Transport Research and Innovation in Horizon 2020

The New EU Framework Programme for R&I 2014-2020

Alessandro Damiani
European Commission
What is Horizon 2020

The new EU Framework Programme for Research and Innovation, 2014-2020

A budget of € 77 billion for 7 years

A core part of Europe 2020, Innovation Union and the European Research Area:

- Investing in future jobs and growth to overcome the economic crisis
- Addressing people's concerns about their livelihoods, safety, environment...
- Strengthening the EU's global position in research, innovation, technology
What's new

• Coupling research to innovation – from research to deployment

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

• Simplified access, for participants

• A single programme bringing together three previously separate programmes/activities*

*the 7th Research Framework Programme (FP7), innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT)
Coverage of the full innovation chain

Societal challenges
Industrial leadership
Excellent science

Basic Research
Technology R&D
Demonstration
Prototyping
Large scale validation
Pilots
Market uptake
Budget breakdown

77028 Million € (current prices)

- Excellent science: 31.7%
- Societal challenges: 38.5%
- Industrial leadership: 22.1%
- EIT: 3.5%
- Science w/f society: 0.6%
- Spreading excellence: 1.1%
- JRC: 2.5%

- Excellent science: 24441 million €
- Societal challenges: 29679 million €
- Industrial leadership: 17016 million €
- Spreading excellence: 816 million €
- EIT: 2711 million €
- Science w/f society: 462 million €
- JRC: 1903 million €
7 Societal challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>% of H2020</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>9.7%</td>
<td>7472</td>
</tr>
<tr>
<td>Food</td>
<td>5%</td>
<td>3851</td>
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<tr>
<td>Energy</td>
<td>7.7%</td>
<td>5931</td>
</tr>
<tr>
<td>Transport</td>
<td>8.2%</td>
<td>6339</td>
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<tr>
<td>Climate</td>
<td>4%</td>
<td>3081</td>
</tr>
<tr>
<td>Changing world</td>
<td>1.7%</td>
<td>1310</td>
</tr>
<tr>
<td>Security</td>
<td>2.2%</td>
<td>1695</td>
</tr>
</tbody>
</table>
'Smart, green and integrated Transport'

The challenge: achieve a transport system that is...

- Resource efficient
- Environmentally friendly
- Safe and seamless
- Beneficial for the citizens, the economy and society

and promote globally competitive transport industries

The logic: a holistic approach which...

- Recognises modal specificities
- Responds to policy requirements
- Is focused on the societal challenges
- Reconciles competitiveness and sustainability
Transport means, modes, systems, policy goals and societal challenges

Intelligent Transport Systems

Global competition

Energy efficiency
Oil dependency
Congestion
Safety
Security
Growing transport needs
User friendliness
Accessibility
Timeliness
Sustainability
Climate resilience
Air quality
Noise
Climate emissions
CO₂ + GHG

Infrastructure

Socio-economic

Seamlessness
Infrastructure capacity
System performance

Logistics

Water
Rail
Road
Urban

Air
'Resource efficient transport that respects the environment'

- cleaner, quieter aircraft, vehicles, vessels:
  - cleaner propulsion technologies
  - use of low emission alternative energies
  - lighter materials, leaner structures, innovative designs

- smart equipment, infrastructures and services

- improved transport and mobility in urban areas
'Better mobility, less congestion, more safety and security'

- substantial reduction of traffic congestion
- improved mobility of people and freight:
  - air: traffic management, passenger and freight handling
  - waterborne: integrated planning and management
  - road and rail: optimisation of network management
- new concepts of freight transport and logistics
- reducing accidents and casualties, improving security
Global leadership for the European transport industry

- next generation of transport means:
  - aircraft, trains, vehicles, vessels; propulsion units, control systems

- on board, smart control systems:
  - vehicle/infrastructure communication

- advanced production processes:
  - design and manuf. techniques: production, maintenance, recycling

- new transport concepts:
  - innovative transport systems, including automated vehicles

COMPETITIVE
'Socio-economic and behavioural research and forward looking activities for policy making'

- data, models and scenarios:
  - data collection, models, mobility patterns, scenarios, foresight
- user needs and behaviour:
  - user behaviour, social acceptance, accessibility, vulnerable users
- transport economics:
  - economic trends, business models, land use, social cohesion, skills
- policy support:
  - policy analysis & impact, internalisation of externalities, innovation uptake

