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HORIZON 2020
LE PROGRAMME DE RECHERCHE ET D'INNOVATION DE L'UNION EUROPÉENNE

Les opportunités de financements européens

Session 2:
Projets collaboratifs de recherche exploratoire et infrastructures de recherche

Laboratoire de Physique Corpusculaire

Mardi 31 mai 2016

La Cellule Europe

Service inter-établissements rattaché à l'UBP depuis le 1er Janvier 2015

- **Ingénierie de projets européens**

Projets individuels et collaboratifs déposés dans le cadre d'appels européens

+ Actions COST, SUDOE

Action 2, Jean Monnet

- **Centre de Services EURAXESS Auvergne**

accompagner les chercheurs étrangers en mobilité en Auvergne

dans les démarches liées à leur venue

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L'équipe

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Erasmus+

euraxess
RESEARCHERS IN MOTION

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DEROULÉ DES SESSIONS

Session 1 — **Actions Marie Sklodowska-Curie et Bourses ERC** — 28/04/2016

- Les Actions Marie Sklodowska-Curie
- Les bourses d'excellence en recherche

Session 2 — **Les projets collaboratifs de recherche** — 31/05/2016

- Les technologies futures et émergentes
- Les infrastructures de recherche

Session 3 — **Réseautage et échange de bonnes pratiques** — 28/06/2016

- Les Actions COST
- L'appel SUDOE
- Le programme Erasmus+ (hors actions de mobilité)

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Les Technologies Futures et Emergentes - FET

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Horizon 2020

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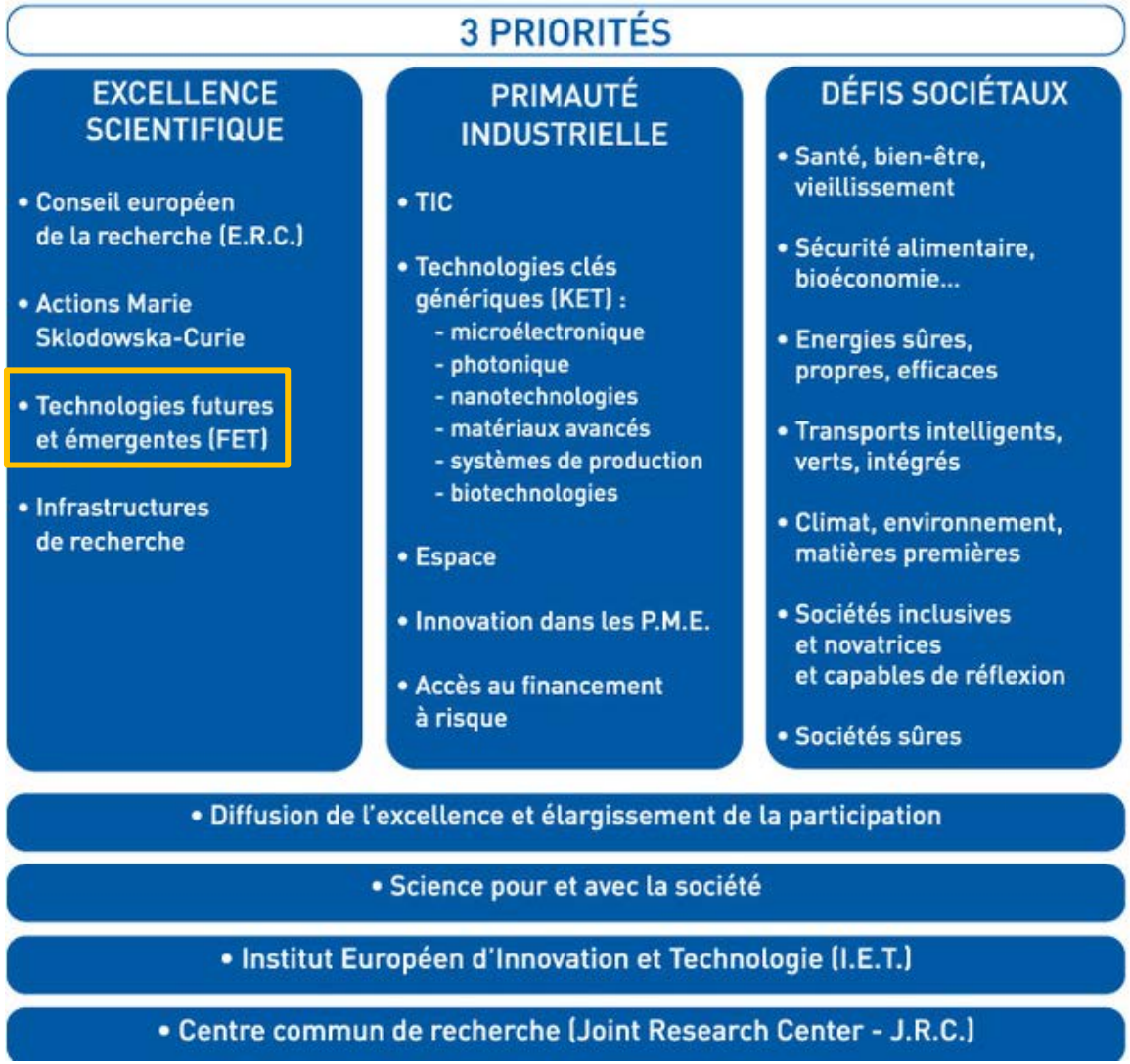
Exploration de nouveaux domaines de recherche pluridisciplinaires et à haut risque

