DELIVERABLE REPORT

D8.1.2

"Social Network Analysis"

collaborative project

MASELTOV

Mobile Assistance for Social Inclusion and Empowerment of Immigrants with Persuasive Learning Technologies and Social Network Services

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1. EXECUTIVE SUMMARY

The objectives of Task 8.1 applications are to elevate the individual as part of a community and to improve the user experience, making participation in social networks and access to information more satisfactory.

These purposes are reached mainly via a Social Application accessible on Android smartphones. The effectiveness of the community interactions are measured by a Social Network Analysis web application. Community people's mood and opinions about specified arguments can be analysed using a Sentiment Analysis engine. The "Local Community Building Services" envisioned in the task name are comprised of all these applications.

This deliverable (D8.1.2) represents the final status after an iteration on D8.1.1 and hence depicts the final definition of tools, functionalities and implementations related to the MASELTOV social network.

2. LOCAL COMMUNITY BUILDING SERVICES

The Social Application consists of a specifically purposed Forum[1].

It is composed of a client component, designed and developed within this task, that runs on Android device and a server component, based on a phpBB3 (version 3 of phpBB[2]) engine, a free and open source forum software.

A web interface to the Forum is provided by phpBB3 platform. This interface can be used by any users in read-only mode and by administrators with administrative permissions.

The Social Network Analysis is a web application that has been fully designed and developed within Task 8.1.

The Sentiment Analysis application is based on a prototypical platform, developed by TI before the project, which has been customized and connected to MASELTOV Forum within the T8.1 task.

The Local Community Building Services described in this document cover the following modules:

- MASELTOV Forum (Android App, Server Side and web Client): see Sections 3 and 4
- Social Network Analysis (Client and Server side): see Section 5
- Sentiment Analysis (Client and Server side): see Section 6

[1] See http://en.wikipedia.org/wiki/Internet_forum An Internet forum, or message board, is an online discussion site where people can hold conversations in the form of posted messages

[2] See https://www.phpbb.com/ and http://en.wikipedia.org/wiki/PhpBB

phpBB is an Internet forum package written in the PHP scripting language. phpBB is free and open source software and as it is available under the GNU General Public License, one may make changes to the code without first having to obtain permission from the phpBB Group

All these modules have been implemented using a combination of open source and custom made modules.

Figure 1 depicts the overall architecture of the achieved solution, whilst the Table below describes each module.

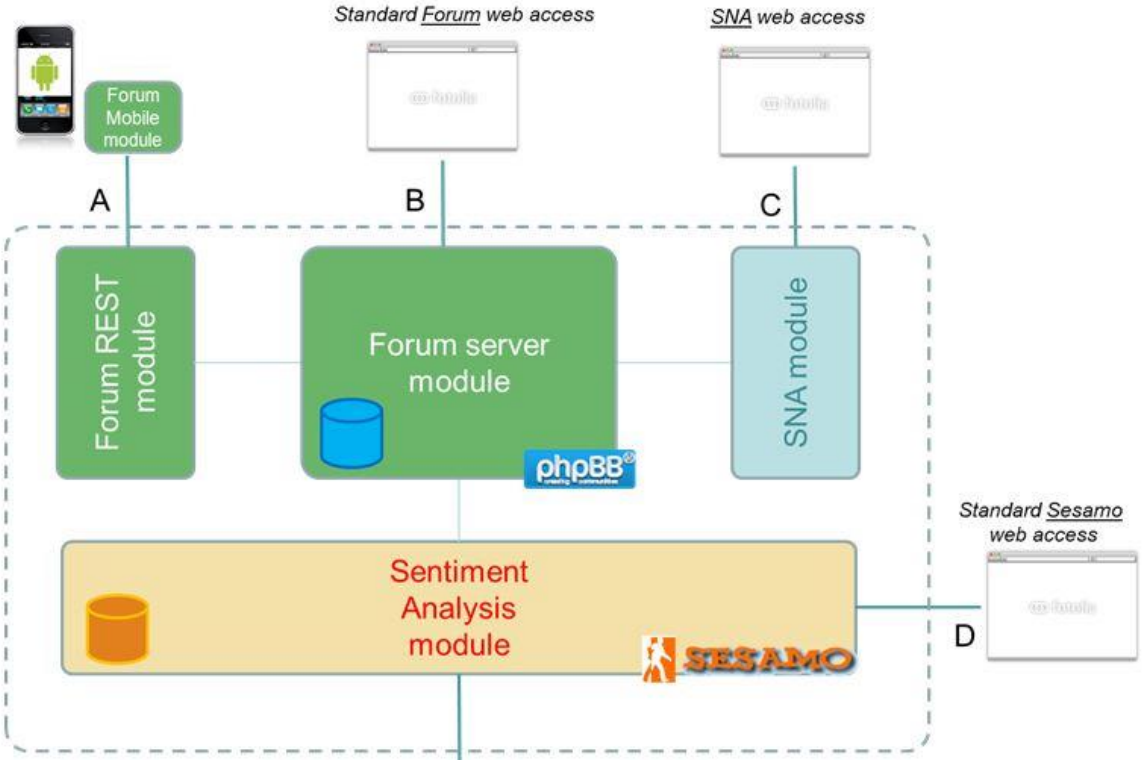


Figure 1 – Local Community Building Services

Table 1 – Local Community Building Services: modules table

Component	Description
Forum Server module	The core of the application. It is based on a phpBB3 platform customization, with custom add-ons
Forum REST module	This module provides interfaces between Forum server and Forum Mobile module. It is based on a Forum Runner server side customization
Forum Mobile module	The Android client running on mobile phone, giving community services access
SNA module	The Social Network Analysis module provides network analysis indicators calculus and reporting functionalities
Sentiment Analysis module	Based on a customization of SESAMO (a prototypical platform of TI), it crawls MASELTOV Forum content in order to extract sentiment information

3. SOCIAL APP (FORUM)

3.1 INTRODUCTION

The main purpose of the MASELTOV Forum is to create an assistive network for immigrants who face everyday problems arising from cultural differences.

Using the Forum (reading posts, creating thread/post, replying to a post of a thread) MASELTOV users can share personal experiences, look for help, read MASELTOV community news, interact on specific subjects (like job requests, real estate information, bureaucratic difficulties, language learning and so on), exchange private messages and share useful information on Facebook and Twitter. A "like" system is also provided to promote the most successful thread and to encourage user to submit their experiences/information to the community.

The following functionalities are provided via mobile:

- Browse the Forum contents (topics/threads/posts)
- Read posts, create posts (replying to an existing post)
- Create threads
- Search on Forum content
- Express goodness of specific post ("like")
- Share a content on external social network (Facebook and Twitter)
- Send/receive private message to/from other Forum users
- Being notified about new private message
- Forum topics on Language learning can be reached easily from the Language Learning service
- Forum can be enriched by threads created automatically when a user shares the translation of a text detected by means of Text Lens module

3.1.1 USER PROFILING

As explained above, the Forum is a sub-application of the main MASELTOV application, so it is assumed that the user is already authenticated via the User Profile component.

Whenever the Forum is launched from the MApp main dashboard, the following user information is read from the User Profile :

- username (i.e. the nickname chosen by the user)
- email (i.e. the MASELTOV unique user identifier)

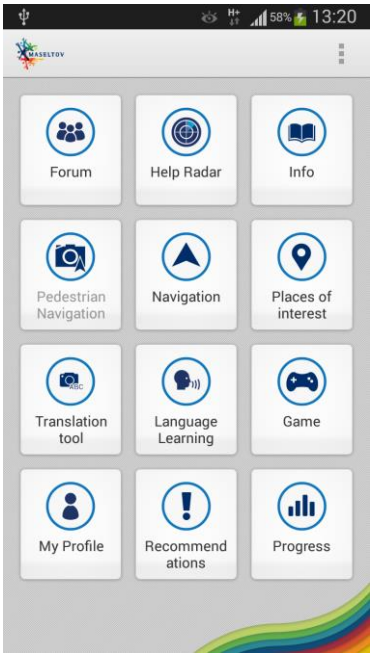
These information elements are saved on shared preference and sent to the phpBB server. If the user profile already exists in the Forum server module, all data are updated (if necessary) otherwise the new user's profile is inserted in in the FORUM server database. As a result of this procedure, the Forum server database is always aligned with the main MASELTOV profile data application.

3.2 MOBILE USER INTERFACE

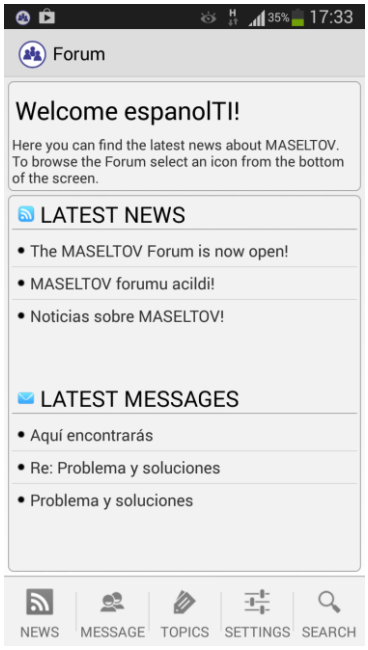
The Forum UI on mobile is available (professional translations) in Italian, English, Spanish, Turkish.

The Forum dashboard is reached starting from the general MASELTOV dashboard, which contains icons accessing all possible MASELTOV services, and tapping on the "Forum" icon.

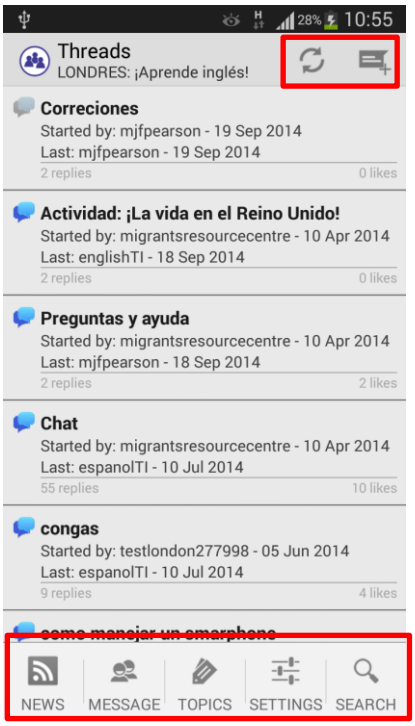
3.2.1 MASELTOV DASHBOARD

	The MASELTOV dashboard contains all other sub-applications that are different builds of APKLIB. The main dashboard contains some common configuration parameters and links to the individual applications.

3.2.2 FORUM DASHBOARD

	The main access to the Forum is through the Forum dashboard. Here, the user can find, following a welcome message, the latest news from the MASELTOV Forum and the latest private messages received. The user can tap on a single item in order to open the associated view (for example he/she can tap on the first news and the "*News*" view is automatically opened)

3.2.3 FORUM UI STRUCTURE

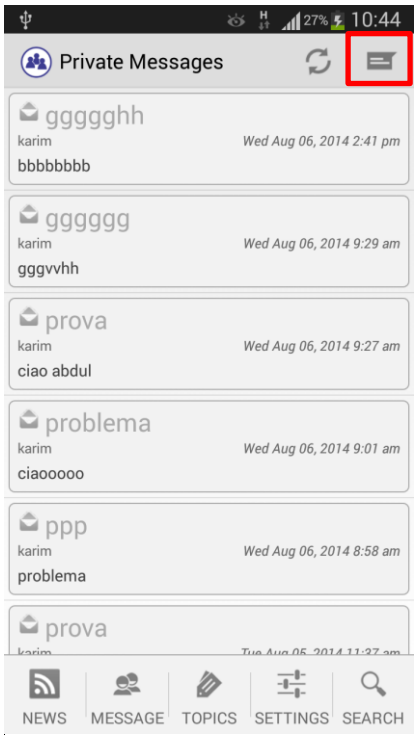


The Forum app UI is structured to be as user friendly as possible. At the bottom of the screen the main menu is visualized and allows users to access the main functionalities (see the following sections). At the top right corner, the actions that a user can perform (e.g refresh, reply) in the current view are visualized.

3.2.4 NEWS

"*News*" from the MASELTOV Forum is listed upon access to this page. These *News* posts are produced by the MASELTOV Forum administrator whose authorizations have been previously configured in the backend of the phpBB forum.

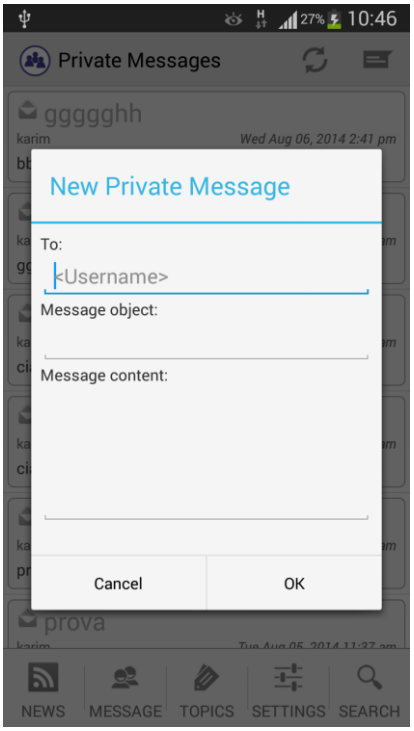
3.2.5 MESSAGE



Here, all messages received by the user are visualized in a list, together with the subject, a short preview and additional information such as date/time and the sender of the message.

By tapping on a list item the detail view of the message is provided (described in the next paragraph).

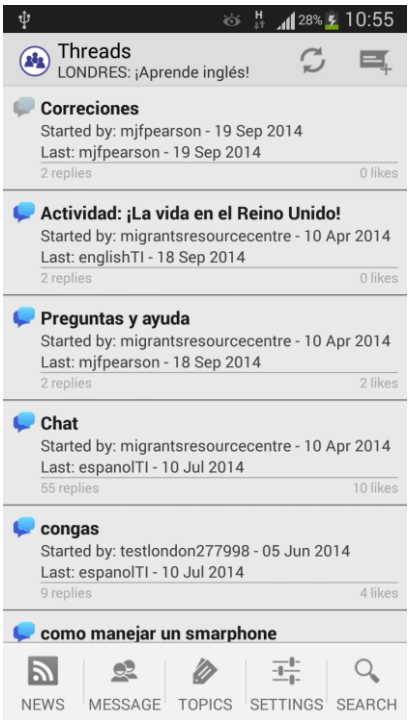
Two action are available: *refresh* the messages list and *send a new message*. By tapping on the button in the top right corner, a pop-up window appears where all fields required to send a new message are to be filled.



This is the popup that appears when the user tap on the button of the previous screenshot. There are three input boxes: the username, the object (title) and the content of the message (body).

