FETPROACT

SSH and RRI contents

Walter Van de Velde

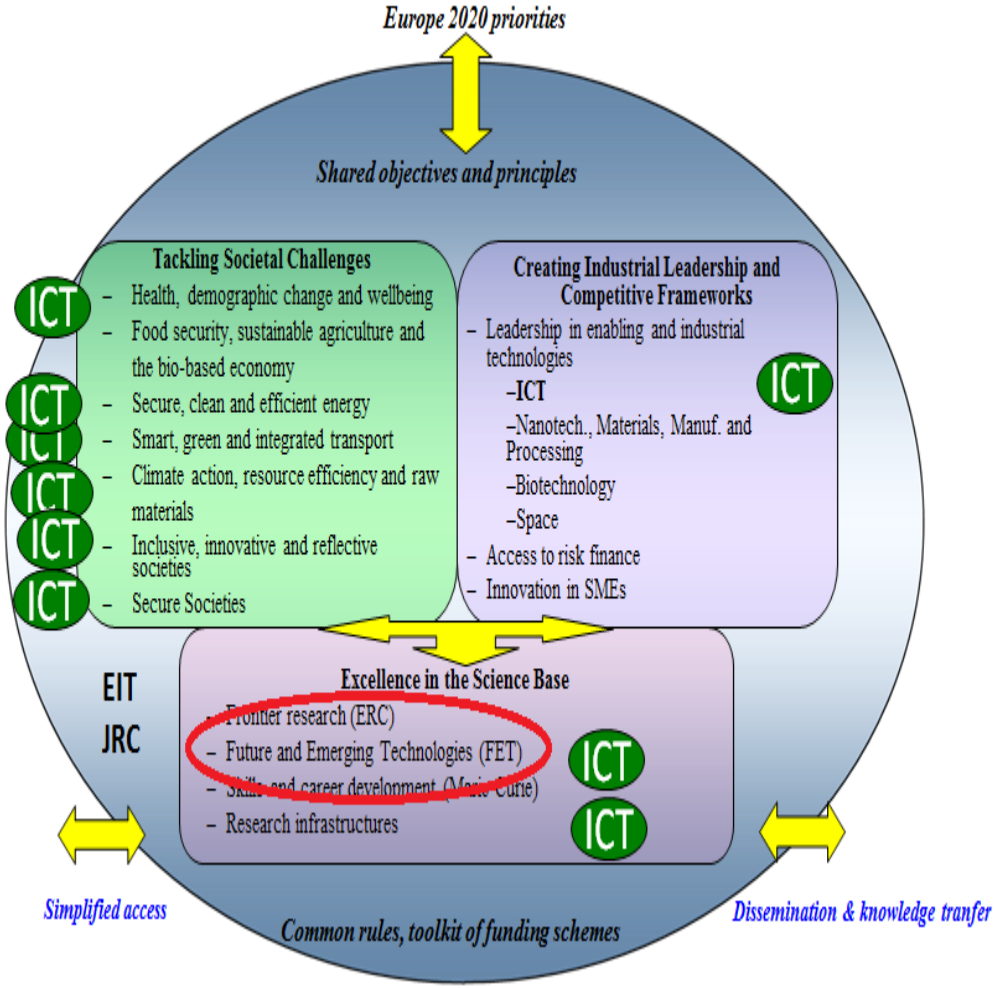
Table of contents

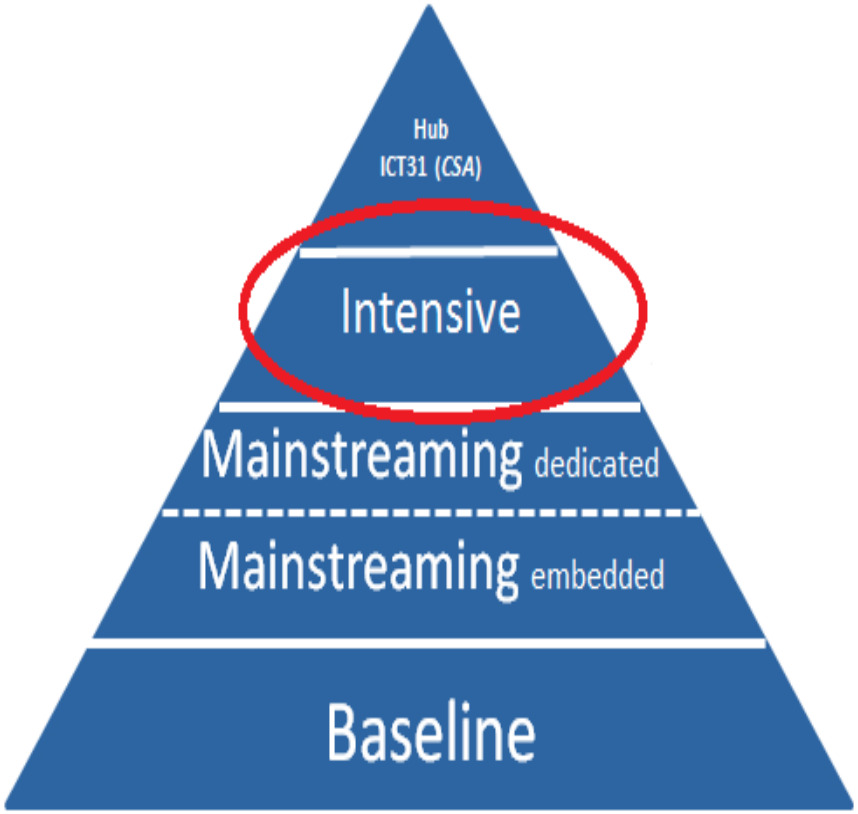
FET Proactive - Emerging themes and communities

