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GIS and touristic itineraries. The case of São Cristóvão, Sergipe, Brazil
SIG e roteiros turísticos. O caso de São Cristóvão, Sergipe, Brasil

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Abstract:

The Information Systems (IS) and the Internet have transformed the relations between individuals and social groups. They associated new dimensions to the tourist practices. In this study, the possibilities of use of the GIS/WebGIS by planners and managers of tourist activity, and by the end users of tourist products: tourists were highlighted. This study aims to present a methodological proposal for implementation of Geographic Information System (GIS) for the development of tourist itineraries in accordance with the tourist demand. The tourists can obtain and use specific geographic information before and during their stay at the destination. To develop the itineraries, it was drawn up the inventory of local tourist attractions, as well as the goods and services classification in the surroundings of each attraction. Subsequently, photos and textual information were added to define linear circuits used as a reference for visitor's tours. With the itineraries publication and their use anchored in explorers (Google Maps, Open Street Maps or Waze), one hopes the procedures and techniques of support based on GIS are executed by tourist destinations, in interactive websites format and/or applications format updated by local managers. And GIS can be consolidated as a basic tool for decision-making, providing a better control of spatial concepts, expanding and intensifying the tourist experiences.

Keywords: GIS, new technologies, innovation, tourism, itineraries

Resumo:

Os Sistemas de Informação (SI) e a Internet têm transformado as relações entre indivíduos e grupos sociais e, consequentemente, associado novas dimensões às práticas turísticas. Diante disso, destacamos as possibilidades de uso do SIG/WebGIS por planejadores, gestores da atividade turística e pelos usuários finais dos produtos turísticos: os turistas. Dessa maneira, este estudo pretende apresentar uma proposta metodológica de aplicação do Sistema de Informação Geográfica (SIG) para a elaboração de roteiros turísticos com vistas a utilização pela demanda turística, de modo que estes possam apropriar-se e usar as informações específicas georreferenciadas antes e durante sua estada no destino. Para desenvolver os roteiros, foi elaborado o inventário turístico dos principais atrativos locais, assim como a classificação dos bens e serviços do entorno de cada atrativo. Posteriormente, foram adicionadas fotografias e informações textuais para definir circuitos lineares que podem ser utilizados como referência de roteiros turísticos para os visitantes. A partir da publicação dos roteiros e sua utilização ancorada nos exploradores como Google Maps, Open Street Maps ou Waze esperamos que os procedimentos e técnicas de suporte baseados em SIG sejam executados por diversos destinos turísticos, em formato de sites interativos e/ ou aplicativos alimentados pelos gestores locais, de forma que possa consolidar o SIG como ferramenta básica para a tomada de decisões, proporcionando um maior domínio das noções espaciais, expandindo e intensificando as experiências turísticas.

Palavras-chave: GIS, new technologies, innovation, tourism, itineraries

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1. Introduction

Important brands responsible for technological devices production put on the market, quickly, numerous high technical capacity appliances for intense internet access. They are quickly acquired (and discarded for new acquisitions) by the society of consumption.

The tourists' behaviour has changed because of a broad access to information obtained via internet connected devices, making them wiser, more demanding and questioner. This new behaviour has also caused changes in touristic practice, a need of new actions and strategies articulation in the planning of touristic spaces were observed, in order to create mechanisms of competitiveness between products and touristic destinations connected to new forms of production and consumption of these spaces.

As follows, some transformations were produced regard to preferences and motivations of touristic consumers, generating a greater segmentation of tourism supply and demand. Therefore, the touristic practice starts to present a complexity in the moment of spatialization of the supply and demand components. This fact opens a range of opportunities for the combined use of specific GIS and destinations publication, and their respective tourist attractions in the worldwide network of computers (internet). This provides georeferenced information to support the planning process and destinations management.

GIS are increasingly considered to be an integral part of solutions and innovative projects, since new technologies based on these systems provide autonomy and convenience to tourists during their visits to tourist destinations. They will use mobile devices to access information, through specific websites and/or applications (Marques et al., 2017). In addition, the geoprocessing technology can help to increase the destination visibility, promoting the development necessary to the touristic potential of several destinations and possible attractions.

According to many scholars, the GIS integration with internet (World Wide Web) enables a new paradigm to draw processes of management and planning in a collaborative way between public managers and users (Masron et al., 2014). Using pathfinders, codes readers, and social networks photographs from tourists' smartphones, it's possible to provide information and data in public domain, the base to share specific itineraries.

