Bachelor's Thesis (UAS)
Degree Program in Information Technology
2013

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WEBSITES IN INTERACTION WITH SOCIAL NETWORKS

– Developing a website interacting with Facebook

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BACHELOR'S THESIS | ABSTRACT
TURKU UNIVERSITY OF APPLIED SCIENCES
Degree Programme | Information Technology
22.12.2013 | 38
Instructor: Patric Granholm

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WEBSITES IN INTERACTION WITH SOCIAL NETWORKS

Nowadays social networks are widely used in people's personal lives. This thesis demonstrates how social networks can be used effectively as advertizing tools for businesses and organizations to promote their services, products and activities. The purpose of this project is to show how to integrate any average website with Facebook using all the features that the social media offers in order to promote an organization or business at almost no cost. In particular, the website of Tietokonehuolto Apache was optimized and promoted in Facebook. To achieve this optimization the following technologies have been used: Wordpress, Search engine optimization plugins and all the available codes that Facebook offers in its developer website area. All these technologies tuned together made it possible to promote the website. All the codes written for this thesis are free to use. No special license or payment is needed. This kind of implementation is suitable for small businesses and organizations that are starting with small budgets. As a result of this integration of the website and Facebook, search engines like, for example, Google and Bing rank Tietokonehuolto Apache's website almost at the top of their search results with the right keywords.

KEYWORDS:

Social networks, website integration, social media, Facebook application, Facebook connect, Tietokonehuolto Apache

FOREWORD

There have been many people involved on this trip so far from my home country in order to achieve something that not everyone has the opportunity to do in Peru. It has been a very hard and long way before I came to Finland to complete a professional degree. The language (English), some economic difficulties and the nostalgia of being far away many years from home became big challenges in the way. Thanks are due to my parents, Oona, my brother Javier, Aini and my teachers who got involved with me on this project. Finally, it is true. Your support was invaluable and now it is my turn to show during my professional life that all the sacrifices were worth it.

December 18th 2013, Turku

Antonio Minaya

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ACRONYMS AND ABBREVIATIONS

API:	An abbreviation for application program interface is a set of routines, protocols, and tools for building software applications.
Bandwidth	Bandwidth describes the maximum data transfer rate of a network or Internet connection. It measures how much data can be sent over a specific connection in a given amount of time.
Browser's cookies	They are small files which are stored in a user's computer. They are designed to hold a modest amount of data specific to a particular client and website, and can be accessed either by the web server or the client computer.
Facebook wall	A Facebook wall is the area on a profile or page where friends and "fans" can post their thoughts, views, or criticisms for everyone to see.
Facebook Connect	Facebook Connect is a single sign-on application which allows users to interact on other websites through their Facebook account.
FLV	A very popular video format on the Web from Adobe. Using the .FLV file extension, Flash videos are played with the latest Flash media player from Adobe as well as other FLV players.
GIF	Graphics Interchange Format, file format used by the WWW. GIF supports color and various resolutions. It also includes data compression, but because it is limited to 256 colors, it is more effective for scanned images such as illustrations rather than color photos.
Header Php	The header() is a function that allows sending a custom header command to the web browser.
I like it	The Like button is a simple plugin that lets people quickly share content on Facebook.
HTML	(Hypertext Markup Language) The standard document format for Web pages, defined by the Internet Engineering Task Force (IETF). Every Web page contains HTML tags (codes) embedded in the text that define the page layout, fonts and hypertext links
JSON	(JavaScript Object Notation) is an independent data exchange format. Json is limited to text and numeric values. Binary values are not supported.

JPG, JPEG	Joint Photographic Experts Group, and pronounced jay-peg. JPEG is a lossy compression technique for color images. Although it can reduce files sizes to about 5% of their normal size, some detail is lost in the compression.
Landing page	It is the page website visitors arrive at after clicking on a link. It could be a homepage, or any other page in the site.
Open source	It refers to a program in which the source code is available to the general public for use and/or modification from its original design free of charge.
REST	(REpresentational State Transfer) It is a simple stateless architecture that generally runs over HTTP
Search engine	It is a software program that searches a database and gathers and reports information that contains or is related to specified terms.
Sessions Php	Session variables hold information about one single user, and are available to all pages in one website application.
SQL	It stands for Structured Query Language. The SQL language is used to create, transform and retrieve information from RDBMS (Relational Database Management Systems).
Social networks	They are websites that allows users to connect with friends and family, share photos, videos, music and other personal information with either a selected group of friends or the public.
Streamer video source	It is the internet resource content sent in compressed form over the Internet and displayed by the viewer in real time.
Third party websites	The term third-party websites refers to web-based technologies that are not exclusively operated or controlled by a host website.

1 INTRODUCTION

1.1 Justification of the project

The topic of this work has been inspired by the fact that nowadays there is a massive use of the social networks in the society; this far Facebook and Twitter have been leading in the top, followed by Google+. The number of users has been growing in the last years and the tendency of this phenomenon is going up every day due to the new technologies introduced every year, like smart phones, iPods, etc.

Due to this tendency the websites have to be integrated (connected) to the social networks as a normal function. This is the reason why it is very important for software developers to know how to achieve the integration in order to exploit of all the features that social networks can offer in an organizational environment. Even for those organizations which already have a website, this work could provide help to integrate social network services to give more functionality to their Internet sites.

1.2 Available Technologies

In order to accomplish this project, it was necessary to choose a social network in which all this project would be based on. According to Jain Sorav's research there are over 40 social networks available for free in the Internet (Sorav 2012). We can find, for example Facebook, MySpace, Twitter, LinkedIn and Google+. For this project, Facebook was chosen due to its popularity and massive use in the Scandinavian countries. This thesis is going to show how to develop a Facebook application and get it integrated to a social network.

1.3 Expectations of the Project

This work aims to show the advantages of using a website integrated with social networks and make a comparison of popularity and functionality with the traditional website in order to advertise a company or an organization.

This work also shows the simplicity of developing a large application using smaller ones already created in the social networks developing environment. Finally, the purpose of this work is to document all the technical details and procedures concerning to the website integration.

