AWARE

Ageing Workforce towards an Active Retirement

AAL Joint Programme Project ID: aal-2009-2-136

Deliverable D1.5

Technical requirements together with integration guidelines of modules in the final system

(Restricted)

Version number and date: V1.0, Feb, 28, 2011

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Abstract:

With the information provided by previous tasks, technical guidelines, requirements, applications and methodologies for the social network are defined at this deliverable, in order to achieve agreement between different user profiles and demands of enterprises.

The technical requirements as well as the overall system conceptual design will be taken into account in technical developments within WP2, WP3, WP4 and WP5.

AWARE Consortium:

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Ayuntamiento de Gandía	Partner	Spain
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1. INTRODUCTION

1.1. SCOPE

To define the contents and technical requirements of the AWARE system.

1.2. DELIVERABLE STRUCTURE

2. SUMMARY OF THE CONCLUSIONS REACHED IN THE TASKS OF WP1

WP1 has aimed at collecting information about the problems, needs and preferences of the potential AWARE users, in order to define the structure and features of the tool.

The potential users have been defined both as elderly people (distinguishing between active and retired) and companies.

To compile the information from these users several techniques have been employed:

- Documental and bibliographic revision.
- Discussion groups with elderly and companies.
- Questionnaires addressed to elderly.
- Laboratory experiments using questionnaires, observation and eye tracking technology.

The complete results of these compilations are shown at deliverables D1.1, D1.2, D1.3 and D1.4. At the following paragraphs we show a summary of the main conclusions.

2.1. USERS: DISCUSSION GROUPS CONCLUSSIONS

Knowledge sharing

Sharing knowledge is perceived both as the possibility transferring knowledge to other people and to receive knowledge from others.

The possibility to share knowledge, even though is generally well appreciated, has quite a few nuances:

- There is more interest among people whose work has been related to knowledge and who are active users of computers. Similarly, people who are physically active have a lower interest and see it only as a way to network, communicate and find resources.
- The interest is greater in regard to share experiences (both life and work) the possibility to help others or to obtain leisure facilities, than in transfer knowledge or technical aspects.
- There is a high interest in regard to receiving knowledge, but that is not related to the working world they have left.
- The platform for sharing knowledge should not be an end in itself but a way to enable contacts face-to-face or other similar resources that allow users to share knowledge (eg, expert locator, ...).

- There is curiosity and increasing interest in Internet and new technologies, even though the priority is not the world of work.

Relationship with companies

There is a clear separation between what workers think it is useful for them (preparation for retirement, new technologies, communication and contacts, experience, etc.) and what they perceive as useful for their company (productivity, specific knowledge, procedures). A key issue is, therefore, to get in touch both views (employer and employee), so that information can flow on both sides and both parties are involved and contribute. Some tips on this subject are:

- The application must be able to find the relationship between firms and workers or former workers:
  - Define what knowledge the employee could share: courses, advice, resolving doubts in a forum, etc.
  - Define the terms: incentives, privacy of the system, etc.
  - Improve and promote fellowship and teamwork. Must avoid that sharing of knowledge can be seen as competition between workers.
- Two distinct parts: what they can contribute and what they want to receive. As well as part related to leisure and another of work.

Topics of interest

The main interest areas where they might be interested the elderly are:

- Before retirement:
  - Tips on improving health, more appropriate ergonomic postures and maintenance of fitness and health.
  - Preparation for the retirement…
  - How to use computers
- After retirement:
  - Communication (contact, meet, find people)
  - Leisure activities
  - Local resources
  - Training /education (non-work related)
  - Legal advice
  - Hobbies (know+share)

Tool features

One of the main conclusions is that older people see the internet world as full of opportunities, resources and information. Therefore, they do not find very useful that the platform is very specific and attempt to cover many aspects. It is preferable, therefore, that it has some basic features (for example, functions of communication, information and training) and that is capable of linking to other sites and resources.

