

Universal High-Speed Real-Time Monitoring Device for Embedded Systems

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Presentation Overview

- Technical background
- Real-time monitoring
- DataScope
- Real-time display software
- Proposed co-operative project with EU

Technical Background

Developers Experiencing “Vanishing Visibility”
If You Can’t Find It, You Can’t Fix It

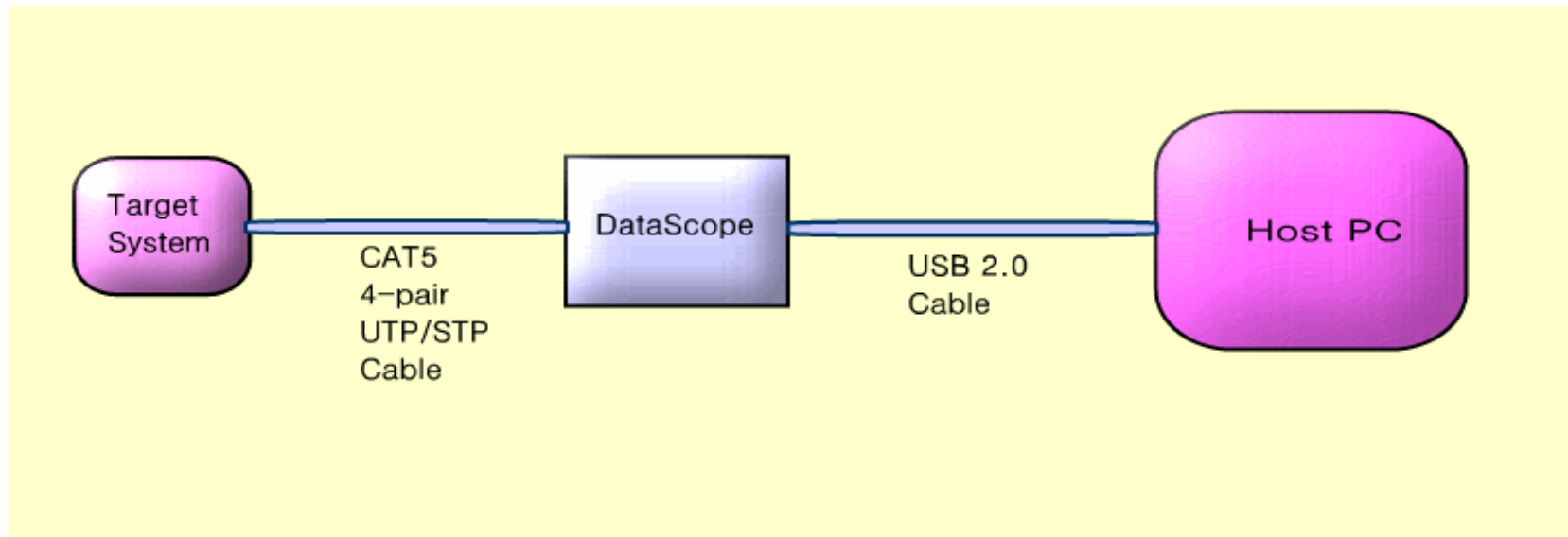
- Faster CPU and bus clocks are pushing the limits of both logic analyzers and ICE technology
- Higher SoC integration of system peripherals and embedded buses cause lack of signal access
- Larger on-chip cache and memory is only accessible via processor bus
- Increasing use of heterogeneous multiprocessors clouds real-time visibility into the system