Développement de projets sur des thèmes émergents



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Exploration de nouveaux domaines de recherche pluridisciplinaires et à haut risque

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Objet **permettre l'émergence de nouvelles idées susceptibles de déboucher sur des technologies disruptives à moyen ou long terme**

APPELS NON-THÉMATIQUES

- **RECHERCHE EXPLORATOIRE**
- **RUPTURE SCIENTIFIQUE & TECHNOLOGIQUE**
- **INTERDISCIPLINAIRE**

3 à 5 ANS

≤4 M€

- **Personnel**
- **Fonctionnement**
- **Sous-traitance**

COLLABORATIF

Au moins 3 partenaires de 3 pays européens différents

Mobiliser :

- ***des organismes de recherche,***
- ***des industriels…***

DÉPÔT EN 1 ÉTAPE

- ***16 pages***

Appel FET-Open-2016-2017
17/01/2017
27/09/2017

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nuClock

Project reference: 664732
Funded under: H2020-EU.1.2.1. - FET Open

Towards a nuclear clock with Thorium-229

From 2015-06-01 **to** 2019-06-01, ongoing project

HORIZON 2020

Lumiblast

Project reference: 712921
Funded under: H2020-EU.1.2.1. - FET Open

A paradigm shift in cancer therapy – using mitochondria-powered chemiluminescence to non-invasively treat inaccessible tumours

From 2016-10-01 **to** 2021-03-31, Grant Agreement signed

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Développement de projets sur des thèmes émergents

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Objet renforcer les capacités existantes en Europe sur des domaines de recherche ou des thématiques précises

APPELS THÉMATIQUES

3 à 5 ANS

5 à 10 M€

Personnel
Fonctionnement
Sous-traitance

- **EMERGING THEMES AND COMMUNITIES (CF SLIDES 9-10)**
- **HIGH PERFORMANCE COMPUTING**
  - **CO-DESIGN OF HPC SYSTEMS AND APPLICATIONS**
  - **TRANSITION TO EXASCALE COMPUTING**
  - **EXASCALE HPC ECOSYSTEM DEVELOPMENT**

COLLABORATIF

Au moins 3 partenaires de 3 pays européens différents

Mobiliser :

