



Association of
European Research Establishments in Aeronautics



EREA and PEGASUS Joint Position Paper on H2020 Interim Evaluation

Executive Summary and Key Messages

In order to keep the innovation thrust in aerospace alive, we must invest in education and long term research. But to be able to achieve the EU's blueprint of smart, sustainable transportation while maintaining inclusive growth and jobs, there is an essential need to invest in research and innovation covering the entire research and innovation chain from TRL levels 1 to 8-9. This approach is crucial to address the grand societal challenges like sustainable energy supply, climate change, and sustainable, safe and secure transport. Scientific research is an important key in enabling the sector to reach the goals it put forward in the ambitious ACARE Flightpath 2050. Currently, however, regarding Transport, the European funding opportunities focus on higher TRL level research and ready-to-market technology.

We continue to see Europe and the investment in research and innovation as one of the key global drivers to tackle the grand societal challenges and better equip European citizens, industry and society as a whole for the future. Subsequently, we envisage a stronger commitment of all stakeholders towards a bright future of European research and innovation. This includes a stronger commitment of member states and the European Commission to a more extensive and large Framework Programme to succeed Horizon 2020.

Regarding the implementation of Horizon 2020 and subsequent Framework Programmes we fully support further simplification for users and call for an early agreement on the rules of participation of all research granting programmes allowing a more balanced approach between trust and control.

Our recommendations:

- ***To set the right example by dedicating a considerable part of the budget and efforts to the European Research and Innovation Framework Programmes encouraging excellence and close collaboration between actors;***
- ***To support the entire research and innovation chain with appropriate instruments such as ERC, collaborative research, and PPPs/JTIs. Instruments to support Innovation like EIC using financial instruments (loans) should be set up only in addition to the current support schemes;***
- ***To ensure the continuance of bottom-up low-TRL research in the future;***
- ***To earmark a larger portion of the funding for collaborative research on TRL levels 1 to 4, which will keep the invaluable innovation and human capital source for one of Europe's most strategic sectors vibrant and bring in new ideas for the technological base of the European Industry;***
- ***To continue the approach of more precisely outlined WP topics as done in WP2016-2017. A restricted success in the first step is needed to ensure a dedicated success rate of 30 to 40% in the second step;***
- ***To better align programming and funding rules of different EU-funds to allow for better coherence and synergies.***

Introduction and Motivation

Looking at the magnitude of funding with nearly €80 billion and the number of proposals submitted, Horizon 2020 has pushed Europe in leading position on a global scale in terms of excellence in science, crossing national barriers and delivering innovation. European associations, such as EREA and PEGASUS have been major contributors to European Framework Programmes. In addition to main activities in “Smart, green and integrated transport”, EREA and PEGASUS members are also active in activities regarding:

- European Research Council,
- Marie-Sklodowska-Curie Actions,
- Research Infrastructures,
- Industrial leadership (LEIT) incl NMBP,
- Climate action, environment, resource efficiency and raw materials,
- Secure societies – Protecting freedom and security of Europe and its citizens, ...

Main reasons behind participation in the European Framework Programmes such as Horizon 2020 are collaboration with European / international partners to broaden research activities over the entire Technology Readiness Level (TRL) span. Removing national barriers and providing support is key to achieving a critical mass to tackle grand societal challenges, to secure Europe’s global competitiveness and to foster multicultural education. Supporting only national or even regional programmes will not add value to this superordinate importance. Furthermore, collaboration in research in Europe is essential to get access to and combine knowledge of European partners in order to improve the results (and their exploitation) and avoid fragmentation and duplication. Consistent with the spirit of the current Framework Programme H2020, we strive for cooperation between Academia, Research Establishments and the private sector to deliver innovation.

We see collaborative research at TRLs 1 to 6 as the jet engine behind radical innovation. Not bound by sales targets or restricted by “local optima” conditions, lower TRL research at universities and research centres can initiate step-change innovation. The development of thermoplastic composites illustrates this well. First conceived in the research labs, they are now a lifeline for the European aerospace industry. The mix of researchers in academic communities, from MSc and PhD students to professors, provides a perfect breeding ground for creation of new knowledge and innovation and feeding them into the innovation ecosystem. MSc and PhD students play great role in the innovation ecosystem as they come up with high risk high gain breakthrough technologies, while research assistants, postdocs and professors guarantee continuity and high levels of experience and are able to create spin-off companies with highly skilled jobs. Many MSc and PhD students are hosted by Research Establishments and this ensures a strong connection with universities. The European aerospace industry needs this research more than ever to keep a competitive edge and to come up with much needed solutions to society’s challenges, such as low emission, low noise and low energy air transport. EREA and PEGASUS have synergetic approaches to issues related to European Aviation, and are pursuing a close cooperation with the other stakeholders of the Aviation sector (industry and SMEs) supporting mutually beneficial collaborations and ensuring an effective knowledge and technology transfer in Europe.

