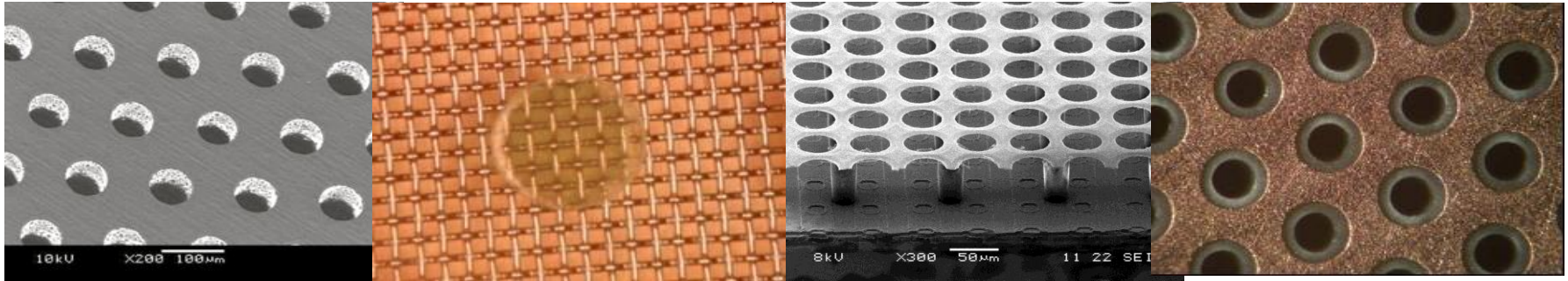

DAQ Electronics Developments and Technology Transfer at IFIN-HH

Sorin Martoiu
IFIN-HH (DFPE)

Scalable Readout System



- Product of the RD51 Collaboration for the Development of Micro-Pattern Gas Detectors Technologies
- General purpose multi-channel readout solution for a wide range of detector types, detector complexities, and different experimental environments.
- Scalable - size
 - Only point-to-point links. No busses
 - Star topology
- Scalable - application
 - Allows the use of different front-ends
 - Can integrate different sub-detectors DAQ in the same system
- Cost effective
 - Use of cost effective components from high-volume markets

RD 51 Collaboration Organization



Consolidation around common projects: large area MPGD R&D, CERN/MPGD production facility, common electronics developments, software tools, beam tests

**Large area (MM, GEM, THGEM)
Design optimization
(e.g. THGEM, Resistive MM)**

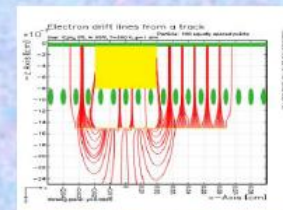


WG1:



**“RD51 Common Projects”
(Generic R&D)**

WG2:



**MPGD SRS
Electronics**

WG5:



**Software and
Simulation**

WG4:

WG7:



WG6:

