



WP T1

DELIVERABLE T1.4.1

Urban Innovation Action Plans (UIAPs)
RIJEKA

05 2019
Final



Project information	
Project Index Number:	CE677
Project Acronym:	URBAN INNO
Project Title:	Utilizing innovation potential of urban ecosystems
Website:	http://www.interreg-central.eu/Content.Node/URBAN-INNO.html
Start Date of the Project:	1 st June 2016
Duration:	36 Months
Document Control page	
Deliverable Title:	D.T1.4.1 – Urban Innovation Action Plan (UIAPs) _ RIJEKA
Lead Contractor of the Deliverable:	PP1-City of Rijeka
Authors:	PP1-City of Rijeka PP8-Ericsson Nikola Tesla d.d.
Contributors:	Smart RI d.o.o.
Contractual Delivery Date:	05.2019
Actual Delivery Date:	05.2019



Content

EXECUTIVE SUMMARY	1
BACKGROUND – OVERVIEW OF THE URBAN ECOSYSTEM	3
1 Characteristics of the urban innovation ecosystems – regional background	3
2 Socio-economic and SWOT analysis of the urban innovation ecosystem.....	11
3 Summary of the current situation and major challenges	14
3.1 SPOT profile	14
3.2 Identification of major opportunities and risks for the development of the urban innovation ecosystem	15
ACTION PLAN	16
4 Thematic priorities – fields of action	16
5 Mission statement and objectives	18
5.1 Overarching mission statement and objective(s) for the UICN	18
5.2 Strategic and operational objectives.....	19
6 Major initiatives and projects to be implemented	20
6.1 Strategic area / objective 1: Responsible and efficient use of energy, urban infrastructure and natural resources - planned actions and key projects.....	21
6.2 Strategic area / objective 2: Improving the quality of life by establishing high-quality solutions in urban traffic and encouraging innovative, sustainable, clean and energy-efficient modes - planned actions and key projects	27
6.3. Strategic area / objective 3: Improvement of business infrastructure and business supporting system, based on high-tech industry and innovation - planned actions and key projects	31
6.3 Strategic area / objective 4: Full/intensive digitalization of public administration - planned actions and key projects	33
IMPLEMENTATION – MONITORING AND EVALUATION	37
7. Management structure	37
8. Communication.....	40
9. Monitoring and evaluation	43
EXPECTED IMPACT FOR THE TERRITORY.....	45
10. Expected impact.....	45
11. Outlook.....	45



EXECUTIVE SUMMARY

Rijeka is the largest Croatian port, located at the crossroad of Central European and Adriatic and Mediterranean routes with the shortest maritime connections to end destinations. Its history is based on tradition in industrial manufacturing, the shipbuilding industry, the production of petroleum products, pharmaceutical products, the service sector and new technology application in cooperation with the academic community. With its geographic position, traffic connections and developed infrastructure, as well as with the openness and multicultural spirit of its citizens, Rijeka represents a suitable place for investment and business.

In September 2013, the City of Rijeka adopted the Development Strategy of the City of Rijeka until 2020. The Development Strategy of Rijeka is based on the Strategy of the European Union until 2020. The mission of the City stated in the document reads as follows: 'Rijeka is focused on the wellbeing of all citizens, which common values reflect in fostering openness, tolerance and responsibility'. Rijeka is a pleasant city to live in, and bases its development on the advantages of its unique geographic position, and on development of human resources focusing on knowledge that in a modern manner links the economy and science.

The past decade in Rijeka was marked by large investments made in sports infrastructure, port capacity extension, traffic infrastructure and scientific and research infrastructure during the construction of the university campus.

Moreover, utility infrastructure underwent renewal, the Site plan was adopted as well as the General Development Plan, quality and professional staff hired and its orientation towards innovations, new technology and support to the economy make Rijeka a quality location for making new investments.

The promotion of Rijeka as a new cruise and yachting destination and the decision whereby assigning the title of European Capital of Culture 2020 to Rijeka, have great relevance for the economy of Rijeka

The City of Rijeka actively took part in a number of activities and projects falling within the field of European integration, financed under the EU pre-accession assistance programmes (ISPA; SPARAD and PHARE, i.e. IPA, since 2007) and the technical and financial assistance programmes and the cross border cooperation programme (CARDS and INTERREG). Taking advantage of international cooperation, as well as of the aforementioned EU financial sources, the City of Rijeka realised a number of successful projects and activities that made improvements in the City of Rijeka and contributed to its convergence with EU standards.

In 2013 Croatia became a fully-fledged member of the European Union, which opened up new possibilities for the next development phase of Rijeka. In the previous period an innovative approach was necessary toward project and programme financing, while IPA-programmes (pre-accession programmes offering assistance while preparing for EU membership) were not available for the needs of development infrastructure in a city such as Rijeka. After the entry of Croatia into the European Union, EU funds became available for Rijeka.

The city of Rijeka is constantly developing projects contributing to the smart city concept, which was recognized on EU level. In 2014 Rijeka was indicated on the Smart city map (*expert study Mapping of EU smart cities*), as a smart city among the cities with over 100.000 inhabitants. The City of Rijeka has been recognized as a smart city based on a series of projects, and this material will further contribute to strengthening the development of the city towards the development of new technologies and innovative models.



The City of Rijeka already has a respectable technical infrastructure which is a prerequisite for the realization of projects. Also, the City of Rijeka has an Information Technology Institute (ZID), as a specialized organizational unit that provides professional assistance to the application of technology in various projects. In addition, there are many years of experience of Rijeka through collaboration on projects and programs. Based on the above experience, the City of Rijeka will continue to strengthen partnerships with all stakeholders at the local level (businesses, the academic community and the civil sector).

From 1993 to 2017 the City of Rijeka has implemented 34 projects with smart elements. In the period of 201/2018 additional 83 'smart' projects are in progress. It is clear that the City of Rijeka, including City government, public providers, city-owned companies and institutions, was involved in total of 117 smart projects from different thematic fields. Moreover, in the organization framework of the City of Rijeka in 2018 altogether 7 workshops on smart city topics were held, gathering 107 participants (representatives of local authorities, city companies and public providers). The workshop were focused on smart city dimensions (smart mobility, smart government, smart living, smart people, smart economy and smart energy), and especially with projects to be provided by Smart RI d.o.o – City owned company as a leader of Center of competences for smart cities.

Urban innovation action plan of Rijeka region is document developed within support of UI4 quadruple-helix network, strongly relying on urban ecosystem background, actual development strategy and smart city concept with related initiatives and policies. The intention behind it is to reconcile the needs and interests of local community with contemporary trends in smart solutions, with final goal to improve the quality of living and working in Rijeka region.

BACKGROUND – OVERVIEW OF THE URBAN ECOSYSTEM

1 Characteristics of the urban innovation ecosystems – regional background

1.1. Basic information and city characteristics

Rijeka is administrative center of Primorsko-goranska County and largest seaport in Croatia. With total of 128.624 inhabitants (2011), Rijeka is the third-largest city in Croatia and one with the highest population density (2.923/km²). According to latest population census from 2011, some of the city demographic indicators are presented in Table 1.

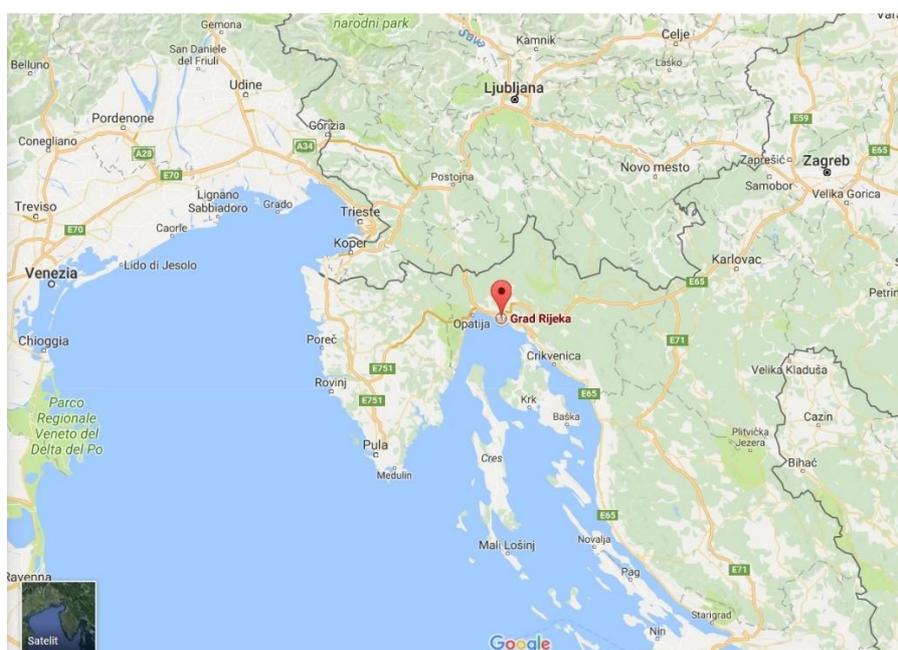
Table 1: City of Rijeka Demographic Indicators

Population by gender	Male		Female
	47,39%		52,61%
Population by age	0-14	15-64	65+
	11,63%	68,63%	19,74%
	Average age of population 44,50		
Total of working-age population		88.271	
Working-age vs. Total population		68,63%	
Share of high-educated inhabitants older than 25 y.		25,93%	
Share of national minorities in total population		13,83%	

Source: Geostat RH, geostat.dzs.hr

Rijeka is located on the northern coast of Adriatic Sea, in the deep section of Kvarner Bay. Thanks to its advantageous **geostrategic position and turbulent history, Rijeka is today considered as an important transport and cultural hub of Croatia and wider region.** Picture 1. represents Rijeka in geographic context.

Picture 1: City of Rijeka geographic location



Source: Google maps



Urban / regional strengths

- Rijeka has favorable geographical position and is the largest Croatian seaport
- Rijeka Gateway (Rijeka-Zagreb-Budapest) is a part of V. Pan-European transport corridor, whereby Port of Rijeka has momentous role. In recent years new investments have been launched in order to improve not only seaport capacities, but also related traffic infrastructure, such as highways and city roads. Those already planned actions will be continued in the future, supported by city official development strategy - *Rijeka 2020* (source: *Development Strategy for the City of Rijeka 2014-2020*).
- Rijeka is elected for European Capital of Culture 2020 (source: Rijeka 2020, www.rijeka2020.eu).
- City of Rijeka as an urban/administrative center of region (Urban Agglomeration Rijeka and Primorsko-goranska County). Formation of Rijeka Urban Agglomeration (City of Rijeka, Kastav, Kraljevica and Opatija, and Municipalities Čavle, Klana, Kostrena, Lovran, Mošćenička Draga and Viškovo) with unique mission: sustainable economy development and maintaining of urban areas quality.
- Rate of highly educated citizens (25,9%) is significantly higher than national rate (16,4%) (source: Croatian Bureau of Statistics, www.dzs.hr).
- GDP per capita higher than national GDP p/c, index=126,4 (data from 2013) (source: Croatian Bureau of Statistics, www.dzs.hr)
- High transparency level based on amount of published budget-related documents, available to local community on official city web sites (source: The Institute of Public Finance, www.ijf.hr)
- Participation in numerous European projects (source: City of Rijeka official website, <https://www.rijeka.hr/en/city-government/eu-projects/ongoing-projects/>)
- Membership in numerous international associations (source: City of Rijeka official website, <https://www.rijeka.hr/en/city-government/international-cooperation/memberships-in-international-associations/>)
- Other advantages: Sports infrastructure (new sports facilities), New University capacities (University campus), Tolerance and cultural pluralism, City real-estate property.

1.2. Characteristics of the local economy

City of Rijeka and Primorsko-goranska County represent the most relevant political and administrative institutions regarding urban innovation, with synchronized strategic policies. In the foreground of mutual and sharing interests are green economy, life quality improvement and sustainable development. On the city level these aims are elaborated through more specific and local-focused actions.

Development Strategy of the City of Rijeka for the period 2014-2020 is a key development document adopted by the City Council of the City of Rijeka, in 2013. City of Rijeka, along with the city institutions and city utilities and companies, implemented a number of projects that comply with the European concept of the Smart city.

