

TransBridge

Concurrent design interface for electrical system design and EDS' I-DEAS 3D modelling



TransBridge provides the optimum linking between the electrical design world and I-DEAS 3D packaging. Electrical system design and analysis can be done in TransDesign, prior to the definition of solid models and then synchronized with the mechanical representation of the layout. In this process a topological comparison is done to ensure that the design in the electrical domain is indeed topologically equivalent to that in the mechanical domain. In addition, items mastered in IDEAS (mechanical support and harness dressings) are transferred into the TransDesign toolset and added into the Unified Bill of Materials.

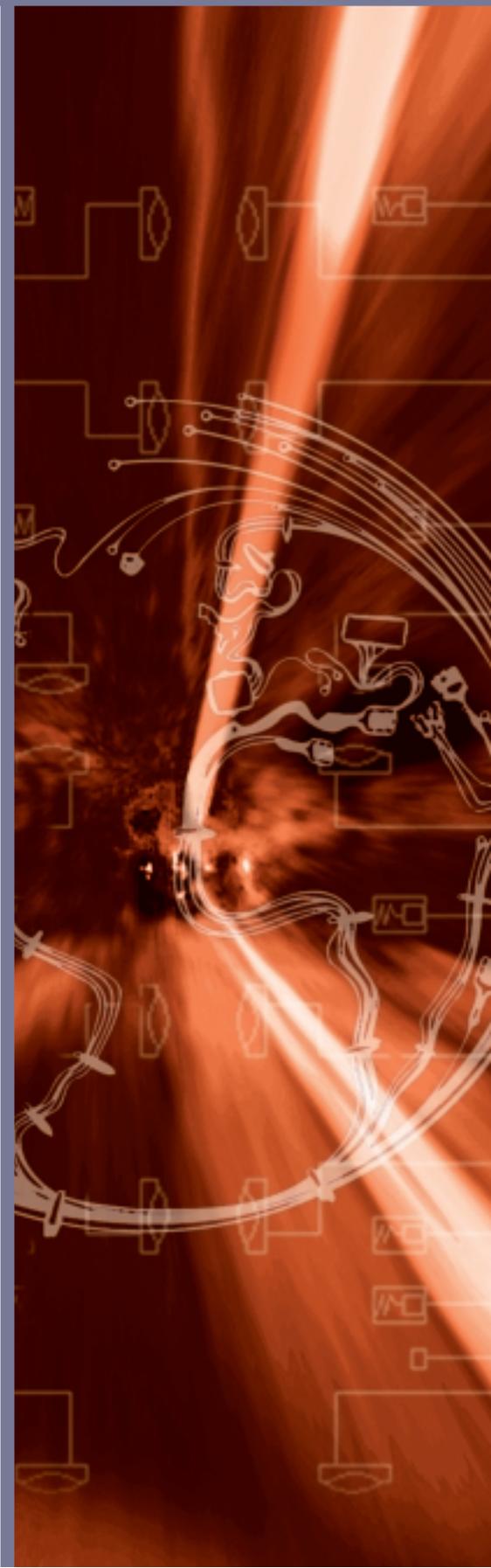
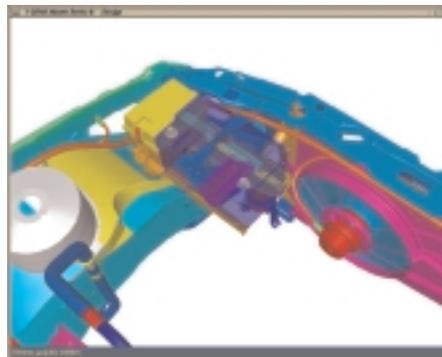
Target Market

These tools are the best choice for companies that have adopted rigorous mechanical design processes that rely mainly on complete 3D digital packaging using EDS I-DEAS. In addition, companies whose products have complex electrical distribution systems, like automotive, aerospace, shipbuilding, and the defense industry will significantly benefit from the use of these tools. The primary area of benefit is the reduction in cycle time due to the concurrency in the design process enabled by TransBridge.

Design Scenario

The electrical design is captured using a combination of tools within the TransDesign environment. TransCable is used for schematic capture. TransLayout is used to construct the electrical design of the entire product. Early in the design process, before detailed mechanical constraints are defined, the electrical design is developed in TransLayout. Wiring paths and component placements are established. TransLayout synthesizes wires, splices, and multi-terminations. System interconnection architecture, including aspects such as system signal content, electrical equipment (module) positioning, the number of harnesses, interconnection of harnesses via inline connectors, and the topology of harnesses may be established based upon a plan-view of the system.

When product design is ready to package wiring, a topological definition of the harness is passed to I-DEAS. This process uses a bi-directional ASCII format interface. The connectors, bundles, bundle diameters, and branching nodes are passed to I-DEAS to synchronize the packaged wiring harness design with the electrical design. After the wiring paths are routed, each I-DEAS bundle length is fed back to the TransDesign tool suite. These bundle lengths are used by TransDesign to update the lengths of all the wires in the wiring harness. In addition, wire harness parts, such as protective coverings, retention clips, and brackets can be passed through the interface to the UBOM.



Electromechanical Solutions

Together, Mentor Graphics and EDS have developed electromechanical solutions that bridge the gap between electrical and mechanical design domains. This bi-directional approach promotes concurrent electrical/electromechanical and mechanical design. The integration between the products reduces manual errors, enables virtual prototyping of electromechanical systems, and helps identify potential design problems early in the design process.

Seamless Integration between Mechanical and Electrical System Design in TransDesign

The I-DEAS/TransDesign Topology Bridge provides an interface that enables regular updating of design changes between TransDesign and I-DEAS. Topology mismatches are identified and reported, ensuring the compatibility between the assembly of the end product and the content of the wiring harnesses.

Correct by Construction

The synchronization of design between 3D design and the TransDesign environment guarantees that the wiring harnesses that fit in the end product function as specified.

Highlights

- Passes wiring harness definition to I-DEAS Harness Design for packaging
- Passes wiring diameters to I-DEAS, based on bundle-by-bundle wire content
- Synchronizes wiring topology on connectors, bundles, and branching
- Identifies and reports topology mismatches
- Links every element of the wiring harness between the I-DEAS environment and the Mentor Graphics electrical system design tools
- Provides a Unified Bill Of Materials (UBOM) that combines the most accurate mechanical information from I-DEAS and Mentor Graphic's electrical design tools (TransDesign)
- True 3D lengths of wiring bundles are back annotated to TransDesign and reflected in the UBOM
- Mechanical objects added to the wiring in I-DEAS are added to the UBOM for each wiring harness
- UBOM data can be loaded into Oracle™

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