

The Social Web beyond “Walled Gardens”: Interoperability, Federation and the Case of Lorea/n-1

Florencio Cabello^{1*}, Marta G. Franco², Alex Haché³

¹University of Málaga
(Spain)

²*Diagonal* (Spain)

³ Donestech Research
(Spain)

ABSTRACT

This paper starts from the warning given by Tim Berners-Lee about the present threats to the social web with a view to analyzing the main limitations of the Web 2.0 paradigm (fragmentation, centralization, control and risks to privacy). The authors continue on to describe several proposals (federation and interoperability, distribution and free management of identity and privacy) that tackle those threats. Finally, the paper offers a brief comparative map of decentralized social web efforts and focuses on the specific case of Lorea/N-1, a Spain-based federation of free social networks originated in 2009. Along with Lorea/N-1's pioneering nature and technical possibilities, the paper concludes by referring to its adoption by the M15 movement and by discussing its current limitations as well as its potential implications. To this end, our research combines bibliographic revision of recent works on the social web and fieldwork within Lorea/N-1 developing group.

Keywords: *social web, social networking sites, interoperability, federation, Lorea/N-1*

Paper Received 13/09/2012; received in revised form 18/04/2013; accepted 18/04/2013.

1. Introduction

In 1990 Tim Berners-Lee formulated a proposal for an information management system that planted the seed for the World Wide Web. His main motivation was the "frustration" he felt about the "untapped potential" taking place at CERN in that period (Berners-Lee, 2009). Indeed, the research laboratory was at that time the largest Internet node in Europe and was on the way to housing the Large Hadron Collider (<http://home.web.cern.ch/about/accelerators/large-hadron-collider>). CERN was a reference center where researchers from around the world were continuously coming to provide tools, ideas and documentation. One of its most serious problems was that the richness and diversity of contributions were not generally accessible and

Cite as:

Cabello, F., Franco, M. G. & Haché, A. (2013). The social web beyond “walled gardens”: interoperability, federation and the case of Lorea/N-1. <i>PsychNology Journal</i> , 11(1), 43 – 65. Retrieved [month] [day], [year], from www.psychology.org .
--

*Corresponding Author

Dr. Florencio Cabello
University of Málaga, Campus Teatinos, s/n, C.P. 29071 Spain
E-mail: fcabello@uma.es

retrievable by others nonetheless. The reason for such pitiful loss of information was that researchers used different operating systems, software and storage formats.

This serious problem of incompatibility burdened the follow-up of large-scale projects that required continuous updating. As a result, anyone who wanted to access a particular document had to become familiar with new technologies or to compare information from different sources. This required researchers to continuously relearn new working environments and documentation systems. However, since the beginning Berners-Lee (1990) was aware that this diagnosis was applicable beyond CERN: “The problems of information loss may be particularly acute at CERN, but in this case (as in certain others), CERN is a model in miniature of the rest of world in a few years time”. The rest of the story is well known: the birth and development of the web as a universal and flexible hypertext-based information system made possible through openness, decentralization and distribution principles.

Today, as we contemplate the fast growth and deployment of Social Networking Sites (SNS), with Facebook in the lead with more than 1 billion active users a month (Kiss, 2012), it is significant that the so-called Web 2.0 has again triggered a frustration in Berners-Lee. Today the “untapped potential” would be the myriad of data uploaded into different SNS and the loss of control, recovery and universal linking of it.

The reason for this loss of control can be found in the walls of incompatibility erected by commercial SNS struggling for their exclusivity on data. This serious setback in the web architecture, originally designed as “a *multiply connected `web' whose interconnections evolve* with time” (Berners-Lee, 1990), confronts us with a pressing question: If we have welcomed the opportunity to exchange emails regardless of our provider, or to publish and link web pages knowing that they will remain accessible regardless of our browser, why should we accept that the profiles and social links we build in the social web remain zonified according to SNS restrictive terms of service? Why are we abandoning the possibility to network with those who do not choose to use the same SNS? In sum, why should the social web be different from the web *tout court*?

This article attempts to tackle these concerns by examining the limitations of the so-called Web 2.0, describing solutions that are respectful of the original principles of the web and presenting some pioneering initiatives in the realm of the free and federated social web. Among them we will specifically focus on the case of Lorea/N-1, a federation of free social networks that have offered citizens and social movements a wide variety of features for cooperation and secure communication (LibrePlanet, 2010). By “federation” we refer to one specific approach to decentralized social networks

based on interoperable implementations that follow the client-server model. The abovementioned example of email exchange regardless of email providers or clients might be the most familiar illustration of this model. The concept of “federation” should not be confused with the “distributed” approach, aimed at applying peer-to-peer architectures to SNS. In other words, the distributed model entails that users would host their own profile data on home servers. For our study we have combined fieldwork within the group of developers of Lorea/N-1² with a literature review of recent publications concerning the Social Web (focusing on O'Reilly for the characterization of the Web 2.0, and on Berners-Lee and the W3C Consortium's Social Web Incubator Group for the analysis of the federated social web).

2. Limits of the Web 2.0 paradigm

SNS are part of the “Web 2.0”, a term coined by Tim O'Reilly (2007) to refer to a set of technologies enabling information management on the web (syndication, folksonomies, blogs, tagging, mash ups) and the practices associated with those. If we look back into history for the principles governing the Internet, we shall find that the web has always been social and marked by an eagerness for participation and decentralization. Therefore, the novelty lies neither in the technologies nor in their users' behavior. Instead, the Web 2.0 label refers to a business model that rose to prominence in the wake of the dot-com bubble. As the focus shifts from software and content to personal data, competition is based on the number of users. In fact, users are seen as the main source of benefits in terms of crowdsourcing, voluntary outsourcing and data mining. Not surprisingly, in defining Web 2.0 O'Reilly (2007) already underscored that *“network effects from user contributions are the key to market dominance in the Web 2.0 era”*. This section explains how the development of the Web 2.0 paradigm threatens the values that have made possible the Internet as we know it. Indeed, our use of this concept is strictly limited to set a recognizable context for the critical analysis of a particular paradigm about the evolution of the web. For the rest, we consider this concept vague since its inception and prefer the term “social web” as a way to claim our preference for a set of social practices above guidelines settled by the market.

