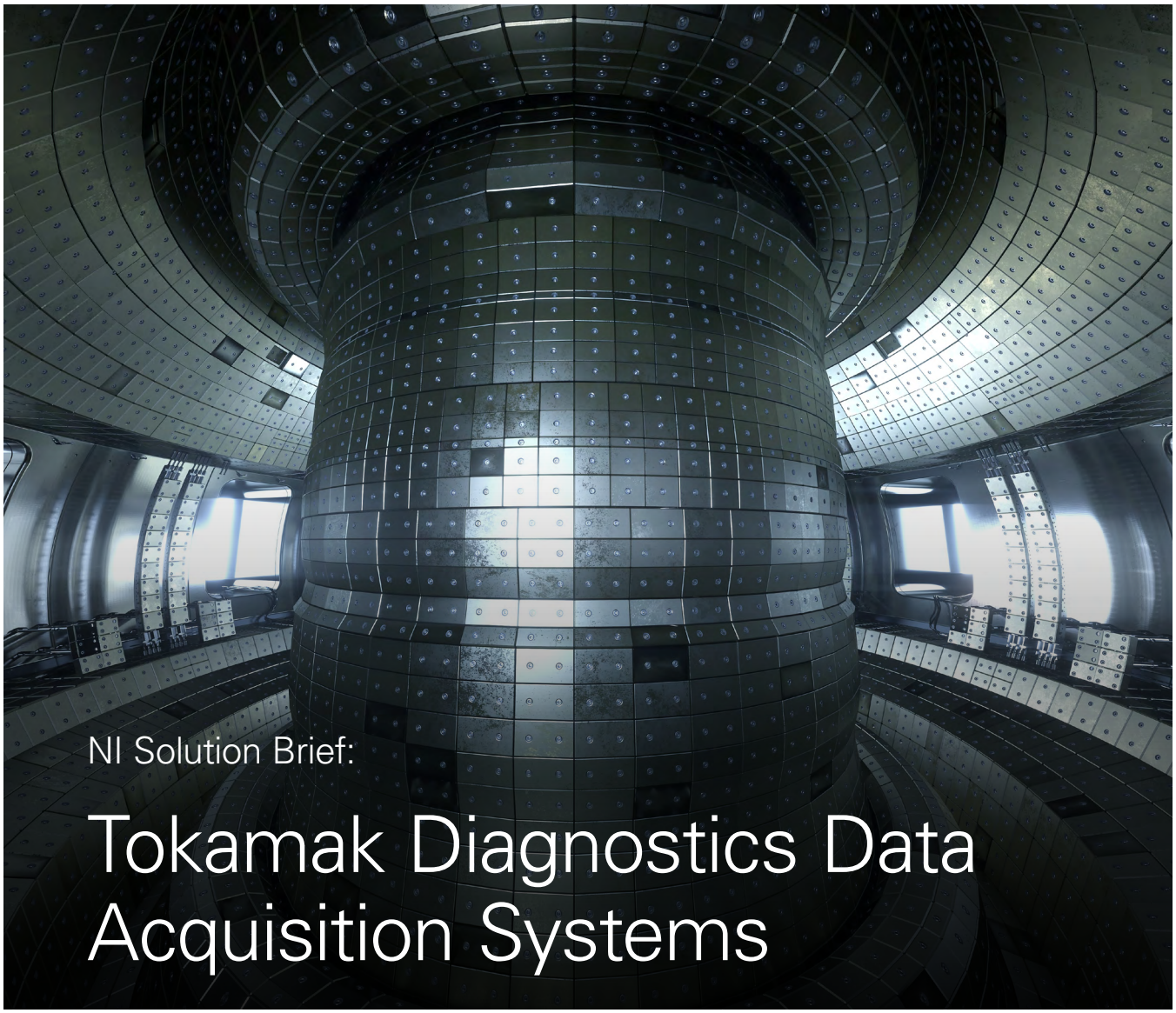


NI Solution Brief:

Tokamak Diagnostics Data Acquisition Systems

Modern experimental Tokamaks must be equipped with a broad array of diagnostic instruments to provide the measurements necessary to control, evaluate, and optimize plasma performance. These requirements demand high performance, scalable and flexible data-acquisition systems, and high-speed signal processing.

