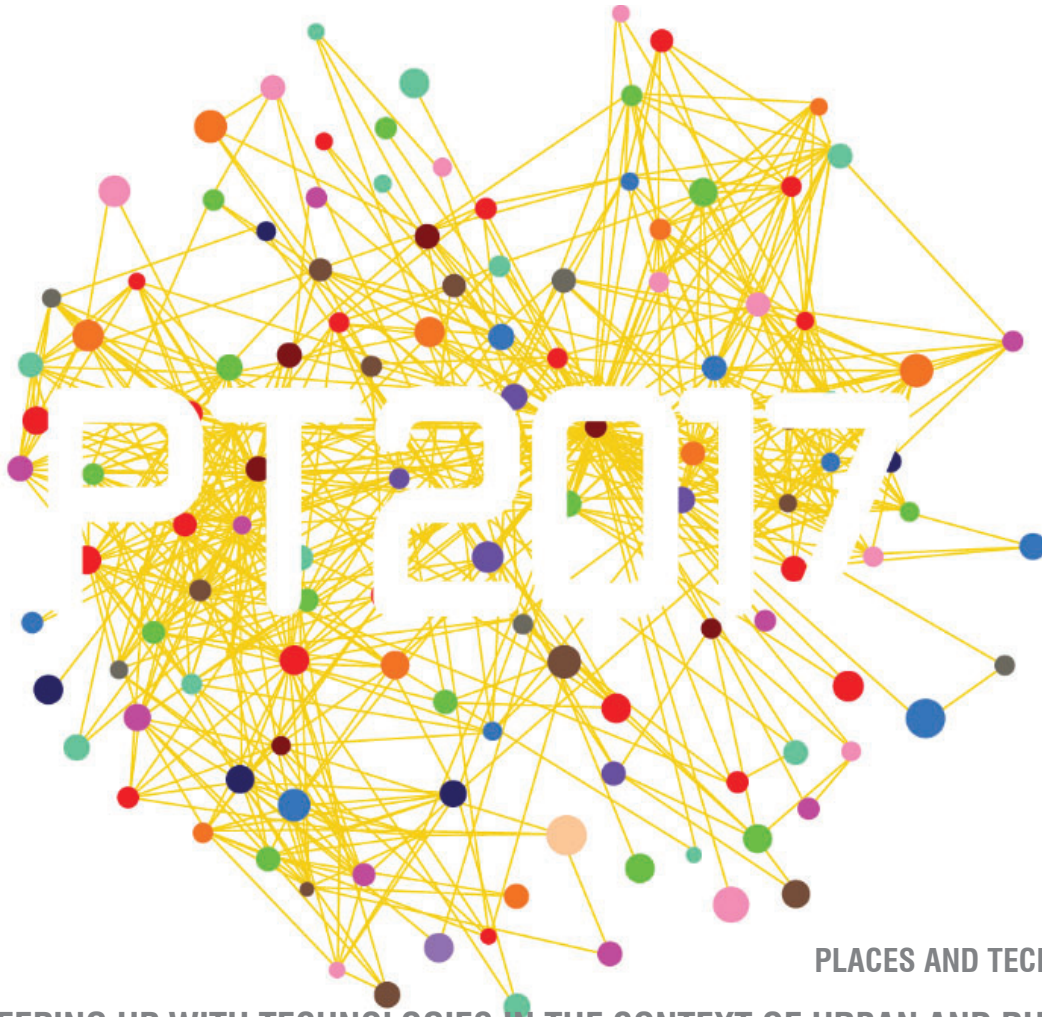


4th International Academic Conference



PLACES AND TECHNOLOGIES 2017
KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL SYNERGY
Book of Conference Proceedings

Sarajevo, Bosnia and Herzegovina, June, 08th - 09th, 2017

4th International Academic Conference
PLACES AND TECHNOLOGIES 2017

KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL SYNERGY

08 & 09 JUNE

SARAJEVO

BOSNIA AND HERZEGOVINA

BOOK OF PROCEEDINGS

PLACES AND TECHNOLOGIES 2017
KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL
SYNERGY

BOOK OF CONFERENCE PROCEEDINGS

Editors:

Dženana Bijedić, Aleksandra Krstić-Furundžić, Mevludin Zečević



Sarajevo, Bosnia and Herzegovina

Title :

