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# TOWARDS THE CONVERGENCE OF TECHNOLOGIES USING OPEN STANDARDS IN SOCIAL NETWORKING SOFTWARE

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## Abstract

This paper is an analytical research on Social Networks (SN), namely the issues of open standards, data portability and interoperability. Some references are made to personal identity protecting, profiling as these new technologies make it possible for individuals to aggregate and share this information much more easily. Interoperability and data portability are specific issues of my ongoing PhD, where we have started with the assumption that people can use computers in collaborative learning environments, while constructing knowledge. Our specific topic is: how web systems might improve the computer's usability in learning processes? At present my focus is related to SN usage in high school contexts. I am applying a Web 2.0 social software tool, which allows students and teachers to interact and share data among them. We are just starting collecting data to analyze its impact and finding ways to improve the user's involvement, participation or motivation levels at school.

**Keywords:** Data Portability, Interoperability, Open Standard, Social Networks.

## 1 Introduction

Most Web sites allow us to create virtual identities by allowing us to register on those places. However these services collect and store data far more than just the standard suite of identity data (name, address, and phone). They increasingly store information that is directly linked to those virtual identities.

Despite being easy for the users to input their data into the system: user profiles, blog posts, media, list of friends, etc, it seems rather difficult to move their data someplace else or simply want to make a backup. After all, why would any company make it easy for its customers to leave? It's for this reason that amongst web 2.0 developers, data portability is being promoted as a much needed requirement to free customer lock-in.

Recently, Eric Schimdt at Web 2.0 summit reinforced this issue by claiming that instead of large company behaviour to protect their business practices against the choice of the users, they should let users move their data around, never trap the data of an end user. Data portability, on Marshal Kirkpatrick [1] opinion, should be considered even a rights issue: "I own rights on my data; I want to be able to easily and quickly take it with me from one social network to another." But do users of social software really care about such issue as data export? And why should companies support data portability? It is said that users do care mainly because they don't like to create all those relationships and upload their photos all over again, or our web presence can be seen as a branch of our identity, and we should absolutely own the data associated with it.

Therefore data portability must be seen as just another part of providing a good and trustworthy service.

Another interesting issue related with Social Networks is interoperability, specially for letting my friends follow me on all sites I sign up, or tell me which friends are already on a particular new site, and keep track of new friends joining over time. In fact we are assisting today a thousand social networks bloom and there are at least four categories of SN Sites:

- Leisure Oriented (e.g. Facebook, Myspace)
- Professional Networking (e.g. LinkedIn)

- Media Sharing (e.g. YouTube, Flickr)
- Virtual Meeting Place (e.g. Second Life)

And the interoperability among these SN is required. For example, Dopplr lets users upload and share their travel itineraries with a group of trusted fellow travelers and provides connection with Facebook friend lists.

One last and most important issue is data identity and its control. In response to these issues, the research community is coming up with new protocols and frameworks for collecting, using and governing identity data. For instances the CloudTripper Project is developing a way for individuals to "take their data with them" as they cross the Web, just as they keep their wallets with them as they move around in the real world.

All these three issues: Data portability, Interoperability and personal identity protection are, on our point of view, requisites a SN system should have. In order to achieve these keystones one must look at the developers community and be connected with the global orientation. Unfortunately there isn't yet a clear definition on these matters. The personal identity protection is the one that seems will come up with a global solution, thanks to the episode where Facebook blocked "power user" Robert Scoble's account when he attempted to test out a new feature from Plaxo that synchronized Facebook "friends list" e-mail addresses with Plaxo's contact management system. What seems interesting though is that major corporations are opening their platforms and starting conversations between them to reach open standards.

This paper is organized in the following sections: Section 1, this section, introduced the importance of data portability, interoperability and data identity in SN systems; Section 2 will describe the ongoing process of opening platforms in the SN field; Section 3 will describe some open standards; Section 4 will show the relation of SN with my PhD work; finally Section 5 will list some conclusions and next steps for our work.

## **2 Data portability**

The Data portability workgroup [2] has recently gained a new dimension when representatives from Facebook, Google, and Plaxo have signed as members. This workgroup is a sort of alliance of Web thinkers devoted to create a reference design for end-to-end data portability, using existing technologies.