NATIONAL INSTRUMENTS

Tokamak Diagnostics Data Acquisition Systems

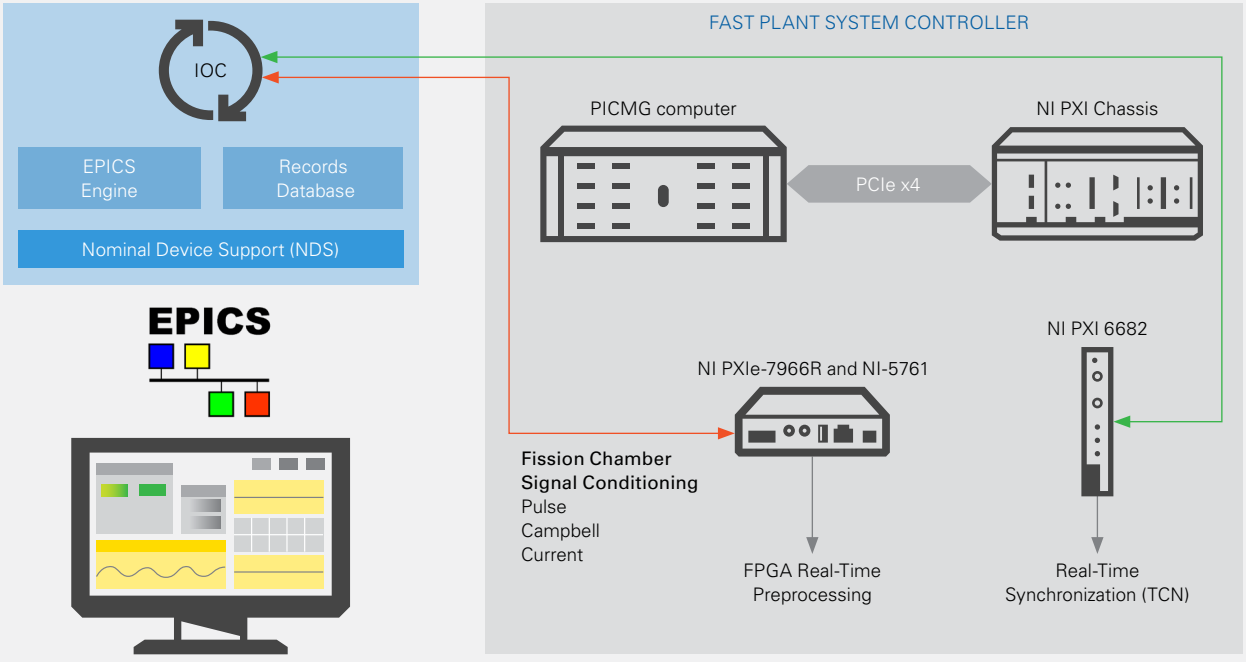
With the NI platform, you can measure a broad variety of signals, provide signal conditioning, and conduct high-performance computing to build customized diagnostic instruments. You also can reduce instrument development time and resources while improving reliability and availability by using NI's commercial off-the-shelf (COTS) solution

Application Requirements

- Customizable high-performance measurements and high-speed signal processing
- Ability to meet demanding schedule, cost, and RASM targets
- Integration with plasma control applications such as EPIC.

ITER Neutron Diagnostics

ITER Fast Plant Controller Hardware and Software Components



The NI Advantage

Build a customizable and scalable data acquisition system to enable high-performance measurement and computing requirements

Conduct high-speed signal processing with the high-level language programming of a state-of-the-art FPGA.

