A digital interface mezzanine for ATCA-SRS

12x HDMI ports

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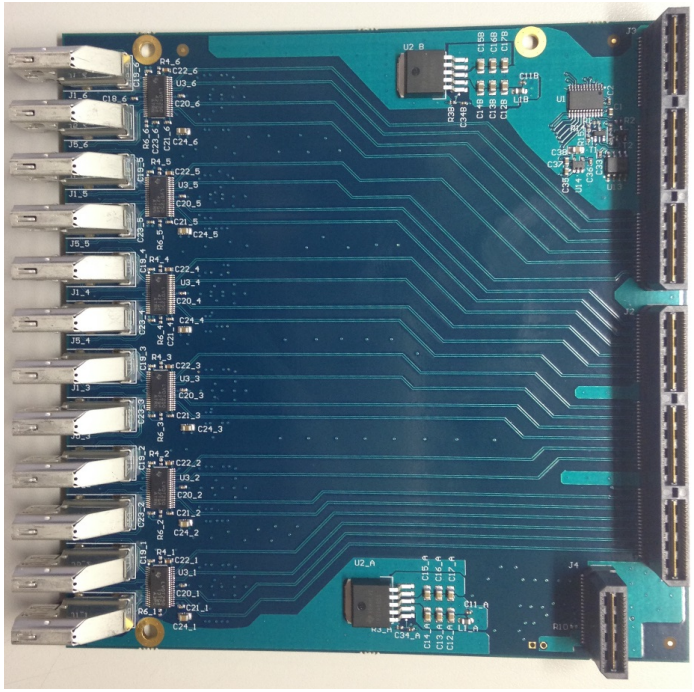
A digital interface mezzanine for SRS-ATCA

12x HDMI ports with 4xLVDS each (2 in, 2 out)



1. Purpose
2. Features
3. Project status and availability
4. First application: The NEXT detector
5. Upgrades

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Purpose

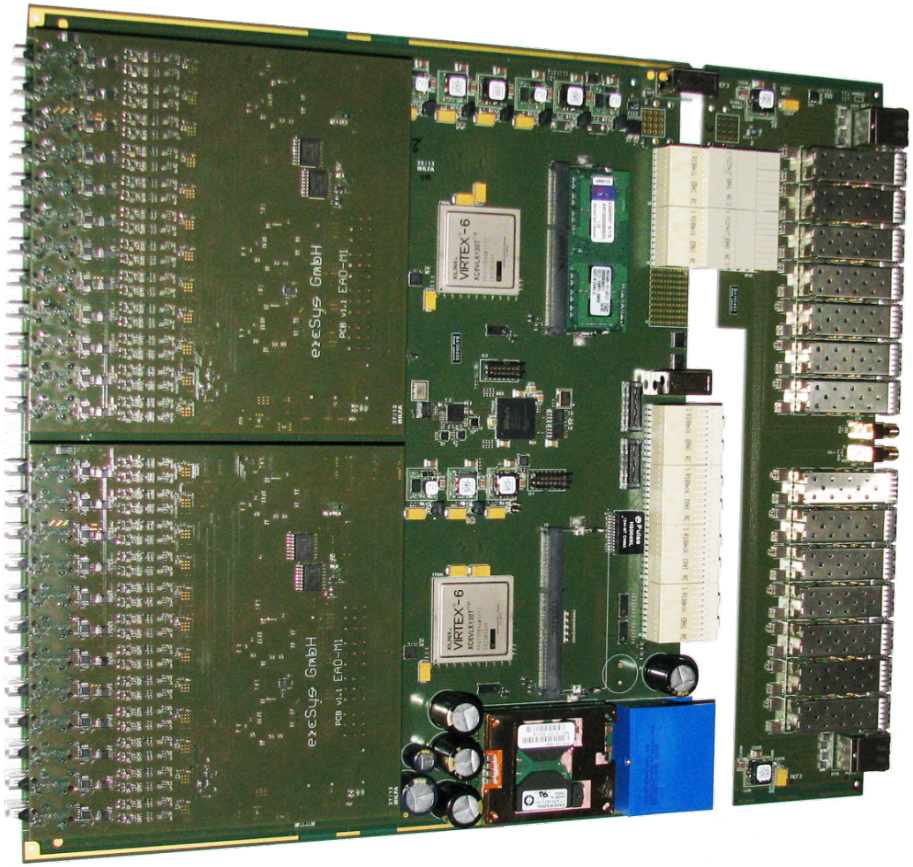
Connect your digital front end to ATCA-SRS

NEXT detector

Only needs 12x SRS DTCC interfaces, so each HDMI carries only 2xLVDS in, 2xLVDS out.

