

CHALLENGES AND OPPORTUNITIES FOR THE SMART CITIES ADMINISTRATION

Cristina LINCARU,
Dr., INCSMPS¹, *crisrina.lincaru@yahoo.de*
Speranța PIRCIOG,
Dr., INCSMPS, *pirciog@incsmpls.ro*
Vasilica CIUCA,
Dr., INCSMPS, *silviaciuca@incsmpls.ro*
Draga ATANASIU,
mat., INCSMPS, *incsmpls1@incsmpls.ro*

ABSTRACT

Among the „hot” policies priorities of European Policy is the “Smart City” (Washburn, 2011) as a consequence of the fact that “today 78% of European citizens live in cities, and 85% of the EU’s GDP is generated in cities (Smart cities EU, 2013). These spatial agglomerations of populations are accompanied with positive externalities like: “jobs, growth and investment, innovation, energy efficiency, low-carbon development”, providing better quality of life for its inhabitants.

Challenges or opportunities produce for all actors of these agglomerations the need of developing new behaviours and regulations. In global competitive framework becomes more and more visible that only the cities that are able to find solutions for all its members (citizens, business, all stakeholders) and use the technology in an intelligent manner will attract resources and will improve citizens’ lives or else will be deserted.

There is out of question the success of any Smart technologies application in the cities infrastructure without the city administration inclusion next to “education, healthcare, public safety, real estate, transportation, and utilities - in a more intelligent, interconnected, and efficient.” (The International Telecommunication Union (ITU) is the United Nations, 2014).

Dirks (2009) links the “smart city” concept with government or public administration and its citizen, including new channels of communication for the citizens, e.g. “e-governance” or “e-democracy”. This integrated approach moves from the “Smart Governance” (Batagan, 2011) towards The Urban Systems Collaborative inter-disciplinary community shaping. (Harrison & Donnelly, 2011). At this moment there are many debates regarding the “smart city” main dimensions, including or not the administration / governance. Our intention is to emphasise the key role of administration / governance in the life of the “smart city”.

H83, O 20, O18

Keywords: smart cities, public administration, citizen, collaborative systems

¹ INCSMPS - National Scientific Research Institute for Labor and Social Protection

1. Introduction

The 2020 Europe Strategy's launched the ambitious objectives of creating durable smart and inclusive growth. The urban area is the home for more than 78% of its citizens and provide more than 85% of the EU's GDP. (Brochure WEB eusmart) In Europe cities are the sources of jobs, growth, innovation but also the locations where are the highest CO emissions, high energy, water, and other resources high consumption, mass waste production, segregation, unemployment, and poverty are concentrated. On the background of RDI progresses and globalisation, the competition's demands increases more and more, and requests innovative solutions that assure low carbon emissions, resource efficient and inclusive economy building.

On 30th of May 2016 in Amsterdam the EU Ministries Responsible for Urban matters established the urban Agenda for EU "Pact of Amsterdam". "The Urban Agenda for the EU will rely on the principle of an integrated approach to sustainable urban development as the guiding principle to achieve the goals of the three policy pillars. The Urban Agenda for the EU will, in addition to the organisations mentioned in the Pact of Amsterdam, make use of existing European policies, instruments, platforms and programmes such as the opportunities offered by Cohesion Policy, including its sustainable urban development strand, Urban Innovative Actions, URBACT, ESPON, the "Covenant of Mayors", Civitas 2020, RFSC (Reference Framework for Sustainable Cities), EUKN. It will make full use of the European Innovation Partnership 'Smart Cities and Communities' (EIP-SCC, 2013) as established by the Commission." (Pact of Amsterdam, p. 6)

