Agilent EEsof EDA Design Technology

Agilent Technologies

Innovating the HP Way

Is Your Design Process Making Your Job Harder?

DSP Designer and DSP synthesis from Agilent EEsof EDA provide a digital signal processing design and development solution that quickly moves you from DSP concept to hardware. Quick enough to meet the challenging pace of product development needed to be a leader.

In the communications industry, time-to-market pressures continue to build and silicon density doubles every 18 months. Today's DSP development methodologies are already failing to keep up with this pace. How can your company stay ahead of the competition and turn this challenge into an opportunity? Read on.

DSP Solutions Developed from Experience

It may surprise you to know that Agilent produces millions of ASIC chips every year. These silicon chips are used in everything from computers to communications system measurement equipment. By combining Agilent's years of design experience in both ASIC design and EDA tools with leading DSP design research from the University of California, Berkeley Ptolemy project, Agilent EEsof EDA has developed a clearly superior methodology for DSP communications design.

A New DSP Methodology for a New Millennium

Many existing DSP systems design methodologies share a few fundamental problems. First, there are too many steps and tools required to go from a DSP idea or algorithm down to a DSP ASIC on the test bench. Inefficient design methodology burdens the engineer and wastes precious time that could be spent refining the design rather than fighting the process.

Second, even perfect DSP designs can fail when they are combined with analog or RF parts on the test bench. These costly surprises on the bench usually lead to repeated design cycles that lengthen development time. Agilent EEsof EDA has a unique DSP solution that overcomes these challenges.

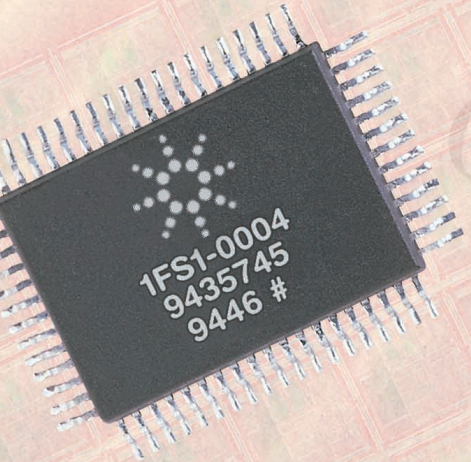
Agilent DSP Designer helps streamline the design process from initial concept to final implementation.

Developing DSP Designs Efficiently

Agilent DSP Designer addresses these two key challenges by streamlining the design flow from idea to hardware. DSP Designer includes the full spectrum of technologies and models needed to design and refine DSP ideas.

DSP Designer provides a behavioral synthesis tool that helps designers move quickly from DSP block diagrams to hardware description language. To avoid those surprise project delays often discovered on the test bench, DSP Designer works with Agilent Advanced Design System's RF and analog development tools so designers can correct mixed signal design integration problems early.

Working without boundaries. Pick the platform of your choice: laptop, PC, or UNIX workstation.



Flexible Design Solutions Speed DSP Creation and Refinement

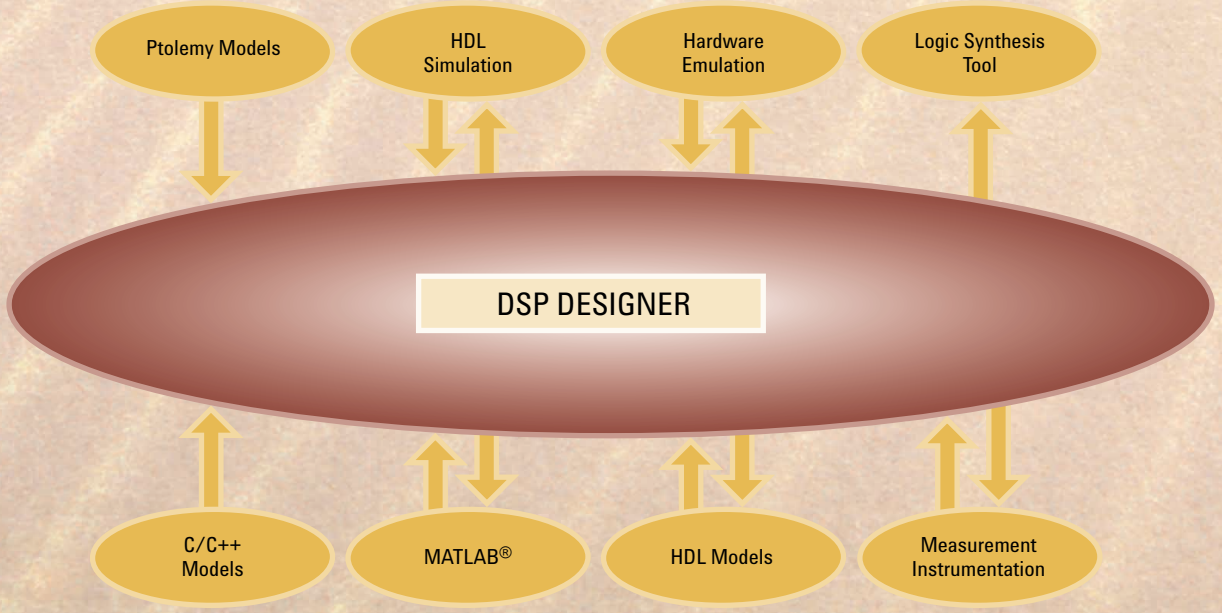
Top-Down Approach for Innovative Design

Advanced Design System facilitates system architecture exploration by co-designing DSP, analog, and RF models at the system level. Once the system architecture is determined, optimum specifications for the DSP portion can be derived and designed in detail.

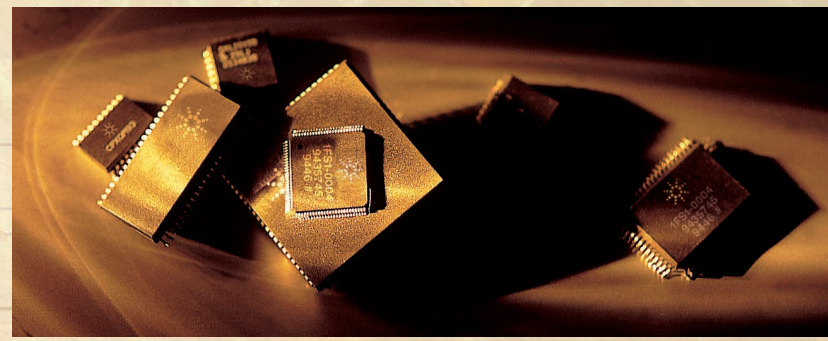
Time constraints often force DSP designers to pick the first algorithm that works and run with it. Unfortunately, this rarely results in the best design possible. With DSP Designer's extensive library of over 1,000 behavioral DSP and communications models, designers save significant time and can afford to explore different ideas to make the best one a reality. Designers also need ways to add digital filters to the design environment quickly. DSP Designer includes an integrated digital filter tool that lets designers quickly generate filter designs based on guidance and specifications.

Working with Your Existing Design Process

Improvements in tools and processes are useful only if they fit into the design processes that your company has created to work best in your business. DSP Designer works with a wide variety of industry standard development and implementation tools. DSP Designer also outputs industry standard hardware description languages that work with your current logic synthesis tools.



Benefit from synergy with third-party tools, measurement instrumentation, and existing intellectual property.



Making the Most of Your Intellectual Property

Intellectual property from previous designs is a key competitive advantage that must be leveraged into complex future designs for ongoing success. DSP Designer speeds the integration of existing intellectual property components and behavioral models into new designs. DSP Designer also includes an intellectual property integration kit that provides a simple user interface for importing various forms of existing designs.

