

Collaborative GIS platforms for Storytelling – Case Study: Battleship Averof

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Abstract. Content Management Systems [1] are widely used in web sites and portals lately, promoting collaboration among groups of users. Collaboration applies to many fields and storytelling in the Web is one of them. When a group of users can contribute into telling a story the result could be apart from a more detailed story, an interesting educational method. Since the main purpose of a storyteller is to make the audience interested in the story, then ways to achieve this should be found. Visualizing the story is one of these ways. Interactive maps create a visual story and give an easily accessible starting place from which users can explore at their own pace based on their own interests. In this paper the need to integrate collaborative storytelling with collaborative GIS in the Web is stated and the use of historical map collections for this purpose is validated.

Keywords: CMS, Collaboration, Storytelling, GIS, Historical Maps

1 Introduction

Maps are important in storytelling since they can set the geographical context and convey any underlying spatial information of a story. When the story being told is about historical events then a collection of relative maps of that time period is almost a prerequisite for the better comprehension of it.

In addition to visualizing the story being told interactively, collaboration among GIS [2] users and storytellers can create a very powerful tool, used for several applications (e.g. education, gaming).

This paper presents the research that currently takes place in the Department of Geography of Harokopio University of Athens, regarding the integration of Web based Collaborative GIS [3] – Storytelling Systems and the role that historical map collections can have in storytelling platforms. A case study is being implemented in terms of IKYDA project [4], [5], [6] “Non-linear Digital Storytelling for the Battleship G. Averof” [7] with the chair of Informatik 5 RWTH, (<http://www-i5.informatik.rwth-aachen.de/>).

2 Development of a Collaborative GIS – Storytelling platform for the IKYDA project and the importance of using historical map collections in it.

The IKYDA project deals with the promotion and enrichment of Battleship's Averof museum archives. As a result, the ship's rich history will become widely known and new interesting methods of education will be developed.

The main idea is to create a Web-Based application that invites individuals and community partners to experience and share knowledge or memories through interactive mapping to contribute to an enduring record of Battleship Averof's history and culture, whilst interesting storytelling methods – like non linear storytelling tools are developed.

An application like that should

- link stories and memories to places in the landscape (life in the ship, battles, movement, etc),
- use historical and contemporary maps to link the past to the present (the development of the ship from a strong weapon to a museum),
- use historical documents and maps to show the movement of the ship over time, and
- use digital models and maps to layer stories

2.1.1 Architecture

A multi-tier architecture was selected for the implementation of GIS Story Telling Collaboration platform. More specifically the architecture is narrowed to the following three tiers: (Figure1)

- **Application Tier**

This is the topmost level of the application where the Web Services are deployed. It consists of a CMS platform which encapsulates GIS and storytelling capabilities as plug-in. Current GIS capabilities should be enhanced by adopting historic map infrastructures. There are two approaches regarding historical maps and the storytelling procedure, being studied. Historical maps can either have a supporting or a leading role, depending on the goal the story has to fulfill.

- **Service Tier**

This tier acts as the glue component providing standardized access to data. Concerning GIS capabilities all images, features and coverages will be served to the application tier over the internet by a server that implements all the O.G.C. [8] standard interfaces. Additionally an O.G.C. catalog server [8] and a multimedia catalog server will be used as a single point of access to all O.G.C. interfaces and multimedia repositories respectively.

- **Data Tier**

This tier consists of Database Servers. Here information is physically stored and retrieved. This tier keeps data neutral and independent from all the above tiers.

Specifically it consists of distributed network of spatiotemporal and multimedia database servers which could be located anywhere in. Thus by giving data their own tier we improve scalability and performance of our framework.

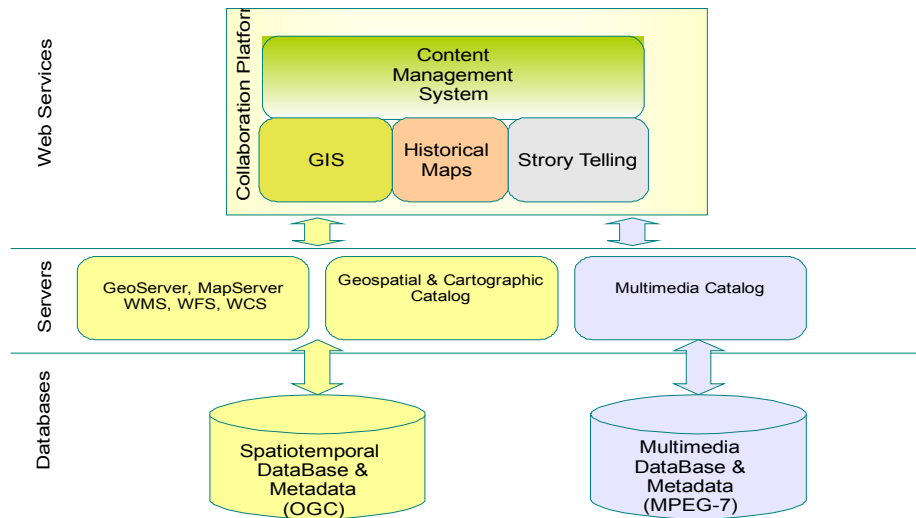


Fig. 1 Collaborative GIS/Storytelling system Architecture

2.2 Current development

During designing and implementing the system described above, some work has already been done.

- A spatiotemporal database based on the records of the ship's diaries. The *PostgreSQL/PostGIS* [9] open source software package has been adopted for the implementation.
- A historical photographs database with use of *PostgreSQL/PostGIS*.
- A geographic catalog server to transform the data repository into a Spatial Data Infrastructure [10]. The software package used for this implementation is the *GeoNetwork Open Source Server* [11].
- A series of Web-Mapping Applications presenting the main events of the ship's history, using geographic mashups (<http://averof.dynalias.net>)
- A series of images associated spatially and temporally are uploaded in RWTH repository (<http://merkur.informatik.rwth-aachen.de/bscw/bscw.cgi/2614228>)
- A story is generated about Lemnos Battle [12] using *YouTell* [13] application and two hypothetical scenarios (What would have happened if...) issue a non-linear story (http://merkur.informatik.rwth-aachen.de/bscw/bscw.cgi/d2729524/YouTell_HPapadaki.pdf)
- A CMS – GIS platform has been implemented using the Plone Maps [14], geographical tool for Plone.

3 Future Work

- The system described in chapter 2 will be implemented by unifying all the existing tools, provided that they should first be enriched.
- A deeper examination of the CMS-GIS platforms available will contribute into choosing a complete Collaborative GIS platform for the system to be implemented.
- Examine closer the multimedia standards (MPEG-7 [15]) and the possibilities of cooperating with the Map Standards (O.G.C., I.S.O. [15])
- Examine the possibility of extending YouTell templates using XML [16] schemas for geo-mapping domains (GML) [8] for extracting data on the Web.
- Explore the usability of the geographical data of a map collection (vectors) in order to narrate or represent a time series of spatial and non spatial changes. For example, a story can be implemented about a certain area (e.g. an island - polygon) with changing properties through time (placename, area, ownership) due to various historical events (wars, treaties, annexations). For this, the appropriate geospatial temporal ontologies that will be used to show the correlation of current and historical places should be defined [17].

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