Slavko Arsovski [1]

Zora Arsovski

MODELING SMART TOURISM

Abstract: A smart tourism is now in emerging phase. It is based dominantly on existing tourism resurces in connection with Internet of Things (I0T). In each new concept problem is fuzzy space between old and new, esspecialy related to modeling.

In the paper are emphasized different aspects of modelimg based on existed and future projects of smart tourism. Base for modeling are processes in smart tourism (existed/new) is new technologies impact for solving complex problems.

The goal of the paper is to propose model of smart tourism and, based on literature data and data from Serbia, predict global solution of smart tourism in Serbia.

Keywords: Modeling, Smart tourism, Internet of Thinks, Serbia

1. Introduction

A concept of Smart Tourism is relative new. According World Tourism Organization (2017) smart tourism concern clean, green and quality service on all levels of service (Munzhasova et. al, 2017). The base data from year 2015 related to applying of Information and Communication Technologies (ICT) and Smart Destination. In this concept Smart Tourist Destination is defined as „intelligent, sustainable and competitive tourist destination using resources related to data including geo-referent data, big data and Internet of Thinks (IoT)". In this concept are included all interested parties.

A smart tourism is now in emerging phase. It is based dominantly on existing tourism resurces in connection with Internet of Things (I0T). In each new concept problem is fuzzy space between old and new, esspecialy related to modeling.

In the paper are emphasized different aspects of modelimg based on existed and future projects of smart tourism. Base for modeling are processes in smart tourism (existed/new) and new technologies impact for solving complex problems.

The goal of the paper is to propose model of smart tourism and, based on literature data and data from Serbia, predict global solution of smart tourism in Serbia.

2. CONCEPT OF SMART TOURISM

In concept of Smart Tourism is performed communication and much closer interaction between tourist and local citizen, local business, as well as tourist attractions in most cases in smart city. A fundions of Smart Tourism are: (1) Smart Services, (2) Smart Guides, (3) Smart Guides for Bying, (4) Smart Transport, (5) Smart Payment, (6) Weather Informations, (7) Service Lines, (8) Registration of Tourist Morement, (9) Smart Destination management and others. One carracteristic of Smart Tourism is existing a combination of real and virtual concept wich are connected through Cloud, Internet of

---

[1] Corresponding author: Slavko Arsovski
  Email: cqm@kg.ac.rs

Things, Artifficial Intelligence, mobile phones, etc. (as technologies of fature) and smart cities (real infrastructure). In fig. 1 is presented structure of Smart Tourism. The first component is Smart/Digital Economy based on competitiveness. The second component is Smart People which represent social and human capital developed by Knowledge Economy concept. The next component is Smart Mobility for achieving higher provider quality of services and attractiveness of tourist destination. The fourth component is crutial because is related to communication of all actors in Smart Tourism. Smart ICT has evolution of classical toouls to comprehencive new ICT (ISO 2018; Toret & Calleja, 2014; Touati et. al, 2018). Now, key access to this concept is by Smart Phone. The fifth component is Smart Living wich includes smart hauses, smart districts, etc.
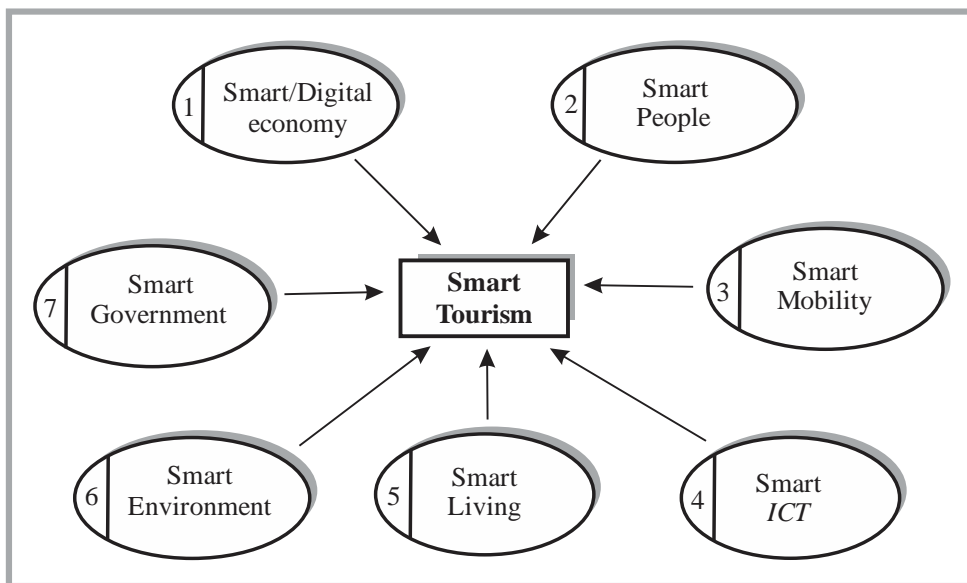