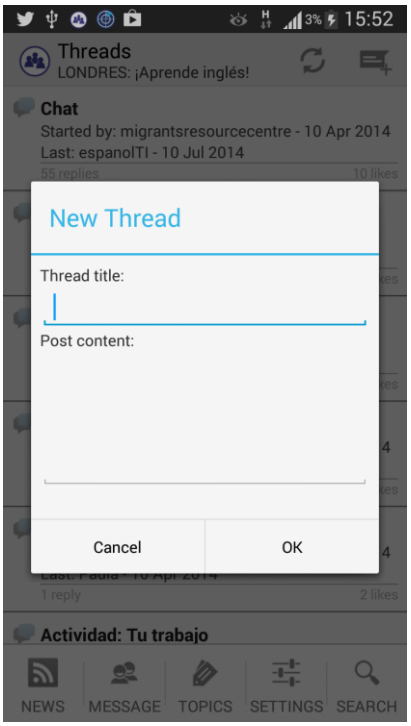
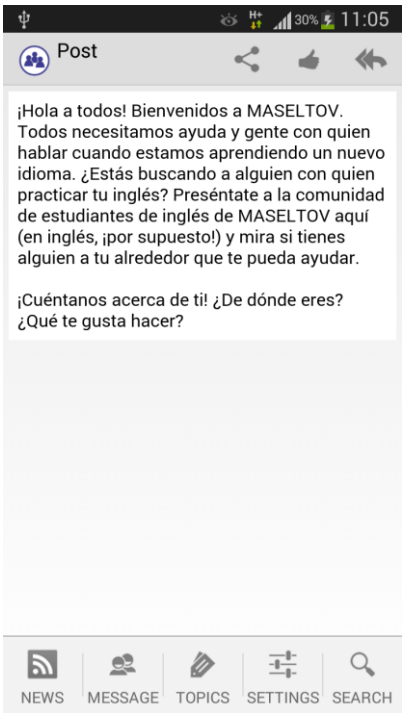
3.2.6 TOPICS, THREAD AND POSTS

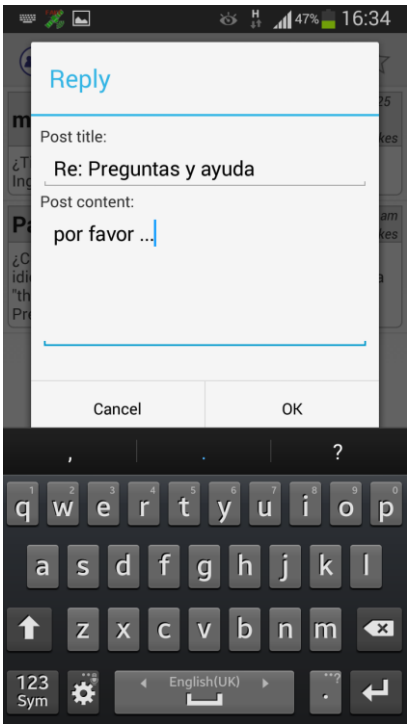
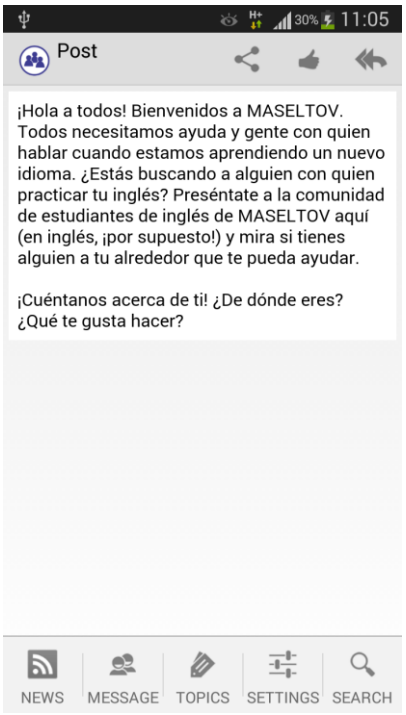
<table>
<tr>
<td> 
</td>
<td>The “Topics” view is the place where all users can start interacting with the community: a list of topics is shown. The topics must be pre-defined by the administrators of the MASELTOV Forum If the user taps on a topic item, he/she can see all the threads related to the selected topic. In the top/right corner there is the refresh button.

The Topics structure is managed by the MASELTOV Forum administrator whose authorizations have been previously configured in the backend of the phpBB forum.</td>
</tr>
<tr>
<td> 
</td>
<td>This screen is displayed when the user taps on a topic. Here all the threads related to that topic can be found.

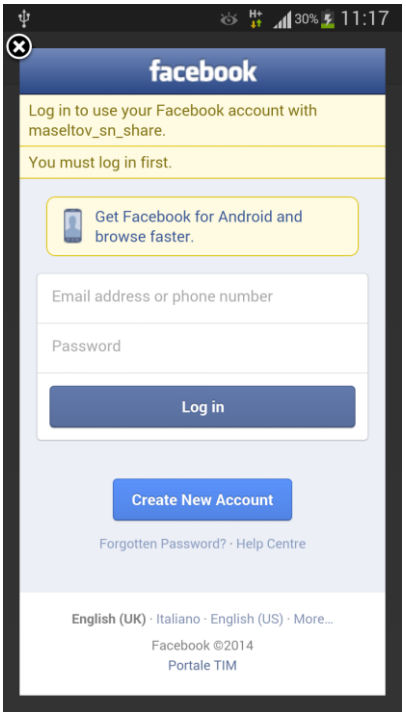
On the bottom of each thread there is the number of replies received per thread.

The user has the opportunity to refresh the list and to create a new thread (see buttons on the top/right corner).</td>
</tr>
</table>

	Creating a *New thread* with its *first post*.
	This is the detailed view of a post, where the user can read all the content. As usual, in the top-right corner there are all actions that are available for this view. In particular there are: the "*share*" button, used to share the content of the post on Facebook and/or Twitter, the "*like*" button, the "*quote*" button to create a reply post that quotes the current post.

	Creating a *reply post*
	This is the detailed view of a post with its content. As usual, in the top-right corner there are all actions that are available for this view. In particular there are: the "*share*" button, used to share the content of the post on Facebook and/or Twitter, the "*like*" button, the "*quote*" button to create a *reply post* that quotes the current post.

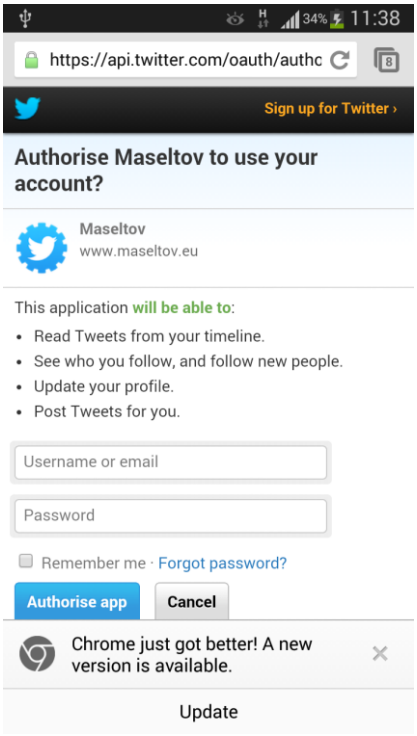
FACEBOOK



The first time that the user tries to share content on Facebook a pop-up is launched. In this window Facebook asks the user for their Facebook credentials in order to authorize the MASELTOV application to share content on the user's Facebook timeline. User Facebook credentials are read only by Facebook login interface and not stored in the MASELTOV platform.

No further authorization will be required whilst the user doesn't remove the MASELTOV application from the list of allowed applications in his Facebook web panel.

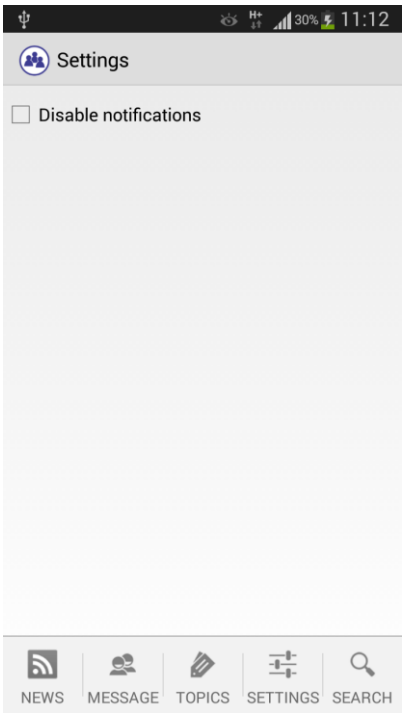
TWITTER



The first time the user tries to share content on Twitter, a web instance is launched. In this window Twitter asks the user the Twitter credentials to authorize MASELTOV application to share contents on the user Twitter timeline. User Twitter credentials are read only by Twitter login interface and not stored in MASELTOV.

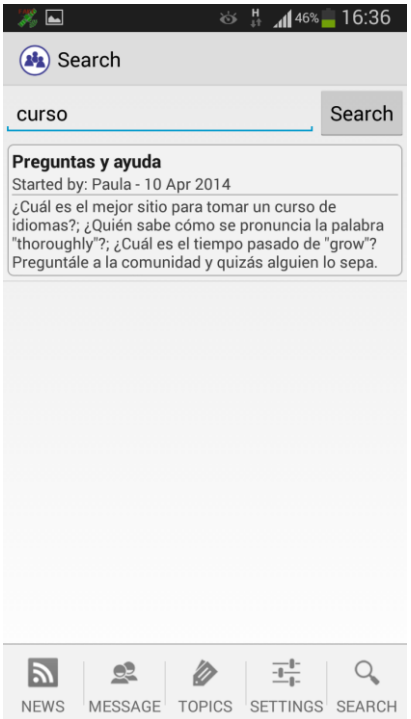
No further authorization will be required provided the user doesn't remove the MASELTOV application from the list of allowed application in his Twitter web panel.

3.2.7 SETTINGS



A "*Settings*" view to set parameters for the Forum application is also provided. At the present time there is only the possibility to enable/disable the notifications.

3.2.8 SEARCH FUNCTIONALITY



Here the user can search for posts in the entire MASELTOV Forum. the user has to insert the string to search (from 3 to 14 chars) and tap the *Search* button.

3.3 DEVELOPMENT DETAILS

Some details regarding the implementation of the Social App (Forum) are provided in the following paragraphs.

3.3.1 INTRODUCTION

The code is organized into 4 packages:

- com.tilab.social: This package contains the implementation of all the activities.
- com.tilab.connections: Here are some support classes, and some wrappers used to communicate with the server (explained in the next chapter).
- com.tilab.social.custom: Here some adapters used to display the Social App GUI
- com.tilab.util: This package contains the receiver used to start the services at boot time

In general all the application views are implemented as different activities. All the activities derive from a superclass, called MASELTOV activity that at creation time performs some common tasks.

In order to implement the lists of messages, threads, posts, and others the FragmentList class (as suggested by the Android operating system) is used. This class helps in handling the loading time (the time between the server call and the response), the actions on the single elements, and other low-level tasks. Every fragment list receives an adapter that contains all data to show, the view of the single item and some other utilities. The Android array adapter has been customized in a class, MASELTOV adapter, in order to pool the code between activities.

For the bottom menu a simple fragment including all activities has been used, so the code for this common widget is in one place.

3.3.2 PAGINATION

Pagination is a critical problem in this application because the various lists presented in the activities could be long and unintuitive for the user to navigate. To solve the problem, an "infinity scrolling" has been created, such that the user can scroll the list down and when the 80% of the size is reached, a new call to server is automatically made for the page and the retrieved items (the oldest for the current section) are appended to the list. In practical terms, the pagination is not visible to the user, who sees the list as it was previously downloaded from the server (a loader symbol could appear to represent the time between call and response).

3.3.3 CLIENT/SERVER COMMUNICATION

The communication between client and server is done via a REST interface. This REST interface is provided by a php module installed on the server called FORUM RUNNER that provides almost all the functionalities of the phpBB through REST interface. More information about FORUM RUNNER is in the next chapter.

Data exchanged between client and server are encoded in JSON format.

```
{
```

```
    "success": true,
    "data": {
      // …
    },
    "pm_notices": 0,
    "sub_notices": 0
}
```

Four fields are always present in the calls, and they are in particular:

- success: true/false if the request is correctly completed
- data: the data exchanged for the particular service
- pm_notices: number of notifications for the private messaging.
- sub_notice: number of notifications for the subscription.

In order to implement this communication a library, called android-async-http, is included in the client; it is needed to create every call in a new thread and to handle the JSON response.

The creation of a new thread is mandatory because Android does not permit performing network operations in the main thread. The library has been wrapped in a class, MaseltovClient.java that performs some common tasks before and after every calls (like connections check, or validate the returned data).

3.3.4 NOTIFICATIONS

Every time a user receives a private message, a notification is sent. This notification is reported in two ways:

- via "in app" notification: when the Social App is active (that is, some Social App activities are currently displayed) a notification appears in the main menu with a simple red circle over the "MESSAGE" icon, with a white number inside that represents the number of unread messages.
- via "Android" notification: when the Social App is not running, a small MASELTOV icon appears in the notification bar. If the user swipes down he/she can see a simple message with the number and the type of notification. By tapping on that item he/she is redirected to the correct view of the application.

In order to check for new notifications in the main activity, an AlarmManager has been created so that every ten minutes a dummy call to the server is made just to retrieve the number of notifications. This is done by a receiver (not an activity) called SendNotification.java.

3.3.5 SENDING DATA TO USER PROFILE

Interaction between Social App and User Profile is not limited to getting data in the start-up and subscription process (see par. 3.2.1). In some other circumstances Social App sends data to User Profile. These data may be:

- events
- coins

3.3.5.1 SENDING EVENTS TO USER PROFILE

Social App sends an event to User Profile when:

- user create a new Post (SENDPOST event)
- user replies to a Post (SENDREPLY event)

SENDPOST event

Events parameters sent to UserProfile are described in the following table:

Parameter name	Description
Username	nickname of the user sending the Post

SENDREPLY event

Events parameters sent to UserProfile are described in the following table:

Parameter name	Description
Username	nickname of the user sending the Reply

3.3.5.2 SENDING COINS TO USER PROFILE

Whenever user sends a new Post or replies to a Post, Social App adds 5 coins to the user's "wallet".

3.3.6 ANDROID MANIFEST

Some useful information contained in the manifest file.

3.3.6.1 GENERAL

Name	Description
Package	com.tilab.social
versionCode	11
versionName	0.1.0
minSdkVersion	15
targetSdkVersion	16
theme	Theme.Holo.Light

3.3.6.2 PERMISSIONS

Name	Description
android.permission.INTERNET, android.permission.ACCESS_NETWORK_STATE	Allows Social App to check the network state and open network sockets in order to communicate with the server.
com.ait.userprofile.AITUserProfileProvider	Allow access to User Profile
android.permission.RECEIVE_BOOT_COMPLETED	Allow Social App to be wake up when the device boot is completed in order to start the services
android.permission.WAKE_LOCK	android.permission.WAKE_LOCK

3.3.6.3 ACTIVITIES

Name	Description
com.tilab.social.Dashboard	Main social app Activity. Implements the social app dashboard. It's activated from the MASELTOV app dashboard with "com.tilab.social" name
com.tilab.social.Messages	Show list of messages
com.tilab.social.MessageDetail	Show detail of a single message
com.tilab.social.News	Show the list of news

com.tilab.social.Topics	Show the list of topics
com.tilab.social.Threads	Show the list of threads
com.tilab.social.Posts	Show the lists of posts
com.tilab.social.PostDetail	Show the detail of a single post
com.tilab.social.SettingsActivity	Show settings
com.tilab.social.Search	Show the search view
com.tilab.social.NoConnection	Show a message when a connection can't be established (i.e. no connection available from Android)
com.tilab.social.CreatePost	Create a new Post
com.tilab.social.CreateExtPost	Create a new Post from external apps
com.tilab.social.NoAuthentication	Show a message when the user authentication failed
com.facebook.LoginActivity	Perform login to Facebook

3.3.6.4 RECEIVER

Name	Description
com.tilab.social.SendNotification	Called from alarmManager check if there are notifications to send.
com.tilab.social.util.BootReceiver	Called when the boot device is completed. It performs Social App services start-up

3.3.7 POM.XML

The following paragraphs describe information contained in social network pom.xml file

3.3.7.1 GENERAL

Name	Description
groupId	com.tilab
artifactId	Social

packaging	apklib
version	0.1.0-SNAPSHOT

3.3.7.2 REPOSITORIES

Name	Description
http://repo.maven.apache.org/maven2	Central maven repository
http://ooo-maven.googlecode.com/hg/repository	
`http://163.162.107.247:8080/nexus/content/repositories/maseltov-social-releases`	TI local repository
http://repo1.maven.org/maven2	Central maven repository
http://avianey.github.io/facebook-api-android-maven	Facebook maven repository
`http://maven.fluidtime.com/content/repositories/public-maseltov`	Fluidtime maven repository

3.3.7.3 DEPENDENCIES

Name	Description
com.google.android 4.1.1.4	Android library
com.google.android support-v4 r18	Android support library
com.loopj.android.http 1.4.2	Library used to handle rest interface
org.twitter4j-core.3.0.5	Twitter library (used for share)
com.facebook.android 3.5.2	Facebook library (used for share)

3.3.8 SHARED PREFERENCE

This following paragraph describes the Android shared preferences managed by the social network app. Some shared preferences are used to recognize user at application whilst others are used to keep track of the current topic/thread/post visualized.

Name	Description
uid	MASELTOV unique user identifier

username	Username of the user authenticated
useremail	Email of the user authenticated

3.3.9 INTERLINKS WITH OTHER COMPONENTS

The Social App allows any external Android applications (in particular MApp components) to read and send Posts in the social network.

There are two ways to do this:

- a generic way: it is designed to allow any external apps to create a new Post directly
- a specific way: it is designed to interact with a specific MApp component (Language Learning). This component needs to select a particular topic on a language basis.

GENERIC INTERACTION

This method is used by the MASELTOV Text Lens module.

To allow any external app to create a new Post, Social App has implemented a standard Android intent filter which is able to receive data from ACTION_SEND:

```
<intent-filter>
      <action android:name="android.intent.action.SEND" />
      <category android:name="android.intent.category.DEFAULT" />
      <data android:mimeType="text/plain" />
</intent-filter>
```

Any external apps can send a text to Social App calling the filter using a simple code like this:

```
Intent sendIntent = new Intent();
sendIntent.setAction(Intent.ACTION_SEND);
sendIntent.putExtra(Intent.EXTRA_TEXT, “my text”);
sendIntent.setType("text/plain");
startActivity(sendIntent);
```

The “new Post” Social App window is automatically opened inside the calling app, and the message body field is filled with the text. Then the user must select the destination e send the Post.