Some key aspects in the **design** are:

- It must be very attractive (keep the attention).
- Avoid the "older-people aspect".
- Dynamic and configurable by the user: preferences, profiles, forums, blog, etc.
- It must be adapted to the local resources of the user.
- Simple. Not show much information.
- Respect privacy and personal data.

Regarding **usability**, some points mentioned are:

- Easy to use and understand (training if required).
- Large print. Adjustable.
- Search options (keywords).
- Clarity, reduced to its essential/ necessary elements Self-explanatory, easy to use, no special knowledge acquired. No advertisement.

Finally, with regard to the **structure**, some highlights are:

- Initial Setup: Linking the level of knowledge about computers or the Internet to associate it with the topics and format and appearance of the pages.
- Forums and blogs to tell and share personal experiences.
- Seekers with different levels of use.
- Section at which advices can be obtained. Must include the possibility of answer questions.
- Consultancy / Expert groups that advise on various topics.

2.2. USERS: QUESTIONNAIRE CONCLUSSIONS

Most frequent activities performed by the users when they access to the internet are clearly **the search of information** (mainly using searchers or browser, like google, but also in local pages) and the **communication with others via e-mail**.

The majority of users are interested in a platform where people could share information about retirement and share the knowledge acquired during work experience.

In the same manner, **a third of the respondents affirm that they would need specific training to use a platform like this**. The users who perform (or have performed) jobs with little training or without relation with computers are those who affirm that they probably would need specific training.

It is interesting to note that the main reason for not using the platform would be "*I'm not interested in keeping in touch with my work after I retire*". The platform would therefore have sections that include **both work-related issues as others related to leisure, home, etc**. Even labour issues can be targeted towards "serve as a consultant or expert", preventing that the relationship is exclusively between the former company and the employee retired.

Other reasons for not using the platform are related with **the preference of establishing face-to-face contacts rather than virtual ones**. The platform can also exploit this issue: promoting contacts, appointments, events, etc where users can meet others and establish initial contact, and subsequently lead to a personal contact. The goal would be that the platform is established as a way to make real social contacts and not an end in itself.

The vast majority of the respondents claim to have experience that could be useful to others and would be willing to share. However, many doubt that their company is really interested in their knowledge or experience.

In this regard, two actions to enhance the platform can be:

- **Trying to put together the interests of the workers and their companies**. A possible solution may be to create a database or interactive search engine for classifying companies and workers in depending on the knowledge and experience they demand or offer.
- **Broadening the scope**: users can share experiences and knowledge not only with their former company but also with anyone who may need it. Similarly, companies may find users not only among former workers, but also among all users of the platform.

It is very interesting that **the vast majority of the users expect to receive something in exchange of the knowledge or experience they offer**. In this regard, the platform would have to enhance or highlight the **potential incentives** that may be the exchange of knowledge. The rewards and incentives must be different depending on whether the knowledge is provided by an employee or a retired person:

- For older workers, possible incentives include: credit hours, flexible working conditions, serve as advisors as a substitute to perform heavy tasks, promotion systems, etc.
- For retired workers, as there is no contractual relationship with the company, incentives can be directed towards: special offers, discounts, possibility of make social contacts, etc.

All these possibilities should be considered in the following project tasks, since the **motivation of users** is essential to be active users of the platform. An important task will be to provide practical alternatives to give content to the motivational aspects best rated by the users:

- To learn of others experiences
- To improve personally
- To adapt myself to changes and innovations
- To feel useful and help others
- To receive help and advice related with retirement matters

In this sense, **the ways of sharing knowledge have to be taken into account**. The best valued options are, in order of preference, the following:

- Search for specific information stored in the platform (documents, videos, recordings, images,…)
- Upload materials (mainly text and documents) that could be useful to others
- Search and contact people who have experience in some topic, to make them questions or to contact directly with them.
- Make questions in thematic forums, to allow online answers by experts

A very important aspect is to know, besides the knowledge management, which are **the most interesting contents that could have an online platform for the elderly and retired**. The alternatives offered included both leisure and other related personal and working life. The main conclusions extracted from the responses of the questionnaire are the following:

