

Transport Research and Innovation in Horizon 2020

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



Manuela SOARES – Director European Commission Directorate for Research and Innovation

HORIZON 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



- 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



European Commission



Budget breakdown

77028 Million € (current prices)

European Commission



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7 Societal challenges

European Commission





- Innovate to preserve competitiveness, expand market-shares and jobs
- Achieve the 20/20/20 energy-climate-environment targets
- Curb noxious emissions, improve air quality
- Reduce congestion through improved network capacity and modal shift
- Develop smart solutions for safety and security toward "zero fatalities"



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





Implementing the programme: WP calls and large initiatives

Collaborative calls for proposals

> Innovation investment package

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





PPPs with industry





- > 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 types of actions/funding rates (research and innovation actions: 100%; innovation actions: 70%/100%;...)
- > 2-stage evaluation for most topics
- > keywords and tags for easy access to information





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







WP 2014-15 Transport calls

Calls (publication 11 December 2014)	Budget (€ Mio) 2014	Budget (€ Mio) 2015 *
Call 'Mobility for Growth'	374,5 (+2)	184 (+10)
1. Aviation	70 (+2)	36
2. Rail	52	-
3. Road	66	23 (+5)
4. Waterborne	56	18
5. Urban	40	66,5
6. Logistics	32	18
7. ITS	31	-
8. Infrastructure	19	17,5
9. Socio-economic and behavioural research	8,5	5 (+5)
Call 'Green Vehicles'	129	30
Call Small business and Fast Track	35,87	38,69
Contribution to Smart Cities, Blue Growth	33.5	25.5

* provisional

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AVIATION 108 M €

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



RAIL 52 M €

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





- 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



ROAD 94 M €

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'

159 M €



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

Call 'Green Vehicles'

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







WATERBORNE 74 M €





- 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



• 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

TOPICS:



URBAN MOBILITY 106.5 M €

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, ...)



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 50 M €

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







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



INTELLIGENT TRANSPORT SYSTEMS

31 M €

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

31 M €



TOPICS:

- Connectivity and information sharing for intelligent mobility
 MG7.1 2014 2 stages
- Towards seamless mobility addressing fragmentation in ITS deployment in Europe – MG7.2 - 2014 – R&I: 2 stages; CSA: 1 stage



INFRASTRUCTURE 36.5 M €

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



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

18.5 M €

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 TRA 2016 Conference
 MG9.7 2014 1 stage
- Europe wide open source transport models, data and scenarios (under 'Other Actions' in WP)
 OA2 Tender 2015 (under 'Other Actions')



Call 'Small business and Fast track'

84.5 M €





- 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'





- 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

Other areas:

- Future and emerging technologies
- European Research Council
- Marie Sklodowska Curie actions
- Research infrastructures
- Access to risk finance
- Spreading excellence, widening participation
- Science with and for society
- Joint Research Centre







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
- **BOTTOM-UP** 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 **FOP-DOWN** 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

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- 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

FORMS OF FUNDING	Types of action	Funding rate	Min n° of partners
Grants	- Research and Innovation actions/RIA	100%	3
	- Innovation Actions/IA	70%/100%*	3
	- Coordination and Support Actions/CSA	100%	1
	- Marie Sklodowska Curie Actions/MSCA	100%	1
	- European Research Council/ERC grants	100%	1
Programme co-fund	- ERA-Net co-fund	33% (top-up)	3
	- PCP/PPI co-fund	PCP 70% PPI 20%	3
Prizes	- Inducement prizes, award prices	Lump sum (result based)	1
Procurement	- Tenders	100%	1
Financial instruments	- Loan instrument	-	1
	- Equity instrument	-	1
SPECIFIC PROCEDURES		1. Lump sum 2. 70%	1 1
	- Fast Track to Innovation (pilot)	70%	¹ 43
In red: actions in the Trans	nort WP 2014-15	* 100% for	non-profit

* 100% for non-profit



Types of action in Transport WP 2014-15

1/2

– <u>Research and innovation actions/RIA</u>

target: produce new Inowledge, explore new technologies/solutions **features:** min 3 participants; 100% funding rate

– <u>Innovation actions/IA</u>

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

– <u>Coordination and support actions/CSA</u>

target:accompanying measures: coordination, standardization, dissemination, awareness-raising, communication, networking, studies features: 1 or more participants; 100% funding rate



Types of actions in Transport WP 2014-15 (2/2)

Public Procurement of Innovative solutions (PPI co-fund)

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**: subject to the outcome of an on-going study

– <u>SME instrument</u>

target: innovative SMEs; covers feasibility, R&D, demo, market take-up **features**: 3 phases:

- 1. Concept and feasibility (lump sum 50 k€, ~6 months)
- 2. R&D, demo, market replication (1-5 M€, 12-24 months)
- 3. Commercialisation (SME window in loan & equity schemes)

– Fast Track to Innovation

target: increase participation of industry, SMEs, first time applicants (LEIT+SC) **features**: pilot in 2015; 1-5 participants; grants up to 3 M€.



