Department for computer and systems sciences

Stockholm university
Royal Institute of technology

Linking conferences to web pages

June 1996

By Jacob Palme

Abstract: The World Wide Web provides good methods for making information available for retrieval, but does not provide methods for letting people discuss and comment on the information provided. It would be useful to be able to have non-simultaneous discussions on the contents of normal web pages, using non-simultaneous computer conferencing techniques (like Usenet News newsgroups). Several methods to do this is discussed in this paper, for example adding "Start discussion"" and "Discussion exists" buttons to the ordinary web pages, where these buttons would lead to a computer-conferencing discussion of the web page. Some of the options described here will be implemented in the Web4Groups project, a research project financed by the telematics program of the European Union (EU).

Author's personal address: Skeppargatan 73, S-115 30 Stockholm, Sweden. Phone: +46-8-16 16 67 Fax: +46-8-783 08 29. Internet mail: jpalme@dsv.su.se.

University address: Department of Computer and Systems Sciences, Stockholm University, Electrum 230, S-164 40 Kista, Sweden. Phone: +46-8-16 20 00.

1. Introduction

When using World Wide Web, you can search for and download many interesting documents. Often, when you read a document in the WWW, you may want to discuss what you are reading with the author of the document you have just seen, and with other readers of the same document. It would be nice, if the WWW had such a facility for discussing web documents. By discussion I mean in the sense of computer conferencing or mailing lists, i.e. non-simultaneous discussion even between people who read a web page at different times.

The Web4Groups project (a research project partly funded by the European Union) is in the process of implementing a web-based conferencing system which provides these facilities. The system will be ready for user trials in the autumn of 1996. For more information about the Web4Groups project, see [Alton-Scheild 1995].

2. Functions wanted

The ideal system for adding discussions to web pages should

1. Allow discussion on any web page anywhere.

2. Either allow that any web user who sees a web page can join a discussion on it, or alternately allow discussions only within a certain group of web users.

3. Allow discussions either on a whole web document or on a certain section or paragraph of it.

4. Show to people, when they read a web document, whether there already is a discussion on it or not.

5. Let people who join an already started discussion on a web page read what was written before they joined the discussion.

6. Allow people to participate in discussions on web pages either through use of a web-based computer conferencing system or through use of e-mail. The web-based conferencing system can provide a neater user interface and let people read the discussion at times of their own choice. The e-mail option will ensure that people who have joined the discussion are reminded when new discussion items are written by other people.

This paper discusses how to provide these features. Different options are compared. The paper concludes that requirement 1 and 2 above are very difficult to provide at the same time. An implementation can however support both requirement 1 and 2 for different web documents, only not 1 and 2 in one single discussion for each web page.

3. Implementation choices

3.1 How a user can select a discussion connected to a web page

This paper assumes that we are going to use existing web browsers, preferably any reasonably capable browser, and that we will not have to write a special kind of web

browser to support discussions on web pages. Discussions on web pages may however be handled in a neater way if the web browser is extended with Java applets, but this should not be a requirement for joining such discussions.

A user who reads a document should be able to see places in this document where a discussion has already been started. Since a special web browser should not be used, the only way to implement this is to add HTML [Lee-Connoly 1995] text to the HTML document, indicating that there is a discussion linked to the document.

A user who reads the document with an ordinary web browser will not have any command available in that web browser to find, enter or start a conference for that web page. There are two ways in which the user might be able to find, enter or start a conference for that web page:

Method	(1) Use a special web page	(2) Button in web page
Description	The user uses a special web page (stored among his bookmarks) to enter discussions. Either users have to enter the URL in this web page manually, or their proxy servers might know which was the last seen web page.	The web page, when shown to its readers, contains one or more buttons, on which the user can click to find or enter a conference.
Comparison	The user will not see, when looking at a web page, if there are discussions on it, and will not directly be reminded of the opportunity to start or join such a discussion.	Easy to use, the user just has to click on buttons labelled, for example, "discussion".

Examples of web pages with buttons are given in appendix A.

3.2 How to get buttons into the web page

Two methods for putting buttons into web pages are:

