

Action plan for the City of Prague

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“This material was created thanks to our long-term effort to bring innovation in public sector, keeping close cooperation with city companies and budgetary organizations with respect to their daily work and the desire to move city forward and innovate. Our big thanks belong to the Ministry of Transport, our partner in cooperative systems development and wide spectrum of experts from academic and private sector.”

CONTENTS

INTERREG EUROPE PROGRAMME	3
INNOTRANS PROJECT	3
EXECUTIVE SUMMARY	5
STRATEGIC FRAMEWORK.....	7
PRIORITY STREAMS.....	9
ANALYSIS OF THE INNOVATION POTENTIAL OF PROJECT PARTNERS	10
ANALYSIS OF STAKEHOLDERS.....	19
COMMUNICATION AND PUBLIC AWARENESS ACTIVITIES.....	23
DETAILS OF ACTIONS.....	24

Interreg Europe Programme

Interreg Europe Programme of interregional cooperation helps regional and local governments across Europe to develop and deliver better policy. By creating an environment and opportunities for sharing solutions, the aim is to ensure that government investment, innovation and implementation efforts all lead to integrated and sustainable impact for people and place.

By building on its forerunner, INTERREG IVC (2007-2013), Interreg Europe aims to get maximum return from the EUR 359 million financed by the European Regional Development Fund (ERDF) for 2014-2020.

Solutions exist that can help European regions become the best that they can be. The EU's emphasis is very much on paving the way for regions to realise their full potential – by helping them capitalise on their innate strengths while tapping into opportunities leading to economic, social and environmental progress. To achieve this goal, Interreg Europe offers opportunities for regional and local public authorities across Europe to share ideas and experience on public policy in practice, therefore improving strategies and their impact on the life of citizens and communities.

INNOTRANS Project

INNOTRANS¹ is one of the projects of the Interreg Europe Programme. Its focus is on supporting interregional exchange of experience between participating regions, sharing good practices and developing the right environment for transport innovations that link and leverage transport assets in new and different ways. The project maps regional transport capacity, identifies competitive advantage of the individual regions as well as their good practices, publishes guidelines for policy interventions and action plans, and helps create funding strategies.

The main objectives of INNOTRANS are the following:

- to improve the ERDF regional strategy for 2014-2020 for each region in addressing transport innovation by providing policy makers with the necessary evidence and a solid knowledge base to better channel funds to transport innovation infrastructure and capacity building projects
- to support policy makers in taking more informed decisions about the distribution of regional transport innovation funds
- to increase the levels of regional transport innovation capacity which will boost competitiveness and minimize spillage of resources.

¹ The INNOTRANS (PGI02182) was selected within the second call for proposals of the INTERREG Europe 2014-2020 Programme (<http://www.interregeurope.eu/>), under the policy topic Research and Innovation.

- to improve or change current measures underpinning the transport innovation public funding schemes, taking into consideration the current picture of the innovative milieu in the regions. The action plans, which will derive from the project, will outline actions and schemes in support of transport innovation in the regional Growth and Jobs programmes.

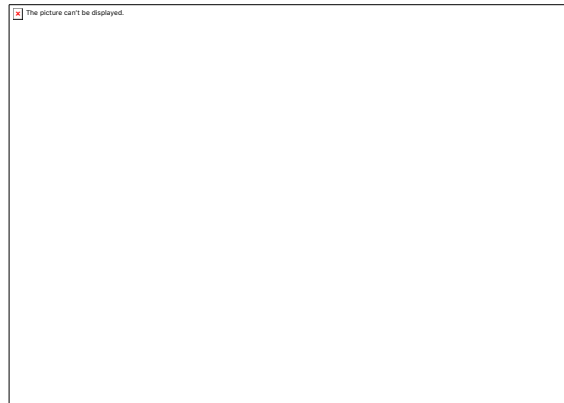


Figure 1: INNOTRANS strategic objectives
Source: Stakeholder's Briefing, Coventry (10 May 2017)

The following five partners are involved in its implementation:

- City of Prague, Czech Republic
- Coventry University Enterprises Limited, United Kingdom
- Abruzzo Region, Italy
- South East Regional Development Agency, Romania
- Region of Western Macedonia, Greece



Figure 2: INNOTRANS partners
Source: Enhancing transport innovation capacity of regions leaflet

Executive Summary

This Action Plan was prepared as part of the INNOTRANS project which was financed by the Interreg Europe Programme². INNOTRANS focuses on transport innovations and supports interregional exchange of experience, sharing good practices and developing the right environment to link and leverage transport assets in new and different ways.

This Action Plan is one of the project outputs and builds on those other outputs delivered during the INNOTRANS lifetime which are as follows:

- Transport Innovation Frameworks Report
- Good Practice Handbook
- Five Regional Policy Recommendation
- Joint Policy Recommendation
- Joint Action Plan

Strategic and operational framework

Before specifying the actions, this document outlines the strategic and operational framework under which these actions are designed and to be carried out.

The strategic framework is determined by key policy documents and commitments adopted at both national and local (city) level. They are as follows:

- Smart Prague 2030
- Sustainable Urban Mobility Plan for Prague (2019)
- Prague's Climate Commitment 2030 (2019)
- Alternative Fuel Vehicles Strategy 2030³ for Prague (2019, pre-final draft)
- Autonomous Driving Action Plan (2019)
- National Action Plan for Clean Mobility (2015, currently updated, pending approval)
- Czech Automobile Industry Future Action Plan (2017, currently updated, pending approval)

Based on the outlined strategic framework, the City of Prague has identified three priority streams and their priority axes that should be pursued as part of this Action Plan. These priority streams are:

- E-mobility
- Autonomous driving
- H-mobility (Hydrogen)

² Interreg Europe Programme of interregional cooperation helps regional and local governments across Europe to develop and deliver better policy. By creating an environment and opportunities for sharing solutions, the aim is to ensure that government investment, innovation and implementation efforts all lead to integrated and sustainable impact for people and place.

³ In Czech known as the Strategy in Support of Alternative Powertrains (Strategie na podporu alternativních pohonů)

Considering the INNOTRANS' key goal of experience exchange and best practices sharing, and the subsequent use of this new knowledge to enhance own projects, the documents goes on to present the project's other partners, particularly from the perspective of applying innovative approaches in the field of transport. This section provides some background analysis of all the regions based on a 2014 research, introduces a methodological approach for assessing innovation ecosystems and makes assessment on the current state of the innovation ecosystem of the project's partners through their best practices.

The following section deals with the local stakeholder ecosystem. Key stakeholders for the execution of the Action Plan are presented and their roles explained to underpin their inclusion in the different actions. The following entities have been identified as key stakeholders for the purpose of this Action Plan:

- Ministry for Transport of the Czech Republic (MD)
- City of Prague (Prague City Hall, MHMP)
- Letiště Praha, a. s. (Prague airport)
- Operátor ICT, a. s. (Operátor ICT)
- Dopravní podnik hl. m. Prahy, a. s. (DPP)
- Technická správa komunikací hl. m. Prahy, a. s. (TSK)
- Institut plánování a rozvoje hlavního města Prahy (IPR Praha)
- Centrum dopravního výzkumu, v. v. i. (CDV)
- PREdistribuce, a. s. (PREdistribuce)

Finally, there is a section on overall marketing and PR activities which are considered a key instrument for boosting the impact of all actions, supporting their sustainability and independence in the turbulent urban environment and for monitoring results in phase 2.

Communication will be targeting both internal (municipal) departments and companies, and external parties and wider public. It should achieve the following specific goals:

- general awareness of the sustainable future-oriented transport and mobility innovations
- general awareness of Prague's activities in that field
- fact-based understanding of the topics through education

Action Plan

The Action Plan provides a more detailed context for each of the defined priority streams and complements it by a concrete facilitation and marketing activities plan for influencing the spending of ERDF and other national funding.

