



# LIVERPOOL PP GROUP MEETING

Liverpool Semiconductor Detector Centre  
(LSDC) @ H + 10

Tim Jones  
(May '22)

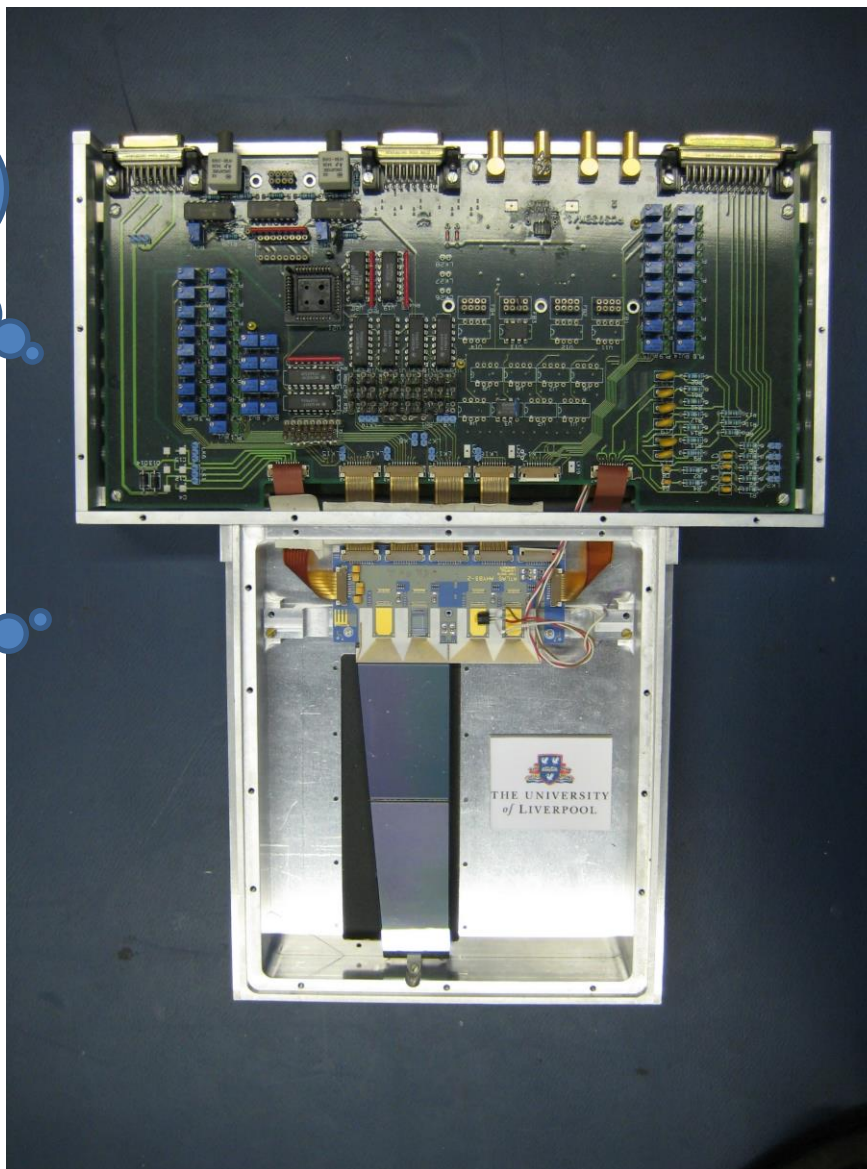




Do you  
know what  
it is ?

