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**INTERSOCIAL: Unleashing the Power of Social Networks for Regional SMEs**

**Deliverable D3.1.1: Report on the state-of-the-art**

**Action 3.1: State-of-the-Art Report and Requirement Analysis**

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Report on the state-of-the-art  
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*Purpose:* Survey on the functionality offered by available software tools for online social networks analysis

*Results:* A comparison and taxonomy of the tools

*Conclusion:* A variety of tools are available. There is a need to customize them for specific SMEs and advise SMEs on their use.

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## Report on the State-of-the-Art

### Section 1 Introduction

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

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

A very large number of software tools have been developed to capitalize on the new opportunities offered by OSNs.

In this article, we provide a concrete survey of the functionality offered by such tools.

Two Appendixes complement the main part of this report. Appendix I provides a list of how social networks and the related tools can be used for specific tasks of an SME. Appendix II provides additional details for the taxonomy of tools presented in the main part of this report.

### Section 2 Social Networking Tools

A variety of software tools have been developed to explore the social network communities and to analyze them.

Social networking tools take advantage of the APIs offered by the social networks to build advanced functionality. APIs are offered by most of the popular social networks (e.g., for Google+ [1], Facebook [2] and Twitter [3]). APIs allow access to the OSN public data such as to user profiles and other user-generated content. Application developers can integrate their applications and websites within the OSNs or use OSN features within their applications.

Most of the available tools follow a “freemium” model, in which basic functionality is offered for free, while more advanced functionality is offered at a premium. Very few of the tools are open source.

Based on the functionality they offer, tools related to social networks can be distinguished into two broad categories. The first category includes tools that harvest the amount of “big” data that is currently available online in the various social networks to extract useful information. The second category includes tools that help their users organize and promote their own presence in the social network world.

## Section 3 Harvesting Information from OSN data

Many software tools have been developed that monitor and collect content generated in online social networks and explore it in many useful ways. In the following, we describe the basic types of tools that fall in this category.

### 3.1 Search and monitoring tools

Tools in this category offer functionality for searching or monitoring the huge amount of user generated content towards discovering useful information. The searched or monitored content may include blog posts, profile pages in social networks, messages or other material posted by the OSN users and in general any kind of data provided by the users of an OSN. Search may be on the information currently being generated or include historic data collected over long periods of time.

The simplest type of search or monitor is keyword-based search, where the user specifies one or more keywords or terms of interest. The tools returned any content that match the keywords. More advanced querying includes search/monitor of general metrics such as trends and mentions. Search and monitor may be parameterized among a variety of dimensions, such as time and geography. For instance, one may monitor the political trends in Middle East during the last month.

### 3.2 Analysis Tools

Analysis tools go beyond search and monitor and offer suites of data mining, machine learning and visualization tools for handling “big data” collected from social networks. Available tools may track the overall user and audience engagement, measure the strength, passion, sentiment, reach, growth of a brand. They also offer multi-dimensional comparisons with competitors. Other available functionality includes support for identifying top influencers and various predictions tasks, such as predicting potential customers and future trends. Other types of analysis refer to trust management, expert finding and spam detection.

Analysis tools may provide integrated support for existing tools such as Google Analytics and Facebook Insights as well as various graphical illustrations and time charts.

### 3.3 Alerts/Notifications Tools

Tools in this category offer immediate notification or alerts to draw attention of their users to important events as they happen. Such important events may be related to the brand, the company, a marketing campaign or to actions of its competitors. Events can also be of a broader interest, more loosely related to the users of the tool, such as a developing news story or an emerging trend.

## Section 4 Organizing the OSN Presence

The large number of available OSNs and the huge amount of the generated activity in each of them created the need to develop tools that would help users in organizing and promoting their presence in OSNs. We describe next the basic types of tools that fall in this category.

### 4.1 OSN-aware Content Management

Tools that fall into this category help their users enhance their web pages with social plug-ins. They also assist their users on personalizing the content and appearance of their web pages based on target demographics, such as language and location. In addition, they help users publish pages on multiple channels and offer facilities for monitoring access on the content of the pages.

