

HDL Designer Series manages design complexity by providing visibility and control over design data and design process.

Major product features:

- A complete solution for creating and managing complex Verilog, VHDL, and mixed-language ASIC and FPGA designs
- Facilitates development across distributed design teams through data management and version control
- Provides a variety of text, tabular, and graphical design creation methods to suit different designers and design tasks
- Makes design reuse practical through rapid understanding and easy deployment of IP
- Accelerates design verification through early static analysis and graphical simulation debug
- Automatically produces graphical, HTML documentation for design reviews, archival and reuse

The Power to Manage the Complexity of Growing Designs

Bigger/deeper design complexity doesn't mean the time-to-market window has become larger — if anything, it's getting shorter. Design teams struggling with today's sophisticated designs must get things done more quickly than ever. The productivity and predictability of traditional HDL methodologies is breaking down under this increased design complexity. Meeting these challenges requires deployment of evolved tools and techniques to ensure a predictable, flexible

design process, rapid design development, practical IP reuse, powerful design analysis and automated design communications.

HDL Designer Series™ from Mentor Graphics is an all-inclusive Verilog and VHDL design environment that improves the productivity of engineering teams working on complex ASIC, FPGA, and SoC designs. Unified design management, creation, reuse, analysis, and communications capabilities give you the power you need to manage the multi-million gate complexity of today's and tomorrow's designs.

A Predictable, Flexible Design Process

Minimize Risk Through Process and Data Management

Complex designs require a team design approach and team design requires rigorous data and process management. Built to support team collaboration, HDL Designer Series eliminates the costs of developing and maintaining a homegrown design environment and lowers the risks of distributed design projects reaching across extended teams. Robust data management and version control mechanisms help avoid costly mistakes and design

iterations, and protects your company's design investment against the impact of staff turnover. HDL Designer Series includes customizable data management and analysis capabilities enabling designers to selectively view, search, organize, and correlate design data — dramatically improving the productivity of each engineer on your team. A flexible environment, HDL Designer Series integrates with the leading version management systems and supports your team's choice of simulation, synthesis, and other design tools.

The Design Manager Provides Complete Design Visibility

Large, complex designs require new design analysis and management techniques. The flexible and powerful Design Manager provides easy design navigation and the ability to search and organize data to aid in understanding design content. Sort, group, and filter your data based on any design unit attribute and instantly view any portion of the design hierarchy.

Tasks Support Repeatable Design Process

The use of Tasks enables predictable, repeatable design flow execution. Tasks allow common operations to be

performed with a single click, saving invaluable design time. Tasks can range from individual “tools” to complex decision-based “flows.” They are designed to serve the needs of designers trying to quickly capture a repeated operation and CAD support specialists responsible for maintaining complete design flows.

Built-in tasks are provided to support all leading industry simulation and synthesis tools.

Rapid Design Development

Mix Text, Tabular and Graphical Editors to Best Satisfy Varying Design Requirements

Design creation methodology must keep pace with larger, block-based designs. HDL Designer Series offers teams a choice of data entry mechanisms to match both individual preferences and specific design roles. The powerful DesignPad design-aware text editor and the unique Interface-Based Design™ (IBD™) connectivity table editor offer the fastest design iteration for experienced designers. These choices along with the configurable State Machine, Block Diagram, Flow Chart

and Truth Table editors ensure that your team is the most efficient at each point in the design process.

Accelerated HDL Code Entry

DesignPad is a design-aware, fully customizable HDL code editor. DesignPad's power lies in its inherent understanding of HDL design. A code browser lets designers rapidly navigate HDL code and provides immediate access to any code blocks. DesignPad lets designers easily cross-reference error/warning messages and a powerful file comparison feature highlights differences and lets designers selectively apply changes to either file.

