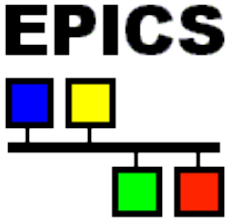

NATIONAL INSTRUMENTS LabVIEW™

Connecting LabVIEW to EPICS network

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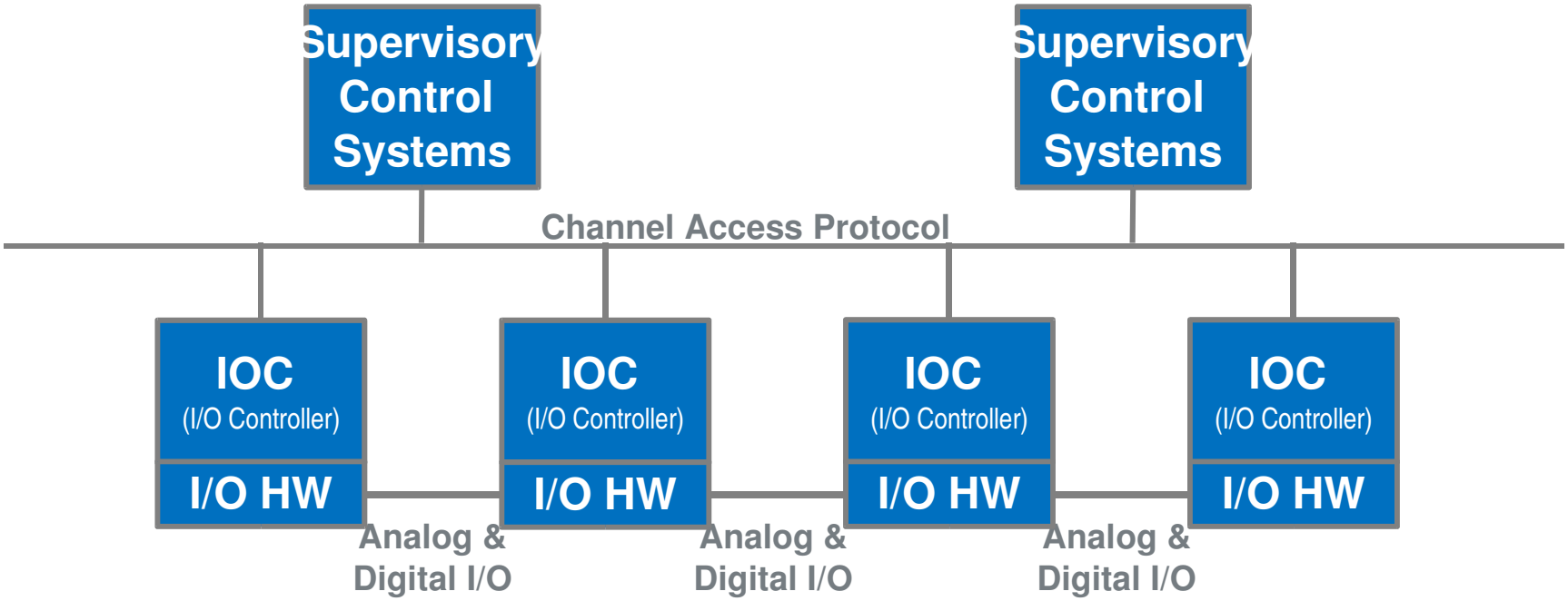
EPICS Software Architecture

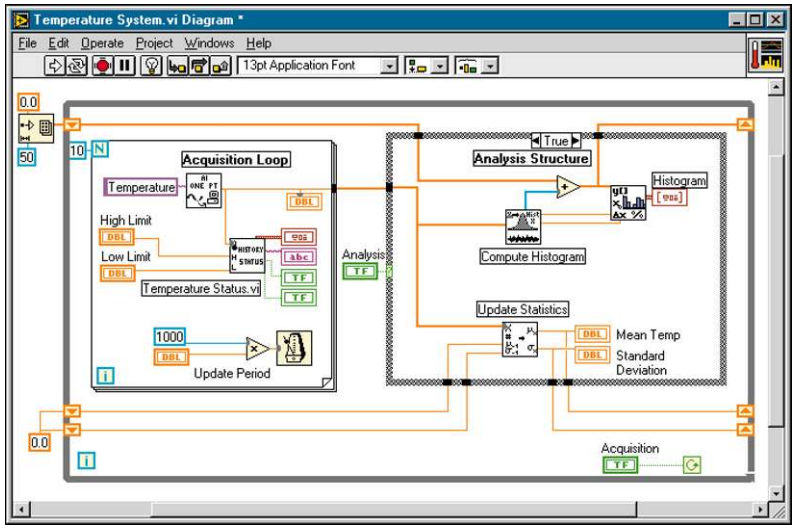
- Channel Access Protocol for non-real-time data (10 Hz update)
- Analog and digital I/O for deterministic data transfer
- Each IOC holds a subset of EPICS database variables

