The New EU Framework Programme for R&I 2014-2020
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)
Three main priorities

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

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

77,028 Million € (current prices)
Transport main policy goals: competitiveness and sustainability

- Innovate to preserve/expand market-shares and jobs (fierce international competition)
- Resource efficiency vs. climate change and oil dependency (achieve the 20/20/20 energy-climate-environment targets)
- Curb noxious emissions, improve air quality (30% of all CO₂ comes from transport)
- Network capacity and modal shift vs. saturation and congestion (congestion costs: 1 to 2% of GDP)
- Smart solutions for safety and security (28000 road fatalities/year in the EU)
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

Socio-economic

- resource efficiency
- CO₂ and GHG emissions
- air quality
- noise
- climate resilience
- seamlessness
- infrastructure capacity
- system performance

Global competition

- energy efficiency
- oil dependency
- congestion
- safety
- security
- growing transport needs
- user friendliness
- accessibility
- timeliness

Infrastructures

- Rail
- Road
- Water
- Urban
- Air

Logistics

- sustainability
'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

**SUSTAINABLE**
'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
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
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

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

* possible revision
### Mobility for Growth

- **MODE SPECIFIC:** 1. Aviation, 2. Rail, 3. Road, 4. Waterborne
- **INTEGRATED:** 5. Urban, 6. Logistics, 7. ITS, 8. Infrastructure
- **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
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
ROAD

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
Call ‘Green Vehicles’

EGVI PPP: 'EUROPEAN GREEN VEHICLES INITIATIVE'

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 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
Call 'Mobility for Growth'"}

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
Call 'Mobility for Growth'

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
SOCIO-ECONOMIC and BEHAVIOURAL RESEARCH and FORWARD-LOOKING ACTIVITIES for POLICY-MAKING

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
Transport related topics in WP 2014-15/other parts of H2020

- 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
International cooperation: common problems, mutual benefit

- GHG emissions, oil dependency, traffic congestion, passenger safety, transport security, ...: global challenges call for global solutions

- global standards and interoperability of systems are more necessary than ever

- most future transport growth will occur outside Europe: access to knowledge and markets becomes more important

- transport increasingly global, new competitors emerge, but also new opportunities for collaboration

- economic and social dynamics beyond Europe’s borders call for closer links and greater cooperation
Engaging international partners: openness + selective targeting

- anybody can participate
  submit proposals, join consortia
- participants from developing countries can get funding
  (see list of countries in WP annexes)
  participants from industrialised and emerging countries
  can get funding only exceptionally

- some topics in the Work Programme may target
  cooperation with specific countries in given areas
- basis: agreed common interest, co-funding if possible
- reinforce collaboration with key partners; integration
  with candidate countries, proximity and partnership
  with neighbours; multilateral cooperation
• 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><strong>Grants</strong></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><strong>Programme co-fund</strong></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%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PPI 20%</td>
<td></td>
</tr>
<tr>
<td><strong>Prizes</strong></td>
<td>- Inducement prizes, award prices</td>
<td>Lump sum (result based)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Procurement</strong></td>
<td>- Tenders</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Financial instruments</strong></td>
<td></td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- Loan instrument</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Equity instrument</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>SPECIFIC PROCEDURES</strong></td>
<td></td>
<td>1. Lump sum</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- SME Instrument</td>
<td>2. 70%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Fast Track to Innovation (pilot)</td>
<td>70%</td>
<td>1</td>
</tr>
</tbody>
</table>

In red: actions in the Transport WP 2014-15

* 100% for non-profit
– **Research and innovation actions/RIA**
  target: produce new knowledge, explore new technologies/solutions
  features: min 3 participants; 100% funding rate

– **Innovation actions/IA**
  target: deployment oriented: demonstration, pilot, prototype, testing, product validation, market replication
  features: min. 3 participants; 70% funding (100 for non-profit)

– **Coordination and support actions/CSA**
  target: accompanying measures: coordination, standardization, dissemination, awareness-raising, communication, networking, studies
  features: 1 or more participants; 100% funding rate
- **PPI co-fund/public procurement of innovative solutions**
  
  **target:** groups of public procurers, sharing innovation deployment risks
  
  **features:** 20% funding rate; 2 phases: preparation+execution

- **Inducement prize**
  
  **target:** result oriented cash incentive to induce cutting edge solutions
  
  **features:** 2 types: 'first-past-the-post' contest, 'best-in-class' contest

- **SME instrument**
  
  **target:** innovative SMEs; covers feasibility, R&D, demo, market take-up
  
  **features:** 3 phases:
  1. concept and feasibility (lump sum 50000€, ~6 months)
  2. R&D, demo, market replication (1-5 M€, 12 to 24 months)
  3. commercialisation (SME window in loan and equity schemes)

- **Fast track to innovation**
  
  **target:** increase participation of industry, SMEs, first time applicants (LEIT+SC)
  
  **features:** pilot in 2015; single applicant ok, no more than 5; grants up to 3 M€.
### Transport Challenge 2014 evaluations

<table>
<thead>
<tr>
<th>Single stage</th>
<th>Two stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- all Coordination and Support Actions (CSAs: 12 topics)</td>
<td></td>
</tr>
<tr>
<td>- ‘Green Vehicles’ call (RIAs: 4 topics, IAs: 4 topics)</td>
<td></td>
</tr>
<tr>
<td>‘Mobility for Growth’ call (RIAs: 20 topics, IAs: 4 topics)</td>
<td></td>
</tr>
</tbody>
</table>

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

| Stage 1 | • **proposal submission**  
max 15 pages; focus on content and results  
• **proposal evaluation**  
2 criteria: excellence and impact  
outcome: 'GO' or 'NO GO' |
|---|---|
| Stage 2 | • **proposal submission**  
only stage 1 'GO' proposals admitted  
• **proposal evaluation**  
3 criteria: excellence, impact, implementation |
### EVALUATION PLANNING 2014

<table>
<thead>
<tr>
<th>GV (1 stage)</th>
<th>Deadline 28/08 GV</th>
<th>GV Evaluation 15-26/09 + Consensus/Final Panel 06-24/10</th>
<th>ESR to proposers: Beginning December</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MfG CSA (1 stage)</strong></td>
<td>Deadline 27/03 CSA</td>
<td>Evaluation 14/04 - 02/05 + Consensus/Final Panel 12-23/05</td>
<td>ESR to proposers: Beginning June</td>
</tr>
<tr>
<td>MfG RIA and IAs (2 stages)</td>
<td>Deadline 18/03 Stage 1</td>
<td>Deadline 28/08 Stage 2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mars</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>Nov.</th>
<th>December</th>
</tr>
</thead>
</table>

### TIME-TO-GRAIN PROCESS

- **M 0**: Call deadline (single stage/Second stage)
- **M 5**: Evaluation
- **M 8**: Grant signature
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
Transport Info day 2013

Smart, Green and Integrated Transport Information Day 2013

18 December 2013
Charlemagne building, rue de la Loi 170, 1000 Brussels

Brussels 18th December 2013
Thank you for your attention!

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