The European Innovation Partnership on Smart Cities and Communities (EIP-SCC, 2013) supports through integrated smart city solutions (technologies for Energy, Transport and Information and Communication Technologies (ICT)) to provide a better quality of life for its citizens. The main method used is the creating of the Market Place (eu-smartcities.eu/) a space where are bring together cities with industry and its citizens. The EIP-SCC-COP, 2013 iterates eleven priority areas among which there are 3 Vertical Areas: *Sustainable Urban Mobility, Districts and Built Environment, Integrated Infrastructures (Energy, ICT and Transport) and Processes* and eight key horizontal enablers on the themes of Decisions (Citizen Focus, Policy & Regulation, Integrated Planning), Insight Knowledge sharing, Metrics & Indicators, Open Data, Standards) and Funds (Business Models, Procurement and Funding)

Among the findings emphasised in the study Mapping Smart Cities in the EU (2014) was profile an smart comportment for cities by their size: "cities with at least 100,000 residents, 240 (51%) have implemented or proposed Smart City initiatives. Although almost half of European Smart Cities have 100,000 to 200,000 inhabitants, this is only 43% of this size category, *whilst almost 90% of cities over 500,000 inhabitants are Smart Cities*. This is very clearly a large city phenomenon, with such cities each having a large number of Smart City initiatives compared to smaller cities".

Following this idea i.e. London that makes a „spectacular example of global city going to become smart, sustainable and inclusive” (Abdoullaev, A., 2015)

On this context, becomes evident the increasing importance of smart city developments as the main instruments to respond to the needs of its citizens, to solve the identified problems and to provide high life quality for its citizens. Even in Romania the urban development’s demands smart solution adoption.

2. Research Question

In the context of population agglomeration increasing in fixed areas and finite resources is increasing the demand of making cities ”smart”. In the context of global scale Ojo et.al (2016”, p. 23) the concept of making cities “smart” has grown out of the need for cities to meet their main challenges and their main opportunities that faces increasing day by day. For the main challenges of ” the phenomenal growth in the urban population and the demand for a sustainable management for urban systems like: transportation, water resources, waste, energy and natural environment” are associated as the main opportunities **the social nexus** (Ojo cites Ratti &Townsend 2011) and the ability to **make more with less resources** (Ojo cites Bettencourt & West, 2011) **through better management and innovation**. On this background our research question is ”What are the main Challenges and opportunities for the smart cities administration?” The better management and innovation is the result of the activity of administration/governance as the actor that plays the key role in shaping and keeping functional the smart cities.

3. Discussions regarding the challenges and opportunities for the smart cities administration

3.1. Defining smart cities

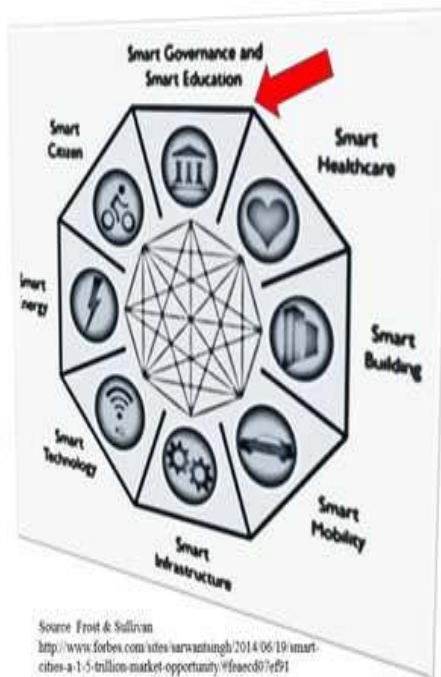
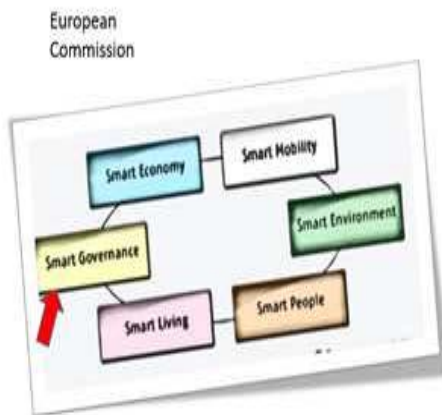
Under Pact of Amsterdam (2016) the Smart city concept is an **innovative approach** that allow to solve the challenges that urban areas faces. Better **funding, regulation and knowledge** represents the tree main pillars of EU policy making and implementation. Urban Agenda for the EU includes as an indicative description of priority themes the following: “Inclusion of migrants and refugees, Air quality, Urban poverty, Housing, Circular economy, Jobs and skills in the local economy, Climate adaptation (including green infrastructure solutions), Energy transition, Sustainable use of land and Nature-Based solutions, Urban mobility, Digital transition, Innovative and responsible public procurement.”

