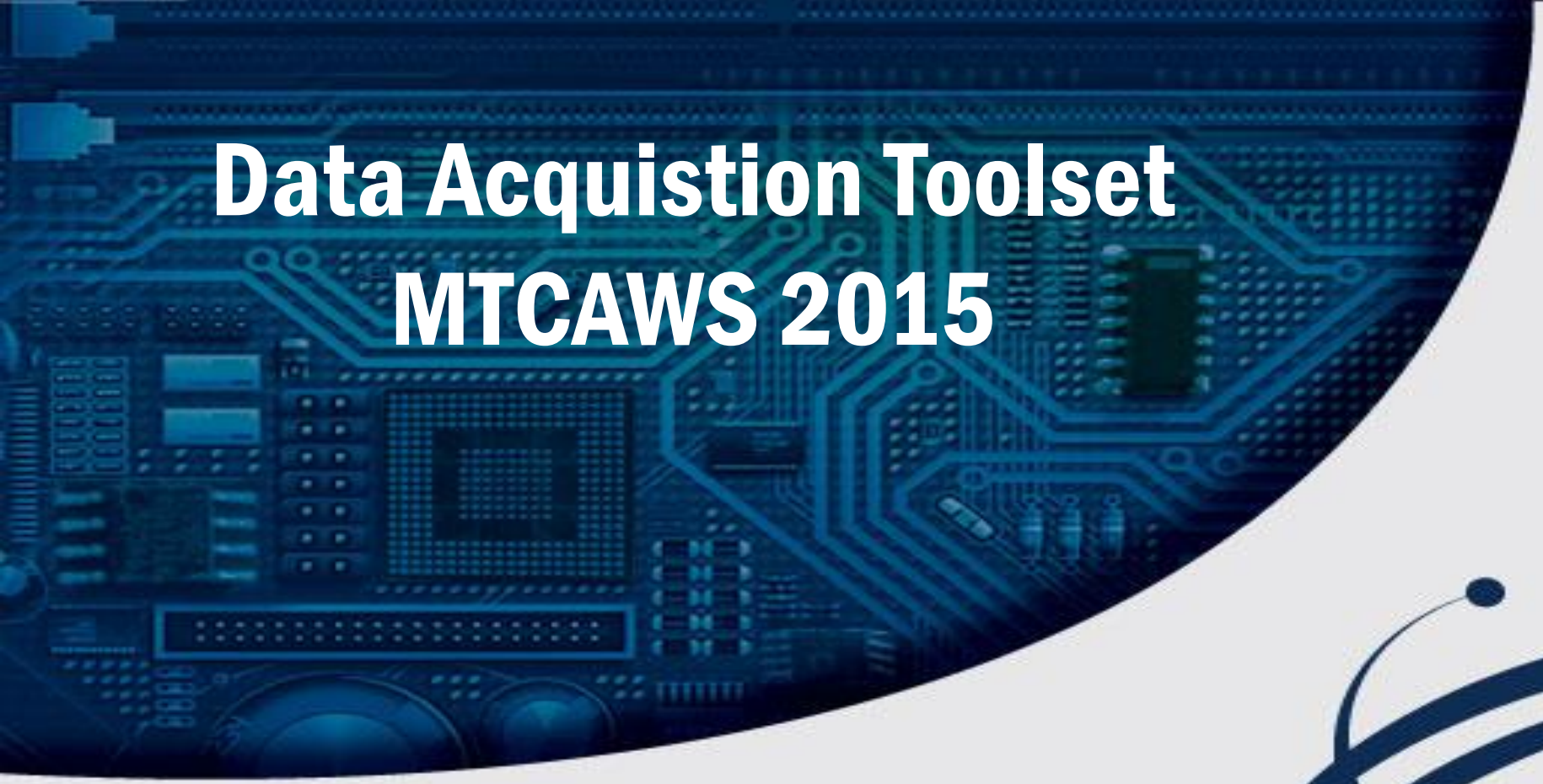
Data Acquistion Toolset
MTCAWS 2015



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THE POWER OF VISION

Corporate Fundamentals

- Founded 2004, privately owned
- Corporate HQ in Henderson NV, USA
- AS 9100 Certified
- 5-yr CAGR of 35% (to end of 2015)
- Top 5 customers are all industry leaders
- Subsidiaries in Europe and Asia Pacific
- Worldwide distribution

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Corporate Values: We…

…provide Technology
- 100GbE Line Cards
- Feature-rich MCH
- 56GSPS ADC

…commit to our Customers
- Engineering partnership
- Collaborative approach
- Mutual success

…deliver Complexity
- Distributed management
- Complete signal chain
- Multi-discipline solutions

…manufacture in-house
- AS9100 Accredited
- 30,000 sq ft facility
- Multi-site expansion

