



# Annual Activity Report 2013

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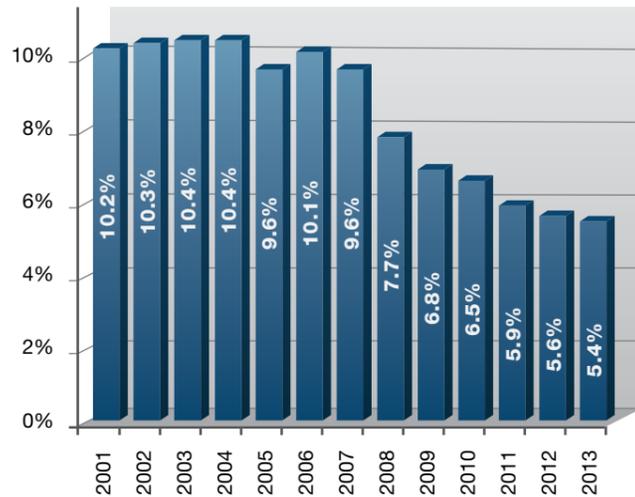
Motto: When the object is to raise the permanent condition of a people small means do not merely produce small effects: they produce no effect at all.

John Stuart Mill (1806-1873) "The Principles of Political Economy"

## INTRODUCTION

In 2013, some market analysts estimate that the semiconductor industry grew by 4,6%. The semiconductor suppliers headquartered in Europe continued losing market share, yet at a slower pace; some of them actually grew faster than the market, improving their position in the global ranking. This is a first positive signal, allowing some hope in a reversal of the downwards trend observed in the last eight years.

Advanced technologies made in Europe with world class features, such as Fully Depleted Silicon on Insulator (FDSOI), progressed towards market acceptance, but did not achieve yet the breakthrough. Europe consolidated its strong position in diversified processes usually described as "More than Moore" technologies.



Market Share of the European Leaders

The challenge in front of the European industry is its positioning in mainstream CMOS technologies, in particular on 300mm: The fab lite / fabless strategy pursued to a large extent by the European IDMs cannot fill this gap, the obvious solution is to put in place policies to create conditions for establishing a state of the art foundry capability. The European Commission took steps to define a strategy by inviting an Electronics Leaders Group to work on strategies to increase the European share in semiconductor value creation.

## PROGRESS TOWARDS OBJECTIVES

2013 has been the last year of the Framework Programme 7, hence the last year in which the ENIAC JU could launch calls for proposals and select projects for funding. This report will give the overall view on the achievements in making commitments, while the main part of the project execution will take place in the following four years.

The objectives defined in the ENIAC JU basic act are as follows:

### Establishing the research agenda

The ENIAC Multi Annual Strategic Plan defines 25 Grand Challenges addressing three technology areas and five application areas responding to societal needs. The Annual Work Programme 2013 opened for proposals all Grand Challenges.

At the end of 2013, the total eligible costs of the projects selected for

funding approached 2.9 B€ covering all the R&D areas defined in the MASP. This is in line with the most ambitious objectives.

### Awarding funding to participants

In 2013 the ENIAC JU selected for funding further thirteen projects (four projects on TRL 2-5 and nine KET Pilot Line Projects on TRL 4-8). In total, the ENIAC JU committed co-funding to a total of 63 projects. In 2013 the ENIAC JU paid to the participants 34.4 M€. Since the programme inception, the ENIAC JU paid 79.1 M€ while the ENIAC member States certified 136.3 M€ grant payments for a total of 215.4 M€ public funding

