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AS YOU MAY THINK: MAPPING THE FUTURE OF COMMUNICATION

Assignment

The objective is to outline and present your own vision of the future – specifically what may be in store for multimedia and digital convergence over the next decade.

In groups, students will consider the possible technological, social, economic, and political environments of the year 2017. Based on research and knowledge of current trends, each group will make reasonable and well-supported predictions about what our “digital world” will be like at that time.

The group’s predictions should be compiled in a scenario depicting this possible future.

Schematic Report Outline

I. Executive Summary
II. Introduction
III. How did we get here?
    a. E-mail
    b. IM
    c. SNS
IV. Where are we going?
V. Conclusion
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Executive Summary

We have been given charge in coming up with a scenario that will predict the future. We chose to map the future of communication.

Since the Internet was invented, it has become a free enterprise able to deliver information and facts about any kind of subject imaginable. With this success and due to its rapid expansion, it has also created problems and concerns for consumers and businesses alike. Mediums of communication are also evolving. From E-mail to instant messaging (IM) and social networks, (SNS) the internet is a booming enterprise and as such it should adhere to rules and regulations stipulated by governmental agencies along with the help of its consumers and businesses.

Our way of doing business over the internet will change in the next ten years. Many topics covered in this report such as E-mail, IM and SNS will make profound changes that will impact consumers in the way they communicate with each other.

- E-mail and IM have been used as a substitute for letters and phone calls, eliciting more immediate responses.
- Online communications can and have been used in emergencies to disseminate information quickly and to a vast audience; from network outages, to natural catastrophes, health issues, schedule changes.
- The convergence of digital technologies will allow better, more efficient and faster communication methods.
- How will these technologies help reduce costs for consumers and businesses?
- How will we communicate in the future?

This project proposes that the current technologies used for communication will converge in the future to an all-encompassing personal social communication network (PSCN). It will include E-mail, instant messaging, and multimedia technologies.

Introduction

Think back to a time before there was MySpace. A time before email, instant messaging, or texting. A time before cell phones or computers, telephones or telegraphs. Then go back further and think of a time before there were planes. Before there were trains. Before there were automobiles. How did people communicate? For those of us writing and reading this report, we do not have personal knowledge, and will have to draw upon our history lessons.

In the days before all the above mentioned conveniences, people communicated in person. Communities were small and within a geographical radius where people could reach each other by foot travel or horseback. The term "community" was in essence dictated by geography.

Now add back in the transportation network. People and communities get dispersed around the world. Yet they still have a need to communicate. And our understanding of the term "community" changes. It is no longer restricted by people being close in geographical proximity to one another.

Now add back into the equation computers, cell phones, email, instant messaging, texting and social networks. These modern conveniences allow users to communicate with each other in real time, regardless of geographic location. They allow our community to be both timeless and limitless.

Communication and community are the driving force behind electronic communication. People want relationship, intimacy, friendship. And they want to network and share knowledge and information. They want to share photos, and videos and they want technology to provide a means of "sharing memory (Weinberger, 2004) about those photos and videos. They want to pool resources. They want to network with others around the world. And they want to do it in real time and with ease.

People also want systems that will evolve with them. As their life changes, they want their social networking system to adapt so that they do not have to start from scratch at each new branch in the road, whether it be transitioning from high school to college to professional life or from single to married to parent and even grandparent.

Finally, people want privacy, security and authenticity. They want to know that what they post online in high school or college on their social network will not inhibit or eliminate them from getting their dream job down the road.

Tools come and go. The communication tools of the future, specifically social networking systems, will need to address these issues in addition to building community and facilitating real-time communication with ease.

How did we get here?

History is in important guide for predicting the future of technology, especially in the area of communication. Knowing where we have been helps us to learn, plan, prepare and improve upon previous technologies.

The computer revolution has brought us email, instant messaging and social networks. All have their features and benefits, as well as their drawbacks. By studying the best and the worst of each, in addition to their histories, we will be better able to provide a vision of the future in regard to how people will communicate electronically.

Electronic mail (E-mail)

The earliest use of electronic mail (E-mail) was in the 1960s. Since then, E-mail has become a staple in communication, more widely used than traditional letter writing. There are various features and benefits that make E-mail such an appealing way to communicate with people near and far.