Figure 1. Structure of Smart Tourism

Smart Environment covers natural resources as ambient and attractors. At and is Smart Government which is very important because impact on political, tourism, digitalization and other goverment supporting.

A key part of smart tourism is smart destination. It is structured as in fig. 2. A project of development of smart tourism has five phases, i.e.:
1. Problem identification and motivation for development,
2. Defining vision goals, plans,
3. Research and development,
4. Verification and validation, and
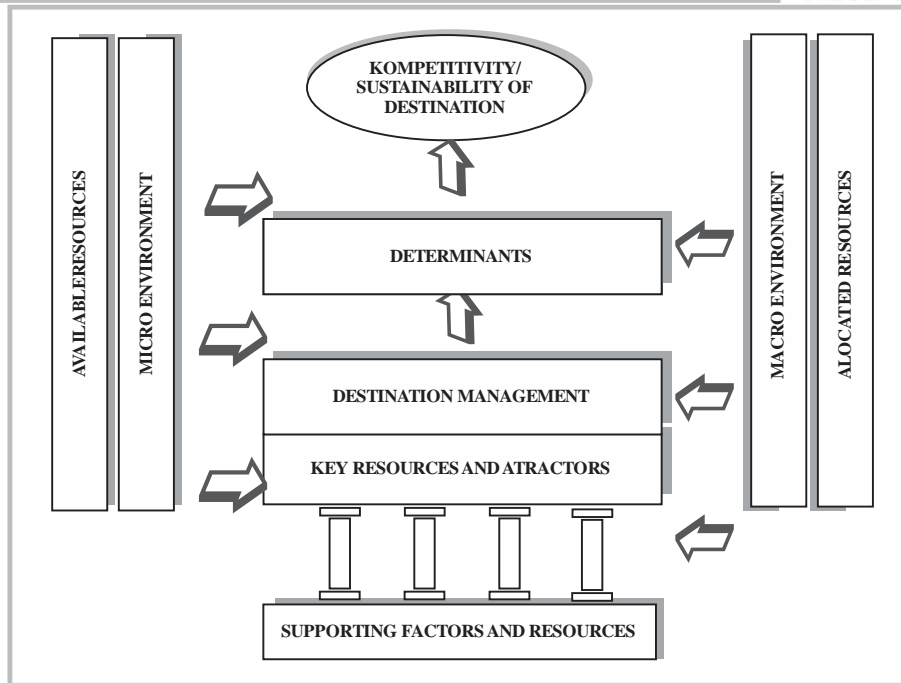Communication and dissemination of project results

S. Arsovski, Z. Arsovski

Figure 2. General model of tourist destination

3. Model of smart tourism

According to Hu et. al. (2018) a base for smart tourism is smart tourist destination with different spatial forms of travel (fig. 3). The first form is flow of tourist to one specific destination (A1). In second form (A2) there are one touristic tour with different destinations and in third (A3) form there is base with interconnected destinations. A fourth form (A4) there are destinations on regional tours and a fifth form is chain of destinations (A5) with routs. A development of smart tourism is performed in five phases (fig. 4). In first phase are:

- searching low level toursm services, lack of expirience and culture,
- consideration of communication barriers, and
- understanding importance of problems for local interested parties (stakeholders).