Developers are losing the ability to debug their applications

Real-Time Monitoring

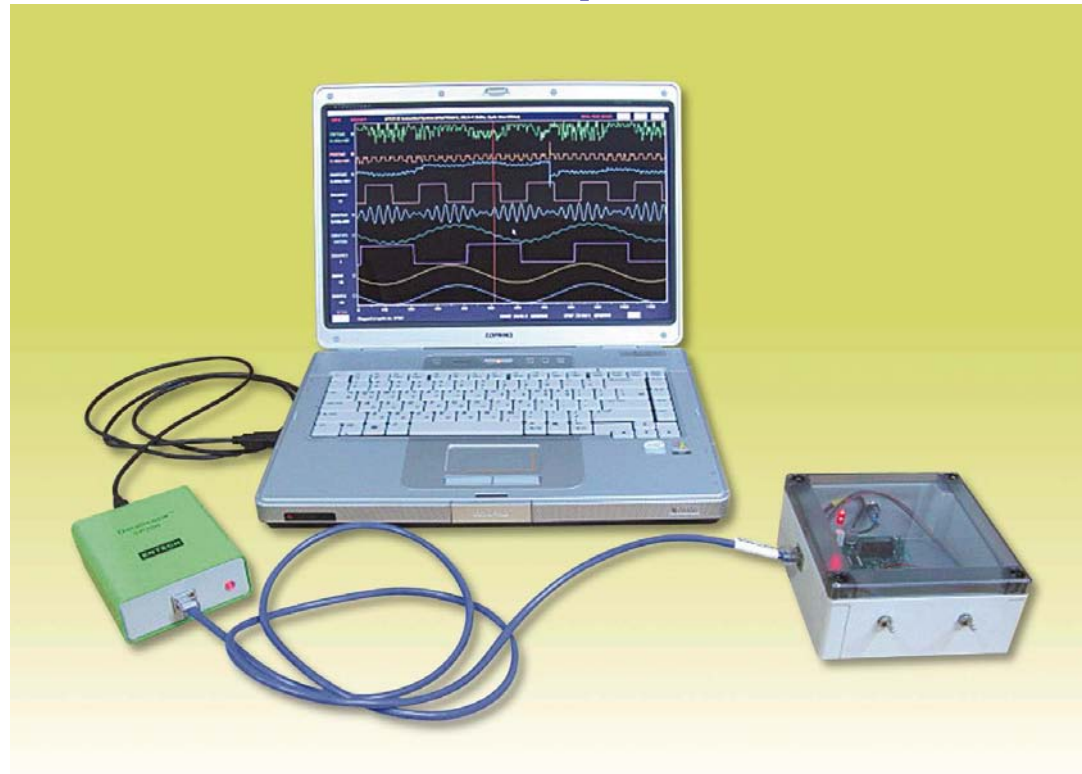
- Breakpoint debugging invalidates real-time behavior
- Data is continuously transported from an embedded application to a host without stopping the processor
- Provides low-intrusive means of analyzing an embedded application's behavior
- Provides continuous execution visibility
- Real-time monitoring simplifies debugging
- Can find “invisible” complex, intermittent, context-sensitive real-time bugs

DataScope



- A target system generates monitoring data packets and transmits them to the DataScope through high-speed data communication
- SPI communication protocol with the RS-422 differential signals
- USB 2.0 communication with a host PC
- Real-time display software running on Windows XP
- Seamless start of real-time monitoring on a running target system without intervention
- Continuous monitoring without any digital data lost

