



Basic information	
2007/0122(CNS) CNS - Consultation procedure Regulation	Procedure completed
Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics Repealed by 2013/0234(NLE) Subject 3.50.01.05 Research specific areas 3.50.20 Scientific and technological cooperation and agreements	

Key players				
European Parliament	Committee responsible		Rapporteur	Appointed
	ITRE Industry, Research and Energy		VAKALIS Nikolaos (PPE-DE)	16/07/2007
	Committee for opinion		Rapporteur for opinion	Appointed
	BUDG Budgets		HAUG Jutta (PSE)	20/09/2004
	CONT Budgetary Control		The committee decided not to give an opinion.	17/07/2007
	IMCO Internal Market and Consumer Protection		The committee decided not to give an opinion.	
	Council of the European Union	Council configuration		Meetings
Competitiveness (Internal Market, Industry, Research and Space)		2820	2007-09-28	
Competitiveness (Internal Market, Industry, Research and Space)		2832	2007-11-22	
Environment		2842	2007-12-20	
European Commission	Commission DG		Commissioner	
	Communications Networks, Content and Technology		REDING Viviane	

Key events			
Date	Event	Reference	Summary

22/06/2007	Legislative proposal published	COM(2007)0356 	Summary
24/09/2007	Committee referral announced in Parliament		
28/09/2007	Debate in Council		Summary
22/11/2007	Debate in Council		Summary
22/11/2007	Vote in committee		Summary
29/11/2007	Committee report tabled for plenary, 1st reading/single reading	A6-0486/2007	
11/12/2007	Decision by Parliament	T6-0589/2007	Summary
11/12/2007	Results of vote in Parliament		
20/12/2007	Act adopted by Council after consultation of Parliament		
20/12/2007	End of procedure in Parliament		
04/02/2008	Final act published in Official Journal		

Technical information	
Procedure reference	2007/0122(CNS)
Procedure type	CNS - Consultation procedure
Procedure subtype	Legislation
Legislative instrument	Regulation
Amendments and repeals	Repealed by 2013/0234(NLE)
Legal basis	EC Treaty (after Amsterdam) EC 172 EC Treaty (after Amsterdam) EC 171
Stage reached in procedure	Procedure completed
Committee dossier	ITRE/6/50915

Documentation gateway				
European Parliament				
Document type	Committee	Reference	Date	Summary
Committee draft report		PE396.506	15/10/2007	
Amendments tabled in committee		PE396.717	06/11/2007	
Committee opinion	BUDG	PE394.193	13/11/2007	
Committee report tabled for plenary, 1st reading/single reading		A6-0486/2007	29/11/2007	
Text adopted by Parliament, 1st reading/single reading		T6-0589/2007	11/12/2007	Summary
European Commission				
Document type	Reference	Date	Summary	
	COM(2007)0356			

Legislative proposal		22/06/2007	Summary
Document attached to the procedure	SEC(2007)0851 	22/06/2007	
Document attached to the procedure	SEC(2007)0852 	22/06/2007	
Commission response to text adopted in plenary	SP(2008)0411	23/01/2008	
Follow-up document	COM(2010)0752 	16/12/2010	Summary
Follow-up document	COM(2011)0557 	14/09/2011	
Follow-up document	SEC(2011)1044 	14/09/2011	
Follow-up document	COM(2012)0190 	27/04/2012	Summary
Follow-up document	SWD(2012)0105 	27/04/2012	
Follow-up document	COM(2012)0758 	14/12/2012	Summary
Follow-up document	SWD(2012)0430 	14/12/2012	
Follow-up document	COM(2013)0830 	27/11/2013	Summary
Follow-up document	COM(2013)0935 	06/01/2014	Summary
Follow-up document	SWD(2013)0539 	06/01/2014	

Other institutions and bodies

Institution/body	Document type	Reference	Date	Summary
EESC	Economic and Social Committee: opinion, report	CES1444/2007	25/10/2007	

Additional information

Source	Document	Date
National parliaments	IPEX	
European Commission	EUR-Lex	
European Commission	EUR-Lex	

Final act

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 11/12/2007 - Text adopted by Parliament, 1st reading/single reading

The European Parliament adopted a resolution drafted by Nikolaos **VAKALIS** (EPP-ED, EL) and made some amendments to the proposal for a Council regulation setting up the ENIAC Joint Undertaking.

The key amendments were as follows:

Joint Undertaking: Parliament added that it shall be ensured that after the last call for proposals in 2013 projects still in progress are implemented, monitored and funded until 2017. The ENIAC Joint Undertaking is a body as referred to in Article 185 of the Financial Regulation and Point 47 of the IIA of 17 May 2006.

Objectives: the Joint Undertaking should promote a public-private partnership aiming at mobilising and pooling Community, national and private efforts, increasing overall R&D investments in the field of Nanoelectronics, fostering collaboration between the public and private sectors and creating synergies among all the Nanoelectronics industry's stakeholders, including corporate players, SMEs and R&D institutes. The objective of ensuring the efficiency and durability of the JTI on Nanoelectronics was deleted.

Members: the clause permitting membership for any non-EU, non-candidate and non-associated country pursuing R&D policies or programmes in the area of Nanoelectronics was deleted.

Financing: a financial contribution from the Community of up to EUR 10 million, payable in instalments of up to EUR 1.5 million per annum or a sum equal to 50% of the contribution from AENEAS, whichever figure is lower. Any part of this contribution not spent during the current year shall be made available in the following years for the R&D activities. The financial contribution from the Community of up to EUR 440 million to finance Projects, may be increased by any unspent part of the contribution from the Community towards running costs, as provided for in the text.;

Financial rules: the financial rules of the ENIAC Joint Undertaking may not depart from Regulation (EC, Euratom) No 2343/2002, unless its specific operating needs so require and subject to the prior consent of the Commission. The budgetary authority shall be informed of such derogations.

Staff: the Commission and the Member States may, in agreement with the Governing Board, second a number of officials to the ENIAC Joint Undertaking. The Governing Board shall, in agreement with the Commission, adopt the necessary implementing measures regarding the secondment of officials of the European Communities and participant Member States and the employment of additional staff.

