

InterComm™

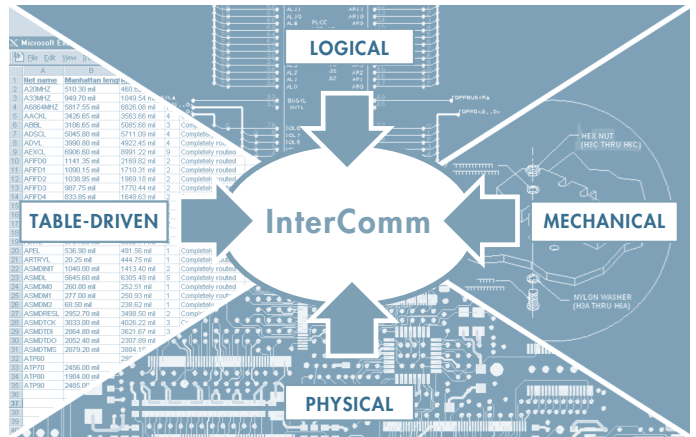
Accelerating Interactive Electronic Design Collaboration

InterComm is a production-proven suite of electronic design collaboration solutions to enable enterprise-wide visualization, design verification, and collaboration of electronic design content. InterComm provide simple access to complex CAE/ECAD design data created in leading electronic design automation (EDA) tools. By improving collaboration between departments, customers can eliminate a design spin through higher quality prototypes.

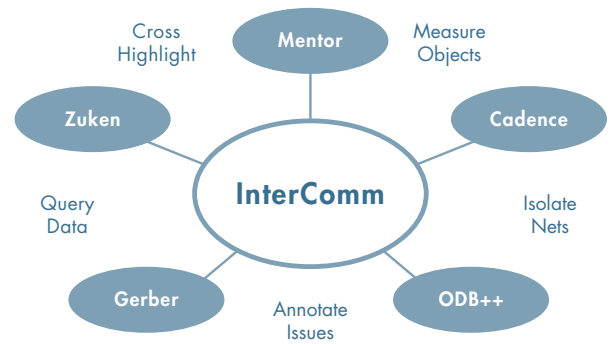
The InterComm ECAD browser is a powerful, yet easy-to-use solution for enterprise-wide sharing, reviewing, annotating, and verification of electronic design intent. InterComm gives engineers, manufacturers, test technicians and their suppliers controlled access to design data created in leading EDA tools, including those provided by Cadence Design Systems, Mentor Graphics, Zuken, and other EDA vendors. Much more than just a viewer, InterComm enables non-EDA users to interactively de-bug and verify the design intent of schematic and PCB designs directly from their desktops, without requiring an expensive and hard-to-use native EDA license.

By providing both visual and programmatic access to fully intelligent electronic design data, the design intent can be more quickly verified between engineering, design, fabrication, test, and assembly departments. Users can easily interact with fully intelligent EDA design data, including complete data browsing, querying, verifying, markup, and communication of design issues and ideas on the component library, logical schematic, physical printed circuit board (PCB), and bill-of-materials.

InterComm, is successfully deployed at hundreds of small, medium, and Fortune 500 electronics companies around the world as the preferred method for design verification and troubleshooting.



Bringing together multiple domains of product design.



Easily collaborate on design data from multiple EDA vendors.

InterComm Expert 5.1

InterComm Expert enables users to easily interact with electronic design information directly from their desktops, without requiring the native EDA tool. Users are able to:

- Browse the information contained in the schematic CAE or PCB CAD databases for library, schematic, PCB, and bill-of-materials data
- Query intelligent ECAD design data and verify design intent
- Follow nets across the schematic by pin function, and trace receivers back to drivers to identify the source of a bad signal
- Communicate changes, ideas, or redline data back to the EDA user electronically

InterComm Expert Product Capabilities

- Query, measure and highlight detailed placement, net and component data
- Cross-highlight between the schematic, layout and bill-of-materials
- Redline mark-up in any language worldwide and communicate with internal and OEM engineers
- Create custom applications using the API to improve the internal process

Benefits Experienced by InterComm Customers

- Increased design team communication time by 55%
- Eliminated one design spin per board—savings can be weeks or months
- Reduced overall design cycle time by 30 - 35%
- Reduced tooling costs by 25%
- Improved design and manufacturing team capacity by 22%
- Improved internal and supply chain communication with dispersed engineering, test, and manufacturing teams
- Realized a 65% productivity gain in board test alone
- Improved design integrity (right the first time) with fewer design spins
- Discovered test and repair anomalies in-process rather than later in the process
- Reduced design review time from days to hours

Sample InterComm Customers

COMPUTER

- Dell
- Intel
- EMC
- Storage Computers
- Unisys
- HP
- IBM

CELL PHONE MAKERS

- Siemens
- Ericsson
- Panasonic
- Samsung

TELECOM

- Lucent
- Nokia
- Ericsson

AUTOMOTIVE

- Visteon
- Motorola ACES

NETWORK ELECTRONICS

- Cisco Systems
- Nortel Networks
- Ellacoya Networks
- Ciena
- Sonus Networks
- Spring Tide Networks

CONSUMER ELECTRONICS

- Bose
- Thomson Multimedia
- Xerox

AEROSPACE/DEFENSE

- Lockheed Martin
- Loral Space
- Harris Corporation
- Rockwell
- BAE Systems
- Raytheon
- General Dynamics
- Harris Semiconductor