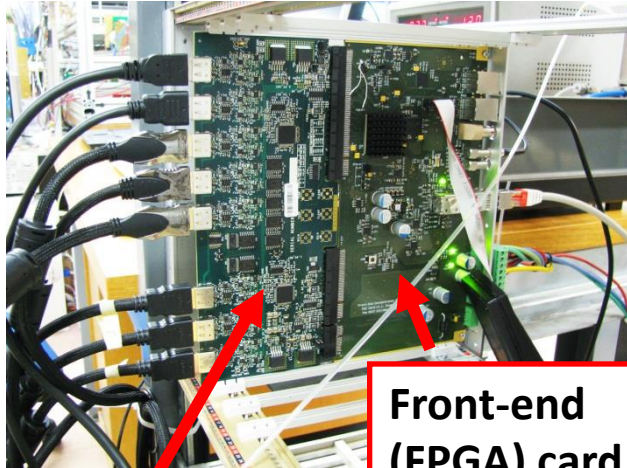


**RD51 Common
Test Beam Facility**

**CERN MPGD Workshop
& Industrialization**

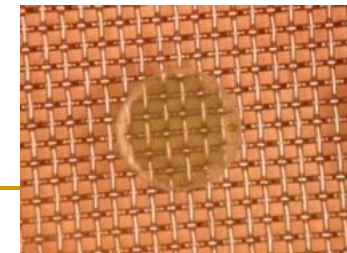
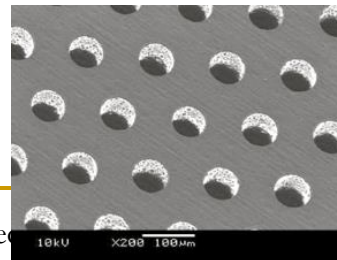
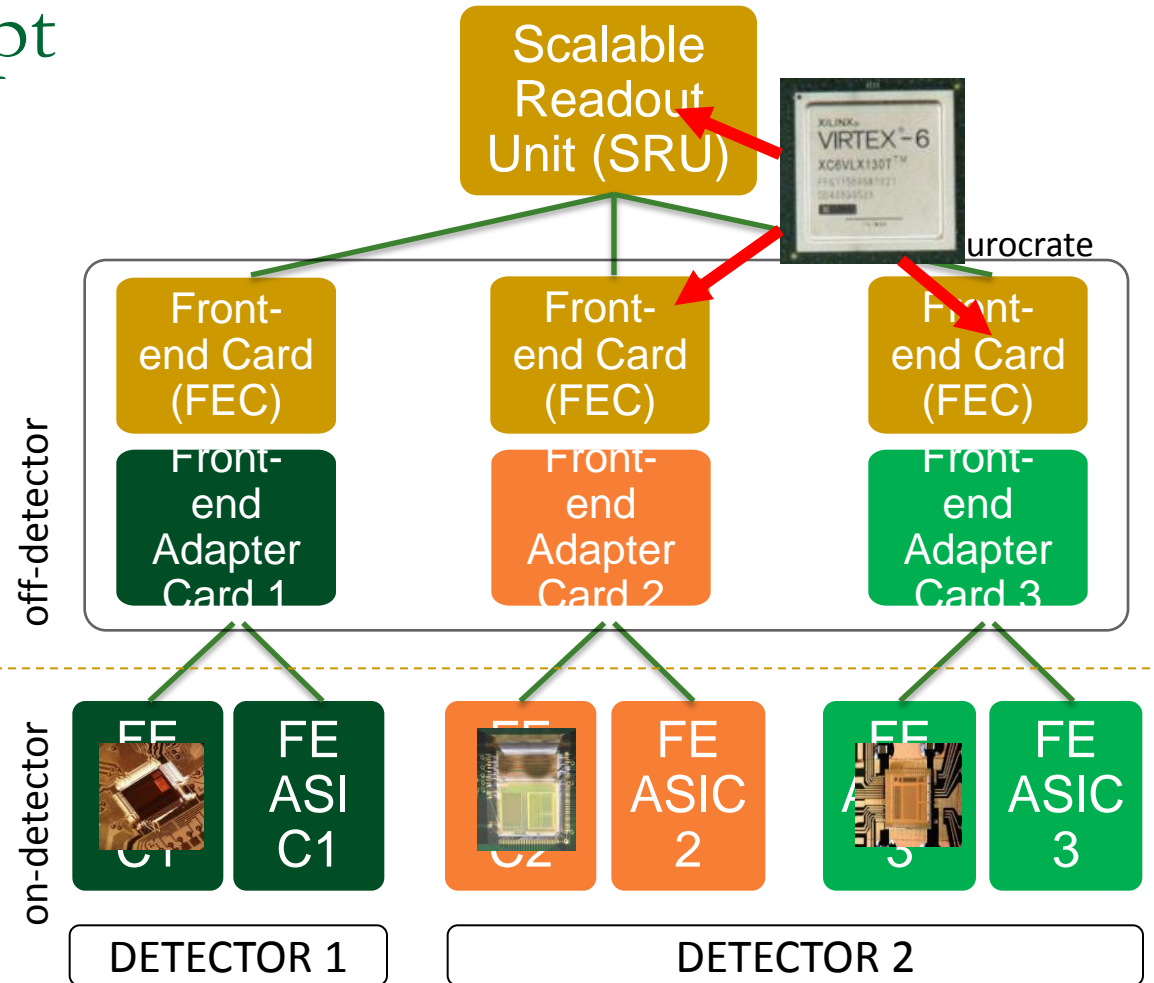
RD51

