

# EP/DT/EF/MPT workshop

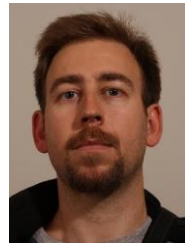
June 22, 2017



Alexandra



Alexis



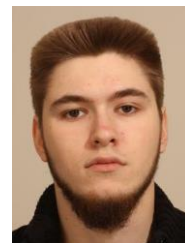
Bertrand



David



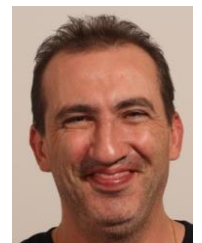
Olivier



Roch TTE



Serge



Antonio

Staff



Adam



Benilde



Elise



Ercan



Franck



Jorge



Katia



Krzysztof

FSU



Paul



Pawel



Xavier



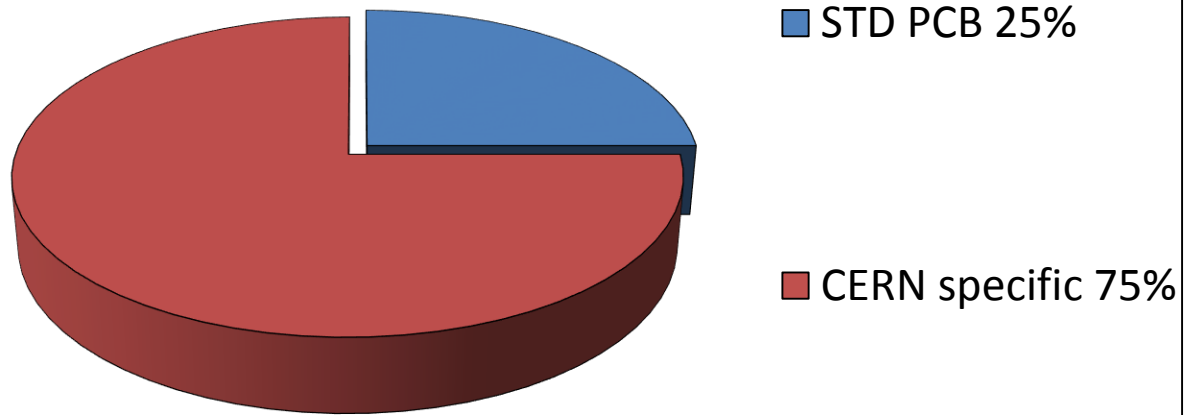
Zafer



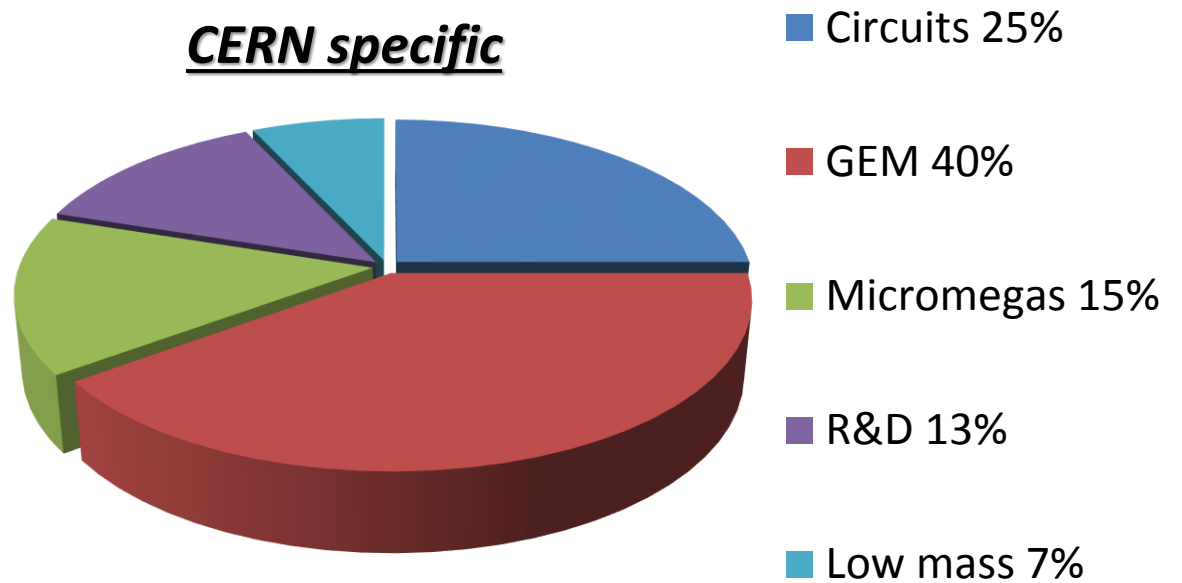
Guillaume

FSU

**Expected 2017 turnover : 2 MCHF**



**CERN specific**



# GEM

- Team

- 2 staff :

