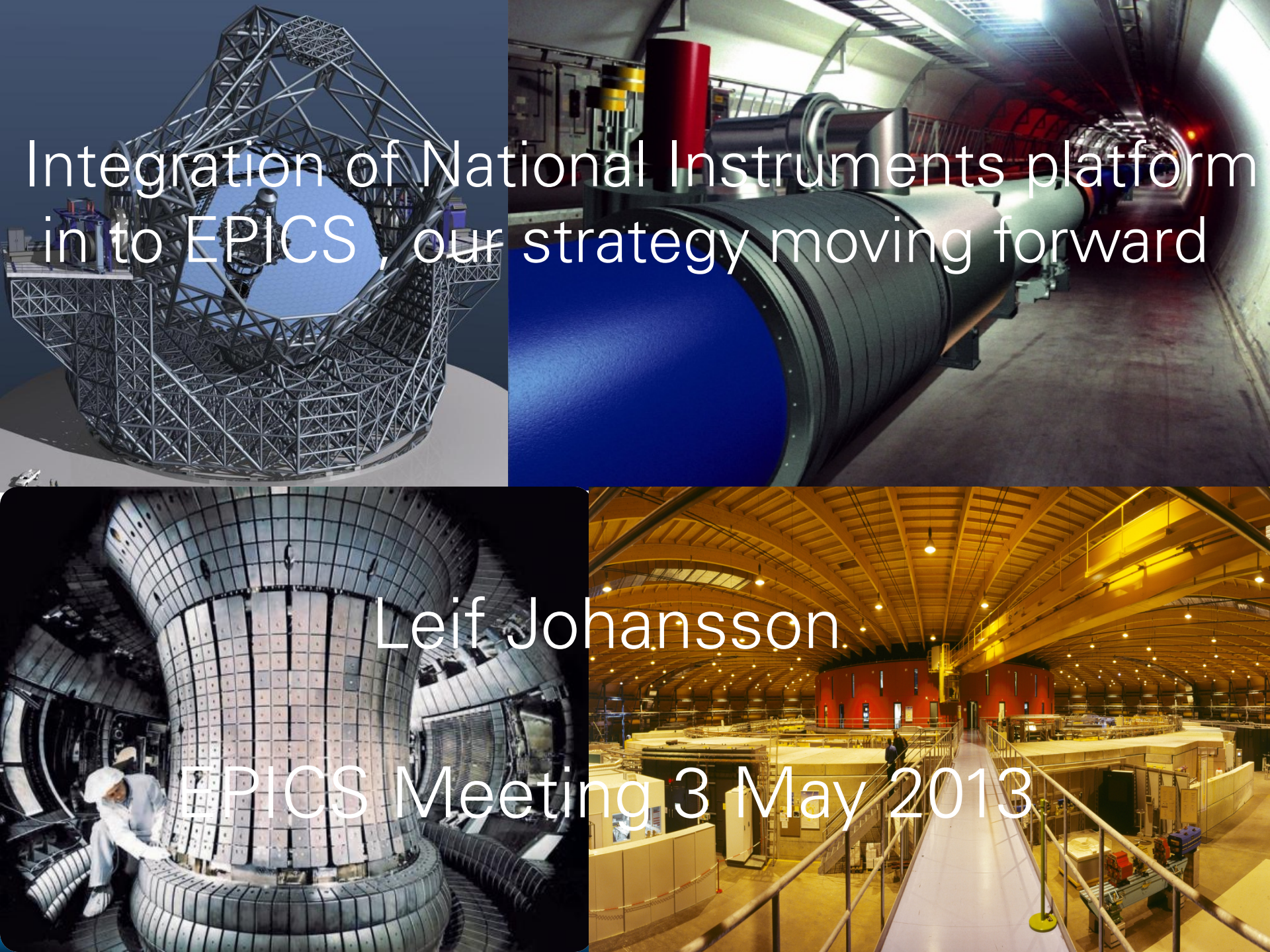

NATIONAL
INSTRUMENTS™

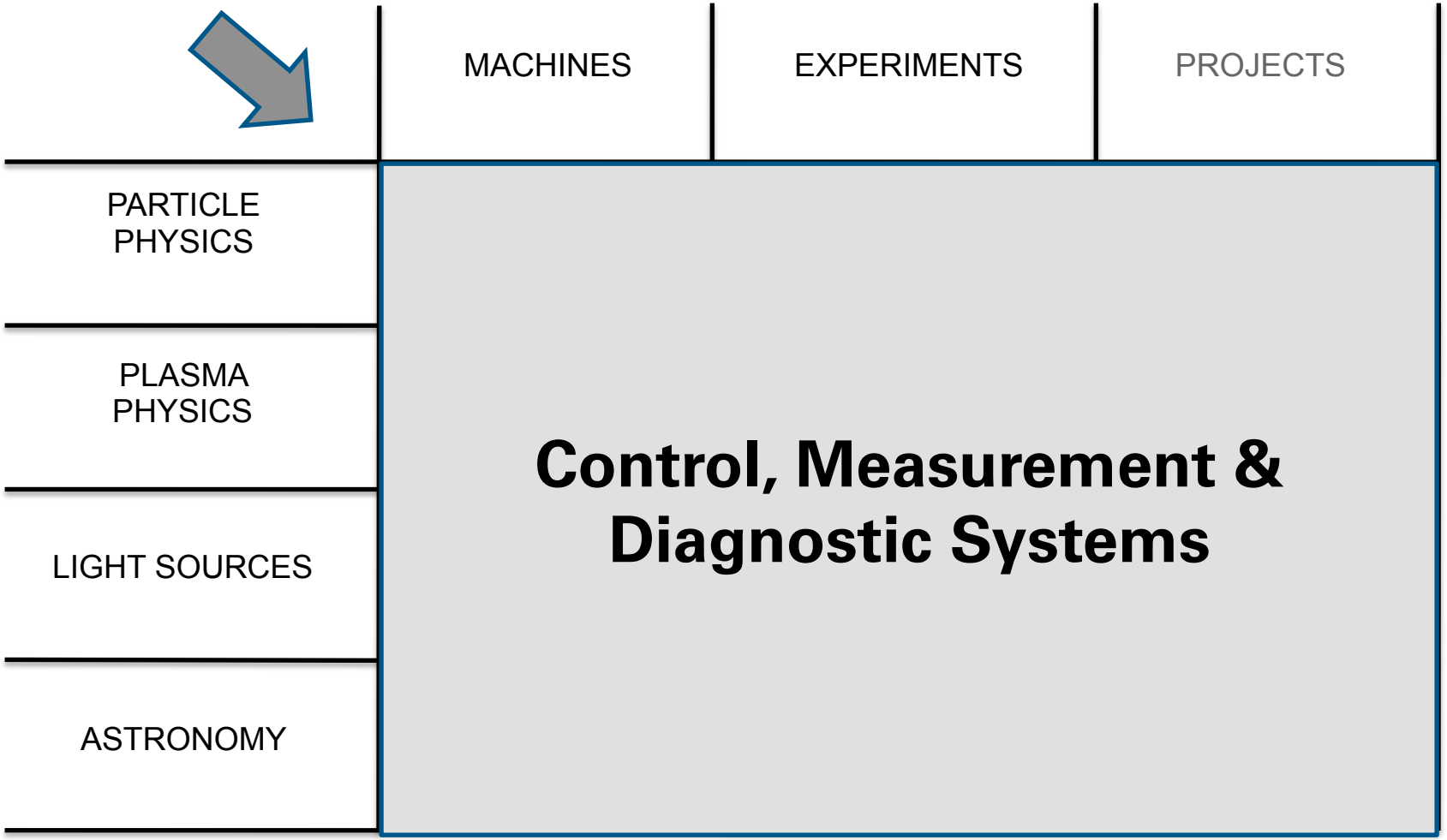


Integration of National Instruments platform in to EPICS , our strategy moving forward

