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THE SMART CITY SECTOR IN CROATIA

FLANDERS INVESTMENT & TRADE MARKET SURVEY

The Smart City Sector in Croatia



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1 A Few Numbers on Croatia

On 1 July 2013, the Republic of Croatia became the 28th member of the EU. This event is a break point to the path of the country in the following years.

Croatia is a country of 4 429 000 inhabitants. It is a democracy whose official language is Croatian, but many people speak English (49%) and other foreign languages, mainly German (34%) and Italian (14%). The capital is Zagreb. Other main cities are Osijek, Rijeka and Split.

Croatia had a GDP growth of 2.9% (Q3 2016).

In 2017, the economic activity should accelerate mildly, to 2.1 percent. For 2017, the IMF expects an increase in inflation by 0.8 percent. The estimate of this year's surplus in Croatia's current account should slip to 2.2 percent.

Unemployment is relatively high and, according to official sources, reached 14.8% of the workforce in December 2016. Despite the government's efforts to stimulate employment with various incentive programs for employers, the level of unemployment remains a significant social and economic burden. Nevertheless, it is worth mentioning that Croatia has a high skilled and educated workforce in different fields, including the IT sector.

The national currency is kuna (HRK). The average monthly paid off net salary is 5 676 HRK (760 euros), which represents a nominal increase of 0.1% and a real decrease of 0.4%, when compared to the first quarter of 2016. In comparison to the same period of 2015, it shows a nominal increase of 1.2% and a real one of 3%

INDICATOR	MONTHS	YEAR	VALUE
GROSS DOMESTIC PRODUCT, % REAL ANNUAL GROWTH RATES	q3	2016	2,9
INDUSTRIAL PRODUCTION, % ANNUAL CHANGES	10	2016	1,8
CONSUMER PRICES, % ANNUAL CHANGES	10	2016	-0,5
PRODUCER PRICES, % ANNUAL CHANGES	10	2016	-2
RETAIL TRADE, % REAL ANNUAL CHANGES	10	2016	5,3
TOURISM - NIGHT STAYS, % ANNUAL CHANGE	9	2016	11,5
CONSOLIDATED CENTRAL GOVERNMENT BALANCE, HRK MILLION, ESA 2010		2015	-10.706
CONSOLIDATED CENTRAL GOVERNMENT BALANCE, % OF GDP, ESA 2010		2015	-3,2
AVERAGE MONTHLY NET WAGE, HRK	9	2016	5,624
UNEMPLOYMENT RATE, % EOP	10	2016	14
NUMBER OF REGISTERED UNEMPLOYED PERSONS	10	2016	225,703
AVERAGE EXCHANGE RATE EUR/HRK	10	2016	7,5
AVERAGE EXCHANGE RATE USD/HRK	10	2016	6,8
AVERAGE EXCHANGE RATE CHF/HRK	10	2016	6,89
EXPORT OF GOODS, EUR MILLION (CBS)	8	2016	927
IMPORT OF GOODS, EUR MILLION (CBS)	8	2016	1,568
CURRENT ACCOUNT BALANCE, EUR MILLION	q2	2016	152,2
CURRENT ACCOUNT BALANCE, % OF GDP	q2	2016	4,6
EXTERNAL DEBT, EUR BILLION, EOP	8	2016	43,672
EXTERNAL DEBT, % OF GDP	6	2016	97,3
PUBLIC DEBT, % OF GDP, ESA 2010		2014	85,1
OFFICIAL INTERNATIONAL RESERVES, EUR MILLION, EOP	10	2016	12,993
MONEY (M1), HRK MILLION, EOP	10	2016	78,783
TOTAL CREDITS, HRK MILLION, EOP	10	2016	259,746
DEPOSITS WITH COMMERCIAL BANKS, HRK MILLION, EOP	10	2016	207,261