Responsibility: some essential clauses of the JU Statutes have been inserted to clarify that the Joint Undertaking shall be solely responsible for meeting its obligations. It shall not be responsible for meeting the financial obligations of its Members. The Members shall not be liable for any of the ENIAC Joint Undertaking's obligations. The financial liability of the Members shall be an internal liability towards the Joint Undertaking only, limited to their commitment to contribute to the resources.

Report: no later than 31 December 2011 the Commission shall present an evaluation of the ENIAC Joint Undertaking prepared with the assistance of independent experts. This evaluation shall cover the quality and efficiency of the ENIAC Joint Undertaking and progress towards the objectives set. The results of the evaluation shall be taken into consideration so as to reorient, if necessary, the Research Agenda.

Preparatory actions: the Commission and AENEAS shall take all necessary preparatory actions for the setting up of the ENIAC Joint Undertaking until its bodies are fully operational and shall ensure that the ENIAC Joint Undertaking is fully operational within 3 months of the entry into force of this Regulation.

Parliament also introduced the following amendments in the annexes:

- the participation of SMEs must be ensured and at least 15% of available funding must be granted to them;
- the Public Authorities Board may allow other Member States which are not ENIAC Member States to participate in its activities as observers;
- the Public Authorities Board shall elect its Chairperson every two years;
- the Executive Director shall be appointed following a call for expression of interest published in the Official Journal of the European Union, on the internet and in the press in all the Member States of the European Union, for a period of up to 3 years. After an evaluation of the Executive Director's performance, the Board may extend the term of office for a further period of not more than three years, following which a call for expression of interest shall be published in the same way;

- in-kind contributions shall be subject to an evaluation of their value and relevance to the activities of the ENIAC Joint Undertaking and to acceptance by the Governing Board. The procedure for evaluation of contributions in kind shall be adopted by the Governing Board and be based on certain principles prescribed in the text;
- once approved by the Governing Board, the Multiannual Strategic Plan, the Annual Work Programme, and the Annual Implementation Plan shall be made public;
- the Annual Activity Report shall identify the participation of SMEs in the ENIAC Joint Undertaking and in the R&D activities;
- calls for proposals shall be made public to the greatest extent possible, including on the internet and in the press in all Member States of the European Union;
- Parliament made some amendments to the provisions on Access Rights. It also deleted the time-limits on Project participant's obligations to provide access rights;
- lastly, the report stipulates that the European Parliament needs to be consulted on any important changes to the JU's statutes.

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 16/12/2010 - Follow-up document

The Commission presents its first interim evaluation of the [ARTEMIS](#) and ENIAC, the two Joint Undertakings implementing the Joint Technology Initiatives (JTIs) in the fields of embedded systems and nanoelectronics research. The report formulates the Commission's initial response to the evaluation's recommendations and sets out follow-up measures. Furthermore, the Commission intends to prepare a Communication, scheduled for the first half of 2011, to set out its overall conclusions on the interim evaluations of all the JTIs and the interim assessments of the Recovery Plan Public-Private Partnerships (PPPs).

The ARTEMIS and ENIAC JTIs were established in 2007 as Joint Undertakings (JUs). After their first two calls for proposals, ARTEMIS and ENIAC have launched 25 and 18 projects, respectively, each with an average duration of three years. The EU and JTI Member States together have so far committed EUR 576 m to both JTIs combined (2008-2010), in addition to private R&D efforts worth about double that amount. While this represents a considerable public investment in two crucial technology fields, the present public support falls far short of the original objectives set in the Commission's proposals for establishing the Joint Undertakings (total of EUR 900 m combined for the same period). The current investments in the two JTIs also do not live up to the expectations of the research stakeholders, who had ambitions for programmes amounting to EUR 2.5 to EUR 3 billion each (corresponding to the Commission's overall proposal).

Evaluation results: significantly, the evaluation panel recognises the value of a tripartite structure for JTIs in these fields, pooling resources from industry, the EU and Member States. However, the experts express their concern that ARTEMIS and ENIAC are not giving sufficient attention to their European strategic aims. The panel calls for a strategic re-focusing of the two JTIs, involving all stakeholders and moving further towards a truly joint effort. The evaluation panel also considers that the **funding shortfall is a critical issue**. The shortfall appears to be partly related to the ITEA2 and CATRENE Eureka intergovernmental schemes, which work in parallel with ARTEMIS and ENIAC and which are supposed to progressively integrate with the JTIs where added value can be created.

Follow up action: the Commission will undertake:

- immediate actions for the existing Joint Undertakings (i.e. the JTI activities in the period 2011-2013) to be followed up through their governance structures; and
- longer-term actions for the potential next generation of PPPs in these domains under the Innovation Union and Digital Agenda for Europe flagship initiatives launched to address the Europe 2020 strategy.

General recommendations: the Commission agrees that the JTIs would benefit from recommitment by the partners to the tripartite model and to a European strategic agenda as soon as possible. The Commission will engage with industry and Member States to explore the best way to achieve this.

Recommendations for Member States: the Commission acknowledges that there is a need to **increase the financial contributions from Member States** in order to reach the overall financial objectives set out in the Regulations. In addition, it will propose that the **Member States agree on a multi-annual budgetary contribution for the remaining lifetime of the JUs** with the aim of achieving the original goals of the JTIs. This is one element of the strategic recommitment the Commission expects from its partners.

Member States have so far paid little attention to the required synchronisation of their operations. The Commission will insist that national practices be adopted in line with the terms of the Regulations and the Administrative Arrangements in place in order to help converge on common practices. It will also propose the creation of a Working Group within the Public Authorities Boards to deal with the benchmarking of national practices to improve the harmonisation of administrative processes and national funding rates.

Recommendations for the industrial associations: the Commission will propose measurable indicators and ask the industrial associations regularly to undertake a strategic analysis of the results and impact of each call for proposals.

