1 What is TestStand?

Describe the purpose of TestStand and the benefits of using test management software.

Topics

+ Introduction to TestStand
+ Benefits of Using TestStand

A. Introduction to TestStand

Objective: Explain the purpose of test management software.

Exploring Test System Terminology

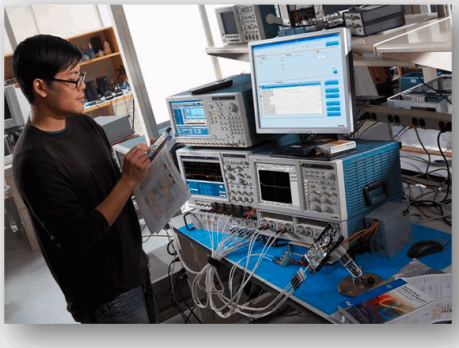
Automated Test System A system that can reduce or eliminate the human effort needed to test a product by performing some or all tasks without human interaction.

Test Management Software Software that provides the infrastructure and the modular test framework required to repeat the operations for each product.

"I need to test compliance quickly… but"

The Challenge

Integration testing is a complex process that involves bringing together fragmented components and test types.



Why?

Architecture and tools with different interfaces must work together.

Testing Is Critical for Cell Base Stations

What is a Test Executive?

Test Executive A system that organizes and executes sequences of reusable code modules you can create in a variety of programming environments.

Activity: Test Executive Requirements Brainstorm

What needs should a test executive satisfy? Fill in your answers below.

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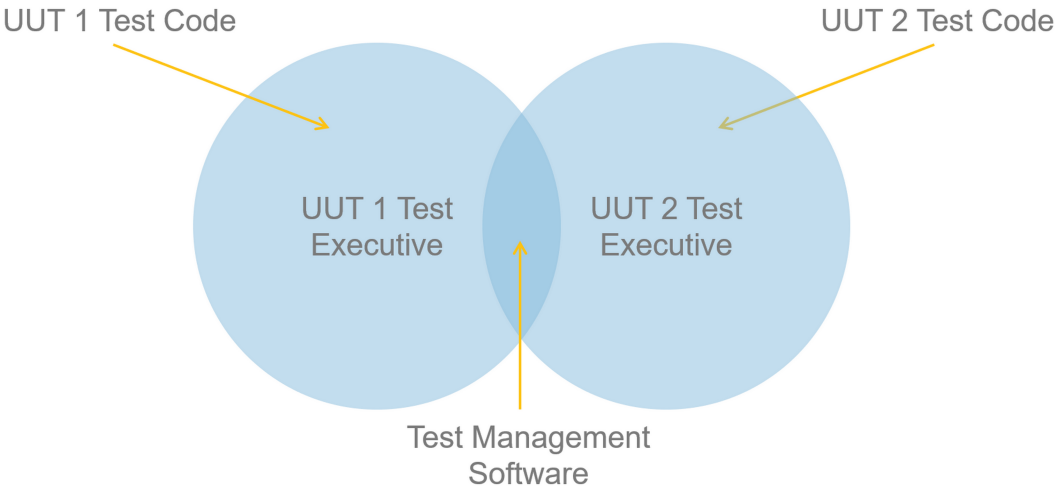
Common Test Executive Needs

Typical Automated Test System Operations



Why standardize on a Common Architecture?

