

# Social Semantic Web

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**Abstract**— Over the past several years, a lot of research has been done on the concept of semantic web. However, the research and implementation of the semantic web has predominantly focused on making data machine-understandable while neglecting personal information and human relationships. The *social semantic web* is a catchall term for defining and presenting social information such as friendship in a manner that is machine-understandable. This paper will introduce the concept of the social semantic web and two related initiatives: the Friend of a Friend-project (FOAF) and XHTML Friends Network (XFN). Their similarities and differences as well as real-life applications are also discussed.

**Index Terms**— social networking, social semantic web, semantic social network, semantic web, XFN, FOAF

## I. INTRODUCTION

In constructing the semantic web, the majority of the work has been focused on describing the contents and relationships of documents, knowledge and information. In doing so, the importance and structure of human relationships have often been neglected. Meanwhile, in an attempt at leveraging the power of social networking, several websites have been introduced in the recent years. Each has been aiming to act as a place where social relationships play a key role; an online community.

While some of the centralized services enjoy a sizeable user base, many centralized social networking ventures have also been unsuccessful. The basic model of centralized service suffers from a number of inherent drawbacks that we will look into more detail later. As a result of these drawbacks, the centralized model is not well suited for presentation of social relationships on a global scale. Answering to the problems of centralized solutions, decentralized methods more true to the open nature of the Internet have been developed.

This paper will first introduce the concept of the *social semantic web* and discuss whether such a thing is really needed. We will then cover in more detail two initiatives used to define personal information and social relationships in the web, FOAF and XFN, providing examples of both. Finally, the two specifications are compared and their similarities and differences discussed.

## II. SOCIAL SEMANTIC WEB

The concept of social semantic springs from a combination of two concepts. The first of these, *social networking*, is in itself nothing new. The formation, functioning and importance of social networks among humans (and even animals) have been studied in detail for a long time. The second concept, *semantic web*, which has among other things been defined as “the web of data with meaning in the sense that a computer program can learn enough about what it means to process it”, has been extensively researched over the past several years [7]. However, the research of the semantic web and machine understanding has predominantly focused on documents and information, not social relationships and people. It is by combining the machine understandability with social networks and their nuances that we come to the concept of social semantic web. Another proposed term for a similar concept is *semantic social network* [22].

In an effort to capitalize from the social networking phenomenon, several websites have dedicated themselves to one or more forms of social networking. To mention but a few of the most popular services, Friendster, described as “an online community that connects people through networks of friends for dating or making new friends” boasts over 20 million members and Orkut.com, an “online community that connects people through a network of trusted friends” claims ‘millions’ of members. LinkedIn.com, a career-oriented social networking site, currently has 3.6 million registered members. What these approaches have in common is their centralized structure in the sense that there exists a single service provider running the social networking service and all the information of social relationships exists within the servers of the single service provider.

When considering the web-based centralized services like Friendster and others, several drawbacks are immediately apparent. First, the services are closed: people using the service will have to manually register to each of them and fill out the personal information and define social relationships separately for each service. Also, as not all of ones friends are likely to be registered to all of the services, the social network of any one service is unavoidably left incomplete.

Furthermore, the amount of information one can access using the centralized services is often merely a minimal personal profile that does not provide any depth in describing the person or his/her interests and thoughts: the identity consists only of the available, usually brief, personal profile. Indeed, this shallowness of personal information causes these

networks to be easy targets of fraud and moreover, the user lacks a consolidated identity [17]. To make matters worse, many commercial services have unfriendly terms of service; for example, the service operator can legally own all content entered, thus further discouraging participation and entering of any personal data. Finally, many bloggers have a natural resistance to creating several separate "identities" on external services: their blog already contains, or even *is*, their identity. A website possibly containing a personal diary with years of archives certainly serves as a richer source of "identity" than a simple half-page profile

Contrast this centralized approach to an open, decentralized method of defining social relationships: personal information available can include the entire blog written by the person in question with all the richness of information inherent to blogs and "blog identities". Linking of these rich identities would make much more sense than linking short profiles on a centralized service.