Recommendations for the European Commission: the evaluation panel calls on the Commission not to apply the framework Financial Regulation or the Staff Regulations to potential future PPPs. The Commission proposed, in the triennial revision of the Financial Regulation, two additional options to

implement public-private partnerships: a mixed public-private body based on Article 185a of the Financial Regulation and a private-law body. This proposal, if adopted by the legislator, would create the framework for following this recommendation.

The Commission will also:

- investigate ways of combining funding from different sources;
- consider how to provide financial support to activities that are critical to achieve the European strategic objectives of the JTIs and that could not be supported under the current JTI set-up, such as infrastructure or innovation projects that are not R&D activities in the strict sense;
- establish a set of indicators to assess the achievements of the JTIs against the goals enshrined in their founding acts and their multi-annual strategic plans.

Recommendations for the Joint Undertakings: the Commission is aware of the difficulties experienced by the industrial associations in generating sufficient income from their membership fees or other types of activities without mandatory contributions from all beneficiaries of the projects. It will support steps by the JUs to improve the current situation.

The Commission's position towards Eureka and the problem of underinvestment: the Commission agrees that the parallel operation of Eureka clusters (CATRENE and ITEA2) and the JTIs in the areas of nanoelectronics and embedded systems adds complexity to the European Research Area, is confusing for the research community and is intrinsically inefficient. It considers that the co-existence of Eureka clusters and the JTIs contributes to the present shortfall in contributions from the Member States to the JUs and the Eureka clusters, as the financing of both instruments often comes from a single source at national level. This important issue is not addressed in the report. The Council, however, had acknowledged this situation when adopting the regulations establishing the JTIs, in particular in calling for progressive integration of the two funding mechanisms. Integrating the two approaches under one roof would facilitate the implementation of a single strategy for Europe, ensure sufficient resources to reach critical mass and enable the partners involved to choose the right mix of instruments for their aims.

Even though the panel states that operational integration should only be considered over the long term and not for the period from 2014 onwards, the Commission's ambition is to keep working on the progressive integration of these two funding mechanisms. The Commission will actively participate in the existing structures (JTI and Eureka) and working groups in order to make further progress with the differentiation and coordination of activities, and will study the detailed conditions under which the progressive integration of the Eureka clusters within the JUs' operations would create added value.

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 22/06/2007 - Legislative proposal

PURPOSE: to set up a Joint Undertaking: "ENIAC".

PROPOSED ACT: Council Regulation.

BACKGROUND: the [7th Framework Programme](#) 2007-2013 sets up four Specific Programmes: Co-operation, Ideas, People and Capacities. This proposal relates directly to the Specific Programme [Co-operation](#) and one of its core themes: "Information and Communication".

Joint Technology Initiatives (JTIs) were introduced for the first time under the Co-operation programme as a way of realising public-private partnership for large-scale research projects being developed at a European level. JTIs are born out of the "European Technology Platforms", (ETPs), which already existed under the previous, 6th Framework Programme.

JTIs are being proposed in the form of Joint Undertakings that have a legal structure, allowing for the first time, national, EU and private investment to be combined within a coherent framework. They are being proposed in a limited number of sectors only, including: hydrogen and fuel cells, aeronautics and air transport, embedded computing systems, nanoelectronics, pharmaceuticals and global monitoring for environment and security.

The global market for nanoelectronics has a strong annual average growth rate of around 15% and generates a significant number of jobs. Europe has world leading capabilities but is under threat from Asia and the USA if production expansion for future nanoelectronics technologies fails to generate the necessary investment in this sector. Over the past ten years, European research programmes, together with Eureka, have helped support research into nanoelectronics in Europe on a par with Europe's major competitors. However, if Europe is to remain at the forefront in nanoelectronics a European co-ordinated approach is needed.

CONTENT: the purpose of this proposal is to create a Joint Undertaking to be known as ENIAC the purpose of which is to concentrate public as well as private funding on nanoelectronics in the form of a public-private partnership.

The proposed objectives of ENIAC are:

- to define and implement a "Research Agenda" in the field of nanoelectronics in order to strengthen Europe's competitiveness and to foster the emergence of new markets and social applications;
- to award funding to participants in selected projects following competitive calls for proposals;
- to encourage a public-private partnership that seeks to mobilise and pool Community, national and private efforts in order to increase overall R&D investments in nanoelectronics;
- to achieve greater synergy between European R&D efforts in the field of nanoelectronics and the progressive integration Eureka into the ENIAC Joint Undertaking.

ENIAC will be established in Brussels for an initial period lasting up to 31 December 2017, although the Community's financial contribution will cease as from 2013 in line with the EU's financial perspective. The members of ENIAC will be the European Commission (acting on behalf of the Community) as well as the AENEAS Association.

In terms of financing, ENIAC will be jointly funded through financial contributions paid in instalments and in-kind contributions from its Members in order to support both the running costs as well as research activities. Specifically speaking the Community will contribute EUR 440 million towards the financing of R&D projects, whilst financial contributions from AENEAS will take the form of annual commitments to be disbursed directly to R&D organisation as well as "in-kind" contributions.

The proposal provides for the simplification of administrative procedures that affect both public authorities as well as private parties. When compared to the existing framework the new Joint Undertaking has been designed to: remove budgetary overlap; remove the need to duplicate evaluation and monitoring activities (currently different procedures are applied at national level); allow for a shortened "time-to-contract" period; and remove as much red-tape for participants as possible.

Following an extensive impact assessment ENIAC is also expected to introduce the following benefits:

- the sharing of R&D costs and infrastructures in order to maintain Europe's competitiveness in the field of nanoelectronics;
- to build on Europe's current expertise in semiconductor technologies and to apply them to alternative markets;
- to manage breakthroughs in electronic design in order to fill the ever-widening gap between what is achievable in technologies and what can economically be designed and tested;
- to provide European SME's with effective and efficient tools in order to help support them in their innovation process. A further benefit of the ENIAC Joint Undertaking will be common European procedures and work plans through an EU-level distribution network.