- Alexis Rodrigues (team leader/production)
    - Bertrand Mehl (design)

- 4 FSUs :

- Ercan Budun (production)
    - Paul Nguyen (production)
    - Krzysztof Baran (production)
    - Thierry Budun (production)

- 1 tech student:

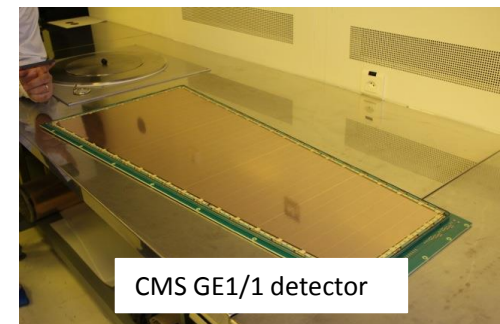
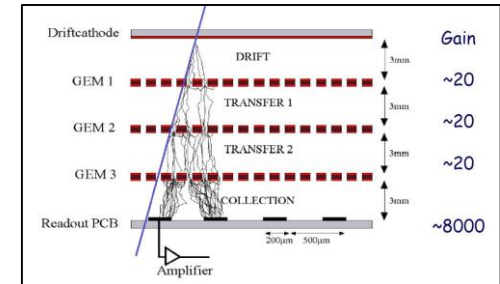
- Roch Bonnard (production)

- Projects

- Large scale ALICE TPC – CMS GE1-1 (close to 750 GEM)
  - In total 12 GEM projects already booked for 2017

- Other info

- World record on the largest GEM (1.8m x 0.6m)
  - On going heavy technology transfer to industry (out of 8 companies 3 will probably fly)
  - MPT is still the only supplier of Large GEMs in the world



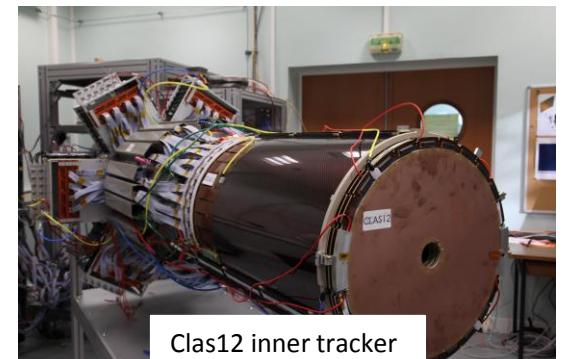
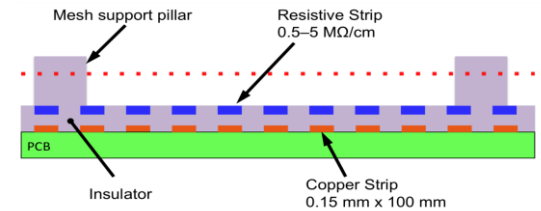
CMS GE1/1 detector



Large ALICE GEM

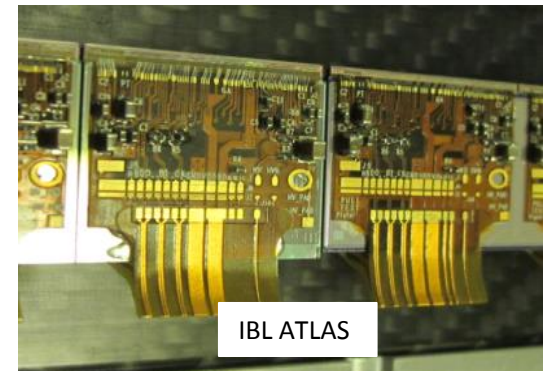
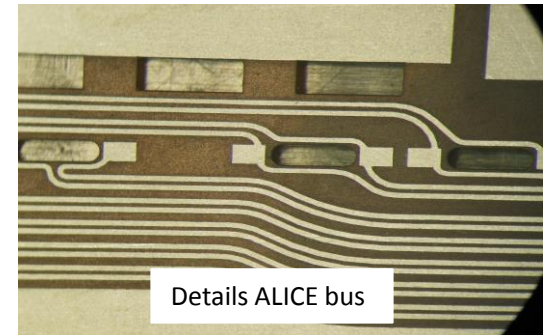
# Micromegas detectors

