

Title	アウェアネス支援に基づくリアルタイムなWWWコラボレーション環境の構築
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An Awareness supported method to construct the environment for realtime collaboration in WWW

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Abstract

In recent years, many products which support human's cooperative work have become popular in the field of CSCW (Computer Supported Cooperative Work). The Internet has grown significantly, many GroupWare are integrated on WWW (World Wide Web). Nowadays, WWW has become a base system like Operating System after appearance of Java and JavaScript language which are suitable for network applications. There are many products which are made for WWW.

WWW is a system for purpose of common information by looking at the different period originally. WWW doesn't have functions for realtime cooperative work. We analyzed four processes which form collaboration, copresence and awareness and communication and collaboration. WWW is lack of awareness, so people cannot happen to meet on WWW. And we established the way to connect people by supporting awareness.

There are some level in awareness. We proposed "WWW awareness" that complements presence and action and behavior between some clients each other. WWW awareness consists of two awareness, presence of WWW awareness and action of WWW awareness. This paper describes how to recognize presence of people on WWW and how to acknowledge actions for WWW operations. We can construct realtime collaboration environment on WWW by WWW awareness. We showed some applications for realtime collaboration, and We developed some effective tools for each collaboration.

At first, We developed realtime sharing WWW system which is expanded old WWW system. We applied realtime sharing WWW to presentation and seminar that is defined "WWW presentation". And We developed the interactive tool for WWW presentation. The tool is "red-pen" system that can paint free images and text character on overlapped WWW page. Red-pen means correction and modification and annotations that such

as pointed by teachers and bosses. Red-pen has function of coordinated movements via network. And We also developed the “ cooperative editor ” that can make some production in the activities on WWW. Cooperative writing is an intellectual activities that producing one document with cooperation by plural people. Cooperative writing has effectiveness for efficiency and creative thinking.

Some people often point problems of introduction on GroupWare. GroupWare must be acceptable for all the members of group, otherwise the system doesn't work successfully. But once members use some GroupWare system, they complain about many problems such as interface, lack of benefit balance, protection of privacy, disagreement of the present system, education for operation. So GroupWare doesn't spread to the organization successfully. That is problem of introduction. But realtime sharing WWW is useful and solve the problem. Most of WWW system can introduce realtime sharing WWW smoothly. It is not necessary for users to make a change or modify usual WWW environment.

Past sharing WWW system depended on particular Operating System or WWW server or WWW browser. Some system has disadvantage that its configuration requires MBONE network or particular technology. Fundamentally multi-platform is main advantage of WWW. Realtime sharing WWW is suit to multi-platform because that is implemented by Java version 1.0.2. Since many WWW browser are not corresponded for Java version 1.1.1 Realtime sharing WWW system is available for many kinds of WWW browsers and WWW Servers and Operating System. That is one of the advantage of this system.

OS Windows95, WindowsNT 3.5.1, MacOS 7.5.5, SunOS 4.1.4, Solaris 2.5.1

Browser Netscape Navigator3.0 Netscape Navigator 4.0, Internet Explorer 3.0 Internet Explorer 4.0, HotJava 1.0

Server Apache 1.2.0, Personal Web Server, fnord

Red-pen is implemented by JavaScript version 1.2 and has network function by Live-Connect mechanism. Cooperative editor is implemented by HORB1.3. Cooperative editor is distributed application with Invitation mechanism. It works cooperative on any WWW browser.

Realtime sharing WWW and cooperative editor are available for many purposes, because it is basic system and is designed for wide range of application. We can use realtime sharing WWW for remote seminar and remote classes. Cooperative writing is available for group report and online review and cooperative programming.

We examined prototype system and evaluated realtime collaboration. We used it for the seminar at school, and we introduced the system by WWW presentation at the office. And we used the system with communication tools which can transmit sounds and video pictures via the Internet. Then we got some great results through the above experiments. We succeeded to get positive interactions by realtime sharing WWW and red-pen at the seminar. We can make realtime system instantly by some mobile notebook machines even with different browsers because the system is available for multi-platform and is not heavy. Distributed realtime sharing WWW with communication tools is effective for help support.

In this paper, we described method to construct realtime collaboration environment on WWW for creative value. WWW collaboration work out a solution for problems of introduction. In the future, we hope that many cooperative applications will become popular for cooperative work.