Overview of EPICS drivers for DAQ boards

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Overview

- DAQ boards
- Requirements
- Framework
- Driver implementation
- Graphical interfaces
- Summary

DAQ boards

TELEDYNE SP DEVICES
Everywhereyoulook™

- Gigasample digitizers
- ADQ7
  - 1-2 14-bit channels
    - Up to 10 GSPS
- ADQ14
  - Up to 4 14-bit channels
    - Up to 2 GSPS

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DAQ boards

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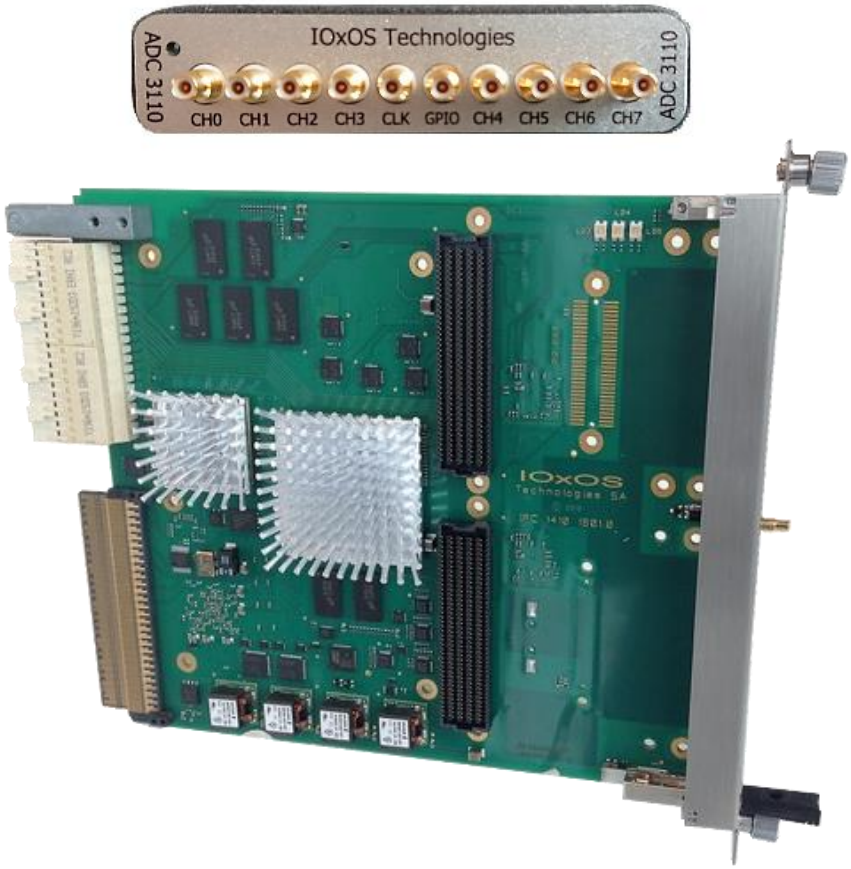
IOxOS TECHNOLOGIES
RELIABILITY BY DESIGN



- High-speed digitizer on all-in-one board
- ADC3110 FMC on IFC1410
  - 8 16-bit channels
    - 250 MSPS

DAQ boards

vadatech
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- High-speed ADC/DAC module
- AMC523 with MZ523B on MRT523
  - 12 ADC 16-bit channels
    - 125 MSPS
  - 2 DAC 16-bit channels
    - 250 MSPS

DAQ boards

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Micro-Research Finland Oy

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- Added support for MRF protocol in the firmware:
  - direct link to EVM through SFP on the front panel
  - supported functionality:
    - synchronize time with MRF to provide timestamping
    - trigger acquisition on event, generate pulse on event
  - standard trigger on the backplane is still supported if an EVR is present in the crate

DAQ boards

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- There are many different DAQ boards but…
- …they share a common use-case:

  digitizing analogue signals.

