A IOC based on PXI and virtualization technology

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with
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Some background information...


Greenland
Iceland
Suomi (Finland)
Sverige (Sweden)
Norge (Norway)
United Kingdom
Polska (Poland)
Deutschland (Germany)
Україна (Ukraine)
Kazakhstan
France
Italia (Italy)
España (Spain)
Türkiye (Turkey)
Canada
United States
North Atlantic Ocean
Iraq
Afghanistan
Iran
Pakistan
Algeria
Libya
(Egypt)
Saudi Arabia
India
México
Mauritania
Mali
Niger
Chad
Sudan
Nigeria
Ethiopia
Venezuela
Colombia
Kenya
DR Congo
Tanzania
Brasil (Brazil)
Perú
Angola
Bolivia
Namibia
Botswana
Madagascar
Chile
South Pacific Ocean
South Atlantic Ocean
South Africa
Argentina
Southern Ocean
A
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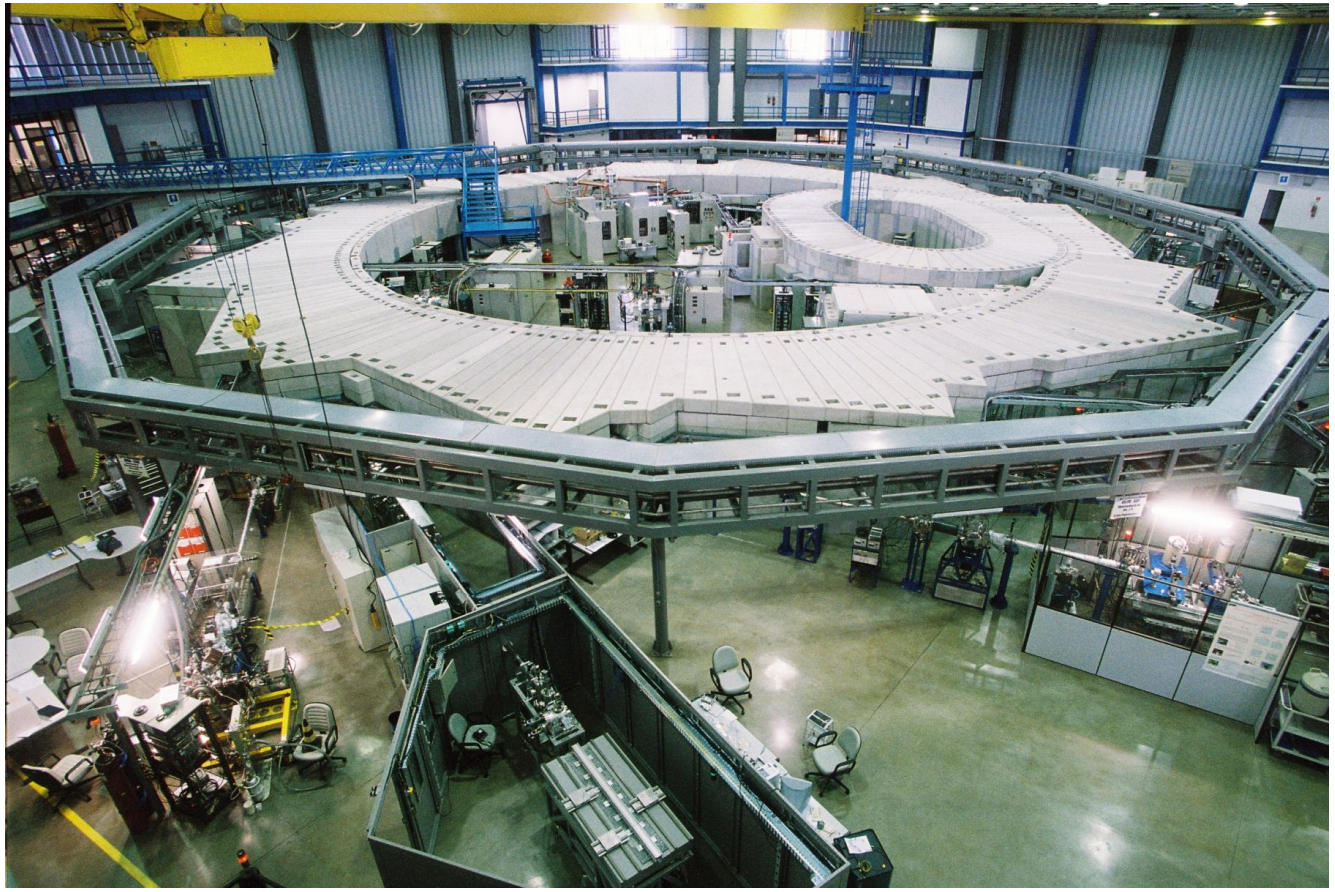
LNLS Laboratório Nacional de Luz Síncrotron