2 As the authors have been involved in the developing team of Lorea/N-1, no informed consent was required to obtain direct and secure access to internal information.

2.1. Interoperability and portability vs. fragmentation and centralization

Communication on the Internet requires interoperability and data portability, which are made possible by open standards and web protocols. However, on the commercial social web side, universal protocols are rare; each company tends to create its own environment through an application programming interface (APIs). Through a sociotechnical process that we outline below, the API creates a “gated community” of sorts that discourages interconnectivity, thus preventing users from communicating with those who have chosen another SNS.

An API, which is usually provided by the developer, acts as a “kit of parts” for those outside of the organization that wish to develop applications or interfaces with any given SNS. Just as any piece of hardware requires the right kinds of cables and wiring to connect to the electrical grid or other hardware devices, software requires a set of codelets and protocols to interface with other pieces of software. Facebook, for example, must provide an API so that game developers can build games within Facebook and so third party developers can produce applications using Facebook’s data. Different lines of code are provided within APIs to spread messages across multiple SNS. However, they are mainly based on broadcasting models that do not allow either integration of information from different SNS or interaction among them. Moreover, SNS policies regarding data usually place another burden on interconnection even when standardized APIs offer technical possibilities to promote it. Besides, freedoms that are intrinsic to free software do not apply when it is impossible to examine code on a remote computer without having administrative access to it. How could users really trust web applications, not to mention install and/or modify them, without the source code being publicly available? Indeed, this concern led to the development of the GNU Affero GPL as a way to close the “application service provider loophole” in the GPL (Kuhn, 2012). Richard Stallman states that using commercial SNS and other proprietary web based services is similar to falling into “a trap” for “fools” (Johnson, 2008).

These “walled gardens” (Berners-Lee, 2010, p. 82) negatively impact not only the portability (export or import of data across platforms), but also the management of privacy and identity online. Indeed, this management becomes more and more complicated as personal data is fragmented in various watertight compartments and there are no configuration and reporting standards relating them (Social Web Incubator Group-SWXG-2010). There is also a process of centralization since the vast majority

of online data produced remains in the hands of increasingly few companies – Google, Facebook and to a lesser extent Yahoo!—with the associated risks of oligopolistic power situations. In fact, some of them do come out of their gardens in an attempt to take advantage of their dominant position and extend their standards across the web (Facebook is seriously promoting Facebook Connect as an authentication protocol, while Twitter’s recent changes to their terms of use makes its APIs more restrictive for third parties³).

It should be remembered that one of the key projects for the development of Arpanet/Internet, the Augmentation Research Center (ARC), was born in opposition to the hegemonic paradigm of centralization typified by mainframes and dumb terminals. The public presentation of the ARC's NLS (oN-Line System) in 1968 marked the emergence of the personal computer and gave a glimpse of its networked potential (Markoff, 2005, p. 43). Indeed, Douglas Engelbart's (1975) demonstration of his oN-Line System (NLS) showed how someone sitting in front of a screen could manipulate texts and images and even engage in a video-conference through a keyboard and a mouse. This moment involved two crucial shifts: “Computing had made the leap from number crunching to become a communication and information-retrieval tool [and] was being used interactively with all its resources appearing to be devoted to a single individual” (Markoff, 2005, p. 149).

Bearing all this in mind, Tim Berners Lee (2010, p. 80) warns that “the Web as we know it is being threatened in different ways” and blames big SNS for “walling off information posted by their users from the rest of the Web”. By “walling off” we do not mean the legitimate and increasingly mature choices SNS users can make to decide who gets to see which portion of the personal information they post online (Boyd and Marwick, 2011, p. 19-24). Instead we refer again to the commercial SNS policies regarding data. As Halpin (2008) puts it: “Social data portability and privacy are usually viewed as opposing forces. Yet data portability and privacy are mutual benefits that a framework for a mature Social Web could bring users. Today, the walled garden of data fundamentally leads to less security and privacy for users”.

3 As explained in the developers' blog on August 9, 2012: <https://dev.twitter.com/blog/changes-coming-to-twitter-apit>

2.2. Privacy and collective memory vs. control and privatization

As stated above, the most common public concern about the social web is privacy, a precondition for being in control of our own data, identities and memories. It has been extensively discussed how the notion of privacy becomes contentious when we go online (Nissenbaum, 2010). Likewise, some claim that the “nothing to hide” precept may interfere with our capacity to rethink what privacy means inside a SNS (Solove, 2007). However, privacy awareness and management challenges could and should be tackled both socially and technically. On one hand, it is necessary to strengthen security systems and encryption, and also to develop interface designs and web architectures that encourage good practices in relation to the respect of privacy (SWXG, 2010). On the other hand, more awareness raising, training and inclusion activities need to focus on what it means to reveal one's electronic identity online.

However, this does not seem to be the dominant trend. Until recently the paradigmatic illustration of this point was the case of Facebook, whose creator, Mark Zuckerberg, claimed that “the age of privacy is over” because social norms had evolved to make people mostly interested in sharing (Johnson, 2010). Moreover, Matt McKeon's visualization “The evolution of privacy in Facebook. 2005-2010”⁴ made clear how Facebook had been changing the default configuration of personal profiles up to a point where almost everything was made visible to the whole Internet. To make matters worse, Raphael (2010) showed how achieving the highest degree of protection on Facebook required browsing 50 menus and more than 170 options. Compared to the two steps needed to open an account, it seemed clear by then that the company showed little interest in safeguarding data and promoting privacy awareness among its users.