DataScope SP200



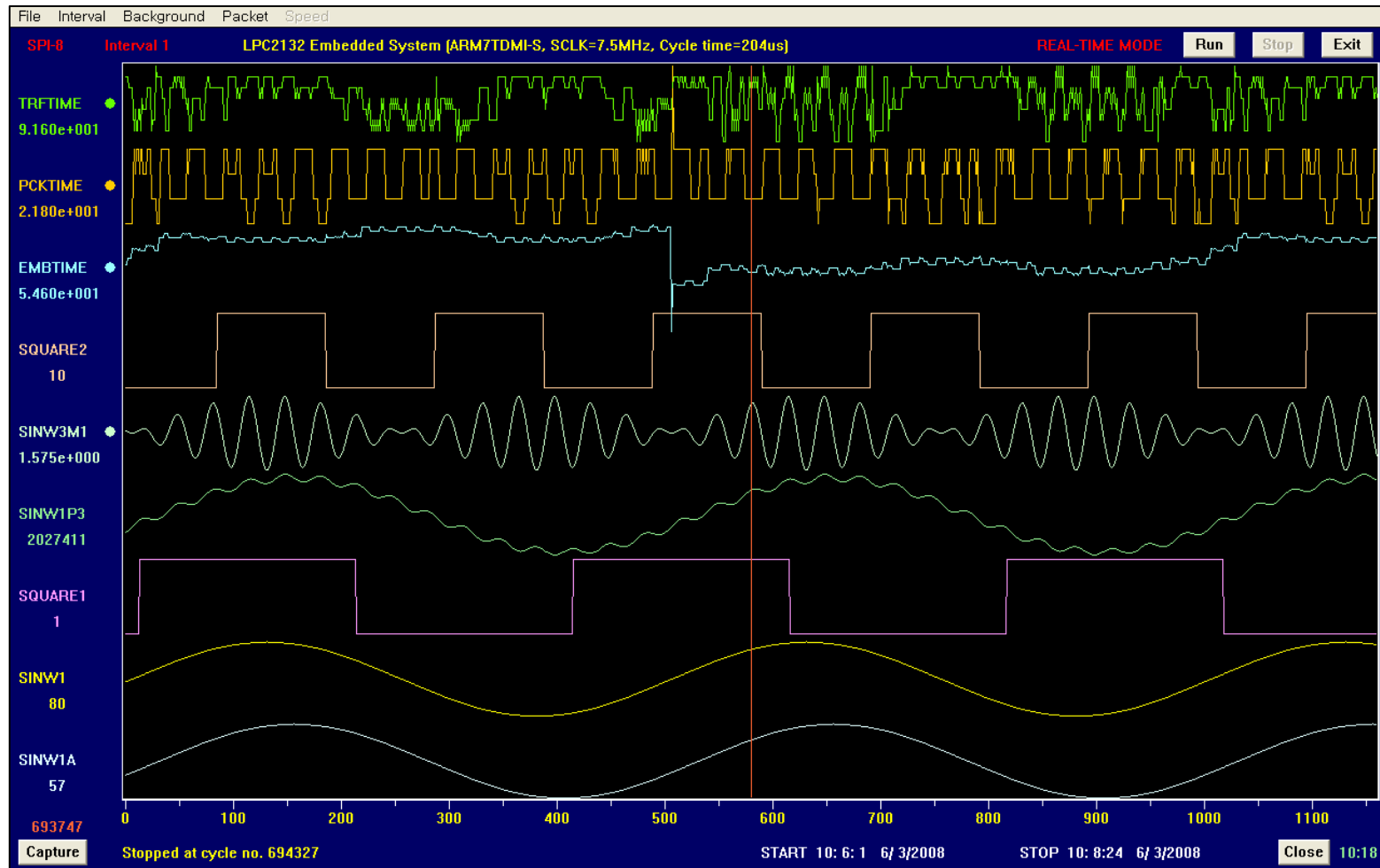
- SPI communication via RS-422 link with CAT5 LAN cable (SPI Rx speed: 20 Mbps max)
- Transmission distance from the target system: 50m at 20 Mbps, 100m at 10 Mbps.
- Galvanically isolated from the target system
- Real-time display mode or playback display mode