With the beginning of 2019 *Strategic plan Rijeka Smart City 2019-2020* has been developed, as an addition to *Development strategy of the City of Rijeka (2014-2020)*, outlining digital transformation and smart city initiatives and defining projects and goals to be fulfilled by the end of the 2020. Moreover, within University of Rijeka, the Centre for support of smart and sustainable cities was established in 2018. At this point, Rijeka is already recognizable as 'the smartest' city on national level (<https://www.rijeka.hr/grad-rijeka-proglasen-najboljim-u-kategoriji-smart-city/>).

Major priorities and challenges

Three priority fields are defined by Rijeka's *Development strategy 2014-2020*:

- Related to Rijeka Gateway: building and development of transport infrastructure, integrated management of Rijeka gateway, strengthening of maritime and logistics clusters, global promotion and international cooperation, coordination of maritime actors, sustainability of public city transport.
- Related to knowledge-based and innovation economy: gaining of technical and entrepreneurship skills and knowledge by any form of education, development of entrepreneurship institutions and supporting measures, knowledge and technology transfer, increasing of employment rate, especially among young people, economic development based on new technologies, development of creative industries, ICT city infrastructure.
- Related to social inclusion: integrated urbanistic planning, European Capital of Culture title, constructing of city infrastructure, creating conditions for independent living of young people, preventive health care through education programs and sports, modern social policy, strengthening of human resources and knowledge, regional and European cooperation.

Present major challenges of the urban area:

- Demographic ageing of population
- Lack of labour force and brain drain (especially young citizens)
- Uncertainty of local shipbuilding industry
- Global competitiveness of Rijeka Gateway
- Constant investments in municipal infrastructure as well as in ICT infrastructure
- Unused business spaces
- Need for improvement of knowledge and technology transfer from Rijeka University to local economy
- Fossil fuels dependence.

The European semester is being implemented by the year 2020, and a new European semester will begin in 2021, so the detailed action plan on the City level cannot be developed at this moment because the parameters of the new European Semester are still not known. However, the establishing of Development plan for the City of Rijeka 2020-2030 is yet in progress.

Economic indicators and employment

Primorsko-goranska County, with Rijeka capital, is one of the most developed regions in Croatia, according to economic indicators. The table below is comparing GDP in different administrative extents.

Table 2: Gross Domestic Product, 2016

	GDP per capita in PPS (EU28=100)	GDP thousand EUR	% of Total
GDP Croatia	61,00	46.663.725	100
GDP Adriatic Croatia	58,60	14.947.547	32,02
GDP Primorsko-goranska County	73,10	3.875.650	8,30

Source: Croatian Bureau of Statistics, www.dsz.hr



Major changes occurred in Croatian labour market, in the past few years. The rate of unemployment is on low level, and tending to be even lower, especially among younger population. The reason for such indicators lay in migration processes, where mostly young people and high-educated are moving into more prosperous EU and worldwide countries.

Table 3: Unemployment in 2018

Description	Number of unemployed 31.12.2017.	Number of unemployed 31.12.2018.	Index 2018/2017	Unemployment rate 2018 (%)
City of Rijeka	4.420	3.553	80	5,2
City of Rijeka – young citizen up to 29 yr.	1.031	774	75	3,8
Primorsko-goranska County	9.774	8.647	88	8,2
Republic of Croatia	193.967	167.351	86	10,6

Source: Croatian Employment Institute, Croatian Bureau of Statistics data analysis

City of Rijeka has significantly lower unemployment rate (5,2%) in comparison to national rate (10,6), but both are tending to be even lower, especially within younger population.

Business/Industry

According to National Financial Agency (FINA) basic economic and financial indicators (2017) in the city of Rijeka are demonstrating raising of economic activities. The only indicator not showing the progress is investments in fixed assets, with decrease of 16% in comparison with previous year (2016). The number of entrepreneurs increased in 5,4%, and the number of employees in almost 4%. Total revenues increased for 9%, in which sales abroad have risen in over 20%. However, average month salary is around 708 Euros, below national average in about 11%. The overview of economic and financial indicators is represented by Table 4.

Table 4: Basic indicators of entrepreneurship activity in the city of Rijeka, 2017

Description	2016.	2017.	Index 2017/2016
Number of entrepreneurs	4.335	4.568	105,4
Number of employees	28.859	29.989	103,9
Total incomes (EUR)	2.443.253.258	2.668.745.607	109,2
Sales abroad (EUR)	495.461.894	597.536.513	120,6
Domestic sales (EUR)	1.620.216.287	1.743.476.823	107,6
Total expenditures (EUR)	2.316.439.015	2.533.685.872	109,4
Gross Income (EUR)	126.814.242	135.059.734	106,5
Net profit (EUR)	104.469.674	108.939.556	104,3
Average month salary (EUR)	678,40	708,13	104,4
Investments in fixed-assets (EUR)	197.245.387	164.697.930	83,5

Source: FINA (National Financial Agency), July 2018



From the company size point of view, micro and small enterprises are generators of growth of Rijeka economy. Together, they are representing 99% of total number of enterprises, employing 55% of total employees, and earning 45% of total revenues and 46% of total profit.

Table 5: Financial results of business activities according to company size (city of Rijeka, 2017)

Description	Total	Micro	Small	Medium	Large
Number of employees	29.989	9.452	7.038	3.566	9.933
Total incomes (EUR)	2.668.745.607	536.709.619	674.626.560	374.441.174	1.082.968.253
Net profit (EUR)	108.939.556	20.057.787	30.331.777	28.335.017	30.213.641
Average month salary (EUR)	708,13	535,86	814,13	906,53	725,60

Source: FINA (National Financial Agency), July 2018.

The most represented industrial branches, earning 89% of total income in 2017. in Rijeka city area, are: processing industries, retail, transport/storing and providing of expertise, science and technology services, increasing for 8% in comparison to 2016. However, analysis does not include the data from financial sector, local government, craftsmen and freelancers activity fields, due to FINA methodology aggregation system.

Among the other branches, which are vital for strategic focus of urban development of the city of Rijeka, ICT companies showed a rapid income increase in 103% (+ 50.133.133 Eur), while accommodation and food services increased in about 20% (+ 13.600.000 Eur).

1.3. HER, clusters and other intermediaries in the urban area

HER overview

The Table below indicates the number of entities in High education and research in Rijeka urban area.

Table 6: HER subjects in Rijeka

Type	Number
Universities	2
Non-university education providers	1
Total	3

Source: Ministry of science and education, public.mzos.hr



Three indicated HER organizations in Rijeka urban area are:

- University of Rijeka (including 11 Faculties, 4 departments, 12 centers, and 9 teaching units)
- Polytechnic of Rijeka
- Business School P.A.R.

Established clusters

In total, 4 clusters are established in Rijeka urban area with 3 different thematic focuses: Smart cities, Shipbuilding and Healthcare. Also, 11 more cluster associations are existing within Croatian Chamber of Economy of Primorsko-goranska County, related to Maritime affairs, Processing industry, Construction and building, Architecture and Engineering, Design, graphic and publishing, Computer programming and information, and Waste disposal and environment protection.

Considering knowledge/innovation-based economy as one of the strategic objectives in Rijeka development strategy, and 'Smart city'-concept activities and tendencies that took place in recent local government policy, City of Rijeka had to identify business subjects from ICT/IT sector in order to establish related **center of competence (CoC)**, along with high-education and research institutions. For this purpose, subjects from regional and national territory were taken into account in order to enhance CoC's expertise and performance. The list of partners included in 'Smart RI' CoC is provided below.

Table 7: Smart RI CoC members

Company	Industry	Employees No.
Ericsson Nikola Tesla d.d.	ICT	1.933
Hrvatski Telekom d.d.	ICT	4.045
KD Vodovod i Kanalizacija d.o.o.	Utility service provider: Water supply and drainage, Waste water disposal	302
3T.cable d.o.o.	Engineering and technical consulting	20
Alarm Automatika d.o.o.	Technical security	69
Combis d.o.o.	IT	356
Elektrokovina d.o.o.	Mechanical engineering	38
Energ o. o. o.	Utility service provider: Thermal energy and gas/Public lighting	155
Exevio d.o.o.	IT	5
IOLAP inc.	Big data technology	n.d.
Kreativni odjel d.o.o.	Complex and interactive visualizations	4
Rijeka Promet d.d.	Utility service provider: Management of city road network and public traffic areas	63
Sense Savjetovanje d.o.o.	Investment and organization consulting	29
Smartis d.o.o.	IT	1
Smart Sense d.o.o.	IT	2

Source: Center of Competence for Smart cities - Strategy of research and development, 2016



Civil society and other stakeholders

The City of Rijeka is divided into 34 local community councils, each corresponding to an exact city territory. The citizens participate in the work of the local community councils which make a plan of development and action for each year, specifying the projects of direct influence to their local community that will be conducted (i.e. infrastructure construction and reconstruction, local festivities, environmental activities etc.). The citizens can share their opinions directly to the community councils regarding planned projects and propose their own projects.

In the City of Rijeka there are currently 1759 active civil organizations. 108 of these organizations focus on R&D in different scientific fields. The City of Rijeka has a number of NGOs which actively take part in city everyday life improvements. 3 of them supported URBAN INNO project: Association for civil society and development SMART (also 4UI network member), Junior Chamber international Rijeka, and Pensioners' Association of Rijeka.

Overview of other stakeholders in Rijeka urban area is provided in the next Table.

Table 8: Other Intermediaries

Type	Institution/Organization
Incubators	Start-up Incubator Rijeka
	Business incubator for service activities Torpedo
	Business incubator for manufacturing activities Rujevica
Agencies	Rijeka Development Agency PORIN
	Regional Development Agency of Primorsko-goranska County
Science parks	Step Ri Science and Technology Park of the University of Rijeka
Chambers of commerce	County Chamber for Economy
	County Chamber of Crafts

1.4. Local, regional and national policy context

The Strategy of Smart specialization of the Republic of Croatia 2016-2020 and the Action Plan for the implementation of the Strategy of Smart specialization 2016-2017 have been adapted in 2016. The Strategy (S3) is based on available resources and the potential for their use, competitive advantages and technological specialization as the foundations of future innovations. S3 provides an overall assessment on managing capacities of the public sector and the instruments for stimulating innovations, as well as identifying key actors of innovation – research capacities and human resources. The Strategy identified 6 priority areas:

- Health and Quality of Life
- Energy and Sustainable Environment
- Traffic and Mobility
- Security
- Food and Bio-economy

The horizontal themes for these areas are **KET** and **ICT**.



The City of Rijeka initiated the founding of The **Centre of Competence for Smart cities** which will base actions on R&D and facilitate commercialization of achievements from the projects of R&D, and develop competences in 2 thematic areas of the Strategy: Energy and Sustainable Environment & Traffic and Mobility. The CoC for Smart cities is based on triple helix cluster concept.

Primorsko – goranska County has adapted the **Strategy of development of the Primorsko – goranska County 2016-2020** which specifies its priorities as: smart, sustainable and inclusive growth in accordance with the Europe 2020 Strategy. The Strategy of PGZ points out that entrepreneurship is insufficiently concerned with technological growth and innovations followed by a lack of investment in research and development. The County will take measures in developing a stimulating entrepreneurial environment and an economy based on: knowledge, innovations and green economy. The County specifies that the potential for economic growth for the area lies in tourism, shipbuilding, wood industry, ICT, maritime-traffic and energetics.

One of the main priorities is to enhance and stimulate contributions of the civil society in regards of the projects for the development of the **Primorsko-goranska County**. The County has therefore began stimulating citizens to join in the decision making process with a partner approach, and by supporting the activity of various civil society organizations. The strategic objective of developing a stimulating entrepreneurial environment will therefore be achieved by:

- Developing infrastructure for entrepreneurship (developing and establishing support institutions - intermediaries)
- Strengthening competitiveness of SMEs
- Stimulating new organizations and
- Clusterization and socially responsible business.

The City of Rijeka has declared **The Strategy of development of the City of Rijeka 2014-2020** in 2013, emphasizing the need for cooperation between city government, public and private sector, as well as scientific organizations so that projects of interest for the community could be developed. A large portion of the Strategy is dedicated to the inclusion of social groups and development of projects of interest for the community so that the needs of citizens could be synchronized through various projects and programmes which is one of the goals of URBAN INNO in Rijeka – allowing citizens to decide the purpose of use of the real estate property owned by the City for their needs. This will also be strengthened through the development of social entrepreneurship in compliance with the Europe 2020 Strategy.