As follows, the present study aims to present a methodological proposal for implementation of Geographic Information System (GIS) for the development of tourist itineraries to be used in accordance with the tourist demand. The tourists can obtain and use specific geocoded information before and during their stay at the destination. In addition, it aims to highlight the importance of new technologies in tourism as tools able to articulate information and support the process of planning and managing the territory where the touristic activity will be deployed.

Ramón Morte (1997), analysing the use of GIS in touristic activity, highlights some possibilities about this systems applicability in tourism. Among the uses, the author said:

a. Prevention of natural/environmental risks in touristic space;
b. Analysis of the landscape and touristic activities linked to the use of spaces in urban and rural areas;
c. Study of environmental quality;
d. Analysis of the environmental impact of touristic activity;
e. Realization of tourism inventory;
f. Promotion of tourism products, among others.

Among these possibilities, the studies of Sousa and Fernandes (2007) and Masron et al. (2014) can be highlighted. They allow the integrated use of several information services, accessible via different WebGIS based technological platforms. Therefore, the relevance of the methodological suggestion is the encouragement to awake future interventions in the planning and management of tourism, since it is a tool with power to finish the lack of solutions for technological innovation in the industry. The purpose is to contribute to the planning, sorting and generating information process about touristic destinations, with the ultimate purpose of introducing more convenience, speed and autonomy in touristic demand during the experience in the destination visited.

For this article, some methodological procedures were initially adopted as the bibliographic survey about specific topics related to historic cities tourism planning, the use of geographic information systems in tourism, development of tourist itineraries from new technologies, among others. In this case, the analysis of the tourist itineraries prepared for the area classified as Patrimony of Humanity by UNESCO

in 2010, located in the city of São Cristóvão, in north-eastern Brazil. It is an object of research appropriate as base model for the configuration of a methodological proposal, since it had been used as experimental space by the authors Santos et al. (2016).

With the objective of broaden the GIS use by tourists before the trip and during the stay at the destination by the insertion of new tools in the list of touristic activity planning and management, the proposal is an implementation procedure of a geographic information system (Open GIS) in tourism - to facilitate the attractions and touristic facilities visualization, development and dissemination of touristic itineraries. They must be distinguished by the following processes: Software selection; touristic area delimitation; data collection; data bank creation; mappings preparation; and map making at GIS available online platform.

The expectation is the Geographic Information System has applicability and scope in other localities in Brazil and the world, in order to supply new forms of tourism planning based on technological innovation to meet new demands of the touristic activity agents and, especially, of tourists. As an example, as highlighted before, is about the historic centre of São Cristóvão (Figure 1).

As follows, the need for an elaboration and/or consultation with the destination touristic inventory, the construction of particular symbology and the proposition of new routes may lead the user (navigating in some interoperable platform as Open Street Maps, Waze or Google Maps) to a contribution including specific markings on destinations. It is already possible based on the wide distribution and use of contributory viewers, like Google Earth, which accepts editing in kmz/kml format, using laptops, smartphones, tablets and other “wearable technologies”.

2. GIS and tourism relationship

For many years, the touristic activity is understood as an important development factor for the receiving areas, especially in countries where the development of other economic activities such as, for example, the industrial activity is difficult or impossible.

However, for the development of touristic practices, it is fundamentally important the production of joint interventions by the state, private capital and civil society to formulate strategies and guideli-