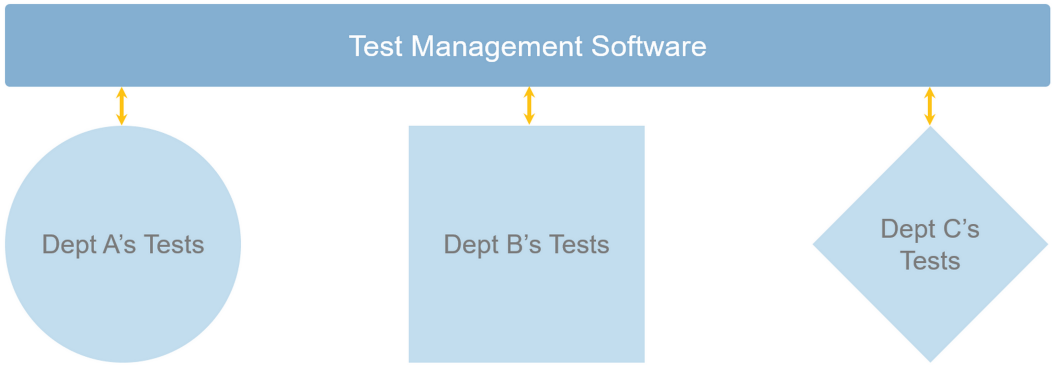
Imagine that you are a test engineer at a major company that designs/produces a variety of products. You are responsible for testing solar panels and have developed your own test executive to test your solar panels on the production floor. Now imagine that an engineer in another group has created their own test executive to test their UUTs.

What problems could arise from having two independently-created test executives running on the production floor?

- Little code reuse or consistency
- Each department pays ongoing maintenance costs
- Developers and operators must learn different applications
- Often support only one language or development environment
- Do not scale for future needs.

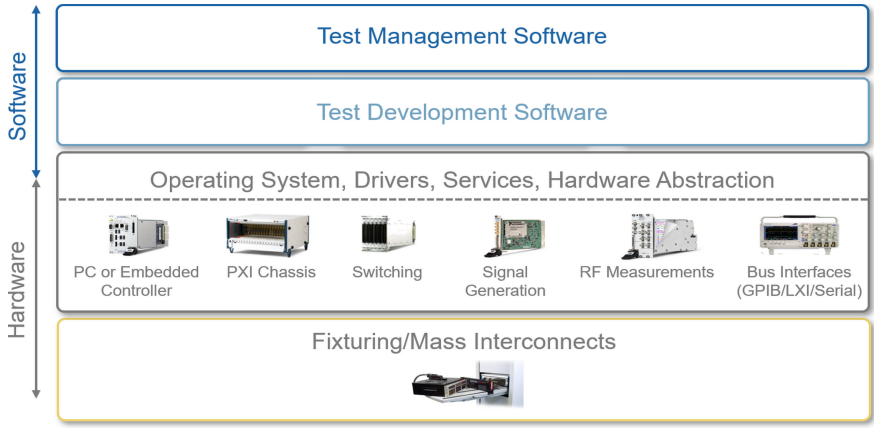
Automated Test System Operations

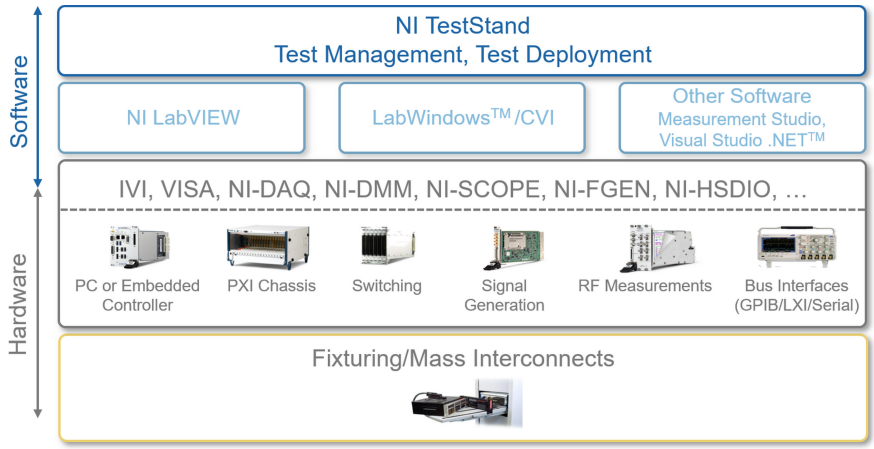
Using one application to handle the common functionality of the test system is an efficient way to implement your automated test system.



Components of an Automated Test System

Modularity in test system design helps you increase the maintainability and reusability of your test system components. A modular test software architecture is divided into four layers.

