

Senior Online
Telematics DE4002

REPORT D6.1.1

Issues and Concepts in Senior Online

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1. Executive summary

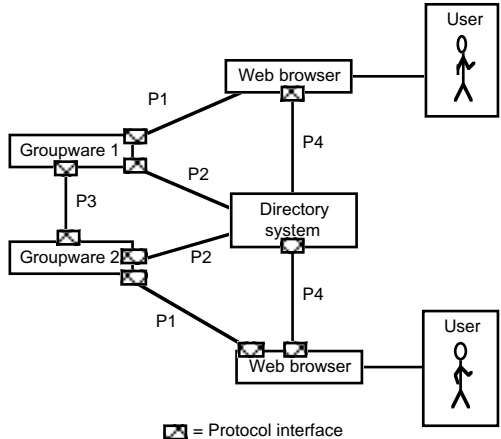
The object of this document is to describe some technical issues and concepts in Senior Online in a format which can be understood by both users and developers, and which can help users and developers to better understand each other.

2. User-Oriented and Developer-oriented Table of Concepts, Issues and Functions

The main goal of this table is to describe those issues, which are currently of importance to the developers, in a way which can be understood by users. It is not a complete table of all issues, it is mainly directed at currently important issues for the developers.

No	User-Oriented Description	Developer-Oriented Description
1.	Language used in communication between computers. This language restricts what two computers can say to each other.	Protocol
2.	<p>A name is globally unique, if no two objects can have the same name. For example, postal address, phone numbers and e-mail addresses are globally unique.</p> <p>A disadvantage with globally unique names is that they have to be longer and more complex than other names.</p> <p><i>Phone number example:</i></p> <p>Not globally unique: 16 16 67</p> <p>Globally unique: +46-8-16 16 67</p> <p><i>E-mail example:</i></p> <p>An e-mail might have a header:</p> <p>To: John Smith <jsmith@dsv.su.se></p> <p>In this example, "John Smith" is not globally unique, but "jsmith@dsv.su.se" is globally unique.</p>	Globally unique
3.	<p>The white and yellow pages of the telephone directory are examples of directories. Directory systems are computer systems, which allow users to find information in directories. Examples of directories in Senior Online are directories of (1) e-mail addresses and other information about users, (2) forums, with information about how to find and join forums.</p> <p>In Senior Online, we have used the word portal for a directory systems. But it might be better to use the term directory system since portal implies an entry point, and a user may not always want to enter Senior Online through the directory system.</p>	Directory system

No	User-Oriented Description	Developer-Oriented Description
4.	There is no single product which can provide all the functions of Senior Online. Senior Online will provide its services by combining different existing and newly developed products. These products should work together in such a way that Senior Online will appear as a single, integrated product to its users. By architecture is meant how these products relate to each other. Example: A user of an e-mail product may need to look up the e-mail address of some person. The e-mail product can then perform this look-up in a directory product. The architecture then specifies that the e-mail product can connect to the directory product.	Architecture
5.	<p>By security is meant protection against various kinds of risks. Examples of risks are that someone gets hold of your private e-mail, or that someone writes a false message in your name. Tools to provide security can be names and passwords (identification), or lists of who is allowed to do what (authorisation).</p> <p>High security costs money to develop, and often also makes systems less user-friendly. For example, forcing users to repeatedly use different passwords can give higher security. Even higher security can be achieved if users have to use special devices, such as smart cards .</p> <p>Since higher security has both advantages and disadvantages, we should decide on an appropriate level of security in Senior Online.</p>	Security
6.	The doorstep is the first page or pages which a user sees when connecting to Senior Online. There can be different doorsteps for new and experienced users, and doorsteps which lead more directly to a particular service than the main entrance.	Entry point
7.	The standard which a web browser uses to download web pages.	HTTP, Hypertext Transfer Protocol [4], [5].
8.	The standard used for sending Internet e-mail.	SMTP and MIME [7], [8], [9].
9.	A forum is an area of messages, and a group of users who can read and write these messages. Since the messages are stored in the computer, they can be written by one person at one time, read by another person at a later time, and read by yet another person at an even later time. Such communication systems are <i>non-simultaneous (different-time)</i> .	Forum, Non-simultaneous , Different-time.
10.	A chat system is a system which allows groups of users to discuss at the same time, by sending short messages or lines to each other. All the messages sent during a chat can be saved in a transcript of the chat. Note that chat requires users to be active at the same time. Such systems are <i>simultaneous (same-time)</i> .	Chat
11.	Product, which provides different services to support groups of people and their interaction. Forums and chats are commonly occurring functions in groupware products.	Groupware