Requirements

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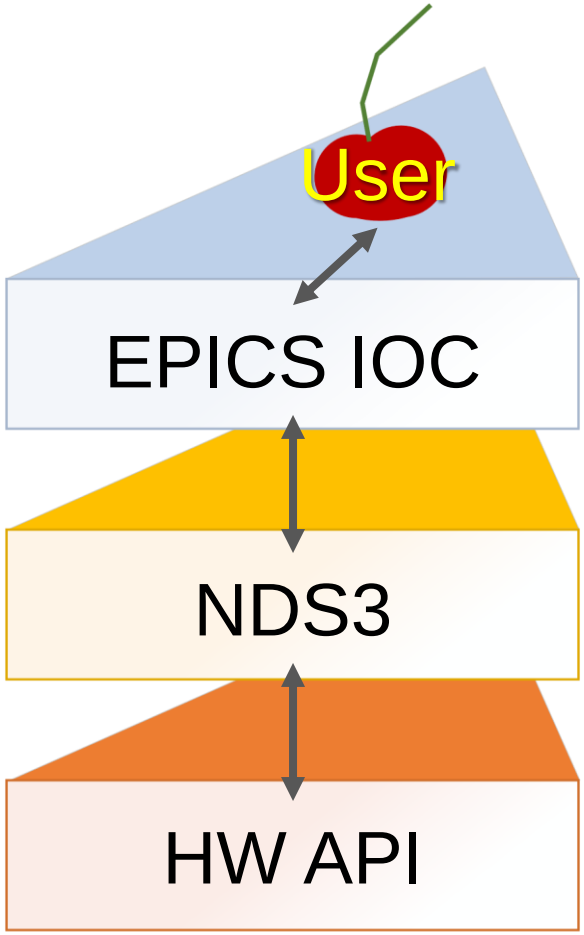
- Driver provides full support for main and board-specific functionalities:

Software support	*Driver supports a specific board model no matter what hardware interface it has.*
Automatic startup	*Communication with DAQ board established automatically.*
DAQ modes	*Any available DAQ mode can be chosen.*
DAQ parameters	*DAQ can be configured with various available parameters.*
Trigger modes	*DAQ can be triggered with any available source.*
Channel mask	*Number of active channels is configurable.*

- Support documentation has a standardized structure.

Framework



- Driver is based on community version of NDS3
- Three layered software application
- End user interacts with IOC application or GUI