### 4.2 Management and Coordination of OSN presence

Such tools offer possibilities of collectively managing the presence of an individual or a company in a variety of social tools (that is one's overall social presence) efficiently and effectively. Most often they offer a single point where users can manage their profiles in many social network sites at once, monitor traffic on such sites and aggregate their followers from different sites. They also offer to their users a comparative analysis of their presence at the different social networks. Archival of related information over time is also possible.

In additions, users can post content in many sites at once and monitor related responses. Updates to profiles can also happen centrally and propagated from this central cite to all

related social networks. Tools offer also possibilities for scheduling the delivery of content or updates at specific future times or to specific targets.

Finally, they support the collaborative management of the social presence by offering features that allow one to assign specific tasks to each team member.

### 4.3 Promotions/campaigns Builders on Social Sites

Such tools view the users of the OSNs as potential recipients of promotion-related activities. They offer help in creating a large variety of such promotion activities including contests, advertisements, giveaways and incentive surveys. Information collected about the behavior of the OSN users can be exploited to personalize the activities. The use of OSN communities allows reaching a very large audience in a very effective manner. The online nature of the interaction as well as the possibility of interaction among users makes the created campaigns very attractive.

## Section 5 Comparative Analysis and Conclusions

A variety of tool are available that can be used to leverage data provided by social networks. Table 1 provides a short list of the functionality provided by such social networking tools based on the taxonomy we have introduced in this report. As seen, the functionality differs. There is a need to customize these tools so that the offered functionality can be tailored to the requirements of each specific SME.

**Table 1:** *Summary of the functionality offered by tools for social networks*

Category: Harvesting Information from OSNs	
Tool Type	Features
Search and monitor	Search for keyword/phrases Top users (based on followers, likes, posts, etc) Top keywords Trends Mentions Comparison with competitors
Analysis	Given a term find most related keywords and top users Track the strength, passion, sentiment, reach, growth of

	<p>brand, company, etc</p> <p>Audience and overall user engagement and ROI analytics</p> <p>Comparisons with competitors</p> <p>Graphical illustrations and time charts</p> <p>Integrated use of other tools</p> <p>Analyze fans demographics</p>
<b>Alerts/Notifications</b>	Alerts of brand, company, marketing campaign, a developing news story, a competitor, a relevant trend
<b>Category: Organizing the OSN presence</b>	
<b>Tool Type</b>	<b>Features</b>
Content Management	<p>Page building</p> <p>Publish page on multiple channels</p> <p>Social plugins</p> <p>Content and appearance personalization based on target age, language, location</p>
Management and coordination of social network presence	<p>Social network presence aggregation:</p> <p>keep track of presence in all social networks</p> <p>update at a single place</p> <p>Schedule messages and tweets and monitor responses</p> <p>Comparative analysis of presence at different social networks</p> <p>Collaborate and assign tasks to team members</p> <p>Archival service</p>
Promotions/campaigns builder on social sites	<p>Contests</p> <p>Giveaways</p> <p>Incentive-based surveys</p> <p>Sweepstakes</p> <p>Advertisements</p>
<b>Miscellaneous</b>	
URL shortening services	

In Table 2, we provide a list of some representative tools along with their functionality based on the categories in Table 2, their scope and their pricing policy.

