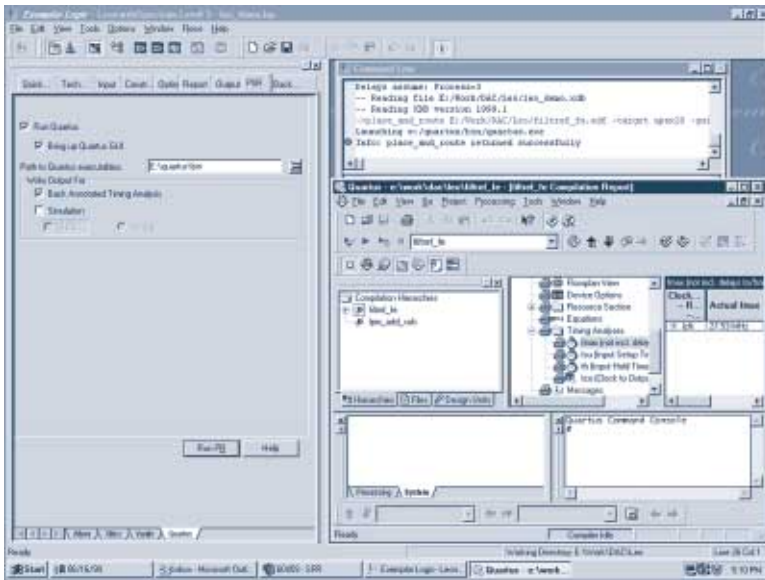


# Quartus NativeLink Integration with Exemplar Logic LeonardoSpectrum Software

*Truly Seamless Integration to Enhance Design Flow for Multi-Million-Gate Devices*



LeonardoSpectrum software can be set up to launch the Quartus software and display Quartus messages.

## Design Methodology Evolution

- Increasing design densities have driven designers to rely on best-of-class point tools to support designs.
- Many EDA tools do not allow designers to take advantage of other tools' functional strengths at various stages of the design flow.
- EDA tools need to be designed for greater compatibility and integration.
- Verification is a complex task that can be simplified with cross-probing between tools for debugging purposes.

A truly seamless design flow for creating System-on-a-Programmable-Chip™ solutions is available with the Altera® Quartus™ and Exemplar Logic LeonardoSpectrum software. The Quartus software offers NativeLink™ integration for increased designer productivity and highest quality results for Altera APEX™ devices. The Exemplar LeonardoSpectrum software performs direct mapping to APEX logic elements and has direct access to Quartus pre-place-and-route timing estimates to optimize synthesis strategies, which creates an efficient design flow.

## Improved Device Performance & Resource Utilization

The LeonardoSpectrum software has an unprecedented level of control over the final mapping of APEX designs. NativeLink integration with the Quartus software allows the LeonardoSpectrum software to directly map designs to APEX logic elements. It is not necessary to re-synthesize the design for place-and-route in the Quartus software.

## Debugging HDL Code via Cross-Probing

The LeonardoSpectrum and Quartus software provide cross-probing capabilities between both pre- and post-synthesis source code for debugging purposes. Cross-probing support that links back to the LeonardoSpectrum HDL source file is available from the Quartus Node Finder, compilation messages, and hierarchy view of the Project Navigator.

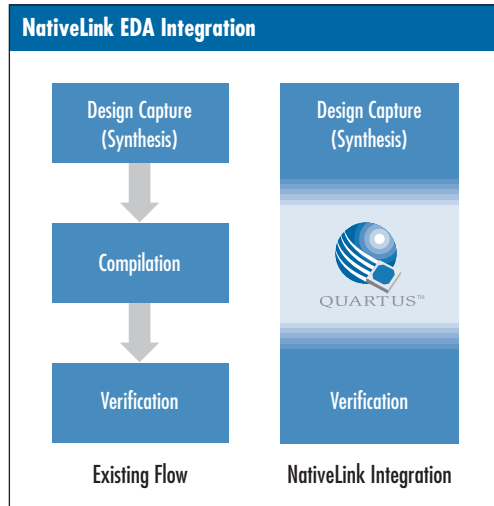
## Communication between Tools

NativeLink integration allows Quartus and the LeonardoSpectrum software to pass project information between the two applications. Each tool displays processing messages from the other tool.

## Open Application Programming Interface (API)

Altera opened the Quartus API to allow Exemplar to provide excellent levels of integration with the LeonardoSpectrum software. This integration includes the ability to launch the Quartus software from within the LeonardoSpectrum software.





After the Quartus compilation is complete, the LeonardoSpectrum software can back-annotate post-place-and-route area and timing estimates to quickly evaluate results and further optimize the design.

The Quartus software also has the ability to launch the LeonardoSpectrum software. Designers can start a project using the Quartus software, and then select the LeonardoSpectrum software to perform logic synthesis on the design. During project compilation, the Quartus software launches the LeonardoSpectrum software and displays all Exemplar messages within the Quartus project window.

### Quartus Development System

The Quartus software allows designers to process multi-million-gate designs with advancements never before seen in program-

mable logic device (PLD) development tools. These advances—including incremental compilation, workgroup computing, and multi-processor support—shorten the design cycle by streamlining the design flow and increasing productivity.

In addition to NativeLink integration, the Quartus software offers SignalTap™ logic analysis, which allows engineers to verify chip functionality and timing by observing internal and I/O signal values at system clock speeds. The Quartus software is also web-aware, allowing designers with Internet access to connect directly to Altera's web site for immediate solutions, hints, and workarounds to issues they may face during the design cycle. Customers can submit service requests directly to Altera Applications and monitor their progress via the Internet while using the Quartus software.

### LeonardoSpectrum Software

LeonardoSpectrum version 1999.1d supports APEX devices and NativeLink integration with the Quartus software. The LeonardoSpectrum software runs on both Windows and UNIX workstations. The LeonardoSpectrum software is not included in the Quartus software package. For more information, please visit the Exemplar web site at <http://www.exemplar.com>.

### Altera Offices

Corporate Headquarters  
Altera Corporation  
101 Innovation Drive  
San Jose, CA 95134  
Telephone: (408) 544 7000  
<http://www.altera.com>

Altera European Headquarters  
Altera U.K. Limited  
Holmers Farm Way  
High Wycombe  
Buckinghamshire  
HP12 4XF  
United Kingdom  
Telephone: (44) 1 494 602 000

Altera Japan, Limited  
Shinjuku Mitsui Building 36F  
1-1, Nishi-Shinjuku, 2 Chome  
Shinjuku-ku, Tokyo 163-0436  
Japan  
Telephone: (81) 3 3340 9480  
<http://www.altera.com/japan>

Altera International, Limited  
Suites 908-920, Tower 1  
Metroplaza  
223 Hing Fong Road  
Kwai Fong, New Territories  
Hong Kong  
Telephone: (852) 2487 2030