The developers were enthusiastic by seeing these corporations going towards the same direction on this particular issue. In one hand, Facebook is embracing open standards and open access, and that is a huge fundamental change from its previous position on closed standards [3] , on the other hand, Google is developing a common platform- OpenSocial [4], where several companies joined, namely Plaxo, Hi5, Ning, Friendster, Bebo, LinkedIn and surprisingly at the last minute Myspace.

However it is said that Google goal is to compete with Facebook's widget platform, not actually opening up social networks.

Nevertheless OpenSocial is said to use open-source code to allow any participating social media site to implement a common set of application program interfaces (APIs) and create "universal" applications, but does not yet include a plan for data sharing between different services. It is expected to be ready in early 2008. Moreover, Google has their own group Social Network Portability [5], and if they all agree that data portability should bridge one social media site to another, using existing technologies like OpenID [6] and RSS, the road ahead won't be a smooth one towards true interoperability.

In the meantime, a number of Google OpenSocial partners have launched independent developer platform strategies: Bebo, Friendster, LindedIn. They aren't users impressive compared with Myspace or Facebok (fig. 1) but they are positioning themselves in both "open" platforms – Facebook, OpenSocial and also opening their platform to other developers, which brings another dimension into these matters.

In my opinion Data Portability is yet to come, despite some efforts are being made to achieve it, it seems the users are forcing the companies to provide it but they don't want to give to the user control so rapidly and lose their positioning in this raising market.

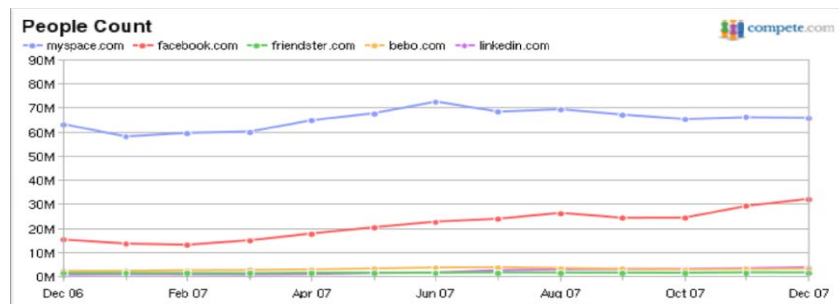


Fig.1 Site analytics of year 2007

### 3 Emergent Open Standards

#### 3.1 OpenID

OpenID was created by Web 2.0 guru Brad Fitzpatrick [7], and is designed to facilitate single log-ins [8] for multiple unaffiliated Web sites.

Recently in a debate over social-networking interoperability [9], universal standards have been a raising issue. It is expected Yahoo to support OpenID, which will represent a total of 368 million Web users, by the end of January 2008. With this, sites that accept OpenID will have the option of displaying a "Sign in with your Yahoo ID" button.

As more major Web players start to sign onto OpenID there will inevitably be security concerns raised. Since OpenID has no central repository for identity management, users can choose which sites they trust with their OpenIDs.

#### 3.2. FOAF, XRI and XDI

In mid 2000 FOAF appeared and now is a stable core of classes and properties that will not be changed, beyond modest adjustments [10]. FOAF is a linked information system. It is built using decentralized Semantic Web technology, and has been designed to allow for integration of data across a variety of applications, Web sites and services, and software systems. The biggest problem with FOAF is that profile sharing is done on a FOAF-file level of granularity, so we must have multiple FOAF files if we want to share different information with different entities. Storing all the FOAF info in a database and dynamically creating a specialized (WRT the requester) FOAF file is one way to get around this limitation.

The core idea is that to provide user control to what parts of the profile — we can't tie the access control format down to a specific blog, domain, application, that you are using. We need the access control format to be as portable as the data it is controlling, or else we'll never get to real portable data and relationships.

XRI and XDI provide an open standard way to do this [11]. They break the problem of portable access control into two parts. The first part is a portable addressing format — a way to address the data being controlled that is domain- and application- independent. That's the job of XRI (Extensible Resource Identifier). It enables a layer of

abstract addressing on top of any network-addressable resource that enables portability of data across domains and applications.

