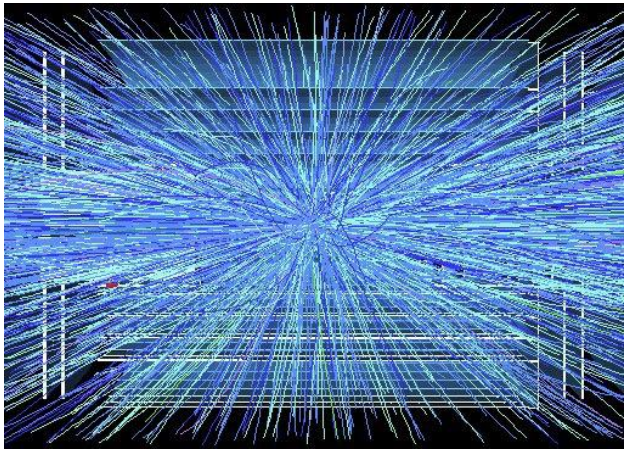
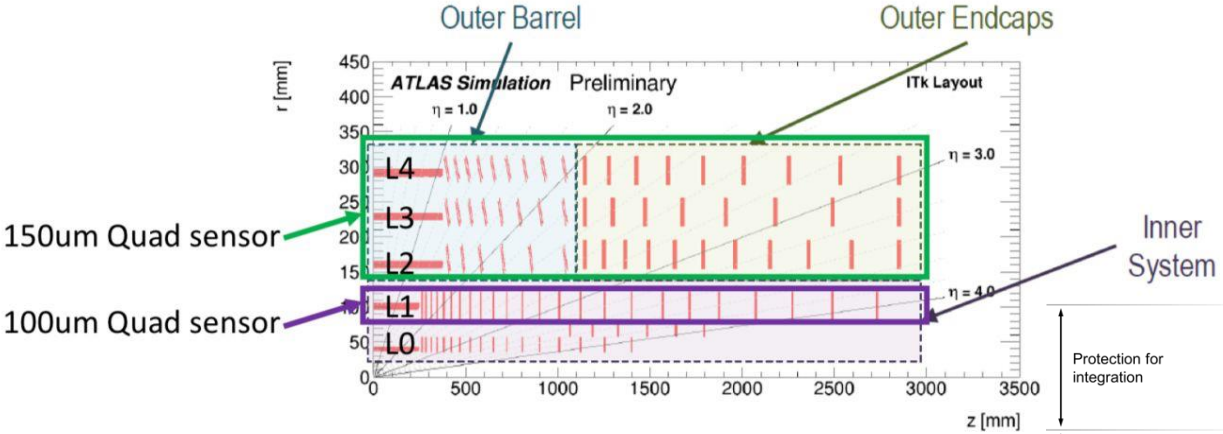
Atlas ITK