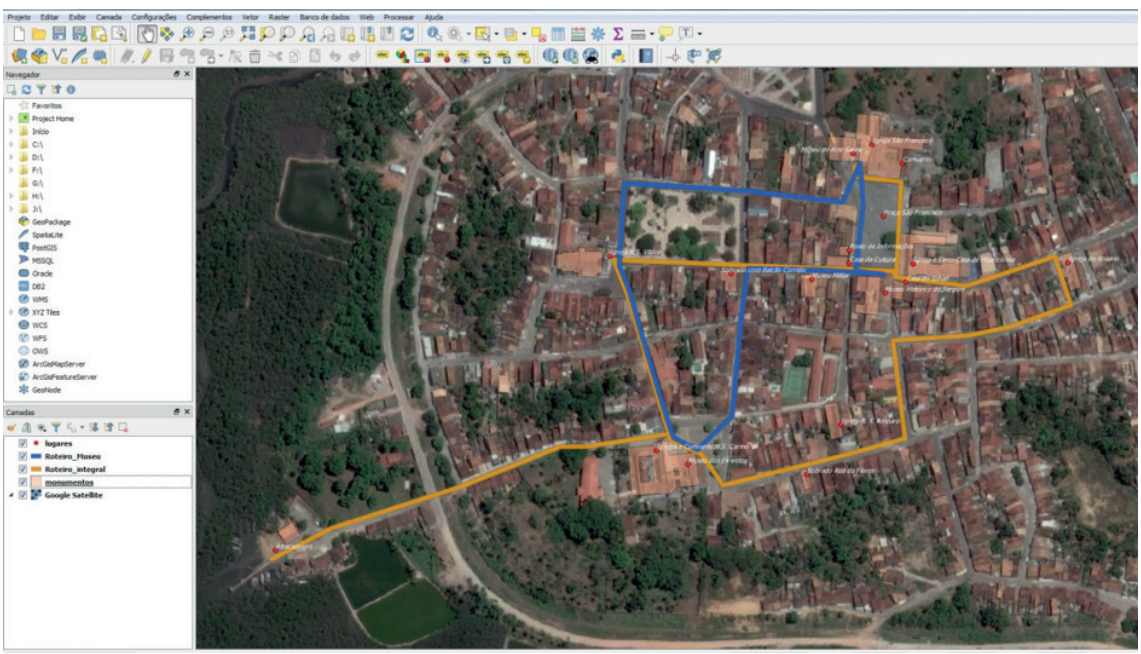

Figure 1
QGIS screen with tours of São Cristóvão, Sergipe, Brazil.
Source: The authors.

nes to achieve positive goals in economic, cultural and, above all, social areas.

The tourism studies should be based on the changes made by the interventions of several agents inducing a touristic demand behaviour. Therefore, it is necessary to think the touristic activity communication and planning mode from the spatialization complexity of this new offer and demand components.

In this context, the relevance of Geographic Information Systems (GIS), increasingly considered integral part of solutions and innovative projects to build a database and qualitative attributes to associate mobile applications, internet and geocoding of historic bases (Ladwig, 2012) is highlighted. In Brazil, GIS assume ever greater importance in several areas, including tourism, since it can be used in most activities as a spatial component. The raw material is the spatial information resulting from historical and geographical data inserted into a system that associates the territorial bases.

Based on the possibilities mentioned, it becomes evident that the geographic information system can be converted into a tool to generate support information for the tourism planning and management. It can be used as a mechanism to integrate, visualize and summarize complex and diverse information.,

Poon (1993), at the beginning of the decade of 1990, has already stated that the touristic activity was strongly influenced by the rapid dissemination of information technologies, because tourism as an activity reinvents itself from the information. Castells (1999) has also warned "The Internet is the global communication backbone intermediated by computers: it is the network that connects most of the networks", characterizing since then, the best vehicle for data/information distribution, with possibility of information flow, knowledge and users' continuous enlargement in all areas and grades. With the spread of several products through the Internet, the dissemination of maps and images are converted into seduction elements for travellers and tourists who starts to define previously the cultural and environmental experiences under new perspectives (Wurman, 2005).

Duque and Mendes (2006) stated that, through cartography and GIS use, it is possible to elaborate a methodology to enable tourism development from the view of future scenarios, which can be understood as an important tool in the tourism planning and development. Also, a powerful tool to promote the touristic competitiveness, from the development of new touristic products.

In fact, as Santos et al. (2006) says, GIS is a tool with highlighted characteristics such as the decision-making support and expanding the marketing reach. As a result, the public manager can use GIS for several activities: the formatting of a new touristic product, spatial analysis of the locality, activity monitoring, among others.

According to Duque and Mendes (2006), the use of new technologies for tourism planning can be considered from two aspects: for the planner and for the tourist. In the first case, its use may assist the public management based on the compiling data possibility, old information organization and new information generation. Also, the data processing on touristic information, which facilitate the administrative efficiency, particularly in the decision-making process.

From the touristic perspective, new technologies can be facilitators and articulators of the touristic experience. They are excellent communication tools capable of guiding the rational use of touristic space, offering to the visitor an overview of the geographic space of touristic interest with important information for activities planning, and time managing (Aranha & Guerra, 2014).

Despite consumers as tourists need information to make decisions regarding touristic practice, this information must be distributed treated by suppliers (public or private), in order to present their products and tourist destinations in a more attractive and organized way for prior planning. GIS can embrace and meet the demands from both perspectives.

The manipulation and organization of these information is vital for the locally or regionally touristic activity planning and implementation, since GIS allows space analysis and recognition in the digital environment.