Leif Johansson

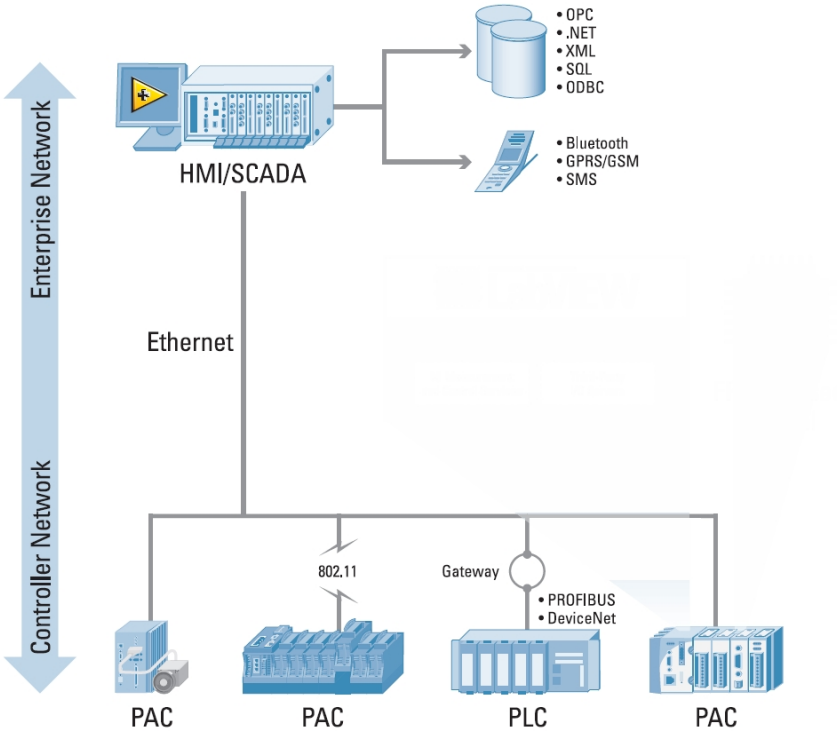
EPICS Meeting 3 May 2013

What is Big Physics from NI's view?



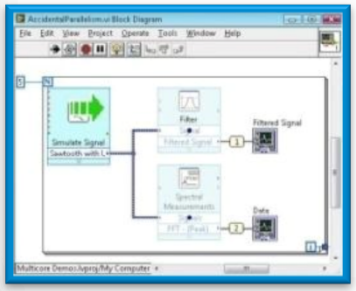
Open Architecture

- Controls standards
  - TANGO, TINE, **EPICS**, CORBA, C
- Connectivity to different devices
  - OPC, Modbus, TCP/IP, UDP, EtherCAT, Serial
- Flexibility
  - Windows, Linux, RTOS, FPGA



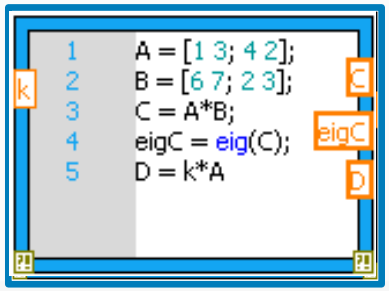
High-Level Design Models

Data Flow

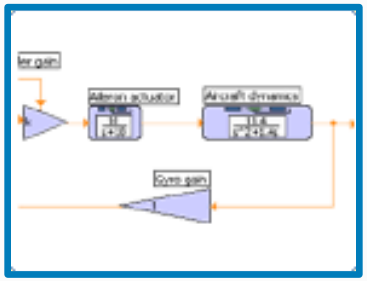


C Code

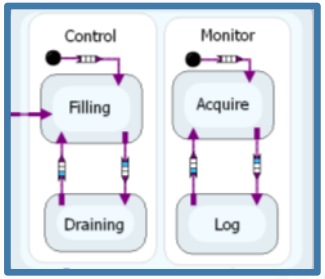
Textual Math



Simulation



Statechart



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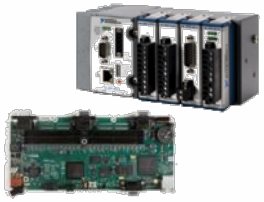
Graphical System Design Platform