LANGUAGE LEARNING INTERACTION

When the Language learning component needs to read Posts in the Forum for learning purposes, it has to select a specific topic (related to the language of interest).

In this case, Social App will not create a new Post automatically, but will redirect the Language Learning user to the specific topic.

To interact with Forum, Language learning module will have to perform the call with a code like this:

```
Intent sendIntent = new Intent();
sendIntent.setAction(“com.tilab.SOCIALAPP”);
sendIntent.putExtra(“extApp”, “Language Learning”);
sendIntent.putExtra(“language”, “English”);
sendIntent.setType("text/plain");
startActivity(sendIntent);
```

4. PHPBB FORUM

4.1 INTRODUCTION

MASELTOV Forum has been implemented using phpBB3 (version 3 of phpBB) which is one of the most popular forums management systems, widely known for its ease of use and multi-language support (translated in 49 languages).

The description of the phpBB3 platform is contained in D8.1.1.

In the case of MASELTOV, the instance of phpBB3 accessible via the web has been limited to be read-only.

All web users are grouped as "anonymous" and can read all the topics.

Only the Administrator can access in “modify mode” the web interface in order to manage the Forum.

Some of functionalities offered by the phpBB platform to the Administrator are:

- Forum maintenance
- Forum/Users permissions management
- Topics creation/modification/deletion
- News creation/modification/deletion
- Moderator functionalities:
    - Change the content of a post
    - Change the author of a post
    - Delete a post
    - View post details
    - Lock thread
    - Merge thread
    - Move Thread
    - Split thread
    - Manage bans (preventing a user to reach any part of the Forum; the duration of the banning can be specified)
    - Issue warnings as private messages and email

4.2 DEVELOPMENT DETAILS

4.2.1 PHPBB3 SCHEMA

phpBB3 database schema for MASELTOV:

NAME	CONTENT
phpbb_acl_groups	Permission roles and/or individual permissions assigned to groups

phpbb_acl_options	List of possible permissions
phpbb_acl_roles	Permission roles (Standard Moderator, Simple Moderator etc.)
phpbb_acl_roles_data	Permissions each role contains
phpbb_acl_users	Permission roles and/or individual permissions assigned to users
phpbb_attachments	Information on attachments (Post, physical filename, original filename, MIME type...)
phpbb_banlist	Banned users/IPs/emails...
phpbb_bbcodes	Custom BBCodes
phpbb_bookmarks	Bookmarked topics
phpbb_bots	Spiders/Robots
phpbb_config	Configuration information ($config table)
phpbb_confirm	Contains session information for confirm pages ("are you sure you want to delete foo")
phpbb_disallow	Disallowed usernames
phpbb_drafts	Drafts of future posts/private messages
phpbb_extension_groups	Extensions Groups (associate extensions with a file type - Images, text...)
phpbb_extensions	Extensions (.xxx) allowed for attachments
phpbb_forumrunner_config	Configuration forum runner
phpbb_forumrunner_push_data	Data cache forum runner
phpbb_forumrunner_push_users	Users cache forum runner
phpbb_forums	Forums (Name, description, rules...)
phpbb_forums_access	Stores who is logged in to password protected forums
phpbb_forums_track	Unread post information is stored here
phpbb_forums_watch	Subscribed forums
phpbb_groups	Usergroups
phpbb_icons	Post icons
phpbb_lang	Installed languages

phpbb_log	Administration/Moderation/Error logs
phpbb_login_attempts	Tbd
phpbb_moderator_cache	Who is a moderator in which forum (for display on forum index)
phpbb_modules	Configuration of acp, mcp and ucp modules
phpbb_poll_options	Options text of all votes ("Yes", "No", "Maybe"...)
phpbb_poll_votes	Users which have voted on a poll
phpbb_posts	Topics posts
phpbb_privmsgs	Private messages text
phpbb_privmsgs_folder	Custom privates messages folders (for each user)
phpbb_privmsgs_rules	Messages rules, e.g. "if the username of the sender is ..., move the message to this folder".
phpbb_privmsgs_to	Information (sender, new, replied...) on private messages.
phpbb_profile_fields	Custom profile fields (name, min/max number of characters, allowed characters...)
phpbb_profile_fields_data	Data that users enter in custom profile fields
phpbb_profile_fields_lang	tbd (empty on my forum with some custom profile fields)
phpbb_profile_lang	Localized name and description of custom profile fields (presented to users)
phpbb_ranks	Ranks (Name, image, minimal # of posts)
phpbb_reports	Reported posts
phpbb_reports_reasons	Reasons for reported posts and disapprovals
phpbb_search_results	Last searches
phpbb_search_wordlist	Indexed words (for search)
phpbb_search_wordmatch	Associate a post with indexed words
phpbb_sessions	Sessions (to identify users browsing the forum)
phpbb_sessions_keys	Autologin feature
phpbb_sitelist	Secure Downloads of attachments - list of IPs and hostnames
phpbb_smilies	Smilies (text => image)

phpbb_styles	Style = template + theme + imageset
phpbb_styles_imageset	Imagesets
phpbb_styles_imageset_data	Tbd
phpbb_styles_template	Tbd
phpbb_styles_template_data	Tbd
phpbb_styles_theme	theme = css file
phpbb_thanks	Contains user that like post
phpbb_topics	Topics in forums
phpbb_topics_posted	Who posted to which topic (used for the small dots in viewforum)
phpbb_topics_track	Unread post information is stored here
phpbb_topics_watch	"notify me upon replies"
phpbb_user_group	Users groups
phpbb_users	Registered users
phpbb_warnings	Warnings given to users
phpbb_words	censored words
phpbb_zebra	Friends and foes

4.2.2 FORUM RUNNER

Forum Runner is a phpBB3 mode that allows users to browse a forum using a native Android/iPhone/iPad client. When a user selects this mode, he gains a faster access since it only downloads the actual forum information rather than all the extraneous images that slow down the mobile connection. Forum Runner is free for forum owners to install. Forum Runner inherits all the security built into phpBB3, so users running Forum Runner will only be able to see the same forums and threads as they could using a regular browser. Forum Runner uses a Representation State Transfer (REST) with client-server architectural style. A uniform interface separates clients from servers. This separation of concerns means that, for example, clients are not concerned with data storage, which remains internal to each server, so that the portability of client code is improved. Servers are not concerned with the user interface or user state, so that servers can be simpler and more scalable. Representational State Transfer is intended to evoke an image of how a well-designed Web application behaves: presented with a network of Web pages (a virtual state-machine), the user progresses through an application by selecting links (state transitions), resulting in the next page (representing the next state of the application) being transferred to the user and rendered for their use. REST was initially described in the context of HTTP, but it is not limited to that protocol. RESTful architectures

may be based on other Application Layer protocols if they already provide a rich and uniform vocabulary for applications based on the transfer of meaningful representational state. RESTful applications maximize the use of the existing, well-defined interface and other built-in capabilities provided by the chosen network protocol, and minimize the addition of new application-specific features on top of it.

COMMAND

The commands that forum runner uses with the request method GET of the HTTP protocol are the following:

SERVICE	PARAMETERS	DESCRIPTION
delete_pm	pm	Delete private message
delete_post	threaded, postid	Delete post
get_forum	forumid, page	Get forum with all topic
get_forum_news	threaded	Get topic only from news forum
get_pm	pmid	Get private message
get_thread	threadid, page	Get thread's post
login	username, password	Login
post_edit	postid, message, forumid, threaded	Edit exist post
post_like	postid, forumid, threadid	Do post like
post_message	subject, message, forumid, threaded	Post message
post_remove_like	postid, forumid, threadid	Do remove post like
post_reply	subject, message, forumid, threadid	Post reply
provisioning	uid, username, useremail….	Record new user by UID, if already exist check update field (username, mail..) and login
search	text, forumid	Search
send_pm	recipients, title, message	Send private message
subscribe_thread	threadid	Subscribe thread to notify user of new answer
unsubscribe_thread	threadid	Unsubscribe thread

RESULTS

The application returns the result as JSON document. The simplicity of JSON has decreed rapid use especially in AJAX programming. Its use via JavaScript is particularly simple, because the interpreter is able to perform the parsing through a simple call to the eval () function. This fact has made it very popular because of the fast spread of programming in JavaScript in the world of the Web.

Example get news:

http://<ip>/maseltov/phpbb3/www/forumrunner/request.php?cmd=get_forum_news&threadid=10

SERVICE	PARAMETERS
Get_forum_news	threaded=10

JSON XML


```
{
    "success": true,
    "data": {
        "posts": [
            {
                "post_id": "36",
                "thread_id": "10",
                "forum_id": "3",
                "forum_title": "Real estate forum",
                "username": "admin",
                "joindate": "Feb 6, 2007",
                "numposts": "7",
                "userid": "2",
                "title": "test news 2",
                "online": 0,
                "post_timestamp": "30 Jan 2013, 14:33",
                "fr_images": [
                    {
                        "img": "http:///phpbb/forumrunner/file.php?id=6"
                    }
                ],
                "text": "bla blaaaa<br/><img src=\"http:///phpbb/forumrunner/file.php?id=6\"/>",
                "quotable": "bla blaaaa",
                "post_like": "0",
                "user_like": "0"
            }
        ],
        "total_posts": 1,
        "page": 1,
        "canpost": 0,
        "mod": 0,
        "pollid": 0,
        "subscribed": false,
        "thread_like": "0"
    },
    "ads": 0
}
```


JSON result

5. SOCIAL NETWORK ANALYSIS

Social network analysis (**SNA**)[3] is the use of network theory to analyse social networks. Social network analysis views social relationships in terms of network theory, consisting of *nodes*, representing individual actors within the network, and *ties* which represent relationships between individuals.

These networks are often depicted in a social network diagram, where nodes are represented as points and ties are represented as lines.

A more extensive description of the theory is contained in the first release of this document (D8.1.1 "Social Network Analysis").

5.1 MASELTOV SOCIAL NETWORK ANALYSIS

The MASELTOV Social Network Analysis (SNA) is a web application whose purpose is to analyze the trend of MASELTOV forum.

This tool provides measures of interaction between the users, using tables and graphs for their representation.

Within the duration of the project the measurements produced by the SNA can be used during and after the fields trials.

During the trials SNA tool gives opportunity to monitor the Forum trend in order to encourage users to be more active in the Forum and to discover who are the leaders of the community (possibly involving them more deeply in MASELTOV trials activities).

After the trials the measurements about the Forum usage enrich the analysis of results carried on by WP9. In the Appendices of this document screenshots of the results of the field trials are depicted.

5.1.1 DEFINITIONS

Many of the definitions for terms used in (social) network science can be found in a glossary of graph theory[4] .

The terms mentioned in the following definitions are the ones that are used in the description of the statistics visualized in MASELTOV SNA web interface:

[3] See http://en.wikipedia.org/wiki/Social_network_analysis

[4] See http://en.wikipedia.org/wiki/Glossary_of_graph_theory and http://en.wikipedia.org/wiki/Graph_theory

- A "*graph*" is made up of "*vertices*" or "*nodes*" and lines called "*edges*" that connect them.
- A graph may be *undirected*, meaning that there is no distinction between the two vertices associated with each edge or *directed,* when its edges are be directed from one vertex to another.

- N is the number of nodes of the network

- E is the number of edges (and it is called the "*graph size*")

- *The maximum number* of edges is *½ |N| (|N|−1)* ; this is the number of all the possible edges (each node is connected to the rest of other nodes)

- *The density* D of a network is defined as a ratio of the number of edges E to the number of possible edges, that is *½ |N| (|N|−1)* , giving
  $$D = \frac{2E}{N(N-1)}.$$

The MASELTOV social network is an undirected graph where one node represents one users and one edge between 2 nodes represents a relationship (a *tie*) between 2 users.

A relationship between 2 users (A and B) is established when the user A responds (sends a *reply post*) to a *post* of user B (that is to the first *post* of a *thread* started by user B) or vice versa, that is regardless of the direction and regardless of the number of *replies (*sent from A to B/sent from B to A). If the user A responds to a post of user B or vice versa, this will be considered as a single relationship regardless of the direction. If user A interacts multiple times with user B, this will be considered as a single relationship.

The following table contains the description of the measurements visualized in MASELTOV SNA web interface

ID	PARAMETERS NAME	DESCRIPTION
ΔT	Start Date Stop Date	The time interval of the statistics to be displayed
NUM. ITERATIONS	Number of Iterations	In the UI a relationship between 2 users is called *Iteration.* The number of Iterations of a single user corresponds to the count of the different relationships (*edges*) that that user has carried on with others users. The count can be global (from the beginning until the actual date) or can be relative to the defined time period (ΔT).

NUM. POSTS	Number of Posts	In the UI the number of Posts of a single user corresponds to the count of *replies* sent or received from/to that user. The first post of a thread is not included in any measurements. The starting post a thread is not included in the count. If a user sends a reply to his/her own post, this reply is not considered in the measurements. The count can be global (from the beginning until the actual date) or can be relative to the defined time period (ΔT).
P1	Total subscribers	It is the number of registered MASELTOV users that have entered into the Forum at least once (from the beginning until the actual date). The term *subscriber* is used since the first access to the Forum via MASELTOV app is implemented as a subscription to the phpBB Forum. This number may be smaller than the total number of the registered MASELTOV app users.
P1ΔT	Subscriber users (ΔT)	It is the number of registered MASELTOV users that have entered into the Forum for the first time within the defined time period (ΔT).
P2	Active users (ΔT)	It is the number of registered MASELTOV users that have entered into the Forum at least once in the defined time period (ΔT).
P3	Operational users (ΔT)	It is the number of users that have written at least one *post* (that is the *starting post* of a thread or a *reply post)* in the defined time period (ΔT).
P4	Reading users (ΔT)	It is the number of users that have entered into the Forum in the defined time period (ΔT) and that haven't written any *post* (*starting post* of a thread or *reply post)*. It is the difference (P2–P3) between the number of active users and the number of operational users.
P5	Inactive users (ΔT)	It is the number of subscribers users that in the defined time period (ΔT) have not entered into the Forum. It is the difference (P1–P2) between the Total number of subscribers and the number of active users.
P6	Dynamic of social network (ΔT)	It is the ratio (P3/P2) between the number of operational users and the number of active users in the defined time period (ΔT).
P7	Coefficient of relationship of a	It is the ratio between numbers of relationships established by the user A in the defined time period

	user of the social network (ΔT)	(number of *Iterations* in ΔT) and the Total number of subscribers.
P8	Average coefficient relationship between users (ΔT)	It is the number which is obtained by summing the correlation coefficients of all active users in the defined time period (ΔT) and then dividing the result by the number of active users in the defined time period (ΔT).
P9	Coefficient of relationship of a user social network in the full period	It is the ratio between numbers of relationships established by the user A (number of *Iterations*) in the full time period (from the beginning to the actual date) and the Total number of subscribers.
P10	Efficiency of social network (ΔT)	It is the ratio (P2/P1) between the number of active users in the defined time period (ΔT) and the Total number of subscribers.
P11	Density of social network (ΔT)	The density D of the social network is defined as the ratio between the relationships actually occurred between the subscribers and all possible relationships in the defined time period specified (ΔT). N defined as the number of subscribers, E defined as the number of possible relationships among all the users, the density D is expressed as: $$D = \frac{2E}{N(N-1)}.$$
P12	Total social network density	The density of the social network D is defined as the ratio between the relationships actually occurred between users (subscribers) and all possible relationships. If the user A responds to a post by user B or vice versa, this will be considered as a single relation regardless of the direction. N is the number of subscribers , E is the number of possible relationships among all the subscribers and the density D is expressed as: $$D = \frac{2E}{N(N-1)}.$$

5.1.2 MASELTOV SNA WEB INTERFACE

Only authorized users can access to SNA web interface using a specific login.

The usage of the SNA is intended only for administrators and analysts, not for the final users of MApp.

In the following picture the SNA login window is depicted.