Definition

A store and forward method involving composing, sending, storing and receiving messages over electronic communication systems.
According to Webster's online dictionary, E-mail is "a means or system for transmitting messages electronically" ("Merriam-Webster Online").

History

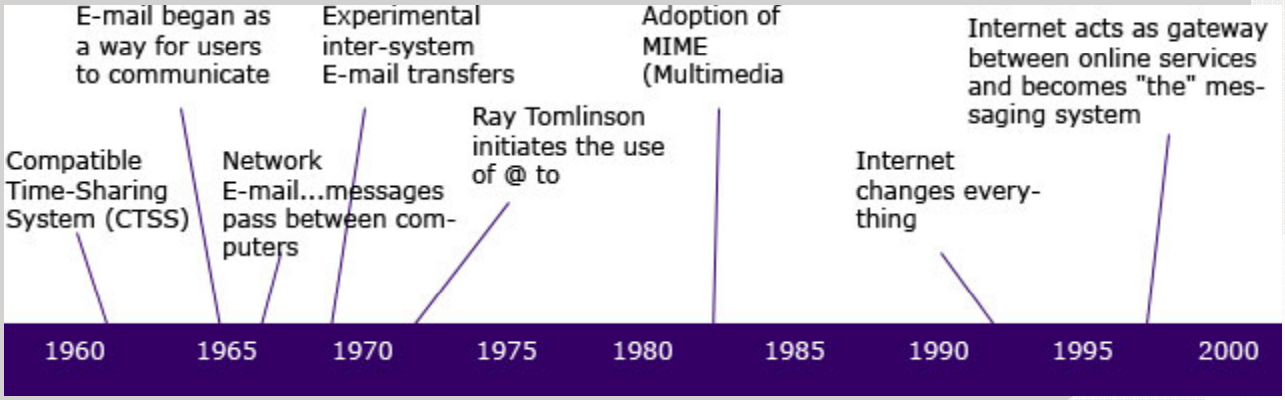

Figure 1. Timeline illustrating the historical evolution of E-mail.

Tools

Figure 2. Various common E-mail tools used to communicate.

Features

E-mail has a variety of features, including:

- Asynchronous
- Text-based communication
- One-to-many – can send one E-mail to many people with one action
- Signature can be automatically applied or attached
- Auto reply
- Create rules fro filing/redirection
- Address book – store and retrieve instantly
- Notification of undeliverable messages
- Date and time stamped
- Attachments can include files, graphics, sound, often compressed
- Web mail and mobile E-mail allow for on the go lifestyle

Benefits

- Price
  - Relatively inexpensive, no long distance fees
- Convenience
  - Message is stored until recipient is ready to read it
  - Send to multiple people
- Permanent
  - Record can be saved including timestamp
- Collaboration
- Safety
  - Children's E-mail systems offer protection from unsolicited users