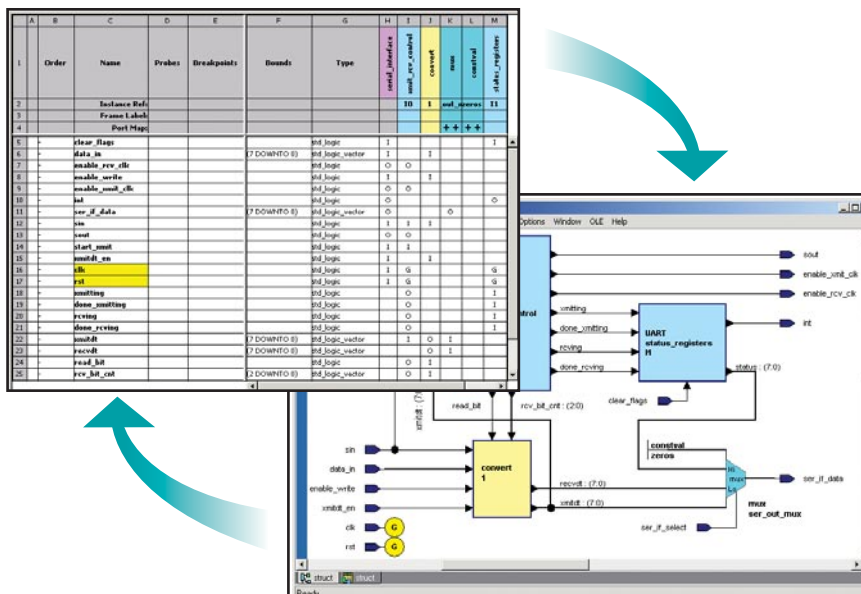
Verilog and VHDL templates are included for faster and more accurate HDL entry. Speed-enhancing features include multi-tab, multi-window editing, drag-and-drop component instantiation and use of the ModuleWare parameterized generator library.

Interfaced-Based Design Methodology Rapidly Defines Design Structure

The Interface-Based Design editor is a unique tabular design methodology for rapidly editing structural HDL for large and complex designs. It allows you to rapidly describe design hierarchy and interfaces for blocks, reusable components, IP, and interconnects between design units. IBD works equally well as a standalone editor or as a complement to the Block Diagram editor with changes in either view instantly reflected in the other.

Intuitive Graphical Editors

HDL Designer Series includes Block Diagram, State Machine, Flow Chart, Truth Table and Tabular I/O editors for creating a design and, simultaneously, its corresponding documentation. Use of these graphical editors ensures a consistent coding style; further facilitating design reuse and maintenance. These editors use an intuitive, graphical



Interface-Based Design™ tables support compact structural HDL descriptions and can be instantly viewed as equivalent Block Diagrams.

methodology that is ideally suited to designers migrating to HDL methodologies or switching their primary design language, making them quickly productive.

Flexible ModuleWare Logic Generator

Flexible and easy to use, HDL Designer Series ModuleWare generates silicon-vendor-independent logic for a variety of common logic functions. Each function's parameters can be quickly tailored to fit your particular design problem. ModuleWare components are available for easy drag-and-drop into all three of the structural design editors: DesignPad, IBD and Block Diagram. Most importantly, the code generated from ModuleWare is optimized for synthesis so you know you are always getting the most efficient implementation.

Practical IP and Design Reuse

45–50 percent of today's designs include IP reuse with 90 percent predicted by 2005*. Design teams simply cannot complete large projects on time without the efficiency gained from reusing existing designs as building blocks. However, some of this efficiency is lost if you are spending valuable design time unraveling IP in order to verify it's completeness and accuracy. HDL Designer Series enables rapid understanding and deployment of IP and reusable design blocks, freeing up more time for creating new design blocks.

Understanding Design Structure and Behavior

In many cases purchased IP and company-internal reusable design blocks are not packaged or documented well enough for easy use. With HDL Designer Series you can immediately see how the design hierarchy is structured and verify that all the neces-

sary files are included. Using IBD, Block Diagrams, and DesignPad it's easy to see how all of the blocks are connected. For leaf-level blocks, State Machine Diagrams and Flow Charts can be rendered as needed to better explore design intent. Finally, live probes and animation can be applied during simulation for deeper understanding of design behavior.

Deploying IP Across Your Teams

The concept of a design library is inherent in HDL Designer Series. Libraries can include corporate-standard IP, a single team's reusable blocks or the personal library of an individual engineer. Libraries combined with version control provide the infrastructure to support effective IP deployment. A convenient component browser offers drag-and-drop access to all IP components for easy inclusion into designs in progress.

Powerful Design Analysis

Early Design Analysis Cuts Verification Time

The earlier a design problem is discovered, the faster and easier it is to fix. HDL Designer Series delivers predictable, scalable performance with fast hierarchy traversal and short incremental compile times. HDL Designer Series automatically extracts hierarchy

and logical design units whose attributes can be quickly analyzed. Logical content is analyzed down to the leaf level, with hierarchy for any block available for display on demand. HDL code is parsed dynamically with syntax errors highlighted for easy identification.

