

Test Sequencer / Automation Framework Requirements



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Agenda



- What is a Test Sequencer? What is an Automation Framework?
- Off the shelf Test Sequencer – NI TestStand Advantages and Disadvantages
- Requirements for a Test Sequencer
 - Open Source
 - High Performance
 - Scalability (across platforms)
 - Robustness
 - Platform independence
 - Parallel tasking; distributed components
 - sequences on hosts and subsystems
 - realtime capability
 - object orientation
 - security
 - easy to understand – easy to use (one paradigm)
 - connectivity (databases, communication mechanisms)
 - Reliability, maintainability
 - Low TCO (total cost of ownership)
 - Parallel task scheduling
 - Standardization



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What is a Test Sequencer?



- Application framework or engine that is able to run specific tasks (defined in sequence tables) sequentially or in parallel



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Off the shelf Test Sequencer – NI TestStand Advantages and Disadvantages



- Advantages: Off the shelf tool with ability to use different languages
- Disadvantages
 - Expensive (development platform and runtime engine)
 - only Windows platform (ActiveX based)
 - slow (ActiveX/Interpreter)
 - Flat learn curve
 - difficult to understand
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Test Sequencer Requirements



- Open Source
 - no runtime fees
 - code sharing drives development
 - easier debugging
 - ...



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Test Sequencer Requirements



- High Performance
 - high performance communication interfaces (DIM, message queues, notifier, ...)
 - no ActiveX or .net
 - support for realtime platforms
 - support for field programmable gate arrays
 - distributed applications and real parallel execution
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Test Sequencer Requirements



- Scalability

- distribution of threads
- use of CSP-model (Communication of Sequential Processes)
- ...



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Test Sequencer Requirements



- Robustness and failure tolerance

- intelligent failure management system
- robust communication mechanisms
- ...



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Test Sequencer Requirements



- Platform Independence
 - Windows
 - UNIX
 - Linux
 - PharLap
 - VXWorks (in some months)



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Test Sequencer Requirements



- Parallel Tasking and Distributed Intelligent Objects
 - Object nets
 - Petri Nets
 - ...



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Test Sequencer Requirements



- Sequences on hosts and subsystems
 - Tony Hoares CSP model
 - support for all major platforms



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Test Sequencer Requirements



- Realtime Capability
 - PC and dedicated targets (VXWorks, PharLap, PXI, Dell Optiplex...)
 - FPGA
 - Windows with realtime extensions



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Test Sequencer Requirements



- Security
 - failure management
 - rollback features
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Test Sequencer Requirements



- easy to understand – easy to use
 - one paradigm
 - code sharing drives development
 - easier debugging
 - easy to learn and understand
 - coding and documentation is identical



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Test Sequencer Requirements



- connectivity (databases, communication mechanisms)
 - database connectivity (ODBC, ADO, DAO, ...)
 - all major communication mechanisms
 - DLL / Shared Libraries
 - ActiveX / .net / OPC /DDE / OLE
 - native LabVIEW communication elements
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Test Sequencer Requirements



- Reliability, maintainability
 - tested and validated code
 - proven software standards
 - object oriented approaches
 - 100% pure „G“



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Test Sequencer Requirements



- Low TCO (total cost of ownership)
 - no runtime fees
 - comprehensive documentation and help files
 - network of „supporters“ from different areas (science and industry)



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Test Sequencer Requirements



- Parallel task scheduling
 - unlimited parallelism using FPGA's
 - concurrent performance of host and realtime tasks



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Test Sequencer Requirements



- Standardization
 - coding standards
 - application frameworks



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Events...

- LabVIEW Trainings
- CS-Training March 2006
- LVUG-Day April 2005
- VIP, Automatica, Sensor&Test, NI Week, ...



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Unsere Philosophie
Erhöhung und Weiterentwicklung fachlicher Entwicklungs-, Engineering- und Dokumentationsstandards sowie intensiver Erfahrungsaustausch auch in SIGs (Special Interest Groups).

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More informations...

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