ABTLuS CNPEM

Ministério da Ciência e Tecnologia

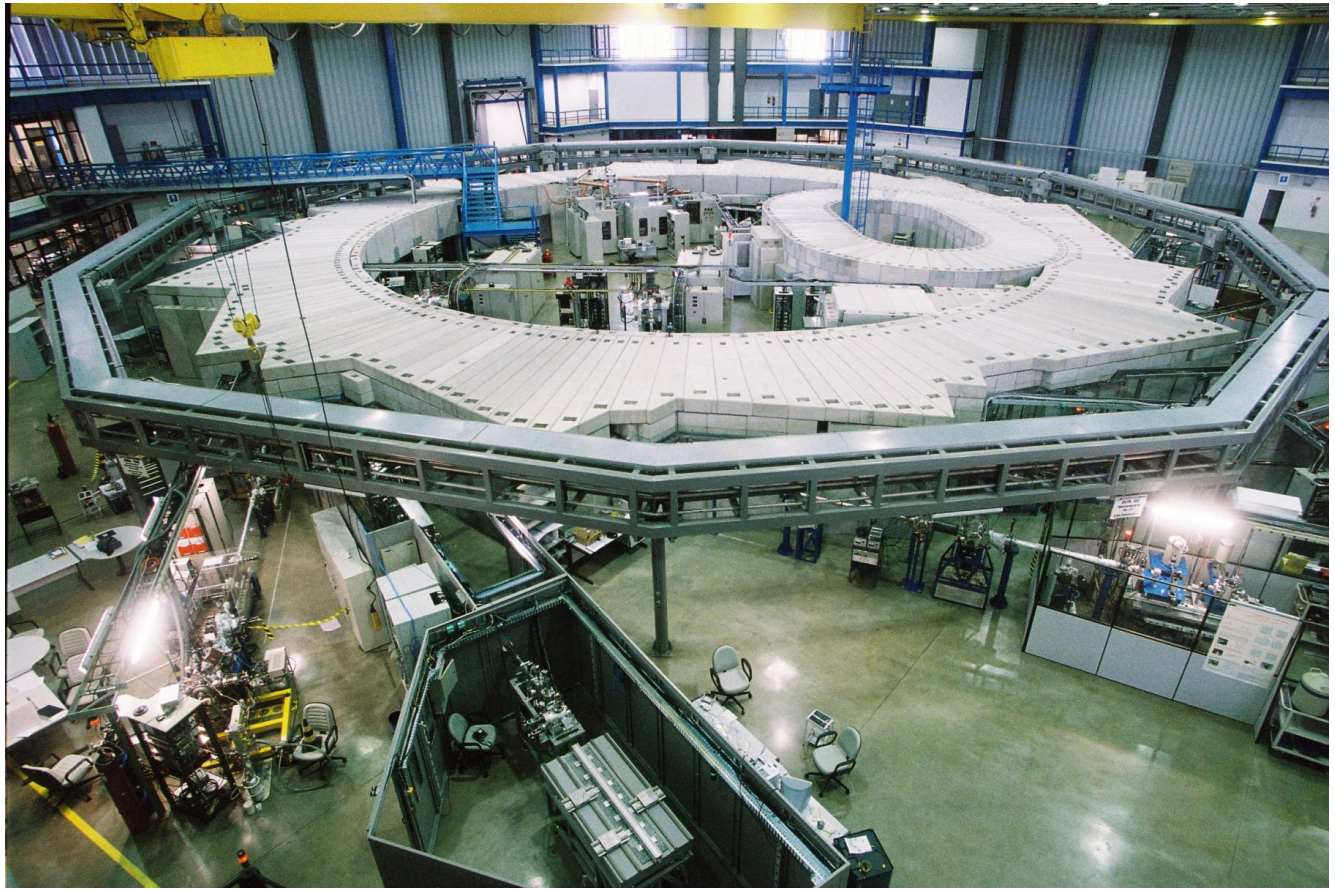
GOVERNO FEDERAL BRASIL PAÍS RICO É PAÍS SEM POBREZA

