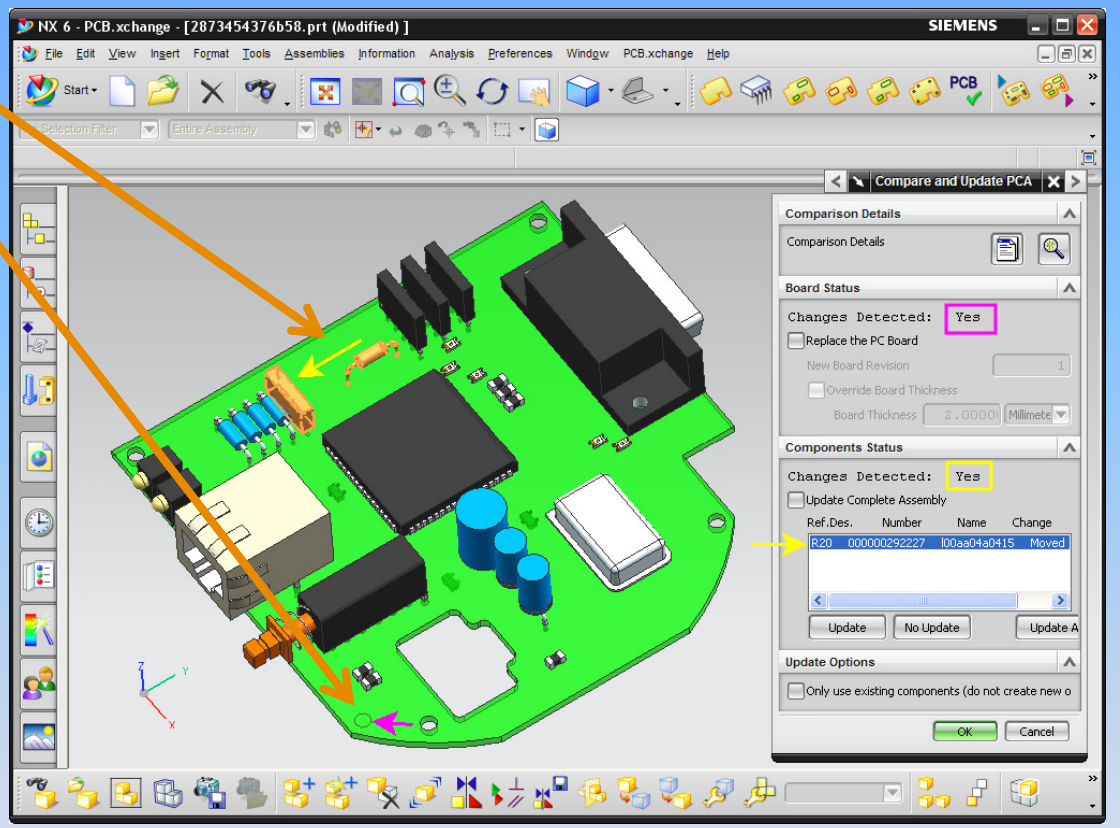
Compare & Update





- ✓ **Generates a detailed comparison report**
- ✓ **Provides graphical preview of changes**
- ✓ **Overlaps NX and ECAD Boards & Board Features**
- ✓ **Allows a selective update of the NX model**

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Data Management

- Component parts found in Teamcenter database are automatically used
- New components are created from their ECAD footprints
- PC Assembly is created directly in Teamcenter Database