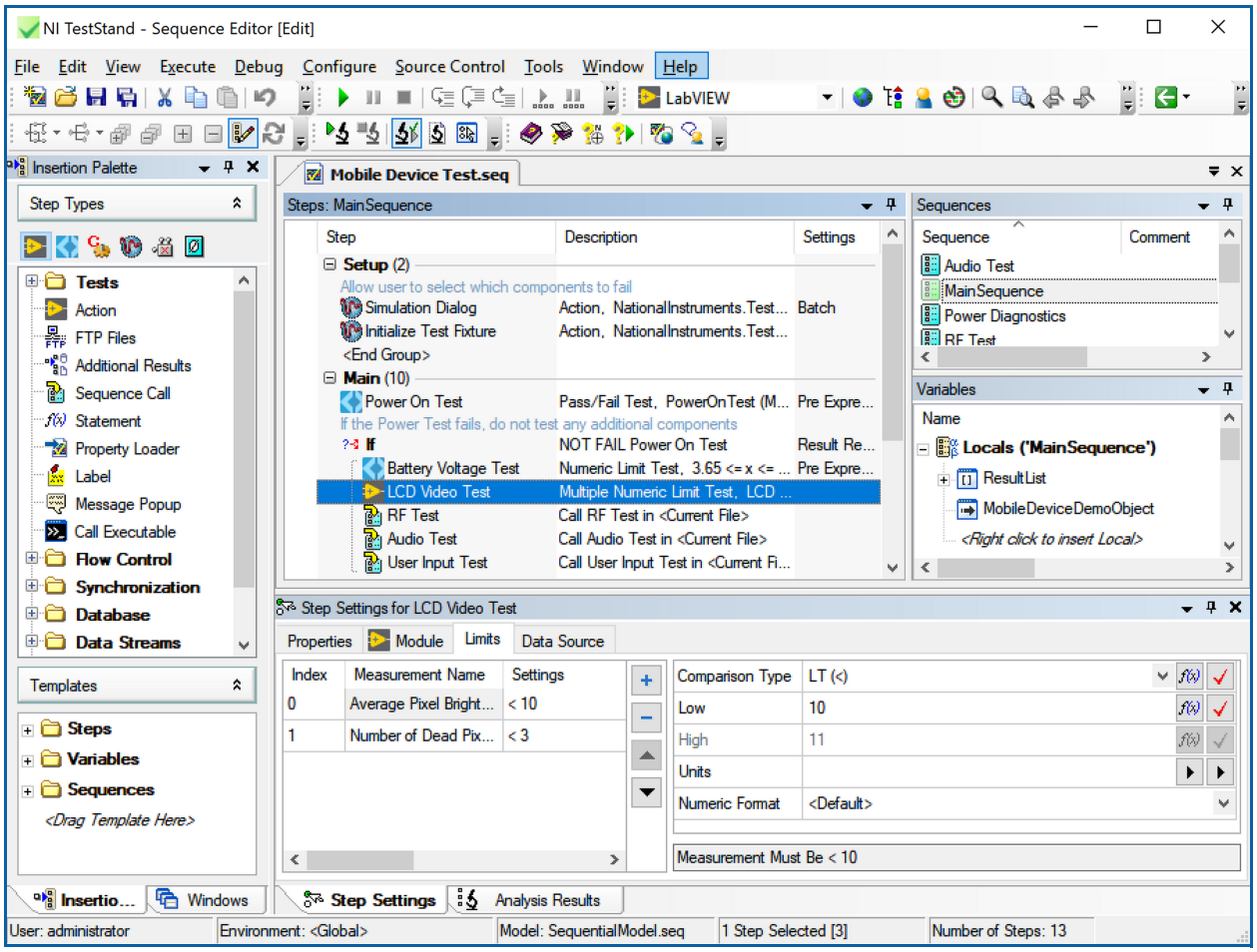




Fixturing/Mass Interconnects	At the lowest level, the first component is well-designed mass interconnects or fixturing. Test operators must quickly and reliably connect and disconnect each device as they come off the assembly line.
OS, Drivers, Services	The OS/Drivers layer interfaces with your device under test (DUT). Layer components include your computer or embedded PXI controller, the PXI chassis, and any bench-top instruments that you have in your system.
Test Development Software	Tests are developed using a programming language. When developing software to control your tests, focus on modularity. Each test should be a piece of code that you can reuse and maintain independently.
Test Management Software	The top layer is the test management software that integrates the different pieces of a test system, controls the use of instrumentation resources, logs results, and integrates with other organization-wide systems.