LNLS-Laboratório Nacional de Luz Síncrotron is home to



the Brazilian electron storage ring (1.37 GeV, 250 mA)

Open since 1997



16 beamlines and 1000 users per year

A tradition of hardware and software created in house, for a number of reasons

XAFS1 is the first LNLS beamline running...

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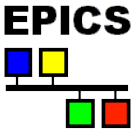


EPICS

(since February 2011)

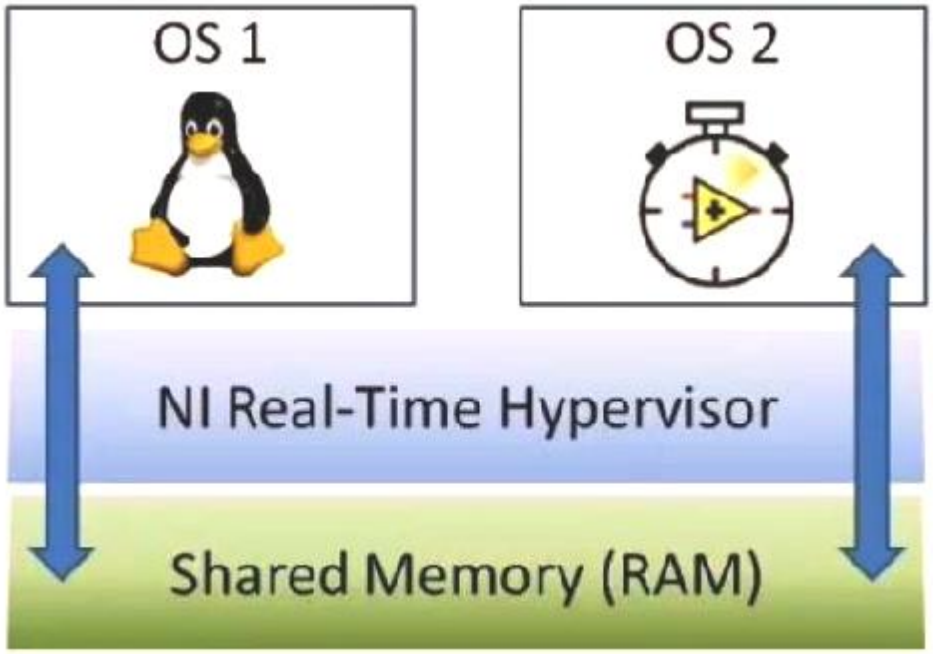
Devices of XAFS1 beamline

Scintillators	±100mV, 18-bit digitizing, 90dB minimum
Pin Diodes	500KHz pulse train, counting
Ion Chambers	Pre-amplified ±10V, 18-bit digitizing, 90dB minimum
Sensors	24V digital industrial standard
Actuators	24V digital industrial standard
IMS Motors	RS-485, 2-wire
Spectrometer	Ethernet, TCP/IP
Other Devices	RS-485, RS-232, USB, Ethernet...

Looking for hardware alternatives available in the local market...