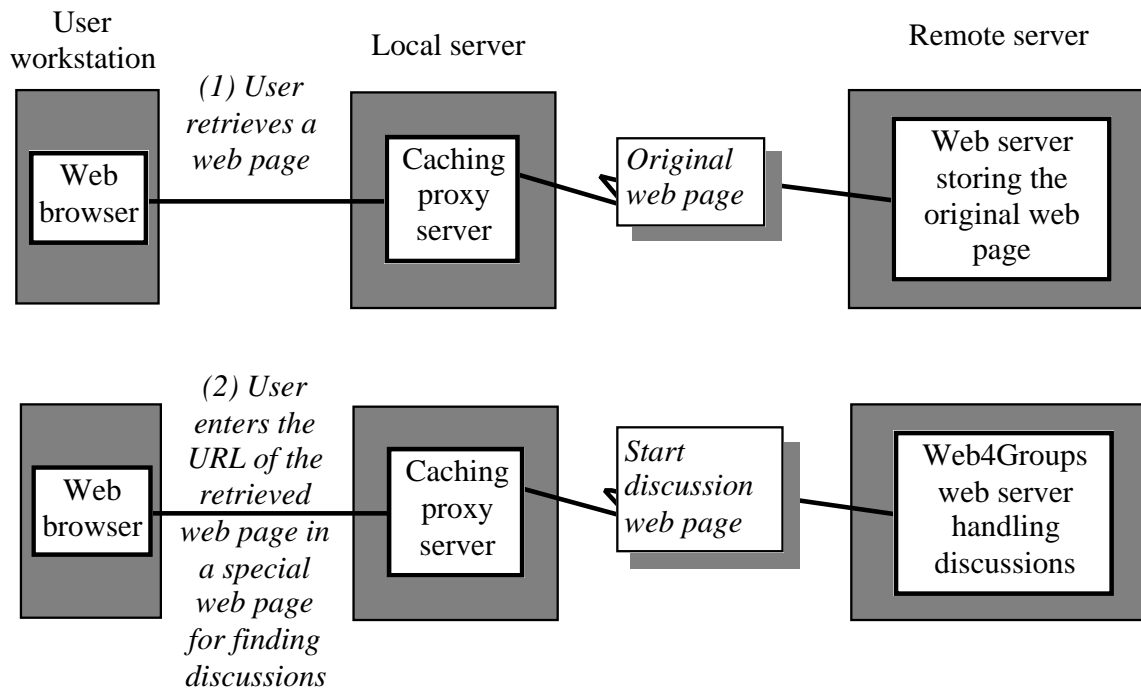| Method	(2a) A proxy server, handling all page requests from a user, intersects all the user requests for web pages and puts one or more discussion buttons into the web into the pages	(2b) Java is used to modify the web browser used by the user so that discussion buttons are inserted into all web pages.	(2c) The creator of web pages, or some special software, adds buttons to their original web pages.	(2d) All web page deliveries from a web server, to all users of the web page everywhere, get discussion buttons added to them before they are sent out.
Where can discussions start	Theoretically it is possible using this method to start discussion on any web page anywhere in the world.		Discussions can only be started on web pages controlled by someone who can manually or automatically add discussion buttons to the original pages.	Discussions can only be started on web pages stored at those web servers who let their deliveries pass such a proxy server.
Who can participate in the discussions	Only users at sites which run a modified proxy web server will be able to see the discussion buttons and thus choose to participate in the discussions.	Only users using the Java-modified web browsers will be able to see the discussion buttons and thus choose to participate in the discussions.	Theoretically anyone in the world who finds a discussion button can click on it to get into the discussion.	
Control problems	It can be a little questionable to go in and add buttons to other people's web pages without their approval, and without even the authors knowing that buttons have been added to their pages.		Since buttons are added locally, authors can see the modifications and can influence how they are done.	See below.
	Authors might also, for all four methods, be able to stop buttons from being added to their pages by adding some special notation such as "</NODISCUSSION>" to the head section of their web pages.			
Adding buttons to forms	For all four methods, technical problems might occur in adding discussion buttons to web pages containing forms.			
Adding buttons to pages which already have buttons	The proxy server should probably recognise if a web page already has discussion buttons and then not add more such buttons to it.	The Java program should probably have some way of if a web page already has discussion buttons and then not add more such buttons to it.	The automatic program for adding discussion buttons to original web pages should probably recognise if a web page already has discussion buttons and then not add more such buttons to it.	

The most important difference between the methods is that methods 1, 2a and 2b are suitable when you only want a limited set of people, using one or a set of co-operating servers, to see and participate in the discussion. There is however a large risk with methods 1, 2a and 2b, that no discussion at all will occur, because the number of interested people will not reach a critical mass. Method 2c and 2d, which allow anyone anywhere, who sees a web page, take part in discussions on it, will let more people have the opportunity to join each discussion, so that the discussion easier reaches a critical mass of participants.

Methods 2a and 2b can be used to make discussions available either only on local web pages, or on any web page anywhere in the world (but only to a limited set of people). In
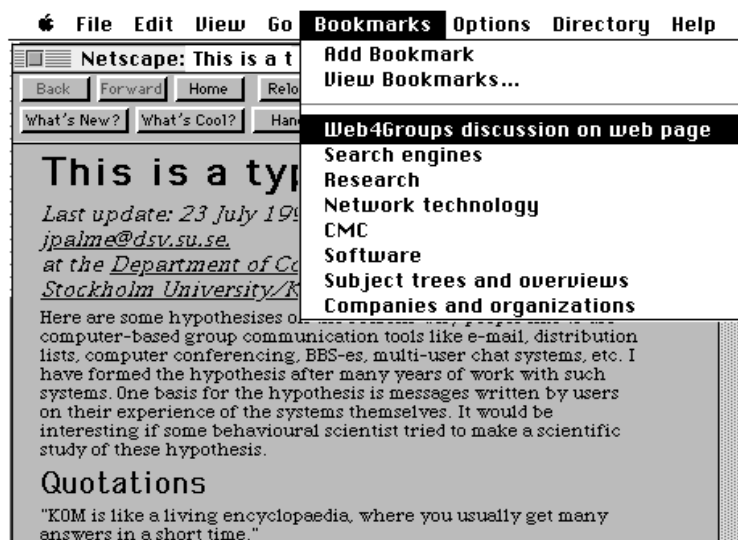
the latter case, they theoretically require a large, preferably distributed data base to find if there already is a discussion on a certain web page or not. In an experimental system, a simpler such data base might however be used.

3.3 Graphical depictions of the implementation choices

3.3.1 Choice 1: Use separate software

User workstation | Local server | Remote server

(1) User retrieves a web page

Web browser ── Caching proxy server ── *Original web page* ── Web server storing the original web page

(2) User enters the URL of the retrieved web page in a special web page for finding discussions

Web browser ── Caching proxy server ── *Start discussion web page* ── Web4Groups web server handling discussions

The figure below shows how a user can use a special bookmark to get to a page for starting discussions on the last seen web page.