- Provide both **online and offline content**. Give particular emphasis on online activities as they are innovative and attractive to many users.
- Emphasize the **social networking features** of the platform, since they are highly valued by users and have high flexibility to include diverse contents (messaging, data storage, search engine, etc.).
- Pay special attention to those activities that have been most highly rated:

  - Having access to professional advice on legal issues, social services, etc.
  - Information about legal aspects regarding retirement.
  - Answer to questions others made, about topics in which the users have experience
  - Bulletin board where knowledge is exchanged, doubts are answered, questions of interest are made, etc.
  - Access to information about local activities (leisure, associations, etc.).
  - Make contacts to know other people in person
- Enable the **search of information on the major issues that are of interest to older people**: legal information, activities, resources, health and social services. Ways to do this can be diverse:
  - Provide access to sites of interest on these issues.
  - Provide basic information on these topics.
  - Guide to services and resources nearby.
  - Allow users to submit questions, being themselves or experts those who give the answer (eg, thematic forums.)
- In general, although the users value the sharing of knowledge and experience (both work environment and non-work), the solution of "storing knowledge in the network" does not seem very popular. Users prefer more **flexible and dynamic solutions that do not involve too much work for them and that enhance personal relationships**. In this sense, the **forum** seems to be a fairly good solution. This solution allows several variations that can be included in the platform:
  - Generic free opinion forums on different subjects.
  - Thematic forums.
  - Expert forums, where users can register on the basis of the knowledge they have on certain aspects.
  - Question and answer forums, such as "Yahoo answers", in which are released questions and are the users themselves who punctuate the different answers.
  - Forums that include additional features: chat, contacts, links, data storage, etc.

The last section of the survey inquires aspects of the practical features of the platform. In contrast to the previous section, these issues are more related to the organization of the platform than with its contents. The basic features of design and usability have to take as a reference these responses. The main conclusions are the following:

- There must be a **separation / distinction between labor issues and other topics related with leisure or social life**.
- The best valued alternatives are those related with the **search and modification of information**: Browser (Thematic searcher) and word searcher. Therefore, it is very important that the platform has different alternatives so that the users can search and find the information they want. Some ideas are:
    - Possibilities to perform both very open searches, and highly structured.
    - Different search options depending on the profile and preferences of each user.
    - Intelligent Search Options: saved preferences, predicting words based on usage, search suggestions, etc.
    - Both internal (within the platform), and external searches (throughout the web, or in certain pre-selected external sites).
- Other valued alternatives are:
    - **Forum**, in which people may post and answer questions, grouped in themes.
    - **Wiki** (Information pages that can be edited or modified by the users).
- **The less interesting options are the blog and the chat**.
- **Usability and accessibility** have a high importance to the users. All criteria have been positively valued, although some are more important than others. The order of preference is as follows:
    - Trustworthiness of privacy and personal data.
    - Simple: well organized and without superfluous elements.
    - Links with other web pages and resources.
    - No advertisements.
    - Easy to understand: neither technical terms nor informatics jargon.
    - Online help / Specific training course.
    - Attractive. Without older people aesthetics.
    - Change the size of the letters.
    - Change the contrast and colors.

2.3. COMPANIES: DISCUSSION GROUPS CONCLUSSIONS

Knowledge sharing

The storage and transmission of knowledge is generally considered as quite significant, although with some nuances:

- For companies working with knowledge and information which change frequently, sharing knowledge is essential.
- For other companies, it is only important for certain jobs (highly skilled technicians). For other workers, the information can be transmitted through personal ways: courses, specific training, meetings, etc.
- In other cases, rather than the transmission of knowledge, the company prioritizes the transmission of procedures, rules and techniques.
- Regardless of the above, there are doubts about whether it is necessary to store and transmit the knowledge of workers that are going to retire. It may be important only in very specific cases, but not in general. Older workers and retirees can transmit other aspects such as: experience, tips, tricks, procedures, etc.