Active Design Visualization Enhances Simulation Debugging

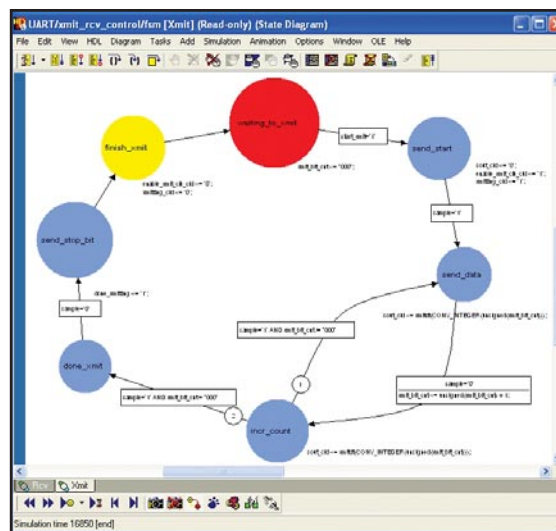
HDL Designer Series works with HDL simulators including Mentor Graphics ModelSim® and Cadence's® NC-Sim® to enhance their design analysis capabilities through graphical and tabular design views interacting during live simulation. From any diagram window, simulations can be fully executed and controlled. Enhanced debugging features include graphical breakpoints, signal probing, graphics-to-text source cross-highlighting, animation, and cause analysis. The ability to overlay live simulation results in graphical context, speeding the debug process by allowing faster problem discovery and design iteration.

Automated Design Communications

Spend Less Time Documenting and More Time Designing

Complex designs, by their nature, are more difficult to communicate and bigger designs require more design reviews. More and more often design groups are now distributed, either geographically or across company boundaries. To meet these challenges, communication of design data needs to be made as easy as possible.

State machine animation provides instant verification of state coverage.

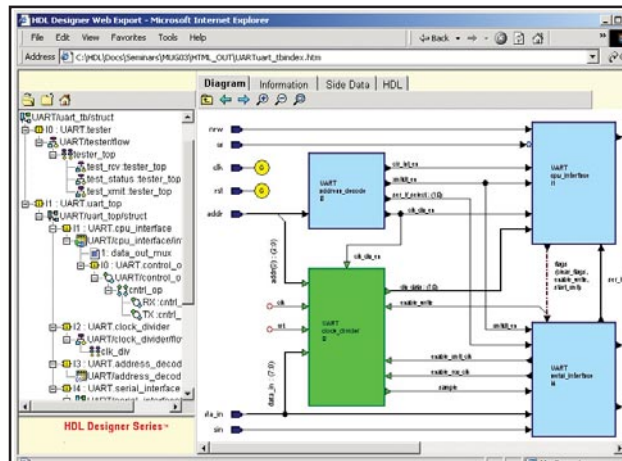


Generate Accurate Diagrams from HDL Code

A picture is still worth a thousand words and that's why most engineers create graphical diagrams as part of their design documentation. The process of updating these diagrams by hand as the HDL code evolves is both time-consuming and error-prone. HDL Designer Series solves this problem by automatically generating diagrams on demand from HDL code in Block Diagram, IBD, State Machine, and Flow Chart formats. When the code changes, the diagram can be updated instantly and its accuracy is ensured. This can add up to tremendous timesavings over the course of several design reviews. And since it's easy to do, the frequency and accuracy of communications improve, making the design team more effective.

Automated Design Documentation Publishing

Built to support team collaboration, HDL Designer Series includes advanced HTML export documentation, enabling global design teams to securely share and publish designs for design reviews and later reuse. Designers can share information with customers and part-



HTML publishing produces a complete design website including all HDL code, graphical views, and traversable hierarchy for design reviews, lifecycle maintenance, and design reuse.

ners, while controlling how much data is visible to shield proprietary or incomplete code. In addition to the HDL code and diagrams, the exported HTML design website can also include any other associated design data, including synthesis scripts and simulation results files.

The Sure Choice for Complex Designs

HDL Designer Series is a complete design development and management solution with the performance and capacity necessary to manage, analyze and document designs of 50 Million gates and beyond. Your choice of text,

tabular, and graphical editors offer simple-to-sophisticated design creation features that automatically generate high-quality, well-structured HDL for any level of design complexity. HDL visualization and analysis along with comprehensive documentation and communication features deliver the efficiency you need. With HDL Designer Series you can fully leverage existing IP, find economies that you didn't know existed, reduce

time-to-market, and cut development costs company-wide.

HDL Designer Series Products

HDL Designer Series is available in four different product configurations to match your team's needs. *HDL Designer* includes the entire set of capabilities, *HDL Author* is focused on design development analysis, *HDL Detective* includes design reuse and communications, and finally *Debug Detective* is a special package of enhanced graphical and tabular simulation enhancements for ModelSim users.

*Source: Gartner Dataquest

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