A rich and integrated
Group communication environment
High-level technical and functional overview of a suite of advanced internet tools to be used for
online collaboration

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Abstract
SURFnet has set up a web-based shared workspace, combined with synchronous collaboration
tools for Presence, Instant Messaging, web-based videoconferencing, chat, and application
sharing [2]. The combination of tools supports students, researchers and employees in the
higher education and research area in the Netherlands when they want to work together over
the internet.
These tools are integrated in such a way, that it is possible for groups to start a communication
session from either a web browser, messaging client or through e-mail. They can share
documents or information from their group site at any moment.
Examples of groups that are supported are an Economics class (for lectures), members of an
educational project (for ad-hoc collaboration off hours), and doctors determining diagnoses
working together from several hospitals.

Keywords
Videoconferencing, Instant Messaging, data collaboration, web conferencing

Introduction
Many institutions in The Netherlands already have some form of shared workspaces on the
web. They fall in the class of non real-time collaboration environments or better: a-synchronous
collaboration environments. The need arises to have a similar environment for cross-domain
activities outside their borders, because it is very unusual that guests can get access to the
resources of an institution. This is one of the reasons that SURFnet decided to implement a
shared workspace on the web, suitable for cross-institutional projects.
This environment is completed with real time communication tools like video conferencing. This
class of collaboration services, in fact synchronous communication tools, have the attention of
institutions as well, but so far were considered not mature enough, hard to integrate or difficult
to use and again: hard to open up for guests. As far as Instant Messaging is concerned, many
institutions are not sure whether to offer it to their students or employees and integrate it in their
(educational) processes.
SURFnet’s goal is to support many different forms of collaboration. With the current state of
technology this goal comes within reach. In a pilot, SURFnet proved that it is very well possible
to combine both established collaboration tools, as well as state-of-the art new tools that offer a
virtual group the following features:
- Data sharing (documents, pictures),
- Common calendar,
- Address books,
- Forums,
- Presence,
- Instant Messaging,
- web-based videoconferencing,
- Chat,
Application sharing.

The tools can be divided into a-synchronous tools like document sharing and synchronous tools like chat and web conferencing.

The suite of tools proved useful in various situations:
- Giving or following lectures remotely [3]
- Project collaboration
- Remote consultation
- Remote diagnosing

Many different ways of collaborating are made possible. In the case of lectures, sessions are more or less one-way. Communication in the direction of the professor can be limited to asking questions or be more interactive, for instance when students are working on assignments. Any sort of project going on in the higher education and research area can be supported: students following project based courses, employees working on implementation projects and so on.

Goals

Any member of the SURFnet community can request an account on the SURFgroepen service, create one or more ‘groups’ and invite group members. A ‘SURF group’ offers a team the features mentioned above. Members enter the group environment through the URL http://www.surfgroepen.nl. Once they log on, communication is encrypted and they can access documents and other resources in a secured way. Some members may have more rights than others, like redesigning the entire group web page, or chair a web conference.

SURFnet started this service keeping the following high-level goals in mind:
- Provide a large-scale, complete and integrated set of communication tools to groups of users that want to work together over the SURFnet backbone and the internet in general,
- Make advanced tools early available to the SURFnet public,
- Be as easy-to-use as possible,
- Be cross-platform (Operating system) and easy to set up (zero-installation),
- Obtain economy of scale by centralising the set up,
- Create a close relationship with end-users,
- Act as a showcase for institutions considering implementations of their own,
- Provide ‘best practices’ for using the tools in various (educational or research) scenarios.

The results of the pilot and experiences during building of the service are publicly available, especially for educational or research institutions, and for instance used in the SURFnet Sharepoint User Community and the TERENA Task Force on Voice and Video Collaboration (TF-VVC) [4].

Pilot phase and production phase

The pilot project gave insight in what functionality appeared most interesting in miscellaneous situations, what features should be added, removed or improved and how the service should be scaled up to many thousands of users.

It aimed at testing with about 25 groups, each having a ‘group owner’. These group owners were known employees of institutions connected by SURFnet. They were responsible for the groups they initiated (on behalf of teachers, associations et cetera) and were able to create user accounts. The service was (and remains) free for users of the SURFnet backbone. Participants were requested to actively report bugs and provide feedback on functionality, share experiences and enter feature requests.

The pilot ran from November 2004 until April 1st 2005. The number of groups and members grew considerably and very good feedback was received, which gave many reasons to start a
service based on the suite of tools. Click to Meet was replaced by Breeze for the web conferencing component.

Building such a service includes designing an architecture that is ready to support a large number of users (potentially >500,000), is set up in a redundant way and is self-supporting. An integrator was chosen to install hardware and software, configure the applications and integrate components. The last activity appeared the most energy-consuming. Since each component has its specific way of dealing with provisioning and authentication of users, each aspect of user provisioning led to a lot of integration work.

All servers are set up in a redundant way at the data centre of Kennisnet [5]. A lot of effort is put into rendering the service safe and highly available.

**Functional components**
The functions are realized by three main components:
- a web based data collaboration front end [6],
- a presence and instant Messaging platform [7], and
- a web based videoconferencing and collaboration platform [8].

Though each platform is an off-the-shelf separate product, all platforms are coupled in such a way that each one is easily and transparently accessible to the end user from any of the other two. In the picture below their relationship is depicted. The synchronous tools are situated in the lower part of the picture.
Integration of components

Interaction between the three platforms is obtained by sharing the same user database and creating links between all components.

This interaction now includes:

- One account for all platforms,
- Entering the web conference meeting from the group site,
- Viewing the presence status of users on the group site and inviting them to a one-on-one chat or videoconferencing session,
- One-click access to the group site from Windows Messenger,
- Joining meetings and inviting users through the SURFnet Videoconferencing Service [9], VideNET Global Dialling Scheme [10], the Public Switched Telephone Network and SIP [11] clients (work in progress),
- Opening Microsoft Word, Excel and PowerPoint documents from and saving them to the group site from the applications themselves.

The possibilities to extend the functionality and integration are endless. It will become possible to enter a web conference room with other software or equipment that is compatible with the protocol. Interaction with existing services like the SURFnet Video Portal [12] will be made easy, and single sign-on by A-Select [13] will make it possible for a user to log on using his institutional account.

Conclusions

Interested group owners could easily be found during the pilot, and at the current start of the production service the number of members and groups is growing rapidly. Even before the pilot project started, many customers have been using the web conferencing platform quite successfully for the scenarios that the platform is intended for. Experiences so far give reasons to assume that making real time communication tools easy to install and easy to use, can lead to a breakthrough in the adaptation of the use of videoconferencing in the educational environment.

The platform is accessible by any browser. The integration with presence and instant messaging and will have to proof itself, but it is one of the reasons why many participating group owners were eager to join the project.

Many years of development and discussions on standards and features have led to off-the-shelf products that have met each other in the current timeframe. This evolution enables us to build a very complete service, and we’re still at the beginning of the possibilities.

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Vitae

The author became MSc in Electrical Engineering in 1999 and started working at the Dutch PTT. In 2001 he started working in the Innovation department of SURFnet and now is Manager Advanced Services and responsible for both existing internet services as well as the technical part of the development of new services.
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