- Team
  - 2 staff :
    - Olivier Pizzirusso (production leader)
    - Bertrand Mehl (design)
  - FSU team for STD parts production
- Projects
  - ATLAS NSW (consulting)
  - 5 projects already booked for 2017 (T2K , Clas12...)
- Other info
  - Technology transfer to ELVIA and ELTOS done (took 5 years).
  - **The workshop is still the only supplier of cylindrical detectors**
  - We still have the World record of size with 2m x 1m
  - **Resistive protection introduced by the workshop in 2011**
    - Base Line of ATLAS NSW



# Low mass circuits

- Team
  - 1 staff :
    - David Ranchin (production and design)
- Projects
  - Existing ALICE Inner tracker and upgrade
  - IBL ATLAS
  - Many low mass interconnection flat cables
- Other info
  - The workshop is presently the only known supplier of multilayer AL flex
  - Maximum size produced 1.5m x 0.6m
  - Increasing activity





# R&D

- Team

- 4 staff :

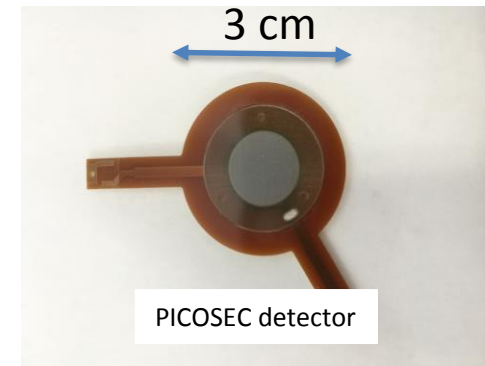
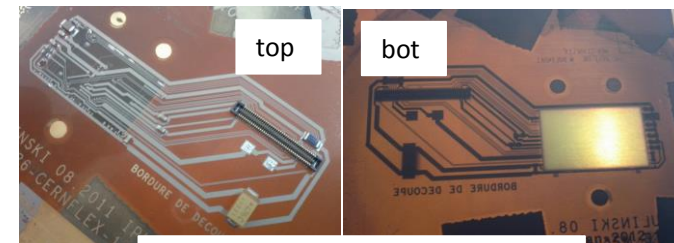
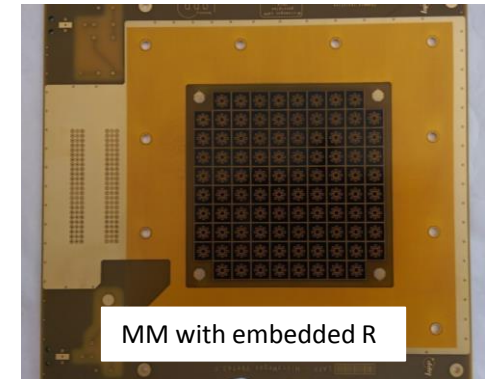
- Antonio Teixeira (team Leader & production/design)
    - Serge Ferry (production & design)
    - Alexandra Gris (Production & Design)
    - Bertrand Mehl (design of final structures)

- Projects

- Micro Resistive well detectors (CMS R&D GE2/1 , LHC-B R&D)
  - High rate u-Rwell (CMS ME0 R&D)
  - Embedded resistor for High rate Micromegas (ATLAS Tagger R&D)
  - Embedded front end electronics (ATLAS Tagger R&D)
  - Embedded silicon detectors in flex (ALICE R&D)
  - High time resolution detectors : PICOSEC (Generic R&D)

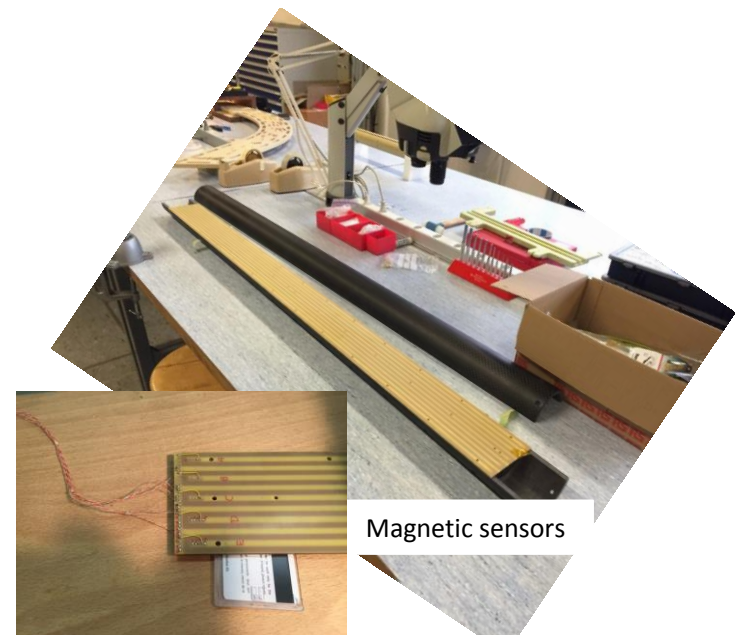
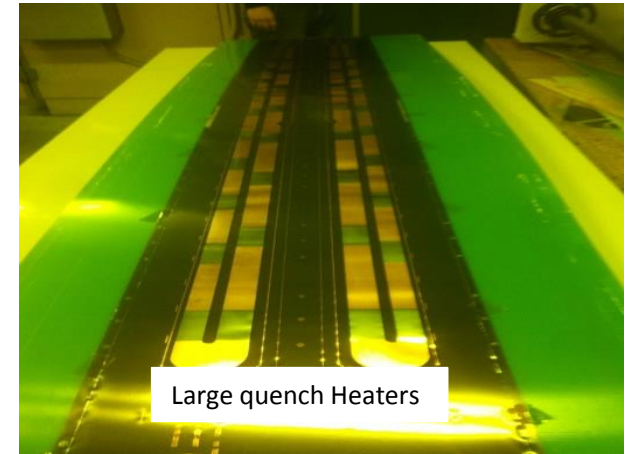
- Other info