1.4 Objectives

There are several objectives covered by the scope of this project:

- Develop a website and a social network application.
- Develop a website that interacts with the social networks features.
- Document all the process and put all the technical information available on this work.
- Show that the integration of social networks to a website platform allows functionality and usability for the user.
- Understand how the social networks work in interaction with the websites.
- Understand how the API from the social networks works with the several programming languages.
- Give the developers an overview about using social networks on a website based platform.

2 THEORETICAL BACKGROUND

2.1 Social Networks

Assuming a concept of networks without computers, networks can be formed from actions like sending a letter or connecting electricity to a home. It is also possible to talk about *people social networks*. People networks can be helpful to, for example, find jobs, meet new friends, and even find life partners.

For example, Juha is your friend, and he knows Laura, and Laura's friend is offering a job that would be perfect for you. This is the concept of *people social networks*. The problem with it is that, in the world without computers, these important connections between those people are hidden. This same network of people could have a huge potential if there would be a way to make these links between people more visible and available to be used so that people can connect to each other efficiently.

One solution to the problem of hidden connections between people is a type of website called social network site. These websites can help people to be more aware of their social networks which are hidden in the real world and also to make completely new connections online.

2.1.1 How social network sites work

In the social networks sites, people can sign up for free in an account profile and then find people they know. When they find someone, they click on a button called *add as friend.* Once they do this, they and that person have a connection in the website that others can see. They are now members of each other's friend networks.

The advantage of this is that people can see who their friends know and see who of their friend's friends they could know. In this sense people are less

strangers to one another; they can contact each other easily. This solves the problem of the *people social networks* because their networks are not hidden anymore. Social networks websites make these connections between people visible, like a map for highways. They show to the travelers how to get to their next destination where there is, for example a job, a new contact or even a life partner. In this sense social networks become suddenly a more useful tool for business.

2.1.2 Facebook

Currently there are many social network sites available to be used for free. This project is based on Facebook. Facebook is valued at about 72 billion euros (Frier 2012) and it had around 901 million users by the end of March 2012 (Rai 2012), which is almost 3 times the population of the United States.

At the end of 2004, Facebook had only 1 million users. That audience grew up until over 900 million and the site is now available to anyone over the world in almost every country in 70 languages (O'Neil 2009). A large amount of the world's population is using Facebook according to the calculations one of three online users are using Facebook actively. One out of nine Facebook users spends an average of 8 hours per day there (Press Trust of India 2012).

Facebook stores more than hundreds of terabytes of information in pictures and videos, which is thousands of time of the information content in any regular library or the equivalent of 1,6 million IPod's storage capability. All that information is about the private user information.

In 2005 Facebook had revenues of around 11.2 million euros. In 2009 it was 583 million Euros and in 2011 the revenues were already around 2.7 billion Euros, which means that the revenues increased almost 5 times during 2005 – 2011. Most of the money is coming from advertising, games and applications available.

2.2 Landing Pages

The purpose of the landing page is to collect somebody's details directly from a Facebook page and generally this is done by giving something away for free, for example, giving free reports, free video series and other kinds of files as exchange of the name and email address of the user.

2.3 Evolution of the Social Media Technologies

The communication is changing; technology is responsible for the way people communicate. As the technology improves rapidly, these changes happen rapidly as well. For example, it took 38 years for the radio, 13 years for the TV, 4 years for the Internet and only 2.5 years for Facebook to reach 50 million users. Google totally changed the way how people find products and services. By the end of the year 2000, Google was the top search engine used over Internet.

Social media is the latest phase of evolution in communication. Only now users realize that social media can help them to connect with products and services in a much more meaningful way.

3 DESCRIPTION OF THE PROJECT

3.1 Available Options

As mentioned previously, there are many options concerning to the social network that can be chosen. It is very typical nowadays that the websites include the option of connecting many social networks simultaneously. The idea and concept are the same in all the cases. If people need to connect to some other social networks, they will only go through that networks documentation and will find it easy to do because they are already familiar with Facebook in this case.

3.1.1 Twitter application and a Web platform

Twitter is another large social network that allows the users to interact with each other by sending fast and short messages. This could be very useful to companies and organizations in order to keep frequent communication with their customers.

Using Twitter has its advantages and disadvantages. Developing web pages in Twitter is easy and fast and it easily promotes the web pages popularity in *search engines*. According to Twitter statistics, a large number of its users is dedicated to the business activities which proves very convenient if a business wants to focus on a specific customer segment to target their products.

On the other hand, nowadays Twitter is limiting the number of developed applications due to the huge amount of applications already created. Twitter does not have an absolute control over all the applications developed by other users. Twitter is also not as popular social platform in Finland as Facebook, for example. (Hirvonen 2013)

3.1.2 Facebook application and a Web platform

Facebook is nowadays one of the most widely used social networks that is not used only to exchange messages and post thoughts. In Facebook, it is also possible to share links, videos, news, games and so on.

Facebook possesses a very good platform for developing applications. In addition, it is easy to find a lot of information on the Internet about Facebook developing applications.

Facebook is the social network with the greatest number of registered users. “[The] company Go-Gulf.com has compiled an infographic that compares...the social networking sites...It is no surprise that Facebook takes the lead.” (Herngaard 2012)

However, there are several disadvantages to consider concerning the Facebook platform. For example, it takes more time to develop applications in Facebook than in Twitter. Another aspect is that the original Facebook language FBML has become out of use. “We removed FBML in July of this year, so any FBML code that was being used in the Static FBML Page app would have stopped working at that time. However, the Static FBML Page app is still able to render plain HTML. On December 5th, we will remove the Static FBML Page app and any Static FBML tabs you had installed on your Page will disappear” (Thampi 2012).

The following table makes a comparison and evaluation about which social network is more suitable for this project.