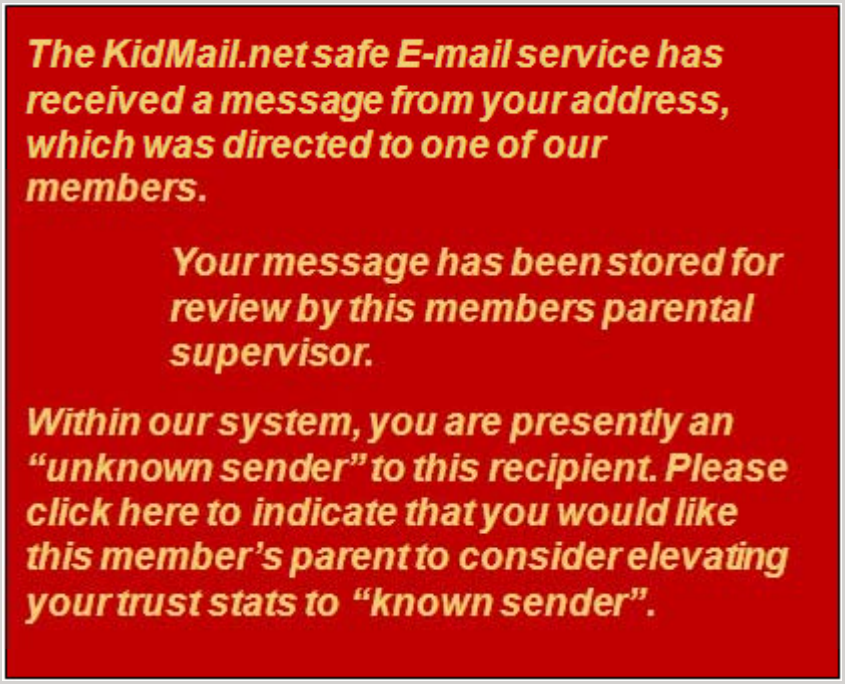

Figure 3. The "KidMail" system sends a message to the sender indicating that the message has not reached it's intended recipient

Risks and liabilities

- Spamming
  - Unsolicited commercial E-mail
- Phishing
  - Fraudulent E-mail
- E-mail worms
  - Use E-mail to replicate themselves
- Junk E-mail
  - Reduction in usefulness of E-mail
- Privacy
- Security
  - Generally not encrypted
  - Easy to intercept and read messages
  - Deleted messages stored on ISP's server
  - No anonymous communications

Standards and protocols

- Internet Message Access Protocol (IMAP)
  - Access E-mail via your local server
- Simple Mail Transfer Protocol (SMTP)
  - A "push" or sending protocol to deliver mail
- Post Office Protocol version 3 (POP3)
  - A "pull" or receiving protocol
  - Access mailbox and download message to computer
- Multipurpose Internet Mail Extensions (MIME)
  - Allows for sending of executable, sound, picture, movie, and other kinds of files
- Hypertext Transfer Protocol (HTTP)
  - Can be used for accessing mailbox via the Web

Standards and protocols (cont.)

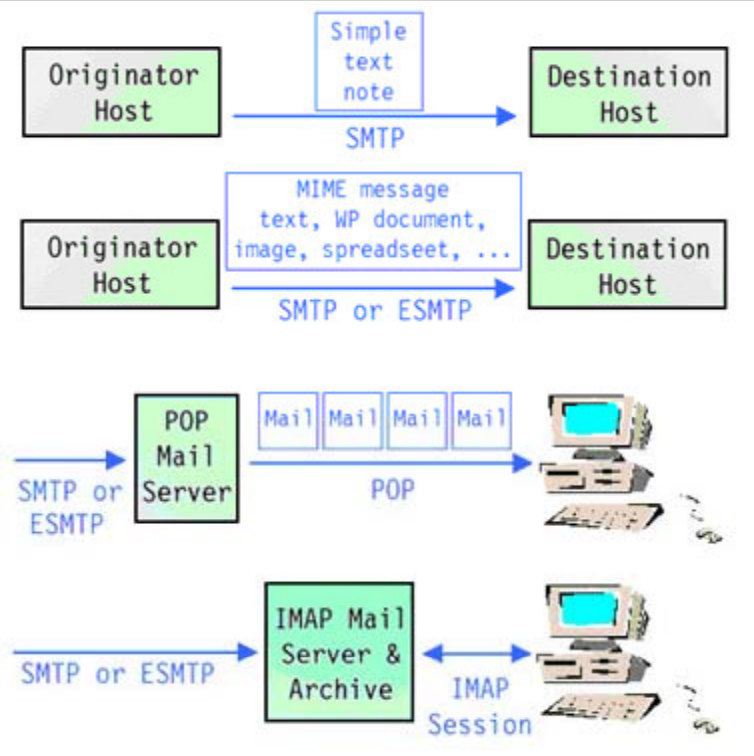

Figure 4. Illustration of the E-mail process (http://technology.niagarac.on.ca/courses/ctec1906/notes/tcp-ip-13.html).

Interoperability

Interoperability has not been a problem with email, as it has with IM. For the most part, what Internet Service Provider (ISP) or email client does not inhibit whether your email gets to its recipient.

Instant Messenger (IM)

Instant messenger (IM), like E-mail was pretty quickly adopted by users. IM has its share of features and benefits that makes it a favorite for young and old alike.

Definition

According to Webopedia, “IM is short for *instant message*, a type of communications service that enables you to create a kind of private chat room with another individual in order to communicate in real time over the Internet, analagous to a telephone conversation but using text-based, not voice-based, communication. Typically, the instant messaging system alerts you whenever somebody on your private list is online. You can then initiate a chat session with that particular individual” (“What is IM?”).