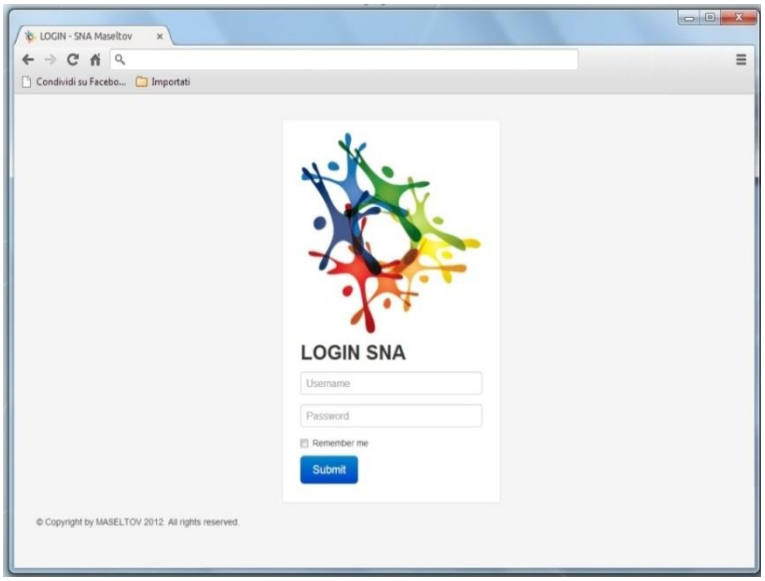


Figure 2 – Social Network Analysis Login Interface

In the following picture the SNA dashboard is depicted

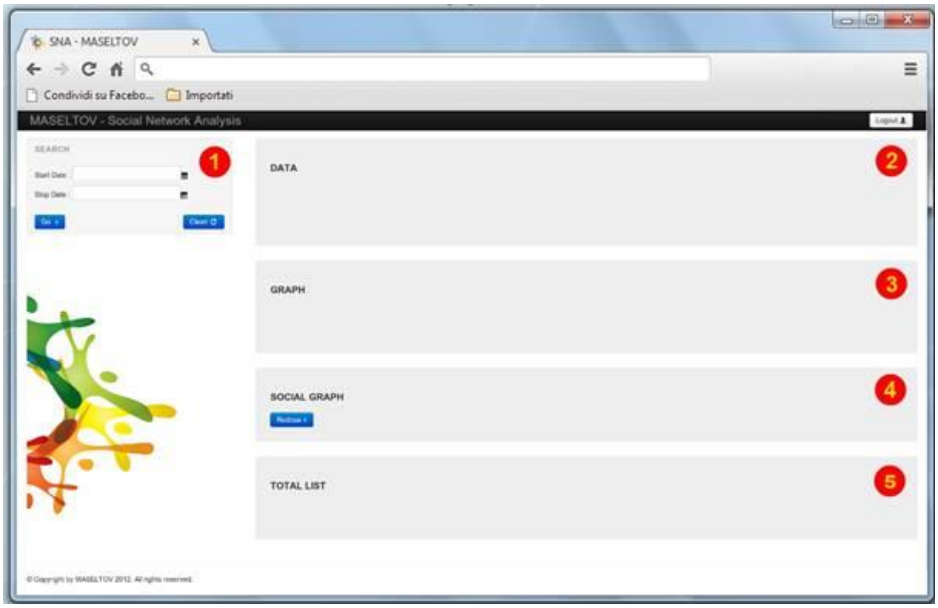


Figure 3 – Social Network Analysis Dashboard

The dashboard is divided into five distinct areas:

1. **SEARCH**: the time interval of the statistics to be displayed
2. **DATA** (in the defined time period): the whole set of statistics in the defined time period
3. **GRAPH** (in the defined time period): Donut graph + linear graphs
4. **SOCIAL GRAPH** (in the defined time period): Graphical representation of interactions between users
5. **TOTAL LIST** (from the beginning to actual date): the whole set of statistics

5.1.2.1 SEARCH AREA AND DATA AREA

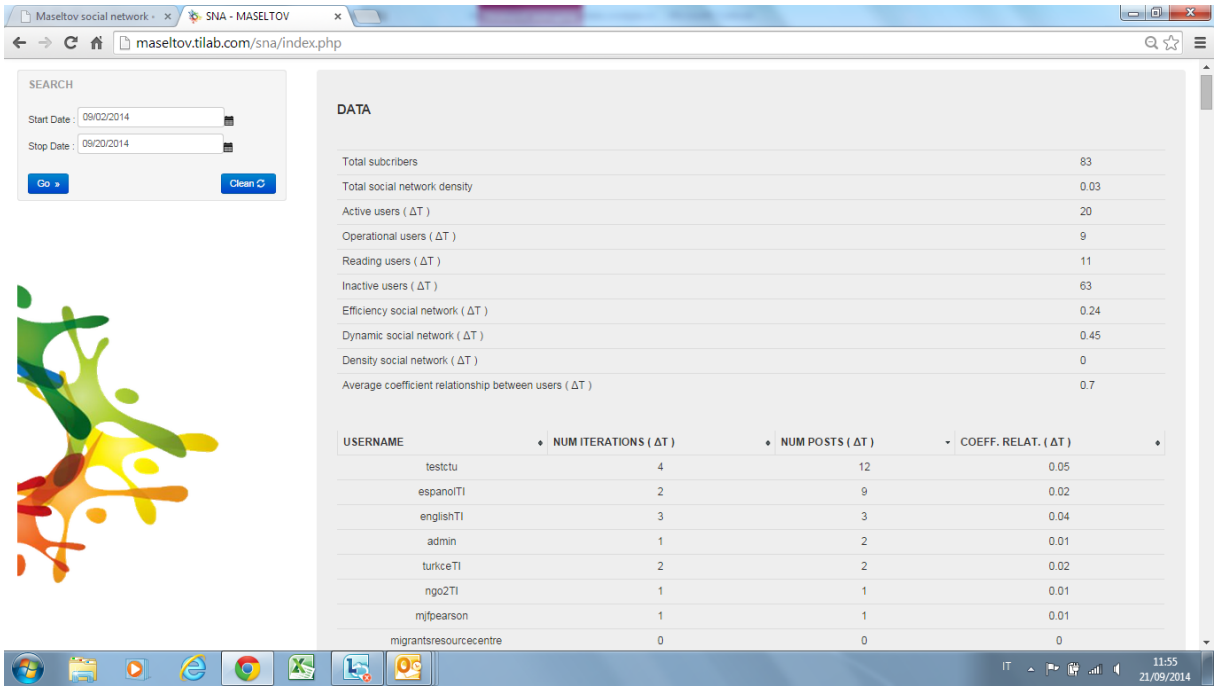


Figure 4 – Social Network Analysis: SEARCH area and DATA area

In the **SEARCH** area the time interval of the statistics to be displayed can be specified via 'StartDate' and 'StopDate

The Start Date and Stop Date can't be in the future and the Stop Date must be subsequent to the Start Date.

In the **DATA** area most of the statistics are displayed.

In the upper part of this area there are statistics related to the full set of users:

- Total subscribers: see P1
- Total social network density: see P12
- Active users (ΔT): see P2
- Operational users (ΔT): see P3
- Reading users (ΔT): see P4
- Inactive users (ΔT): see P5
- Efficiency of social network (ΔT): see P10

- Dynamic of social network (ΔT): see P6
- Density of social network (ΔT): see P11
- Average coefficient relationship between users (ΔT): see P8

In the lower part of the **DATA** area a table is displayed with statistics referring to the defined time interval. There is one row for each subscribers, regardless of the defined time period. The measurements displayed are:

- NUM. ITERATIONS (ΔT): number of *Iterations* (relationships)
- NUM. POSTS (ΔT): number of *reply posts* (received or sent)
- COEFF. RELAT. (ΔT): coefficient of relationship

The table can be sorted by clicking on the desired column header and it is useful to select a descending order on NUM. ITERATIONS or on NUM. POSTS as all the Subscribers are displayed in this table but the most interesting rows are the ones with values different from zero. Only in Operational users rows it is possible to find numbers different from zero.

5.1.2.2 GRAPH AREA

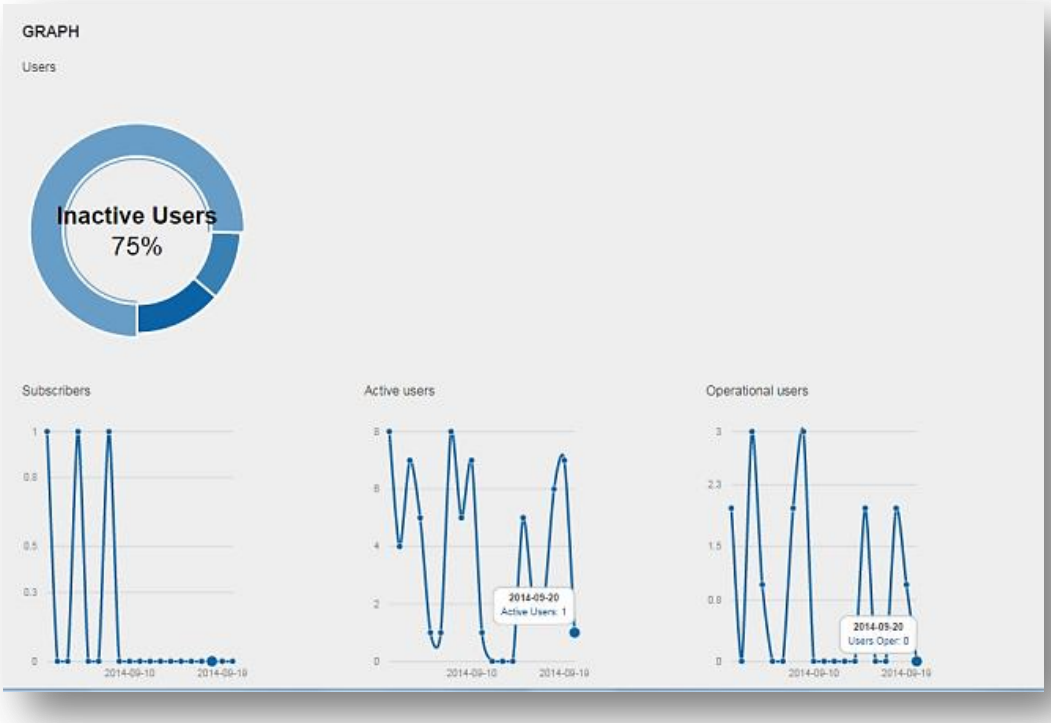


Figure 5 – Social Network Analysis Graphs

In the **GRAPH** area there are different types of graph:

- Donut graph (clickable) with:
  - Operational users (ΔT)
  - Reading users (ΔT)
  - Inactive users (ΔT)

- 3 linear graphs with:
  - Subscriber users (ΔT)
  - Active users (ΔT)
  - Operational users (ΔT)

It is possible to click on the charts to zoom in and click again to zoom out.

When the mouse cursor is over the chart the hover legend is shown.

5.1.2.3 SOCIAL GRAPH AREA

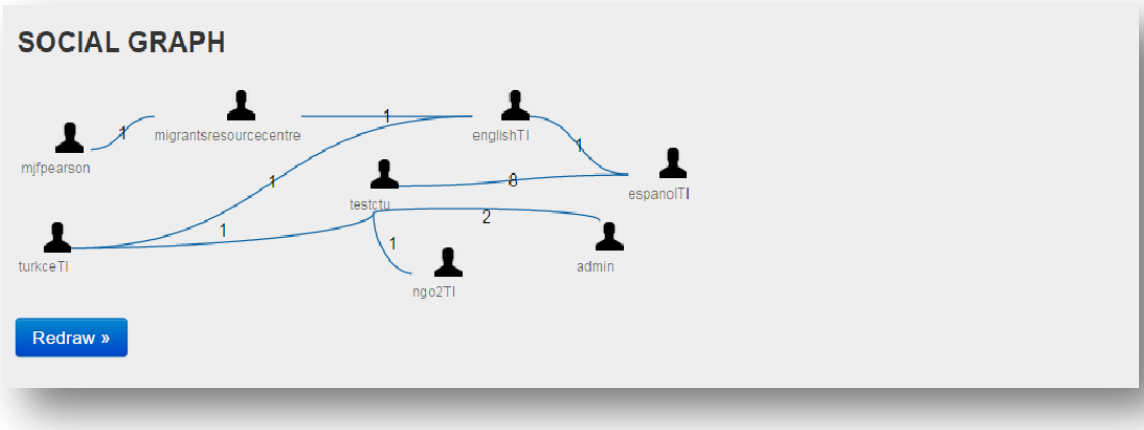


Figure 6 - Social Network Analysis User Interaction Graph (SOCIAL GRAPH)

In the **SOCIAL GRAPH** area the graphical representation of interactions between users is displayed.

The edges are labeled with the number of reply posts exchanged between the two users.

The graph is dynamic and allows the repositioning of the icons that represent users.

It is possible to click on the charts to zoom in and click again to zoom out.

It is possible redraw the graph by pressing Redraw.

5.1.2.4 TOTAL LIST AREA

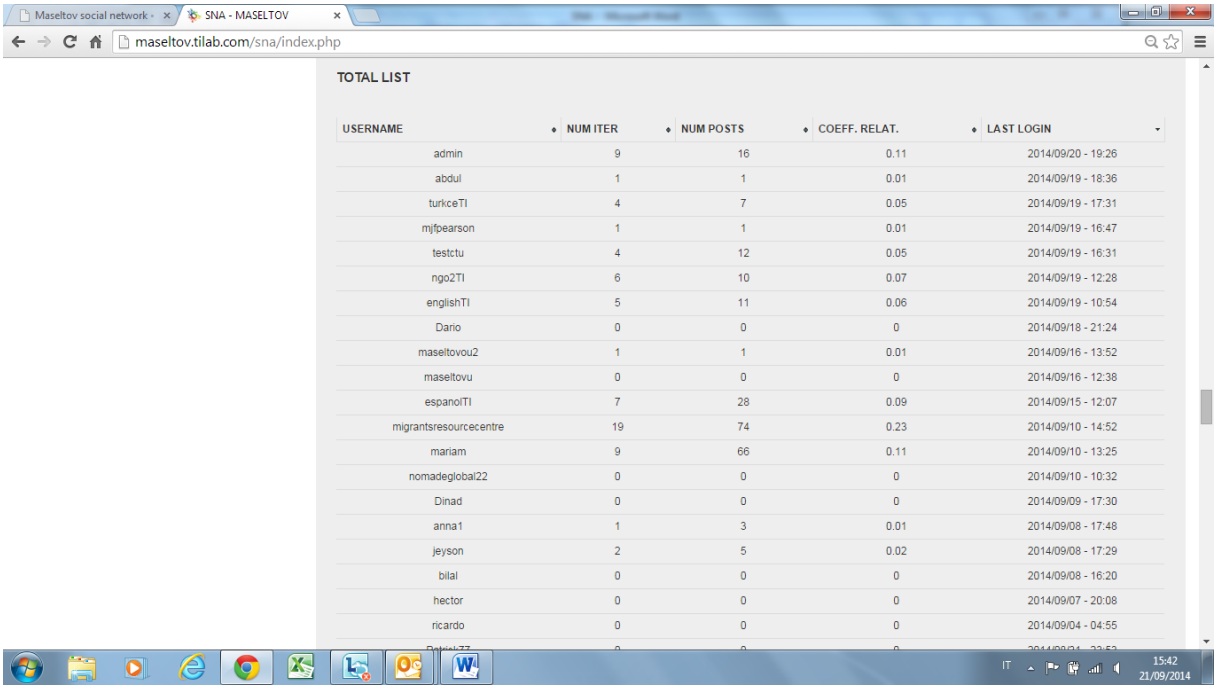


Figure 7 – Social Network Analysis: TOTAL LIST

In the **TOTAL LIST** area a table (one row for each subscribers in the full time period) is displayed with measurements referring to the global time interval (from the beginning until the actual date).

The table can be sorted by clicking on the desired column header.

For each user the measurements displayed are:

- NUM. ITERATIONS: number of *Iterations* (relationships)
- NUM. POSTS: number of *reply posts* (received or sent)
- COEFF. RELAT.: coefficient of relationship
- LAST LOGIN: the date of the last access to the Forum

5.2 DEVELOPEMENT DETAILS

The SNA consists of a GUI made in HTML5 and CSS3, whilst extracting data from the database of the phpBB3 MASELTOV forum takes place via php script, which returns results in JSON. The graphical representation and tabular JSON data are made with libraries js (Java script) and JQuery. Also, features such as zoom-in and zoom-out on graphs, calendar and hover legends are made in js.

6. SENTIMENT ANALYSIS

6.1 INTRODUCTION

In the last ten years social media like blogs, forums and social networks have seen a growing interest in the use of semantics in their own content. The use of semantics appears in very different ways, but is not incorrect if we summarize by saying that semantics are used to extract meaningful information from content.

Extracting information from text in natural language is probably the most interesting and the most difficult goal to achieve.

Information extracted can be of very different types and, by way of example, entities and sentiment are two different types (these are information that in the MASELTOV domain we are looking for).

In the following paragraph we briefly explain the meaning of Sentiment Analysis and Entity Extraction, and how they are realized in MASELTOV, providing a customization of Telecom Italia's SESAMO platform.

6.2 SENTIMENT ANALYSIS

One type of information extracted from content is called *sentiment*.

Sentiment extraction means looking for specific judgment about an argument in text phrases expressed in natural language. In general this is a very difficult task, so the first step is to restrict our attention on argument related to a specific context, called *domain*.