No	User-Oriented Description	Developer-Oriented Description
12.	A user tells the computer who the user is. Log in can be combined with a password, to stop people impersonating other people. Log in can also use smart cards and other advanced methods for identification, which are even more secure than passwords, but which may be more difficult to implement and use.	Log in, identification, authentication [17].
13.	Senior Online users can use forums, send and receive e-mail and participate in chat sessions.	The Senior Online Groupware provide services for e-mail, forums and chat.
14.	Senior Online users can use directories of users, forums, web pages and other information. They can find information by textual search (example Find the e-mail address of John Smith) . They can also find information in some directories by following links from topic to subtopic, for example first following a link to Botany , and then from Botany following a link to Tropical flowers . When searching directories, users can indicate that they want to search only that part of the directory, which is in a particular language, such as English or German.	The Senior Online directory system contains directories of users, forums, web pages, Senior Online servers and maybe also forum contributions, ratings and anti-spamming information. The directory can be searched, and some directories also provide a hierarchical structure. Separate directories are provided for each language.
15.	Picture of some of the products in Senior Online and how they may communicate with each other.	<p>Part of the architecture of Senior Online:</p>  <pre> graph TD User1[User] --- WB1[Web browser] WB1 -- P4 --> DS[Directory system] DS -- P2 --> G1[Groupware 1] DS -- P2 --> G2[Groupware 2] G1 -- P3 --> G2 G1 -- P1 --> WB1 G2 -- P1 --> WB2[Web browser] WB2 -- P4 --> DS DS -- P4 --> User2[User] </pre> <p>☒ = Protocol interface</p> <p>P1 = Groupware user interface P2 = Protocol between Groupware and Directory system P3 = Protocol between two groupware servers P4 = Directory system user interface</p>

No	User-Oriented Description	Developer-Oriented Description
16.	<p>The communication between user and directory can be organised in two ways. The users can either communicate directly with the directory, or they can communicate indirectly through their groupware.</p> <p>Example: With direct communication, a user will click on a link to get to the portal. With indirect communication, the user will give some instruction to the groupware, so that the groupware will find information in the directory.</p> <p>Indirect communication can be made more user-friendly, because different services can be better integrated. Example of indirect communication: A user is writing an e-mail message, and wants to find the e-mail address of John Smith . The user might write this name in a box on the screen and push a button Find . The groupware can then connect to the directory and get a list of people with this name and provide them to the user.</p> <p>With direct communication, the same example work so that the user has to click on a link to open a window from the directory system, find the e-mail address, copy it, go back to the groupware, and paste the e-mail address.</p> <p>However, indirect communication is much more costly to develop, and we may not have resources to develop it. Because of this, we propose that only some basic functions can be done indirectly (searching for a user or forum by name) but that other services, such as following a hierarchical tree structure, require that the user connects directly to the directory system (previously named portal }.</p>	<p>Issue: Should users communicate directly with the directory (P4) or indirectly through their groupware (P1+P2).</p>
17.	<p>Issue: How high security should we provide? Can we allow that a spy, who is able eavesdrop on the internet traffic, can see private information, and can collect passwords and later impersonate a user. There are security methods based on encryption to stop such eavesdropping, but they will add considerable cost for the development, which might mean that we will not be able to get other wanted functions ready.</p> <p>A compromise might be to use some encryption, for example let servers identify themselves in a secure way, but otherwise use simpler security methods.</p>	<p>Issue: Should we use low (password) or high (encrypted) security.</p>

