

Virtual Presence for the Web

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Abstract

This short paper introduces the Web as a virtual space. Applying the location metaphor to the Web leads to the notion of virtual presence on the World Wide Web. We describe requirements for a virtual presence service, which can cope with the scale of the World Wide Web.

Keywords--- WWW, virtual space, web awareness, virtual presence, voice over IP, Jabber.

1. Virtual Spaces

Today there are many virtual worlds and virtual spaces. From chat over games to educational worlds. There are small ones, like virtual shopping malls and large worlds like online RPG with millions of users. There are old ones like the early MUDs (text based so called Multi-User Dungeons) and new ones with advanced 3D environments.

A common characteristic of most online virtual spaces is that they feature virtual presence. This means that users are not just in the world. They are at a certain place inside the world. They see each other and interact with their virtual neighbors. While many worlds offer communication media for separated users, there are usually more ways to interact if people are virtually close to each other. Interaction happens in many different ways. From chat, over fighting and trade to more complex actions like virtual weddings and parties.

People like to meet others in virtual worlds. This has been true since early MUDs. It can be seen million fold every day in current MMORPG. The notion of being close seems to be almost as important in virtual worlds, as it is in the real world. But there is one virtual space where millions go every day, without seeing each other: the Web.

1.1. The Web

The Web is not just a collection of linked documents. The Web is a virtual space of millions of virtual places. Each Web site is a virtual place. The Web has no global spatial dimensions, only pages are spatial, but as we surf the Web, we use the location metaphor and much less the document metaphor. We go to a Web site rather than opening a hypertext document. While we are there at a virtual location, there are other people present at the same location at the same time. They are also jumping from page to page, and reading the same content. But we cannot see them. Presence, awareness of other people and synchronous communication do not exist on the Web.

We use other tools for synchronous communication. The two most important being text chat and VoIP. VoIP is

usually completely unrelated to the Web. Text chat is available on web sites in the form of chat channels. The deficiency of chat channels is that they are limited to certain pages and the Web site administrator must actively enable them. There is no synchronous communication across all Web pages.

1.2. Presence for the Web

The question is, if synchronous communication on the Web is desirable at all. We answer this question positively, because there are so many signs of and synchronous communication on Web pages like user online counters, so called shout boxes, and live chat support tools. They are isolated islands of synchronous communication.

After creating the problem, we are of course going to solve it. We present the concept of ubiquitous virtual presence for the Web. It makes people aware of each other who are at the same Web location at the same time. Virtual presence is an enabling concept for synchronous interaction on the Web.

The goal of this system is to show users as avatars directly on Web pages. They should be able to move around so that they can approach each other. They see other avatars as long as they are on a Web page. Each Web page or site is a place where people can meet and talk. Pages are the places and streets of the Web.



Figure 1 Avatars on Web pages

2. A Virtual Presence System

There have been earlier virtual presence (VP) projects. Most used the term Web awareness. There were early systems, like Virtual Places [1], CoBrow (Collaborative Browsing) [2], and WebPlaces [3]. Later came centralized proprietary systems, from companies like Hypernix, NovaWiz, and Cyland.

The major difference of the system we are proposing is that it is designed to be ubiquitous and distributed, and that it will be based on open internet standards.

2.1. Requirements

We design a system that will cope with the size of the Web in terms of the number of users and the number of virtual places. Scalability is an important requirement. This leads to a distributed architecture, if we want to avoid a single large provider and a single point of control.

We want to show users directly on the Web page as avatars. Users shall be able to move their avatars and virtually approach other people. The user interface must be adapted to the location metaphor.

Since we make people aware of each other there will be a component in the network that can associate people by their virtual location. The system works with virtual locations which are derived from URLs. But still the privacy of the user must be protected. We require, that there will no URLs of users be sent over the network.

An important requirement is the use of existing standards and tools. The acceptance to install and operate VP components is much higher, if the protocols are standardized and if the software components are publicly available and already widely in use.

2.2. Implementation

Fortunately there do exist server networks, which provide all we need. Almost any distributed chat network is suitable as a VP network. Chat channels would be used as locations and channel names become locations identifiers. The participant list of a chat channel serves as the virtual presence list. And all chat systems offer a native chat capability.

Other desirable features are a distributed per user storage facility for arbitrary data to store avatars and extensibility to add virtual presence related features.

We concentrated on large chat networks with active open source communities. From these we chose the Jabber network (XMPP) [4] over IRC, because it provides additional services, like server storage.

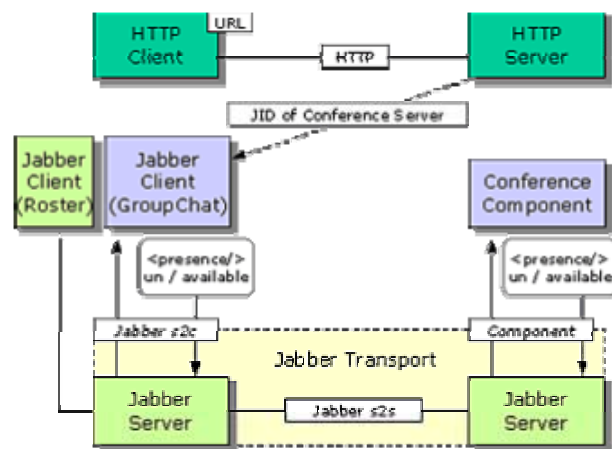


Figure 2 The Jabber network as transport and processing infrastructure

Jabber is an XML based instant message and presence network. The Jabber community developed a variety of

protocols. There are open source and commercial implementations of clients and servers. The Jabber network is structured so that a client connects to a server and servers interconnect with each other. The VP network becomes an overlay network on the Jabber network. Many servers share the load of client connections and other servers share the virtual presence load and chat conversations.

2.3. A Client

From the technical point of view, we implemented a Jabber group chat client with a graphical user interface, which automatically enters and leaves Jabber chat rooms while the user is browsing the Web. From the user's point of view we developed a program, which runs in the background, and as soon as you go to a Web site, it shows your avatar on the page and the avatars of other users, who are at the same Web page at the same time.

In addition to the basic functionality of showing avatars and chat, it provides a small video for each user. It supports private chat for one-to-one conversations. Avatars can be animated figures which walk like small game characters.

2.4. Voice Rooms on Web Pages

We could even automatically add users to VoIP channels. This turns Web pages into VoIP enabled room. Users can just open a Web page and talk into the microphone. Anyone on the same page would hear them without dialing or setting up conference calls. Actually, this is the single most requested feature. A VoIP component is in development.

Conclusions

We introduced the concept of virtual presence on the Web as a solution to the apparent lack of ubiquitous synchronous communication in the virtual space of the Web. We described requirements for and the implementation of a distributed virtual presence system.

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References

- [1] Mass, Y. Virtual Places - Adding people to the web, Proceedings of the Third International World-Wide Web Conference 1995
- [2] Sidler, G., Scott, A. et al (1997) Collaborative Browsing in the World Wide Web, Proceedings of the 8th Joint European Networking Conference, Edinburgh, May 12.-15
- [3] Maglio, P.P., Barrett, R., WebPlaces: Adding People to the Web, Poster Proceedings of the Eighth International World Wide Web Conference 1999, <http://www.almaden.ibm.com/cs/wbi/papers/www8/wwwplaces-abstract.html>
- [4] Adams, D J (2002) Programming Jabber, O'Reilly.