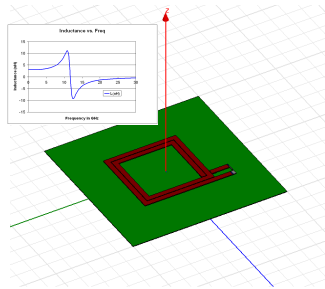


Fidus delivers Signal Integrity (SI), Power Integrity (PI) and Electromagnetic Compatibility (EMC) analysis for on-chip IC (Integrated Circuit) design, Package design, Printed Circuit Board (PCB) and System design. Working closely with our customers, we assess their specific system challenges. From chips and memory testers, to wireless, telecom, High Performance Computing and aerospace applications, Fidus develops solutions for the most demanding SI requirements. Averaging 20 years' experience, our experts are well respected leaders in the Signal Integrity community.

- Layer stack-up and net topology design
- Pre-layout, during layout, and post-route, high-speed signal integrity analysis and simulation for
  - Verifying good signal quality
  - Reducing Signal reflections
  - Increasing Timing margins
  - Reducing Crosstalk
  - Enhancing Power Integrity through cost effective Decoupling design
  - Simultaneous Switching Noise (SSN) reduction, and
  - Reducing conducted and radiated Emissions
- Specific Absorption Rate (SAR) analysis

### Integrated Circuit (IC, or on-chip) Design Analysis

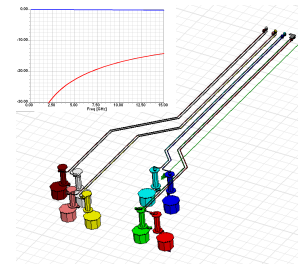
- SSO noise reduction
- IC inductor and transmission-line modelling
- Simulation test bench creation
- DDR2/3 controller characterization and optimization
- Jitter analysis
- Generation of design guidelines, AC characteristics and data sheets



*On-chip inductor for a wireless Integrated Circuit (IC)*

### Package Design

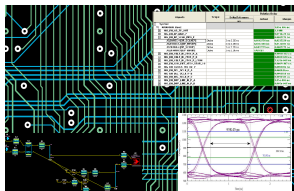
- Package and connector electromagnetic modelling in 3D, leading to equivalent circuits or s - parameters
- Wirebond and flipchip package design with electrical constraints on impedance, cross-talk and delay
- Optimization of interconnects for frequencies up to 12 GHz



*Gbps differential pair package layout*

### Printed Circuit Board (PCB) Analysis

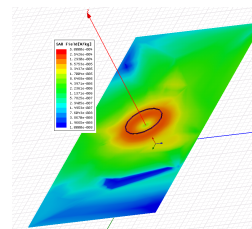
- Printed Circuit Board (PCB)-level modelling and constraint management
- Creation of topology templates and routing guidelines
- Pre- and Post route simulation



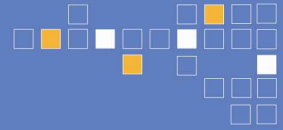
*Printed Circuit Board Signal Integrity (PCBSI)*

### System Design

- Power, grounding, decoupling and filtering analysis
- Multi-board system simulations
- High-speed backplanes
- Multi-Gigabit serial links
- 3D Enclosure modelling for EMI
- Specific Absorption Rate (SAR) computation



*Low frequency SAR in the skin layer due to a loop antenna*



## Project Examples Include:

- 1066 Mbps DDR2, and 1600 Mbps DDR3 Evaluation Platform
- 20 GHz PCB interconnects for ASIC Evaluation Platforms
- 3.125 Gbps and 10G Base-KR Backplane Modelling
- 10/100 Mbps Ethernet, 100 MHz multi-drop SDRAM interface, USB 2.0, HDI, HyperTransport, Infiniband, RapidIO, DDR, DDR2, DDR3, RLDRAM, GigE, XAUI, PCI Express Gen. 2, XLAUI, 10G Base-KR

## Simulation Software Tools:

Fidus maintains licences for:

- Ansoft HFSS
- Ansoft Designer
- Cadence Allegro PCB SI (SPECCTRAQuest)
- Cadence PSPICE
- Synopsys HSPICE
- Mentor graphics HyperLynx

We are also experienced with:

- Cadence Virtuoso
- Cadence Analog Artist
- Cadence Spectre

## Laboratory Facilities:

The Fidus laboratory is equipped with:

- Advantest VNA
- Advantest Spectrum Analyzer
- Agilent Infinium 8 GHz DSA and Tektronix Oscilloscopes
- F Signal Generators

## From targeted consulting to turn-key design, Fidus helps you get your product to market.

- System architecture to board design, circuit simulation, PCB layout, schematics and gerbers
- Component & system characterization, measured or simulated including full S-parameters, gain & noise figure optimization
- Fully documented Design Validation & Functional Testing
- Shield designs for both compliance and sensitive signal preservation.

## About Fidus Systems

Fidus Systems Inc. develops high-speed electronic products for a wide range of industries including aerospace and defence, consumer, industrial, medical, security, semiconductors and telecommunications. Fidus has extensive design experience in turnkey product development and technical knowledge in System Design & Architecture, Wireless/RF, Signal Integrity/EMC, Hardware, PCB Layout, DSP/FPGA/ASIC, Software/Firmware and Mechanical design. As a trusted design partner, Fidus offers companies greater flexibility and capability in their product development with access to the expertise, process and tools to successfully move their products to market. Fidus has delivered on more than 750 products and projects for 180 customers across North America.

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