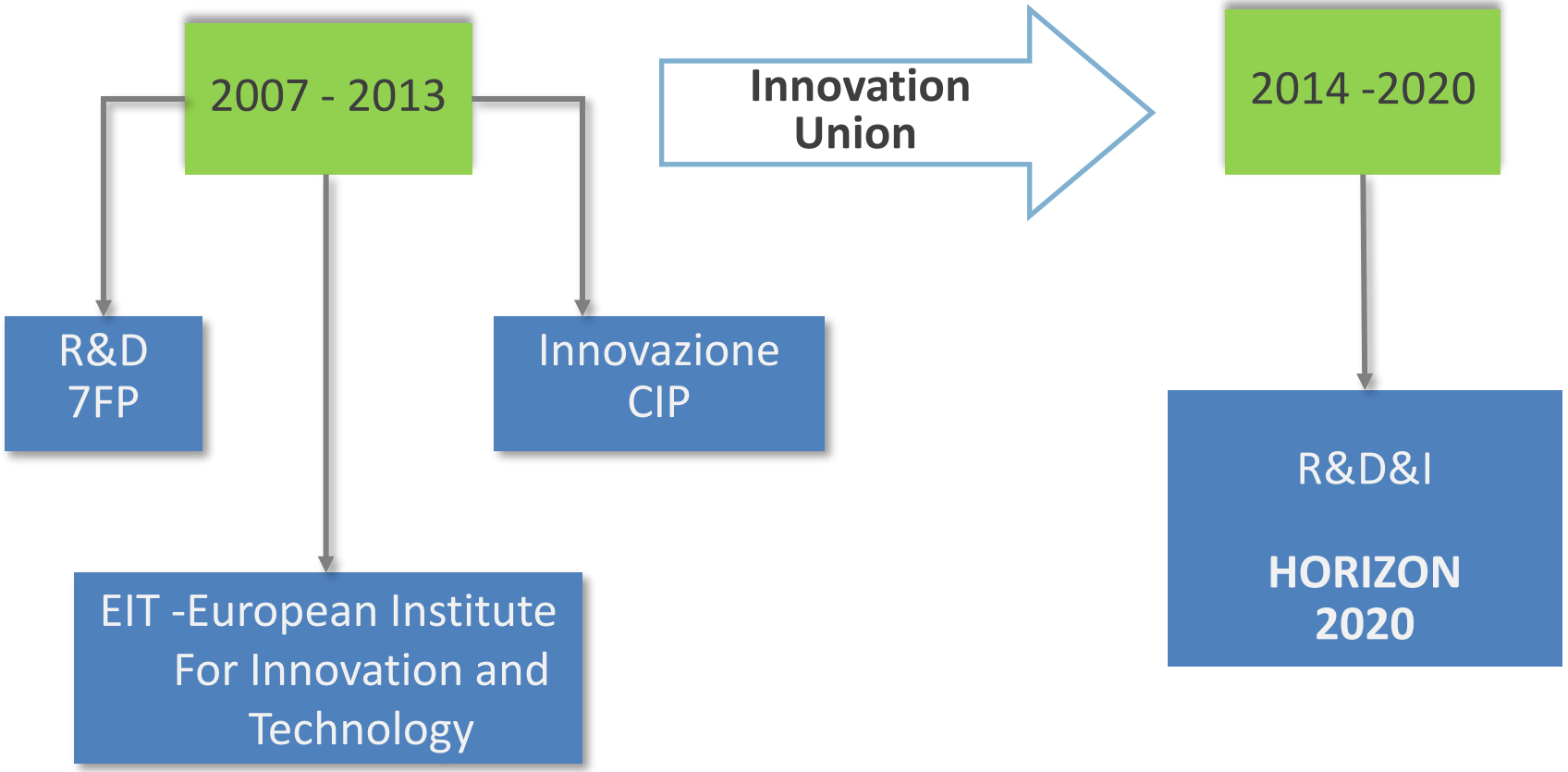
APRE
AGENZIA PER LA PROMOZIONE DELLA RICERCA EUROPEA

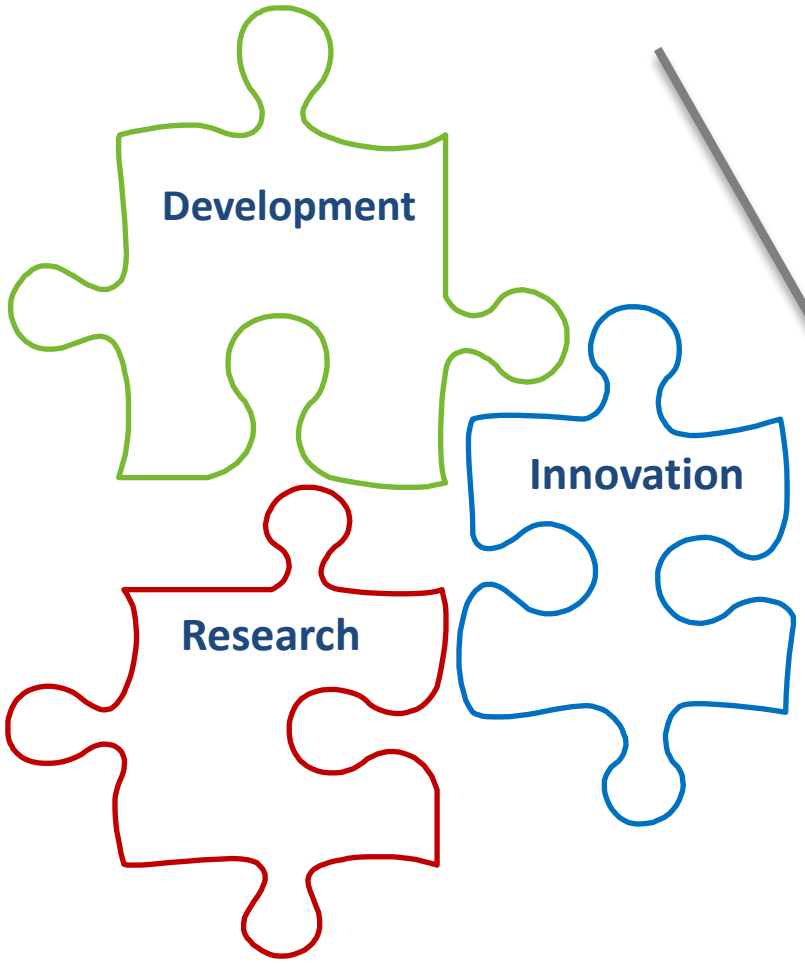
Horizon 2020

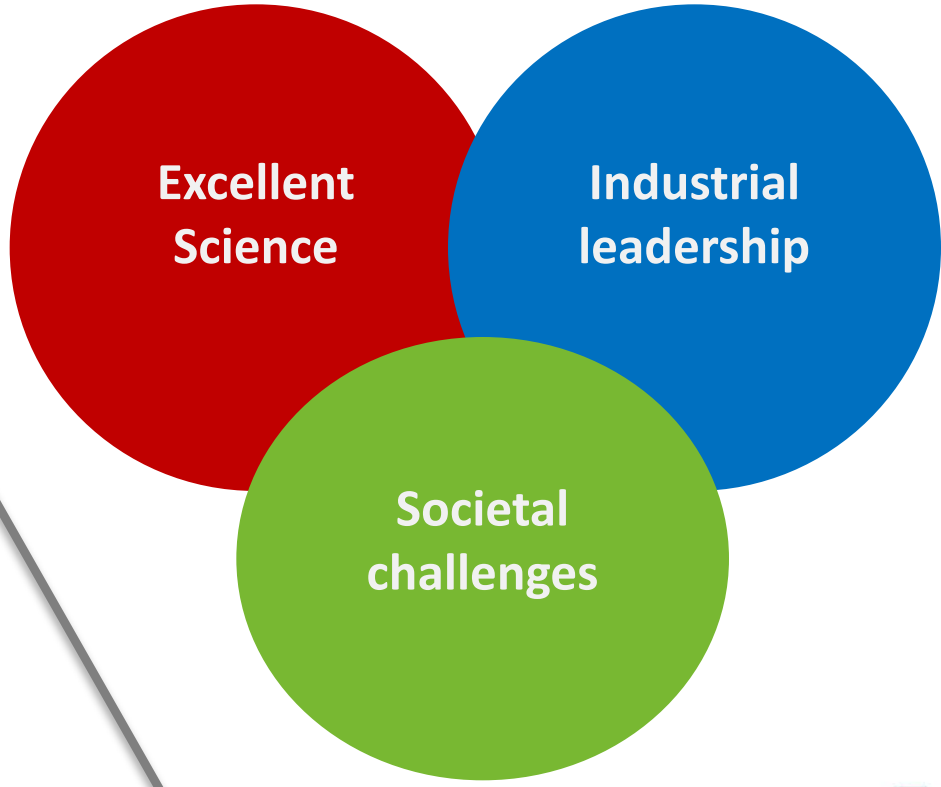
La proposta della Commissione e aree di attività

Verso un unico programma R&D&I



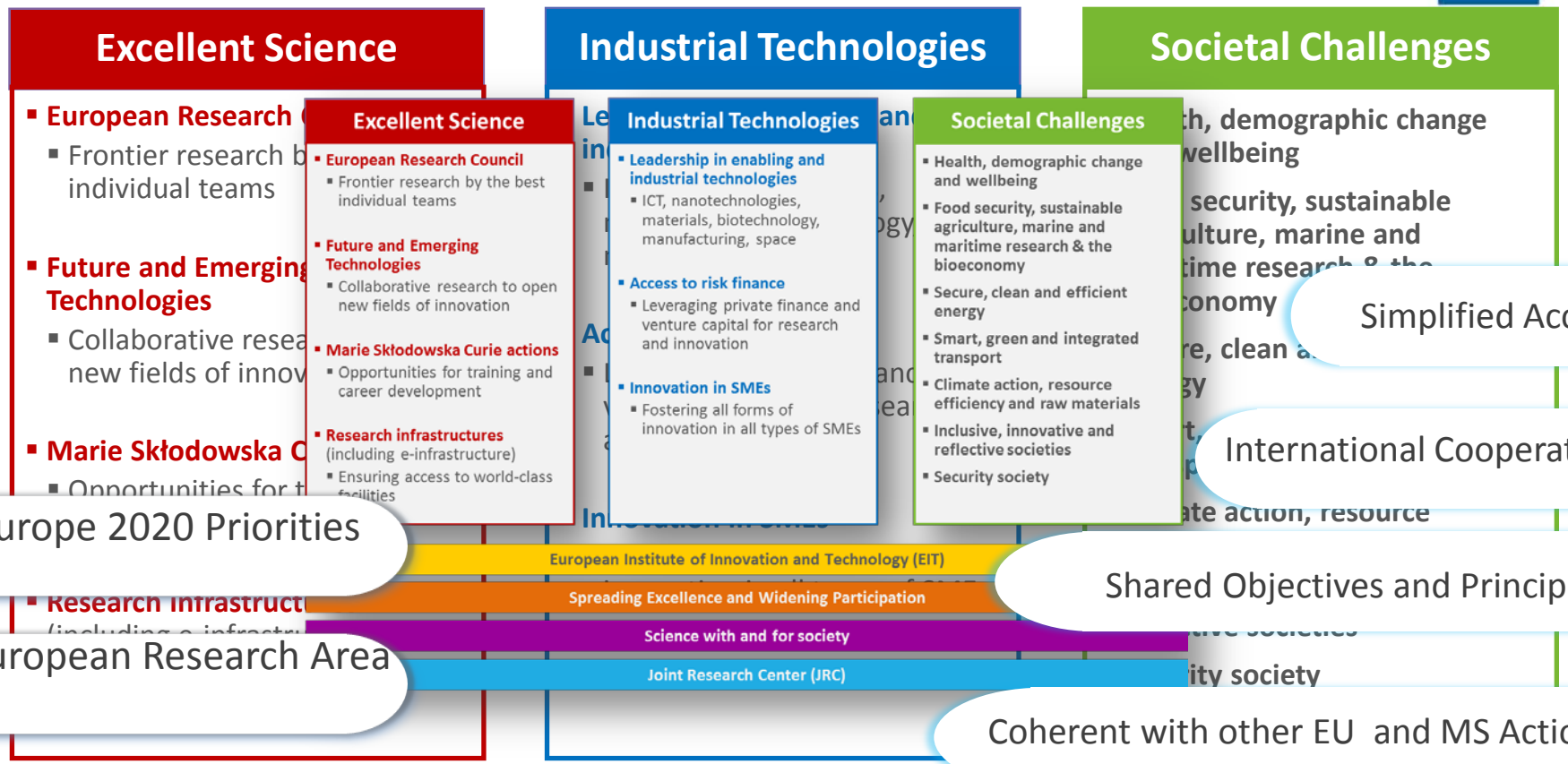
Un progetto in Horizon 2020…





…a stronger, clear focus

Struttura del programma



Europe 2020 Priorities

European Research Area

Simplified Access

International Cooperation

Shared Objectives and Principles

Coherent with other EU and MS Actions

Common Rules, Toolkit of Funding Schemes

European Institute of Innovation and Technology (EIT)
Spreading Excellence and Widening
Science with and for society
Joint Research Center (JRC)

Caratteristiche

- Un **singolo programma** che riunisce tre iniziative fino ad ora separate
- **Value chain** che va dalla ricerca di frontiera , allo sviluppo tecnologico, dimostrazione, valorizzazione dei risultati e innovazione
- **Innovazione**, in tutte le sue forme
- Focus su **societal challenges**
- **Accesso semplificato** per le imprese, le università, etc in tutti gli stati europei
- Sinergie con i **Fondi Strutturali**

Accordo sul Budget

*28 Giugno 2013

European Commission | EUROPEAN PARLIAMENT | CONSILIUM

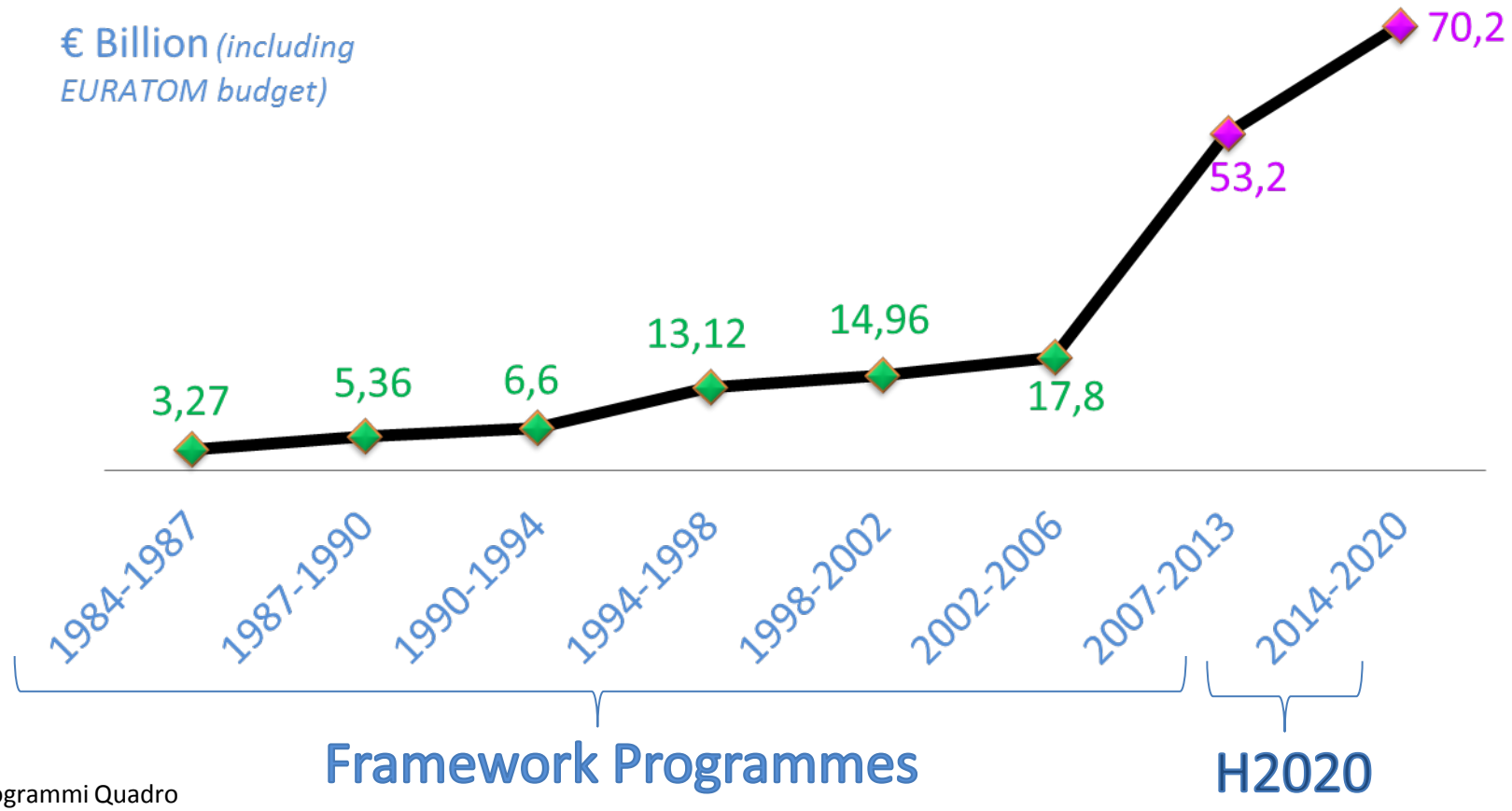
70,2 Miliardi di €

(incluso EURATOM)

Quadro finanziario pluriennale 2013/2020 - MFF

.

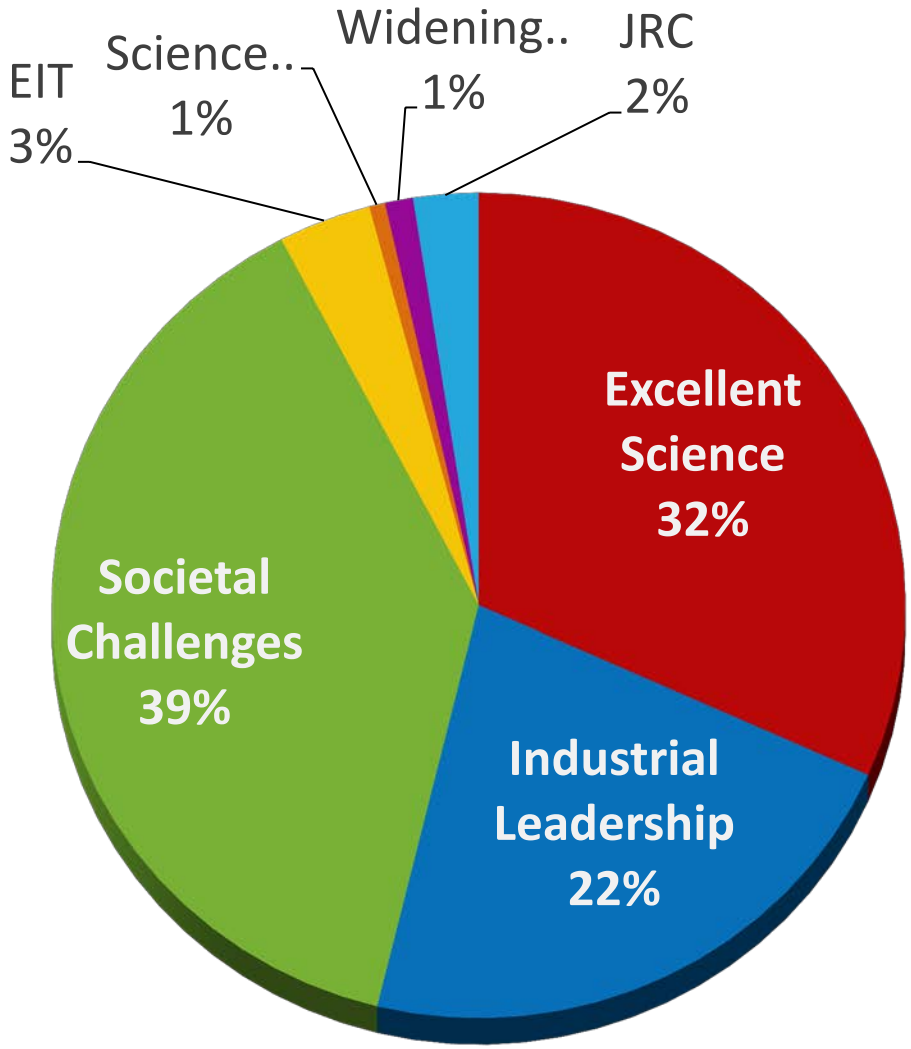
Budget da FP1 a Horizon 2020



Programmi Quadro quadriennali e quinquennali

Programmi Quadro settennali.

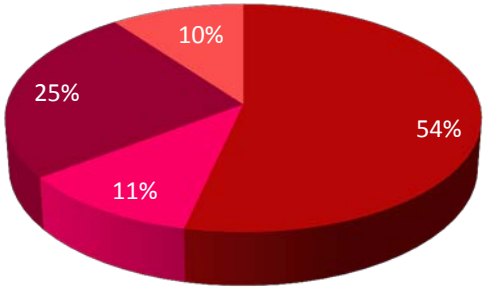
Ripartizione finanziaria



* proposta del Trilogo del 27-06-13

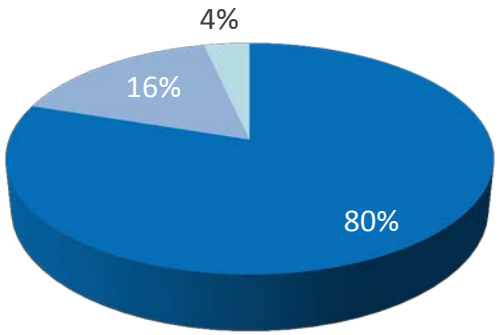
Il budget per le attività

Excellent Science



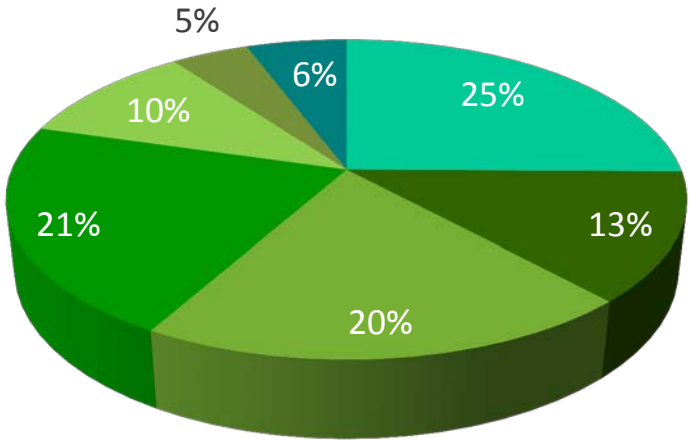
- European Research Council
- Future and Emerging Technologies
- Marie Skłodowska Curie Actions
- European Research Infrastructures (including eInfrastructures)

Industrial Leadership



- Leadership in enabling and industrial technologies
- Access to risk finance
- Innovation in SMEs

Societal challenges



- Health, demographic change and wellbeing
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy:
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action, environment, resource efficiency and raw materials
- inclusive, innovative and reflective Societies
- Secure Societies

1° PILLAR

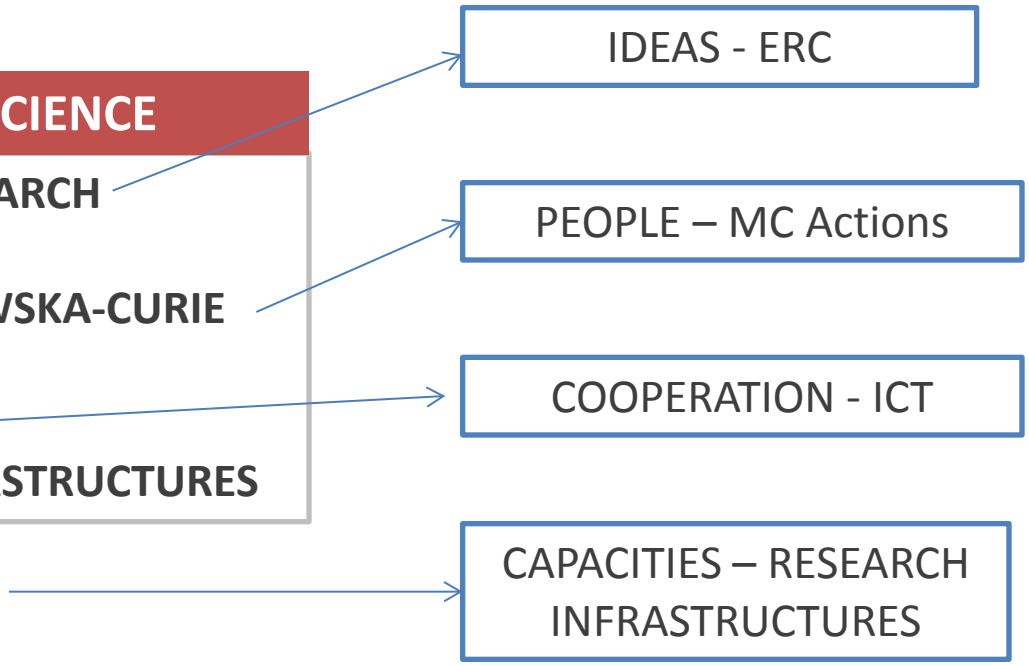
EXCELLENT SCIENCE

H2020

FP7

EXCELLENT SCIENCE

- EUROPEAN RESEARCH COUNCIL
- MARIE SKŁODOWSKA-CURIE ACTIONS
- FET*
- RESEARCH INFRASTRUCTURES



*Le FET, che nell' FP7 riguardavano solo ICT, in H2020 saranno trasversali ad altre tematiche.

Excellent Science

Per sostenere le migliori idee e sviluppare competenze, per fare dell'Europa un polo di attrazione per i migliori ricercatori mondiali

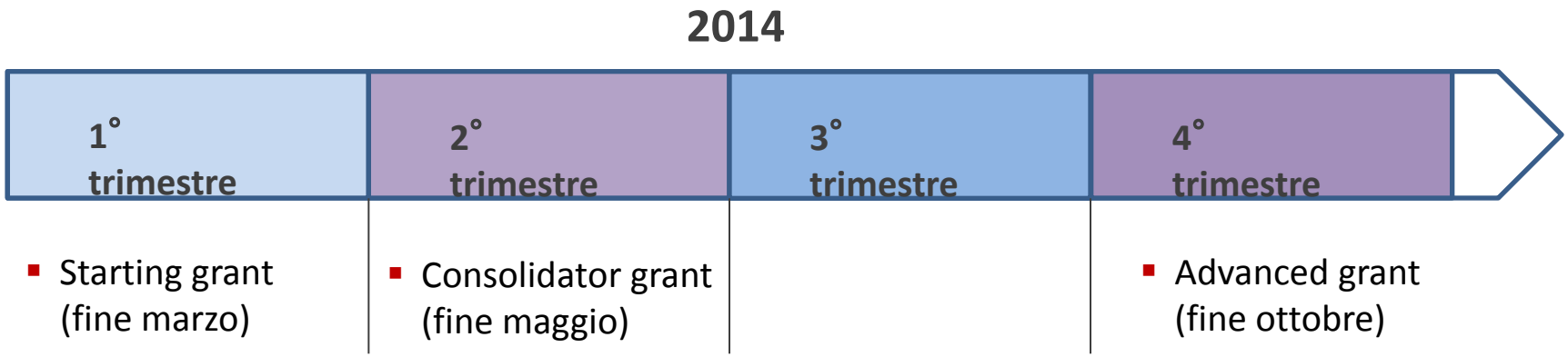
- **European Research Council**: progetti di ricerca di frontiera migliori team individuali
- **Future and Emerging Technologies**: ricerca nelle aree più promettenti nel campo delle tecnologie di domani; **(Science)**
- Azioni **Marie Skłodowska-Curie** per attrarre e sostenere ricercatori e la loro mobilità;
- **Infrastrutture di Ricerca** adeguate, meno care e diffuse in Europa.

Consiglio Europeo della Ricerca

- Nella proposta non sono evidenziati gli schemi di finanziamento
- ERC organo indipendente
- Schemi

FP7	Eleggibilità
ERC Starting	2-7 anni dal phd
ERC Consolidator	7-12 anni dal phd
ERC Advanced	Almeno 10 anni di esperienza on ricerca
ERC Sinergy	• Da due a quattro PI • transdisciplinarietà
ERC Proof of Concept	Per grantees finanziati

ERC: Calls 2014*



- Synergy grant: no call nel 2013 e 2014
- Proof of Concept: 1 call con doppia scadenza nel 2014 (inizi di aprile e di ottobre)

*proposta ERC, da approvare

FET – Future and Emerging Technologies

- Expanded from ICT to be used as cross-cutting instrument
- Supports frontier research: alternative ideas, concepts or paradigms of risky or non-conventional nature

FET Open

fostering novel ideas. Collaborative research for embryonic, high risk visionary science and technology

FET Proactive

Nurturing emerging themes and communities

FET Flagship

Tackling grand interdisciplinary science and technology challenges

MARIE SKŁODOWSKA-CURIE ACTIONS - MSCA

ITN (including EID and IDP)	**Innovative Training Networks (ITN)**	Doctoral and initial training of researchers proposed by international networks of organisations from public and private sectors
IEF IOF IIF CIG	**Individual Fellowships (IF)**	Individual fellowships for most promising experienced researchers to develop their skills through international or inter-sector mobility
IAPP IRSES	**R&I Staff Exchange (RISE)**	International and inter-sector cooperation through the exchange of research and innovation staff
COFUND	**COFUND**	Co-funding of regional, national and international programmes

Research Infrastructures

Three main objectives

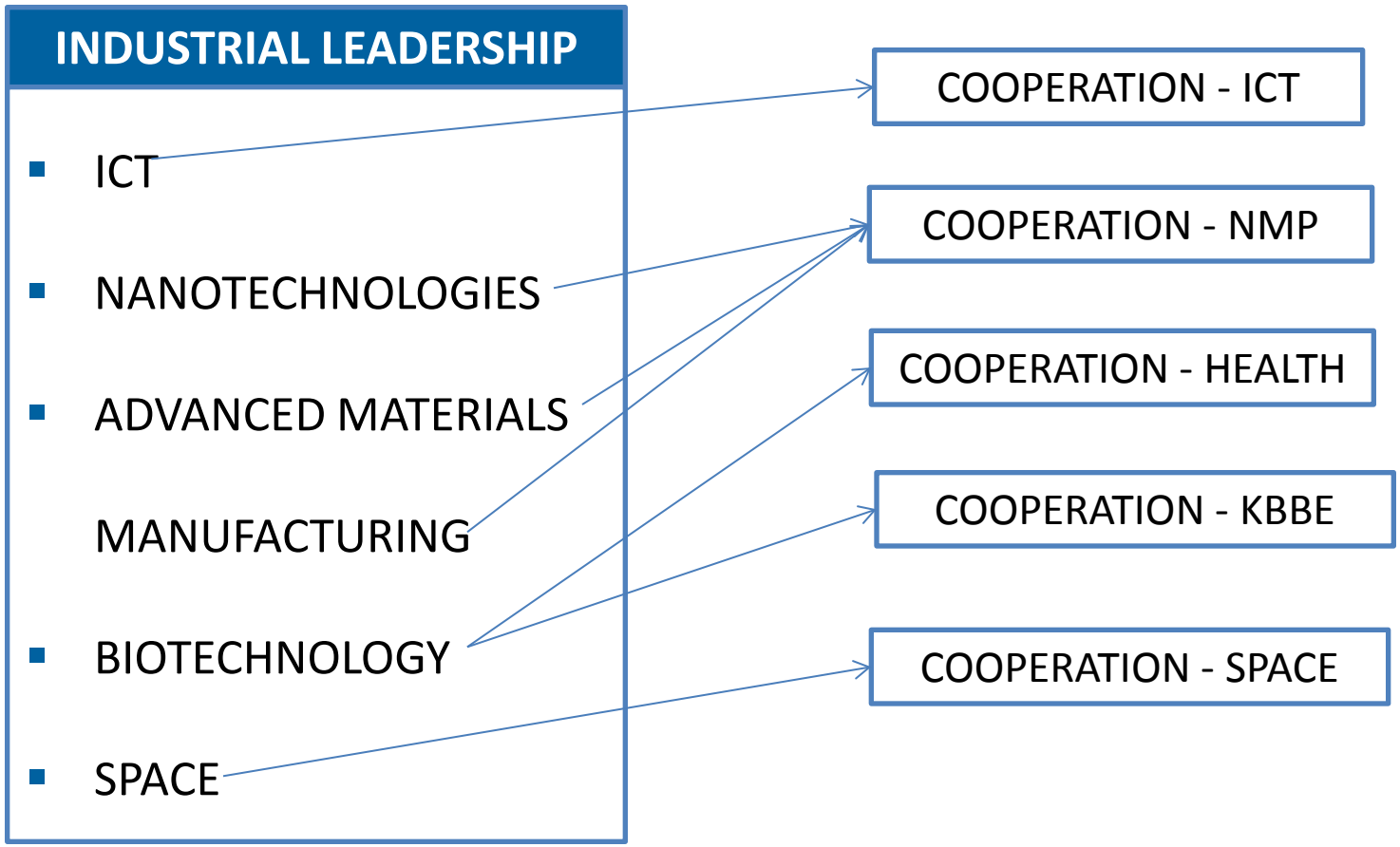
- Developing the European research infrastructures for 2020 and beyond
- Fostering the innovation potential of research infrastructures and their human capital
- Reinforcing the European research infrastructure policy and international co-operation

2° PILLAR

INDUSTRIAL LEADERSHIP

H2020

FP7


INDUSTRIAL LEADERSHIP
ICT
NANOTECHNOLOGIES
ADVANCED MATERIALS
MANUFACTURING
BIOTECHNOLOGY
SPACE
COOPERATION - ICT
COOPERATION - NMP
COOPERATION - HEALTH
COOPERATION - KBBE
COOPERATION - SPACE

Industrial Leadership

Per incoraggiare investimenti in R&I in Europa, promovendo alcune priorità per ogni forma di business

- **Leadership in enabling and industrial technologies** - soprattutto Key enabling technologies (Information and Communication Technologies (ICT), Nanotechnologies, Advanced materials, Biotechnology, Advanced Manufacturing and Processing) & Space;

- **Access to finance** per aziende innovative, strumenti finanziari in partenariato con l'European Investment Bank; Debt instrument & Equity instrument

- **Innovation in SME**

  Support to innovative SMEs

COSA SONO LE KET?
Key Enabling Technologies

Tecnologie "ad **alta intensità di conoscenza** e associate ad elevata intensità di **R & S,** a **cicli d'innovazione rapidi**, a consistenti spese di investimento e a **posti di lavoro altamente qualificati**. Rendono possibile **l'innovazione nei processi, nei beni e nei servizi** in tutti i settori economici e hanno quindi rilevanza sistemica. Sono **multidisciplinari**, interessano tecnologie di diversi settori e tendono a convergere e a integrarsi. Possono aiutare i leader nelle tecnologie di altri settori a trarre il massimo vantaggio dalle loro attività di ricerca“

- Photonics
- Manufacturing
- Biotechnology
- Advanced Materials
- Micro/Nanoelectronics
- Nanotechnologies

*Current situation of key enabling technologies in Europe, SEC (2009)

3.510 M €

Nanotechnologies

Next generation nanomaterials, -devices, -nanosystems

Ensuring safe development & application + societal dimension

Efficient synthesis and manufacturing of nanomaterials, - systems

Developing capacity-enhancing techniques, measuring methods

Advanced Materials

Materials development & transformation

Mgmt of materials components

Materials for sustainable and for creative industries

Metrology, characterisation, standardisation, quality control

Optimisation of the use / substitution of materials

Advanced Manufacturing & Processing

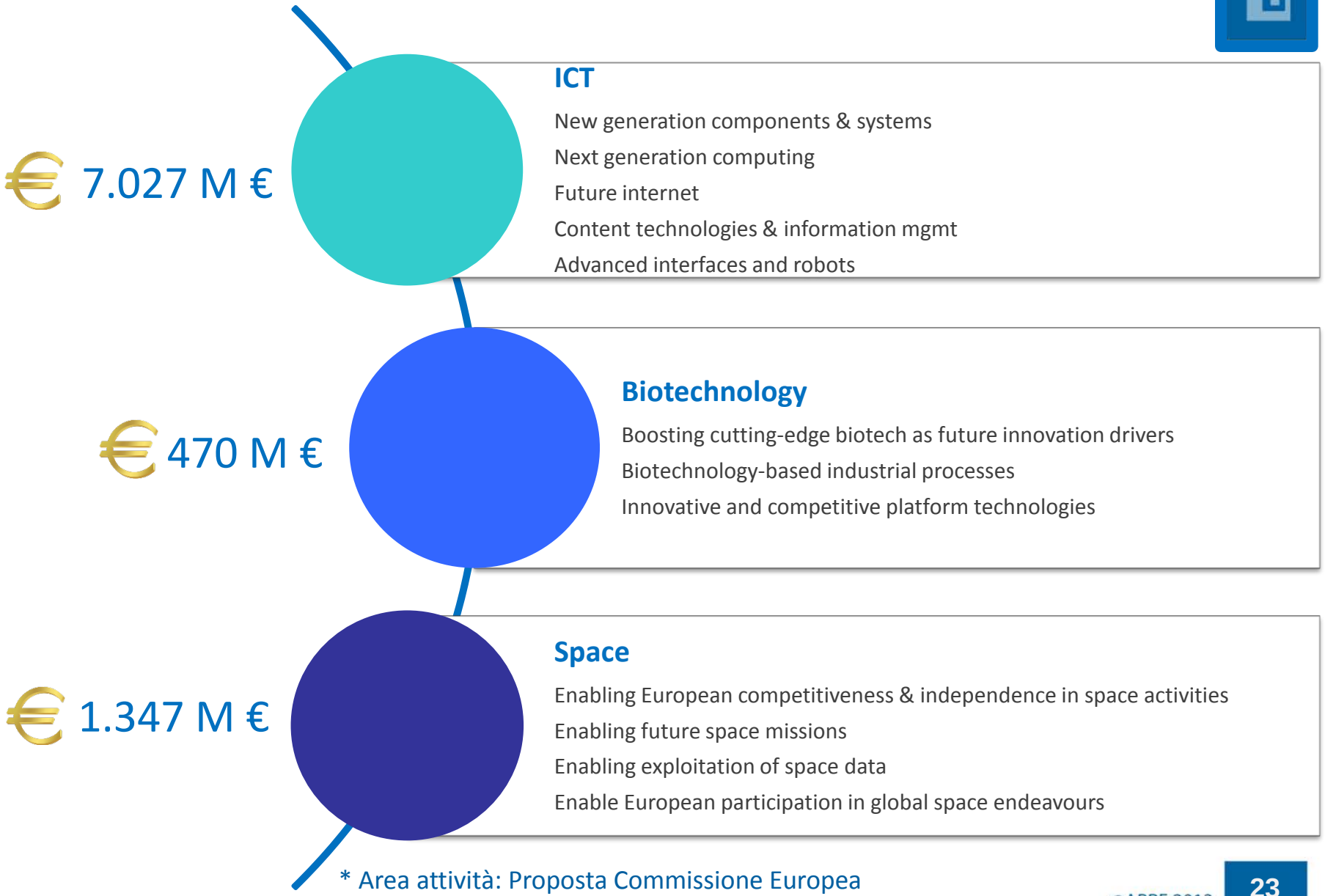
Factories of the future

Energy-efficient buildings

Sustainable technologies in energy-intensive process industries

New, sustainable business models

* Area attività: Proposta Commissione Europea



* Area attività: Proposta Commissione Europea

Access to Finance

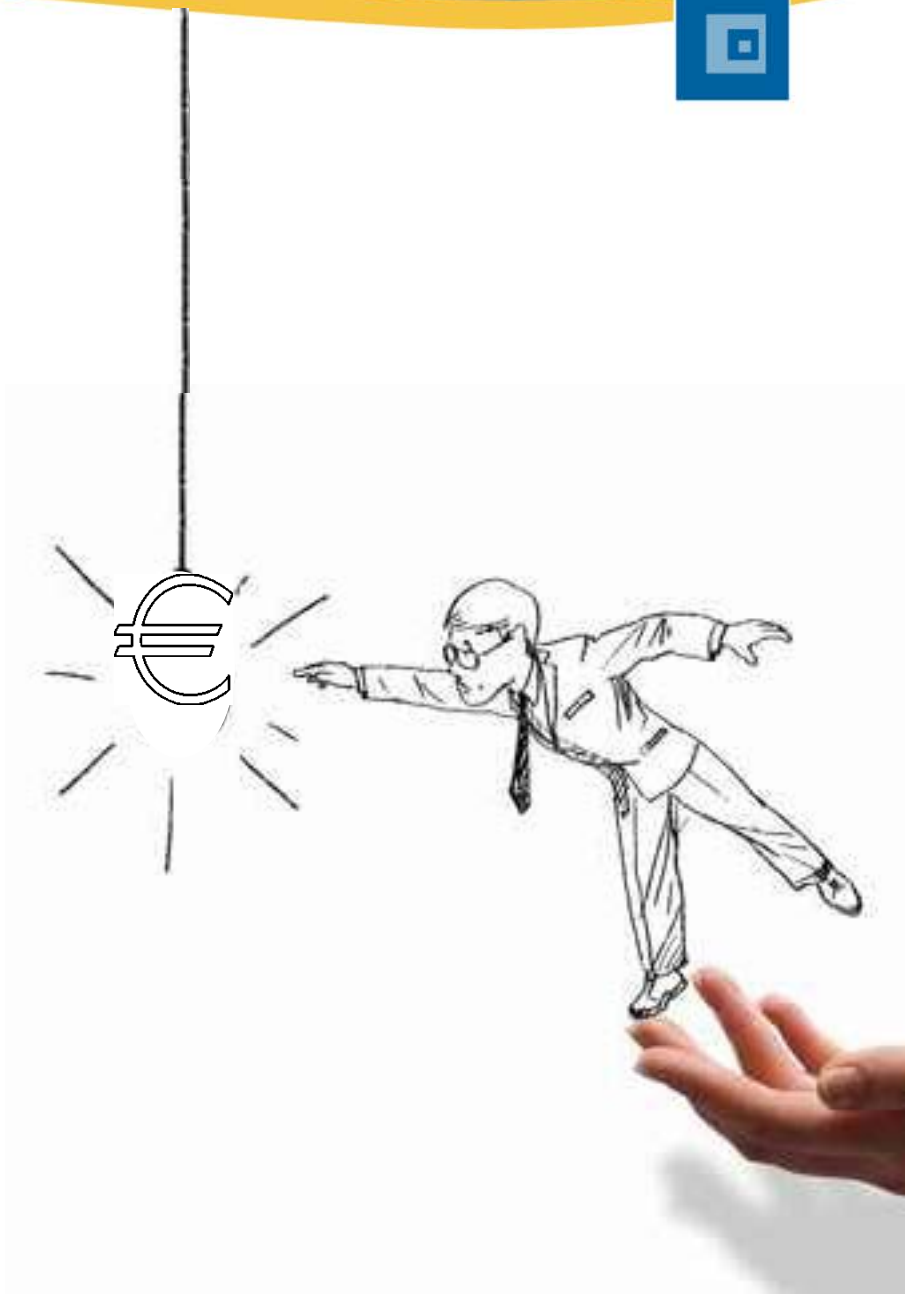
- Per aziende innovative
- Strumenti finanziari in partenariato con l'European Investment Bank
- Debt instrument & Equity instrument

€ 2.590 M €

Innovation in SME

- Eurostars
- EEN
- Azioni di coordinamento e supporto

€ 561 M €



Lo strumento per le PMI

Concept & Feasibility Assessment	Demonstration Market replication R&D	Commercialisation
Idea to concept, risk assessment, technological & commercial feasibility	Demonstration, prototyping, testing , market replication, scaling up, miniaturisation, research	Quality label for successful projects, access to risk finance, indirect support

Idea **S**ostegno continuo per l'intera durata **M**ercato

Lo strumento PMI: le tre fasi

Fase 1: concetto e valutazione della fattibilità

Input:
Idea/Concept in "Business Plan I"
(~ 10 pages)

Main Activities:

Feasibility of concept
Risk assessment
IP regime
Partner search
Design study
Pilot application

Output: elaborated "Business plan II"

Lump sum: around 50.000 €

~ 6 months

Fase 2: R&D, dimostrazione, market replication

Input:
"Business plan II" +
"Description of activities under Phase2" (~ 30 pp.)

Main Activities:

Development Prototyping
Testing
Piloting
Miniaturisation
Scaling-up
Market replication

Output: investor-ready "Business plan III"

Output based payments:
1 to 3 M€ EU funding

~ 12 to 24 months

Fase 3: Commercializzazione

Input:
"Business plan III"
+

Opportunities:

'Quality label' for successful Phase 1 & 2

Easier access to private finance

Support via networking, training, coaching, information, addressing i.a. IP management, knowledge sharing, dissemination

SME window in the EU financial facilities (debt facility and equity facility)

No direct funding

Caratteristiche dello strumento PMI

- Indirizzato a tutti i tipi di PMI innovative che presentino una forte volontà di crescere, svilupparsi e internazionalizzarsi
- Solo PMI potranno richiedere finanziamenti (sostegno a una sola impresa è possibile, ma collaborazione certamente consigliabile)
- Competitivo, dimensione EU → solo le migliori idee passano la fase 1
- Orientato al mercato; attività close-to-market: finanziamento al 70%
- Costituito da 3 fasi – piu' il coaching
- Possibilità di entrare nella fase 1 e fase 2
- Applicato in tutte le 'societal challenges' e 'key enabling technologies'

Altre attività relative alle PMI in H2020

- Strumento per le PMI – mainstreaming (applicato in tutte le societal challenges e nei LEITs)
- Sostegno delle PMI a alta intensità di ricerca: Innovazione nelle start-ups, spin-offs and giovani imprese research-intensive (Eurostars2)
- Rafforzare le capacità di innovazione delle PMI (mentoring e coaching + other activities – ProInno…): Innovation in SMEs

<u>INOLTRE</u>

- Partecipazione delle PMI a piu' tradizionali progetti di ricerca collaborativa (tutte le tre priorità)
- Accesso alla finanza di rischio (prestiti e strumenti di equity)
- Scambio e mobiltà dei ricercatori incluse le PMI (Marie Curie actions)
- Link all'accesso ai procurements

3° PILLAR

SOCIETAL CHALLENGES

H2020

FP7

SOCIETAL CHALLANGES

- Health, Demographic Change and Wellbeing;
- Food Security, Sustainable Agricolture, Marine and Maritime Research & the Bio-economy;
- Secure, Clean and Efficient Energy;
- Smart, Green and Integrated Transport;
- Climate Action, Resource Efficiency and Raw Materials;
- Inclusive, Innovative and Reflective Societies;
- Secure Societies.

COOPERATION

- HEALTH
- KBBE
- ENERGY
- TRANSPORT
- ENVIRONMENT
- SSH
- SECURITY

INTERNATIONAL COOPERATION

Societal challenges/1

Budget proposto (milioni di €)

26,240 M €

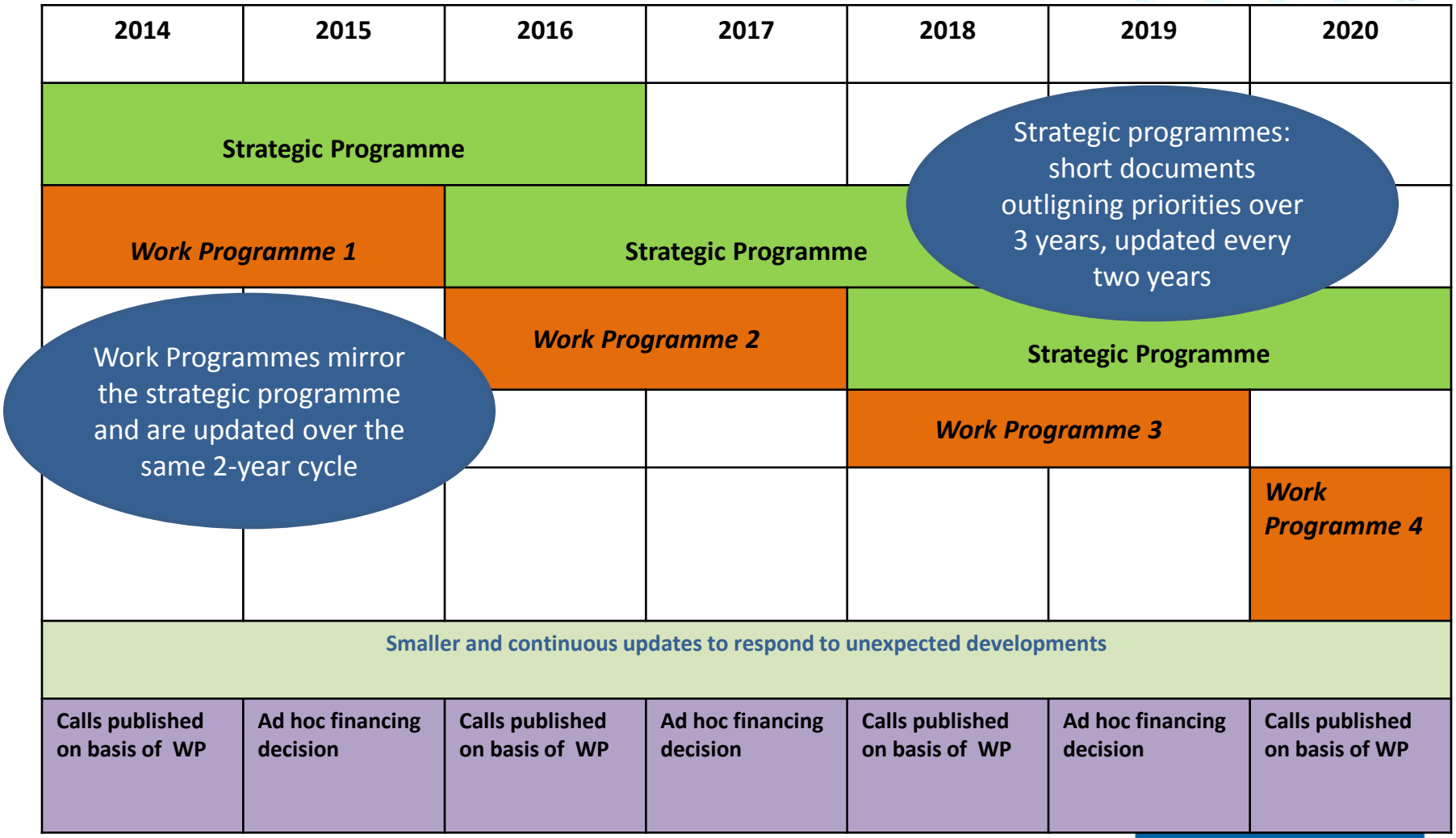
	EC	EP	Compromise 27.06.13
Health, demographic change and wellbeing	9.077	8.033	**6.606**
Food security, sustainable agriculture, marine and maritime research & the bioeconomy	4.694	4.152	**3.405**
Secure, clean and efficient energy	6.537	5.782	**5.244**
Smart, green and integrated transport	7.690	6.802	**5.605**
Climate action, resource efficiency and raw materials	3.573	3.160	**2.724**
Inclusive, Innovative and Reflective Societies	4.317	3.819	**1.158**
Secure Societies			**1.498**

Gli schemi di finanziamento

IMPLEMENTAZIONE DI H2020

IMPLEMENTAZIONE
Work Programmes H2020

- **STRATEGIC PROGRAMME: A multi-annual approach (3 years) to help applicants plan ahead.** (*note: this could be subject to the vote of Programme Committee*)
- **WORK PROGRAMMES: 3 Work Programmes (biannual) during the course of H2020 and 1 final Work Programme for the last year to bridge to the next programme after 2020**
- **FLEXIBILITY IN ORGANISING CALLS: one call in each WP with two deadlines; or two calls with two deadlines; or continuously open calls** *(under discussion)*
- **SYNERGIES: Horizon 2020 will follow closely the emerging Smart Specialisation flagship priorities and will support them through the Horizon 2020 Work Programmes"**


2014
2015
2016
2017
2018
2019
2020
Strategic Programme
Work Programme 1
Strategic Programme
Work Programme 2
Strategic Programme
Work Programme 3
Work Programme 4
Strategic programmes: short documents outligning priorities over 3 years, updated every two years
Work Programmes mirror the strategic programme and are updated over the same 2-year cycle
Smaller and continuous updates to respond to unexpected developments
Calls published on basis of WP
Ad hoc financing decision
Calls published on basis of WP
Ad hoc financing decision
Calls published on basis of WP
Ad hoc financing decision
Calls published on basis of WP

Tipologie di progetti collaborativi

R&D projects

Basic research, applied research, technology development and integration, and testing e validation on a small scale prototype in a laboratory or simulated environment

Close to market projects

Prototyping, testing, demostrating, piloting, large - scale product validation and market replication

Tipologie di progetti collaborativi

R&D projects

Funding rate: 100%

TRL: 1 – 5/6 + clinal trials in phases 1 to 3

Close to market projects

Funding rate: 70%/100%

TRL: 6 to 7/8 or 9

Focus

ICT

Struttura del programma

Excellent Science

- **European Research Council**
  - Frontier research by the best individual teams
- **Future and Emerging Technologies**
  - Collaborative research to open new fields of innovation
- **Marie Skłodowska Curie actions**
  - Opportunities for training and career development
- **Research infrastructures** (including e-infrastructure)
  - Ensuring access to world-class facilities

Industrial Technologies

- **Leadership in enabling and industrial technologies**
  - ICT, nanotechnologies, materials, biotechnology, manufacturing, space
- **Access to risk finance**
  - Leveraging private finance and venture capital for research and innovation
- **Innovation in SMEs**
  - Fostering all forms of innovation in all types of SMEs

Societal Challenges

- **Health, demographic change and wellbeing**
- **Food security, sustainable agriculture, marine and maritime research & the bioeconomy**
- **Secure, clean and efficient energy**
- **Smart, green and integrated transport**
- **Climate action, resource efficiency and raw materials**
- **Inclusive, innovative and reflective societies**
- **Security society**

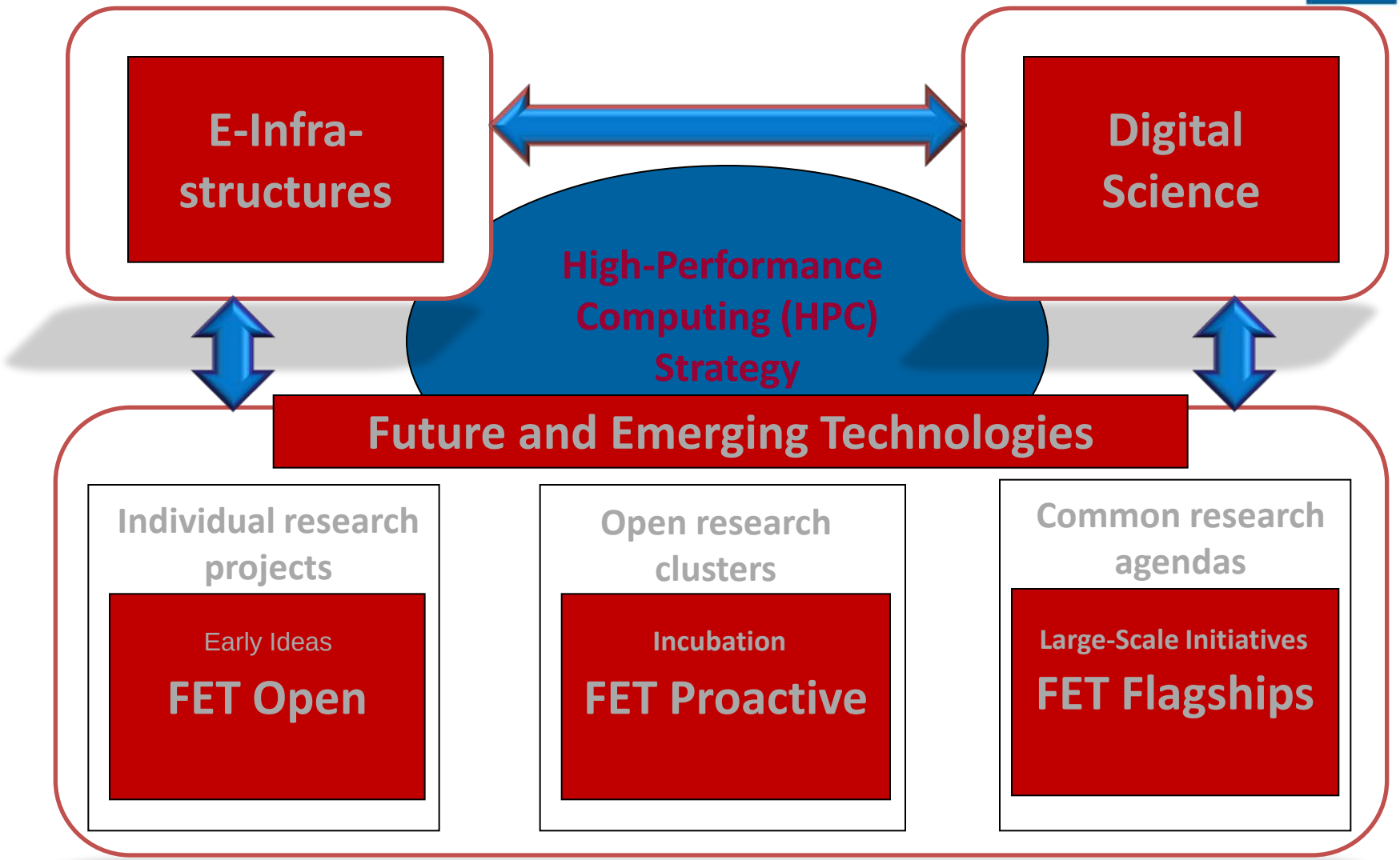
European Institute of Innovation and Technology (EIT)

Spreading Excellence and Widening Participation

Science with and for society

Joint Research Center (JRC)

Overview of ICT in Excellent Science


E-Infra-structures
Digital Science
High-Performance Computing (HPC) Strategy
Future and Emerging Technologies
Individual research projects
Early Ideas
FET Open
Open research clusters
Incubation
FET Proactive
Common research agendas
Large-Scale Initiatives
FET Flagships

FET Proactive in WP2014-15

Three topics are selected for funding in WP2014-15:

- Knowing, doing and being: cognition beyond problem solving
- Global Systems Science (GSS - improve the way in which scientific knowledge can stimulate, guide, and help evaluate policy and societal responses to global challenges)
- Towards exascale high-performance computing, as part of the High Performance Computing Public-Private Partnership.

High Performance Computing PPP

- The EC Communication "**High-Performance Computing: Europe's place in a global race**", adopted 15 Feb 2012, describes an ambitious strategy for HPC, combining three elements:

FET

(a) Computer Science: towards exascale High Performance Computing;

RI

(b) providing access to the best supercomputing facilities and services for both industry and academia;

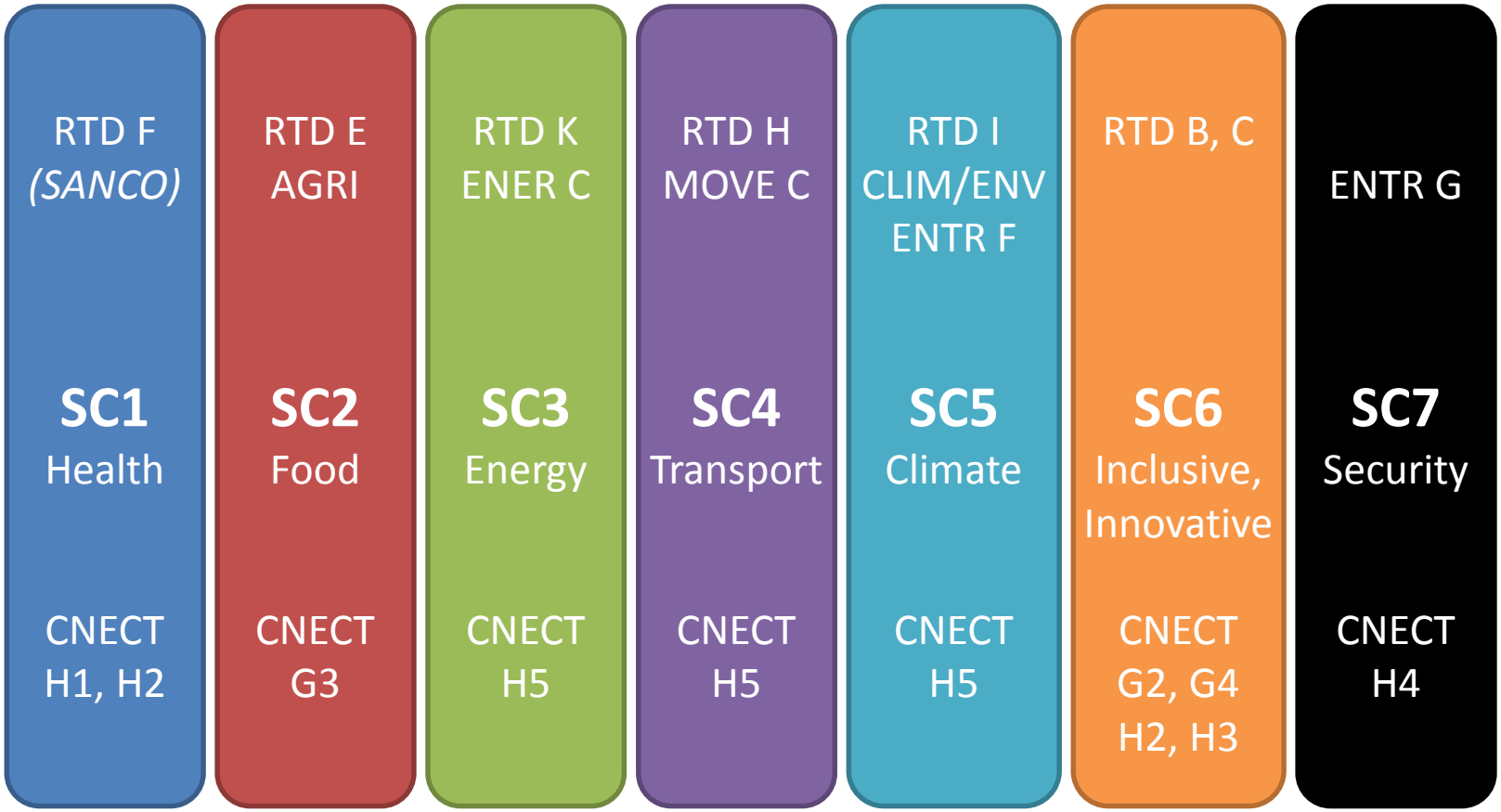
FET+ RI

(c) achieving excellence in HPC applications;

Complemented with training, education and skills development in HPC

Overview of ICT in Societal Challenges

H2020 Societal Challenges
Organisational Configuration



SC1 Health and wellbeing

- **Advancing active and healthy ageing**
  - Service robotics within assisted living environments
  - ICT solutions for independent living with cognitive impairments
  - ICT solutions enabling early risk detection and intervention
- **Integrated, sustainable, citizen-centred care**
  - ICT-based approaches for integrated care (beyond current state-of-art in tele-health and tele-care)
  - Mobile Health
  - Public-procurement of innovative eHealth services
- **Improving health information and data exploitation**
  - Decisional support systems
  - eHealth interoperability

SC3 Energy

- **Energy efficiency**
  - New ICT-based solutions for consumer engagement
  - Public procurement of green data centres
- **Competitive low-carbon energy**
  - Smart Grids
- **Smart Cities and Communities**
  - Smart Cities and Communities solutions integrating energy, transport, ICT sectors
  - Enhancing the roll-out of Smart Cities and Communities solutions by stimulating the market demand

SC4 Smart, green and integrated transport

–ICT offer the tools to address sustainability of transport systems, congestion and road fatalities effectively.

- **ICT pilots** addressing smart, energy-efficient and safe mobility
- **Connected mobility** - linking vehicles and people on the move
- **(Semi-)Automated driving** for increased efficiency and safety
- Cooperative **Intelligent Transportation** Systems (C-ITS)

✓20% higher energy efficiency
✓10% less traffic congestion
✓10% fully electric vehicles in Europe
✓30% less road fatalities
✓30% less injured persons and an increase
✓50% in reliability of transport schedules by 2020

SC5 Climate and resource efficiency
Water and Waste Management

- **Water**
  - Modular, fully interoperable and real-time components, able also to interoperate with management and control systems of other infrastructures (e.g. energy infrastructures)

- **Waste**
  - More effective processes and technologies for recycling and improved dismantling capacity of ICT
  - More efficient handling of waste in general through ICT

SC6 Inclusive, innovative and reflective society (1)

- **ICT-driven Public Sector Innovation**
  - –Make the services closer to the citizens and be adapted to their new modes of communication
  - –Innovation through achieving European cross-border interoperability of public services

- **Cultural heritage and European identity**
  - –Innovative solutions for researchers and citizens to access European cultural heritage
  - –Preservation of our digital memory for the future

SC6 Inclusive, innovative and reflective society (2)

- **Stimulating the use of ICT tools and services for learning and teaching**
  - Digital skills and e-learning platforms
  - Implementation of large scale projects piloting of educational technologies & services for take up of ICT in Education and Training

- **Stimulating the use of ICT tools to facilitate the social & economic integration of excluded citizens**
  - Piloting of innovative ICT solutions for disadvantaged groups
  - Connecting people to skills needs/ Targeted Serious games

SC7 Securing the Digital Society

- Protecting our society by providing sustained **trust in the usage of ICT** and in securing the ICT underlying our digital society.
- Demonstrating the viability and maturity of state-of-the-art security solutions in **large scale demonstrators**, involving end users
- **Preventing cyber-attacks** on any component of the digital society
- **Ensuring freedom and privacy in the digital society**, protecting the fundamental values of our society and democratic rights of our citizens in cyberspace
- Protect the weak in our society from abuses over the internet and **giving the user control over his private data** and the uses that are made thereof

Overview of ICT in Industrial Technologies

Focus Area Work-programme 2014-15

ICT in Industrial Leadership

1. Components and systems
2. Advanced Computing
3. Future Internet
4. Content technologies and information management
5. Robotics
6. Key Enabling Technologies: Micro-nano-electronics and photonics

+ Factory of the Future cPPP

+ International Cooperation actions (EU-Brazil, EU-Japan)

<u>ICT Cross cutting activities:</u>

- Internet of Things
- Human-centric Digital Age
- Cybersecurity
- Support to NCPs

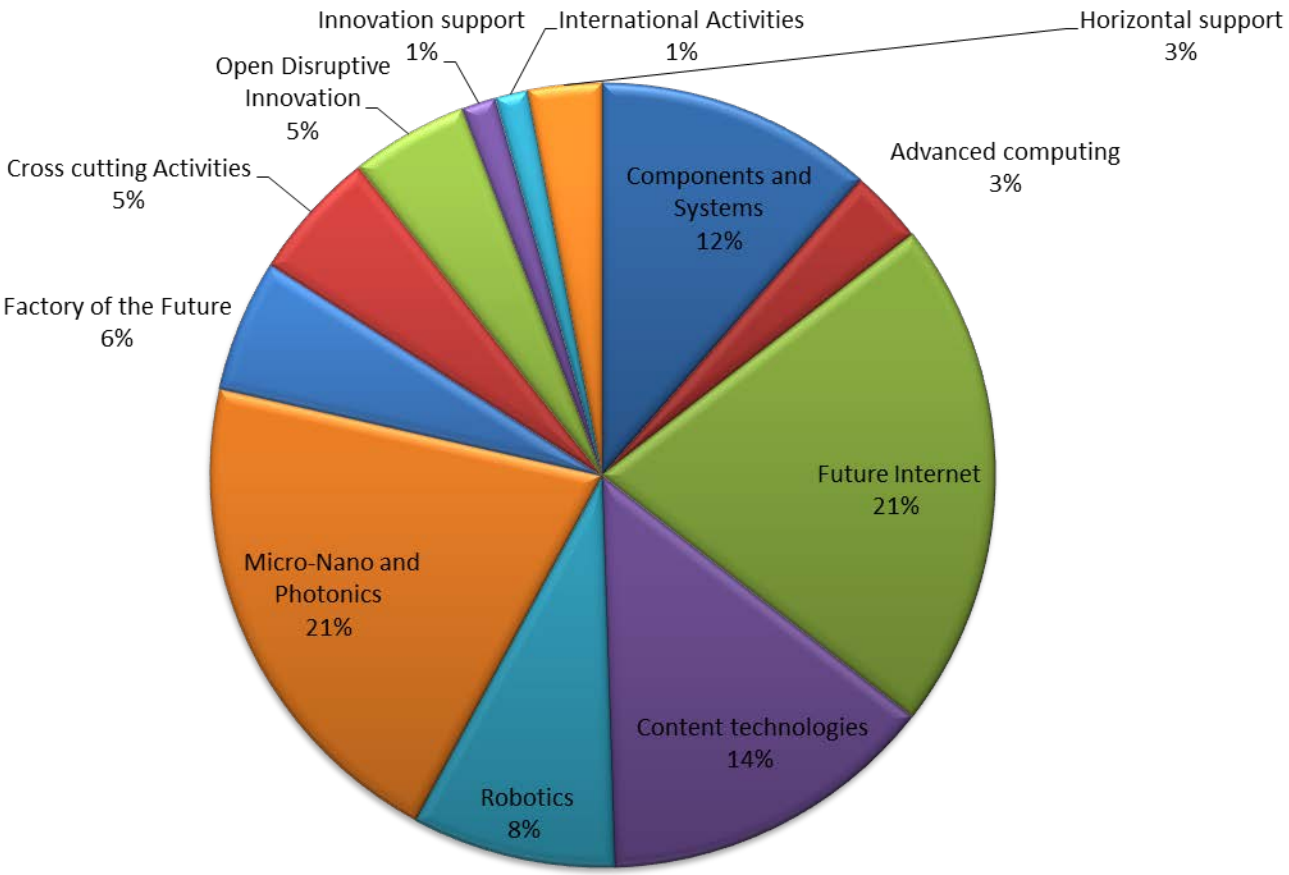
<u>ICT Innovation actions</u>

- Access to finance
- Innovation policy support
- Open disruptive innovation scheme (SME instrument)

International Cooperation actions

- Two coordinated calls
  - EUB: Brazil (advanced cyber infrastructure) (7M)
  - EUJ: Japan (Network Futures) (6M)
- ICT36: International partnership building and support to dialogues with high income countries (USA, Canada and East Asia) (3M)
- ICT37: International partnership building in low and middle income countries (11M)
- Targeted opening on Future Internet Research and Experimentation Micro- and nano electronics with US, Japan, Brazil and South Korea

ICT LEIT Budget Overview



Focus

SALUTE

First work programs will be developed around a limited set of focus areas

- ✓ ***Personalizing health and care***
- ✓ ***Sustainable food security***
- ✓ ***Blue growth: unlocking the potential of the oceans***
- ✓ ***Smart cities and communities***
- ✓ ***Competitive low-carbon energy***
- ✓ ***Mobility for growth***
- ✓ ***Innovation in Public Sector& social innovation*** *(pilot calls, other programmes "ISA"..etc.)*
- ✓ ***Waste: a resource to recycle, reuse and recover raw materials***
- ✓ ***New ideas, strategies and governance structures for Europe***
- ✓ ***Disaster-resilience: safeguarding and securing society, including adapting to climate change***
- ✓ ***Digital security***
- ✓ ***Energy Efficiency***

A strong initial emphasis will be to support Member States and regions in the effective implementation of the new research and innovation programmes under the Structural Funds…

Call for *Personalizing Health and Care 2014-2015*

Where are we now in health?

On content?

- ***Council** Partial General Agreement*
- ***Trilogue in progress***

1.1. Understanding health, ageing and disease

1.2. Effective health promotion, disease prevention, preparedness and screening

1.3. Improving diagnosis

1.4. Innovative treatments and technologiew

1.5. Advancing active and healthy ageing

1.6. Integrated, sustainable, citizen-centred care

1.7. Improving health information, data exploitation and providing an evidence base for health policies and regulation

IMI, AAL, EDCTP cutting across

EUROPEAN COMMISSION

NB: as well as advice from scientific panels such as the "Scientific Panel for Health".

Call for *Co-ordination activities* 2014-2015

1.1. EIP on AHA – European Innovation Partnership on Active and Healthy Ageing

1.2. JPI – Joint Programming Initiative More Years and Better Lives

1.3. European Reference Networks: Efficient network modelling and validation

1.4. Global Alliance for Chronic Diseases: prevention and treatment of type 2 diabetes

1.5. ERA-NETs

- Synergies between JPND (Neurodegenerative Diseases) and H2020
- Cancer Research
- Brain related diseases
- Systems medicine for clinical needs research
- Rare Diseases research implementing IRDiRC objectives

Per maggiori informazioni:

http://ec.europa.eu/research/horizon2020/index_en.cfm