In second phose performs:

- communication support for service interactions,
- performing communication among all stakeholders related to goals definition, and
- balanced optimisation of different sum-goals.

In the third phase performs design, artefacts and prototypes for testing. In the fourth phase performs:

- demonstration of artefacts with analysis,
- verification of prototypes with potential users, and
- presentation of benefits, feasibility and value of tourism destination.

In the fifth phase performs:

- publishing project results on conferences and lournals and
- change of results with project members and environment.

A smart tourism is based on concept of Internet of Things (IoT) which is structured in 7 layers (fig. 5).
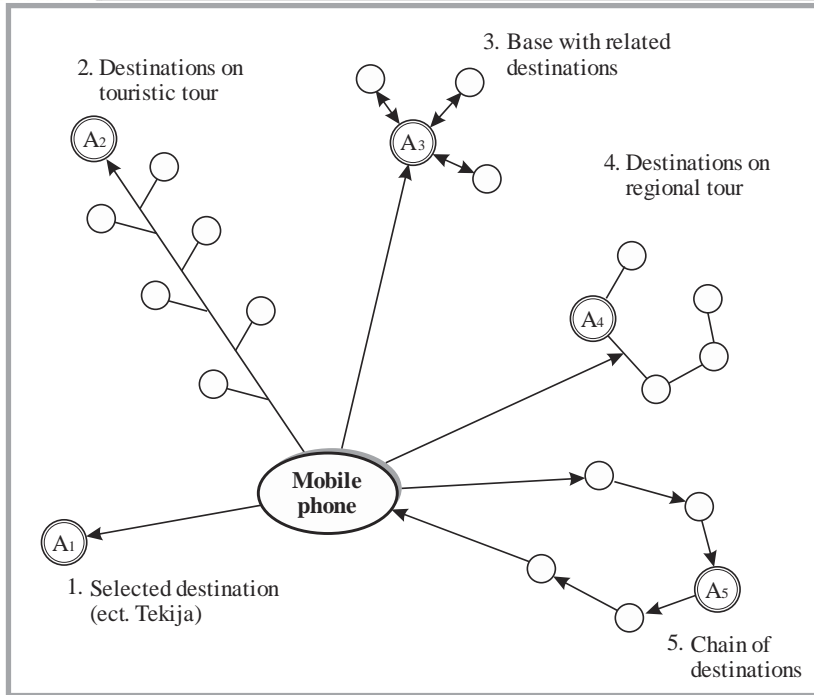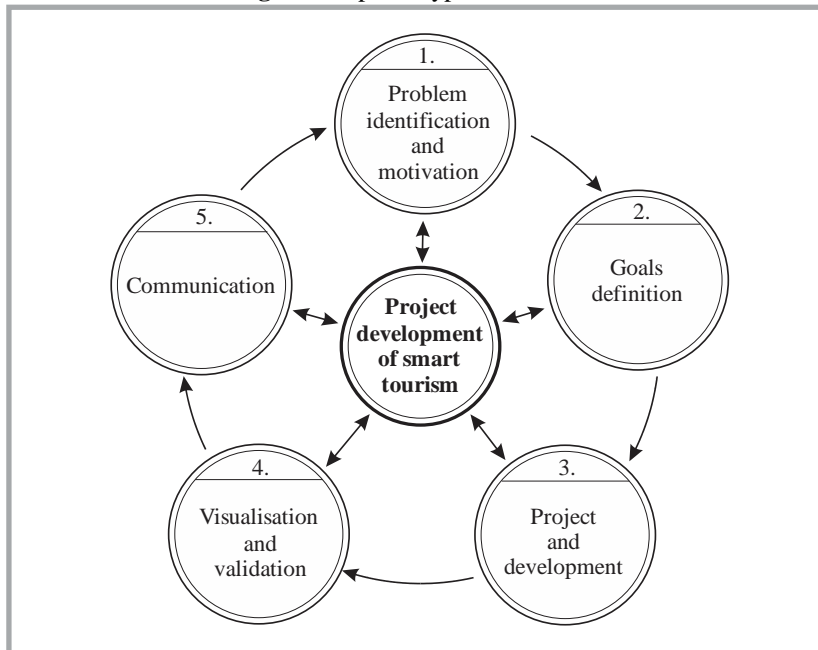
Figure 3. Spatial types of business