To summarize and exaggerate slightly, the problem is that RSS feeds, simple links and blogrolls link content but not identities, while centralized social networking websites link identities but not content. Yet for example blogging is inherently a social activity, so the capability to express relationships would be very valuable. Among other goals, social semantic web attempts to reconcile this problem by providing for social linkage among the already existing "rich" identities of e.g. blogs or personal websites.

While it's been criticized that online relationships are not as valuable as offline ones [4], it is clear from the popularity of the centralized sites alone that online social networking as a concept is highly in demand and clearly valuable. If not by monetary means or business models [6], social relationships themselves are the backbone of human existence. It's also evident that we have only begun to realize the vast possibilities that building a comprehensive social network might enable [2].

Finally, as more and more of our lives take place online and relationships with geographically distant people become more common, the importance of online social relationships is likely to increase. The fact that successful business models employing social networking have not – yet - been numerous does not diminish the importance of the concept itself.

### III. FOAF

This section introduces the Friend Of A Friend (FOAF) specification. First, an introduction to FOAF is given. After a brief example, some applications utilizing FOAF are presented.

#### A. Introduction to FOAF

At the basic technical level, FOAF is just an RDF (Resource Description Framework) vocabulary [12], originated by Dan Brickley and Libby Miller in 2002. The goal of FOAF is to provide a means for describing people and their personal information – such as name, e-mail address as well as social linkage to their friends – by using XML and

RDF. The FOAF specification allows software to process this kind of information in a standardized fashion. While the initial focus of FOAF has been on the description of people, FOAF can also be used to represent and link to groups, companies, projects, documents and other information. This paper focuses on the original, social aspects of the specification.

The FOAF vocabulary specification defines a number of attributes for the description of persons and other information. This information is split into five categories: basic information, personal information, online accounts and IM, projects and groups and finally documents and images, each specifying information belonging to their respective category. The full specification of all properties contains dozens of specified properties. Some of the most common properties are the following:

- **foaf:name**, **foaf:surname**, and **foaf:firstname** all provide information on the individuals name. The first is assumed to be the full name of the person while the surname and firstname properties contain only the family name or the first name, respectively.
- **foaf:nick** provides a nickname for a particular person, e.g. Bill.
- **foaf:homepage** specifies a link to the persons homepage, e.g. <http://www.doe.com/john/>
- **foaf:phone** is the individuals phone number, typically identified using the tel: URI scheme.
- **foaf:schoolHomepage** provides a link to the school homepage this individual is studying at.
- **foaf:gender** provides gender information
- **foaf:knows** specifies a person that this person knows. It does not give a link to their homepage directly, but instead a person-structure is expected (which can, in turn, include a link to the homepage of the known person).
- **foaf:depiction** points to a URL of an image of the person in question.

The description of relationships is specified with the **foaf:knows** property. This property is somewhat vague as it's not specified what is actually meant by "knowing" a person. However, according to the specification, it's purposefully vague [10]. While there are proposed extensions to change this behavior, more accurate relationship definition in basic FOAF is left up to the search engines and other "post-processors" of the information. It is envisioned that these automatic tools could be used to find assumed relationships; for example, two persons who work for the same company are likely to be colleagues. Similarly, if a document exists that lists two people as their creators, they are likely to be collaborators on some level. Obviously, finding accurate information about interpersonal relationships through such data mining techniques is slow and unreliable at best.

The FOAF Vocabulary specification includes a very rich set of entities for the description of personal information.

Properties are available for the specification things such as the person's Myers-Briggs personality classification, nearest airport as well as other eccentric properties like **foaf:geekcode**, used to specify the geek person's "geek code" [18].

The core of the FOAF description of personal information consists of the **foaf:person** class. All information relating to a person (and his/her relationships) is grouped under this class and when specifying relationships, the target individual is another foaf:person construct.

### B. FOAF Examples

A description of a fictional person called John Doe could be presented with the FOAF description in Listing 1.