The Action Plan contains the following actions:

- E-mobility
 - Setting the framework for charging infrastructure development and use
 - Developing a feasibility study, incl. an action plan for the deployment of electric vehicles in municipal services fleets
- Autonomous driving

- Preparing the deployment of autonomous vehicles at the Prague airport
- Developing an HD map for a pilot location in Prague
- H-mobility (Hydrogen)
 - Piloting H-buses on a regular public transport service line in Prague
 - Developing vision and scenario-based strategy for hydrogen mobility

Each action is outlined covering the following features:

- Scope and deliverables
- Players involved
- Timeframe
- Costs
- Funding resources

Due consideration was given to the need for coordination, especially between actions within each priority stream. Stakeholder engagement platforms such as Working Groups are hence shared where possible and desirable.

The execution of all actions is planned for the 2020-2021 period.

Strategic framework

It is key that the Action Plan results in the good practices of the participating region being applied within the strategic framework existing for each partner. Such strategic framework reflects the priorities of the local context while the application of best practices enhances the quality of its implementation.

Prague's Action Plan follows up on the following key policy instruments:

- Smart Prague 2030
 - Owner: Operátor ICT⁴
 - Smart Prague 2030 is a strategic document outlining the city's long-term priorities. It focuses on six key areas: Future Mobility, Smart Buildings and Energy, Wasteless City, Attractive Tourism, People and the Urban Environment, and Data.
 - The Future Mobility goals are based on the following principles:
 - Clean | deploy zero-emission vehicles in public transport
 - Shared | decrease the importance of car ownership
 - Intelligent | use data for management
 - Mobile | make information and mobility services available on the phone
 - Autonomous | deploy autonomous public transport vehicles
- Sustainable Urban Mobility Plan for Prague (2019)
 - Owner: Prague City Hall (Transport Dpt.)

⁴ Operátor ICT is a municipal company charged, among others, with the implementation of the Smart City concept in Prague.

- Sustainable Urban Mobility Plan is a key strategic document in the field of transport. It takes a holistic view of the transport and mobility issues putting emphasis on intermodality
- The SUMP targets:
 - Improved accessibility
 - Higher efficiency of transport of persons and goods
 - Lower transport-related energy demand
 - Lower environmental pollution
 - Higher quality and attractiveness of public space
 - Higher transport safety
- Prague's Climate Commitment 2030 (2019)
 - Owner: Prague City Hall
 - Prague's Climate Commitment 2030 targets a 45% CO₂ emissions reduction in the city by 2030 (compared to the year 2010) and zero CO₂ emissions by 2050 at the latest. These goals are to be reflected in the strategic and financial planning of the city's development.
 - Measures will cover the following areas:
 - Energy resources (electricity and heat)
 - Transport
 - Waste management
 - Buildings (technical standards)
 - Purchase and consumption of products
- Alternative Fuel Vehicles Strategy 2030⁵ for Prague (2019, pre-final draft)
 - Owner: IPR Praha
 - A strategic follow-up on SUMP which focuses on the potential of alternative fuels⁶ to help reduce the city's environmental footprint and thus enhance the quality of local environment and health of its citizens. The document outlines measures and recommends incentive schemes to achieve those goals.
- Autonomous Driving Action Plan (2019)
 - Owner: Ministry for Transport
 - The Plan presents the national strategy for autonomous vehicles and the infrastructure and operational framework that needs to underpin it. It defines a series of measures to enable that framework. The Plan only covers road transport.
 - The measures cover the following areas:
 - AV-related infrastructure and operational tools
 - Regulation and standardisation
 - Ethical issues
 - Research & development
 - Education

⁵ In Czech known as the Strategy in Support of Alternative Powertrains (Strategie na podporu alternativních pohonů)

⁶ Electricity, natural gas / biogas, hydrogen

- Public awareness
- National Action Plan for Clean Mobility (2015, currently updated, pending approval)
 - Owner: Ministry for Industry and Trade
 - The Plan represents the national policy framework aiming to support the deployment of alternative fuel vehicles. It thus implements the obligation stipulated by the European directive 2014/94/EU. The plan defines strategic targets related to alternative fuel infrastructure as well as vehicles. It also outlines a series of measure in support of the targets. It covers the following fuels: electricity, CNG, LNG as well as hydrogen⁷. It follows principles from other national strategic documents related to energy, climate change, and transport.
 - The measures cover the following areas:
 - Regulation
 - Direct incentive schemes
 - Indirect incentives schemes
 - General market-related measures
 - Research & development
- Czech Automobile Industry Future Action Plan (2017, currently updated, pending approval)
 - Owner: Ministry for Transport
 - A specific industry action plan that reflects the role of the automotive industry in the Czech economy from the perspective of the evolving regulation and market challenges.
 - The Plan covers the following areas:
 - E-mobility
 - Autonomous driving
 - Digitalisation
 - Selected cross-industry issues
 - Considering the strategic overlap and hence common goals of the Action Plan and Prague's SUMP and Smart Prague 2030 concept, Prague City Hall, Czech Technical University (ČVÚT) and ŠKODA AUTO a. s. co-signed a declaration of support⁸ which underpins their commitment to cooperate and collaborate, particularly in the area of autonomous and electric mobility, and digitalisation towards enhanced mobility services.

Priority Streams

Based on the outlined strategic framework, the City of Prague has identified three priority streams and their priority axes we would like to pursue as part of this Action Plan.

- E-mobility
 - Expansion of electric vehicles in municipal services fleets, incl. service fleets of municipal budgetary organizations/companies owned by Prague

⁷ The 2015 Plan had covered hydrogen to a limited extent, the 2019 update has changed this and hydrogen is considered

⁸ Declaration of support was co-signed by the three partners in September 2018.

- Setting the framework for charging infrastructure development based on both the urban planning and development needs and thriving e-mobility market needs
- Incentivising development / Developing charging infrastructure, incl. in combination with sustainable distributed energy resources (DER) and their management
- Autonomous driving
 - Mapping the transport infrastructure and identifying roads for priority conversion into autonomous-driving-ready infrastructure
 - Creating a testbed for piloting autonomous vehicles in real world conditions
 - Deployment of autonomous vehicles in pilot mode
- H-mobility (Hydrogen)
 - Developing vision and scenario-based strategy for hydrogen mobility for Prague
 - Creating a testbed for piloting hydrogen-fuelled buses
 - Deployment of hydrogen-fuelled buses in pilot mode

Analysis of the innovation potential of project partners

The following analysis of the innovation potential is based on multiple approaches covered in the Mapping European Transport Regional Research and Innovation Capacities reports. In particular, the Regional RTD Frameworks report and Typology of Regions Concerning Transport Innovation report. In addition, the below categorisation makes use of the INNOTRANS own analysis of innovation capacity reflecting the good practices submitted by the project partners and published in the INTERREG database.

European regional innovation typology

In the first step, each region is described in accordance with the typology of European regional innovation⁹ as presented in the Typology of Regions Concerning Transport Innovation report. The typology is based on wider characterisation of the economy with special emphasis on transport.

The report identifies altogether ten different European regional innovation types¹⁰. It is interesting to note that each of the five INNOTRANS project partners falls under a different category:

- City of Prague (CZ) | 'Regions of economic structural change'
- Coventry University Enterprises Limited (GB) | 'Old industrialized regions'
- Abruzzo Region (IT) | 'South-mid Europe'
- South East Regional Development Agency (RO) | 'New EU countries'
- Region of Western Macedonia (GR) | 'Emerging regions'

⁹ Work package: Meta-analysis of main principles and typology for regional innovation– WP4, Deliverable title: Typology of regions concerning transport innovation, Authors: Merja Hoppe and Martin Winter, ZHAW

¹⁰ 1. New EU countries, 2. Emerging regions, 3. Recovering regions, 4. South-mid Europe, 5. French type, 6. Smart and rising regions, 7. Metropolitan regions, 8. Old industrialized regions, 9. Regions of economic structural change, 10. Transport innovation regions

Characteristic features of the different regions are given below for each project partner's region. It is important to highlight that these characteristics were compiled back in 2014 and apply to the region in general. They may hence not fully reflect the current situation, in particular from the partners' sub-regional perspectives. It is nevertheless relevant to look at the conclusions on the innovation potential in transport and assess whether, based on the good practices submitted by project partners, the region, or at least one of its parts, have fulfilled its potential or even surpassed it.