Companies use certain methods to store, transmit and share information. There is no common pattern, and it depends on the type of company. Some examples are:

- University: Wiki, online training
- Technological companies: wiki, databases, forums, specific training.
- Banking: Database of procedures and techniques, forums, meetings.
- SME: Direct transfer (from one worker to another).
- Production companies: direct training, accompaniment, books/sheets with proceedings.

In general, a large part of the transmission of knowledge occurs directly (contacts, questions, courses, etc). A computer system should complement and facilitate this and not replace it. Although the system is adequate and flexible, it is very important that it is within a general plan of the company and that allow personal relationships.

A major problem is finding one mechanism that is effective, simple and customizable to the needs of the company. Especially in small and medium enterprises, the computer systems for knowledge sharing are perceived as a costly investment and not very profitable.

Relationship with workers

Workers find it difficult to transmit information. Therefore, any system must try to bring together the company's interests with those of workers. It must ensure that is accepted by both the company and by employees. To do this, some ideas are:

- Not to interfere with the production system or with the tasks carried out by the workers.
- It should not be seen as an imposition. Has to provide value. It has to be agreed with the workers. There must be one trial period to can change things that do not work or that are not useful.
- It should include incentives for workers to use it: credits, possibility of improving the job, establish contacts or non-work activities, etc.
- It should enhance contacts and communication.
- It should include tools to improve procedures and processes. May also serve to workers to express their views and put forward improvements.

Tool features

Contents:

- Database of knowledge, resources, contact persons, etc.
- Adapted learning courses.
- Information related to workplace issues:
    - Analysis of workplaces / change of workplaces.
    - Ergonomic programs.
- Connections with other actions:
    - Meetings / encounters to share experiences and knowledge.
    - Programs to ease the transition to retirement.
    - Incentives / benefits.

Some key aspects in the **design** are:

- Cheap / Affordable.
- Adaptable to the company needs / Polyvalent.
- Powerful: able to manage and recover a lot of information.
- Information should be grouped into different profiles depending on the interest of the users. Also products fitting to the interest should be offered
- Different ways to manage information and communicate, so the user can choose a preferred one: wiki, database, email, video, chat, blogging, forums, games, etc.
- It must include public and private areas. Below are some ideas, although it have to be configurable by the company :
    - Public areas:

        - General information about the company.
        - General procedures.
        - General forum
        - Contact with the retired workers or other consultants.
        - Features not related with the production (leisure, meetings, contact within workers,…).
    - Private areas:
        - Specific information about the company.
        - Specific procedures, methods and techniques.
        - Specific or "sensible" knowledge.
        - Thematic forums.

With regarding **usability**, some points mentioned are:

- Easy to learn.
- Easy to use.
- Transparent (handling with personal dates, security...)
- Well structured but also flexible.

Finally, with regard to the **structure**, some highlights are:

- Wiki (or other database structure) for storing and searching information. With powerful search capabilities.
- Forums and blogs to tell and share experiences.
- Section at which advices can be obtained. Must include the possibility of answer questions.
- Consultancy / Expert groups that advise on various topics.

Very important: **Trustworthiness and privacy of data**:

- Not accessible to external companies or persons.
- Different permissions to workers, depending on their responsibilities / profiles.

2.4. RECOMMENDATIONS FOR COMPUTER DESIGNING WITH OLD USERS.

The most common use of computers and the Internet for older adults appears to be for communication, social support, leisure and entertainment.

Social networking use among internet users ages 50 and older is rapidly increasing, although email continues to be the primary way of communication.

The most important barrier to computer use by older adults is actually the lack of perceived benefit that is to blame.

The accessibility barriers that have a more negative effect on the daily interactions of older people with the web are due to their difficulties in remembering steps, understanding web and computer jargon and using the mouse, despite their willingness to use it. These obstacles could be much more important than those caused by their difficulties perceiving visual information, understanding icons and using the keyboard.

Some common mistakes are:

- substantially too much functionality, increasing the risk of getting lost in the system, and the fear of not knowing what to do;
- complex conventions which were not understood by the users, including issues such as when to double-click;
- the use of impenetrable terminology and jargon;
- very cluttered screens which confused older people;
- icons, fonts, and color contrasts which were inadequate for those with agerelated sensory loss;
- memory needs that demanded far too much from people with age-related memory loss, which included information hidden within poorly-titled menu systems.
- Increasing the size of elements is bad if horizontal or vertical scroll increases too.