No	User-Oriented Description	Developer-Oriented Description
18.	<p>Cookies are methods to help the server remember who the user is, so that the user need not repeatedly give his name and password.</p> <p>Session cookies mean that the user need only give his name and password when logging in. They may also, for security reasons, be limited to, for example, 15 minutes. Persistent cookies are cookies which allows the server to remember who the user is, when the user connects on another day. Cookies are stored in the personal computer of a user. This means that persistent cookies <i>cannot</i> be used on personal computers used by more than one user.</p> <p>Another restriction with cookies are that cookies for one server cannot identify a user to another server. This means that if a user has told the directory system his/her name, they have to tell the same name again to the groupware.</p> <p>There are methods to avoid this problem, but they may give less security.</p>	Session cookies and persistent cookies.
19.	<p>Must a user tell his e-mail address to the directory system before clicking on a link to a forum? For technical reasons, this is necessary. The only way to avoid it would be that the user always communicates with his groupware, and only indirectly with the directory system. But to implement this 100 % requires maybe more development effort than we can afford. Especially PVL has manpower problems because they have to concentrate their resources on getting Web for groups ready and working.</p>	<p>Issue: Must a user log in into the directory system. Log in without password is enough, except if the user is an administrator. I have written an e-mail to some developers describing a way to partially overcome this problem.ⁱ</p>

No	User-Oriented Description	Developer-Oriented Description
20.	<p>Types of forums:</p> <p>Open forum: Anyone can participate.</p> <p>Closed forum: Only allowed people can participate. A closed forum can be open to some people, such as members of Seniornet Sweden. The name and the description of the closed forums is however shown to non-members.</p> <p>A secret forum is a closed forum, whose existence is not shown to outsiders.</p> <p>Moderated forum: A moderator checks all contributions before they are shown to the members of the forum. Advantage: Avoids unsuitable messages such as spamming. Disadvantage: Delays the interaction speed.</p> <p>A forum can also be restricted so that only members can submit contributions to it. Or it can be designed so that submissions by non-members must be approved by the moderator.</p> <p>A forum can also be specified to allow/require anonymous or pseudonymous contributions.</p> <p>Special kinds of forums can be an advice column, to which people write questions and get answers by an expert. The questions might in such a case be anonymous or pseudonymous.</p> <p>KOM 2000 also has even more special kinds of forums called courses which include facilities for a teacher to give marks on what the students write.</p> <p>Which types of forums do the users of Senior Online want. All of the above?</p>	<p>Access control settings for seeing, reading and writing in forums.</p>
21.	<p>Issue: Priorities of development of co-working functionality.</p> <p>There is a priority issue in allocating the time for the developers of KOM 2000 and Web for groups. Should they develop better local groupware functionality (Local Forums and chats within one server) or should they develop the software for co-working between different servers. The software for co-working between servers makes it possible for a user of one groupware product running on one server, to find and join forums on other groupware servers. It also allows software on one server to find the e-mail address of users at other servers. This priority issue is most acute for PVL, since they are in the final testing stages of Web for groups, which is to be fully working in July.</p> <p>Possibly elderly users will find local functionality of more importance. On the other hand, in an EU project for co-operation between countries, it might be suitable to develop software which stimulates co-operation between people in different countries.</p>	<p>Issue: Priority of separate groupware development versus development of Portal and Groupware protocol functionalities.</p>

No	User-Oriented Description	Developer-Oriented Description
22.	<p>This is a very technical issue, but I will try to explain it from a user point of view:</p> <p>The issue is how messages and contributions are to be forwarded between groupware servers. For example, if a user in a server in Stockholm wants to participate in a forum in Vienna, the contributions in this</p> <p>HTTP has the disadvantage that no other systems use HTTP for this particular purpose. It has the advantage that it is easy to implement, gives fast response times and can be used for all the functions we want.</p> <p>NNTP and SMTP have the advantage that they are already accepted standards for sending messages. NNTP is currently used in Usenet News and SMTP in e-mail. They both have the disadvantage that they do not support all the functionality we may want. SMTP has the additional disadvantage that it is somewhat slower. Delivery of a message may take 1-5 minutes, this is too much to keep a user waiting. Thus, if we use SMTP, a user on server A who wants to join a forum on server B, will not immediately be able to see the contributions in the forum, if we choose SMTP.</p> <p>Since NNTP and SMTP do not give all the functions we want, we may want to extend them for our needs. Examples of facilities not supported is to get the list of members of a forum, to add and exclude members of a closed forum, to support some types of forums.</p> <p>NNTP and SMTP has the advantage that we will implement them anyway, in order to allow Senior Online users to participate in Usenet News and send and receive e-mail. So choice of them may save development time.</p> <p>NNTP has an additional possible disadvantage in that it has its own naming scheme for forum names, of formats like sol.botany.arctical-flowers . This may force existing groupwares, if they do not want to adopt this naming method internally, to have duplicate names of forums. However, also with other methods than NNTP, duplicate names may be needed, see the issue below.</p>	<p>Issue: Choice of protocol base for portal protocol. Choices: HTTP, NNTP, SMTP, Corba.</p>