- ***FETPROACT 1: Global System Science: bridging science and policy for global challenges. Highly interdisciplinary with strong impacts across different sectors of policy and society.***

- ***FETPROACT 2: Knowing, Doing, Being: cognition beyond problem solving aims to shift the focus of study in advanced robots and other cyber-physical settings from knowledge and action for getting things done, to what it means 'to be'.***

- ***Deadline for both: 1/4/2014***





European Commission

FETPROACT 1 - 2014: Global Systems Science (GSS)

Specific challenge: The ambition is to improve the way scientific knowledge can help inform and evaluate policy and societal responses to global challenges like climate change, global financial crises, global pandemics, and growth of cities – urbanisation and migration patterns. These challenges entangle actions across different sectors of policy and society and must be addressed by radically novel ideas and thinking for producing, delivering, and embedding scientific evidence into the policy and societal processes.

GSS will put to full use the abundance of data on social, economic, financial, technological, and ecological systems available today. GSS emphasises systems thinking and the need to integrate/link data, models, and policies across all policy sectors with all societal actors. GSS will build on results from, among others, Complex Systems Science, Network Science,

PART 2 - Page 13 of 35

HORIZON 2020 – WORK PROGRAMME 2014-2015

Future and Emerging Technologies

Mathematics of Big Data, the life sciences, social sciences and humanities, behavioural sciences, statistics, econophysics, etc.

Scope: Proposals must address all of the below elements, necessary to successfully embed scientific evidence in the policy processes for tackling global challenges:

- Research grounded in theoretical foundations of, among others, systemic risk, decision making under uncertainty or conflicting evidence, mathematics and computer science for Big Data (including their characteristics), algorithmic game theory, cascading/escalating effects in networks, integration and visualisation of Big Data…
- Contributions to solving real world problems in one selected problem area - for instance tackling systemic risk in finance/economics, managing growth of cities and migration, or global pandemics – and in particular to tackle cross-cutting policy dependencies and interactions affecting the area of choice.
- Novel ideas and technologies to generate and better communicate the scientific evidence-base: advanced simulation of highly interconnected systems; mathematical and tools for analysing (often unstructured) Big Data; integration of the whole spectrum of structure and unstructured data; methods to deal with conflicting data and modeling results; novel data visualisation tools.
- Society/human-centred technologies, for instance, new approaches to allow citizens to actively participate in the policy process, to collectively gather and integrate data, analyse evidence, and novel methods to better judge and use scientific evidence: methods, e.g. games, gamification, and narratives to clearly and consistently convey data and modeling results and thereby to stimulate societal responses.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

FETPROACT 1: Global Systems Science (GSS)

Transfers scientific knowledge to policy making; can radically guide and help policy making and societal response to global challenges.

Tackling the real world problems and societal challenges

Communicate complex science to non-experts, especially to policy makers (and to all citizens)

Citizen empowerment, tools to asses policies, besides participation in data collection

FETPROACT 2 - 2014: Knowing, doing, being: cognition beyond problem solving

Specific challenge: This initiative addresses the interdisciplinary fundamentals of knowing, thinking, doing and being, in close synergy with foundational research on future artificial cognitive systems, robots, smart artefacts and large scale cyber-physical systems. It aims at

renewing ties between the different disciplines studying knowledge (especially beyond the 'declarative' and static action oriented kind of knowledge), cognition (e.g., perception, understanding, learning, action) and related issues (e.g., embodiment, thinking, development, insight, knowledge as a social construct, identity, responsibility, culture…) from various perspectives (e.g., physical, biological, neuronal, behavioural, social, epistemological, ecological). The aim is to enable new synergies with engineering disciplines on smart and self-organising materials, embedded systems, robotics, hybrid systems or smart infrastructures and cities to take artificial cognitive systems beyond the level of dull task execution or repetitive problem solving.

Scope: Proposals must address at least one of the following elements:

- New concepts and paradigms in cognitive systems such as new approaches to embodiment, learning, motivation, autonomy, knowledge and mind, not limited to prior anthropocentric or bio-mimetic models. Proposals will aim to demonstrate these paradigms in robust performance of future robotic systems (possibly nano-, micro-, multi-, hybrid- or unconventional ones) in challenging changing environments, possibly co-habited with or linked to biological systems, and over long periods of time.
- Integrative studies of knowing, thinking, doing and being that bridge between low-level (e.g., neuronal, physiological) and high-level (e.g., belief, intention, identity) descriptions. These multidisciplinary studies are expected to go well beyond addressing the perception-action loop, and to tackle issues such as development, experience, understanding, empathy, memory, attention, the emergence and development of self, social belonging and culture. They are to be researched in close synergy with technological experiments, for instance in computational neuroscience, intelligent materials, robotics, cyber physical settings or large scale simulations that incorporate, test and refine insights gained.
- Approaches for understanding the long-term development of individual and social knowledge and identities, especially in highly heterogeneous and dynamic settings (reflecting aspects of e.g., diversity, urban change, migration, social and gender diversity, multiculturalism, inter-disciplinarity, etc.). Proposals are expected to take into account the role of technologies and infrastructures in this, as well as how these facilitate or hamper societal changes.

FETPROACT 2: Knowing, Doing, Being: Cognition Beyond Problem Solving

***Many SSH hooks*: thinking, development, knowledge, identity, responsability, culture,…**

***Common threads*:**

1. ***Being***
2. ***Slow, enduring changes***
3. ***Complex social and environmental embedding***

***Three subtopics*:**

1. ***New paradigms and proof-of-concept***
2. ***Deepening evidence from interdiscipinary studies ('high-level', 'low-level')***
3. ***Coupling back from social and environmental (technologically enhanced) embedding to long-term development***

-