As regards the sources of financing, the budgetary assessment indicates maximum Community expenditure of EUR 450 million over the initial period of the ENIAC Joint Undertaking (up to 2017), which would need to be committed before 31 December 2013 when the FP7 budget comes to an end. An initial EUR 42.5 million is to be committed in 2008. AENEAS will contribute to the running (non-R&D) costs of the Joint Undertaking up to EUR 20 million equivalent to 1% of the overall costs of R&D whichever figure is higher – but not exceeding EUR 30 million. However, the numbers quoted below (under heading "Co-financing") list that these overall costs will amount to EUR 30 million. The Community contribution to running costs will total EUR 10 million.

In addition, the Member States who participate on the Joint Undertaking will, at a national level, make annual commitments of funds that are to be spent on R&D projects launched by the Joint Undertaking. These additional resources are estimated to be at least 1.8 times the operational expenditure – i.e. at least EUR 792 million for the duration of the Joint Undertaking.

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2007/0122(CNS) - 20/12/2007 - Corrigendum to final act

PURPOSE: **Corrigendum** to Council Regulation (EC) No 72/2008 of 20 December 2007 setting up the ENIAC Joint Undertaking (*Regulation initially published in Official Journal of the European Union L 30 of 4 February 2008*).

This Regulation sets up a Joint Undertaking (the ENIAC Joint Undertaking) for a period up to 31 December 2017 for the implementation of the Joint Technology Initiative (JTI) on nanoelectronics. The JTI on nanoelectronics must create a sustainable public-private partnership and increase and leverage private and public investment in the sector of nanoelectronics in Europe. It must also achieve effective coordination and synergy of resources and funding from the 7th Framework Programme.

The corrigendum concerns:

- page 35, Annex, '**Statutes of the ENIAC Joint Undertaking**', Article 19(3): it should read " The annual implementation plan shall specify the plan for the execution of all the activities of the ENIAC Joint Undertaking for a particular year, including planned calls for proposals and actions needing to be implemented through calls for tenders. ...";

- page 37, Annex, '**Statutes of the ENIAC Joint Undertaking**', Article 23, point 3.4.2: it should read "Subject to its obligations concerning confidentiality, where a project participant is required to pass on its obligations to provide access rights, it shall give at least 45 days' prior notice to the other participants of the envisaged transfer. The participants may, by written agreement, agree on a different time limit or waive their right to prior notice in the case of transfers of ownership from one participant to a specifically identified third party".

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 14/12/2012

The Joint Technology Initiatives are public-private partnerships in industrial research at European level. They were set up as pilots in 2007-2008 under the Seventh Framework Programme in five strategic areas: aeronautics and air transport (the Clean Sky initiative), public health (the Innovative Medicines Initiative (IMI)), fuel cell and hydrogen technologies (the Fuel Cells and Hydrogen (FCH) initiative), embedded computing systems (the

ARTEMIS initiative) and **nanoelectronics (the ENIAC initiative)**. The SESAR (Single European Sky Air Traffic Management Research) programme should also be mentioned since it is funded under the Seventh Framework Programme.

An annual report on the progress achieved by the Joint Technology Initiatives Joint Undertakings ('JTI JUs') is required by Article 11(1) of the Council Regulations setting up the individual JTIs. This report contains details of implementation including number of proposals submitted, number of proposals selected for funding, type of participants, including SMEs, and country statistics. This **2011 annual report** follows the **first interim evaluations of the Joint Undertakings** carried out under Article 11(2) of the Council Regulations.

The European Commission, as a co-founding member, was responsible for starting up the JTI JUs. Once they had built up their legal and financial framework and demonstrated their capacity to manage their own budgets, ARTEMIS, IMI and Clean Sky were given autonomy in late 2009, followed by ENIAC in May and FCH in late 2010. Thus, 2011 was the first full year in which all the JTI JUs operated autonomously.

The first interim evaluation was performed on time and assessed their quality and efficiency and the progress achieved towards their objectives. All the reports concluded with a **favourable opinion**: the evaluation panels agreed that the **JUs should continue beyond 2013**. The evaluation panels supported the Sherpa Group's recommendations, in particular that **the current legal framework be streamlined to fit the purposes of setting up and implementing future JTIs**. In this respect, the current 'Community body' status of JTIs should be reviewed. They recommended **reinforcing and streamlining processes and decision-making**.

They also referred to the need (i) for more structured coordination and complementarity with FP7 and national programmes and funds; (ii) for improved communication, to enhance the visibility of JTI actions aimed at the general public and at international level; and (iii) for systematic data collection and a monitoring system for key performance indicators.

Progress achieved by the ENIAC JU: for the period 2008–2013, the Commission allocated a maximum budget of EUR 450 million to Nanoelectronics (ENIAC), which was boosted by ENIAC Member State funding of at least of 1.8 times the EU contribution (EUR 810 million). A matching contribution in kind at least equivalent to the public authorities' total is expected from industry.

The main objectives of ENIAC are: (i) to tackle research and innovation in nanoelectronics technologies and their integration in smart systems; (ii) to help European industry consolidate and reinforce its position in nanoelectronics technologies and systems and (iii) to contribute to further incorporation and miniaturisation of devices, and increase their functionalities while delivering new materials, equipment and processes. As with **ARTEMIS**, the participation of Member States in funding and governance alongside the EU and industry is a major feature of ENIAC. The submission and evaluation process is similarly two-stage (PO, then FPP).

In 2011, a decline in commitments by ENIAC Member States was reversed and this increase in commitments is expected to continue in 2012. However, it was observed that the 1.8 ratio between the ENIAC JU and the Member States' grants to the projects would likely not be achieved at the life end of the JU. As a consequence, the Public Authority Board took a decision to reduce ENIAC JU's participation from 16.7 % to 15 % of total eligible costs and up to 52 % of the ENIAC Member States' contributions to the calls for proposals. This should result in a ratio close to 1.8, provided that (i) the ENIAC JU uses the maximum EU contribution provided for in the Council Regulation and (ii) the ENIAC Member States fund their participants at funding rates similar to those in the past.