Scalability Concept Application



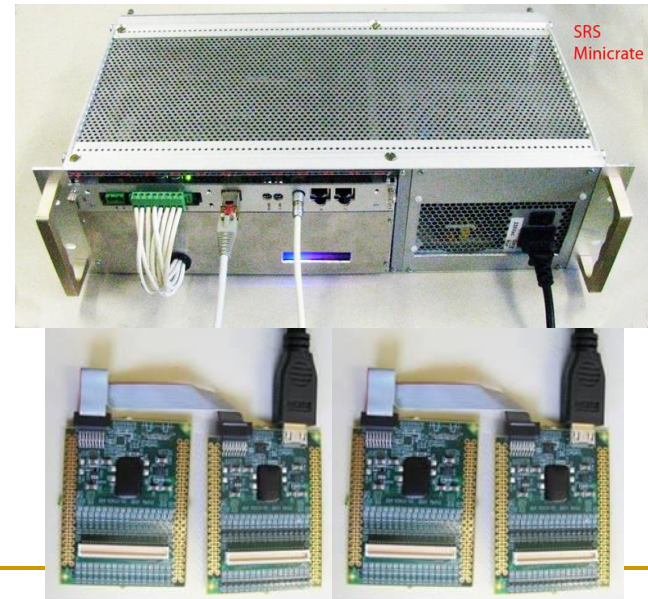
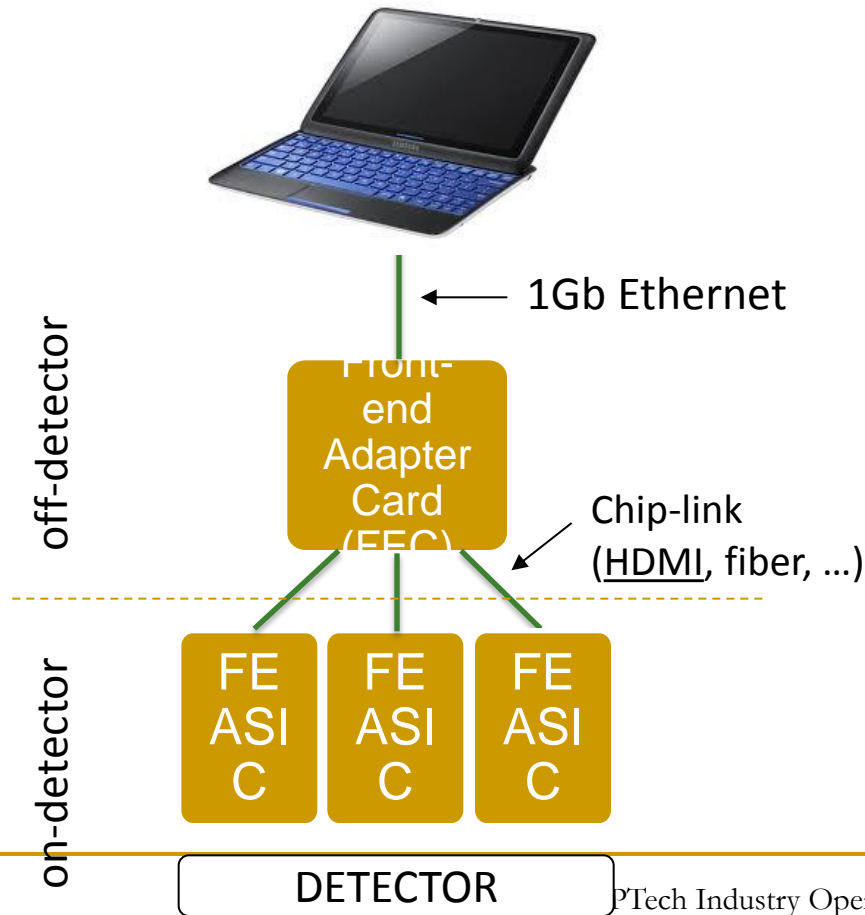
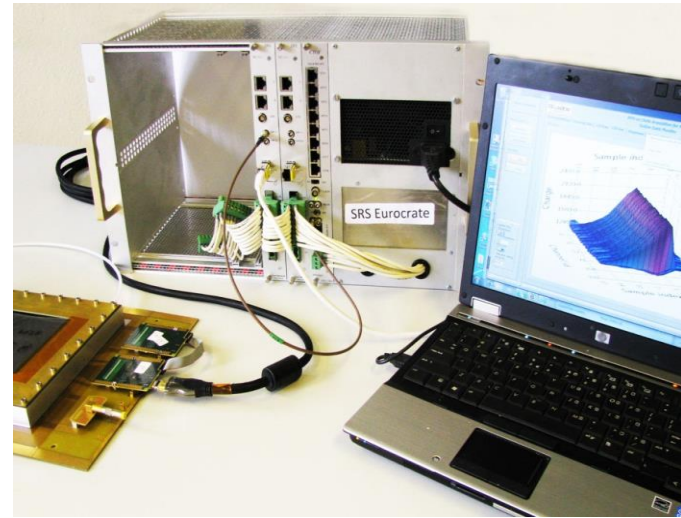
Front-end (FPGA) card

