

CLUSTER (Consortium Linking Universities of Science and Technology for Education and Research)

CLUSTER is a tight network of 12 elite European Universities focusing on science and engineering but also excelling in architecture, design and economics. CLUSTER universities work in close partnerships with European and global industries and the consortium has associated partners around the world. Cluster has an active collaboration with 18 top Chinese Universities, the Sino European Engineering Education Platform (SEEEP). CLUSTER Universities represent the highest quality engineering and technology education in Europe and are active partners in the European knowledge triangle comprising Education, Research and Innovation. The Open Science and Innovation agendas are deeply rooted into the entrepreneurial ecosystems that Cluster universities are building with European and global industries and business. In a world facing huge and unprecedented challenges, science, advanced technology and engineering play a crucial role. Solving these challenges calls for truly international, multi-disciplinary and multifaceted collaboration, and entrepreneurial mindset. In this setting, CLUSTER universities and their partner networks have a pivotal role in educating future game-changers and nurturing the innovation ecosystems of tomorrow.

CLUSTER members:

*Aalto University, Finland;
Darmstadt University of Technology, Germany;
Eindhoven University of Technology, the Netherlands,
Grenoble Institute of Technology, France;
Instituto Superior Técnico, Portugal;
Karlsruhe Institute of Technology; Germany,
KU Leuven & Université Catholique de Louvain,
Belgium;*

*Polytechnic University of Turin, Italy;
Royal Institute of Technology, Sweden;
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Cluster Statement on the Next Framework Programme (FP9)

Executive Summary

Anticipating the next major European investment in research, the 9th Framework Programme (FP), the Cluster Consortium emphasizes the **need to increase competitive, grant-based funding to universities**. There is ample research data showing that investment in university research and education is the most profitable form of long-term public investment, resulting in new knowledge and technology, educated workforce and new jobs thereby improving the wellbeing and stability of societies.

Universities are the only institutions with a specific mission to create new knowledge and technology.

Top-class research universities act as global hubs of scientific excellence, frontline knowledge and disruptive innovation, which in turn attract global talents, innovators and corporations around the best universities. The magnitude of climate change and the other current Grand Challenges facing the world calls for groundbreaking science and new technology. Such capacity is most efficiently created within innovation ecosystems in which global research universities work hand in hand with the private, public and third sectors. Such hubs consist of critical mass of excellence, talent, ideas and multidisciplinary capacity integrated into entrepreneurial mindsets. Supporting world-class science and technology development in European universities is therefore our best bet for long term wellbeing and survival.

Key messages from CLUSTER for the preparation of the FP9:

1. Invest more resources in **competitive funding instruments** supporting long-term creation of groundbreaking science and technology, which in turn will have the highest chance to create disruptive innovations and positive societal impacts.
2. Make sure that European consortium grants have **broad enough themes** to allow for the best scientists and their corporate partners to apply for funding based on the newly generated knowledge and the boldest innovative ideas. Request industrial commitment by significant cofunding. Allow risk-taking.
3. Provide for **regional capacity-building** by offering grants for the best scientists or teams from the developing regions to hook in with the best FP9 consortia.
4. Develop new instruments for supporting the development of **emerging European innovation ecosystems** to support mobility of scientists and students and the development of world-class infrastructures. **Coordinate and prioritize the ESFRI roadmap** with the infrastructure needs of the key innovation hubs.
5. **Coordinate instruments of the proposed European Innovation Council (EIC)** to support entrepreneurial efforts of the best European scientists and innovators, students as well as researchers. Create effortless paths from research to innovation between ERC and EIT, do not build overlaps but synergies. The actions could be simply grouped into **Research – Track to innovation – Innovation** stages instead.
6. Revise the ethical, legal and financial framework to develop a less-complex, flexible and proactive way of collaboration and broad participation of institutions from the entire European Research Area (ERA). Disruptive and radical innovations do not proceed in a linear manner and will therefore not thrive in rigid and highly regulated systems. Simplify the application and reporting procedures of all EU funding instruments.