In 2011 ENIAC launched two calls for proposals, call 4 and call 5 (the latter with a one-stage procedure because of a tight deadline). Of the 286 applicants that sent Full Project Proposals (FPP) for the 2011 ENIAC calls, 195 were selected for funding, a good success rate. The balance of partners is very specific to the sector: research organisations (50), industry (71) and SMEs (74) are quite evenly represented while public bodies and academia are absent. SMEs accounted for 37.9 % of all participations from 2008 to 2011 they accounted for 13.30 % of EU funding.

Participants in the calls came from 19 countries, with the Netherlands in the lead, followed by Italy, France, Germany and Austria. EU-12 countries also participated, mostly represented by the Czech Republic, Poland and Slovakia. There was good participation from 'associated' countries, led by Israel, with 5 participants, Norway (3) and Switzerland (1). However, there were no international partners.

Towards the end of 2011, the ENIAC JU launched a call for Expressions of Interest in setting up pilot lines. This call aims to prepare the JU to be a preferred instrument for implementing the KET policy on improving Europe's position in six 'key enabling technologies' including nanoelectronics. The pilot lines will allow innovation at higher technology-readiness levels (4 to 8) providing a bridge to *Horizon 2020*.

In 2011 the **main research objectives** evolved to reflect the latest progress in their fields of technology. ENIAC's Strategic Research Agenda continues to be pertinent to tackling major societal challenges, which very much depends on **improving integrated circuit functionality and reducing power consumption**.

For the future, a number of challenges remain open: the relatively small size of the JUs was considered as 'risky element' by experts involved in the first interim evaluation of ARTEMIS and ENIAC. The independent experts proposed, amongst the possible scenarios for JUs evolution both merging the two and setting up a **joint structure for administrative tasks only**.

It is time to seek **better alignment** of ARTEMIS and ENIAC research agendas **with national programmes**.

Funding for ARTEMIS and ENIAC projects follows a unique tripartite model. Partners obtain much of their funding from their own governments or regional agencies under grant agreements. The JUs also provide funding directly to the partners worth up to about 16.7 % of their eligible costs. This funding model worked well in the first years of ARTEMIS, but **with certain limitations** - mainly caused by sharply lower commitments by Member States in the context of the economic and financial crisis. In 2011, for the first time, the trend was upwards and this is expected to continue in 2012.

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The Commission presented its annual progress report on the activities of the Joint Technology Initiative Joint Undertakings (JTI JUs) in 2012.

The Joint Technology Initiatives are public-private partnerships in industrial research at European level that are now well established and have reached cruising speed. They were set up in 2007-2008 under the Seventh Framework Programme in **five strategic areas**: (1) Aeronautics and Air Transport (**Clean Sky**); (2) Public health - **Innovative Medicines Initiative** (IMI) JU; (3) Fuel Cells and Hydrogen (**FCH**) JU; (4) Embedded Computing Systems (**ARTEMIS**) JU; (5) **Nanoelectronics** (ENIAC) JU.

Participation and geographical coverage: JUs are successful in funding highly specific, industry-driven research and that **stakeholders are getting more acquainted with the modus operandi of these new instruments**. Participation in terms of numbers of projects selected for funding remained stable in the last two years while the **overall success rate increased from 35.8 % in 2011 to 45 % in 2012**. Concerning industrial participation in 2012, large companies represented 31.1% of total participations and SMEs another 30%. **SMEs participation increased from 28% to 30%** in the last two years (2011 and 2012).

In terms of distribution of participation from Member States and Associated Countries, in 2012 as in the previous year the five JTI JUs involved, on average, **20 different countries** in the implementation of their research agendas.

First results and promising advances: in the **nanoelectronics components sector**, a major effort concerned the launch, evaluation and selection of 5 Manufacturing Pilot Lines. These projects include advanced R&D environments to allow the testing and demonstration of new technologies in close to production conditions.

This significantly improves Europe's ability to close the gap between technology development and deployment. The pilot lines provide access to advanced technologies to actors, in particular SMEs.

Two success stories were highlighted:

- **the IMPROVE project**: the partners developed computational models for equipment behaviour and history enabling virtual metrology, predictive maintenance and adaptive control plans to improve throughput, stability and reproducibility, and the overall wafer fabrication efficiency;
- **the LENS project**: the 12 partners in the LENS project considerably advanced the multiple facets of the technology using double exposure. Lithography is the essential technology for scaling semiconductor devices.

Challenges and perspectives: for the future, a number of challenges remain open:

- **relatively small size of the JUs** and their relatively high running costs is still a major challenge;
- **maintaining the level of commitment from Industry and Members States**: certain difficulties have arisen in recent years in matching funds from industry and Member States and only in 2012 did the trend reverse;
- **effectively integrating results achieved in research projects into the Commission communication and dissemination system**: the JUs will probably be called upon under Horizon 2020 to adopt tools and working arrangements that will enable all parties involved to constantly assess results and to use them.

To summarise the **experience gained** in the first years of autonomy of all the Joint Undertakings, the following **successful results** can be highlighted:

- **JTIs are continuing at a steady pace** to reach their objectives in research and beyond;
- in terms of management, the JTI JUs have gained **speed**. In 2012, they generally reduced their Time to Grant (TiG), which is now 11.6 months on average;
- the **visibility** of JTI JU activities was also enhanced in 2012, among stakeholders and beyond;
- the JTI JUs' achievements started to be monitored and evaluated against a set of **key performance indicators** (KPIs);
- **SMEs are attracted to the JTI JUs' research topics**, especially because of the stability and continuity of the research and innovation environments, the funding arrangements and the involvement of larger value chains. Overall, SMEs have received about EUR 170 million, which accounts for roughly 27% of all EU funding available after evaluation;
- **industry commitment** to the achievement of general objectives remained stable and overall stakeholder participation continues to be well balanced following major updates in 2011;
- the JTI JUs **strategic research and innovation agendas** now include a **more ambitious approach towards innovation**, in line with Horizon 2020;
- lastly, respondents especially highlighted the clear **European added value** of PPPs in specific technological sectors.