Recommendations for ageing-related functional impairments

Visual

- Information presented in a larger size.
- Avoid unnecessary elements that can strain the eyes: capital letters, several fonts mixed bright and extremely vibrant colors, etc.
- Maximize the information/background contrast in critical content areas.
- Present important information as close to the centre of the screen as possible.

- Avoid patterned backgrounds.
- Avoid background patterns, drop shadows on text or floating text over images. The use of a faint grid pattern as background was found to provide the best compromise

Motor

- Avoid actions that require finer movements and motor coordination:
- Avoid actions that require tracking and capturing a moving target with a mouse.

Hearing

- Interfaces that use sound to get the users attention will need to use lower frequency sounds for older users.
- Permit the user to adjust the volume.
- Reduce speech velocity: less than 140–180 words per minute.

Cognitive

- Provide simple and well structured information.
- Give information in a non-technical language.
- Give tutorials, maps and aids to understand the environment.
- Offer redundant information using several (for example images+text).
- Avoid designs effects that disconcert old people: pop-ups, infinite loop videos, decoration non relevant to the content, etc.

Personalization

Even though following accessibility guidelines, people are not able-bodied and familiar with the technology. Maybe it is possible some simple personalization to allow for people with poor eye sight or dexterity in addition to accessibility features, but they do not know how to change the configuration.

Interface layering represents a useful approach to introducing the novice computer user to available functionality.

2.5. LABORATORY: FUNCTIONAL ANALYSIS AND VALIDATION OF PARAMETERS FOR USER-INTERFACES

Creating a new user account

- The form to create a new account should be in the main access to the network (as in Facebook).
- The font size must be large and have a great contrast between the letters and the background on the form where user information is requested (as in SigoJoven).
- There must be a duplicate field in all those data that are essential for the creation of the account (eg email) in order to avoid the problems encountered in CvidaClub.
- The registration form doesn't have to require much personal information and thus not lengthening the registration process in order to avoid the problems encountered in the network CvidaClub.
- Fields including drop-down lists (eg, country): these lists don't have to be exhaustive, but rather contain only the most popular choices. In the case that they are comprehensive, they would have to include first the closest options to the users.
- An adequate feedback must be provided, so that the users know that they have done the task well (for example, by a warning at the end of the process or by sending an email).
- Words of security (Captcha) must be accessible and in any case, have alternative options. If it is not strictly necessary, they are not recommended.

Logging In

- Have a consistent and predictable way to access to the account in order to avoid the problems encountered in SigoJoven:
    - If the user makes a mistake, the error indication should appear marked on the same page and not redirect to another page with a different format.
    - To facilitate the location of the mistakes, these should be highlighted in the same field.
    - The remaining fields that have been completed correctly should not be deleted, but rather keep the previously entered data (to avoid the user having to type them again.)
- Avoid that the user have to recall excessive and / or unnecessary data, as in CvidaClub. For example: using the email as the field access, preventing the user from having to invent (and remember) a specific user name.

Adding a network user / make a friend

- The access and structure from the searcher and all the procedure of finding and inviting friends must be intuitive and must be well explained.
- A clear language must be used at the forms and at the links in order to avoid confusion with other sections like 'invite friends' or 'find friends'.
- Provide a clear environment with a good font size (or resizable) and colors highly contrasted.

Read a message and answer

- Access to the messages must be clearly highlighted in the home page.
- The messages must be easily distinguishable from each other.
- It should be emphasized where is the access to the message content in order to avoid problems of misunderstanding when entering the sender's profile as in Facebook and SigoJoven.
- It is preferable to prevent access through links. Links must be replaced with buttons with clearly defined actions (read, reply, delete, etc).
- The buttons must be placed next to each message so they do not give errors when performing actions.