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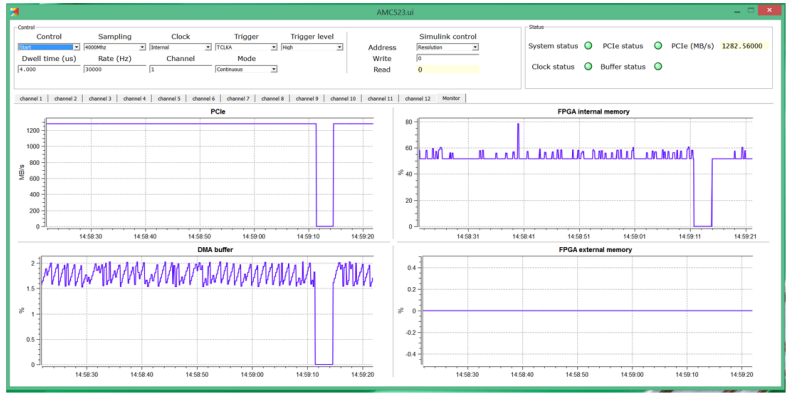
Data Acquisition Bundle

Digitiser

FPGA Processing
+
DMA Engine



Driver
+
EPICS / Qt

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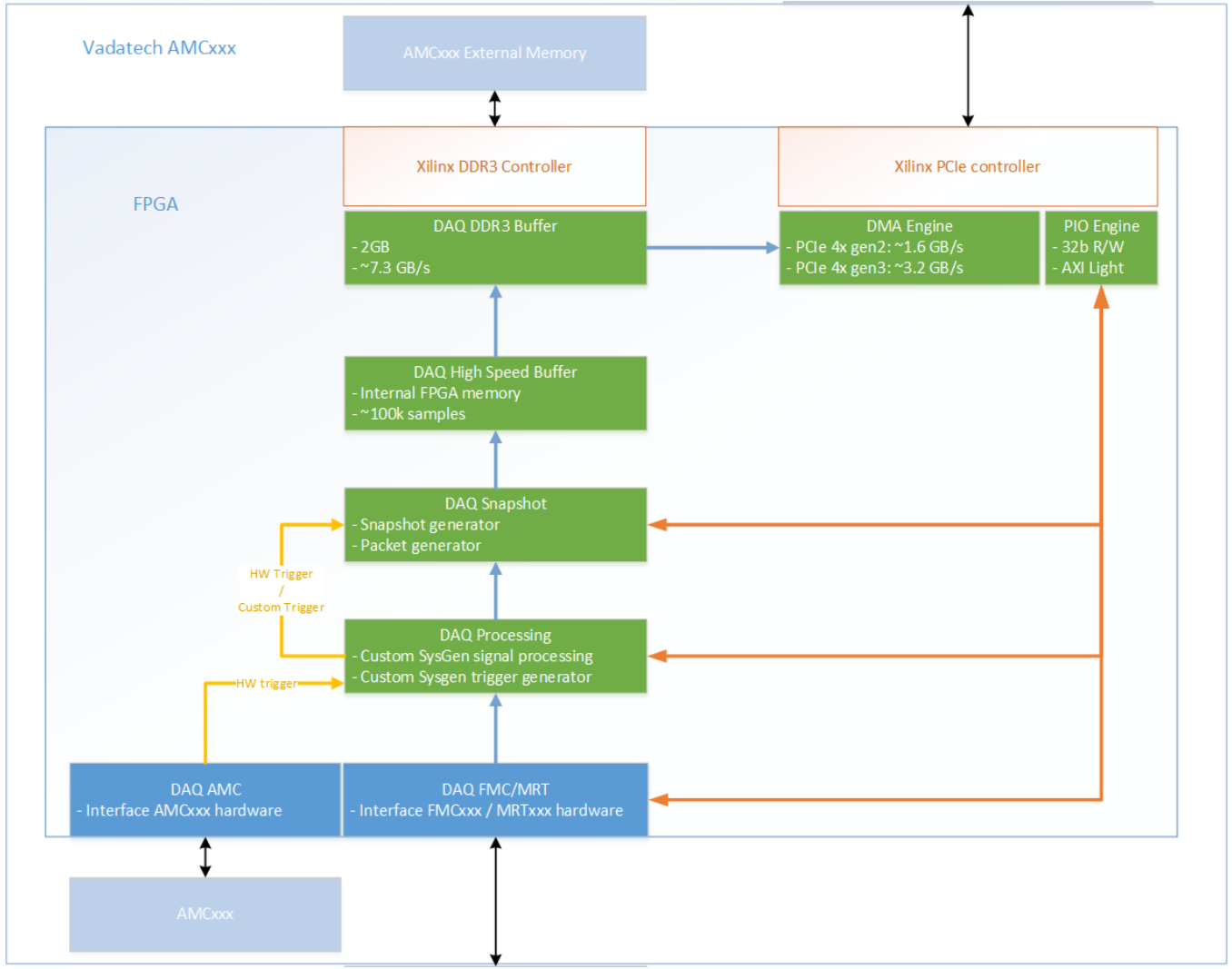
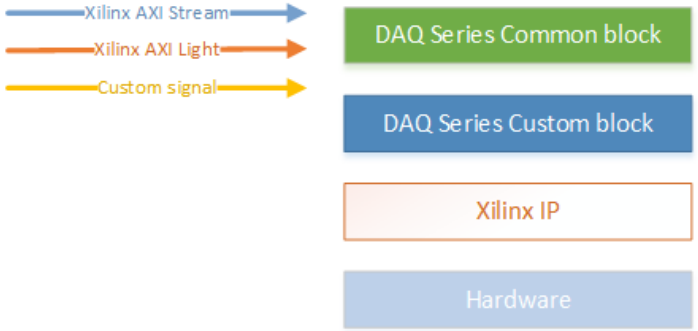
VadaTech IP Architecture