Another interesting insight on progress achieved so far will be provided by the second interim evaluation, which will cover the period from setting up until 2013 and will be published as a separate report by November 2013.

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

The JTIs were introduced in the Seventh Framework Programme (FP7) to support key areas of research and technological development of importance to Europe's competitiveness. The ARTEMIS and ENIAC JUs were launched in February 2008.

Since their establishment, the ARTEMIS and ENIAC JUs launched and evaluated, respectively, six (one per year) and nine calls for proposals (one in each of 2008, 2009 & 2010 and two in each of 2011, 2012 and 2013). By the end of 2012, **102 projects** had been funded by the ARTEMIS and ENIAC JUs. The EU and JTI Member States together have so far committed over **EUR 1.115 billion to both JTIs combined** (2008-2012), in addition to private R&D efforts worth more than EUR 1.670 billion.

The second interim evaluation report confirms the **high value and significant achievements of the ARTEMIS and ENIAC JUs**. In particular, the panel concludes that (i) the relevance of the JUs remains high, and considerable progress has been made to achieving their objectives; (ii) the effectiveness is high; (iii) the efficiency is good despite the rather heavy regulatory, administrative and financial burden; and (iv) the quality of reviewing, reporting and monitoring of projects as done by the JU is high.

In the ENIAC case, the 50 projects to date represent a total R&D investment of EUR 1.795 billion, comprising of EUR 382 million national contributions, EUR 283 million EU contribution and EUR 1.130 million industry contribution. The projects cover all eight work areas of the ENIAC Strategic Research Agenda in the fields of automotive/transport, communications/lifestyle, energy, health, safety/security, semiconductor design, semiconductor manufacturing and the underlying equipment/materials.

Since 2011, the ENIAC JU became an **important vehicle for the implementation of manufacturing pilot lines**. This created a steep increase in the joint investments by the stakeholders, bringing the execution of the programme close to budget that was foreseen.

In operational terms, the ENIAC JU is **on track to bring it close to the original ambition for the initiative**, i.e. to leverage an industrial investment programme in nanoelectronics R&D of some EUR 2.7 billion. The Commission is confident that both initiatives will have delivered on their promises by the end of their mandate in 2017.

Recommendations for the Industrial Associations: the report states that the call for manufacturing pilot lines by the ENIAC JU in 2012 has been very successful. This call is the first large-scale implementation of the recommendations from the High-Level Group on Key Enabling Technologies (KETs).

In the area of nanoelectronics, CATRENE and ENIAC developed a common Vision, Mission and Strategy document for R&D in micro and nanoelectronics in Europe.

With the new **ECSEL JU**, the industrial partners should take the opportunity of a **more coordinated and proactive approach** to reinforce the strategic dimension of their cooperation.

To this effect, the proposal of the Council Regulation on ECSEL includes a requirement for broader stakeholder engagement.

These actions will contribute to the development of an **overarching EU research, development and innovation strategy covering nanoelectronics, embedded computing and cyber-physical systems**.

Recommendations for the Joint Undertakings: in accordance with the recommendations of the panel of experts, the Commission will ask the Executive Directors to examine the possibility to implement them and ensure a proper **reporting** on exploitation activities, though limiting the burden on the beneficiaries. The **development of an appropriate metrics** for measuring the impact and success of JU projects is equally important.

The Commission will continue to raise this issue in the Governing Boards in view of achieving a reasonable assurance that the financial transactions of the JUs are correct.

Recommendations for the European Commission: the recommendations relating to the next generation JTI have been taken into account in the Commission's proposal for a Council Regulation on the ECSEL Joint Undertaking. This concerns in particular the recommendation to: (i) have a single JTI with a single integrated research and innovation agenda; (ii) provide simplified financial regulation measures and an increased strategic role for its Governing Board; (iii) incorporate a further harmonisation of rules in accordance with the Rules for Participation of HORIZON 2020.

The new ECSEL JU should **focus on innovation and covering higher Technology Readiness Level (TRL)**.

Recommendations for the Member States: Member State participation rules, funding rates and procedures should be harmonised and synchronised wherever possible, adopting best practice as the guiding principle. They should commit to a multi-annual funding system.

The final evaluation of the ARTEMIS and ENIAC JUs is scheduled for **2017** as part of the interim evaluation foreseen for the ECSEL JU.

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 27/04/2012

The Commission presents its annual report on the progress achieved by the Joint Technology Initiatives Joint Undertakings in 2010. These were established as pilots in 2007-2008 under the Seventh Framework Programme in five strategic areas for a limited period up to 31 December 2017:

- **Aeronautics and Air Transport (Clean Sky) JU** increasing the competitiveness of the European aeronautics industry while reducing emissions and noise, established by Council Regulation (EC) 71/2008;

- **Innovative Medicines Initiative (IMI) JU** fostering the development of better and safer medicines for patients, established by Council Regulation (EC) 73/2008;
- **Fuel Cells and Hydrogen (FCH) JU** speeding up the development and deployment of hydrogen supply and fuel cell technologies, established by Council Regulation (EC) 521/2008;
- **Embedded Computing Systems (ARTEMIS) JU** helping the European industry to consolidate and reinforce its world leadership in embedded computing technologies, established by Council Regulation (EC) 74/2008;
- **Nanoelectronics Technology 2020 (ENIAC) JU targeting to achieve a very high level of miniaturisation required for the next generation of nanoelectronics components, established by Council Regulation (EC) 72/2008.**

ARTEMIS, IMI and Clean Sky gained officially their autonomy in October-November 2009, followed by ENIAC in May and FCH in November 2010. Thus, 2010 was the first full year of autonomous functioning of most of the JTI JUs.

The report starts with a brief introduction of the JTI JUs, summarises their key achievements in 2010 and outlines the fields for improvement in the future.

Key achievements in 2010: after the relatively slow operational start of the JTI JUs, to a certain extent due to the limitations of the existing legal and the regulatory framework for a "Community body", in 2010 the five Joint Undertakings revealed that the new business model between public and private sectors in research promises to be successful. The JTIs' activities that have been launched and already ongoing were recognised to be overall efficient and of a high quality according to the conclusions of first interim evaluations of the Joint Undertakings performed in 2010 (April 2011 for the FCH JU).