Open source environment, multiple IOCs

Deterministic data acquisition, signal processing and communication

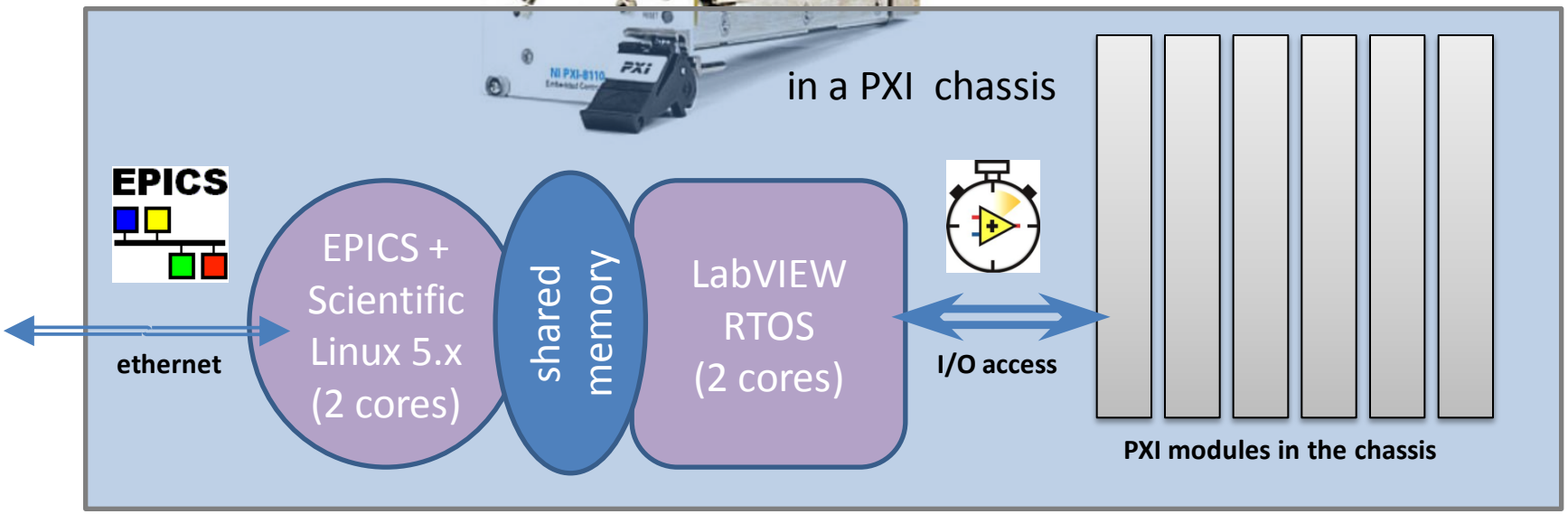


Deterministic high speed data transfer up to 2 GB/s

Two Operational Systems in the same controller

A PXI quadcore controller

in a PXI chassis



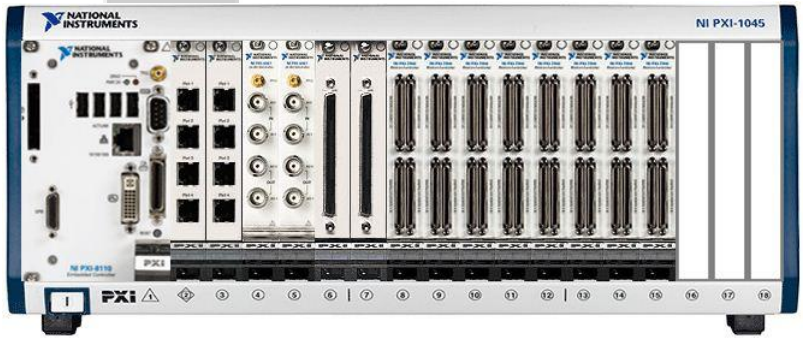
EPICS

NATIONAL INSTRUMENTS
DAQ

- Scintillators
- Pin Diodes
- Ion Chambers
- Sensors
- Actuators
- IMS Motors
- Spectrometer
- Other Devices