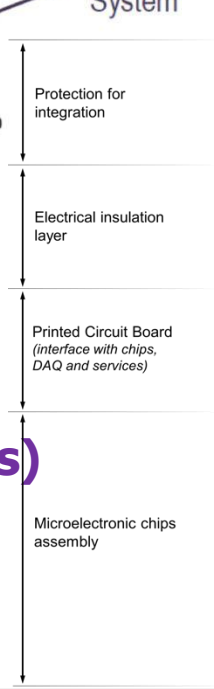
ITK - Projet

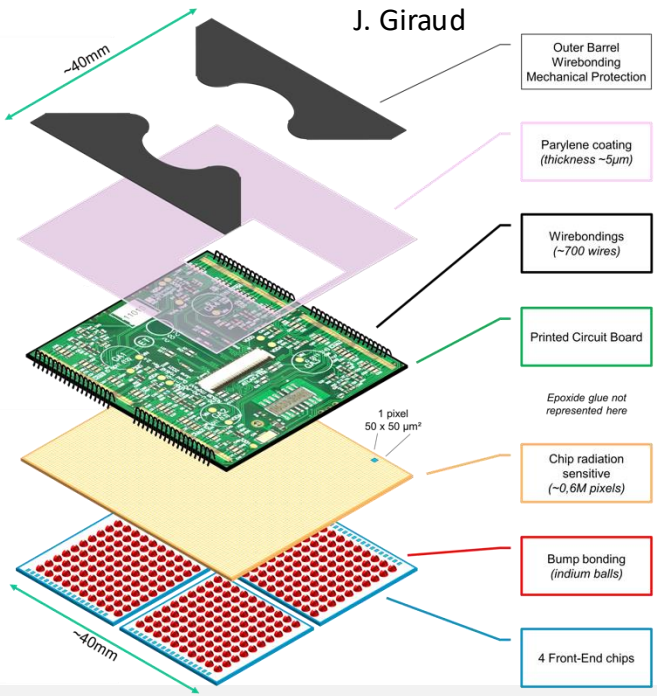
Phase 2 du LHC, augmentation de la luminosité
→ augmentation de l'empilement
➔ Amélioration des détecteurs
➔ Implication dans le détecteur de Pixel