Currently there a huge literature regarding the **smart city concept** crystallisations, Hollands in 2008 focused on “Urban Labelling”, Caragliu et. al.

(2009) identifies smart cities in Europe, in 2012 Alawadhi et al., links smart city with the implementation of information technologies, in 2011 Nam and Pardo points that smartness is realized only when an *intelligent system adapts itself to the users' needs*. (Cited by Albino, 2015). Harrison et al. (2010), in an IBM corporate document, stated that the term “smart city” denotes an “instrumented, interconnected and intelligent city.” Ballas in 2013 take in consideration “strategic directions targeting sustainable development, economic growth, better and quality of life for their citizens, and creating happiness” as the main dimensions for smart city. Batty (2013) sees the smart city a services provider. In 2015 Mavrič et. al., is focusing on city performance as a measure of urban development, Tryfonas et.al. 2015 emphasise the differences given by the citizens skills correlated with the Digital Agenda.

Fig. 1

Defining smart cities



HOLISTICA Journal of Business and Public Administration
No. 1/2016

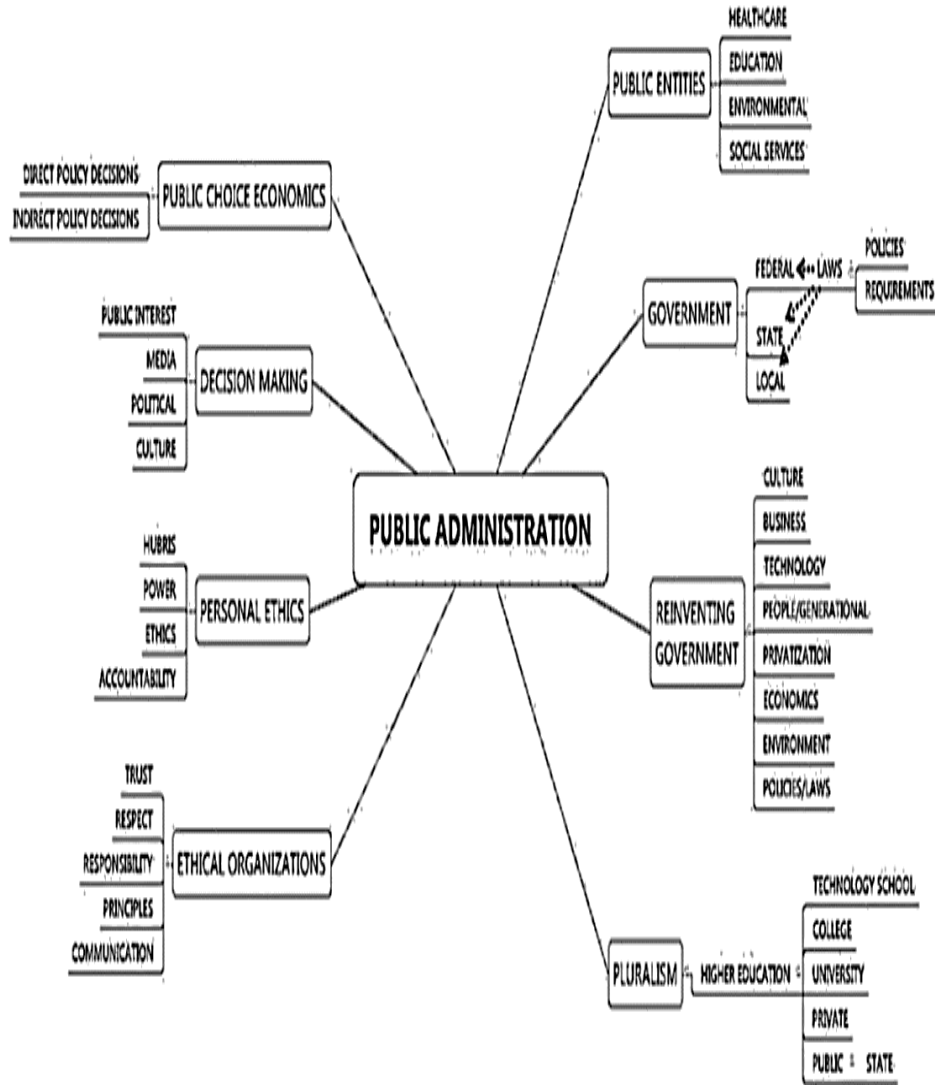
The European model of smart city provided by europeansmartcities 3.0 (2014) made by Technische Universitat from Viena (TU Wien) and Planning for Energy Efficient Cities (PLEEC) is multidimensional and included the Smart Governance next to other 5 smart dimensions (economy, mobility, environment, people and living) (see Figure 1) Another multidimensional model is described by Frost and Sullivan in 2014 (see Figure1). Authors uses the smart label but to a larger spectrum. In this model Smart Governance is included in the same dimension with the Smart Education next to other 7 smart dimensions (Healthcare, Building, Mobility, Infrastructure, Technology, Energy and Citizen)