Because of the strong linkages between Rijeka and its metropolitan area, the Urban Agglomeration Rijeka was established in 2015. It consist of 10 neighboring cities and municipalities – Matulji, Kastav, Viškovo, Klana, Jelenje, Čavle, Opatija, Lovran, Kraljevica nad Kostrena. The Rijeka Agglomeration has adapted the **Strategy of Development of the Urban Agglomeration Rijeka**. The priorities of the Agglomeration are entrepreneurial infrastructure, younger citizens, services in the social sector, cultural heritage and tourism, brownfield, clean urban traffic and heating services, and strategic documents are being developed for financing these activities through the **ITI mechanism**. Since the City of Rijeka is the center of the Agglomeration, the processes of development go hand in hand.

City of Rijeka strategy of development (also within Rijeka UA) is harmonized with Europe 2020 strategy for smart, sustainable and inclusive growth, National Development Strategies and *Development strategy of Primorsko-goranska County 2016-2020*. Table 8. provides an overview of synchronicity among European and local development priorities.

Table 9: Comparison of European and local strategic goals

Rijeka Urban Agglomeration	Primorsko-goranska County	Europa 2020
Strategic goal 1. The development of efficient human resources	Strategic goal 3. Human resources development and improving life quality Priority 3.4. Social security improvement and social sensibility strengthening	Target 1. Employment - 75% of the 20-64 year-olds to be employed Target 5. Fighting poverty and social exclusion - at least 20 million fewer people in or at risk of poverty and social exclusion
Strategic goal 2. Creating conditions for green economy development	Strategic goal 1. Development of competitive and sustainable economy Priority 1.4. Green economy development	Target 2. Research and Development - 3% of the EU's GDP to be invested in R&D Target 3. Climate change and energy sustainability
Strategic goal 3. Sustainable urban development	Strategic goal 2. Strengthening of local capacities and equal development Priority 2.1. Equal development of micro-regions and upgrading of territorial cohesion	Target 3. Climate change and energy sustainability

Sources: UA Rijeka Strategy of Development 2016-2020, Europa 2020, ec.europa.eu

2 Socio-economic and SWOT analysis of the urban innovation ecosystem

2.1. Strengths

- **Urban Agglomeration Rijeka (UAR)** is consisted of 4 cities (Rijeka, Kastav, Kraljevica and Opatija) and 6 municipalities (Čavle, Klana, Kostrena, Lovran, Mošćenička Draga and Viškovo) with unique mission: sustainable economy development and maintaining of urban areas quality. UAR was set up by a decision of the Croatian Ministry of Regional Development and EU funds, and is going to benefit from the integrated territorial investment (ITI) mechanism in the Republic of Croatia.
- **Above-average level of development:** in comparison to average national level of development (GDP per capita in PPS, \emptyset EU28=100) Rijeka's region rate is 12% higher (2016). Also Rate of highly educated citizens (25%) is significantly higher than national rate (16%).
- **Rijeka - European Capital of Culture 2020:** City of Rijeka is elected for European Capital of Culture for the year 2020. Basically, it is a project with an aim to improve the range and diversity of cultural offer, extend the approach and participation in culture, and to strength the capacities of cultural sector and its connections with other sectors. Actions and initiatives, planed and provided by the city- and county-owned company Rijeka 2020 d.o.o., responsible for project implementation, will have a significant influence on urban ecosystem transformation.
- **Local budget transparency:** City of Rijeka has the highest rank of budget transparency level based on the number of key budget documents published on its official websites. Budget transparency enables citizens



to obtain complete, accurate, timely and understandable budget information. This analysis are annually conducted by the National Institute of Public Finance, from year 2013. City of Rijeka was ranked 5/5 in every year since.

- **Improvements of business infrastructure and SMEs supporting mechanism:** with 3 already established incubators (Table 7.), new ones will be built and activated within 3 years. Also, City of Rijeka General Measures for Encouraging the Development of Entrepreneurship is supporting SMEs by granting their specific activities.
- **Sport infrastructure:** In the recent years several facilities were built with primarily sports purpose: the pool complex, sport hall and the stadium.
- **New University capacities:** University campus with Science and Technology Park Step RI, with new, planned expands in the near future, tends to be the centre of higher education and research in wider region.
- **Public transport:** Good connections within the city and with nearby cities and municipalities facilitate intensive daily migrations. In addition, 42/173 vehicles are using CNG fuel.
- **City real-estate property:** City of Rijeka owns numerous of real-estate units, including residential and commercial spaces. However, some of them remain still unused.
- **Participation in European projects and membership in international associations:** high engagement of City departments and municipal companies enables the demands could be solved through involvement and partnerships. Since March 2018 City of Rijeka is elected as one of 15 European cities in *Digital Cities Challenge* program, with main objective to improve their services to the citizens, by using advanced technologies.
- **E-consultations:** on-line tool for citizens' engagement in local regulation and acts proposals, existing from 2013, and considered as one of the best examples in the country.

2.2. Weaknesses

- **High population density:** Rijeka is the third-largest city in Croatia and one with the highest population density (2.923/km²). Surrounded by neighboring cities and municipalities, city has a poor possibilities to spread inside its administrative borders. That causes spatial limitations in urban planning and development.
- **Public infrastructure:** Constant investments in municipal infrastructure as well as in ICT infrastructure are required, especially in the field of production and distribution of thermal energy (heating system). Some of the needful, but intense investments, can't be implemented by City itself, due to the City budget limitations.
- **Public transport:** In the last period many of public transportation vehicles (buses) ran into malfunction due to poor investment in the fleet maintenance. Also, the lack of drivers resulted in cutting off some of the routes and reducing the time-tables.
- **Unused business capacities:** Partially as the consequence of the global crisis, large shopping malls appearance and other reasons (e.g. too expensive rentals), many smaller businesses in the center of the city were not profitable and got closed.
- **Gap between knowledge and local economy:** Even though in the past years some progress has been made, the bridges between industry and know-hows are still insufficient. The new models of networking are still the required.
- **Fossil fuels dependence:** Entire public heating system is based on fossil fuels usage. Renewable energy producing points are still rare, and mostly related to solar and photovoltaic panels.
- **Lack of monitoring:** There is no central monitoring system that could collect, analyze and provide all city data. Some of the indicators are not accessible, some of them can be hardly found in many different sources, or just be provided on national, not on local level.



- **Limited jurisdiction:** City of Rijeka, as local authority unit, has no jurisdiction in many issues/areas directly impacting everyday life and economy: railways, hospitals and medical care, the majority of maritime zones (Port authority, Ministry of Sea, Transport and Infrastructure), electricity supply (national electricity provider) etc.

2.3. Opportunities

- **EU funds financing:** City of Rijeka is participating in numerous EU projects, using them as a source for financing its strategic goals. The project applications are continuous activity, with many local and national stakeholders involved.
- **Smart city initiatives:** recent public policies relies on smart city concepts. Participation in related projects and networks creates a fruitful background for improvements in urban ecosystem.
- **SMEs as flywheel of local economy:** Over 99% of local business are small enterprises with up to 50 employees. Due to the fact that in the local area a very small number of large companies exist, this points out that the small enterprises have to be initiators of the economy development. Recently, a number of startups has been established, many of them export-oriented and/or using new technologies.
- **Smart specialization:** enhancing innovation infrastructure and capacities, in particular Centers of Competences, where significant synergies between industry/business, R&D and government could be achieved.
- **Rijeka Gateway:** comprehensive revitalization of part of Rijeka's coastal area with an aim to support the national economy, making it more dynamic and competitive.

2.4. Threats

- **Unfavourable entrepreneurship climate:** Lack of new business initiatives, legal insecurity and tax-policies are some of the reasons that the number of startups and startup initiatives relatively low. In addition, the labor market balance is even more compromised by increased population migrations in foreign (EU) countries.
- **Strong centralization:** the most of the relevant decisions that affect local level are made in the national institutions settled in Croatian capital Zagreb.
- **Unfavourable social climate:** distrust in the authorities and their initiatives results with a lack of involvement and engagement, based on common opinion that 'nothing can be changed'. This is, probably, the reasonable outcome of the corruption scandals that occurred in Croatian recent history.
- **Weak infrastructure:** ICT infrastructure investments are needed in order to assure preconditions for the implementation of the 4.0 Industry, and quality development of internet-based companies.
- **Permanent depopulation and brain drain** possibly resulting with decrease in consumer demand, lack of researchers and experts, as well as needed work force (especially young people).
- **Inefficient public administration:** massive bureaucratic machine often doesn't ensure the efficiency of the economic system.
- **Administrative borders and fragmentation:** city of Rijeka is surrounded by neighboring cities and municipalities, and has a poor possibilities to spread inside its administrative borders. That causes spatial limitations in urban planning and development.
- **Ageing population:** The most represented age group are inhabitants from 55-59 years (8,38%) following by age group from 50-54 (7,97%), and 60-64 (7,63%), which indicates significant share of older population in total population structure.
- **Abandoned industrial and military property:** many of former factories and military facilities that closed during the period of transition are still unused. Some of them needs to resolve environmental issues (land pollution). Brownfields are mostly in private ownership, so the local authorities have no legal rights to manage and recover them.



2.5. Summary of the SWOT analysis

City of Rijeka is leaning into a transformation that already begun few decades ago: from strong heavy-industry core to cultural, service-oriented, high-education and tourism center, by building long-term strategies of development on recent social, economic and technological trends and policies. However, the process is not simple and without obstacles that emerge from transition and identified threats. The changes are taking place, but maybe not in desirable dynamics and volume, due to political, financial and structural reasons. Still, in this environment city of Rijeka has achieved significant results reflecting in its above- average indicators of development (comparing to national average or to other regions/cities).

One of the strongest advantages is early involvement in the EU programs and use of EU funds, to stimulate progress and innovations within urban ecosystem and city infrastructure. This fact, along with unambiguous political support, is one of the key drivers of Rijeka’s development. In the last years Rijeka’s landscape experienced a large improvements: a better road connections, new sport and university capacities, new technology solutions embedded in some public buildings and systems, CNG based public transportation system, free city Wi-Fi area, refurbishment of old buildings with new public purposes etc. Great efforts were and are made in the field of improvement of entrepreneurship culture: the new facilities are going to be built and activated, providing high-tech services to startups and possibly creating the improved entrepreneurship atmosphere in Rijeka. In addition, a huge steps were made in cultural and civil sector, by which Rijeka is recognized as plural, transparent and advanced working and living environment.

Despite all accomplishments and ongoing efforts, some of the basic issues in the city remain yet unsolved, whether or not they belong to the City or Country jurisdiction: a City bus terminal, public heating system, waste disposal, railway system, etc. Moreover, the existing public systems and contents need technological improvements, which can be made only in close collaboration of urban ecosystem stakeholders (including citizens): public transport system that will support Rijeka’s intensive daily migrations, overall improvement of energy efficiency (public, industry, tertiary, residential), adoption of smart solutions, and building of central monitoring system that could provide information and expose city profile. The final goal is to make Rijeka a better place to live and work, tailored by citizens’ needs and interests, as well as based on improved technology solutions.

3 Summary of the current situation and major challenges

3.1 SPOT profile

SPOT	PRESENT (Situation)	FUTURE (Vision)
	Which strengths do we plan to build on?	Which opportunities do we want to seize?
POSITIVE	1 ▪ Rijeka agglomeration	▪ Smart City projects
	2 ▪ Entrepreneurship infrastructure	▪ EU financing
	3 ▪ European Capital of Culture (ECC) 2020	▪ Centre(s) of competences
	4 ▪ University of Rijeka	▪ SMEs and Startups
	5 ▪ Above-average level of education	
	Which problems do we want to solve?	Which threats do we need to avoid?
NEGATIVE	1 ▪ Public infrastructure	▪ Unfavorable social climate
	2 ▪ Unfavorable entrepreneurship climate	▪ Brain drain and lack of the labor force
	3 ▪ Gap between knowledge and local economy	
	6 ▪ Lack of monitoring	



3.2 Identification of major opportunities and risks for the development of the urban innovation ecosystem

Major opportunities:

- EU funds co-financing: the majority of City projects related to smart city concept rely on EU programs funded by ERDF.
- Innovations of the public infrastructure: smart technology solutions will make positive impact on living standards. The smart solutions will not affect just Rijeka in its administrative boards, but also neighboring municipalities and cities, gathered in Rijeka Agglomeration (joint public utility systems such as water supply and drainage, waste disposal, traffic, public transport etc.).
- Innovations in decision-making process: citizens will be actively involved not only in discussion on regulation proposals (E-consultations) but invited to expose their problems, interests and suggestions, in all city matters, in real time, by on-line collaboration platform, developed within URBAN INNO project. This may improve unfavorable social climate.
- In the year 2020 Rijeka will have the opportunity to present itself as European Capital of Culture, not only as a cultural center, but also as a city with vision of future development. The basis of that future will be easily to observe in smart solutions already embedded in the urban ecosystem.

