SaberES Designer
Synopsys Electrical System Design

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Challenges in Electric System Design

- Electronic systems in automotive growing at 10% per year
- More electronics = Optimization of wires and physical connections
- More models served by one platform

- Large number of design options to meet diverse marketing requirements
- Impossible to verify by prototypes, must have automated simulation
- Need to minimize giveaways from over engineering

Wire Harness Design is First and Foremost an Electrical Project

Traditional Approaches

- Electrical Schematics
- 3D Model & Routing
- Merge into System Design
- Buildable Harnesses

• Loose connections mean that merge takes weeks!
• Changes are difficult to keep consistent and don’t get propagated often leaving electrical schematics outdated

SaberES Designer Approach

- System Design
- 3D Model & Routing
- Buildable Harnesses

• No weeks-long merge!
• Changes made in master data are easily propagated through entire flow
Electric System & Harness

Harness purpose: **connect together components** to **distribute power** and **data**
Intuitive user interface with seamless integration between development phases (Logical, Wiring, Harness)

Interface to 3D MCAD Tools

Automated verification
- Automated Test Environment
- Voltage drop testing - simulation vs. calculation
- Time-domain simulation, frequency domain simulation, etc. are an optional add-on
A main *and unique* advantage is the concept of a single design database

Even though portions of the design are in separate schematics/files, they are aware of each other

- For example, you can’t use a resource, such as a connector cavity, which is already consumed elsewhere

Built-in revision control enables global collaboration

Consistency is maintained from the start, not merged or checked at the end; correct-by-construction
SaberES Designer top-down methodology

*Re-use, re-use and re-use!*

- Logical Design
- Wiring Design
- Harness Design
- Outputs

Sub-Systems

3-D MCAD

Vehicle/System Design

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Simulation & verification flow

Validation through the complete process

- Sub-Systems
- Logical Design
- Wiring Design
- Harness Drawing
- Manual Checks
- Simulation and Design Rules
- Build Bundle
- Build Cable
- Package
Validate before implementation

- Functional/Connectivity
- Load Balance
- In-Vehicle Networking
- EMI/EMC
- Sizing & Fault
Automate Your Tests
Rapidly setup and re-use simulation plan & test results
Saber Fault Simulation

Meet ISO26262 safety assessment and validation requirements!

Focus: Hardware and System Level Fault Analysis

- PARAMETER FAULTS
  - OPEN
  - SHORT
  - GROUND
  - STUCK AT
- TIMED FAULTS
- Concurrent Faults

Check Compliance

Reduce costly destructive fault experiments
Improve time-to-compliance
Simulate fault scenarios that could not be tested before
What Separates SaberES Designer?

A platform for design *and* automated verification / simulation

Built-in global collaboration

Option handling

Single-design database and correct-by-construction—fast, accurate releases

Production-proven—designs in production today

Synopsys support & customer experience