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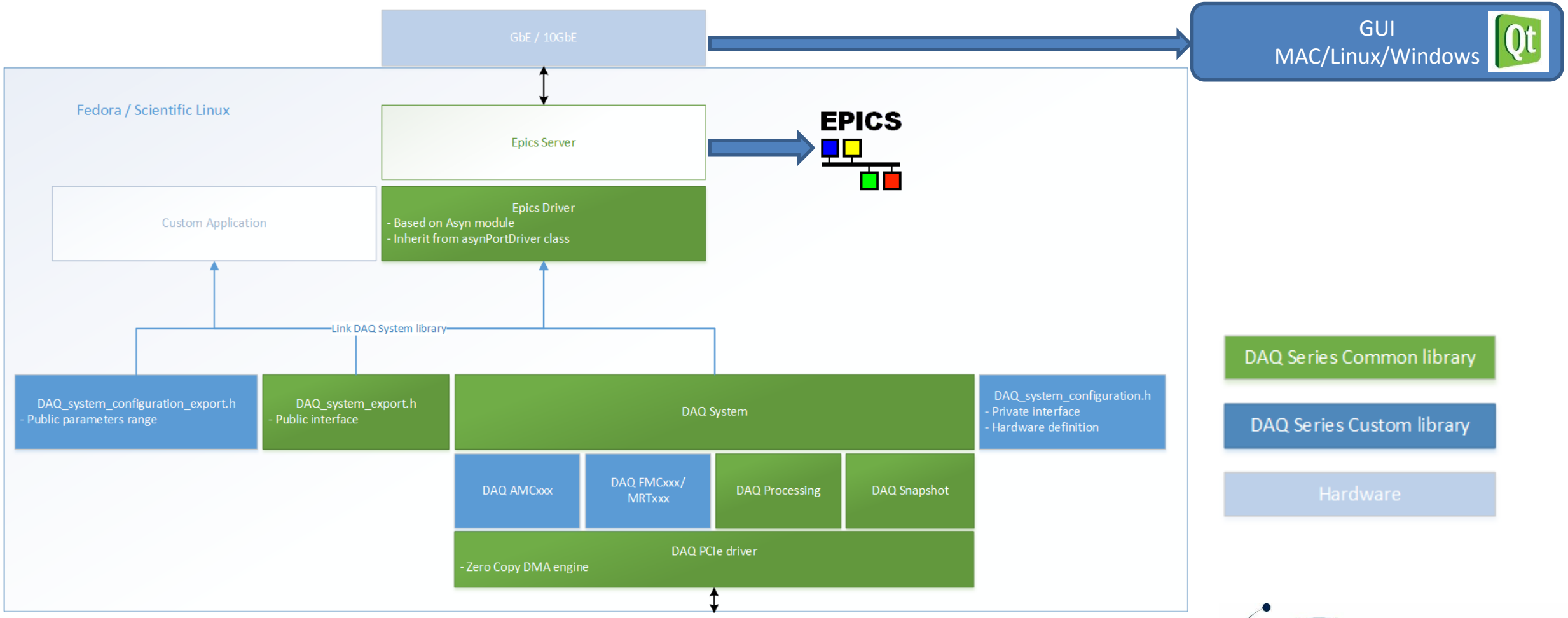
VadaTech Software Architecture



