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**European Territorial Cooperation Programme
Greece-Italy 2007-2013**

The Intersocial logo features a globe with various social media icons (Twitter, Facebook, YouTube, etc.) and the word 'Intersocial' at the bottom.	<p>INTERSOCIAL: Unleashing the Power of Social Networks for Regional SMEs</p>
<p>Deliverable D3.3.1: Social Networks Monitoring Tool</p>	
<p>Action 3.3: Social-Oriented Product Promotion Mechanisms WP3: Development of Innovation Devices</p>	

Priority Axis 1: Strengthening competitiveness and innovation
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Social Networks monitoring tool

Deliverable D3.3.1 Action 3.3

Workpackage WP3: Development of Innovation Devices

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Purpose: Implementation of Social Networks monitoring tool.

Results: We describe the architecture, implementation and the features of the INTERSOCIAL monitoring tool. Additionally we report results from the evaluation performed from 4 SMEs with diverse profiles.

Conclusion: Results from evaluation shows that INTERSOCIAL monitoring tool search based on keywords functionality is conceptually useful and valuable for identifying important information.

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When	Who	Comments
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Introduction

Online Social Networks are sites that make it possible for people to connect with each other to form communities and share content. Communities of people are created to connect people with similar interests, backgrounds or goals. Shared content may include amongst others videos, photos, articles as well as user profiles and activities. Users may comment, rate and tag content, engage in conversations and in a variety of activities including participating in multiplayer games.

In recent years, the widespread adaptation of Online Social Network (OSN) platforms resulted in the creation of huge amounts of user generated content. Data collected from the online interactions and the explicit relationship links and profile information of their users offer a rich source for various data analysis tasks. In addition, the users of OSNs constitute a large community of potential customers, trend creators, and opinion makers.

Social networking tools have been developed to capitalize on the new opportunities offered by OSNs and to take advantage of the APIs offered by the social networks to build advanced functionality. APIs are offered by most of the popular social networks. APIs allow access to the OSN public data such as to user profiles and other user-generated content. Based on the functionality APIs offer, search and monitoring tools offer functionality for searching or monitoring the huge amount of user generated content towards discovering useful information.

INTERSOCIAL Monitoring Tool is a keyword-based search, where the user specifies one or more keywords or terms of interest. The tool returns any public content that match the keywords, came from Facebook and Twitter. Search and monitor are parameterized among a variety of dimensions, such as time and geography. Search is based on the information currently being generated, including historic data collected over a specific period of time.

The use of the INTERSOCIAL Monitoring Tool is proposed for enhancing SMEs social presence by permitting SMEs through a friendly user interface to define sets of keywords and thus generate related Facebook and Twitter streams of what social network users are talking about.

In the following Sections we describe the architecture, implementation and development of the INTERSOCIAL Monitoring Tool. Main features of INTERSOCIAL Monitoring Tool and how it can be used are also described in the form of simple examples. Finally, results from the evaluation report are also presented.

Architecture

INTERSOCIAL Monitoring Tool (Figure1) consists of 2 layers the access and the processing layer.

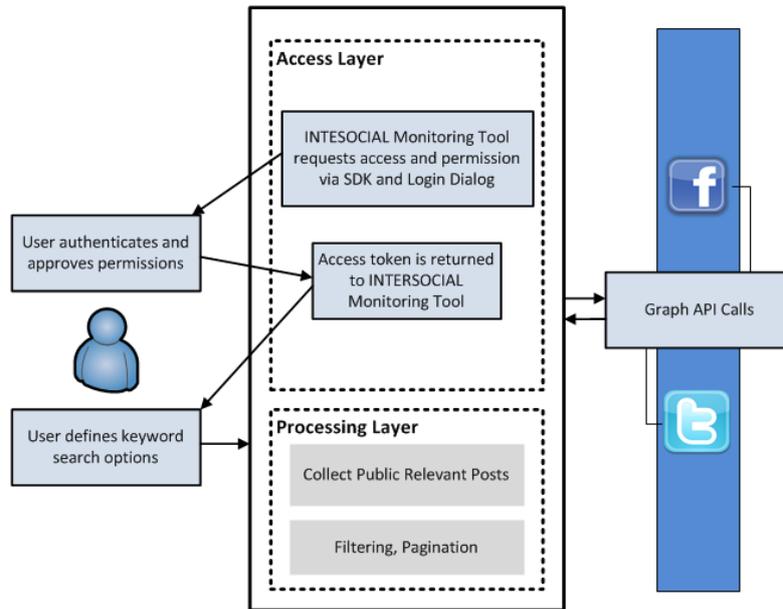


Figure 1: INTERSOCIAL Monitoring Tool architecture

Access Layer: INTERSOCIAL Monitoring Tool asks access and permission to user via SDK and login dialog. After user’s permission, an access token is returned back to INTERSOCIAL Monitoring Tool and search and monitoring are ready to be used. For developing the access layer we used the open source Facebook PHP SDK [1] that allows the access on Facebook Platform, and the open code libraries TwitterOAuth [2] and tmhOAuth [3].