3.2. Smart administration definitions and concepts

Public administration is defined by the Encyclopaedia Britannica as:”the implementation of government policies. Today public administration is often regarded as including also some responsibility for **determining** the policies and programs of governments. Specifically, it is **the planning, organizing, directing, coordinating, and controlling of government operations.**” (Encyclopaedia Britannic, Chapman) Tayren (2010, Figure 2) describe the public administration as a complex universe that includes a large spectrum of domains and subdomains:

- 1 Public Entities (Healthcare, Education, Environmental and Social Services)
- 2 Government (Federal: Laws + Policies + Requirements; State, Local)
- 3 Reinventing Government (Culture, Business, Technology, People / Generational, Privatization, Economics, Environment, Policies/Laws)
- 4 Pluralism (Higher Education: Technology School + College + University + Private + Public /State)
- 5 Public Choice Economics (Direct Policy Decisions, Indirect Policy Decisions)
- 6 Decision Making (Public Interest, Media, Political, Culture)
- 7 Personal Ethics (Hubris, Power, Ethics, Accountability)
- 8 Ethical Organizations (Trust, Respect, Responsibility, Principles, Communication)”

Figure 1 Public administration – a complex Universe!



Source: Tayrien, 2010, <http://www.xmind.net/m/6npu>

HOLISTICA Journal of Business and Public Administration
No. 1/2016

Public administration as a developing discipline (Ginandjar et.al., 2006) which transits in the last century through 5 paradigms defined by Henry (see Box1) the new public management (NPM) in the early 1990's, a new managerial, approach to public administration which "is reform-oriented and seeks to improve public sector performance".

