

TransLayout

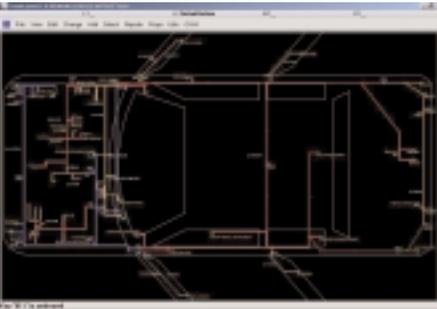
Wire Harness and Cable Design Using Interconnect Synthesis



TransLayout™ provides a design environment for complex systems from concept through to manufacturing support. Early in the design process, system and electrical engineers explore design alternatives for wire harness and cable systems and assess their impact on manufacturing cost and physical space requirements.

Target Market

The transportation (automobiles, trucks, trains), aerospace (planes, satellites), telecom, semiconductor equipment, and industrial machinery industries are experiencing an increase in the electrical content of their products. TransLayout enables design teams to plan the electrical distribution system within a simplified view of the physical package and estimate manufacturing costs as well as the complete development of the physical interconnect of a system.



Design Scenario

Logical schematics are created that capture the equipment, connectors, and pins that are electrically connected within a system. Multiple schematics may be configured together to define the electrical distribution system. The TC2TL utility will generate a netlist and may be used to automatically generate module symbols. A module symbol will have pins that represent the associated module side connectors.

A symbol representing the physical outline with scaled dimensions of the mechanical package may be placed within TransLayout to provide the context for the design.

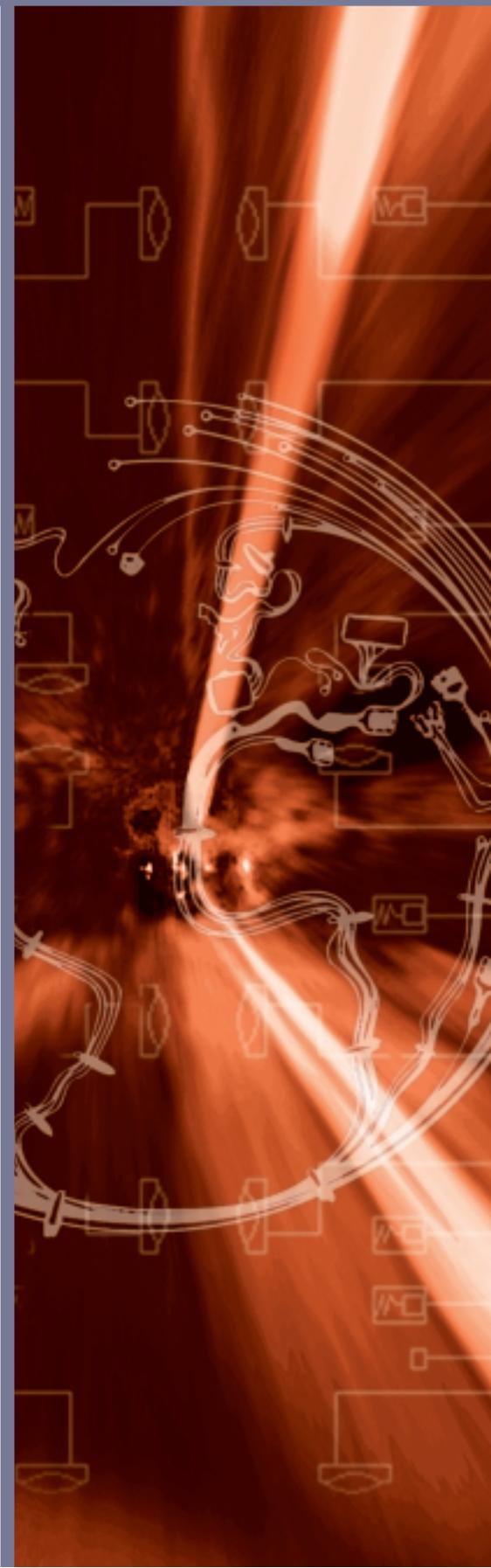
After importing a netlist, the user will place either customized or automatically generated module symbols within the physical outline. Selecting signals highlights electrically connected modules.

The user may simply draw conduit segments between electrically connected modules to create wire routing channels. TransLayout may then be used to automatically synthesize wires and splices through the routed channels.

Synthesizing Electrical Signals to Physical Wires and Splices

The autorouter is used to synthesize wires and splices from electrical signals by adhering to electrical and manufacturing design rules. Design rules are specified as router cost values or router modes. Examples of router cost values include maximum number of wires per splice or multi-termination, cost per unit length of a wire, and minimum distance between splices or between a splice and a take-out. Autorouter modes may be used to allow or disallow multiple wires terminating on common pins or prioritizing router performance over design iteration time. The router will automatically assign the wire gauge for a signal. It may also be used to optimize the location of splices.

The autorouter will optimize the total wire cost while satisfying electrical and manufacturing design rules. The factors contributing to total wire costs include base wire, wire length, and the number of jumpers, splices, and multi-terms. Total wire costs, wire cut lengths, and bundle diameters are automatically calculated.



Inserting Inline Connectors and/or Junction Blocks

Inline connectors and/or junction blocks may be inserted within a bundle segment. The conduit will be split into two pieces. If wires were routed within that segment, they will be automatically cut and terminated at cavities within the inline connector. The wire cut lengths will be automatically recalculated. The signals automatically assigned to cavities may be swapped or deleted.

Compatibility Checks

TransLayout supports the assignment of compatible harness and inline connectors. The user may also change a terminal on the harness side connector with another compatible terminal. Terminal codes may be defined to insure that proper techniques are utilized with specified connector, pin, and wire configurations.

Report Generation

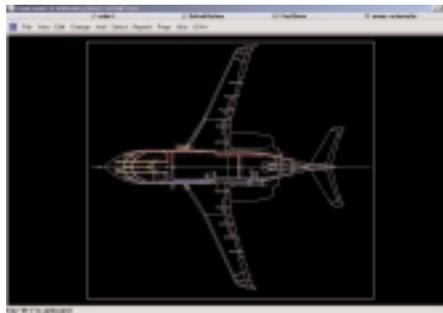
TransLayout is used to generate Wire From - To and bill of material amongst other fully configurable reports. The design may also be exported to a formatted file and loaded into a relational database. The design can also be loaded into an ORACLE database. Relational databases such as Oracle enable sophisticated SQL queries of design information and comprehensive report generation.

Design Changes

Changes made to the schematics will be imported into TransLayout by updating the netlist using the TC2TL utility.

Highlights

- Optimizes interconnect synthesis of electrical signals into wires and splices
- Enables engineers to evaluate different architectures early in design cycle
- Provides automatic calculation of wire cut lengths and bundle diameters to save money and space
- Offers choice of compatible, mated connectors, compatible terminal and terminal codes
- Integrates with TransCable™, an intelligent schematic capture environment
- Exports design data to formatted file that can be loaded into Oracle database



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