A destination using GIS to disclose its tourism products and services not only has more chances of attracting the potential tourist, but also to increase its stay in the place, in addition to autonomy, flexibility and power of choice and decision. This is because the GIS may have itineraries with different attractions, often poorly disclosed and unknown by the visitor, increasing the supply and profitability with the tourist spending expansion in the destination.

As indicate by Aranha and Guerra (2014), with GIS, information can be transmitted clearly and objectively, to facilitate the tourist understanding about the touristic site visited. GIS can benefit the receiving community, in addition to the visitor, once it will have quicker access to information and a greater knowledge of the local, valuing and raising awareness about the importance of preserving heritage. In addition, it will reduce the manage costs with disclosure, considering the traditional ways of advertising, as brochures, magazines.

The main (of several) applicability of GIS in tourism are the analyses of environmental impact, providing spatial information, disseminating and knowledge of touristic products and services for tourists, managers, private initiative and receiving community, as well visibility on the internet.

Santos (2017) highlights not only the data are important, but, above all, the spatialization process of these data, since it will be through the spatialization tourists could access information quickly and securely and know the destination. This view is also shared in the studies of Reis (2015) on the geographic information systems and innovation in tourism. The same about Iborra (2016), using GIS synchronization with the knowledge of the residents to create tourist routes in Murcia's urban area.

Given the above, the use of Geographic Information Systems in the field of tourism brings benefits to the activity. These benefits will be based on accurate information and space analyses aiming to minimize social, environmental, cultural or economic impacts.

3. Method of implementation of the GIS to the elaboration of touristic itineraries

Among the possible GIS applicability, management, offering of fast and accurate information for tourists, communities and related entities were examined, from the preparation and online posting of touristic itineraries, according to the model of São Cristóvão/SE, in which the GIS was adequate to information sorting about the local tourist attractions available.

However, to ensure the online availability of touristic itineraries on GIS platform, in order to meet the intended functions, the process should be gradually established. In addition, the present study intends to contribute with generic methodological procedures suggestions for GIS future applications, based on the authors experience preparing auto-guided cultural tours to the municipality of São Cristóvão/SE.

A wide research and bibliographical survey is initially established. In it, some proposals for GIS implementation in tourism with distinct and convergent methodological processes were identified. Among the methods of the proposals, data collection, data organization on GIS, and later posting in the virtual network of computers can be pointed out.

Polidoro and Barros (2010), in its GIS application to create a tourism portal for Londrina/PR, established three methodological steps. Among them, data collection with acquisition of cartographic bases and information in several databases; database and mappings creation; website and WebGIS application creation; and, provide the online application.

Schmidt et al. (2007), developing a GIS for Pelotas/RS tourism, adopted as methodological procedures the preparation of cartographic base in CAD format; field work with the information collection, and, above all, the identification of touristic services and equipment defined for GIS; elaboration of a database with the information collected; photographic survey; exportation of the files to Shapefile (shp) format, in order to manage these data in GIS environment; elaboration of thematic and interactive maps; and online availability of maps, photographs and information inserted in GIS software in an online platform to the virtual community.

The GIS application models and cases found were important for the establishment of some procedures used in the model of São Cristóvão, also for the system application generic definition regarding the preparation of touristic itineraries.

The proposal is GIS implementation to plan and organize touristic activity based on touristic itineraries development in a given local, considering the existing attractions, with the following steps: Software selection; delimitation of touristic area; data collection; database creation; mapping preparation; and provide online GIS maps (Figure 2).

As it's known, the geographic information systems software allows the elaboration of touristic itineraries and it is possible to access them later on internet. As a result, in the *software selection* stage, the planner of touristic itineraries should select the