Figure 5. ICQ (“I seek you”) was one of the first IM programs.

History

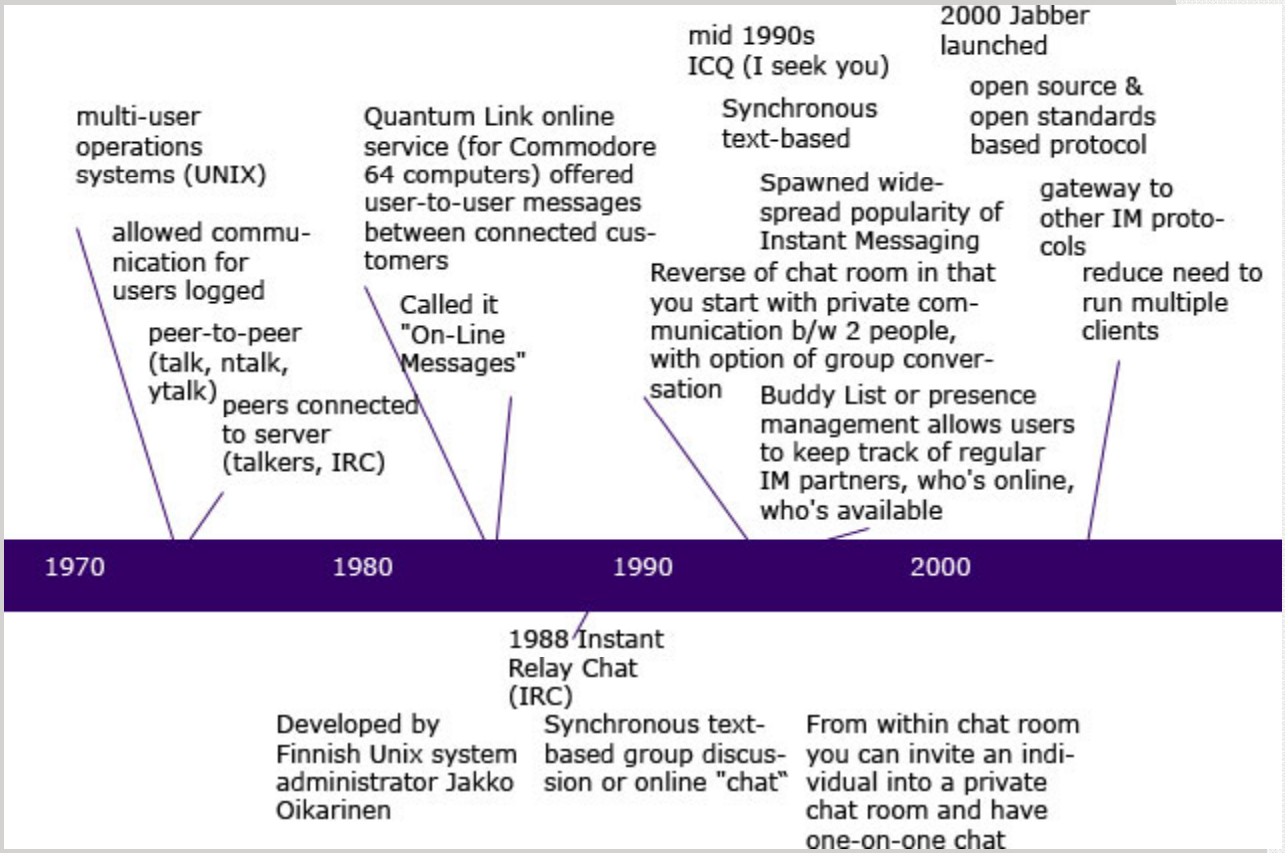

Figure 6. Timeline illustrating the evolution of IM.

Tools

Figure 7. Various IM tools used to monitor "friends" and communicate.

Features

Some of the IM features are dependent on the platform being used. For example, BitWise IM has the following features: Mobility, Encryption, Security, Privacy, Conferencing, Presence, Offline IMs, Direct Connectivity, Voice, Whiteboards, File Sharing and Text Messaging. These features are available for Windows, Mac OS X and Linux.