ECAD PCB Layout

ZUKEN

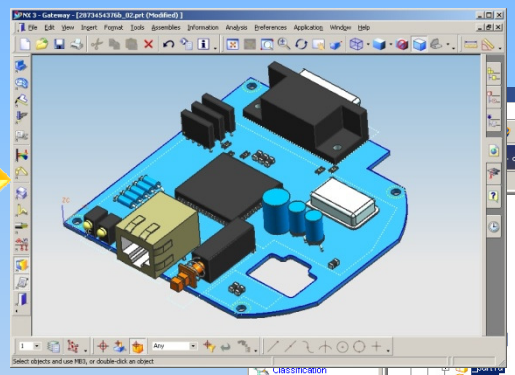
cadence

Altium

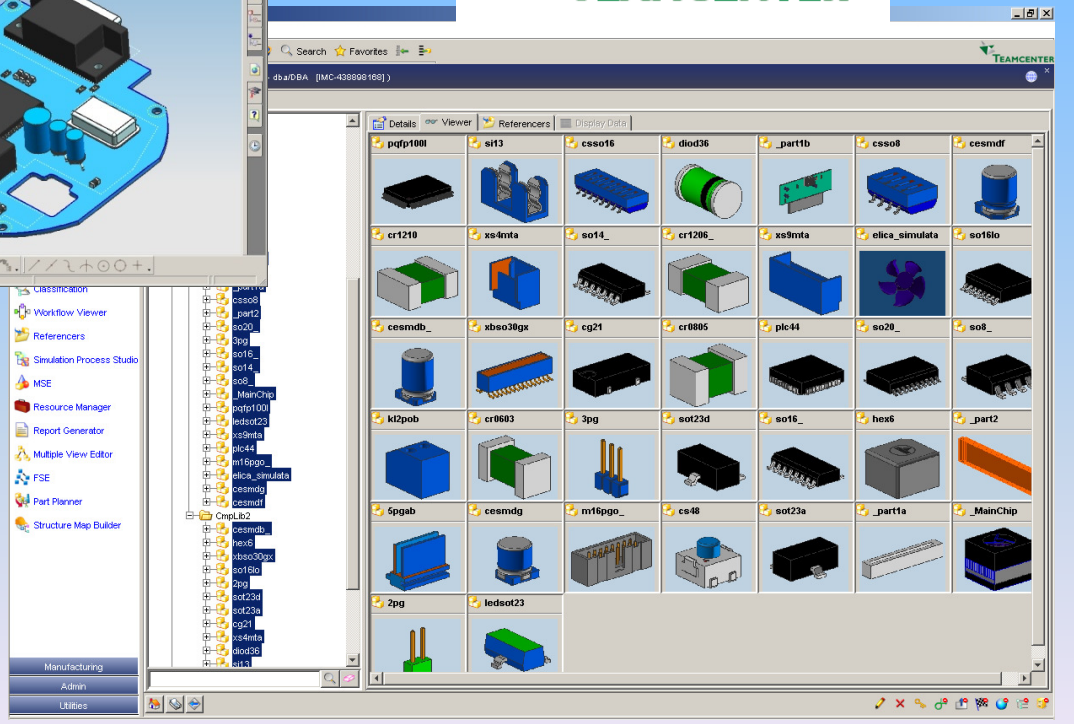
Mentor Graphics

PULSONIX

INTERCEPT



TEAMCENTER



