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INTERSOCIAL: Unleashing the Power of Social Networks for Regional SMEs

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Tools for enhancing SMEs social presence

Deliverable D3.4.4 Action 3.4

Workpackage WP3: Development of Innovation Devices

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Purpose: Implementation of tools for enhancing SMEs social presence.

Results: We describe the architecture, implementation and the features of the SONETA tool. Additionally we report results from the evaluation performed from 3 SMEs with diverse profiles.

Conclusion: Results from evaluation shows that SONETA geolocation and search based on keywords functionalities are conceptually useful and valuable for identifying important information.

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Table of Contents

Introduction.....	4
Architecture.....	5
Development.....	6
Representative Usage Scenario.....	7
Account creation for using the SONETA tool	8
Creation of a new Stream.....	9
Managing Streams (Dashboard).....	9
View Settings	10
Analysis of results	10
Evaluation.....	14
Conclusion	15
References.....	15

Introduction

Social media provide a way for people to interact with each other. People can talk through social media about any aspect of their life, including their experiences about products and companies. This offers a great opportunity to businesses for understanding how users respond to business decisions e.g. a new product development. But users are also generating a huge amount of data. This has created a new need for software tools that can act as a filter for companies in order to help them find valuable information.

We propose the use of a tool entitled SOcial NETwork Analytics tool (SONETA), for enhancing SMEs social presence by permitting SMEs through an intuitive user interface to define sets of keywords in specific geographic areas and thus generate related twitter streams of what social network users are talking about. Tweets from this stream are stored, processed and analyzed and the most important terms used are presented in the form of wordclouds, treemaps and bubbleclouds for specified time periods

In the following Sections we describe the architecture, implementation and development of the SONETA tool. Main features of SONETA and how it can be used to support SMEs enhancing their social presence are also described in the form of example use cases. Finally, results from the evaluation report are also presented.

Architecture

SONETA architecture (figure1) consists of 4 layers the communication, the storage, the processing and the presentation layer.

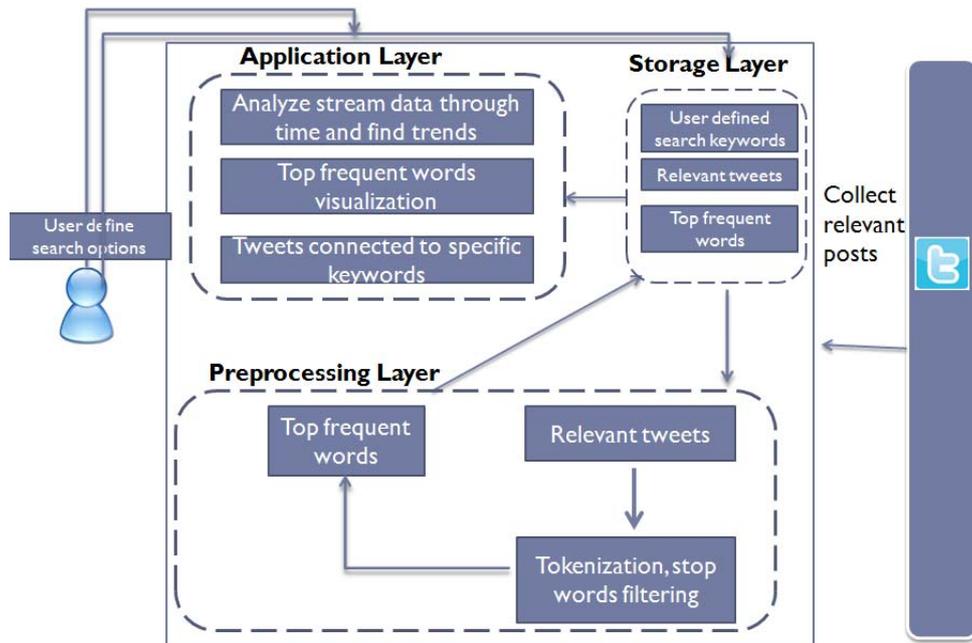


Figure 1: SONETA architecture

Communication Layer: SONETA tool communicates with Twitter Search API 1.1 for retrieving tweets related to user defined keywords. For communicating with the Twitter Search API 1.1 we used a PHP library [1] as a client for accessing Twitter resources. SONETA asks for tweets containing specific keywords posted from a specific location.