OTHER FEs (like VMM2)

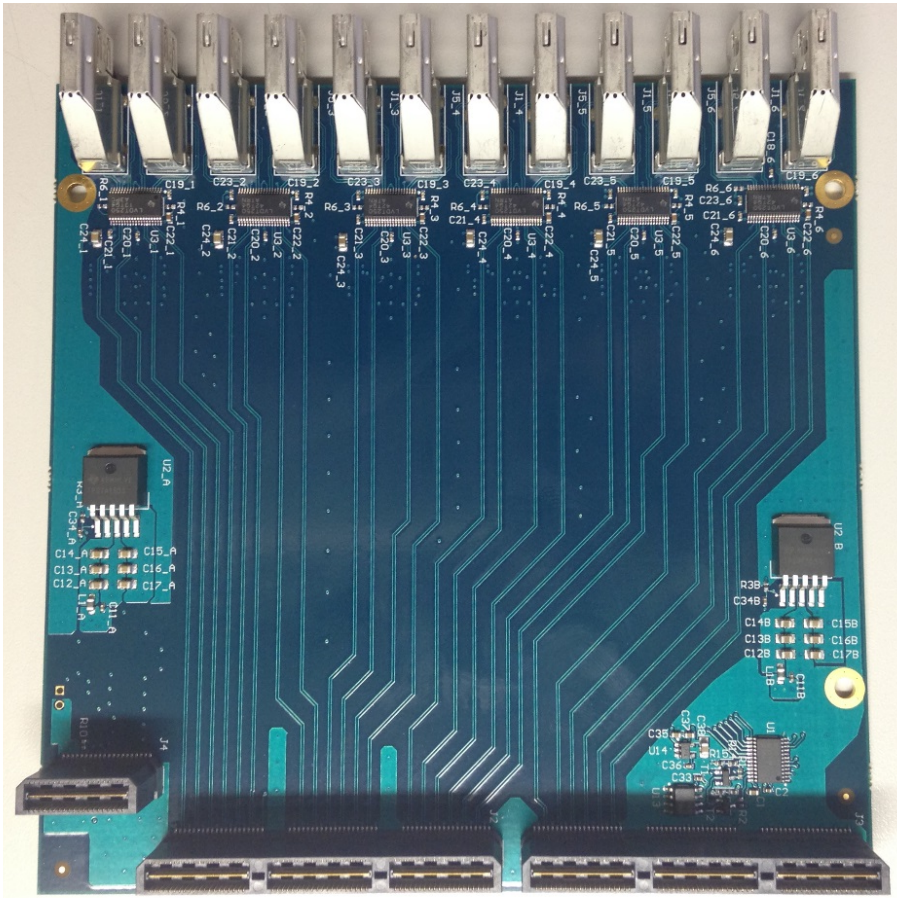
If power, I2C or Gbps over HDMI are required, see section **5** (Upgrades) in this presentation.