Box 1

Henry's evolutions of paradigms (1995)

<p>Paradigm 1: Politics/administration dichotomy, 1900-1926</p> <p>Paradigm 2: The principles of administration, 1926 – 1937</p> <ul style="list-style-type: none">– period of orthodoxy– scientific management– bureaucracy– POSDCORB (Planning, Organising, Staffing, Directing, Coordinating, Reporting and Budgeting, introduced by Guillick)– administrative responsibility– the most serious challenge– administrative behaviour <ul style="list-style-type: none">• the challenge, 1938 - 1947• reaction to the challenge, 1947 - 1950 <p>Paradigm 3: public administration as a political science, 1950-1970</p> <p>Paradigm 4: public administration as management 1956-1970</p> <p>Paradigm 5: public administration as public administration 1970-</p> <ul style="list-style-type: none">-New public administration-Reinventing government-Administrative behaviour-New public management

*Source: Henry, N., Paradigms of Public Administration, Public Administrative Review, Vol 35, No. 4 *Jul. Aug. 1975) pp 378-386, Published by Blackwell Publishing Review, on Behalf of the American Society for Public administration, Stable URL. <http://www.jstor.org/stable/974540?origin=JSTOR-pdf>, accessed on 78/7/2016 from <https://sangyubr.files.wordpress.com/2012/02/paradigms-of-public-administration.pdf>*

Ginandjar et. al. (2006) concludes that "overall, public administrative culture is changing to be more flexible, innovative, problem solving, entrepreneurial, and enterprising as opposed to rule-bound, process- oriented, and focused on inputs rather

HOLISTICA Journal of Business and Public Administration
No. 1/2016

than results”. The authors points out that “today, the NPM is becoming the dominant managerial approach”

In post-industrial era the “Government has no longer been merely the keeper of the peace and the provider of basic services. ...Government has become: a principal innovator, a determinant of social and economic priorities, and an entrepreneur on a major scale. (Encyclopaedia Britannica)

Based on Encyclopaedia Britannica, in the smart city background theories, we can conclude that government becomes a **smart solution provider!**, considering that

”On virtually every significant problem or challenge-from unemployment to clean air-people have looked to the government for solutions or assistance.The tasks of planning, organizing, coordinating, managing, and evaluating modern government have likewise become awesome in both dimension and importance. (Chapman, B., Encyclopaedia Britannica)

The complex role of government is reflected also by enrichment of efficiency maximisation process coupled with new **values and goals** providing. Paraphrasing Allanigue (2012) the Public Administration is the synergic mechanism of implementing the individual values and goals. (Figure 3)

Fig. 3 Political definitions of PA



HOLISTICA Journal of Business and Public Administration
No. 1/2016

Nam & Pardo (2011) considers the main dimensions (technology, people and institutions) in accordance with strategic principles. The institutional factors include governance, policy and regulations / directives. Governance of institutional factors is strongly linked with leadership based on collaboration between “different functional sectors and parties (government, business, academics, non-profit and voluntary organizations and others) and among different jurisdictions within a given geographical region” (Nam & Pardo, 2011, pg. 288).

Governance encapsulates collaboration, cooperation, partnership, citizen engagement and participation [20]. The role of leadership is pivotal both within government and for its relation with citizens. (Nam & Pardo, 2011, pg. 288).

“Smart Government: The use of innovative policies, business models, and technology to address the financial, environmental, and service challenges facing public sector organizations. The concept of Smart Government relies on consolidated information systems and communication networks”. (Jiménez et. al., 2015)

In general, (public) governance has been defined “as regimes of laws, administrative rules, judicial rulings, and practices that constrain, prescribe, and enable government activity, where such activity is broadly defined as the production and delivery of publicly supported goods and services.” (Lynn, 2010, pg.235).

Chourabi et.al (2012) making a literature review points out that among the **success factors** usually are considered as very important the IT initiatives and projects, while “only a few studies in the academic literature on smart city initiatives address issues related to managerial and organizational factors”. Also this team of authors shape in two level of influence the influence of the factors included in a Smart city initiative framework. This framework considers “outer factors (governance, people and communities, natural environment, infrastructure, and economy) are in some way filtered or influenced more than influential inner factors (technology, management, and policy) before affecting the success of smart city initiatives”. (Chourabi et. al., 2012, pg. 2294).