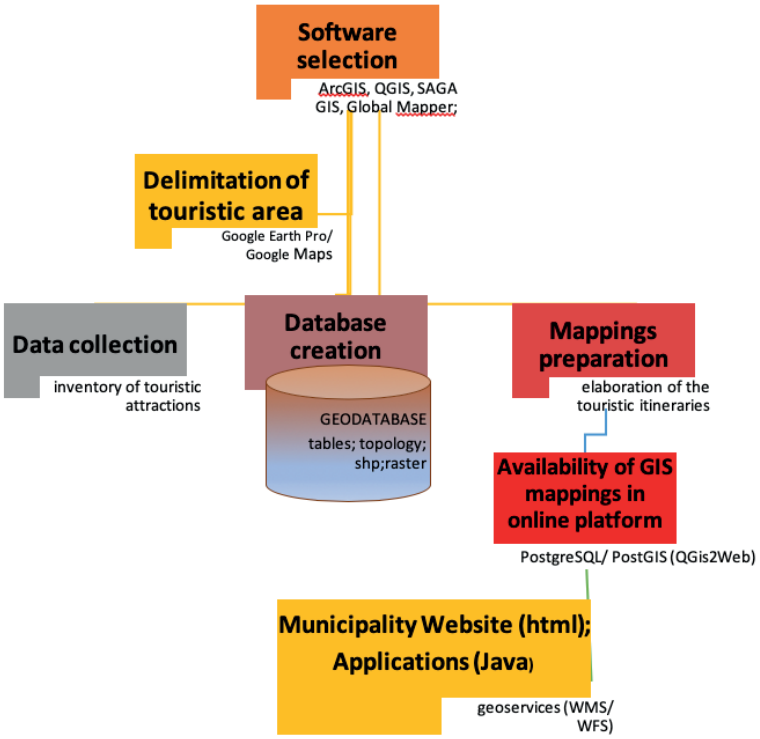

Figure 2
Methodological procedures for the use of GIS in developing tourist itineraries.
Source: The authors.

adequate program for the destination specific purposes considering the tourist wanted to be achieved, and the process demands. Such demands can be related to the software gratuity, specific tools offered by the systems, as well as the characteristic of friendly interface depending on the technical expertise of the users.

Several GIS software can be used as a tool for touristic innovation: ArcGIS, QGIS, SAGA GIS, Global Mapper, among others. They can be remotely accessed via Web platform and used for the preparation and promotion of tourist itineraries planned for a given destination. In this process, the planner must select other software for visualization and identification (View Explorer Maps). They may subsidize the elaboration of the touristic itineraries in data collection and inventories. One suggests the use of free apps as Google Earth and Google Maps.

At the second stage, *delimitation of the tourist area*, the planner of touristic itineraries should delimitate the touristic area which will be designed in the viewer in 2D or 3D (dimensions). Using software such as *Google Earth* or *Google Maps*, users can have a better visualization of the site to develop the subsequent stages.

The *data collection*, the identification of touristic area elements delimited to the elaboration of tourist itineraries, because of the need of local tourist attractions knowledge will compose the general map. In many cases, the planner should do, by field work, the *in loco* inventory of tourist attractions. In addition, the secondary data collection can complement the inventory by cartographic data and photographic data in consults to the local database and images - if any- and other available sources.

Subsequently, the planner must do the *database creation*, in which the secondary data obtained in several database must be converted and classified by attribute kind. They should be exported to Shapefile (.shp) format, enabling the database creation (Geodatabase) hosted in the cloud, integrating a database for spatial information from the primary and secondary collections. With this available online special base, it will be possible produce thematic

and interactive maps for a better visualization of the studied area tourist attractions, in order to trace the planning of desired touristic itinerary.

With prepared and registered data in the GIS platform, it is necessary to do a hierarchy of tourist attractions. One suggests Ministério do Turismo (Ministry of Tourism — MTur/Brazil) methodology, prepared in the Tourism Regionalization Program — Brazil's Itineraries (Brazil, 2007). The methodology helps the assessment of attractions importance to include them in touristic itineraries. The attractions are organized by priority considering criteria such as: attractiveness potential, current use degree, representativeness, local and community support, surrounding landscape conservation condition, infrastructure and access. This will assist the choice definition and decisions of governors, administrators, managers, entrepreneurs and planners.

After the touristic attractions hierarchization, the planner should keep in mind the attractions will compose the touristic itinerary or itineraries. As a result, this step is comprised by the elements inherent to touristic itineraries definition: establishment of the visitation order to selected attractions, general information, definition or adequacy to the target audience of the itinerary, itinerary time, visitation schedule of every touristic attraction; additional services; and others.

It is possible to achieve the fifth and next to last stage which consists in the *elaboration of the touristic itineraries mappings*. Using GIS and its tools, the planner should prepare the maps with the touristic itinerary planned. For each touristic itinerary a map product must be drawn, in order to illustrate the spatial distribution of identified tourist attractions, demonstrating the touristic itinerary established. Moreover, at the layout establishment, attention should be paid to the technical standards for the preparation of subtitles, scale and data source references.

As it should be noted, after the elaboration of the touristic itineraries, it is important the planner execute it practically, using the mapping prepared at GIS. Such action will allow the planner to test the cartographic product developed and realize if adjustments and adaptations are necessary, some factors could be not initially foreseen in the planning. As well list all itineraries operational aspects, i.e., since the observation of selected attractions until the previewed time of the itinerary.