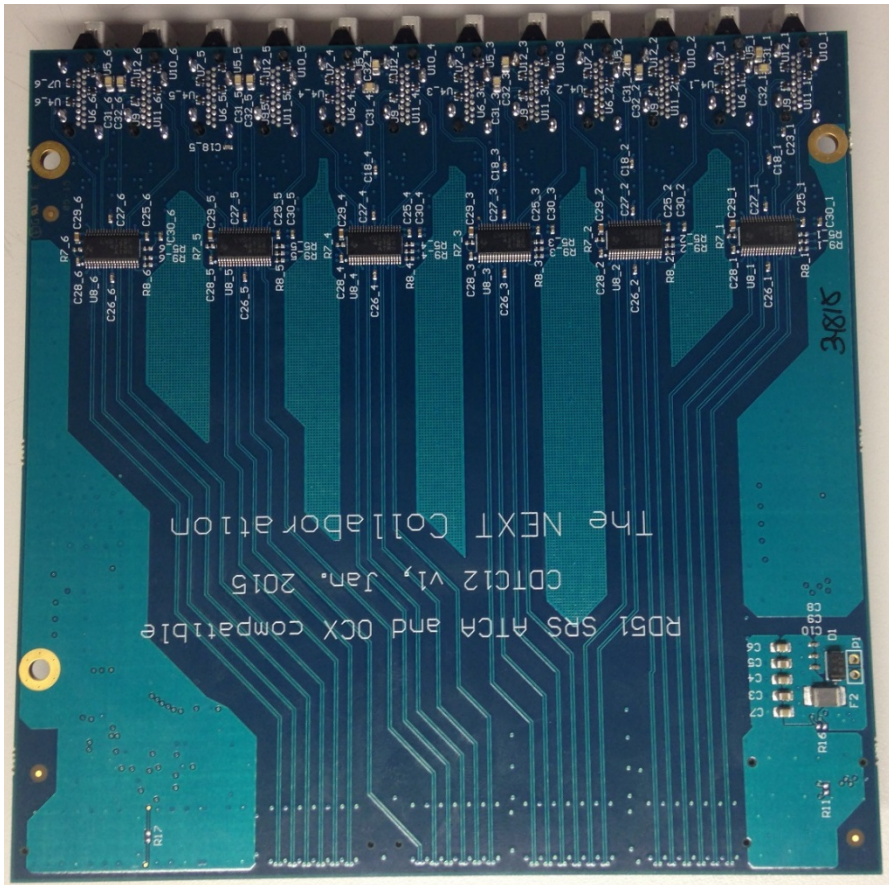


2

Features:

12x DTCC over HDMI



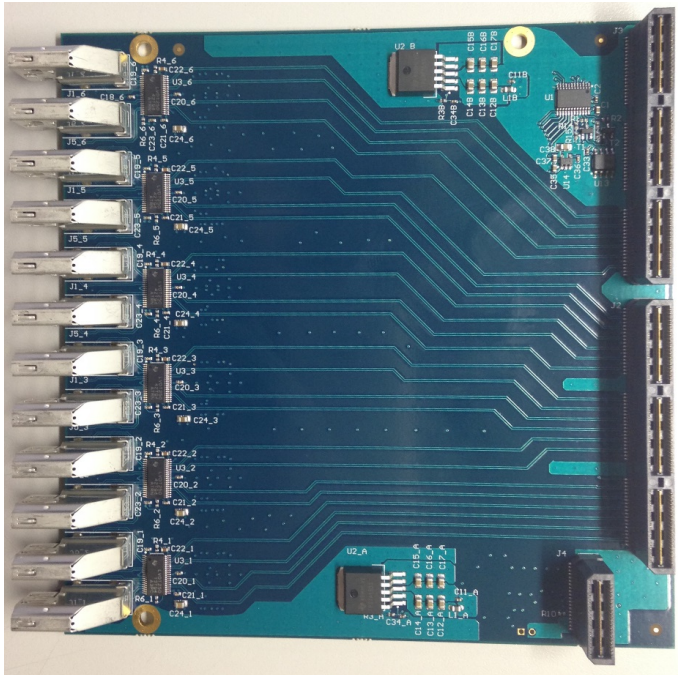


Includes new “blue” power connector, complies with new ATCA-SRS

2

Features:

12x DTCC over HDMI



1. I2C expander to provide enable signals for 3.3V LDOs (2) and LVDS buffers (12)
2. 1 kb serial EEPROM on I2C bus
3. 9 W max. power dissipation
4. LVDS buffers are 2 Gbps grade
5. HDMIs in the same position as in the ADC mezzanine (same front panel)

Project status and availability

9 cards have been produced (March 2015)

