

Status of the Captinnov platform. October 2014.

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The Captinnov platform

The P2IO Captinnov group set up a technological platform for the development and characterization of detection systems integrated with large and highly segmented semiconductors. The acquisition of two equipments has been identified as a priority according to the needs expressed by the research teams:

- A probe station for testing large semiconductor detectors, micro circuits and also printed circuits for front end electronics.
- A semi-automatic bonding machine to achieve the integration of detectors and/or chips on printed or hybrid circuits.

These equipments are selected to meet the needs of very specific phases of R&D and prototyping for which it is essential to have facilities for local teams. Main characteristics are listed in the following:

- Field operation of large (300mm wafers) for testing and implementation of detectors or hybrid systems (multi detector + ASICs) across one PCB
- EMC shielding, possibility of making measurements of very low noise level (fA);
- Means of optical testing;
- Large variety of test probes and bonding head;
- Possibility of platinum cooled / heated (thermal group);
- Semi automatization of functions (production of small series, repetitive structures tests).

The platform is intended to be evolutionary and open to all constituents of P2IO, to their partners and to external structures.

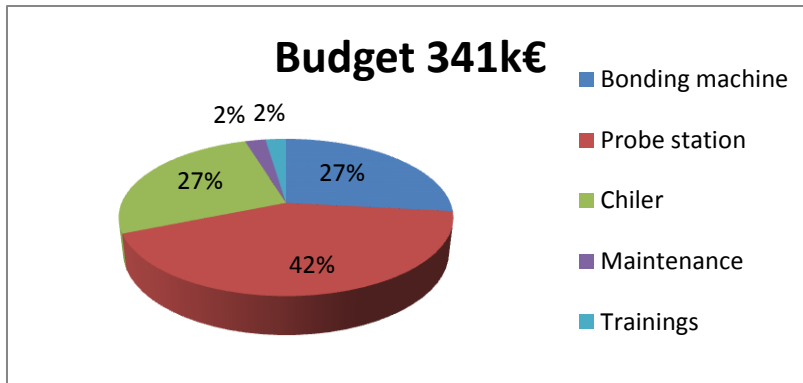
Status of implementation

Purchase of materials

The call of offer has been published in May 2013. After the opening of envelopes at the end of June 2013, the orders were issued at the end of July 2013(managed by LLR – Ecole polytechnique / CNRS-IN2P3).

All the budgets allocated were engaged to date: 341,000.euros. They come from two sources: P2IO one hand and the Ile-de-France on the other hand (SESAME project supported by the LLR - Ecole Polytechnique / CNRS-IN2P3). The budget included a series of training in the use of machines and two years of preventive maintenance.

The Bonder machine is paid. The probe station is not fully installed, it has been paid an advance to the supplier pending the execution of the technical recipe which is currently underway.



Reception tests of the bonder machine. CEA - 10/09/13

Installation and commissioning

The bonder machine was delivered and installed in early October 2013 in the clean room at CEA Saclay- Ormes des merisiers. Some tests on an integrated circuit sample were successful. The CEA staff in charge of its operation is being acquired skills. Two training sessions were organized.

The delivery of the advanced test machine and its thermal group took place in July 2014. The implementations of the work of the clean room at LAL - University Paris Sud / CNRS-IN2P3 have been proved more complex than expected (Intervention of multiple subcontractors) which delayed the installation originally scheduled in 2013.

The technique recipe of the advanced test machine is provided since early of September. We cannot accept the equipment in the state due to a set of non-conformities or malfunctions listed below:

1. Number of insufficient connectors (4 present, 6 required)
2. Uneven surface defect of the sample holder (limited usable dimensions at 20cm instead of 30cm expected)
3. Incompatibility of the compressor with the thermic group for temperatures below -5 ° C (-40 ° C required)
4. Minor damages (scratches) of the sample holder during his installation.

Fixing identified problems requires intervention of the American manufacturer's representative and a conflicting expertise between the supplier and a subcontractor.

The proper functioning of the machine in normal conditions (positive temperature and sample size of less than 20cm) is not challenged. An action plan is defined (meetings of 9 July and 2 October) with the visit of the supplier scheduled the 28/10 (together with additional training).

Projected schedule:

Early February 2015: end of the technical recipe

Autumn 2015: end of skills acquisition and installation of the measuring equipment

Early 2016: Opening to users P2IO

Beginning in 2017: openness to external

Operation

A major effort is to continue finalizing the operating agreement and use of the platform. Following many new actors occurred in 2013 at the CNRS-DR5 (Meudon), the file was transferred to the CNRS - DR4 (Gif sur Yvette) in January 2014. A first version of an official document legally valid was proposed in early of June 2014 and a second version at late of August 2014, which was forwarded to the administrators of the partners. The people in charge of the file have been leaving their mission but the work should be continued with new interlocutors for the 4th time. This instability slowed considerably the process of development and validation (Preliminary contact made with the financial management of the FCS).

Results and Prospects

The P2IO-CAPTINNOV group federated around this high-tech equipment corresponding at needs shared by many project well distributed across all laboratories involved projects. Equipment's are delivered, the technical recipe is in progress. A phase of training and acquiring of skills for mastering equipment is required on the coming year.

As part of science policy of our institutions, projects involving the use of machinery are identified. The equipment's were visited by representatives of most of the partners.

Both machines acquired this year will meet the highest priority needs, the CAPTINNOV platform encouraged by the Scientific Council of P2IO has a vocation to be enriched with new means for test and diagnosis.