Adapter Card
• ADC / digital / optical / ...

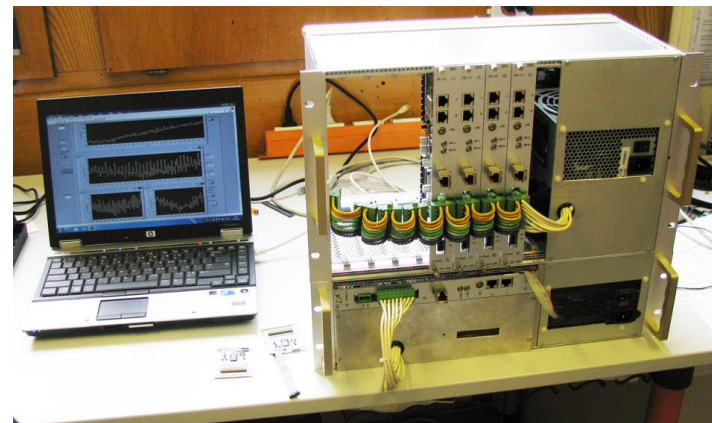
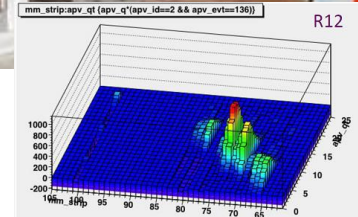
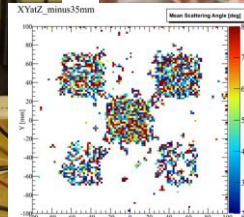
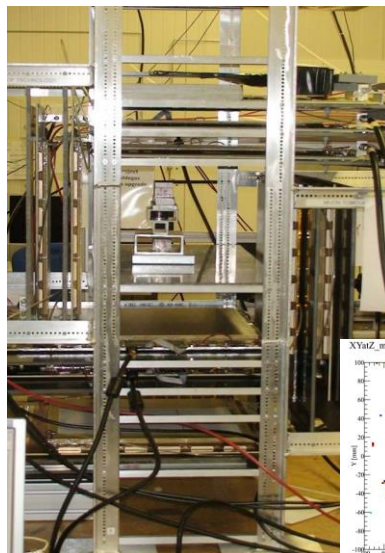
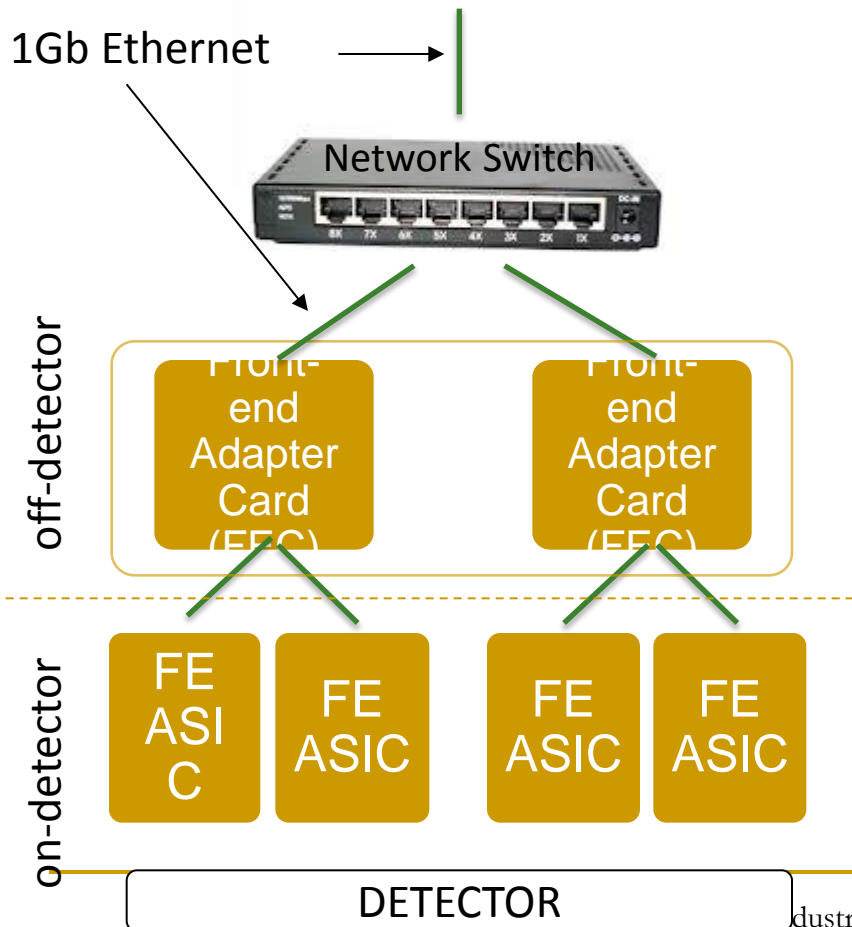