400 Mbps DTCC firmware is available, debugging in March

Functional tests in March

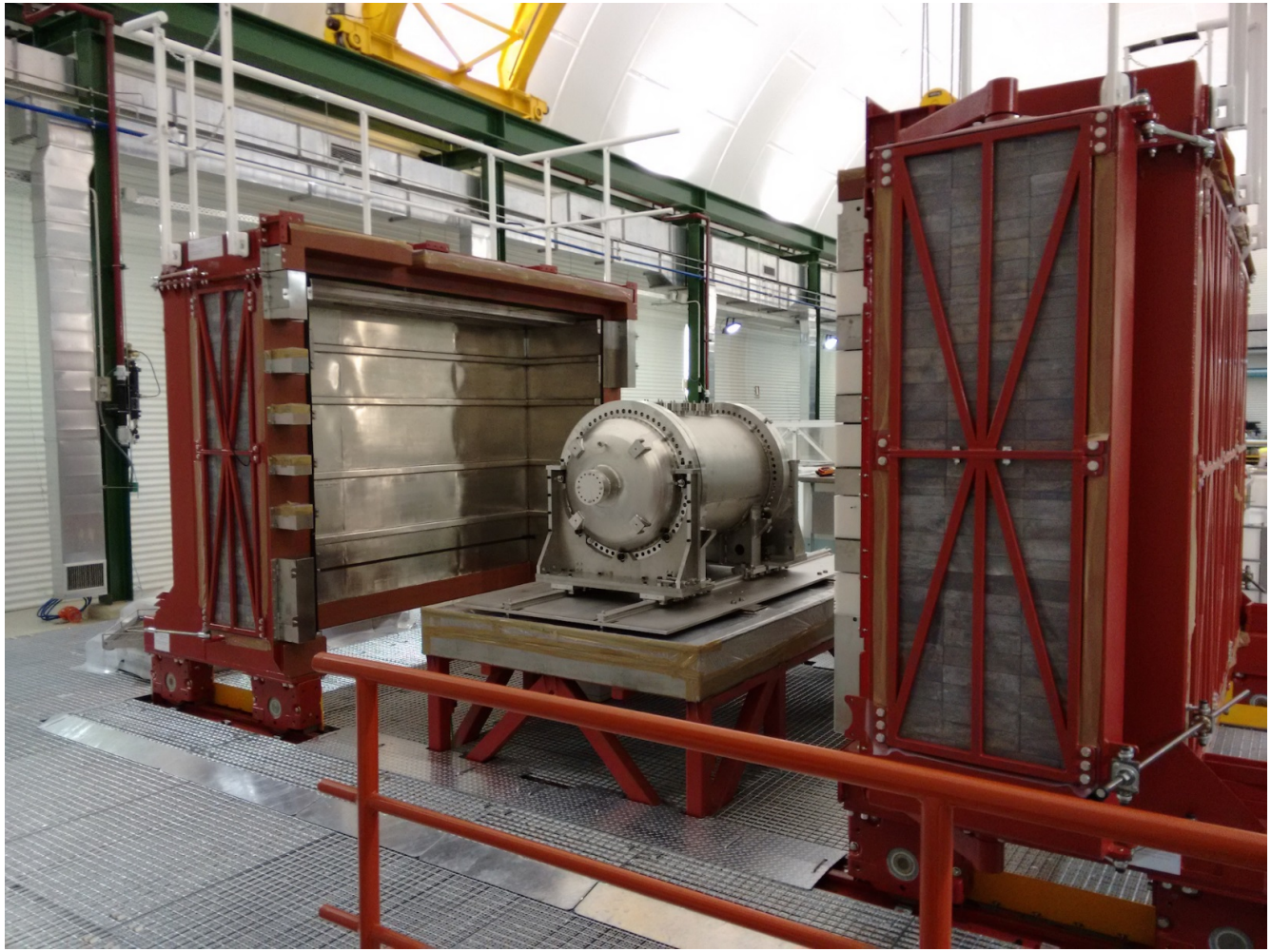
Performance tests in April (if required)