The roadmaps and touristic mappings formatted on GIS interface should be disclosed in a Web platform. The information about the touristic attractions can be easily accessed via internet by visitors, residents and managers, effectuating the last step regarding *availability of GIS mappings in online platform*.

To integrate all tasks, the *Open Geospatial Consortium* (OGC) was reliably used for the establishment of functions for image processing, spatial analysis and spatial databases consulting. Currently, the open codes relational libraries (MySQL and PostgreSQL/PostGIS), use the publication process Web Mapping through QGIS, which can be implemented by means of the plug-in QGIS2Web which is found on the menu additions of software QGIS.

This tool has exportation possibilities of thematic maps produced through geoservices, they may be accessed by a specific URL giving access to the geographical data and their settings as symbology and labels. The interoperability standards (OGC) as the Web Map Service (WMS) and Web Feature Service (WFS) were highlighted. It supports the GIS solutions available in the market capable of performing the steps of integration and provision of information to the citizen.

4. Application of GIS in tourism — the case of São Cristóvão, Sergipe, Brazil

São Cristóvão, a city established in 1590, is considered the fourth oldest city in Brazil. São Francisco Square received the title of UNESCO World Heritage in 2010. São Cristóvão historical centre has one of the largest and most important material and immaterial heritage of Sergipe state as a laboratory to auto-guided itinerary implementation. However, despite the state and local managers recognize its importance, there is still no real proposals or well-defined strategies to convert São Cristóvão in a consolidated touristic destination, and consequently, in the long term, a competitive destination (Santos, 2014).

Even though São Cristóvão is important for Sergipe tourism, the current maintenance conditions of basic infrastructure and tourism, and even the lack of offers doesn´t help the tourism development. The previous surveys made in the city through field work reveals some heritage assets of São Cristóvão are ignored by tour guides and receiving agencies at

visitation tours, as well as, it was noted the non-recognition by part of the local population of existing assets in the local.

To figure out strategies for the development of the tourism practice using GIS is the most important factor focused on the development of auto-guided cultural itineraries.

Based on the GIS features, it is possible to use geotechnology with tourism for the elaboration of auto-guided cultural tours. The tourists, as well all the resident population, can better understand the several elements the city touristic offer, including their heritage assets, including the heritage education which can generate the awareness for heritage preservation necessary to the survival of touristic activity.

The visitor will have freedom of choice between following the itinerary already ready or build their own itinerary, considering the touristic itineraries are flexible. Because it does not require a visitation sequence, the tourists can start the visit at any point of the itinerary. Besides, they do not necessarily present a route start point and an endpoint. In the case of auto-guided tourist itineraries, they have the main function to facilitate the tourist displacements and allow the visitor contact with the attractions without a professional tour guide (Santos, 2014). The routing allows the emergence of complementary products, making a segment more than a single product. In this study, the priority is the cultural tourism segment, but the emphasis is the need for diversification.

With the experimental application São Cristóvão by Santos et al. (2016), two cultural tours were prepared. The first itinerary includes the city museums: Museum of Sacred Art, Sergipe Historical Museum, Ex-Votos Museum and the Military Museum. The second itinerary covers the main cultural attractions of the city: São Francisco Square (World Heritage), Church and Convent of São Francisco/Santa Cruz, Santa Casa de Misericórdia Church, IPHAN House, Casa da Cultura, Sobrado do Balcão Corrido, the Parish Church of Our Lady of Victory, Convent and Church of Nossa Senhora do Carmo (Carmo Maior and Menor), Sobrado to Rua das Flores, Church of Nossa Senhora do Amparo, Church of Our Lady of the Rosary of Black Men and the seaport of Rio Paramopama.

For the preparation of these itineraries, initially, the highlighted local attractions were defined based on the touristic inventory process and the identified priorities. Subsequently, following steps were performed: (a) Definition and adaptation to the target audience (visitors/tourists); (b) itineraries planning and design; (c) itineraries pre-test on specified day and time with Tourism students of