Single stage	 All Coordination and Support Actions (CSAs) 'Green Vehicles' call (RIA & IA) 	
Two stage	ge `Mobility for Growth' call (RIA & IA) (except topic MG.1.4)	

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



- 20% of budget from societal challneges and LEIT
- New "SME Instrument": > 70 Meur in 2014-15 for Transport
- Support measures under "Innovation in SME" Networking and brokering SMEs to "spin-in" technology by connecting to researchers and innovators across Europe
- Eurostars Joint Programme with MS and associated countries for research-intensive SMEs
- Access to Risk Finance
- A new "Fast Track to Innovation" Pilot open call (Priorities 2 and 3). Open to all sectors, also including sectors that are not in H2020 calls (starting in 2015)



SME instrument



IDEA business coaching and complimentary services MARKET



Phase 1: Concept and feasibility assessment

Input: Idea/Concept: "Business Plan 1" (~ 10 pages)

<u>Activities</u>: Feasibility of concept Risk assessment IP regime Partner search Design study Pilot application etc.

Output: elaborated "Business plan 2"

Lump sum: 50.000 € ~ 6 months Phase 2: R&D, demonstration, market replication

<u>Input:</u> "Business plan 2" plus description of activities under Phase 2 (~ 30 pages)

Activities: Development, prototyping, testing, piloting, miniaturisation, scaling-up, market replication, research

Output: "investorready Business plan 3"

0.5-2.5 M€ EC funding ~ 12 to 24 months Phase 3: Commercialisation

Promote instrument as quality label for successful projects

Facilitate access to private finance

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

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

Possible connection to Procurement

No direct funding



- Targeted at all types of innovative SMEs showing a strong ambition to develop, grow and internationalise
- Only SMEs will be allowed to apply for funding and support
- Single company support possible
- No obligation for applicants to sequentially cover all three phases; each phase open to all SMEs
- 70% funding (exceptions possible)





Article 18(2) Regulation

[...] a dedicated SME instrument that is targeted at all types of SMEs with an innovation potential, in a broad sense, shall be created under **a single centralised management system** and shall be **implemented primarily in a bottom-up manner** via a **continuously open call** [...]

- Implemented centrally by one agency (EASME)
- Bottom-up approach within the frame of SC & LEIT
- \rightarrow each SC & LEIT defines a broad topic
- Continuously open call with around 4 cut-off dates per year
- Draft Dates:

2014		2015		
Phase 1	Phase 2	Phase 1	Phase 2	
18/06/2014	09/10/2014	18/03/2015	18/03/2015	
24/09/2014	17/12/2014	17/06/2015	17/06/2015	
17/12/2014		17/09/2015	17/09/2015	
		16/12/2015	16/12/2015	





- Coaching offered in Phase 1 and Phase 2 via the EEN:
 - ✓ Phase 1 3 coaching days
 - \checkmark Phase 2 12 coaching days
- Coaches will drive the performance of the organization by working with the senior management team
- Coach suggestion provided by the EEN, but final selection by the SME
- Coach and SME to decide a coaching plan in Phase 1. A summary of coaching foreseen for Phase 2 will form part of application to Phase 2
- Coaching paid in addition to Phase 1 and Phase 2 contribution
- During Phase III only indirect support EEN helping SMEs to reach out to investors, coaches, links to other support like COSME facility, etc.



Calls: deadlines 2014

	18 March	27 March	28 August
Mobility for Growth			
. RIAs + IAs stage 1	X		
. RIAs + IAs stage 2			X
• CSAs (single stage)		X	x
Green vehicles (single stage)			X
SME instrument (open call) cut-off dates: 18 June, 24 Sept, 17 Dec			Sept, 17 Dec
Fast track to innovation[pilot action in 2015]			





Governance





Calendar

- Pre-publication of draft Work Programme 2014-15
- Formal adoption of Horizon 2020
- Publication of Work Programme, first calls
- Transport Info Day in Brussels
- Transport Info Days in the Member States

19 November 2013

3 December 2013

11 December 2013

18 December 2013

Nov 2013 - Feb 2014





Thank you for your attention!

Find out more:

www.ec.europa.eu/research/horizon2020
www.ec.europa.eu/research/participants/portal/page/home

Mark your calendar:

