**ChannelExpert**

Enabling High-Speed Channel Exploration

Highlights

1 It is challenging for digital system designers to simulate a high-speed SerDes channels. There are many different simulation scenarios to cover ranging from pre-layout/post-layout, frequency-domain/time-domain/statistical analysis, compliance check, to TX/RX optimization.

2 ChannelExpert offers many built-in channel templates to support pre-layout exploration. Parametric S-parameters and transmission line models are supported for easy channel exploration.

3 For post-layout scenario, ChannelExpert can extract the desired channels with or without crosstalk from physical layout with transmission line and 3D via models automatically generated with built-in solvers.

4 Channel Operating Margin (COM) is incorporated in the tool to enable a quick check.

5 Integrated SnpExpert functions in ChannelExpert to automate compliance check for Ethernet, computing, storage, and other standard

High Speed Channel Design in ChannelExpert

- Easy to create channel for both pre-layout and post-layout scenarios.
- Quick to analyze channel in both frequency domain and time domain.
- Automatically generate report from simulation.
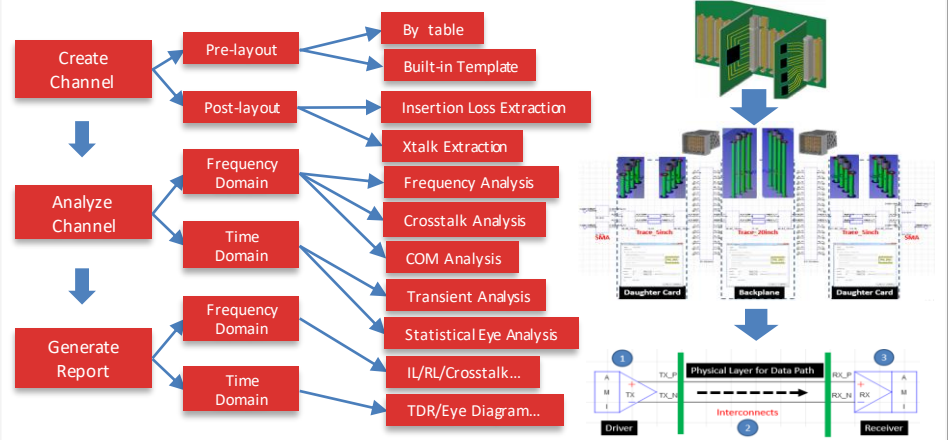
Add Channel from Pre-Layout Flow

- Built-in "Add Channel by Table" to allow easy channel creation by table.
- Built-in "Add Channel by Template" to enable quick channel build for various systems
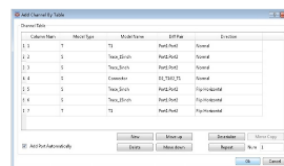
Different types of Component

- Support import and edit S parameter.
- Support create N-trace transmission line(TML).
- Support add Independent Source and Spice model.
- Support add IBIS/IBIS-AMI and Transceiver
- Support add model from Xpeedic tool, such as Via Model.
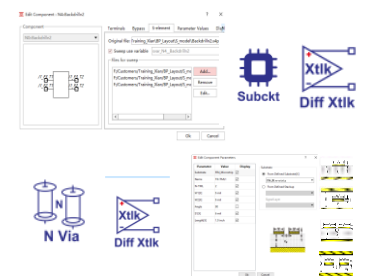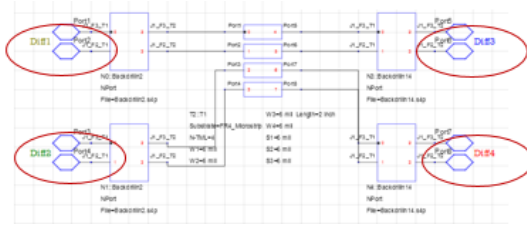
Add Channel from Post-layout Flow

- Support import multiple board to construct channels
- Support fast pin mapping between connectors
- Support auto transmission line and via model creation.
- Quick to generate result with T-line 2D solver and fast cascading method.
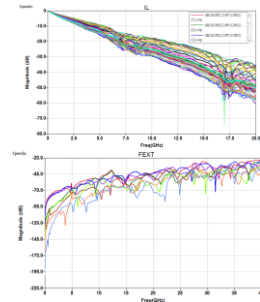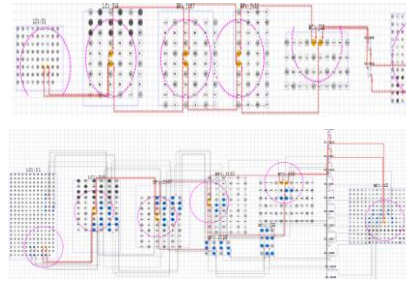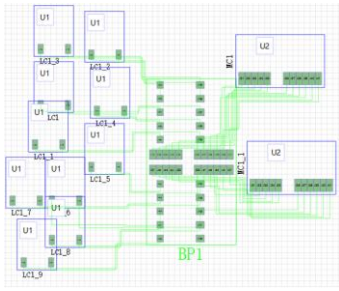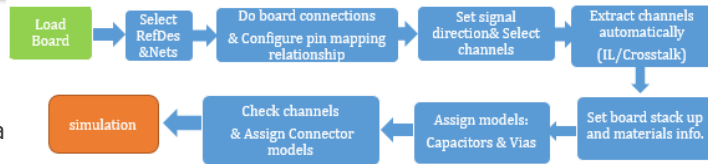
Crosstalk and COM Analysis

- Easy to set crosstalk in schematic.
- Support quick crosstalk and COM Analysis.

Time Domain Analysis

- Easy to plot V/t curve and Eye diagram in transient analysis.
- There are two ways to do statistical analysis:
  1. Using IBIS-AMI model.
  2. Using Ideal Source with equalization, such as Emphasis/FIR in TX and CTLE/FFE/DFE in RX.
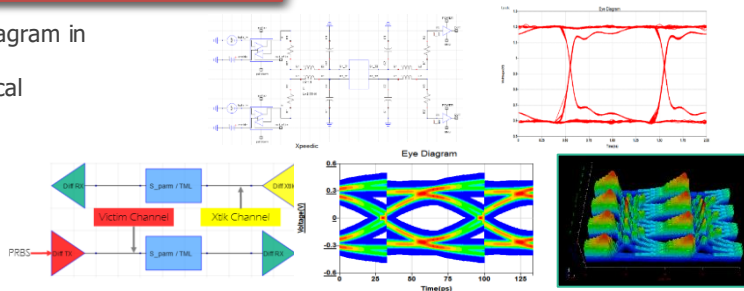
Parametric Sweep and Generate Report

- Sweep S parameter file.
- Sweep Transmission line setting ,such as trace length ,trace spacing, trace width etc.
- Sweep substrate setting.
- Support to generate report for schematic setting and plots from frequency analysis and time domain analysis.