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INSTRUMENTATION & APPLIED ACOUSTICS RESEARCH GROUP

Analog Data Acquisition and Processing FPGA-based Solutions Integrated in Area Detector using FlexRIO technology

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Integrate FPGA IDAQs Systems in Distributed Control System EPICS with one C++ Class

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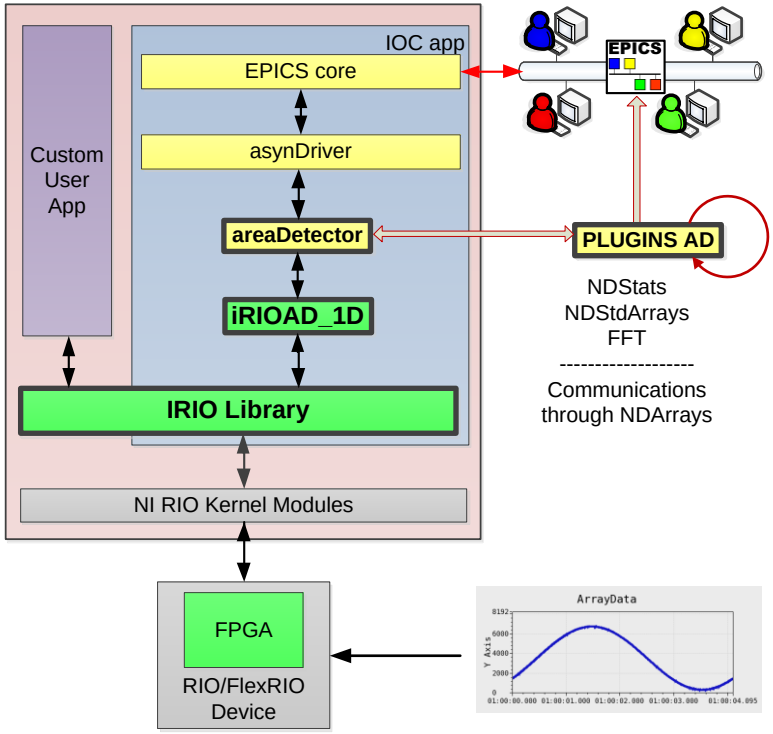

Objective

Integrate IDAQs (DAQs with FPGA) in distributed plant control systems like EPICS:

- Better performance and preprocessing capabilities, reduce time delays.
- Dificult to Integrate, heterogeneuos devices → areaDetector brings common interface to EPICS to different imaging hardware solutions

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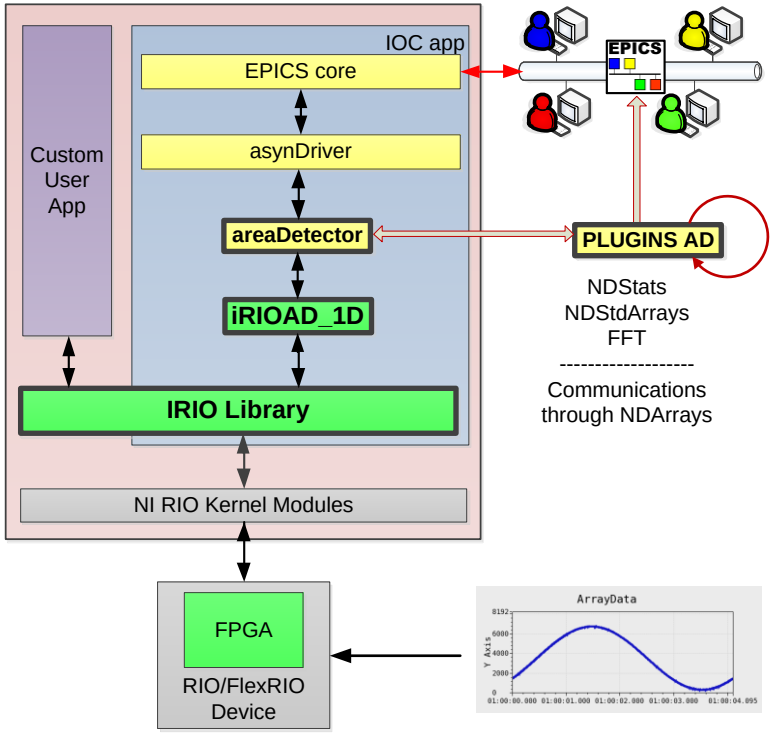

New model, two parts:

1. FPGA common model – Design Rules to show common interface
2. New areaDetector 1-D driver
   - Connect IDAQ hardware
   - Interface with EPICS through new PVs
   - Reuse areaDetector model (asynNDArrayDriver) and some PVs
   - Reuse areaDetector plugins

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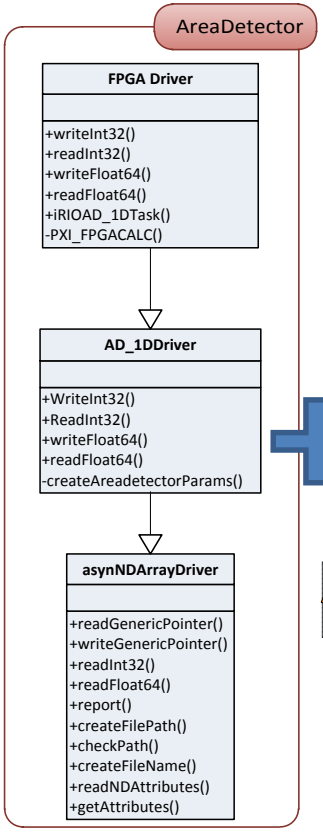

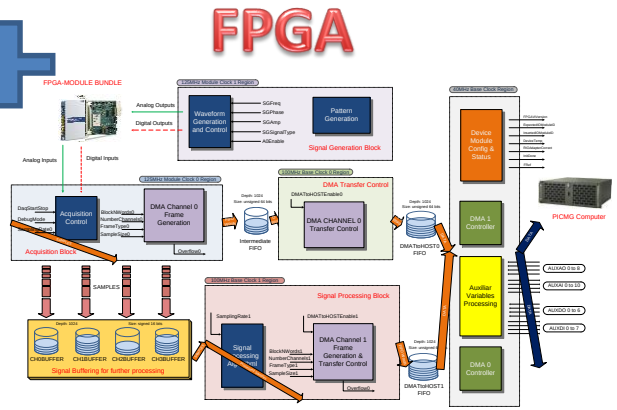

New ***HW developments*** just need to follow ***FPGA Design Rules***

&

Develop just one class for the specific parameters of the FPGA that connects to AD_1D driver

1-D areaDetector for IDAQs (FPGA)