File   Edit   View   Go   Bookmarks   Options   Directory   Help

Netscape: This is a t
Back Forward Home Relo
What's New? What's Cool? Han

Add Bookmark
View Bookmarks...

Web4Groups discussion on web page
Search engines
Research
Network technology
CMC
Software
Subject trees and overviews
Companies and organizations

This is a typ

Last update: 23 July 19
jpalme@dsv.su.se.
at the Department of Co
Stockholm University/K
Here are some hypothesises of
computer-based group communication tools like e-mail, distribution
lists, computer conferencing, BBS-es, multi-user chat systems, etc. I
have formed the hypothesis after many years of work with such
systems. One basis for the hypothesis is messages written by users
on their experience of the systems themselves. It would be
interesting if some behavioural scientist tried to make a scientific
study of these hypothesis.

Quotations

"KOM is like a living encyclopaedia, where you usually get many
answers in a short time."

The figure below shows how the web page which the user gets to can look like. URL is already filled in, but the user can replace it with another URL to find a discussion on that web page instead.
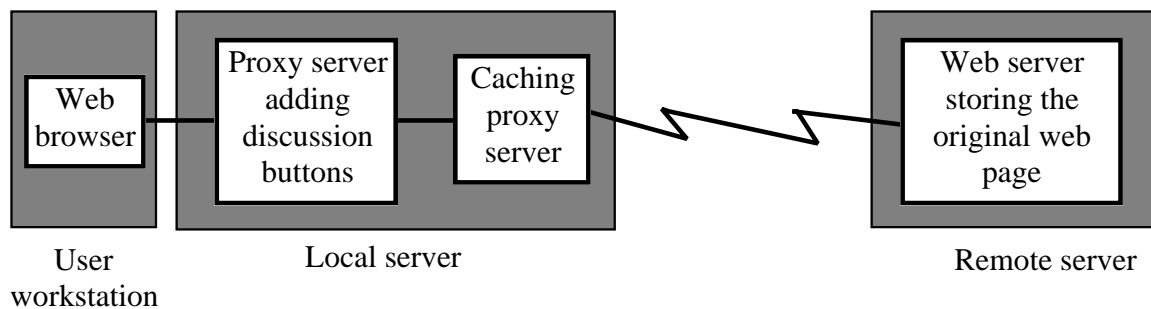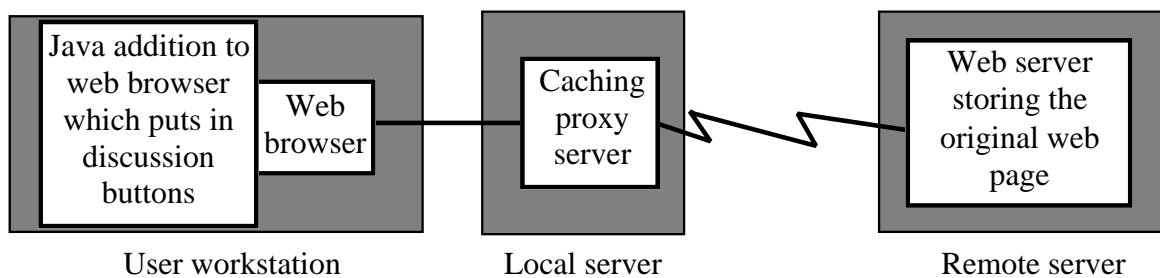
Previous web page

Title: This is a typical Web page

URL: http://www.dsv.su.se/~jpalme/a-typical-web-page

Action to be taken

☒ Find out if there exists a discussion on this web page, and let me join that discussion
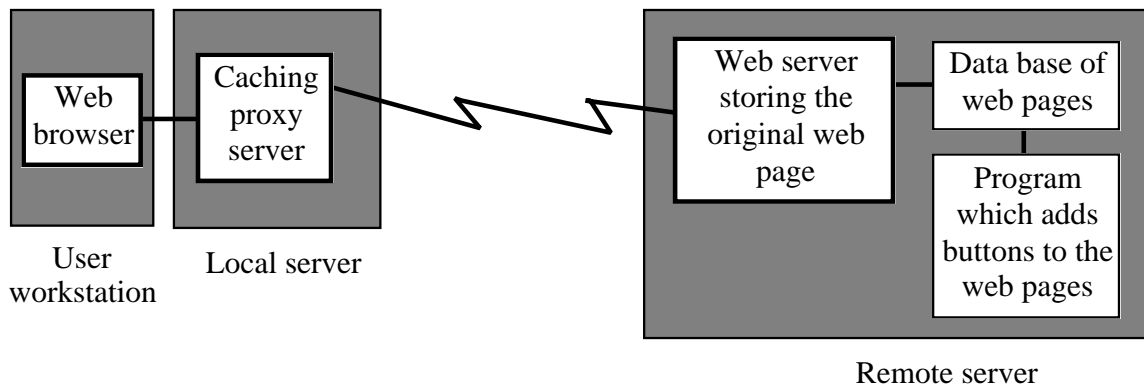
☒ If no such discussion exists, start one