The second part is a portable format for expressing the controls an individual (or other data authority) wants to assert over access and sharing of their information. That's the job of XDI (XRI Data Interchange), a very simple XML format in which every node of a data graph is XRI-addressable. Within this graph, certain nodes are used to store the access control metadata. In XDI these are called link contracts.

Link contracts are the portable access control format users are asking for. XDI link contracts have already been implemented in a large scale data sharing project for La Leche League International [12] [13].

## **4 Related work**

In a high school Community, Social Networks are being massively used by youngsters, where they like to meet new people and establish a lot of social connections. This social interaction caught my attention and started my research wondering how it would be possible to use this generalized interest towards sharing knowledge. Of course the teacher's community, as a part of the school, should participate, but also other members, namely parents or other agents should get involved.

Recently I came across with a learning theory- Conectivism, which argues through disperse meaning learner's must recognize the patterns, which appear to be beneath it. Therefore, meaning-making and forming connections between specialized communities are important activities [14]. Moreover Downes [15] refers it and mentions that the newly empowered learner will give more focus to learning systems based on conversation, interaction, on sharing, creation and participation. He regards learning not as a separate activity, but rather, as embedded in meaningful activities such as games or workflows. Brown research can reinforce this theory when he claims that the internet leverages the small efforts of many with the large efforts of few [16]. Also the new e-learning 2.0 systems go in this direction because comprises resources and services organized in order to offer learning opportunities in a network environment. Win Veen in his book [17] "Homo Zappiens growing up in a digital age", explains how technology is influencing the skills and attitudes of learners as well as how games and TV can become tools for learning in this changing learning paradigm.

However this approach is not new. The Vygotsky Zone of Proximal Development states that learners constructs knowledge due to the interactions among them [18]. One might consider we are using the social constructivist theory that sees learning as a social process of knowledge construction, but we are focusing in a Computer Software perspective, leaving the Sociological analysis to other researchers. For doing that we are hoping to deliver a software tool which can be potentially used in a particular context.

In fact Knowledge and its transfer is ubiquitous in how social algorithms work, and the social paradigm, with an egalitarian and meritocratic bottom up approach, is not usual at high schools, which brings some additional difficulties to our research. Therefore the goal of this work is to evaluate, in a real context, the social software tools usage, where distinct agents (students, teachers from a particular class) interact on a web based environment, and not its subsequent effects.

We are now doing our system specification which is based on the McKenzie claim that a web system must provide a structure, supporting the student's investigation and keeping them on the path while seeking "the truth" about whatever issue [19]. This system should later on be validated in a high school context, where all members will have an active role in achieving good educational results. We are expecting to use a Social Network layer to reinforce the student levels of motivation and interest for the learning tool. The core idea is to enable their study around class matters, where they can revise subjects, understand their basics, but also around other fields of interest somehow related to them. We consider that by providing a bidirectional communication media system between both main actors (students and teachers) they will interact and reach higher levels of understanding, mutual cooperation and at the last instance knowledge. By doing so teachers will know more about their student's interests (games, clothes, music, gadgets, etc.) and students will have a nicer place to learn, bringing along all their friends with.

The added value regarding other Learning Management Systems (LMS) is the possibility to integrate several user's virtual identities into this learning place, with of course data portability.

In order to anchor my research work I developed the L-Tree site [20], where in a near future it will have the Web learning tool. Today, in the web site, one can read a short description what it is going to be the L-Tree tool.

## 5 Conclusions and next steps

Web 2.0 applications, which enables user's interaction in a social network is dazzling, but the rapid growth of these systems caught the attention of major corporations and they may reduce its initial impact. However the virtual identities are bringing a new dimension and new challenges are arising.

The power of a digital personality is just starting and soon new systems will appear to show its usefulness. We believe that data portability and interoperability must be considered in future systems specifications, making bridges between these social platforms and a web solution applied to a learning context must be provided.

If we provide a learning web solution, as a class complement, where students can bring along all their friends, profiles, media interests, they will be more motivated to learn. Also teachers will have the opportunity to better understand their student's reality, as well as provide additional class matters, making the integration to the learner's world.

Therefore we are now analyzing the impact of these social networks in a particular high school, which will later on clarify what a social learning web site is expected to have.

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