Figure 8. Logo of the BitWIse IM client.

Benefits

- Instant
- Social interaction
- Business applications
- Easy collaboration
- Opens new methods of spontaneous communication for disables, i.e. hearing impaired
- Builds community

Risks and liabilities

- Security (hackers)
- Spyware, viruses and worms
- Compliance (laws and regulations governing use of electronic communication in business)
- Identity theft and authentication spoofing
- Firewall tunneling
- Data security leaks
- Spam

Standards and protocols

- AOL, Microsoft, and Yahoo were developed without standards based protocols.
- Recent efforts include:
  - IETFs SIP (Session Initiation Protocol)
  - SIMPLE (SIP for Instant Messaging and Presence Leveraging Extensions)
  - APEX (Application Exchange)
  - Prim (Presence and Instant Messaging Protocol)
  - XMPP (Extensible Messaging and Presence Protocol) XML-based commonly known as Jabber
  - OMA's (Open Mobile Alliance) IMPS (Instant Messaging and Presence Service) November, 2006

Google, Microsoft, and Yahoo
“In an encouraging act of collaboration, Google, Yahoo and Microsoft announced tonight that they will all begin using the same Sitemaps protocol to index sites around the web. Now based at Sitemaps.org , the system instructs web masters on how to install an XML file on their servers that all three engines can use to track updates to pages. This should make it easier to get your pages indexed in a simple and standardized way. People who use Google Sitemaps don’t need to change anything, those maps will now be indexed by Yahoo and Microsoft” (TechCrunch, 2006).

Figure 9. Logos of the companies collaborating in the use of standards.

Interoperability

Interoperability allows your instant messenger to communicate with other instant messenger platforms.

AIM	AIM	ICQ	IRC	Jabber	MSN	Yahoo!
APNI.NET	X	X				
AT&T	X	X			X	X
Easy Message	X				X	X
EveryBuddy	X	X			X	X
Excite Messenger	X	X		X	X	X
Exodus-Jabber*	*	*		X	*	*
Yahoo						X

Figure 10. How does your instant messenger stack up when it comes to interoperability? The above table offers a small sample of interoperability between various platforms.

Figure 11. Exodus motto is to escape from proprietary IM Systems. Exodus is a new Jabber ™ client being developed to be a "successor" to the very popular client Winjab. It's smaller, faster, easier to use, and looks better.

Social Networking Services (SNS)

Social networking services (SNS) are relatively new to the communication scene, however few haven't at least heard of sites such as MySpace. SNS sites have brought to light their own features and benefits as well as an increase in risks and liabilities, especially for misinformed youth.

Definition

A social network is "an association of people drawn together by family, work or hobby. The term was first coined by professor J. A. Barnes in the 1950s, who defined the size of a social network as a group of about 100 to 150 people." ("Social network," n.d.) It is made of nodes which are generally individuals or organizations ("Social network,") Social network services (SNS) provide an online venue for these relationships.

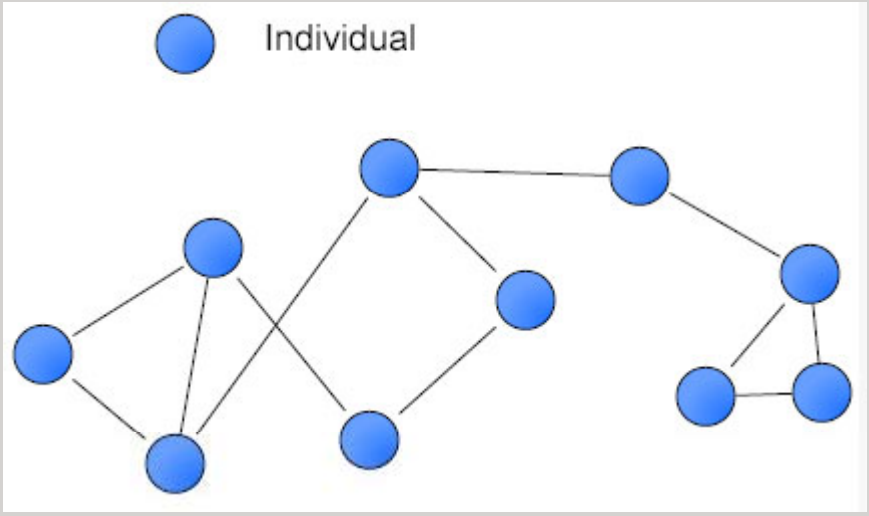

Figure 12. An example of a social network diagram ("Social network")..