**PLACES AND TECHNOLOGIES 2017 - KEEPING UP WITH TECHNOLOGIES IN THE CONTEXT OF URBAN AND RURAL SYNERGY
BOOK OF CONFERENCE PROCEEDINGS**

For publisher:

Prof.Mr.Sci Mevludin Zečević

Chef editors:

Prof.Dr Dženana Bijedić, Prof.Dr Aleksandra Krstić-Furundžić, Prof.Mr.Sci Mevludin Zečević

Editorial board:

Prof.Dr Eva Vaništa Lazarević, Prof. Dr Aleksandra Djukić, Dr Milena Vukmirović

Publisher:

Arhitektonski fakultet Univerziteta u Sarajevu

Year of publishing:

2017

CIP - Katalogizacija u publikaciji
Nacionalna i univerzitetska biblioteka

Bosne i Hercegovine, Sarajevo

711.3/.4(063)(082)

INTERNATIONAL Academic Conference Places and Technologies (4 ; 2017 ; Sarajevo)

Keeping up with technologies in the context of urban and rural synergy [Elektronski izvor] : book of conference proceedings / [4th International academic conference] Places and technologies 2017, Sarajevo, June, 08th - 09th, 2017 ; editors Dženana Bijedić, Aleksandra Krstić-Furundžić, Mevludin Zečević. - El. zbornik. - Sarajevo : Arhitektonski fakultet, 2017. - 1 USB fleš memorija

Sistemski zahtjevi: Nisu navedeni. - Nasl. sa nasl. ekrana

ISBN 978-9958-691-56-0

COBISS.BH-ID 24131590

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ORGANIZATION

Organizers:

University of Belgrade, Faculty of Architecture, Serbia

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ICT POTENTIAL FOR TOURISM IN RURAL AREAS

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ABSTRACT

Tourism in rural areas is considered small-scale tourism, which represents a strong potential for growth of areas traditionally characterized as agricultural areas. Small-scale also implies that economical gains are hard to achieve due to high operating costs caused by remoteness of rural areas. With ICT, tourism in rural areas can be improved through improvement of visibility, communication, marketing, customer perceived benefits through convenience, and in return growth, profitability, efficiency, effectivity and the quality of life of local population can be enhanced. Rural tourism tends to be heterogeneous with many different and scattered stakeholders, making the efficiency and effectivity hard to achieve. The aim of this research is to propose a model for the inclusion of ICT, and specifically information system, to increase efficiency of the rural small-scale tourism. The goal of this information system is to gather a rich database that will allow potential tourists to identify their next destination and to identify most valuable assets for each location in the region.

Keywords: ICT, information systems, rural areas

¹⁴² Corresponding author



TOPIC X:
TOURISM FOR URBAN-RURAL SYNERGIES

INTRODUCTION

Information and communications technology (ICT) tools and applications have allowed increase of the performance and effectiveness in tourism. ICT has influenced ways tourism services are accessed and consumed. Tourists typically use their ICT devices to search for information to help them form decisions in regard with their trip (Buhalis, 2015). This is one of the reasons why technology and its applications have had instrumental role in tourism marketing and many businesses had to redefine their marketing model. Usage of new technologies provided benefits not only as the increase in the supply of information, but it also provided a channel for the information sharing to larger audience, while reducing the cost of production.

While there are various benefits to using different technologies and application, there are also drawbacks of their usage. The abundance of information on the Web poses a challenge when trying to filter useful information on various destinations. This is especially true for tourism industry where information is distributed over various websites and stored using heterogeneous formats (Haller, 2000).

Destination image formation no longer relies on brick-and-mortar travel agencies and glossy travel brochures, but rather on the user created content, usually based on various shared advices, comments and photographs (Hunter, 2015). Currently, on TripAdvisor there are 465 million reviews and opinions and 390 million monthly average unique visitors (TripAdvisor, 2017). Furthermore, usage of mobile devices has changed tourist services and offerings. Mobile technologies offer information to tourists not only while planning a trip, but also at the destination. GoodWorkLabs reports that 85% use smartphones to plan their travel when on leisure tours, 72% people will post photos about their travel on social platforms like Facebook, 30% use mobile apps to find the best hotel deals, 29% use mobile apps to find the best flight deals, 55.8% tourists use mobile apps to check weather, 49.1% tourists use mobile apps to use mapping features, 62.1% tourists use mobile apps to search for nearby restaurants, 48.1% tourists use mobile GPS to get travel directions, 46% tourists use apps to find hotels (GoodWorkLabs, 2015).