LISTING 1: FOAF EXAMPLE DESCRIPTION

```
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-
syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-
schema#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:admin="http://webns.net/mvcb/">
  <foaf:PersonalProfileDocument rdf:about="">
    <foaf:maker rdf:nodeID="me"/>
    <foaf:primaryTopic rdf:nodeID="me"/>
    <admin:generatorAgent
rdf:resource="http://www.ldodds.com/foaf/foaf-a-
matic"/>
    <admin:errorReportsTo
rdf:resource="mailto:leigh@ldodds.com"/>
  </foaf:PersonalProfileDocument>
  <foaf:Person rdf:nodeID="me">
    <foaf:name>John Doe</foaf:name>
    <foaf:title>Mr</foaf:title>
    <foaf:givenname>John</foaf:givenname>
    <foaf:family_name>Doe</foaf:family_name>
    <foaf:nick>johnnie</foaf:nick>
    <foaf:mbox_shalsum>d91d74ab037d6dee1ce0a29d12096d1b
074fe014</foaf:mbox_shalsum>
    <foaf:homepage
rdf:resource="http://www.doe.com/john/" />
    <foaf:depiction
rdf:resource="http://www.doe.com/john/face.jpg" /></f
oaf:Person>
    <foaf:knows>
      <foaf:Person>
        <foaf:name>Jane Doe</foaf:name>

    <foaf:mbox_shalsum>385c068a568ade2b8647ad3acd8f71f
6f3e70b5d</foaf:mbox_shalsum>
    <rdfs:seeAlso
rdf:resource="http://www.doe.com/jane" /></foaf:Per
son>
  </foaf:knows>
</foaf:Person>
</rdf:RDF>
```

The example description in Listing 1 contains the following information about John:

- The name in two different forms; first the full name (foaf:name) and then the first and the last names separately (foaf:givenname and foaf:familyname).
- John's nickname (foaf:nick).
- An SHA-1 sum of the mailto: identifier of John's e-mail address. This property is used if the e-mail address is not wished to appear publicly for e.g. spam avoidance reasons (foaf:mbox\_shalsum). The

SHA-1 sum of an e-mail address cannot be used to determine the actual e-mail address of the person, but can be used as a kind of an "anonymous reliable identifier".

- URL to John's homepage (foaf:homepage).
- URL to a photo of John (foaf:depiction).
- The fact that John knows a person whose name is "Jane Doe". More information of this person is assumed to be available at the URL <http://www.doe.com/jane> (foaf:knows-construct and information specified therein).

In order to make a profile public, the FOAF description is saved to a file and stored on the web server. The de facto-standard for the name of this file has become "foaf.rdf". However, the discovery aspect of the FOAF specification is still a subject that is somewhat open and actively discussed in the FOAF community. One suggested method to enable search engines to find the information is to use the HTML link-tag to point to the FOAF descriptions. This would then allow any search engine indexing the page to also find the FOAF description at the specified file. For example, the following could be placed in the HEAD-section of a website's index.html:

```
<link rel="meta"
      type="application/rdf+xml"
      title="FOAF"
      href="foaf.rdf" />
```

### C. Challenges

The FOAF structure and information specified therein raises a number of social and even legal issues. The first problem arises from the fact that nothing stops people from creating misleading or forged profiles of other people and then distributing them on the Internet. Since there currently is no way of rating a given piece of FOAF-information for its accuracy, it may be difficult or impossible to remove and/or correct it if the flawed information enters the "FOAF-space".

Another potential problem is the vagueness of the "foaf:knows" property, although this can be seen as both a strength and a weakness. It is generally assumed that the knows-property refers to the individuals being "friends". While this construct makes defining relationships very simple, it does not say anything about the precise nature of the relationship. As was previously mentioned, attempting to refine this relationship property through data-mining techniques is time-consuming, difficult and unreliable. Having no other type of relationships than "friend" limits the usability of FOAF in social networking and situations where all parties do not agree what a "friend" means.

Privacy of data is also a concern with FOAF. Given the vast amount of information that is possible to define in a persons FOAF profile, it may be undesirable to have all this information available to the general public. However, there are currently no agreed methods of partitioning the data so

that only trusted parties could access more detailed information. Given the potential amount of public information, questions are raised about the jurisdictional right of service providers to use this information – e.g. do the aggregators of FOAF information have the right to use and republish the personal data and what data-protection laws will they have to abide by?