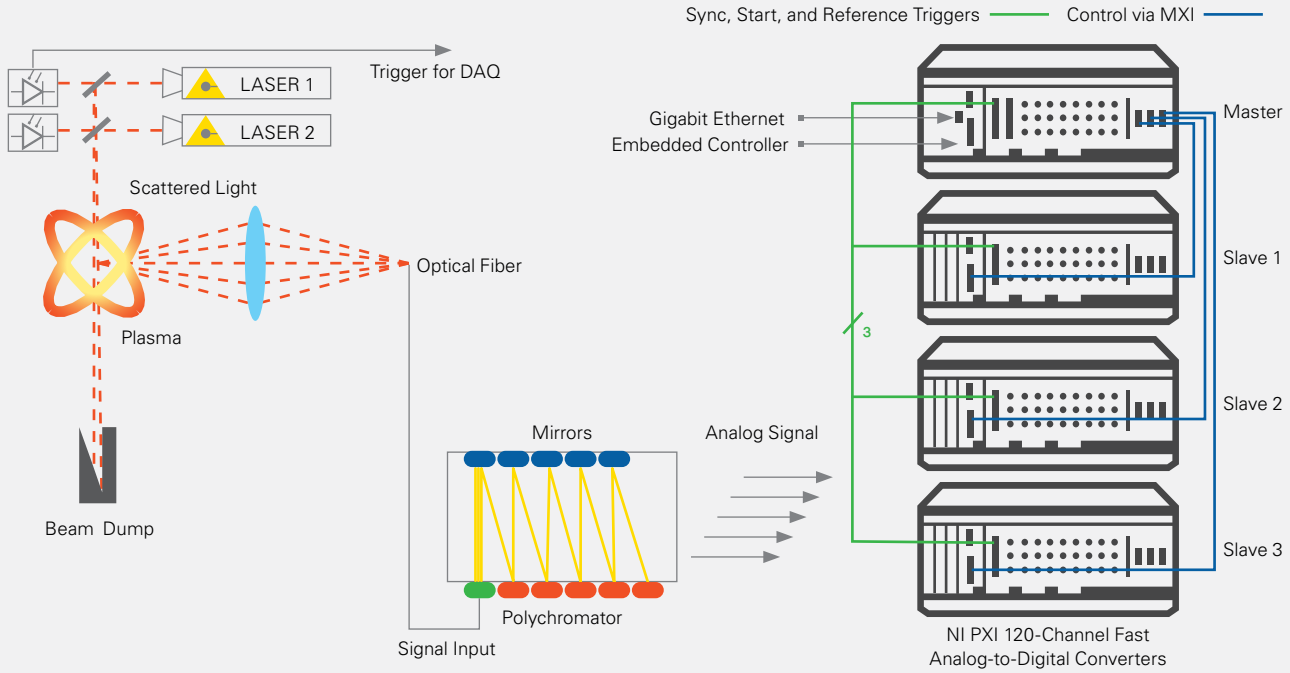
Gamma and neutron radiation exposure testing performed under an ITER-supported project.

The NI Solution

Measurement Devices
Account for broad measurement I/O needs with PXIe and FlexRio, backed by a LabVIEW-programmable FPGA and 64-bit Linux device drivers.

Comprehensive Options
Utilize a single platform for data acquisition, fast controllers, timing and synchronization, and machine-control needs.