Evaluation Criteria	Weight	Options	
		Facebook	Twitter
Cost	0.25	2	4
Quality of service	0.20	4	3
Reliability	0.30	3	2
Maintenance	0.15	4	2
Specialized knowledge	0.10	3	4
Total	**1.00**	**3.10**	**2.90**

Table 1. Facebook vs. Twitter

One of the most important aspects to consider in the comparison of these two technologies is the cost of development and maintenance of the solution for the company. Nowadays connecting any website with Facebook is much simpler than Twitter. Moreover, all the available solutions that Twitter can offer would demand extra time researching, meaning extra cost in the developing process for the organization.

4 DEVELOPING THE APPLICATION

After the evaluation of the two social networks mentioned above Facebook was chosen because of its larger number of registered users compared to Twitter and because it possesses a good platform to develop applications. These features would be convenient for this project. The integration of Facebook with the website is simple due to the fact that only some scripts need to be built into the website code.

This thesis specifies how to create a Facebook website and the functionality of Facebook's APIs in order to create an application to interaction between Facebook and a website. The results and limitations of this project are also documented in this work.

4.1 Schedule of the Project

The Gantt diagram in Table 2 illustrates how the work sequences for this project were planned and developed.

Gantt diagram

Activities	Work	Time / hours
Planning the project goals	4	4
Investigating the available solutions	2	2
Developing the prototypes	6	6
Modeling the domain	2	2
Developing the social network's page	8	8
Developing the social network's application	16	16
Integrating the website with the social network	17	17
Testing the project (software testing)	4	4
	59	

Table 2. Project schedule

4.2 Facebook page

4.2.1 Developing a Facebook page

Facebook as a social network page allows us, for example, to share links, news and videos. Regarding to sharing videos YouTube as a stream *video source* has become strongly integrated into Facebook functionality. Nowadays in every mobile application, for example, it is easy to share any YouTube or domestic video in Facebook by just pushing a button on the screen. For this project a YouTube channel was created in order to link with the website page of Tietokonehuolto Apache.

There is no cost attached to the creation of a Facebook page and it is not necessary to possess high knowledge of programming to be able to create a 'good looking' page because it is possible to reuse many applications that have been already created by another companies. The only requirement to create a Facebook page is to have an active account on the site. This account will be used to manage the web page and other applications related to Tietokonehuolto Apache.

4.2.2 Advantages of Facebook pages

One of the first advantages of Facebook pages is that these pages are public rather than personal profiles which are allowed to be visited only by the specific users. Facebook pages, however, can be accessed by anyone in the network which is what we want for this project. This is important, because when customers are browsing the company website, they can easily be linked to the Facebook page without any *login process.*

Using the *news feed* feature of the Facebook pages, the company activities can automatically appear on the main page of the customers profile once they have clicked in '*I like it'*. It is just a matter of time before another user clicks '*I like it'*

button and the page will become more and more popular every time. Through the *news feed* it is also possible to keep the users updated with the latest offers, sales, new products, promotional videos, etc. of the business or organization.

Facebook allows the developers to customize the appearance of their page with particular company designs, colors, logos, videos and other contents proper to the firm. With Facebook pages, it is also possible to offer exclusive applications and contents to the fans or followers of the page.

Finally, once the users have liked the page, all the activities will be shown in their main Facebook page and they will be allowed to leave comments and feedback on the page and participate actively in the company activities through *Facebook comments*. "Customers opinion is important!"

4.2.3 Creating a Facebook application

Currently there are many Facebook applications that are available to be used on the Facebook pages. There are available applications ranging from free to those expensive ones in the online shops. These applications are useful when a company is building their own website and making it very dynamic with a good appearance. Some popular examples of online shops are AppBistro, Involver and Lujure.

Procedure:

1. To create a Facebook application go to facebook.com and then choose ***Create a Page*** *for a celebrity, band or a business*. Then a wizard window will show *Set up Tietokonehuolto* and it will guide through the rest of the process to complete the page creation.
2. Choose *Local business or place* and proceed to put the name of the page and all the business information required.
3. In ***About*** tag add some description.
4. In ***Profile picture*** tag proceed to submit a logo of the organization.
5. In ***Facebook address***, it will show the web address of company page that anyone can see from Internet without login.

In this case the address is:
https://www.facebook.com/tietokonehuoltoapache

6. After that accept everything else.
7. Finally upload a profile and background.
8. The Facebook page developed for this document is shown in Figure 1. and the corresponding link is:
https://www.facebook.com/tietokonehuoltoapache

Figure 1. Facebook page of Tietokonehuolto Apache

Facebook pages start from a landing page which would be the main page or the start page of the website (index.html, index.php). It can be a beauty front page, basic image (*jpg, gif*), flash extension (*flv*) or any other file that a browser can handle.

For this project, the Tietokonehuolto Apache's website was developed based in the PHP language and the MySQL database. This website is used as a landing page in this project. The website is located in the following address: http://www.tietokonehuolto-apache.com/

4.3 Developing a Facebook application

Developing a Facebook application is going to give the company an opportunity to let the customers tell their opinions, suggestions and comments about the several services that the company or organization should offer.

Large companies from different kinds of businesses have developed applications in order to help to promote the logo, name or branch of the company to be more popular among the consumers. Nowadays it is well known that the social networks are extensively used as a good marketing tool by the organizations, in general.

To develop an application in Facebook, it is necessary to have good skills in programming. It is worth noting about Facebook that it has a huge community dedicated to developing applications and support as well. There is a great deal of information in Facebook and blogs which can be used if technical problems occur.

4.3.1 Development tools available in Internet

4.3.1.1 API

The API is an interface based in REST that allows gaining access to the user information, like profile, friends list, photos and events using *GET and POST messages*. *"REST (REpresentational State Transfer) is a simple stateless architecture that generally runs over HTTP" (*Rouse 2005). Currently there are APIs (libraries) that allow the programmers to obtain information from the

Facebook users; these libraries return the information in the file with extension *XML(JSON)*.

JSON (JavaScript Object Notation) by definition *"is an independent data exchange format and is limited to text and numeric values. Binary values are not supported."* (Vogel 2011). The APIs supported by Facebook are available for the following programming languages: *PHP, JavaScript, Action script, Java and .Net.* These APIs, in addition, are widely used in the mobile software in order to customize and synchronize the mobile applications with the users Facebook information.