Operational activities: in 2010, the five JTI JUs concentrated efforts on the management of their calls for proposals – finalising negotiations, signature of grant agreements and kick-off of the projects coming out from the 2008 and 2009 calls, as well as launch of the 2010 calls, evaluation and selection of the winning proposals and, for some JTIs, start of the negotiation process. The Joint Undertakings worked also on the preparation of the 2011 calls for proposals: based on the lessons learned from the previous calls and consultations with the various stakeholders, they came out with a definition of the next calls' topics.

All JTI JUs were successful in attracting a wide variety of participation in their calls from Europe and FP7-associated countries. Overall, a large number of SMEs took part in the proposals. There were, however, some obstacles which the JTIs had to deal with to further strengthen the SME involvement in their research activities.

Administrative activities: after the initial start-up and preparatory phase before autonomy, the JTI JUs had to then work on their consolidation as a prerequisite for sustainability and a factor for success. Although the establishment of the five public-private partnerships was a considerable achievement on its own, the Joint Undertakings needed to further develop their internal control frameworks, and introduce, if necessary, additional control mechanisms. This was also pointed out in the reports of the European Court of Auditors which found out that by the **end of 2010 none of the entities had completely implemented their internal controls** and financial information systems and/or had yet validated their underlying business processes as required by the Joint Undertakings' financial rules.

Moreover, implementation of key performance indicators in 2011 by all JTI JUs had to avoid making the output of the initiatives scattered and diffuse. Their task would be not only to assess and periodically monitor quality in order to maximise impact across research programmes, but also to be tracked by a sound monitoring and evaluation system. An important step towards this in 2011 had to be the implementation or adoption, where not done yet, of comprehensive internal audit plans and the performance of regular ex-ante verifications and ex-post audits. Moreover, as expressed by the European Court of Auditors, the JTI JUs had to clearly define the role of the Commission's IAS in their financial rules.

Concerning the IT and logistics matters, all Joint Undertakings needed to further consider the establishment of formal IT policies and procedures to ensure the proper functioning of the IT planning and monitoring cycle and provide for reliable risk management tools. Also, a host agreement had to be concluded with the Belgian authorities concerning the office accommodation, privileges and immunities, and other support provided by the State. Both comments were taken into consideration by the JTI JUs and actions are already underway.

Among the objectives of the Joint Undertakings in 2011 should have been the enhancement of their communication activities using a more proactive and target-oriented approach, especially within SMEs and the research community to increase their level of participation in the research projects. As recommended in the interim evaluation reports, the JTI JUs should develop and implement clear communication and dissemination plans, obtain a separate identity and work more on the synergy with national programmes and international cooperation with non-EU stakeholders.

Overall assessment: the first interim evaluations of the Joint Undertakings were carried out as planned by the end of 2010 (in April 2011 for the FCH JU) covering the quality and efficiency of their work and assessing the progress towards the set objectives. **The overall result of the evaluations is positive, affirming good prospects for achievement of the JTI JU's goals.**

As the Joint Undertakings are only now fully autonomous, **there needs to be a period of some years of consolidation before the real benefits can be assessed.** Nevertheless, the importance of cross-sectoral co-operation in key strategy setting is considered extremely important. In the case of the FCH JU, for example, where there are very specific market entry barriers, the industrial partners have been very effective in organising objective assessment of market potential in relation to other competing technologies. The stable allocation of funds has also underpinned the industry commitment – especially SMEs – at a time when the Framework Programme funds could easily have been diverted to competing technologies.

In 2011, the five Joint Undertakings had to follow up on the implementation of the ongoing activities and start the next waves of projects, as well as on the preparation and launch of the future calls. Calls topics needed to be defined on the grounds of the revised research agendas, considering the market forces and the quick pace of technology development in their industries.

As recommended by the European Court of Auditors and the experts in the first interim evaluation reports, the entities that experienced initial delays in starting their operations, such as Clean Sky, should have promptly recovered in order to achieve their objectives within the set timeframe. This would have also contributed to shorten the time for payments to beneficiaries and improve the implementation of the budget, which had been perceived overall as being low among all JTI JUs in 2010.

The JTI JUs had to further **encourage the wide participation of industrial and academic partners, and particularly of SMEs, in their research activities**. They needed to remove the obstacles for SMEs, where such existed. IMI had put on its agenda the development of a methodology for in-kind contribution and calculation of indirect costs, and FCH already initiated the process to adopt an increase in the funding rates, which were considerably lower than those in FP7. Clean Sky, ARTEMIS and ENIAC were challenged to keep the high interest of SMEs in the calls for proposals they were launching.

Taking into consideration that the report is looking at the JTI JUs' development in the first year of their autonomous operations, and at a point where none of their projects are completed, the prospects for the future remain to be considered. The results achieved by the five JTI JUs so far sets them as ambitious European initiatives with the potential to become a new affirmed model of a public-private partnership.

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 20/12/2007 - Final act

PURPOSE: to set up a Joint Undertaking: "ENIAC".

LEGISLATIVE ACT: Council Regulation (EC) N° 72/2008 setting up the ENIAC Joint Undertaking.

CONTENT: this Regulation sets up a Joint Undertaking within the meaning of Article 171 of the Treaty (the ENIAC Joint Undertaking) for a period up to 31 December 2017 for the implementation of the Joint Technology Initiative (JTI) on nanoelectronics. The JTI on nanoelectronics must create a sustainable public-private partnership and increase and leverage private and public investment in the sector of nanoelectronics in Europe. It must also achieve effective coordination and synergy of resources and funding from the Framework Programme. Accordingly, the ENIAC JU is set as a legal entity responsible for the implementation of the JTI on nanoelectronics. In terms of liability, the ENIAC Joint Undertaking shall be solely responsible for meeting its obligations.