More recent studies begin to paint a different picture of privacy issues. Some interesting insights in this regard can be found in the Pew Internet & American Life Project's *Privacy management on social media sites* report. This study offers evidence that in recent years “social network users are becoming more active in pruning and managing their accounts” (Madden, 2012), with no significant variation regarding age or frequency of use. This can be seen as a good signal in the direction of overcoming the problem of “the privacy paradox” (Barnes, 2006). From the point of view of the perceived simplicity of privacy settings, the conclusion of the study seems equally promising: “Half of SNS users say they have some difficulty in managing privacy controls, but just 2% say it is ‘very difficult’ to use the controls” (Madden, 2012).

4 See: <http://www.mattmckeeon.com/facebook-privacy/>

Regardless, we should not ignore how the various expectations of privacy people have may affect this perception. Otherwise, it would be difficult to understand the counterintuitive finding that “social media users who are college graduates are significantly more likely than those with lower levels of education to say that they experience some difficulty in managing the privacy controls on their profiles” (Madden, 2012).

However, this newly emerging trend does not change the evidence that the business model of commercial SNS still relies heavily upon the massive collection of personal data (The Economist, 2010). Once gathered, users' personal information is processed through data mining techniques to establish personal profiles and social relationships for purposes of advertising. The universal library called Google grows thanks to mechanisms that are too often beyond our control. For instance, in January 2012 Google announced a major privacy policy shift, consisting of tracking and sharing data on its users' activity across all its services (Honan, 2012). Besides, putting our memory in the hands of commercial entities can cause unpleasant surprises, namely the privatization or even disappearance of collective knowledge stored in web services that are suddenly discontinued or subject to payment (some notorious examples being Last.fm and Ning).

To make things worse, the fact that most commercial SNS belong to multinational companies innovating in new emerging fields usually leads to little effective regulation over them. In August 2011 the Irish Data Protection Commissioner (DPC) started an investigation after receiving 22 complaints from Europe Vs Facebook⁵. Founded by a group of Austrian students, this association attempts to reclaim consumer rights over their data on the basis that this company has a division based in Ireland. We have yet to see any sanction on Facebook regarding privacy policy abuses in the European Union. Admitting that the legal situation leads to hesitant standing for citizen's rights, the European Commissioner for Justice Vivian Reding is working to renew data protection legislation, due to materialize not sooner than 2015. The current Data Protection Directive was designed in 1995.

The uncertainty about what we post online also involves serious consequences for fundamental freedoms such as free speech and the right to information. Indeed, communication through social networks has been blocked in both authoritarian and supposedly democratic regimes. Commercial companies behind SNS have been suspicious of censorship since their launch. For example, the Arab Spring, which

5 More information at: <http://www.europe-v-facebook.org/>

extensively used SNS for calling and coordinating actions on the streets, have faced many situations where groups and individual profile pages were shut down with no explanation at all.

An illustrative case was the U.S. Justice Department's requirement that Twitter hand over user information in connection with the Wikileaks case⁶. Although it was precisely the company's reluctance to abide by this requirement that shed light on this issue (Greenwald, 2011), the US Court's final ruling synthesizes our concerns: "[The plaintiffs] voluntarily conveyed their IP addresses to the Twitter website, thus exposing the information to a third party administrator, and thereby relinquishing any reasonable expectation of privacy" (Mello, 2011). The validity of such terms of service, mostly accepted without reading due to their legal technical jargon, is at least questionable from an ethical perspective. In the Twitter Transparency Report⁷, the company states that they received more government requests for information in the first half of 2012 than in the whole of 2011. Many of the requests are related to copyright issues, but several activists from the Occupy movement have also been searched this way.

With the mainstream assumption of the Web 2.0 paradigm, there has also been a concomitant fostering of horizontal communication spaces, nourished by the participatory and sharing culture of the Internet. Nonetheless, critical readings like Ugarte (2010) confront this optimism reminding us that "participation is not interaction" and that commercial SNS are based on "the artificial generation of scarcity" rather than connection and openness. Unlike mailing lists and forums, the interfaces of the latest social applications are barely configurable, thus constraining interactions within rigid guidelines. Following Ugarte (2010), the purpose behind classifications, voting systems and the 140-character limit of tweets is "to produce a single aggregate result for all". Finally, Ippolita (2012) underlines how those dynamics are part of the irresistible rise of so-called "anarcho-capitalism", in which players who, at first sight, are as different as Facebook and Wikileaks indeed stimulate similar processes. According to Ippolita (2012), the enthusiasm for "radical transparency" is a mistake that is being made both by users of commercial SNS and "clicktivists" (Ippolita, 2012).

Our point is not to present a completely negative evaluation of commercial SNS. First, because it is undeniable that they provide opportunities for dissemination of content and collective articulation with ease and speed hitherto never seen. Second, because

6 Concretely, Twitter had to provide data related to Julian Assange, Bradley Manning, Jacob Appelbaum, Rod Gonggrijp and the Icelandic MP Birgitta Jónsdóttir.

7 Published on July 2, 2012: <http://blog.twitter.com/2012/07/twitter-transparency-report.html>

it would portray the millions of people who use them as simply unconscious, passive or alienated, thus denying the range of tactical uses that are available for them. To explain why we use those commercial SNS despite knowing their drawbacks, Bauwens (2008) refers to an underlying social contract, which states that “we appreciate the facilitation of the sharing processes, and we understand that operating such platforms comes with a cost, and with an expectation of profitability. We therefore allow our attention to be monetized through advertising, as long as it does not interfere with our sharing”. We believe the contract is fair because we perceive that we get a benefit, whether material or not, and “if the interference crosses a certain line of acceptability, we will either revolt, or go elsewhere” (Bauwens, 2008).