Major risks:

- Public awareness and unfavorable social climate: some citizens didn't accept basics of proper social behavior: littering, wall-writing, stealing and devastating of public property permanently damages any intention to make city of Rijeka more useful and pleasant for living, despite all the efforts to bring the change. On second hand, defeatism and general dissatisfaction took place, making people complaining on everything and not prone to support the changes, not to mention – to be that change.
- Smart city and smart users: there is no smart city without end-users willing to accept new paradigm of living. To change citizens' attitude, a lot of communication, as well as education efforts have to be performed. To make the citizens (especially particular groups such as elder people) prepared for the new age of 'smartness' in Rijeka, many kinds of support has to be provided (NGOs, local authorities, public institutions etc.).
- The risk of insufficient quality of cooperation with the state, public and utility companies/institutions in the area of Rijeka, in the context of inaccurate, insufficiently structured or timely submission of data, information and documentation. As said in SWOT, the lack of monitoring currently arises from this poor and fragmented cooperation and distrust, even between state-owned utility companies (such as electricity provider) and local authorities.
- Lack of experts: many local companies are struggling to find and keep experts, especially on field of ICT. The reason is low salaries. Few miles west from Rijeka, these experts can earn more than double.



ACTION PLAN

4 Thematic priorities – fields of action

The concept of smart city is a framework for a specific vision of modern (urban) development. Information and communication technologies are recognized to be of particular importance as a driver of economic competitiveness, environmental sustainability and life in general. By using information and communication technology as a key element in development, smart cities of the future will accelerate economic growth, improve the way of life for citizens, create opportunities for urban development and renovation of cities, support the initiative of environmental sustainability, improve political processes, and provide access to advanced financial services.

In recent years the concept of smart city has become very popular and attractive as a new innovative industry that it started a competition on who will invent something new, so some have designed the ‘smarter’ model, because the goal is to continuously improve the system and should always strive for better, and not a certain level of smart. Key dimensions of the smart city concept are provided in the next overview.

Picture 2: Key dimensions of the smart city concept

<p style="text-align: center;">Smart mobility</p> <ul style="list-style-type: none"> •Accessibility •Safe transport •Innovative technologies •Efficient transport systems •Introduction of a new system of traffic flow management to avoid delays and haults and to increase the efficiency of mobility of citizens and vehicles •New social connections enabling a wider use of new services in the context of sharing economy 	<p style="text-align: center;">Smart economy</p> <ul style="list-style-type: none"> •Improving regional and global competitiveness •Focus on the development of entrepreneurship and innovations •High level of productivity for the public government and economy •Broadband access for citizens, public government and economy •Availability of services independent to a location-helps retain citizens in rural areas •Development of digital economy (e-banking, e-bill, e-shop) 	<p style="text-align: center;">Smart living</p> <ul style="list-style-type: none"> • High quality of living • Improving social aspects of quality - education, health, public safety and housing •Availability of high quality health services (e-health, remote monitoring of patients, electronic health chart system) •Automatization of house appliances, smart homes and offices •Access to a wide specter of social services
<p style="text-align: center;">Smart management</p> <ul style="list-style-type: none"> •Expeditive decision making •Available public and social services •Tranparency •Democratic processes and inclusion of all layers of society •Connecting administration on all levels, from state to regional and local •Improvement of publicly accessible services for all members of the society 	<p style="text-align: center;">Smart citizens</p> <ul style="list-style-type: none"> •Social and human capital •Qualified, creative and educated citizens •The ability to use ICT based e-services •Providing continuous, quality education in urban and rural areas •Availability of e-learning platforms (remote education and collaboration) especially in remote areas so that citizens could be better connected and educated 	<p style="text-align: center;">Smart environment</p> <ul style="list-style-type: none"> •Continuous monitoring of pollution •The use of sustainable technology •Sustainable and ecologically friendly production and reduction of energy •Reduction of energy consumption by application of new technologies and materials, simultaneously promoting energy saving and material recycling



By joining these dimensions with local public policies, in particular *City of Rijeka Strategy of the development 2014-2020* and *Strategic plan Rijeka smart city 2019-2020*, altogether 4 thematic fields could be derived as the main areas of action:

Thematic priority 1: Energy and Sustainable Environment

The fundamental determinant of the development of smart cities is their sustainability. The innovation potential of the city can only be achieved on a sustainable basis. City of Rijeka is focused to achieve a significant contribution to global challenges in relation to safe, clean and efficient energy, climate change and resource efficiency, by:

- a) development and application of modern energy technologies and the production of equipment, primarily the system (equipment) for measuring environmental pollution
- b) new optimized technical solutions and new advanced materials, as well as the application of various sensors for functionality and conditions monitoring based on ICT.

Thematic priority 2: Transport and Mobility

Traffic and mobility directly affect the expansion of the industrial market, indirectly implying economic growth, improving living standards, competitiveness between regions and local communities and the physical expansion and integration of infrastructure.

The sustainable urban mobility plan is mandatory for the City of Rijeka, in compliance to EU policies, with the purpose to ensure accessibility to jobs and services to everyone, enhance security and protection, reduce the pollution and greenhouse gases, improve efficiency and productivity in passengers and goods transport and increase the attractiveness and quality of urban landscapes. The main directions of the actions within Transport and mobility priority field include:

- a) Intelligent traffic Systems and Logistics
- b) Ecologically Sustainable traffic solutions.



Thematic priority 3: Economic development

In order to strengthen the competitiveness of local economy, City of Rijeka is tending to improve the linkages between local actors and relevant national stakeholders, as well as international cooperation, in the field of modern-day business and industries. All aspects are saturated by advanced reliance on recent technology and trends, R&D and innovation. The intention is to build up a new economy course within local capacities, which will have wider national and international impact, especially in mobilizing of innovation potential.

Following points arise as action path:

- a) Centre of competences for smart cities (already described in section 1) as a driver of smart solutions
- b) Improvement of the existing system of business incubators, including Technology park 'Torpedo' and Incubator for creative technology and IT industries 'Energana'.

In addition, City of Rijeka with the support of local partners (from business, academic civil and public sectors) is already involved in Digital City Challenges (DCC), EU initiative within framework of COSME program, with an objective to improve its services to the citizens and companies by using advanced technologies.

Thematic priority 4: Government efficiency

Basically, this priority implies digital transformation of the city, which is and will be implemented by the projects addressing quality and efficiency of public services and reduction of public expenditures. Altogether 13 projects are nominated by *Strategic plan Rijeka smart city 2019-2020*, thus, will be finalized by the end of the year 2020. The actions cover various fields of City authority, from improvement of free Wi-Fi access to social inclusion, education system and digitalization of City services and systems.

As said before, the main principle is to make the city of Rijeka, as well as City of Rijeka (institution) more flexible, accessible, faster and adapted to citizens' needs.

5 Mission statement and objectives

5.1 Overarching mission statement and objective(s) for the UICN

The mission of the Rijeka 4UI network is to include and support local SMEs and research organizations to use available innovation potential in creating new added value for the local economy and local community.

Objectives on the city's and on the citizens' level:

- Overcoming the fragmentation of the innovation chain of value and the gap between the scientific – research sector and the business sector
- The modernization and diversification of the economy through business sector investments in innovative smart city projects
- Upgrading the global chain of value and encouraging the internationalization of the Croatian economy
- Working in partnerships to address social challenges
- The development of smart skills - improving qualifications of existing, and new workforce for smart specialization, as well as creating smart users of services developed within the cluster.

Rijeka 4UI network is committed to use and practice the Toolbox of smart participatory methods and tools developed within URBAN INNO project framework (www.user-participation.eu).



Final goal/Vision:

Positioning the City of Rijeka as a platform for the verification of the smart city concepts and initiatives, while ensuring the cooperation and participation of the most technologically advanced companies and other relevant stakeholders in the Republic of Croatia.

The intention is to make the city of Rijeka even ‘smarter’, to retain the title of the Croatian ‘smartest city’ for a long-term period, and to support other cities and municipalities (without territory limitations) to embrace smart city solutions.

5.2 Strategic and operational objectives

For clear explanation of strategic and operational goals of Rijeka region, the list will be presented within the following table, also addressing the priority field concerned.

Table 10: Overview of strategic and operational objectives

Strategic objective	Operational objectives	Priority field
<p>Responsible and efficient use of energy, urban infrastructure and natural resources</p>	<ul style="list-style-type: none"> • Development and monitoring of key indicators relevant to the field of energy efficiency and sustainable environment • Development and implementation of system for optimizing waste management: top-down and bottom-up effective waste management. • Implementation of new electronic and software basis for the system of public lighting control. • The researched and tested database of utility infrastructure. • Development of innovative services and products for managing the movement of residents and tourists, and the life dynamics in the city (Rijeka Radar Application and Security barometer application). • Platform for energy efficient management and monitoring of the smart city in a Cloud • A set of applications for citizens and businesses improving their everyday life and activities. • Extension of the existing city optical broadband network and city wireless broadband network. 	<p>Energy and Sustainable Environment</p> <p>Government efficiency</p>
<p>Improving the quality of life by establishing high-quality solutions in urban traffic and encouraging innovative, sustainable, clean and energy-efficient modes.</p>	<ul style="list-style-type: none"> • Integrated information system for analytics, monitoring, management and better use of traffic aspects of smart urban areas. • Application solutions to improve mobility in urban conditions. 	<p>Transport and Mobility</p> <p>Energy and Sustainable Environment</p> <p>Government Efficiency</p>



	<ul style="list-style-type: none"> • Creating an open e-Roaming platform with clearly defined locations for charging e-vehicles, along with real-time indication of the availability and the possibility of booking and use, with included precise information and locations for the use of a Car Sharing system and a fully digitized system of parking. • Development of the eSigns and e-Crossing prototypes in order to increase the safety of pedestrians in traffic as well as enable the smooth flow of car traffic. 	
Improvement of business infrastructure and business supporting system, based on high-tech industry and innovation	<ul style="list-style-type: none"> • Implementation and commercialization of smart city products and services driven by Centre of competences for smart cities. • Expansion of the system of existing business incubators in the City of Rijeka and enhancement of its quality and services offer through the establishment of 2 incubators: <ol style="list-style-type: none"> (1) Technology park 'Torpedo', business incubator focusing 3D and additive technologies SMEs. (2) 'Energana', business incubator focusing creative technologies and IT industries SMEs. 	<p>Economic development</p> <p>Government Efficiency</p>
Full/intensive digitalization of public administration	<ul style="list-style-type: none"> • Modernization of data center of the City of Rijeka. • Full computerization of city's elementary school system, social welfare system, sports system and public procurement system. • Improvement of City's e-Services system as well as information security system. • Engaging citizens and business into City of Rijeka Open data internet portal. 	<p>Government Efficiency</p> <p>Economic development</p>

6 Major initiatives and projects to be implemented

The projects and initiatives addressing the above listed strategic objectives emerge from the existing strategic documents and plans of the City of Rijeka, as well as from regional and national policies and strategies, such as The Strategy of Smart specialization of the Republic of Croatia 2016-2020. In addition, European initiatives and programs, as the main funding sources, supporting the strives of local stakeholders, especially the City of Rijeka, to embrace the challenges of digital and 'smart' era.

By every objective we selected few projects with significant impact, not just in terms of city or region, but also as the foundation of the future projects and actions. The common background is to improve every aspect of living and working in the city of Rijeka, by using smart city solutions and advanced technology.