| Send | | Clear | | Cancel |

3.3.2 Choice 2a: Proxy server used by a user for all his web pages

User workstation   Local server   Remote server

3.3.3 Choice 2b: Using Java to add buttons in the user's web browser

User workstation   Local server   Remote server

3.3.4 Choice 2c: Adding buttons to original web pages

3.3.5 Choice 2d: Proxy server for outgoing pages from a web server
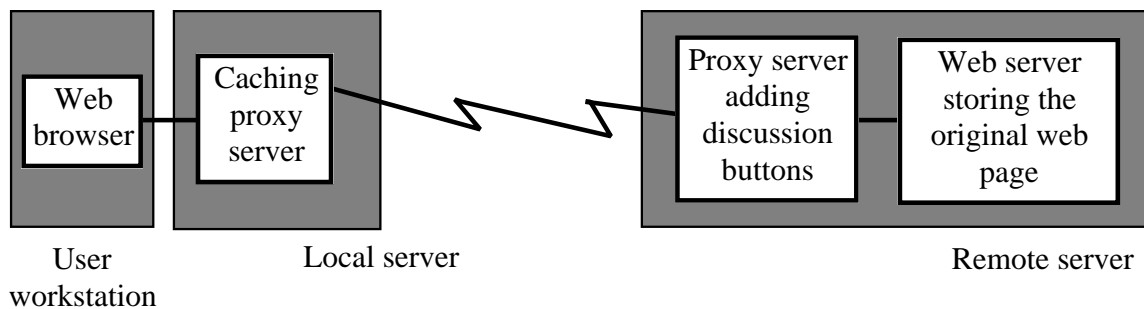
4. Implementation methods

4.1 Overview of implementation issues

4.1.1 A special web page for finding discussions

4.2   A special web page for finding discussions.

4.1.2 Common to the four methods 2a, 2b, 2c and 2d

4.3   A HTML format for discussion buttons.

4.4   Showing whether a discussion has been started already or not.

4.5   A HTML format for the author of a web page to indicate his interest in getting into a discussion on this web page if it is started.

4.6   A way of finding out if there is already a discussion on a certain web page.

4.7   A HTTP server functionality to handle when people push discussion buttons.

4.1.3 Method 2a and 2d: Proxy server adding buttons

4.8   Proxy HTTP servers which can add discussion buttons to web pages.

4.1.3 Method 2b: Java program adding buttons

4.9   A Java program for adding buttons to web pages.

4.1.4 method 2c: Authors or a program which adds buttons to web pages

4.10   A program, which gives the author of a web page, additional text for a discussion button, to paste into his web page.

4.11   A program, which takes a web page and adds or modifies discussion buttons in it.

4.2 A special web page for finding discussions

A user who sees a web page notes its URL, and then uses his bookmark file to get to a special page for finding discussions. The user pastes the URL in a form in this page, and posts the page to a server which will find the discussion for the user, or start it if it does not yet exists.

A variant would be that instead of going to a special page, the user transfers control to a special user client for finding discussions.

Another variant might be that if the user gets his web pages via a proxy server, that proxy server might remember the URL of the last page seen by the user, so that the user need not paste this URL into the web page for finding discussions. This URL might be pre-pasted into the field for the URL, but allowing the user to override this if the user wants to find a discussion on another web page than the last seen page.

4.3 A HTML format for discussion buttons

There are two alternatives for this. Both alternatives can look almost the same to the user.

Alternative	An ordinary HTML click-able anchor containing an image	An HTML form with a submit button
How it looks to the user	Button created by a GIF image loaded into the page	Button created by the HTML form facilities of the web browser

Example of possible HTML code for a discussion button in a web page with the URL:
 	
`HTTP://www.x.com/mypage.html`
	`<HEAD>`
	`<TITLE>The title of this web page</TITLE></HEAD>`
	`<BODY>`
	`...`
	`<A name="discussion-point-1"></A>`
	`<A href="http`[1]`://w4g.x.com/discussion?place=www.x.com/mypage.html#discussion-point-1">`
	`<IMG BORDER=0 SRC="HTTP://w4g.x.com/Discussion-button.GIF`[2]`" ALT="Discussion">`
	`</A>`
		`<HEAD>`
		`<TITLE>The title of this web page</TITLE></HEAD>`
		`<BODY>`
		`...`
		`<A name="discussion-point-1"></A>`
		`<FORM METHOD=GET action="HTTP`[1]`://w4g.x.com/discussion">`
		`<INPUT type=hidden name="place-to-discuss" value="www.x.com/mypage.html#discussion-point-1">`
		`<INPUT type=hidden name="title" value="The title of this web page">`
		`<INPUT type=submit name="button1" value=Discussion`[2]`>`
		`</FORM>`

The pros and cons of these alternatives are discussed in [Stupazzini 1996], who also helped me test the HTML sequences above. Here is an abstract of his conclusions:

The first method (ordinary anchor with a GIF picture of a button) has the following advantages:

- More compact.
- Can be handled also by browser which do not support the form HTML facility.
- Possibility to specify an alias for text-only browsers.
- A more commonly used method for creating buttons.

---

[1] Should a different port from the ordinary HTTP port also be included in this URL?

[2] The text on the button should be in the same language as that of the HTML document in which it is inserted. Possibly, the program which creates the button could check the language of the HTML document before inserting the button. Such a check is easy to do. Just count the occurrence of very common words (like "the", "at", "from" , "by", etc. in English, and corresponding words in other languages). Omit words which occurs in more than one language (like "a", "and", "or" and "on").

- The user can with most browsers see the URL of the discussion by moving the cursor to button.

The second method (use of forms) has the following advantages:

- Will work also with browsers which do not support the BORDER=0 feature of HTML.

- User feedback when button is clicked (dynamic 3D effect of button going down when clicked on Windows machines, blinking on Macintoshes).

- Button appearance is consistent with all the buttons of the client GUI.