There are different ways to model a domain. One is to define an ontology, containing the keywords and relations that represent the information that we are looking for. Ontology in brief represents all things that have a semantic value for us.

So, in the case of sentiment analysis, the first task is to define an ontology with classes and instances containing all keywords related to specific *objects* and possible *judgments* about these *objects*.

When ontology keywords (objects and judgments) are defined, another class of keywords that must be considered is the class of *modifiers*. Modifiers are terms used in natural language to emphasize or to depreciate a specific judgment. These are for example: not, very, almost, etc. In general, modifiers are not linked to a specific domain.

The sentiment analysis process usually includes the following steps (here we do not mention text extraction from source – crawling – because, even if it is necessary, it is not really specific to sentiment extraction):

- *validation of sentiment*: this means that terms (domain objects and judgments) extracted from the text are validated by means of rules to be sure that extracted words are really referred to each other (for example, using syntax information and sentence template structure matching).
- *sentiment voting*: this means to assign a number (vote) to any judgment and to provide a set of rules that are used to manage the presence/absence of modifiers. The voting

process is useful if you are interested in extracting specific indicators and providing reports about them.

The second important task in Sentiment Analysis is to identify the *subject* of the sentiment in the source text. This task can be viewed as a specific type of *Entity Recognition process*. It must be specified which type of entities you are interested in, if entities are simple or complex, and it must be defined a set of rules that are used to link extracted sentiment to identified entity.

6.3 SESAMO (SEMANTIC SEARCH AND MINING OPEN SOURCE)

MASELTOV provides sentiment analysis functionalities using a specific customization of a platform developed by Telecom Italia named SESAMO (SEmantic Search And Mining Open source).

Following paragraphs will describe how Sentiment Analysis is implemented in MASELTOV using SESAMO customization.

6.3.1 ONTOLOGY DEFINITION

As described in the previous paragraph, the first task in sentiment analysis is defining a domain ontology. SESAMO provides useful functionalities to build and load into the system the specific domain ontology needed.

In MASELTOV, as agreed with MASELTOV Consortium, the chosen domain for trials is *Real Estate* (in Italian) and the customization work consists in the following:

- select terms (objects, judgments, modifiers) related to the Real Estate domain
- design a class hierarchy that models the features of the Real Estate domain that we want to capture
- assign to each term a specific class

The SESAMO platform provides tools to load terms, build a class hierarchy, and to assign terms to classes. Term selection is indirectly supported by SESAMO: in fact, it's possible to use crawling functionalities to extract from source texts terms that have relevant information on the selected domain. For example, in MASELTOV case, we produce specific crawlers to extract terms from following site: http://www.immobiliare.it.

Extracted terms are evaluated against dictionary and public domain ontologies available on the net. The following table summarizes the ontology built for MASELTOV, with the detail of classes and terms (objects).

Table 2 – MASELTOV ontology

CATEGORIA	Commerciale
	Residenziale
	Turistico
UNITA'	Edificio
	Infrastruttura
	Esercizio
	Fabbricato
	Immobile

	Appartamenti
	Ville
	Case
	Box
TIPOLOGIA	Terreno
	Cucina
	Bagno
	Locali
	Rimesse
	Stato immobile
	Riscaldamento
	Condizionamento
	Altri locali
SERVIZI	Pertinenze esterne
	Vicine
STRUTTURE	Accessorie
	Luogo
LOCALITA'	Zona
	centrale
	demografica
	periferica
	rurale
	semicentrale
FASCIA	suburbana
	certificazione
	classificazione
IMPOSTE	istituti
ALTRO	

6.3.2 CRAWLING SOURCE INFORMATION AND INDEXING

SESAMO provides crawling and indexing capabilities to extract text from different sources as web pages, formatted documents (i.e. doc, pdf, etc.), DB tables and posts forum. Extracted text is indexed to build an index, usable to perform needed tasks related to sentiment analysis, as described in the following paragraphs.

Text extraction and indexing task in MASELTOV require the following customization steps:

- build a specific forum crawler type, to extract and index forum post content
- select pre-processing steps, that are for example how SESAMO will tokenize and split text, if SESAMO will perform lemmatization task , …

The indexing process uses functionalities provided by the Lucene library.

SESAMO provides four types of crawlers, depending on the type of source being indexed: generic text, web pages, forum posts and DB query result set.

For MASELTOV customization, the choice has been to develop a specific DB crawler; because SESAMO server has direct access to phpBB3 Forum platform database.

Each crawler is defined by choosing specific parameters (depending on the type of source), but all crawlers have to specify the pre-processing stage. The pre-processing stage defines the steps of indexing process and characteristics of the produced index. Listed below is a shortlist of pre-processing stage steps and customization options:

- Tokenization strategy
- Lemma strategy
- Synonym strategy
- If stop words are to be considered or not
- Maximum length of sentences

The defined crawler, starting from FORUM post content, builds an index of content. This indexed content represents the starting point for the sentiment analysis process.

6.3.3 SENTIMENT EXTRACTION

In order to perform Sentiment analysis, SESAMO uses the ontology information previously loaded and does the following step:

1. search into the index the correspondence of pairs (object, judgment)
2. check into founded occurrences the presence of possible modifier

The results set from the previous step is then validated against syntactic/semantic rules, which are language specific. In this step, SESAMO use PoS tagging and dependency parser features provided by FreeLing library.

For each phrase, SESAMO investigates which positions extracted terms have. Possible pairs of objects/judgment are matched against a valid position schema.

If matching process is successful, sentiment is validated (the judgment is correctly associated to the object). Otherwise the specific phrase does not contain any valid sentiment (for example, possible pairs of object and judgment are composed of terms that are not related each other because they belongto different part of the sentence).

Validation schemas in SESAMO are implemented by a built in library of rules, specific for Italian language.

6.3.4 ENTITY EXTRACTION AND SENTIMENT ASSOCIATION

In order to understand the subject of extracted sentiment, SESAMO provides entity extraction features that make use of various techniques well known in the Entity Extraction field.

In MASELTOV context, buildings geographic areas represents the entities *subject* of extracted sentiment.

In order to identify complex entities like addresses or other localization information, SESAMO implementation makes use of a mix of basic token matching processes, supported by the use of reference dictionary.

Localization entity is defined as an occurrence of the following information, where not all fields are mandatory

Field	Note
Città	City
CAP	Postal Code
riferimento stradale	Address name that follows the key reference. For example in the sentence '*via Roma*', *riferimento-stradale* value is *Roma*.
località (eventuale)	Locality name
Zona	Information like neighborhood/district/area

A localization entity is considered valid if it contains values in at least one of the following groups (order is not important):

1. [città | CAP, riferimento stradale | zona | località]

Specific tasks and rules implemented in SESAMO to extract localization information are summarized in the following:

1. It is sufficient that only one of *CAP* and *città* fields is present.
2. *CAP* field values are extracted making use of specific regular expression and validated against a reference dictionary of CAP
3. *città* , *località*, *zona* field values are extracted using Freeling basic NER and NEC software modules and validated against a reference dictionary of cities.

Collected terms as possible field values, and they are then analyzed to be sure that they represent part of the same location entity instance. This is done using FreeLing parsing capabilities with implementation of specific rules that identify entity parts relative position in the phrase.

Last but not least important step is to relate sentiments with localization data. This specific task is done calculating relative distances of the extracted objects and where it is possible, making use of dependency parser information.

6.3.5 RESULTS AVAILABILITY AND RETRIEVAL

Extracted sentiment with related localization data are available to MASELTOV using a specific reporting GUI.

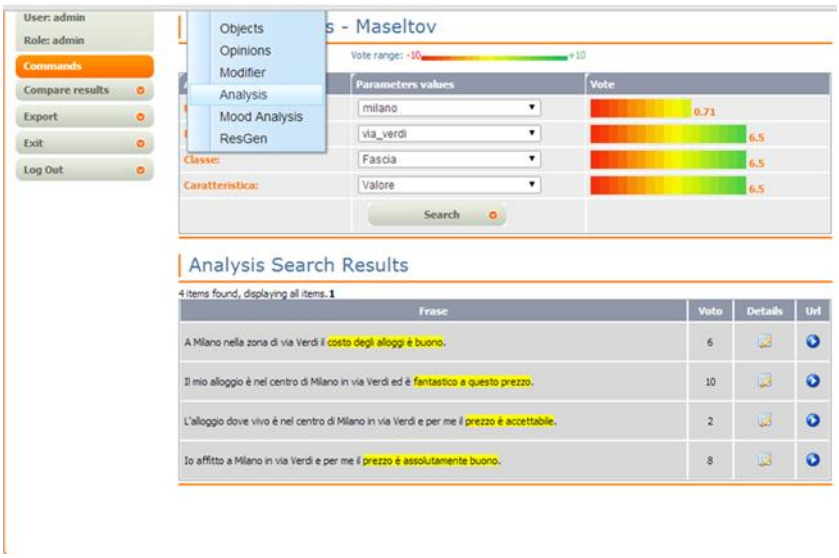


Figure 8 – SESAMO: looking for opinions on apartment in Milano

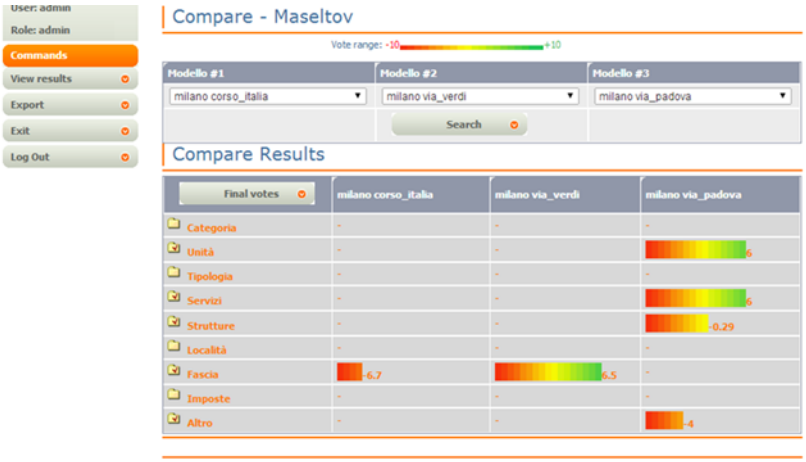


Figure 9 – SESAMO : comparing opinions on apartment in different area of Milano

SESAMO provides a library of reports that enables skilled users to search for detailed or aggregated indicators; each report gives the possibility to point directly to the source text that generate sentiment and/or localization data indicated.

Following figures are an example of analysis reports, related to a mobile phones domain, as at present MASELTOV FORUM doesn't contain any data to be extracted and analyzed.

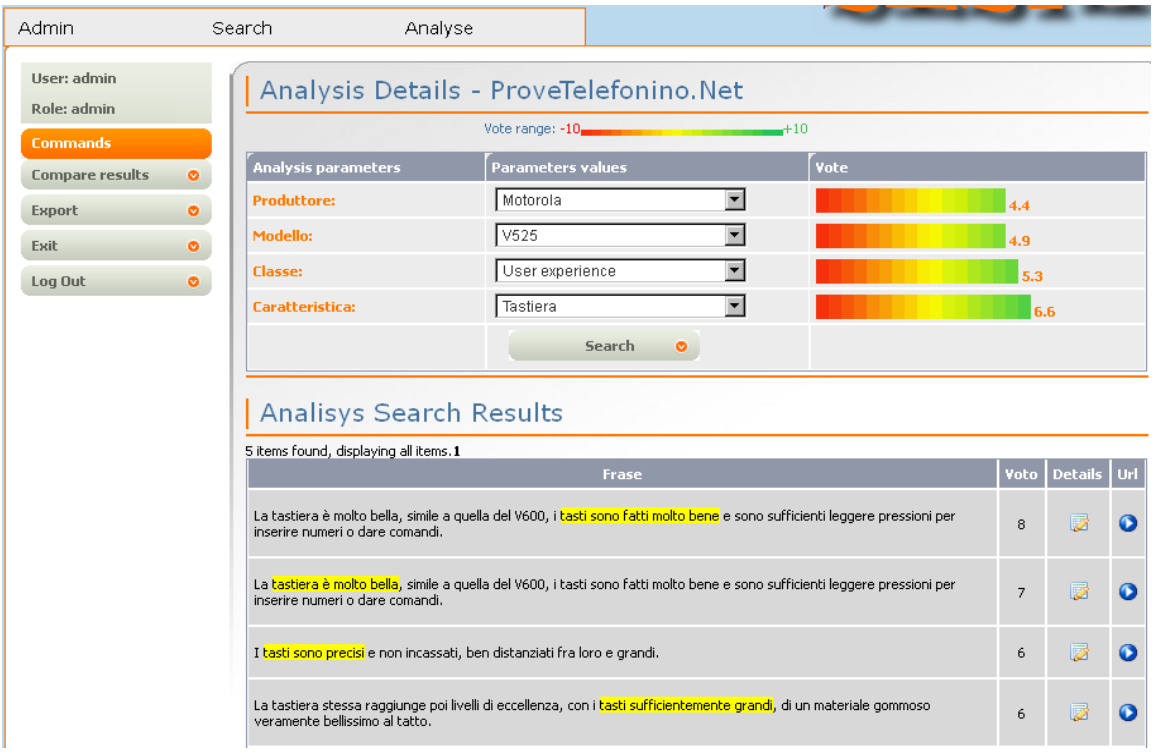


Figure 10 – SESAMO reports first view

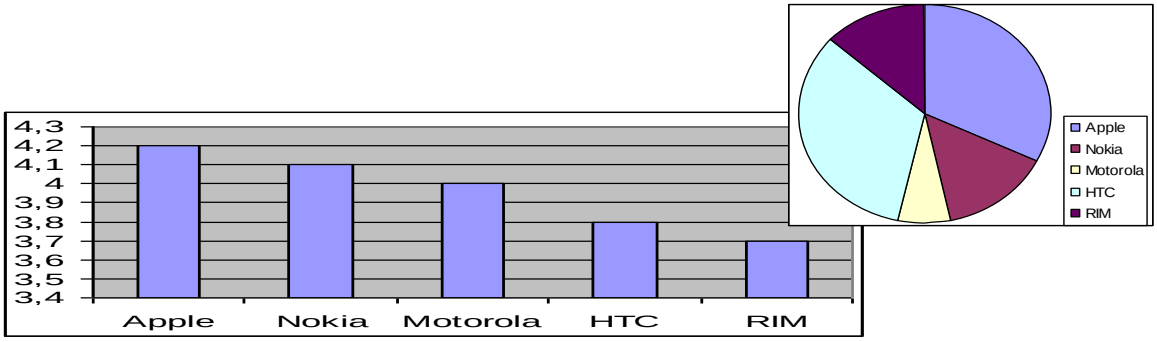


Figure 11 – SESAMO reports, alternative views

7. HARDWARE AND SOFTWARE REQUIREMENTS

7.1 INTRODUCTION

In this chapter we'll provide all hardware and software needs to deploy LOCAL COMMUNITY BUILDING services platform module. For each module, when it is needed, client and server requirement are provided.

7.2 FORUM APP

Only Client part.

7.2.1 CLIENT

7.2.1.1 HARDWARE REQUIREMENTS

CPU core	>=2
Display size	4'' or wider
Internet connectivity	HSDPA
Sensors	WiFi

7.2.1.2 SOFTWARE REQUIREMENTS

Operating System	Android 4.1 or higher

7.3 FORUM AND SNA

7.3.1 CLIENT

7.3.1.1 HARDWARE REQUIREMENTS

N.A.

7.3.1.2 SOFTWARE REQUIREMENTS

Web Browser	IE v.7, FireFox, Chrome

7.3.2 SERVER

7.3.2.1 HARDWARE REQUIREMENTS

CPU core	>=2
HDD	500 GB or more
Memory	2 GB

7.3.2.2 SOFTWARE REQUIREMENTS

Operating System	Ubuntu 10.10.1
Software package	**phpBB3** v.3 with following add-on: - AutoMod: mode for installing packages - PhpBB Statistics: mode for more statistics - Forum Runner: mode that allows users to browse forum using a native Android, iphone, ipad - Log Connection: mode to log login connection on forum - Thanks for posts: mode adds the ability to thank the

	author of the post (or cancel thanks to the author). - Share On: mode to share topic on Facebook, Twitter, Myspace (etc..) **MySql** ver 5 **Apache2** web server **ksh**

7.4 SENTIMENT ANALYSIS

7.4.1 CLIENT

N.A

7.4.1.1 HARDWARE REQUIREMENTS

N.A.