**Table 2:** *List of some representative available tools*

<b>Tool Name</b>	<b>Functionality</b>	<b>Scope</b>	<b>Pricing Policy</b>
<b>Radian6</b>	Social media monitoring	Facebook, Twitter, blogs and media sharing platforms	Fremium – Some of the simple features are free
<b>Wildfire</b>	Product suite: Promotion builder, Monitor, Page builder, Analytics, Messenger	Facebook, Twitter, LinkedIn	Various plans
<b>Social Mention</b>	Search and analysis platform	100+ social sites including: Twitter, Facebook, YouTube, Digg, etc	Free API that provides access to a single stream of real-time search data aggregated from numerous social media properties
<b>Technorati</b>	Search over the blogosphere	Over 1,2 million blogs	Free search,
<b>XeeMe</b>	Social network presence manager	200 social networks, more can be added	Fremium - Some features are free
<b>Hootsuite</b>	Social network presence manager	All popular ones	Fremium - Some features are free
<b>Adobe Social</b>	Social network publishing workflow	All popular ones	Commercial software
<b>Klout</b>	Social influence score measurement and social performance	Facebook, Twitter	Fremium SaaS
<b>Sysomos</b>	Social media analytics	Twitter, Facebook, media sharing	Commercial SaaS
<b>Social Flow</b>	Analysis tool for social graph and Social Media publishing advisor	Facebook, Twitter through API and media sharing	Commercial SaaS
<b>Paper.li</b>	Social personal newspaper – aggregator	Twitter and media sharing OSN	Free with plugin and APIs
<b>Google Analytics</b>	Social media performance Analysis tools	Popular social media and blogging platforms	Free extendable with commercial third part plugins

<b>Shoutlet</b>	Social promotion and marketing	Popular social media and blogging platforms	Commercial SaaS
<b>Crowdboost</b>	Social promotion and campaigns, marketing and analytics for brands	Popular social media and blogging platforms	Commercial as a Service or SaaS

## APPENDIX I: The APQC's Process Classification Framework

The APQC's Process Classification Framework (PCF), also used in [56] and available for download from [57], is a taxonomy of business processes developed as an open standard for organizations regardless of their size, geography or of industry type. The PCF has been in continuous development since 1992, when it involved over 80 organizations. The PCF organizes operating and management processes into 12 high-level functional categories. Each category contains groups of processes, processes and activities. In Table 3, we present some examples of processes categories and activities whose operation could be enhanced through the use of social networking tools.

**Table 3: Business processes as defined by PCF**

Number	Business Process Category	Example process groups and activities
1.0	Develop Vision and Strategy	Analyze and evaluate competition, identify economic trends, analyze demographics, identify social and cultural changes, capture and access customer needs
2.0	Design and Manage Products and Services	Evaluate performance of existing products/services against market opportunities, conduct customer tests and interviews
3.0	Market and Sell Products and Services	Identify market segments, determine target segments, develop value proposition including brand positioning for target segments, develop and manage promotional activities, track customer management measures
4.0	Deliver Products and Services	Production scheduling supported from targeted marketing campaign, mining of potential customer data using analysis tools
5.0	Manage Customer Service	Customer support and expert routing
6.0	Develop and Manage Human Capital	Internal social networking tools, Professional development, Expert Recruiting using professional networks line LinkedIn
7.0	Manage Information Technology	Modeling available resources and information sources allocation as internal social graphs  Data preparation such as definition of strategies, utilization of Content Management including privacy
8.0	Manage Financial Resources	Tracking and performance of new customer

		<p>and product strategies using social network data mining, optimizing customer and product mix by monitoring personalized performances using SN,</p> <p>Manage internal control procedures such as defining and communicating the code of ethics</p>
9.0	Acquire, Construct, and Manage Property	Added for completeness, some processes and activities can be defined for specific companies e.g. property and asset management
10.0	Manage Environmental Health and Safety	Added for completeness, some processes and activities can be defined for specific companies e.g. industrial environmental policy promotion, ecotech and government agencies dealing with Public Health
11.0	Manage External Relationships	Applied in public relations program marketing and performance monitoring, community and media relationships, supported reputation monitoring, legal and ethical issues in relation to external parties and/or consumers
12.0	Manage Knowledge, Improvement, and Change	Knowledge sharing internal social networks Strategic KM SN Mining

## APPENDIX II: Detailed List of Social Networking Tools

In this Appendix, we present examples of available OSN and social media tools. First, we present some popular online social networks and then some social networking tools. The Appendix ends with a complete list of the tools using the taxonomy introduced in the main part of this report.

### II. 1. Online Social Networks

In the following paragraphs, we present a number of popular social networks including social networking sites, blogging and micro-blogging, media sharing networks and location based tools.