4.4 Showing started meetings differently from unused discussion start places

Ideally, the web page should show places where meetings had already been started differently from places where meetings can be started. This can be done by varying the text on the Discussion button, for example "Discussion", "Discussion exists" and "Start discussion" buttons.

| Discussion | Discussion point where the program cannot rapidly find out whether a discussion exists or not. |

| Discussion exists | Discussion point where someone has already started a discussion. |

| Start discussion | Point marked for possible start of a discussion, but where not discussion has yet been started. |

The server ought to be able to check if a discussion exists using the methods discussed in section 4.6 below. Possibly, in some cases, this would take too much time in the case of an HTTP proxy server when a user is waiting to see a new web page. In such cases, it might be better to just provide a "Discussion" button.

4.5 A HTML format for the author of a web page to indicate his interest in getting into a discussion on this web page if it is started

The accepted HTML method of indicating authorship is to include, in the <HEAD> section, before the <BODY> section, a statement as shown by the following example:

```
<A REV=MADE HREF="mailto:murray@sq.com">Author</A>
```

This format is at present only in ietf-draft stage (draft-ietf-html-relrev-00.txt), and still not widely used. More common is use of MAILTO anchors in other places of the document. We plan to first look for a REV element in the HEAD as specified above. If no author is found there, we will search for any other MAILTO anchors. If there is more than one other MAILTO anchor, we will choose the one within an ADDRESS section of the document.

One could add the author automatically to any discussion on his web pages. But it might be better to just send an email to the author, telling the author that the discussion has been

started, and with instructions on how to join it. This would leave it up to the author whether, when and how to actually join this discussion.

4.6 A way of finding out if there is already a discussion on a certain web page

In order to find out if there is a discussion on a certain web page (or on a certain section of a web page) a data base is needed, which takes as input the URL of a web page or of a point within a web page, and returns as output the name of the Web4Groups server handling this discussion and the name of the discussion itself.

When there is a Web4Groups server in the same domain as the web page (possibly with the domain names changed from "www.domains" to "w4g.domains") this Web4Groups server can hold such a data base.

When there is no Web4Groups server, this is much more difficult. The simplest solution to implement is probably a central data base somewhere, but this is not well-suited for large-scale usage in the Internet. A distributed data base would be better, but to implement a new distributed data base is not a simple task. One might investigate the possibility of using an existing distributed data base system like X.500 or whois++.

What should the name of the discussion conference be? To ensure a globally unique name, the full URL of the Web page (or the section within the web page) might be used, or some conversion of that URL to give a URL which points to the discussion conference Web4Groups server. More user friendly would be the title of the Web page. This title may however not be globally unique. Possibly, both can be combined in some way.

Assume that the URL of a point within a web page is

```
HTTP://www.x.com/sub/mypage.html#discussion-point-1
```

and that the title of the same web page is

```
The title of this page
```

Two alternatives for the name of the discussion conference on this web page might then be:

	E-mail name and address of the discussion conference	**URL of the discussion conference**

1	`The title of this page`
	`<sub/mypage.html#discussion-point-1`
	`@w4g.x.com>`
		`HTTP://w4g.x.com/sub/`
		`mypage.html#discussion-point-1`

2	`The title of this page`
	`<www.x.com/sub/mypage.html#`
	`discussion-point-1`
	`@w4g.x.com>`
		`HTTP://w4g.x.com?www.x.com/sub/`
		`mypage.html#discussion-point-1`

Alternative 1 will only work if the WWW server URL begins with "HTTP://www", and that the Web4Groups server connected to this WWW server has the same name, but with "www" replaced by "w4g", but is simpler and has the advantage that the URL and e-mail name of the discussion can automatically be derived from the URL of the web page, to which the discussion is linked.

If no discussion already exists, a discussion should automatically be started. The text of the web page should then be copied into the presentation of this KOM meeting, since the web page may otherwise disappear while the discussion is still ongoing, except where copyright on the web page forbids such copies to be made.

4.7 A HTTP server functionality to handle when people push Discussion buttons

When people push discussion buttons, they will be connected to a special HTTP server which actually represents a Web4Groups server, but talks the HTTP protocol. This server should perform the following functions:

(a) Find out if there is already a discussion conference on this web page or on this position in this web page (see section 4.6).

(b) If such a conference exists, tell the user of this and ask the user if he wishes to join it by e-mail or by Web4Groups and if he wishes to immediately read previous entries in the conference and write his own contribution.

(c) If such a conference does not exist, start the conference, ask the user if he wishes to join it by e-mail or by Web4Groups and if he wishes to immediately write an entry into the discussion. The server should also try to get the author into the conference (by looking up the web page and looking for author information, see section 4.5).

Examples of how such a web page sent in response to a push on a *Discussion* button can look like is shown in Appendix B below.

4.8 Proxy HTTP servers which can add virtual Discussion buttons to web pages

The Proxy HTTP servers to add virtual Discussion buttons to web pages can be used in two ways, method 2a and method 2d.

With method 2a, this server will handle all HTTP requests from their users. A problem is if the users wish to use other proxy HTTP servers which provide other services like caching. Caching proxy HTTP servers may become more commonly used in the future. Perhaps the Web4Groups proxy server can then be coupled in series with the caching proxy server, so that user requests first go to the Web4Groups proxy server, then to the caching proxy server and from that when necessary to the URL requested by the user.

With method 2c, the proxy server is instead put in front of (or made a part of) an ordinary web server, and will add discussion buttons to all or most web pages delivered from this web server.