OSNOVNI GOSPODARSKI POKAZATELJI
BASIC ECONOMIC INDICATORS

INDEKSI OSNOVNIH GOSPODARSKIH KRETANJA
INDICES OF BASIC ECONOMIC INDICATORS

	2013. 2012.	2014. 2013.	2015. 2014.
Bruto domaći proizvod, stalne cijene u cijenama prethodne godine, referentna godina 2010. = 100¹⁾ <i>Gross domestic product at constant previous year prices, referent year 2010 = 100¹⁾</i>	98,9	99,6	101,6
Fizički obujam industrijske proizvodnje <i>Total volume of industrial production</i>	98,2	101,2	102,7
Ukupan broj zaposlenih u industriji <i>Total number of employees in industry</i>	95,2	98,3	99,4
Proizvodnost rada u industriji <i>Labour productivity in industry</i>	103,2	103,0	103,3
Zaposleni u pravnim osobama svih oblika vlasništva <i>Persons in paid employment in legal entities of all kinds of ownership</i>	98,2	99,0	101,8
Prosječne mjesečne isplaćene neto plaće, ukupno <i>Average monthly paid off net earnings, total</i>	100,7	100,3	103,2
Realne neto plaće, ukupno <i>Real net earnings, total</i>	98,5	100,5	103,7
Prosječne mjesečne bruto plaće, ukupno <i>Average monthly gross earnings, total</i>	100,8	100,2	101,3
Realne bruto plaće, ukupno <i>Real gross earnings, total</i>	98,6	100,4	101,8
Ukupan broj nezaposlenih, godišnji prosjek²⁾ <i>Total number of unemployed persons, annual average²⁾</i>	106,4	95,1	87,1
Nominalni promet u trgovini na malo³⁾ <i>Nominal turnover in retail trade³⁾</i>	101,7	99,6	101,4
Realni promet u trgovini na malo³⁾ <i>Real turnover in retail trade³⁾</i>	99,4	100,4	102,4
Izvoz – preračunano u EUR <i>Export – recalculated in EUR</i>	99,6 ⁴⁾	108,1 ⁵⁾	111,2 ⁶⁾
Uvoz – preračunano u EUR <i>Import – recalculated in EUR</i>	101,9 ⁴⁾	103,6 ⁵⁾	107,9 ⁶⁾

1) Podaci za 2013. konačni su, dok su podaci za 2014. i 2015. privremeni (zbroj tromjesečnih podataka).

2) Izvor: Hrvatski zavod za zapošljavanje

3) Godišnji podaci revidirani su radi preračunavanja na novu bazu godinu 2010.

4) Vidi Metodološka objašnjenja u Priopćenju 4.2.3/2014.

5) Vidi Metodološka objašnjenja u Priopćenju 4.2.2/2015.

6) Vidi Metodološka objašnjenja u Priopćenju 4.2.2/2016.

1) Data for 2013 are final, while data for 2014 and 2015 are provisional (the sum of quarterly data).

2) Source: Croatian Employment Service

3) Annual data have been revised in order to be recalculated to the new 2010 base year.

4) See Notes on Methodology in the First Release No. 4.2.3/2014.

5) See Notes on Methodology in the First Release No. 4.2.2/2015.

6) See Notes on Methodology in the First Release No. 4.2.2/2016.

OSNOVNI GOSPODARSKI POKAZATELJI
BASIC ECONOMIC INDICATORS

INDEKSI OSNOVNIH GOSPODARSKIH KRETANJA

INDICES OF BASIC ECONOMIC INDICATORS

(nastavak)

(continued)