Note that for a business enterprise to achieve a successful social media presence, the enterprise must focus both on the social network and on the content that is shared among the member of this network. The size, connected profiles, user relevance and activity of this network and the quality of the content are of equal importance. Thus, a clear understanding of both social network building and content development is necessary.

#### Social networking sites

Social Networking Sites can be defined as web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system [1]. The nature of these connections may vary from site to site. The most popular OSN sites are presented below.

*Facebook*<sup>™</sup> is the most popular free social networking website, where registered SMEs can create profiles, fan or product pages, upload multimedia content and keep in touch with their customers. Facebook is fully customizable through templates and developer kits for pages, mobiles and apps [2].

*LinkedIn*<sup>™</sup> is a freemium social networking website geared towards companies and industry professionals looking to make new business contacts or keep in touch with previous co-workers, affiliates, and clients. LinkedIn is providing developer tools as an API to integrate the social platform to an SME site e.g. to allow candidates to apply for a company position through their LinkedIn profile [3].

*Google+*<sup>™</sup> (pronounced Google plus) is the Google's social networking project. Its initial target was to replicate the way people interact offline more closely than is the case in

other social networking services, such as Facebook and Twitter. Google is offering comprehensive APIs in order to start integrating Google+ with business and networking apps [4].

*Ning*<sup>TM</sup> is not a social networking website, but a commercial platform for creating a personal or business social network. Ning platform is designed for brands of all shapes and sizes to build custom and powerful social websites using provided API [5].

## **Blogging and Microblogging**

Blogging web platforms have been initially designed as a SaaS (Software as a Service) where users can post content, and lately, some of the tools are provided as a PaaS (Platform as a Service) where the users are able to save posts under categories, and/or label them with tags as keywords. The blogs can be used as a part of an SME website to enhance and replace the “news, opinions, use cases and white papers” communication channel with customers.

Some popular platforms are the Blogger [6], WordPress [7], Typepad [8] and Posterous [9]. WordPress is provided also as an open source PaaS that can be installed easily to a company website. All platforms can be extended and connected to popular social media sites through plug-ins.

Microblogging is a broadcast medium in the form of blogging. A microblog differs from a traditional blog in that its content is typically smaller in both actual and aggregate file size. Microblogs "allow users to exchange small elements of content such as short sentences, individual images, or video links" [10].

Twitter [11] is an online social networking microblogging service that enables its users to send and read text-based posts of up to 140 characters, known as "tweets". Twitter is used from large corporations, small business ventures and independent professionals as a tool for spreading news and opinion papers, promotion of products and advertising, in order to build their following, reputation, and customer's trust with these simple practices [12]:

- *Share*. Share photos and behind the scenes info, give a glimpse of developing projects and events.
- *Listen*. Regularly monitor the comments about company, brand, and products.
- *Ask*. Ask questions of followers to glean valuable insights.
- *Respond*. Respond to compliments and feedback in real time
- *Reward*. Tweet updates about special offers, discounts and time-sensitive deals.
- *Demonstrate wider leadership and knowhow*. Reference articles and links about the bigger picture as it relates to business.

- *Champion your stakeholders.* Retweet and reply publicly to great tweets posted by followers and customers.
- *Establish the right voice.* Twitter users tend to prefer a direct, genuine, and of course, a likable tone from the business.

Another microblogging approach is Tumblr [13], a popular platform started and designed for creative self-expression. Now Tumblr is considered also as a business tool mainly with successful cases in entertainment, art and fashion industry targeting a younger audience compared to Twitter.

## Media sharing

Media sharing platforms are part of social media strategy for a business, aim to provide rich media information for products, services and achievements. SMEs can create information channels including

- video (YouTube [14], Vimeo[15]),
- audio (Soundcloud [16], Audioboo [17], iTunes [18]),
- photos (Flickr [19], Instagram [20]) and
- white papers, presentations and documents (Google docs [21], SlideShare [22], Issuu [23]).

