Interactive Cultural Map of Veliko Tarnovo Municipality as a Part of the eCity Platform Veliko Tarnovo

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Abstract. The result of the project is an interactive map of cultural objects of Veliko Tarnovo Municipality with the region supporting the candidacy of the city for European Capital of Culture 2019. This system is integrated into the eCity platform of the project for e-Municipality Veliko Tarnovo.

Keywords: Interactive map, GIS, CMS functionality, digital libraries, mobile browser, Python programming language.

1 Introduction

The "Interactive cultural map" project is an initiative of the team preparing the candi-dacy of Veliko Tarnovo for European Capital of Culture 2019 (ECoC 2019). In the context of this candidacy, the creation of an interactive cultural map is useful idea for its comprehensiveness, for identifying different areas of cultural interest and villages in the region, supporting the candidacy.

The cultural information gathered in the process, is a part of an interactive platform, available for existing and potential cultural objects, activities and practices on the Internet. Similar developments have been made [4,5,6].

A model of digital repositories has been developed [1] and the result is an interactive cartographic presentation of objects of culture through an interactive cultural map of Veliko Tarnovo Municipality with the region, supporting the city as a candidate for European Capital of Culture 2019, as well as being a part of the eCity platform of the project for e-Municipality Veliko Tarnovo.

2 Details and Specifications in the Design of Interactive Map System

The interactive cultural map covers objects of the cultural infrastructure, such as cultural centers, museums, galleries, theaters, cinemas, concert halls, places of science and education, religious sites, cultural values, markets, open spaces, parks and others.

The following tasks were solved:

- Detailed study of the needs for local residents, the people who are involved in cultural institutions and organizers of cultural activities and information technologies;
- Prepared a list of existing and potential objects of cultural infrastructure in municipalities and regions;
- Defined types of objects and determined the criteria for conducting the mapping of existing and potential cultural objects;
- Organization of initial version of the interactive map with the development of software and administration module;
- Introduction of initial group of objects and cultural places on the interactive map;
- Addition of new alternative objects and places of cultural interest.

The interactive cultural map is consistent with the following types of main categories:

- Cultural objects;
- Places of Education and Science;
- Religious objects;
- Objects of cultural property;
- Cultural use of open spaces;
- Significant monuments;
- Commercial objects having in common with culture;
- Alternatives tourist sites and cultural events;
- European partners related to cultural institutions;
- Others.

Cartographic representation is consistent with the classification scheme [1] for organization of digital libraries of cultural objects and cultural heritage of the region of Veliko Tarnovo.

The data and the actual archives of cultural objects has been analyzed and is a model created for the organization of cultural objects [1]. They have been organized in hierarchical order in panels, themes and collections, depending on its type and the institutions that preserve it. Digital objects in funds are organized into separate archives and collections, depending on its type. The individual panels are stored in separate repositories, topics - in separate archives, in which are the collections like the similar type collections with materials of different funds so that everything can be put in one archive. The organization of digital libraries is a hierarchical template scheme of cultural objects, applied for the central region and for all ten municipalities in the region.

3   Requirements and Methods for Software Implementation of the Interactive Cultural Map

Completed surveys were selected for requirements and restrictions towards the interactive cultural map.

1. The interactive map has to visualize information about objects of cultural significance on the territory of Veliko Tarnovo.
2. Different objects have to be categorized – for example religious temple sights, sports facilities etc.
3. For each cultural site should be maintained a minimum set of the following metadata:

- Name (multilingual content);
- Type / category of the site (multilingual content);
- Textual description of the object (multilingual content);
- Geographical location (GIS);
- Text with a description of the location (multilingual content);
- Valid from-to (used to describe temporary objects, for permanent establishments these attributes will be empty);
- Main picture;
- A range of additional media - photos, videos, files for download;
- Specific icon for a preview on the map (if needed).

4. For each category should be maintained a minimum set of the following metadata:

- Name of the category (multilingual content);
- Color and icon display;
- Description of the category (multilingual content).

5. Objects should be displayed on an interactive map of the two existing Internet portals of Veliko Tarnovo Municipality by using color markers and a specific icon for its respective category; if an object has been assigned a specific icon it will be used that specific icon.
6. The interactive map should meet the appropriate style of each Internet portal, in which it is incorporated.
7. Upon clicking on object of the map it should be displayed an information "bubble", containing summary information about the cultural object and a link "read more".
8. Information should be displayed on the current language of the Internet portal; if the current language is not introduced, the data should be visualized in the default language (Bulgarian).

The interactive map has to contain an administration module, a separate menu, specific filter by category and with a possibility for searching different cultural objects. The initial version should contain about 200 cultural objects and 10 categories. New categories can be added by a functional module without certain limit for new categories, subsections and cultural objects. All categories should appear as separate layers. The map should include institutional cultural objects and alternative places that will require more extensive field of detailed study. The layer with European partners is a separate layer from the map of Europe, which should not be confused with other regional layer categories, as shown in the example cultural map. Upon clicking on an object certain parameters should be displayed - both general (photo, link, location

(with display window for GPS positioning only for a certain object in the Google map) and other custom parameters.