While the industrial tourism is popular and ICT usage in its promotion is visible, rural tourism is largely individual oriented and may or may not have a mass appeal (Shanker, 2008). Many of the assets in rural tourism are not very well known. Using ICT tools and applications, these assets can be brought into mainstream tourism. In order for this to happen, it is essential to create a model for a user-friendly platform to promote local regions. Tourist services in rural areas are typically not well established. Moreover, they need to be continuously innovated and diversified so that tourist can maintain their interest in the region and to increase in the influx of tourist visits to rural areas. Rural areas typically hold their income based on the agricultural activities. Hence, developing and diversifying rural tourism can counteract the income from the agricultural sources, as tourists bring income and purchasing power to rural areas.

Rural area tourism provides perspective and new economic possibilities to the younger generations. Keeping younger generations in rural areas can preserve villages and strengthen the communities by not only strengthening them

economically but by preserving local culture and heritage. Tourism areas may offer a dynamic environment for young generations given good social and job opportunities and a generally smooth entry into the labor market (Möller, 2015).

The main objective of introducing a novel information system (IS) within rural areas is to establish the practice that will generate positive impact on tourism and contribute to competitiveness in promotion of regional assets. The idea behind information rich information system is to promote not only very well know regional assets, but also a less known “hidden jewels” of the region and some less known activities and accommodations that are hard to find on the web. Information rich IS utilizes different technologies, while gathering different format of digital media that represent the region through digitalization of its assets. Digitalization of assets allows one to present valuable information about the region, which is not easily accessible on a daily basis.

RURAL AREAS, RURAL TOURISM AND DIGITAL TECHNOLOGIES

Three theoretical approaches are used to define term rurality: negative, sociological and economic. For the first approach, everything that is not urban is rural, i.e. low density, with little artificial character, dispersion of activities and communities. In terms of socio-cultural criteria, rurality is related to specific social relationships, the value system, and lifestyle and consumption patterns. While the economic approach observes rural as areas where economic activities are little diversified and where agricultural activity is dominant in terms of its share of jobs and income. At the international level, the most frequently used approach is that proposed by the OECD. They have established a regional typology according to which region has been classified as predominantly urban, predominantly rural and intermediate.



**TOPIC X:
TOURISM FOR URBAN-RURAL SYNERGIES**

Degree of urbanization for local administrative units level 2 (LAU2)

EDORA Structural typology map

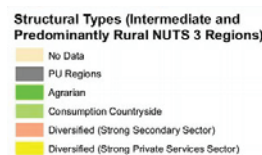
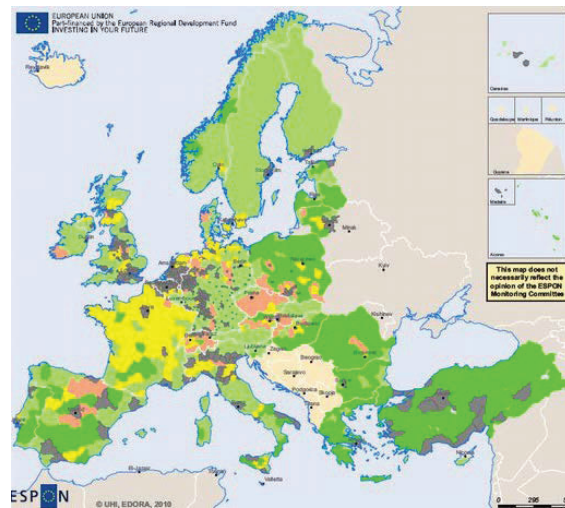
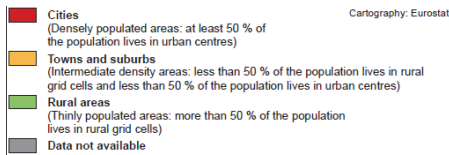
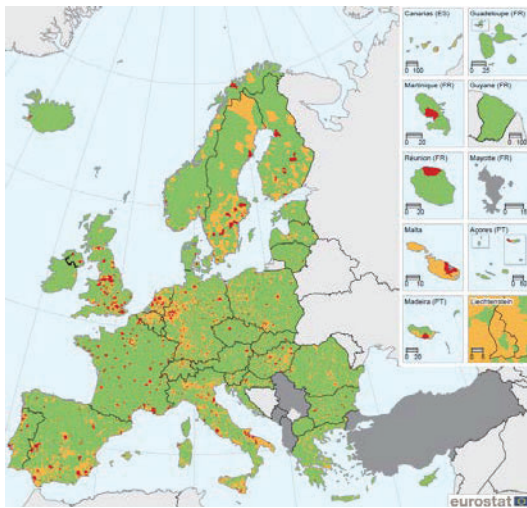