## Geo Location – Location based OSNs

The combination of social media tools and geographical location created the so called “Geosocial Networking” is a type of social networking in which geographic services and capabilities such as geocoding and geotagging are used to enable additional social dynamics [37]. User-submitted location data or geolocation techniques can allow social networks to connect and coordinate users with local people or events that match their interests. For mobile social networks, texted location information or mobile phone tracking can enable location-based services to enrich social networking [38].

The representative example of geosocial tools is FourSquare [39]. FourSquare is a location-based social networking website for mobile devices (iOS, Android). Users "check in" at venues using a mobile website, text messaging or a device-specific application by selecting from a list of venues the application locates nearby. Users can choose to have their check-ins posted on their social media accounts e.g. Twitter, Facebook.

Lately, all popular social media tools are integrating as well the user location while posting messages, pictures or multimedia information.

## II.2. Online Social Networks Tools

Social media services like Twitter, Facebook, and Google are the fundamental pillars for building social graph and promoting information sharing.

All OSN mentioned in the previous chapters provide Applications Programming Interfaces (APIs), a way for outside parties to build a product or an application on an existing service by harvesting the content shared in social networking sites. With the rich information available from social graphs and social technology, thousands of applications, services, and businesses have been created that help a person do everything from networking with travelers to playing online social games.

Current trends initiated by users are calling for more open APIs, better data portability, and more robust features that could handle the increasing flow of new content of diverse type.

In the following paragraphs, the basic categories of tools that are build using social media APIs are presented in terms of their functionality for the end users and enterprises.

### **Content aggregators**

News syndication allows businesses to distribute their updated, dynamic content to users without visiting their website. Customers can sign up for feeds and then access and manage those feeds all at once using social media and news readers such as Del.icio.us [24], digg [25], stumbleupon [26], reddit [27], feedburner [28], Technorati [29] and Google Reader [30].

### **Social media as communication tools**

Spreading the information through social channels is very important for a brand. With the evolvement of social media tools, a set of tools has been developed or extended to combine the classic communication channels with social media presence. Such tools combine the mailing lists with Facebook, twitter, analytics and monitoring tools like Mailchimp [31] or replace the business newsletters with novel social media generated newspapers and aggregators like Paper.li [32] and Scoop.it [33].

### **Social media presence management tools**

With the growing diversity of social online engagements, presence management becomes more and more important. Representative examples are XeeMe, TweetDeck and HootSuite.

XeeMe [34] is a social media software company focusing on social presence management. A “XeeMe” lets users or brands organize, grow and monitor their social

presence. XeeMe provides a common interface to concentrate all profiles and presences, analytics tools that help users monitor their progress and success, learn about network relevancy, compare themselves or their brands with others.

Tweetdeck [35] and Hootsuite [36] are social media dashboard designed to handle multiple Twitter and Facebook accounts simultaneously.

### **Monitoring social presence: statistics, tracking and analytics**

Social Media Monitoring and Analytics tools are an important part of the social presence of connected enterprises, in order to measure the impact of social media in relation to business goals and conversions.

*Radian6* [40] is a popular social media monitoring tool that helps businesses to track various social media and get insights into brands performance. Radian6 cover almost all popular social media channels like blogs, twitter and Facebook. Radian6 enables organizations to become Socially Engaged Enterprises. It provides detailed analytics reports and charts extracted through media listening, tracking, monitoring and engagement tools.

*Google Analytics for social media* [41] is an extension of the Google tool through customs plug-in able to measure the impact of social media on user defined metrics, to learn which social sources refer engaged visitors and to discover what visitors are sharing and where they're sharing it. The platform can be extended with freemium or commercial plug-gin for different social media channels.

*Klout* [42] is a new tool created to measure the “social influence” score for twitter and Facebook accounts. The scoring approach is related to social presence rate, followers and their scores (True Reach: How many people a user influences, Amplification: How much a user influences its followers, Network Impact: The influence of the network).

*Grader* [43] is a suite of tools that helps a company to measure and analyze the marketing efforts. Grader provides special analysis tool for marketing, twitter, book authors and search keywords scoring.