4.3.1.2 FQL

Coming from the abbreviation Facebook Query Language, FQL is a querying language similar to the *SQL* language. It is used to retrieve information about Facebook users but unlike the APIs, the FQL language allows to make more complex requests to the database.

4.3.1.3 FBML

Coming from the abbreviation Facebook Markup Language, FBML is a programming language similar to HTML that can be embedded in the HTML code in order to enable the integration of the application to the website. This is going to improve the browsing experience of the user which is the purpose and objective of this project. FBML permits access to certain information about the user, like profile, profile activities, canvas and feeds. FBML also supports AJAX and Javascript.

4.3.1.4 Iframe

The Iframe is a programming language that can use HTML, PHP, JavaScript, CSS and JS external libraries. Nowadays Iframe is replacing FBML because it possesses some advantages such as:

- It is possible to follow easily the user's activities using Google Analytics.
- It is possible to set Autoplay to *YouTube videos, flash animations*, etc.
- It is possible to have full functionality of the plugins. For example, with FBML the link  did not work in a FBML tab unless a *Comment Box* was there. With IFrame it does.
- The stability and the speed of loading the FBML tabs have been improved.

4.3.2 Creating the application "Apache Tuki"

First, go to *Facebook.com* and then click in *developers* area and then proceed to create the application. At this point an **id** and **pin-code** will be given to be used in the application code. Second, a name, link and path need to be provided where the application will be stored.

4.3.2.1 Source code that allows to POST on the Facebook wall

The facebook.php and config.php libraries, that are available in the Facebook website, were used to write the following source code that allows to POST on the Facebook wall.

Code

```
<?php
	$appBaseUrl=“https://www.facebook.com/tietokonehuoltoapache”;
		if(isset($_GET[‘code’]))
		{
				header(“Location: ” . $appBaseURL);
				exit;
		}
		 require ‘facebook.php’;
?>

//Here we set up the values of our Facebook application

$facebook = new Facebook(array(
	‘appId’ => ‘1446142525610075’,
	‘secret’ => ‘c12e2f6aef451aa50369bc9b36847fda’
));

$user = $facebook -> getUser();

if($user)
	{
	try	{
		$user_profile = $facebook -> api(‘/me’);
		}
		catch (FacebookApiException $e)
		{
				error_log($e);
				$user = null;
		}
	}
if($user)
	{
		$logoutUrl = $facebook -> getLogoutUrl();
	}
else
	{
		$loginUrl = $facebook -> getLoginUrl
		(array(‘scope’ =>
				‘email,
				publish_stream,
				user_birthday,
				user_location,
				user_work_history,
				user_about_me,
				user_hometown’));
	  }
```

```
// This code verifies if the users are logged. If not, the request will be
resent to Facebook to perform the logging again.


if(!user)
      {
            echo “
            <script type= ‘text/javascript’>
                        top.location.href = $loginUrl;
            </script>”;
            exit;
      }

// This code ask permission to the user to authorize publish in his wall

$fbperms = $facebook -> api(array(
            ‘method’ => ‘fql.query’,
            ‘query’  => “SELECT publish_stream, user_likes
                           FROM permissions
                           WHERE uid = me()”,
            ‘callback’ => ”
      ));

if(isset(   $fbperms[0][“publish_stream”]) &&
            $fbperms[0][“publish_stream”] == 1)
            {

// With this code, we personalize the message to show in the wall:
//The messages in the code require to be in UTF - 8 format.

$newPostId = $facebook->api(‘/me/feed’,‘POST’,array(
‘message’=> ‘You are member of the greatest community of MovieGallery.’
‘picture’=> “http://www.tietokonehuolto-apache.com/wp-
content/themes/SimplePress/images/logo.png”,
‘link’=> “https://www.facebook.com/tietokonehuoltoapache” ,
‘name’ => ‘Movie Gallery Community’,
‘description’ => ‘If you are fans of the movies, this is the right place to
get start, come in and join to us’
            }
            else
            {
            echo “<h2> The user had not allow the post. Post failed</h2>”;
            }
?>
<img src=“ http://www.tietokonehuolto-apache.com/wp-
content/themes/SimplePress/images/logo.png”
width = “500” height = “539”>


</body></html>
```

4.3.3 Evaluation of the application developed

The first limitation observed in this step is that Facebook sets a fixed size to the frame of the application in the screen which is 512 px. This could result in very unpractical and not good looking scrolls. To avoid this, it is important to optimize the website according to the Frame that Facebook defines.

Regarding to the programing there were few restrictions using all the PHP functions. Some functions simply do not work as in a normal web PHP server. For instance, *headers* (WebMax 2012) or *sessions* (W3schools 2012) cannot be used because those functions are disabled and produce some errors. The text string in the code should be in UTF-8 format in order to show all the characters correctly.

In addition, some other restrictions that Facebook establishes in the creation of the applications are that Facebook limits the time when an application is created. This is because there is a massive number of users creating and modifying their applications and Facebook uses this mechanism to control the abuse of the system by some malware code programmers.

In the creation of the Facebook application, the size of the file was considered in order to guarantee the best performance on the Internet because an application has a different performance on the Internet compared to the laboratory environment. Once the application is running on the Internet, many factors will affect its performance, for example the *bandwidth*, computer processing, traffic load, etc.

Another factor is that the security of the application will not be determined by the programming code. Instead of that, it will be strictly dependent on the security features that Facebook establishes, because the application will be running in the Facebook platform environment.

4.4 Developing a website to interact with a social network

Any information or content of a website can be shared in the social networks using a link buttons like '*I like it*' or '*Share it*'. By clicking on these buttons, it is possible to post or share any web content to the social networks (Facebook) through the user profile. Nowadays this is a very powerful marketing tool that businesses can use to make their products more popular on the Internet.