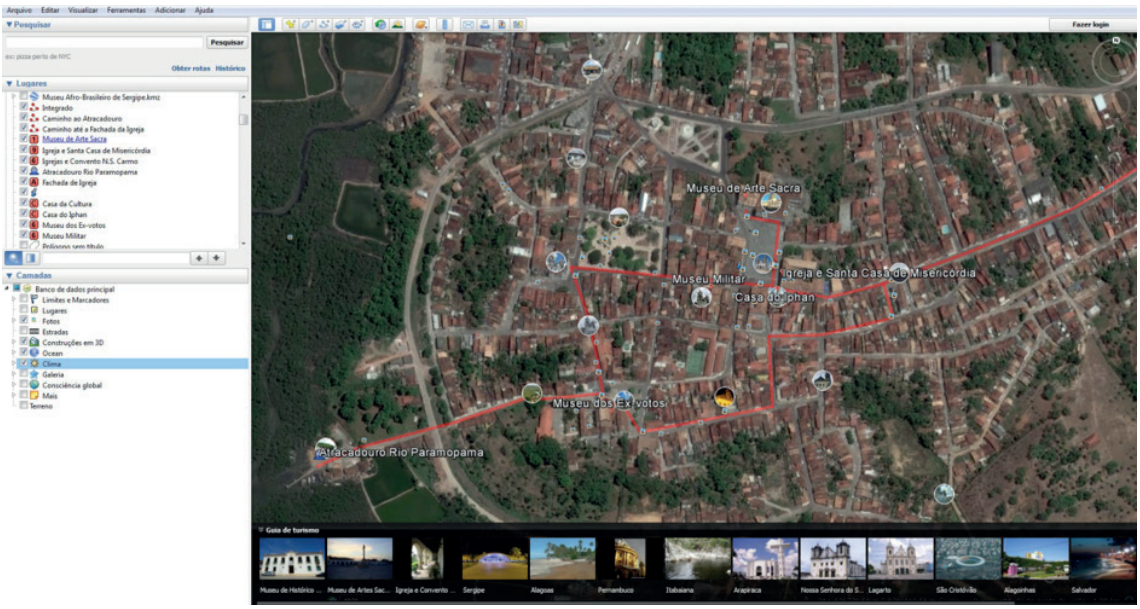

Figure 3
Proposal for dissemination of São Cristóvão as a touristic destination.
Source: The Authors at Google Earth Pro.

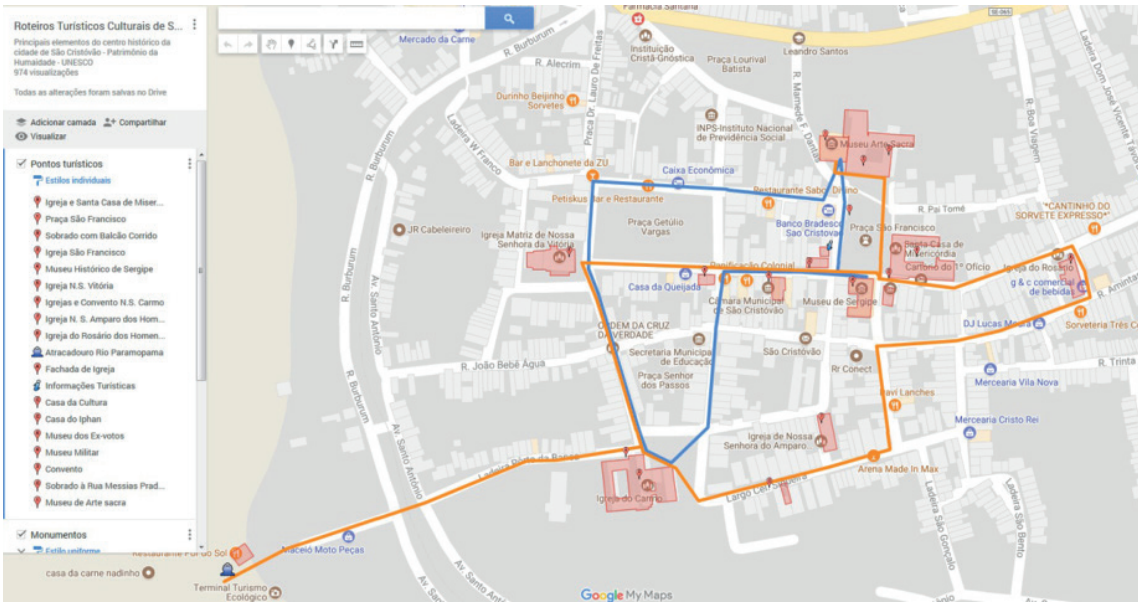

Figure 4
Dissemination of Destination — São Cristóvão.
Source: The authors at Google Maps.

