Co-funded by the
Erasmus+ Programme
of the European Union

MicroElectronics Cloud Alliance Project

562206-EPP-1-2015-1-BG-EPPKA2-KA

(2016 – 2018)

MECA Project

- 18 European institutions, 8 HEIs and 8 SMEs will share infrastructure, technological and human resources to develop
  - open educational resources,
  - remote access and sharing of educational and professional software,
  - remote and practice-based learning facilities.

KNOWLEDGE ALLIANCE

MicroElectronics Cloud Alliance (MECA)

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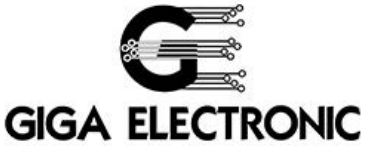

Courtesy Etienne Sicard

Rationale

- No one university or SME can afford the necessary infrastructure, clean rooms, technology and experts in all fields of the multidisciplinary science of microelectronics.
- Sharing of laboratory experiences, CAD tools, project ideas, and a common infrastructure represents a sort of “educational cloud” on top of the cloud software/hardware infrastructure.

Project Aim

Definition and development of cloud-based European infrastructure and organisation for education in micro- and nanoelectronics providing a range of

- open educational resources,
- remote access and sharing of educational and professional software,
- remote and practice-based learning facilities

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State of the Art and Background

- The cloud computing approach is created mainly for Internet application needs.
- Almost all HE partners are experienced in development of e-learning courses.
- UNED and TUS - in development of training through remote laboratory access.
- At POLITO the experiment with a cloud based architecture started two years ago with a couple of microelectronics and microsystems courses which require the use of complex CAD software.

Innovation

- The design of an efficient training infrastructure based on a cloud approach can be also a key solution for traditional classroom training through sharing server and software resources.
- Not only the distance from a desktop is the advantage or information longevity assured by the cloud resources.
- An important point is that it allows students to interact and cooperate with expanding circle of peers, regardless geographical location.

Objective 1

- Analysis of institutional, teachers' and students' needs in
  - shared IT infrastructure,
  - teaching materials and learning resources, meeting the requirement of the enterprises in micro- nanoelectronics and
  - translation into functional specifications of mClouds.

  Deadline: May 2016

Objective 2

- Networking of project partners from HEIs and SMEs,
  - to share ideas, methodologies and experiences in order to improve the HE programmes
  - to face the rapid technological change in the sector and joint development of job-specific training modules.
- Deadline:

Objective 3

- Development of the mClouds system and realization of:
  - a shared server infrastructure,
  - shared e-learning resources and
  - the remote access to the CAD tools.
- Deadline: December 2017

Objective 4

- Pilot test of the virtual services and training teachers and technical staff in their use.
  - from January 2018 till March 2018
  - with small groups of learners – minimum 10 per country

Objective 5

- Implementation of jointly developed cloud-based open educational resources in micro-nanoelectronics in the partners' educational contexts.
  - as a part of the regular educational practices at each university
  - from April 2018 till December 2018
  - with at least 240 students and retrained teachers.

Important Note

The universities will share their infrastructure, technological and human resources,

they will recognise the common certified modules but

each university will keep his autonomy regarding the national diploma delivery.

Milestones

- M1 need analysis report, *May 2016*
- M2 specification of the three Clouds architectures for open learning resources sharing, IT infrastructure and CAD software common use, *September 2016*
- M3 job-specific courses and courses on entrepreneurship, project management, *March 2016*

Milestones

- M4 updated HE curricula in microelectronics in collaboration with the practitioners from the industry and mClouds system developed and implemented with minimum 16 courses delivered as OERs, *August 2017*
- M5 system officers and teachers and trainers from enterprises trained, *December 2017*
- M6 pilot tests, *March 2018*
- M7 exploitation/field trial, *December 2018*

Outcomes

- 16 shared MSc on-line courses delivered in the eight EU countries
  - Step towards European wide HE area with OERs and shared resources between universities
- Stable Alliance between HEIs and business
- mClouds for sharing institutional IT infrastructure
- mClouds for sharing CAD software(s)

Meetings

- M1: meeting in Toulouse for needs analysis with involvement of target users, stakeholders and decision makers from France.
- M2: Meeting on mClouds functional specification at POLITO
- M3: Meeting for peer review of job-specific teaching and on mClouds on-going development/ implementation and training seminar for system adminsitrators in Frankfurt.

Meetings

- M4: Training workshop for teachers by the industrials on job-linked education in Bucharest.
- M5: Training seminar for teachers, system administrators for the use of mClouds in Cadiz. Users and managers at different levels invited.
- M6: Meeting for reporting the pilot test in Berlin, Users and managers at different levels invited.
- M7: Open dissemination/demonstration workshop in Budapest.