2.6. KNOWLEDGE TRANSFER METHODOLOGIES AND CONSIDERATIONS

- Based on their relevance to this project we have selected **8 fundamental Knowledge Transfer methodologies**:
    - Communities of Practice (CoP)
    - Mentoring
    - Job-Shadowing
    - Expert Systems
    - Job Aids
    - Storytelling
    - Knowledge Capture
    - Teaching/training

- **Ideas, experiences, knowledge, feelings, stories, people, places,…captured in:**
    - Documents
    - Blog posts/comments
    - Forum posts
    - Chat logs
    - Emails
    - Tags and comments

- Pictures, images, drawings
- Bookmarks
- Documents
- Courses
- Contacts and profiles
- Audio recordings
- Video recordings

- **Tools that can be used in the KM system:**
  - Wiki
  - Forums
  - Blog
  - Bookmarking/Social Bookmarking
  - File sharing
  - IM
  - VoiceIP
  - Podcasts
  - Livecast

Example: Facebook

Knowledge transfer	e-knowledge	e-knowledge tools	How	Who	When
Community of Practice Mentoring Knowledge Capture	Documents Blog posts Forum posts Emails Tags and comments Pictures Bookmarks Documents Contacts and profiles Audio Video	Blog Bookmarking File sharing Forum Chat	Profile + Network + Groups + My files + Messages + Tools	1 to n n to 1 1 to 1	Synchronous or Asynchronous

3. RECOMMENDATIONS AND TECHNICAL REQUIREMENTS

3.1. GENERAL KNOWLEDGE SHARING REQUIREMENTS

The knowledge sharing and management module is intended to be a key point of the AWARE system. Therefore it has received an in-depth analysis at WP1. Although the contents and structure of this module will be defined at other paragraph, the general requirements are described at the following lines:

General features

- **Bi-directional**: The KM system must permit the management of the contents by all the possible users. For example: workers have to be able both upload and download information.
- **Dynamic**:
    - The information must be instantly accessible. The system must refresh the data constantly and permit the interchange of live information (for example, through chats).
    - The formal storage of knowledge (for example a database or a wiki) is not considered to be very important neither by the users nor by the companies. Although there can be resources to store, classify and access to information, this feature is not central for the module, as users prefer a more dynamic environment.
- **Customizable**:
    - Users have to be able to design their own environments and search methods.
    - For companies this feature is especially important: The possibility of defining different levels of access to the information and to the management rights.
    - Initial Setup: link the level of knowledge about computers or the Internet to associate it with the topics and format and appearance of the pages
- **General**: The KM module must be both general and work-related. On one hand, retired people are not very interested in keep in contact with their former company, but they want to share their knowledge and experience. On the other hand, companies want to have something like a "private network" in which they can share their knowledge. Therefore the KM module has to have both public and private areas.

- **Topics**: The users of the KM system have to be able to:
    - Share experiences, tricks, tips, etc.
    - Communicate with others: contact people, make and receive answers, find experts, etc.
    - Interchange internal information: complains, suggestions, tips, etc. This is especially important at the companies' private network.

Conditions

- **Privacy:** Users (and especially, companies) have to be able to define the level of access of their accounts: knowledge visible, users authorized to see/modify information, etc.
- **Incentives:** Users are willing to share information and knowledge in general, but nevertheless, they claim for incentives to share information with their company or former company. This aspect cannot be addressed from the project, as they are initiatives to be put in place by companies to promote the use of the tool. Some ideas that can be considered are the following:
    - For older workers: credit hours, flexible working conditions, serve as advisors as a substitute to perform heavy tasks, promotion systems, etc.
    - For retired workers: special offers, discounts, possibility of make social contacts, public recognition, etc.