DataScope SP200



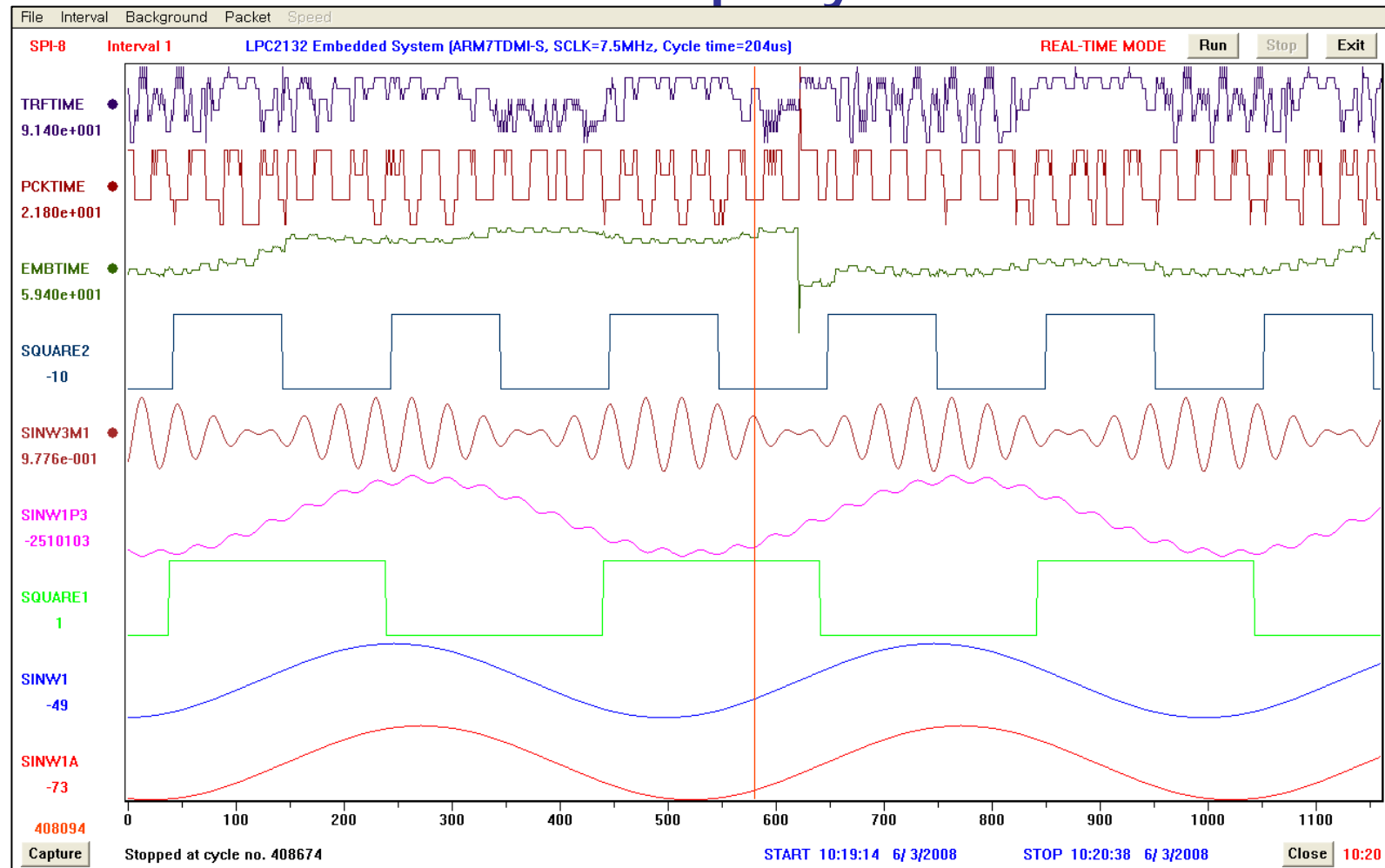
- USB 2.0 communication with a host PC
- Power consumption: 5 VDC, 250mA, bus-powered USB device
- Size: 90(W) x 35(H) x 110(D) mm, high-quality AL case
- 8-pin RJ-45 modular jack on the target side, type B USB receptacle on the host side