Figure 1: a) EU Degree of urbanization for LAU2 (Eurostat - GISCO, 2013) and b) EU Structural typology map (ESPON and UHI Millennium Institute, 2011)

Accordingly to the mentioned approaches, rural areas are dominant for the EU territory (Figure 1), and therefore, development of rural areas represents a significant challenge as it has a great relevance for the economic and social context of EU¹⁴³ (ESPON and UHI Millennium Institute, 2011). EU rural areas are facing multiple problems in the domains of demography (aging, gender disparities); remoteness, infrastructure, and access to basic services (housing, access to transport, commuting, ICT, access to health care and social services); education and human capital; problems of labor market and vicious circles (European Commission, 2008). In regards to this, any potential

¹⁴³ PR and IR regions account for 91 % of EU territory and 56% of the population of EU27. These regions generate 43% of Gross Value Added (GVA) in the EU and provide 55 % of employment (European Commission, 2008, p. 49)

for rural development is seen as "a vector of geographic cohesion, driving the competitiveness of rural areas and supporting the sustainability of human activities and rational management" (CIHEAM, 2008).

	Holdings with other gainful activities (% of total number of holdings)	Tourism	Processing farm products	Renewable energy production	Forestry work	Wood processing	Acquaculture	Contractual work	Handicrafts	Others
		(standard output of holdings having the specified activity as a share of the standard output for all holdings with other gainful activities) (%) (1)								
EU-27	5.2	12.5	18.7	18.7	:	2.0	1.0	39.1	0.9	23.6
Belgium	7.8	14.5	18.1	18.5	4.2	1.9	1.0	36.7	4.8	23.3
Bulgaria	1.1	0.8	13.4	0.0	1.7	0.1	2.5	76.8	0.1	17.7
Czech Republic	15.0	11.5	20.1	10.4	2.5	5.5	1.4	77.6	6.5	1.9
Denmark	52.0	2.9	2.6	10.7	67.8	0.0	0.0	38.8	3.0	16.2
Germany	30.8	6.6	16.5	49.4	18.2	3.6	0.5	36.0	0.2	13.3
Estonia	13.5	5.7	17.0	0.5	19.5	2.9	0.7	51.4	0.9	23.5
Ireland	9.2	10.0	2.6	2.2	34.3	1.5	0.8	27.7	0.9	28.1
Greece	1.4	3.9	46.4	0.9	1.8	1.4	0.6	49.2	0.6	2.6
Spain	2.1	15.6	23.6	11.3	7.9	0.7	0.3	25.6	1.2	21.8
France	9.4	18.0	31.3	3.7	1.1	1.2	0.5	42.0	0.6	10.3
Italy	4.7	23.5	26.0	11.5	4.6	1.9	0.2	25.9	0.3	34.7
Cyprus	1.0	0.0	88.4	0.0	0.0	0.0	0.0	11.5	0.0	0.0
Latvia	5.0	7.3	39.4	1.7	24.4	4.1	21.5	26.5	0.9	17.4
Lithuania	0.8	3.4	43.4	0.2	2.8	1.9	0.2	14.3	2.8	36.1
Luxembourg	24.1	18.0	12.1	31.4	11.5	7.4	0.0	60.0	0.0	18.9
Hungary	8.2	6.7	32.2	1.2	10.1	0.6	1.7	73.8	0.1	48.5
Malta	2.2	0.0	58.8	0.0	0.0	0.0	0.0	43.7	0.0	0.0
Netherlands	24.6	9.8	7.4	20.4	0.0	0.0	0.2	22.3	0.0	60.6
Austria	37.3	13.8	21.8	15.6	63.9	1.2	0.5	18.5	0.6	3.1
Poland	3.3	8.8	13.7	1.1	1.9	1.3	12.3	18.9	0.5	54.3
Portugal	5.0	14.2	17.7	0.0	50.6	1.7	0.0	21.5	0.3	14.2
Romania	1.1	1.0	67.6	0.3	0.5	0.7	0.2	21.7	0.1	19.8
Slovenia	16.8	5.2	22.5	1.3	67.0	2.9	0.1	11.7	0.9	4.9
Slovakia	5.9	7.0	27.5	0.2	0.8	2.2	1.2	63.2	8.2	50.1
Finland	26.5	9.7	6.9	5.9	6.4	2.5	0.3	58.6	1.0	34.7
Sweden	33.8	14.4	10.3	9.3	:	2.4	0.6	71.3	1.3	13.6
United Kingdom	17.5	26.7	7.6	3.0	8.5	2.5	1.7	55.4	0.6	24.4
Norway	54.7	7.8	4.4	2.4	50.4	22.3	:	55.1	1.2	10.2
Switzerland	44.5	10.1	19.7	10.1	38.2	13.5	0.1	38.6	2.5	50.3
Croatia	5.9	16.0	47.1	0.0	0.0	11.6	1.3	40.0	1.7	4.6