No	User-Oriented Description	Developer-Oriented Description
23.	<p>Issue: Globally unique names of forums.</p> <p>There are two ways to ensure that forums have globally unique names.</p> <p>(1) One way is to do it the same way it is done in e-mail. The name of an e-mail user might be:</p> <p>John Smith <jsmith@omega.at></p> <p>Here John Smith is not globally unique, but jsmith@omega.at is globally unique, because it combines a name part jsmith with a globally unique name of the server omega.at .</p> <p>(2) Another way is to use some kind of central data base to ensure that names will be unique. NNTP has such a data base, and therefore does not have to include names of domains to make the forum names unique. In Usenet News, there is however a slight change that two new forums by mistake get the same name, if more than one NNTP server is used. We can avoid this problem by using one single NNTP server for Senior Online.</p>	<p>Issue: Globally unique names of forums.</p>
24.	<p>Again, this is a technically detailed issue, but I will try to explain it from a user's viewpoint.</p> <p>LDAP and HTTP are two standards which can be used as a base for communication from the groupwares to the directory in Senior Online. LDAP has the advantage that it is a standard designed for directory systems. This means that if we choose LDAP, users will be able to use the LDAP functionality built into other e-mail software than our own, to find people's e-mail addresses. For example, someone using Netscape Mail, might use the LDAP function built into Netscape Mail, in order to find the e-mail address of a Senior Online user from the Senior Online directory. The main disadvantage with LDAP is that it is more complex and expensive to implement.</p>	<p>Use of LDAP or HTTP for the Portal Protocol. LDAP is a standard for communication with directory systems, but uses a complex binary format called ASN.1-BER.</p> <p>The specification I have already written in [3] is based on HTTP, but it will not be difficult to rewrite it to use LDAP, if that is our choice.</p> <p>I should prepare an example of how the same operation looks like using LDAP and HTTP, as a basis for our discussion. I do not, however, have time for this until after 16 June 1999.</p>
25.	<p>Issue: Chat can not occur with some chat participants using KOM 2000 and some using Web for groups.</p> <p>To allow this requires some additional development effort for both DSV (KOM 2000) and PVL (Web for groups), and must be prioritized against other services wanted by the users.</p>	<p>If we want global chat, we should probably copy the protocols used by IRC, or a subset of them, since IRC is the standard for distributed chat.</p>

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ⁱ This endnote is only for the technical people:

Suppose a user who is registered as a user of KOM 2000 in Seniornet finds a forum which is managed by Web for groups in Vienna Stadt. We have previously discussed that the portal would then provide a link like this to the user:

```
<A  
href="http://kom.seniornet.se/w4g.vienna-stadt.at/tropicalflowers">.  
Tropical flowers</A>.
```

If we decide to use NNTP for groupware, then this might instead look like this:

```
<A href="http://kom.seniornet.se/nnntp/sol.botany.tropicalflowers">  
but there is still a need for the portal to indicate who the user is.
```

Now to my suggestion: Add the user's e-mail address at the end of the URL. Example:

```
<A  
href="http://kom.seniornet.se/w4g.vienna-  
stadt.at/tropicalflowers?jpalme@dsv.su.se">. Tropical flowers</A>.
```

Advantage: Since the portal already knows who the user is,

this is no problem for the portal. And for the groupware, this means that log in can be simplified, the user need only give his/her password, not give his name again.