Storage Layer: Results from the communication layer are stored in the storage layer. Storage layer consists of two main components a MySQL Database and a data directory. In MySQL database are stored the user defined keywords, the results from the Twitter stream and the user credentials. Database has been designed in such a way that new components and services can be added later. In the data directory are also stored the results from the preprocessing layer.

Preprocessing Layer: Stored tweets are the input of the preprocessing layer. The preprocessing layer implemented in PYTHON with the help of NLTK package. For each tweet we remove the links since they don't provide any new information to our system, we tokenize it and we also remove the most common words appeared in different languages. Finally having removed the unnecessary data we track the most frequent words and store them in a JSON format in the data directory component of the Storage layer.

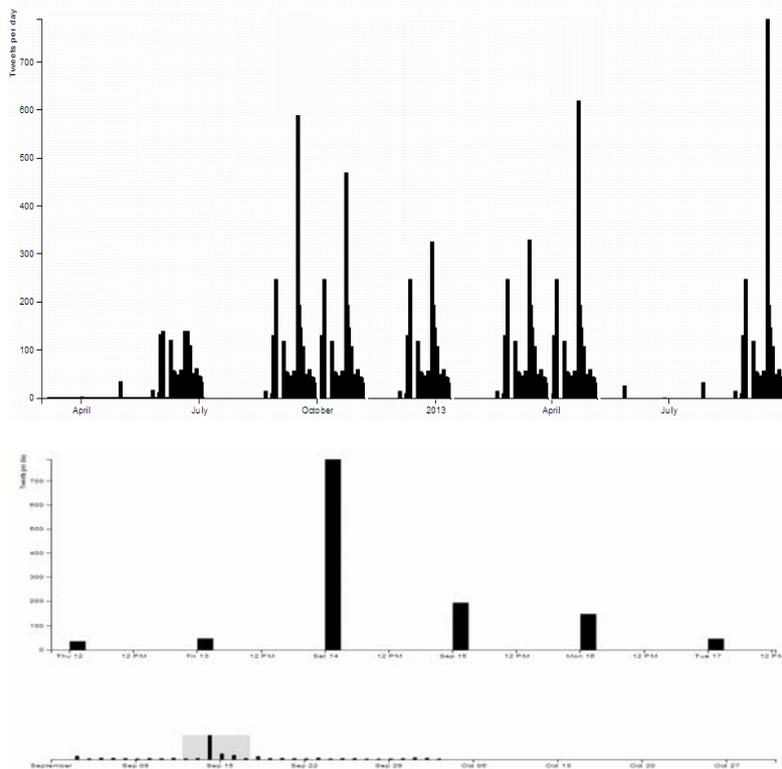


Figure 3: Representative screenshots of the development phase (comparing the initial and the final version of the graph)

At the figure2 we can see the wordcloud representation at its initial phase, where the color and the font size were selected randomly with no special meaning attached to it. Finally we ended up using the font size and a monochromatic color combination to denote the importance of each top frequent word. For representing the total amount of tweets per day at the initial phase of the development we used one graph. But as can be seen from the figure 3 selecting a long period of time the user was not able to see day by day reports easily. This is why we chose to use 2 graphs, one that represents the whole picture of the user selected period and another one for zooming and showing a user selected period from the first graph in detail.

Representative Usage Scenario

OffersGreece247 is a Greek startup company which is active in the region of Thessaloniki. OffersGreece247 uses a Deal-of-the-day business model, offers discounted products or services for sale for a specific period of time usually on daily basis. Additionally the target group of the company is located in the region of Thessaloniki since the products and services offered are from companies located in the same region. OffersGreece247 is seeking for new potential customers that have two main characteristics: are interested in product offers and live in the region of Thessaloniki. Potential customers will be notified for new offers via email or social networks.

The company has performed a thorough market analysis of available tools that can be of value to enhance its social media presence and came across the tools that have been developed within the **INTERSOCIAL** project. Particularly, the **SONETA tool** seems to meet the major requirement which is the geographical and time framed analysis of social media networks.

The head of social media of the company decides to try out the SONETA tool. The SONETA tool seems to meet the main requirements of delivering an accurate **timely and geographically framed** social network analysis which is **based user defined keyword(s) search**.

Account creation for using the SONETA tool

The account creation of the SONETA tool is a quick task. A potential user has to provide some basic information to the system by filling out the below form.