Figure 1: Other gainful activities for agricultural holdings, 2010 (EUROSTAT, 2016)

Observing the weakness of rural areas, tourism has attracted growing interest of academics, tourism professionals, investors and politicians alike, due to its apparent potential as a development tool. This was also confirmed by an indication of the various types of secondary gainful activities (EUROSTAT, 2016, p. 13) that were practiced by agricultural holdings in 2010 with 12.5 % of agricultural holdings that also offered tourism services in the EU-27 (Figure 2).



**TOPIC X:
TOURISM FOR URBAN-RURAL SYNERGIES**

There are different views of what is rural tourism. The OECD (1994) define rural tourism as all types of tourism taking place in rural areas, while some authors under the rural tourism considered a quite specific tourism product, with some requiring the presence of agriculture as a core element (Cavaco, 1999). Following the negative approaches in defining term "rural", rural tourism could be as well defined as something opposed to mass and resort/urban forms of tourism. In such way, rural tourism is characterized by "features such as small scale, personalized contacts, the traditional character of service elements and environments, the presence of nature and agriculture and the existence of traditional social structures, reflected in a specific way of life, that tourists wish to discover and participate in" (Eusébio, Kastenholz, & Breda, 2014, p. 15). This characterization is very important since there are different kinds of rural areas with diverse opportunities for development, which dictate the character of the tourism product.

The main goal of the Europe 2020 strategy to create the conditions for smart, sustainable and inclusive growth, poses a complex and difficult challenge for rural areas. This challenge in particular relates to the general characteristics of the rural areas reflected in "low accessibility, negative migratory balance, and low education levels" (Naldi, Nilsson, Westlund, & Wixe, 2015). Having in mind that smart growth of rural areas comprises of exploitation of local amenities and development of creative economies, rural tourism is emerging as a very important activity. However, reaching of embeddedness, relatedness, and connectivity as key areas in order to reach smart growth, as well as expected tourist demand can be considered difficult for the achievement.

In accordance with the presented situation problems can be overcome by using digital technologies, i.e. ICT. Implementation of ICT tools and applications can achieve positive outcomes in three areas: connectivity, entrepreneurship and human capital. In the first domain, telecommunications technologies and the Internet diminish, if they do not entirely erase, the tyranny of space and distance. From the second flexible manufacturing and smaller optimal sizes of products provide greater possibilities for rural firms against giant competitors. The third is related to continuing population growth in rural areas, both from new migrants attracted by rural amenities and by return migrants, promises an upgrade of skills demanded for the new economy (Malecki, 2003).

Furthermore, ICT could also contribute to more sophisticated ways of finding, as well for offering of diverse tourist products and services. This is very important characteristic because of the "shift from standardised mass tourism to more individualistic patterns, in which greater flexibility and a more meaningful experience have gained prominence" (Briedenhann & Wickens, 2004, p. 73). Because of the different motivations that might include ecological uniqueness, special adventure opportunities, cultural attractions, or the peace and quiet of the countryside there was a unique opportunity for rural operators to manage in terms of 'economies of scope' and a need for creation of the special digital tool for the integration of different information about rural tourism offers. This is particularly important because of "a complex, multi-faceted activity, marked by continuously increasing diversity" (Eusébio, Kastenholz, & Breda, 2014, p. 16)

INFORMATION SYSTEM MODEL FOR RURAL AREAS DESTINATIONS

Information System Services

The primary aim of rural area information system is to integrate existing technological infrastructure of many local tourism enterprises and local citizens who offer accurate and up-to-date information about rural areas' cultural, historical, geographical, ethno site and relevant facilities they offer such as accommodation, restaurants and different agricultural products. Information system aims to attract tourists to buy certain tourism products and it provides a platform that simplifies access to rural areas' tourism and cultural information. Also, it enables access to large amount of other relevant tourism information already distributed all over the web such as information about weather and traffic conditions, schedules of trains, buses, low cost airlines or shuttle transportation.