History

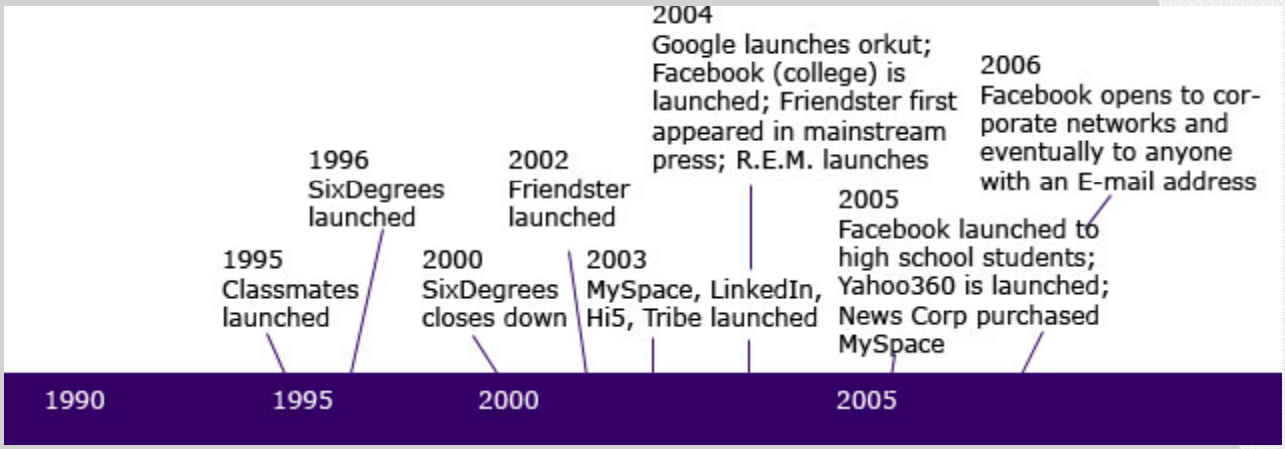

Figure 13. Timeline illustrating the evolution of SNS.

Tools

There are well over 200 SNS sites in existence in 2007.

Figure 14. Various SNS tools used to build relationships, communicate, and share multimedia.

Features

- Profiles
- Groups
- Photos
- Interests
- Friends or Friend of a friend (FOAF)
- Some “brands” or companies are linking various services together, i.e. your Hotmail account and Windows Live Spaces are each just a click away from your Windows Live Messenger service window.

Benefits

- Builds networking and communication skills
- User generated interactions
- Frequent use of existing and emerging/changing technologies
- Another communication tool for business
- Blogs and other social media used to speed up innovation, market products effectively
- Ways of connecting more directly to the individual market
- Low-cost way to keep companies in contact with consumer
- Companies can gain competitive advantage over another
- Easier for consumer to experiment with new technologies, social interaction and social tools

Risks and liabilities

There are certain risks involved in SNS. Some of sites listed below offer an array of complications and danger to the people who used them when used in the wrong context, requiring more scrutiny, security by parents, law enforcement agencies, and schools/colleges. Sites like, Blog and diary websites; Myspace.com; Facebook; Cyberdating sites; Child pornography; are just a few of them. Risks include:

- Sharing of personal information
- “Cyberbullying” and online predators
- The “permanency” of online profiles
- Misinformation

Standards and protocols

According to Planetwork Journal, the emerging systems for online social networking, and how the new kinds of knowledge and information sharing they make possible to interact with one another. "Just as the open standard TCP/IP protocol created the Internet, and the open standard HTTP protocol created the Web, XDI is an open standard protocol that can join today's emerging social networks into one interoperable Social Web. This layer will evolve naturally over the existing HTTP-based Web the same way the Web evolved over the then-existing Internet."