- ***des organismes de recherche,***
- ***des industriels …***

Appel FET-PROACTIVE-2016-2017
27/09/2016

DÉPÔT EN 1 ÉTAPE

- ***70 pages***

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greenFLASH

Project reference: 671662
Funded under: H2020-EU.1.2.2. - FET Proactive

Green Flash, energy efficient high performance computing for real-time science

From 2015-10-01 **to** 2018-10-01, ongoing project

HORIZON 2020

AQuS

Project reference: 640800
Funded under: H2020-EU.1.2.2. - FET Proactive

Analog quantum simulators for many-body dynamics

From 2015-01-01 **to** 2017-12-31, ongoing project

FET ProActive – Emerging Themes and Communities
Thématiques 2016-2017 (1)

Area 1: Future technologies for societal change

- Being human in a technological world: critical interdisciplinary explorations of potentially game-changing impacts of future technologies on humanity, in plausible as well as in extreme scenarios. This can include individual, gender, organisational, economic, cultural and societal impacts, for instance from changes to self- or social perception, to our narratives, or to human development (e.g., cognitive, physical) or evolution. Visions being addressed should be radically forward looking and relatively unexplored, such as hyperconnectivity, human augmentation, hybridisation of nature, life extension, extra-sensorial perception or real/virtual blending. The work should provide fresh perspectives that challenge current thinking, include ethical and social aspects, reflecting on the purposes, impacts and motivations for the research and innovation activity, the associated uncertainties, areas of ignorance, assumptions, questions and dilemmas; and by this crystalize through active stakeholder engagement concrete options for shaping a worthwhile and responsible future.
- New science for a globalised world : tools and methods (mathematical, technological, social/organisational,…) for the collaborative study, projection and engineering of large scale open socio-technological and –ecological systems characterised by complexity and inherent uncertainty due to, among others, partial knowledge, ignorance and conflicting world-views by different actors. These tools and methods should include the study of informal opinion groups emerging on the Internet at a global level, and focusing on global topics such as Global Systems Science as a new integrative science approach, the emergence of global solutions as patchworks of local ones, non-rationality, the impact of open-data, the dynamics of social and cultural divides, of peace and conflict, and various incentives, drivers and enablers of change and innovation, including the arts.

Area 2: Biotech for better life

- Intra- and inter-cell bio-technologies: new technologies to enable the study and engineering of processes within and between biological cells, and their exploitation for purposes such as sensing, signalling, imaging, regulating, curing or for mimicking or re-engineering the intra- and inter-cell physics and dynamics. This can include the use of natural cells, optimised, therapeutic and compound, synthetic ones or combinations of these, as well as cell-free techniques. Where needed, multiscale mathematical modelling and computational simulation can be included. Proposals under this subtopic should also explore the paradigm-changing potential of these technologies, for instance in the bio-medical field.
- Bio-electronic medicines and therapies: using adaptive nerve or brain stimulation for precise regulatory control of organs or other biological processes inside the human body, in order to restore or maintain healthy conditions. This includes technologies for bio-electronic medicines, drug-free therapies, adaptive drug release, closed-loop BNCI, more invasive stimulation, or development of neurotransmitter sensor/actuator systems, all within a setting of personalised and adaptive medicine and the tight integration of diagnostic and therapeutic capabilities (theranostics). A Responsible Research and Innovation approach, including aspects of ethics, as well as social science and humanities should be taken into account.
- Cognitive neuro-technologies: integrated interdisciplinary approaches combining theory and novel technology-based experiments for understanding the circuits and pathways of higher-level cognitive functions (such as navigation, goal-oriented behaviour, motivation and reward, memory, knowledge and belief formation, reasoning and decision making, emotion, interaction, communication), the related principles of neural coding and operation within and between brain regions and the role of the physical and social/cultural environment in bringing them about. Proposals should focus on non-validated, leading-edge methodologies and technologies specifically relevant to cognitive neuroscience. Target applications could include, for example, adaptive human interfaces, specific brain interfaces and neuro-prosthetics to restore or support cognitive functions or to address unmet therapeutic needs.