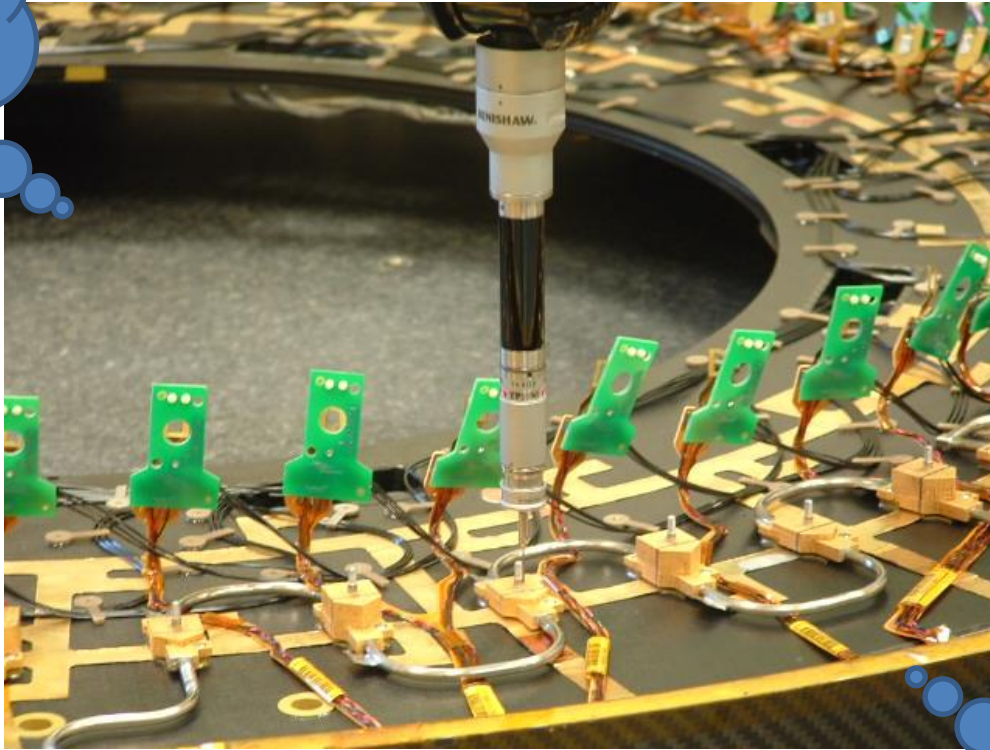
Do you know  
what's so  
special about  
it ?

Did YOU  
build it?





Do you  
know what  
this is ?



Did YOU  
measure it?





Do you  
know what  
it is?



Do you  
know where  
it is?

Do you know  
who it is?





This is  
ATLAS SCT  
Endcap C



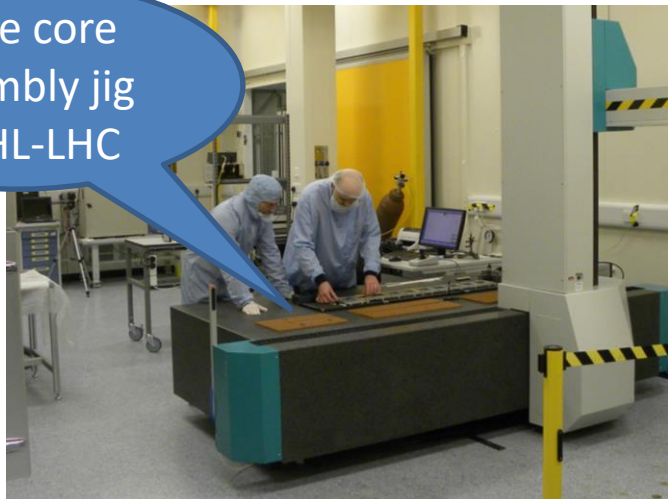
It would be a  
miracle if you  
DID recognise  
anyone!

This is what LSDC was built for ...