#### D. FOAF Applications

To aid the creation of a FOAF description, some automated tools have been introduced. One example is a FOAF-a-Matic (available at <http://www.ldodds.com/foaf/foaf-a-matic>) which generates a FOAF description from a web-form filled out by a user with personal information. This can then be saved to a file and linked to as described earlier.

Several tools are also available to view the FOAF information and explore the linkages. One of these is FOAF Explorer [13]. Using this tool, a link to FOAF description can be given and the explorer extracts all information and links to other people and presents them in a convenient form including possibly defined photos of the persons. Also, a system called Flink has been developed for extraction and visualization of social networks based on FOAF information [1].

Another tool for exploring the FOAF links and information is FOAFNaut, which presents the information in an intuitive SVG (Scalable Vector Graphics) format [14]. Figure 1 below is a screenshot from FOAFNaut, the dotted lines representing a “foaf:knows”-relationship:

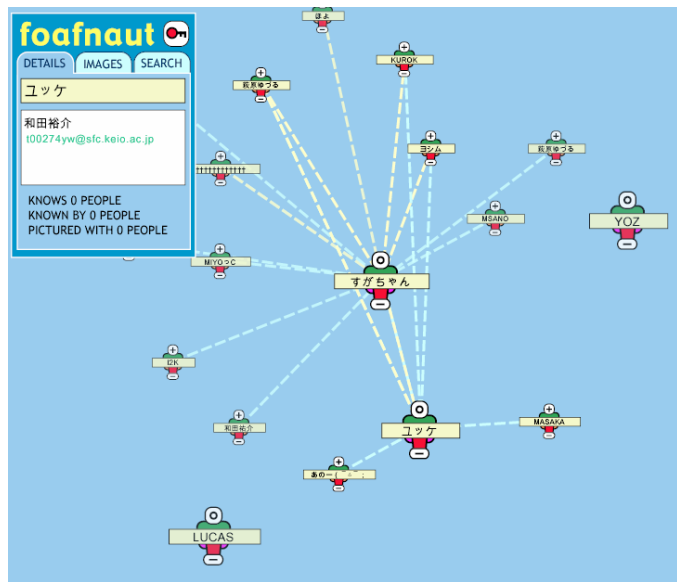


Figure 1: Screenshot of FOAFNaut

In addition to applications utilizing FOAF, several FOAF extensions and modifications have been developed. For example, a substantially simpler “version” of FOAF called RSS-FOAF has been specified for use in RSS feeds [19]. Extensions to FOAF include specification of several suggested trust- and reputation-based specifications for relationships, notes for describing possessions, visited countries etc. Extending FOAF is quite easy as extensibility

was kept in mind when designing it. As long as the FOAF file is well-formed XML written in a valid RDF syntax, the presence of any extensions do not interfere with the basic functionality.

#### IV. XFN

This chapter will provide an introduction to the XHTML Friends Network (XFN) specification. We will first look at how relationships are presented in XFN, then cover the all of the specified relationship types and finally provide some example applications and an example scenario of using XFN.

### A. Introduction to XFN

XFN was created by the Global Multimedia Protocols Group (GMPG), with the first draft written in May 2003. The authors of the first specification were Tanek Çelik, Eric Meyer and Matthew Mullenweg who also are the founders of the GMPG. When creating XFN, the main design principles employed were simplicity and decentralization [5,9]. Unlike FOAF that also specifies information *about* people, XFN only specifies the *relationships* between people. It's assumed the linked resource provides all the necessary information about the person and XFN thus makes no attempt to further describe the individuals.

The specification is based on XHTML Meta Data Profiles [3] and uses the ‘rel’ attribute. Rel is specified in W3C’s HTML specification to be used for description of the relationships from the current document to the specified anchor [8]. In XFN, this relationships attribute is extended to provide for social relationships.

The use of a pre-existing standardized attribute has a number of advantages. First, the tags can easily be added to existing links without any special tools and are easily both machine- and human-readable and understandable. Second, the adding of tags does not interfere with the functioning of a program that does not understand them nor are any existing standards broken. Links that contain XFN tagging will also be rendered normally (unless explicitly specified otherwise with e.g. a CSS2 style sheet).