FET ProActive – Emerging Themes and Communities
Thématiques 2016-2017 (2)

Area 3: Disruptive information technologies

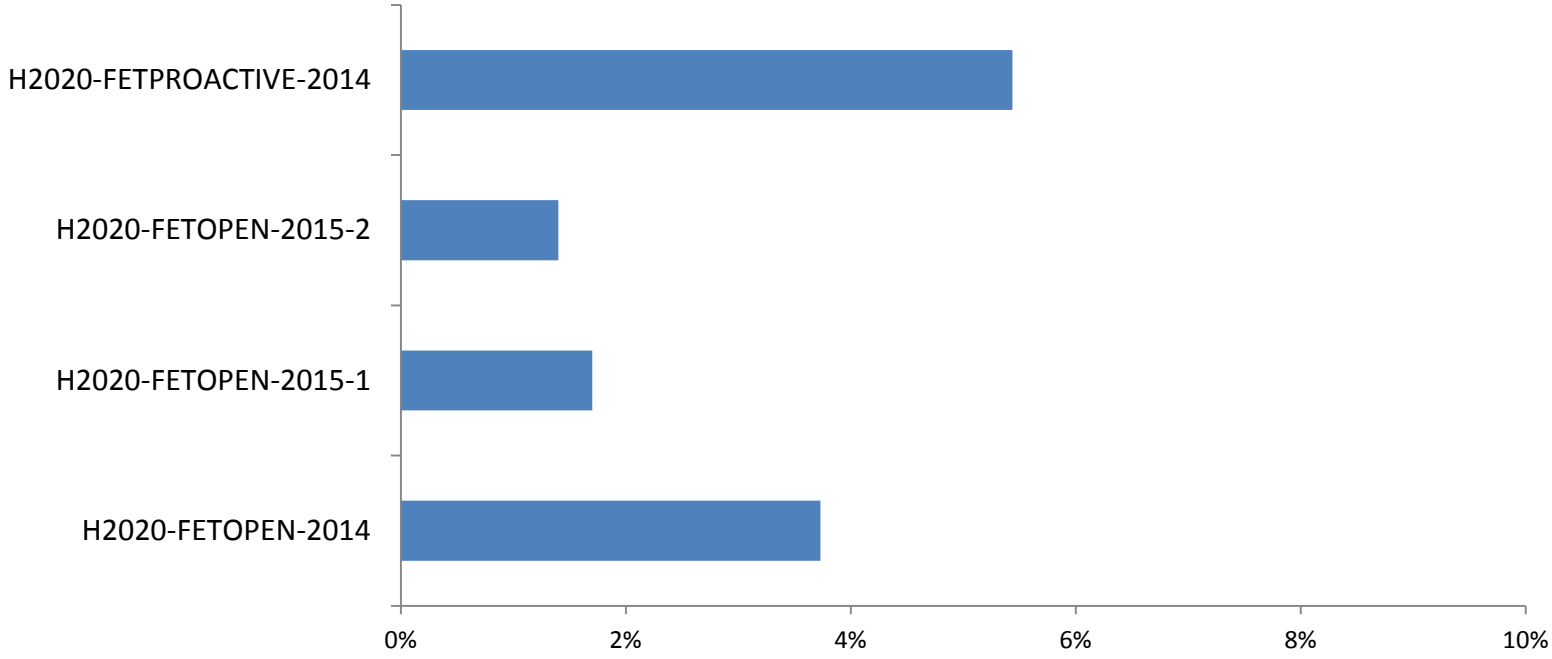
- New computing paradigms and their technologies: new foundations for computing, including bio-, nature- and socio-inspired ones that can encompass also aspects of communication, interaction, mimickry or differentiation (adaptation, learning, evolution), as well as non-technological aspects like organisational or physical/virtual architectural ones, and tailored to future and emerging challenges and requirements in highly interdisciplinary settings and for new kinds of mathematical and computational approaches in science.
- Quantum engineering: reproducible, economical and scaleable approaches, architectures and techniques for designing and realising devices and systems that exploit quantum phenomena, such as superposition and entanglement, for achieving new or radically improved functionalities (for instance in sensing, precision measurement, transduction, secure communication, control, simulation and computation) and demonstrated in the context and boundary conditions of a specific application area (for example in the biological, medical, materials, process, energy or standards domain).
- Hybrid opto-electro-mechanical devices at the nano-scale: new working principles and their first-time validation in nano-, molecular- or atomic-scale devices based on the interaction and mutual control of multiple physical degrees of freedom to achieve new or radically improved functionalities and application scenarios under plausible operating conditions. The interacting degrees of freedom are those involved in e.g. nano-optics, nano-scale electromagnetism, nano-mechanics and phonons and fluctuations.