Figure 4 Phases of development of smart tourism
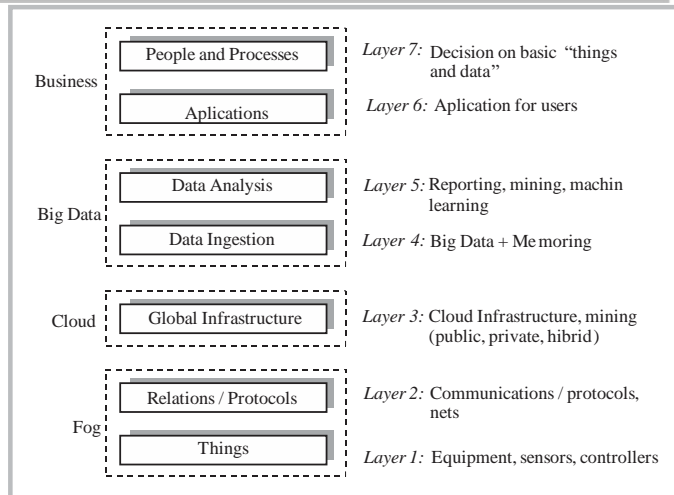
S. Arsovski, Z. Arsovski

Figure 5 Seven layers of IoTOn the other side we have include destination management requests (fig. 6).

Figure 6 Requests for destination management

At the end has be created list of tourist supply according different regions/communities (fig. 7).

Nº	Region/ community	Tourist destination	Leisure or recreation outside	Tours	Tourist attraction	History and culture place	Room location	Restorants and picnic places
1	Kladovo							
2	Tekija							