Real-Time Display Software



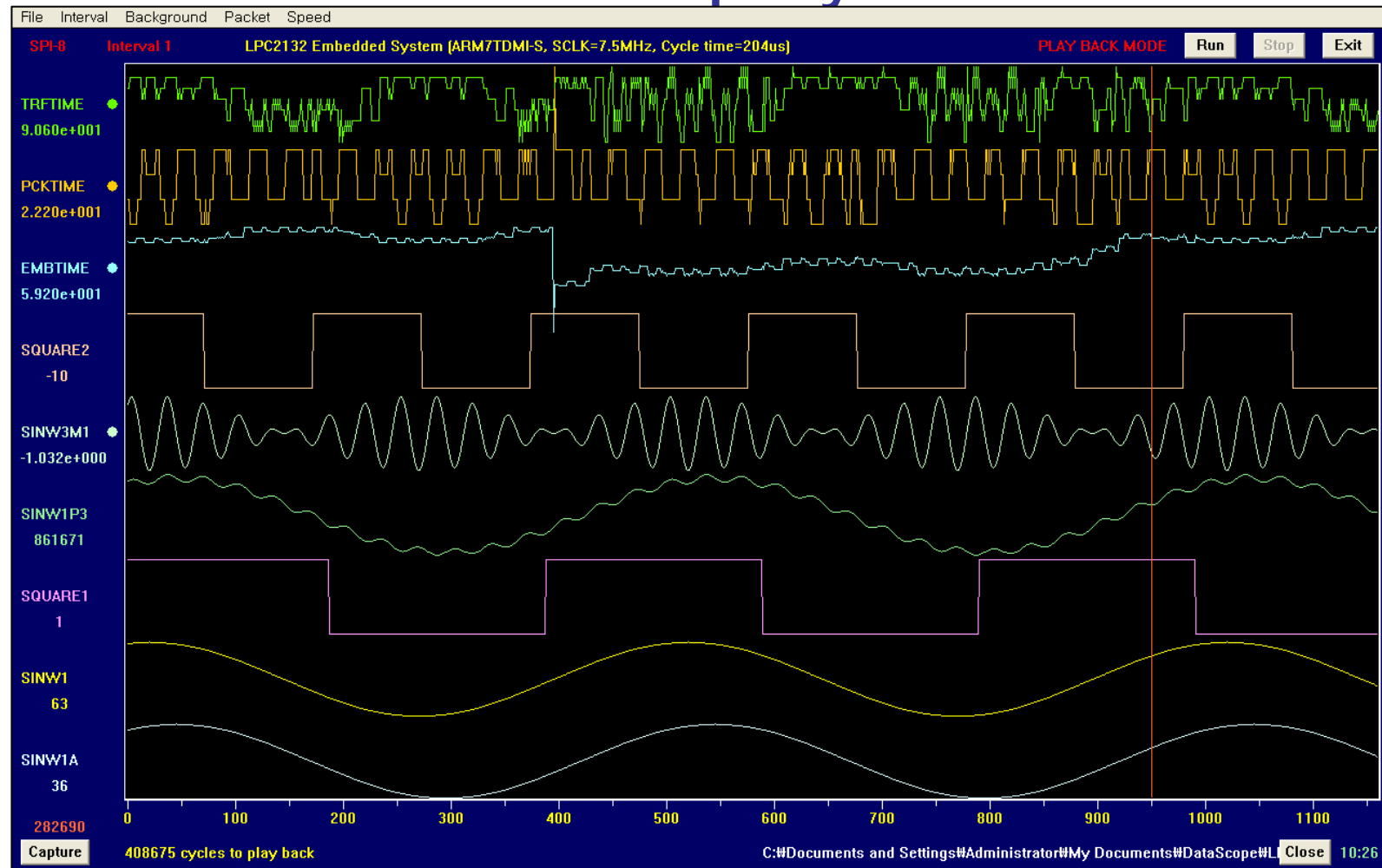
- Windows XP 15.4 " notebook PC with 1280x800 pixels
- Real-time display mode with black background

