

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

# **THE CONCEPT OF MISSIONS**

## SHIFTING PERSPECTIVE TO A MORE IMPACT-DRIVEN APPROACH

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## Introduction

Europe is exposed to rapid changes in economical, technological, environmental and political trends. Despite the successful shift from research to innovation in Horizon 2020, the European innovation paradox<sup>1</sup> still remains.

The future European framework programme has to finally ensure that European research and innovation funding leads to tangible benefits for Europe and its citizens. The preparation of the framework programme takes place under severe budgetary constraints and certain skepticism of the European project among the citizens. A stronger thematic concentration and a more outcome-based approach could present effective measures to counter low success rates and to deliver impact.

Fraunhofer therefore welcomes the European Commission's focus on impact and the dedication to follow a mission-oriented approach for a substantial part of the framework programme. Considering the fact that a mission-oriented approach indeed constitutes a fundamental shift in perspective, Fraunhofer would like to offer some further thoughts on the subject.

## 1

### European missions: ultimate goals in mind

Until now, the European Commission selects a specific technology or a technological field to be deployed (by consulting various stakeholder platforms, expert groups and the member states through the program committees) and defines a certain timeframe and budget for the different projects. Proposals with the most promising outcome will be funded. Even with the shift towards the societal challenges approach this technology-driven perspective remains in many cases.

In contrast, a mission defines first the outcome that has to be reached within a defined timeframe and a given budget. It is then up to the research consortia to select and to develop technologies which are the most appropriate to reach that goal. Proposals with the most promising solution finding process will be funded.

It is unimportant how the given goal is reached – be it with a biotechnological or an astrophysical approach. It only matters that the goal is achieved – technologies are the enablers. It is therefore crucial to maintain a strong and broad key enabling technologies base in Europe to which one can resort to fulfil a given mission. Missions will help to bring selected new technologies to the market. While this certainly is a desired effect of the mission, it is not the main objective.

Therefore, it is not advisable to discuss single technologies as a starting point to set up a mission. Instead, the question should be what the maximum benefit for Europe as a whole will be. Which challenges cannot be solved by a single member state? Where

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<sup>1</sup> As already observed in the European Commission's Green Paper on Innovation in 1995: "One of Europe's major weaknesses lies in its inferiority in terms of transforming the results of technological research and skills into innovations and competitive advantages."

European research and innovation policy should put its priority on? How can we assure a transparent selection process and a maximum outcome? What will be the future benefit for the European citizens in terms of health, safety, prosperity, freedom and maybe even happiness?

## 2 Structure of a mission

A mission is a large project or a group of projects to reach a challenging target. In order to deliver impact and to be visible, one has to guarantee a reasonable relation of the three main variables: outcome, time-frame and budget. Fraunhofer proposes a project management-oriented approach, characterized by the following criteria:

- **Specific outcome:** at the heart of each mission, a specific goal is defined which is ambitious and at the same time realistic in terms of the given time-frame and budgetary limitations; one could e.g. aim at one to two levels under the current Horizon 2020 Societal Challenges;
- **Given time-frame:** a mission has a defined timeline; the duration shall generally be longer than typical R&I projects and could even well extend beyond an European framework programme. In such a case, projects within the framework programme will be defined as parts of the mission.
- **Reasonable budget:** missions tackle grand societal challenges; being equipped with a reasonable budget is not only indispensable for their success, but also undermines their importance and prestige. This attracts the best-of-the-best and creates a catalyzing environment for ambitious and innovative solutions.
- **On the way deliverables:** The timeline is structured with stage gates which could be milestones within a project or contributions from separately managed part-projects. At a stage gate, the progress achieved so far is evaluated and the following stage is fine-tuned. Based on the evaluation, decisions have to be taken that could re-allocate resources and funds or even terminate the mission due to unforeseeable obstacles or changes in the framework conditions. This integral control mechanism is necessary to achieve the maximum effect of the effort and finances and to secure public awareness and acceptance.
- **Technology-open approach:** a scenario which has to be reached is defined at the beginning, but the best suited technology is not known – the solution finding process is open to all technological approaches which contribute to its completion; this incites the creativity of the players and automatically stimulates collaboration and interdisciplinary.