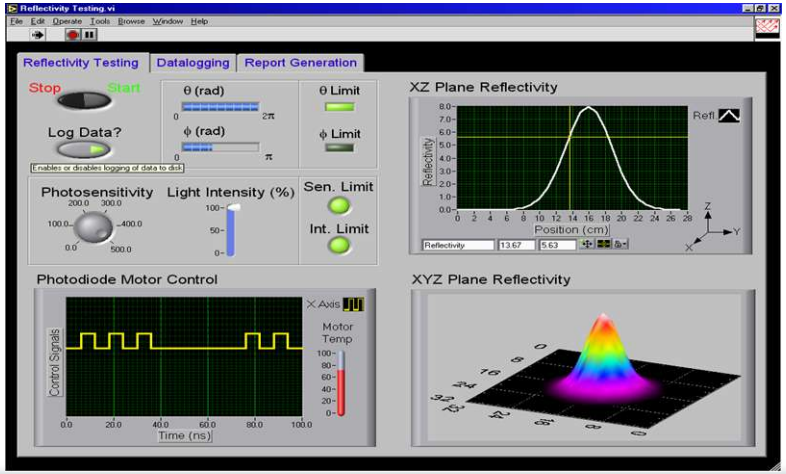


NATIONAL INSTRUMENTS LabVIEW™

- Graphical dataflow programming
- Interactive front panel / GUI
- Efficient compiled execution

- Targets
  - Windows, Real-Time, FPGA, Linux, Macintosh, DSP, Other Processors
- I/O and analysis libraries
- Distributed networking capabilities





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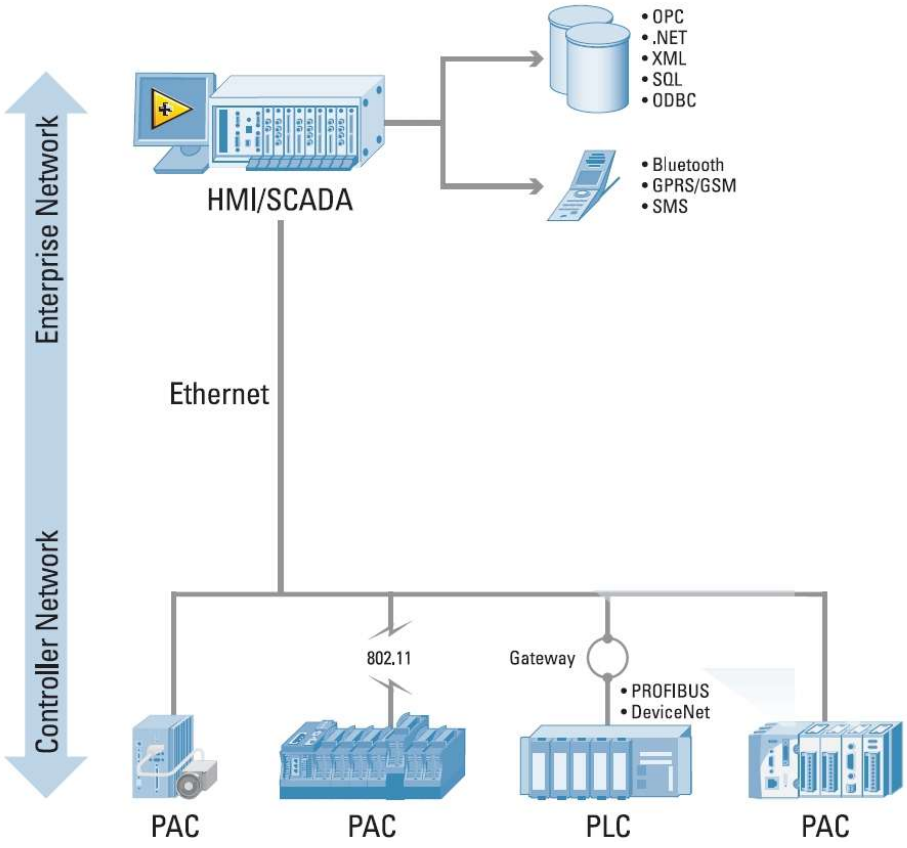
Open Architecture

- Connectivity to different devices
  - OPC, Modbus, TCP/IP, Serial
- Flexibility
  - Windows, RTOS, FPGA



