

Consideration for a PXI Test System Development Strategy

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Today's demands for fast development of flexible test systems, lead engineers to change their current test systems, or develop new test systems using PXI instrumentation and take advantage of the benefits modular PXI test systems have to offer. PXI test systems help engineers to develop test systems for less cost, using modular components that are very configurable from multiple vendors, and can be developed for a smaller test space, with improved cabling, cooling and execution efficiency. Engineers choosing to develop a PXI test system benefit from first developing a PXI system development strategy.

This article outlines the key PXI test system choices engineers will make as they begin their test system development strategy.

Test system infrastructure

The first step in PXI test system development is to select a test system infrastructure, chassis and controller configuration, that will support the system control, data rate speeds, and configuration flexibility for the application. PXI test system control can be achieved by either a remote personal computer (PC) or an embedded controller that is installed into the PXI chassis. Embedded PXIe controllers are a good option for compact PXI system that need longer product life support than off the shelf PCs.

For maximum data throughput, it is important to choose a chassis and controller configuration that support faster data transfers. Today's Gen 3 IO cards combined with a remote PC can provide as much throughput as an embedded PXI controllers. Selecting infrastructure components capable of maximum throughput provides the foundation needed for faster test system speeds.

Software strategy

The choice of test system software must include considerations for ease of development and integration, and can have a large affect the test system cost. Software that is more complex can take additional time to develop and modify code, resulting in a more expensive test system that is less flexible. Faster test system development can be achieved by using software that can be leveraged and reused, easily integrated with other program languages, and able to control instrument modules from multiple vendors. There are pros and cons to using software readily available for specific applications, or creating custom software, that must be determined by development engineers and the specific application needs. It is important to choose a software strategy from the beginning in order to achieve fast and successful PXI test system development results.

Module/ instrument selection

Multiple PXIe vendors provide stimulus, measurement, and control modules that are designed in accordance with the PXIe industry standards ensuring their interoperability. Engineers can choose from a wide range of modules for the instruments that best meet their current test needs and also, enable flexibility and scalability for future expansion.

As PXI instrument modules are selected, it is important to understand the modules' communication path, how it is controlled through software, and if there are trade-offs in the time it takes to program the module versus test throughput. It is important to check the available drivers for the modules you are considering to ensure they will easily work with the software environment you intend to program in.

Consider these key PXI test system development points and take advantage of the benefits PXI test systems have to offer as you develop your next test system.

Read more on transitioning to a PXI test system <http://literature.cdn.keysight.com/litweb/pdf/5992-1652EN.pdf?id=2782042>