Cluster Statement on the Next Framework Programme (FP9)

Full statement

The Cluster Consortium strongly supports European Commission's proposal to increase funding for the next research framework programme (FP9) to promote sustainable peace, democracy, prosperity and wellbeing of Europe's citizens. Cluster universities encourage the EU framework programmes, such as FP9, to focus on fostering ground-breaking science, excellent research and innovation in open and collaborative ways in order to take urgent action in tackling global challenges in climate change and energy, urbanization, digitalization and security and multiple impacts thereof. In accordance with the Cluster H2020 MTR submitted earlier in 2017, we continue to emphasize that **a larger budget is required for the long-term creation of ground-breaking science, excellent research and innovation**. For FP9 and future programmes larger budget allocations should be directed both at (i) bottom-up collaborative projects under the Excellence pillars: FET-Open, MSCA-ITN, ERC-SynG and possibly new multidisciplinary bottom-up schemes, and (ii) at collaborative projects under the Industrial Leadership Pillar. In addition, the gap between ERC-CoG and ERC AdvG needs to be filled. Cluster emphasizes that rigid categorization of TLRs are difficult to match with the nature of scientific and rapidly evolving disruptive innovations. The H2020 over-emphasis on high – TRLs (6-10) has not been conducive to increasing or widening collaboration within Europe, as setting the bar at higher TRLs limits participation of multiple universities and research centers in joint developments. Accordingly, Cluster calls for the **elimination of the TRLs** as

the present programs have created artificial and non-functioning categorization. Rigid categorization of TRLs is a mismatch with the nature of scientific research and rapidly evolving disruptive research. The actions could be simply grouped into **Research – Track to innovation – Innovation** stages instead.

1. **During next framework programme innovation ecosystems and networks of different partners with diverse expertise and knowledge can collaboratively and openly produce new and crucial knowledge as well as formulate common goals and solutions for tackling the major global challenges.** Iterative processes between scientific and other social domains with stakeholders can together create groundbreaking science and excellent research with exceptional societal impact. Governments, research funders, the private and public sector as well as society at large should aim to develop future-oriented policies and implement innovative practices which will lead to production of true scientific innovations and disruptive technologies for needs of the global citizens.
 - a. **New interactions and open modes of innovation are needed.** In addition to regional hubs at the level of the EU, **global hubs situated in EU are called for.** However, Cluster emphasizes that the funding for top-level university research must have priority in funding via FP9, ERC and EIT. It is important to safeguard the long-term funding for University – based research, and consequently FP9 and subsequent FPs, ERC funding and EIT should be focused on EU – universities collaboration with EU – and Global hubs. Accordingly, internationally significant hubs need to be created, but funding for these must flow through universities. Moreover, the hubs should be ingrained into university ecosystems, they should consist of critical mass of excellence, talent, ideas and multidisciplinary capacity and be integrated into university ecosystems, promoting entrepreneurial mindsets.
 - b. **Global hubs can attract top talent, ideas and investments to the EU and its member countries.** National research and innovation councils should therefore step up to become significantly more international in nature and thus strongly promoting the integration of all actors into global networks.
2. **Societal impact is of utmost importance in all science and research.** Dynamic, open and networked processes of co-production of knowledge, should be increasingly funded. Such processes are often unpredictable and should therefore also be accompanied by more flexible evaluation processes, which support recognition of scientific and technological creativity and innovation.
 - a. **Global scale quality and excellence need to be prioritised over regional aspects and aims.** Multi – and transdisciplinarity brings added value to all research projects and it is important to create flexible instruments for funding for global innovation ecosystems which are built on multidisciplinary research. **Regional capacity-building**, an important pillar in European development, could be supported by offering grants for the best scientists or teams from the developing regions to hook in with the best FP9 consortia and innovation ecosystems.
 - b. **Funding should be aimed for strategic management and profiling of universities on EU level. Stronger units need to be created, since this will attract international talent and can connect the best global networks as equal partners.** Specialisation needs strengthening among higher education and research institutions in order to build upon already existing world-class strengths. EU funding should be used to should encourage universities to increase

knowledge exchange and the generation of social and economic impacts from research, regardless of profile of university.

- c. **New policy mechanisms are needed to support innovation ecosystems and communities challenging traditional roles for both businesses and the higher education and research sector together with open scientific communities.** These policies and the subsequent funding instruments should encourage private sector investment in research and infrastructures to co-create globally competitive innovation ecosystems.

3. Co-funded research at Universities needs to genuinely involve companies at all levels – local, national, EU and global. In order to be able to lead rapidly evolving global trends, EU economies must have the ability to support research, development and innovation environments where internationally significant universities link with innovative industries, and especially SMEs and start-ups together with larger companies. True innovations come from innovative excellent research, both basic and applied, together with coproduced knowledge and transmission.

- a. Engagement with universities is essential to not only improve applications of existing products and services but **to innovate together crucial pioneering research on global scale and thus achieve competitive advantages for EU businesses worldwide.** Border-crossing collaborative research needs emphasis and funding also in the future.
- b. International research **excellence** plays crucial role in co-operating with industries to pursue technologies and business models, which enable **companies to upgrade business and shift from existing activities to new, related ones.**
- c. **It is vital for science and society to interact between stakeholders and formulate common goals and joint roadmaps for fulfilling the share vision.**

4. Europe will achieve added value by investing in long-term creation of ground-breaking science, excellent research, societal impact – which covers social innovation and impacts on society in addition to purely economic factors – and disruptive innovation.