Below is an example of how an XFN relationship can be added to a simple link. First, a normal link to John's blog:

<A HREF="http://johnsblog.somewhere.com/"> John </A>

Now suppose the person linking John considers him as his/her friend that he/her has physically met. The XFN-enhanced link containing this information would look like this:

<A HREF="http://johnsblog.somewhere.com/" rel="friend  
met"> John </A>

The only addition is that of the rel-attribute with appropriate tags. We will next look at all the possible values specified by XFN profile version 1.1.

### B. XFN 1.1 Profile

The XFN profile specifies the allowed attributes for describing relationships [9]. They are categorized under friendship, physical, professional, geographical, family, romantic and identity categories. In the specification below, a symmetric relationship of "A -> B" implies that "B -> A" also holds true while a transitive relationship means that relationships "A -> B" and "B->C" imply "A->C".

1) *Friendship (at most one should be picked from this category. In addition, where relevant, suggested mapping between Orkut-values and XFN friendship values is given.)*

#### **contact**

Someone you know well enough get in touch with. Often symmetric. (Maps to Orkut's "haven't met" contact)

#### **acquaintance**

Someone who you have exchanged greetings and not much (if any) more — maybe a short conversation or two. Often symmetric.

#### **friend**

Someone who is your friend. A compatriot, buddy, home(boy|girl) that you know. Often symmetric. All Orkut "levels" of friendship (friend, good friend, best friend) can be considered friends in XFN.

2) *Physical*

#### **met**

Someone who you have actually met in person. Symmetric.

3) *Professional*

#### **co-worker**

Someone a person works with, or works at the same organization as. Symmetric. Usually transitive.

#### **colleague**

Someone in the same field of study/activity. Symmetric. Often transitive.

4) *Geographical (at most one should be picked from this category)*

#### **co-resident**

Someone you share a street address with. Symmetric and transitive.

#### **neighbor**

Someone who lives nearby, perhaps only at an adjacent street address or doorway. Symmetric. Often transitive.

5) *Family (at most one should be picked from this category)*

#### **child**

A person's genetic offspring, or someone that a person has adopted and takes care of. Inverse is parent.

#### **parent**

Inverse of child.

#### **sibling**

Someone a person shares a parent with. Symmetric. Usually transitive.

#### **spouse**

Someone you are married to. Symmetric. Not transitive.

#### **kin**

A relative, someone you consider part of your extended family. Symmetric and typically transitive.

6) *Romantic*

#### **muse**

Someone who brings you inspiration. No inverse.

#### **crush**

Someone you have a crush on. No inverse.

#### **date**

Someone you are dating. Symmetric. Not transitive.

#### **sweetheart**

Someone with whom you are intimate and at least somewhat committed, typically exclusively. Symmetric. Not transitive.

7) *Identity*

#### **me**

A link to yourself at a different URL. Exclusive of all other XFN values. Required symmetric. There is an implicit "me" relation from a subdirectory to all of its contents.

### C. Challenges

As with FOAF, the structure of XFN also presents a number of issues, only different kinds. Firstly in XFN, there is no way to enforce that only valid set of values are entered for any links. Indeed any combination of valid or invalid values could be written to the rel-attribute but it's assumed that people participating in the creation of the social network do not misbehave in this way. For example, it would be possible to specify a co-resident spouse that one has never met; however, the XFN specification deliberately excludes all negative expressions (such as "not met" or "enemy") and thus

"missing" values can usually be concluded from existing values and unintentional conflicts are not common.

Forging relationships is, in theory, easy with XFN. For example, person A might claim that a person B is his or her close friend. If the other party reciprocates the friendship linkage (i.e. by linking back to person A as his/her friend), the situation is clear. However, in the absence of a reciprocating link, there is no reliable method of knowing if the alleged relationship is true. It might be that the other party simply does not yet support XFN. The other possibilities are that the claimed friendship is indeed false or that the friendship is considered unilateral – the other person may only consider the other party as an acquaintance instead of a friend.

The "identity" specified in XFN is quite weak – or rather, nonexistent as it is offloaded to the linked resources – and is usually bound to one or more URLs. This in effect eases the load of XFN as the person does not need to be described. Of course, it's debatable whether a person even could sufficiently be described in a simple XML-document. In that sense, using blogs or websites to "define" a person makes sense intuitively. Nothing in XFN mandates that the resource linked to with an XFN-link actually *does* contain any information about any person, but this is assumed to be the case.