Another explanation suggests that we do not (yet) value enough our need for technological sovereignty. Whereas the importance of social, environmental and economic conditions of production of food, for instance, has become increasingly accepted, it is still not the case with respect to technology. Hence, we continue relying on big commercial companies as if they were the best option and will last forever (Haché et al., 2012). As summarized by Marga Padilla (2009), “from a political perspective, the real potential of the 2.0 phenomena is not appreciated, only its value from an instrumental perspective”. The appeal created by usable functionalities is hindering our capacity to create from noncommercial alternatives that respect our values and prove sustainable in the long term. Consequently, in the next pages we will explain briefly some of the alternatives currently under way. The main idea behind most of them is the building of a commons for the social web, that is, a shared space we are not forced to leave as soon as the abovementioned social contractual balance breaks down.

3. The commitment to interoperability and open standards

According to Narayanan et al. (2012, p. 1), “the search for alternatives to centralized aggregation of personal data began in the late 1990s, which saw a wave of so-called ‘negotiated privacy techniques’ including commercial ‘infomediaries’” as well as “community initiatives”. After more than one decade, the W3C Consortium's Social Web Incubator Group (SWXG, 2010) is confronting the challenges described in the previous section with a defense of “truly universal, open and distributed social web architecture”. This goal goes beyond merely being able either to import and export our

data from one SNS to another, or to migrate from centralized gated communities to distributed and open ones. In the end, both options continue preventing people from connecting and managing their social relationships in a federated and consistent mode. Instead of that, the availability of open standards to ensure real-time interoperability among all social applications could be a beneficial proposal for both users and the industry.

The SWXG final report contains a number of recommendations that underpin a commitment towards an open and federated social web. First, the SWXG emphasizes that this commitment is fully achievable from a technical point of view because of the ready availability of interoperability standards. Nonetheless, it also points out the urgency of developing new standards addressing complex issues beyond the social web (e.g. privacy and contents sources). Thus, it is suggested to research deeper on identity management from the browser (for handling multiple identities in a secure decentralized way), as well as on semantic formats for profile description. Related to the latter, another recommendation addresses the combination of both a social and semantic web in an attempt to better describe user-generated content so that proper attribution and even micropayments and other forms of barter are facilitated. With respect to the growing concern for privacy, the SWXG (2010) recognizes the usefulness of tools such as public key encryption and urges the W3C to "take a leadership position in this area". Along this line, it is recommended to undertake an exploration of approaches to both technical and social levels in the context of a strong commitment to review and incorporate respect to privacy in all recommendations issued by the W3C. This recommendation has proved consistent with later contributions defending the importance of combining "social" and "structural" privacy "strategies" (Boyd, 2011, pp. 19-24), and to "incorporate other notions of regulability" and not "ignoring socio-legal approaches" (Narayanan et al., 2012, p. 7).

Finally, recommendations to support the experimentation around these issues by opening the W3C to members of these initiatives crystallized in early 2011 with the creation of an incubator group focused on the federated social web. This means a direct recognition of the role acquired by grassroots communities in sponsoring recent experimental networks based on free software and federated through open standards: "Simply branding something 'open' is no longer enough. [...] So that the decentralized Social Web can reach maturity, the World Wide Web Consortium should offer its resources to the wider Social Web community" (SWXG, 2010).

4. Free and federated social networks: the case of Lorea/N-1

Civil society has never limited itself to the passive use of technological tools developed by others. Instead, it has contributed to some extent to the design and development of its own techno-political tools, thereby enhancing its own “technological sovereignty”. Regarding the development of free SNS, however, it was difficult to find any viable alternative at least until 2008. We may identify various reasons for this delay: a lack of material and economic resources; a lack of interest in what many considered to be a teen fad with little potential for the self-organization of civil society; or the inability of social movements to capitalize and innovate on the fundamental principles they practice within cyberspace: participation, horizontality and collective intelligence (Haché, Franco, 2011; Narayanan et al., 2012, p. 2).

In recent years, however, the growing social concern about the risks described in Section 2 has finally given birth to a field of operational experiences. So far a variety of alternative approaches have been considered: first, desktop applications that can run on your own computer and communicate with other applications using open protocols, as well as browser apps based on universal authentication systems for profiles and identities. Second, decentralized networks that can be either distributed or federated have been proposed. As we explained in the Introduction, the latter refers to installing software on a trusted server application that communicates with other trusted servers, while the former entails using P2P networks, which may not even need dedicated servers. Both approaches are still in an early stage but are gaining momentum among developers and activists. We describe some of those initiatives in Table 1, even though more of them are being currently designed and prototyped.

Webhosting approach

<i>Name</i>	<i>Release status</i>	<i>Features</i>	<i>Developer</i>
BuddyPress	Production (since May 2009)	Plugin for WordPress CMS with social features: adds activity streams and friend connections to user profiles, user groups, discussion forums and private messaging.	Linked to WordPress project.
Crabgrass	Production (since August 2007)	Networking platform designed for social networking, group collaboration and network organizing (groups, pages, tasks lists, discussion and item ratings). Emphasis on privacy.	Riseup, a project that provides online communication tools for people and groups working on liberatory social change. Their aim is to create democratic alternatives that control their own secure means of communications. (Based in USA).
Cryptocat	Production	Open, accessible instant	Developers and activists