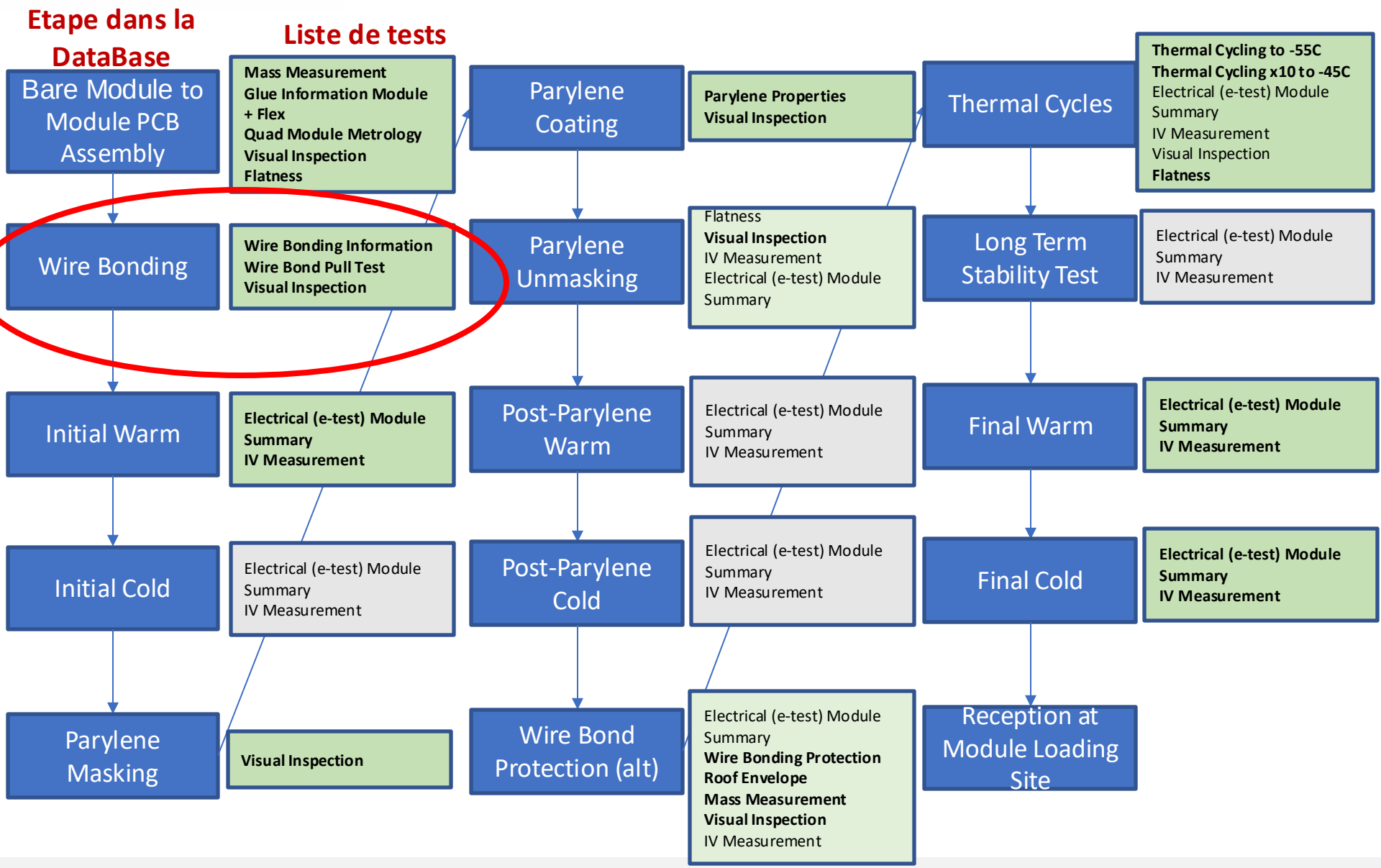


Paris Cluster :
Construction des modules pour la partie Outer Barrel des pixels (33% ~3k modules)