6.1 Strategic area / objective 1: Responsible and efficient use of energy, urban infrastructure and natural resources - planned actions and key projects

Project 1:

SmartCity.Energy & Environment Development of solutions to improve energy systems and systems for environmental monitoring in smart cities		
PARTNERSHIP		
Lead Partner	Smart RI d.o.o. City of Rijeka-owned company for management and strategic development of Center of competence for smart cities	
Further regional / national partners	Policy/administration	Smart RI d.o.o.
	Industry	Hrvatski telekom d.d SmartIS d.o.o Sense savjetovanje d.o.o Elektrovina d.o.o
	Research & Higher Education	Energy Institute Hrvoje Požar
	Civil society / NGOs...	Citizens of Rijeka
	Others	-
DESCRIPTION		
Objectives	This project consists of five modules: EnergyEfficiency whose aim is target management and planning of energy efficiency in the environment of the smart city; the KPI Evaluator which aims to develop and monitor the economic indicators in the area of energy efficiency and sustainable environment, then the project; SmartWaste for developing complete solutions for efficient waste management in the city; the Smart Lighting Network which was launched with the aim of developing a comprehensive solution for the efficient management of public lighting and accompanying infrastructure; EmPower module within which IT is developed and a social platform for the implementation of energy efficiency projects through the activation of end users.	
Activities	Energy Institute Hrvoje Požar: conducting the research with a holistic and interdisciplinary approach to the issue of energy efficiency, consideration of the current situation, proposing the possible economic and technically most acceptable solutions. Hrvatski telekom d.d: provides infrastructure and implementation of module SmartWaste in order to develop complex solutions for the efficient management of waste disposal in the city.	



	<p>SmartIS d.o.o is in charge of the implementation of the module EmPower within which IT is developed and the social platform for the implementation of energy efficiency projects through the activation of end users.</p> <p>Sense savjetovanje d.o.o. is in charge of the implementation of the module KPI Evaluator which aims to develop and monitor key performance indicators (KPI) of the smart and sustainable city in the area of energy efficiency and environmental sustainability.</p> <p>Elektrovina d.o.o: Industrial partner in charge of the implementation of the module Smart Lighting Network in order to develop a comprehensive solution for the efficient management of public lighting and the accompanying infrastructure.</p> <p>Smart RI d.o.o: participating in the project in part of the development, in the harmonization of budget-analytical bases for the dynamic decision making support and determination of the economic and technical indicators of energy efficiency, waste management, KPIs, and systems for managing public lighting to the needs of the city administration and utility companies, and participating in the implementation and testing of new solutions.</p>
Timeframe	3 years (up to 2022)
Estimated costs & sources of funding	<p>Total: 4.038.000,00 €</p> <p>EU co-financing - ERDF: 2.894.700,00 €</p> <p>Restricted call 'Supporting the development of Centers of competence'</p> <p>Own resources: 1.143.300,00 €</p>
Internationalization linkages	Other cities and regions in Croatia and the EU that have an interest to use the platform for monitoring and management of energy efficiency.
Expected impact	<p>Most important impacts:</p> <ul style="list-style-type: none"> • transparency of management of the city government by introducing precise measurement of achieved objectives using KPI smart city indicators through the implementation of the project • optimum utilization of infrastructure while minimizing costs and consumption of resources • greater involvement of citizens and direct energy savings • actively involved citizens in the management of resources and management of energy efficiency through the gamification platform.



Project 2:

<p>SmartCity.4D Intelligent Infrastructure The development of new technologies for making a 4D intelligent infrastructure in smart cities</p>		
<p>PARTNERSHIP</p>		
<p>Lead Partner</p>	<p>Smart RI d.o.o. City of Rijeka-owned company for management and strategic development of Center of competence for smart cities</p>	
<p>Further regional / national partners</p>	<p>Policy/administration</p>	<p>Smart RI d.o.o. Energo d.o.o. KD Vodovod i Kanalizacija d.o.o</p>
	<p>Industry</p>	<p>Ericsson Nikola Tesla d.d 3tcable d.d Alarm Automatika d.o.o</p>
	<p>Research & Higher Education</p>	<p>Energy Institute Hrvoje Požar The University of Rijeka</p>
	<p>Civil society / NGOs...</p>	<p>-</p>
	<p>Others</p>	<p>-</p>
<p>DESCRIPTION</p>		
<p>Objectives</p>	<p>The project will examine, explore and develop a system for efficient management of utility infrastructure. The aim is to provide an innovative system of records and management of a wide range of data related to the infrastructure, from the location to the characteristics of each infrastructure, socio-economic indicators, as well as security aspects for critical infrastructure.</p>	
<p>Activities</p>	<p>Ericsson Nikola Tesla d.d: will provide project management and implementation of modules for data collection and data analysis through the GPR (Ground Penetrating Radar) technology and newly developed algorithms. 3tcable d.d is in charge of the implementation of the module for visualization and management of cable infrastructure of underground and aboveground networks. A key area of research will be the development of methods of inventorying and interpretation of data on underground and aboveground infrastructure via contactless technology (RFID, NFC, etc.) Energy Institute Hrvoje Požar as a scientific & research institution is responsible for the implementation of the module for integration with the Energy & Environment project. Energo d.o.o. (utility public services) is in charge of the implementation of the module for piloting, verification and improvement of the results on the real energy and heat pipe infrastructure. KD Vodovod i Kanalizacija d.o.o (utility public services) is in charge of the implementation of the module for piloting, verification and improvement of the results in the real water and wastewater infrastructure.</p>	



	<p>The University of Rijeka as a scientific and research institution will engage in the analysis of images and information obtained by the GPR system on the supercomputer Bura.</p> <p>Alarm Automatika d.o.o. is in charge of the implementation of the module for managing critical infrastructure. The primary goal of the research is the implementation of methods regarding the latest EU standards in the context of the protection of critical infrastructure.</p> <p>Smart RI d.o.o. activities are participating in data collection, recording and testing the management of utility infrastructure, enabling communication related to the approval and use of the pilot locations and to coordinate test recording, research and designing of the 4D platform.</p>
Timeframe	3 years (up to 2022)
Estimated costs & sources of funding	<p>Total: 3.049.430,00 €</p> <p>EU co-financing (ERDF): 2.185.241,50 €</p> <p>Restricted call 'Supporting the development of Centers of competence'</p> <p>Own resources: 864.188,50 €</p>
Internationalization linkages	The project was presented within the Ericsson Nikola Tesla and international partners (Ericsson AB), who expressed interest in the commercialization of such information systems in global markets.
Expected impact	<p>Successfully researched and proven collection of underground infrastructure with GPR technology - GPR technology has proven to be more accurate and faster than traditional methods.</p> <p>New services and products that would be obtained by research within Smart City 4DII are intended for all infrastructure owners and managers, and various government bodies in charge of collection, recording and management of one or more types of infrastructure.</p>



Project 3:

<p>SmartCity.Modesty Development of a platform for energy efficient management and monitoring of smart city with the help of cloud computing and a set of applications for citizens and businesses with high level of data security</p>		
<p>PARTNERSHIP</p>		
<p>Lead Partner</p>	<p>Smart RI d.o.o. City of Rijeka-owned company for management and strategic development of Center of competence for smart cities</p>	
<p>Further regional / national partners</p>	<p>Policy/administration</p>	<p>Smart RI d.o.o.</p>
	<p>Industry</p>	<p>Combis d.o.o Hrvatski telekom d.o.o Ericsson Nikola Tesla d.d Exevio d.o.o iOlap Inc</p>
	<p>Research & Higher Education</p>	<p>-</p>
	<p>Civil society / NGOs...</p>	<p>Citizens of Rijeka</p>
	<p>Others</p>	<p>-</p>
<p>DESCRIPTION</p>		
<p>Objectives</p>	<p>The project will develop and install a network of interactive, modular senses (IoT) in the City of Rijeka in order to collect data in real time about the state of urban environment (carbon dioxide and other greenhouse gases, temperature, noise, vibration, etc.), infrastructure and activities necessary for research and public use. In addition to sensors that will measure the activity and parameters on land, sensors will be set for measuring marine pollution and sea currents.</p>	
<p>Activities</p>	<p>Combis d.o.o. is providing project management and implementation of the module for integration and anonymization of data, and creation of Open Data Portal. Hrvatski telekom d.o.o. provides project management and implementation of the module for data security and communications infrastructure. Ericsson Nikola Tesla d.d. is in charge of the implementation of the module for real-time IoT integration of networks of interactive, modular senses in the wider area of Rijeka. Exevio d.o.o. is SME partner in charge of the implementation of the module for the analysis and simulation of selected scenarios for implementation (such as the study of the link between energy consumption and changes in the number of residents and tourists in the city, analysis of the impact of urban traffic (number of vehicles, buses, ferries fairway order) on the situation in environment.</p>	



	<p>iOlap Inc. is in charge of the implementation of the module Prediction Data Modelling, the key area of research are advanced algorithms for big data analysis and prediction of probability of certain scenarios.</p> <p>Smart RI d.o.o. is participating in the development of a plan to measure the environmental pollution and the implementation of sensors in the City of Rijeka, they will also provide inputs to the city government for the purpose of analyzing the state of the environment in relation to traffic, economic and social activities.</p>
Timeframe	3 years (up to 2022)
Estimated costs & sources of funding	<p>Total: 3.650.080,20 €</p> <p>EU co-financing (ERDF): 2.538.552,13 €</p> <p>Restricted call 'Supporting the development of Centers of competence'</p> <p>Own resources: 1.111.528,07 €</p>
Internationalization linkages	<p>Project Modesty is applicable to other cities that have the ambition to become smart cities, and is expandable to the entire region. Solutions under the project Modesty are not related to the territory of Croatia alone, they can also be applied to foreign cities.</p> <p>Hrvatski telekom is part of the group Deutsche Telekom AG. Deutsche Telekom has in the focus for the development of new businesses, solutions for the smart city, and its business is present in 50 world countries in which they can directly promote ICT solutions and look for partners for their implementation.</p> <p>Partner Ericsson Nikola Tesla, whose mission is to create innovative ICT solutions which improve living by creating new value for the business and social community, is part of the international corporation Ericsson in which project Modesty can be promoted globally.</p>
Expected impact	<p>There is currently no comprehensive approach to smart metering of environmental pollution, especially air pollution on the territory of Croatia, and no analyses have been conducted that correlate the state of the environment to traffic, economic and social activities in the city and the activities of the population. Since Rijeka is a coastal city, a network of sensors would also be set up in the sea and monitor marine pollution and its effect on economic activities essential to the city.</p>



6.2 Strategic area / objective 2: Improving the quality of life by establishing high-quality solutions in urban traffic and encouraging innovative, sustainable, clean and energy-efficient modes - planned actions and key projects

Project 1:

SmartCity.Trans Development of innovative systems for integrated traffic management		
PARTNERSHIP		
Lead Partner	Smart RI d.o.o. City of Rijeka-owned company for management and strategic development of Center of competence for smart cities	
Further regional / national partners	Policy/administration	Smart RI d.o.o. Rijeka promet d.d:
	Industry	Ericsson Nikola Tesla d.d Smart Sense d.o.o Sense savjetovanje d.o.o Combis d.o.o Alarm automatika d.o.o
	Research & Higher Education	Faculty of Maritime Studies
	Civil society / NGOs...	-
	Others	-
DESCRIPTION		
Objectives	The goal of the project is to develop and implement energy efficiency measures in city traffic whose application would result in a decrease in consumption of primary energy and reducing emissions of carbon dioxide and other harmful gases, thus ensuring the sustainability of the urban traffic system. These measures can be implemented by establishing an advanced information and communication system for decision making support in traffic.	
Activities	<p>Ericsson Nikola Tesla d.d: as the project holder will provide project management and implementation of the module for collecting traffic data and its analytics.</p> <p>Rijeka promet d.d. (City-owned company for traffic management) is responsible for the implementation of the module for piloting, verification and improvement of the results on real traffic infrastructure.</p> <p>Faculty of Maritime Studies: as a scientific/research institution is in charge for the implementation and improvement of algorithms for analysis and routing of multimodal traffic.</p>	



	<p>Smart Sense d.o.o. is in charge of the implementation of the module for sensor infrastructure components and integration with other modules.</p> <p>Sense savjetovanje d.o.o. is in charge of the implementation of module shaRing - model for the division of components of traffic infrastructure by exploring the concept of collaborative action of the public and private sector in developing a traffic solution model based on the sharing economy.</p> <p>Combis d.o.o. is in charge of the implementation of the communication - infrastructure portion of the project, improvement and optimization of platforms for cloud computing.</p> <p>Alarm automatika d.o.o. is in charge of the implementation of the module for early detection of fire and integration with other components of the solution.</p> <p>Smart RI d.o.o. will be participating in the development of sensor networks in the pilot area, coordinating the development of the platform and the implementation among the project partners and authorized institutions in the pilot area, and will ensure consideration of formal legal and technical requirements by the city administration and their implementation in the final solution.</p>
Timeframe	3 years (up to 2022)
Estimated costs & sources of funding	<p>Total: 3.504.403,00 €</p> <p>EU co-financing - ERDF: 2.478.040,75 €</p> <p>Restricted call 'Supporting the development of Centers of competence'</p> <p>Own resources: 1.026.362,25 €</p>
Internationalization linkages	The project was presented within the Ericsson Nikola Tesla and international partners (Ericsson AB), who expressed interest in the commercialization of such information systems in global markets.
Expected impact	<p>Most important impacts:</p> <ul style="list-style-type: none"> • Integrated information system for analytics, monitoring, management and better use of traffic aspects of smart urban areas. • This platform will, using the latest technology and, up to now, unused sources of information, in one place consolidate all the resources essential for access to the necessary information related to the mobility of users, with particular emphasis on the environmental dimension and encourage alternative forms of traffic.