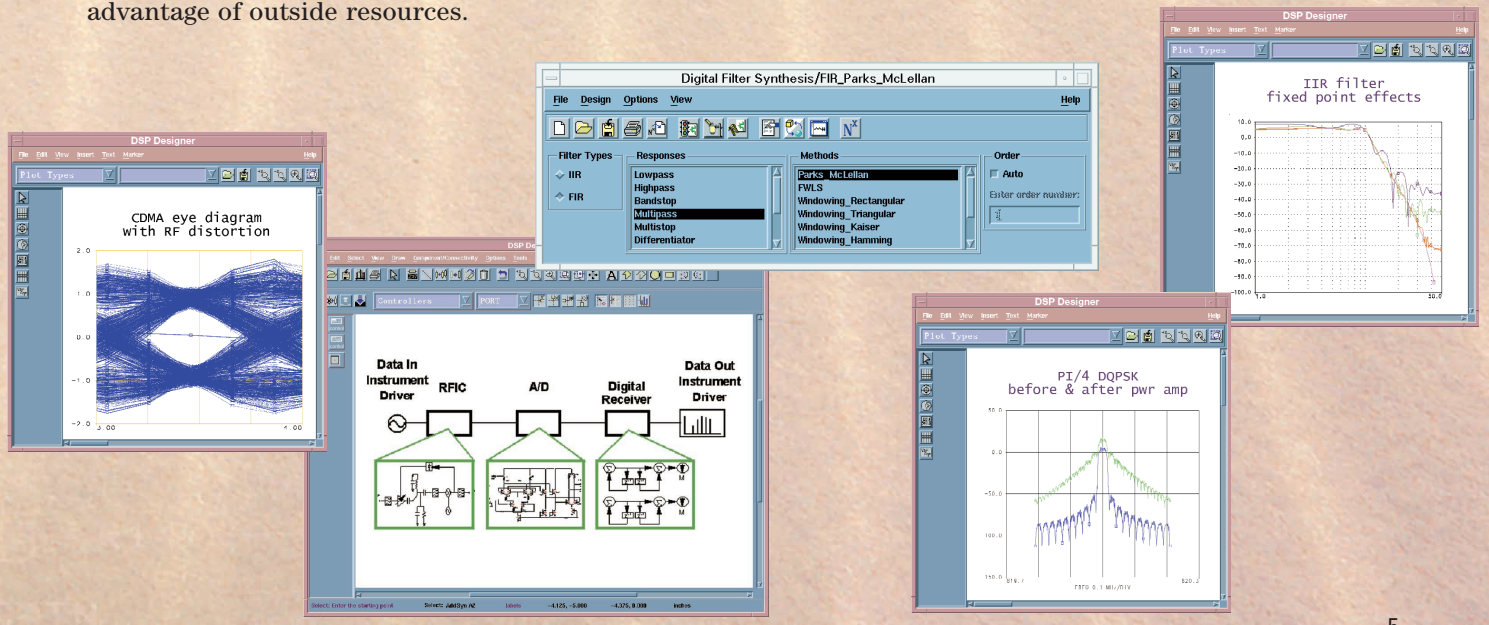
If you have a large volume of intellectual property to integrate but don't want to divert engineers from new product development, Agilent EEsof EDA can help. Our team of engineering consultants can help you leverage past designs so your teams can stay focused on new projects and take advantage of outside resources.

Catching Integration and Test Problems Before They Happen

DSP designs that appear perfect can often fail when integrated with the analog and RF portions of a communications product. As a result, 40% of product development time is often spent on integration and test. DSP Designer offers co-simulation with true RF and analog designs to avoid unexpected performance problems late in the design cycle.

Bringing Reality to Your Design

Sometimes, even co-simulation with true RF and analog design tools is just not enough to avoid unexpected problems. DSP Designer has seamless links to critical measurement instrumentation to help eliminate test bench problems before they happen. Included are links to vector signal analyzers, logic analyzers, spectrum analyzers, oscilloscopes, and RF sources. With the confidence gained from co-simulation and integration of actual measured data, DSP engineers can now implement their designs in hardware by using the DSP synthesis tool.



Agilent DSP Synthesis Takes You to Implementation Faster

Taking High-Level Designs to Hardware

DSP Designer offers powerful capabilities to help both DSP and IC designers significantly improve productivity and reduce development costs. DSP synthesis is an effective tool for optimizing and implementing high-level DSP designs for application specific integrated circuits (ASICs) and field programmable gate arrays (FPGAs). Removing the wall between DSP designers and IC designers facilitates better engineering team integration and promotes a seamless design process for speedy implementation of DSP designs.

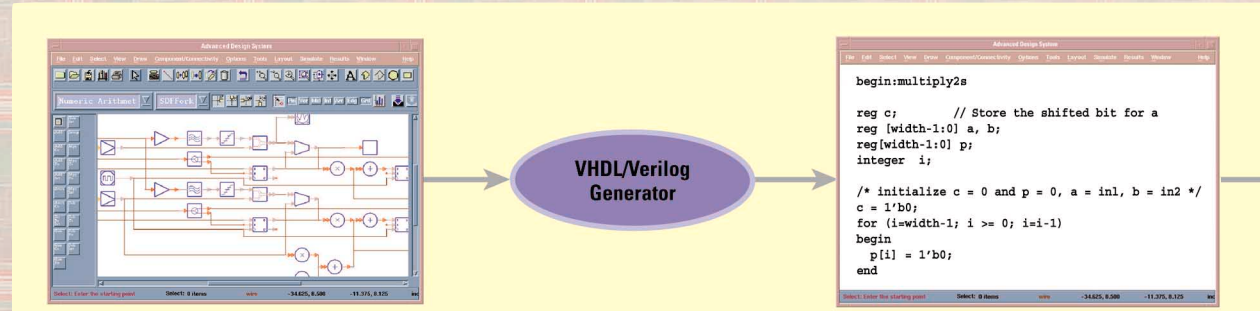
DSP Designer helps engineers develop leading edge designs that meet performance and area requirements at the earliest stages of the development cycle. DSP designers gain efficiency by modifying designs at a high level of abstraction, rather than at the lower, more time-consuming structural level. For IC designers, behavioral synthesis eliminates the need for hand-coding behavioral hardware description language (HDL) and generates optimized register transfer level (RTL) HDL.