LINUX | LVRT

NI Hyp



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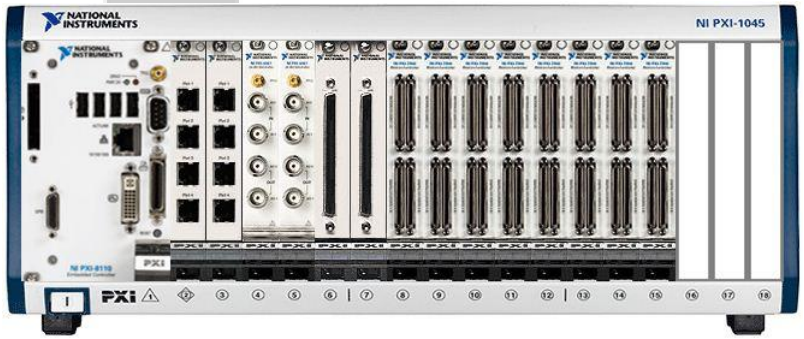

already implemented

Some advantages

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- a wide array of PXI instrumentation modules

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- a wide array of PXI instrumentation modules
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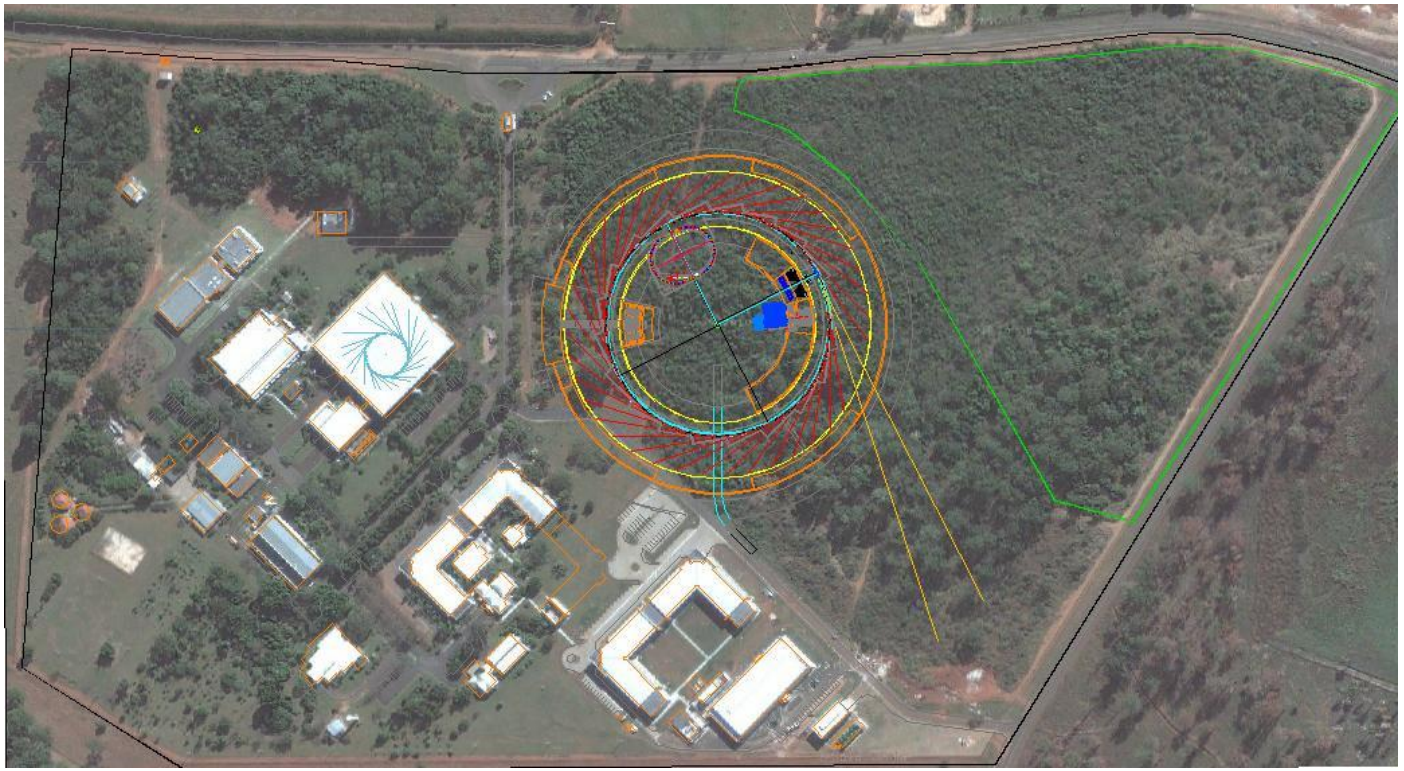