Processing Layer: Depending on user’s search options we collect all public relevant posts from Facebook, Twitter or both. We filtering them so to keep the 50 more updated of each category, and we order them by date of post using pagination method. User can see relative public posts with detailed information of users of both networks. For developing the processing layer we used php and javascript libraries for implementing data visualizations.

Development

Development: Facebook Part

Facebook gives the access to its user to develop different kind of applications. Users who wish to be Facebook developers have to verify first of all their Facebook accounts (Figure 2).

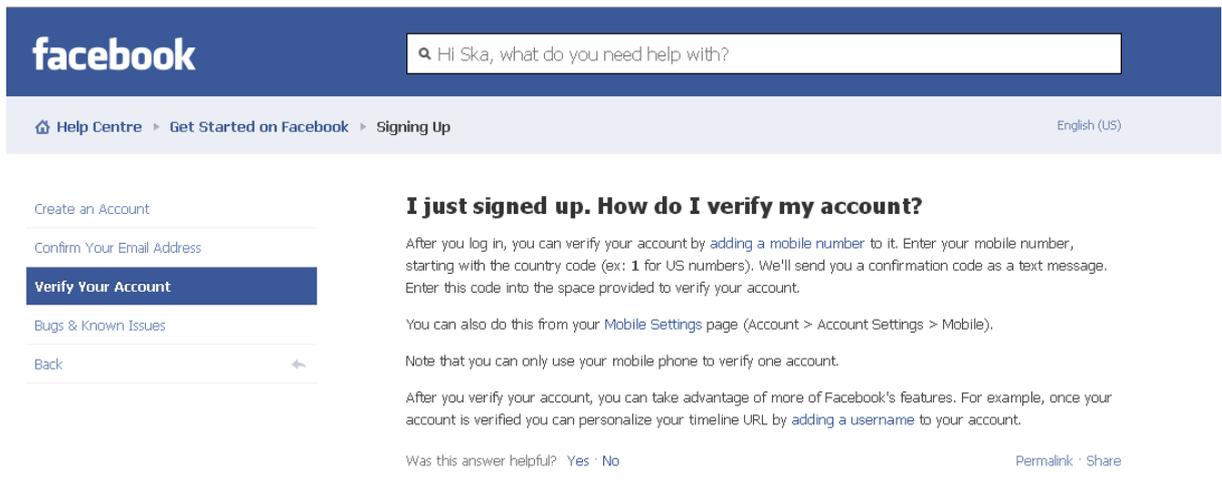


Figure 2: Verification of user's Facebook account

After that, users can visit Facebook developers' webpage and click on Apps tab (Figure 3) in order to create a new application (Figure 4).