Driver implementation

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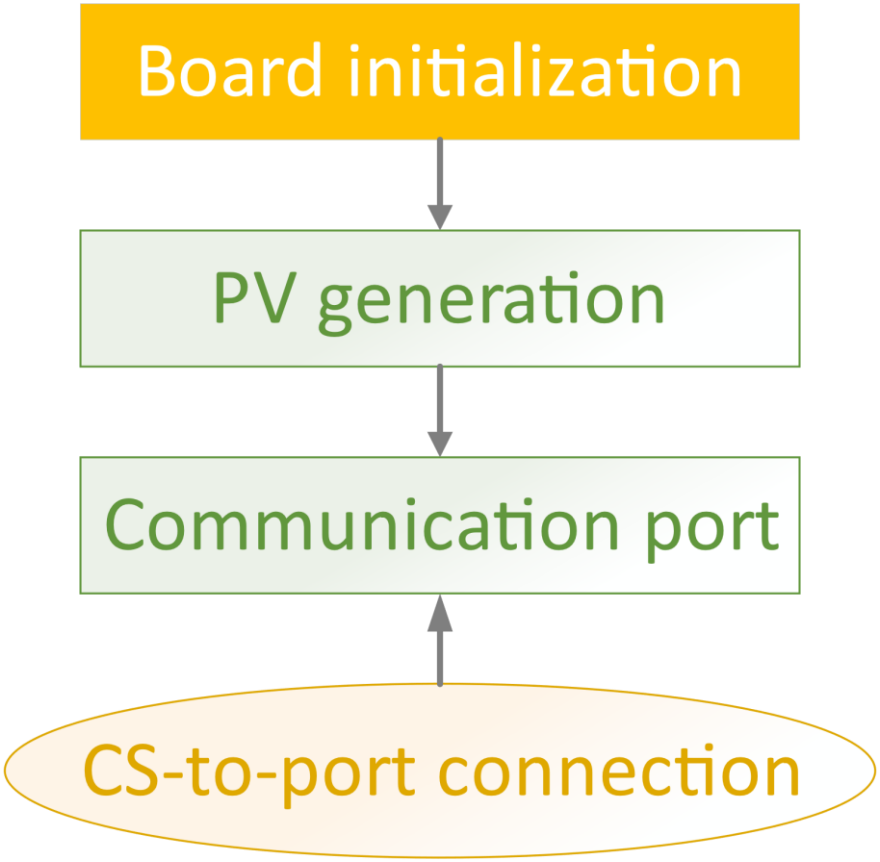
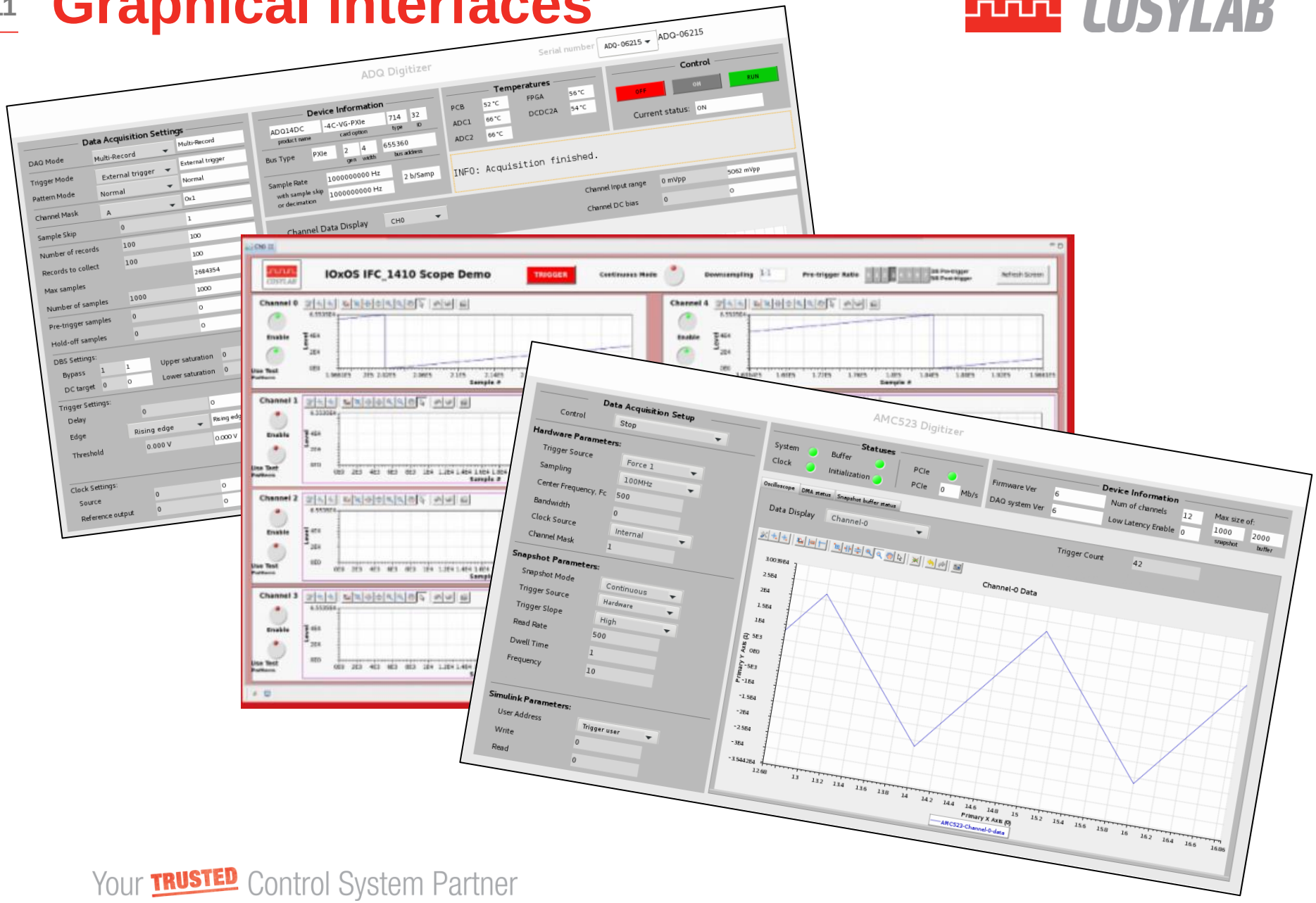


Graphical interfaces



Summary

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- During the past year we have got a lot of experience with different DAQ boards, also of MTCA.4 form factor.
- And despite the wide variety of DAQ boards, they can be operated in a unified way…
- …A way, that can be developed and maintained with community supported software.

THANK YOU!

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