Connecting to Facebook has a number of advantages:

a. No need to register: Nowadays the users are more impatient when they are 'surfing' on the Internet. When people need to use some services in Internet, the website usually requires from the user to be *registered* in the website in order to enjoy more functionalities. This situation could make the difference between continuing reading or jumping to another website. Facebook offers the possibility to fetch all the user information and start login immediately by clicking a single button without the need of filling online forms in order to get registered. Nowadays around 1.11 billion people have an active account in Facebook according to Facebook sources (Associated Press 2013).

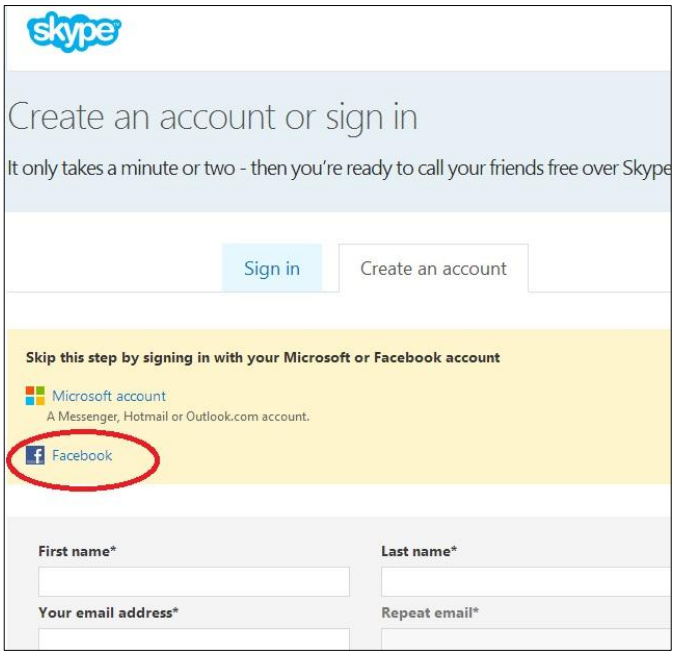

Figure 5. Sign in using Facebook session.

b. Fast login: Facebook is used daily and all the time by people, so when the users are visiting any website which requires login, usually the *Facebook's session* is already stored in the computer, using *browser's cookies.* Finally, when the user just clicks the link *connect with Facebook*, the login occurs instantly without any login information (no need to put *username* and *password*). This is a very powerful mechanism when a connected session needs to be established between the users and a corporative website. The next figures are very common buttons which are found in almost all websites offering to start a session using Facebook features.

Figure 6. Facebook connect buttons.

c. Website promotion: In addition to the fast login feature, another functionality that Facebook can offer is that the user can publish in the user's *Facebook wall* (Rouse 2010) the business activities, and in that way spread this information to other friends.

d. Contacts: Another available feature in Facebook is that once the users are logged in, they can find friends on their Contacts in the website as long as those users are subscribed to the website as well.

4.4.1 Login process between the website and Facebook

Lately one of the most popular features of Facebook has been the '*Facebook Connect'*, because this is how Facebook can connect its *social platform features* with an external websites. *'Facebook connect'* was released as a revolutionary idea in the summer of 2007. It enables users to bring automatically their personal information from Facebook to any place in Internet whenever they need. Likewise, sharing any content from the web into their

Facebook profile to their friends becomes easy. “You won't have to create separate accounts for every website; you only use your Facebook session wherever the *Connect button* is available” (Janssen 2010). This application (that uses APIs) allows the users to avoid the step of registering and logging in to any website that requires authentication.

4.4.1.1 Requirements for *Facebook Connect*

In order to achieve the login to a website by Facebook Connect, it is important to ensure that the *user’s table* in the database has the following fields.

id_users: Usually, this field is a primary key (PK) in the table. The property of *auto increment* is set **on** because the system will handle the rest of the information through this field.

oauth_provider: This field will store the provider. This is recommended in order to have the same table *users* from the social network (Eg: Facebook and Twitter together). In this way, the system will be prepared in case a future upgrade needs to expand the use of authentication credentials from Twitter.

4.4.1.2 The Entity–Relationship model

The next figures show the entity relationship model and demonstrate the integration between Facebook and the website.

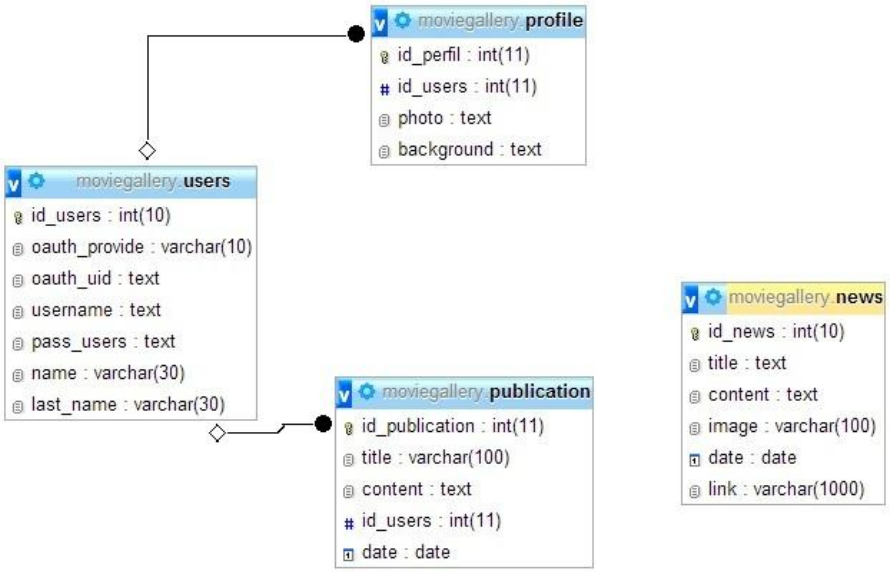

Figure 7. MySQL - Entity relationship model of the database.