As one potentially more "real" problem, as the location of a person's primary web page or blog might change often, it can become a difficult administrative task to keep especially all the reciprocating links up to date. So far there are limited tools available to perform this automatically.

#### D. Applications & examples

Since the specification of XFN, several services especially in the blogging space have taken the specification into use. A popular content management system / blogging platform Wordpress [20] was among the first compliant applications – mostly due to the fact that XFN and Wordpress share the same creator, Matt Mullenweg. Other blogging platforms which have added support for XFN via different extensions include Moveable Type for which a template has been developed and Bloxsum for which a module has been developed.

Community websites embracing XFN have also been popping up. Metafilter [24] users can now add XFN information to their links to other Metafilter users and Journalspace [23] provides a similar service. In addition, search services like RubHub [25], which uses XFN-annotated sites to display the social networking relationships, have been created. Rubhub presents XFN information of a particular website in a convenient format. Figure 2 displays an example of the XFN linkages for the website [www.meols.com](http://www.meols.com) using the rubhub.com service:



Figure 2: rubhub.com presentation of the XFN links from [www.meols.com](http://www.meols.com).

In the example of Figure 2, [www.meols.com](http://www.meols.com) can be seen as having three outgoing links. One of these, to [www.koffdrop.com](http://www.koffdrop.com), is listed as a "friend met colleague". The "friend" and "met" tags are reciprocated by the target site – i.e. the author of [www.koffdrop.com](http://www.koffdrop.com) also thinks of the author of [www.meols.com](http://www.meols.com) as a friend that he/she has met. However, instead of a colleague, the author of [www.meols.com](http://www.meols.com) is listed as a co-worker by the author of [www.koffdrop.com](http://www.koffdrop.com). [www.fabelbish.com](http://www.fabelbish.com) is listed as another site belonging to the same author, while [www.danhon.com/ec](http://www.danhon.com/ec) is defined as a friend that has been met. The same information could be displayed in a somewhat more intuitive way using graphs as shown in Figure 3. Who these sites actually refer to is not apparent from

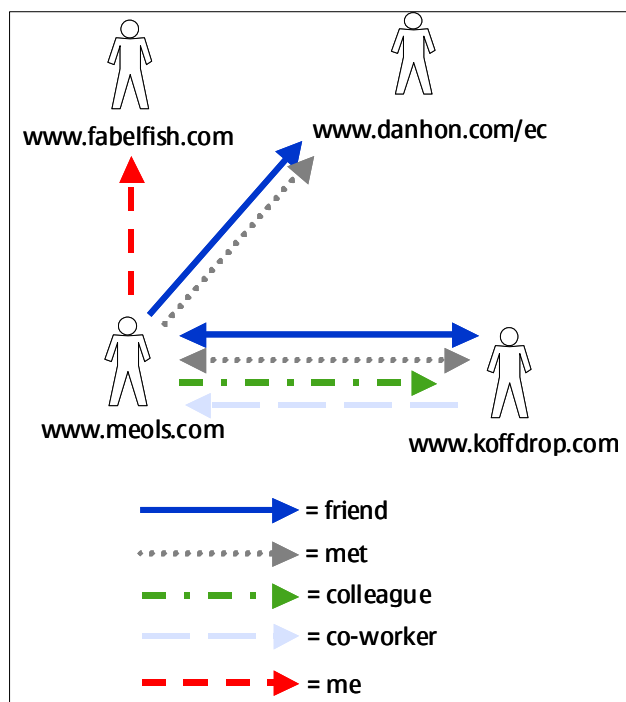


Figure 3: XFN Linkage example

the links themselves or the XFN descriptions – this would need to be discovered by “manually” reading the linked websites.

## V. COMPARISONS

### A. Other systems and specifications

XFN and FOAF are by no means the only initiatives undertaken to describe the social semantic web. The previously mentioned centralized services make up one category, of which there are dozens if not hundreds of active examples. A website dedicated to collecting information on social networking services currently has 380 such entries of different services [16]. The proposed distributed solutions to social networking are much fewer in numbers and few serious proposals other than XFN and FOAF have been presented.

