

Agilent / Mentor RF Design Solution



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Mentor and Agilent

Collaborate for Mixed Technology PCB Design

- The use of RF circuitry on mixed technology PCBs is increasing

The old way.

- Designing with loosely interfaced systems is no longer acceptable:
 - RF design isolated from the digital and analog designers
 - Multiple iterations to resolve interfaces and verify functionality
 - Results in sub-optimal products

The new industry-first RF Design Solution!

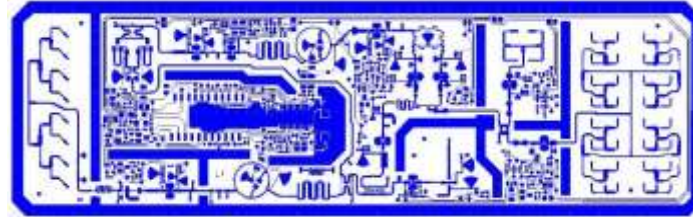
- Mentor/Agilent integrated RF, analog, digital design solution
 - Can reduce design cycle times by up to 50%
 - Optimizes end-product size, performance and quality
 - Improves design team productivity



The Explosion of RF Circuitry

■ Wireless telecom & consumer

- Handhelds
- Base stations
- Computer
- GPS



■ Automotive

- Collision avoidance
- “Auto Pilot”
- Toll collection
- Telematics
- Mobile Internet



■ Transponders

- Grocery checkout
- ID tracking
- Anti-counterfeit



■ Mil/Aero

- Flight and weapons control
- Secure data and voice communication

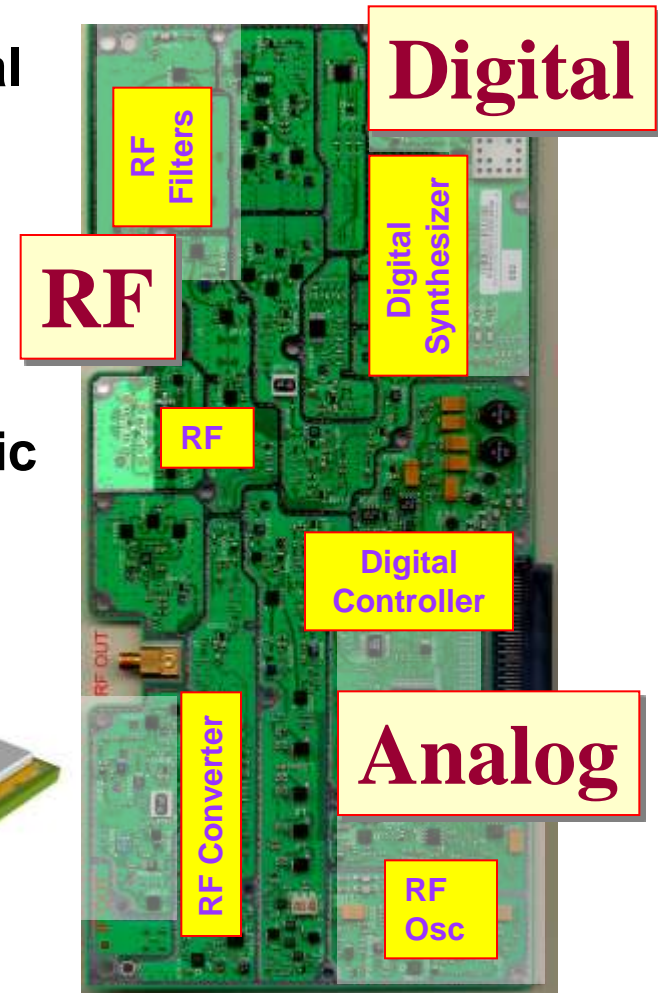


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Trends in Board Design Technology

- More complex multilayer, multifunctional RF boards
- More mixed technology (RF, analog, digital) boards
- Globally dispersed design team specialists
- Continued pressure to meet an electronic company's business needs:
 - Shorter design cycle times
 - Reduced development and end product costs
 - More competitive products



