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Research Paper

# THE DEVELOPMENT OF ALBA IULIA IN A SMART CITY

**Dragos Ionut ONESCU**[1] | [1]*Strasbourg University, Babes-Bolyai University, Cluj, Romania.*

## ABSTRACT

*Alba Iulia will become the first smart city in Romania, with Wi-Fi hotspots in public places and in public transportation, air quality monitoring applications and remote reading of energy consumption, water and gas.*

*In the present paper I analyzed the development of Alba Iulia in a Smart city.*

**KEYWORDS:** *Romania, Smart City*

## INTRODUCTION

The term smart city refers to cities calling intensive new technologies "Smart guy" dedicated to improving public services, increasing level comfort of citizens in urban and rural resource consumption efficiency and reduce costs in the medium and long term. EU institutions strongly support development "scenario SMART". Technology solutions dedicated to solving the problems facing contemporary cities (traffic congestion, pollution, etc.) were joined by the scientific community and European institutions under the umbrella concept of Smart City.

The worldwide and in most urban development strategies component SMART rapidly evolved from "would be better" to "is not necessarily to" (including world 3, even there, in some cases, spins around digital metering utilities, mobile communications systems and water monitoring). No different cities like Johannesburg (project bwired), Rio, Lagos, Nairobi or Cape Town, are more advanced in this respect than even some European cities and the US, in addition to Africa were launched some innovation platforms (eg SCI NA, an NGO whose mission is to help public and private institutions and initiatives to deploy smart and innovative citizen-purpose social and economic development - link in Best Practices section).

While experts in demography and urbanism stipulate that the world population will double by 2050 and that by 2020, 80% of people will live in cities, it is estimated that the overall investment in technology for Smart City will reach 2020 fabulous sum 110 billion dollars.

In 2015, the European Economic and Social Committee (EESC) adopted a document establishing a new development strategy and support projects Smart City called "smart cities as a driver for a new industrial policy in Europe."

To support the development of cities smart in the EU, the EESC supports support investment in such projects using public funds existing European, national and regional level and by exploiting the opportunities offered by the European Fund for Strategic investments (ESIS).

For example, only the European Agency specializes in R / development / innovation - innovation and Network Executive Agency (INEA) has, for the period 2014-2020, a budget of 33.4 billion euros.

To facilitate the process, was established European innovation Partnership for Smart Cities and Communities (English acronym PPE -SCC), which brings together cities, industries and citizens, in order to bring about an improve ment in the quality of urban life more sustainable through integrated solutions (through applied innovation, better planning, a more participatory approach, improved energy efficiency, better transport solutions, intelligent use of ICT, etc.).

In the European Union, the issue of adoption of smart technologies and solutions has been reached for the first time (it is true tangential) in 2007, it was adopted "Leipzig Charter on Sustainable European Cities".

In 2010, development ministers of the 26 Member States (at the time) of the European Union, the three candidate countries (Croatia, FYROM and Turkey) and the two invited countries (Norway and Switzerland) adopted the Declaration of Toledo (listed in International Events section), which marked the creation of a European urban agenda and focused on current urban challenges and solutions for intelligent urban development, sustainable and cohesive society.

On January 1, 2014, the EU launched the "Horizon 2020" over seven years, will invest 77 billion euros in research and innovation. To date (May 5, 2015) in the call for proposals "Smart Cities and Communities", there were 51 proposals(Applications).

In April 2015, during the World Congress "Local Governments for Sustainability", 100 mayors of several cities signed Declaration Seoul (listed in Section International Events) setting nine future targets, including "smart cities" is a concept important. Theme of sustainable urban development and smart resumed and updated in June 2015 at the meeting of Ministers responsible for territorial cohesion and urban issues in member countries, causing the Declaration of Riga (listed in International Events section).

For 2016 -2017, the European Commission Horizon 2020 Program allocates a budget of 16 billion euros, targeting a series of initiatives to modernize the European manufacturing industry (1 billion euros), automatic control technology and standards for motor vehicles (over 100 million euros), the Internet of Things (139 million), digitalization of EU industries and circular economy (670 million euros), smart and sustainable cities (232 million).

Returning to our land, according to the National Strategy for Energy Efficiency, Romania would invest 5 billion euros in the next five years in this sector, of which EUR 3.9 billion to implement a low-carbon economy and 1.1 billion euros for projects on energy efficiency (buildings, lighting systems and smart cities).