Real-Time Display Software



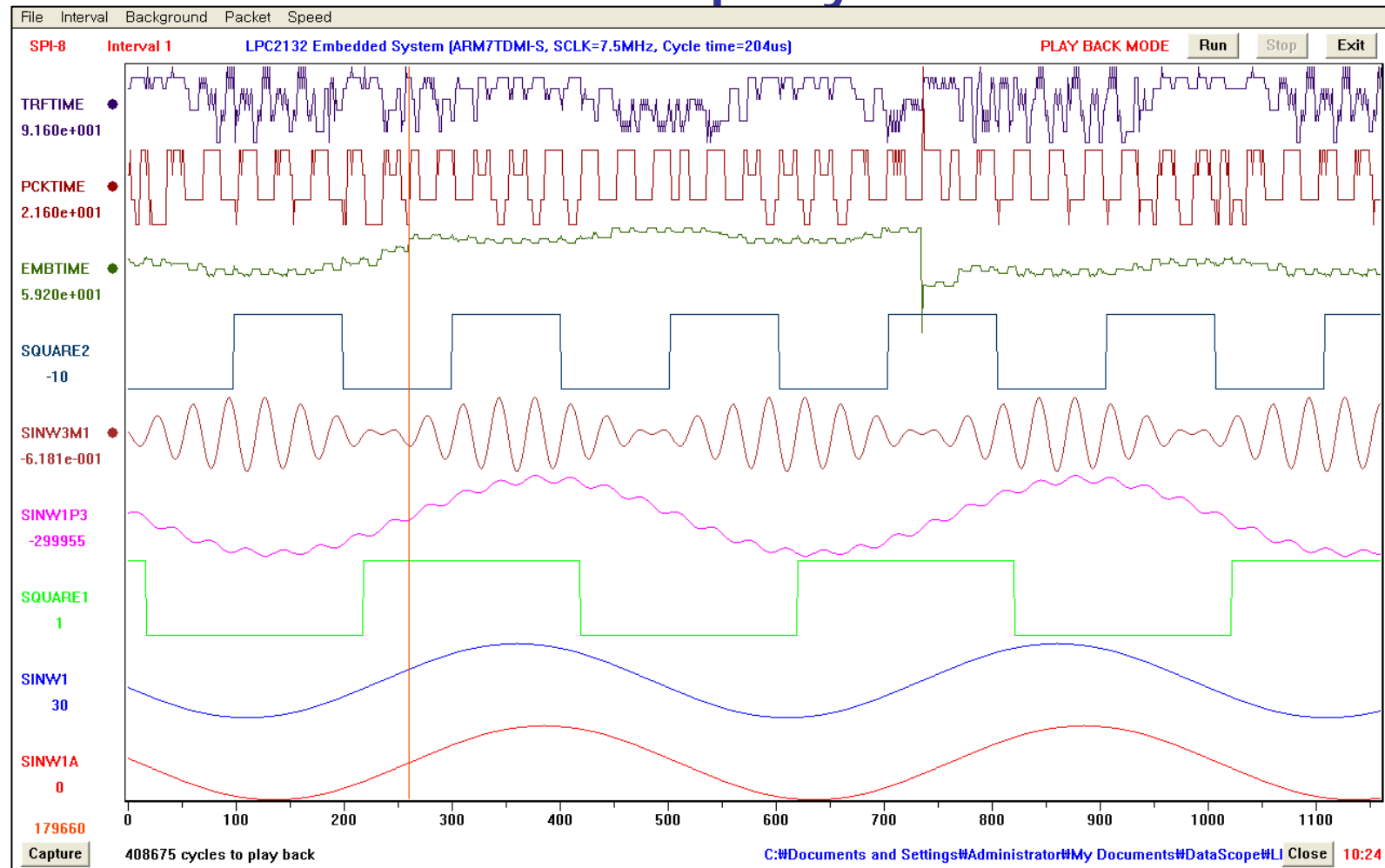
- Windows XP 15.4 " notebook PC with 1280x800 pixels
- Real-time display mode with white background

Real-Time Display Software



- Windows XP 15.4 “ notebook PC with 1280x800 pixels
- Playback display mode with black background