Agilent Spectrum Analyzer Mixed Technology RF PCB

Today's Business Needs Produce Challenges for Mixed Technology RF Boards

■ Time-to-Market

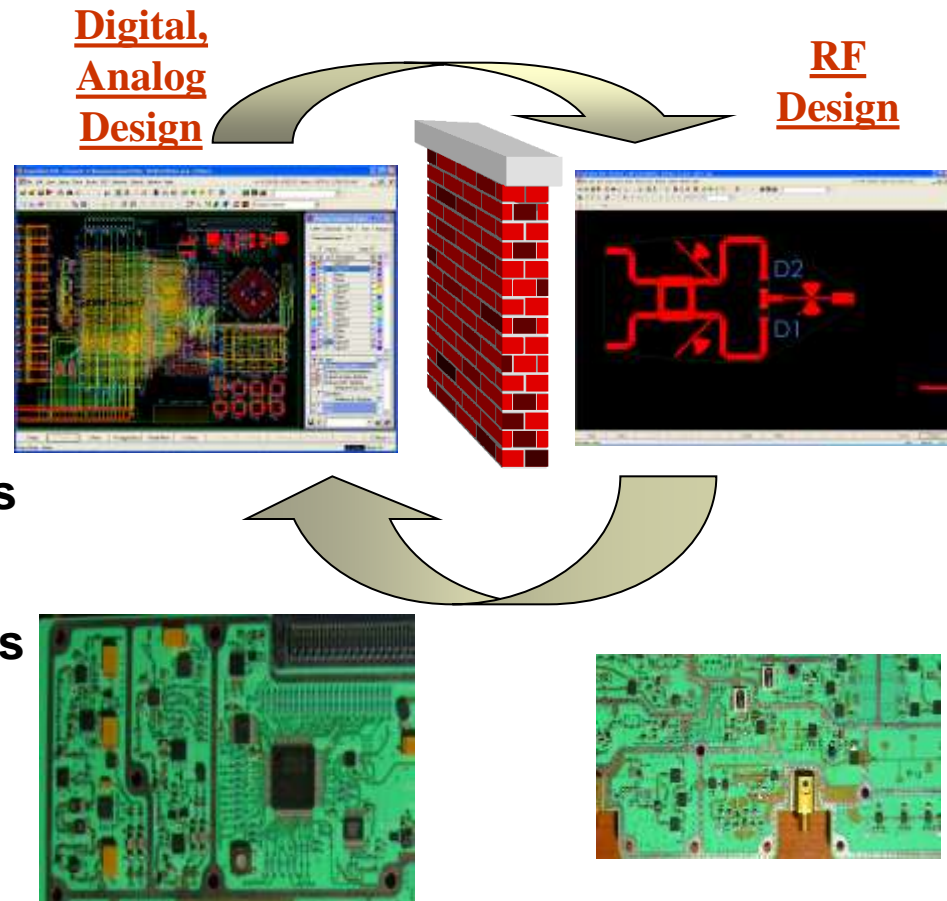
- Isolated design team members causes multiple design iterations
- Serial process versus parallel for mixed technology lengthens design cycle time
- Reduced simulation causes prototyping and PCB re-spins

■ Designer Productivity

- PCB design-to-simulator access is manual and error prone
- Un-synchronized libraries and databases causes duplicate efforts

