

# Needs for the *cosmic challenge*

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# Setup for the magnet test

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- New hardware needed:

- Final ROS **AND VME** crate with special backplane
- Final Sector Collector
- DDU with S-Link

**CRITICAL ITEMS !!**

- New software:

- DCS minicrate control (backup: TB multiplied by two)
- HV LV in the new framework (backup: ISR setup)
- DCS supervisor integration software
- Configuration and condition DB following CMS DB requests.

## Sector Collector Status

<b>Components</b>	<b>Prototype Test</b>	<b>Test beam</b>
LVDS receiver link	Fully passed	Fully passed
Sorter ProAsic IC	Passed (VHDL almost final)	Fully passed
SC-to-TF interface	Fully passed	Fully passed
Opto TX channel	On going	---
Opto RX channel	On going	---

## SC prototypes

Production of 4 complete SC for Magnet Test

<b>Boards</b>	<b>Design</b>	<b>Board proto</b>	<b>Test</b>	<b>End (4 boards)</b>
Opto Tx piggy	Feb Q1	Feb Q4	Mar Q4	Apr Q2
Opto Rx board	Feb Q1	Feb Q4	Mar Q4	Apr Q2
LVDS Rx 4 ch piggy	Mar Q1	Mar Q4	Apr Q4	May Q2
LVDS Rx 2 ch piggy	Mar Q3	Apr Q2	May Q2	May Q4
Mother board	Jul Q1	Jul Q4	Aug Q4	Sep Q2

**SC ready by mid Sept !!**

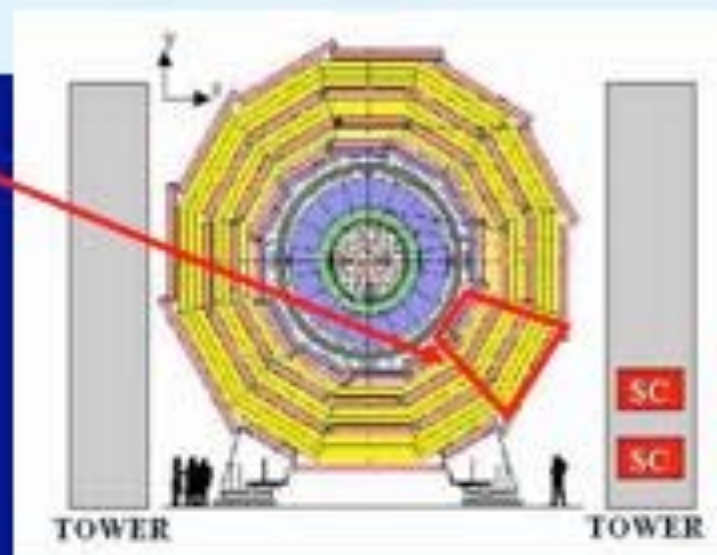
## Full SC production

<b>Boards</b>	<b>Q.ty (+ spares)</b>	<b>Prod start</b>	<b>Prod End</b>
Opto Tx piggy	60 (10)	Apr Q2	Dic Q4
Opto Rx board	96 (16)	Apr Q2	Dic Q4
LVDS Rx 4 ch piggy	60 (10)	May Q2	Dic Q4
LVDS Rx 2 ch piggy	180 (30)	May Q4	Dic Q4
Mother board	60 (10)	Sep Q2	Dic Q4

## Read- Out Server Boards (ROS) status

4

- 1 ROS-25 will read 1 sector, i.e., 4-5 minicrates.
- It will be allocated in the Sector Collector crates, in the towers on both sides of the CMS detector.
- There will be 6 boards/crate, **60 boards+spares** for all CMS.
- A **prototype is under design** and a few units will be available by mid 2005.
- Those units will be used for data taking during **magnet test** (cosmic challenge).
- Final **ROS production** may start once the boards are validated **by end 2005**.
- **Installation ~ 2006.**



**A few ROS ready  
by about July**



## *DDU prototype: 2 Channels = 2 Sectors*

### Status




- Standalone tests in Torino:
  - Fully tested and OK with VME
  - Fully tested and OK S-Link output
- Test in Madrid
  - Tested and OK with 2 channels input from ROS-8 in Madrid and VME output
- Test in Legnaro
  - Tested with 2 channels input from ROS-8 in VME and S-Link output (work in progress)

# DTTF READOUT

- Spy Readout
    - As it was during Testbeam
    - Full access to all data
    - Slow readout - to accelerate
      - Implement 16bit accesses to JTAG
      - Decrease bit counter accesses
      - Accelerate JTAG frequency (???)
      - Check VME Controller Driver
    - Flexible timing
  - Standard DAQ Readout
    - DAQ interfaces ready
    - Tests with FED-Kit soon
    - Access only to DAQ data
    - Requires a fully functioning TTC!
    - Timing given by the full system
  - With this solution one faces all Trigger Synchronization problems of the final system!
- We hope for a 1kHz readout



# Summary

- **HARDWARE:**
  - ROS ready in July;
  - 4 SC ready mid Sept. Question: is possible to have 1 SC in July ?
  - MAGNET COIL TRAINING STARTS OCT (schedule dec04)**
  -  **Detector not accessible, current in the coil.**
  - So OCT. is the deadline for the data taking before B is on.**
  - DDU ..... It is needed if we want to take data with the global CMS DAQ. If not ready, we can store data **ONLY** with LOCAL DAQ (same as testbeam).
- **SOFTWARE:**
  - DCS: at least the MC control and config are needed.
  - Monitor of chamber behaviour: modification the testbeam monitor.
  - Global monitor with shows, for example, the tracks through a sector (IGUANA).

# Some thoughts

- At this moment the availability of hardware seems the bottleneck. The final ROS is a really MANDATORY item !
- **Strategic question:**  
**For the MU barrel, which is the priority in the cosmic challenge, PHYSICS or INTEGRATION test ??**

If PHYSICS, then data can be taken  
patching/adapting/gluing... what we have ....

If INTEGRATION, we must wait for the final hardware,  
which could arrive too late for the data taking ...

We are monitoring the status and development of the electronics.

Next meeting on electronics is in Padova, Mon April 4<sup>th</sup>.