	2013, 2012.	2014, 2013.	2015, 2014.
Indeks potrošačkih cijena – ukupno <i>Consumer price index – total</i>	102,2	99,8	99,5
Prehrana i bezalkoholna pića <i>Food and non-alcoholic beverages</i>	103,7	97,8	100,4
Alkoholna pića i duhan <i>Alcoholic beverages and tobacco</i>	109,6	106,2	102,0
Odjeća i obuća <i>Clothing and footwear</i>	96,1	95,8	99,8
Stanovanje, voda, električna energija, plin i ostala goriva <i>Housing, water, electricity, gas and other fuels</i>	104,8	101,7	99,9
Pokućstvo, oprema za kućanstvo i redovito održavanje kućanstva <i>Furnishings, household equipment and routine maintenance of the house</i>	100,5	99,2	99,7
Zdravlje <i>Health</i>	101,1	100,8	101,7
Prijevoz <i>Transport</i>	99,1	100,1	93,3
Komunikacije <i>Communication</i>	98,4	99,5	101,1
Rekreacija i kultura <i>Recreation and culture</i>	100,7	100,8	102,1
Obrazovanje <i>Education</i>	100,2	100,1	99,6
Restorani i hoteli <i>Restaurants and hotels</i>	102,0	101,7	101,1
Ostala dobra i usluge <i>Miscellaneous goods and services</i>	101,7	99,6	100,0
Indeksi cijena industrijskih proizvoda pri proizvođačima na domaćem tržištu (NKD 2007.) <i>Producers' price indices of industrial products on domestic market (NKD 2007.)</i>	100,5	97,3	96,1
Indeksi cijena proizvoda poljoprivrede pri proizvođačima⁷⁾ <i>Producers' price indices of agricultural products⁷⁾</i>	93,8	95,0	100,4
Industrijska proizvodnja – ukupno <i>Industrial production – total</i>	98,2	101,2	102,7
Prema Glavnim industrijskim grupacijama – GIG 2009. <i>According to Main Industrial Groupings – MIGs 2009.</i>			
AI Intermedijarni proizvodi <i>Intermediate goods</i>	98,2	103,4	102,4
AE Energija <i>Energy</i>	104,5	93,8	99,2
BB Kapitalni proizvodi <i>Capital goods</i>	89,5	100,4	106,0
CD Trajni proizvodi za široku potrošnju <i>Durable consumer goods</i>	98,7	104,3	99,5
CN Netrajni proizvodi za široku potrošnju <i>Non-durable consumer goods</i>	97,4	103,1	103,6

7) Podaci su usklađeni s Eurostatovom metodologijom *Handbook for EU Agricultural Price Statistics version 2.0, March 2008.*

7) *The data are harmonised with the Eurostat Methodology Handbook for EU Agricultural Price Statistics, version 2.0, March 2008.*

2 Economic overview of Croatia

Croatia is included in the group of countries with small and open economies, which are largely connected to other foreign markets. The priority of Croatia's economic policy is the continuation of making a stable and strong market-oriented economy, competitive in the global market, with the constant reinforcement of macroeconomic stability and the continuation of structural reforms for the purpose of securing stable and sustainable economic growth, increase in production, especially import, and increase in employment. A particular emphasis is put on creating a favourable business environment harmonized with the business environment prevalent in the European Union, further development of the market economy, stimulation of private investments, promotion of international competitiveness, and entrepreneurial and market freedom. In terms of primary goals of the economic policy of the Republic of Croatia, a special position is given to foreign investments which are very important for the future development of the country and further restructuring and modernization of the economy. The basic economic goals include export growth, quality standards introduction, meeting ecology requirements and achieving expenditure efficiency. One of the primary goals of the economic policy of the Croatian government is to create a stimulating business environment, harmonized with the standards used in the EU and countries with developed market economies. The basic features of Croatia's economy are industry, agriculture, forestry, fishing industry and food, drink, tobacco production, construction, transport & communication and trade.

Croatia is mostly an exporter of transport equipment, machinery, textiles, chemicals, foodstuffs and fuels. On the other hand, Croatia is an importer of machinery, transport and electrical equipment, fuels and lubricants and foodstuffs. Croatia mainly exports to Italy, Bosnia and Herzegovina, Germany, Slovenia, Austria and Serbia.

The Croatian economic growth decelerated in the first quarter of 2017 but nevertheless recorded another period of healthy growth, supported by strong private consumption and a pickup in fixed investment, but constrained by a negative contribution of net foreign demand. GDP growth softened from the 3.4% recorded in the fourth quarter of last year to 2.5% in Q1, the weakest expansion in over one year but nonetheless marking the tenth consecutive quarter of growth. The economy is benefiting from an improved external environment and strong private consumption, and so far seems to have been only slightly affected by the consequences of food and retail group Agrokor's ongoing restructuring process. In the first four months of the year, exports expanded by almost a fifth—with shipbuilding recording exceptionally strong growth—on the back of robust demand from both European Union trading partners and the Balkan states. Moreover, the latest available data on tourist inflows show that in the period from January to May arrivals surged by 15%, which translated into unemployment reaching fresh multi-year lows in both May and June. This, together with rising wages, both in the public and private sectors, is fuelling the private consumption, as suggested by healthy retail sales readings so far this year. In July, Fitch Ratings affirmed Croatia's BB rating with a stable outlook, highlighting favourable cyclical conditions but also the country's weak potential growth compared to peers due to adverse demographics and structural rigidities.