7.4.1.2 SOFTWARE REQUIREMENTS

Web Browser	IE v.7, FireFox 20, Chrome

7.4.2 SERVER

7.4.2.1 HARDWARE REQUIREMENTS

CPU core	>=2
HDD	500 GB or more
Memory	2 GB

7.4.2.2 SOFTWARE REQUIREMENTS

Operating System	Ubuntu 10.10.1
Software package	Ubuntu Package • libpcre3-dev • libdb4.7++ • libdb4.7-java • libdb4.7-java-gcj • libboost-filesystem1.40-dev • libboost-filesystem1.40.0 • libboost-program-options1.40-de • libboost-program-options1.40.0 • libboost-system1.40-dev

	• libboost-system1.40.0 • libboost1.40-dev **Lucene**2.9.1 **Freeling**3.0 **Java 6 sun** 1.6.0.26 **MySql**ver 5 **Tomcat6** web server **Ksh**

8. INSTALLATION

This chapter provides information about installation of packages.

8.1 FORUM AND SNA MODULE

Under the repository is available the self-installing package of forum phpBB3 and SNA.

http://polaris.tilab.com/svn/maseltov/Forum_Server/PHPBB3_MASELTOV.tar.gz

Before starting the installation stop tomcat and apache with these commands:

- *sudo service tomcat6 stop*

-sudo service apache2 stop

Create a temporary directory and copy the self-installing package as **root** user.

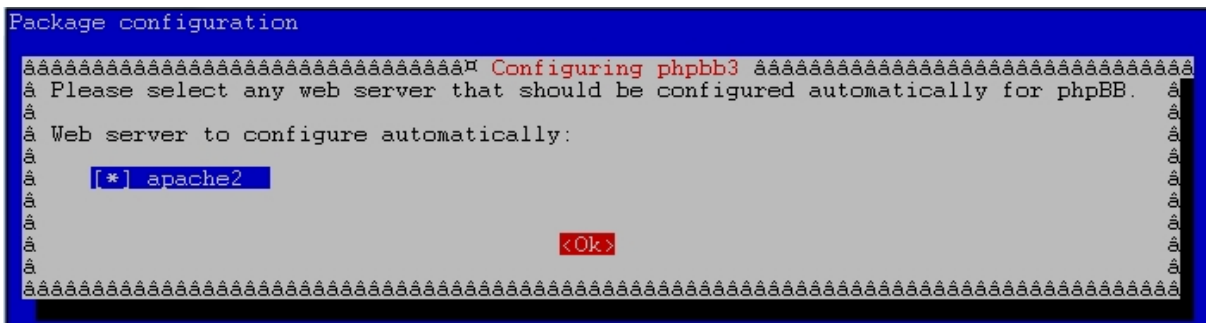
Change permissions and extract the package with these commands:

- *chmod 777 PHPBB3_MASELTOV.tar.gz*
- *unzip PHPBB3_MASELTOV.tar.gz*
- *tar xvf PHPBB3_MASELTOV.tar*

```
root@ubuntu:/tmp/phpbb3_maseltov# ll
total 156476
drwxr-xr-x  2 root root     4096 2013-05-16 08:43 ./
drwxrwxrwt 29 root root     4096 2013-05-16 08:42 ../
-rwxrwxrwx  1 root root      974 2013-05-16 08:28 install.list*
-rwxrwxrwx  1 root root     4843 2013-05-16 08:27 install.sh*
-rwxrwxrwx  1 root root 69539840 2013-05-16 08:28 install.tar*
-rwxrwxrwx  1 root root  2312824 2013-05-16 08:08 phpbb3_3.0.10-4_all.deb*
-rwxrwxrwx  1 root root  8241774 2013-05-16 08:08 phpbb3-l10n_3.0.10-4_all.deb*
-rwxr-xr-x  1 root root 80107520 2013-05-16 08:42 PHPBB3_MASELTOV.tar*
root@ubuntu:/tmp/phpbb3_maseltov#
```

Install phpBB3 from .deb:

- *dpkg –i phpbb3_3.0.10-4_all.deb*



QUESTIONS TO INSTALL PHPBB3	SELECT	CONFIRM
Web server to configure automatically	apache2	<Ok>
Configure database for phpBB3 with dbconfig-common?	/	<Yes>
Database type to be used by phpBB3:	mysql	<Ok>
Password of the database's administrative user:	type your pswd	<Ok>
MySQL application password for phpBB3:	phpbb3	
Password confirmation:	phpbb3	<Ok>
Password for phpBB admin:	phpbb3	<Ok>
Password confirmation:	phpbb3	<Ok>

- *dpkg –i phpbb3-l10n_3.0.10-4_all.deb*

```
root@ubuntu:/tmp/phpbb3_maseltov# dpkg -i phpbb3-l10n_3.0.10-4_all.deb
Selecting previously deselected package phpbb3-l10n.
(Reading database ... 145430 files and directories currently installed.)
Unpacking phpbb3-l10n (from phpbb3-l10n_3.0.10-4_all.deb) ...
Setting up phpbb3-l10n (3.0.10-4) ...
root@ubuntu:/tmp/phpbb3_maseltov#
```

Run installation with the command:

- *./install.sh*

```
#################################
# INSTALL FORUM MASELTOV AND SNA #
#################################

Created directory /tmp/phpbb3_maseltov/tmp/
Do you want to continue ? [y/n]:
```

Type “y” to continue

Insert user and password of mysqlistance, accept to drop DB and then import phpBB3 DB.

```
--------------------------
3-> IMPORT DUMP DB

Insert DB user ( Ex. root ): root
Insert DB password : root123

DROP PHPBB3
Dropping the database is potentially a very bad thing to do.
Any data stored in the database will be destroyed.

Do you really want to drop the 'phpbb3' database [y/N] y
Database "phpbb3" dropped

IMPORT DUMP

----------------------------------------

END
root@ubuntu:/tmp/phpbb3_maseltov#
```

After installation restart services with these commands:

- *sudo service tomcat6 start*

-sudoservice apache2 start

Change mysql user and password with the current in the files of SNA that follow:

- */var/www/maseltov/sna/data/social_analysis.php*

- */var/www/maseltov/sna/data/test_social_analysis.php*

At rows 37 and 38.

```
# DB Variales
$user = "root";
$pass ="root123";
$host = "localhost";
$db = "phpbb3";
```

8.2 SENTIMENT ANALYSIS AND SESAMO MODULE

SELF-INSTALLING PACKAGE

Unpack the package SESAMO_UBUNTU.tar.gz into a temporary directory: (example. / tmp / SESAMO /)

```
mirko@mirko-desktop:/tmp/SESAMO$ ls
SESAMO_UBUNTU.tar.gz
mirko@mirko-desktop:/tmp/SESAMO$ gunzip SESAMO_UBUNTU.tar.gz
mirko@mirko-desktop:/tmp/SESAMO$ tar xvf SESAMO_UBUNTU.tar
install.sh
install.list
install.tar
mirko@mirko-desktop:/tmp/SESAMO$ ls
install.list  install.sh  install.tar  SESAMO_UBUNTU.tar
mirko@mirko-desktop:/tmp/SESAMO$
```

Before run installation procedure:

- Stopping the tomcat with the command: sudo service tomcat6 stop

Installation procedure:

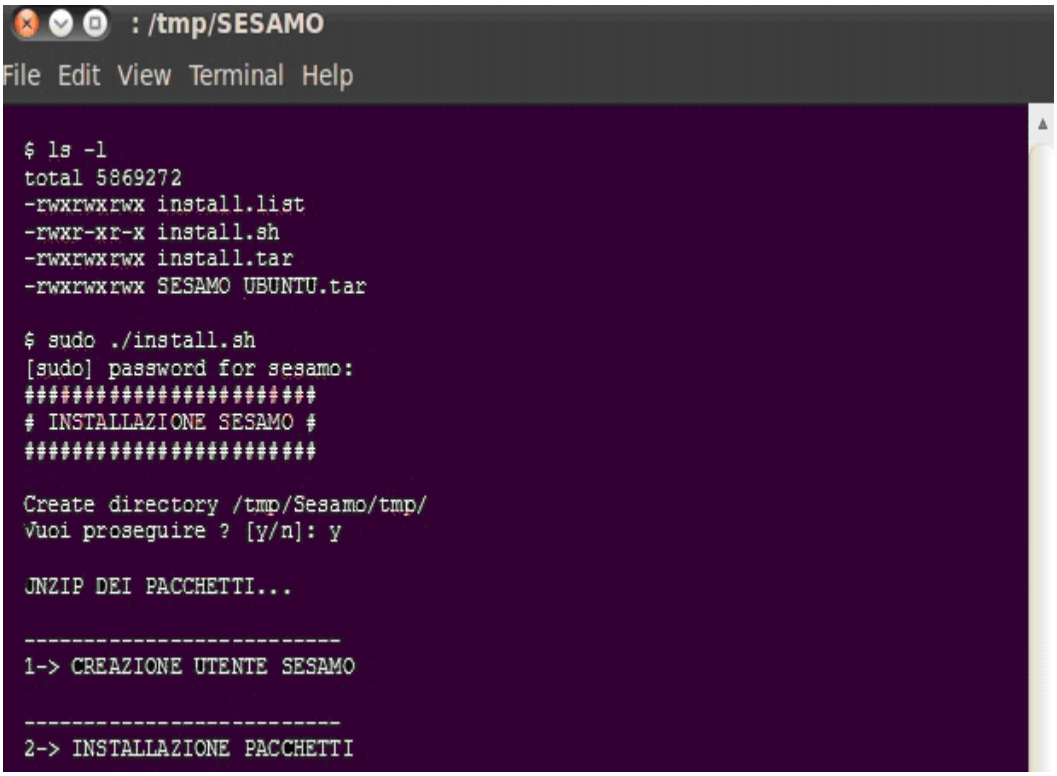
- Execute install.sh command as “root” user.
- The procedure will perform the following operations:

    - Creation of /home/sesamo
    - Install SesamoServer.jar under /home/sesamo
    - Install SesamoBuild.zip under /home/sesamo/script
    - Install under the home Sesamo the Freeling libraries
    - Install SesamoWeb.war under /var/lib/tomcat6/webapps
    - Install SesamoWS.war under /var/lib/tomcat6/webapps
    - Install necessary libraries under /usr/local/ (lib,share,include) and create links
    - Import the dump of the instance DB with the mysql credentials (Note: user/pwd sesamo/ sesamo)

After installation:

- Check under the /home/sesamo /script/ if the scripts StartRegistry.sh, StartServer.sh and StartNode.sh have the correct environment variables.
- Create user and password sesamo/sesamo for istance mysql
- Start the tomcat with the command: sudo service tomcat6 start

Example of installation:



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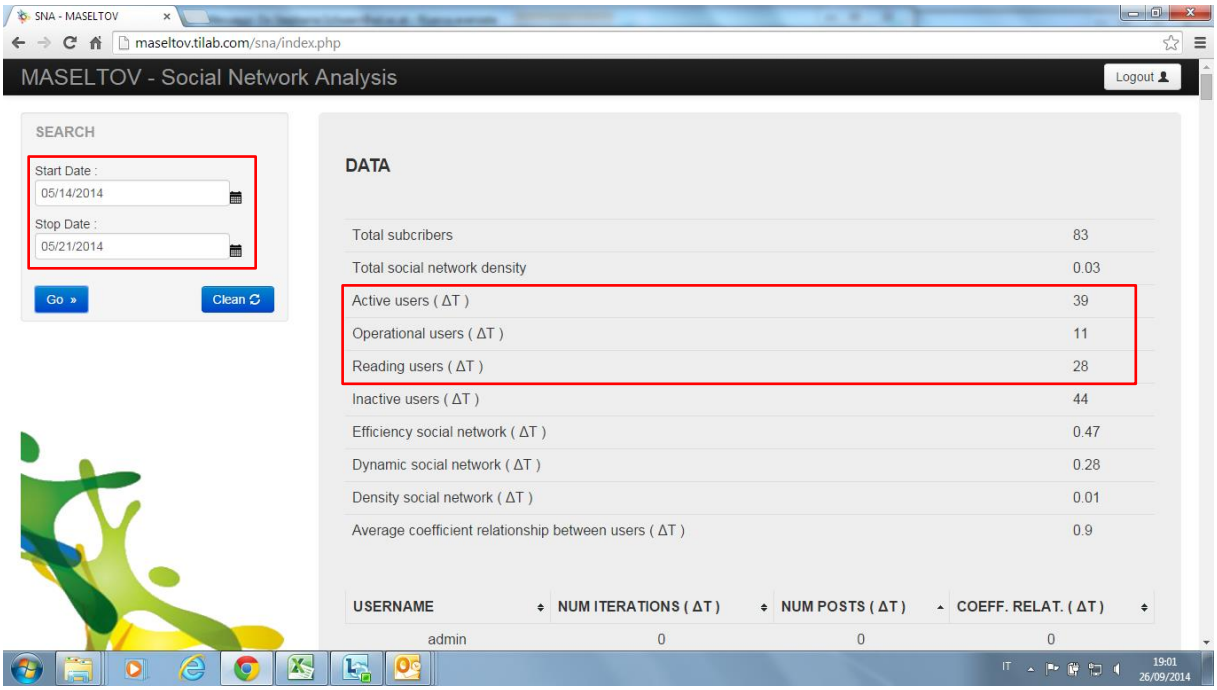
26. **DELIVERABLE REPORT D 8.1.1 "Social Network Analysis"**

10. APPENDIX 1: SNA APPLIED TO GRAZ FIELD TRIALS

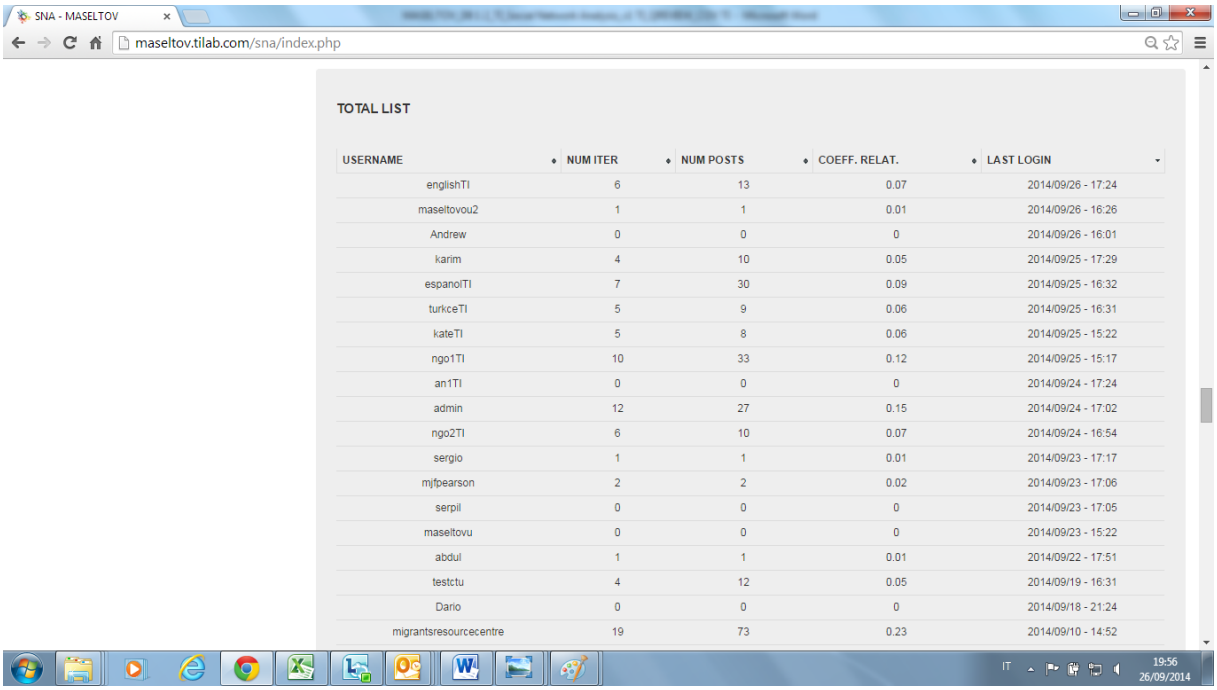
Graz field trials have taken place from the 14th to the 21th of May 2014.