The main task of the proxy server is to insert (or modify) Discussion buttons. These buttons must be inserted in the same way for all Web4Groups Proxy servers who add such virtual buttons to the same web pages. Either we have to agree on a common algorithm to do this, or the proxy server should contact the Web4Groups server in the same domain as the web page to be discussed, and ask it to provide the page with the Discussion buttons inserted, or information about the URL-s to put in the discussion buttons.

The algorithm for inserting virtual buttons could be similar to the one described in section 4.11 below, and probably the same code could be used to a large extent.

The first version of Web4Groups will only implement one discussion button at the end of each web page. Later, we will experiment with several buttons, e.g. one on each section or paragraph.

4.9 A Java program for adding buttons to web pages

A Java program could be written, which modifies a web browser so that discussion buttons are added to all web pages it receives. This program should maybe first add buttons marked only "Discussion", and then, while the user reads the web page, interrogate whether discussions have already been started on this web page, and when the results arrive, modify the button marked "Discussion" into buttons marked "Start discussion" or "Discussion exists".

4.10 A program, which gives the author of a web page, additional text for a discussion button, to paste into his web page

This program is a variant of the program described in section 4.11 below, which instead of automatically inserting the button, gives the author of a web page a piece of HTML text to insert into his Web page. It is useful in cases where the master of the web page is not in HTML format, for example where the master is in a word processing format, which is converted to HTML, with software like the RTFtoHTML translator, whenever the page is changed.

Another suitable method for such people who have masters in another format is the one described as choice (f) in section 4.11 below.

4.11 A program, which takes a web page and adds Discussion buttons to it

This program should both be capable of adding Discussion buttons to web pages, and to modify existing Discussion buttons from "Start discussion" to "Discussion exists" when a discussion has been started since the last time the discussion button was added to the page. If the program adds buttons on the fly while distribution web pages (method 2d), then the program should add either "Start discussion" or "Discussion exists" button depending on whether a discussion exists or not.

The program should be used either by a web manager, who wishes to add discussion buttons to all his web pages or a designated section of them, or by a web page designer to add discussion buttons to his own pages. A web manager should be able to set the program to run automatically, e.g. once every night, to check all web pages in his domain, and add discussion buttons to new pages, and modify "Start discussion" buttons to "Discussion exists" when needed. Modification of "Start discussion" to "Discussion exists" might be better done immediately as soon as the discussion meeting is started, and not the next night.

The program should take as input a designation of one or more files. A designation for more than one file could be a directory, to get all files in the directory with a certain

extension (by default .HTML, .HTM, .html and .htm) and with a way for the user to indicate whether also files in subdirectories should be scanned. Possibly some kind of wildcard scheme could also be used to designate which files to scan.

A parameter to the program should also be where buttons are to be inserted. Some choices might be:

(a)   Only one button at the bottom of the page.

(b)   A button in each section which has a <A NAME=> anchor, immediately before the first heading after this section, plus at the bottom of the page.

(c)   A button immediately before each heading which is (i) not the first heading, and (ii) which is not immediately preceded by another heading, and (iii) which is not inside a HTML form, plus always at the bottom of the page. The program should maybe add <A NAME=> anchors to the page to name the sections it gives buttons to, unless the sections already have such names.

(d)   Use algorithm (b) above for documents with sections which have <A NAME=> named sections, and use algorithm (c) for other documents.

(e)   Buttons at places explicitly designated by the person who runs the program, the program might for example show the document in a scrolling window and ask the user to click where buttons are to be inserted. Best would be to show the document in the same way as a web browser would, but this is difficult to implement. Easier is of course to just show the HTML text of the document.

(f)   Buttons at places explicitly designated by the person who wrote the web page by putting some kind of code into his web page, like "</DISCUSSION>" which the program will convert into a discussion button.

(g)   If the web page contains the markup </NODISCUSSION> in the HEAD section of the web page, then the program should not add any discussion buttons to this web page.

This program should preferably have an option to notify the author of the web page, if found, by e-mail, that discussion buttons have been added to his web page. One reason why this is important is that the author may have a master version of the web page, to which the buttons should also be moved.

An additional function which might be optionally provided would be that the program adds REV=MADE links in the HTML HEAD (see section 4.5 above) if there are no such links, and if the program has knowledge of who the author is (such as for web pages in personal areas). Such LINKs should not be added if there already is such a link in the head.

5. Acknowledgements

6. References

Alton-Scheidl 1995: Home page of the Web4Group project at URL: http://www.socoec.oeaw.ac.at/w4g/Web4Groups.html.

Lee-Connoly 1995: Hypertext Markup Language - 2.0, by T. Berners-Lee and D. Connolly, Internet RFC 1866, November 1995.

Stupazzini 1996: Considerations on HTML format for discussion buttons, by Enrico Stupazzini, Omega Generation, Via Murri, 39, Bologna, I-40137, Emilia Romagna, Italy. Web4Group project internal working document.

Appendix A: Example of a Web page with and without buttons

This example takes a typical web page, and shows it in three formats:

(a)   Original format without discussion buttons.

(b)   Just one discussion button at the end.

(c)   Several discussion buttons at different places, to allow discussions connected to particular sections of the page.

Superbrain
through
Computer
Mediated
Communication

Why do people use Computer-Mediated Communication (CMC)

Last update: 23 July 1995 by Jacob Palme E-mail: jpalme@dsv.su.se.
at the Department of Computer and Systems Sciences, Stockholm University/KTH

Here are some hypothesises on the reasons why people like to use computer-based group communication tools like e-mail, distribution lists, computer conferencing, BBS-es, multi-user chat systems, etc. I have formed the hypothesis after many years of work with such systems. One basis for the hypothesis is messages written by users on their experience of the systems themselves. It would be interesting if some behavioural scientist tried to make a scientific study of these hypothesis.