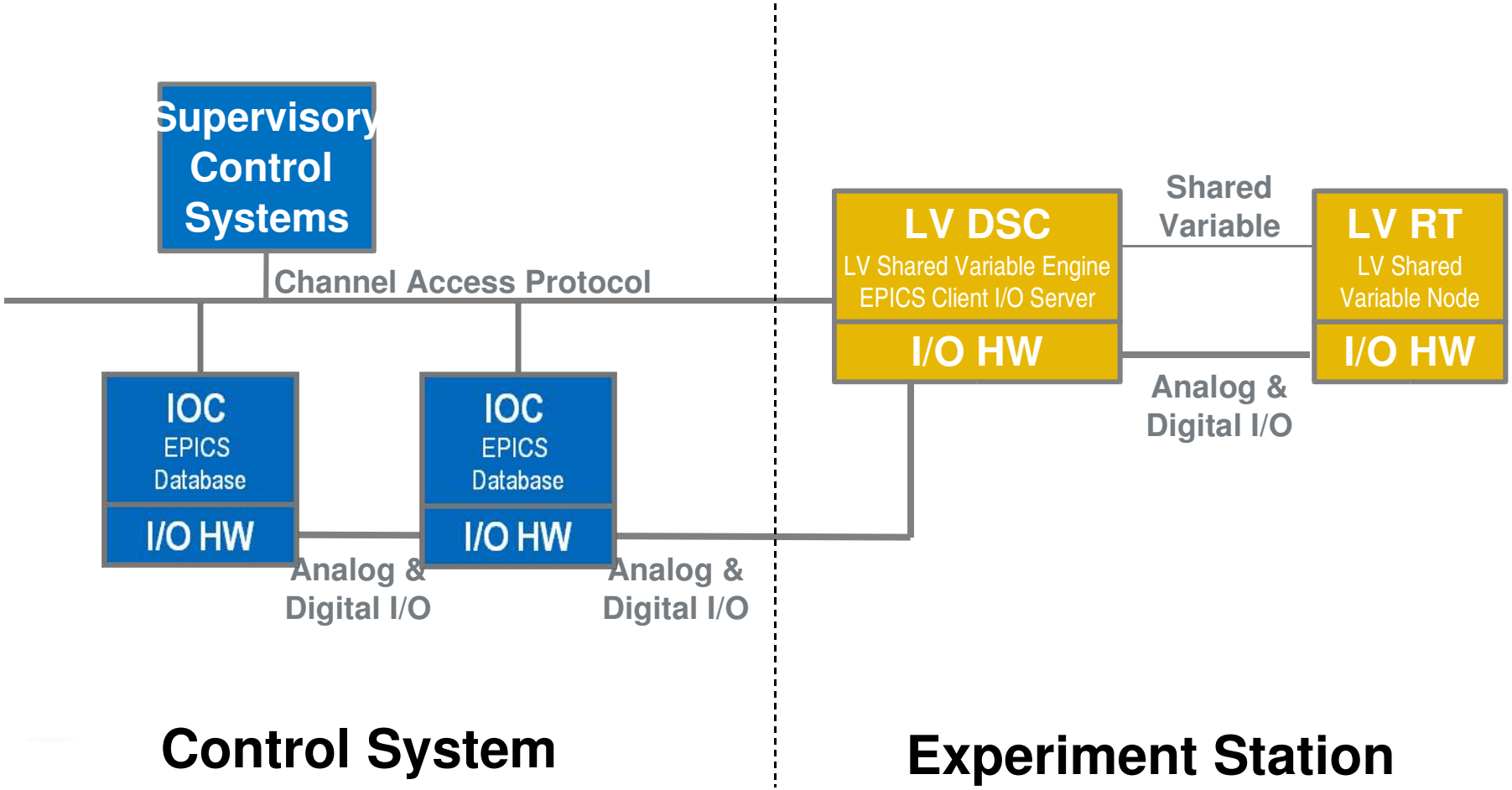
Current LabVIEW-EPICS interfaces

- LabView display/EPICS DAQ:
  - ActiveX library – by SLAC
  - LabVIEW EPICS Client I/O server
- EPICS display, LabView DAQ:
  - Shared memory interface – by SNS ORNL