Area 4: New technologies for energy and functional materials

- Ecosystem engineering:[1] new models, materials, processes, devices and systems going beyond a single dimension for extreme energy and resource efficiency and recovery, and footprint management into circular ecosystems (energy, raw materials, waste, water,…). New approaches and technologies for extremely efficient energy generation (e.g., artificial photosynthesis or microfluidic conversion), transfer, conversion, high-density storage and consumption. The targeted improvements with respect to the state of the art are to be stated in quantitative terms. Genuine cross-fertilisation and deep synergies between the broadest range of advanced sciences and cutting-edge engineering disciplines for emerging ecological technologies seeking holistic paradigms, striving to reduce or eliminate the environmental impact, and the replacement of toxic/pollutant substances by ecofriendly materials should be considered. First time validation and assessment of these results in the context of integrated synergetic circular economy solutions or other quasi self-sufficient environments.
- Complex bottom-up construction: new technologies and methods for self-organisation, assembly and adaptation of materials and physical devices/systems with complex functionality (including for instance energy storage, conversion or recovery), complex composition and/or spanning a range of scales (nano, meso) and with superior properties on each of them. Energy and resource/material availability, ecofriendlyness and efficiency are to be taken into account). Where needed, multiscale mathematical modelling and computational simulation of materials and related production or self-organisation processes can be included.

Evaluation et résultats

FET 2014-2015



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Les infrastructures de recherche

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Horizon 2020

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Mise en réseau d'infrastructures existantes

Création de nouvelles infrastructures

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Les différents types d'infrastructures

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mono-site

équipements et ensemble d'instruments scientifiques

INFRASTRUCTURES DE RECHERCHE

collections, archives et bibliothèques scientifiques

virtuelles

distribuées

bases de données, systèmes informatiques et réseaux de communication

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Développement de nouvelles infrastructures

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Objet **soutenir l'élaboration, la construction, la structuration légale et l'exploitation efficiente de nouvelles infrastructures de recherche de classe mondiale**

3 à 5 ANS

1 à 10 M€

- Personnel
- Fonctionnement
- Sous-traitance

S'ADRESSE MAJ. AUX PROJETS IDENTIFIÉS COMME PRIORITAIRES PAR LE EUROPEAN FORUM ON RESEARCH INFRASTRUCTURE

COLLABORATIF

Au moins 3 partenaires de 3 pays européens différents

Mobiliser :

- ***des collectivités territoriales,***
- ***des ministères,***
- ***des agences de financement,***
- ***des organismes de recherche,***
- ***des universités***
- ***et des industriels.***

Appel INFRADEV-2016-2017
Preparatory phase: 22/06/2016
Design Studies: 29/03/2017

DÉPÔT EN 1 ÉTAPE : 70 PAGES

HiLumi LHC

Project reference: 284404
Funded under: FP7-INFRASTRUCTURES

FP7 High Luminosity Large Hadron Collider Design Study

From 2011-11-01 **to** 2015-10-31, closed project

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Mise en réseau d'infrastructures existantes -1