Croatia is a member of the IMF, the European Bank for Reconstruction & Development and the World Trade Organization.

Sources:

- <http://www.tradingeconomics.com/croatia/gdp>
- <http://www.focus-economics.com/>
- <http://www.mvep.hr>
- <http://www.dzs.hr>

3 Smart Cities in Croatia

More than 40 out of a total of 128 cities in Croatia use smart solutions, which means applying new technologies and social concepts that enable better management and living for their residents.

What do cities need to know to get access to EU funds that can help them invest in smart city solutions?

EU smart infrastructure funds, such as for smart lighting, cover up between 40 and 100% of the amount of investment needed to realize such projects. Therefore, it is important for cities to get acquainted with the conditions of availability and the prerequisites needed to use EU funds to maximize their benefits and to reduce their own investments to a minimum.

What are usually the biggest challenges in realizing these projects?

One of the major challenges is the fact that the separate initiatives of city administration offices must be mutually related. Their efforts must be linked to the full potential of "Internet of Things" and create synergy. Apart from the mutual cooperation of certain city offices, this includes the participation of citizens in the process of launching innovative ideas. In order to achieve this, it is necessary to use open platforms and open standards. This is the only way to ensure citizens long-term connectivity with city data. Looking from the technological perspective, cities need an open, adaptable, horizontal and expandable IP-based architecture ("Internet Protocol"), as it allows any competent body, citizen or supplier to connect to it. Proprietary protocols and data formatting should be avoided. Pilot projects allow testing smart city solutions on a smaller scale and give insight into their impact. Also, it is possible to try several configurations without the risk of interrupting public services. At the testing stage, it is possible to identify individual needs that can then be transferred to a larger project. Moreover, pilot solutions are regularly funded with the support of state institutions, as well as international organizations such as the European Union. This way, cities get an open infrastructure for testing a variety of different applications.

3.1 Projects in Croatia

PROJECT SMART CITY DUBROVNIK

"Thanks to this pilot project, Dubrovnik will officially become the first innovation, testing, development and sales Smart City Center of Croatian Telecom. Citizens and numerous tourists will be significantly facilitated, and traffic safety and energy efficiency will be improved. This HT project is at the very top of the regional and European technological leaders in promoting, presenting and implementing the Internet of Things / Smart City Technology Framework. Our

investments in the development of mobile and fixed infrastructure, as well as increasing the capacity for broadband internet access and IP transformation have enabled us to begin the realization of this demanding project," said Davor Tomašković, CEO of Croatian Telecom (HT).

Work began with the installation of the most modern magnetic parking sensors in 30 parking spaces, which will allow drivers to know the real parking situation. Informative parking screens with information of free spaces will be located above the road, and in the first phase will contain information on places that already have sensors, as well as in public garages. Smartphone users will be able to use an application that will provide information on the real state of occupancy of any city parking.

The security of the city will be enhanced thanks to a multisensory video monitor which will record traffic violations, excessive speed, overcrowding, unauthorized use of the left traffic lanes and inappropriate parking.

The smart city project will provide free city-wide Wi-Fi high speed and bandwidth (50 Mbit / s). In addition, this project includes a system of remote-controlled public city lighting management and regulation of lighting intensity and consumption of public lighting depending on movement of pedestrians and motor vehicle traffic in the vicinity of the lighting. When there is no traffic around, public lighting will function with decreased intensity, and if movement is detected, lighting intensity will increase. Also, many sensors will be installed that will monitor the air quality and other parameters that affect the environment. The information will be available in the first phase to the academic and research community and public health institutions, and in the second phase it is planned that certain information are published in an appropriate way in public.

All systems will be interconnected by a common platform, but also with the existing systems that the city is already using, and part of the data collected will be accessible to anyone who can further innovate and add knowledge and experience, such as local start-ups.

Apart from Croatian Telecom, the renowned global and domestic technology included partners are: CISCO Systems, Sensity, Zumtobel, RAO, Mobilisis, SmartSense, Electrotechnics and many others, and HT is constantly expanding its network of partners including renowned domestic companies and start-ups that can effectively contribute to the development of this technological framework.