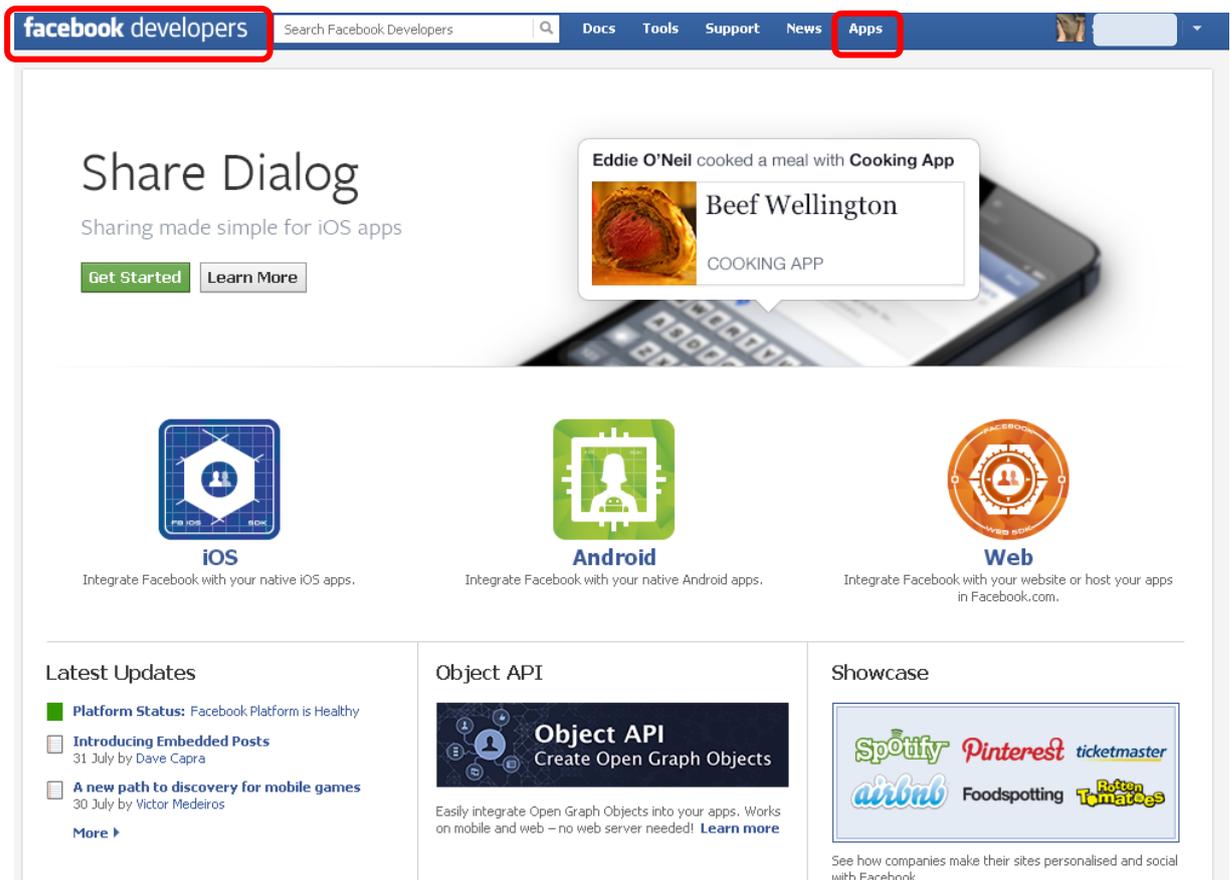


Figure 3: Facebook developers' web page

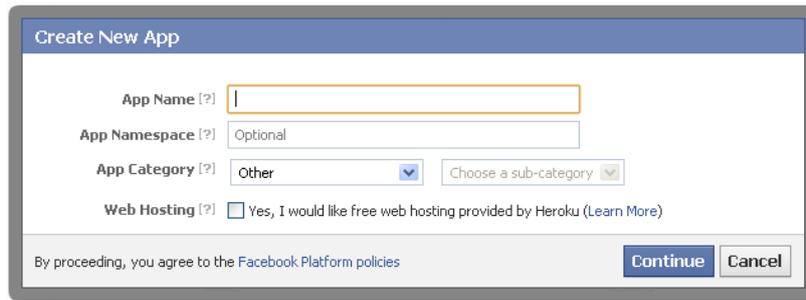


Figure 4: Creating a new Facebook app

We have already done the procedure above and we created the application called INTERSOCIAL, which indicates the Facebook Part of the INTERSOCIAL Monitoring Tool (Figure 5).