Recommendation:

Investing in research and innovation is essential if Europe wants to move forward, realising its goal to become a true knowledge-based economy and to keep track of global developments. The EU should continue to set the right example by dedicating a considerable part of the budget and efforts to the European Research and Innovation Framework Programmes encouraging excellence and close collaboration between actors.

Relevance and Implementation

Past and current Framework Programmes have been successfully creating the technological basis for a competitive and sustainable European industry by providing continuous support along the **entire research and innovation chain** from basic research, technology development, and technology verification up to system demonstration. In particular, this holds true for aviation with long product development cycles and long product lifetimes. Assets and equipment in aviation are in operation for 30 years and more, so that support for development and improvement creates a strong demand for a long term European Framework Programme for Research and Innovation.

In the current system, the so called commercial “valley of death” in which companies will have to deploy the demonstrated technologies into the final successful product (TRLs 7 to 9) has been identified in the European instruments. The proposed European Innovation Council, which should be set up in addition to the existing framework programme, could complement and cover such a valley of death through financial instruments. It is crucial that this additional instrument flanks existing instruments and does not weaken them by reducing their resources.

However, as the whole research and innovation chain needs to be funded in the years to come, the European Research Council (ERC), the European Innovation Council (EIC) and the European Investment Bank (EIB) should not be the only pillars for funding and financing in Horizon 2020 or future Framework Programmes. In order to avoid silo structures between the various research and innovation stakeholders, the successful **collaborative research instruments** need to be **maintained and strengthened**. This will continue to foster strong cooperation between European universities, research organisations, SMEs and industry, ensuring effective knowledge and technology transfer between the stakeholders. Therefore, the ERC as well as EIC should allow access and support to all research stakeholders. A successful European innovation system has to cover the entire research and innovation chain.

Collaborative research funding needs to be based on **grants** and cannot be simply financed by financial instruments. However, in order to nurture promising disruptive ideas and support their implementation, projects might come along which bear higher risks where grants are not always available. In this case, when financial instruments will be used, industry could be encouraged with additional benefits in case universities and research organisations are subcontracted.

We need **appropriate funding for basic low-TRL research in aviation**, which could come from CLEAN SKY, SESAR and follow-up programs in future aerospace related EU Framework Programmes. As done successfully in the previous FPs the upcoming framework programme should be based on the ACARE SRIA guidelines listing the most important long term scientific challenges in this field and fund bottom-up research conducted by MSc and PhD students, research assistants, postdocs and professors in universities and Research Establishments. Contrary to the Clean Sky Academy, the Research Programme could be partially based on bottom up ideas peer-reviewed evaluated, letting researchers work not only on top-down defined topics. It is essential to fund the entire eco-system, as currently too much focus and funding are given to high TRL level research – building demonstrators – in CLEAN SKY and SESAR. By earmarking a more significant part of the budget of SESAR, CLEAN SKY and follow-up programmes for basic low-TRL research, the aerospace innovation ecosystem would be covered better. Funding will then encompass the entire ecosystem right from the source of innovation at universities and Research Establishments through to the companies which bring the new innovations onto the market. It will enable Europe to secure long term perspectives and reach its own goals as set out in the ACARE Flightpath 2050.

Bottom-up low-TRL research has to be integrated directly under the next Framework Programme or in the next CLEAN SKY in a similar way as collaborative research in FP7 or exploratory research in SESAR 2020 with a separate dedicated process in parallel to the original Clean Sky 1 / 2. It is essential to ensure the continuity of low-TRL activities on the long term in order to avoid gaps.

Recommendations:

- *To support the entire research and innovation chain with appropriate instruments such as ERC, collaborative research, and PPPs/JTIs. Instruments to support Innovation like EIC using financial instruments (loans) should be set up only in addition to the current support schemes.*
- *To ensure the continuance of bottom-up low-TRL research in the future ;*
- *To earmark a larger portion of the funding for collaborative research on TRL levels 1 to 4, which will keep the invaluable innovation and human capital source for one of Europe's most strategic sectors vibrant and bring in new ideas for the technological base of the European Industry.*

With respect to **implementation**, we recognise that several improvements have been established for H2020. Using the participant's portal as single point of entry and a place to gather information and the legal documents is a major improvement. This includes also the common registration using PIC number and relevant central information on the organisation.

- In the first calls of H2020 we experienced dramatic low success rates. In several calls the success rate in the second stage of the chosen two-stage approach was lower than the success rates in the one stage approach in FP7. This holds true in particular for Transport and in particular aviation. As a consequence of this, many researchers wasted valuable time and (taxpayers) money writing project proposals that never got funded. This has to stop. Amongst others, the most significant reasons are as follows: The lack of focussed prescriptive topic descriptions resulted in another negative aspect which encouraged many applicants to submit a proposal that only addresses marginal parts of the call as its true scope and intended objectives are imprecise.
- Too many proposals were positively evaluated in the first stage and given access the second stage.