Citizens, as key users of such infrastructure will also be involved in project evaluation through a special volunteer expert body appointed by the city, which will consist of a team of IT professionals living and working in Dubrovnik. The project is in progress from 15th March 2016.

KOPRIVNICA

By measuring the indicators of the quality of life Koprivnica received the ISO certificate 37120: Sustainable development – indicators of city services and quality of life. Koprivnica became the first city in the region and the seventh city in Europe with this ISO certificate.

Project certification for obtaining the certificate was carried out by the World Council on City Data (WCCD). From a total of 100 indicators in 17 areas relevant to cities, which are measured and analysed in the process of certification, Koprivnica has proved correct measurement of 46 basic and 48 additional indicators, which won the highest levels of certification – Platinum. The

results were published on the WCCD website and allow a comparison between Koprivnica and other certified cities regardless of the size of the city and the area in which they are located.

Cities who obtained the ISO 37120 certification can use results for assessment of city services and the quality of life in the city, for the prioritization of the city budget, to improve operational transparency to the citizens, to support ICT smart city solutions, the harmonization of public and private investment in infrastructure and for communication towards the citizens that become aware of continuous efforts and work of the city administration and services to improve the quality of life in the city.

Koprivnica became a frontrunner of electromobility in Croatia with the Civitas Dynamo project. In addition to strategic planning, the project is aimed at addressing the lack of public transport, which is a common problem for small towns. Special innovations are electric buses whose market and service base are still underdeveloped in Croatia. Energy efficiency is particularly pronounced to the degree of electromagnetism where the city has already established car-sharing electric vehicles for city administration employees and businesses and developed the infrastructure for fast-moving electric vehicles in the city that were built in partnership with the HEP-ELEN program and are accessible to all citizens and visitors to the city. Through the CBC Croatia-Hungary Bicycle Oasis project, a public bicycle system was established, including seven terminals with a total of 60 bicycles. One of the terminals is next to the railway station and makes for an additional offer of public transport.

The introduction of the first experimental city bus line further reduced the problem of lack of public transport. The system should be further developed, adding new lines to surrounding settlements and thus reducing the need for usage of personal vehicles.

JASTREBARSKO

E-roads Online project of the city of Jastrebarsko was launched in the first half of 2014. Its main objective was to improve solving citizens' problems in the daily work of local government and the establishment of a more efficient system of management and maintenance of non-classified roads. The system is designed in a way that any authorized person having access to the system has the ability to report field problems in the area of traffic infrastructure or road maintenance, which are then automatically recorded in the system by getting the 'intervention' tag. With the introduction of this system, the city has managed to merge multiple individual organizational systems into one central system, thus making the process at least 50 percent faster than the previous mode of operation. By implementing the E-road Online project, fast and efficient communication of multiple services has been achieved simultaneously with the total cost control and field intervention orders via a single WebGIS interface.

PLETERNICA

One of the goals of the town of Pleternica is to become an energy-independent city by 2020 for public needs. That is the reason why the city decided to build a small hydro power plant, which represents an innovative approach to the use of renewable energy sources in the narrow local area on the existing natural resources of the Orlava River. A small hydro power plant of 220 kilowatts has been put into trial in early December 2012 and has been in full operation since

March 2013. Last year, more than 965,000 kilowatts of electricity were produced and revenues of more than 806,000 were generated, covering 95% of the energy costs of public lighting in Pleternica and all the 37 settlements. These 95% cost savings are now the financial capital of Pleternica for other infrastructural and social cultural projects. The project's result is the reduction of CO2 emissions, which in 2014 amounted to 362.9 tCO2. Thus, by the production of electricity from renewable sources, hydro power plants directly affect the reduction of environmental pollution.

3.2 Strategic challenges

The smart city concept, which brings together a large number of city-level ICT projects, is a complex system that requires solving the following set of problems:

1. Lack of co-ordination for the planned implementation of ICT projects
2. Lack of legal regulations and guidelines
3. Lack of local companies and professionals for the implementation of ICT projects

The real problem consists of the lack of qualified staff: engineers, programmers, makers, hackers, designers, artists and creators. This is a consequence of an inadequate education system and a large drop in the number of students. Indicators show that the ICT sector has a potential to open at least 5,000 new jobs by 2020. That's why hackathons, such as Hackathon Dubrovnik, is a perfect event to gather everyone interested in one place, with one goal - to build a smart city.