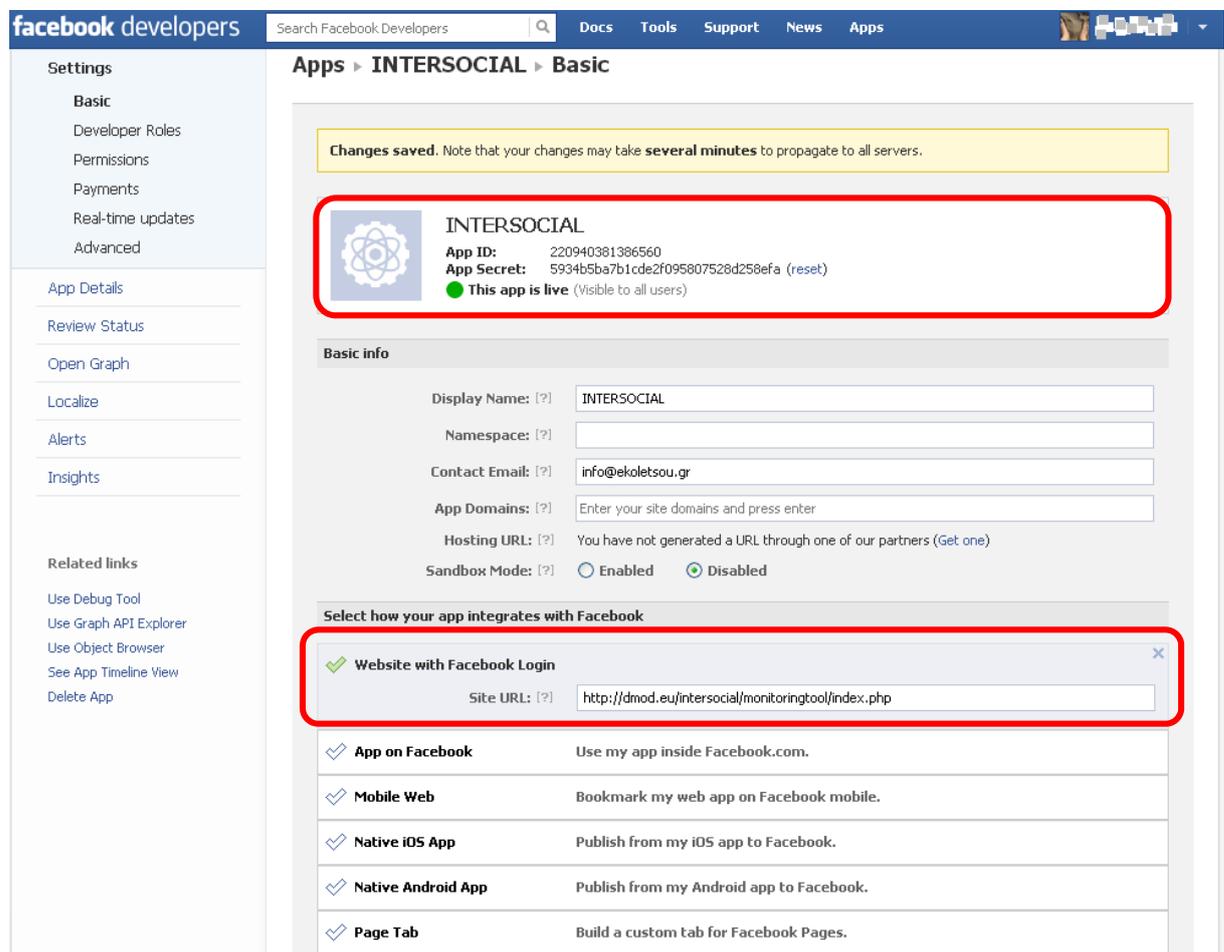


Figure 5: The INTERSOCIAL Facebook app

The Facebook Part of the INTERSOCIAL Monitoring Tool is based on the Facebook Platform. The Facebook Platform is a set of APIs that make an application more social. By using Facebook Login to sign in users with their real identities, calling the Graph API and using Open Graph to retrieve posts based on user’s keyword search. The

INTERSOCIAL Monitoring Tool uses the open source Facebook PHP SDK that allows the access on Facebook Platform.

The Facebook SDK for PHP provides a rich set of server-side functionality for accessing Facebook's server-side API calls. These include all of the features of the Graph API and FQL. The SDK is used to perform operations as an app administrator, and also to perform operations on behalf of the current session user. By removing the need to manage access tokens manually, the SDK greatly simplifies the process of authentication and authorizing users for an app (Figure 6). So, it supports authentication for INTERSOCIAL Monitoring Tool using the users' Facebook account. On the server-side, the SDK provides helper-methods to authentication, requesting permissions, and logout. This functionality is provided by the `Facebook::getUser()`, `Facebook::getLoginUrl()` and `Facebook::getLogoutUrl()` methods.