Demonstration: Launch the TestStand Sequence Editor

Explore the TestStand development environment, known as TestStand Sequence Editor.



Activity: Interface Exploration Race

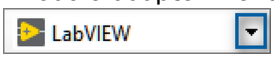
Be the first to find the answers to the following questions. Raise your hand for the trainer to check your answers. If any answers are incorrect, the trainer hands the page back for you to try again. All answers must be correct to place in the race. Good luck!

Instructions:

1. Type `%Teststandpublic%` into a Windows explorer window to open the TestStand public directory.
2. Navigate to `<TestStand Public>\Examples\Demos\Mobile Device Test.`
3. Double-click `Mobile Device Test.seq` to open the example sequence.
4. Click **OK** to close the Login dialog box.
5. Answer the questions below quickly and accurately.
   a. What is the first test under the Main category in the **Steps: Main Sequence** pane?

   b. Click on the answer you got for question a. Look at the **Step Settings for Power On Test** area on the bottom of the screen. What is the third category on the Properties tab?

   c. Click the following code module adapter menu in the toolbar:

   What is the fourth option from the top of the list?

   d. Select **Edit»Sequence File Properties** from the menu. On the Advanced tab, how many **Model Options** are there?

   e. In the **View** menu, what is the keyboard shortcut for **Types**?

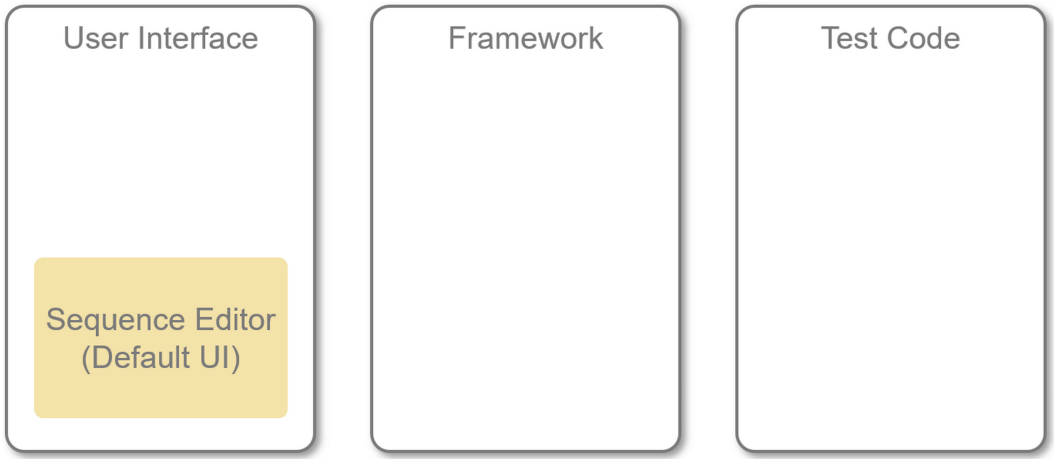
   f. In the **Configure»Result Processing** menu, what is the first Output Name listed?

   g. What does pressing <Ctrl-F1> do?

   h. Keep the dialog box from step g open and select the Index tab. Type in the word `sequence`. How many topics appear when you double click **sequence**?