- a. **A concerted effort should be on agility, speed and impact with focus on high quality outputs, impacts and solutions based on an understanding of the nature of disruptive and radical innovations.** EU's research needs to be focused on finding solutions, focusing on outputs and not inputs, and boosting disrupting innovations to tackle major societal and technological challenges e.g. by promoting Open Science, that is Open Access publication and Open Data, increasing the attractiveness of the area for world's top researchers e.g. through ERC funding and promoting international and inter-sectoral mobility of young researchers e.g. through MSCA funding. Larger budget allocations should be directed both to bottom-up collaborative projects under the Excellence pillars: FET-Open, MSCA-ITN, ERC-SynG and possibly new multidisciplinary bottom-up schemes. Excellent collaborative applied research should be strengthened not only under pillar 1. In addition to this, the gap between ERC-CoG and ERC AdG should be filled.
- b. **Harmonisation of rules between EU funding programmes needs to be increased in order to facilitate the use of complimentary funding.** In addition to this, harmonisation of

practices between agencies and project officers should be implemented in order to ensure equal treatment of the proposers and grantees.

- c. **Calls for applications must provide clear and easy access, detailed information beforehand concerning financial and administrative rules and possible restrictions, enabling applicants and their respective institutions to adjust their practices accordingly.** This is essential for enabling project officers in different locations to effectively deal with future FP9 programme management.
- d. **Two-stage applications procedures should be promoted** in large programmes to minimize unnecessary work and to streamline application processes. This would lower the currently challenging oversubscription. **Budgets could be more balanced** for different topics of funding and the success rates should be balanced even more in the future.
- e. **Digitalization should be integrated more effectively** into all preparative and managerial measures of the programs and technical issues of the participant portal need to be addressed swiftly, in order to improve the practical usability.
- f. **Exploitation of research results must be reinforced in co-funded projects.** A dedicated instrument needs to be created, e.g. ERC-PoC type of scheme for all three pillars. Exploitation of the fundamental research (low TRLs) should be increased, e.g. extra Proof-of-Concept grants for highly successful Pillar II and III projects of low TRLs.
- g. **The TRLs could be completely eliminated**, as it is evident that the present programs have created artificial and non-functioning categorization. Rigid categorization of TRLs is a mismatch with the nature of scientific research and rapidly evolving disruptive research. The actions should be simply grouped into **Research – Track to innovation – Innovation** stages instead. Strengthening of fundamental research at TRL 1-6 is vital in case the TRLs still prevail in the next FP9.

5. EU should prepare for a new ethical, legal and financial framework allowing for broad participation of institutions from the entire European Research Area (ERA). In the development of such a future framework it is imperative to strive to develop a less-complex, flexible and proactive way of collaboration. Disruptive and radical innovations do not proceed in a linear manner, and will therefore not be fostered by rigid and highly regulated systems.

- a. Currently due to very differing evaluation criteria and financial and administrative rules in H2020 and ESIF as well as other structural fund programmes, the complementary use of these funding sources cannot be actively encouraged by the university. In consequence, better synergies with ESIF and other EU funding programmes should be created in the future after Horizon 2020. Evaluation needs to continue as transparent and review processes should always be based on scientific excellence.
- b. Funding from European Fund for Strategic Investments (EFSI) should also be made possible in the form of grants for universities in order to improve academia and business relations. In general there should be no extension of credit funding for universities.
- c. **In addition to this, the liabilities should be limited.** The unlimited liability towards the funder in joint undertaking projects is problematic for universities because the funder consists also of enterprises, which might have conflicting interests in the projects.

- d. **Synergies with various EU programmes demand strengthening.** Investments to FP9 create more synergies with other EU programmes and national funds. Reduction of the number of different funding instruments might be relevant. Therefore, a programme continuum must be established in order to attract even more private investment to help boost Europe's performance. Preservation of pillars 1-3 is logical also in FP9, **actions and instruments of the proposed EIC should be coordinated with the existing instruments** for optimal synergy, and to avoid overlaps.
- e. **Quality and excellence and originality must be the criteria based on which the funding needs to be allocated, especially when it comes to regional funding.** The assessment criteria should be based on the criteria of the framework programme. Criteria regarding regional funding should be changed so that in case a framework project is already funded the regional project could gain additional points by complementing the framework programme project.