CA ActiveX

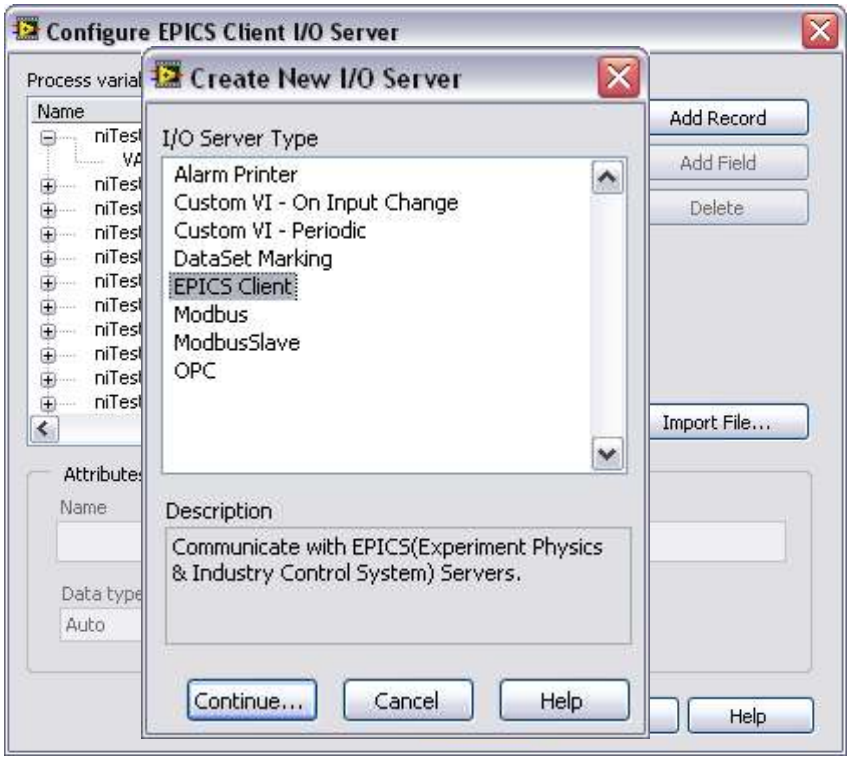
- Windows-specific
- Conceptually similar to CIN
- Used for SNS BLM electronics calibration
  - Picoamp source

EPICS and LabVIEW

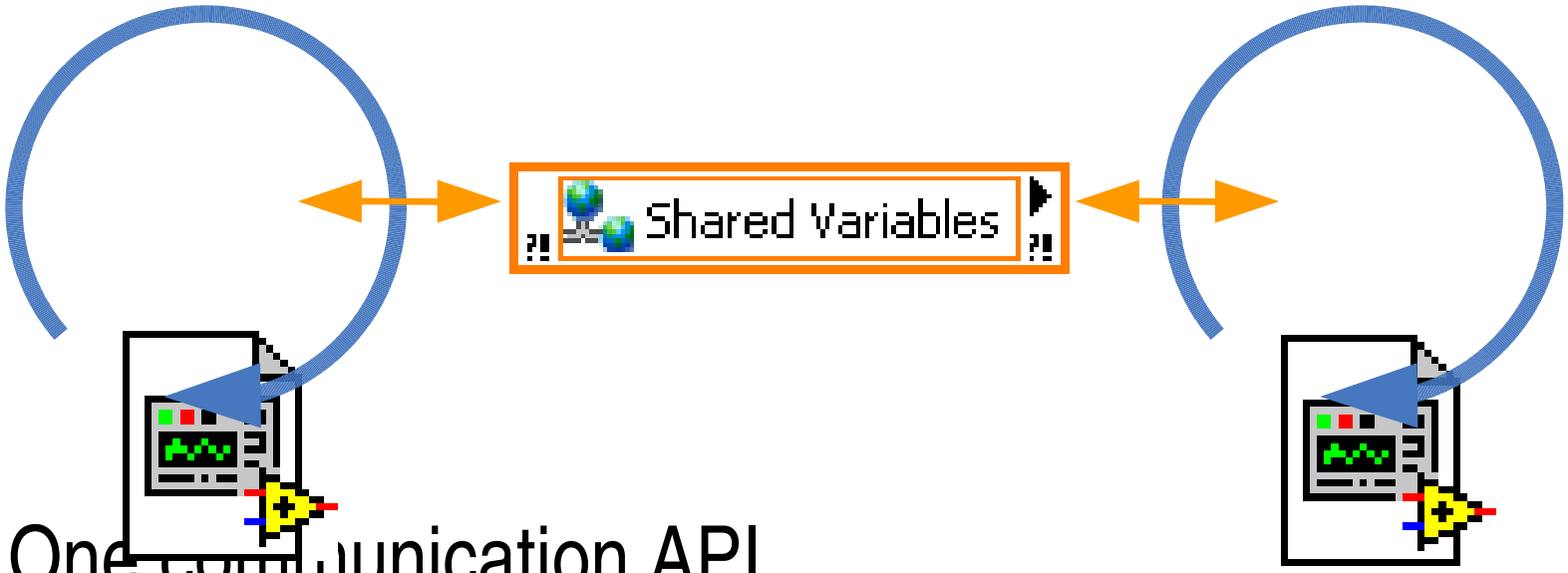


LabVIEW EPICS Client I/O Server

- Runs on LabVIEW for Windows
- Requires LabVIEW DSC
  - Data archiving
  - Alarming
  - Scaling
  - User interface
- Based on shared variable technology