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Objet ouvrir l'accès d'infrastructures nationales clefs à tous les chercheurs européens qu'ils soient issus du secteur académiques ou non-académiques

3 à 5 ANS

5 à 10 M€

- Personnel
- Fonctionnement
- Sous-traitance

STARTING COMMUNITIES : APPELS NON-THÉMATIQUES

ADVANCED COMMUNITIES: APPELS THÉMATIQUES

COLLABORATIF

Au moins 3 partenaires de 3 pays européens différents

Mobiliser :

- ***des organismes de recherche,***
- ***des partenaires technologiques,***
- ***des autorités publiques…***

Appel INFRAIA-2016-2017
1ère étape : 31/03/2016
2ème étape : 29/03/2017

DÉPÔT EN 2 ÉTAPES

- ***1ère étape : 20 pages***
- ***2ème étape: 100 pages***

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ENSAR2

Project reference: 654002
Funded under:
H2020-EU.1.4.1.2. - Integrating and opening existing national ar

EGI-InSPIRE

Project reference: 261323
Funded under: FP7-INFRASTRUCT

European Nuclear Science and Application Research 2

From 2016-03-01 **to** 2020-02-29, ongoing project

European Grid Initiative: Integrated Sustainable Pan-European Infrastructure for Researche Europe

From 2010-05-01 **to** 2014-12-31, closed project

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Mise en réseau d'infrastructures existantes -2

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EXEMPLES DE SUJETS 2016-2017 : ADVANCED COMMUNITIES

Research Infrastructures for hadron physics. This activity must provide and facilitate access to key research infrastructures in Europe for studying the properties of nuclear matter at extreme conditions, turning advances in hadron physics experimentation into new applications. It must present a long-term sustainable perspective on the integration of relevant facilities and related resources. Furthermore, it should also target new users and stimulate new scientific activities aimed at taking full advantage of new possibilities which will be offered by relevant initiatives on the ESFRI Roadmap, in particular FAIR.

Particle Accelerators. A project under this topic should facilitate access to state-of-the-art facilities to develop new techniques for improving the performance of existing and future accelerators. It should include accelerators for nuclear and particle physics and accelerator-based photon sources. It must present a long-term sustainable perspective on the integration of relevant facilities and related resources. A project under this topic should complement and further new scientific activities aimed at taking full advantage of new possibilities which will be offered by relevant initiatives on the ESFRI Roadmap.

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Les appels thématiques du programme Horizon 2020

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Quelques exemples d'appels thématiques 2016-2017 -1