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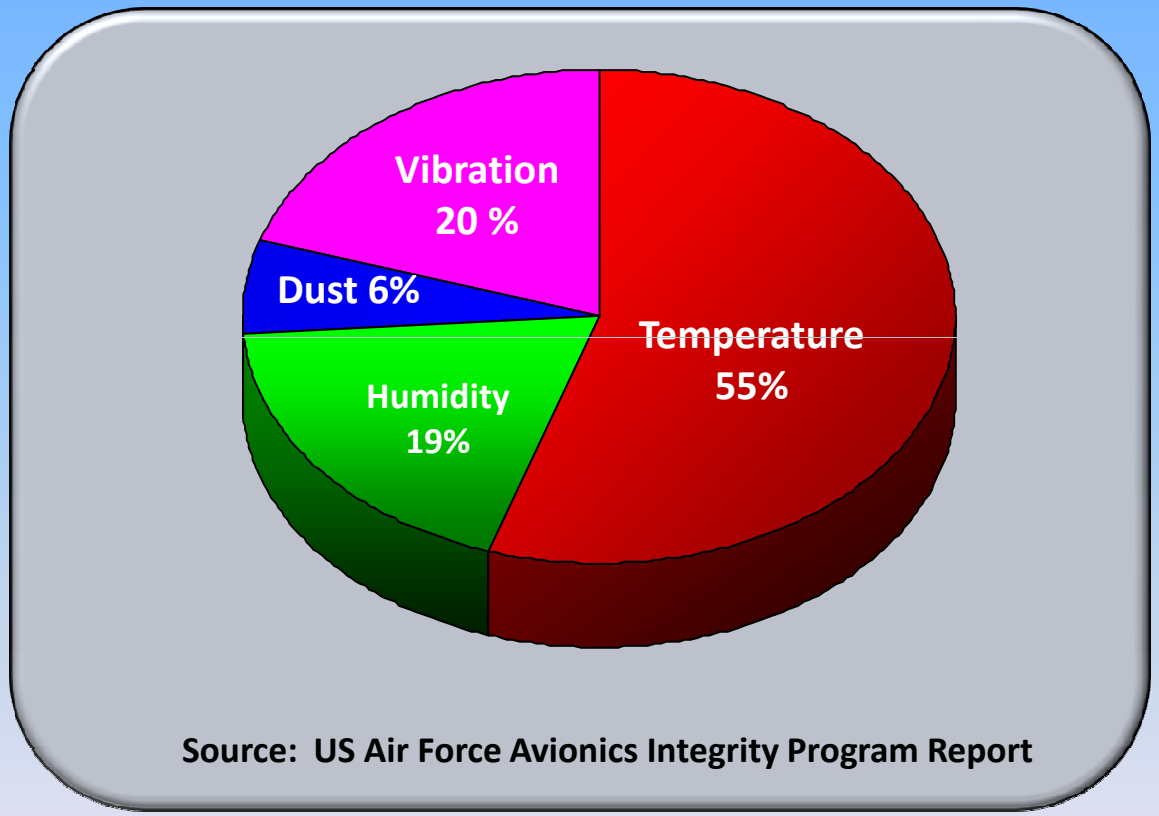
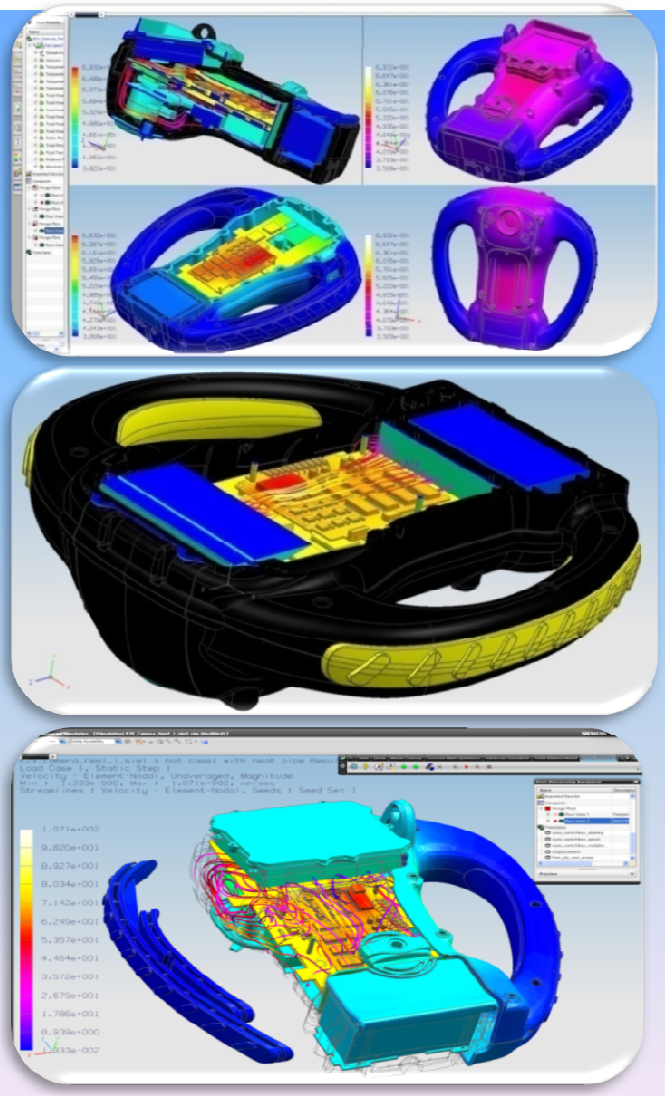
Major Causes of Electronic Failures



