A.I.M. - Advanced Interactive Map

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Abstract—This paper discusses the ongoing development of a tool to produce - through an authoring system - an interactive map with advanced functions. A first map has been produced in collaboration with the Municipality of Cetinje (Montenegro); a map of the Municipality of Gioia del Colle is still under construction with students of a secondary school. These activities concern the Mu.S.A. (Must See Advisor) Project, a cultural heritage booster aiming at giving visibility to less known sites - as potential tourism destinations - by valuing knowledge from selected communities.

Index Terms—Authoring System, Interactive Map, Capacity Building.

I. INTRODUCTION

Keeping in mind the ‘average’ visitor that more and more frequently searches for information directly on the Web before moving, initiatives could be made more effective using interactive maps published on the Internet. The use of GIS software to serve maps over the Internet is already available with a wide variety of approaches – see, for example, the map of Cyprus (http://geomatic.com.cy/visitcyprus/) and Malta (www.visitmalta.com) at regional level and the map of U.S. Cities as Lake Havasu (http://lakehavasu.micromaps.com) and Oswego (http://oswego.lunarcowimap.com/imap).

It can perform just about any GIS function but it requires very advanced GIS and other technical skills - for most small municipalities and local communities, this approach may not be the best one. Therefore, our Institute developed “Smart Map+”, procedures and software specifically designed to simplify the publication of geo-referenced information generated using a camera equipped with GPS.

It was developed in the framework of the Mu.S.A. (Must See Advisor) Project, a cultural heritage booster aiming at giving visibility to less known sites - as potential tourism destinations - by valuing knowledge from selected communities.

The procedure includes: planning and executing of a survey with photos acquisition; geolocalization of Point of Interest (P.o.I.) using smartphones, maps or metadata available for shots taken by GPS camera; data input and map generation.

The last step is performed through an Authoring System, specifically implemented, running on a web browser [1].

II. THE AUTHORING SYSTEM

At present, the Authoring System reads two different files:

- A “list” file containing, for each P.o.I., basic information (longitude and latitude; title; accessibility level; century; age; address; short description; marker name; typology; typology marker name; survey date; filename of extended description; name of the main photo at different resolution and frame; rating).

- A “media” file containing additional information about media available for each P.o.I. (reference P.o.I.; media type as sheet, image, video, 3D; preview image of media; P.o.I. title; media description; media URL; source; source URL; media date of production).

Then, using switchable parameters, it produces a preview map; given the purpose of the system and possible difficulties in finding cartographies, the authoring system uses Google Maps. Finally, it allows to input additional parameters for the project (the map filename and the window title), the header and the map (clustering distance and threshold); when the user has completed the data input, it prompts to produce the interactive map according to the output needed with different contents and functions.

III. MAP FEATURES

The Advanced Interactive Map interface has two main components: a menu (fig. 1, on the left) and a sidebar (fig. 1, on the right); according to function selected in the menu, and/or action performed on the sidebar, the map sets and shows its components, as the time slider (fig. 1, on the left) and the slideshow of main photos of P.o.I. (fig. 1, bottom).

Each P.o.I. has its own marker: it could be the same reported in the sidebar, or a customized one in order to point out a feature (e.g. a qr-code availability). We use those available at http://mapicons.nicolasmollet.com (it contains also our icons), selecting a white boundary to improve the visibility on dark backgrounds.

The sidebar has a dynamic legend, displaying by type the number of P.o.I. available according to search results and filtering. The sidebar enables the user to conduct a text search, thus going beyond the concept of making location the common thread for P.o.I. retrieval [2].
The sidebar has a set of colors unambiguous both to colorblind and non-colorblind people (http://jfly.iam.u-tokyo.ac.jp/color); these constraints limit to five the number of different P.o.I. types.

At the first level, the legend has five different colors and picture; if sub-types are available, there are no pictures (like “Hystoric Building”): the picture are available only at the second level according to each sub-type. At the third level, a P.o.I. box (image, name, address) is displayed.

Clicking on type and sub-type boxes enable/disable the view of related markers in the map.

The menu allows localizing the best site, to switch on/off satellite view and to show/hide functions – at present:

- Slideshow, an animated collection using a set of main photo of each P.o.I., linked to its position.
- Time slider, an interactive bar allowing filtering all the P.o.I. existent at the selected century.
- Folder, a gallery of media previews (linked to object), organized by slideshow (manual/automatic) or by tile.
- Table, a list of all the media (linked to each object) ordered by P.o.I., media source, media type and media content, with search function.

The callout (fig. 1, center) associated to each P.o.I. shows the name, the address, the main photo, a set of function, a short description linked to an extended version (more), age and two icons about rating and accessibility.

The set of function has sheet, image, video and 3D buttons, in order to show the folder filtered by the selected media; a table button is also available, in order to view the list of media belonging to the selected P.o.I.

IV. ONGOING ACTIVITIES

The capacity building activity at the secondary school is highlighting the opportunity to improve the friendliness of the authoring system and to erase the limit of use only landscape images with fixed ratio, due to the wide ratio availability of images and the constraints imposed by tall buildings or reduced street.

Future work includes the shift towards the use of different shapes for marker type according to [3] and the development of more functions in the menu (as print map, user profile) and in the callout (as way to, select, like, share).

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