To become a "smart city", Alba Iulia needs to invest 227 million euros, according to the study "Smart Cities Research" from Siemens. Although the amount is large, the benefits are as authors' research estimating that over the next 35 years will generate benefits of total investments, direct and indirect, of 532 million euros.

Among proposed solutions include an integrated tourist platform, free Wi-Fi extended electric bike rental service, can use public transport tickets online. These investments would increase the number of tourists and the amount spent by them in Alba Iulia, but also to improve the lives of the inhabitants. In addition to the city's transformation are proposed in real time planning trips, use of intelligent parking control and street lighting, and electrical networks for "smart".

Alba Iulia to become a "smart city" must realize the following measures:

## 1. Connectivity

The technologies analyzed in the study are geared towards improving the tourist experience, to increase the number of visits and spending by tourists during their stay in Alba Iulia and include platform integrated tourism, free Wi-Fi extended service bike rental electric beacons and geo location and augmented reality and online tickets for public transportation.

Designed for smart city proposed by Orange Romania lay the foundation for open and interoperable platform that can be extended and adapted to the changing needs of citizens and municipalities.

The costs of development and implementation of solutions for smart city pilot project are fully covered by Orange Romania and its partners: Civic Alert Magnasci (uRadMonitor) Tech Lounge FullscreenDigital, Gebs (Zoniz) FlashNet.

Open infrastructure platform created benefit from Orange - 4G networks, broadband based on fiber optic IoT LoRa WAN, Wi-Fi, Bluetooth - as well as applications and expertise of Orange and its partners, start-ups Romanian tech.

The information gathered by sensors installed in the city (air quality monitoring, intelligent lighting management, smart metering water distribution, etc.) of the data sets publicly available to local authorities (www.apulum.ro) and government (data.dov. en, ithub.gov.ro) will be aggregated platform and will allow adding new information from any type of sensor or institution. With an open and searchable interface for application programming (API), any organization can develop new applications for Smart City project.

The concept of Orange Romania for the pilot project Alba Iulia Smart City in 2018 includes:

- Wi-Fi Hotspots with access to secure Internet in public areas (the fortress Alba Carolina in bus stations, the train station, schools and universities);
- Solution for public transport smart 15 public transport managed by public transport companies Alba Iulia, including Wi-Fi Internet secure for travel, access to real-time position information, speed and direction of transport to public transport company;
- Solution for communicating with citizens through Wi-Fi hotspots and through the E-Alba Iulia;
- Viewing and optimizing traffic pedestrian and public transport, by adapting the Orange Business Retail Analytics;
- Infrastructure LoRa WAN that will communicate applications and connected devices internet;
- Solution for measuring air quality, uRadMonitor offering information on the pollution level in the city and surrounding area;
- Solution to promote tourism and interaction with citizens including 250 beacons installed in about 225 objectives (museums, university, city, restaurants, statues, cathedrals) that will transmit information about these visitors to your mobile phone;
- Public lighting management solution by installing 100 devices supplied by FlashNet on lampposts which are controlled remotely operating hours and light intensity. The devices alarms and provide real-time information on electricity consumption for each column;
- Management solution and intelligent metering of the public water supply by 50 of devices also send alerts related losses;
- Securing access to Internet for all components of the smart city and monitoring system by platform Business Internet Security;
- Section for Pilot Project Smart City Alba Iulia in the program to accelerate startups Innovation Labs in 2017, where the infrastructure will be open to developers;
- Solution for Civic Alert, which citizens report to city Hall city issues, the status of tickets opened can be tracked in real time on the website town Hall
- Solution for digital filing cabinet containing tablets, educational content digital, digital catalog, Internet access via Wi-Fi network and web traffic filtered.

Following Hackathon in Cluj Napoca, Orange works with the team Softschool integration solution electronic catalog with the Business Wi-Fi implemented already in high school, so authenticating users (students, high school teachers) on the Wi-Fi hotspot Orange schools to achieve uninterrupted account using electronic catalog.

The Orange Softschool is supported by both the integration of Wi-Fi infrastructure with M2M SIMs and

access to SMS Gateway API integration option for notification to users (students, teenagers, parents).

Another team, SMity, this time in Bucharest, also works in the Innovation Labs to a solution of intelligent data processing hardware for the infrastructure of Smart City developed by Orange in Alba Iulia 2018.