Optimizing with State-of-the-Art Technology

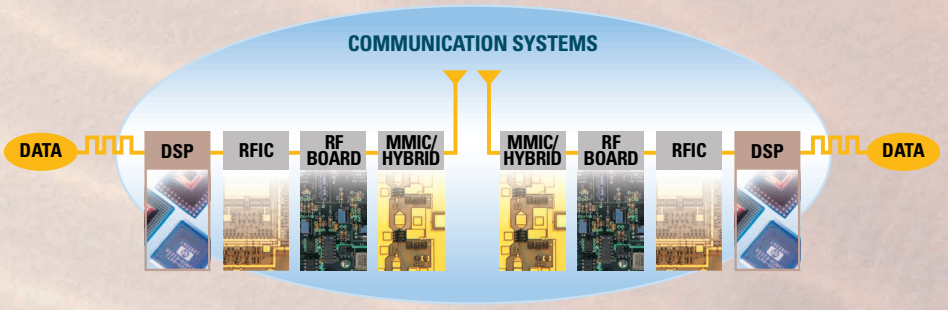
Only Agilent EEsof EDA offers a DSP synthesis tool that outputs VHDL or Verilog, and intelligently "advises" you on the best options when making critical design choices. Unlike other behavioral synthesis tools on the market today, optimization in DSP Designer is neither an all-manual approach (which can be confusing and cumbersome for big designs) nor an all-automatic blackbox approach (which doesn't allow any user interaction).

DSP Designer combines the best of both approaches by allowing designers to actively guide the streamlined optimization process. This optimization process searches for and synthesizes the desired design while letting users provide key input at critical points in the process.

With DSP Designer, system-level concepts are quickly converted into working hardware.



DSP System Design



Agilent DSP Designer is part of the Agilent Advanced Design System, which lets you simulate the entire communications signal path from input bits to output bits—with powerful tools for DSP, RFIC, RF board, MMIC/hybrid, communications systems, and planar EM—all in a single design environment.

Verifying HDL Designs

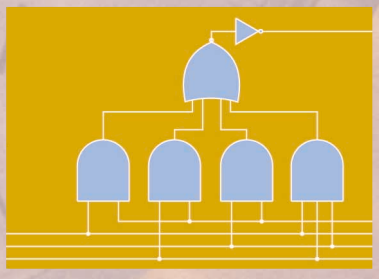
The output from DSP Designer is structural VHDL or Verilog that can be used with the popular Design Compiler™ from Synopsys for logic synthesis. The functionality of the output structural HDL can also be verified with industry-leading VHDL and Verilog simulators from Model Technology.

To facilitate the design verification process, DSP Designer offers a highly-sophisticated comparison tool. It highlights test vector inconsistencies between system-level and structural HDL-level simulations.

Jump-Starting Your Design Methodology

DSP Designer provides a complete, integrated solution for quicker transition from idea to implementation. This helps eliminate design cycle repetitions by doing integration and test early in the design process. If your company needs to keep up with the DSP design challenge, call your local Agilent EEsof EDA representative today.

Validation



Gate-Level Netlist

Product Design Suites

Agilent DSP design solutions combine leading edge simulation and synthesis technologies to provide an efficient path from idea to implementation. These cost-effective solutions are available in both node-locked and network-licensed configurations on PC and UNIX systems.

	UNIX	PC
DSP Designer	—	**E8820A/AN**
Ptolemy Simulator	—	E8823A/AN
Design Environment	—	E8900A/AN
Data Display	—	E8901A/AN
DSP Designer Pro	**E8821A/AN**	**E8821A/AN**
Ptolemy Simulator	E8823A/AN	E8823A/AN
Design Environment	E8900A/AN	E8900A/AN
Data Display	E8901A/AN	E8901A/AN
Digital Filter	E8825A/AN	E8825A/AN
Ptolemy Matrix Models	E8826A/AN	E8826A/AN
Ptolemy Fixed Point	E8822A/AN	E8822A/AN

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