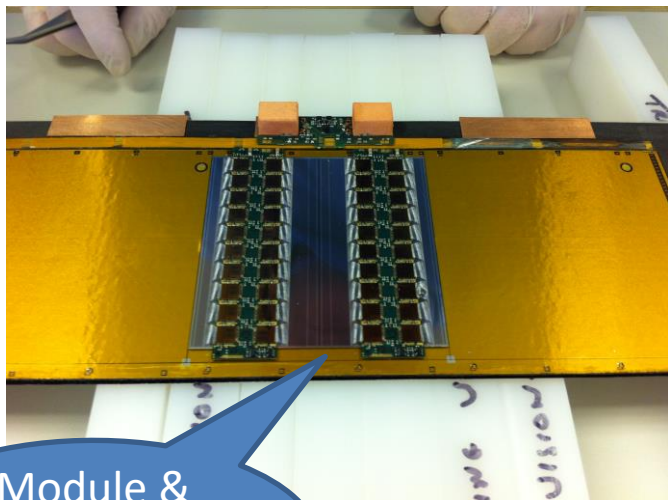
Stave core  
assembly jig  
for HL-LHC



BJ820 &  
SmartScope for  
HL-LHC



Module &  
Local Support  
for HL-LHC

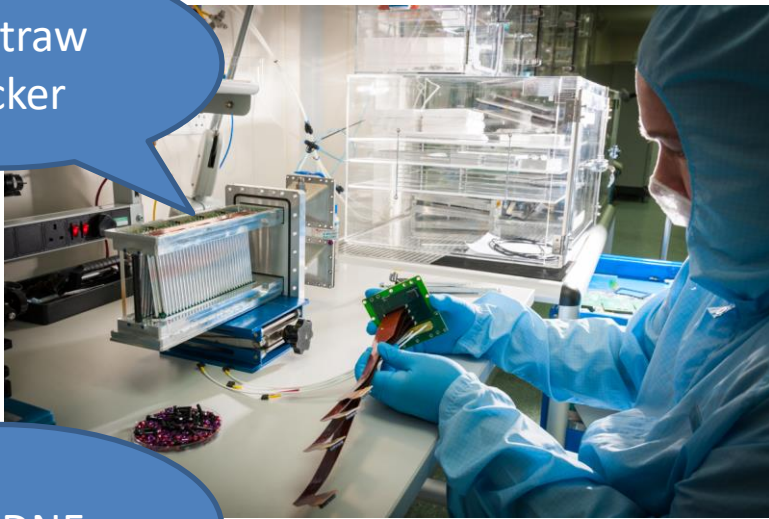


Test  
system for  
HL-LHC





g-2 Straw Tracker



ALICIA  
