#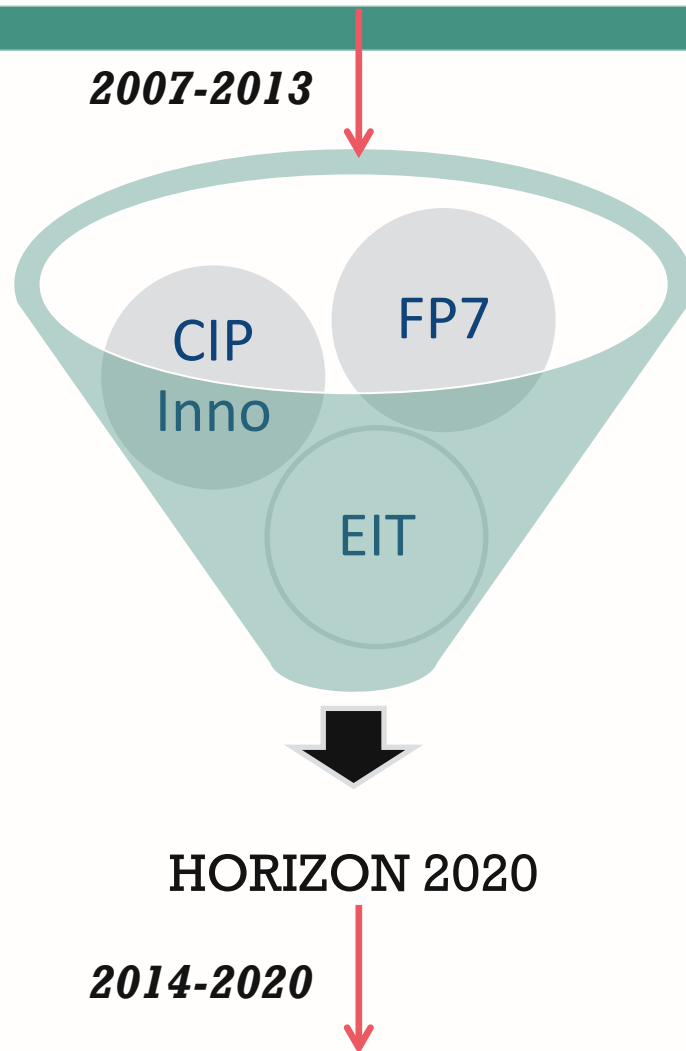 The opportunities in the frame of **HORIZON 2020 -** The European Funding instrument for research and innovation (2014-2020)

Alma cg
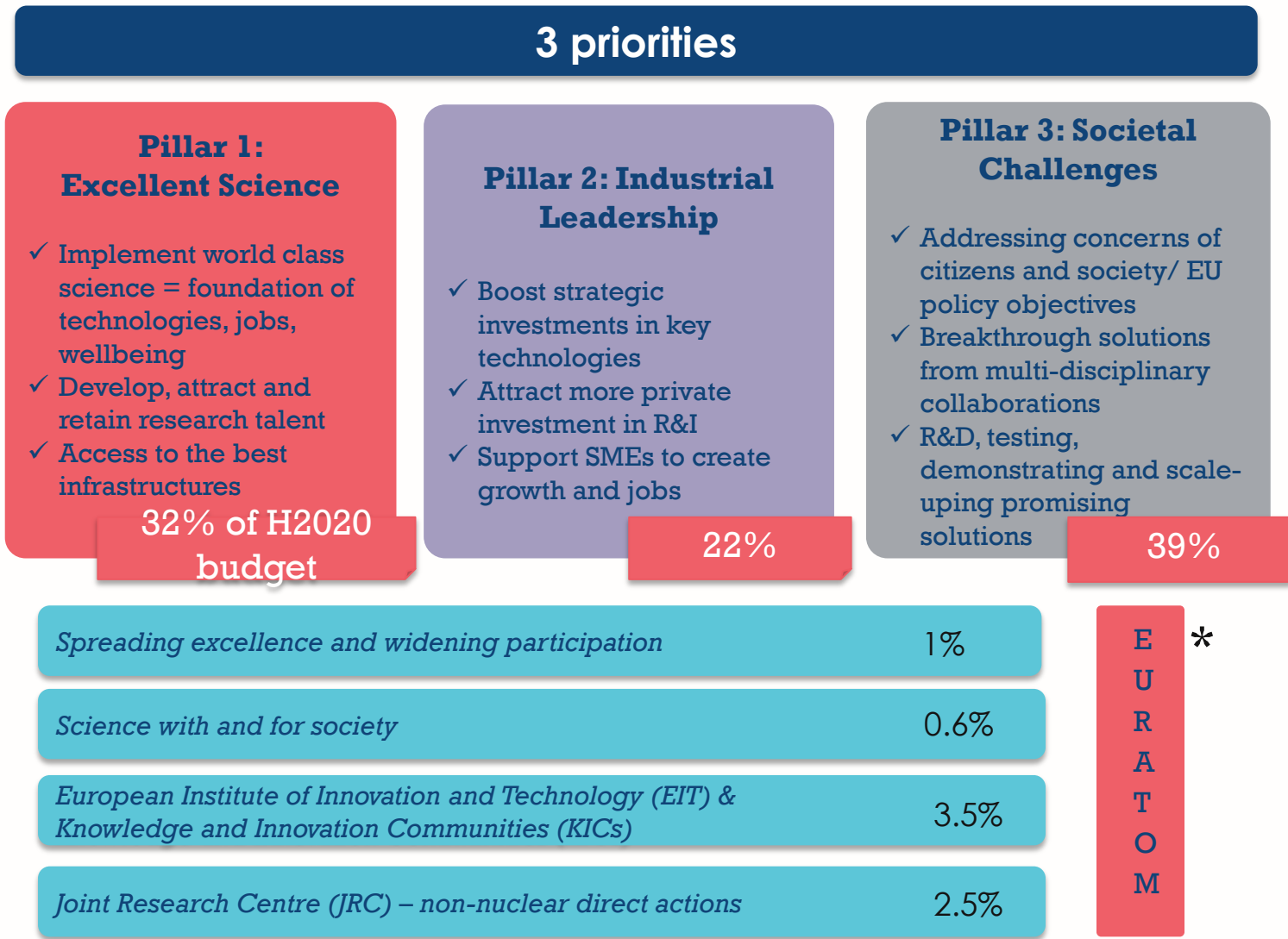
grant solutions

In general

HORIZON 2020: ~79 b€ for EU research & innovation

2007-2013

CIP Inno

FP7

EIT

HORIZON 2020

2014-2020

* FP7: 7th Framework Programme for Research & Technological Development
* CIP Inno: Innovation part of the Competitiveness and Innovation Framework Programme
* EIT: European Institute of Innovation and Technology

- **A single programme** bringing together three separate programmes/initiatives*

- **Coupling research to innovation** – from research to retail, all forms of innovation covered

- **Focus on societal challenges** facing EU society, e.g. health, clean energy, transport, security,..

- **Contributing to cross cutting activities,** e.g. sustainable development and climate change, SSH, SMEs involvement, international cooperation, gender issues, digital agenda,…

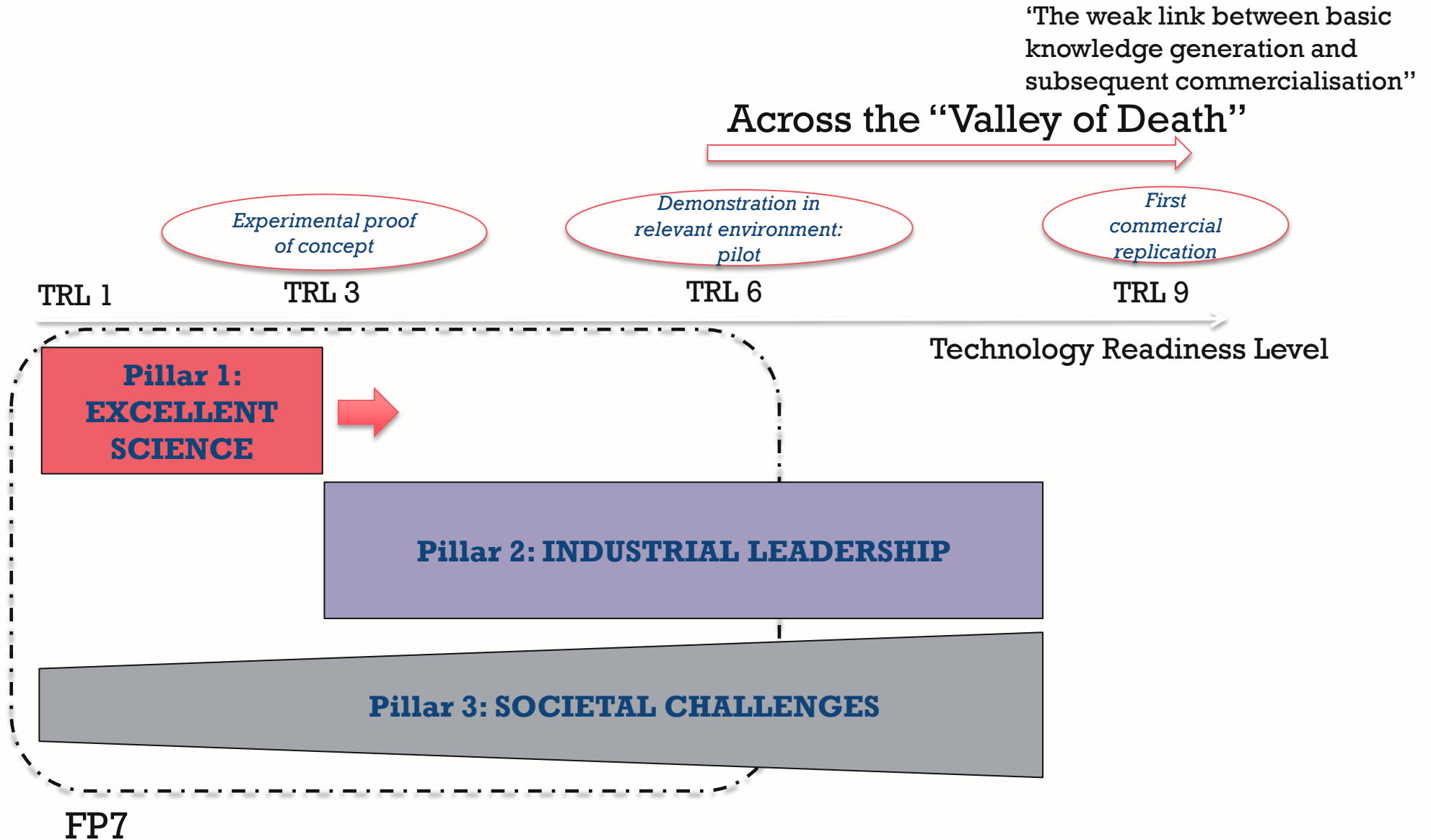- **Simplified access and rules,** for all companies, universities, institutes in all EU countries and beyond

grant solutions

Alma cg

Structure and relative budget distribution

3 priorities

Pillar 1: Excellent Science

✓ Implement world class science = foundation of technologies, jobs, wellbeing
✓ Develop, attract and retain research talent
✓ Access to the best infrastructures

32% of H2020 budget

Pillar 2: Industrial Leadership

✓ Boost strategic investments in key technologies
✓ Attract more private investment in R&I
✓ Support SMEs to create growth and jobs

22%

Pillar 3: Societal Challenges

✓ Addressing concerns of citizens and society/ EU policy objectives
✓ Breakthrough solutions from multi-disciplinary collaborations
✓ R&D, testing, demonstrating and scale-uping promising solutions

39%

Spreading excellence and widening participation	1%
Science with and for society	0.6%
European Institute of Innovation and Technology (EIT) & Knowledge and Innovation Communities (KICs)	3.5%
Joint Research Centre (JRC) – non-nuclear direct actions	2.5%

E U R A T O M *

* Separate regulation

Alma cg

TRL positioning of the 3 pillars

'The weak link between basic knowledge generation and subsequent commercialisation''

Across the ''Valley of Death''

Experimental proof of concept

Demonstration in relevant environment: pilot

First commercial replication

TRL 1   TRL 3   TRL 6   TRL 9

Technology Readiness Level

Pillar 1: EXCELLENT SCIENCE

Pillar 2: INDUSTRIAL LEADERSHIP

Pillar 3: SOCIETAL CHALLENGES

FP7

grant solutions

Alma cg

Budget per Pillars and their components

Close to Market TRL 7-8

Applied Research TRL 4-6

Science & Research TRL 1-3

Public Private Partnerships (PPP)

17 B€

Pillar 2: Industrial Leadership

■ *Leadership in Enabling and Industrial Technologies (LEIT):*

- ICT
- Nanotechnologies / Advanced Materials
- Biotechnology
- Advanced Manufacturing/ Processing
- Micro- and nano- electronics
- Photonics
- Space

■ *Access to risk finance for SMEs*

■ *Innovation in SMEs*

Pillar 1: Excellent Science

- *European Research Council (ERC) : Frontier research by best individual teams*
- *Future Emerging Technologies (FET): collaborative projects open to new innovations*
- *Marie Sklodowska Curie Actions (MSCA): training and career development*
- *Research Infrastructures (including e-infrastructures) (RI)*

24 B€

Joint Technology Initiatives JTI:

- Innovative Medicines Initiative 2 (IMI2)
- Clean Sky 2
- Fuel Cells and Hydrogen 2 (FCH2)
- Electronic Components & Systems for European Leadership (ECSEL)
- Bio-based industries (BBI)
- Strengthening Industrial innovation for the Future of rail Transport (SHIFT2RAIL)

Joint Undertaking:

- Single European Sky Air Traffic Management Research (SESAR)

Contractual PPPs:

- Factory of the Future (FoF)
- Energy-efficient Buildings (EeB)
- Green Vehicle (GV)
- Advance 5G Network Infrastructure for Future Internet (5G-PPP)
- Sustainable Process Industry through Resource and Energy Efficiency (SPIRE)
- High Performance Computing (HPC)
- The Partnership for Robotics in Europe (SPARC)
- Photonics
- Big data Value

Pillar 3: Societal Challenges

- SC1: Health, demographic change and well being
- SC2: Food security, sustainable agriculture and forestry, marine / maritime/ inland water research, bioeconomy
- *SC3: Secure, clean and efficient energy*
- SC4: Smart, green and integrated transport
- SC5: Climate action, environment, resource efficiency and raw materials
- SC6: Europe in a changing world - Inclusive, innovative and reflective societies
- SC7: Secure societies - Protecting freedom and security of Europe and its citizens

30 B€

grant solutions

Alma cg

Budget per Pillars and their components

Close to Market
TRL 7-8

Applied Research
TRL 4-6

Science & Research
TRL 1-3

Public Private Partnerships (PPP)

17 B€

Pillar 2: Industrial Leadership

Leadership in Enabling and Industrial Technologies (LEIT):

- *ICT*
- *Nanotechnologies / Advanced Materials*
- *Biotechnology*
- *Advanced Manufacturing/ Processing*
- *Micro- and nano- electronics*
- *Photonics*
- *Space*

Access to risk finance for SMEs

Innovation in SMEs

Pillar 1: Excellent Science

- *European Research Council (ERC) : Frontier research by best individual teams*
- *Future Emerging Technologies (FET): collaborative projects open to new innovations*
- *Marie Sklodowska Curie Actions (MSCA): training and career development*
- *Research Infrastructures (including e-infrastructures) (RI)*

24 B€

Joint Technology Initiatives JTI:

- Innovative Medicines Initiative 2 (IMI2)
- Clean Sky 2
- Fuel Cells and Hydrogen 2 (FCH2)
- Electronic Components & Systems for European Leadership (ECSEL)
- Bio-based industries (BBI)
- Strengthening Industrial innovation for the Future of rail Transport (SHIFT2RAIL)

Joint Undertaking:

- Single European Sky Air Traffic Management Research (SESAR)

Contractual PPPs:

- ***Factory of the Future (FoF)***
- Energy-efficient Buildings (EeB)
- Green Vehicle (GV)
- Advance 5G Network Infrastructure for Future Internet (5G-PPP)
- ***Sustainable Process Industry through Resource and Energy Efficiency (SPIRE)***
- High Performance Computing (HPC)
- The Partnership for Robotics in Europe (SPARC)
- Photonics
- Big data Value

Pillar 3: Societal Challenges

- SC1: Health, demographic change and well being
- SC2: Food security, sustainable agriculture and forestry, marine / maritime/ inland water research, bioeconomy
- ***SC3: Secure, clean and efficient energy***
- SC4: Smart, green and integrated transport
- ***SC5: Climate action, environment, resource efficiency and raw materials***
- SC6: Europe in a changing world - Inclusive, innovative and reflective societies
- SC7: Secure societies - Protecting freedom and security of Europe and its citizens

30 B€

grant solutions

Alma cg

This document is an exclusive property of Alma CG – not legally binding

Themes, WPs, calls, topics,..

> **Work programmes in H2020:**

- Over 2 years (first for 2014-2015 worth of > 15 B€)
- Focus from research to innovation activities (especially TRL > 4) and societal challenges
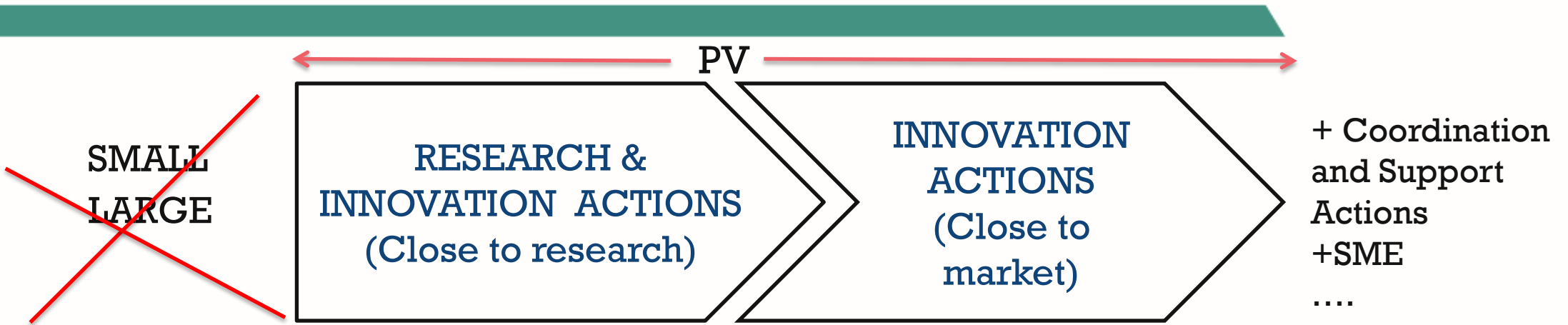
> **Themes:**

- Less prescriptive in H2020 (not outlining the expected solutions to the problem, nor the approach to be taken = more open to different innovative solutions, technologies…)
- Focus on **impacts** (in a given focus area)
- Thematics spread under different Pillars/instruments! Use EC Participant Portal search engine with thematic key words

> **Calls/Topic descriptions:**

- Fewer calls, with fewer topics
- **Specific challenge** to overcome. **Scope** and perimeter of the activities (TRL-especially in Pillar 2). **Expected impact** linked to challenge (close to research or market)
- Selection criteria for projects (with different weighting) : Excellence, Impact and Implementation
- Budget per topic and indicative budget range per project (not an eligibility criteria)

Alma cg

2 main type of projects

PV

SMALL
~~LARGE~~

RESEARCH &
INNOVATION ACTIONS
(Close to research)

INNOVATION
ACTIONS
(Close to
market)

+ Coordination
and Support
Actions
+SME
....

Marked in the Work-programme for each topic
TRL levels indicated in topics will define the perimeter of your project

100% funding
for direct costs

70% funding for
direct costs
(100% for "non profit
body")

Indirect costs = 25% direct costs

Alma cg

Strategy to find the appropriate financing instrument
(analysis by collaborative activities Pillar 1 to Pillar 3)

Typology of (main collaborative project) activities

Work programme

Main project typology

Approach technologies

- Proof of concept / lab demonstration
- Bottom-up / high risk approach
- TRL < 4

→ **Pillar 1: FET** → **R&I (100%)**

- Generic/enabling technologies
- Technology convergence/ integration
- Top-down, TRL 3-4 to 7-8

→ **Pillar 2: LEIT** → **R&I (100%)** • Mono-KETs

Innovation (70%) • Multi-KETs Pilot, TRL>6

- Technologies linked to sectorial /industrial roadmap
- TRL 3-4 to 7-8

→ **Pillar 2: cPPP / JTI** → 3: **R&I (100%)**

Innovation (70%) • Pilot, TRL>6

- Technological and/or non technological solution (market pull)
- Wide open solutions to tackle SC
- TRL (1→)4-8

→ **Pillar 3: Societal Challenges** → **R&I (100%)**

Innovation (70%)

Approach challenge Transversal projects

grant solutions

Alma cg

Horizon 2020 WP2014-2015

Upcoming PV calls calendar year 2015 in Pillar 3: SC3

- ✓ **LCE-02-2014/2015: <u>Stage 2</u>: Developing the next generation technologies of renewable electricity and heating/cooling - R&I Action (from TRL 3-4 to 4-5)**

- ✓ **LCE-03-2014/2015: Demonstration of renewable electricity and heating/cooling technologies - Innovation Action (from TRL 5-6 to 6-7)**

- ✓ **DL 5/5/2015**

grant solutions

Alma cg

Pillar 3: Secure, clean and efficient energy
Low-Carbon Energy

> **LCE-02-2014/2015: Developing the next generation technologies of renewable electricity and heating/cooling - R&I Action**

- Specific challenge for photovoltaics (theme a):   **DL Stage 2: 5/5/2015**

  Developing very low-cost PV cells and modules – Proposals are requested to develop very low-cost but highly performing concepts either reducing constraints on the demand on natural resources (low material use and dependence on rare materials) or using low cost materials, while having efficient manufacturing processes of cells and of modules and improving device performance and durability for competitive energy costs. Proposals are also requested to explore innovative applications.

  Proposals should bring technology solutions to a higher TRL, from TRL 3-4 to 4-5 (EU grant 3-6 M€)

- Expected Impact:

  Technology performance, LCA, predictability, grid friendly nature, cost-competitivity, reliability, reduced complexity,.. EU energy security & cohesion, coherence and strategy in the development of new renewable energy technologies. Industrial impact,..

grant solutions

Alma cg

Pillar 3: Secure, clean and efficient energy
Low-Carbon Energy

> **LCE-03-2014/2015: Demonstration of renewable electricity and heating/cooling technologies - Innovation Action**

- <u>Specific challenge for photovoltaics (theme a):</u>   **DL: 5/5/2015**

  PV integrated in the built environment – Building integrated photovoltaic (BIPV) systems will become essential elements in future net zero energy buildings provided a number of challenges are solved, e.g. integration with other functional building components, flexibility in system design, architectural and aesthetic considerations and standardisation, smart interaction with the grid, extension of the lifetime of system components, and cost reduction

  The proposals should bring the proposed technology solutions from TRL 5-6 to TRL 6-7 (EU grant 5-20 M€)

- <u>Expected Impact:</u>

  Technology performance, LCA, predictability, grid friendly nature, cost-competitivity, reliability, reduced complexity,.. EU energy security & cohesion, coherence and strategy in the development of new renewable energy technologies. Industrial impact,..

grant solutions

Alma cg

« Some lessons learned and recommendations » from first H2020 year

« Some lessons learned and recommendations » from first H2020 year

✓ **Volumes**

- ~3 million visits per month on Participant Portal
- Ca. **34,500 proposals submitted**
- Nearly 11,000 expert evaluators contracted (74,000 experts registered)
- Attracted **newcomers** and evidence of increase in **industry participation**
- High **oversubscription** reflects the popularity of Horizon 2020
  (8x available budget, 5x under FP7). However, picture remains largely diverse! Around 1/3 of good proposals (i.e. above threshold) can be funded

✓ **Selected analysis & recommendations from 33 first calls & several consultations**

- WPs needs to be more visible → Enhance **presentation of calls** in Participant Portal
- Maintain the challenge-based approach, but improve **clarity of topic descriptions** (impact statements)
- Adapt call conditions for **two-stage** evaluations ensuring a 1:3 (budget-wise) **success rate** in the second phase

grant solutions

Alma^cg

« Some lessons learned and recommendations » from first H2020 year

✓ **Selected analysis & recommendations from 33 first calls & several consultations**

- Some concerns regarding **interpretation of criteria** and **new concepts** (e.g. innovation management)
- Lack of certain expertise in **expert database** (women, experts in innovation and business planning). To subscribe: http://ec.europa.eu/research/participants/portal/desktop/en/experts/index.html
- Difference in level of feed-back provided to applicants → Develop a set of **minimum standards on Evaluation Summary Report feedback**

Alma cg

Horizon 2020 WP2016-2017

Elaboration of Work Programme 2016-2017

| PAGE 19

✓ Based on draft **"Horizon 2020 Strategic Programming Document: Guidance for the Development of the Work Programme 2016-2017"** and it's annexed **Scoping papers per WP/call:**

- **First quarter of 2015 :** Consultation of the H2020 Advisory Groups on input for the development of the content of the work programme

- **Second quarter of 2015 :** Discussions and exchanges between Programme Committee representatives (per Member States) and European Commission with the formal opinion expected towards the beginning of the summer

- **Third quarter of 2015 :** Adoption of the Work Programme for 2016-2017 followed by publication of calls/WP at the latest before the end of the year

grant solutions

Alma^{cg}

This document is an exclusive property of Alma CG – not legally binding

Key priorities / focus areas for Work Programme 2016-2017

✓ Programme worth of €17 billion

Key priorities	Means/subjects and 9 Focus Areas
New boost for **jobs, growth** and **investment**	PPP, Pillar 1 instruments, financial instruments, transversal support to EU manufacturing like Additive Manufacturing (3D printing), SME instrument/FTI,..
Connected digital single market	*3 Focus areas: Internet of Things, Automated Road Transport , Digital Security.* Big data, electronics, photonics, robotics,.. Open Research Data,..
Resilie**nt energy union** with a forward looking **climate-change policy**	*3 Focus areas: Smart Cities and Communities with Nature-based Solutions,* ***Energy Efficiency*** *(e.g. in buildings),* ***Competitive Low-carbon Energy****.* Activities on climate-smart Europe

grant solutions

Alma cg

Key priorities / focus areas for
Work Programme 2016-2017

Key priorities	Means/subjects and 9 Focus Areas
Deeper and **fairer internal market** with a **strengthened industrial base**	*3 Focus areas: Industry 2020 and Circular Economy* (ensuring economic, environmental, social sustainability throughout a complete value chain approach), *Blue Growth* (potential of seas and oceans), *Sustainable Food Security*. Promoting healthy ageing and personalised healthcare, mobility for growth, Key Enabling Technologies, space,..
Stronger global actor, towards new policy on migration, and an area of justice and fundamental rights based on mutual trust	Border and external security, fight against crime and terrorism, privacy and ethics,..

✓ In addition, across the whole work programme :
  ✓ Support for **innovation** and **close-to-market activities** (prototyping, testing, demonstrating, piloting, large-scale product validation and market replication)
  ✓ **Inducement prizes** (for completion of technological challenges not yet achieved)
  ✓ **Social sciences** & **humanities, gender issues, international cooperation, climate** action and **sustainable development,** clearer and stronger **expected impacts, ...**

grant solutions

Alma cg

Focus Scoping paper 2016-2017 for Societal Challenge 'Secure, clean and efficient energy'

DRAFT

✓ **Stronger emphasis on the security and affordability of our energy system on all levels (from supply to demand)**

✓ **More attention to the role of the consumer in the energy system as an active player managing its demand and being part of the energy supply**

✓ **Triangle of policy objectives**
   ✓ Energy security
   ✓ Increasing the sustainability of the energy system
   ✓ Affordable energy

✓ **PV research structured inside 2 Focus Areas / Calls :**
   ✓ Energy Efficiency (e.g. in buildings)
   ✓ Competitive Low-carbon Energy

✓ **Proposed preliminary PV topics (to be confirmed):**
   ✓ Supporting the EU PV manufacturing industry, tackling the bottlenecks of high penetration levels of PV electricity into the electric power network, support to the activities of the PV TP to contribute to the SET-Plan, support to emerging PV technologies, reducing the cost of PV electricity,..

grant solutions

Alma cg

Links

> ## HORIZON 2020 portal EC

- http://ec.europa.eu/programmes/horizon2020

> ## EC Participant Portal

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

Contact

Jetta Keranen
Expert consultant
BU Grant solutions/ Innovation funding & partnerships

Tel.:+33 1 41 49 41 00/12 94 (operator/direct)
Mob. : +33 6 26 53 14 50 - jkeranen@almacg.com
185 avenue des Grésillons, F-92622 Gennevilliers Cedex

Alma^{cg}