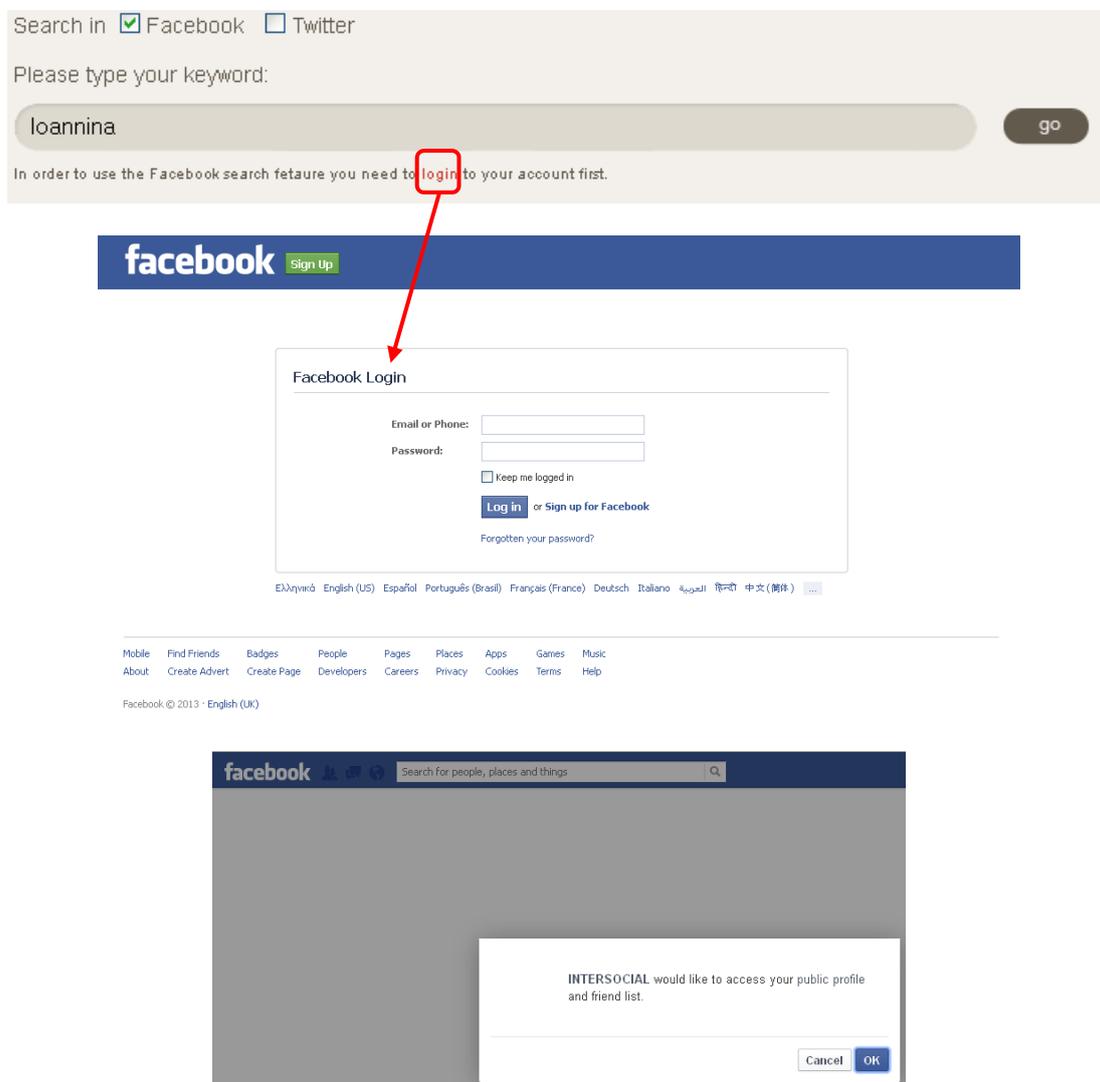


Figure 5: Process of authentication and authorizing users for INTERSOCIAL Monitoring Tool app

When someone connects with an application using Facebook Login, the application will be able to obtain an access token which provides temporary, secure access to Facebook APIs.

An access token is a random string that identifies a User, App or Page session and provides information about granted permissions. Access tokens are obtained via a number of methods, each of which are covered later in this document. The token also includes information about when the token will expire and which app generated the token. Because of privacy checks, the majority of API calls on Facebook need to include an access token. The type of access token that INTERSOCIAL Monitoring Tool app uses are App Access Token and Users Access Token (Figure 7). This kind of access token is needed to modify and read the app settings. It is a pre-agreed secret between the app and Facebook that the app passes in with the API calls to prove its authenticity. User Access Token is needed anytime the app calls an API to read, modify or write a specific person's Facebook data (their profile, photos etc.). This can be thought of as a limited and time bound permission that someone grants the app. In essence it is a temporary password that the app can use on behalf of the person. User access tokens are generally obtained via a login dialog and require a person to permit your app to obtain one.