InterComm EDA Partnerships



InterComm PLM Partnerships



InterComm Expert 5.1 Enhancements

- Overlay manipulation
- Gerber D codes list and cursor tips
- Access options dialog box without loading the design
- Right click menu
- UI for custom API commands
- Classes
- Snapshot command (bitmap cut/paste buffer – e-mail)
- Expanded isolate
- Engineering build notification
- File source tracing
- Default options/colors and save/restore
- Set sub-layer colors by layer
- Improved logical links and connectivity
- Stop redraw command
- Highlight print in color
- Dynamic pan by cursor

API Toolkit – Data Mining Without Use of the Native EDA Tools

InterComm Expert's API Toolkit allows our customers to data-mine both the parametric and graphical design data of the fully intelligent database captured in InterComm without the use of the native EDA tools. Our customers use the API toolkit to customize reports to support the verification and documentation of ECAD designs. Example reports include:

- Compare design BOM with an external BOM report
- Generate custom Net Length report
- Generate custom Netlist report
- Generate testability report
- Find components by Ref Des
- Create user-definable design rule checks
- Add user-defined property
- Communicate a design summary
- Highlight all #1 pins, components, and nets

API Toolkit Capabilities

- Included with InterComm Expert
- Unrestricted data mining for all design objects, including their attributes and properties

- Standardized API calls regardless of the native EDA tools
- Accessible via all major programming languages such as C, C++, Java, Visual Basic, etc.
- Can be used from within InterComm – custom interactive commands and reports, as well as programming links to other processes
- Can be used from outside of InterComm with graphics as a slave process
- Can be used from outside of InterComm without graphics for pure data mining
- Fully documented with an interactive debugging tool

API Toolkit Customer Benefits

- Extracts data from the EDAfiles instead of pre-processing data from the native EDA tools
- Optimizes programming resources in custom-developed data mining
- Minimizes enterprise-wide dependency on the specific EDA toolset
- Minimizes use of EDA tool licenses outside of the design departments
- Improves user efficiency by adapting InterComm's UI to specific tasks

EDAfile – Normalized Representation of the EDA Data

EDAfile is a powerful and enabling alternative to a multiplicity of incompatible EDA file formats and data representations. An EDAfile is a single binary file that replaces directory and file complexity of the native EDA data containers, enabling enterprise-wide distribution outside of the EDA tool environment.

EDAfile Capabilities

- Significantly smaller (5x-10x) than the original EDA data container
- Very fast load into InterComm
- Password protection against unauthorized use
- Date expiration for planned obsolescence
- Source and owner information for traceability
- Interactive Disclaimer dialog box for enforcement and clarification of the intended use

EDAfile Customer Benefits

- Normalized data distribution format for all EDA databases
- Minimized storage requirements during collaboration
- Full protection against unauthorized use of data

- Optimized for fast processing by InterComm

EDAconduit™ – Connecting EDA Authors with the Extended Product Team

EDAconduit eliminates manual steps with a fully automated, bi-directional link between native EDA systems and InterComm. EDAconduit automates the EDAfile generation process from within the EDAtools or as a batch process. It enables the exchange of InterComm redline markups back into the authoring ECAD layout and schematic tools (back-annotation). EDAconduit also enables direct cross-highlighting of equivalent design data between EDA data in InterComm and the native Schematic capture and PCB layout authoring tools.

EDAconduit improves collaboration by allowing PCB designers to use their native EDA tools in conjunction with InterComm, and by allowing hardware engineers to access the PCB design information in InterComm relative to their CAE authoring tools.

The benefit of EDAconduit is that it eliminates manual file extraction steps, thus reducing the opportunity for manual review errors, and ensures that collaboration information is quickly and seamlessly shared both upstream and downstream in the process.

EDAconduit Product Capabilities

- Interactive (menu) and batch (command line) generation of EDAfile(s) out of EDA tools (schematic capture and PCB layout)
- Back-annotation of InterComm markups (bookmark files) to the native EDA tools
- Cross-highlight of equivalent design data between InterComm and native EDA tools
- Consistent look-and-feel across all EDA tools

EDAconduit Customer Benefits

- Automates enterprise-wide deployment of EDA design data
- Enables PCB designers to use their EDA tools to collaborate with InterComm users
- Enables hardware engineers to access PCB CAD information relative to their EDA tool
- Improves the flow of EDA design data between EDA authors and non-authors

PLM Open Interoperability

InterComm is integrated with many of the most popular commercial PLM systems. This integration delivers a controlled environment for distributing and accessing EDA design data between globally dispersed teams.

By integrating InterComm with PLM environments, companies can manage EDA design data and work concurrently with the entire design chain across the extended enterprise. Potential improvements in terms of both the time and cost of electronic design can be achieved for

processes such as work-in-process design review, cross-discipline collaborative product development, and controlled change management.

Planned Futures – EDACompare™

EDACompare is a major new technology initiative for the PCB design industry. This soon-to-be-released product allows the comparing of two PCB design revisions in any combination of the three basic board design abstractions: Schematic, Layout, and Gerber. It analyzes and reports parametric as well as geometric differences, codifies results in XML-encoded structures, and provides platform-independent Web browser-based functionality to navigate the results. The EDACompare analysis is based on and builds on the strengths of the EDAfile format.

- PCB-to-PCB compare
- Schematic-to-Schematic compare
- BOM-to-BOM compare
- Netlist-to-Netlist compare
- Gerber-to-Gerber compare
- All combinations of the above mentioned compares

For More Information

There are a number of key sources for additional information on the InterComm website available at:

<http://www.ptc.com/products/intercomm>

- InterComm Video Demonstration
- InterComm Video Gallery – provides short (3 minute) video clips of key functionality areas as well as detailed online training lab for how to use special and advanced features

To download InterComm for evaluation, please connect to the link below and follow the simple instructions. We will provide open access to our InterComm licenses for you to conduct a formal evaluation.

<http://www.intercommcommunity.com/asp2/request.asp>

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