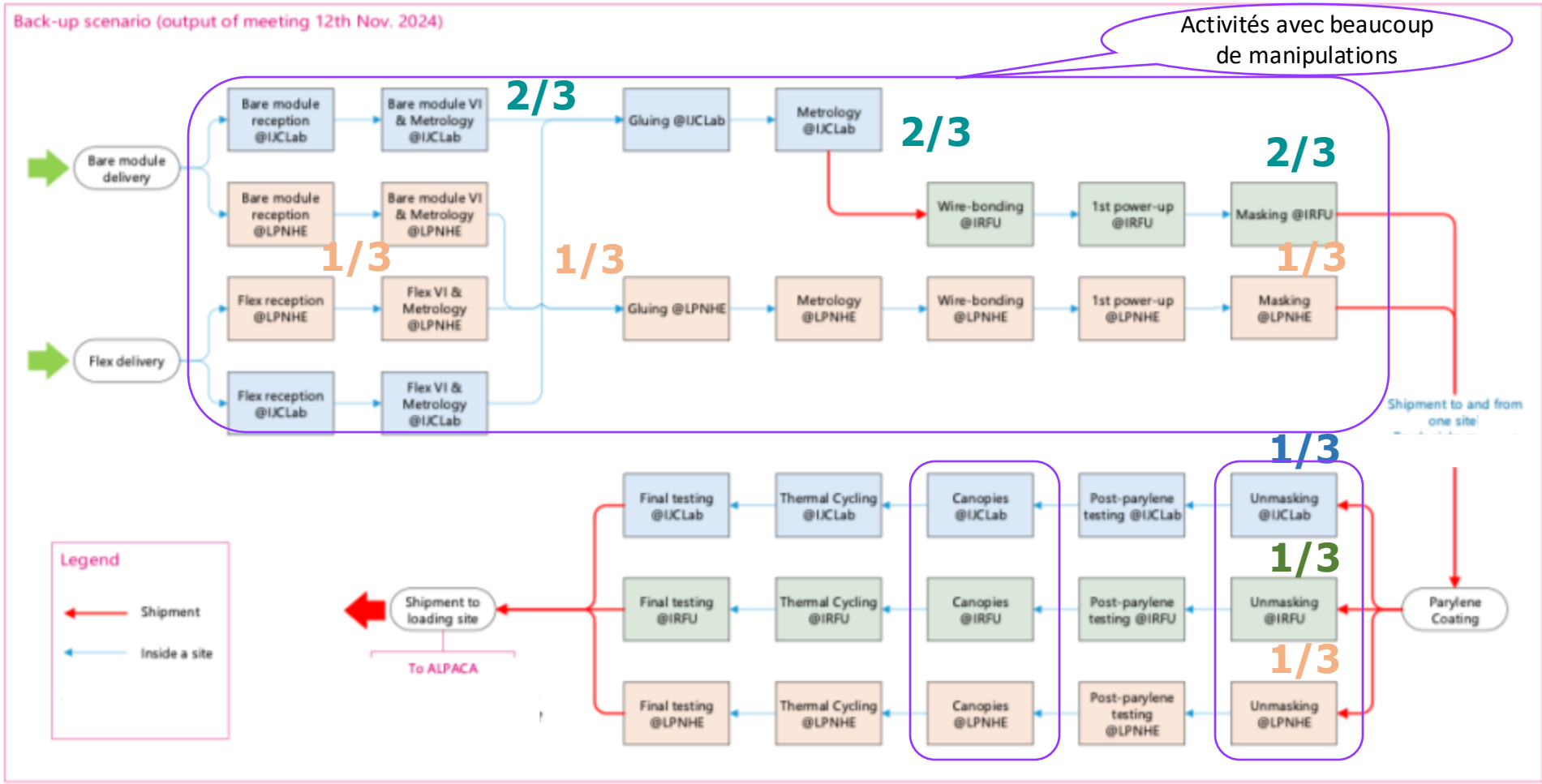




ATLAS ITk Pixel Workflow



Paris Cluster workflow



LPNHE → chaine entière de production avec 1/3 des modules à faire
IJCLab + IRFU → partage la chaine en faisant 2/3 des modules
Redondance des activités

Wirebonding

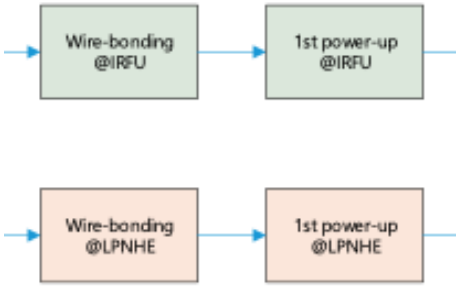
Même machine entre LPNHE/IRFU, tête différente :

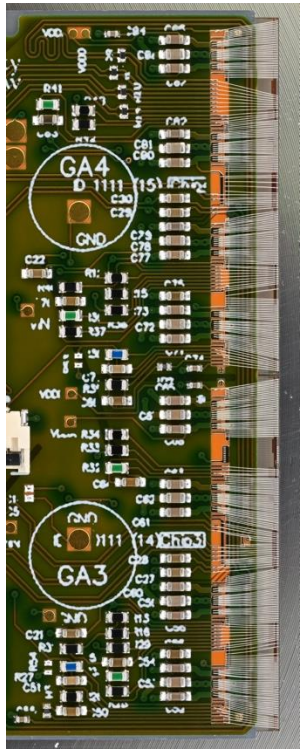
→ 700 fils a wirebonder de 25 um

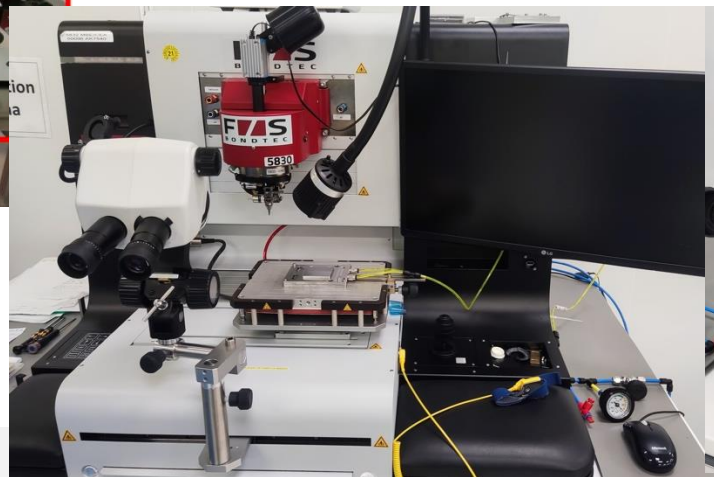
→ Pull test pour contrôler la tenue des fils