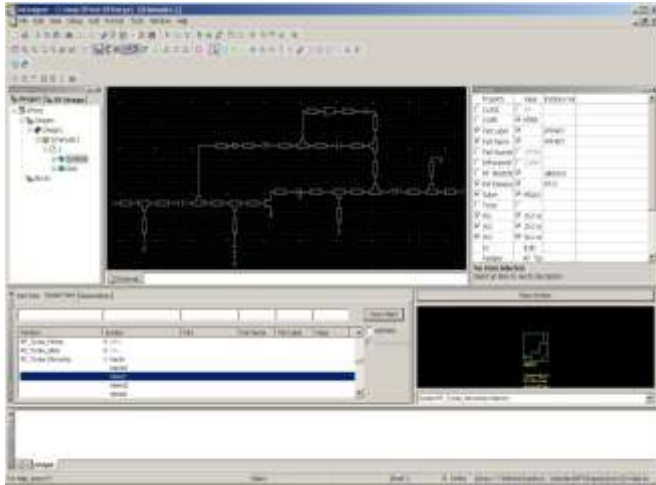
■ Product quality, cost and risk

- Fewer simulations =
 - Lack of component optimization
 - Lower yields in manufacturing
 - Poorer product performance



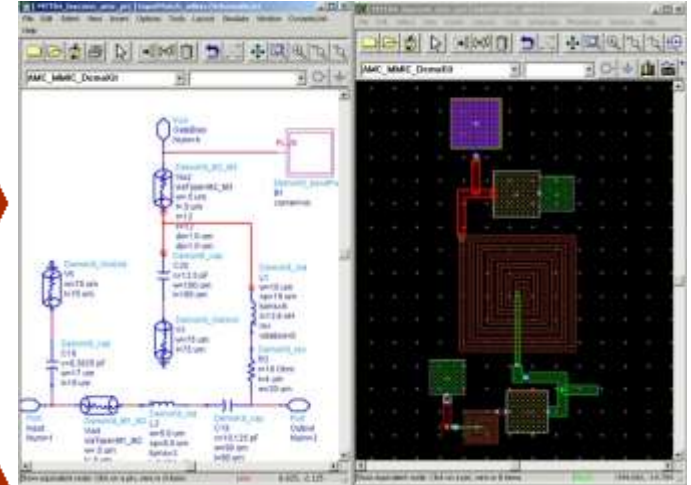
New Mentor / Agilent RF Design Solution for Mixed Technology Boards

Mentor's RF/A/D Schematic & Layout



RF, Analog & Digital Schematic and Layout

Agilent's RF Design & Simulation



RF Schematic, Layout & Simulation

Dynamic Integration

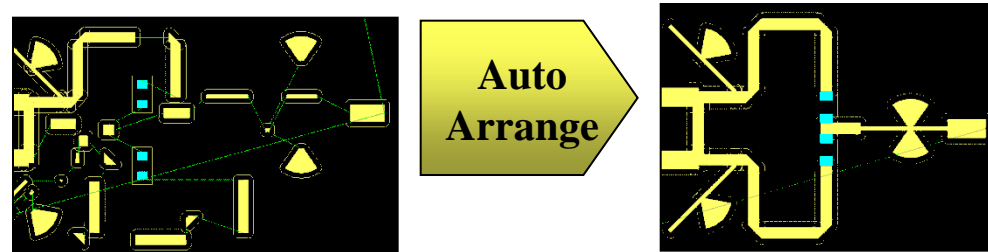
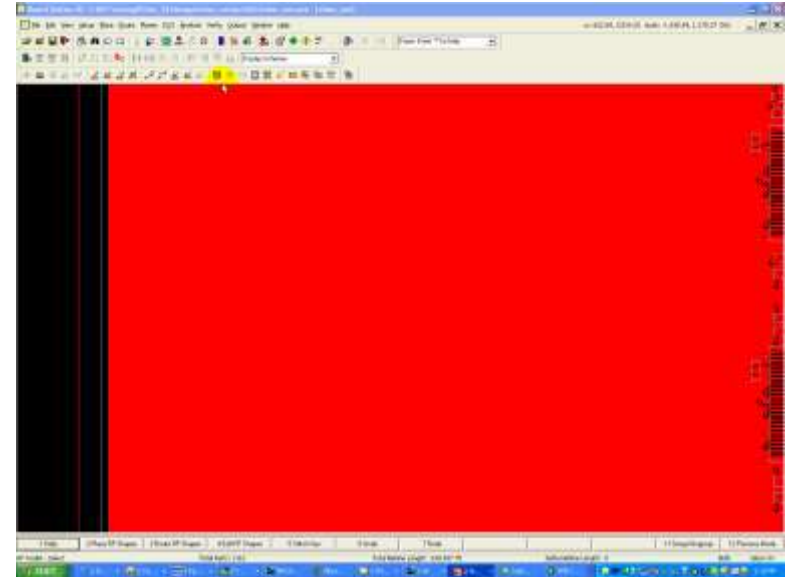
Synchronized Libraries