For WP2016-2017 we experienced a major improvement, as on the one hand the topics in the work programme were formulated more focused, so that less but much better fitting proposals were sent in. Furthermore, the success in the first stage of the two stage calls was limited so that for the second stage a dedicated success rate of 30 to 40% could be guaranteed.

The lack of focus in topic descriptions resulted in a difficulty to find appropriate evaluators covering the entire potential scope. As a consequence, the quality of evaluators' comments and feedbacks to the proposers decreased compared to FP7. With the precisely outlined WP2016-2017 topics more adequate evaluators could be selected, which improved, according to our experience, the quality of the evaluation and the feedback to proposers. Furthermore a more focused formulation in the descriptive topics for the future calls of H2020 would allow a coherent implementation of European Research and Innovation strategies.

The frequency of calls for proposals with a two-stage approach is rather challenging as we experience a permanent phase of application. Along with an increased amount of effort that needs to be put in a two-stage proposal compared with former single-stage proposals, we call for a reduction of work load. A postponement of the second step, however, will not lead to a positive effect as time to grant will be further prolonged and the research needs might have shifted in between.

Recommendation:

To continue the approach of more precisely outlined WP topics. A restricted success in the first step is needed to ensure a dedicated success rate of 30 to 40% in the second step.

Currently in the 3rd year of H2020 we experienced the 6th version of the model grant agreement respective the annotated one. In particular smaller organisations like Universities or SMEs are not capable to follow these kinds of quick changes of administrative boundary conditions. Even in larger research institutes like EREA members these short-lived modifications cause bureaucratic burden, hence administration needs sound boundary conditions to set-up appropriate processes.

The use of one single model grant agreement including all options is not a simplification in many cases as the complete document needs to be always handled even if large parts are not relevant in the context. The previous set-up in FP7 with a light model grant agreement with specific annexes, to be added when needed was simpler to be managed than the current one.

Due to the fact that project monitoring is handled by agencies the overall quality of reviews and reports suffer significantly. The main arguments we intend to highlight at this point are as follows:

- timely delivery of results outweighs the quality of documents;
- the first point becomes apparent with hardly any interest in the project outcome. Projects are rather seen as bureaucratic effort by the agencies and decisions are based on administrative issues and not on expertise.

Summarizing this trend of delegation to executive agencies, we do not see any added value of it towards the goals of Horizon 2020. Quite contrary to the EU's blueprint to foster growth and innovation potential, the management of parts of Horizon 2020 by agencies leads to an institutional separation. As there is lacking flow of information between the agency and the European Commission identification of successful projects the granting of promising follow-up projects is hampered as a consequence.

Efficiency and Added Value of H2020 to Europe

H2020 has also put Europe on the map globally, not only as a continent with excellent universities and research organisations, but also as a builder of the European Research Area and a reliable, innovative funder of research and innovation. Notable outputs from the consecutive Framework programmes have proven the drive for excellence amongst researchers from different countries, different stakeholders and different disciplines. The successive Framework Programmes actually increased synergies not only within the individual stakeholder groups but also across all stakeholders including end-users like airlines and airports. This constitutes a strong driving force of the consecutive FPs. Staying on track, sticking to the principle of a competition in excellence and collaboration amongst European nations and also international partners when appropriate will create value for Europe and pave the way for jobs and economic growth.

Coherence

Coherence of H2020 with European R&I policies / strategies.

EREA and PEGASUS see former FPs as well as H2020 as the European instrument to implement European policies and European Research and innovation strategies, like SRIAs developed by ETPs and other fora. In order to ensure a coherent implementation of European Research strategies via the FP a structured approach like the current set-up of **societal challenges** (e.g. transport incl. aeronautics, energy, security) is necessary.

Internal coherence of H2020 and its instruments

There are still a lot of different instruments inside H2020 and further simplification must be continued.

EREA and PEGASUS call for a harmonised set of procedures for announcing calls and describing the expected **impact**. The existing lack of coherence results in an ambiguous demarcation of contents that comes along with an unavoidable underperformance.

Synergies with other programmes

Even though the current legislation of the different EU Funds, such as H2020, Erasmus+ and the European Structural and Investment Funds (ESIF) allow for synergetic application, the reality is that the different funds hardly correspond. The different funds need to have their own purpose and goal, but should be perfectly aligned with one another, to allow for synergies where possible.

Furthermore, despite H2020 introduced synergy with Structural Funds, one need to recognise that the governance, process and regulations are different thus synergies are not yet really in place.

Other programmes containing some research and innovation activities (ESIF, COSME, ...) bring a blurred message and a reduced overall efficiency due to risks of duplication and complexity.

Recommendation:

To better align programming and funding rules of the different EU-funds to allow for better coherence and synergies.



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