One related proposal for distributed systems providing social networking capabilities is **LID** (Light-Weight Digital Identity). LID is geared primarily towards providing reliable and secure digital identities, so in addition to providing a basis for social networking, LID system is envisioned to be a base for single sign-on (SSO) systems as well as providing authentication mechanisms [15].

The danger with much variety in the space of social semantic networking is that individual users will not know which standards are worth taking seriously and implementing to their own sites. The usage of e.g. XFN is natural for Wordpress users as the support is well integrated to the content management system, but other platforms may use other, incompatible methods to describe the social relationship information. Additionally, users may not be aware of the possibilities already present for the construction of a social semantic web and their advantages.

### B. Comparing FOAF and XFN

The two specifications presented can both be seen as building blocks of the social semantic web. They can also be viewed as potentially providing overlapping information as they both serve the same goal of allowing the expression of human relationships. However, as we have seen, their approaches are quite different.

Table 1 below summarizes some of the key differences between FOAF and XFN. Comparing the two approaches side-by-side, it's clear that the two technologies are more complementary than overlapping. The information about a person could be described with FOAF while XFN is more suited to describing the relationships to other people. While there is no specifically defined interoperability model between XFN and FOAF, one suggested method is for authors to create a FOAF property that represents the relationship between two people and use XFN values within the property to describe the relationship. This allows FOAF information to be enriched with the more detailed relationship information provided by XFN's relationship values.

On the other hand, FOAF extensions for describing the relationships in more detail have also been suggested. One of

such suggestions was the ‘relationship’ module by Eric Vitiello [11], which specifies attributes similar to those in XFN. However, this initiative failed to gather widespread community support and was later spun off as a general, non-FOAF-specific vocabulary for describing relationships between people [21].

	FOAF	XFN
<b>Underlying technology</b>	RDF/XML vocabulary	XHTML meta data profile, uses rel-attribute
<b>Described information</b>	Wide variety of personal information and relationships.	Only social relationships
<b>Manual profile creation possible?</b>	Yes, but format complicated + obfuscating e-mail addresses with SHA1-sums difficult manually.	Yes; relationships defined purely text-based.
<b>Vulnerability to fraudulent information</b>	Yes; there is no way to “mod” or rate given pieces of FOAF information.	Not serious; alleged relationships remain one-way.
<b>Identity model</b>	Personal information defined in the FOAF description: additional pages can be linked from the description. No assumed relationship to website hosting the description.	The originating page is assumed to contain all necessary information about the person. Links to “me” can also be provided.

TABLE 1: KEY DIFFERENCES BETWEEN FOAF AND XFN

Purely from the perspective of specifying relationships, FOAF is a significantly heavier method and requires more time and effort than implementing XFN information to existing links. On the other hand, FOAF is better supported by a number of tools and applications, whereas software and application support for XFN is more limited. Of course, with the explicitness of XFN, less software support is needed in the first place.

## VI. CONCLUSIONS

The current multitude of (centralized) social networking services and technologies makes the choice of which one(s) to sign up for or support difficult for users. Having personal information re-entered and “distributed” among multiple centralized, mutually incompatible services is hardly an ideal solution as they offer a very limited perspective into the world of the social semantic web. It's clear that there is a need for a standardized distributed method of presenting personal information and information on social relationships.

While both FOAF and XFN have already enjoyed some popularity, it is much too soon to predict whether either or

both will gain critical mass over time to become standard way(s) of presenting social semantic information on the web. From a machine-understandability point of view, FOAF is much stronger in describing the actual persons, while XFN focuses on the relationship aspects in much greater detail than FOAF. From a deployment perspective, XFN can be considered simpler to use and a more lightweight solution. Neither supports authentication of users or secure digital identities and thus the distribution of falsified information remains a problem, especially so with FOAF.

Regardless of the standard, it is becoming clear that personal and social aspects of the semantic web is an area of great interest and one that is bound to increase in importance over the coming years. Only time will tell exactly what role XFN and FOAF or their possible descendants will play in the future of the social semantic web.

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