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The underground atlas project: can we really crowdsource the underground space?

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Abstract

It has been almost two years since the launch of the Underground Atlas Project (UAP) and since a crowdsourcing database is, by its nature, a fairly dynamic one, the experience gained and feedback that was received provide guidance towards the next steps. The paper analyzes the positive impact of the UAP, addresses issues that appeared during the testing period of the UAP and outlines the improvements and additions implemented based on the responses. Decisions regarding the implemented actions were based on web traffic statistics analysis, literature review and empirical data. The outcome of the analysis led to a major redesign of the UAP that now offers more functionality and interactivity both to the academics and the public. The new features can be divided into four major categories, freeing restrictions from the public contribution, enhancing the interface visually and interactively, improve App functionality and data dissemination. The new features have been implemented using the latest technologies regarding web and mobile applications.

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1. Introduction

The Underground Atlas Project (UAP) (Kaliampakos et al., 2016) is a significant addition to the academic community that studies underground space. Indeed, the underground space is vast and dispersed in the world, and the task of collecting and classifying it is a very difficult one. The idea of collecting underground space has been proposed before (Lavagno and Schranz, 2002), but there was no action until the launch of the UAP. The UAP offers a web platform to create a community of people that can combine their strengths and knowledge to collect the underground space while developing its spatial aspect.

The UAP has been introduced almost two years ago and has since made a significant impact among academics and scholars involved in underground projects. The core of the project has a dynamic nature and as such requires an interactive approach based on feedback and web data analysis. The aim is to improve the functionality of the website and the App. At this moment, there are approximately 40 records of underground sites in the UAP database. These have been submitted by the UAP users, however the performance in terms of public participation and involvement has been below our initial goals. There might be many reasons for this and hence one of the main purposes of this study is to examine the reasons why the UAP has not yet met its targets. Thus, a major goal is to identify the mishaps and to plan and implement new features that will boost the creation of a large and active online community that will study and continuously support the UAP by submitting new and interesting underground space sites and uses. This paper analyses the work that has taken place in order to tackle the issues that identified and emerged through the two-year operation period of the UAP.

2. Methodology

In order to improve the UAP the following steps have been taken:

- A thorough review of the website statistics, literature and empirical data.
- Planning the new additions and features of the UAP.
- Implementing the new features.

2.1. Interpreting Statistics

Most of the websites use a provider to keep statistics concerning website traffic, a critical tool for every business that offers online services (Plaza, 2011). As much for every case, those statistics may be analyzed to improve the services and/ or the products of a business. The same rules apply for digital content or services. As Fang (2007) suggest, the web traffic statistics can be used as a tool to improve a website's content and services by a) tracking the overall usage, b) track visitors' behavior, c) determine the efficiency of the navigation system, d) improve user experience and e) determine the optimal redesign of the website.

The UAP uses the Google Analytics provider to keep traffic data, from the first day of its launch, the October 7th of 2014. The evaluation of the data has been made at three major sectors: visitors' traffic data, traffic sources and visitors' behavior. Figure 1 illustrates the visitors' traffic data from October 2014 since April 2016. Data are mainly presented as sessions, which account for visits in the website. Users are unique visitors, namely carrying a unique IP address while visiting the website. A user may have several sessions and, while at a session, several page views. The timeline shows an increasing traffic from 2014 to 2015 and a decline for 2016. While this may be understood as a positive fact, it is not adequate on its own. As the pie diagram and the numbers suggest, a user is unlikely to revisit the website a second time. This is clearly depicted from the returning visitors' percentage (16%) in contrast to the new visitors (84%). Even more, the page views per session and the average time per session are both very low (2.14 and 01:40 respectively), leading to the deduction that the UAP content and services are not very appealing to most users.

The second major statistical data is the website acquisition (Table 1). Generally a user may find himself or herself to a website from 4 sources: referrals that are links in other websites, direct meaning the user types the URL, organic search that are the various search engines and social that is the various social networks (e.g. Twitter, Facebook). While referrals hold the largest part of the traffic sources, most of these sessions are coming from spam bots (almost 85%). This is the reason why the bounce rate for the referral sources is so high. The bounce rate corresponds to the

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