RF Design in Either System

Expedition RF Benefits

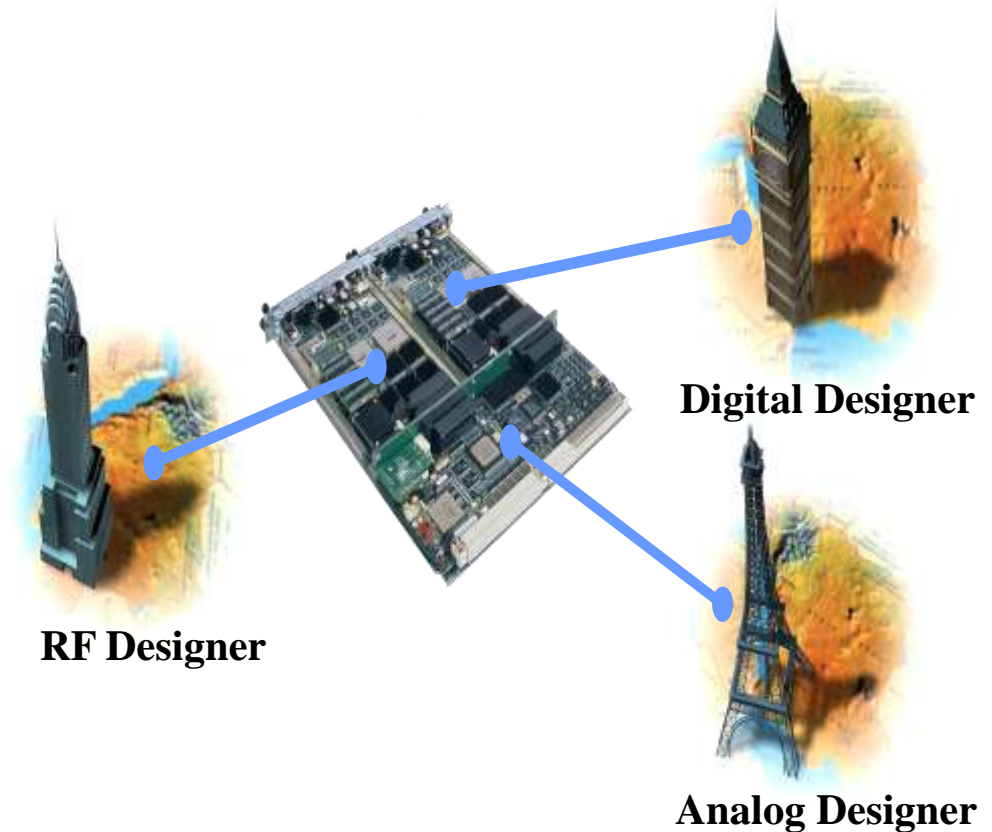
- **Automation provides designer productivity**
 - Parametric driven RF circuit synthesis
 - Meander and shield stitching
 - Schematic drive auto-arrange
 - Digital, analog, RF in common tools

- **Design team collaboration for process efficiency**
 - Schematic to layout
 - Mentor / ADS link
 - Synchronized libraries