Coventry University Enterprises Limited (CUE), United Kingdom – ‘Old industrialized regions’

- a rather average economic power (a low GDP, average R&D expenditures, average employment rate, average income)
- a high level of education and a high share of highly-educated people
- a high number of workers in science and technology
- an average population density with a well-developed infrastructure
- the innovation ecosystem in transport above European average
- the general innovation and economic performance: below European average

Conclusion: An average to above-average innovation potential which is not yet realised.

Abruzzo Region, Italy – ‘South-mid Europe’¹¹

- a contradictory economic structure (a high GDP, average employment rate, a high risk of poverty)
- a high level of education and R&D expenditures
- a prosperous and innovative transport sector: a high proportion of innovative enterprises, high growth in value added, a low infrastructure and low internal R&D funding
- not a very innovative economy in general: patents and R&D activities and funding are below average

Conclusion: The innovation potential in transport is high, mainly in the North of Italy.

South East Regional Development Agency, Romania – ‘New EU countries’

- the economic power below the European average (GDP, R&D expenditures and patent applications)
- a low level of income and education, low population density
- a low number of workers in science and technology
- a low density of road/ rail/ waterways infrastructure and a lower share of land use for living and working (more rural environment)

¹¹ Characterised by certain difference between the North and South of Italy, the description here depicts the situation in Northern Italy

- orientation more on production than on innovation in the transport sector

Conclusion: A little general innovation potential.

Region of Western Macedonia, Greece – ‘Emerging regions’

- the economic power below the European average (GDP, R&D expenditures and patent applications)
- a low level of income, low share of highly educated people, low population density
- a low number of workers in science and technology
- a low density of road/ rail/ waterways infrastructure and a lower share of land use for living and working, (more rural environment)
- an economically strong and prosperous transport sector, a high growth in value added in the sector

Conclusion: The innovation potential in transport is on average as transport sector situation is positive while innovation under average.

City of Prague, Czech Republic – ‘Regions of economic structural change’

- a strong economy (a high GDP, high R&D expenditures, low risk of poverty)
- a high level of education, wealth and income, a high population density
- a strong transport sector with a high proportion of innovation, patent applications and growth in value added
- a weak transport infrastructure (motorways, waterways and railways) along with a low proportion of public funding in the transport sector

Conclusion: There is a high innovation potential.

Innovation system typology

In the second step, we look at a more general categorisation of innovation systems. At the core of an innovation system there is knowledge exchange that takes place in networks. These networks function in different dimensions. The primary dimensions identified in academic literature¹² are space, sector and technology. An innovation system is the result of an overlap of at least two dimensions (see Figure 3 below) and systematic development and honing of creative processes within those dimensions.

The creative process is characterised by the following features:

- the interaction between agents of the process (built on feed-back)
- the cumulative aspect of, and increasing returns to, the innovative process
- the ‘problem-solving’ orientation which shows the specific nature of the innovation

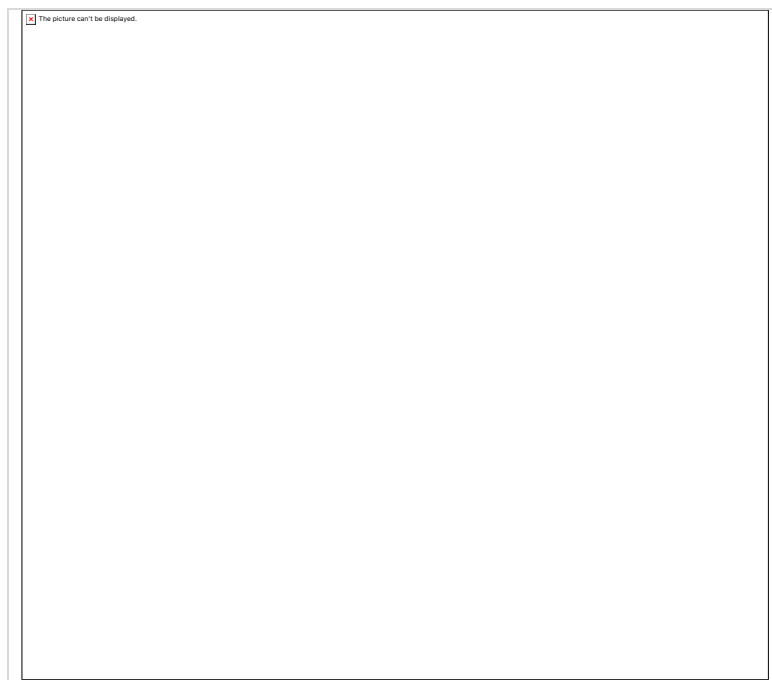
¹² As reviewed in the Typology of Regions Concerning Transport Innovation report

It is hence not only a technological but also an organizational process. And it is this organizational part that is paramount and determines the technological innovation itself.¹³

As far as the **space dimension** is concerned, the following types of innovation systems exist:

- Regional level (concerns or influences a whole region)¹⁴
- National level (refers to a country)
- Global level (goes beyond the national borders)

Depending on the spatial dimension, the innovation systems are shaped by different regulatory rules and standards.



*Figure 3: The relationship between global, national, regional, sectoral, and technological systems of innovation
Source: Frenz and Oughton (2005) in: Regional RTD frameworks report*

As far as the sectoral dimension is concerned, an almost indefinite number of innovation systems might be identified. For the purpose of this analysis, we only look at the transport sector and its specific characteristics (functions) as defined by Leduc et al. in 2010. Considering the general terms used, the functions are likely applicable to other sectors too.

¹³ Regional RTD frameworks report: Mapping Regional Transport Innovation Frameworks – WP2

¹⁴ Considering the good practices presented under INNOTRANS, it may be argued that there is also a sub-regional level of innovation system which is manifested through specific projects at the city/metropolitan level. The knowledge gained through such projects is channelled to the regional or even higher level by the project stakeholders.



*Figure 4: Components and functions of an innovative system of transport
Source: Leduc et al. (2010) in: Regional RTD frameworks report*

The specific functions of the transport innovation system are defined as follows:

- Resource mobilisation
- Guidance of search
- Entrepreneurial experimentation
- Knowledge creation
- Market formation
- Legitimation
- Knowledge diffusion through networks

As presented in Figure 4 above, these functions are performed through networks, within an institutional framework with the participation and interaction of interested actors (players). It highlights the feedback loop and the cyclical character of innovation.

Innovative actions typology

In the third step, we look at the innovative actions typology identified for the purpose of the INNOTRANS project by its partners. This typology¹⁵ is based on the good practices exchanged through knowledge sharing and highlights the benefit of the actions:

- **Innovation mechanism (facilitator: structure or service)**
 - established **for** the production of transport innovation, i.e. **transport innovation is intended**

¹⁵ Source: Presentation of INNOTRANS: Good Practices Overview, presented in Thessaloniki on the 4 December 2019

- a 'structure', 'agency' or 'service' set usually by Public Authorities and in collaboration with the main stakeholders, and enhancing the innovation capacity within the transport ecosystem by encouraging, promoting, financing, and disseminating innovation initiatives
- it is not a transport innovation by itself; rather it is an innovative solution for the facilitation of innovation generation in general, or in the transport sector in particular
- **Innovative technology and/or management system**
 - resulted **by** the implementation of the innovation process, i.e. **transport innovation is the outcome**
 - the outcome of an innovation process usually applied by businesses and academia either individually or in collaboration with each other
 - it is a product, technology system, management procedure or business model that fulfils the criteria of innovation
 - it may refer either to a real application thereof by a transport operator or to a marketable and exportable product or/and know-how targeting transport companies

Relevant Good Practice:

In line with the underlying goal of this Action Plan to make use of the INNOTRANS partners' knowledge as demonstrated by their good practices, the following provides an overview of those good practices that are relevant for the actions presented further below. Besides the description, each good practice is linked to the typical features of the various innovation typologies that it demonstrates.