Scalability Concept

System Size (small)



Scalability Concept System Size (medium)

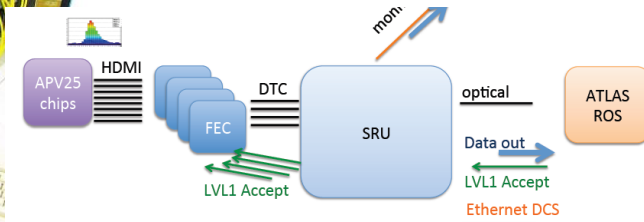


Scalability Concept

System Size (large)



MAMMA test installation in ATLAS



1/10/40.. Gb Ethernet
(opt. DDL/S-Link/...)

Scalable
Readout
Unit (SRU)

DTC Link
(Data, Trigger & Control)

Eurocrate

Front-end
Adapter
Card (FEC)

Front-end
Adapter
Card (FEC)

Front-end
Adapter
Card (FEC)

FE
ASIC

FE
ASIC

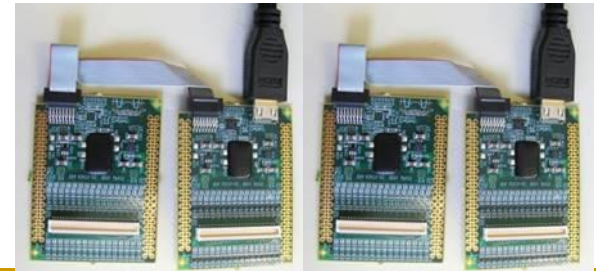
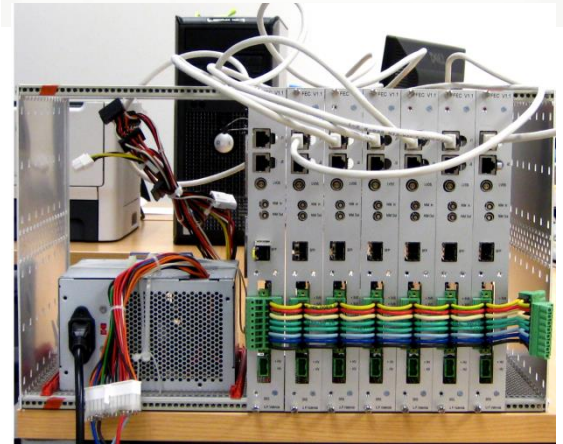
FE
ASIC