Source: US Air Force Avionics Integrity Program Report



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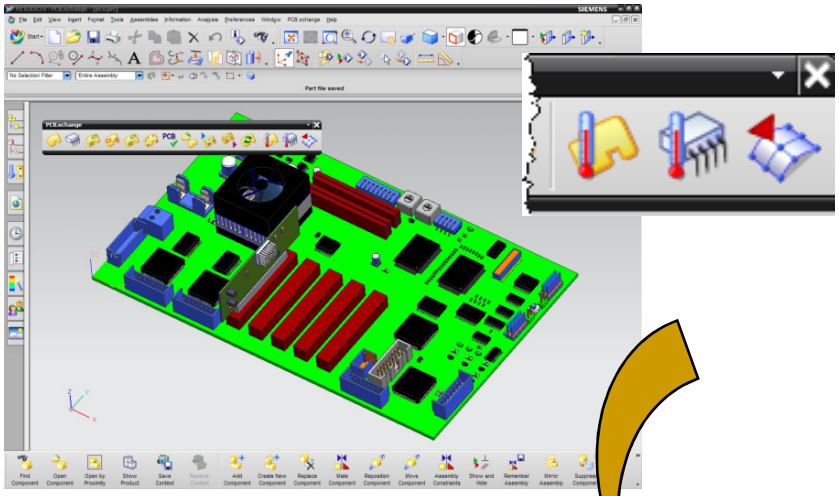
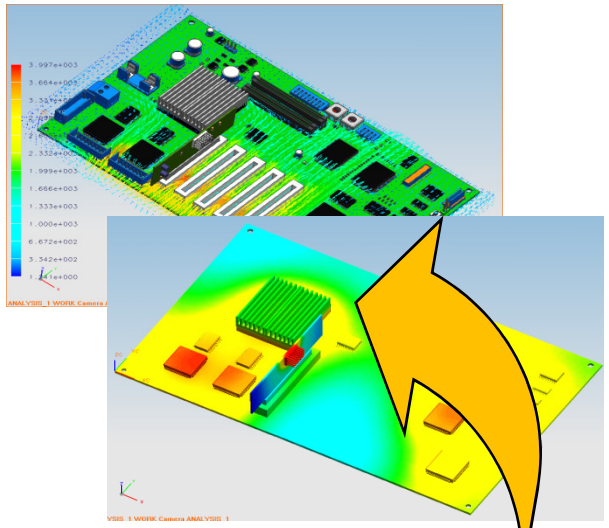
Direct access to NX Thermal, NX Electronic Systems Cooling, NX Space Systems Thermal.

NX





Defines Board Mesh & Thermal Settings

Defines Default Component Mesh & Thermal Settings

Creates Solution

Component Thermal Database

Automatically creates a ready-to-solve model:

- Creates the Fem and Sim.
- Meshes the Board & components
- Assigns Material and Physical Properties to the Board and Components Meshes
- Creates Heat Loads and Thermal Couplings

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The Siemens answer: PLM Software for increased quality and 95 percent less rework.

Answers for industry.

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NX / NX PCB.xchange demo.

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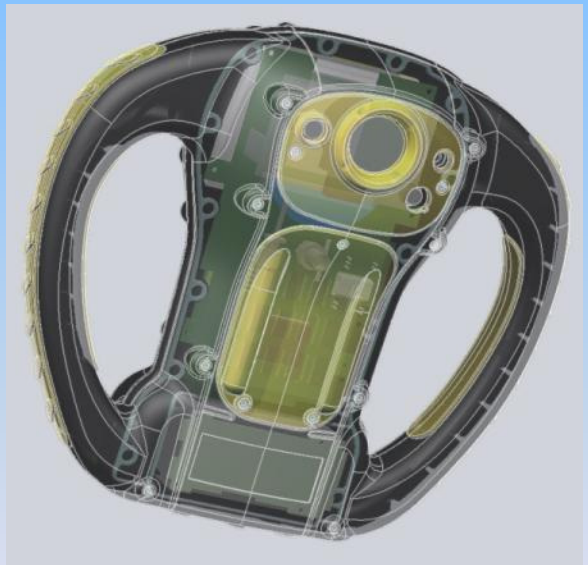
Thermal Imaging Camera



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Virtual and real come together…

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Thank You