Partner	Project (short title)	Innovation typology			Description	Relevant Good Practice	Assessment of fulfilment of innovation potential ¹⁶
		Innovation Action Type	Spatial Dimension	Key Transport Innovation Functions			
UK	UK CITE	Tech and/or mgt system	Regional Innovation System	Resource mobilisation Knowledge creation Market formation Legitimation	Research into, and practical testing of CAVs and infrastructure in Coventry	Development of a testbed in real world environment (urban laboratory) contributing to knowledge creation and legitimisation	Coventry has been successful in fully realising the identified innovation potential.
UK	MCAV	Tech and/or mgt system	National Innovation System <i>(shifting to the</i>	Resource mobilisation Guidance of	Cluster fostering innovation and cooperation in CAV technology	Creation of a cluster connecting businesses active in the area of autonomous	

¹⁶ The assessment draws upon each region's innovation potential as identified in the METRIC's 'Typology of regions concerning transport innovation' and the actual innovation demonstrations as represented by the good practices submitted by INNOTRANS partners for each region.

			<i>Global European) level)</i>	search Market formation Knowledge diffusion through networks		driving. Underpinning market formation.	
RO	SUMP Planning	Mechanism	City Innovation System / Regional Innovation System	Resource mobilisation Knowledge diffusion through networks Legitimisation	SUMP Buzau 2016-2030 based on integrative, efficient and transparent process aiming to integrate urban mobility with other associated projects	Introduction of a participatory process aiming at a holistic approach and collective project ownership	Although the number of good practices submissions is generally lower for the region, the innovation presented is rather strong and exceeds the “little general innovation potential” concluded in early 2015.
RO	Video surveillance solution serving both the road area & parking spaces	Tech and/or mgt system	City Innovation System / Regional Innovation System	Resource mobilisation Knowledge diffusion through networks	Implementation of intelligent traffic management systems to increase fluency and traffic safety and prevent crime	A holistic approach to the issues at hand. Creation of combined benefit for the transport itself as well as the public space. Improvement of the quality of life in the city.	

GR	THESi Parking control system	Tech and/or mgt system	City Innovation System / Regional Innovation System	Knowledge creation Market formation Resource mobilisation	Electronic system for the management and charging of the cars' parking on the road sides	Creation of a tool that facilitates parking for the drivers as well as parking management for the city while making it also more efficient and revenue generating.	The region of Western Macedonia has submitted the most good practices under the INNOTANS project ¹⁷ . Considering the impact of the recent Greek financial crisis and the innovation situation in the region being assessed as under average in early 2015, it may be concluded that this region surpassed its 2015 innovation potential outlook.
GR	AUP's spin-offs: emisia, exothermia	Mechanism	Global Innovation System	Entrepreneurial experimentation Market formation Knowledge creation	Spin-offs specializing on carbon footprint calculations, emissions modelling, exhaust after-treatment, etc.	Creation of innovation mechanisms of entrepreneurial character that have market formation capacity and produce key knowledge for urban sustainability	

¹⁷ 10 projects (3 demonstrating an innovation mechanism, 7 an innovative technology/ management system)

Analysis of Stakeholders

In view of the priority streams for the action Plan, several groups of stakeholders were identified as illustrated in the figure below:

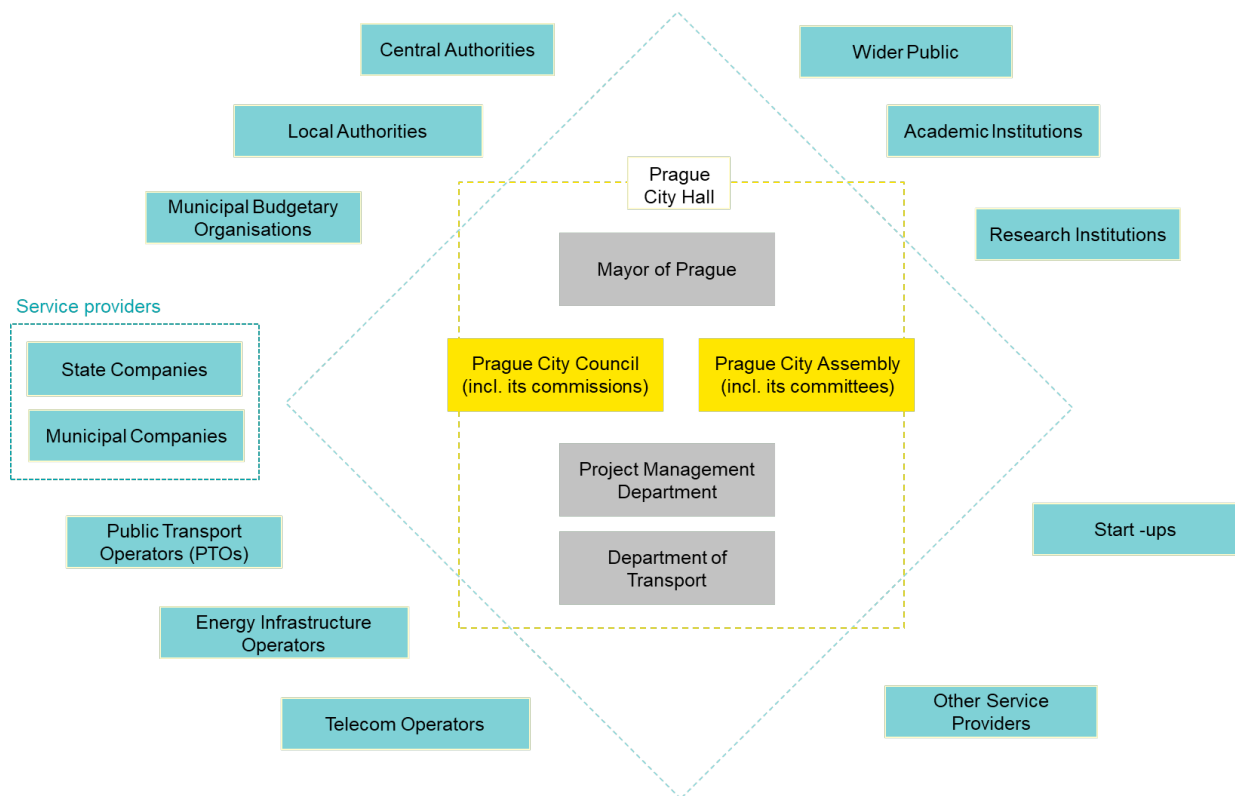


Figure 5: Map of stakeholders

Each category consists of multiple actors. The profiles of selected actors are presented below:

- **Ministry for Transport of the Czech Republic (MD)**
 - Category: Central authorities
 - A central government body in charge of transport
 - Sets the Czech Republic's policy enabling innovation in transport (ITS - Intelligent Transport Systems, space activities)
 - Manages the Operational Programme Transport¹⁸ underpinning the e-mobility and h-mobility infrastructure development
 - Oversees a number of other public bodies in charge of execution of central government and respective analytical activities in the area of transport. From the perspective of the Action Plan, the following are

¹⁸ CZ: Operační program Doprava

the most relevant: Road and Motorway Directorate¹⁹, Centre for Transport Information Systems²⁰, Transport Research Centre²¹