Project 2:

SmartCity.Surnimo Development of the platform for connected, energy-efficient and shared urban mobility		
PARTNERSHIP		
Lead Partner	Smart RI d.o.o. City of Rijeka-owned company for management and strategic development of Center of competence for smart cities	
Further regional / national partners	Policy/administration	Smart RI d.o.o. Rijeka promet d.d:
	Industry	Hrvatski telekom d.d Sense savjetovanje d.o.o Exevio d.o.o
	Research & Higher Education	-
	Civil society / NGOs...	-
	Others	-
DESCRIPTION		
Objectives	<p>The purpose of the project is to develop the SmartCity.SURINMO domain platform for enabling connected, energy-efficient and shared urban mobility, with an applicative component for end-users, also intended for optimizing traffic flows and relieving traffic at a standstill, in terms of low-carbon mobility, which will be demonstrated in the area of the city of Rijeka.</p> <p>SmartCity.SURINMO platform aims to:</p> <ol style="list-style-type: none"> 1. Develop an eRoaming platform for managing networks of publicly available filling stations, 2. Develop and test the system eSigns, 3. Develop and test the system eCrossing 4. Conceptually, functionally test and connect those systems with two additional, as a foundation of low-carbon mobility: Smart Parking and Car Sharing. 	
Activities	<p>Hrvatski telekom d.d: As an industrial partner provides project management and implementation for module eRoaming in the context of exploring a method of managing a network of publicly accessible filling stations for electric vehicles, energy and safety effective methods of communication especially in rural and hard to reach areas, methods of secure payment for services over wireless infrastructure.</p> <p>Sense savjetovanje d.o.o: Partners in charge of the implementation of the module eCrossing.</p> <p>Exevio d.o.o: Industrial SME partner in charge of the implementation of the module eSigns with the use of advanced e-ink technologies.</p> <p>Rijeka promet d.d: Partners in charge of the implementation of the module for piloting, verification and improvement of the results of real traffic and the parking facilities.</p>	



	<p>Smart RI d.o.o: participates in the analysis and development of plan application solutions for e-Signs and e-Crossing in the pilot area, coordinates compliance with institutions in the pilot area and ensures consideration of formal legal and technical requirements by the city administration.</p>
Timeframe	3 years (up to 2022)
Estimated costs & sources of funding	<p>Total: 2.282.460,00 €€ EU co-financing - ERDF: 1.622.221,50 € Restricted call 'Supporting the development of Centers of competence' Own resources: 660.238,50 €</p>
Internationalization linkages	The project was presented within Hrvatski telekom d.d. and international partners (Deutsche Telekom AG), which has expressed interest in the commercialization of this information system in operating markets (EU).
Expected impact	<p>Most important impacts:</p> <ul style="list-style-type: none"> • e-Roaming: Analytics of public transport and traffic in the City of Rijeka is implemented in different and incomplete manners, with no central monitoring and possibility to make strategic decisions about traffic management, so through this platform, valuable experiences will be collected through testing conducted in real time. • e-Signs: The entire project is based on innovation, and combination of new technologies: eInk, fluorescent coating, lithium ion battery, solar cell and microcomputer with a SIM card. With its further development, very useful projects can be produced for the community, at local and national, and international level. • e-Crossing: The creation of a traffic solution which, in addition to the primary increase of pedestrian safety in traffic, at the same time collects data on the traffic of pedestrians and vehicles in a certain location, allowing better planning and traffic management in urban and other areas.



6.3. Strategic area / objective 3: Improvement of business infrastructure and business supporting system, based on high-tech industry and innovation - planned actions and key projects

Project 1:

Technology park – Torpedo Business incubator for 3D and additive industries		
PARTNERSHIP		
Lead Partner	City of Rijeka	
Further regional / national partners	Policy/administration	Rijeka development agency PORIN
	Industry	-
	Research & Higher Education	-
	Civil society / NGOs...	-
	Others	-
DESCRIPTION		
Objectives	<p>The general goal is to expand the system of existing entrepreneurial incubators in the City of Rijeka and to increase their quality and services offer through the establishment incubator - "Technology park - Torpedo", an advanced entrepreneurial supporting infrastructure that will enable the competitiveness of small and medium-sized entrepreneurs of the Primorje-Gorski Kotar County and beyond, providing high-quality services for its users.</p> <p>Specific goals: reconstructing of the existing hall and equipping the Technology park - Torpedo with modern equipment based on additive technologies that will enable SMEs the easier access to high-quality services of the entrepreneurial incubator and improvements of their business and entrepreneurial skills as also as transfer of knowledge through the establishment of new education programs.</p>	
Activities	<ul style="list-style-type: none"> • Reconstruction and conversion of the former 'Building 14' into the Technology park Torpedo – a technological/educational incubator for entrepreneurs, aiming specifically to the innovative companies in production sector, • Purchase of highly sophisticated equipment – industrial 3d scanner and 3d printers (polymers, metal, sand) which will enable the SME enhancement of their services and results, • Transfer of knowledge through new educational programs. 	
Timeframe	2 years: 2017-2019/end	



Estimated costs & sources of funding	Total cost 3,07 mil € Sources of funding: Operative program Competitiveness and Cohesion Croatia 2014-2020 (97%), City of Rijeka (3%)
Internationalization linkages	Knowledge center for creative application of technology and IT industry that would facilitate and accelerate knowledge exchanges between national and international stakeholders.
Expected impact	<p>The expected impacts are concerning the quality and quantity of new establish companies and startups in Rijeka region, using 3D and additive technologies, as well as boosting Rijeka business scene with expected international cooperation and expertise, involved within Torpedo operational and regular activities.</p> <p>Production park Torpedo which will enable:</p> <ul style="list-style-type: none"> • Increase of the competitiveness of SMEs in Primorsko-goranska County • Increase of the number of newly established companies • Increase of the 'survival' rate of the newly established SMEs.

Project 2:

Energana Business incubator for creative technologies and IT industries		
PARTNERSHIP		
Lead Partner	City of Rijeka <ul style="list-style-type: none"> - Department of Entrepreneurship - Information Technology department - Department for Urbanism - Department of Culture 	
Further regional / national partners	Policy/administration	-
	Industry	-
	Research & Higher Education	-
	Civil society / NGOs...	-
	Others	-
DESCRIPTION		
Objectives	The aim of the project is to develop the IT community in Rijeka in order to increase its competitiveness, increase the number of IT SMEs, number of employees in the sector, create synergies with the existing companies and research institutions which will result with new projects, products/services ideas and in the increase of IT innovations developed in Rijeka region.	
Activities	Through the project Incubator for creative technologies and IT industry 'Energana' we plan to renovate about 2.700 m ² of useful space of the former	



	<p>Energy plant within the ex Paper mill complex, which will be offered to SMEs, together with educational programs, mentoring, networking, internationalization and organization of events. The entrepreneurial support will primarily be aimed at the development of IT solutions for Smart Cities, IOT (<i>Internet Of Things</i>), AI (<i>Artificial Intelligence</i>), multimedia, game development, and open data. Also, data center will be offered to all interested organizations as a commercial service.</p> <p>The premises will consist of:</p> <ul style="list-style-type: none"> • 24 office spaces for entrepreneurs • Photo/video studio • Game development studio • Data center • Educational area, meeting rooms, conference area, common spaces
Timeframe	<p>3 years</p> <p>Estimated date of implementation:</p> <p>Start: 1.1.2020, Planned completion: 31.12.2022.</p>
Estimated costs & sources of funding	<p>Total cost 4,5 mil €</p> <p>Sources of funding: Operative program Competitiveness and Cohesion Croatia 2014-2020, Integral Territorial Investments – Urban Agglomeration Rijeka, City of Rijeka</p>
Internationalization linkages	<p>As an education center, Energana will host international experts as lecturers and mentors. Also, Energana will offer entrepreneurship support and networking for SMEs, meaning support the cooperation on EU- and global level.</p>
Expected impact	<p>Increase the number of IT SMEs, number of employees in the sector, and to create synergies with the existing companies in local and national level.</p>

6.3 Strategic area / objective 4: Full/intensive digitalization of public administration - planned actions and key projects

Full list of smart projects contains 13 comprehensive action to be implemented in the city of Rijeka and gravitating area in the next period. Some of these activities already started, and some will be developed in short-/mid- or even long-term perspectives. This section is describing only 4 of them, in regards to the impact they will have on urban ecosystem.

- Digital City Challenge
- Improvement of City of Rijeka data center
- E-communication infrastructure
- E-Schools
- City of Rijeka Free Wi-Fi – area extension
- Improvement of the information security system of the City of Rijeka
- E-Inclusion
- E-Government – Government without papers and counters
- Intranet of the City of Rijeka 2.0
- Open data internet portal
- Informatization of City social care system
- Informatization of City sports system
- Informatization of City public procurement system.



Notice: 2 of the listed projects (E-communication infrastructure and Wi-Fi) are set-up in one initiative table, as they are thematically related. Also, [E-government](#) is connected with DCC initiative, so it is not provided as a single project in this selection.

Initiative 1:

Digital City Challenge		
PARTNERSHIP		
Lead Partner	City of Rijeka <ul style="list-style-type: none"> - Department of Entrepreneurship - Information Technology department 	
Further regional / national partners	Policy/administration	Rijeka development agency PORIN Rijeka 2020 d.o.o.
	Industry	-
	Research & Higher Education	University of Rijeka Step RI – Science and Technology park of the University of Rijeka Business school PAR The Public University
	Civil society / NGOs...	MIPRO association CTK (Center of technical culture) Rijeka
	Others	Center for innovation and entrepreneurship PAR
DESCRIPTION		
Objectives	<p>The Digital Cities Challenge was launched on 12 October in Brussels during the ‘Supporting cities and regions to become successful digital ecosystems’ workshop which took place during the European Week of Regions and Cities. The challenge was first launched by the European Commission and helps cities build their digital presence and capacities, through developing digital policies to transform the daily lives of their residents, businesses, workers and entrepreneurs.</p> <p>The program includes:</p> <ul style="list-style-type: none"> • Access to high-level experts with local and international experience to help cities develop and implement strategic plans addressing economic growth and social welfare; • Access to tools allowing cities to develop a clear understanding of what stage of digital maturity their city can currently claim and where they should be aiming for it to be; • Access to unique and innovative training and capacity building sessions for key city staff and representatives; • Dialogue with other cities in Europe who have embarked or are in the process of embarking on the same process, in order to exchange ideas, experiences and best practices; 	



	<ul style="list-style-type: none"> Access to European networks and platforms. <p>Source: European commission (ec.europa.eu)</p>
Activities	<ul style="list-style-type: none"> Defining of digital vision and objectives Defining of strategy Action plan development Implementation and evaluation
Timeframe	01/2018-10/2019
Estimated costs & sources of funding	All costs are covered by EU funds, through COSME program (Program for the Competitiveness of Enterprises and small and medium-sized enterprises)
Internationalization linkages	Common European commission and European committee of Regions initiative
Expected impact	Opportunity to improve the public services delivered to the citizens and business sector, such as economic growth, cleaner environment, transport, new/high-value jobs, in order to enhance the quality of living and working in the city of Rijeka.