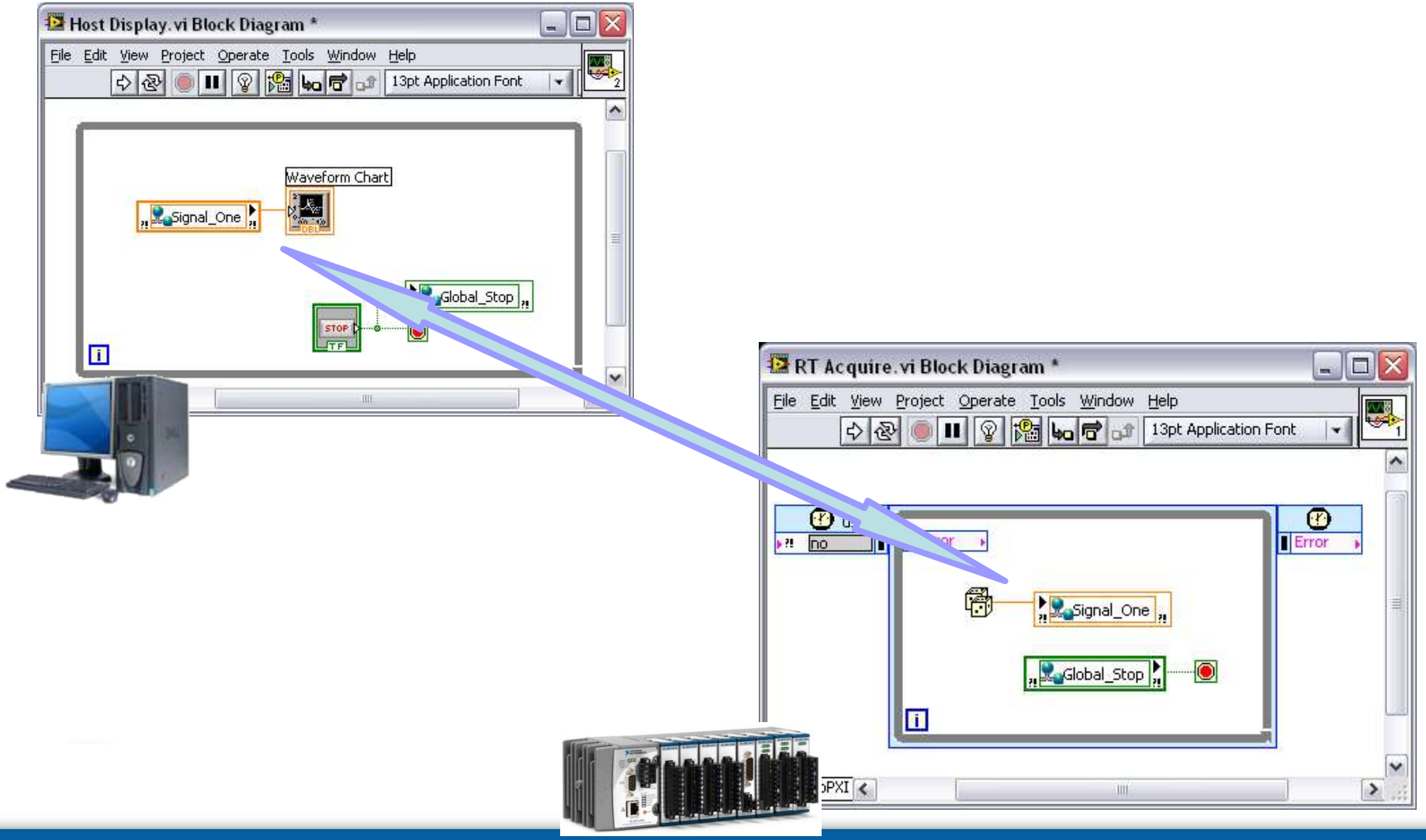


The LabVIEW Shared Variable

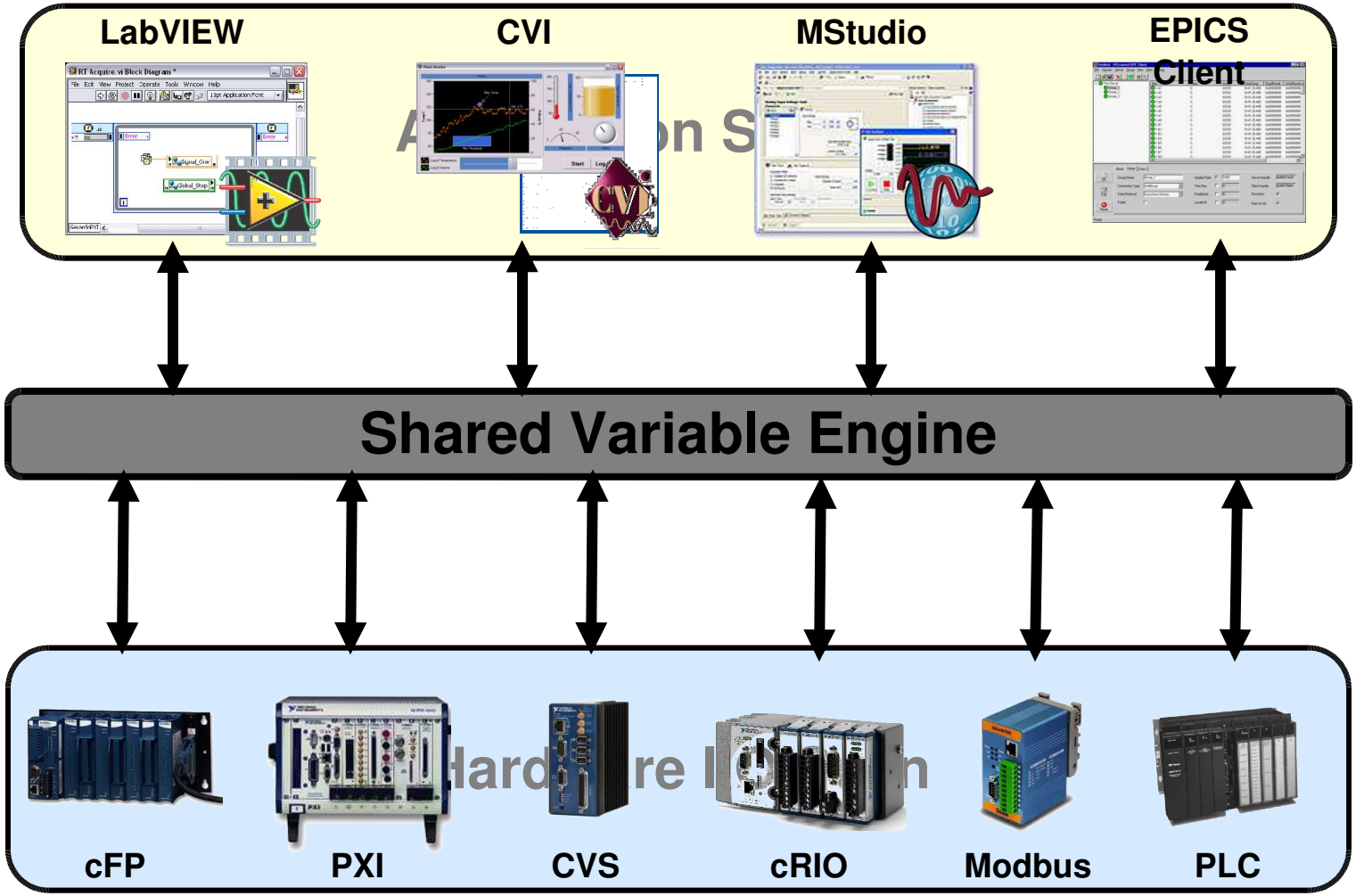


- One communication API
- Scales from simple to large distributed applications
- Supported on Linux