- Stakeholder role: providing guidance on the implementation of national transport-related strategies at regional/metropolitan level, coordinating such activities and knowledge sharing
- **City of Prague (Prague City Hall, MHMP)**
 - Category: Local authorities
 - The City Hall executes tasks given to it by the Prague City Council or the Prague City Council Board as well as performs tasks delegated to the City of Prague by the central government bodies
 - Innovations are coordinated by the Project Management Department whose competences cover also entrepreneurship assistance, economic diplomacy and disbursement of European funds. Innovations in transport are executed through a network of partners, both internal and external, referred to in this stakeholder analysis
 - Stakeholder role: supervising the overall implementation of the action plan, providing political support and steering where necessary
- **Letiště Praha, a. s. (Prague airport)**
 - Category: State companies
 - Operator of the most important airport in the Czech Republic that is also one of the most rapidly growing European airports in the 10-20 million passengers category. 16.8 million passengers passed through the airport in 2018. There are almost 170 airlines represented at the airport offering direct connections to more than 160 destinations worldwide. There are also 8 cargo service providers operating from the airport and dozens of others provide charter transport services.
 - It employs approx. 2,400 people, while another about 14,000 are employed by firms providing services at the airport or linked to its operations.
 - Stakeholder role: executing a concrete action, providing information and sharing new knowledge stemming from the action execution
- **Operátor ICT, a. s. (Operátor ICT)**
 - Category: Municipal companies
 - In charge of the Smart City agenda, incl. SC projects management, ICT consultancy and project implementation for municipal districts and other municipal companies
 - Stakeholder role: managing actions on behalf of the City of Prague, coordinating all stakeholders
- **Dopravní podnik hl. m. Prahy, a. s. (DPP)**
 - Category: Public Transport Operators (PTOs), Municipal companies
 - Principal operator of the Prague public transport
 - It covers all major transport modes (metro, trams, buses, incl. suburban lines, funicular, ferry)
 - Its transport fleet consists mainly of metro carriages (730: 3 lines, 61 stations), trams (948 vehicles: 25 daily and 9 night service lines), buses (1 161 vehicles: 141 service lines)²²

¹⁹ CZ: Ředitelství silnic a dálnic ČR (ŘSD)

²⁰ CZ: Centrum dopravních informačních systémů (CENDIS)

²¹ CZ: Centrum dopravního výzkumu (CDV)

- Stakeholder role: executing a concrete action, providing information and sharing new knowledge stemming from the action execution
- **Technická správa komunikací hl. m. Prahy, a. s. (TSK)**
 - Category: Municipal companies
 - Responsible for operation, maintenance, modernisation and development of urban road infrastructure (roads of category II and III, and local and special purpose roads in the territory of the City of Prague) and its related structures and facilities (eg. road signage, traffic lights, pavements, bridges, tunnels, greenery, embankment walls, and others)
 - It also introduces measures targeting reduction of accidents, traffic management optimisation, and transport evolution monitoring and assessment, and systematically develops the transport system of the City of Prague
 - Stakeholder role: supporting the execution of/ executing a concrete action, providing information and sharing new knowledge stemming from the action execution
- **Institut plánování a rozvoje hlavního města Prahy (IPR Praha)**
 - Category: Municipal budgetary organization
 - The principal conceptual office of the City of Prague in the field of architecture and urbanism, it is involved in decision-making concerning those areas; it prepares and coordinates documents relating to strategic and urban planning and development, the public realm as well as to transport, technical, landscape and economic infrastructures
 - Collects, maintains and updates space information relevant for urban planning and development, incl. the operation of the web information platform www.geoportalphaha.cz
 - Stakeholder role: providing information, providing guidance on the action execution
- **Centrum dopravního výzkumu, v. v. i. (CDV)**
 - Category: Research institutes
 - A public research institution established in 1993; a single research organisation within the remit of the Ministry for Transport
 - Its scope includes all major aspects of transport in the Czech Republic and covers all levels, i.e. national, regional and local (e.g. safety, technologies pertaining to road construction, maintenance, repairs and modernisation, traffic management technologies, impact of transport, incl. its infrastructure, on the environment, economy of transport, multimodal transport, transport psychology, education, transport demand modelling, geographic information systems, ticketing and parking systems, transport telematics)
 - Stakeholder role: providing information, providing guidance on the action execution
- **PREdistribuce, a. s. (PREdistribuce)**
 - Category: Municipal companies, Energy Infrastructure Operators
 - Electricity distribution system operator in the territory of the City of Prague and Roztoky municipality
 - It is responsible for the operation, maintenance, and development of the respective distribution system

²² Data k 31. 12. 2018

- It is a regulated entity providing third party access to its network based on the principles of transparency and non-discrimination
- Stakeholder role: supporting the execution of/ executing a concrete action, providing information and sharing new knowledge stemming from the action execution

Other examples of presented categories:

- Energy service providers (PRE, ČEZ, Innogy, E.ON, Bohemia Energy)
- Academic institutions (ČVÚT, Vysoká škola báňská, Technická univerzita Ostrava)
- Telecom operators (O2, T-Mobile, Vodafone)
- Local authorities (city districts)

Communication and public awareness activities

Considering the general goal of this Action Plan, which is to facilitate progress towards sustainable future-oriented transport and mobility in the urban environment, it is crucial to organise associated relevant communication and public awareness activities (marketing and PR activities). PR plays a crucial role in boosting the impact of all actions supporting thus their sustainability and independence in the turbulent urban environment.

Communication will be targeting both internal (municipal) departments and companies, and external parties and wider public. It should achieve the following specific goals:

- general awareness of the sustainable future-oriented transport and mobility innovations
- general awareness of Prague's activities in that field
- fact-based understanding of the topics through education

Key communication tools

To carry out the marketing activities, we propose the following communication tools. The communication plan itself will be drafted as part of the proposed actions and further elaborated and implemented separately as part of the project's second phase.

For quality assurance purposes, the proposed communication tools will be managed and applied by marketing specialists.

- Communication plan design
 - communication content
 - timeline
 - human resources and organizational support plan
- Individual web pages and social media profiles
 - microsites and social media administration
 - connection to INNOTRANS Facebook and Twitter account
- Group interviews with focus groups
 - large audience of professionals
 - covering the area of the city of Prague
- Press conference
 - press release
 - press kit
 - invitations
 - mailing list of respective stakeholders
- Workshops
- Publication in newspapers
 - articles in newspapers with wide circulation

Details of Actions

Part I – General information

Project: INNOTRANS: Policy recommendations and actions on transport innovation capacity in Prague (CZ)

Partner organisation: City of Prague

Country: Czech Republic

NUTS2 region: Prague

Contact person: Michal Pospíšil
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Supervisor: Šárka Tomanová
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Project Management Department, City of Prague
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Part II – Policy context

The Action Plan aims to impact:

- Investment for Growth and Jobs programme
- European Territorial Cooperation programme
- Other regional development policy instrument:

Name of the policy instrument addressed: Operational Programme Prague – Growth Pole of the Czech Republic

- Priority Axis 1: Strengthening research, technological development and innovation
- Priority axis 2: Sustainable mobility and energy savings

European Regional Development Fund

Priority Stream: E-mobility

The background

Electric powertrains are one of key future transport and mobility attributes as envisioned today, complementing Connected, Autonomous and Shared²³. As such these attributes direct the framing of relevant strategies and policy documents at both the national and regional/local level. As regards the strategic framework for e-mobility, it is primarily determined by the National Action Plan for Clean Mobility and, for the City of Prague, complemented by the strategic goals and axes defined in the Smart Prague 2030 concept, Sustainable Urban Mobility Plan, and the draft Alternative Fuel Vehicle Strategy.

Prague has already supported several initiatives in the area of e-mobility, especially in the public transport but also with regard to public charging infrastructure. As for the public transport, one of the projects has also been submitted as good practice under INNOTRANS.²⁴ Other actions influencing sustainable mobility have been proposed under the InnovaSUMP Action Plan finalised in June 2019, incl. the Alternative Fuel Vehicle Plan now in its finalisation phase²⁵.

Accounting for the InnovaSUMP's coverage of e-mobility in public transport, actions proposed under this Action Plan focus on developing e-mobility in car fleets owned and/or operated by the city and its companies and organisations, as well as on supporting further (and much stronger) development of public charging infrastructure in the city. Such charging infrastructure is considered to be the backbone of e-mobility market without which there will not be a significant growth in electric vehicles in either corporate fleets or individual ownership. At the same time, the City of Prague is well aware of the importance of setting the appropriate set of rules to guide such development and protect the character of the city²⁶, incl. avoidance of cluttered public space.