FE
ASIC

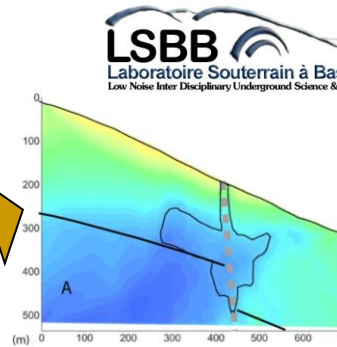
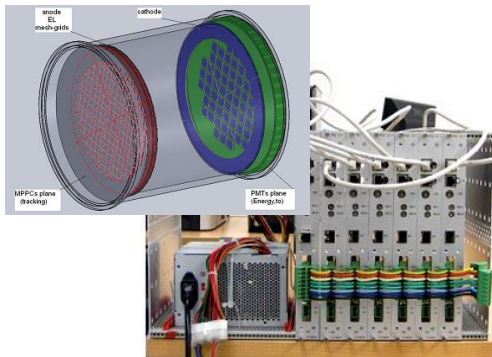
FE
ASIC

FE
ASIC

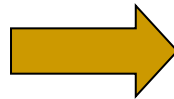
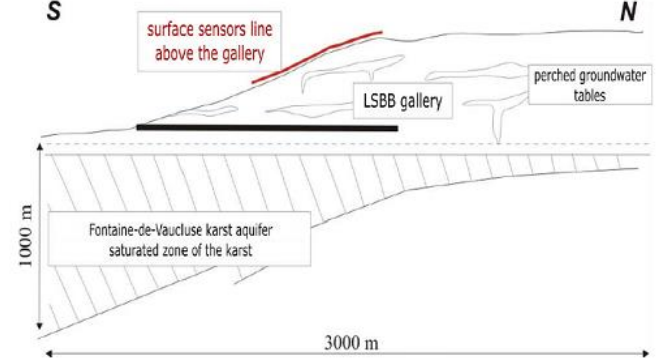
DETECTOR



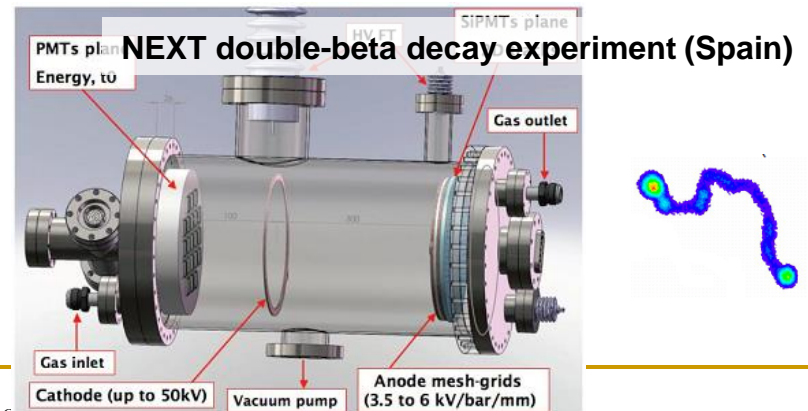
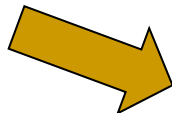
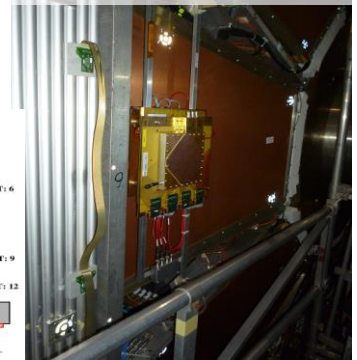
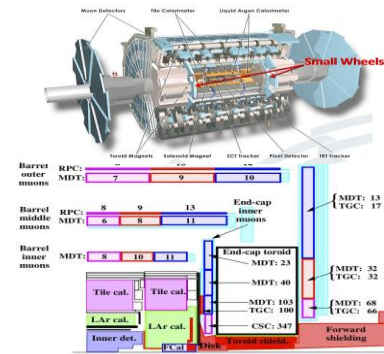
Applications



Geophysical Muon Tomography (France)