In order to support those objectives, information system services can be roughly categorized in three different ways:

- Services that are accessible to the public, whereby the most important ones are: (a) services for retrieval of all types of tourism information in order to find relevant tourist products, (b) booking services for accommodation that are based previous and current user search, (c) services for recording digital content generated directly by users that are relevant for the information system.
- Services that allow authorized stakeholders (travel agencies/organizations, local tourist enterprises or local community) to create and update information about their local assets of interest.
- Configuration services which are accessible only to stakeholders with administrator privileges and which allow system configuration in various ways over the Internet.

Information system for tourism in rural areas defines an integrated system with both internal and external systems. The goal of this information system is to reduce extensive research that potential tourists usually go through in order to identify their next destination. With the information system with rich database, the objective is to provide easy approach to identify most valuable assets for each location in the region.

Internal system has several important functions:

- IS relies on the very rich database, which is updated by the shared activity of various public and private entities
- Database allows data collection through web platform and portable devices such as mobile phones and tablets. Data collection through mobile phones and tablets allow for tourist to upload their photos, information, opinions and experiences for a given asset.



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- Mobile application provides easier access to the Database, allowing Mobile tag system to sort and store digital assets by users. Mobile tag system can also provide variety of information through the tag reading software including displaying text, images, video, audio, hyperlinks, contact information, etc.
- Using the data in the Database IS has the functionality to automatically generate the guidebook from the selected spots of interest. As such, IS can serve as a virtual and portable visitor information center.
- Unlike most tourist ICT platforms which allow search by destination only, rural tourism IS provides opportunity to also select assets by type and interests. Type of destination is used as a primary search category: cultural site, historical site, geographical/nature site, ethno site, events, accommodation, restaurants, etc.
- IS allows to input different form of digital assets such as virtual tours, augmented reality tours, videos, text/description of destination, contact information, maps, photographs imported by owners of hotels, restaurants, tourist organizations, etc, photographs imported by tourists who visited the place, interesting happenings and information (i.e. festivals).
- Flexible booking system for accommodation, which is compatible with external booking systems.

Integration with external systems, such as Google maps, weather forecast, car rentals, social networks and public transportation, provides a complete solution for all key stakeholders (Figure 3). There are three critical key stakeholders: travel agencies, local community promoting their local assets (restaurants, accommodation, etc.) and potential tourists. System is not excluding other stakeholders, but they are not the scope of this paper and are left to be considered for future research.

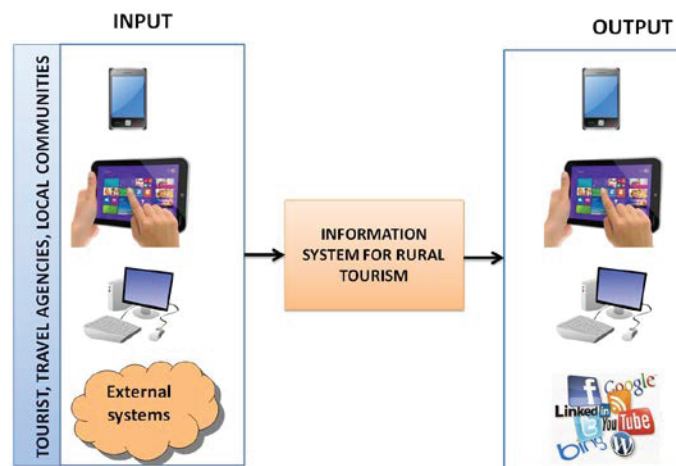


Figure 3: Collection and distribution of data

Software Architecture

Direct access to all services is offered through common Web portal dedicated to all stakeholders. In order to enhance its accessibility, Web portal should be implemented by employing the Web technologies recommend by latest W3C standards and novel technologies in modern smart phones. Software architecture that supports functionalities promoting rural areas is presented in Figure 4.