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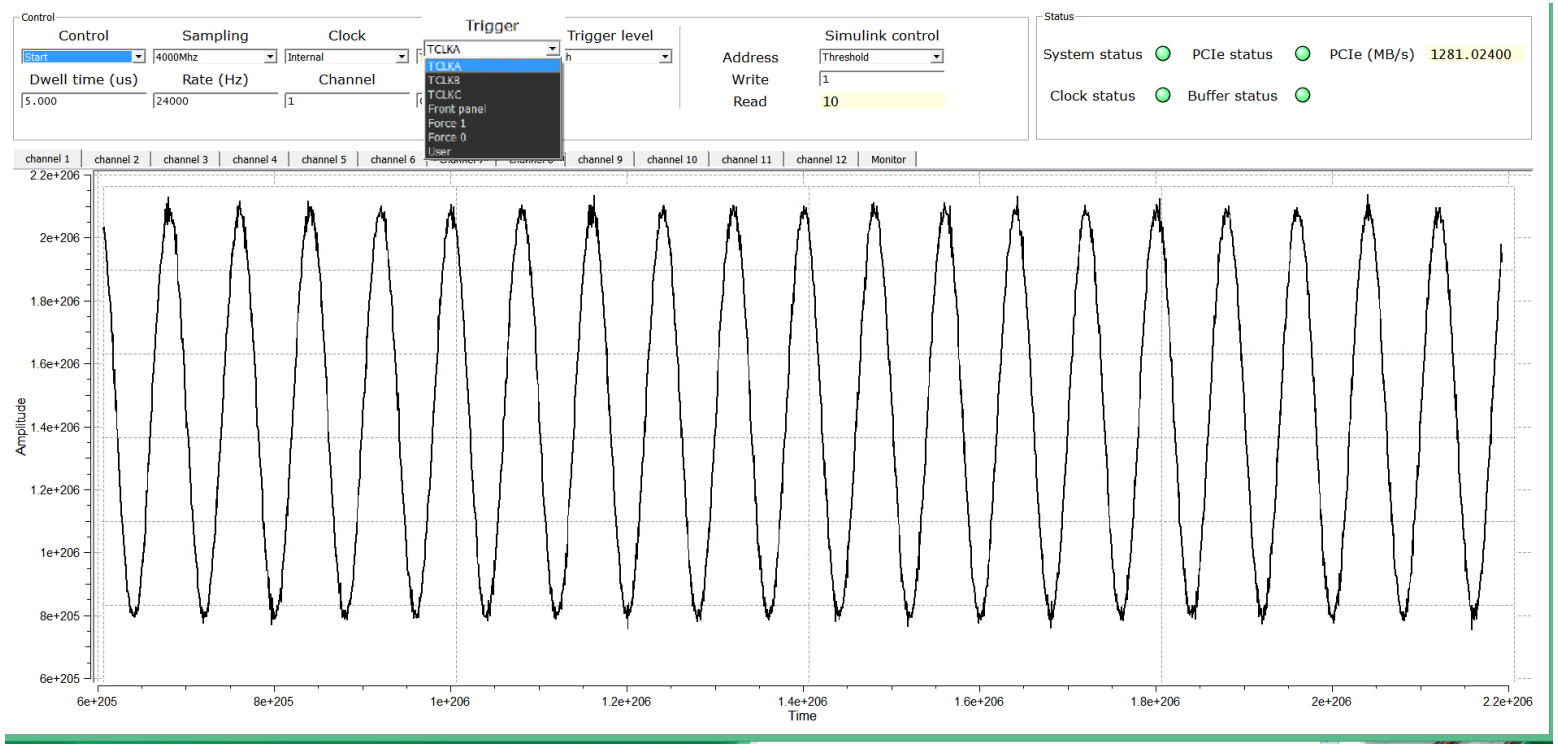
Data Acquisition – User Interface (1)

Configuration Window



Acquisition parameters:

- Dwell time: Snapshot duration
- Rate: Snapshot frequency
- Channel: Activated channel
- Acquisition mode:
  - Continuous: Active after first trigger
  - Stepped: One snapshot for each trigger event

Clock source drop-down

Trigger source drop-down

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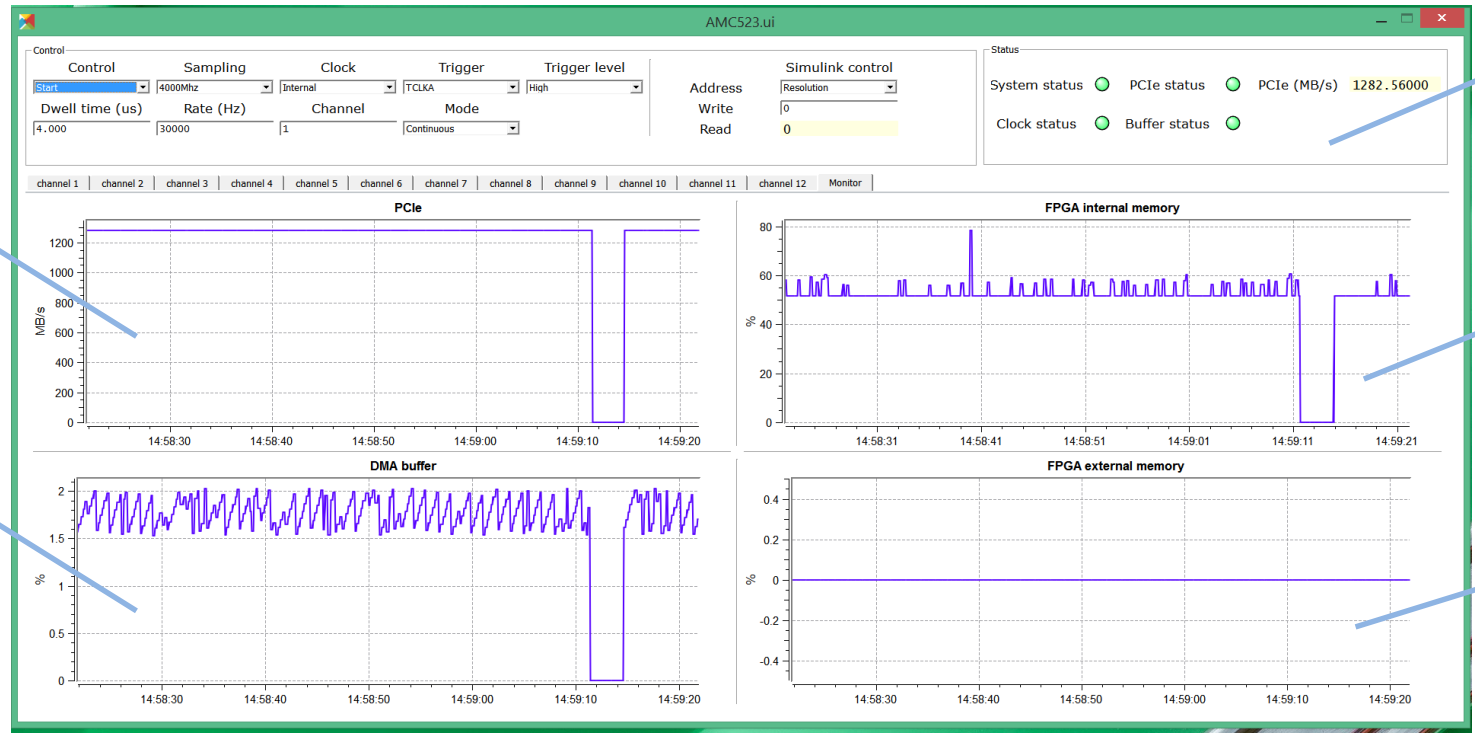
Data Acquisition – User Interface (2)