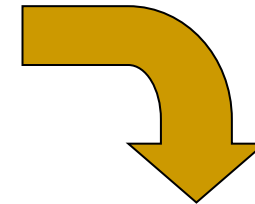
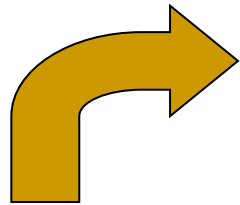
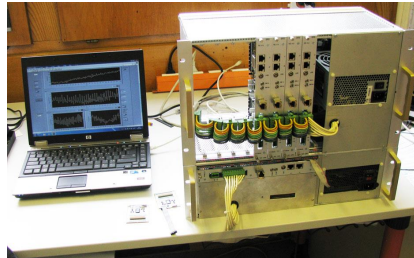


MAMMA ATLAS Small Wheel Upgrade



Technology Transfer

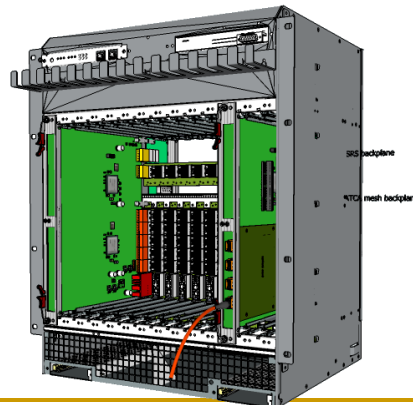
“Classical” SRS



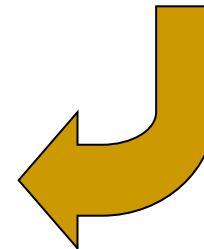
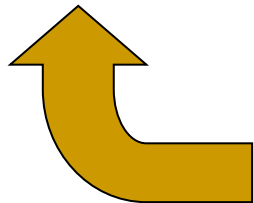
RD51

CERN, Switzerland
UP Valencia, Spain
IFIN-HH, Romania

ATCA-SRS

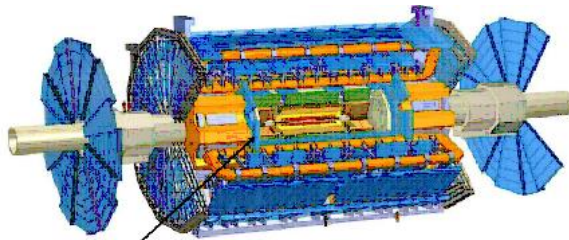
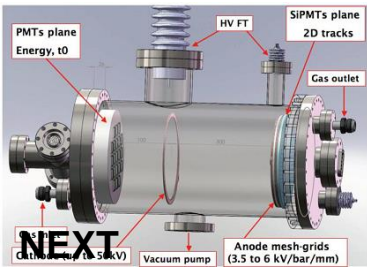


eicSys GmbH
Embedded Integrated Control Systems



Technology Transfer

Research

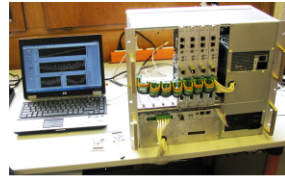


ATLAS NSW Upgrade

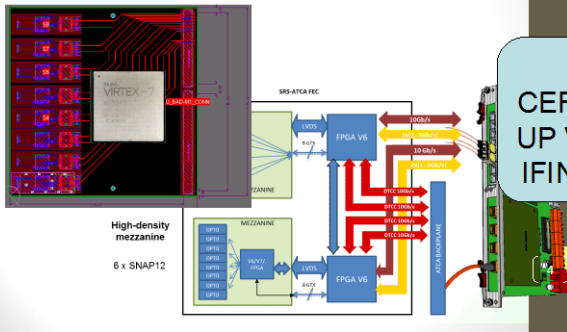
Medical Applications



"Classical" SRS

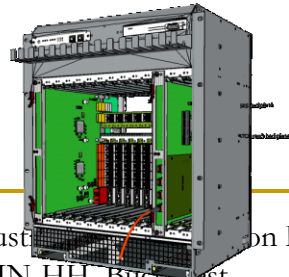


ATCA-SRS Contribution

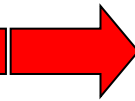


RD51
CERN, Switzerland
UP Valencia, Spain
IFIN-HH, Romania

ATCA-SRS



eicSys GmbH
Embedded Integrated Control Systems



Industry

Thank you