TestStand Execution Architecture

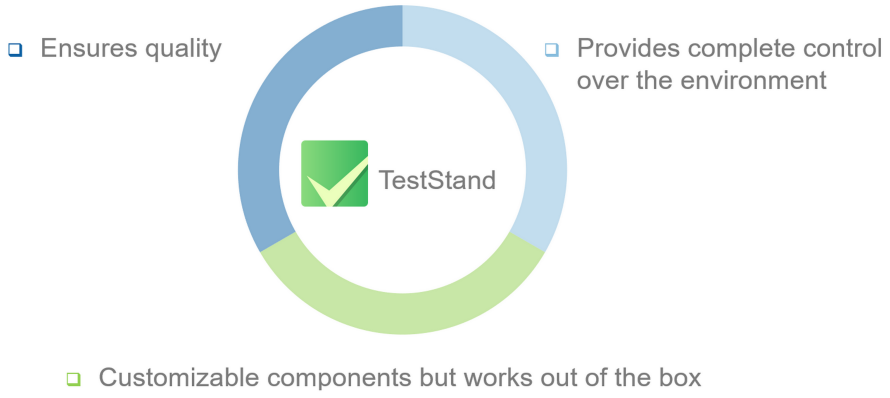
As we go through the course we will add more detail to this basic execution architecture for TestStand.



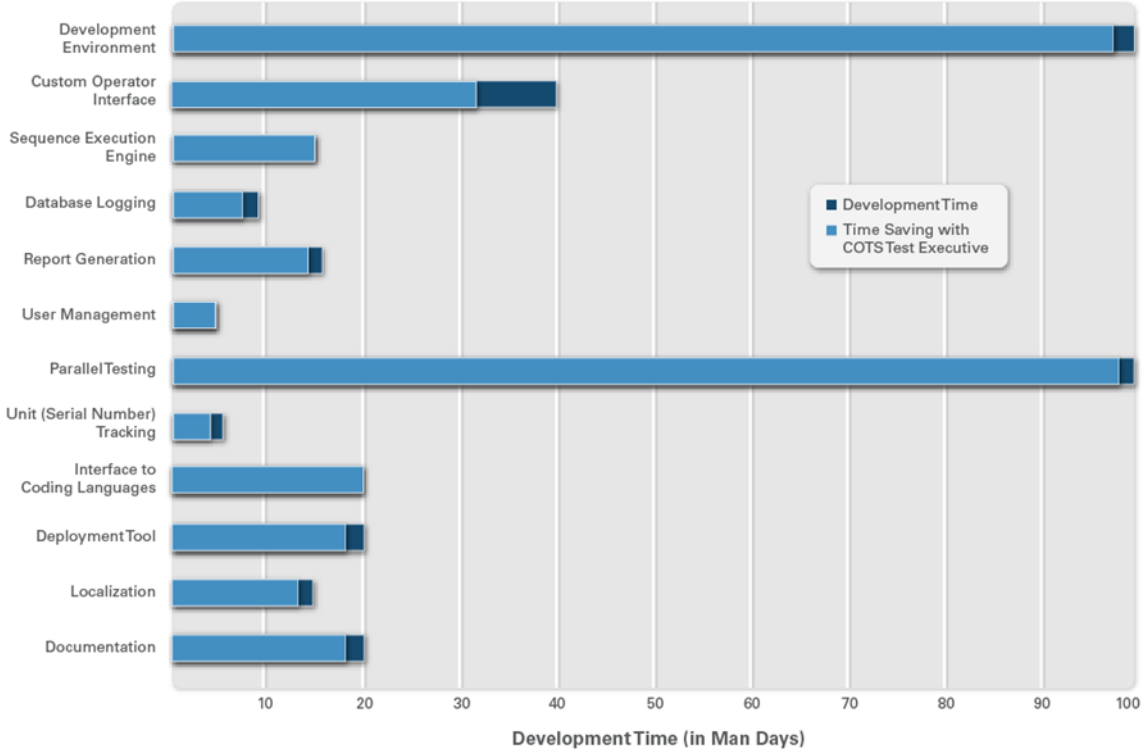
B. Benefits of Using TestStand

Objective: Describe the benefits of using TestStand.

Off-the-Shelf Test Management Environment



Streamlines Automated Test System Development

Some of the ways TestStand streamlines test system development include the following features.

- Increased reusability of test code because of a modularizaton of common tasks.
- Faster development of UUT-specific code because you can use application environments you are already familiar with such as LabVIEW and LabWindows/CVI.
- Decreased maintenance effort because test executive is standardized.