The SMity integrate heterogeneous information, and data from sensors uRadMonitor air quality information on the flow of people and public lighting. Based on these streams SMity presents a profile of city life accessible and understandable to people with vocational guidance and interests as diverse as decision makers from the political and business experts on public health, culture and urban infrastructure, townspeople and tourists.

The inclusion of Alba Iulia in EU-funded projects (Horizon 2020) won by Orange Romania on architecture and technology use in applications such as smart 5g city. Such projects will help co-pilot Smart City Project in Alba Iulia.

"Peak season for tourism is July and August. In many sectors dependent on tourism, the difference between the numbers of tourists in these months compared with winter months, causing an imbalance in cash flows for the businesses in the region.

Without base visitors uniform throughout the year, new hotels may not be willing to invest in Alba Iulia. This perpetuates a cycle of limited capacity, which restricts city to accommodate more visitors during peak periods.

The intelligent technologies have the potential to make the region able to host typology diverse tourists, whose visits are less dependent on holiday periods and time.

For example, the city could host festivals and conferences in months not peak season to stimulate demand accommodation all year round.

## 2. Transport

One of the proposed technologies is represented by operational sensors that allow collecting data transport infrastructure, helping to create an inventory of assets and the condition they are. Planning trips in real-time and intelligent parking systems are also positive impact on mobility technologies tourists and city residents.

According to the study Siemens, through a system of sensors that record available parking space and then distribute the information to users on GPS systems or directly on phones through an application would reduce bottlenecks and drivers would save annually 44,000 hours spent in traffic, the equivalent of 860,000 euros.

## 3. Energy

Alba Iulia assumed reduce CO2 emissions by 20% by 2020 and smart technologies are an essential component for achieving this goal.

Investing in an intelligent street lighting control is according to the study, the most advantageous in terms of short-term performance. The research shows that an intelligent lighting program could save electricity by 14GWh, based on a 73% reduction in energy consumption for lighting. This saving equals the energy demand of 5,000 people annually.

In addition, long-term investments in smart electricity networks would generate benefits over 300 million Euros, the study shows. Integration of renewable energy technologies in the network or the use of smart meters is among the systems that deliver strong benefits.

## 4. Research

The study "Smart Cities Research" by Siemens was initiated last year and included the city of Alba Iulia, with Aberdeen and London in the UK, Brussels (Belgium) and district Kartal (Turkey).

The findings were presented on July 13 with the Municipality of Alba Iulia. Implementation of intelligent solutions is becoming easier and more accessible thanks to technological evolution. The rapid development of Internet of Things has allowed unprecedented growth in data volume and center of these devices is connected smartphone.

For example, Siemens according to the study, over 90% of current data, globally, have been generated in the past five years.

This dynamic, coupled with falling prices of sensors and the increasing penetration of smart phones built a new trend in how cities can monitor and manage infrastructure systems or other assets, and this is just the beginning.

# CONCLUSION

This concept warns that soon, "any time, any (working system, etc.) anywhere" will communicate will be interconnected in a network.

"There are over 50 projects contracted and under implementation, completed or not yet started implementation. We signed cooperation agreements with large companies, but also start - ups. The most advanced and consistent investment projects are developed Alba Iulia Orange, with whom we have a very good cooperation! it works very well with us. Our goal is to contract until the end of 2017 at least 100 pilot projects for smart cities that try them out during the centenary year. We can see what works and what does not, what is viable technical, financial, functional and what is just ... let's call it marketing. The assessments will make users of products or services, applications and processes, ie citizens, tourists and other institutions. They also will help us to prioritize as to what types of solutions, technologies will direct public spending after 2019. We are pleased with the interest shown by vendors of technology and effervescence generated by the initiative announced last year by the Ministry of Communications and Information Society in partnership with the City of Alba Iulia. And appreciate the diversity offered solution that is sized verticals including areas - smart lighting, smart metering, intelligent communication, e-government, e-citizen, smart mobile digital education etc. For us the challenge is to integrate them, to ensure the security technique, adequate communication and human resources prepared especially clever etc. In this sense, already consider organizational change and the positions of the Hall in the sense of establishing smart city department. In 15 years, the City began to develop a team of people who have posted projects and brought many international funding cities. Now we want to develop a team to manage ingenious smart city projects. As Siemens makes its products ", said Nicolaie Moldovan.

Alba Iulia could become a smart city.

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