3.3. Challenges and opportunities for the smart cities administration presented in literature

Keta links smart administration in the context of smart city with the political and philosophical concept of open governance”. (Keta, 2015, pg.48) Also Keta arguments “The need for a Smart Administration would mean the necessity for ‘a Different Administration’” (Keta, pg.49). In Smart administration framework is need to be reshaped the **informative and serving activities**, a new profile for the administrators of an open data providing transparency.

“The nexus between Government & Governance and Citizenship & Cities within the Information & Knowledge Society are keys of a new view of our world as a “system” in which its optimal status should be to achieve the highest degree of

HOLISTICA Journal of Business and Public Administration
No. 1/2016

governance within a city, in which their benefits are maximized and their disadvantages are minimized.”(Jiménez et. al., 2015)

Batagan (2011) inventories some Indicators for Economic and Social Development of Future Smart City.

In the context of global scale Ojo et.al (2016”, p. 23) finds as main challenges for the smart cities the *phenomenal growth in the urban population* and the *demand for a sustainable management for urban systems like: transportation, water resources, waste, energy and natural environment*. On the opportunities side these Cities are **social nexus** (Ojo cites Ratti & Townsend 2011), make more with less resources (Ojo cites Bettencourt & West, 2011) through better management and innovation.

Rogers (2015) points that areas like transportation, health and public safety, urban planning and education, and energy and environment are the main challenges for Smart Cities challenges including. Based on the idea that suitable IT technologies strongly contribute to cost decreases in the focused areas as a tool to improve “planning, cooperation, connectivity” important inputs for the city management. Rogers concludes that “by working together, technology developers, data scientists, and city leaders can establish the Smart City frameworks needed to ensure public safety and enable compatible, manageable, and scalable systems”. This vision naturally induce an interdisciplinary approach..

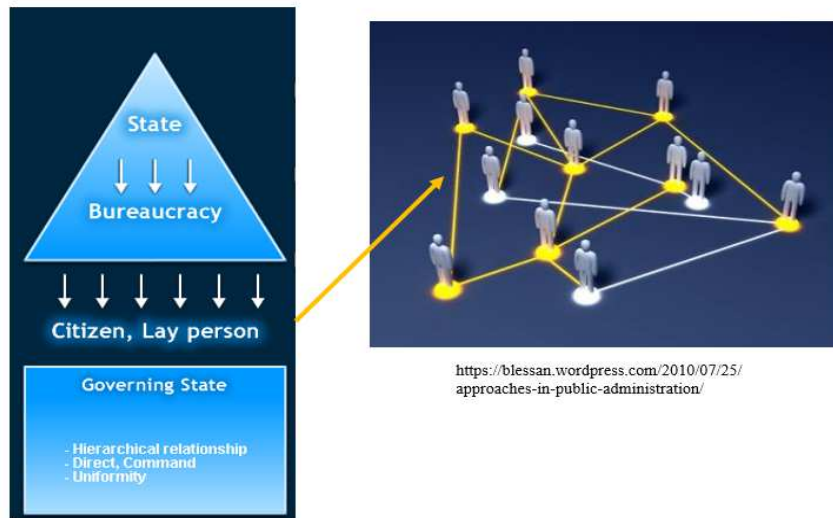
The challenges range from providing a good quality of life for citizens to ensuring appropriate socio-economic development year on year, while the opportunities can be seen in businesses becoming more efficient and innovative, to the reduction of crime through the use of ICTs in policing.

The concept of making cities “smart” has grown out of the need for cities to meet these challenges and opportunities

4. Final remarks

The Urban Systems Collaborative interdisciplinary community shaping. (Harrison & Donnelly, 2011). At this moment there are many debates regarding the “smart city” main dimensions, including or not the administration / governance. Our intention is to emphasise the key role of administration / governance in the life of the “smart city”. The public administration will create smart cities by remodelling processes administration itself - becoming an intelligence administration. (Figure 4)

Figure 4 - Transition towards Smart Administration Paradigma



KRUEATHEP, W. (2006). School of Public Affairs and Administration, Rutgers University–Newark.