RESPONSIVE
Implementing the programme: WP calls and large initiatives

- Collaborative calls for proposals

- Innovation investment package
  - Clean Sky
  - SESAR
  - Fuel Cells & Hydrogen (contribution)
  - [Shift2Rail]

Budget

~50% WP
~50% JTIs
Work Programme: new features

- challenge-based approach: broad latitude for applicants to devise innovative solutions

- broader topics, less prescription, focus on impact

- biennial WP, annual calls (in most cases)

- 1 topic = various projects (in most cases)

- no 'ringfencing' of topic budget/ranking (in most cases)

- simplified list of actions/funding rates
  (research and innovation actions: 100%; innovation actions: 70%/100%;...)

- 2-stage evaluation for most topics

- facilitated access through keywords and tags
Work programme cycle in H2020

1st 2014 2015*
2nd 2016 2017
3rd 2018 2019 2020

- Calls: annual, biennial or open
- Single stage or 2-stage evaluations

* possible revision
WP 2014-15 Transport main calls

➤ Mobility for Growth
- MODE SPECIFIC: 1. Aviation, 2. Rail, 3. Road, 4. Waterborne
- CROSS-CUTTING: 9. Socio-economic and behavioural research

➤ Green Vehicles

➤ Small business and Fast Track
AVIATION

EUROPE NEEDS:

• Medium to long-term Research and Innovation actions with a bottom-up approach for innovative technologies, complementing those carried out under Clean Sky and SESAR

• Actions to improve the skills and knowledge base of European aviation, to support its R&I policy and to create durable links with targeted international cooperation partners
AVIATION

TOPICS:

• Competitiveness of European aviation through cost efficiency and innovation – MG1.1 - 2014 – 2 stages

• Enhancing resource efficiency of aviation – MG1.2 - 2015 – 2 stages

• Seamless and customer oriented air mobility – MG1.3 - 2014 – 2 stages

• Coordinated research and innovation actions targeting the highest levels of safety for European aviation - MG1.4 - 2014 – 1 stage

• Breakthrough innovation for European aviation – MG1.5 - 2014 – 2 stages

• Improving skills and knowledge base in European aviation – MG1.6 - 2014 – 1 stage

• Support to European aviation R&I policy – MG1.7 - 2014 – 1 stage

• International cooperation in aeronautics – MG1.8 - 2014 – 1 stage; 2015 – 1 stage

• Developing a public European environmental modelling suite for aviation (under 'Other Actions' in WP) Tender – OA1 – 2014

in red: topics open in 2014
Call 'Mobility for Growth'

RAIL

EUROPE NEEDS:

- Radical progress in service, costs, interoperability, capacity, noise reduction and competitiveness and further developments in terms of carbon footprint
- Novel business, organizational and logistics solutions, new partnerships with service and technology providers from more advanced sectors
- New technologies in all rail segments, services infrastructure
RAIL

TOPICS:

• Intelligent Infrastructure – MG2.1
• Smart Rail Services – MG2.2
• New generation of rail vehicles – MG2.3

All are 2 stages for 2014

Projects will contribute to the objectives of the envisaged 'Shift2Rail' initiative

in red: topics open in 2014
EUROPE NEEDS:

• R&I for road transport in complement to the ‘Green Vehicles’ call
• Activities in the field of:

  Internal combustion engines; support to air quality policy; safety of road transport; production technology; new vehicle concepts for road and urban transport
ROAD

TOPICS:

- Technologies for low emission powertrains – **MG3.1** - 2014 – 2 stages
- Advanced bus concepts for increased efficiency – **MG3.2** - 2014 – 2 stages
- Global competitiveness of the automotive supply chain management – **MG3.3** - 2014 – 2 stages
- Traffic safety analysis and integrated approach towards the safety of Vulnerable Road Users – **MG3.4** - 2014 – 2 stages
- Cooperative ITS for safe, congestion-free and sustainable mobility – **MG3.5** - 2014 – 2 stages
- Safe and connected automation in road transport – **MG3.6** - 2015 – 2 stages
- The cleanest engine (under 'Other Actions' in WP) – **OA4** - 2015 - Inducement prize

in red: topics open in 2014
The call on Green Vehicles is an essential component of road transport R&I, it supports:

- Improvement of energy efficiency of road transport vehicles
- Use of new types of non-conventional energies in road transport, such as electricity, CNG and LNG, bio-based fuels

*Demonstration is essential to ensure timely deployment of the new technologies*
**TOPICS:**

They are all single stage

- Next generation of competitive Li-ion batteries to meet customer expectations – **GV1** - 2014
- Optimised and systematic energy management in electric vehicles – **GV2** - 2014
- Future natural gas powertrains and components for cars and vans – **GV3** - 2014
- Hybrid light and heavy duty vehicles – **GV4** - 2014
- Electric two-wheelers and new light vehicle concepts – **GV5** - 2014
- Powertrain control for heavy-duty vehicles with optimised emissions – **GV6** - 2015
- Future natural gas powertrains and components for heavy duty vehicles – **GV7** - 2014
- Electric vehicles’ enhanced performance and integration into the transport system and the grid – **GV8** – 2015

In red: topics open in 2014
WATERBORNE

EUROPE NEEDS:

• A modern, safe, secure and resource efficient waterborne transport system

• Sustainable development: optimal use of energy sources, minimization of environmental impacts

• Competitiveness: creation and deployment of R&I solutions; exploring new frontiers in terms of vessels, operational paradigms and industrial use of oceans
WATERBORNE

TOPICS:

• Towards the energy efficient and emission free vessel – **MG4.1** - 2014 – 2 stages

• Safer and more efficient waterborne operations through new technologies and smarter traffic management – **MG4.2** - 2014 – 2 stages

• System modelling and life-cycle cost and performance optimisation for waterborne assets – **MG4.3** - 2015 – 2 stages

• Advancing innovation in the Inland Waterways Transport (IWT) sector – **MG4.4** - 2014 – 2 stages

in red: topics open in 2014
URBAN MOBILITY

EUROPE NEEDS:

Innovation in resource-efficient and competitive urban mobility and transport ('CIVITAS 2020'):

• Transformation towards a cleaner and better urban mobility and transport

• Five complementary challenge-topics

• Framework for coordinated evaluation, dissemination and information exchange

• Build on legacy (CIVITAS, STEER market take-up, ...)

Call 'Mobility for Growth'
URBAN MOBILITY

TOPICS:

• Transforming the use of conventionally fuelled vehicles in urban areas – **MG5.1** - 2014 – 2 stages

• Reducing impacts and costs of freight and service trips in urban areas – **MG5.2** - 2014 – 2 stages

• Tackling urban road congestion – **MG5.3** - 2014 – 2 stages

• Strengthening the knowledge and capacities of local authorities – **MG5.4** - 2015 – 2 stages

• Demonstrating and testing innovative solutions for cleaner and better urban transport and mobility – **MG5.5** - 2015 – *Innovation actions: 2 stages; CSA: 1 stage*

in red: topics open in 2014
LOGISTICS

EUROPE NEEDS:

• To increase efficiency and sustainability in the EU logistics supply chain
• To remove the communication bottlenecks between stakeholders
• To improve the potential for collaboration, the utilization of equipment and connectivity across the transport modes
LOGISTICS

TOPICS:

• Fostering synergies alongside the supply chain (including e-commerce) – **MG6.1** - 2014 – 2 stages

• De-stressing the supply chain – **MG6.2** - 2014 – 2 stages

• Common communication and navigation platforms for pan-European logistics applications – **MG6.3** - 2015 – 2 stages

in red: topics open in 2014
INTELLIGENT TRANSPORT SYSTEMS

EUROPE NEEDS:

• ITS and ICT technologies provide a set of strategies for addressing the challenges of:

Assuring safety and reducing congestion; Delivering safe, efficient, sustainable and seamless transport options across Europe; Accommodating the growth in passenger and freight traffic; Safeguarding the competitiveness of the European industry

• Progress in the ITS area under H2020 shall contribute to decarbonizing the transport sector and materializing the "Zero" vision of road safety

• Topics adding value to mode-specific activities
INTELLIGENT TRANSPORT SYSTEMS

TOPICS:

• Connectivity and information sharing for intelligent mobility
  – MG7.1 - 2015 – 2 stages

• Towards seamless mobility addressing fragmentation in ITS deployment in Europe – MG7.2 - 2014 – R&I: 2 stages; CSA: 1 stage

in red: topics open in 2014
INFRASTRUCTURE

EUROPE NEEDS:

• To make infrastructure more resilient
• To keep pace with the growing mobility needs and aspirations of people and businesses
• To reduce the impact of infrastructure on the environment
• To maintain and upgrade deteriorating transport infrastructures
• To facilitate the uptake of innovation
INFRASTRUCTURE

TOPICS:

• Smarter design, construction and maintenance – **MG8.1** - 2014 – R&I: 2 stages; CSA: 1 stage

• Next generation transport infrastructure: resource efficient, smarter and safer – **MG8.2** - 2014 – R&I: 2 stages; CSA: 1 stage

• Facilitating market take-up of innovative transport infrastructure solutions – **MG8.3** - 2015 – *Public procurement of innovative solutions*

• Smart governance, network resilience and streamlined delivery of infrastructure innovation – **MG8.4** - 2015 – R&I: 2 stages; CSA: 1 stage

in red: topics open in 2014
EUROPE NEEDS:

• To help generate the innovative solutions necessary for smarter, greener and more integrated transport and mobility by embedding the social sciences and humanities throughout this challenge.

• To address the specific needs in terms of socio-economic and behavioural research: data, models and scenarios; user needs and behaviour; transport economics and policy support.
SOCIO-ECONOMIC and BEHAVIOURAL RESEARCH and FORWARD-LOOKING ACTIVITIES for POLICY-MAKING

TOPICS:

• Transport societal drivers – **MG9.1** - 2015 – 1 stage

• User behaviour and mobility patterns in the context of major societal trends – **MG9.2** - 2014 – 1 stage

• Analysis of funding schemes for transport and infrastructure – **MG9.3** – 2014 – 1 stage

• Research, technology development and market prospects for the European transport industries – **MG9.4** – 2014 – 1 stage

• Fostering transnational cooperation in European transport R&I – NCP network – **MG9.5** - 2015 – 1 stage

• Strengthening the R&I strategies of the transport industries in Europe – **MG9.6** - 2014 – 1 stage

• Innovation awards for students and researchers in the context of the Transport Research Arena conference – TRA 2016 – **MG9.7** - 2014 – 1 stage

• Europe wide open source transport models, data and scenarios (under 'Other Actions' in WP) – **OA2** - Tender 2015

in red: topics open in 2014
EUROPE NEEDS:

• The best products and services, in a time and cost efficient manner, in order to preserve transport sector's leadership and create new jobs

• The role of SMEs is critical in order to meet these challenges
Call 'Small business and Fast track'

**TOPICS:**

- Small business innovation research for Transport – **IT1** – 2014-2015 – SME instrument

- Fast Track to Innovation – **IT2** – 2015

In red: topics open in 2014
Transport related topics in WP 2014-15/other challenges

- **Energy:**
  - biofuels and alternative fuels
  - bioenergy engines
  - energy storage
  - 'Smart Cities'

- **Climate/environment:**
  - urban air quality

- **Security:**
  - crisis and disaster resilience
  - critical infrastructure protection
  - freight inspection technologies

- **Food/'Blue growth':**
  - offshore economy
  - sub-sea technologies
  - response to oil spills and maritime pollution
Leadership in enabling and industrial technologies:
- ICT for Transport applications
- Post lithium-ion batteries
- Advanced functional materials
- Fibre-based materials

Research infrastructures:
- Includes Transport related infrastructures
Implementation principles

- multi-partner transnational consortia (in most cases)
- public calls for proposals
- competitive selection
- evaluation by independent experts
- evaluation criteria:
  - excellence
  - impact
  - implementation quality
- funding rates:
  - direct costs = 100% or 70%
  - indirect costs = 25% of direct costs
### Implementation modalities

