# Culturaturismo.piemonte: Coordinating Cultural and Touristic Operators via the Georeferenced Civic Social Network FirstLife

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#### **ABSTRACT**

"FirstLife" is an innovative example of ICT and information visualization technology that can be used as a tool for the organization and co-production of CH related available information in a specific territory. FirstLife is a map-based civic social network that offers a geo-referenced representation of open and crowdsourced data through an interactive map and that enable communities to collaborate in creating dynamic and public contents related to the area. It overcomes some of the major limits of social networks and web applications when they are used for sharing and generating contents related to a territorial community, representing the state of the art in crowdsourcing and showing information on interactive maps.

#### **ACM Reference Format:**

Guido Boella, Luigi Sanasi, Claudio Schifanella, and Cristina Viano. 2018. Culturaturismo.piemonte: Coordinating Cultural and Touristic Operators via the Georeferenced Civic Social Network FirstLife. In *Proceedings of 2nd Workshop on Advanced Visual Interfaces for Cultural Heritage (AVI-CH 2018)*. Vol. 2091. CEUR-WS.org, Article 4. http://ceur-ws.org/Vol-2091/paper4.pdf, 4 pages.

## 1 INTRODUCTION

Much research on information visualization technologies for Cultural Heritage (CH) is focused on users and on the fruition of content going beyond physical museums, e.g., using virtual tours or taking advantage of social networking technologies to put users in contact with institutions and with each other. However, the same recent technologies can be used for the advantage also of institutions and cultural operators, who are facing increasing challenges in coordinating the wealth of initiatives happening in their territories.

This paper addresses the debate over the roles of ICT and information visualization technologies to provide access to CH collections, to support CH institutions and, at the same time, to reach a wider audience, by introducing the civic social network "FirstLife" as an innovative visual tool for the organization, co-production and enjoy of the variety of CH related available information in a specific territory.

FirstLife is a platform intended as a shared virtual space for coordination, cooperation and collaboration among public administrations, local institutions, civic organizations, businesses and citizens belonging to the same territorial area and sharing needs and projects over it. A map interface provides an intuitive visual

way to create, visualize, share and follow geo-referred contents. As such, it is being tested as a tool to enhance the management and experience of cultural heritage on the side of both cultural institutions and professionals and citizens.

## 2 FIRSTLIFE: A CIVIC SOCIAL NETWORK

FirstLife (http://www.firstlife.org/en) is a platform for Computer Supported Cooperative Work, designed and developed by the Social Computing team of the Department of Computer Science of the University of Turin, which consists in a new map-based social network capable of: to offer a geo-referenced representation of open and crowdsourced data through an interactive map; to be focused on communities that share a territorial area of their interest and collaborate in creating dynamic and public contents related to the area; to exploit the potentialities of social networks to create a virtual community and make it real at a local scale. FirstLife aims at fostering co-production (in the sense of the Nobel Prize Elinor Ostrom [7]) and Do It Yourself initiatives, providing a virtual place connected via maps to the concrete reality. Thus, the platform by itself is intended to involve the different actors in developing new services and initiatives, from institutions to associations, from citizens to enterprises.

FirstLife can be used to visualize in an intuitive way, integrate, share, comment urban territorial data and make them useful for strengthening social and professional communities in the real world, through virtual spaces for debating on strategic and operational decision at different levels.

FirstLife harvests the knowledge and the services that are now scattered around many websites often unknown to the wide public websites, focusing them on a local area. It reduces the overloading of information by filtering them on a locality principle. There are several projects with different purposes in which FirstLife is currently involved, in Turin and elsewhere. Currently, FirstLife is the technological infrastructure of two major European innovation projects:

- WeGovNow is a H2020-EURO6-2015 research and innovation project aimed to integrate in a platform technological solutions for local governance, to extend the participation of citizens and local stakeholders in decision-making processes (http://wegovnow.eu);
- Co-City is an Urban Innovative Actions project aimed to develop a model of local economy based and co management of urban commons, to activate an inclusive urban regeneration (http://www.uia-initiative.eu/en/uia-cities/turin).