## 3 Transparency of the selection process

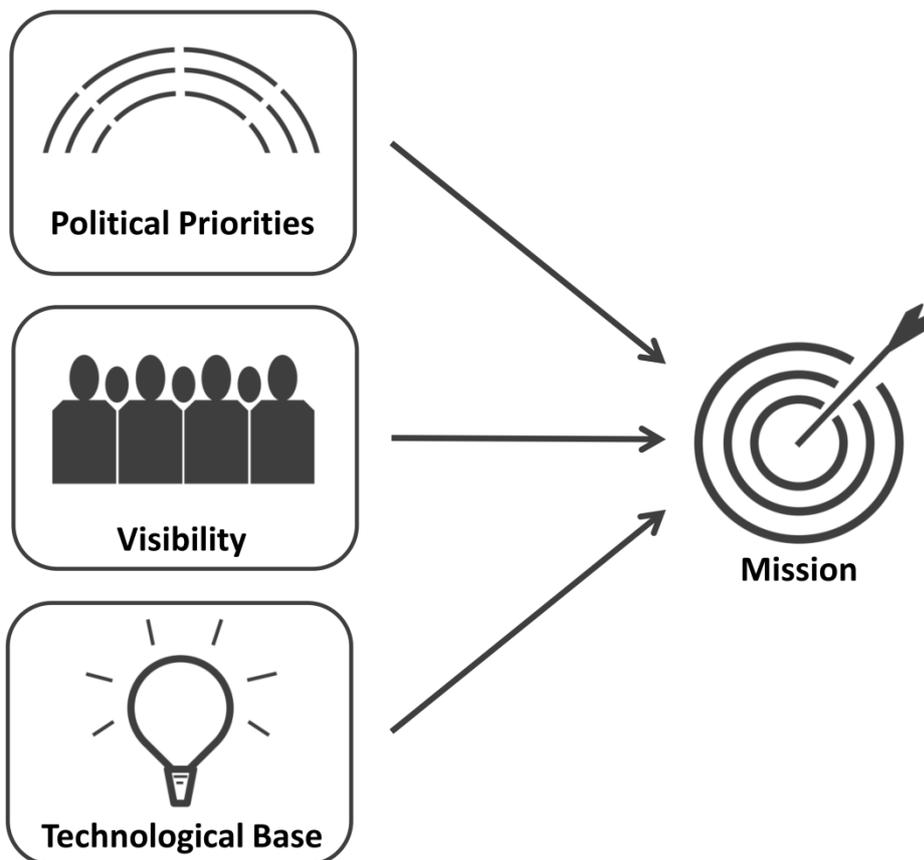
With missions, one is aiming for European added value – both for the individual citizen and for the European economy by ensuring growth, jobs and competitiveness. Due to severe budgetary constraints, one has to prioritize: in order to prepare the ground for successful missions equipped with a reasonable budget, only a mere handful of missions can be set up. The selection process is very delicate, meaning that certain topics are favored, while others are left behind. It is therefore indispensable to make the selection process as transparent and reproducible as possible, with commonly agreed on selection criteria.

In the following, some key requirements which a mission should fulfil and which can serve as guideline in future discussions about missions are summarized. A mission should:

- target a goal of transformative nature for European society and its economy
- target a goal that is not yet (sufficiently) addressed on an European level
- target a challenge that none of the Member States can tackle on its own
- target a purpose that spurs support and enthusiasm in Europe's citizens
- benefit, also economically, the whole of Europe
- trigger additional funding by member states and industry ("buy in")

Given its importance for European society and the transformative character of a mission, collaborations of all kinds impose themselves: between the member states, along the innovation chain and across the sectors and disciplines. This is certainly true during the project duration to fulfil the ambitious mission, but not less important at the stage where one has to select concrete European development goals with strategic relevance and to decide on their key characteristics.

All competences have to be joined and all of the three following dimensions have to be considered seriously:



### 1. Political priorities

There is a societal, environmental and economical aspect to a mission and the selection of a limited number of missions will be one of the greatest challenges for Europe and cannot be executed by the European Commission alone. All member states and European institutions have to jointly set the priorities which will be further elaborated

by the European Commission with the help of its stakeholders. A mission is multidisciplinary and trans-sectoral, setting the direction for the upcoming years; all of the relevant policy areas have to be actively involved, just as different policy levels (European, national and regional) – leading to an efficient decision making process, a bundling of resources and the avoiding of doubling.

Already commonly agreed on challenges, such as the Sustainable Development Goals (SDGs) of the United Nations' 2030 Agenda or the Paris agreement climate goals, could serve as a starting point, where one can then set up concrete missions contributing to the solution of these grand global challenges.

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Transparency of the selection process

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## **2. Visibility and comprehensibility**

The primary goal of a mission is to serve the European citizen – be it directly through major changes in their daily lives or indirectly through a stable and strong Europe standing for its values, a solid European economic base, a high standard of living or an above-average life expectation. It will be essential that a mission significantly enhances the public acceptance and increases visibility of European research. Visibility and comprehensibility should be among the selection criteria for European missions. Besides public relations experts, citizens could be involved in this process through agenda setting and co-creation. Solving the mission needs to be an "exciting story" with results directly demonstrated to citizens.

## **3. European technological base**

A successful mission not only needs reasonable financial resources, but also a strong knowledge and technological base from which it can cherry-pick the best-suited elements to design a promising solution. Missions should build on European technological key competences, use centers of excellence and reinforce them. It would be inefficient to set up a mission necessitating competences which are only marginally represented in Europe and which would have to be developed first; this works against the limited time-frame and the desired impact and visibility. European Technology Platforms (ETPs) have a long-standing experience in identifying (future) key competences and their roadmaps could serve as a valuable guideline.

In order to have an ever-filled stock of knowledge and know-how from which the mission consortia and the European industry as a whole can select and benefit, it is crucial to maintain the collaborative, pre-competitive development of key enabling technologies.