Acknowledgements

This work was supported by a grant of the Romanian National Authority for Scientific Research, CNDI– UEFISCDI, DYNAHU project number PN-II-PT-PCCA-2011-3.2-0084.

References

- Abdoullaev, A., 2015. Global Cities of the Future: A Case of Smart London, <https://eu-smartcities.eu/action-cluster/forums/global-cities-future-case-smart-london>
- Albino, V., Berardi, U., Dangelico, R.M., 2015. Smart cities: definitions, dimensions, and performance, *Journal of Urban Technology*, 22(1). 3-21 2015. <https://sapienza.pure.elsevier.com/en/publications/smart-cities-definitions-dimensions-performance-and-initiatives>
- Allanigue, M., *Public Administration and its Role in the Modern Society*, Taguig City University Graduate School, Management Theory and Policy, summer, 2012,

HOLISTICA Journal of Business and Public Administration

No. 1/2016

Source: <http://www.slideshare.net/MarlynAllanigue/public-administration-38197258>

- Batagan, L.. Indicators For Economic And Social Development of Future Smart City, Journal of Applied Quantitative Methods, Quantitative Methods Inquires, vol. 6, no 3, Fall 2011;
- Batty, M., 2013. Smart Cities Session IV: Cities as Services Delivery, Lecture 7: Urban Information Systems: From Small to Big Data, Centre for Advanced Spatial Analysis. <http://www.spatialcomplexcity.info/http://www.casa.ucl.ac.uk/>
- Caragliu, A., Del Bo, C., Njikamp, P., 2009. Smart cities in Europe, 3rd Central European Conference in Regional Science – CERS, 2009, p.45-59. http://www.inta-aivn.org/images/cc/Urbanism/background%20documents/01_03_Nijkamp.pdf.
- Chapman, B., <https://www.britannica.com/topic/public-administration>
- Chourabi, H., Gil-Garcia, J.R., Pardo, T., Nam, T., Mellouli, S., Scholl, H.J., Walker, S., Nahon, K., 2012. Understanding Smart Cities: An Integrative Framework, 2012 45th Hawaii International Conference on System Sciences, IEE Computer Society
- EIP-SCC-COP, 2013. European Innovation Partnership on Smart Cities and Communities Operational Implementation Plan: First Public Draft. http://ec.europa.eu/eip/smartcities/files/operational-implementation-plan-oip-v2_en.pdf.
- EIP-SCC-SIP, 2013. European Innovation Partnership on Smart Cities and Communities - Strategic Implementation Plan, The High Level Group of the European Innovation Partnership for Smart Cities and Communities
- Espan 2016, Urban agenda for the EU – Pact of Amsterdam, Agreed at the Informal Meeting of EU Ministers Responsible for Urban Matters on 30 May 2016 in Amsterdam, The Netherlands. http://urbanagenda.nl/wp-content/uploads/2016/05/Pact-of-Amsterdam_v7_WEB.pdf
- Frost & Sullivan <http://www.forbes.com/sites/sarwantsingh/2014/06/19/smart-cities-a-1-5-trillion-market-opportunity/#faecd07ef91>
- Ginandjar Kartasmita, G., Deddy S Bratakusumah, D.S, 2006, Public Administration as a Developing Discipline, <http://www.slideshare.net/Ginandjar/public-administration-as-a-developing-discipline-414052>
- Harrison, C., Donnelly, I.A., 2011. A Theory of Smart Cities, Proceedings of the 55th Annual Meeting of the ISSS, Proceedings of the 55th Annual Meeting of the ISSS <http://www.interindustria.hu/ekonyvtar/en/Smart%20cities%20and%20communities/Publications/A%20theory%20of%20smart%20cities.pdf>
- ITU-T, 2014. Smart sustainable cities: An analysis of definitions, Focus Group Technical Report. The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of tele-com-mu-ni-ca-tions, information and communication technologies (ICTs).