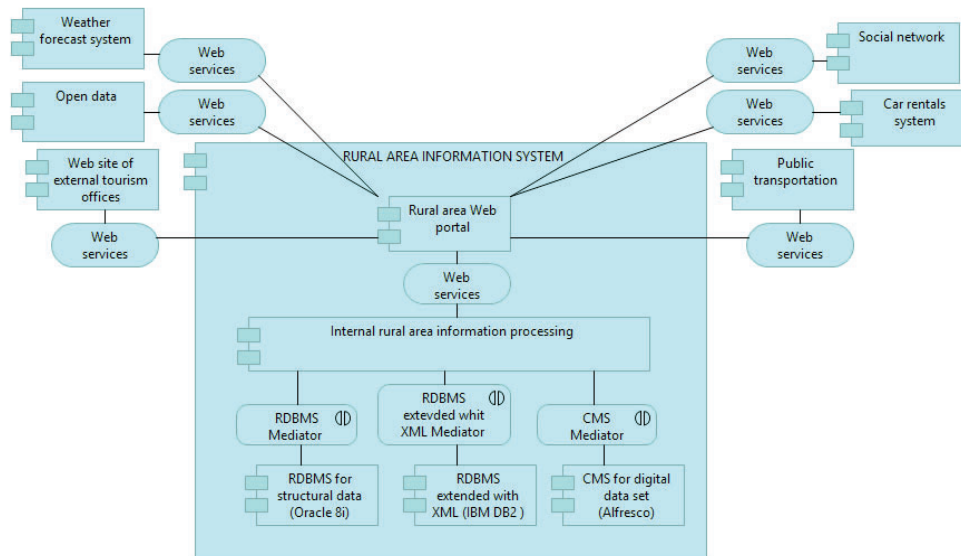


Figure 4: Software architecture for the IS for rural tourism

Web portal should support a homogeneous view on heterogeneous sources that can generally be classified as structured, fully unstructured and semi-structure information. All information on tourism products can be treated as structured information. This data is stored within a central relational database management system (RDBMS) which is constructed on the basis of conceptual data model that incorporates all conceptual entities gathered during the requirements definition with numerous tourism information providers. Fully unstructured information such as images,



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sounds, video, highlights and raw text are planned to be stored in content management systems (CMS) that provides preservation, organization and dissemination services for digital collections. But most of the data like e-mail messages sent to and by tourist offices, experiences and opinions within blogs, forums, or newspaper web sites, which structure is not quite regular, falls somewhere between these two extremes and are called semi-structured data. Dealing with semi-structured documents requires a RDBMS to be enhanced with new data types for representing XML documents inside databases and new capabilities for querying and managing the XML documents (Oracle 8i and IBM DB2 support such characteristics). Because it is not always easy to integrate all these information presented in a wide range of formats not compatible with another, the elements such as mediator toll (proxy and adapter) are used to facilitate communication between these three systems.

Besides allowing integration of different types of tourism-related information stored in information system, Web portal should also collect and merge multiple structured and semi-structured tourism information already existing on the Web. These are considered as external sources and typically contain information in their own databases and/or on their web sites. Integration with the external systems can be done by means of service oriented architecture using SOAP and RESTful based web services.

CONCLUSIONS

Inclusion of public and private entities in developing rich and up to date database of assets of rural regions can pose to be challenging. In order to involve local community and other stakeholders, local enterprises and local actors should be informed about the aims and expected benefits of using such system for the promotion of their local region. Furthermore, all stakeholders should be aware of benefits of using ICT services, which represent an important tool and marketing-channel for the entire local community and their service offerings to tourists. Furthermore, as ICT provides strategic importance for the marketing of the rural region tourist organizations and associations should be prepared to invest time and resources into development of new ICT tools and applications.

Allowing system access to different types of stakeholders will require cleansing of information in order to avoid repetitions and errors. Information cleansing will take time and funds. In general, it also contributes to achievement of a successful rural tourism that could play a significant role in rural development. From one side it has an economic impact and potentially large multiplier effects, and from the other positive social and cultural impact seen as interaction between inhabitants and tourist, as well as new residents.

Tourist offer and maintain of its quality due to its authenticity could contribute to the overall preservation of rural ambience and its culture. In this way, by the responsible use of all its potentials and resources, rural areas could achieve smart, sustainable and inclusive growth which is the main goal of the Europe 2020 strategy.

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