In defining these actions, we relate especially to the INNOTRANS partners' discussions on innovation in policy development both with regard to processes and approaches. The sequencing of actions from the more general to the more particular and back, the associated feedback loop and the involvement of a wide group of stakeholders all along to cover also the interdependent sectors are extremely important aspects of the innovation process. Also noteworthy is the sharp focus on the overall quality of life in the city and its improvement. Last but not least, the actions demonstrate the active role of the city in promoting sustainable and forward-looking urban mobility. These general principles can be identified across multiple good practices submitted within INNOTRANS, we would like to highlight especially

- RO SUMP Planning
 - coverage of interdependent sectors and focus on the enhancement of quality of life
- UK CITE
 - establishment of a platform to deliver business innovation

²³ Often collectively referred to as CASE (Connected-Autonomous-Shared-Electric)

²⁴ Project initiative for a dynamic-charged electro-bus (as entered in Interreg database)

²⁵ The others are: 'Pilot electrification of the bus line 140 (Palmovka -Miškovice)' and 'Electric buses in public transport - Purchase of 14 pieces of standard electric buses'

²⁶ Prague's historical centre is a UNESCO Heritage Site

- RO Video Surveillance Solution Serving Both the Road Area and Public Spaces
 - deployment of technology for the combined benefit of transport infrastructure and public spaces
- GR THESi Parking Control System
 - human-centred design considering both sides of the user continuum (customer as well as the management system users/operators)

Facilitation and marketing activities

The actions presented in this priority stream build on previous e-mobility-related work. As such, the City of Prague plans to continue its support with regard to communication and considers the following key messages and using the following tools for supporting the spending of ERDF and other national funding and for monitoring results of implementation of the Action plan in phase 2.

Key messages:

- 'Prague understand the benefits of e-mobility and is ready to take full advantage of this choice.'
- 'Prague will support the development of charging infrastructure network to enable everyone to own an electric vehicle.'

Key tools:

- Individual web pages and social media profiles
- Group interview with focus group (90 min., 6-10 experts within the Prague region)
- 2 workshops (3 hours)
- 1 article in daily news with wide circulation (over 2 mil real users/month)
- Press conference (2020/2021)

Communication will be targeting both internal (municipal) departments and companies, and external parties and wider public.

1. ACTION 1 - Setting the framework for charging infrastructure development and use

This action envisages the elaboration of strategic guidelines that would frame the development of charging infrastructure (EVSE - Electric Vehicle Supply Equipment) in the City in accordance with rules defined in previous strategic processes concerning mobility and public spaces development plans. At the same time, the guidelines need to account for the needs of the e-mobility market in the mid-to-long term.

This action will build on the output of the EVSE Working Group that has been active since May 2019. The guidelines will define the contextual roles of different stakeholders in development and operation processes, focusing on the incentive provider role of the City of Prague. The document will include a scenario-based market analysis and recommendations for a corresponding charging infrastructure penetration per district and charging type up to 2030. The recommendations will also cover the use of the infrastructure from the point of view of urban transport management. The analysis will be complemented by a cost-benefit analysis that will underpin the set-up of the EVSE ecosystem, incl. the roles.

The action will deliver

- Guidelines for development of charging infrastructure in the City of Prague until 2030, incl. a full-fledged market analysis and CBA
- Associated marketing activities

The EVSE WG will continue its activity and will provide support to the process as necessary.

2. Players involved

Action leader: Operátor ICT

Key partners: MHMP, IPR, TSK, PREdi, local authorities, building authorities

Other stakeholders: e-mobility services providers, charging point operators, energy services providers, municipal services providers, logistics services providers

3. Timeframe

Feb 2020 Action kick-off

H1 2020 Elaboration of the Guidelines

H2 2020 Guidelines adoption by the Prague City Hall

Jan 2021 onwards Guidelines enforcement

Marketing activities will be carried out after the Guidelines completion.

4. Costs

Guidelines: CZK 1,000,000 (approx. EUR 40,000)

Marketing activities: all marketing activities in this Action Plan are considered together and are estimated at CZK 500,000 (approx. EUR 19,000)²⁷

5. Funding sources:

- OP Prague – Growth Pole of the Czech Republic
- City of Prague's / Operátor ICT's budgets

1. ACTION 2 - Development of feasibility study, incl. an action plan for the deployment of electric

²⁷ Expert estimate based on regular and balanced use of the indicated marketing tools

vehicles in municipal services fleets

In line with the Alternative Fuel Vehicles Strategy, Prague's Climate Commitment, and the European Green Deal draft plan, this action envisages the elaboration of a feasibility study in support of mid-to-long term replacement of municipal services fleet ICE vehicles with alternative fuel vehicles, in particular electric ones (EV). The feasibility study will identify the overall potential for such replacement, incl. the long-term costs and benefits and provide a comparison with a BAU scenario.

The action will build on information and follow-up activities pertaining to an analysis of the replacement potential in the fleets of municipal budgetary organisations carried out in 2018. This analysis has led to a decision to facilitate the purchase of 34 EVs for 28 organisations. The facilitation is both of financial and administrative character as the City of Prague leads both the funding request process and the vehicle procurement. The City of Prague also provides additional funding so that the organisations are to cover only 20% of the vehicle purchase cost.

The action will deliver

- Working Group consisting of representatives of all the key stakeholders
- Full-fledged feasibility study, incl. a cost-benefit analysis (CBA)
- Associated marketing activities

The Working Group (EV WG) will be established at the kick-off of the feasibility study. Its activity is considered as crucial for the successful execution of the study as well as for the implementation of its recommendations. As demonstrated by the good practices referred to above, the joining up, collaborating and holistic planning is a very important aspect of the whole process.

2. Players involved

Action leader: Operátor ICT

Key partners: MHMP, DPP, PREDi, TSK, IPR, local authorities

Other stakeholders: e-mobility services providers, charging point operators, energy services providers, municipal services providers, logistics services providers

3. Timeframe

Jul 2020	Action kick-off, incl. the establishment of the EV Working Group
H2 2020	Elaboration of the feasibility study
H1 2021	Adoption of the study recommendations by the Prague City Hall
H2 2021 onwards	Recommendations implementation

Marketing activities will be carried out after the feasibility study completion.

4. Costs (if relevant)

Feasibility study: CZK 1,500,000 (approx. EUR 60,000)

Marketing activities: *all marketing activities in this Action Plan are considered together and are estimated at CZK 500,000 (approx. EUR 19,000)*

5. Funding sources (if relevant):

- OP Prague – Growth Pole of the Czech Republic
- City of Prague's / Operátor ICT's budgets

The subsequent fleet modernisation would make use of

- OP Transport
- State Environmental Fund Czech Republic

Priority Stream: Autonomous driving

The background

Autonomous driving is another of the key future transport and mobility attributes as envisioned today, complementing, in turn, Connected, Shared and Electric. As noted under the e-mobility stream, also this trend directs the framing of relevant strategies and policy documents at both the national and regional/local level. As regards the strategic framework for autonomous driving, it is primarily determined by the national Action Plan for Autonomous Driving and, for the City of Prague, complemented by the strategic goals and axes defined in the Smart Prague 2030 concept.

The City of Prague is currently only at the beginning of its journey towards autonomous vehicles, progress has also been slow at the national level. This is albeit the crucial role of the automotive industry for the economy of the Czech Republic²⁸. This Action Plan is hence meant to move things forward at the city level as well as support the country-wide efforts to build knowledge of the subject and create a conducive environment for deployment of autonomous vehicles in real world conditions.

In defining these actions, we were inspired by the good practices demonstrated by the city of Coventry and its wider ecosystem, namely the UK CITE and UK MCAV actions.

