

Simplify Multicore and FPGA-based Application Development

LabVIEW 8.5 is National Instruments' latest version of the graphical system design platform for test, control and embedded system development. LabVIEW 8.5 simplifies multicore as well as FPGA-based application development with its intuitive parallel dataflow language. As processor manufacturers look to parallel multicore



architectures for performance improvements, LabVIEW 8.5 running on these new processors can deliver faster test throughput, more efficient processor-intensive analysis and more reliable real-time systems on dedicated processor cores.

This new version also extends the LabVIEW platform further into embedded and industrial applications with the new statechart design module for modeling and implementing system behavior as well as new I/O libraries and analysis functions for industrial monitoring and control.

With the adoption of next-generation processors, engineers must consider how their software can deliver the potential performance gains of multicore and FPGA-based systems. With the parallel dataflow language of LabVIEW, users can easily map their applications to multicore and FPGA architectures for data streaming, control, analysis and signal processing.

LabVIEW 8.5 also delivers symmetric multiprocessing (SMP) with the LabVIEW Real-Time environment where designers of embedded and industrial systems automatically can load balance tasks across multiple cores without sacrificing determinism. In addition, users can manually assign portions of code to specific processor cores to fine-tune real-time systems or isolate time-critical sections of code on a dedicated core. To meet the more challenging debugging and code optimization requirements of real-time multicore development, engineers can use the new NI Real-Time Execution Trace Toolkit 2.0 to visually display timing

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relationships between sections of their code and the individual threads and processing cores where the code is executing.

The inherent parallelism of LabVIEW also makes it an appropriate platform for developing FPGA applications. LabVIEW 8.5 simplifies the task of programming FPGAs with an enhanced FPGA Project Wizard that automates I/O configuration, IP development and overall setup for common I/O, counter/timer and encoder applications. A new statechart module has been added to help engineers design and simulate event-based systems using familiar, high-level statechart notations based on the Unified Modeling Language (UML) standard. Because the LabVIEW Statechart Module is based on the LabVIEW graphical programming language, engineers have a single platform to design, prototype and deploy their systems quickly, combining familiar statechart notation with real-world I/O running on deterministic real-time or FPGA-based systems.

Version 8.5 also adds vibration and order tracking measurements and machine vision algorithms for industrial machine monitoring systems. For high-channel-count systems, the new multivariable editor makes it easy for users to quickly and easily configure or edit hundreds of I/O tags using a simple spreadsheet interface.

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