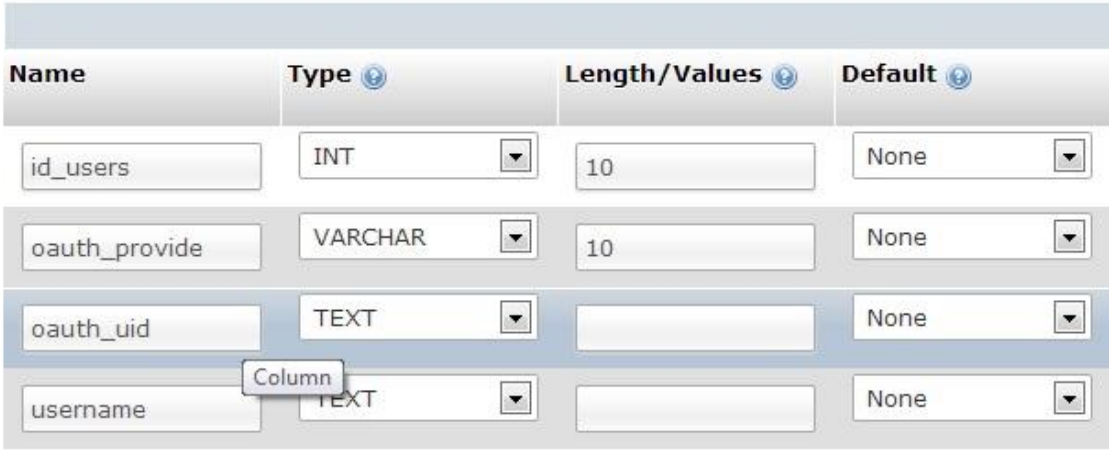

Figure 8. MySQL - Creating the table *users*

In order to be authenticated in the website using Facebook, the user information needs to be retrieved from the four fields mentioned before. To do this, it is just necessary to retrieve the $user['id']. Once $user['id'] is retrieved, a request will

be made to the database for all the rest information of the user sending a FQL sentence. Finally, the database will be connected and the *user table* will be filled with all the values retrieved from Facebook.

4.4.1.3 Connecting to the Database

The following PHP code gives details about how to connect and make the query to the database.

```
mysql_connect('localhost','root','root');
mysql_select_db('system');
$query = mysql_query("SELECT * FROM users WHERE oauth_provider =
'facebook' AND oauth_uid = " . $user['id']);
$result = mysql_fetch_array($query);
```

If it doesn't exist, proceed to add to the table *users*

```
if (empty($result)){


$query = mysql_query("INSERT INTO users (oauth_provider,
oauth_uid, username)
VALUES ('facebook',{$user['id']},'{$user['name']}')");
$query = mysql_query("SELECT * FROM users WHERE id = " .
mysql_insert_id());


$result = mysql_fetch_array($query);
}
```

The next figure, for example, shows the landing page *www.tietokonehuoltoapache.fi* with the button **connect** with Facebook and its respective pop-up after clicking it. Finally Facebook authentication is required to complete the operation.

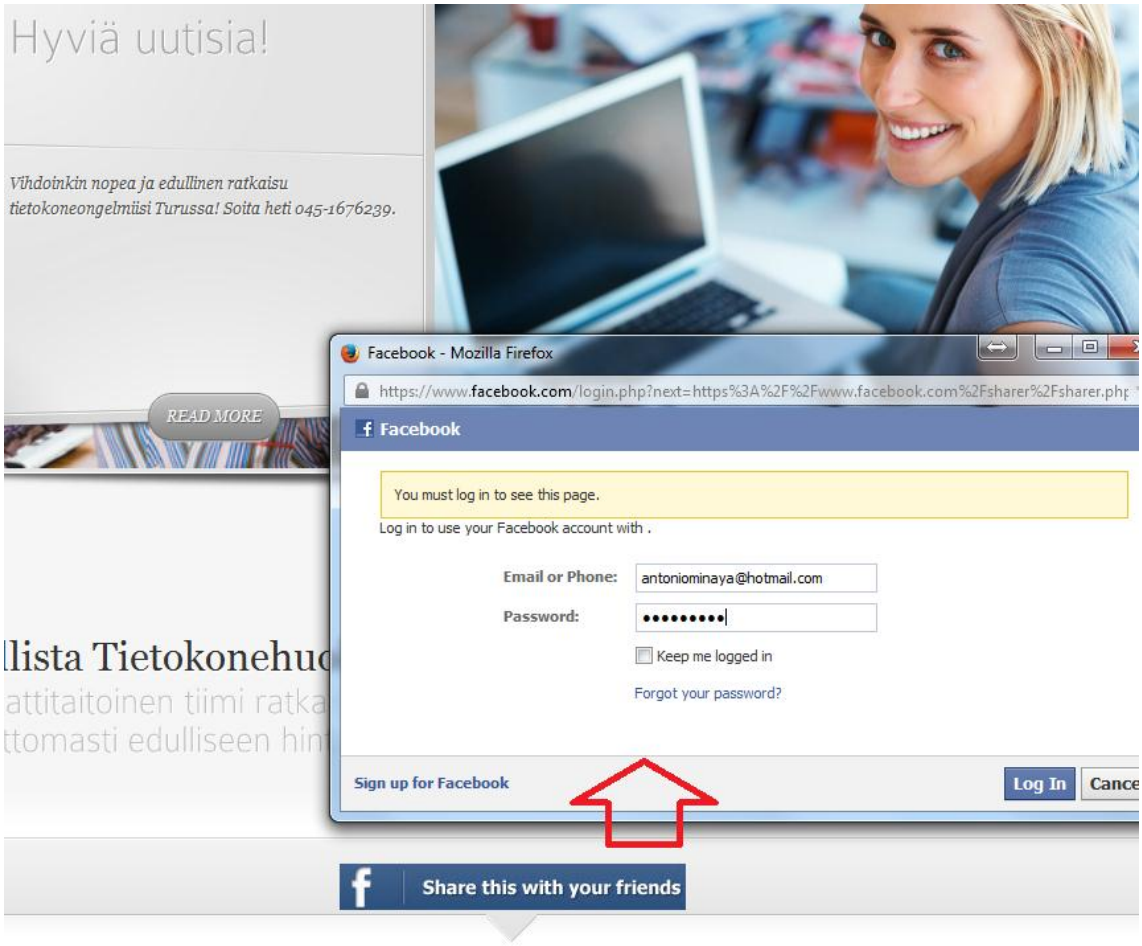

Figure 9. Tietokonehuoltoapache.fi *landing page* asking for Facebook authentication

4.4.2 Sharing News or Links in Facebook

There are many ways to create a typical Facebook share button so that the visitors of the website can send the information to their Facebook profiles and in this way spread the information to their friends and other contacts.