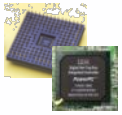
PC/Mac/Linux

PXI



CompactRIO

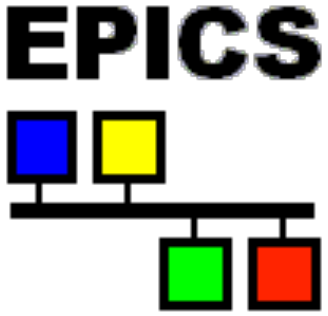
FlexRIO



Custom

NI EPICS support today

LabVIEW	I/O Server	EPICS CA Client or Server
LabVIEW RT on cRIO	Shared Memory	EPICS IOC on VxWorks
LabVIEW RT on PXI	Hypervisor Shared Memory	EPICS IOC on Linux
PXI (No LabVIEW)	Linux Driver Device Support	EPICS IOC on Linux



Other implementations available today from

- Bessy
- SNS
- Observatory Sciences
- ISIS
- And others …..

Moving forward

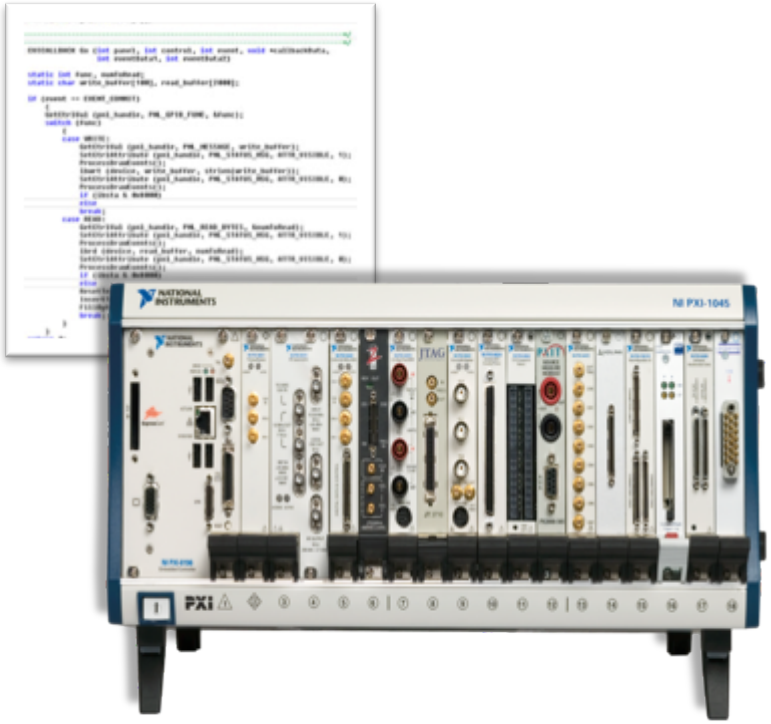
Linux support for Big Physics

- Increased investment in Linux
- LabVIEW for Linux
- Close collaboration with labs
- Linux options
  - FPGA Interface C API (FlexRIO, R series, cRIO expansion chassis)
  - NI MHDDK (DAQ)
  - NI Real-Time Hypervisor
  - Increased native driver support
    - Open source via collaboration
    - Std NI drivers for Linux