# 3 OVERCOMING THE STATE OF THE ART OF SOCIAL NETWORK AND OF WEB APPLICATIONS BASED ON A MAP

FirstLife is characterized by typical map and social network features

- view posts and activities concerning the groups the user is registered to;
- subscribe to objects/places on the map to receive notifications on the bulletin board;
- view posts from people he/she is connected;
- perform queries by selecting the categories of information he/she is interested in or by making searches with keywords.

But it also overcomes some of the major limits of social network and web application when they are used for sharing and generating contents related to a territorial community.

# 3.1 Beyond social networks

Currently, both private and institutional actors are also using the most common social networks to promote the public dimension of their work [4] because those platforms offer the opportunity to disseminate information and engage people at a seemingly affordable cost [3]. Indeed, sharing visions, decision processes, project results, and activities is a need increasingly heard from public and private actors. But the existing social networks have several limitations [6, 9, 10]:

- a personalist logic centered on the individual and on his/her private life;
- purposes other than support the coordination of different players in the city for public goals;
- relationships based only on personal connections;
- a global perspective, not focused on the local scale which is still the main scale where we live and act.

The challenge is to design a digital platform to refactor the current practices of cooperation between private and public sector creating a shared virtual working environment to trace, plan, collaborate and coordinate the initiatives of multiple stakeholders acting in the city. Differently from most mainstream social networks, FirstLife targets is not the person as a private individual but rather as a citizen who lives, works in and enjoys urban spaces together with other people who share his/her interests and problems. It evolved into a relational environment with social networking functionalities such as group membership and notification, centered on an interactive map of the territory. The selected area and categories are the only filters for the content on the bulletin board. No algorithm is used to recommend information, so as to avoid enclosure in a filter bubble [8] and to increase serendipitous encounters [1].

## 3.2 Beyond web applications using maps

Starting from current limitations of web applications using maps, FirstLife outlines an alternative approach based on building an indexing system connecting scales and contents, on fixing visualization and styling rules, and attributing an active role to the user in defining goals, area of interest and related contents. It is built upon a theoretical framework to develop map-based applications where: contents are connected to the map entities and the user

interactions impact on the status of the map and of the application status at the same time. Scaling and visualization theories about traditional maps can be extended to digital maps in order to develop web applications using maps as information management systems, data viewer and recommender systems. Nowadays, the fast and generalized spreading of digital maps, and the related production of geo-localized social media, is due to the intuitiveness of maps in representing reality.

Nevertheless, apart from web geographical information systems (Web GIS), spatial information in digital maps are not connected with the map geometries, but just placed in their spatial context, overlapped to an image.

Current applications showing contents on a map cannot be considered map-based applications since they do not exploit the map as a knowledge management system, based on a visualization theory, structured geographical entities and goal-related theming. FirstLife represents the state of the art in crowdsourcing and showing information on interactive maps, thanks to its vectorial maps showing urban spaces as objects rather than cartographic images, and to its ability to associate and cluster information at different scales (building, block, superblock, district, etc.).

#### 3.3 The interface

3.3.1 Entities model. The platform allows the sharing, representation and management of geo-referenced data (aggregated with reference to the scale of interest), temporalized (explorable in relation to the period of interest), crowd-sourced by different types of users, referred to complex social entities corresponding to markers on the map [2, 5]. The model of entities is organized into the following five types:

- Places;
- Events:
- Work *Groups* linked to specific projects;
- News
- Extras such as stories and initiatives.

3.3.2 Visualization, filtering and searching for contents. The main FirstLife interface is composed of a map and a lateral wall, containing summarized item cards. Single items can be opened clicking on map markers or on their summarized card on the wall, this will open a detailed view that shows their complete details (such as categorization, description, linked URLs, etc.), their child entities, the initiatives they are part of and the posts and comments about them.