There are many ways to achieve this, but the simplest way is using scripts that Facebook puts on the Internet in order to create this button instantly. However, some web developers can personalize these buttons according to their requirements or give some style using images, icons and even give a particular behavior when the user makes a click on them.

Basically, to share some content in Facebook, a link needs to be generated in order to point the Facebook site, sending the URL that we want to share. Figure 10 shows a popup window that is coming up when some content is shared from the website into the Facebook user profile.

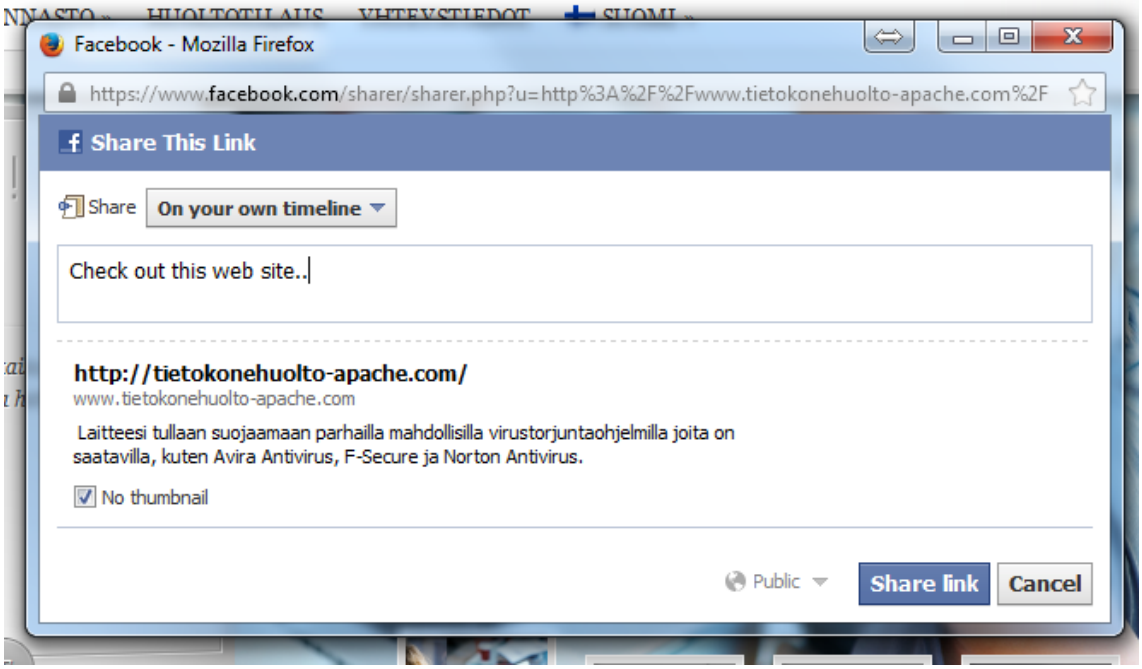

Figure 10. A user posting information from a website into Facebook

The HTML code to insert a button in to the website is:

```
</p><a href="#"
  onclick="
  window.open(

'https://www.facebook.com/sharer/sharer.php?u='+encodeURIComponent(loca
tion.href),
       'facebook-share-dialog',
       'width=626,height=436');
    return false;">
  <img class="size-full wp-image-807 alignnone" alt="facebook-share"
src="http://www.tietokonehuolto-apache.com/wp-
content/uploads/2013/11/facebook-share.jpg" width="262" height="35" />
</a></p>
```

Figure 11 shows the post in the Facebook profile and it is available to be shared with other friends.

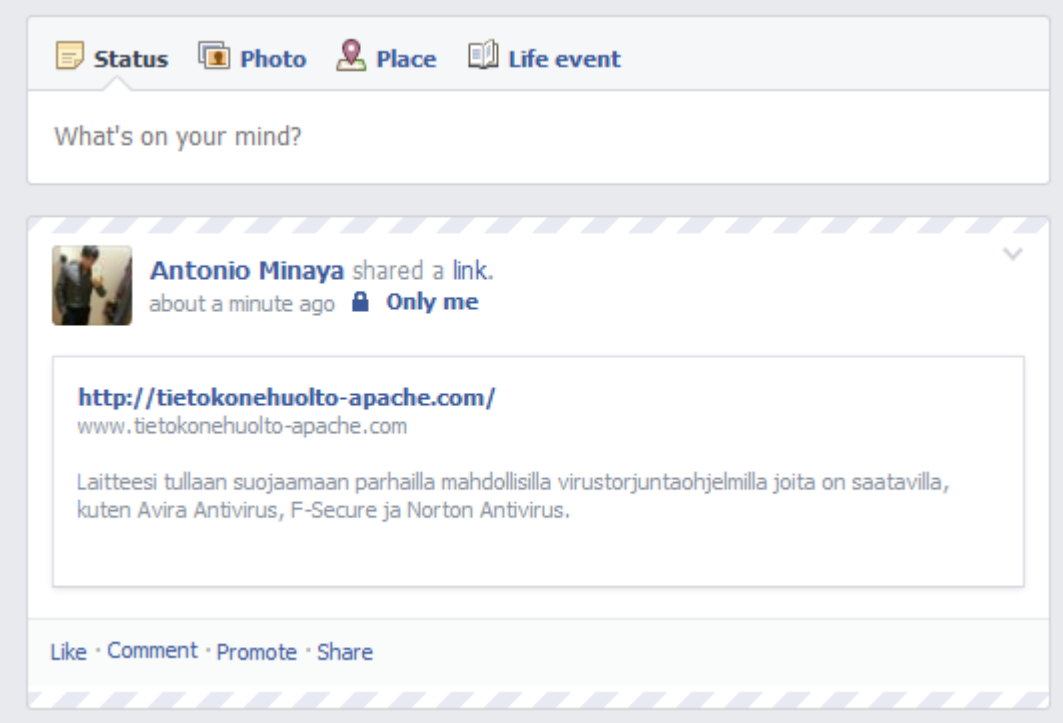

Figure 11. The content posted in the Facebook

4.4.3 Analysis of the Interaction between the Website and Facebook

During the linking of a website with Facebook there was not any problem because it only consisted of inserting few scripts into the website code. However, developing a Facebook application is much more challenging. The performance and security of the application will depend on the server platform environment and Internet bandwidth connection rather than the Facebook servers.