RF, Analog, Digital Design Collaboration Leveraging Mentor's Xtreme® Technology

- Simultaneous design on a common database
- Local or globally dispersed on LAN or WAN
- Real time viewing of team members' edits
- Cuts design cycle times by up to 70%

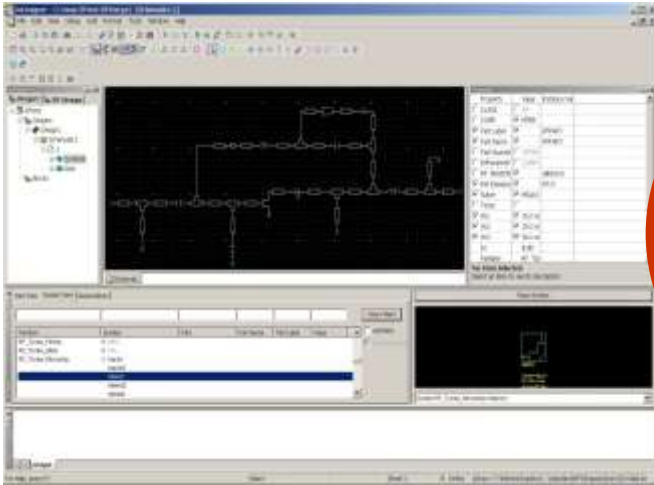


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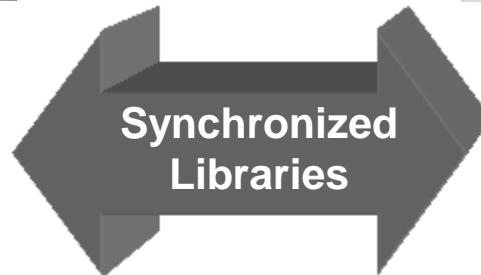
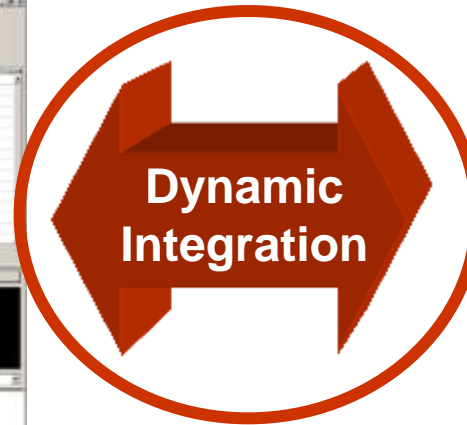
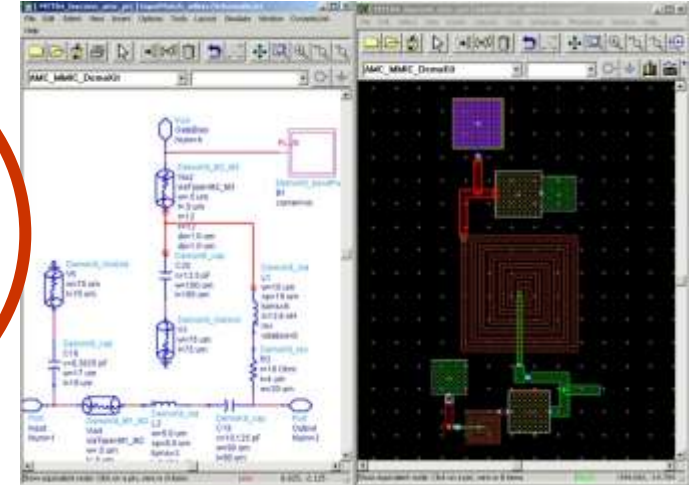
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Dynamic Integration — Why This Is Important