Parameters are adjusted for different specifics of the web site for which the map is created (for the ECoC 2019 web site or the Veliko Tarnovo Municipality web site). For example, optional parameters have to be set, associated with the template for the organization of a certain object (ECoC 2019 web site).

The interactive map has to contain information related to the actual funds and location of a cultural object in the scheme of organization for real objects and information relating to the digital fund. The information has to be consistent with the model for the organization of subject categories created by the working team of Veliko Tarnovo 2019 and published [1].

Certain activities were needed in the process of creating the interactive cultural map:

- Survey of existing cultural objects and sites;
- Definition of the types of objects and choosing the criteria for conducting the mapping of existing and potential cultural objects of culture;
- Preparation of a list comprising existing and potential objects of cultural infrastructure in the municipality and the region;
- Development of a model for the organization of cultural objects;
- Creation of conceptual design parameters for different objects and require-ments for the functionality of the interactive map;
- Development of a software/administration module in the initial version of the project;
- Implementation of existing objects and cultural places on the map (about 200 cultural objects) with multilingual content of all categories for the respective cultural object, including the exact geographical location (GIS);
- Section menu with European partners;
- The initial version of the cultural map for ECoC 2019 has to be consistent with the candidacy of Veliko Tarnovo for European Capital of Culture 2019;
- Addition of new alternative cultural objects and places, getting the platform ready for actual deployment;
- Incorporation of specific features about the town of Veliko Tarnovo.

4   The Interactive Cultural Map as a Part of the eCity Platform

The project "Interactive cultural map" has been created with the thought of being a part of the eCity platform, which is the main base for the web site of the Veliko Tarnovo municipality and the ECoC 2019 web site, thereby achieving an overall unification and reliability in the visualization of the web site. It is integrated as a module "Cultural map" on the platform "Veliko Tarnovo - candidate for European Capital of Culture 2019" (www.vt2019.eu) and will be integrated as well on the portal "Veliko Tarnovo Municipality" (www.veliko-tarnovo.bg). It will correspond to a stylistic design for each of the two Internet portals.

The realization of the cultural map is visible directly from the navigation menu of the ECoC 2019 website [3]. The integrated software "Interactive cultural map" is characterized by categories of cultural objects – typifying different items such as religious temples, landmarks, sports facilities etc. (Figure 1). The content of the cultural objects should have multilingual information of all categories and the exact geographical location (GIS). Connectivity has been established for similar elements from e-services in the integration platform of e-Municipality Veliko Tarnovo (for example events on the cultural map should refer to events on the ECoC 2019 web site).
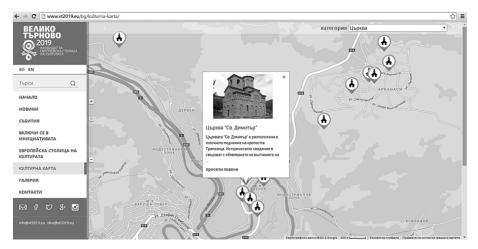

Fig. 1. Interactive cultural map [3]

The interactive cultural map [3] contains:

- Responsive design – the map works with all popular mobile and desktop de-vices running a modern browser (Firefox, Chrome, Internet Explorer, Safari, Opera, Android, Windows Mobile);
- Specific icons for different types of objects and events on the cultural map;
- Filter by category for different cultural objects;
- Preview of upcoming events;
- All other requirements under the proposed specification and design;
- Implementation of full CMS functionality description of the objects.

A major part of this development has been based on Python - the interactive, object oriented programming language [2]. The overall design is fully consistent with the concept design on the web site about the candidacy of Veliko Tarnovo for European Capital of Culture. The administration module is built on the open source platform Django CMS, a management system for publishing content on the World Wide Web and intranet. The platform will have implemented functionality for QR matrix code.

The collected database should facilitate users, who produce and create culture in all dimensions. The project is expected to be the basis for further in-depth studies of the cultural infrastructure.

The map information will be used by the administration to monitor the status and activity needs of local cultural objects in the city area in certain groups of objects to support its development and promotion. There is also a search from cultural managers about the possibilities and a potential of each site for their project, event, activity, as well as the business seeking major partnerships with other cultural enterprise to deploy their shares and teambuilding.

With creating a general picture of the distribution and contents for the cultural infrastructure, the system can be further developed through thematic and technical studies of the local cultural objects in different ways.

- Explore the energy efficiency for cultural objects of the cultural infrastructure;
- Study of municipal buildings and properties, with potential for development as places of cultural interest;
- Provisions for investment activities in specific key areas of cultural infrastructure (museums, galleries, halls, parks, outdoor scenes, etc.);
- Accessibility for people with disabilities in cultural enterprises and places.

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