Sensors status Window



PCIe transfer speed

CPU memory usage

Status indicators

FPGA internal memory usage

DDR3 usage

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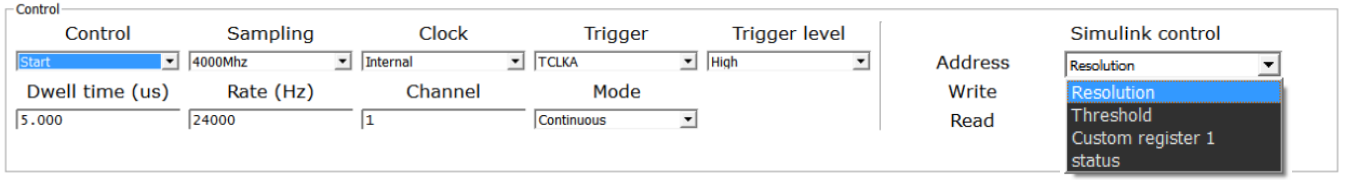
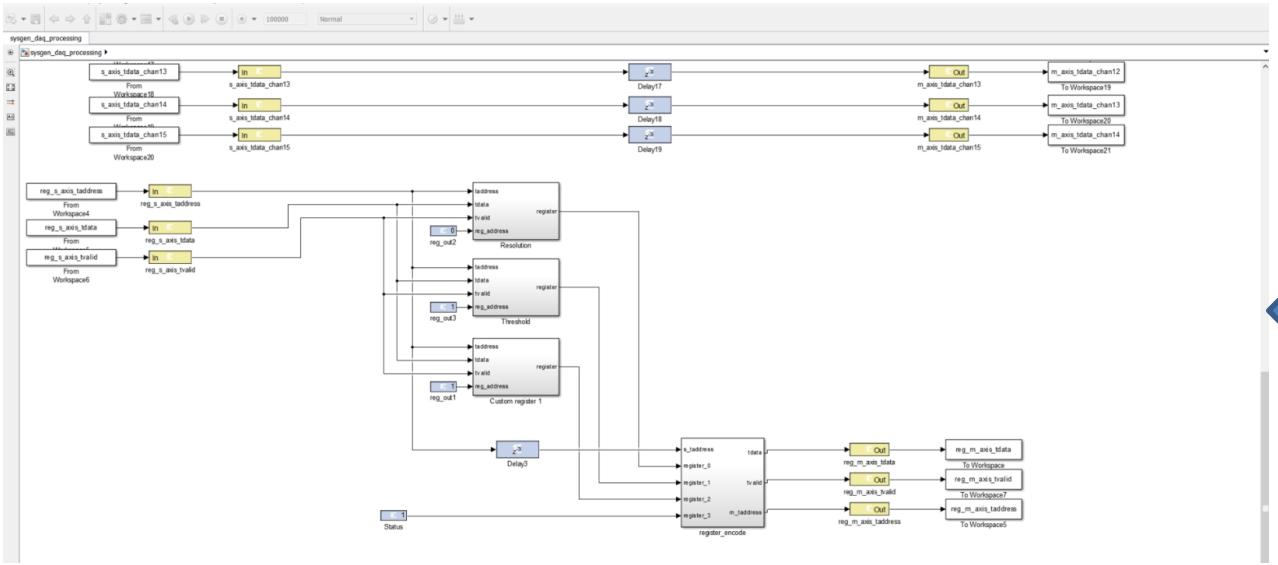
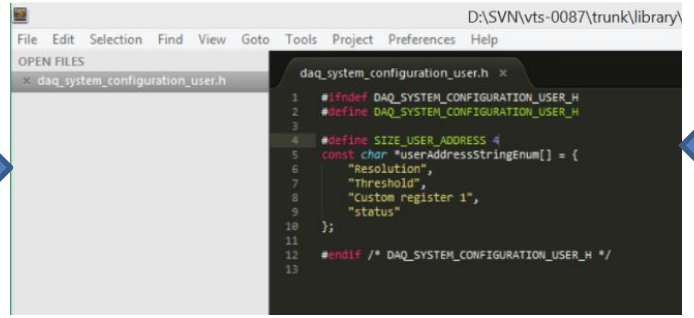
Data Acquisition – Customisation