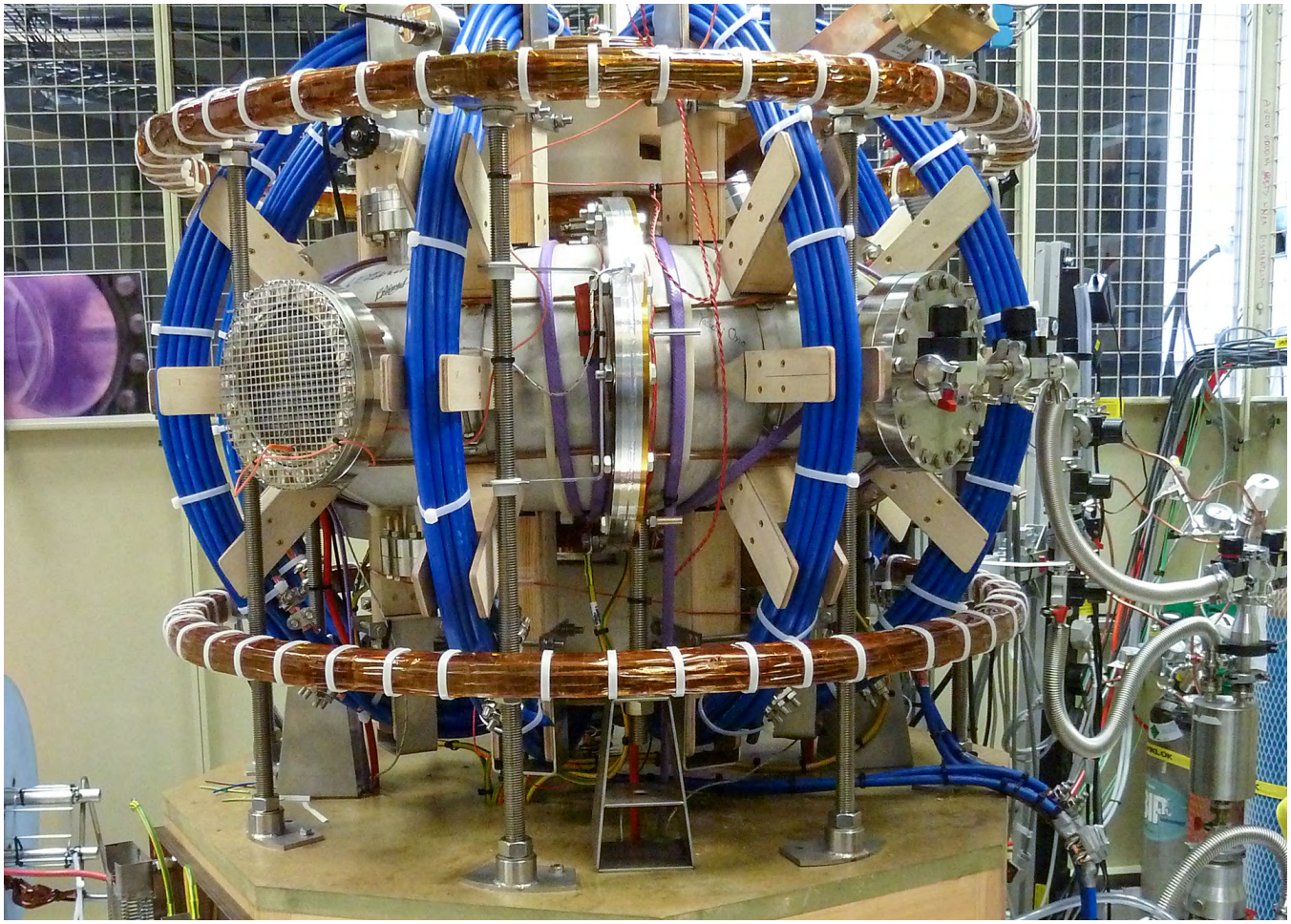
Global Support
Accelerate development and deployment by accessing world-class technical suzpport, proficiency, and training, along with repair and calibration services.



Thomson Scattering Diagnostics System, Institute of Plasma Physics, Czech Republic

"All channels from all chassis are tightly synchronized with the reference clock from the NI PXI-6653. Using NI-TClk technology and built-in phase-locked loops, we can achieve less than 300 ps interchannel skew, even in this high-channel-count system."

Milan Aftanas, Institute of Plasma Physics, Czech Republic



System Integration on Your Terms

NI offers a variety of solution integration options customized to your application-specific requirements. You can use your own internal integration teams for full system control or leverage the expertise of our worldwide network of Alliance Partners to obtain a turnkey system.

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- Global Support
- Prototyping and Feasibility Analysis
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