Functional/performance upgrades in April

Design to be transferred to EicSys

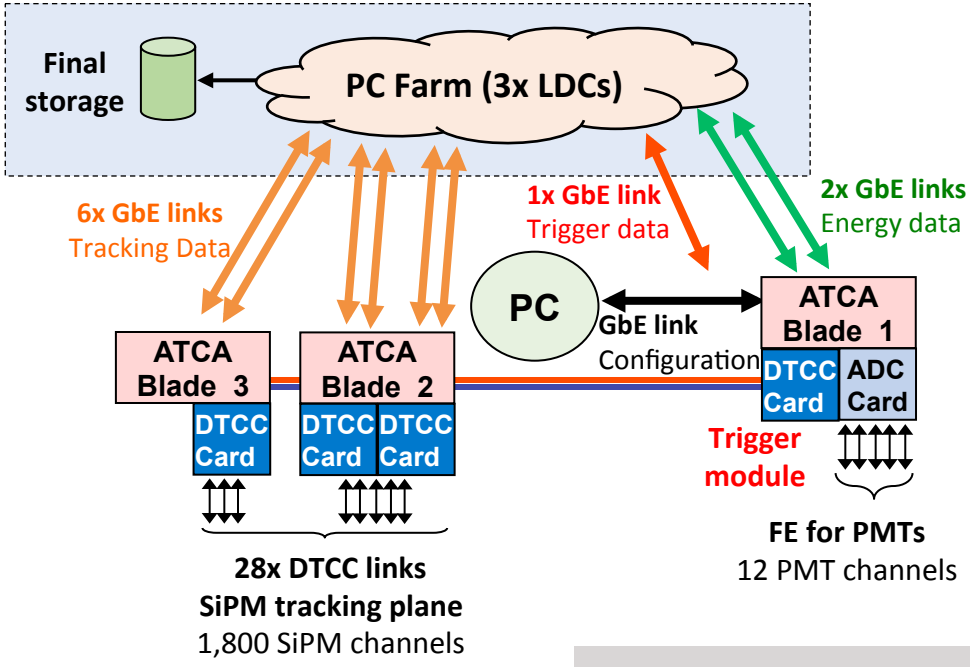
First application: The NEXT detector

The NEW detector and the lead castle in Canfranc



First application: The NEW detector

NEW is the 2nd stage of NEXT



Firmware already developed for the complete application

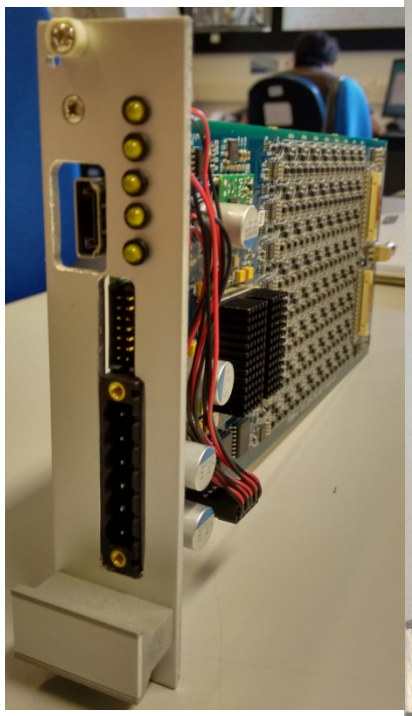
Energy plane & trigger run in Canfranc in April