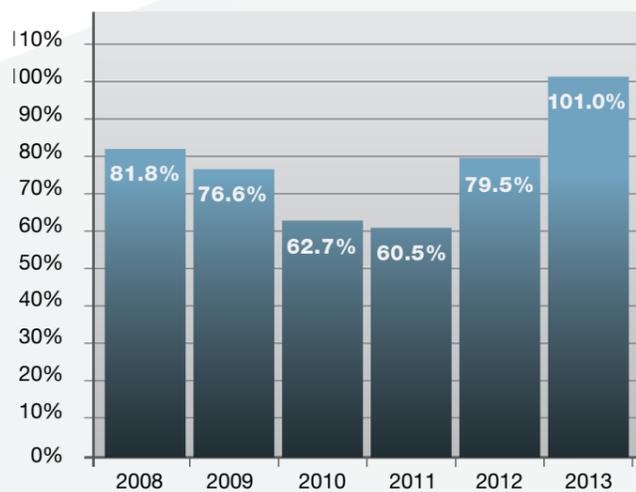
The ENIAC JU recognized the project "ESiP" from Call 2009-1 (Call 2) with the "ENIAC JU Innovation Award 2013", for advancing the state of the art in quality and reliability of the system in package integration

### Increasing the R&D investments in nanoelectronics

In 2013, the ENIAC JU continued recovering the delay in committing funding that has been accumulated in the first three years of the programme. In fact, the response of the R&D actors and of the ENIAC member States to the 2013 calls has been very strong, enabling the ENIAC JU to engage 170.0 M€. This brings the total of the financial commitments to 444.4 M€, made possible by reassigning 4.4 M€ of the administrative costs that have been saved to supplement the 440 M€ budgeted for projects in the basic act.

### Achieving synergy and coordination of the European R&D effort

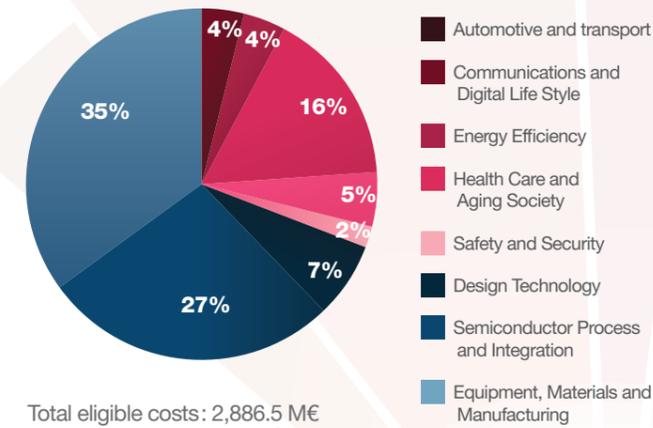
The coordination with the EUREKA programme progressed considerably; allowing to fund through the ENIAC mechanism a project that also received a CATRENE label. Furthermore, the ENIAC JU organized joint events with the EUREKA cluster CATRENE (European Nanoelectronics Forum, Barcelona) and SEMI Europe (SEMI Brussels Forum). The ENIAC JU closely collaborates with the other four Joint Undertakings implementing Joint Technology Initiatives and had exchanges with a number of associations including ESIA, SITELESC, VDE/ZVEI, VDMA and GSA. The European Commission invited the ENIAC JU to share its experience on pilot line projects at various events.



ENIAC JU cumulative financial commitments against the initial plan

The KET Pilot Line Call structured the European R&D efforts, concentrating the means on strategically relevant topics:

- strengthening the 300mm infrastructure (DEMETER, eRAMP, PANACHE, PLACYD, POLIS, Things2DO)
- consolidating the societal impact of diversified technologies on wafers up to 200mm (Lab4MEMSII, ViDaP)



Total eligible costs: 2,886.5 M€

- preparing the future transition to 450mm (E450LMDAP). Fifteen projects from the first two calls submitted final technical reports confirming sustained generation of Intellectual Property (97 patents submitted or planned, 5 trade secrets or confidential results, 3 trademarks, and 277 exploitable foreground IP items) as well as a strong dissemination activity resulting in 1392 publications.

### Promoting the participation of the small and medium sized enterprises

A total of 1384 participants have been active in the 63 ENIAC JU projects. They came from 616 organizations, out of which 278 (45%) are small and medium sized enterprises, 192 (31%) are research institutes and Universities, and 145 (24%) are large companies. The SMEs engaged 335 M€ in the projects; this represents 12% of the total eligible costs in the programme, consequently receiving 12% of the ENIAC JU grants.