The form is titled 'Account creation' and contains the following fields and buttons:

- first Name:
- last name:
- email:
- Username:
- password:
- confirm password:
- Submit button

Figure 4: Account creation

After registering to the SONETA, the user can log-in to the system by entering the username and password from the previous process (figure 5).

The login interface features a dark navigation bar with the following elements:

- AxaiaNews
- password input field (masked with dots)
- log in button (being clicked)
- Sign Up button

Figure 5: Login to SONETA

Creation of a new Stream

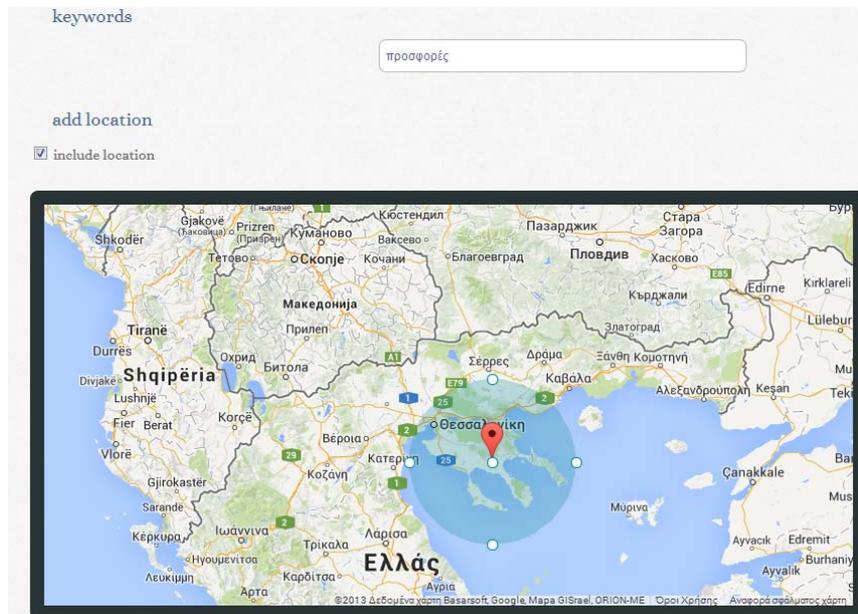


Figure 6: Creation of a new stream

This is the most important step in the supported workflow. The user selects the geographical region as the first unit of analysis. This is done in a user friendly way through direct manipulation. Furthermore, the user can define the keywords which are particular bind for this service. Specifying only a geographic region without entering a keyword the user can retrieve results about what users talk about in this specific region. By entering a keyword and a geographic location the user retrieves results about what users discussing about the specified keyword in this specific region.

Managing Streams (Dashboard)

The settings and the results of the previously created stream can be seen by accessing the dashboard option (figure7).

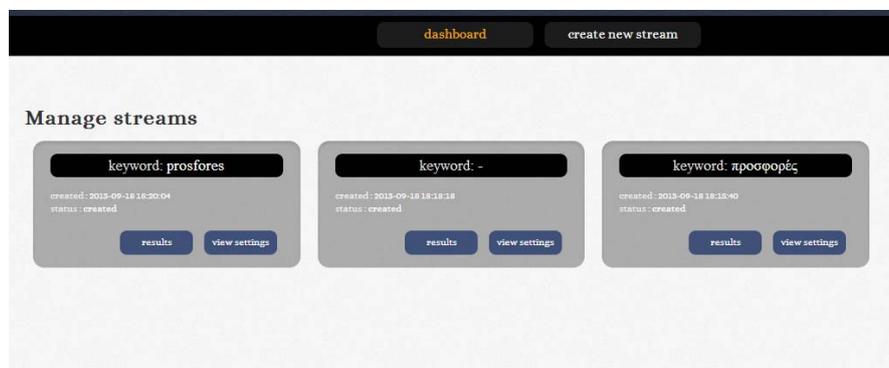


Figure 7: Managing streams

View Settings

For the reviewing the options of the stream the SME can click on the view settings button. The option of deleting the stream is also available here in case the data and the analysis are not used anymore.