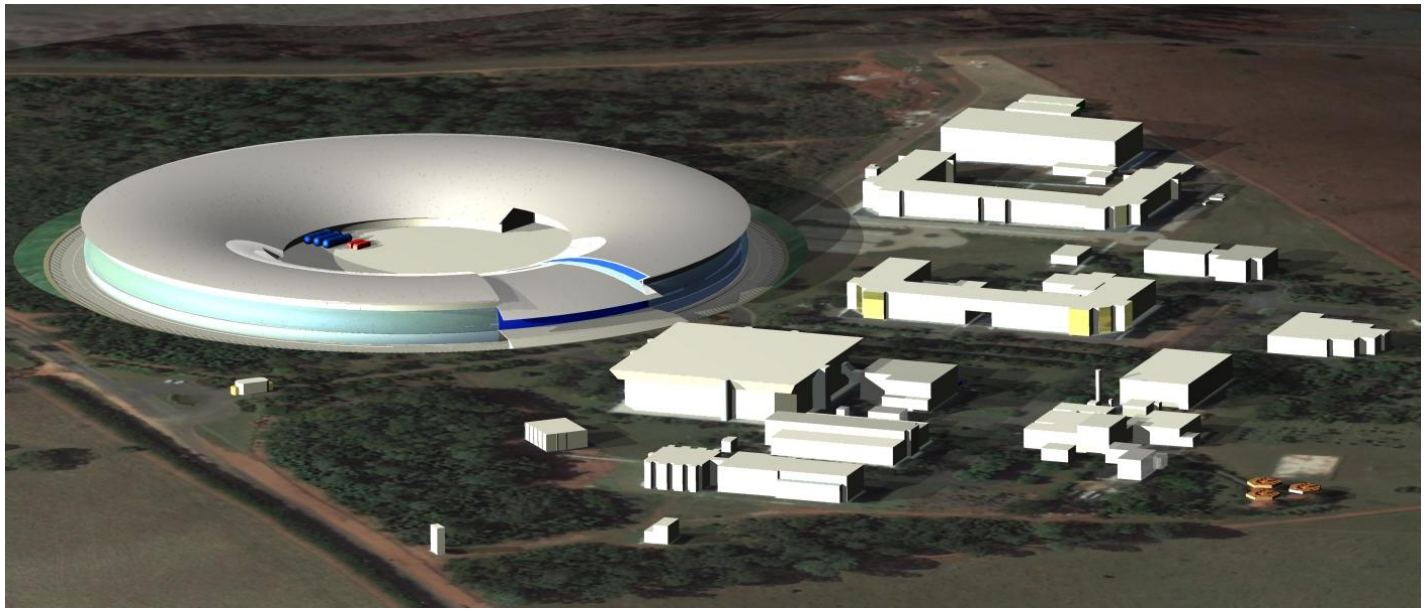
- ease to programming (LabVIEW)
- using libraries provided by the module vendors
- reduction in the acquisition deadtime



EPICS is a candidate system for
SIRIUS (3 GeV, 500 mA), a new accelerator at LNLS
to be commissioned in 2015-16



A preview of SIRIUS in the LNLS campus

Obrigado!

[oh.bree.GAH.do]

(Portuguese for “thank you”)

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