4. Lack of innovative forms of governing

„Decision-making within contracting authorities (especially on the local level) is generally carried out by a small number of government officials who, generally, do not have in-depth ICT and IoT knowledge in solving a public issue.”¹ „Many of the challenges faced by smart cities surpass the capacities, capabilities, and reaches of their traditional institutions and their classical processes of governing, and therefore require new and innovative forms of governance.”²

5. Unfamiliarity of the local community on modern technical capabilities and low involvement of the local community

„Alongside 'top-down' master-planning, we need to enable 'bottom-up' innovation and collaborative ways of developing systems. The notion of the 'smart citizen' as a co-creator draws on a rich intellectual backdrop in both technology design and urban design. In practice, engaging citizens in these processes is immensely challenging.”³

6. Lack of financial resources

There is a need to better use the limited public financial resources and change the model for financing new „smarter” infrastructures. This requires that the funding model to realise a smart city shifts from the use of “traditional” tools such as public (e.g. municipal, regional, national)

¹ M. Milenković, LL.M, M.Rašić, LL.M and G. Vojković, Ph. D. „Using Public Private Partnership models in smart cities– proposal for Croatia “(MIPRO 2017/DE-GLGPS), page 1660

² Ibid.

³ Ibid.

resources to contractual models of Public Private Partnership (PPP), able to attract private capital. „Cities should ensure the visibility of procurement and PPP opportunities through a single portal and use problem-based methods for solving key issues.”⁴ „The Agency for Investments and Competitiveness is a Croatian Agency set up by the PPP Act whose main tasks are to give investors full view of services to invest and implement in projects for the improvement of the economic growth and business environment and to promote Croatian PPP model as competitive.”⁵ Other than private entrepreneurs projects and national and local subsidies, there are European Structural and Cohesion Funds. „The European Union (EU) is encouraging Member States to develop smart cities by allocating 365 million euros for this purpose. Also, the EU brought new financial instruments supporting environmental and climate action projects from which, cities can withdraw the funds. They include: The Financial Instrument for the Environment and Climate Action (LIFE) Programme, Horizon 2020 and Intelligent Energy Europe (IEE).”⁶

„Certainly, it is unreasonable to expect Croatian cities to become ‘smart’ in a short period but by implementing the measures and strategies like creating walkable localities – reduce congestion, air pollution and resource depletion, boost local economy, promote interactions and ensure security bring Croatian cities step closer to the ‘smart cities’. (...) However, it should be noted that cities cannot simply copy the best practices from successful ‘smart cities’, hence must develop approaches that fit their own mind set, organization and culture in terms of broader strategies, human resource policies and demographics.”⁷

Sources:

- <http://www.udruga-gradova.hr/inpuls/dubrovnik-smart-city-dubrovnik-2020/>
- <http://www.netokracija.com/dubrovnik-hackathon-smart-city-118022>
- <https://lider.media/tehnopolis/ict-sektor-ima-potencijal-od-minimalno-5000-novih-radnih-mjesta-do-2020/>
- <https://eu-smartcities.eu/sites/all/files/Guideline%20Financing%20Models%20for%20smart%20cities-january.pdf>

3.3 Contribution of industry

Smart cities are the new industry of the 21st Century. The development of smart solutions based on real-world data holds a lot of potential for global commercialization. Usually, there are several fields of activity which are described in relation to the term smart city: industry, education, participation, technical infrastructure, various ‘soft factors’. In association with economy or jobs the term „Smart City” is used to describe a city with a „smart” industry. That implies especially industries in the field ICT as well as other industries implying ICT in their production processes.

⁴ Ibid.

⁵ Ibid., page 1659

⁶ Ibid., 1657

⁷ Ibid., 1660

There can be found many domestic companies offering innovative solutions for smart cities, such as Ericsson, Nikola Tesla, Croatian Telecom, Končar, Energy Institute Hrvoje Požar, HEP, King ICT etc.⁸

Croatian Telecom (HT, Deutsche Telekom Group's Croatian subsidiary), together with its strategic and local partners, is currently the only one in Croatia offering a comprehensive solution in the smart city concept, from a basic infrastructure level to fully developed applications. Dubrovnik was chosen as the first innovation, testing, and reference Smart City Center of Croatian Telecom.

