

## Lab 3: Time Synchronization



# PC – login instructions



**During start-up, select the LABVIEW image.** If the login below doesn't work, restart the computer.

Login credentials (other user):



User name: .\sgt

Password: EE-472smart

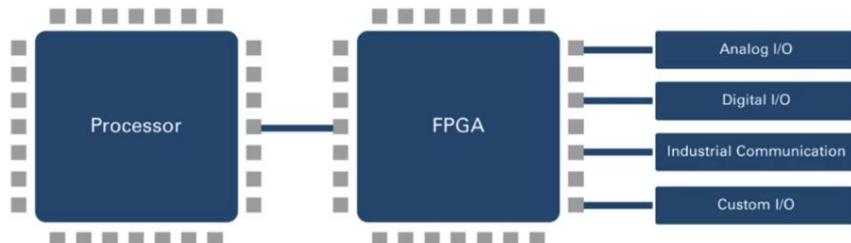
# cRIO (compactRIO)

- Real-time embedded industrial controller from National Instruments
- LabVIEW



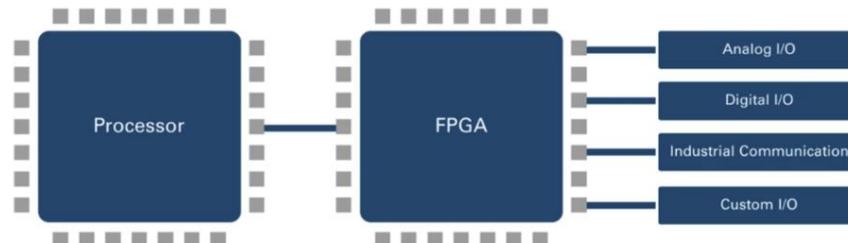
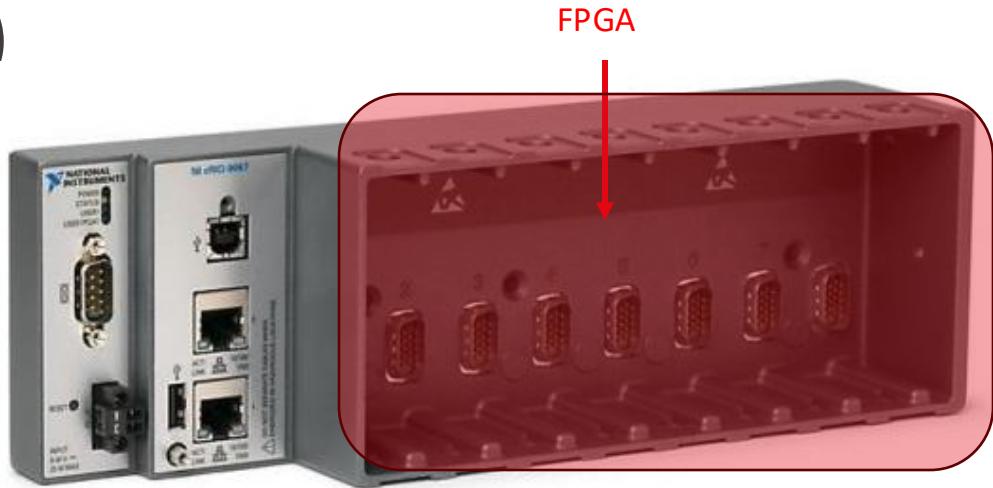
# cRIO (compactRIO)

1. Real-time Processor
  - Running applications
  - Real-time analytics
  - Manipulate datasets
  - Signal processing
  - Data logging
2. FPGA (Field Programmable Gate Array)
3. Modular I/O



# cRIO (compactRIO)

1. Real-time Processor
2. FPGA (Field Programmable Gate Array)
  - Reconfigurable FPGA
  - Reliable, fast, deterministic execution with high throughput
  - Custom timing, triggering and synchronization
3. Modular I/O

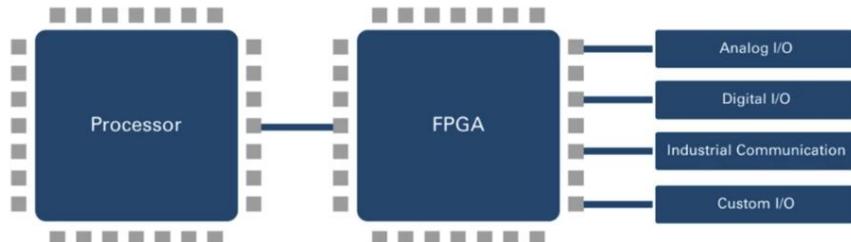


# cRIO (compactRIO)

1. Real-time Processor
2. FPGA (Field Programmable Gate Array)
3. Modular I/O
  - Customizable inputs and outputs
  - Direct connection to FPGA for minimal latency



C Series I/O Modules



# Working on the FPGA

- To halt the FPGA **do not use the red abort button**
  - This may improperly stop the FPGA and cause problems when you try to run it again.
  - Run the real-time (RT) VI to run the FPGA
  - Use the **stop button on the RT VI** to properly halt the program
- Do not change anything on the FPGA VI
  - Moving or modifying any element on the front panel or block diagram will require that you recompile the FPGA code which can take several minutes
  - If you change anything, it is faster to redownload the project from moodle
- Your cRIO can also be accessed from the **NI MAX application** (under remote systems)