65,000 registers available and configurable by the end user to adapt the software to a particular sensor/system.





User-defined functionality



Integrate using Simulink – industry standard toolset for flexibility.

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VadaTech DAQ Hardware

AMC - A/D & D/A Converters (close)

ADC and DAC converters

AMC520

AMC 10-Channel ADC, MicroTCA.4

- Double module AMC, compliant to µTCA.4
- Ten channel of ADC with 125MSPS @ 16-bit resolution utilizing AD9268 device
- Dual DAC with 250 MSPS @ 16-bit resolution utilizing MAX5878 device (this is user programmable for lower sampling rate)
- Internal clock or precision external clock from RTM/backplane/front panel clocks

View Product | AMC520 Data Sheet

AMC521

AMC 24 Channels ADC, Mixed Sampling Rate

- Sixteen channel AD8138 ADC 16-bit @ 250 MSPS
- Eight channel SAR SN74AVC8T245 ADC 16-bit @ 650 KSPS simultaneous
- Interface to the FPGA is via JESD204B
- 24 LVDS for Clock/Trig and/or GPIO

View Product | AMC521 Data Sheet

AMC522

MTCA.4 AMC Dual DAC, 16-Bit @ 500 MSPS

- Dual channel MAX5878 DAC with 500 MSPS @16-bit resolution
- Compliant to µTCA.4, double module, mid-size (fullsize optional) with rear I/O
- Xilinx Kintex-7 FPGA
- AMC.1, AMC.2, and AMC.4 compliant (FPGA programmable)

View Product | AMC522 Data Sheet

AMC523

MTCA.4 AMC, Dual DAC 16-Bit @ 250 MSPS

- Dual DAC 16-bit @ 250 MSPS utilizing MAX5878 device (user programmable for lower sampling rate)
- Double module, mid-size (full-size optional) compliant to µTCA.4
- Internal clock or precision external clock from RTM/backplane/front panel clocks
- Trig in/out configurable by software (external trigger via front or port 17)

View Product | AMC523 Data Sheet

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VadaTech DAQ Hardware

AMC524

Quad ADC, 16-Bit @ 125 MSPS, Dual DAC, Artix-7

- Single module, mid-size per AMC.0
- Conduction cooled version available
- Dual DAC 12-bit @ 2.5 GSPS (DDS AD9915)
- Quad ADC 16-bit @ 125 MSPS (AD9653)

View Product | AMC524 Data Sheet

AMC526

AMC Dual ADC, Virtex-7, 12-Bit @ 2.6 GSPS

- Dual ADC, 12-Bit @ 2.6 GSPS in single module, mid-size (full-size optional)
- Xilinx Virtex-7 690T FPGA in FFG-1761 package
- Quad banks of QDR-II+ memory, 576 Mb total (36-bit wide)
- Single DDR3 1Gb (16-bit wide)

View Product | AMC526 Data Sheet

AMC529

AMC Dual DAC 14-Bit @ 5.7 GSPS Module

- Single module, mid-size per AMC.0
- Conduction cooled version available
- Dual AD9129 DAC, 14-bit at 5.7 GSPS
- Xilinx Virtex-7 690T FPGA in FFG-1761 package

View Product | AMC529 Data Sheet

AMC590

AMC 56 GSPS 8-Bit ADC, 1 Or 2 Channel

- Single channel 56 GSPS or dual channel 28 GSPS MB8AC2070 ADC
- 8-bit resolution
- ADC is 65nm CMOS process technology
- Very low power consumption (5W for the ADC)

View Product | AMC590 Data Sheet

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VadaTech DAQ Hardware

AMC - RTM per MTCA.4 (close)

Rear Transition Modules (RTMs) per the MicroTCA.4 specification. These modules will always plug to a corresponding front AMC of the same part number suffix.