UK CITE created a testbed for Connected and Autonomous Vehicles (CAV) in real world environments by

²⁸ Its contribution to the national GDP is about 9% (Source: AutoSAP, 2019)

first bringing together partners and stakeholders from across the transport environment and giving them the opportunity to collaborate, create, implement and learn together. Based on its success, namely “a safe and effective use of CAVs in a busy city centre environment”²⁹, the initiative was extended for a further 8 years and its geographical scope was widened. It is worth noting that the project also encountered a number of difficulties which, from today’s point of view, represent important lessons learnt. These concern especially the following contextual aspects:

- different starting knowledge and understanding of the subject
- different level of maturity (readiness)
- fast technological development³⁰
- legal and regulatory challenges

UK MCAV is another interesting initiative started by a corporate player perceiving the need of closer partnership with other industrial players to pursue market opportunities. It takes the form of a cross-industry³¹ cluster³² that organises a limited number of events, both major conferences and technical group meetings, that provide platform for discussion and help initiate cooperation between interested parties. The cluster has proved very successful, underpinning also a number of winning development project bid consortia. Within a year of its existence, the cluster has expanded beyond its original regional scope, connecting with technology businesses in Cambridge. In addition, it has rebranded to ICAV (International) and a spoke and hub model. It thus reflects the opportunities of the technological development that underpins its own success as well the international interest in its activities. Connected clusters have been initiated in Portugal, Berlin and Bucharest.

It is worth noting that the cluster is self-financing, the readiness to pay membership fees and event-related fees reflects the merit of this ecosystem for its members.

Facilitation and marketing activities

The actions presented in this priority stream have the potential to be lighthouse projects in the field of autonomous driving in the Czech Republic. As such, the City of Prague is ready to support their inception and implementation with regard to both procedural and marketing aspects. The former are to be identified as part of the action preparation as well as within the respective Working Groups.

As far as marketing is concerned, the City of Prague considers communicating the following key messages and using the following tools:

Key messages:

- ‘Prague supports the introduction of autonomous vehicles to achieve efficient, safe and future-looking mobility and logistics options for its citizens and enterprises’

²⁹ UK CITE project fiche (Source: Interreg database)

³⁰ “technology envisaged and described when writing the project [was] not suitable by [its] end” (Source: UK CITE project fiche)

³¹ In the sense of augmenting the scope of the traditional automotive industry with digital and enhanced manufacturing sector players

³² (Industry) Cluster means a mechanism enabling and facilitating the grouping of entities/ stakeholders with a common interest. The groupings are characterised through three key aspects: the geographical location of companies (i.e. co-location), their functional relationships (i.e. supply chain relationships, production of complementary products), and the presence of institutional linkages (i.e. formal or special linkages with local authorities and universities). The mechanism may demonstrate a different level of formalisation.

(Source: definition based on Emsi: Industry Clusters, The key to identifying the economic strengths, opportunities and threats in your region (2017) and NIESR, SpazioDati, City RED: BEIS Research Paper Number 4, Industrial Clusters in England (2017))

- 'Prague wants to be among the first cities to introduce autonomous vehicles in mobility services'

Key tools:

- Individual web pages and social media profiles
- Group interview with focus group (90 min., 6-10 experts within the Prague region)
- 2 workshops (3 hours)
- 1 article in daily news with wide circulation (over 2 mil real users/month)
- Press conference (2020/2021)

Communication will be targeting both internal (municipal) departments and companies, and external parties and wider public.

1. ACTION 1 - Preparatory work for deployment of autonomous vehicles at the Prague airport

This action concerns the preparatory work for the deployment of autonomous buses or light duty vehicle types at the Prague international airport. Owing to the combination of its transportation needs and closed environment, the airport is considered a convenient starting point for introducing autonomous vehicles in the territory of Prague.

The airport's management is interested in using autonomous vehicles for transporting people between terminals and parking houses as well as for transporting objects.

The action will deliver

- Working Group consisting of representatives of all the key stakeholders
- full-fledged feasibility study, incl. a cost-benefit analysis (CBA)
- Associated marketing activities

The Working Group (AV WG) will have been established at the kick-off of the feasibility study at the latest. Its activity is considered as crucial for kickstarting autonomous-vehicles-related activities in the City of Prague. As demonstrated by the good practices referred to above, the joining up, collaborating and learning together is a very important aspect of the whole process.

It is expected that actual deployment of autonomous vehicles will follow up on the completion of **the feasibility study**, incl. any administrative procedures necessary. Equally, it is expected that the AV WG will continue its work throughout the testing and monitoring phase and will continue to be the driver of further municipal efforts in the area of autonomous driving.

2. Players involved

Action leader: Operátor ICT

Key partners: Letiště Praha (Prague airport), MHMP, telecom operators

Other stakeholders: DPP, TSK, IPR, MD, CDV, academic institutions

3. Timeframe

Jun 2020	Action kick-off, incl. the establishment of the Working Group
H2 2020	Elaboration of the feasibility study
H2 2020 - H1 2021	Going through administrative procedures
H2 2021 / H1 2022	Testing of autonomous vehicles

Marketing activities will be carried out throughout the project, their contents and timing will be agreed by the WG.

4. Costs

Feasibility study³³: CZK 2,000,000 (approx. EUR 80,000)

Organisation of the Working Group: CZK 36,000 (approx. EUR 1,500)

Marketing activities: all marketing activities in this Action Plan are considered together and are estimated at CZK 500,000 (approx. EUR 19,000)

5. Funding sources:

- European Regional Development Fund
- OP Prague – Growth Pole of the Czech Republic (European Structural and Investment Funds)
- Other Operational Programmes (European Structural and Investment Funds)- dedicated calls
- City of Prague's / Operátor ICT's budgets
- Prague airport's budget

It is to be noted that due to the new Programming Period starting in 2021 and being currently under preparation, there may be other funding possibilities.

1. ACTION 2 - Development of HD map for a pilot location in Prague

This action concerns the development of a first HD map of a Prague location (pilot location) for the needs of autonomous vehicles operation. The action aims to support the expansion of the real world environment suitable for AV testing. This action is aligned with national Action Plan for Autonomous Driving, particularly with the priority axis targeting the readiness of the road networks for autonomous vehicles.

The development of the HD map will take into account the Methodology for the selection of roads for the Real World Environment AV Testing Catalogue developed by the Transport Research Centre (CDV). The

³³ Most probably carried out by a subcontractor selected through a tender procedure

methodology is currently in a draft version and will be further refined in 2020.

As part of the development activities, discussion will be held with the action players on the selection of the pilot location and identification of complementary infrastructure-related measures necessary for the subsequent AV testing. The goal is to link into the highway sections around Prague currently proposed for such testing.

As part of this action, we also envisage to carry out an analysis of the Sentinel missions³⁴ data and evaluation of their potential for use in HD mapping, in particular as far as daily/weekly updates are concerned.

This action will be supported by a **Working Group** and closely coordinated with the Ministry of Transport as the central government sponsor of autonomous driving and coordinator of cross-border cooperation. In the spirit of cooperation and experience sharing, the City of Prague has the intention to follow the development of other AV-focused initiatives, many of them being conducted as multilateral European projects.³⁵

The action will deliver

- Working Group consisting of representatives of all the key stakeholders (listed below under 'Players involved')
- HD map for a pilot location in Prague
- Analysis of Sentinel mission data for the possible use in HD mapping
- Knowledge building of the city policy experts
- Associated marketing activities

2. Players involved

Action leader: Operátor ICT
Key partners: MHMP, MD, CDV, SDT, ŘSD
Other stakeholders: TSK, IPR, DPP, academic institutions

3. Timeframe

Jun 2020 Action kick-off, incl. the establishment of the Working Group
H2 2020 - H1 2021 HD mapping, incl. all necessary preparatory work

Marketing activities will be carried out throughout the project, their contents and timing will be agreed by the WG.

³⁴ A series of next-generation Earth observation missions carried out in the framework of cooperation between the European Space Agency and European Commission. (Source: European Space Agency)

³⁵ E.g. Synchrone Mobilität 2023, Connected Cities (H2020)

4. Costs

HD mapping³⁶: CZK 2,000,000 (approx. EUR 80,000)

Organisation of the Working Group: CZK 24,000 (approx. EUR 1,000)

All costs associated with project management and participation in the Working Group, incl. all the related work will be borne by the respective players.