Mentor's RF/A/D Schematic & Layout



Agilent's RF Design & Simulation



RF, Analog, and Digital Schematic and Layout



RF Schematic, Layout and Simulation

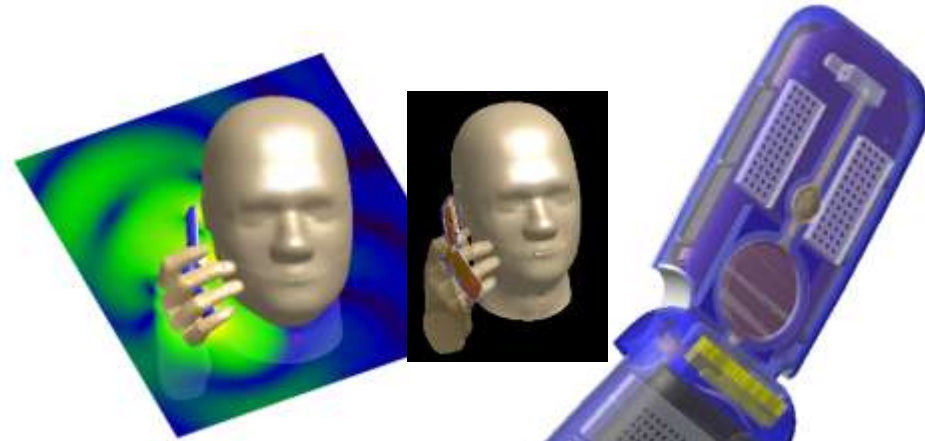
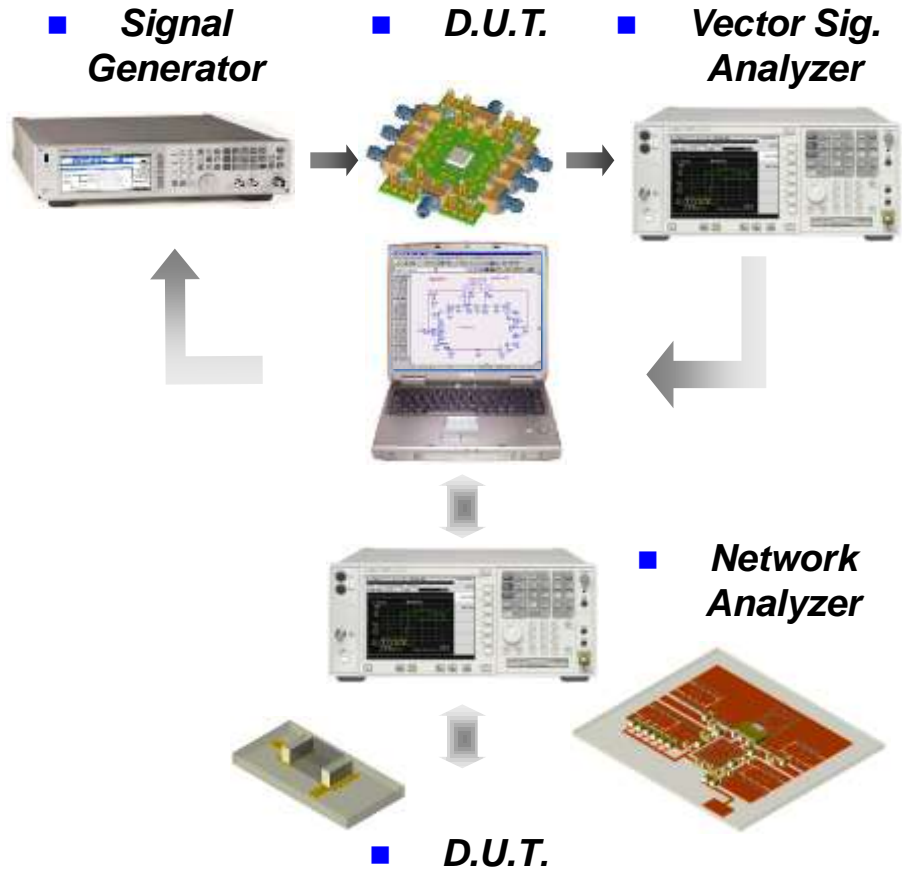


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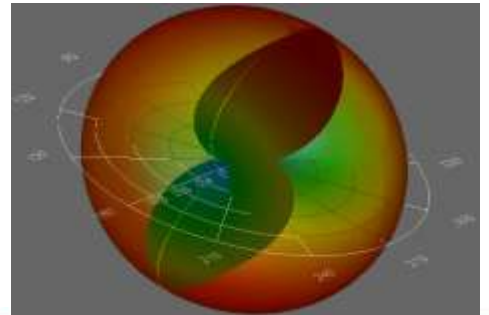


Risk Reduction by Verifying RF PCB Design Against Industry and Wireless Standards

Verify RF PCB design with virtual and real measurements and components



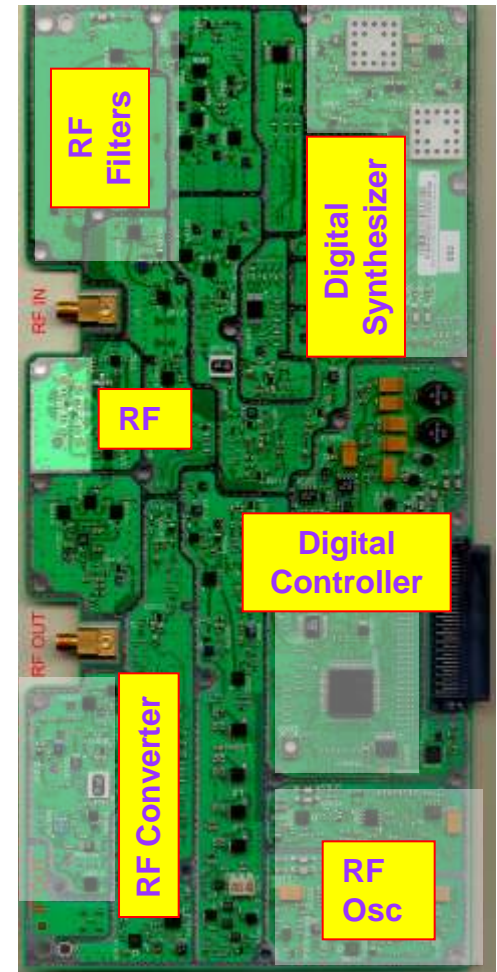
Cell phone radiation into human head verification for safety compliance



Customer Case Study

- ***"We spend 3 months or more in an 8 month development cycle writing custom code to move RF layouts from ADS to Mentor. We also have a dedicated person whose sole role is to accurately move designs from ADS to Mentor."***
- ***"Dynamically linking the ADS with Expedition could easily save 50% of the development time and provide significant cost savings as well."***

Tom Gray
Spectrum Analyzer R&D Engineer
Agilent Technologies, Santa Rosa



Analyst Quote

- ***"The RF design solution for mixed technology PCBs, developed as a cooperative effort between Agilent and Mentor Graphics, directly addresses trends we see in the wireless telecom, automotive, mil/aero and consumer industries. This will enable Agilent and Mentor users to design better products faster and at lower cost. This is a great example of two industry leaders working together to benefit their mutual customers."***

Mary Olsson
Senior Analyst
Gary Smith EDA



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Mentor / Agilent RF Solution Benefits

■ Reduce Time-to-Market

- Dynamic Integration eliminates manual data transfer between Mentor PCB design and Agilent RF simulations
- RF and PCB designed in parallel vs. serial
- Dynamic update to design databases provides error-free RF/PCB production
- “50% fewer prototyping and PCB re-spins” – Agilent Test & Measurement

■ Reduce Product Cost

- Optimize RF design with lower-cost components
- Improve manufacturing yields, time-to-volume
- Reduce over-design margins with more accurate simulation

■ Reduce Risk, Maximize Profit

- Hit optimal market windows with early product introduction
- Reduce lost market opportunities in high-volume consumer wireless electronics





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