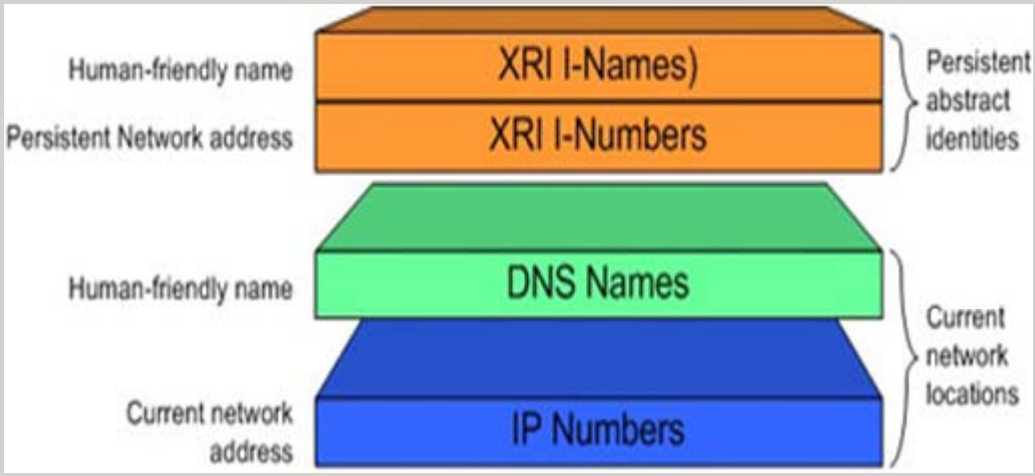

Figure 15. The Social Web can evolve over the Web just like the Web evolved over the Internet. (image retrieved from http://journal.planetwork.net/article.php?lab=reed0704)

Interoperability

Interoperability is limited to moving media, such as video and photos, from place to place, but not relationships and attention data. From MetaFilter, Flicker, Facebook to LinkedIn, to name a few, almost none of these systems interoperate in any useful way.

Where are we going?

In mapping the future of communication, it is important to know where we are now and where we want to go. Short of looking into a crystal ball, it is hard to know what the future will hold. In terms of personal and professional communications, it is perhaps more efficient to look at the gap between now and then. How people use the communications we have now is important to how they may use it in the future. E-mail, IM, and SNS have each evolved relatively quickly. There have been many early adopters and probably just as many have opinions about the pros and cons of each. We want to look at what we think will be the next step.

Digital Convergence

According to Webster's online dictionary, digital means "characterized by electronic and especially computerized technology" and convergence is "the merging of distinct technologies, industries, or devices into a unified whole" (Merriam-Webster Online). This project proposes that the current technologies used for communication will converge in the future to an all-encompassing personal social communication network (PSCN). This network will include E-mail, instant messaging, and multimedia technologies.

- Each individual will have their own domain name
  - Single sign-on
  - One standard profile per person
- Profile linked to any and all clients for E-mail and IM
- Development of the standards and protocols that will enable this to happen

Individuals may still have individual ISP or corporate generated E-mail and IM accounts, but all will be accessible through their domain profile PSCN.

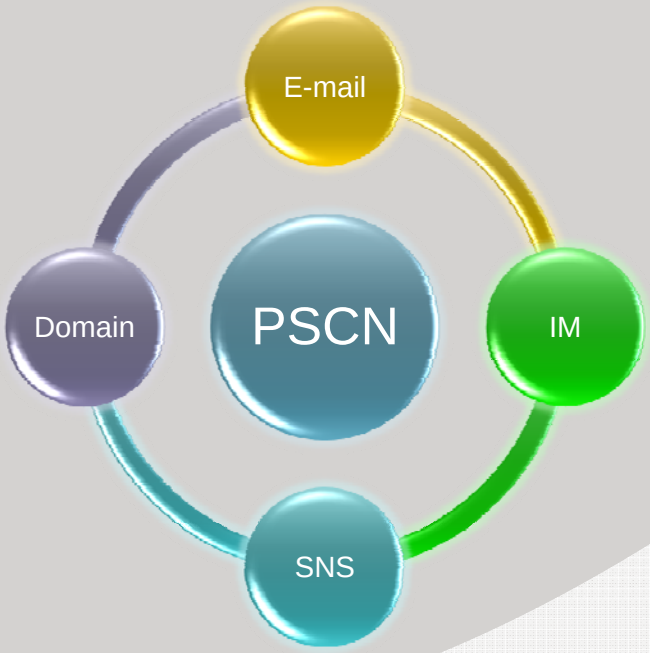

Figure 16. Visual of the combined relationship of the new PSCN.