Figure 7 List of tourism supply
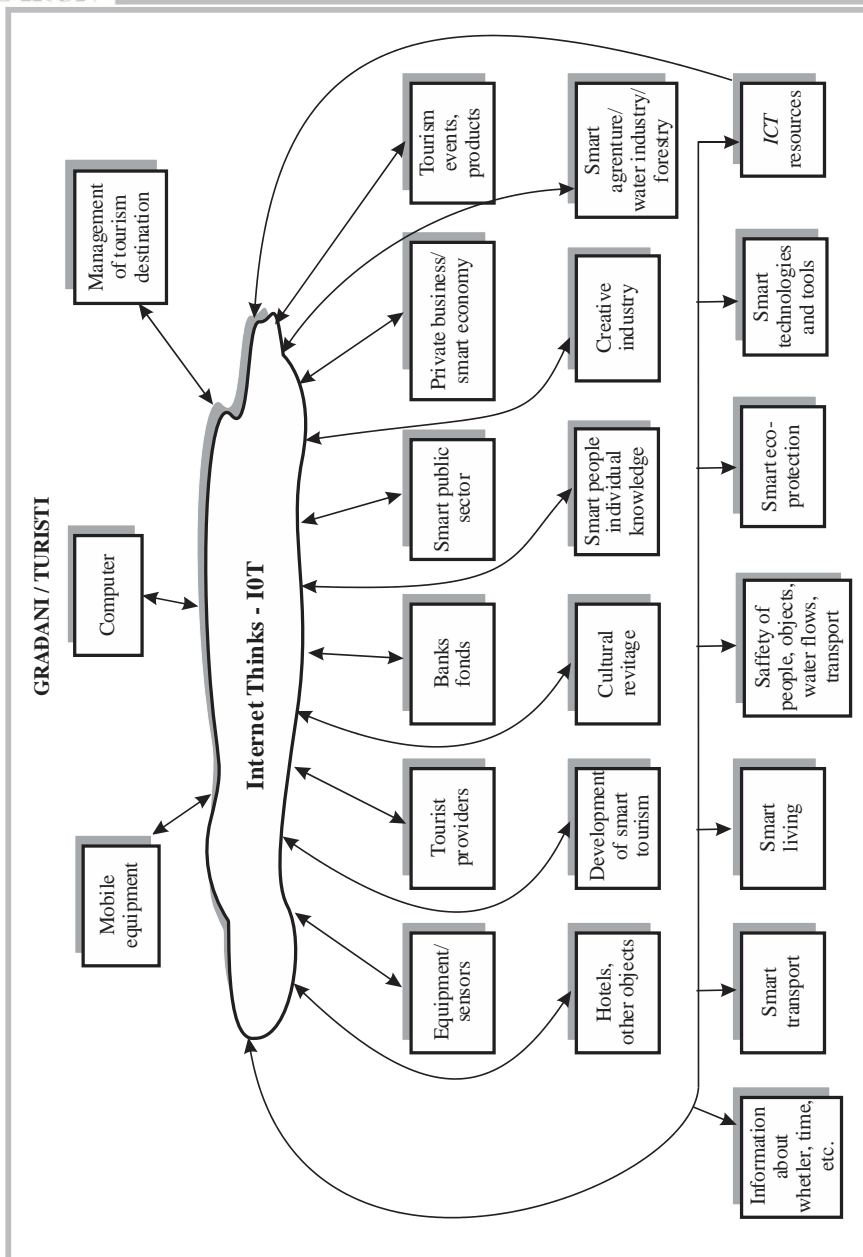
Based on previs research is defined conceptual model of smart tourism (fig. 8).

Figure 8 Conceptual model of smart tourism

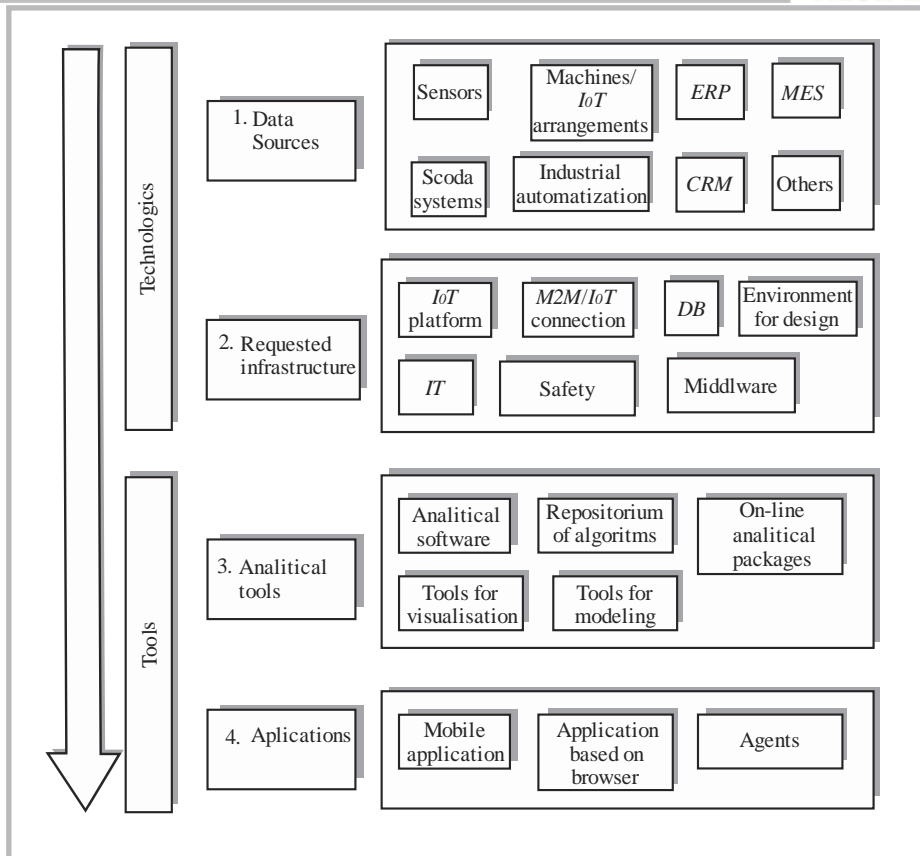A smart tourism is founded by IoT with elements presented in fig. 9.