Customizing COTS Drivers

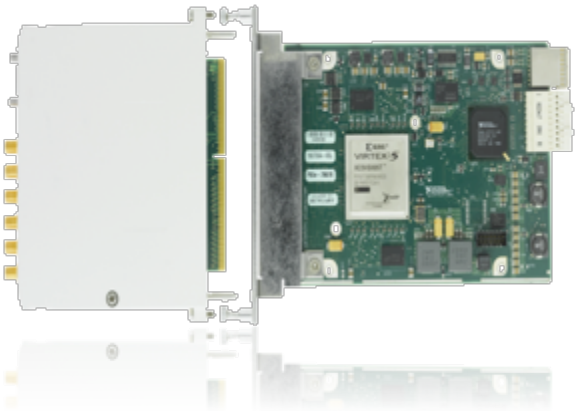
- Fully compatible with CODAC Software Suite (CCS) requirements
  - Red Hat Enterprise Linux and Real-Time Kernel (MRG)
- ***Open source*** and documentation
- Current drivers available for timing, fast controllers, data acquisition and FPGA devices

FPGA Interface C API for Linux



Linux Target (RHEL or Scientific)

FPGA Interface
C API



NI FPGA Device

We are looking for collaboration with the EPICS community

Improving EPICS use with LabVIEW

- Improve the Labview side artichtecture
- Ease of use
- What's missing….

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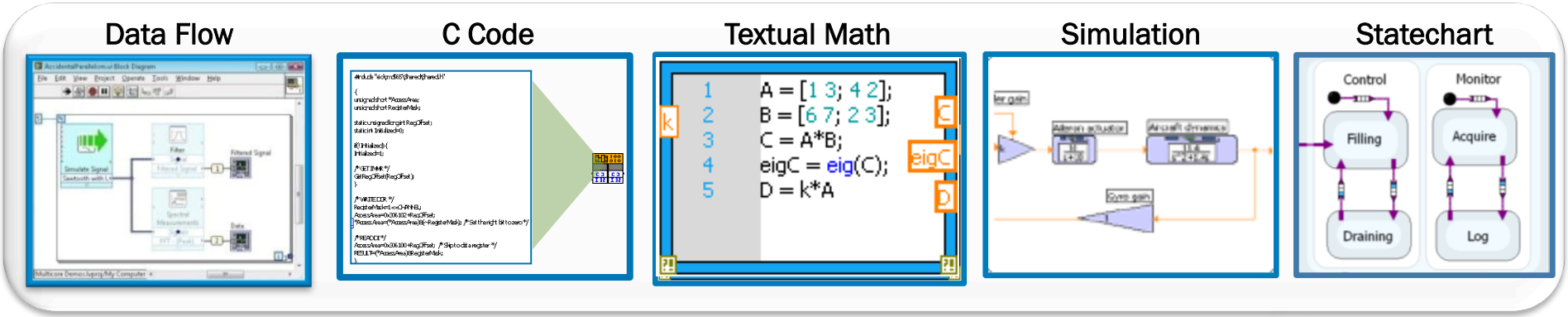
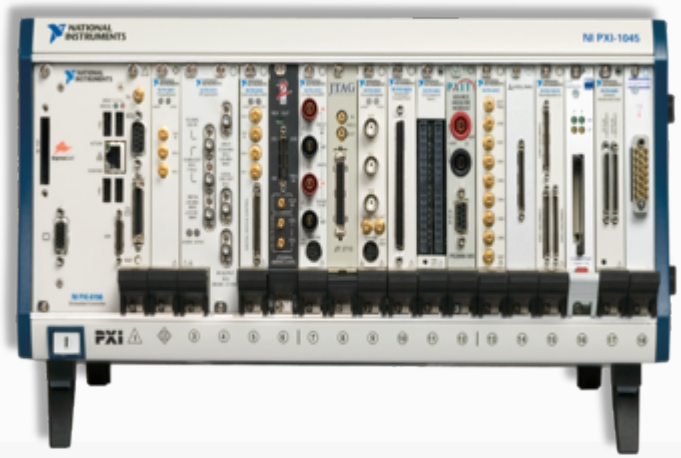


EPICS use with HW like PXI cRIO..

- Future requirements
- OS
- Ease of use
- What's missing….

PXI



cRIO

Thank you

Contact details for feedback

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