The Effects of the PSCN

Socially, this PSCN system will make it much easier to find and monitor individuals. If this is your friend or family member, this is certainly a benefit. The risk will be when others also have access to this information. Along with the development of standards and protocols, security features will need to expand to give an individual more control over their own information – who can access what, when, and how. SNS sites now have check boxes that allow you to only share certain info with friends or open to the public – this will need to be further developed to encompass one's whole domain and profile information, giving an individual complete control over their individual site and information.

Economically, an individual's profile will contain the information and security necessary to conduct online business, making purchases, and checking one's own credit report. The profile authentication would allow access to bank records, and credit card statements. One's own profile would contain historical data of favorite online purchase locations and appropriate targeted marketing that could be viewed at the owner's discretion, much like choosing to look at a particular Sunday newspaper circular.

Politically, this will become the way politicians maintain a social presence. Like everyone else, they will have a publicly accessible site that will contain any info they care to divulge about themselves. With the increased accuracy of standards and protocols that will be developed to allow this system, online voting will be standard as an individual's profile will contain authentication that will allow them to vote anonymously, while ensuring only one vote per person.

Technologically, there will be more sharing of multimedia. Users will be able to provide metadata and a "shared memory" of photos and videos that will enable better search technologies. There will be an integration of voice and video with email for authentication and security purposes, as well as for messaging (Soltoff, 2003).

Web 2.0

The term Web 2.0 refers to the next version of the Web, a new and improved version. Unlike software updates or upgrades, that actually exist in different versions, the Web is not necessarily being updated or upgraded, officially, but rather is constantly evolving to include more features and capabilities. As multimedia evolves, so does the Web's capabilities, including user motivated functions and the convergence of all forms of media. ("Web 2.0."). This is consistent with the evolution necessary for the digital convergence suggested by this proposal.

Figure 17. The cloud-map picture above was constructed by Luca Cremonini on December 25, 2006, for railsonwave.com ("Web 2.0.").

Compliance Issues

There are a number of compliance issues that will need to be addressed in the development of our personal social communication network (PSCN).

- Privacy
- Content Regulations
- Ownership/Copyright
- Authenticity/signature/proof of who you are
- Authority
- Anonymity/confidentiality/safety

Standards and protocols

There are various standards currently under development. These standards will require further development and world wide implementation and adoption for the PSCN to work optimally.

Open ID

According to Wikipedia, “OpenID is a decentralized single sign-on system. Using OpenID-enabled sites, web users do not need remember traditional authentication tokens such as username and password. Instead, they only need to be previously registered on a website with an OpenID "identity provider", sometimes called an i-broker. Since OpenID is decentralized, any website can employ OpenID software as a way for users to sign in; OpenID solves the problem without relying on any centralized website to confirm digital identity” (“OpenID”).

OpenID is increasingly gaining adoption amongst large sites, with organizations like AOL acting as a provider. In addition, integrated OpenID support has been made a mandatory priority in Firefox 3 and Microsoft is working on implementing OpenID 2.0 in Windows Vista.

FOAF standard

According to Wikipedia, “FOAF (Friend of a Friend) is a project for machine-readable modelling of homepage-like profiles and social networks. Founded by Libby Miller and Dan Brickley, at the heart is a schema for defining relationships between people, and various attributes such as name, gender, and interests. To enable linking, each record includes unique identifiers for each friend (such as SHA1 checksums of their E-mail addresses, a Jabber ID, or a URI to the homepage or weblog of the person)” (“FOAF [software]”).

Conclusion

Since the 1960s, personal and professional communications have been changing. Concurrently, business and academics are also changing. Life is online. With this “always on” convenience comes benefits and risks. The ever growing popularity of E-mail, IM, and SNS indicates that these services will not be enough in the near future. A digital convergence will occur, resulting in the personal social communication network (PSCN), encompassing all the form and function currently used by individuals in separate products and sites. This will require increased infrastructure, security, and functionality. The future is now.

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