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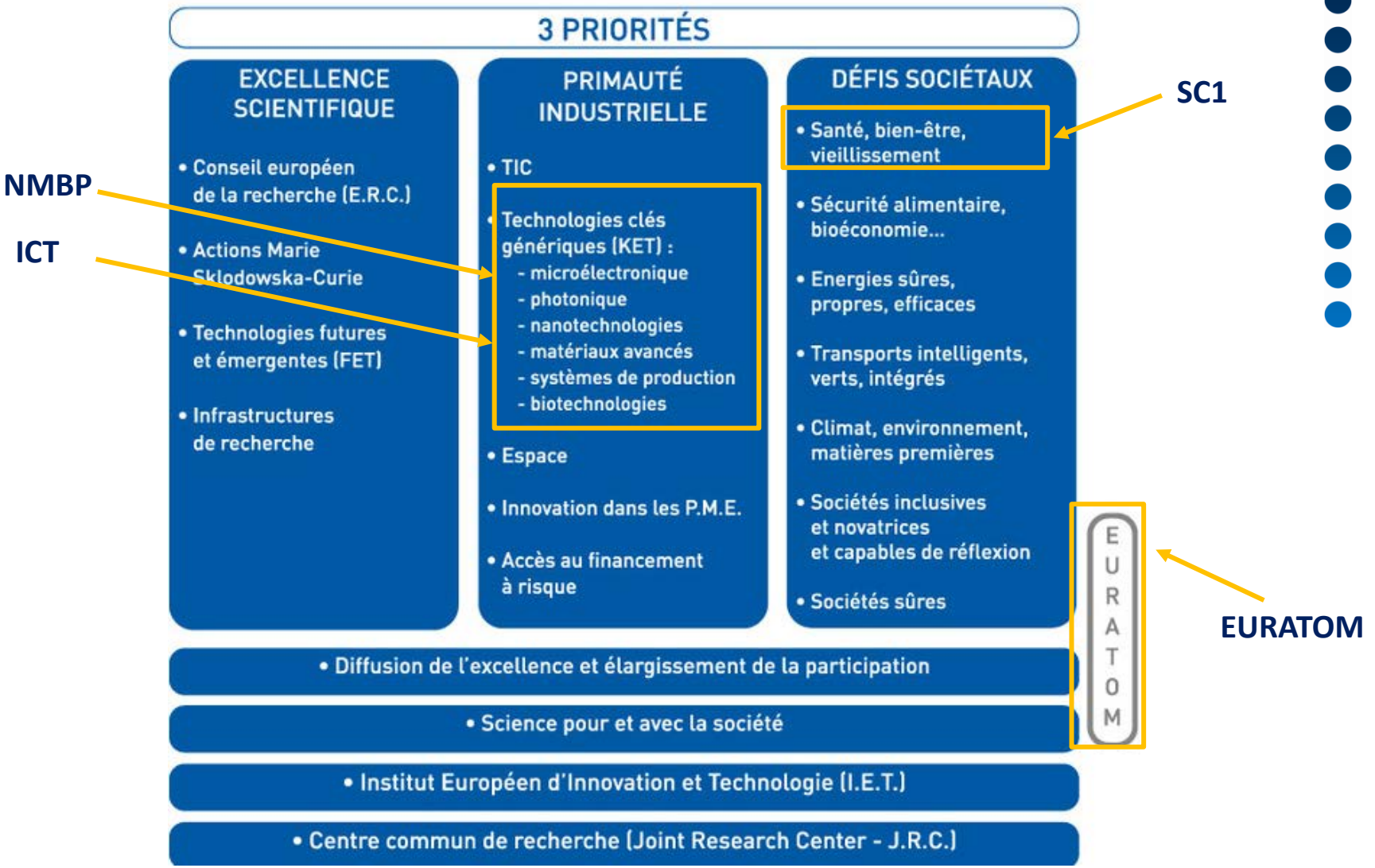

Quelques exemples d'appels thématiques 2016-2017 -2

3 à 5 ANS

3 à 13 M€

Personnel

Fonctionnement

Sous-traitance

COLLABORATIF

- **RECHERCHE APPLIQUEE**
- **INTERDISCIPLINAIRE**
- **ACTEURS NON-ACADEMIQUES**
- **COOPERATION INTERNATIONALE**

Pilier 2 - NMBP

Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

NMBP-12-2017 : **Development of a reliable methodology for better risk management of engineered biomaterials in Advanced Therapy Medicinal Products and/or Medical Devices**

→ identify the potential hazards from biomaterials to human health and to the environment,

→ develop the monitoring and reduction of those risks,

→ initiate and support standardization of the proposed biomaterials and methods.

Research & Innovation Action

Budget par projet : EUR 5 – 8 millions

Dépôt en 2 étapes :

Start at TRL 4, target TRL 6

Budget total : EUR 40 millions

27 Octobre 2016 puis 04 Mai 2017

Quelques exemples d'appels thématiques 2016-2017 -3

Pilier 2 – ICT

Information and Communications Technologies

ICT-14-2016-2017 : Big Data PPP: cross-sectorial and cross-lingual data integration and experimentation

→ a) develop data integration activities in cross-domain setups, where similar contributions of data assets are required,

→ b) address big data experimentation in a cross-sectorial, cross lingual and/or cross-border setup through the development of data experimentation incubators