Facebook offers many methods to synchronize it with the organizational website, so it is possible to choose the most suitable one according to the business requirements. In case another website with the feature interacting with

social networks (Facebook, Twitter or Google+) is planned to be developed, it is important to design the project with that goal in mind from the beginning. In this way, future changes, which could represent a lot of technical issues and extra costs, might be avoided.

5 RECOMMENDATIONS

It is more recommendable to develop an application in the Facebook environment than in other social networks (again, this might change in the future) because Facebook possesses a larger development space, which will result in saving time and money during the whole process.

In this thesis many advantages of the social networks have been mentioned but it is also important to keep the disadvantages in mind. For example, the company has to be careful in using social networks because at this point the information of the network users is more exposed than ever before with these technologies putting the privacy of the users at risk from several perspectives.

With the popularity and free cost of social networks, the risk to be attacked by hackers is also high. It is ironic that “everything is coming in the same packet”. Therefore, it is important to backup strategically all the sensible information that is shared in the social networks and on the websites.

Independently of any social network that has been used, it is important to keep *up to date* with the new technologies and be aware of the rapid changes that these sites are making in order to make the corrective changes on time. Otherwise, the application could produce unexpected errors.

Connecting this recommendation with the previous one, companies have to be careful when developing applications in Facebook environment because it is so easy to be confused between a programming error and function incompatibilities. It is important to make a good investigation of the programming language technologies and technical features of the landing page in order not to use too much time in troubleshooting.

6 CONCLUSION

After having experienced all the options that the social networks can offer, I can conclude that nowadays the use of social networks in the business environment is a good tool to advertise an organization effectively and at a low price. The use of social networks is rapidly growing up which supports this technological solution consistently.

From the user's perspective, to have a website which is connected with the social networks allows an easier and faster way to sign up in the website, because there is no need to write a username and password once the user is already logged in to the social network. This feature is useful concerning to the website's success because of the fact that modern Internet users are much more impatient when surfing on the Internet. "People want the information all the time faster and easier".

Those organizations that have small budgets to promote their websites can find a great opportunity in the social network tools and make a great impact on the customer consumption behavior.

Several source codes are available for free on the Internet and are *open source*. *Open source code* means that it is not under copyright license; anyone can see, modify and improve those applications. This situation leads to several developers working with the same sources, which is going to result in plenty of support and information on the Internet to improve the application all the time.

Many developers improve and correct errors of several platforms and everything is going to be available on Internet and be ready to be downloaded. However, this situation will depend on the profit strategy of the developer.

REFERENCES

Frier, S. 2012. Facebook IPO Overvalued at $96 Billion in Global Poll. Consulted 15.7.2013 http://www.bloomberg.com/news/2012-05-11/facebook-ipo-overvalued-at-96-billion-in-global-investors-poll.html .

Herngaard, A. 2012. Which Social Network Has The Highest User Activity? Consulted 15.9.2013 http://www.mindjumpers.com/blog/2012/06/user-activity-infographic/ .

Hirvonen, A. 2013. Täällä somelaiset elävät - katso lista historiallisesta Facebookista juuri avattuun Pheediin. Consulted 22.12.2013 http://yle.fi/uutiset/taalla_somelaiset_elavat_-_katso_lista_historiallisesta_facebookista_juuri_avattuun_pheediin/6518189

Janssen, C. 2010. Facebook Connect. Consulted 30.8.2013 http://www.techopedia.com/definition/4827/facebook-connect .

O'Neil, N. 2009. Facebook Lite Now Available In Over 70 Languages. Consulted 17.8.2013 http://allfacebook.com/facebook-lite-languages_b8017 .

Press Trust of India 2012. Facebook users spend at least 8 hours a day on the site. Consulted 5.9.2013 http://profit.ndtv.com/news/gadgets/article-facebook-users-spend-at-least-8-hours-a-day-on-the-site-310642 .

Rai, A. 2012. Facebook has 901 million users: Moving towards 1 billion. Consulted 13.8.2013 http://videathink.com/social-media/facebook/facebook-now-has-901-million-users/ .

Rouse, M. 2005. REST - Representational State Transfer. Consulted 23.8.2013 http://searchsoa.techtarget.com/definition/REST .

Rouse, M. 2010. Facebook wall. Consulted 28.8.2013 http://whatis.techtarget.com/definition/Facebook-wall .

Sorav, J. 2012. 40 Most Popular Social Networking Sites of the World. Consulted 6.7.2013 http://socialmediatoday.com/node/195917.

Thampi, G. 2012. Prepare to say Good Bye to FBML. Consulted 27.9.2013 http://www.submitinme.com/news/newsdetails-142.aspx .

The Associated Press 2013. Number of active users at Facebook over the years. Consulted 25.8.2013 http://news.yahoo.com/number-active-users-facebook-over-230449748.html.

Vogel L. 2011. What is JSON? Consulted 29.8.2013 http://www.vogella.com/articles/JSON/article.html .

W3schools 2012. PHP Sessions. Consulted 13.7.2013 http://www.w3schools.com/php/php_sessions.asp .

WebMax 2012. Using the header() function in PHP. Consulted 10.7.2013 http://www.web-max.ca/PHP/headers.php .