- Rate up to 1 Mhz/mm<sup>2</sup> measured on Micromegas detectors
  - u-RWell technology can possibly divide the cost of GEM detector by 2
  - Outstanding time resolution of PICOSEC ( below 50ps )
  
  - Detectors with features like : 1Mhz/mm<sup>2</sup> , large size , spacial resolution below 100um , timing resolution below 1ns , embedded FE , low cost are nearly in our hands.



# Other important activities

- Producers
  - FSU team + Staff
- Projects mainly for TE department
  - Quench heaters for LHC upgrades (600 pieces : estimation)
  - Sensors for Magnet calibration
    - 4 projects booked for 2017
- Other info
  - **The workshop is today the only supplier of 11m quench heaters**
    - Special SS copper plating
  - Record with 1.6m long 40 layers calibration coils
    - Done at CERN after 2 failures in industry

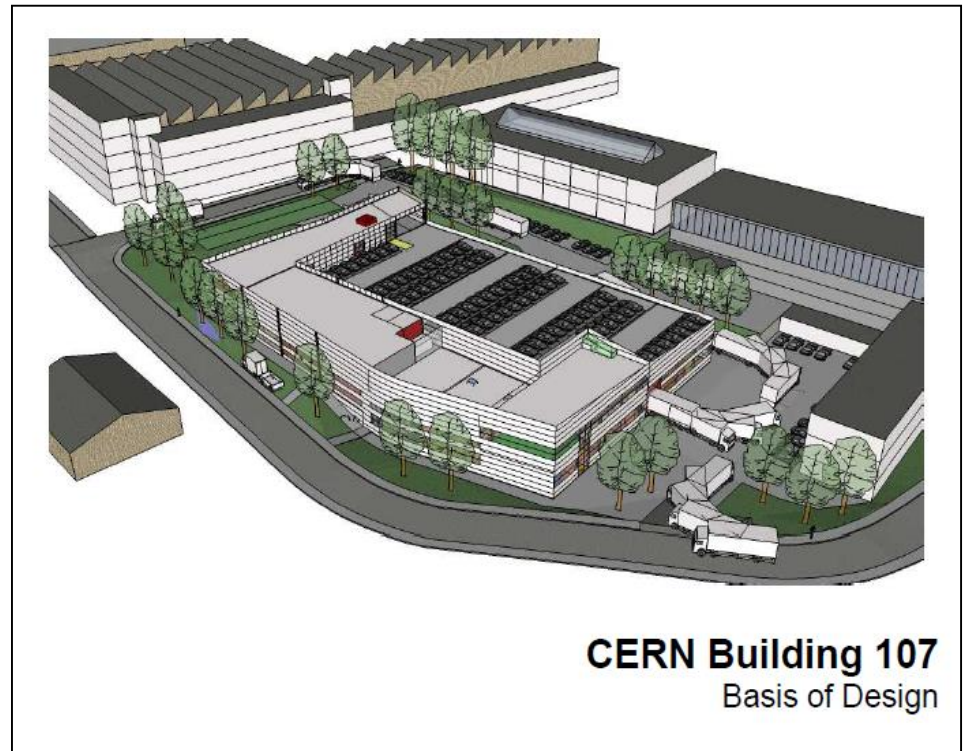


# B 107

Start : beginning 2012    Estimated full operation date: June 2018

- **Building status**

- Walls external/internal 100%
- Floors 100%
- Slatted floors 0%
- EL 50%
- HVAC 50%
- Plumbing 20%
- Clean room 0%





# Thank you for your attention

- And thanks to the FSU persons not cited in previous slides for their precious involvement in all the other production of the workshop.