The web interface has been conceived to offer the user complete control over what he wants to visualize on the map, with the possibility to filter contents using: the main types of *entities* (Places, Events, Groups, News or Extra in the standard model); the system of *categories* and *tags* that users can choose to describe the entities; the validity of entities in different *time spans* (thanks to a timeline and a global calendar). The *map* itself represents a fifth filter that acts on which entities are represented in the lateral wall. A search bar allows to search either for an address, strings present in Entities' names or for tag. The detailed card has a link to center the map on something that has been reached in this way.

- 3.3.3 Adding content and social/collaborative features. Single entities can be added to FirstLife via a stepwise wizard that guides the user in adding the requested categories for the chosen entity type. After this first mapping step, all other users can interact adding their opinions in form of posts. Users can receive notifications regarding new activities and entities they are interested by following them.
- 3.3.4 Geolocalization and areas. Entities in FirstLife are not only referenced to a single point in space: adding something in the same geographical coordinates but at different zoom levels of the map will link it to different areas on the territory (single building or road, whole block, neighborhoods, entire city, etc.). This adds a further dimension to model reality, for example a cultural event could take place in a single building, but a news could be of interest for a whole cultural district.
- 3.3.5 Clustering entities. Since markers on the map can become too crowded, depending of the chosen zoom level, we decided to join them in a single marker when they would be rendered too close to each other. To keep the map expressiveness given by single markers, that are different, in shape and color, for the five main types of entities, these "clustered" markers are represented with a pie chart showing the total number of entities clustered and the relative abundance of their types via their colors

# 4 FIRSTLIFE FOR THE MANAGEMENT AND EXPERIENCE OF CULTURAL HERITAGE

The virtual space is structured by reflecting the organizational logics and the need to share different programs and cultural and tourist initiatives that are insistent on the regional territory. The association of spatio-temporal data with semantic ontologies and historical-artistic and cultural taxonomies, initiated with the Initiative "FirstLife for Culture and Tourism in Piedmont", is being refined thanks to experiments such as the one started in 2017 between the Department of Computer Science and the Cultural Department of Regione Piemonte, using as a case study the system of the Piedmontese UNESCO recognitions, and building specific features required by the new scenario.

Thanks to the use of the platform by coordinators, cultural workers and citizens, both internal management (at the level of single territory and regional system) and interaction with the outside (public and private subjects of the territory they belong to, citizens users of the cultural tourism offer of the sites) will benefit from the sharing of management, design, promotional and public interest information related to the territories concerned.

In FirstLife, the *cultural associations*, as groups of people who decide to co-organize activities and projects on their territory, can tell the stories, share news about their activities, courses and laboratories or look for collaborations and resources, create work groups for the organization and management of events and initiatives in collaboration with other cultural operators and local institutions.

The *local promotion consortiums*, an integrated system of territorial networks and themes for the protection and enhancement of the historical, artistic and landscape heritage and of the productive excellence of the piedmont region, integrate their networks and initiatives starting from the places and groups and events active in

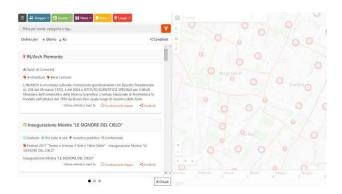


Figure 1: Cultura. Turismo, wall and entities on the map.



Figure 2: Clustering system and timeline.

the territory in order to activate partnerships, collaborations and joint projects aimed at expanding the development opportunities.

*Museums* host stories of works and artists, of events linked to exhibitions, permanent collections and educational activities, of groups who work and live the museum producing culture. With FirstLife, the museum connects to the places linked to the works and the artists, opens up to the events on the territory and can make synergy with the other initiatives developed within the museum networks.

Businesses for culture and tourism can meet in order to activate new opportunities for developing services, products and projects in their production sites; they can share the added value of their activities through stories built in a participatory way with customers, suppliers and collaborators; spread news in real time in their own area and through their networks; they maximize the impact of the events that are organized in the area by coordinating with other local entities.

Libraries can use FirstLife as a part of their cultural awareness initiatives, entering into direct communication with each other, receiving news about what happens in their network, coordinating in order to promote events in the area, facilitating self-organized groups of students, readers, scholars, local educators who live the library and actively co-produce community spaces and services.

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