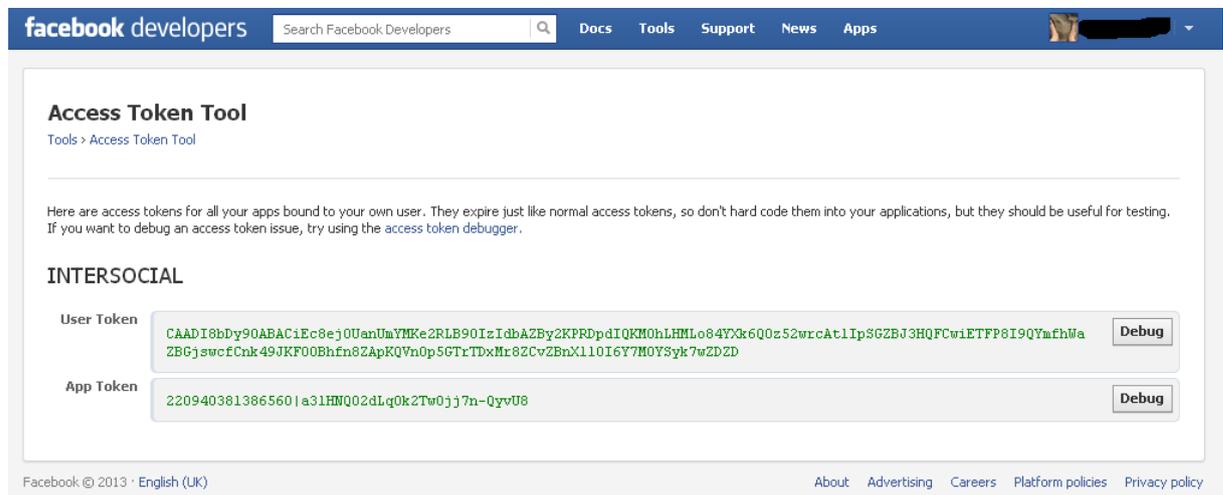


Figure 7: Getting client credentials

Development: Twitter Part

The Twitter platform offers access to its corpus of data, via its APIs. Each API represents a facet of Twitter, and allows developers to build upon and extend their applications in new and creative ways. It is important to note that the Twitter APIs are constantly evolving, and developing on the Twitter Platform is not a one-off event. To create Twitter Part for the INTERSOCIAL Monitoring Tool we also used open code libraries TwitterOAuth and tmhOAuth, as we mentioned before.

To use both libraries above with the Twitter API is needed TwitterOAuth.php, OAuth.php and client credentials. We request and get temporary client credentials from Twitter by registering our application at dev.twitter.com/apps (Figure 8). After we have temporary credentials, we send the user an authorized URL for Twitter of the form: https://api.twitter.com/oauth/authenticate?oauth_token=XXX

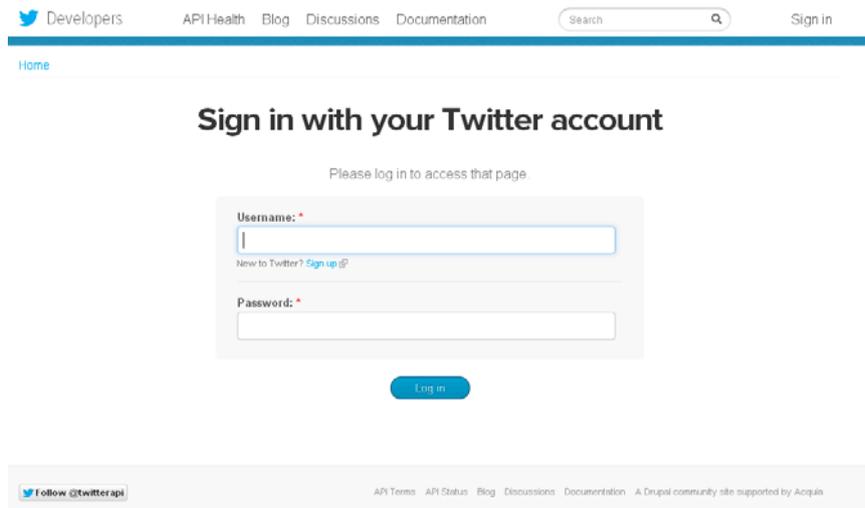


Figure 8: Getting client credentials

The Twitter Part of the INTERSOCIAL Monitoring Tool does not demand the Twitter login of its users. By pressing search button user authorizes automatically access and returns from Twitter. Then, libraries rebuild objects with client credentials and temporary credentials, and get token credentials from Twitter. These are specific to the application and user will act like password to make future requests. With client credentials and token credentials objects are rebuilt and finally user can make requests authenticated as the user. We use the GET API method to present the retrieved results on the screen.

How to Use

INTERSOCIAL Monitoring Tool is a Facebook and Twitter specific search engine, built upon Facebook's and Twitter's publicly available APIs, which are enabled to search for specific keywords/texts on the Timelines of Facebook and Twitter subscribers which they had denoted as being "Public" (Figure 9).