Commissioning

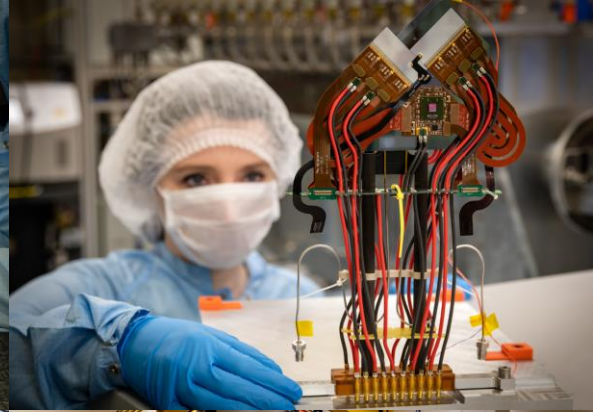
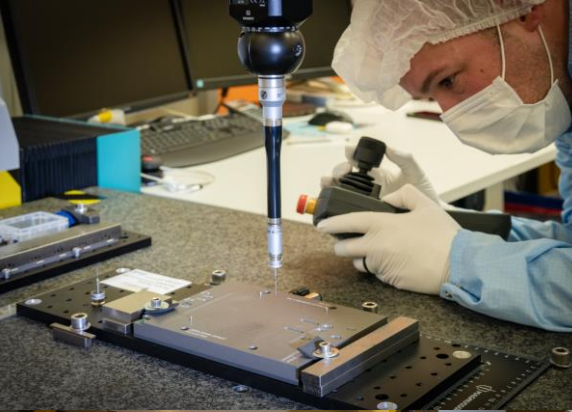
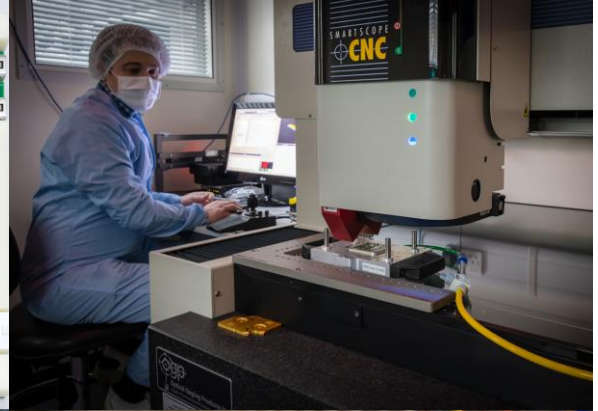
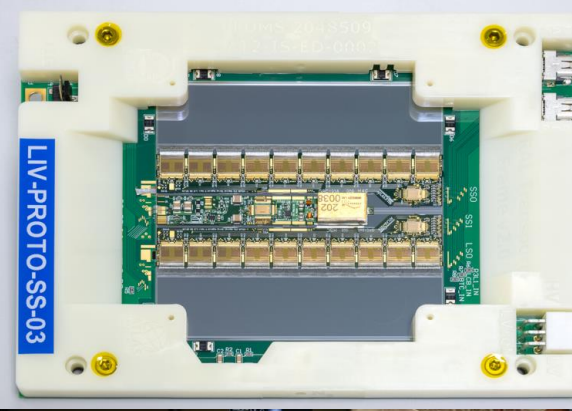


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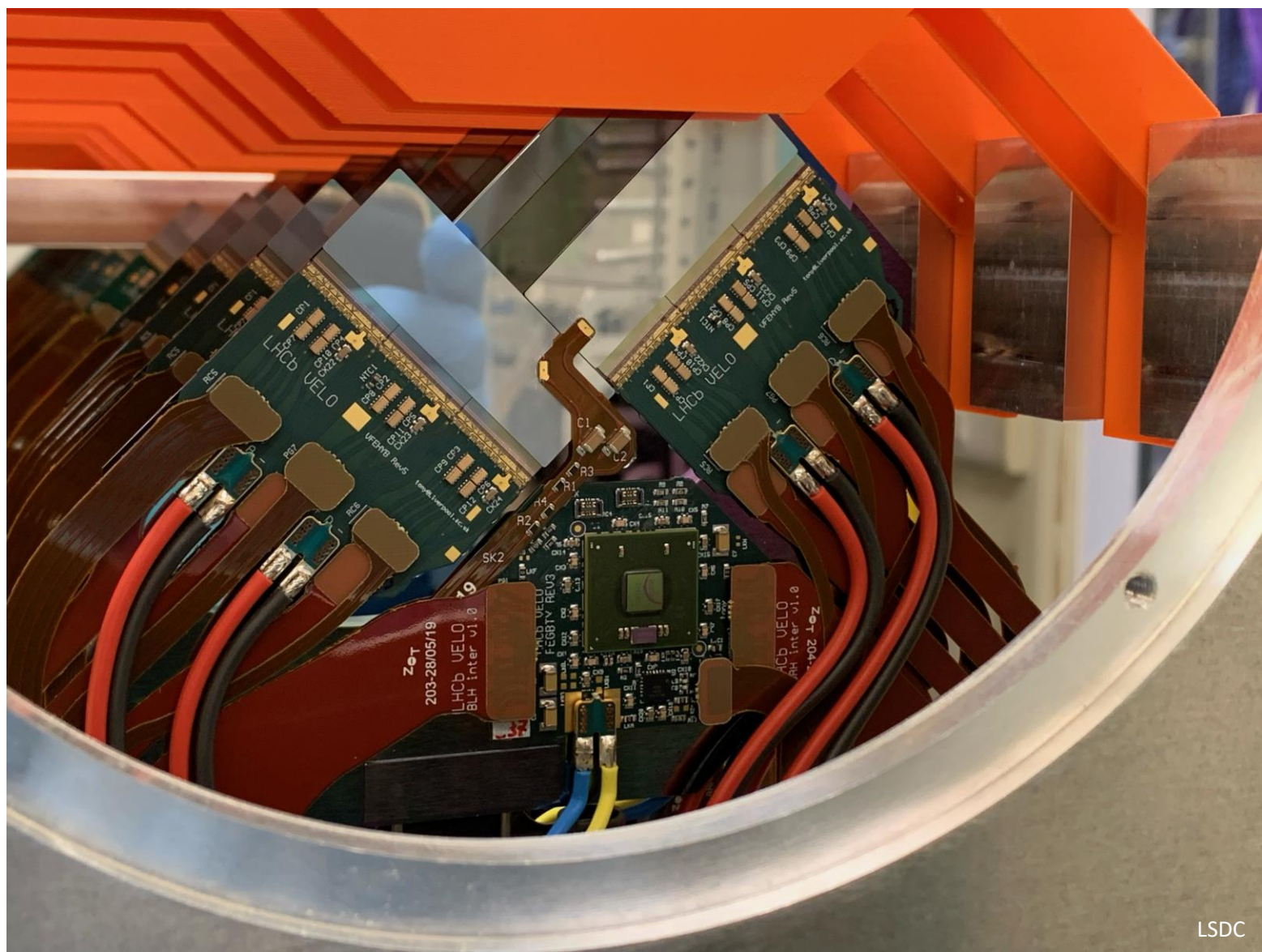