Marketing activities: all marketing activities in this Action Plan are considered together and are estimated at CZK 500,000 (approx. EUR 19,000)

5. Funding sources:

- European Regional Development Fund
- OP Prague – Growth Pole of the Czech Republic (European Structural and Investment Funds)
- TAČR Transport 2020+ (national funding)
- City of Prague's / Operátor ICT's budgets

Priority Stream: H-mobility (Hydrogen)

The background

Hydrogen-fuelled transport is gaining ever more visibility thanks to R&D activities of a number of OEMs and wider global and European initiatives. Hydrogen is considered a key fuel for the future for achieving zero emissions at the tailpipe and, upon wider integration of its production in the energy sector, along its whole value chain.

Considering the potential impact as well as the current costs of the technology and a limited network of filling stations, hydrogen-related strategies focus in the short-to-mid term on heavy-duty passenger transport. This is also one of the assumptions of the National Action Plan for Clean Mobility which, among others, recommends a long-term target of a minimum 25% share of hydrogen buses in the public transport fleets. Owing to the technological neutrality principle, Prague's Smart Prague 2030 has not specified concrete targets for different alternative fuel vehicles but aims to first map and understand the potential of the different fuels. The actions listed below should contribute to this goal.

INNOTRANS partners have not put forward any specific hydrogen-related good practices. The following actions nevertheless draw inspiration from some of the mechanisms and system processes used in those practices.

As with autonomous driving, we highlight UK CITE for its new technology enabling function and the creation of urban testbed as well as for the lessons learnt in terms of contextual aspects³⁷. Also, Prague's own 'In

³⁶ Most probably carried out by a subcontractor selected through a tender procedure

³⁷ Different starting knowledge and understanding of the subject, different level of maturity (readiness), fast technological development, legal and regulatory challenges

motion charging electric bus' good practice which featured the full electrification of bus route 140 will feed into the below actions as DPP, the main public transport operator in Prague, will be a key partner on both actions. We also refer to the RO SUMP Planning good practice which underlines the need for a holistic approach, the understanding of interdependencies and focus on the improvement of quality of life for citizens.

Facilitation and marketing activities

As with the Autonomous Driving priority stream, activities under the H-mobility stream have the potential to carry some unique elements in the field of hydrogen mobility in the Czech Republic. As such, the City of Prague wishes to use the actions' output for marketing and education purposes. Prague considers communicating the following key messages and using the following tools:

Key messages:

- 'Prague supports the introduction of hydrogen mobility in public transport to achieve clean, efficient and future-looking mobility for its citizens'
- 'Prague wants to be a one of the leaders in hydrogen mobility services in public transport in the Czech Republic'

Key tools:

- Individual web pages and social media profiles
- Group interview with focus group (90 min., 6-10 experts within the Prague region)
- 2 workshops (3 hours)
- 1 article in daily news with wide circulation (over 2 mil. real users/month)
- Press conference (2020/2021)³⁸

Communication will be targeting both internal (municipal) departments and companies, and external parties and wider public.

1. ACTION 1 - Pilot testing of H-buses on a regular public transport service line in Prague

This action envisages a pilot testing of two (2) hydrogen buses on a regular public transport service line No. 170. It addresses one of the priority axes of both the Smart Prague 2030 concept and the National Action Plan for Clean Mobility, namely an increase in zero-emission buses in public transport fleets with a special focus on hydrogen.

The City of Prague is currently finalising a Memorandum of Cooperation to provide a formal framework for the first hydrogen mobility pilot project in the capital. The aim is to bring all key partners along the implementation chain together and facilitate close coordination and collaboration on all key aspects of the project.

The overall project management will be carried out by the research institute ÚVJ Řež, the coordinator for the

³⁸ This conference would cover all the three streams of this Action Plan, i.e. e-mobility, autonomous driving and H-mobility

City of Prague will be DPP.

In the best spirit of the UK CITE initiative, this action is to create a testbed for hydrogen mobility in a real world environment while drawing on the top expertise available in the Czech Republic.

The action will deliver:

- H-mobility Working Group consisting of experts of all the key stakeholders (listed below under 'Players involved')
- Project time schedule
- Cooperation and facilitation of all necessary administrative procedures (compliant with applicable regulation)
- Technical solution for the hydrogen buses
- Bespoke production of the hydrogen buses
- Testing of the hydrogen buses
- Maintenance services of the hydrogen buses
- Associated marketing activities

2. Players involved

Action leader: DPP

Key partners: ÚJV Řež, MHMP, ŠKODA ELECTRIC, UNIPETROL RPA

Other stakeholders: IPR, Operátor ICT, TSK, MPO, MD, academic institutions

3. Timeframe

Q1 2020	Conclusion of the Memorandum of Cooperation
Q2 2020	Action kick-off, incl. the establishment of the Working Group
H2 2020 - H1 2021	Development of the technical solution, going through all administrative procedures
H1 2021 / H2 2021	Production of the hydrogen buses
H2 2021 / H1 2022	Testing of the hydrogen buses

Marketing activities will be carried out throughout the project, their contents and timing will be agreed by the WG.

4. Costs

Organisation of the Working Group: CZK 42,000 (approx. EUR 1,600)

Marketing activities: all marketing activities in this Action Plan are considered together and are estimated at CZK 500,000 (approx. EUR 19,000)

All costs associated with project management and participation in the Working Group, incl. all the related work will be borne by the respective players.

Technical development costs will be borne by ŠKODA ELECTRIC.

5. Funding sources:

- European Regional Development Fund
- OP Prague – Growth Pole of the Czech Republic (European Structural and Investment Funds)
- Other Operational Programmes (European Structural and Investment Funds) - dedicated calls for hydrogen mobility in public transport
- DPP's, ÚJV Řež's and other key stakeholders' budget

It is to be noted that due to the new Programming Period starting in 2021 and being currently under preparation, there may be other funding possibilities.

1. ACTION 2 - Development of vision and scenario-based strategy for hydrogen mobility

This action envisages the development of a vision and scenario-based strategy for hydrogen mobility for Prague. It will build on the output of the city's Sustainable Urban Mobility Plan and Alternative Fuel Vehicles Strategy. As such it will complement the holistic view of the SUMP and be another jigsaw in the integrated transport policy framework of the City of Prague. The definition of the hydrogen mobility vision and the development of the associated scenario-based strategy will be guided by the level of improvement that can be achieved in the life of Prague's citizens taking into consideration especially the principles of environmental and economic sustainability as well as safety and security.

The action will deliver:

- Task Forces (TFs) focusing on different aspects of urban H-mobility³⁹
- Hydrogen strategy 2030 for the City of Prague
- Initial action plan
- Public consultation in focus groups/ roundtables
- Associated marketing activities

The strategy development will be supported by the H-mobility **Working Group** established under Action 1 above. Other stakeholders may be invited as necessary.

It is assumed that the strategy will be developed by the representatives of the WG under the project management of an external consultant (as in the case of the Alternative Fuel Vehicles Strategy). Work will be mostly carried out by specific **Task Forces**.

³⁹ TF meetings recurring on two-week basis for a specific period of time for each TF; three different TFs assumed (34 meetings in total)

2. Players involved

Action leader: IPR

Key partners: ÚJV Řež, MHMP, DPP, ŠKODA ELECTRIC, UNIPETROL RPA

Other stakeholders: Operátor ICT, TSK, MPO, MD, academic institutions

3. Timeframe

H2 2020 Action kick-off, incl. the establishment of Task Forces

H2 2020 / H2 2021 Strategy development, incl. public consultation

Marketing activities will be carried out throughout the project, their contents and timing will be agreed by the WG.

4. Costs

Organisation of the Working Group⁴⁰: CZK 34,000 (approx. EUR 1,300)

Project Management: CZK 1,200,000 (approx. EUR 46,500)

Marketing activities: all marketing activities in this Action Plan are considered together and are estimated at CZK 500,000 (approx. EUR 19,000)

All costs associated with participation in the Working Group, incl. all the related work will be borne by the respective players.

5. Funding sources:

- European Regional Development Fund
- City of Prague's / IPR's budgets

Date: _____

Signature: _____

Stamp of the organisation (if available): _____

⁴⁰ The costs cover only additional meetings to those covered under ACTION 1