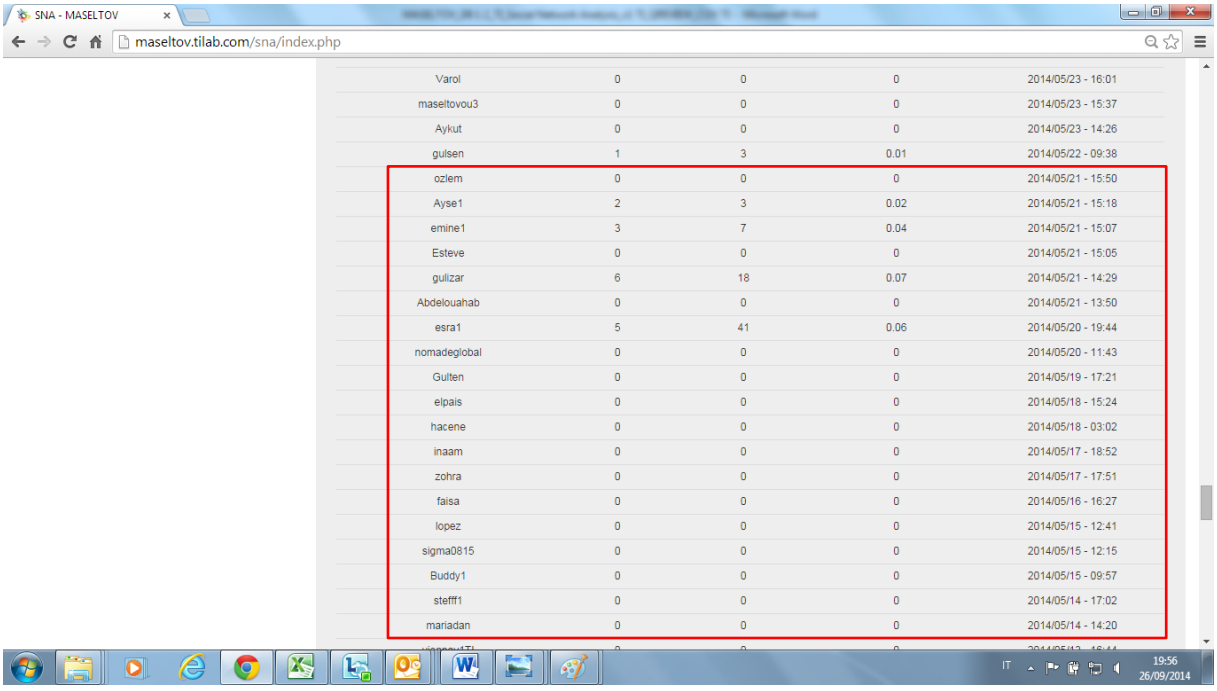
Screenshots from SNA web tool are displayed in the following.

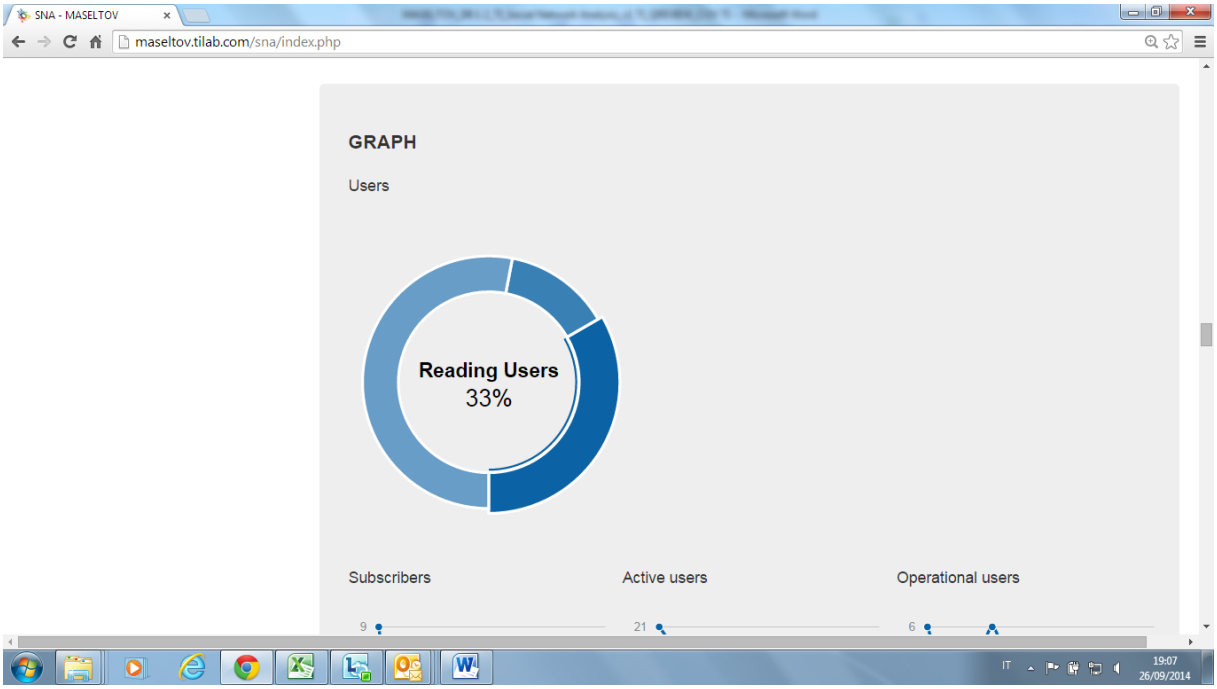
These data will be analysed in collaboration with WP9 further on.

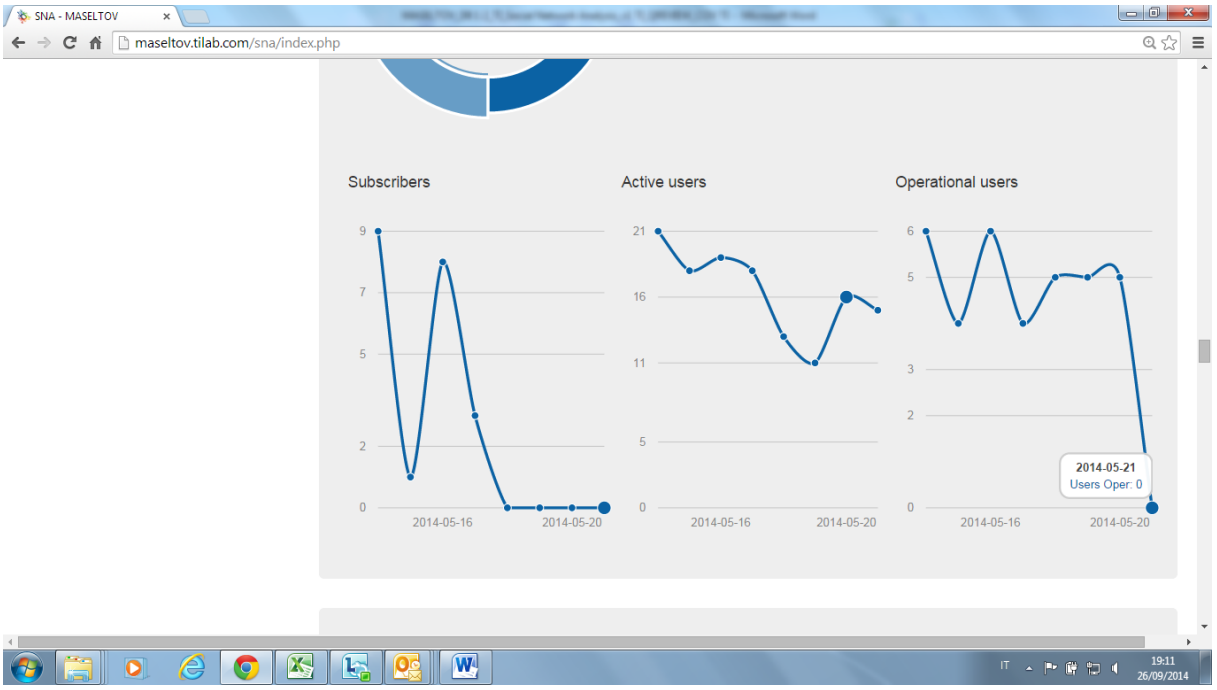


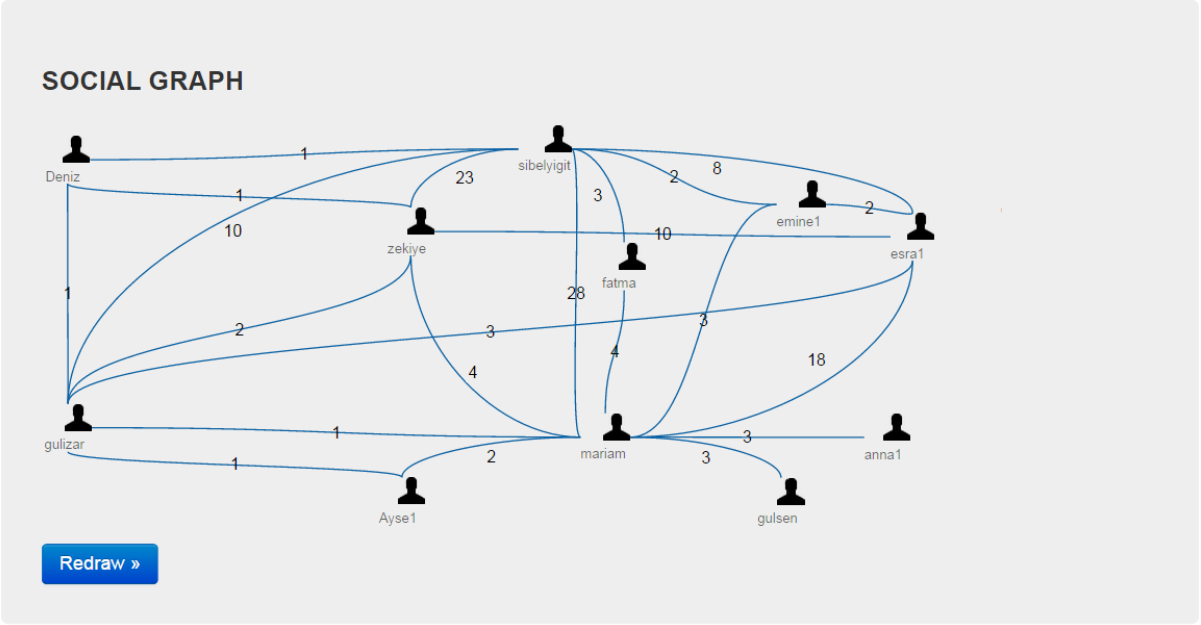
USERNAME	NUM ITERATIONS (ΔT)	NUM POSTS (ΔT)	COEFF. RELAT. (ΔT)
sibelyigit	7	75	0.09
gulizar	6	18	0.07
zekiye	5	40	0.06
esra1	5	41	0.06
Deniz	3	3	0.04
emine1	3	7	0.04
fatma	2	7	0.02
Ayse1	2	3	0.02
gulsen	1	3	0.01
anna1	1	3	0.01
admin	0	0	0
maseltov	0	0	0


SNA - MASELTOV
maseltov.tilab.com/sna/index.php
TOTAL LIST
USERNAME | NUM ITER | NUM POSTS | COEFF. RELAT. | LAST LOGIN
englishTI 6 13 0.07 2014/09/26 - 17:24
maseltovou2 1 1 0.01 2014/09/26 - 16:26
Andrew 0 0 0 2014/09/26 - 16:01
karim 4 10 0.05 2014/09/25 - 17:29
espanolTI 7 30 0.09 2014/09/25 - 16:32
turkceTI 5 9 0.06 2014/09/25 - 16:31
kateTI 5 8 0.06 2014/09/25 - 15:22
ngo1TI 10 33 0.12 2014/09/25 - 15:17
an1TI 0 0 0 2014/09/24 - 17:24
admin 12 27 0.15 2014/09/24 - 17:02
ngo2TI 6 10 0.07 2014/09/24 - 16:54
sergio 1 1 0.01 2014/09/23 - 17:17
mjfpearson 2 2 0.02 2014/09/23 - 17:06
serpil 0 0 0 2014/09/23 - 17:05
maseltovu 0 0 0 2014/09/23 - 15:22
abdul 1 1 0.01 2014/09/22 - 17:51
testctu 4 12 0.05 2014/09/19 - 16:31
Dario 0 0 0 2014/09/18 - 21:24
migrantsresourcecentre 19 73 0.23 2014/09/10 - 14:52
19:56
26/09/2014


SNA - MASELTOV
maseltov.tilab.com/sna/index.php
Varol 0 0 0 2014/05/23 - 16:01
maseltovou3 0 0 0 2014/05/23 - 15:37
Aykut 0 0 0 2014/05/23 - 14:26
gulsen 1 3 0.01 2014/05/22 - 09:38
ozlem 0 0 0 2014/05/21 - 15:50
Ayse1 2 3 0.02 2014/05/21 - 15:18
emine1 3 7 0.04 2014/05/21 - 15:07
Esteve 0 0 0 2014/05/21 - 15:05
gulizar 6 18 0.07 2014/05/21 - 14:29
Abdelouahab 0 0 0 2014/05/21 - 13:50
esra1 5 41 0.06 2014/05/20 - 19:44
nomadeglobal 0 0 0 2014/05/20 - 11:43
Gulten 0 0 0 2014/05/19 - 17:21
elpais 0 0 0 2014/05/18 - 15:24
hacene 0 0 0 2014/05/18 - 03:02
inaam 0 0 0 2014/05/17 - 18:52
zohra 0 0 0 2014/05/17 - 17:51
faisa 0 0 0 2014/05/16 - 16:27
lopez 0 0 0 2014/05/15 - 12:41
sigma0815 0 0 0 2014/05/15 - 12:15
Buddy1 0 0 0 2014/05/15 - 09:57
stefff1 0 0 0 2014/05/14 - 17:02
mariadan 0 0 0 2014/05/14 - 14:20
19:56
26/09/2014


SNA - MASELTOV
maseltov.tilab.com/sna/index.php
GRAPH
Users
Reading Users
33%
Subscribers
Active users
Operational users
9
21
6
19:07
26/09/2014


SNA - MASELTOV
maseltov.tilab.com/sna/index.php
Subscribers
Active users
Operational users
9
7
5
2
0
21
16
11
5
0
6
5
3
2
0
2014-05-16
2014-05-20
2014-05-21
Users Oper: 0
19:11
26/09/2014

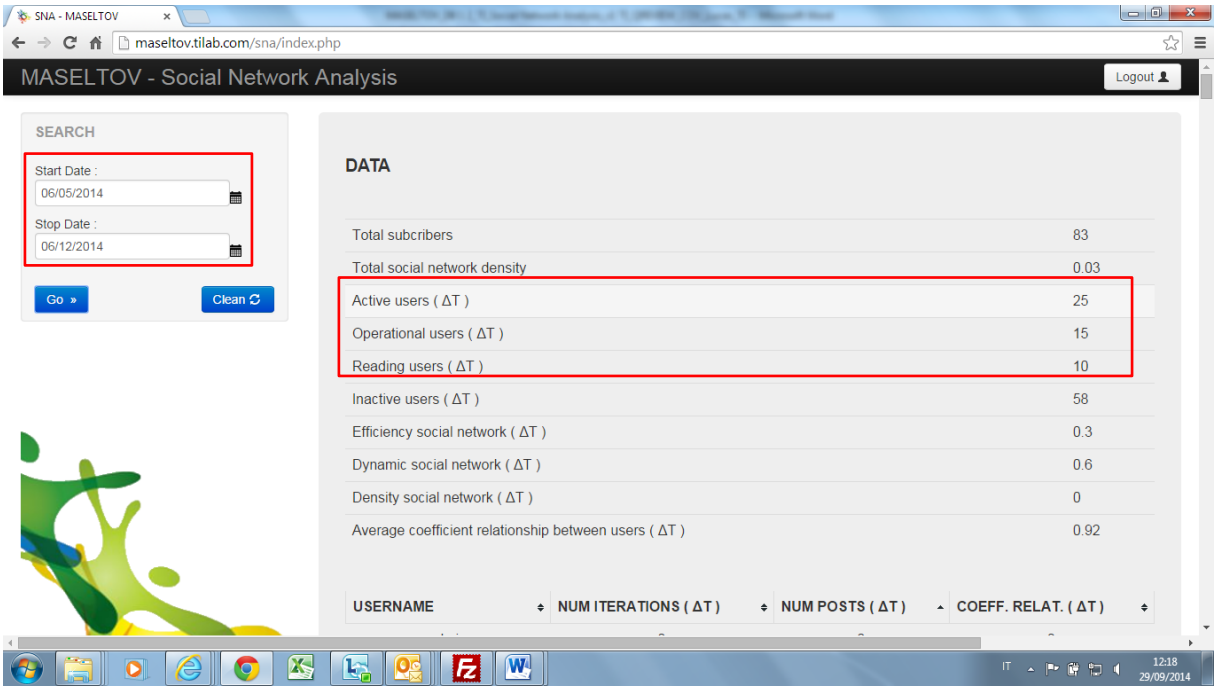

SOCIAL GRAPH
Deniz
sibelyigit
zekiye
emine1
esra1
fatma
gulizar
mariam
anna1
Ayse1
gulsen
Redraw »