S. Arsovski, Z. Arsovski

Figure 9 Elements of IoT

4. CONCLUSIONS

A concept of smart tourism is now in emerging phase. It is connected with other „smart" solutions and because that it is very complex and vulerable. Using methodology of conceptual modeling in the article is presented model which will be base for desired tourism destination.

References:

Campelo A., et all. (2013) Sence of Place: The Importance for Destination Branding, Journal of Travel Research, Vol., pp.1-13.

Dredge D., et all. (2018) Digitalisation in Tourism, GRO – SME – 17 C – 091 – A (Final Report), Aabborg University, Denmark.

European capitol of Smart Tourism 2019: Guide for Applicants, Smart Tourism Capital, EU.

Gretzel U., et all. (2015) Smart Tourism: fondations and developments, Electron Markets, Springer.

Hahleck K. (2018) Assesing Your Readiness, ASQ Quality 4.0 Summit.

Hu L. Hu E., Li L. (2018) Industry 4.0: State of art and future trends, International Journal of Production Research, Vol.56, No.8, pp.2941-2962.

ISO (2018) Information Technology – Internet of Things Reference Architecture, ISO/IEC 30141:2016 09 10 (E).

Kao C., et all. (2018) Conceptualization of Smart Tourism Destination Competitivess, Asia Pacific Journal of Information Systems, Vol.26, No.4, pp.367-384.

Lim Chaeyoung L., Mostofa N., Park J. (2017) Digital Omotenashi: Toward a Smart Tourism Design Systems, Sustainability, No.9, pp.1-20.

Munzhasova A. et all. (2017) Drivers, Standards and Platforms for the IoT: Towards a digital VICINITY, Intelligent Systems Conference, London, pp.1-7.

Smart Destination Report: building the future, Segitur, Spain.

Smith R. (2015) Smart Tourism Tools: Linking technology with the touristic resources of city destinations, NHTV Breda Unuversity of Applied Sciences.

Solima L., et all. (2016) Smart Tourism Destination from IoT Perspective: Adaptive Orientation System, International Conference on Toutism, „New challenges and Boundaries in Tourism: Policies, Innovations and Strategies, Naples, Italy.

Toret J., Calleja A. (2014) Collective intelligence framework, D – CENT.

Touati F. et all. (2018) IoT and IoE prototype for scalable infrastructures, architectures and platforms, International Robotics & Automation Journal, pp.319-327.

Weinelt B., Moavenzadeh J. (2017) Digital Transformation Initiative: Aviation, Travel and Tourism Industry, World Economic Forum.

Yalcinkaya P., et all. (2018) An Evalution on Smart Tourism, China – USA Business Reviev, Vol.17, No.6, pp.308-315.

Slavko Arsovski
University in Kragujevac
Faculty of engineering
Kragujevac
Serbia
cqm@kg.ac.rs

Zora Arsovski
University in Kragujevac
Faculty of economics
Kragujevac
Serbia
zora@kg.ac.rs