	(since August 2011)	messaging environment with a layer of encryption that works directly in the browser. It is served via HTTPS , while also offering a Google Chrome application that loads code locally. Besides, Version 2 will use Jabber/XMPP as transport protocol enabling decentralization.	(Canada).
Cyn.in	Production	Collaboration platform focused on business and institutions. Wikis, blogs, event calendars, file repositories, discussion forums, multimedia galleries and bookmark directories, organized in “spaces” (work areas). Allows crowdrating and voting.	Cynapse, a software development company funded with venture capital (India). The business model for Cyn.in is based on hosting, support and customization on demand.
Elgg	Production (since August 2008)	The most popular social networking engine, it provides a solid framework and powers sites for many institutions. A vast community of developers creates plugins for multiple features.	Curverider Ltd., subsidiary of Thematic Networks Ltd. Software company (not always free software, based in the United Kingdom).
Identi.ca	Production (since 2008)	Microblogging platform, based on StatusNet.	Brought by StatusNet (Canada).
Jappix	Production	Synchronous communication based on XMPP protocol: instant messaging, status, group chats and real time geolocalization.	PostPro, a non-profit organization, and French Touch, a web development and design studio (France).
Kune	Production (since May 2011)	Although Kune current use runs within the web hosting approach, its software implements Wave Federation Protocol. Hence, it could be used in a federated way. Customizable spaces with a collection of tools: forums, blogs, wikis, media galleries, chat rooms, document managers, etc.	Comunes, a grassroots collective, and lepala Foundation (Spain). The platform is aimed to encourage collaboration, content sharing & free culture
Pinax	Production (since October 2008)	Networking platform featuring wikis, groups, forums and bookmarks.	James Tauber, a developer supported by a community (USA).
Decentralized servers approach			
<i>Name</i>	<i>Release status</i>	<i>Features</i>	<i>Developer</i>
Briar	Pre-alpha (since 2012)	Software enabling a secure news and discussion platform. Create invitation-only discussion groups, the software makes use of whatever media are available locally (not just internet connections but Bluetooth, WiFi, dialup modems and even USB sticks) to create encrypted, delay-tolerant networks for distributing news, files and conversations.	Eleanor Saitta, Michael Rogers, developer community.
Diaspora	Beta (announced on February 2012)	Self-defined as “an alternative to Facebook”, but featuring encryption and more data control for users, that can host them on their own server if they want to.	New York University students. They got crowdfunded with 200.000 dollars through a Kickstarter campaign.
Friendika	Production (since 2010)	Friendika users can integrate contacts from Facebook , Twitter , Diaspora , StatusNet and other services in their social streams, and RSS feeds. Communication is	Mike Macgirvin and Friendika community

		bi-directional wherever possible. There is also a bridge to include email contacts. Additionally, connectors allow cross-posting to blog platforms like WordPress, Livejournal , Tumblr and Posterous .	
Lorea/N-1	Production (since October 2009)	Currently most of the operative seeds are hosted by Lorea collective. However, the code is available so anyone could run it on their own server and federate their seed with the other ones. See Table II.	Lorea, a collective of hackers and activists open to the participation of the inhabitants in the self-management of the networks.
Secureshare	Pre-alpha (since 2012)	Focus on privacy: data is encrypted and unencrypted directly and only on the devices of the intended people, contents only visible for the intended recipients (not for admins) and purposefully robust infrastructure.	A collective of hackers (Europe).

Protocols

<i>Name</i>	<i>Release status</i>	<i>Features</i>	<i>Developer</i>
Google Wave Federation Protocol	Production (since July 2009)	Protocol for real-time communication based on XMPP.	Google.
OStatus	Production (since 2010)	Open standard for distributed status updates that references a suite of open protocols (Atom , Activity Streams , PubSubHubbub , Salmon , Webfinger). It allows updates for near real-time communication across different platforms.	The W3C opened a community group to maintain this standard on January 2012.
StatusNet	Production (since 2008)	Protocol and microblogging software (also available in the cloud, see status.net or Identi.ca). Supports OStatus.	StatusNet Inc., free software company (San Francisco).
XMPP	Production (since 1999, formerly known as Jabber)	Identification protocol oriented towards instant or near-real time messaging.	Developed by the Jabber open-source community. Facebook, Google and Microsoft have implemented support for XMPP in their instant messaging services.

Table 1. Free software for social networking (some of the initiatives listed above overlap different approaches). Sources:

http://libreplanet.org/wiki?title=Group:GNU_Social/Project_Comparison and
http://en.wikipedia.org/wiki/Distributed_social_network

Keeping in mind that commercial SNS seek maximum financial returns, their business model has been based on collecting and monitoring data. It should be clear that free social network alternatives are neither compelled to obtain commercial returns nor to develop a business model as such. They should care about developing software and infrastructure that stick to ethics and where users retain control over their data.

To achieve this they need to become sustainable; that is, they need to fulfill their development goals in order to not become another “vaporware” project. Besides, they need to reach out to their public and see if they are considered useful and meaningful enough to be seeded and scaled. The perfect plan would be to achieve both steps at the same time by interacting extensively with target communities, thus leaving open accessible and easy to use channels for suggestions. User-driven innovation and community based software development might be perfect models on paper. However, they are far from being easy to develop. Consequently, too much feedback or even too much time spent training new developers may also burn out a small team of developers.

We highlight here the case of Lorea/N-1⁸ because of the levels of technical development and adoption it has reached in Spain, and because of our involvement in its development team. This project emerged from a loose collective of people concerned about security and privacy in the social web and with a background of free software and technological activism. It was launched at the 2009 Hackmeeting, an annual gathering of hackers held at the squatted social center Patio Maravillas (Madrid). In this meeting two already existing networks based on Elgg, Arte Libre Digital (ALD) and N-1, converged and decided to join efforts; ALD was a meeting place for free culture artists and N-1 was started by media-activists related to Indymedia Estrecho (the Indymedia node for Andalucía and northern Morocco). Hence the strong initial identification with antagonistic social movements. In turn, Lorea means “flower” in Basque and uses the metaphor of seeds to refer to each of the networks planted in a federated field of experimentation.