<table>
<thead>
<tr>
<th>FORMS OF FUNDING</th>
<th>Types of action</th>
<th>Funding rate</th>
<th>Min n° of partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grants</td>
<td>- Research and Innovation actions/RIA</td>
<td>100%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>- Innovation Actions/IA</td>
<td>70%/100%*</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>- Coordination and Support Actions/CSA</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- Marie Sklodowska Curie Actions/MSCA</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- European Research Council/ERC grants</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Programme co-fund</td>
<td>- ERA-Net co-fund</td>
<td>33% (top-up)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>- PCP/PPI co-fund</td>
<td>PCP 70% PPI 20%</td>
<td>3</td>
</tr>
<tr>
<td>Prizes</td>
<td>- Inducement prizes, award prices</td>
<td>Lump sum (result based)</td>
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<tr>
<td>Procurement</td>
<td>- Tenders</td>
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<tr>
<td>Financial instruments</td>
<td>- Loan instrument</td>
<td>-</td>
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</tr>
<tr>
<td></td>
<td>- Equity instrument</td>
<td>-</td>
<td>1</td>
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<tr>
<td>SPECIFIC PROCEDURES</td>
<td>- SME Instrument</td>
<td>1. Lump sum 2. 70%</td>
<td>1</td>
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<tr>
<td></td>
<td>- Fast Track to Innovation (pilot)</td>
<td>70%</td>
<td>1</td>
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</tbody>
</table>

*100% for non-profit

In red: actions in the Transport WP 2014-15
### Transport Challenge 2014 evaluations

| Single stage | - all Coordination and Support Actions (CSAs: 12 topics)  
| - ‘Green Vehicles’ call (RIAs: 4 topics, IAs: 4 topics) |
| Two stages | ‘Mobility for Growth’ call (RIAs: 20 topics, IAs: 4 topics) |

A two-stage procedure fits well with the H2020 character: topics with broad scope, bottom up approach, low prescriptiveness
# Two-stage evaluation

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>proposal submission</strong>&lt;br&gt;max 15 pages; focus on content and results</td>
<td><strong>proposal submission</strong>&lt;br&gt;only stage 1 'GO' proposals admitted</td>
</tr>
<tr>
<td><strong>proposal evaluation</strong>&lt;br&gt;2 criteria: excellence and impact&lt;br&gt;outcome: 'GO' or 'NO GO'</td>
<td><strong>proposal evaluation</strong>&lt;br&gt;3 criteria: excellence, impact, implementation</td>
</tr>
</tbody>
</table>
Evaluation timeline

EVALUATION PLANNING 2014

<table>
<thead>
<tr>
<th>GV (1 stage)</th>
<th>MfG CSA (1 stage)</th>
<th>MfG RIAS and IAs (2 stages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GV Deadline 28/08 GV</td>
<td>MfG CSA Deadline 27/03 CSA</td>
<td>MfG RIAS and IAs Deadline 18/03 Stage 1</td>
</tr>
<tr>
<td>GV Evaluation 14/04 - 02/05 ESR to proposers: Beginning June</td>
<td>MfG CSA Evaluation 15-26/09 + Consensus/Final Panel 06-24/10</td>
<td>MfG RIAS and IAs Evaluation 15/04 - 23/05 Consensus/Final Panel 12-23/05</td>
</tr>
<tr>
<td>M 0 Call deadline (single stage/Second stage)</td>
<td>M 5 ESR to proposers</td>
<td>M 8 Grant signature</td>
</tr>
<tr>
<td>M 5 Max 5 months</td>
<td>M 8 Max 3 months</td>
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</table>
Calendar

- Pre-publication of draft Work Programme 2014-15  
  19 November 2013

- Formal adoption of Horizon 2020  
  3 December 2013 (tbc)

- Publication of Work Programme, first calls  
  11 December 2013

- Transport Info Day in Brussels  
  18 December 2013

- Transport Info Days in the Member States  
  Nov 2013 - Feb 2014
TWO STEPS REGISTRATION VIA
1. EC INFO DAY WEBPAGE
2. ETNA PLUS WEBPAGE

MORE INFORMATION AVAILABLE AT: http://www.transport-ncps.net/calendar/event/1-etna-plus-1st-horizon-2020-transport-call-brokerage-event.html


18th DECEMBER – 15.30h – 18.00h
Thank you for your attention!

Find out more: 
www.ec.europa.eu/research/horizon2020 
www.ec.europa.eu/research/participants/portal/page/home