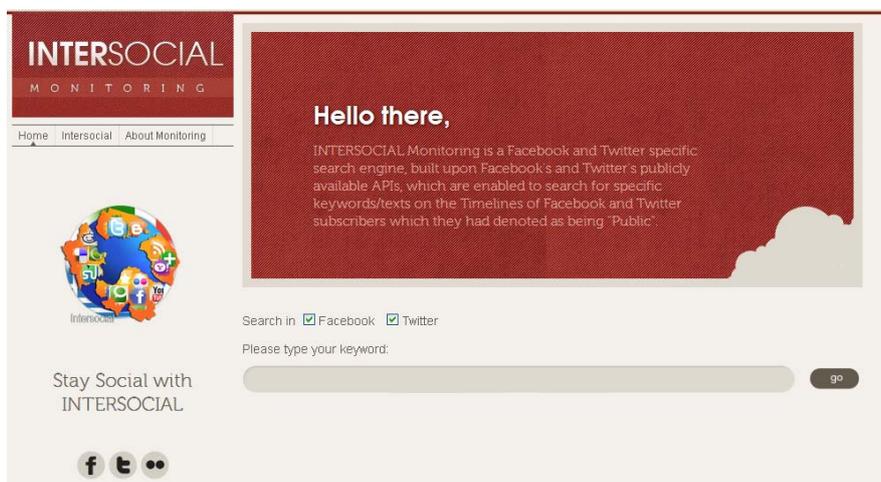


Figure 9: INTERSOCIAL Monitoring Tool

User can select to search and retrieve public posts from Facebook, Twitter or both. In the example below (Figure 10), user tries to find public Twitter posts (1) by using the keyword “Ioannina” (2). Using pagination that permits the appearance of 10 results in each page (3), the INTERSOCIAL Monitoring Tool retrieves the recent 50 (maximum) Twitter results (4-5). Users can also click on user’s profile link of each result in order to go over on their Twitter profile.

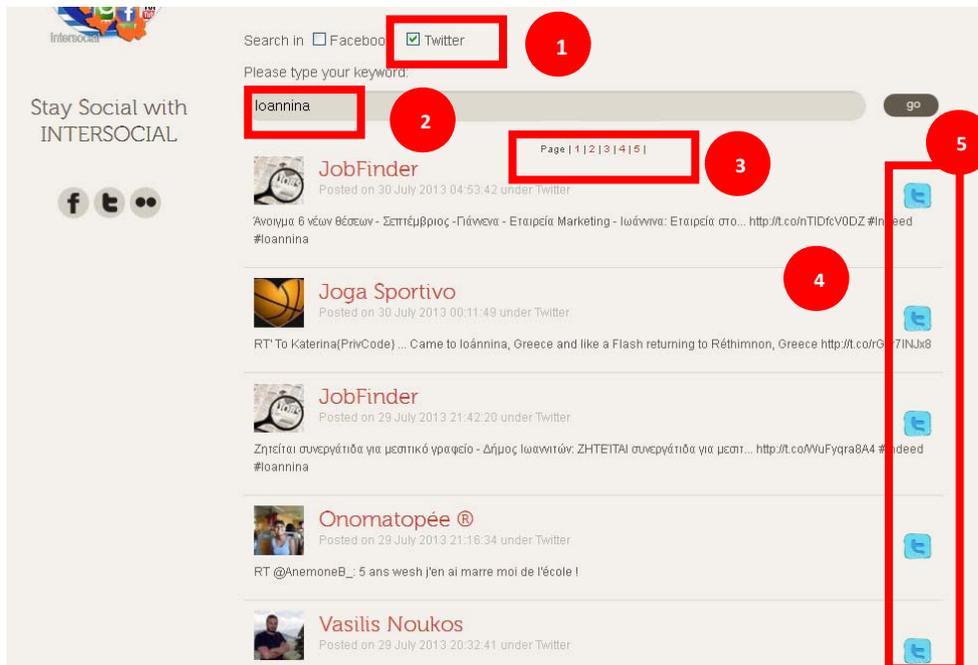


Figure 10: Post results from Twitter on INTERSOCIAL Monitoring Tool

Similarly, Figure 11 demonstrates the recent 50 (maximum) results from Facebook and respectively the recent 50 (maximum) results from Twitter, and Figure 12 demonstrates the recent 50 (maximum) results from Facebook only.