Objectives: The ENIAC Joint Undertaking must contribute to the implementation of the Seventh Framework Programme and the theme 'Information and Communication Technologies' of the Specific Programme 'Cooperation'. It shall, in particular:

1. define a Research Agenda for the development of key competences for nanoelectronics across different application areas to strengthen European competitiveness and allow for the emergence of new markets and applications;
2. support the activities required for the implementation of the Research Agenda (R&D activities), notably by awarding funding to participants in selected projects following competitive calls for proposals;
3. promote a public-private partnership to mobilise and pool Community, national and private efforts, increasing overall R & D investments in the field of nanoelectronics, and fostering collaboration between the public and private sectors;
4. achieve synergy and coordination of European R & D efforts in the field of nanoelectronics including, when added value can be created, the progressive integration into the ENIAC Joint Undertaking of the related activities in this field currently implemented through intergovernmental R & D schemes (Eureka);
5. promote the involvement of SMEs in its activities in line with the objectives of the 7th Framework Programme.

Tasks and activities: the main ones are as follows:

1. ensure the establishment and sustainable management of the JTI on nanoelectronics;
2. to define and make any necessary adjustment to the multiannual strategic plan including the Research Agenda;
3. carry out annual implementation plans for executing the multiannual strategic plan;
4. initiate calls for proposals, to evaluate proposals, and award funding to projects selected through open, transparent and effective procedures, within the limits of available funds;
5. develop close cooperation and ensure coordination with European national and trans-national activities, bodies and stakeholders, in particular the Framework Programme, aiming at fostering a fertile innovation environment in Europe and better synergies and exploitation of R & D results in the area of nanoelectronics;
6. monitor progress towards the objectives of the ENIAC Joint Undertaking;
7. undertake communication and dissemination activities;
8. publish information on the projects, including the name of the participants and the amount of the financial contribution of the ENIAC Joint Undertaking per participant;
9. carry out any other activity needed to achieve the objectives referred to above.

Community contribution: the maximum Community contribution to the ENIAC Joint Undertaking covering running costs and R & D activities shall be EUR 450 million paid from the appropriations in the general budget of the EU allocated to the theme 'Information and Communication Technologies' of the Specific Programme 'Cooperation'.

Members: the founding members of the ENIAC Joint Undertaking are the Community, Belgium, Germany, Estonia, Ireland, Greece, Spain, France, Italy, the Netherlands, Poland, Portugal, Sweden, the United Kingdom, and AENEAS, an association representing companies and other R & D organisations active in the field of nanoelectronics in Europe. The ENIAC Joint Undertaking is open to new members.

Seat: this is located in Brussels, Belgium.

Bodies: these will be the governing board, the executive director, the public authorities board, and the industry and research committee.

Report, evaluation and discharge: the Commission will present an annual report on progress. By 31 December 2010, as well as by 31 December 2013, it will carry out interim evaluations with the assistance of independent experts, and carry out a final evaluation not later than six months after the end of the JU with the assistance of independent experts. Discharge for the implementation of the budget will be given by the European Parliament, upon recommendation of the Council.

ENTRY INTO FORCE: 07/02/2008.

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 28/09/2007

The Council held an exchange of views on four proposals aimed at establishing joint technology initiatives (JTIs) in the following fields:

- nano-electronics technologies ("ENIAC")
- aeronautics and air transport ("CLEAN SKY") (CNS/2007/0118)
- innovative medicines ("IMI") (CNS/2007/0089)
- embedded computing systems ("ARTEMIS") (CNS/2007/0088)

The ministerial debate concentrated in horizontal issues with a view to adopting final decisions at the November Competitiveness Council meeting in order to enable a swift start to the four JTIs in 2008.

The Council underlined a number of important political elements which resulted from the

discussion:

- The JTIs should be set up under Community law as Community bodies. They should receive Community funding in order to implement the research programmes, notably by awarding funding to selected projects, following publication of calls for proposals.
- They will take the form of real public/private partnerships with a shared responsibility of industry in the management of the joint undertakings. EU member states and the Commission will exercise appropriate supervision over the use of public funds.
- They will have a limited duration of 10 years.
- They will not have the status of international organisations.
- They will have legal personality and will be established on the basis of articles 171 and 172 of the EC treaty.
- They will implement the research programmes by combining public and private funding.
- The Community will contribute to both the research activities and the running costs.
- The Council also tasked the preparatory bodies to continue further technical work based on the political guidelines agreed by the Council.

To recall, the ENIAC initiative will address the need for silicon-based technologies throughout four technology domains: the shrinking of logic and memory devices to increase performance and reduce costs; the development of value-added functions, include sensing, actuating and packaging functions and their embedding with logic and memory to form complex system-on-chip or system-in-package solutions; equipment and materials and design automation.

The maximum of the Community contribution is estimated at EUR 450 million (up to 2017).

Research and technological development: setting up the ENIAC Joint Undertaking, nanoelectronics

2007/0122(CNS) - 22/11/2007

The Council agreed on a "general approach" (substantial elements of the legal acts) on four proposals aimed at establishing joint technology initiatives (JTIs) in the following fields:

- Innovative medicines ("IMI")
- Embedded computing systems ("ARTEMIS")
- Nanoelectronic technologies ("ENIAC")
- Aeronautics and air transport ("CLEAN SKY")

The agreement on the general approach paves the way for adopting the final Decisions as soon as possible after receiving the European Parliament's opinions, in order to enable a swift start to the four JTIs in early 2008.

According to the agreement reached today, the JTIs would have the following common features:

- The JTIs should be set up under Community law as Community bodies. They should receive Community funding in order to implement the research programmes, notably by awarding funding to selected projects, following publication of calls for proposals.
- They will take the form of real public / private partnerships with a shared responsibility of industry in the management of the joint undertakings. EU Member States and the Commission will exercise appropriate supervision over the use of public funds.
- They will have a limited duration of 10 years.
- JTIs will not have the status of international organisations.
- JTIs will have legal personality and will be established on the basis of Articles 171 and 172 of the EC Treaty.
- They will implement the research programmes by combining public and private funding.
- The Community will contribute to both the research activities and the running costs.