Innovation Action
Budget par projet : EUR 1 – 7 millions
Dépôt en 1 étape :

Adresser le sujet a) ou le sujet b)
Budget total : EUR 27 millions
25 Avril 2017

Pilier 2 – ICT

Information and Communications Technologies

ICT-16-2017: Big data PPP: research addressing main technology challenges of the data economy

→ address cross-sector and cross-border problems of clear industrial significance, for example: software stacks, distributed data and process mining, predictive analytics and visualization, real-time complex event processing…

Research & Innovation Action
Budget par projet : EUR 2 – 5 millions
Dépôt en 1 étape :

Budget total : EUR 31 millions
25 Avril 2017

Quelques exemples d'appels thématiques 2016-2017 -4

Pilier 3 – Societal Challenge 1 – Health, demographic change and well-being

PM-17-2017 : Personalised computer models and in-silico systems for well-being

→ develop new integrative dynamic computer-models and simulation systems with application in well-being, health and disease,

→ aggregating various information (molecular, biochemical, medical imaging, social, lifestyle, economic etc.) into robust predictors for resilience in coping with and overcoming challenges and stresses.

Research & Innovation Action
Budget par projet : EUR 4 – 6 millions
Dépôt en 1 étape :

Multidisciplinary research in medicine, SSH, ICT
Budget total : EUR 19 millions
14 Mars 2017

EURATOM

NFRP-9-2016 : Impacts of low dose radiation exposure

→ make significant progress in the understanding of radiation effects and underlying mechanisms,

→ create a networked and structured repository for patient dosimetry, imaging meta-data and bio-making,

→ improve the science base for recommendations to decision-makers and practitioners, including for optimization of radiation protection in medical imaging

Research & Innovation Action
Budget par projet : EUR 8 – 10 millions
Dépôt en 1 étape :

Multidisciplinary European Low Dow Initiative
Budget total : EUR 9 millions
5 Octobre 2016

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Où trouver les appels ?

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Où trouver les appels ? - 1

- Le **portail du participant** de la Commission Européenne :

http://ec.europa.eu/research/participants/portal//desktop/en/home.html

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Où trouver les appels ? - 2

RESEARCH & INNOVATION

European Commission

Participant Portal

European Commission > Research & Innovation > Participant Portal > Funding Opportunities

HOME | FUNDING OPPORTUNITIES | HOW TO PARTICIPATE | EXPERTS | SUPPORT | Search PP | LOGIN | REGISTER

EU Programmes 2014-2020

- Search Topics
- Updates
- Calls
  - H2020
  - Research Fund for Coal & Steel
  - COSME
  - 3rd Health Programme
  - Consumer Programme

FP7 & CIP Programmes 2007-2013

- Calls

Other Funding Opportunities

Funding Opportunities

H2020 ONLINE MANUAL

Find the European Union funding opportunities and search for new or closed calls of the programmes described on this page.

Recherche par mots-clefs

Horizon 2020

Horizon 2020 is the new EU funding programme for research and innovation running from 2014 to 2020 with a €80 billion budget. H2020 supports SMEs with a new **instrument** that runs throughout various funded research and innovation fields,enhances EU international research and Third Country participation, attaches high importance to integrate social sciences and humanities encourages to develop a gender dimension in project.

Recherche par appel

Cosme

Programme for the Competitiveness of Enterprises and SMEs (COSME) will run from 2014 to 2020, with a planned budget of €2.3bn. It will facilitate SME access to finance, create supportive environment for business creation, help small businesses operate outside their home countries and improve their access to markets.

Quelques liens utiles

- **Cellule Europe**

  europe.clermont-universite.fr

- **Research & Innovation Participant Portal**

  http://ec.europa.eu/research/participants/portal/desktop/en/home.html

- **European Forum for Research Infrastructures**

  http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri

- **Portail français consacré à Horizon 2020**

  http://www.horizon2020.gouv.fr/

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MERCI DE VOTRE ATTENTION !

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