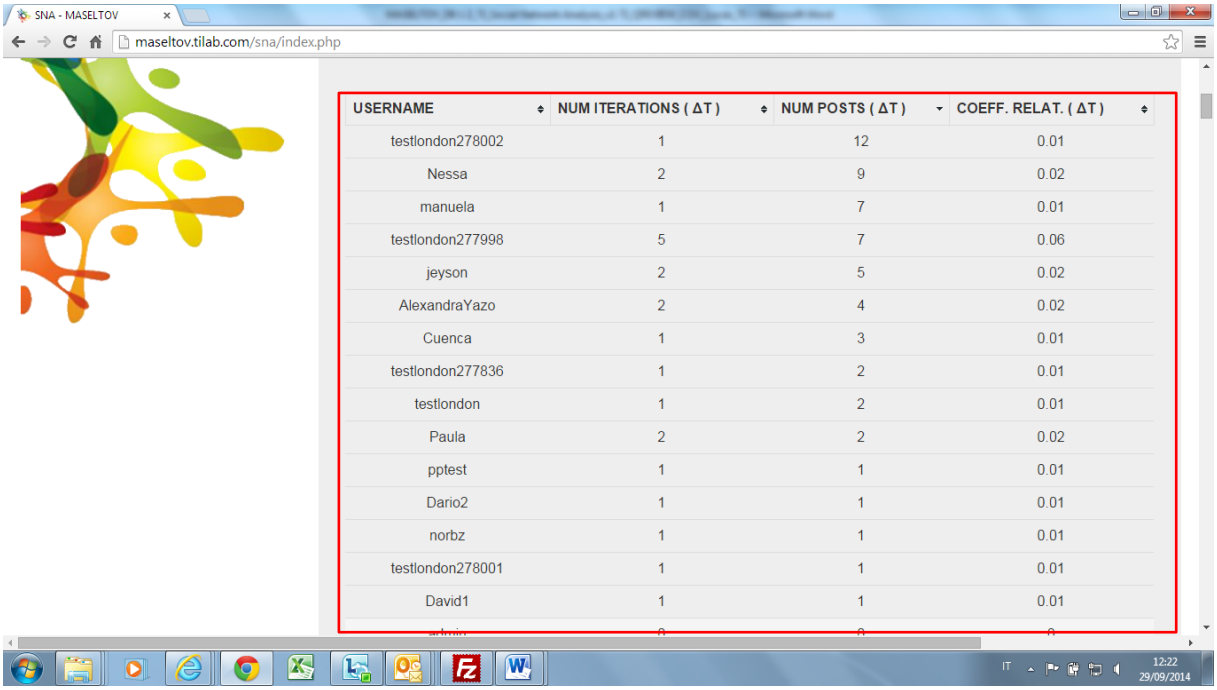
11. APPENDIX 2: SNA APPLIED TO LONDON FIELD TRIALS

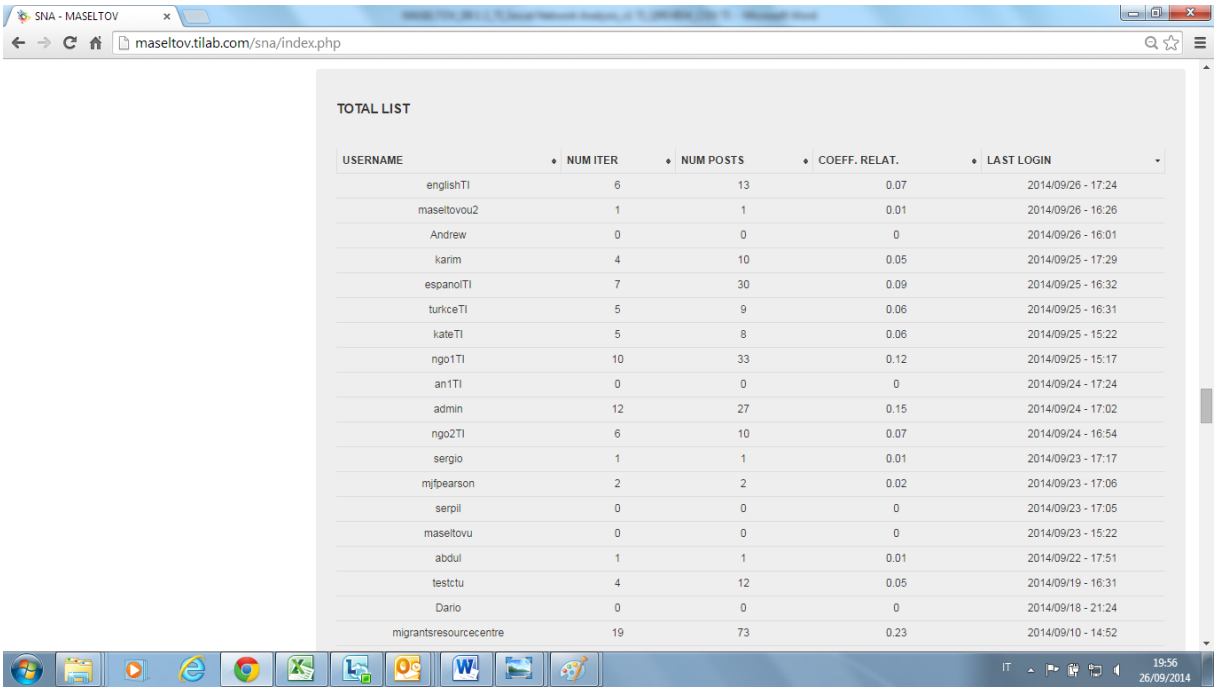
London field trials have taken place from the 5th to the 12th of June.

Screenshots from SNA web tool are displayed in the following.

These data will be analysed in collaboration with WP9 further on.






SNA - MASELTOV
maseltov.tilab.com/sna/index.php
TOTAL LIST
USERNAME | NUM ITER | NUM POSTS | COEFF. RELAT. | LAST LOGIN
englishTI | 6 | 13 | 0.07 | 2014/09/26 - 17:24
maseltovou2 | 1 | 1 | 0.01 | 2014/09/26 - 16:26
Andrew | 0 | 0 | 0 | 2014/09/26 - 16:01
karim | 4 | 10 | 0.05 | 2014/09/25 - 17:29
espanolTI | 7 | 30 | 0.09 | 2014/09/25 - 16:32
turkceTI | 5 | 9 | 0.06 | 2014/09/25 - 16:31
kateTI | 5 | 8 | 0.06 | 2014/09/25 - 15:22
ngo1TI | 10 | 33 | 0.12 | 2014/09/25 - 15:17
an1TI | 0 | 0 | 0 | 2014/09/24 - 17:24
admin | 12 | 27 | 0.15 | 2014/09/24 - 17:02
ngo2TI | 6 | 10 | 0.07 | 2014/09/24 - 16:54
sergio | 1 | 1 | 0.01 | 2014/09/23 - 17:17
mjfpearson | 2 | 2 | 0.02 | 2014/09/23 - 17:06
serpil | 0 | 0 | 0 | 2014/09/23 - 17:05
maseltovu | 0 | 0 | 0 | 2014/09/23 - 15:22
abdul | 1 | 1 | 0.01 | 2014/09/22 - 17:51
testctu | 4 | 12 | 0.05 | 2014/09/19 - 16:31
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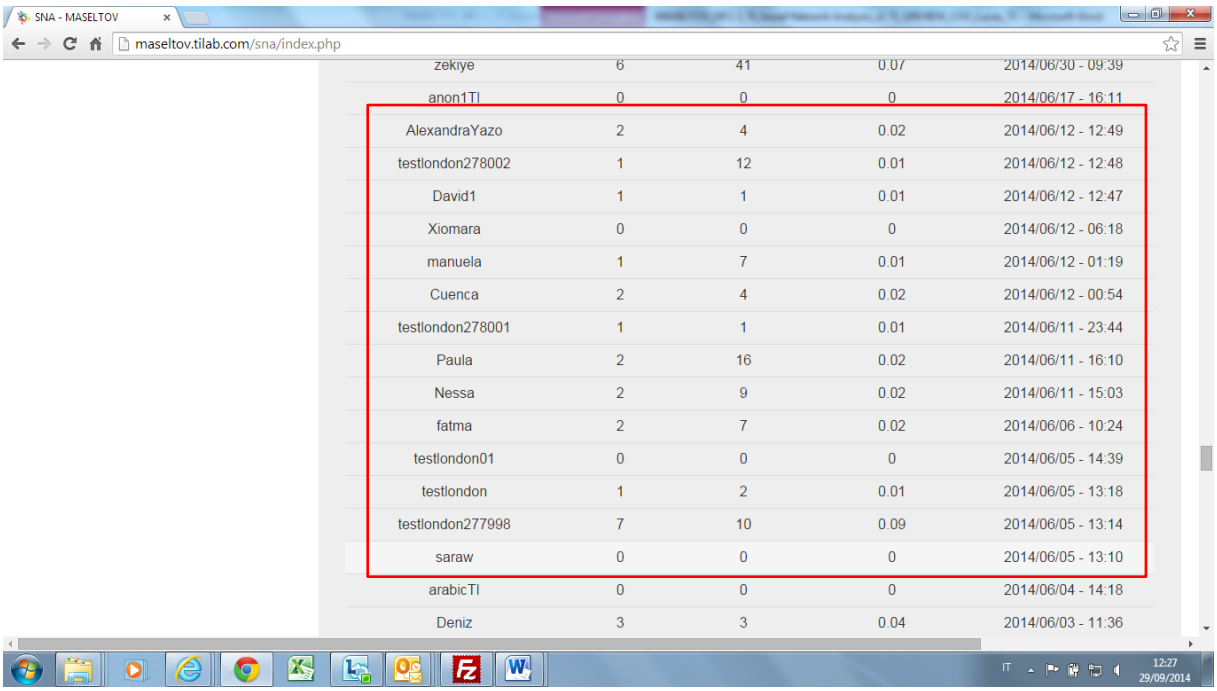
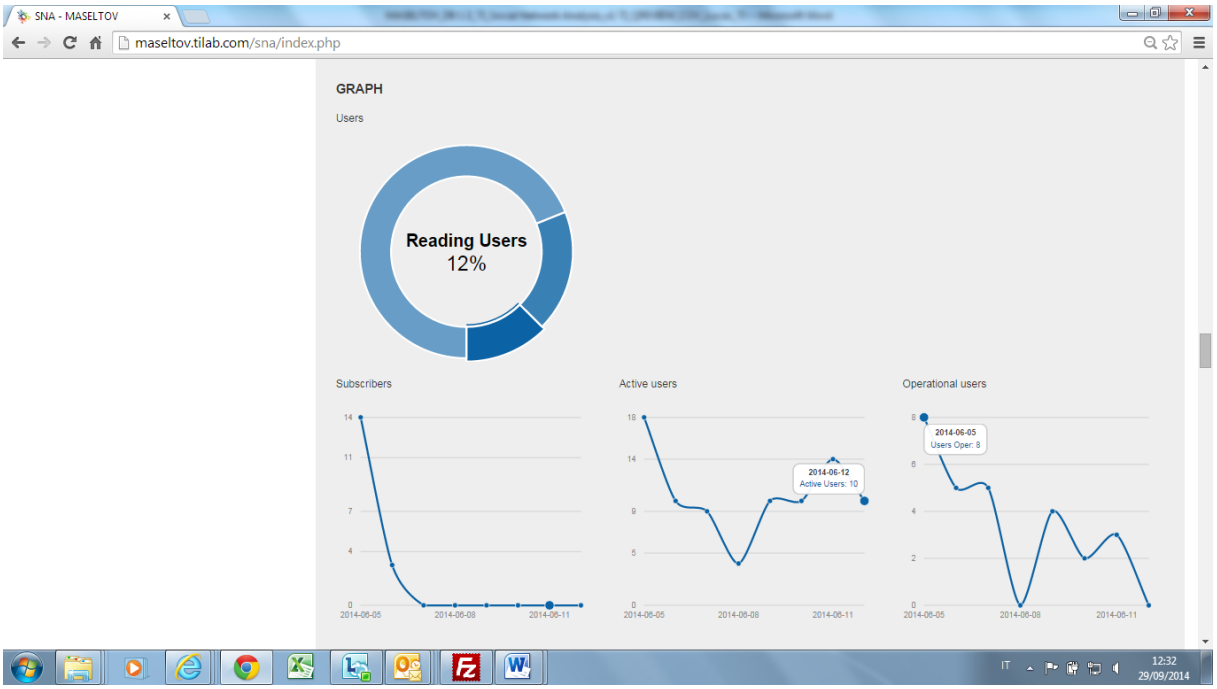
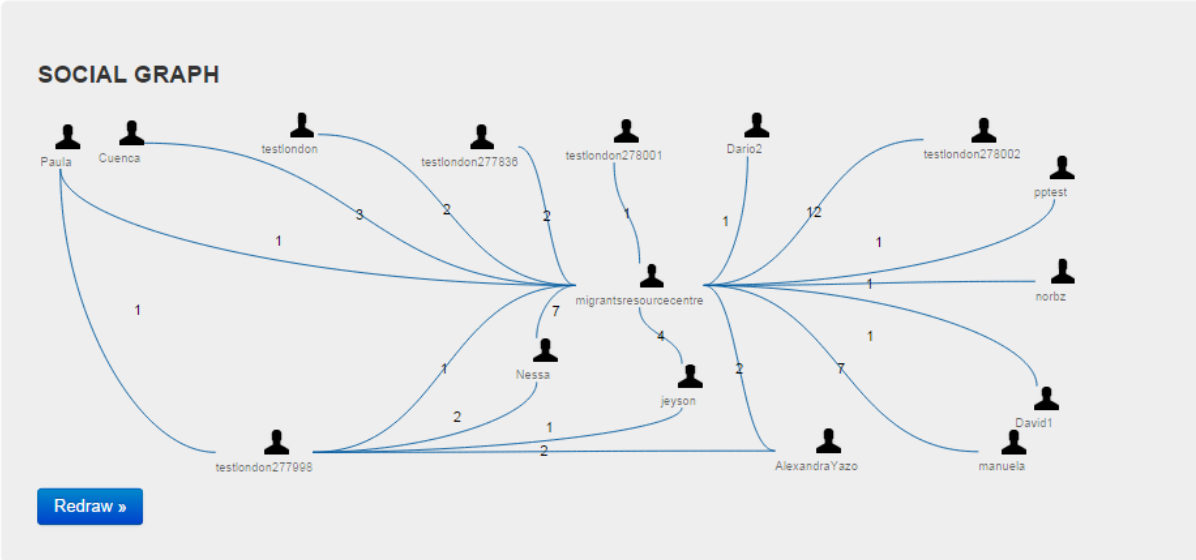
19:56
26/09/2014


SNA - MASELTOV
maseltov.tilab.com/sna/index.php
zekiye | 6 | 41 | 0.07 | 2014/06/30 - 09:39
anon1TI | 0 | 0 | 0 | 2014/06/17 - 16:11
AlexandraYazo | 2 | 4 | 0.02 | 2014/06/12 - 12:49
testlondon278002 | 1 | 12 | 0.01 | 2014/06/12 - 12:48
David1 | 1 | 1 | 0.01 | 2014/06/12 - 12:47
Xiomara | 0 | 0 | 0 | 2014/06/12 - 06:18
manuela | 1 | 7 | 0.01 | 2014/06/12 - 01:19
Cuenca | 2 | 4 | 0.02 | 2014/06/12 - 00:54
testlondon278001 | 1 | 1 | 0.01 | 2014/06/11 - 23:44
Paula | 2 | 16 | 0.02 | 2014/06/11 - 16:10
Nessa | 2 | 9 | 0.02 | 2014/06/11 - 15:03
fatma | 2 | 7 | 0.02 | 2014/06/06 - 10:24
testlondon01 | 0 | 0 | 0 | 2014/06/05 - 14:39
testlondon | 1 | 2 | 0.01 | 2014/06/05 - 13:18
testlondon277998 | 7 | 10 | 0.09 | 2014/06/05 - 13:14
saraw | 0 | 0 | 0 | 2014/06/05 - 13:10
arabicTI | 0 | 0 | 0 | 2014/06/04 - 14:18
Deniz | 3 | 3 | 0.04 | 2014/06/03 - 11:36
12:27
29/09/2014


SNA - MASELTOV
maseltov.tilab.com/sna/index.php
GRAPH
Users
Reading Users
12%
Subscribers
Active users
Operational users
2014-06-12
Active Users: 10
2014-06-05
Users Oper: 8
12:32
29/09/2014


SOCIAL GRAPH
Paula
Cuenca
testlondon
testlondon277836
testlondon278001
Dario2
testlondon278002
pptest
norbz
migrantsresourcecentre
Nessa
jeyson
David1
testlondon277998
AlexandraYazo
manuela
Redraw »