MRT520

MicroTCA.4 RTM For AMC520

- MicroTCA.4 RTM for the AMC520
- Two analog outputs from AMC520's DACs via SSMC connectors
- Ten analog inputs (AC or DC coupled) interfacing directly with AMC520's ADC ICs via SSMC connectors
- Twelve LVDS signals and three differential reference clock routing to AMC520's FPGA

View Product | MRT520 Data Sheet

MRT522

MicroTCA.4 RTM For AMC522, 8 Ch ADC

- MicroTCA.4 RTM for the AMC522
- Double module, mid-size (full-size optional)
- Two analog outputs from AMC522's DACs via SSMC connectors
- Eight analog inputs (AC or DC coupled) via SSMC connectors feeding on-board ADCs via programmable gain amplifiers

View Product | MRT522 Data Sheet

MRT523

MicroTCA.4 RTM For AMC523, 12 Ch ADC 16-Bit @ 125 MSPS

- MicroTCA.4 RTM for the AMC523
- Double module, mid-size (full-size optional)
- Twelve channel ADC 16-bit @ 125 MSPS utilizing AD9653 device
- Two analog outputs from AMC523's DACs via SSMC connectors

View Product | MRT523 Data Sheet

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VadaTech DAQ Hardware

FMC221

FMC DAC 14-Bit @ 2.5 GSPS Module

- FPGA Mezzanine Card (FMC) per VITA-57
- Single module
- Single AD9739 DAC 14-bit at 2.5 GSPS
- 2Vpp Differential Analog Output Swing

View Product | FMC221 Data Sheet

FMC222

FMC Dual DAC 14-Bit @ 2.5 GSPS Module

- FPGA Mezzanine Card (FMC) per VITA-57
- Single module
- Dual AD9739 DAC 14-bit at 2.5 GSPS
- Chip synchronization between the two

View Product | FMC222 Data Sheet

FMC223

FMC High-Speed DAC 14-Bit At 2.5 GSPS Module

- FPGA Mezzanine Card (FMC) per VITA 57
- Single module AD9739 DAC 14-bit at 2.5 GSPS
- 2 Vpp differential Analog output swing
- Programmable DSP clock

View Product | FMC223 Data Sheet

FMC224

FMC Quad DAC 16-Bit @ 2.8 GSPS Module

- FPGA Mezzanine Card (FMC) per VITA 57
- Quad port DAC39J84
- On board-Wide band PLL
- Trig In/Out

View Product | FMC224 Data Sheet

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VadaTech DAQ Hardware

FMC225

FMC ADC, 12-Bit @ 4.0 GSPS And DAC, 14-Bit @ 5.7 GSPS

- FPGA Mezzanine Card (FMC) per VITA 57
- TI ADC12J4000 ADC
- Analog Devices AD9129 DAC
- Excellent dynamic performance

View Product | FMC225 Data Sheet

FMC226

FMC Dual ADC, 12-Bit @ 4.0 GSPS

- FPGA Mezzanine Card (FMC) per VITA 57
- Dual Texas Instruments ADC12J4000 ADC
- Excellent dynamic performance
- Front panel interface includes CLK In, Trig In, Analog In, and GPIO

View Product | FMC226 Data Sheet

FMC228

FMC Quad ADC 12-Bit @ 1 GSPS

- FPGA Mezzanine Card (FMC) per VITA 57
- Dual AD9234
- Option for Direct RF sampling clock via front panel
- On board wide-band PLL

View Product | FMC228 Data Sheet

FMC229

FMC Quad DAC 16-Bit @ 2.8 GSPS With Quadrature Modulator

- FPGA Mezzanine Card (FMC) per VITA 57
- Single DAC39J84
- On board dual Wideband Quadrature Modulator
- Trig In/Output

View Product | FMC229 Data Sheet

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VadaTech DAQ Hardware

Xilinx FMC Carrier FPGAs (close)

AMC502

AMC FPGA Carrier With Dual FMC, Kintex-7

- AMC FPGA carrier for dual FPGA Mezzanine Card (FMC) per VITA-57
- Double module, mid-size (full-size optional)
- Xilinx Kintex-7 FPGA (XC7K420T) in a FFG900C package
- AMC Ports 4-7 and 8-11 are routed to FPGA per AMC.1,AMC.2 and AMC.4 (protocols such as PCIe, SRIO, XAUI,etc. are FPGA programmable)

View Product | AMC502 Data Sheet

AMC510

FPGA Carrier, Double Module/Full Size

- AMC FPGA carrier to add customized mezzanine modules
- Clock, Trig, and Sync in/out
- AMC Ports 0-1 and 4-11 are routed to FPGA (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- Xilinx Virtex-5 FPGA in FF1136 package

View Product | AMC510 Data Sheet

AMC512

AMC FPGA Carrier For FMC, Virtex-5

- AMC FPGA carrier for FPGA Mezzanine Card (FMC) per VITA-57
- Xilinx Virtex-5 FPGA in FF1136 package
- Up to 512 MB of FPGA DDR2 memory
- AMC Ports 4-7 and 8-11 routed to FPGA per AMC.1, AMC.2 and AMC.4 (FPGA programmable per protocol such as PCIe, 10 GbE or SRIO)