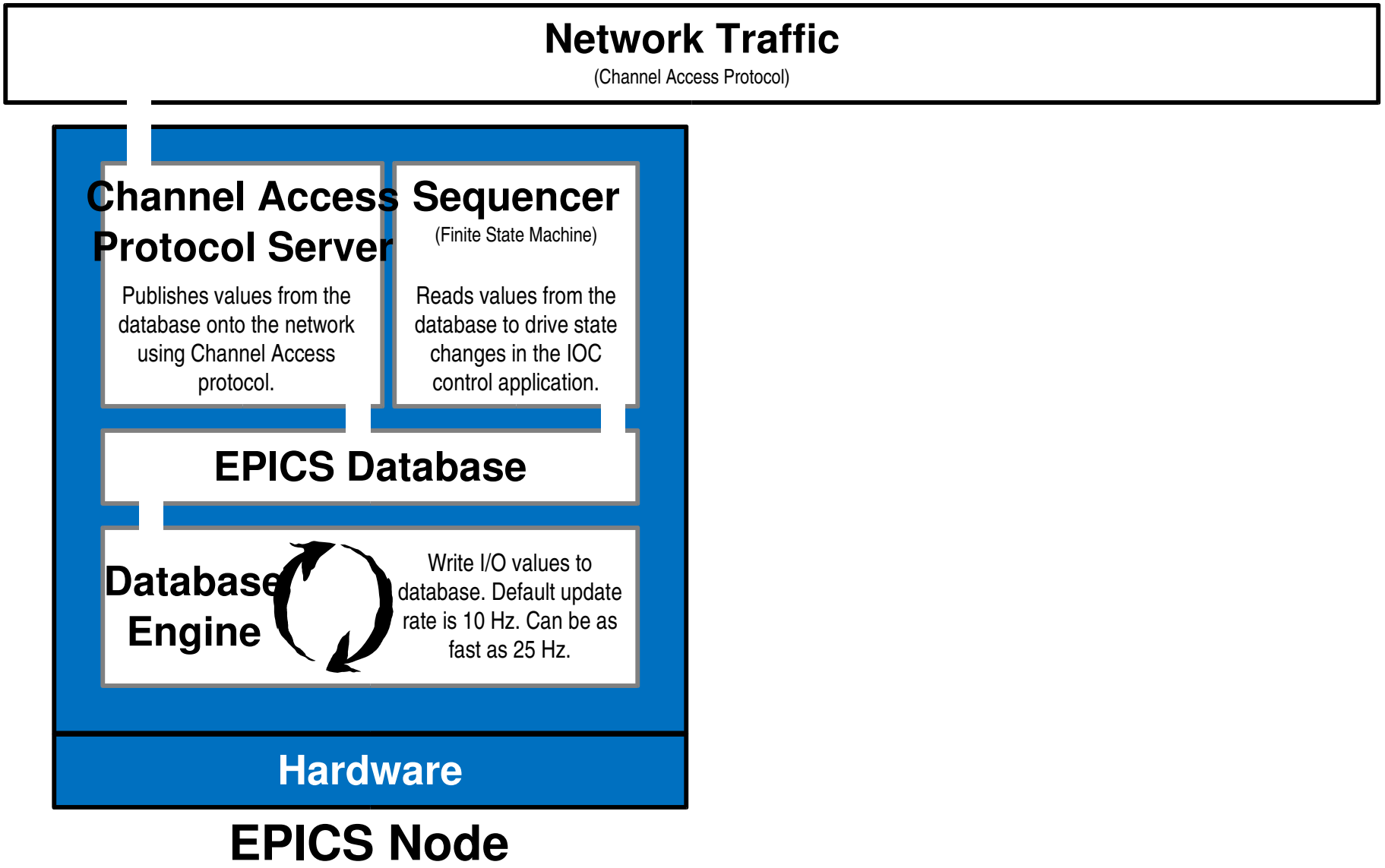
Communication between Targets



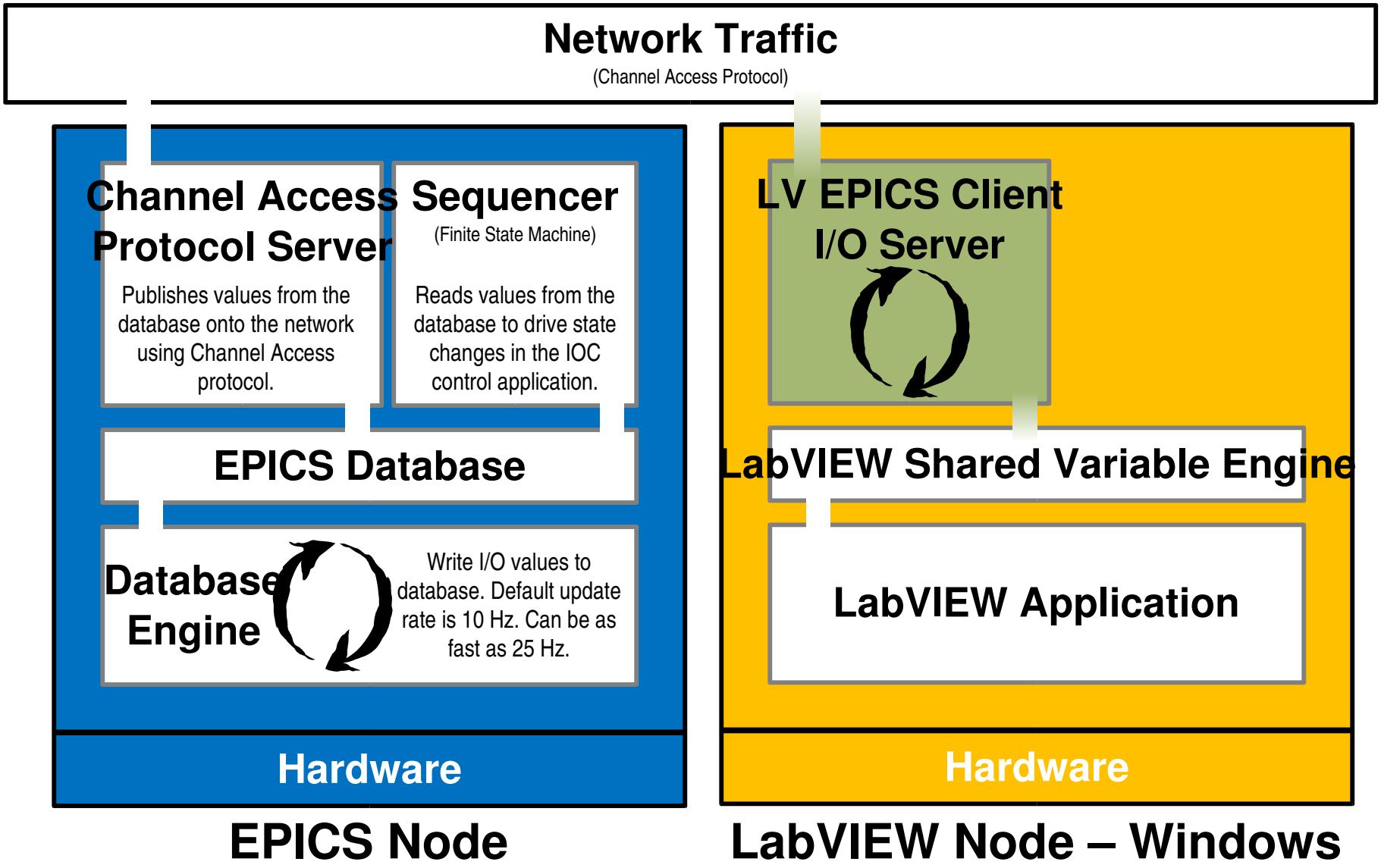
Shared Variable Engine



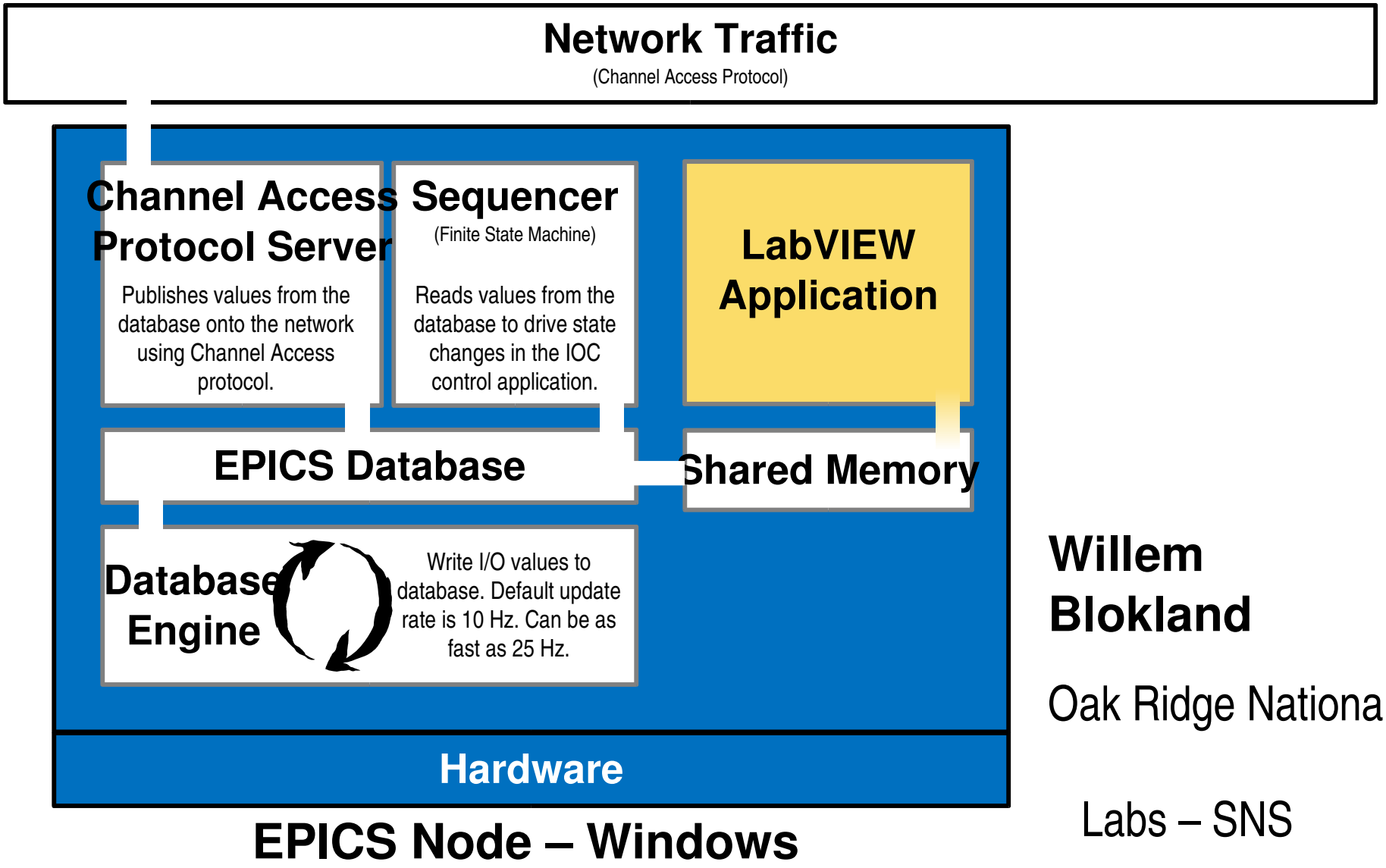
IOC (I/O Controller) Software



IOC Software with LV EPICS



IOC Software with Shared



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The concept: