The future of innovation in view of the new EU policies: Europe 2020, Innovation Union, Horizon 2020

Nikos Zaharis, SEERC
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Europe 2020

5 Targets for the year 2020:

1. **Employment**
   - 75% of the 20-64 year-olds to be employed

2. **R&D / innovation**
   - 3% of the EU's GDP (public and private combined) to be invested in R&D/innovation

3. **Climate change / energy**
   - greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than 1990
   - 20% of energy from renewables
   - 20% increase in energy efficiency

4. **Education**
   - Reducing school drop-out rates below 10%
   - at least 40% of 30-34–year-olds completing third level education

5. **Poverty / social exclusion**
   - at least 20 million fewer people in or at risk of poverty and social exclusion
Europe 2020: 7 flagship initiatives

Smart growth
1. Digital agenda for Europe
2. Innovation Union
3. Youth on the move

Sustainable growth
4. Resource efficient Europe
5. An industrial policy for the globalization era

Inclusive growth
6. An agenda for new skills and jobs
7. European platform against poverty
Innovation Union

Sets the Union’s goals and commitments for creating a true “Innovation Union” by 2020 by:

• Taking collective responsibility for a strategic, inclusive and business-oriented research and innovation policy, to tackle major societal challenges, raise competitiveness and generate new jobs.

• Prioritizing and protecting investments in our knowledge base, reducing costly fragmentation and making Europe a more rewarding place for innovation and for bringing ideas to market. A deadline of 2014 should be set for delivering the European Research Area.

• Agreeing to launch European Innovation Partnerships, the first on active and healthy ageing, to pool resources and expertise to find solutions to societal challenges and to build competitive advantage in key markets.
Innovation Union: European Innovation Partnerships

• **The first on active and healthy ageing**
• **Further potential Innovation Partnerships so far examined by the Commission:**
  - Smart Cities
  - Water-Efficient Europe
  - Sustainable supply of non-energy raw materials for a Modern Society
  - Smart mobility for Europe’s citizens and businesses
  - Agricultural productivity and sustainability
Digital Agenda

The Agenda outlines seven priority areas for action:
1. creating a Digital Single Market
2. improving the framework conditions for interoperability between ICT products and services
3. boosting internet trust and security
4. guaranteeing the provision of much faster internet access
5. encouraging investment in research and development
6. enhancing digital literacy, skills and inclusion
7. applying ICT to address social challenges such as climate change, rising healthcare costs and the ageing population.
Horizon 2020

• After FP7 there is no FP8. Now it is Horizon 2020
• Horizon 2020 is the financial instrument implementing the Innovation Union. The EU framework programme for research and innovation
• Horizon 2020 will tackle societal challenges by helping to bridge the gap between research and the market by, for example, helping innovative enterprise to develop their technological breakthroughs into viable products with real commercial potential. This market-driven approach will include creating partnerships with the private sector and Member States to bring together the resources needed.
• Implementation: 2014-2020
The Multiannual Financial Framework
2014-2020: Commission’s proposals of 29 June 2011

1. Smart & inclusive growth (€491bn)
2. Sustainable growth, natural resources (€383bn)
3. Security and citizenship (€18.5bn)
4. Global Europe (€70bn)
5. Administration (€62.6bn)

Total: €1,025bn
What’s new?

• **A single programme** *bringing together three separate programmes/initiatives (FP7, CIP, EIT)*

• **More innovation**, *from research to retail, all forms of innovation*

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

• **Simplified access**, *for all companies, universities, institutes in all EU countries and beyond.*
Horizon 2020 – Objectives and structure

Europe 2020 priorities

Shared objectives and principles

Creating Industrial Leadership and Competitive Frameworks
- Leadership in enabling and industrial technologies
  - ICT
  - Nanotech., Materials, Manuf. and Processing
  - Biotechnology
  - Space
  - Access to risk finance
  - Innovation in SMEs

Tackling Societal Challenges
- Health, demographic change and wellbeing
- Food security, sustainable agriculture and the bio-based economy
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action, resource efficiency and raw materials
- Inclusive, innovative and secure societies

Excellence in the Science Base
- Frontier research (ERC)
- Future and Emerging Technologies (FET)
- Skills and career development (Marie Curie)
- Research infrastructures

Common rules, toolkit of funding schemes

Simplified access

International cooperation

European Research Area

Dissemination & knowledge transfer
Priority 1: Excellent science. Proposed funding (million euro, 2014-20)

<table>
<thead>
<tr>
<th>Area</th>
<th>Funding (million euro, 2014-20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Research Council</td>
<td>13 268</td>
</tr>
<tr>
<td><em>Frontier research by the best individual teams</em></td>
<td></td>
</tr>
<tr>
<td>Future and Emerging Technologies</td>
<td>3 100</td>
</tr>
<tr>
<td><em>Collaborative research to open new fields of innovation</em></td>
<td></td>
</tr>
<tr>
<td>Marie Curie actions</td>
<td>5 752</td>
</tr>
<tr>
<td><em>Opportunities for training and career development</em></td>
<td></td>
</tr>
<tr>
<td>Research infrastructures (including e-infrastructure)</td>
<td>2 478</td>
</tr>
<tr>
<td><em>Ensuring access to world-class facilities</em></td>
<td></td>
</tr>
</tbody>
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ICT in Science - Future and Emerging Technologies; e-Infrastructures

- **FET Open**: fostering novel ideas
  - Collaborative research for embryonic, high risk visionary science and technology

- **FET Proactive**
  - Nurturing emerging themes and communities

- **FET Flagships**
  - Tackling grand interdisciplinary science and technology challenges

- **E-Infrastructures**
  - Integration and access to national research infrastructures; development, deployment and operation of e-Infrastructures
## Priority 2: Industrial Leadership. Proposed funding (million euro, 2014-20)

<table>
<thead>
<tr>
<th>Category</th>
<th>Funding (million euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership in enabling and industrial technologies (ICT, nanotechnologies, materials, biotechnology, manufacturing, space)</td>
<td>13 781</td>
</tr>
<tr>
<td>Access to risk finance</td>
<td>3 538</td>
</tr>
<tr>
<td>Leveraging private finance and venture capital for research and innovation</td>
<td></td>
</tr>
<tr>
<td>Innovation in SMEs</td>
<td>619</td>
</tr>
<tr>
<td>Fostering all forms of innovation in all types of SMEs</td>
<td></td>
</tr>
</tbody>
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ICT in Industrial Leadership (I)

1. Components and systems
   - Smart embedded components and systems, micro-nano-bio systems, organic electronics, large area integration, technologies for IoT, systems of systems and complex system engineering

2. Next generation computing
   - Processor and system architecture, interconnect and data localisation technologies, cloud computing, parallel computing and simulation software

3. Future Internet
   - Networks, software and services, cyber security, privacy and trust, wireless communication and all optical networks, immersive interactive multimedia and connected enterprise
ICT in Leadership (II)

4. Content technologies and information management
   - Technologies for language, learning, interaction, digital preservation, content access and analytics; advanced data mining, machine learning, statistical analysis and visual computing

5. Advanced interfaces and robots
   - Service robotics, cognitive systems, advanced interfaces, smart spaces and sentient machines

6. Key Enabling Technologies: Micro- nano-electronics and photonics
   - Design, advanced processes, pilot lines for fabrication, related production technologies and demonstration actions to validate technology developments and innovative business models
## Priority 3: Societal challenges. Proposed funding (million euro, 2014-20)

<table>
<thead>
<tr>
<th>Area</th>
<th>Funding (million euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health, demographic change and wellbeing</td>
<td>8,033</td>
</tr>
<tr>
<td>Food security, sustainable agriculture, marine and maritime resources &amp; the bioeconomy</td>
<td>4,152</td>
</tr>
<tr>
<td>Secure, clean and efficient energy*</td>
<td>5,782</td>
</tr>
<tr>
<td>Smart, green and integrated transport</td>
<td>6,802</td>
</tr>
<tr>
<td>Climate action, resource efficiency and raw materials</td>
<td>3,160</td>
</tr>
<tr>
<td>Inclusive, innovative and secure societies</td>
<td>3,819</td>
</tr>
</tbody>
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*Additional €1,050m for nuclear safety and security from the Euratom Treaty activities (2014-18). Does not include ITER.
ICT in societal challenges (I)

- Health, demographic change & wellbeing;
  - e-health, self management of health, improved diagnostics, improved surveillance, health data collection, active ageing, assisted living;

- Secure, clean and efficient energy;
  - Smart cities; Energy efficient buildings; smart electricity grids; smart metering;

- Smart, green and integrated transport;
  - Smart transport equipment, infrastructures and services; innovative transport management systems; safety aspects
ICT in societal challenges (II)

- Climate action, resource efficiency and raw materials
  - ICT for increased resource efficiency; earth observation and monitoring

- Inclusive, innovative and secure societies
  - Digital inclusion; social innovation platforms; e-government services; e-skills and e-learning; e-culture; cyber security; ensuring privacy and protection of human rights on-line
SMEs participation

• A new program based on the US Small Business Innovation Research (SBIR). Funding in 3 consecutive phases:
  1. **Feasibility phase**: Lump sum to explore the viability of a concept
  2. **Main grant**: Support for Research and Development plus demonstration activities and market replication
  3. **Commercialization phase**: Supported indirectly through simplified access to debt and equity financial instruments

• A specific action to promote SME involved in R&D building on the Eurostars program.
Industrial participation

• **Access to Risk Finance.** A total amount of €3.5 billion is budgeted for financial instrument facilities, and accompanying measures, for research and innovation. At least one-third of this amount will be dedicated to SMEs and small mid-caps. A leverage of up to 5 is envisaged.
  - A debt facility providing loans, guarantees and other forms of debt finance to entities of all forms and sizes, including research and innovation-driven SMEs
  - An equity facility providing finance for early- and growth-stage investments, with a particular focus on early-stage SMEs with the potential to carry out innovation and grow rapidly.

• **Knowledge Innovation Communities (KICs)** developed by the European Institute of Innovation and Technology (EIT). Current KICs are:
  - **Climate KIC** (focus on Climate Change)
  - **EIT ICT Labs** (focus on Information and Communication Technologies)
  - **KIC InnoEnergy** (Sustainable Energy)

  More KICs to be developed within Horizon 2020.

• **Public Private Partnerships** like the Joint Technology Initiatives (JTIs) and other koint undertakings.
Rules for Participation: what’s new? (1)

1. A SINGLE SET OF RULES
   - Adapted for the whole research and innovation cycle
   - Covering all research programmes and funding bodies
   - Aligned to the Financial Regulation, coherent with other new EU Programmes.

2. ONE PROJECT - ONE FUNDING RATE.
   - Maximum of 100% of direct costs (except for actions close to market, where a 70% maximum will apply)
   - Indirect eligible costs: a flat rate of 20% of direct eligible costs

3. SIMPLE EVALUATION CRITERIA
   - Excellence – Impact - Implementation (Excellence only, for the ERC)

4. NEW FORMS OF FUNDING aimed at innovation:
   - pre-commercial procurement,
   - procurement for innovative solutions which are specifically targeted at innovation.
   - dedicated loan and equity instruments
   - possibility to award grants to single beneficiaries
   - top-up funding to on-going actions for innovation related activities

5. INTERNATIONAL PARTICIPATION: facilitated but better protecting EU interests.
6. SIMPLER RULES FOR GRANTS: broader acceptance of participants accounting practices for direct costs, flat rate for indirect costs, no time-sheets for personnel working full time on a project, possibility of output-based grants.

7. FEWER, BETTER TARGETED CONTROLS AND AUDITS

- Lowest possible level of requirements for submission of audit certificates without undermining sound financial management;
- Audit strategy focused on risk and fraud prevention.

8. MORE COHERENT RULES ON INTELLECTUAL PROPERTY

- Balance between legal security and flexibility;
- Tailor-made IPR provisions for new forms of funding;
- A new emphasis on open access to research publications.

Beyond the Rules: further simplified provisions in the Grant Agreement and implementing procedures to facilitate access to Horizon 2020 (eg. common IT platform).
Next steps

From 30/11: Parliament and Council negotiations on the basis of the Commission proposals


Mid 2012: Final calls under 7th Framework Programme for Research to bridge gap towards Horizon 2020

By end 2013: Adoption of legislative acts by Parliament and Council on Horizon 2020

1/1/2014: Horizon 2020 starts; launch of first calls