Currently the project is still growing without any formalized management and its survival relies upon the voluntary work of both users (called “inhabitants”) and developers, organized through virtual assemblies⁹. The aim ultimately is to operate within alternative economies based on barter and digital currencies, but right now the inevitable basic expenses are funded by small donations. Recently, Lorea/N-1 has adopted the Move Commons¹⁰ badge “Non-Profit, Reproducible, Reinforcing the Digital Commons, Grassroots” to define its core organizational principles.

After more than two years of development with a strong emphasis on security and the creation of tools for group work, comparative analysis of the project LibrePlanet (2010) considered Lorea/N-1 one of the most interesting options for cooperative work

8 See: <https://lorea.org> and <https://n-1.cc>

9 See: <https://n-1.cc/pages/view/1048569>

10 See: <http://movecommons.org/en/>

and networking. The project is committed to implementing technologies that ensure that messages circulating on its networks can only be read by their intended target. To that end, Lorea/N-1 facilitates the use of GPG (GNU Privacy Guard) encryption on some messages, and is working to extend this to all data exchanges. Technically Lorea/N-1 code was a fork of Elgg, probably the most popular free software for social networking sites, and has now evolved into a distribution that incorporates federation protocols and foreign languages. The list of its current specific features and functionalities is available in below.

Features

- Custom profile page and dashboard (inhabitants can choose which plugins or features to display).
- Multimedia galleries, wikis, pages, pads (based on EtherPad), blogs, bookmarks, task manager.
- Status updates, private and open messaging and chat among inhabitants.
- Events calendar.
- Inhabitant groups that can be open, closed or invisible and provide tools listed above plus a chat room and a discussion forum that every inhabitant can configure to work as a mailing list.
- Privacy-awareness: supports GPG encryption for messages and encourages more cautious practices among inhabitants. The level of visibility is configurable for each item: private, for friends, members of a certain group, network inhabitants or fully open and indexable.
- Federation: supports OStatus (updates across different seeds), OpenID (unique login for multiple sites), XMPP (instant messaging) and FOAF (currently as a tool for experimentation for future features).
- Each seed admin can install additional plugins (those developed by the Elgg community are suitable) and configure them according to their necessities.

Latest implementation (Fall 2012):

- Upgrade to Elgg 1.8 compatibility.

- Assemblies and decision-making plugin.
- Poll plugin.
- License attribution to contents produced in the seed, attribution of Move commons badges to groups.
- New CSS and layout.

Lorea/N-1 is currently made up of 14 federated networks¹¹ used by collectives of social and political transformation devoted to social economy, hacktivism, degrowth, squatting etc. In any case, it should be noted that some of these networks are not active at this time. So far our experience indicates that successful seeds are the ones with active community managers. By community managers we mean virtual gardeners who orientate new inhabitants, fight spam, report bugs and organize face-to-face events to provide training and awareness raising.

Lorea/N-1 is also especially relevant in Spain due to the high number of workshops developed among activist communities, which indicates a clear awareness of the need to develop inclusion dynamics and to keep in touch with the community of users. This continued fieldwork might explain why Lorea/N-1 exploded in the days following the massive demonstrations that filled the streets of Spain on May 15, 2011. At the time when squares of most Spanish cities were taken by popular assemblies and turned into citizenship 'agoras', the number of inhabitants in that seed multiplied by ten in less than one month. Many participants in those popular assemblies felt that in the same manner that they did not want to be “merchandises into hands of politicians and bankers” (as the motto for the M15 demo stated), they did not conform to become goods in the hands of Internet commercial companies either. As Lorea/N-1 was perceived as fundamentally consistent with the principles characteristic of the emerging M15 movement, the significant increase was largely due to the addition of M15 participants (Franco, 2011; Grasso, 2011).

Almost two years later, the growth pace of inhabitants has slowed down and many have left Lorea/N-1 networks. Some of the reasons that explain this decline are the following:

- Instability: search engine and login failures were routine. This caused significant frustration among users and administrators;

¹¹ N-1, Anillo Sur, Arte Libre Digital, Cooperativa Integral Catalana, Redesenred, MonedaBCN, Intermonedes, Cuenca, Ecoseny, Cooperatech, Sementeira, Red DRY, Enekenbat, Luzablue.

- Usability: even though usability often has been poorly reduced to adapt the interfaces so they look like known ones such as Facebook or Twitter, Lorea networks need many usability improvements;
- Lack of critical mass: Lorea networks are not populated enough to give voice to social movements so that they can reach out to new social groups;
- Inadequacy for procrastination or hanging around by users.
- Loss of interest in the M15 movement after the surprise effect and the mainstream public opinion condescension were over.

On the other side, the stream of activity and publications has remained high and there are an increasing number of inhabitants involved in assemblies and cooperatives that choose Lorea/N-1 for their internal communication, coordination and documentation. As of this writing, there are 5000 groups with a combined total of 40000 members on Lorea/N-1..

As repeatedly stated by participants on the core collective, Lorea/N-1 social networks are not interested in emulating commercial SNS: no walls crawling into oblivion, photo tagging and potentially overexposing options or invitations to events as systematic spam. The interest lies in developing tools that facilitate coordination among horizontal collectives and enable self-management dynamics (geolocalisation of resources, time banks and barbers, better encryption, federation across seeds of groups and/or profiles, modules to support assemblies and decision making, multilanguage etc.). The objective of self-management of the social networks has also been a redundant issue over the project development. The transition of new inhabitants who were used to consume a commercial service towards a project where personal commitment is needed to help manage the network has not been really successful. Along this last year, the most involved people in the community have spotted many areas that require better communication and documentation so that every inhabitant can understand where they are standing and how they can help. As stated on the index page, “Don't ask yourself what this network can do for you, but what you can do for this network”. Sustainability and scalability will only be achieved if a solid community understands that achieving technological sovereignty means engaging in Lorea/N-1 dynamics in order to help build a commons into the social web.