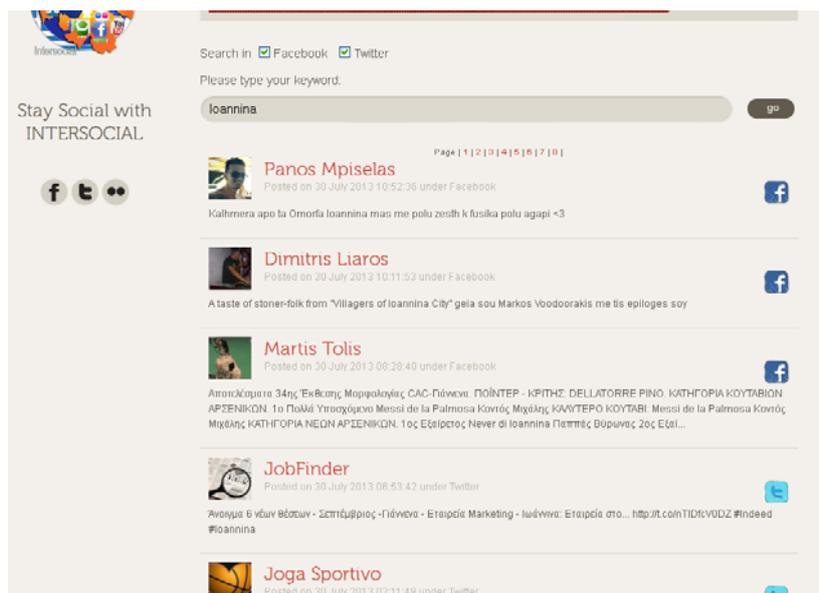


Figure 11: Post results from both Facebook and Twitter on INTERSOCIAL Monitoring Tool

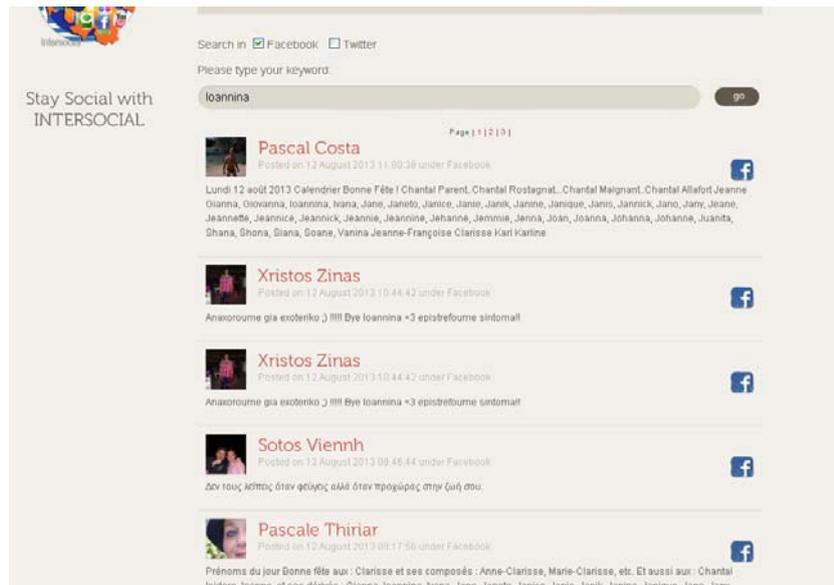


Figure 12: Post results from Facebook on INTERSOCIAL Monitoring Tool

Evaluation

INTERSOCIAL Monitoring tool was introduced to four SMEs with diverse profiles and SM needs, but all of them established at the area of Ioannina, Epirus, in Greece. These SMEs are: Berris S.A., an industry of bakery and related goods, Lakmos Plast S.A., a plastics industry, Archontiko Boyarou, an agricultural enterprise, and Gkoutas, a traditional silversmith shop. INTERSOCIAL Monitoring tool was used for a period of four months. During this period, INTERSOCIAL Monitoring tool’s usability and usefulness was evaluated through semi-structured interviews.

Some selected results are:

“It’s really an interesting tool for my business.”

“Easy to learn it, easy to use it, I access it almost every day.”

“I would like a mobile app also for this tool.”

“It helped me understand better my customers by reading their comments about my company and my products.”

Conclusion

We presented the architecture and the main features of INTERSOCIAL Monitoring tool. Functionalities and how it can be used from SMEs described using example case studies. Main purpose of INTERSOCIAL Monitoring tool is to help SMEs find information within the huge amount of social media data. This functionality can be used

for understanding what users are saying about a specific subject, which is particularly important especially for an SME.

References

[1] <https://github.com/facebook/facebook-php-sdk>

[2] <https://github.com/abraham/twitteroauth>

[3] <https://github.com/themattharris/tmhOAuth>

[4] <https://dev.twitter.com/apps>