Universidade Federal de Sergipe and some local people (tourism and culture city managers) to verify possible failures and adapt them to offer users a better experience at the city visited, as well to make the habitants explore more of their heritage; and (d) the establishment of mappings.

With these actions, one hopes the touristic offer of São Cristóvão can be extended with more tourists to visit places not explored, but with great potential for visitation. Even so, the visitors can follow the itineraries offered or make their own ones, based on the attraction's information offered in the Google Maps and Google Earth maps. Moreover, the public managers of São Cristóvão, based on the data provided by the users, will better manage and plan the touristic activity (Figure 3).

The construction of a destination database and the georeferencing of the main inventoried attractions was discussed, as well the publication of proposed itineraries in one official municipality website. This could minimize the direct searches at the destination, since it would require a wide marketing job. Without the contribution of municipal resources, this would not generate an increase of visitors.

In contrast, the activities developed in the itineraries' generation allow several innovative perspectives based on web characteristics. The itineraries are shared for free in public search engines websites, from publications of files in format (Kmz) generated in the associated online Software QGIS through Google Earth and My Maps internal plug-ins (Figure 4).

Similarly, the distribution of the collected data in the city can generate several uses and categorizations according to users, who can add specific features, such as places of interest, photos, descriptions, and even new itineraries. They can make it registering and posting on collaborative information dissemination of WebGis communities such as Open Street Map (https://www.openstreetmap.org/).

In this case, the new generation of GIS linked to Internet browsers and contributory social applications has generated greater agility in the access to information. This advancement has provided benefits for society, better customer services to the public or even the insertion of additional online consultation services, generating comfort and better quality of life, as well more participation of civil society in the decisions.

The cultural and natural attractions will be available in order to attract tourists who use virtual ways to choose destinations and products. In addition to easy access to destination information, visitors can perform autonomously the visitation through the itineraries produced or to format new paths from the information provided and in accordance with the interest and existing demands.

5. Conclusion

Considering the growing demand of consumers at the time of choice and purchase of tourist destinations and services, GIS can function as a foundation because of its availability on a Web page, a mobile application or even a digital reference system offline. It becomes an increasingly important tool for dissemination and marketing available for society through Internet. And allow the creation of new services and special products to achieve new market niches and leverage the competitive advantages of locations out of world tourist circuit.

The use of GIS and applications connected to the major search engines of the Internet to disclose a destination tourist products and services not only has more chances of attracting the tourist potential but is also able to increase its permanence in the locality. In addition to reducing the costs of managing with disclosure - in view of the traditional advertising media, such as brochures, magazines - because the WebGIS facilitates the destination products and services visualization, as well as its interconnections with other destinations.

The GIS aided in the tourism development in São Cristóvão is important as a base for future applications in tourism in the state of Sergipe and other localities of Brazil. In addition, it is an important tool in the city management and planning, the city needs solutions for the tourist activity. The expectations are the expansion of the tourist to consolidate "new products"; the approach of the community to its patrimony (re)knowing it and preserving it; the practical and quick information generation for society and for organization responsible for the management and planning; and, more visibility for the city based on the geoinformation inserted in the map hall.

Generally, the idea of deploying a GIS or WebGIS in tourism management or even in public management reaches its apex when it is possible update remotely (via Internet and Intranet) the geographical data (storage) base, as well do spatial surveys and reports (distribution). In this aspect, it is worth mentioning the collaboration of citizen and tourist is crucial to open a path to new policies for tourism management promoting innovation linked to technology and develop socio-cultural mechanisms of cultural heritage and identity of each destination.

The cultural attractions available through the municipal WebGIS assume the role of virtual guide, once for the choice of destinations and tourism products, the tourists can do a visit independently with the itineraries produced previously. They can also format a new roadmap from the information provided and in accordance with the interest of the visitor.

The new opportunity of previous access to the information to certain destinations, the use of guided technology impacts considerably the function of the local tourist guides, since their profession would be extinct. The theme is already under discussion by professionals of the area since the emergence and opportunities generated by the amplitude of the virtual agencies for dissemination and sale of tourist packages.

However, the study approach is to promote the creation of spatial data infrastructures anchored in the cloud, through *WebGIS Cloud* to allow greater interaction among the segments of society. The information organization or the possible analyses provided by the interpretation of thematic maps and itineraries can be created and distributed by users.

One believes the initiatives expand the availability of information constituting the first steps to achieve better levels of tourism development. It opens a path to management and planning efficiency and effectiveness for other areas of interest in which the decision-making process in the public governance and even in business are based on spatial information and territorial control.

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