## MANAGEMENT AND INTERNAL CONTROL STANDARDS

No changes took place among the 22 ENIAC member States in 2013.

The organization is fully staffed; gaps in knowledge and capabilities have been eliminated; the internal control standards are well implemented, as confirmed by the management assessment and the various auditors; and the opportunities for improvements are pursued with specific action plans.

Considerable progress was achieved in the auditing activity; the National Funding Authorities reported that 33% of the beneficiaries from Call 1 representing 45.6% of the grants have already been audited, and further 13.6% representing also 13.6% of the grants are planned to be audited.

### EXECUTION OF THE 2013 BUDGET

At the end of the year, the ENIAC JU committed all credits for the projects arising from the last calls, Calls 2013-1 (Call 8) and 2013-2 (Call 9). Its payments represent 95% of the operational payment credits in the 2013 budget related to the on-going projects.

The ENIAC JU committed 2.603 M€ for its running costs versus an approved budget of 2.686 M€. The focus on administrative cost control over the 2008-2013 period allowed assigning the saved Union contributions to additional R&D activities.

## CONCLUSIONS AND PERSPECTIVES

The ENIAC JU consolidated its position as an instrument of choice in implementing KET policies in nanoelectronics. The R&D engagements increased with regard to the previous year, allowing the ENIAC JU to allocate operational budget available and maximize the leveraging of the nanoelectronics research in Europe.

The fourteen KET Pilot Line projects selected for funding in the last

two years engaged 1.8 B€ in total eligible costs addressing the strategic priorities of the European semiconductor industry.

Through their strategic content and the size of the commitments they will impact visibly the global competitiveness of the European industry. After the two successful pilot line calls executed by the ENIAC JU, the European Commission issued in December 2013 the first calls under Horizon 2020: twenty four of them invite submissions of Innovation Actions proposals, similar with the ENIAC JU pilot lines. At the same time, the challenges in front of the European semiconductors are not met yet. Ms Neelie Kroes, V.P. of the European Commission called for stepping up investments in order to significantly increase the semiconductor manufacturing basis in Europe. As part of the Innovation Investment Package in Horizon 2020, the Commission proposed on 10 July 2013 a continuation of the Joint Technology Initiative in nanoelectronics. The ENIAC JU activities shall be consolidated with those of the ARTEMIS JU on embedded software and of the European Technology Platform EPoSS on system integration within a new Joint Undertaking called "Electronic Components and Systems for European Leadership" (ECSEL). The ENIAC JU salutes this initiative that consolidates different disciplines along the same chain of innovation and value creation, with industrial actors often encompassing all steps of the process.

Even within the ECSEL JU, implementing the vision expressed by the V.P. of the Commission exceeds the capabilities and the financial resources available in a single instrument. The way ahead for ECSEL JU will consist essentially in continuing concentrating the means on KET policies and leveraging opportunities of collaboration to amplify and leverage the resources. To this effect, three elements are of the essence:

### Combined financing

Reversing the downwards trend in the European nanoelectronics requires increased investments, it is essential to engage the whole ecosystem – institutes, Universities, SMEs and large companies – and to combine funding from different European and national mechanisms, in particular the innovation funding and the regional funding when the criterion of excellence is synergetic with the cohesion objective.