5. Conclusion

This paper began with the historical parallel evoked by Tim Berners-Lee on the twentieth anniversary of the birth of the web to warn the public about the threats hanging over it. Then we reviewed some constraints posed by the development of the Web 2.0 paradigm within the social web (fragmentation, centralization, control and privacy issues) to then point out ways to overcome them (federation and interoperability, distribution and freedom for people to directly manage their identity and privacy). On this basis, we continued mapping some of the grassroots initiatives involved in the development of decentralized networks (either distributed or federated) as the most suitable options to overcome the abovementioned drawbacks. Finally, we focused on the Lorea/N-1 experience not just because of our direct involvement in it, but also because we believe it typifies both the potential and the complexity of the development of any nonprofit decentralized alternative.

In the discussion about the commercial social web paradigm, it is important to notice the emerging shift towards more privacy awareness, not only among users but also among commercial SNS. One remarkable example of it can be found in Facebook's default privacy settings: until 2010 the evolution of them was clearly oriented to reveal more and more personal data; right now we can choose the level of disclosure of every item we publish on Facebook, something we have only seen before on networks such as N-1 and the like. In our opinion, this suggests that at least some values embodied (and practiced) by alternative SNS can have some influence upon commercial providers.

Nonetheless, there is an uncertainty factor yet to be analyzed: the possible failure of data as a business model. Facebook Inc. began selling stock to the public and trading on the NASDAQ on May 18, 2012. Since then, the stock has lost a significant part of its initial value and doubts about its lack of profitability are flooding the economic press. The public offering of Twitter has been delayed several times and is still to be confirmed, while their attempts to create advertisement formats bearable for users are not reported to be commercially successful. It is too soon to know how the social network giants will react. However, in the context of a worldwide financial crisis venture capitalists are not likely to maintain the flow of funds needed to ensure their oligopolistic positions for long. The way out could be a bigger commitment to open source, which could help both developers and users push for more open policies (e. g., the development of Kune is taking big advantage of Google's release of Wave under

Apache 2.0 free license). We should be aware of the new opportunities arising in the next months, as the free software community has always been able to build synergy with companies exploring open source as their business model.

Another challenge is bottom-up and regards participants in the global movements that started in 2011 in public squares and occupations. The M15/Occupy network has already used social media to spread their message and coordinate their actions, but as the initial outrage for the economic and political situation turns into a desire to collectively build viable alternatives. The need for tools specially designed for self-organization and direct democracy becomes evident as movements find more of their specific needs met less often. The importance of “technological sovereignty” can spread through this breeding ground as one of the core demands in a movement that has left behind technophobia and considers hackers and geeks as human beings one can work with.

One final challenge we cannot afford to ignore has to do with decentralization itself (Narayanan et al., 2012). It is widely assumed that there is neither possibility nor actual desire to create a new monster like Facebook or Twitter. Instead, the aim is to build a whole constellation of interconnected autonomous territories. The problem is purely and simply that interoperability still fails to take off. As counterintuitive as it may seem, one of the main reasons for that is not the lack of open standards, but quite the opposite: “there are too many standards to choose from” (Narayanan *et al.*, 2012, p. 4). As a result, “the only suite of standards that shows any signs of meaningful interoperability is Status-Net” (Narayanan et al., 2012, p. 5). This should help us remember that open standards represent a necessary but not sufficient condition to interoperability. Significant efforts towards unification of technical standards are still needed in order to jump out of the “walled gardens” and liberate the “untapped potential” of a truly interoperable social web. A hopeful step in this direction is the recent launch of the GNU/consensus project, aimed at “facilitat[ing] coordination of free software social networking projects to encourage freedom, privacy, public space, and decentralization” (Free Software Foundation, 2012). The fact that the GNU/consensus Manifesto considers Lorea as the “initial” and “most advanced” model for free social networking federation represents a significant boost for the project presented here.

6. References

- Barnes, S. B. (2006). A privacy paradox: Social networking in the United States. *First Monday*, 11 (9). Retrieved 15 February, 2013 from: <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1394/1312>
- Bauwens, M. (2008). The social web and its social contracts: Some notes on social antagonism in netarchical capitalism. *Re-Public*. Retrieved 15 February, 2013 from: <http://www.re-public.gr/en/?p=261>
- Berners-Lee, T. (1990). Information management. A proposal. Retrieved 15 February, 2013 from: <http://www.w3.org/History/1989/proposal.html>
- Berners-Lee, T. (2009). TED Talks: On the next Web. Retrieved 15 February, 2013 from: http://www.ted.com/talks/tim_berners_lee_on_the_next_web.html
- Berners-Lee, T. (2010, November 22). Long Live the Web: A Call for Continued Open Standards and Neutrality. *Scientific American*, 80-85. Retrieved 15 February, 2013 from: <http://www.scientificamerican.com/article.cfm?id=long-live-the-web>
- Boyd, D. and Marwick, A. (2011, June 2). *Social Privacy in Networked Publics: Teens, Attitudes, Practices, and Strategies*. Paper presented at Privacy Law Scholars Conference, Berkeley, CA. Retrieved 15 February, 2013 from: <http://www.danah.org/papers/2011/SocialPrivacyPLSC-Draft.pdf>
- Engelbart, D. C. (1975, September). NLS Teleconferencing Features: The Journal, and Shared-Screen Telephoning. Paper presented at the CompCon75 Conference, (pp. 73-176). Retrieved 15 February, 2013 from: <http://www.dougenelbart.org/pubs/augment-33076.html>
- Franco, M. G. (2011, July 20). Toma las plazas, toma las calles, toma las redes. *Diagonal*. Retrieved 15 February, 2013 from: <http://www.diagonalperiodico.net/Toma-las-plazas-toma-las-calles.html>
- Free Software Foundation (2012). The GNU/Consensus Manifesto. *GNU Project*. Retrieved 15 February, 2013 from: <http://www.gnu.org/consensus/manifesto.html>
- Grasso, D. (2011, July 20). N-1: una red social no mercantilizada es posible. *Diagonal*. Retrieved 15 February, 2013 from: <http://www.diagonalperiodico.net/N-1-una-red-social-no.html>