Status and self-esteem: You can through CMC communicate with experts and with qualified equals. This will improve your self-esteem and give valuable contacts.

Confidence, competence: CMC makes it easier to keep up with progress and to avoid sliding behind in your area of expertise.

Communion, comradeship: CMC stops loneliness and produces a feeling of communion through discussion with qualified people in your areas of interest.

Inspiration: CMC provides an exchange of ideas with other people, who will inspire you to new ideas on your own tasks.

Generosity: CMC allows you to help others and feel that others appreciate your help. And you know that you can get help in return when needed.

These factors are of course related. For example, most of the other factors listed above contribute to the factor "status and self-esteem".

Quotations

Here are some quotations which I have collected of statements which people of the KOM system have made about the system, and which support my hypothesises. Each quotation is from a different user of KOM at QZ. (QZ-KOM was one of the first Swedish BBS-es, started in 1978 and at its peak in 1987.)

"KOM is like a living encyclopaedia, where you usually get many answers in a short time."

"You can even put a question in the middle of the night and get reply within a few minutes."

"We could not get the Swedish national characters printed on our printer. This plagued us for months, until I put in a question in KOM. Within a few hours, I had the solution."

"If you have special interests, you may only be able to talk about them to yourself. KOM has for me become the channel for contacts with alike-minded bout within and outside of my work."

"KOM is something of an elite group: everyone of importance in the computer area can be found in KOM. You can reach people of importance. I have regular contact with some of the most qualified experts in the country through KOM."

"The contacts through KOM got me into my work as computer consultant."

"I have contact with like-minded people, with the same burning interest for computers as I have. These contacts have several times grown into personal contacts with new friends."

"You regularly meet people you did not know before, and exchange very much information."

Back to the home page on research on Computer Mediated Communication (CMC).

Page with a single discussion button at the bottom

Why do people use Computer-Mediated Communication (CMC)

*Last update: 23 July 1995 by Jacob Palme E-mail: jpalme@dsv.su.se.
at the Department of Computer and Systems Sciences, Stockholm University/KTH*

Here are some hypothesises on the reasons why people like to use computer-based group communication tools like e-mail, distribution lists, computer conferencing, BBS-es, multi-user chat systems, etc. I have formed the hypothesis after many years of work with such systems. One basis for the hypothesis is messages written by users on their experience of the systems themselves. It would be interesting if some behavioural scientist tried to make a scientific study of these hypothesis.

Status and self-esteem: You can through CMC communicate with experts and with qualified equals. This will improve your self-esteem and give valuable contacts.

Confidence, competence: CMC makes it easier to keep up with progress and to avoid sliding behind in your area of expertise.

Communion, comradeship: CMC stops loneliness and produces a feeling of communion through discussion with qualified people in your areas of interest.

Inspiration: CMC provides an exchange of ideas with other people, who will inspire you to new ideas on your own tasks.

Generosity: CMC allows you to help others and feel that others appreciate your help. And you know that you can get help in return when needed.

These factors are of course related. For example, most of the other factors listed above contribute to the factor "status and self-esteem".

Quotations

Here are some quotations which I have collected of statements which people of the KOM system have made about the system, and which support my hypothesises. Each quotation is from a different user of KOM at QZ. (QZ-KOM was one of the first Swedish BBS-es, started in 1978 and at its peak in 1987.)

"KOM is like a living encyclopaedia, where you usually get many answers in a short time."

"You can even put a question in the middle of the night and get reply within a few minutes."

"We could not get the Swedish national characters printed on our printer. This plagued us for months, until I put in a question in KOM. Within a few hours, I had the solution."

"If you have special interests, you may only be able to talk about them to yourself. KOM has for me become the channel for contacts with alike-minded bout within and outside of my work."

"KOM is something of an elite group: everyone of importance in the computer area can be found in KOM. You can reach people of importance. I have regular contact with some of the most qualified experts in the country through KOM."

"The contacts through KOM got me into my work as computer consultant."

"I have contact with like-minded people, with the same burning interest for computers as I have. These contacts have several times grown into personal contacts with new friends."

"You regularly meet people you did not know before, and exchange very much information."

Back to the home page on research on Computer Mediated Communication (CMC).

Start discussion

Superbrain through Computer Mediated Communication

Page with a discussion button at the end of each section (section ends at certain headers and at the end of the page).

Why do people use Computer-Mediated Communication (CMC)

Last update: 23 July 1995 by Jacob Palme E-mail: jpalme@dsv.su.se.
at the Department of Computer and Systems Sciences, Stockholm University/KTH

Here are some hypothesises on the reasons why people like to use computer-based group communication tools like e-mail, distribution lists, computer conferencing, BBS-es, multi-user chat systems, etc. I have formed the hypothesis after many years of work with such systems. One basis for the hypothesis is messages written by users on their experience of the systems themselves. It would be interesting if some behavioural scientist tried to make a scientific study of these hypothesis.

Status and self-esteem: You can through CMC communicate with experts and with qualified equals. This will improve your self-esteem and give valuable contacts.

Confidence, competence: CMC makes it easier to keep up with progress and to avoid sliding behind in your area of expertise.

Communion, comradeship: CMC stops loneliness and produces a feeling of communion through discussion with qualified people in your areas of interest.