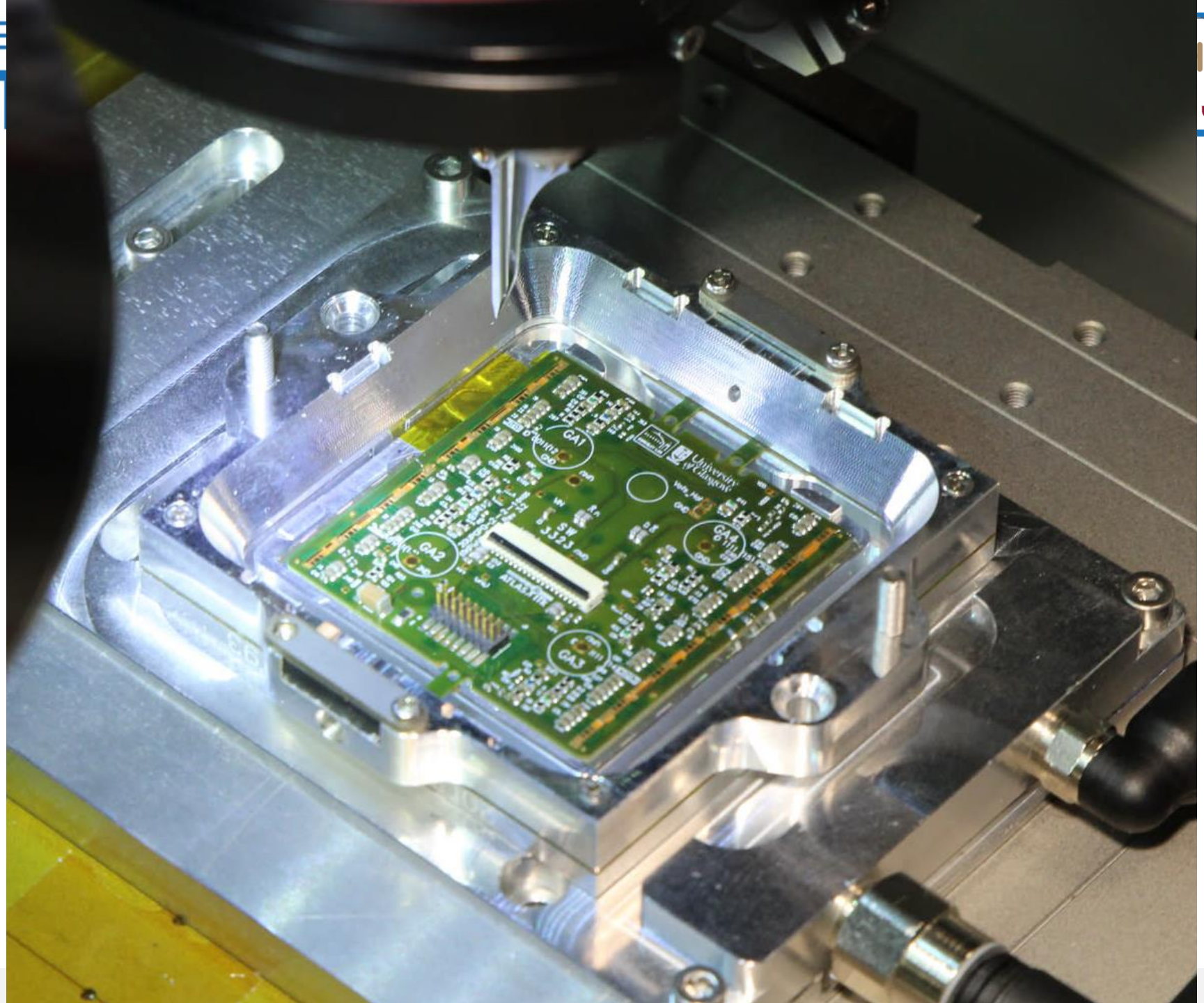
→ Inspection Visuelle

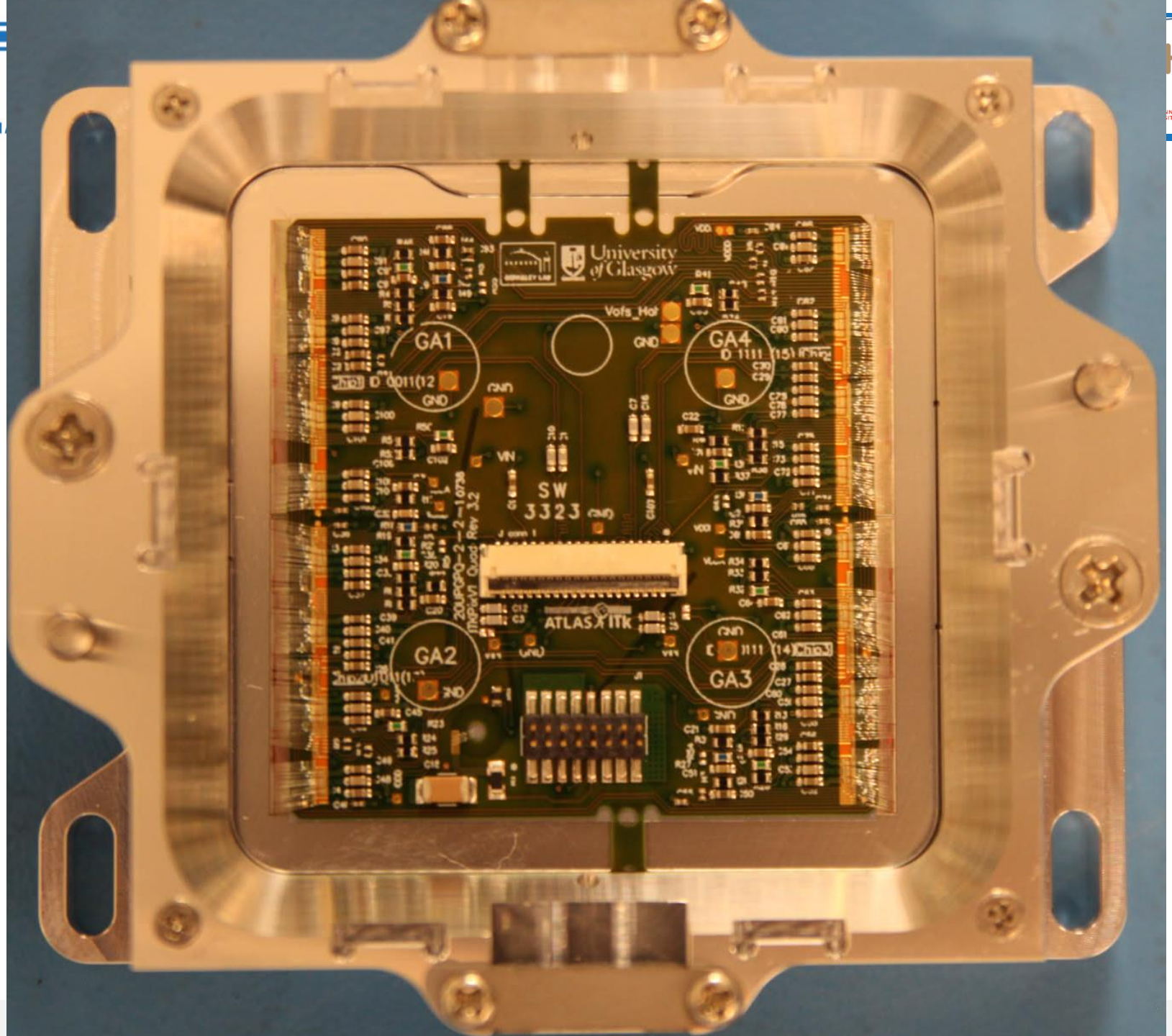
- **→ 30 min/module préparation**
- **→ Entre 3-4h/module dépend de la qualité de nettoyage des flex (Enormes études) [pull test/wirebonding //]**
- **→ 10 min/module inspection visuelle**