- Greenwald, G., (2011). DOJ subpoenas Twitter records of several WikiLeaks volunteers. *Slate.com*. Retrieved 15 February, 2013 from: http://www.salon.com/news/opinion/glenn_greenwald/2011/01/07/twitter/index.html
- Haché, A. and Franco, M. G. (2011). Reclaim the networks: technological sovereignty for social networks. Retrieved 15 February, 2013 from: <https://n-1.cc/pg/blog/read/76157/reclaim-the-networks-technological-sovereignty-for-social-networks>
- Haché, A., Cruels, E. and Vergès, N., (2012). I code, you code, she hacks. Women Hackers and technopolitical insights. Retrieved 15 February, 2013 from: <https://n-1.cc/pg/file/read/1410055/i-code-you-code-she-hacks-women-hackers-and-technopolitical-insights>
- Halpin, H. (2008, October 27) *Beyond Walled Gardens: Open Standards for the Social Web*. Paper presented at the First Social Data on the Web workshop, Karlsruhe, Germany. Retrieved 15 February, 2013 from: <http://ceur-ws.org/Vol-405/keynote2.pdf>
- Honan, M. (2012). Google's broken promise: The end of “Don't be evil”. *Gizmodo*. Retrieved 15 February, 2013 from: <http://gizmodo.com/5878987/its-official-google-is-evil-now>
- Ippolita (2012). *Nell'acquario di Facebook*. Retrieved 15 February, 2013 from:<http://www.ippolita.net/en/nellacquario-di-facebook-ippolita>
- Johnson, B. (2008). Cloud computing is a trap, warns GNU founder Richard Stallman. *The Guardian*. Retrieved 15 February, 2013 from: <http://www.guardian.co.uk/technology/2008/sep/29/cloud.computing.richard.stallman>
- Johnson, B. (2010). Privacy no longer a social norm, says Facebook founder. *The Guardian*. Retrieved 15 February, 2013 from: <http://www.guardian.co.uk/technology/2010/jan/11/facebook-privacy>
- Kiss, J. (2012, October 4). Facebook hits 1 billion users a month. *The Guardian*. Retrieved 15 February, 2013 from: <http://www.guardian.co.uk/technology/2012/oct/04/facebook-hits-billion-users-a-month>
- Kuhn, B. (2012, October 12). *Affero GPLv3: Why It Exists and Who It's For?* Paper

- presented at the European Open Source and Free Software Law Event, Paris, France. Retrieved 15 February, 2013 from: <http://www.ebb.org/bkuhn/talks/Open-World-Forum-2012/AGPLv3/agplv3.html>
- Libreplanet (2010). *GNU Social/Project Comparison*. September 21. Retrieved 15 February, 2013 from: http://libreplanet.org/wiki?title=Group:GNU_Social/Project_Comparison
- Madden, M. (2012). Privacy management on social media sites. Retrieved 15 February, 2013 from: <http://www.pewinternet.org/Reports/2012/Privacy-management-on-social-media/Summary-of-findings/Privacy-management-on-social-media-sites.aspx>
- Markoff, J. (2005). *What the Dormouse Said: How the Sixties Counterculture Shaped the Personal Computer Industry*. New: Penguin.
- Mello, J. P. (2011). Secret probes of online users OK'd by court. *GSNMagazine*. Retrieved 15 February, 2013 from: http://www.gsnmagazine.com/node/22688?c=cyber_security
- Narayanan, A., Barocas, S., Toubiana, V., Nissenbaum, H. and Boneh, D. (2012). *A Critical Look at Decentralized Personal Data Architectures*. *arXiv*: 1202.4503. Retrieved 19 May, 2013 from: <http://arxiv.org/abs/1202.4503>
- Nissenbaum, H. (2010). *Privacy in Context: Technology, Policy and the Integrity of Social Life*. Palo Alto, CA: Stanford University Press.
- O'Reilly, T. (2007). What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. *Communications & Strategies*, 5 (1), 17-37. Retrieved 15 February, 2013 from: <http://ssrn.com/abstract=1008839>
- Padilla, M. (2009, April 9). La Web 2.0 es una paradoja hecha de grandes negocios y pasión por compartir. *Público*. Retrieved 15 February, 2013 from: <http://blogs.publico.es/fueradelugar/55/la-web-20-es-una-paradoja-hecha-de-grandes-negocios-y-pasion-por-compartir>
- Raphael, J. R. (2010, May 16). Facebook Privacy: Secrets Unveiled. *PC World*. Retrieved 15 February, 2013 from: http://www.pcworld.com/article/196410/facebook_privacy_secrets_unveiled.html
- Social Web Incubator Group (2010). *A Standards-based, Open and Privacy-aware Social Web*. *W3C Incubator Group Report*. 6 December. Retrieved 15 February,

2013 from: <http://www.w3.org/2005/Incubator/socialweb/XGR-socialweb-20101206/>

Solove, D.J. (2007). “I’ve Got Nothing to Hide” and Other Misunderstandings of Privacy. *San Diego Law Review*, 44, 745-772.

The Economist (2010, January 28). Profiting from Friendship. *The Economist*. Retrieved 15 February, 2013 from: <http://www.economist.com/node/15351026>

Ugarte, D. (2010). *Los futuros que vienen. La descomposición global y la importancia de la comunidad en el siglo XXI*. Madrid: Sociedad Cooperativa El Arte de las Indias.