View Product | AMC512 Data Sheet

AMC514

AMC FPGA Carrier For FMC, Virtex-6

- FPGA carrier for FPGA Mezzanine Card (FMC) per VITA-57
- Xilinx Virtex-6 FPGA in FF1759 package
- AMC Ports 2-3 and 4-11 are routed to FPGA (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- AMC FCLKA, TCLKA, TCLKB, TCLKC and TCLKD are routed

View Product | AMC514 Data Sheet

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AMC515

AMC FPGA Carrier For FMC, Virtex-7

- AMC FPGA carrier for FPGA Mezzanine Card (FMC) per VITA-57
- Xilinx Virtex-7 XC7V2000T in 1925 package
- AMC Ports 4-11 are routed to FPGA (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- AMC FCLKA, TCLKA, TCLKB, TCLKC and TCLKD

View Product | AMC515 Data Sheet

AMC516

AMC FPGA Carrier For FMC, Virtex-7

- AMC FPGA carrier for FPGA Mezzanine Card (FMC) per VITA-57
- Xilinx Virtex-7 690T FPGA in FFG-1761 package
- AMC Ports 4-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- AMC Ports 12-15 and 17-20 are routed to the FPGA

View Product | AMC516 Data Sheet

AMC517

AMC FPGA Carrier For FMC, Kintex-7

- AMC FPGA carrier for FMC per VITA-57
- Xilinx Kintex-7 410T FPGA in FFG-900 package
- AMC Ports 4-7 and 8-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- Option for on-board Freescale QorIQ PPC2040 (Quad Core Processor)

View Product | AMC517 Data Sheet

AMC518

AMC FPGA Carrier For FMC, Zynq-7000

- AMC FPGA carrier for FMC per VITA-5
- Xilinx Zynq-7000 FPGA in FFG-900 package (XC7Z045)
- AMC Ports 4-7 and 8-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- AMC FCLKA, TCLKA, TCLKB, TCLKC and TCLKD are routed

View Product | AMC518 Data Sheet

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VadaTech DAQ Hardware

AMC519

AMC FPGA Carrier For FMC, Artix-7

- AMC FPGA carrier for FMC per VITA-57
- Xilinx Artix-7 FPGA in FBG-676 package
- AMC Ports 0 and 1 as GbE to FPGA
- AMC Ports 4 and 8 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, GbE, etc. are FPGA programmable)

View Product | AMC519 Data Sheet

AMC525

AMC FPGA Carrier For Dual FMC With Virtex-7

- AMC FPGA carrier for Dual FPGA Mezzanine Card (FMC) per VITA-5
- Xilinx Virtex-7 690T FPGA in FFG-1761 package
- Double module, mid-size (full-size optional)
- AMC Ports 4-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)

View Product | AMC525 Data Sheet

AMC527

AMC FPGA Carrier For FMCs, Virtex-7, QDR-II+

- AMC FPGA carrier for FPGA Mezzanine Card (FMC) per VITA-57
- Xilinx Virtex-7 690T FPGA in FFG-1761 package
- Single module, mid-size (full-size optional)
- AMC Ports 4-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)

View Product | AMC527 Data Sheet

AMC592

AMC FPGA Carrier For FMC, UltraSCALE

- Carrier for FPGA Mezzanine Card (FMC)
- Single module, mid-size AMC
- Xilinx UltraSCALE XCKU115 FPGA
- AMC Ports 4-11 are routed to FPGA

View Product | AMC592 Data Sheet

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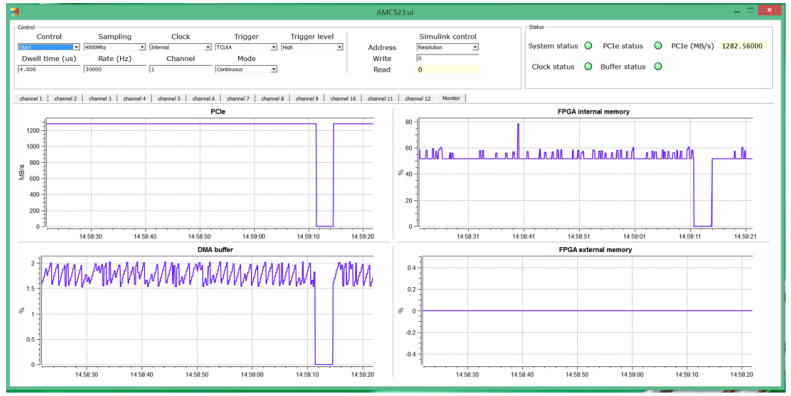
Data Acquisition Bundle



Digitiser, choose from
- 9 AMCs
- 7 FMCs

up to 56GSPS

FPGA, choose from
- 3 MTCA.4 AMCs
- 13 FMC Carriers

up to XCKU115

Supported by
- Driver
- EPICS / Qt

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Summary

- Integrated product
  - Flexible software offering
  - Extensive hardware options
- Consistent approach across range
- Broad usage/adoption supports investment

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