EXCELLENT SCIENCE - Future and Emerging Technologies (FET)

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Specific objective

The specific objective is to foster radically new technologies with the potential to open new fields for scientific knowledge and technologies and contribute to the European next generation industries, by exploring novel and high-risk ideas building on scientific foundations. By providing flexible support to goal-oriented and interdisciplinary collaborative research on various scales and by adopting innovative research practices, the aim is to identify and seize opportunities of long-term benefit for citizens, the economy and society. FET will bring Union added value to the frontiers of modern research.
FET shall promote research and technology beyond what is known, accepted or widely adopted and shall foster novel and visionary thinking to open promising paths towards powerful new technologies, some of which could develop into leading technological and intellectual paradigms for the decades ahead. FET shall foster efforts to pursue small-scale research opportunities across all areas, including emerging themes and grand scientific and technological challenges that require close collaboration between programmes across Europe and beyond. This approach shall be driven by excellence and extends to exploring pre-competitive ideas for shaping the future of technology, enabling society and industry to benefit from multi-disciplinary research collaboration that needs to be engaged at European level by making the link between research driven by science and research driven by societal goals and challenges or by industrial competitiveness.

Rationale and Union added value

Radical breakthroughs with a transformative impact increasingly rely on intense collaboration across disciplines in science and technology (for instance, information and communication, biology, bioengineering and robotics, chemistry, physics, mathematics, medicine modelling, Earth system

sciences, material sciences, neuro- and cognitive sciences, social sciences or economics) and with the arts, behavioural sciences and humanities. This may require not only excellence in science and technology but also new attitudes and novel interactions between a broad range of players in research.
While some ideas can be developed on a small scale, others may be so challenging that they require a large collaborative effort over a substantial period of time. Major economies worldwide have recognised this, and there is growing global competition to identify and pursue emerging technological opportunities at the frontier of science which can generate a considerable impact on innovation and benefits for society. To be effective, these types of activities may need to be built up quickly to a large scale by a common European effort around common goals to build critical mass, foster synergies and obtain optimal leveraging effects.
FET shall address the entire spectrum of science-driven innovation: from bottom-up, small-scale early explorations of embryonic and fragile ideas to building new research and innovation communities around transformative emerging research areas and large collaborative research initiatives built around a research agenda aiming to achieve ambitious and visionary goals. These three levels of engagement each have their own specific value, while being complementary and synergistic. For example, small-scale explorations can reveal needs for developing new themes that can lead to large-scale action based on appropriate roadmaps. They may involve a wide range of research players, including young researchers and research-intensive SMEs, and stakeholder communities (civil society, policymakers, industry and public researchers), clustered around evolving research agendas as they take shape, mature and diversify.

Broad lines of activities

While FET aims to be visionary, transformative and unconventional, its activities shall follow different logics, from completely open to varying degrees of structuring of topics, communities and funding.
The activities shall give firmer shape to different logics for action, on the appropriate scale, identifying and seizing opportunities of long-term benefit for citizens, the economy and society:

(a) FET Open

By fostering novel ideas ('FET Open'), FET shall support early stage science and technology research exploring new foundations for radically new future technologies by challenging current paradigms and venturing into unknown areas. A bottom-up selection process widely open to any research ideas shall build up a diverse portfolio of targeted projects. Early detection of promising new areas, developments and trends, along with attracting new and high-potential research and innovation players, will be key factors.

(b) FET Proactive

By nurturing emerging themes and communities ('FET Proactive'), FET shall, in close association with the societal challenges and industrial leadership themes, address a number of promising exploratory research themes with the potential to generate a critical mass of inter-related projects that, together, make up a broad and multi-faceted exploration of the themes and build a European pool of knowledge.

(c) FET Flagships

By pursuing grand interdisciplinary scientific and technological challenges ('FET Flagships'), FET shall, taking into full account the outcome of FET preparatory projects, support ambitious large-scale, science and technology-driven research aiming to achieve a scientific and technological breakthrough in areas identified as relevant in an open and transparent manner involving the Member States and relevant stakeholders. Such activities could benefit from the coordination between European, national and regional agendas. The scientific advance should provide a strong and broad basis for future technological innovation and economic application, plus novel benefits for society. These activities shall be realised using the existing funding instruments.
40 % of FET resources will be devoted to FET Open.

Context

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