

TranSACT

Automatic physical schematic generator using electrical system layout and logical schematics



TranSACT generates physical schematics (wiring diagrams) based on logical or physical schematics created using TransCable™, and wiring and connector information created using TransLayout. TranSACT uses component placement captured in logical schematics and the physical interconnects from TransLayout to create a set of schematics with the "look and feel" of the original logical design. The resulting wiring diagram includes all physical wires, splices and connectors and their corresponding attributes. TranSACT can also propagate changes made in TransLayout to electrical connectivity, and reflect these changes in the wiring diagram using the original physical schematic instead of the logical schematic. Cosmetic changes and annotations on the original physical schematic are preserved. TranSACT can save companies significant labor costs associated with developing physical schematics by hand.

Target Market

Companies designing products that require electrical wiring diagrams as part of a complete harness definition. These include, but are not limited to, automobiles, aircraft, industrial equipment, and defense industry products.

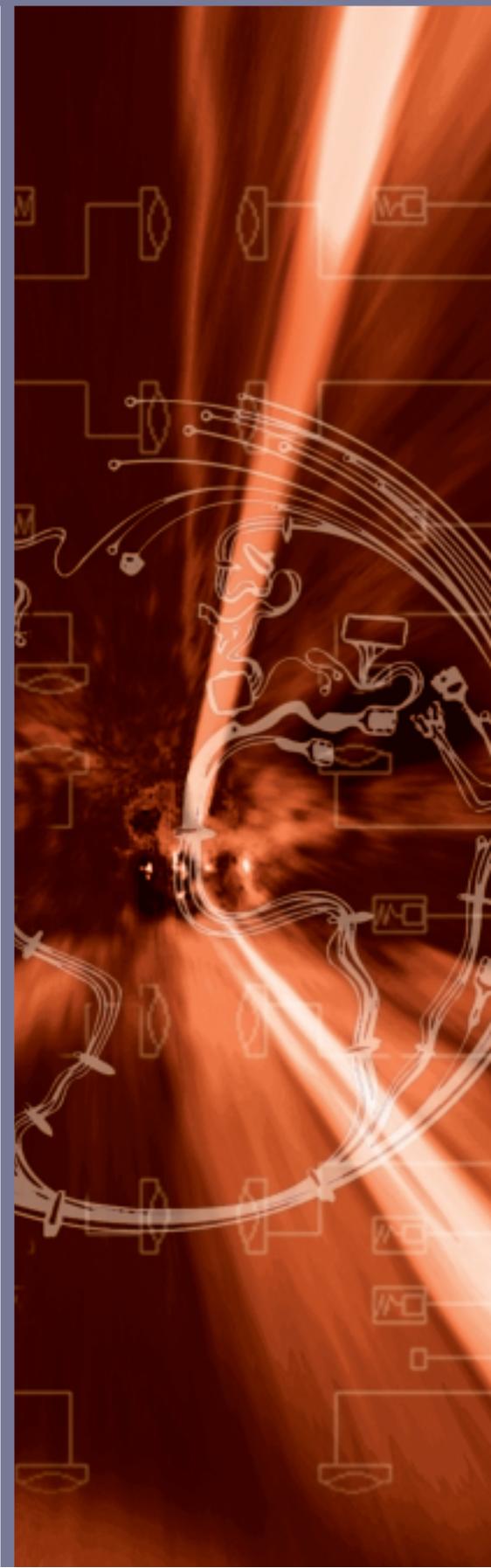
Design Scenario

The user starts with logical schematics representing the connectivity of the various subsystems and components that make up the electrical content of the product. Using this logical connectivity in TransLayout, the user places the components using a 2D representation of the product. The user then defines the harnesses, in-line and module connector information, cavity and terminal assignments, and information for wiring

synthesis. The wiring components synthesized include all wires and splices, along with all of their relevant attributes.

TranSACT uses the original logical schematics as a template for device placement. Wiring elements are then placed to reflect physical connectivity. Splice and connector symbols are automatically placed in the appropriate paths. All data regarding wires, splices, connectors, and physical attributes are imported from TransLayout. Since the logical schematic's placement of components and nets is used as a basis of the generation, the resulting schematics have a familiar look to their corresponding logical schematics.

The physical schematics generated by TranSACT can be viewed or edited using TransCable. This allows the schematics' graphics to be comprehensively annotated, if desired. Users can make cosmetic changes to make the schematic more readable or add notes and clarifying graphics and/or comments.



Revision Management

Changes occurring in TransLayout may require updated physical schematics. When TransACT is run to propagate these changes, cosmetic modifications such as notes or graphics introduced in the previous physical schematics are preserved. Prior editing work is not lost.

In addition, TransACT identifies the elements of the design that have changed between the old and new physical schematic, and can report mismatches. This listing can be used for design revision control documentation.

Simulation and Service

In current design processes, physical schematics have been primarily generated manually. This has been time consuming and error prone, adding weeks to the design cycle at several stages. TransACT has been developed to automate the generation of physical schematics. These schematics may be used for design reviews, service manuals, and simulation.

Highlights

- Automates the generation of physical schematics (wiring diagrams)
- Uses logical schematics as constraint preserving component placement for readability and wiring information from TransLayout™
- Can use a previous physical schematic as constraint to propagate electrical changes initiated in TransLayout
- Provides automatic insertion of wiring splices and in-line connector terminal pairs
- Preserves cosmetic changes present in the constraint schematic
- Features "correct by construction" error-proof generation of physical schematics
- Improved productivity by eliminating labor-intensive physical schematic generation
- Improved quality by eliminating manual transcription errors in the physical schematic

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