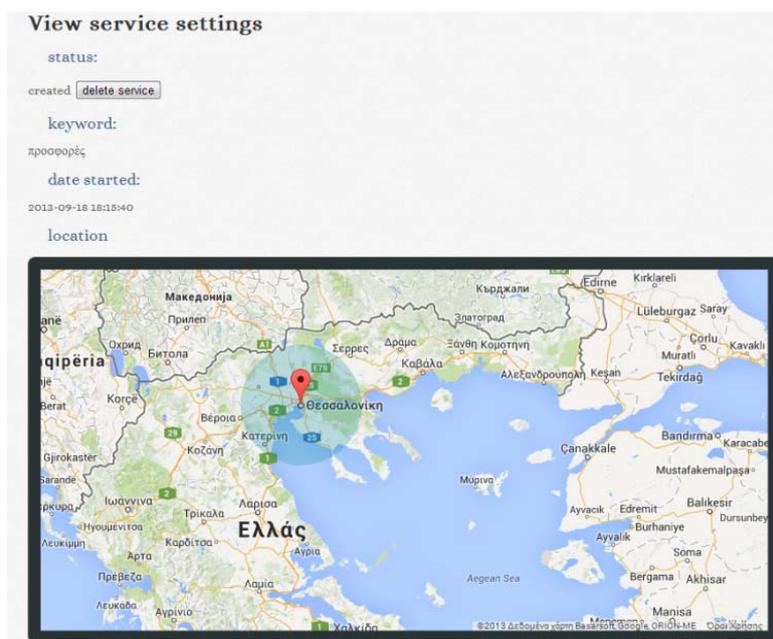


Figure 8: View stream settings

Analysis of results

Using the results option the user is able to see results from the stream he defined. Through this option the user can overview the total amounts of tweets per day, see the most frequent words contained in the tweets and also examine the actual tweets that contain one of the most frequent words.

SONETA presents first the total amounts of tweets per day for the most recent month (figure 9).

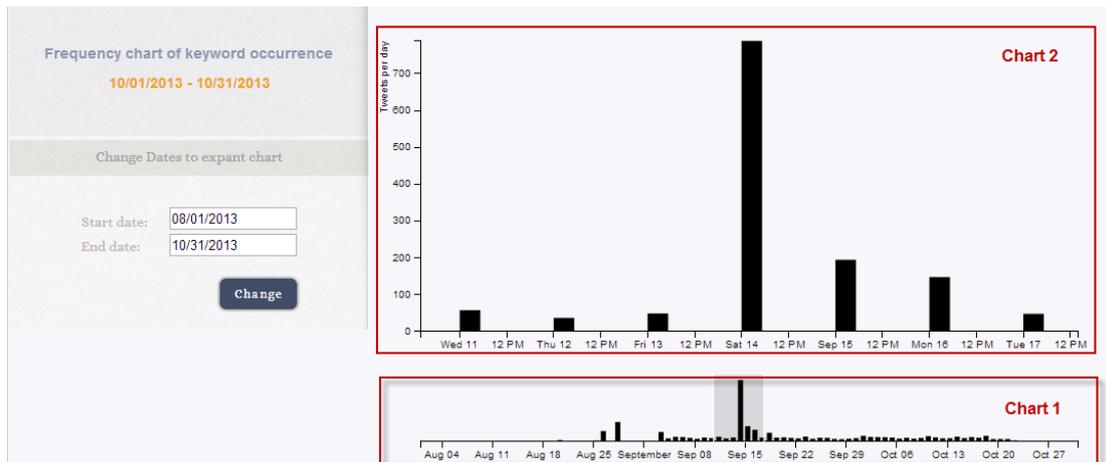


Figure 9: Total amounts of tweets per day

This gives the opportunity to the user for a quick quantitative analysis. Comparing the amount of tweets per day the user is able to analyse the results and find important and bursting discussions about the specific subject he is interested in. Results are presented with two graphs. The first one (chart1) shows the number of tweets per day for the whole time user-selected period and the second one (chart2) shows results for a selected period of the chart1. This gives the opportunity to the user to have day by day reports. Additionally the user is able to select a different time period (figure 10) for comparing and seeing the results.



Figure 10: Time Selection

For each selected day the user can see the top frequent words appearing in the tweets. Top frequent words are analysed in the form of 3 visual representations (wordcloud, boubleclouds, treemaps). The default representation is the wordcloud since it has been used successfully for a preliminary data analysis.



Figure 11: Wordcloud representation of a user-specified tracking service of social media traffic.