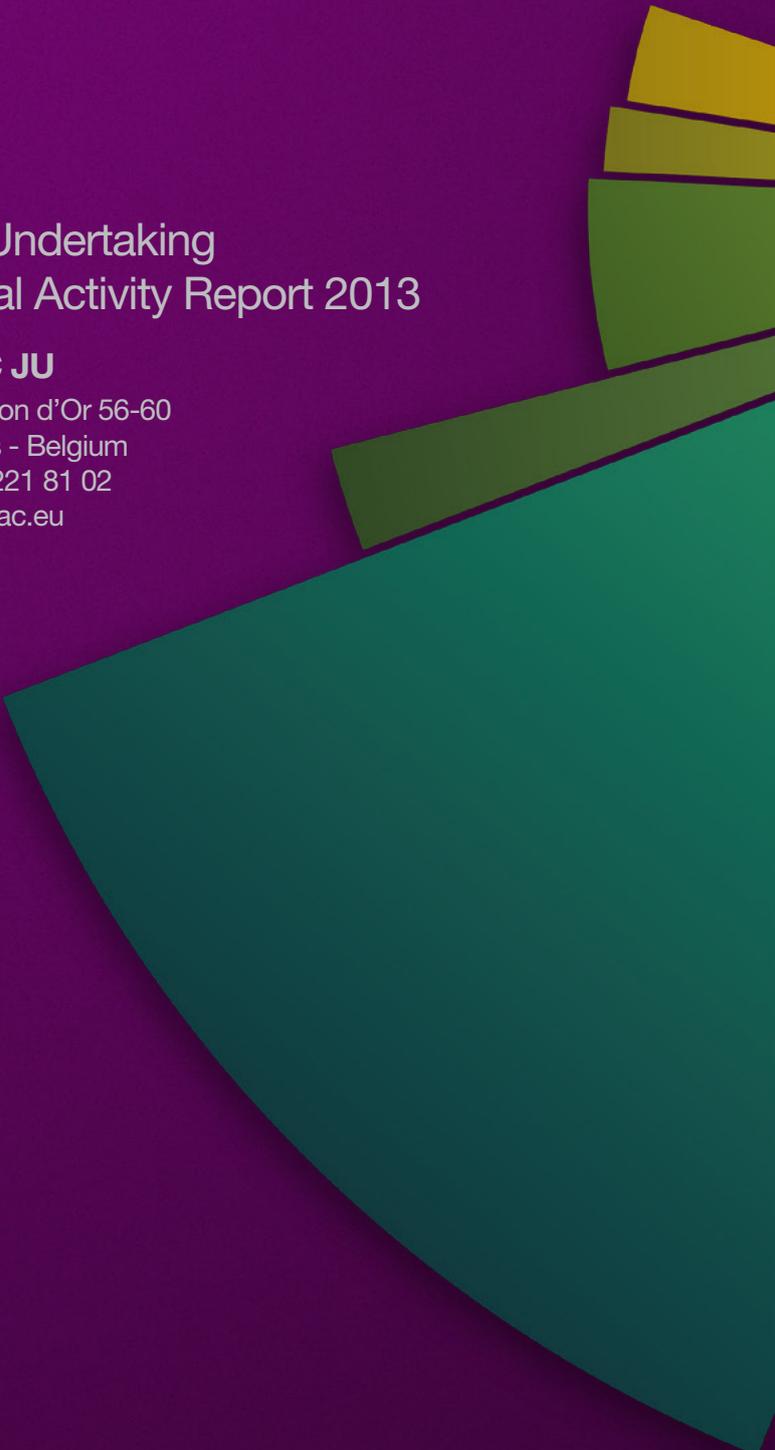
### Autonomy in implementation

It has been convincingly demonstrated that a neutral organization is best positioned to federate the various contributors, in particular European and national resources; it is therefore mandatory to allow for some flexibility in implementation and achieve the right balance between the simplifications achieved through standardisation in Horizon 2020 and the specificities imposed by the engagement of national and regional entities.

### Industrial policy

The bridge across the valley of death must have all three pillars in place. A successful R&D&I phase can go as far as the second pillar, and must be taken to a safe shore by strengthening the third pillar through effective policies establishing a level playing field with the rest of the world. An important step in this direction would be the implementation of important projects of common European interest, as proposed and currently under discussions; the ECSEL JU must strive to be recognised as fulfilling the criteria.

The ENIAC JU will cease existing as a legal entity when the ECSEL JU Regulation will enter into power. It considers that it fulfilled its mission of exploring new ways to strengthen the European competitiveness through innovation in a Key Enabling Technology, helping Europe take another step towards becoming an information based society. The ENIAC JU team expresses its determination to continue its work in the ECSEL JU with the same engagement and dedication.



ENIAC Joint Undertaking  
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