Initiative 2:

Improving of city broadband and free Wi-Fi network		
PARTNERSHIP		
Lead Partner	City of Rijeka - Information Technology department	
Further regional / national partners	Policy/administration	-
	Industry	-
	Research & Higher Education	CARNET (Croatian Academic and Research Network) is a public institution operating within the Ministry of Science and Education in the field of information and communication technology and its application in education.
	Civil society / NGOs...	-
	Others	-
DESCRIPTION		
Objectives	<ul style="list-style-type: none"> To include all facilities and institutions of importance for the City of Rijeka in common communication network. To extent the city free Wi-Fi area. 	
Activities	<ul style="list-style-type: none"> Installing of optical infrastructure for particular city districts Connection of institutions directly engaged in the European Capital of Culture (ECC) 2020 project Extension of free Wi-Fi area on several spaces and institutions primarily related to ECC 2020. 	



Timeframe	2019-2020
Estimated costs & sources of funding	City budget 33.000 EUR EU funding – WiFi4EU: 53.000 EUR
Internationalization linkages	Rijeka ECC 2020
Expected impact	Positive impact on business and residents, as well as on tourists and visitors.

Initiative 3:

e-Schools		
PARTNERSHIP		
Lead Partner	CARNET (Croatian Academic and Research Network) is a public institution operating within the Ministry of Science and Education in the field of information and communication technology and its application in education.	
Further regional / national partners	Policy/administration	City of Rijeka Elementary schools in the city of Rijeka
	Industry	-
	Research & Higher Education	-
	Civil society / NGOs...	-
	Others	-
DESCRIPTION		
Objectives	<ul style="list-style-type: none"> • Implementation of ICT in Rijeka elementary schools • Developing the Strategy for implementation of digitally mature school system in whole national education system (both elementary and high schools) 	
Activities	<ul style="list-style-type: none"> • Full digitalization of business processes in Rijeka elementary schools and educational programs 	
Timeframe	2019-2022	
Estimated costs & sources of funding	Total (approx.): 3.333.000 EUR 85% co-financed by EFRD and ESF.	
Internationalization linkages	Convergence to the EU education standards and demands of EU labor market.	
Expected impact	Improving the education system capacities with the purpose to qualify the students for labor market, further education and lifelong learning.	



IMPLEMENTATION – MONITORING AND EVALUATION

7. Management structure

Organization of CoC for smart cities

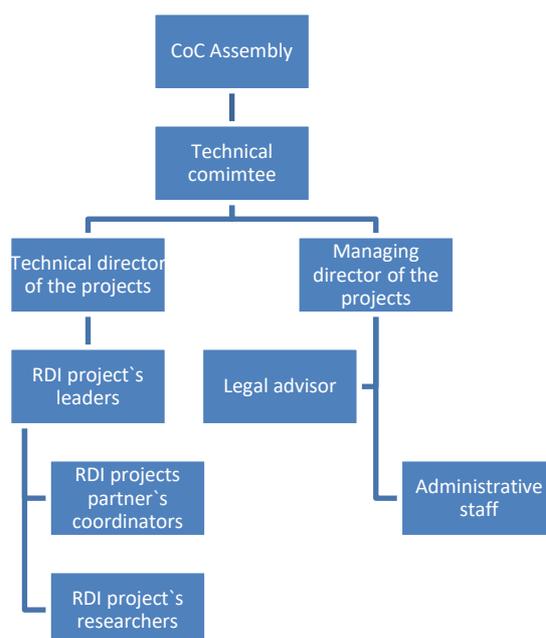
Strategic objectives and projects (basically strategic objectives 1 and 2), which will be developed within Centre of competences (CoC) for smart cities, will be managed by the City of Rijeka owned company Smart RI d.o.o. The managing of the CoC for smart cities is organized as project management where all the activities are subordinated to the successful completion of the project and realization of the set general goals.

Among others, Smart RI will perform the following main activities:

- coordinate R&D projects,
- coordinate the structuring of development strategies and action plans in the field of smart cities and monitor the implementation process,
- encourage and prepare development projects in the field of smart cities,
- encourage cooperation of economic entities and joint appearance on the market, especially projects that are based on job creating, creating new products and services in order to implement new technologies for smart cities,
- construction of infrastructure for smart cities.

Smart RI and project partners signed the Agreement that defines the role of the partners in respect of all obligations to the Managing Authority (Ministry of Economics). The basic principle is that each of the partners are solely and exclusively responsible for the fulfillment of the obligations.

Picture 3: The organizational structure of the CoC for smart cities



Source: CoC Smart cities Strategy of Development



City of Rijeka organizational units

As said before, City of Rijeka is consisted of 15 organization units – departments, with their specific responsibilities. Projects and initiatives listed in UIAP are involving altogether 5 departments: Department of Entrepreneurship, IT department, Department of Development, Urban Planning, Ecology and Land Management, Department of Education and Schooling, Department of Culture. Besides the single projects and initiatives highlighted by this plan, there are other projects and activities (mainly from digitalization priority pillar) not especially distinguished in document, in which other City Departments are taking part as well.

Besides the integrated organizational units, i.e. departments, City-owned companies are actively participating in implementation and management of the said smart city projects.

Here is the overview of management system of the project and initiatives involving City of Rijeka and CoC for smart cities.

Table 11: Management of the selected smart city projects

Strategic area / objective 1:	
Responsible and efficient use of energy, urban infrastructure and natural resources	
Project 1 SmartCity.Energy & Environment	
Leading partner	Smart RI d.o.o.
Managing partner	Energetski institute Hrvoje Požar (Energy institute Hrvoje Požar)
Project 2 SmartCity.4D Intelligent Infrastructure	
Leading partner	Smart RI d.o.o.
Managing partner	Ericsson Nikola Tesla d.d.
Project 3 SmartCity.Modesty	
Leading partner	Smart RI d.o.o.
Managing partner	Combis d.o.o.
Strategic area / objective 2:	
Improving the quality of life by establishing high-quality solutions in urban traffic and encouraging innovative, sustainable, clean and energy-efficient modes - planned actions and key projects	
Project 1 SmartCity.Trans	
Leading partner	Smart RI d.o.o.
Managing partner	Ericsson Nikola Tesla d.d.
Project 2 SmartCity.Surnimo	
Leading partner	Smart RI d.o.o.
Managing partners	Hrvatski Telekom d.d. for subproject eRoaming
	Smart Sense d.o.o. for subproject eCrossing
	Exevio d.o.o. for subproject eSigns



Strategic area / objective 3: Improvement of business infrastructure and business supporting system, based on high-tech industry and innovation - planned actions and key projects	
Project 1 Technology park – Torpedo - Business incubator for 3D and additive industries	
Leading partner	City of Rijeka – Department of Entrepreneurship
Managing partner	Rijeka Development Agency Porin
Project 2 Energana - Business incubator for creative technologies and IT industries	
Leading partner	City of Rijeka – Department of Entrepreneurship
Managing partners	City of Rijeka departments: Information Technology department Department for Urbanism Department of Culture
Supporting expertise	Smart RI d.o.o.
Strategic area / objective 4: Full/intensive digitalization of public administration - planned actions and key projects	
Initiative 1 Digital City Challenge	
Leading partner	City of Rijeka departments: Department of Entrepreneurship Information Technology department
Initiative 2 Improving of city broadband and free Wi-Fi network	
Leading partner	City of Rijeka - Information Technology department
Managing partners	CARNET (Croatian Academic and Research Network)
Initiative 3 e-Schools	
Leading partner	CARNET (Croatian Academic and Research Network)
Managing partners	City of Rijeka: Information Technology department Department of Education and Schooling Elementary schools in the city of Rijeka

Source: City of Rijeka, Smart RI d.o.o.



8. Communication

For setting up the communication strategy it is necessary to understand the diversity of the upcoming projects and initiatives: they all rely on the smart city concept, but they are communicating with different audiences, i.e. different target groups. From the institutional point of view, all projects contributing to the smart city reputation (as well as urban innovation network - UIN, CoC and Action plan/s) and are commonly promoted by 2 main categories of actions:

2) directly by events: participation on conferences, workshops and other public events (local, national, global), as well as initiating and organizing own thematic events.

1) indirectly by media channels: official websites and social media platforms. Moreover, local TV – Kanal RI, partly in the City of Rijeka ownership, is also a media channel supporting all important city activities.

The list of the existing main official media channels, likely to be used in the main smart city activities promotion, are listed in the next table.

Table 12: The list of official City of Rijeka and institutional media channels supporting smart city promotion

Name of the media channel	Link
City of Rijeka official website	www.rijeka.hr
Moja Rijeka – multimedia platform of the City of Rijeka	www.mojarijeka.hr
Smart RI d.o.o. official website	smart-ri.hr
Rijeka development agency Porin official website	www.porin.hr
Rijeka 2020 d.o.o. official website	rijeka2020.eu
City of Rijeka official social media channels	www.facebook.com/grad.rijeka.online twitter.com/gradrijeka www.youtube.com/user/gradrijeka www.instagram.com/gradrijeka/
Moja Rijeka social media channels	www.facebook.com/mojarijeka www.youtube.com/user/mmrijeka
Smart RI d.o.o. social media channels	https://www.facebook.com/Smart-Ri-721020368104144/
Rijeka development agency Porin social media channels	https://www.facebook.com/RijekaRazvojnaAgencijaPorin/
Rijeka 2020 d.o.o.	https://www.facebook.com/rijeka2020/ twitter.com/Rijeka2020 www.instagram.com/rijeka2020/

Source: City of Rijeka

It is important to underline that different projects, or sets of the projects from the same strategic objective will have separated communication strategies, despite they all will be promoted via official City channels. Besides they all have to reach different end-users, they are also co-financed from different sources, and have different extent, types and duration of activities.



Promotion of CoC smart city projects

Projects concerning strategic objectives 1 (Responsible and efficient use of energy, urban infrastructure and natural resources) and 2 (Improving the quality of life by establishing high-quality solutions in urban traffic and encouraging innovative, sustainable, clean and energy-efficient modes) are targeting (1) potential users (decision makers/policy influencers) from other regions and cities, and (2) general public, primarily local residents, as well as visitors. These projects will be covered by marketing activities listed in the Table 13.

Table 13: Marketing activities of CoC smart city projects

ACTIVITY	DESCRIPTION/PURPOSE
Branding (Brand development and visual identity)	House of brands architecture approach, with Smart RI as a parent brand, and single projects as sub-brands.
Website development	Web pages should include all information on services provided by the CoC, the technologies and knowledges in the center, the development team, as well as news about the work of the center and the services and products of high added value held by members of the cluster.
Promotion material and merchandise	Distribution on events and meet-ups, communicating general information on innovation network and smart city projects.
Digital channels	<ul style="list-style-type: none"> • Website • Facebook page • LinkedIn profile • Newsletter • Other social media channels (to be decided)
The organization and participation in fairs and events	Organizing and participating in national and international scientific and professional conferences related to the Smart City technology.
Positioning CoC employees and associates as competent researchers and experts.	The center will position itself as an expert and competence center in terms of technology, new products and expertise to obtain additional recognition. The positioning will be obtained primarily by educations, lectures and active participation on the thematic events.
Internationalization	Cooperation with foreign countries in terms of partnerships on research and development projects, as well as the transfer of technology and knowledge, and services of the center.
Marketing through EU projects	The CoC members will apply to all potential EU programs, particularly related to strengthening the capacities for innovation, technology transfer, entrepreneurial-support programs and cross-border and transnational programs.
Branding own new products and technologies.	The center will brand and protect the developed new technologies and products/services within the R&D program center to ensure better recognition and market success of the product and technology respectively.

Source: Smart RI d.o.o.



