

What ?

- Detector research
- Detector design
- Detector production

- Detector / system concepts
- Sensor research
- **Electronic research**
- Material research
-

To play a visible, recognized role

“edge of technology”

- detailed understanding needed : specialism + **experience**
- Or good collaboration with leading institute
(more effective to go there ?)
Or **team** of specialists => Belgium institutes relative small => act as one institute => one subject
- **Enthusiast, “full time” promoter !**

Electronic research

- Trends:
 - High resolution =>
 - High data volume
 - High level of integration
 - Power , Power , Power (on detector electronics)
 - Distribution / DC-DC : material budget , limit dimensions
 - Dissipation : temperature increase => cooling
 - power saving => efficient design (pulsed power)
 - Radiation hardness (ILC ? => forward detectors ?)
 - Modular , reusable designs (still)

TWEPP 2007 (not all new)

- High resolution calorimeter (“pixel” readout) ILC
- Several tracking pixel research (SLHC)
(SystemOnChip)
- 3D stacked multi chip designs (general)
- Programmable rad-hard logic
(processors, FieldProgrammableGateArrays like
devices , SLHC)
- Smaller design sizes 250nm -> 90nm--> ? 2020
- General optical link (data ,slow ctrl)
- Silicon on insulator

UA interest

- Driven by experience -> electronics
 - No specific specialism, small team
 - interest data processing =>linked to physics
 - Increase specialism by involving applied science faculty
 - Research subjects
 - Mainly electronics, less physics
 - CMS tracker SLHC -> known community
- Close collaboration with Belgium groups

“Supper” (Si) tracker

- Power
- Material budget
- Packaging
- radiation hard
- occupancy
- Higher granularity => more channels
 - More data => digital communication
 - Analogue information is very useful for CMS tracker
- **L1 contribution**

“Supper” (Si) tracker L1

- L1 contribution

- “HW” track reconstruction algorithm
- On detector

- Data reduction
- **Data processing correlator**
- Fast data exchange



data reliability
power
latency

None
standard

data reliability : data correction , triple voting

“Supper” (Si) tracker off detector

- FED => digital => more “general” design ?
- Control ?
- L1 & FED one hw implementation
 - L1 refining / selection -> latency
 - Global trigger ?