LHCb  
VeloPix  
Prototyping









LSDC





- Goal is to support the delivery of detector sub-systems to major national and international programmes and our local generic detector development
  - Staff: Mike Lockwood, Tom Lee, Paul Cook, Alan Taylor
    - Well done to Tom for successfully completing his apprenticeship
  - Facilities: 100 m<sup>2</sup> of Class 5 (100) and 250 m<sup>2</sup> Class 7 (10,000) clean rooms
- Major Activities
  - Mu3e, ATLAS ITk, Darkside20k SiPM array assembly, Generic Detector R&D, &c



Tom

Mike





- **New Equipment**

- Hesse BJ653 wire bonder (courtesy of NP group)
- Aerotech Gantry Positioning System (PPCG 22-25)
  - Pick 'n' place system for module assembly
  - (eg HVCMOS, SiPM, etc..)



- **Near Term Challenges**

- Construction of ATLAS ITk Barrel Strip & Endcap Pixel
  - 40% of LSDC at peak production (2024-25)
  - Maintenance of ageing infrastructure

- **Long Term Challenges**

- Funding (LSDC / DDMF / AML):
  - Income for 21-22 ~ £500k - historically high due to project funding for the construction of LHCb VeLoPix & ATLAS ITk
  - Income just about matches spend
- CG25:
  - We submit CG25-28 in ~ 2 years
  - Need to have new projects bringing in new funding to enable LSDC/DDMF/AML to continue to evolve.





- Together with AML & DDMF, LSDC enables our Technicians, Engineers and hardware-inclined Researchers, Post Docs & PGRs to create truly innovative technology to deliver physics.
  - Working at the forefront of technology, and often against the most pressing schedules, these facilities underpin Liverpool's reputation in detector construction.
  - Each one of them routinely makes unique, critical and long-lasting contributions to the global output of particle physics research.
- Time does not stand still – the LHC/HL-LHC era of long-term investment in R&D (and subsequent construction) will end soon.
  - Need to think carefully about our future R&D and experiment builds to make sure our facilities evolve and we can access the required funding to maintain and develop them

