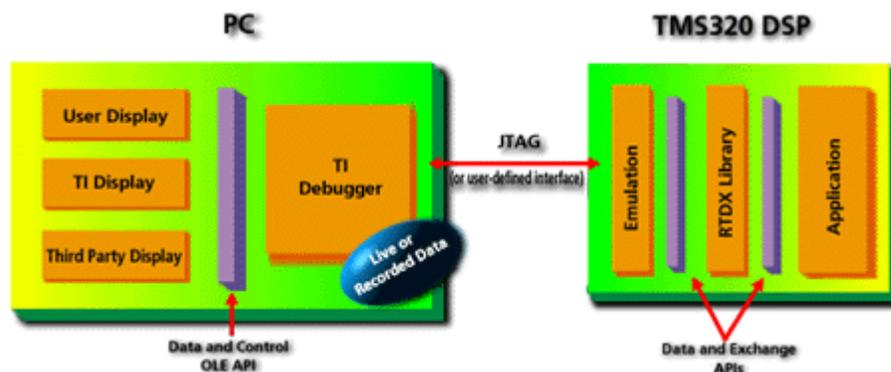


RTDX permits developers to transmit and receive data between a host and a target DSP without stopping their applications and to view live or saved data via an easy-to-use Object Linking and Embedding (OLE) Application Program Interface (API).

### Key Benefits:

- Provides industry's first continuous, real-time code visibility into running applications
- Significantly shortens development time
- Viewable on industry-standard, application-specific or customer-developed visualization packages
- Well-suited for full-speed control, servo and audio applications
- Standard element of many new toolsets for TI DSPs



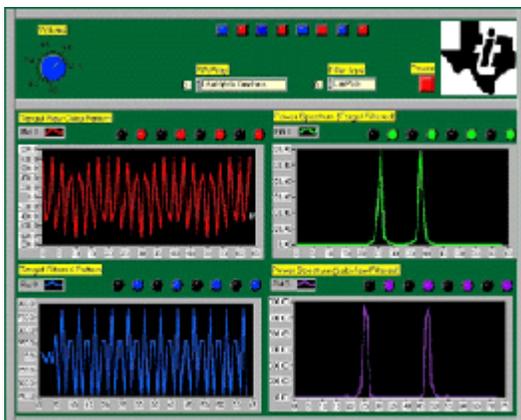
TI DSP Solutions excel in the real-time environment of embedded systems. Now, Real-Time Data Exchange (RTDX), TI's latest innovative technology, extends the company's leadership. RTDX gives designers the industry's first DSP system that provides real-time, continuous visibility into the way target applications operate in the real world. RTDX allows system developers to transfer data between the host computer and DSP devices without stopping their target application.

This important breakthrough shortens development time by giving designers a much more realistic representation of the way their systems really operate. Just as modern medical diagnostic equipment provides a real-time, ongoing analysis of the way a patient's body is functioning, RTDX allows designers to continually monitor their systems and gain real-time insight into their running applications.

### Real-time information means design power

RTDX provides significant benefits over alternative methods of system debugging. Until now, designers were forced to stop their application to exchange data with the host computer. This intrusive method of debugging may also yield misleading information since the isolated snapshot of a halted high-speed application does not present an accurate view of the system's real-world operation.

Another alternative to RTDX is to incorporate in-circuit emulation (ICE) structures to perform real-time monitoring. However, this too does not present an accurate depiction of device performance since the ICE structure is not typically integrated into the production component. RTDX eliminates the need for an extra pre-production version of a chip with ICE structures. It uses relatively small built-in test structures that are part of the production device, yielding performance identical to that of the finished product.



### *Wireless application viewed using National Instruments' LabVIEW*

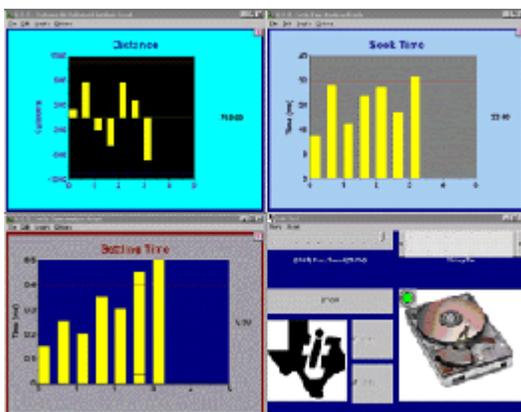
RTDX assists users in evaluating the data retrieved from the target application on the host. This real-time and continual debugging capability is a combination of TMS320 hardware and software functionality. It utilizes built-in 1149.1 JTAG emulation logic and an easy-to-use object linking and embedding (OLE) application program interface (API) that easily connects to industry-standard, third-party application-specific, or customer-developed visualization packages.

For example, designers may use their choice of standard software display packages, including National Instruments' LabVIEW™ or Quinn-Curtis' Real-Time Graphics Tools, or even their own specified spreadsheet software.

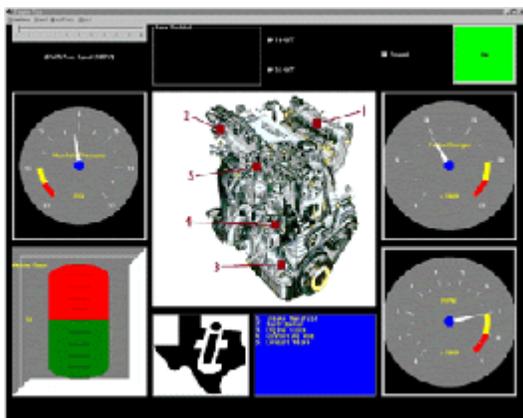
### **How RTDX is empowering DSP design**

Functionally, RTDX works in the following way:

TI supplies a very small software library that runs on the target DSP. The designer's application makes C or assembly code calls to pass data to or from TI's data exchange libraries. These libraries then utilize the eXtended Development System (XDS) scan-based emulators to move the data to or from the host platform. Most important, these actions take place while the application is running on the DSP as the XDS emulator moves the data.



### *Hard disk drive application viewed using Quinn-Curtis' Real-Time Graphics Tools*



*Engine control application viewed via Visual Basic™*

Initially, RTDX will transmit data at up to 8 kilobytes per second, making it well-suited for a variety of control, servo and audio applications running at full speed. For example, wireless telecommunications manufacturers can capture the outputs of their vocoder algorithms to check the implementations of speech applications. Embedded control systems will also benefit. Hard disk drive designers can test their applications without crashing the drive with improper signals to the servo motor, and engine control designers will be able to analyze changing factors like heat and environmental conditions while the control application is running. For all of these applications, users can select visualization tools that display information in a way that is most meaningful to them. Future TI DSPs will feature RTDX bandwidth increases of ten times or more, providing greater system visibility to an even greater number of applications.

### **RTDX - Availability**

RTDX represents a fundamental new approach to system debugging, providing designers with an on-going flow of dynamic information about their system's performance. Initially available on TI's TMS320C54x DSPs, RTDX will be a standard component of many of TI's new DSPs and other processor platforms, including the breakthrough 1600 MIPS DSPs. RTDX is part of a group of TI hardware and software technologies that is giving manufacturers better and more efficient ways of designing and implementing products.

**For more information** If you would like more information about how TI DSP Solutions with RTDX functionality can equip you with the tools to meet tomorrow's market challenges, contact your [local TI distributor](#).