Promotion of business incubators Energana and Torpedo

New business incubators, as an extension of the existing incubators system in the city area, are including reconstruction/refurbishment of the future facilities and investments in equipment and technology. The intention is to build multifunctional spaces providing the support to Startups and SMEs in thematic fields of 3D and additive technology (Torpedo), and GameDev, AI, IoT, and photo/film industry (Energana). The main target are SMEs and Startups which development can be based or enabled by said industries and know-how. The communication with targeted audiences, as well as general public, will be set-up on 2 main pillars: (1) digital channels, and (2) events – educations and meetups.

Here is the overview of the promotion activities planned for both of incubators.

Table 14: Planned promotion activities of business incubators Torpedo and Energana

ACTIVITY	TORPEDO	ENERGANA
Branding and visual identity	Brand development	House of brands (each feature will be set as sub-brand)
Website	Will be incorporated in RDA Porin official website	Development of high-end and intensively interactive web place
Signalization	External and internal signposts	External and internal signposts
Social networks	Own social media profiles/pages, reliance on institutional channels (RDA Porin, Startup incubator Rijeka) for dissemination (especially important in the beginning of market appearance)	Own social media profiles/pages, reliance on institutional channels (CoC, Startup incubator Rijeka) for dissemination (especially important in the beginning of market appearance)
Other digital channels	Newsletter	Newsletter Mobile app
Printed material	Unique brochure and flyer Other corporate identity materials (cards, maps, roll-ups etc.)	Main brochure and flyer Brochures for single functional units Other corporate identity materials (cards, maps, roll-ups etc.)
Events (own)	Regular basis educations and workshops Conferences Meetups Other events	Regular basis educations and workshops Conferences Meetups Other events (e.g. hackathons)
Events (participation)	International and national conferences, workshops, and fairs as guest lectures	International and national conferences, workshops, and fairs as guest lectures
Other	Press conferences Exhibitions and demonstrations International cooperation events (e.g. EU projects meetings)	Press conferences Exhibitions and demonstrations International cooperation events (e.g. EU projects meetings)

Source: RDA Porin, City of Rijeka



The 4th strategic area - Full/intensive digitalization of public administration is leaning on (in total) 13 single projects, from which only 4 were described in prior subchapter (due to document recommended limitation). Since the projects are addressing various thematic fields under the authority of the City, the communication approach tends to be different, both qualitatively and quantitatively.

Digital City Challenge is EU initiative promoted on international level, also supported by all integrated City media channels. The participation of the City of Rijeka in DCC initiative is presented in many public occasions, especially in thematic events, conferences, expert meetings etc. where City of Rijeka activities regarding smart city concept needs to be emphasized. Besides the institutional channels, DCC is also promoted by all involved stakeholders (Rijeka 2020, RDA Porin, High-education institutions, NGOs CTK and MIPRO). Since operation thematic of DCC is not suitable for general public while it is in its development stage, the best option is to put more efforts in communication of projects results, which will be understandable and more tangible to wider audiences, i.e. common residents, citizens and public service users.

As much project **E-communication infrastructure** may be interesting to the special segments of users, or potential users, extension of **free Wi-Fi area** is a point of common interest, and will be announced via local institutional, as well as private media. In addition, this is strongly concerning the tourism development, so the improvement of the existing Wi-Fi will be covered by Rijeka Tourist board, and likely on regional tourist board channels as well.

E-schools project is mainly concerning parents of the elementary school pupils as a direct subjects of the reforms to come, but implies concern of the whole community. It is a delicate field of action in which major changes are needed, and significant challenges are present. The E-school program is national program, with CARNET (national public institution Croatian Academic and Research Network) as responsible partner, cooperating with elementary schools which founder is the City of Rijeka (on city area). The process, as well as mid-results and final outcomes, will be promoted on national and city level, using institutional and other media channels, as well as direct communication between micro-communities via particular schools involved in pilot projects. The final goal is to create digitally mature schools whose students will be fully prepared for digital era of living and working.

9. Monitoring and evaluation

In general, implementation of innovation action plan will be monitored on the City of Rijeka level, by the Working team who will be established by the major of the City of Rijeka. Working team will be consisted of the representatives of the local authority, institutions and city owned companies/public providers. Team will be required to provide half-yearly reports to the major, and further to the City council. The respect report will be also delivered to the Committee for Competitiveness of Rijeka Urban Agglomeration.

Besides monitoring on institutional level, most of the projects are co-financed by EU funds and require specified monitoring of key performance indicators, as well as defined outcomes, by national authority bodies.

In case of CoC smart cities projects identified in the fields of smart energy and smart mobility (strategic objectives 1 and 2), several indicators are defined.



Table 16: CoC smart cities projected performance indicators

Indicator	Measurement unit	Baseline indicators value 2019	The target value of the indicator 2024
Number of supported projects of research and development	Projects	0	6
Number of companies supported for the introduction of new products on the market (CO28)	Company	0	14
Number of companies supported by the introduction of new products for the company (CO29)	Company	0	14
Number of companies that collaborate with scientific-research institutions (CO26)	Company	0	14
Operating expenses for research and development	HRK (EUR)	0	150,000,000 (HRK)
The number of new researchers in the supported entities (CO24)	Number Researcher / Engineer	0	10
Private investments which correspond to public support for innovation or R&D (CO27)	HRK (EUR)	0	45,000,000 (HRK)

Source: Smart RI d.o.o.

Main KPIs in the case of business incubators Torpedo and Energana are presented in Table 17.

Table 17: Rijeka business incubators Energana and Torpedo performance indicators

Indicator	Measurement unit	Baseline indicators value 2019		The target value of the indicator 2024	
		Torpedo	Energana	Torpedo	Energana
Number of incubated SMEs	Startups	0	0	16	12
Number of users of co-working and common spaces	SMEs	0	0	15	15
Number of held educations/workshops	Number	0	0	48	36
Mentoring network	Mentors	0	0	30	30
International cooperation projects/initiatives	Project/ Initiative	0	0	10	7

Source: City of Rijeka and RDA Porin



EXPECTED IMPACT FOR THE TERRITORY

10. Expected impact

There are numerous benefits resulting for the ecosystem from smart city projects planned for the time horizon of the next 5 years, which are presented in this plan. The main and common benefit emerging from all actions is improvement of quality of living and working in Rijeka urban area, or even wider. Here are the some specific impacts expecting from smart city policies and implemented solutions within targeted area:

- Increase of efficiency in the use of energy resources, reduction of ecological footprint and greenhouse gas emissions
- optimum utilization of infrastructure while minimizing costs and consumption of resources
- greater involvement of citizens and direct energy savings
- saving fuel on utility and other vehicles
- reducing traffic congestion and car accidents (followed by the reduction of environmental footprint and emissions)
- the number of citizens, users of the service for the notification of waste management and the provided service
- the number of directly and actively involved citizens in the management of resources and management of energy efficiency through the gamification platform
- Successfully researched and proven collection of underground infrastructure with GPR technology
- Reducing energy consumption in the traffic sector
- Increasing the number of startups in the field of AI, IoT, smart city, creative, 3D and additive technologies
- Increasing the survival rates of Startups
- Ensuring the development and internalization of innovation driven by SMEs/Startups
- Ensuring better availability and cooperation with citizens regarding public services
- Digitalization of public and government processes and systems
- Improvement of citizens engagement at any topic of public interest
- Improvement of education system in primary and high schools
- Improvement of Rijeka as a tourist destination, and subsequently the hospitality and HoReCa industry.

11. Outlook

The concept of Rijeka *The smart city* is empowered through the Strategic Plan, which is providing support to the overall Development Strategy of the City of Rijeka. It should be noted that already in 2019 EU started negotiations with all EU member states, including the Republic of Croatia, with respect to the new European semester. The European semester is being implemented by the year 2020, and a new European semester will begin in 2021. In the past year from EU bodies come clear message that in the period after 2021, EU will strongly insist on projects that have smart or digital components. This is understandable because the EU wants to maintain and strengthen its position in the global market and believes that all EU member states, regions and cities must it give its full contribution.



From the above it is clear that for a period of 2019 to 2020 the City of Rijeka still cannot make a detailed action plan because the parameters of the new European Semester are not known. Until 2020, the City of Rijeka will intensively examine and test all the financing options that are related to smart projects. Also, according to the new Law on Regional Development of the City of Rijeka will have the obligation to draw up a new strategy which will come into force on 1st January 2021. It is therefore important to specify that all the preparations for drafting the new strategy must be completed in mid-2019, all EU states must have a smart or digital orientation.

The following table represents institutions, initiatives and programs with potential to create synergies and future development directions.

Table 18. Platforms and institutions with potential for further development

INSTITUTION / NETWORK	THE ACTIVITY OF THE INSTITUTION / NETWORK
Croatian Chamber of Economy	The Croatian Chamber of Economy offers a range of information, databases, entrepreneurship education, legal advices, assists in finding business partners, co-finances appearances at fairs, provides information on the sources of funding for entrepreneurs and advises in applying for EU funds. The Chamber notifies on international calls. Acting within the Chamber`s associations, the entrepreneurs can influence on the changes in regulations, chamber contacts can be support with the local development agencies, development banks, other state institutions, recommendations to a commercial bank or in procurement, at home or abroad. The chamber knows the business conditions in all foreign markets and is networked with economic associations around the world.
Community of Business Consultants (CCE)	The Croatian Chamber of Economy has established the Community of Business Consultants, to represent, coordinate and protect the common economic interests of service providers in the field of business consulting, and to improve the functioning and the business environment of its members. The Community of Business Consultants has 156 members from everywhere in Croatia. The members are entities providing business advisory services. Through the work of the Community, its members have a better awareness and involvement in the process of creating program and implementation documents related to the implementation of EU funds, ensuring the education necessary for the implementation of their work and the more visible presence in the market of consulting services.
Enterprise Europe Network in Croatia (EEN)	The network provides support and advice to entrepreneurs across Europe and helps them make the most of opportunities in the European Union and the European single market. EEN Network Services are specifically designed for small and medium-sized enterprises (SMEs) but are also available for business institutions, research centers and universities across Europe. The Enterprise Europe Network is made up of almost 600 partner organizations and institutions (chambers, agencies, institutes ..), provides excellent contacts and connections in 54 countries and 92 consortiums: EU28, Norway, Iceland, candidate countries (Montenegro, Serbia, Turkey, Macedonia), Switzerland, third countries (Armenia, Chile, Russia), and connects over 4,000 experts in the field of entrepreneurship, innovation and technology transfer in order to promote competitiveness and innovation at local and European level, and beyond.



<p>European Technology Platform</p>	<p>The main objective of the ETP is to connect economic entities. ETP is led by the industry in the field of research and technological development (RTD - research & technological development) which has a large market potential and is considered strategically important for achieving future growth in Europe, competitiveness and sustainability. The way in which research and technological development is promoted within ETPs is through the creation and implementation of the Strategic - research plan that identifies common goals of Research and technological development, which are important for the industry and cover the whole economic value chain so that they can be achieved.</p> <p>The strategic research plan deals with:</p> <ul style="list-style-type: none"> - technological challenges of research and development that are essential for future competitive Europe; - obstacles to the timely development and employment of new technologies and public goods and services based on new technologies.
<p>International Association of Science Parks (IASP)</p>	<p>IASP is a global network of scientific - technology parks that connects experts in science parks around the world and offers services that encourage the growth and effectiveness of the network members. Members of the network strengthen the competitiveness of businesses in their areas and thus contribute to global economic development through innovation, encourage entrepreneurship and transfer of knowledge and technology. IASP is a non-governmental organization with a special consultative status in the Economic and Social Council of the United Nations. IASP is also involved in the World alliance for innovation – WAINOVA.</p>
<p>European BIC Network (EBN)</p>	<p>European BIC Network (EBN) - The network of European business - innovation centers is a joint initiative of the European Commission, leading industry partners and first business - innovation centers. EBN is the leading non-governmental network that brings together more than 200 business - innovation centers and similar organizations in Europe. EBN is an umbrella organization and provides assistance and support to members acting as an interface between the network members and other organizations, including the European Commission, providing expertise in numerous areas including funding and sharing of best practices.</p> <p>EBN has developed "hub and spoke" connections with the rest of the world.</p>
<p>Community programs and transnational programs</p>	<p>HORIZON 2020, Transnational cooperation programs and inter-regional cooperation programs.</p>

Source: Smart RI d.o.o.