

FRAUNHOFER-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.

# **FRAUNHOFER'S FIVE GUIDING PRINCIPLES FOR THE PREPARATION OF THE 9TH FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION**

Brussels, 26/09/2017

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## Introduction

Fraunhofer defined five guiding principles for its position during the preparation of the 9th European Framework Programme for Research and Innovation. Besides industry participation in the framework programme, Fraunhofer comments on the European Innovation Council, the concept of European Missions, Defence Research and Funding Rules. As the largest organization for applied research in Europe, Fraunhofer will strongly participate in the debate on the design of the future European research funding following these five principles - in particular in close consultation with the European Association for Research and Technology Organizations ([EARTO](#)). In the course of the consultation process, Fraunhofer will proactively support the European Commission, the European Council and the European Parliament. Further position papers – discussing the mentioned five guiding principles in detail – are available for download at the Fraunhofer EU Office's website.

([www.fraunhofer.de/en/fp9](http://www.fraunhofer.de/en/fp9))

## 1

### Declare the competitiveness of European industry a top priority

Fraunhofer is convinced that research for and with industry has to remain a central and dedicated part of the European framework programme for research and innovation. A rigorous focus of the framework programme on the Fourth Industrial Revolution – the digitization of industry – and on the enhancement of European competitiveness is of paramount importance in times of intensified global competition.

Connectivity and digitization revolutionize the European economy unstoppably. This will lead to emerging technology breakthroughs in fields such as robotics, the Internet of Things, autonomous driving, nanotechnology, biotechnology, materials science, energy technologies and quantum computing. Fast development of European standards as well as the cooperation between various market participants along the entire value chain are more important than ever and will decide who can withstand global competition in the future. Collaborative research and innovation projects must accelerate digital change and at the same time lay the foundations for European standards that pave the way towards a competitive and sustainable industry in Europe. In times of digitization and short innovation cycles, a fast technology transfer is just as crucial as consistent co-operation along the value chain and a consequent further development of key technologies and standards. ***Funding in this area needs to concentrate on emerging technologies that offer high economic gains through strong business cases as well as strong impact on the development of a more sustainable European industry.***

The European Framework Programme for Research and Innovation can make a valuable contribution to all of these aspects. ***The forthcoming framework programme should therefore stimulate industry-academia collaboration and industry participation throughout the entire programme. But it also has to continue to fund the development of future and key technologies in pre-competitive innovation networks under a dedicated programme.*** In contrast to the still discussed missions-oriented approach, this part of the framework programme should

continue to be technology driven and primarily focus on the development of a strong technological base in Europe.

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Increase impact and visibility through European missions

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## 2

# Increase impact and visibility through European missions

Limited impact and little visibility to the citizens were certainly among the shortcomings of the past framework programmes. Horizon 2020 has shown improvements, but it remains difficult to comprehend the impact of European research and innovation (R&I) programmes on daily live. The European project is redefining itself in an unstable global environment and the European budget is expected to be under pressure. It is crucial to visibly increase the impact generated by European R&I investments and to directly showcase it to the European citizens. European R&I missions could be a way forward and Fraunhofer vividly supports this idea. However, missions have to be defined and implemented in a consistent and transparent way in order to bring the much needed visible impact and acceptance.

The definition of what a mission is should follow a set of commonly agreed guidelines. A European mission has to be so challenging that no member state can reach it on its own and it should prepare the ground for exceptional business opportunities – in all of the member states. In short, a European mission is pure European added value.

A mission is characterized by a specific goal to be achieved. This is contrary to common research projects where a specific technology shall be developed further. Moreover, it has a defined timeline and given budget to reach its goal. The duration shall generally be longer than typical R&I projects and the budget has to be reasonably high in order to allow the success of this ambitious and prestigious undertaking.

Intermediate deliverables and milestones demonstrate the impact of the mission on the way and allow for eventual adjustments. This integral control mechanism is necessary to achieve the maximum effect and to secure public awareness and acceptance.

***Missions are a means to reach the leading position in a certain field. Fraunhofer recommends selecting European missions both in a top-down approach on the political level and in a bottom-up approach on the R&I stakeholder level.*** It is a mere political decision which future scenarios are the most meaningful for Europe's welfare in future. The member states have to agree on the key elements for Europe's competitiveness, sustainable development and strength in the global environment. But Europe also needs to be in the position to realize the challenging task; one therefore needs to know on which existing expertise one can build. R&I stakeholders have to identify technologies which are the most promising to improve our lives in the future and they have to estimate how advanced they are in that regard. Ultimately, political decisions need to be matched with technological strengths.

Fraunhofer encourages the European Commission to limit the number of missions and to set clear and limited objectives in order to ensure real visibility. An efficient decision making process, a bundling of resources and the avoiding of doubling prepares the ground for ambitious projects with true European added value.

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## 3

### **Support innovation through the EIC in an assertive technology push approach**

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Fraunhofer welcomes the efforts undertaken by the European Commission to establish a European Innovation Council (EIC). The need to spur, facilitate and accelerate innovation has been long identified and several initiatives have been introduced from different players across programmes. However, despite the good intentions, the problem remains and the different initiatives have led to a rather complex and largely scattered support landscape.