  The **internal incentives** must address to promote and encourage the use of the tool. It might be interesting to use a point system to recognize and highlight those users with high participation and contributions that are valued positively by other users (similar system to that used by eBay, Ciao or Yahoo Answers)

Tools

The preferred tools to share knowledge are the following in order of importance:

- **Make and answer questions**. The structure of this tool can be similar to a *forum*, but with the possibility of classify questions, punctuate the best answer, value the expert, etc.
- **Search for experts**: find people that are expert in a field and contact with them (messages and/or real contact). Likewise, users may define themselves as 'experts' in concrete fields. The tool must put in contact both: users who need to know something with experts.
- **Search for information**. The tool must have a powerful search engine, able to find both external information (ie, resources and information at the internet) and internal (knowledge stored, links, experts,…). Several search possibilities must be included: open search, guided search and categorized search.
- **Upload / download files**: photos, videos, documents.

- **Specific courses online**: companies or users have to be able to create and give access to specific training material structured in a course.
- **Wiki**: database of knowledge categorized. The creator of the wiki is able to give specific rights to users in order to add, refresh or modify content.

3.2. TOPICS TO BE COVERED IN THE SYSTEM

The two main questions related with topics are:

- The users/managers have to be able to define and modify their own topics when they are accessing to the private version of the social network or the KM module.
- At the general / public version of AWARE, the topics are considered as flexible themes that are very interesting for elderly people. They are not necessary related with their workplace. The system can manage these topics in several ways: external and internal searches, links to other resources, etc. The best valued topics are the following:
    - Before retirement:
        - Tips on improving health, more appropriate ergonomic postures and maintenance of fitness and health.
        - Preparation for the retirement…
        - How to use computers
    - After retirement:
        - Communication (contact, meet, find people)
        - Leisure activities
        - Local resources
        - Training /education (non-work related)
        - Legal advice / social services
        - Hobbies (know+share)

3.3. SYSTEM DESIGN REQUIREMENTS

The system requirements are detailed in **paragraphs 2.3 to 2.6 of the deliverable D1.3**. It is recommended take into account these requirements when considering issues of accessibility and usability in the system design. Prioritization and / or amendment of these requirements, as well as the adding new ones, are based on the opinions expressed by users. Below are those requirements that must serve as a filter and guide of the recommendations identified in the deliverable D1.3.

3.3.1. External design / Aesthetics

- Simple. Not show much information. Well organized and without superfluous elements
- It must be attractive (keep the attention).
- Avoid the "older-people aspect".
- Dynamic and configurable by the user: preferences, profiles, forums, blog, etc.
- It must be adapted to the local resources of the user.
- Respect privacy and personal data.
- No advertisements.

3.3.2. Accessibility / usability

Regarding **usability**, some points mentioned are:

- Large print. Adjustable.
- Search options (keywords).
- Clarity, reduced to its essential/ necessary elements. Self-explanatory, easy to use, no special knowledge required: neither technical terms nor informatics jargon.
- Online help / Specific training course.
- Change the contrast and colors.
- Specific aspects:
    - Forms (questionnaires, creation of a new account, log in, modification of personal data):
        - The font size must be large and have a great contrast between the letters and the background on the form where user information is requested
        - Fields including drop-down lists (eg, country): these lists don't have to be exhaustive, but rather contain only the most popular choices. In the case that they are comprehensive, they would have to include first the closest options to the users.
        - The form to create a new account should be in the main access to the network.
        - There must be a duplicate field in all those data that are essential for the creation of the account (eg email).
        - The registration form doesn't have to require much personal information and thus not lengthening the registration process.

- An adequate feedback must be provided, so that the users know that they have done the task well (for example, by a warning at the end of the process or by sending an email).
- Words of security (Captcha) must be accessible and in any case, have alternative options. If it is not strictly necessary, they are not recommended.
- If the user makes a mistake, the error indication should appear marked on the same page and not redirect to another page with a different format.
- To facilitate the location of the mistakes, these should be highlighted in the same field.
- The remaining fields that have been completed correctly should not be deleted, but rather keep the previously entered data (to avoid the user having to type them again.)
- Avoid that the user have to recall excessive and / or unnecessary data. For example: using the email as the field access prevents the user from having to invent (and remember) a specific user name.