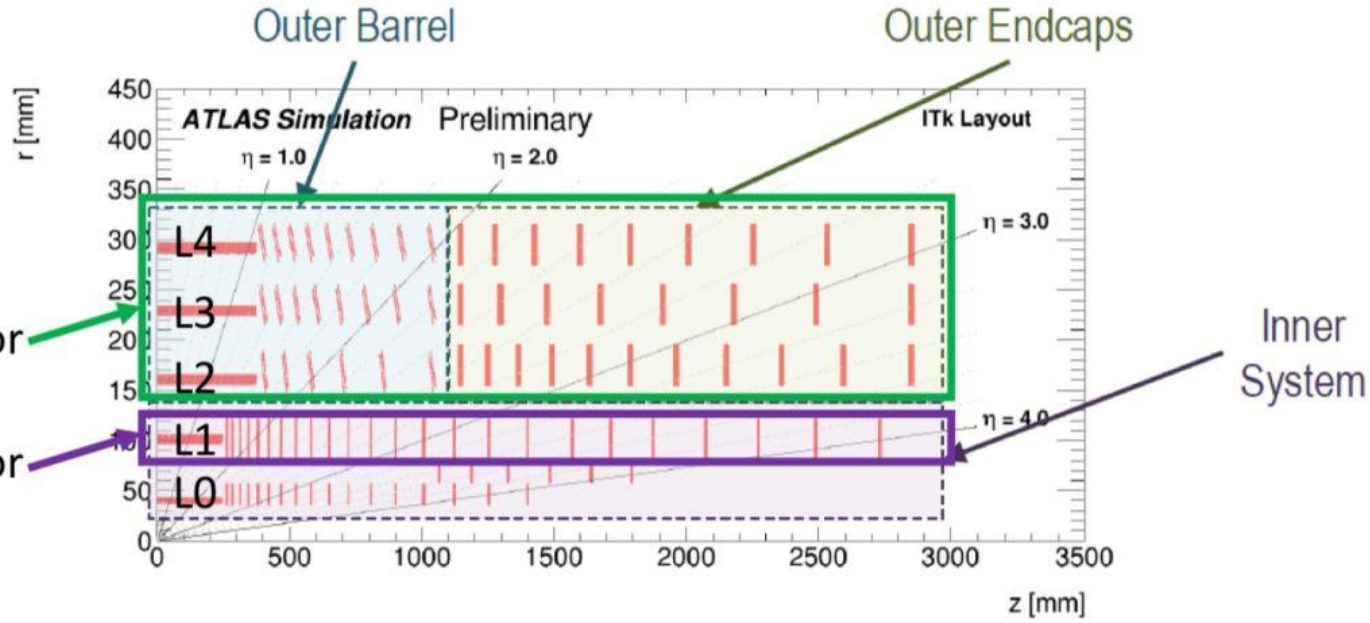


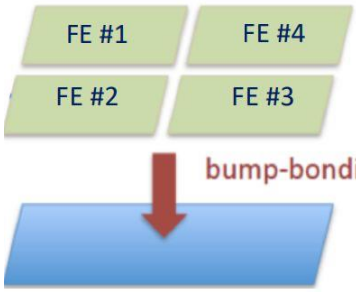

GA1
GA2
GA3
GA4

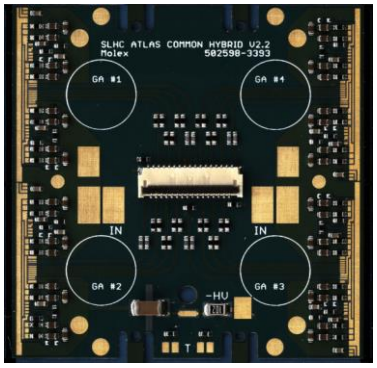

University of Glasgow
GA1
GA2
GA3
GA4
Vofs_Hot
GND
VIN
SW
3323
ATLAS ITk

- **Back up**

ITK – Pixel Layout







ITk planar sensor pixels

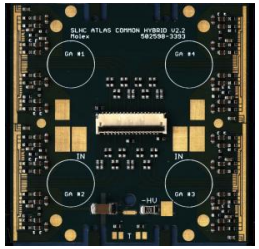
- **Pitch 50x50 µm2**
- **n-in-p technology**
- **100 µm thin sensors for L1**
- **150 µm thin sensors for L2-L4**
- **ITk pixel FR chip is 20x19.2 mm2 (400x384)**

→ Planar sensors produced for 4x FE chips: Quad module

LPNHE Commitment: assembly and test O(1000) quad modules

Paris Cluster

Cluster of the three laboratories in ATLAS of the ile-de-france



Mutualize experience, equipment redundancy, workload harmonization

LPNHE is doing the full production chain, IJCLab+IRFU split the chain but doing 2/3 wrt to LPNHE

Modules built in the paris cluster are sent to ALPAKA (Grenoble/Annecy+Marseille) group for structure assembly