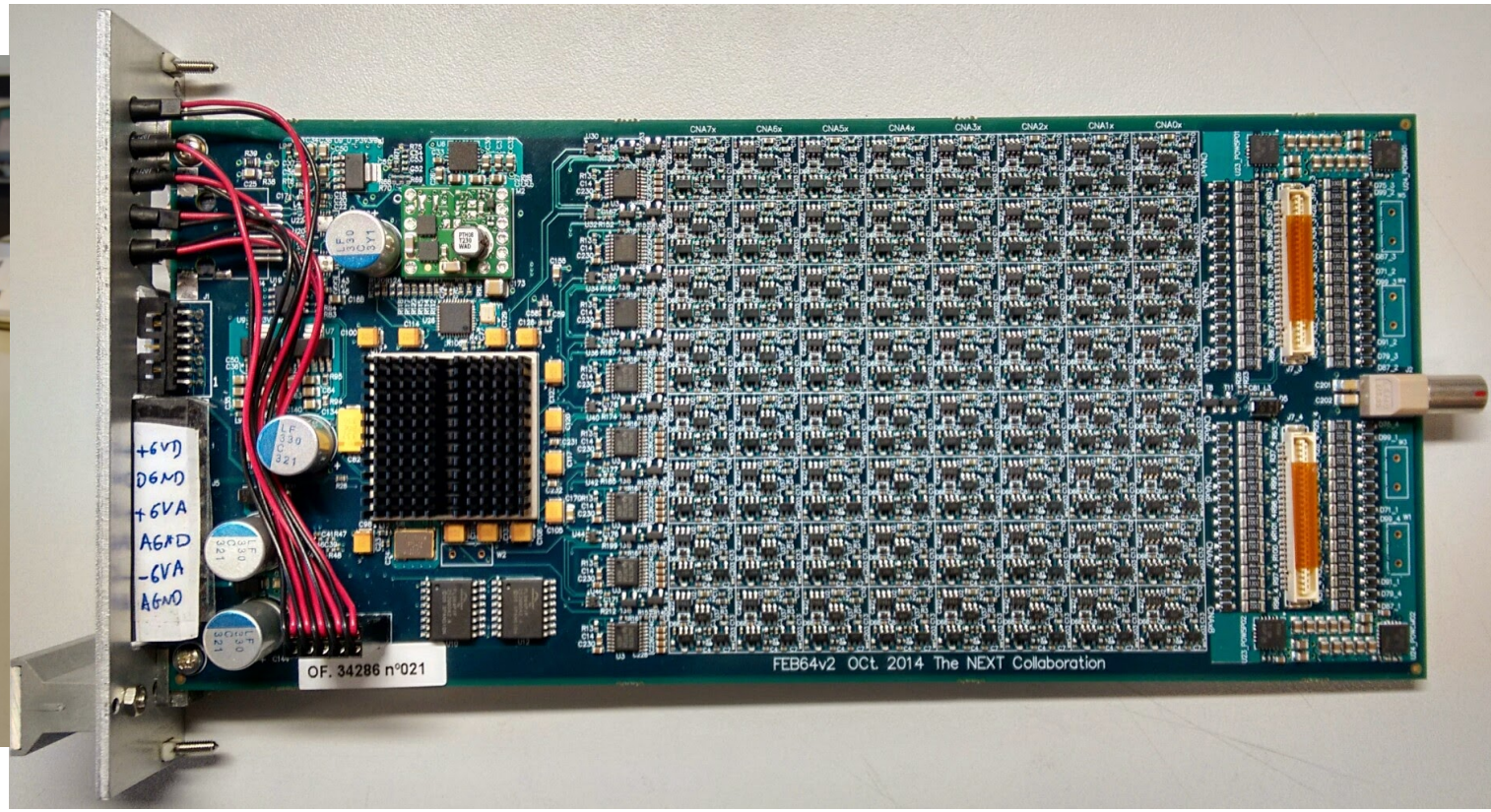
Tracking plane runs in Canfranc in summer

A 5-slot ATCA chassis with 3 blades suffice for NEW

First application: The NEXT experiment

The 64-ch SiPM front-end board with HDMI DTCC link





JINST 10 C01025, Jan 2015, DOI: 10.1088/1748-0221/10/01/C01025

5 Upgrades

Expanding the application range

5.1 Connecting fuses and power to the HDMIs is straightforward

5.2 Adding I2C bus to the HDMIs requires definition

5.3 DTCC firmware, from basic (≈ 400 Mbps) to advanced (1Gbps)

As defined in JINST 9 T06004, DOI: 10.1088/1748-0221/9/06/T06004

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Summary

1. Initial version: 12x HDMI ports, just 4xLVDS each, no power, no I2C
2. Nine cards available now. Tests undergoing
3. DTCC firmware (basic implementation) is available, but not yet final
4. First application: Tracking plane readout in the NEXT experiment
5. Upgrades: power via HDMI is straightforward, I2C on HDMI requires definition

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