Real-Time Display Software



- Windows XP 15.4 “ notebook PC with 1280x800 pixels
- Playback display mode with white background

When to use the DataScope

- In the design and development phase for an embedded system.
- To debug the CPU firmware
- To debug the embedded software
- To debug and develop the device drivers
- To examine hardware problems
- Also to evaluate the performance and execution states of an operating embedded system on an active task conveniently and efficiently

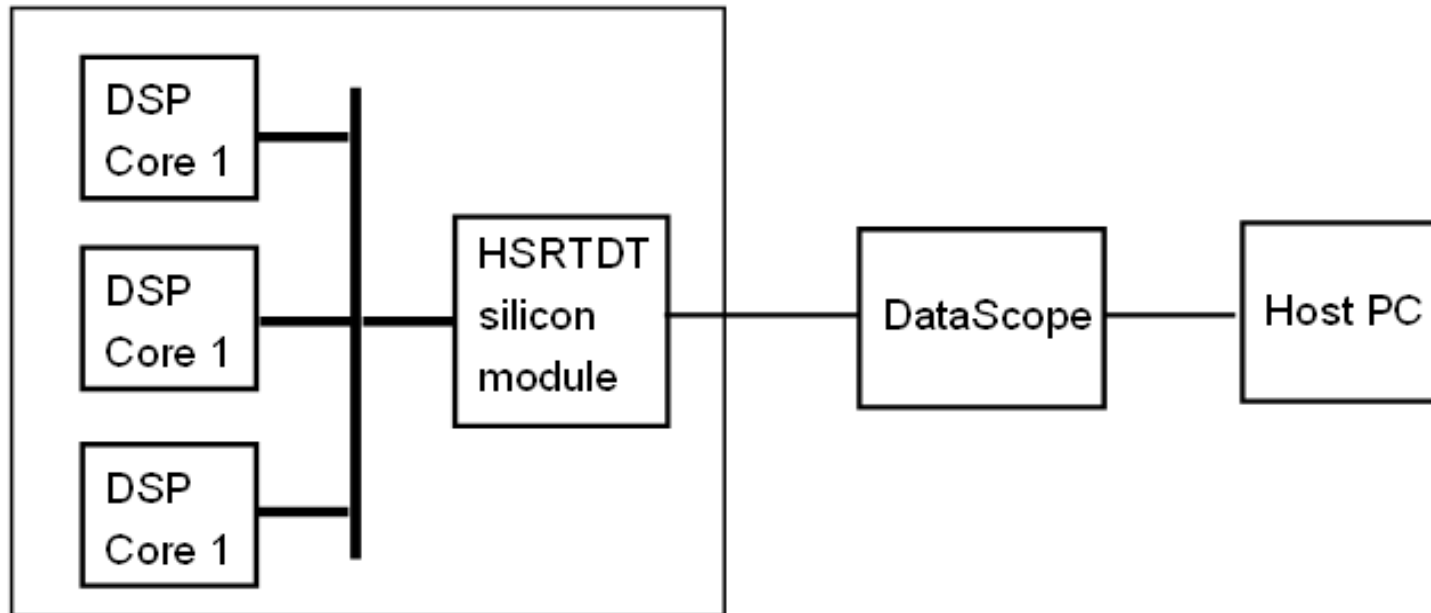
Proposed Co-operative Project with EU

Interface Standard Development for Non-Intrusive High-Speed Real-Time Monitoring of Processors

- Increasing use of heterogeneous multiprocessors clouds real-time visibility into the system
- Provides real-time visibility for high-speed multiprocessor systems
- Provides real-time visibility for multi-core processors
- Non-intrusive monitoring of DSPs and high-speed MCUs

Development of standard on-chip silicon module for high-speed real-time data transport on DSPs and MCUs
(EU + Korea)

Processor Monitoring Configuration



- HSRTDT (High-Speed Real-Time Data Transport) silicon module
- Non-intrusive high-speed real-time monitoring of DSPs and MCUs

Thank you!

Q & A

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