Setting up a European Innovation Council provides a unique opportunity to put all existing innovation related measures under close scrutiny and to rectify the European innovation support scheme. The EIC should fund the maturation and valorization of cutting edge technologies with strong business potential, deep-tech innovations coming from research and research-driven entrepreneurship. ***The EIC has to take a collaborative, non-exclusive approach that makes knowledge and technology exploitable for business and that supports young ventures in achieving investor-readiness. Single participants should be funded only in exceptional cases. Fraunhofer recommends that the EIC is built on European strengths. The programme thus needs to have a straightforward technology-push approach that turns Europe's excellent research into innovative products and solutions.*** To guarantee or better to increase well-being and prosperity for its citizens, Europe needs a stronger industrial base which can compete in the global value chain.

To improve the exploitability of research results, there is a need to assess the potential of a technology in various fields of application. Research actors, such as research and technology organizations, have a strong expertise in the co-creation of new products and solutions. They focus on B2B and industrial applications which are the economic backbone of Europe.

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## 4

### **Establish a separate defence research programme with additional resources and own rules**

Europe faces increasing threats of its security and a dramatic change of the strategic global environment. This is accompanied by an essential deficit in investments in defense and security. Conflict has moved to the doorstep of the European Union and terrorism has become a present threat in all European countries. At the same time, Europe faces more and more cyber and hybrid threats that are difficult to tackle with conventional means. The European Commission and the member states set ambitious political goals in their Global Strategy for Foreign and Security Policy; they want to act as a security provider in the international environment and strive for strategic autonomy. To achieve these goals, a robust defense research and technology base is a condition sine qua non.

Over the last decade, a strong decline of defense research spending can be noted in Europe. Between 2006 and 2013, the member states of the European Defence Agency decreased their defense R&D budget by almost 30% on average.<sup>1</sup> Investments in collaborative European defence R&D decreased even more. In reaction to the financial crisis, the member states pulled out of collaborative European defence R&D projects and cut back their own national spending. A bottom line is now reached, where it is time to realize that pooling resources in areas of strategic importance for Europe is crucial.

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Provide fair and simple funding conditions

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Europe will need to find a way to identify common and balanced defense research priorities, both on higher technology-readiness-levels (TRL) focusing on identified military capability needs as well as on lower TRLs focusing on emerging and potentially disruptive technologies impacting future military capabilities. Moreover, flexible modes of collaboration have to be found.

Highly sensitive defense research requires special framework conditions, confidentiality and higher funding rates than regular research projects. It also requires deviations from the general rules and the governance applied for instance in Horizon 2020. Results from defense research are not meant to be published open access. The defense research programme needs to be separate from the upcoming 9th framework programme for research and innovation: with its own rules, its own budget and full cost funding. New contracting rules are tested right now under the Preparatory Action on Defence Research and should provide a good basis for the future programme.

Fraunhofer supports the European Commission's plans to start small and to increase to a full programme by 2020. However, one has to be careful that the introduction of an EU-funded defence research programme does not lead to a cannibalization effect of the European research budget. The European Union and its member states need to see the importance of both - European defence research as well as collaborative research under the 9th framework programme for research and innovation – and will have to make additional funding available.

***In conclusion, Fraunhofer encourages the European institutions to establish a separate EU-funded defense research programme; it should be complementary to national defence R&D activities and budgets to ensure the expected leverage effect of such a programme on strengthening the European technological and industrial defence base – including academia, research and technology organizations, small and medium-sized enterprises and industry.***

This will be essential to deal with the anticipated security challenges of the 21st century.

## 5

### Provide fair and simple funding conditions

Oversubscription is one of the main problems of Horizon 2020. It leads to frustration and causes unnecessary costs for proposal writing and evaluation. It can even be career threatening for researchers trying to apply for European grants with such low success rates. This development discourages participants and undermines the attractiveness of

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<sup>1</sup> Frédéric Mauro, Klaus Thoma , [The future of EU defence research](#), Brussels: European Parliament (2016)

the programme. **Fraunhofer strongly encourages the European Commission to tackle this problem not only through changes in the evaluation procedures, but also by designing the future framework programme in a way that helps to keep success rates at a reasonable level.**

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Provide fair and simple funding conditions

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Grants for collaborative projects are by far the most relevant form of European funding for the majority of the participants. Collaborative projects best stimulate cooperation among the European member states and different participants groups (e.g. industry – academia). More effectively than other forms of funding, collaborative projects are accessible for participants from all countries. Hence, this format can contribute to closing the innovation divide. Fraunhofer recommends that funding through loans and other financial instruments should only complement collaborative projects rather than becoming main forms of funding.

The framework programmes for research have become increasingly complex and today Horizon 2020 is still not easily accessible - especially for new applicants. The sheer number of different instruments, initiatives and sub-programmes with different rules and objectives hinders accessibility and causes high administrative burdens. Fraunhofer recommends to further reduce deviations from the general rules for participation to a minimum as well as limiting the number of funding instruments and sub-programmes. Ultimately, the funding instruments and the different programmes should be decoupled.

After Horizon 2020 turned away from funding based on modern full cost accounting, Fraunhofer recommends that the future framework programme's funding modalities evolve in a way that eligible costs get as close as possible to the costs under full cost accounting. For organizations using methodologies for accounting for causally related costs, it is a prerequisite that those methodologies are their usual accounting practice, reflect national rules and regulations, and provide a proper audit trail. Fraunhofer also encourages the European Commission to further refine the concept of Large Research Infrastructures (LRI), thus lowering the administrative burden.