Inspiration: CMC provides an exchange of ideas with other people, who will inspire you to new ideas on your own tasks.

Generosity: CMC allows you to help others and feel that others appreciate your help. And you know that you can get help in return when needed.

These factors are of course related. For example, most of the other factors listed above contribute to the factor "status and self-esteem".

Discussion exists

Quotations

Here are some quotations which I have collected of statements which people of the KOM system have made about the system, and which support my hypothesises. Each quotation is from a different user of KOM at QZ. (QZ-KOM was one of the first Swedish BBS-es, started in 1978 and at its peak in 1987.)

"KOM is like a living encyclopaedia, where you usually get many answers in a short time."

"You can even put a question in the middle of the night and get reply within a few minutes."

"We could not get the Swedish national characters printed on our printer. This plagued us for months, until I put in a question in KOM. Within a few hours, I had the solution."

"If you have special interests, you may only be able to talk about them to yourself. KOM has for me become the channel for contacts with alike-minded bout within and outside of my work."

"KOM is something of an elite group: everyone of importance in the computer area can be found in KOM. You can reach people of importance. I have regular contact with some of the most qualified experts in the country through KOM."

"The contacts through KOM got me into my work as computer consultant."

"I have contact with like-minded people, with the same burning interest for computers as I have. These contacts have several times grown into personal contacts with new friends."

"You regularly meet people you did not know before, and exchange very much information."

Back to the home page on research on Computer Mediated Communication (CMC).

Start discussion

Appendix B: Web pages sent when a user pushes a Discussion button

This appendix gives examples of how the web page could look like, which is sent to a user who pushes the discussion button.

B.1 Web page when a discussion conference already has been started

WEB 4 GROUPS **Joining a Web4Group conference**

The Web4Groups meeting with the title

Why do people use Computer-Mediated Communication (CMC) <W4G.dsv.se/why-use-cmc.html#discussion-point-1>

was started on 12 Dec 1995 and has 37 members and 12 contributions.

Meeting description:

This is a meeting for discussion of a section in the web page "Why do people use Computer-Mediated Communication (CMC)" which has the URL "www.dsv.se/why-use-cmc.html#discussion-point-1".

Do you want to

☐ Subscribe to this discussion by e-mail

Your e-mail address:

☐ Subscribe to this discussion as a Web4Group user

Name of your Web4Groups server:

Your user name in this server:

Your password:

☐ Retrieve existing contributions to this discussion:

◉ Retrieve all   ○ Retrieve last [   ] contributions

☐ Retrieve list of present subscribers to this discussion

☐ Write a contribution to the meeting

[Send request] [Clear form]

HELP   HOME[1]   MEETINGS[2]   USERS[3]

---

[1] Will go to a home page for this Web4Group server, from which any WWW user can retrieve lists of open meetings, retrieve previous messages and other information for meetings, subscribe to public meetings, retrieve lists of users.

B.2 Web page when a discussion conference does not yet exist

Starting a Web4Group conference

☒   Start a Web4Groups conference with the name:

Why do people use Computer-Mediated Communication (CMC) <W4G.dsv.se/why-use-cmc.html#discussion-point-1>

Meeting description:

This is a meeting for discussion of a section in the web page "Why do people use Computer-Mediated Communication (CMC)" which has the URL "www.dsv.se/why-use-cmc.html#discussion-point-1".

Do you want to

☐   Subscribe to this discussion by e-mail   ☐   Unsubscribe

Your e-mail address:

☐   Subscribe to this discussion as a Web4Group user   ☐   Unsubscribe

Name of your Web4Groups server:

Your user name in this server:

Your password:

☒   Write a contribution to the meeting

[Send request]   [Clear form]

HELP   HOME   MEETINGS   USERS

---

[2]   Will retrieve a list of the meetings available at this Web4Groups server. The user can select (click) on one of the meetings to get the form B.1 for this particular meeting.

[3]   Will retrieve a list of local users at this Web4Groups server. The user can select (click) on one of the users in this list to get e-mail address, a personal description and a link to the home page of this user (if available).

B.3 Web page when the user pushes the HOME hyperlink

Welcome to the Web4Groups server

This is the Web4Groups server for students at the <u>Department of Computer and Systems Sciences, Stockholm University</u>.

☐ Show a list of meetings.

☐ Show a list of registered users.

Find a ☐ user or a ☐ meeting:

Search key for finding users or meetings:

[   ]

[Send request] [Clear form]

<u>HELP</u>   <u>HOME</u>   <u>MEETINGS</u>   <u>USERS</u>

B.4 Web page when the user pushes the MEETINGS hyperlink

This web page is shown when the user pushes the MEETINGS hyperlink, or when the user crosses the ☐ in front of "Show a list of meetings" in the window in B.3.

 List of Web4Groups meetings

This is the Web4Groups server for students at the Department of Computer and Systems Sciences, Stockholm University.

List of open (public) meetings:

Date last active	Meeting name
12 Jan 1996	All student's forum[1]
12 Jan 1996	Discussion about the European monetary union
12 Dec 1995	Meeting for students writing masters papers
10 Dec 1995	Meeting for course on data base architecture
1 Dec 1995	Discussion of the French nuclear bomb tests

HELP   HOME   MEETINGS   USERS

The list of meetings above is sorted in reverse order according to the last date of activity.

---

[1]   When a user pushes the hyperlink for a particular conference, a page is returned with a list of the last 20 entries in that conference. On this page, the user can click on an individual entry to see that entry, or click on a button to see the next last 20 entries back as long as old entries are available in the server.