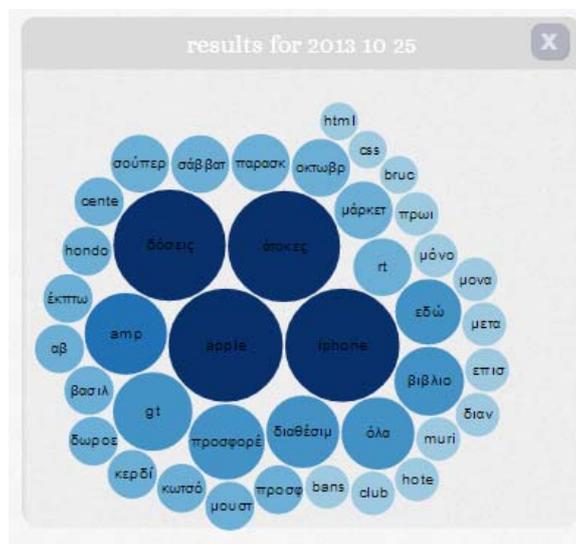


Figure 12: Bubblecloud representation of a user-specified tracking service of social media traffic.



Figure 13: Treemap representation of a user-specified tracking service of social media traffic.

Examining the most frequent words the user can see what social media users mostly talk about in the specific region (previously selected in the stream creation process) for the selected day. Finding important keywords he is able to see all the filtered tweets that contain this keyword.



Figure 14: The actual social media data connected to a specific keyword

The above described functionality can be used from SMEs with diverse profiles to enhance their social presence by using it appropriately. In the above described scenario OffersGreece247 uses SONE’TA for finding potential customers by defining a new stream in the specific area it is active with the keyword “offers”. Then it can have a quick quantitative overview about the total amount of tweets that contain the specified keyword in a specified period. Deciding which days are important or interesting OffersGreece247 can have an overview of what Twitter users are saying about the keyword “offers” (using the top frequent words representation) in Thessaloniki. Finally for each frequent word the actual tweets are available providing the opportunity to find

the new potential customers. Following these social media users and taking part in user conversations OffersGreece247 will have a chance to increase their followers and post content related to their site. As another example let's take the company AchaiaNews that provides accurate and timely news about the region of Achaia. AchaiaNews can use SONETA for finding bursting discussions and news about the local area it is interested in. Finally such, functionality allow an SME to investigate whether there has been a reflection of local marketing initiatives on the social media networks. For example businesses can monitor how users respond to specific businesses decisions (e.g. a new campaign or a new advertisement about a product or service).

Evaluation

SONETA was introduced to three SMEs with diverse profiles and SM needs - an online meta-retailer of shopping deals, a software development company, and a research and development lab – and it was used for a period of one month. During this period, SONETA's usability and usefulness was evaluated through semi-structured interviews.

Some selected results are:

(+) “It helped me increase my followers on Twitter by looking for trending conversations in specific regions as well as in Greece in general. Taking part in these conversations gave me the chance to have 115 additional followers in a matter of a week.”

(+) “Tag cloud is nice because it is a kind of data filter”

(+) “Getting to explore it made me start a new process of finding trends related to our SME's activities.”

(+) “I was able to identify trends that were associated with software quality and gave me ideas for searching the web for related content to post.”

(-) “Not very intuitive”

(-) “Needs better usability”

Results from evaluation showed that SONETA geolocation and visual representations of top frequent words are conceptually useful and valuable for identifying important information. However some users had problems in finding appropriate usages of SONETA in their first time usage. Additionally some usability errors were identified. Most of the usability errors found were addressed and also we plan to add use case examples in SONETA for the first time users. The design, the method and detailed results of the study can be found at D 4.4.3

Conclusion

We presented the architecture and the main features of SONETA. Functionalities and how it can be used from SMEs described using example case studies. Main purpose of SONETA is to help SMEs find information within the huge amount of social media data. Those functionalities can be used for understanding what users are saying about a specific subject or what users are talking in a specific region. Those functionalities are particularly important for an SME since usually they are targeting the region in which they are active.

References

- [1] <https://github.com/abraham/twitteroauth>
- [2] <http://d3js.org/>
- [3] McNaught, C., & Lam, P. 2010. Using Wordle as a Supplementary Research Tool. *The Qualitative Report*, 15(3), 630-643