HOLISTICA Journal of Business and Public Administration
No. 1/2016

- Jiménez, C.E., Falcone, F., Solanas, A., Puyosa H., Zoughbi S., González, F., 2015. Smart Government: Opportunities and Challenges in Smart Cities Development <http://www.igi-global.com/chapter/smart-government/121309>
- Keta, M., 2015. Smart City, Smart Administration and Sustainable Development, Romanian Economic and Business Review – Vol. 10, No. 3, (p. 43-56) <http://www.rebe.rau.ro/RePEc/rau/journal/FA15/REBE-FA15-A4.pdf>
- Lynn, L. E., Heinrich, C. J., & Hill, C. J., 2000. Studying governance and public management: Challenges and prospects. Journal of Public Administration Research and Theory, 10(2), 233-262.
- Mavrič, J., Bobek, V., 2015. Measuring Urban Development and City Performance, Chapter 5, Business, Collection: Management and Economics, Book title: "Perspectives on Business and Management", Prof. Vito Bobek (Ed.), InTech, DOI: 10.5772/61063. Available from: <http://www.intechopen.com/books/perspectives-on-business-and-management/measuring-urban-development-and-city-performance>
- Mosher, F.C., <http://www.britannica.com/topic/public-administration/Principles-of-public-administration#toc36939>
- Nam, T., Pardo, T.A., 2011. Conceptualizing Smart City with Dimensions of Technology, People, and Institutions. The Proceedings of the 12th Annual International Conference on Digital Government Research, (p.282 -291) http://inta-ai.vn.org/images/cc/Urbanism/background%20documents/dgo_2011_smartcity.pdf
- Ojo, A., Dzhupova, Z., Curry, E., 2016. Part I. Smart cities concepts and Methodologies, Exploring the Nature of the Smart Cities Research Landscape, (p. 23) Editors. Gil-Garcia, Pardo, T.A., Nam, T., 2016. In Smarter as the New Urban Agenda: A Comprehensive View of the 21st Century City, https://books.google.ro/books?id=zkiGCgAAQBAJ&pg=PA24&lpg=PA24&dq=Challenges+and+opportunities+for+the+smart+cities+administration&source=bl&ots=WzxKCugBth&sig=SEQE7cRz0cY1fqwzFyg_cXSykTY&hl=en&sa=X&ved=0ahUKEwiqzrnzjvNAhVJ7hoKHZo_C4wQ6AEIUDAI#v=onepage&q=Challenges%20and%20opportunities%20for%20the%20smart%20cities%20administration&f=false
- Rogers, J., 2015. Fundamental challenges and opportunities for Smart Cities: Takeaways from the Global City Teams Challenge., <http://www.energycentral.com/utilitybusiness/informationtechnology/articles/3302/Fundamental-challenges-and-opportunities-for-Smart-Cities-Takeaways-from-the-Global-City-Teams-Challenge/>
- Tryfonas, T., Crick, T., 2015. Smart Cities, Citizenship Skills and the Digital Agenda: The Grand Challenges of Preparing the Citizens of the Future, Government Office for Science, <https://www.researchonline.org.uk/sds/search/taxonomy.do%3Bjsessionid=FDA>

HOLISTICA Journal of Business and Public Administration

No. 1/2016

B388605E7897710E299EE494EBBAB?action=document&ref=B72972&pager.offset=0&taxonomy=LLE

Washburn, D., Sindhu, U., Balaouras, S., Dines, R. A., Hayes, N. M., & Nelson, L. E. (2010). Helping CIOs Understand "Smart City" Initiatives: Defining the Smart City, Its Drivers, and the Role of the CIO. Cambridge, MA: Forrester Research, Inc. Available from

http://public.dhe.ibm.com/partnerworld/pub/smb/smarterplanet/forr_help_cios_un_d_smart_city_initiatives.pdf.

<http://www.smart-cities.eu/model.html>