### **Social performance and marketing for enterprises**

The category, as redefined by the web strategist Jeremiah Owyang [44], includes software tools and methods that analyze, plan, deliver, and measure media such as ads, content, and conversations published in social channels. Those services are commercially provided by major software vendors, SMEs and start-ups. Some examples are presented below:

*Adobe Social* [45], an integrated tool to the Adobe's Publishing Workflow designed to simplify social marketing within a common platform, unifying engagement with listening and business analytics, after the acquisition of *Omniiture* [46] and *Context Optional* [47].

*Sysomos* [48], social media analytics with a product suite that provides customers with the tools to measure, monitor, understand and engage with the social media landscape. Sysomos provides instant access to all social media conversations from blogs, social networks and micro-blogging services to forums, video sites and media sources.

*SocialFlow* [49], analyzes the current social graph activity, guides users on content creation and then publishes at highest resonance. The Optimized Publisher™ can be used to manage all updates for Twitter and Facebook, while the SocialFlow AttentionScore™ calculates the value of your content on the social graph.

*BuddyMedia* [50] a start-up that offers tools for both campaign platform marketing, analytics and ranking, along with social ads (after acquiring the Brighter Option Facebook ads platform).

*Bazaarvoice* [51], a social analytics platform, offering tools for connecting brands with their customers, turning their earned content from ratings and reviews into a new social ad unit inside or outside of Facebook.

*Crowdboost* [52] Analytics platform that measure and optimize the social media marketing campaign, supported with intelligent tools in order to send the content at the most effective times.

*Prosodic* [53] is a social media predictive analytics software designed for Real-Time Conversations between Brands and their Audiences, which analyzes the “who, what, where” in order to aid publishers.

*Shoutlet* [54], an enterprise social marketing platform focused on larger scale companies can help with complicated publishing needs, at scale.

*Webtrends Social* [55], offer software packages to tracks content and ads across multiple channels and measure the performance of the campaigns across multiple digital channels: site, social, mobile.

An overview of the social networking tools based on the categories and features presented on the main part of this report is presented in Table 4.

**Table 4:** Social media tools by service category. Note that some of the social networks have also been extended to provide some additional functionality besides networking itself and thus are included in this table

OSN/ Tool/ Platform	Search and Monitor	Analysis	Alerts and Notifications	Content Management	Management of Social Network Presence	Promotion Campaign Builder
Facebook	X	X	X	X	X	
LinkedIn	X		X	X		
Google+	X		X	X		
Ning	X			X		
Blogger	X			X		
WordPress	X			X		
TypePad	X			X		
Posterous	X			X		
Twitter	X		X	X	X	
Tumblr	X			X		
Youtube				X		
Vimeo				X		
SoundCloud				X		
AudioBoo				X		
iTunes				X		
Flickr	X			X		
Instagram	X		X	X		
GoogleDocs				X		
SlideShare				X		
Issuu				X		
Del.icio.us	X		X	X		
digg	X			X		
Stumbleupon	X			X		
reddit	X		X	X		
feedburner	X		X	X		
Technorati	X		X	X		
Googlereader	X		X	X		
Mailchimp	X					X
Paper.li	X		X	X		X

OSN/ Tool/ Platform	Search and Monitor	Analysis	Alerts and Notifications	Content Management	Management of Social Network Presence	Promotion Campaign Builder
Scoop.it	X		X	X		X
XeeMe	X			X	X	X
TweetDeck	X			X	X	X
Hootsuite	X			X	X	X
Foursquare			X	X		
Radian6	X	X				X
Google Analytics	X	X				
Klout	X	X				
Grader	X	X				
Adobe Social	X	X		X		X
Sysomos	X	X			X	X
SocialFlow	X	X			X	X
BuddyMedia	X	X				X
BazaarVoice	X	X			X	X
Crowdbooster	X	X				X
Prosodic	X	X			X	X
Shoutlet	X				X	X
Webtrends Social	X	X				

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