Sources:

- <http://www.smacc-project.eu/>
- <https://www.tportal.hr/tehnolo/clanak/doznajte-kako-nastaju-hrvatski-pametni-gradovi-20160223>
- www.davor-skrlec.eu/pametni-gradovi-buducnost-ili-stvarnost/

3.4 Organizations serving as a platform for cooperation

Competence centres are associations that are based on innovative cooperation between the public authorities, research and development institutions and enterprises. They are focused on developmental and industrial research prompted by the industry and its marketability within specific thematic areas and fields of competence. They are connected to one or more thematic priority areas and/or intrasectoral themes recognised by the Strategy for smart specialisation. For example, there is a competence centre for smart cities in Rijeka (CEKOM), whose key activities combine innovative and developmental projects devoted to implementation of a strategy for a smart, sustainable and inclusive local community, active support to local administrative units on the introduction of service components of 'smart cities', the establishment of scientific, technological and organizational starting points for the application of integrated intelligent technologies and business models to implement solutions within 'smart cities'. The aim is to find partners from the private and research sectors interested in joining CEKOM through collaborative projects for the development of new products and services related to smart cities.

Development agencies, such as the City of Dubrovnik Development Agency (DURA, dura.hr/) and Development Agency Zagreb (www.raza.hr/), encourage cooperation and provide information related to smart city projects. DURA serves as a link between city departments and the private sector – supporting the development of entrepreneurship and civil society. Their work mostly revolves around the coordination and implementation of multiple smart city projects in the city of Dubrovnik. Development Agency Zagreb launched the first equity pre-acceleration program in Croatia - Startup Factory Zagreb (startupfactory.tehnopark.hr), in cooperation with leading ICT companies, Croatian Telecom, IBM and SmartIS, and supported by the City of Zagreb, the Zagreb Tourist Board, the Prague Startup Center, Lean Startup Croatia, eSTUDENT and Spin City. The project aims to strengthen the ecosystem that encourages the development of start-up entrepreneurship and the sustainable development of innovative tourist solutions for a smart city. The University of Zagreb is also partnering on the project.

In general, universities and students are playing an important role. The Faculty of Electrical Engineering and Computing of University of Zagreb (www.fer.unizg.hr) initiated the establishment of an energy platform „living lab” to encourage research, development and innovation. The Faculty of Civil Engineering, Architecture and Geodesy of the University of Split

⁸ Mr. sc. Branko Burazer, dipl. ing. el. "Normizacija u procesu kreiranja „pametnih gradova“, page 6

(gradst.unist.hr/), together with Urban Data Management Society and ISPRS (The International Society for Photogrammetry and Remote Sensing), organized the first international conference "Smart Data and Smart Cities" held in Split in September 2016. The conferences aim at presenting novel research concerning the use of information and communication technologies in Smart Cities as well as at providing a forum for senior researchers to establish collaborations on new research projects in this domain.

The Croatian Chamber of Economy (HGK, www.hgk.hr) also has an active role in promoting the smart city concept. For example, its organizational unit - Professional Group for Information Technology (www.hgk.hr/zupanijska-komora-split/strukovna-grupacija-za-informacijske-tehnologije), together with Innovatio Profit d. o. o. organized a panel discussion on the theme: „Split 2020 – The Vision of the City’s Future through Smart City Innovation”. The aim of the conference was to encourage and give an opportunity to all IT companies to participate in the realization of the envisaged projects.

It is also important to pinpoint the project 'Smart cities – cities of the future' initiated by Poslovni dnevnik (www.poslovni.hr). The aim of the project is to promote excellence and innovation of 'smart city' and related initiatives implemented in Croatian cities, as well as to raise public awareness of the importance of developing new technological, organizational and logistic solutions aimed at improving the quality of life of Croatian citizens. Their conference Smart cities will be held, for the third time in a row, in November 2017 at the Franjo Tuđman Airport Zagreb.

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