- Search and manage information and contacts (e.g.: adding a network user / make a friend)
  - The access and structure from the searcher and all the procedure of finding and inviting friends must be intuitive and must be well explained.
  - A clear language must be used at the forms and at the links in order to avoid confusion with other sections like 'invite friends' or 'find friends'.
- Communicate with others (e.g.: chat, read a message and answer)
  - Access to the messages must be clearly highlighted in the home page.
  - The messages must be easily distinguishable from each other.
  - It should be emphasized where is the access to the message content in order to avoid problems of misunderstanding when entering the sender's profile.
  - It is preferable to prevent access through links. Links must be replaced with buttons with clearly defined actions (read, reply, delete, etc).
  - The buttons must be placed next to each message so they do not give errors when performing actions.

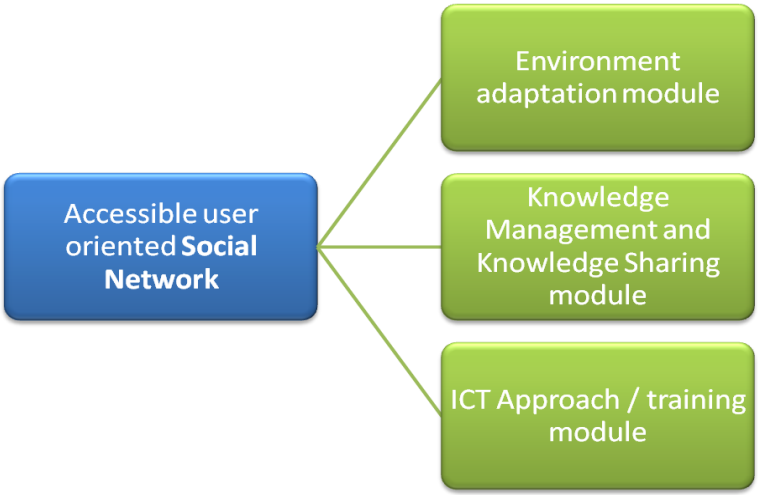
3.4. SYSTEM STRUCTURE

3.4.1. General structure

The platform developed in the AWARE project will be a **Social Network** with three modules integrated:

- **Environment adaptation module**: Ergonomic adaptation plan for workplace and home environments through an intelligent web searcher.
- **Sharing knowledge module**: This module will permit workers to maintain an active role after retirement by allowing share of expertise and experience, get in contact with other workers and retired elderly people. This will help people to stay active after retirement and will allow the company to maintain and acquire knowledge and expertise although a worker has retired.
- **ICT approach module**: This will be a trainer tool for the platform, the provided services and Internet and Social Networks, focused on pedagogical methodologies adapted for elderly people.

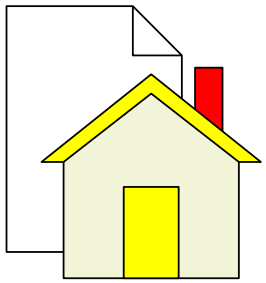
This solution is based on the principles of the social network, where its services (chatting, blogging, etc) will be complemented by specific services oriented to aging workforce and elderly people needs.



The above is the **internal structure** of the content of the system. With regard to the **external structure**, the following figure shows a proposal on the general mode of operation, depending on the type of user.

The home page will include the following elements:

- **Presentation of the site**: what it does, to whom is aimed, etc.
- **Access to content**: registration form or log in.
- **FAQs / contact / other information.**



1. INTRODUCTION
2. REGISTER / LOG IN
3. TUTORIAL / F.A.Q.

COMPANY
Registration / log in

Company Home Page
ADMINISTRATION

Management of:
Contents
Modules
Aspect
Access / permisions

Company Home Page
USERS

Profile management
Access to modules / features:
SN / EA / KM / IT

USERS
Registration / log in

Home Page
Registered users

Profile management
Access to modules / features:
SN / EA / KM / IT

- Social Network (SN)
- Environment adaptation (EA)
- Knowledge management (KM)
- ICT Training (IT)

AWARE will have **two environments**:

- **Private environment**: the registered companies can create their own websites and manage them.
- **Environment groups**: registered users can access the public contents of the platform and manage your profile.

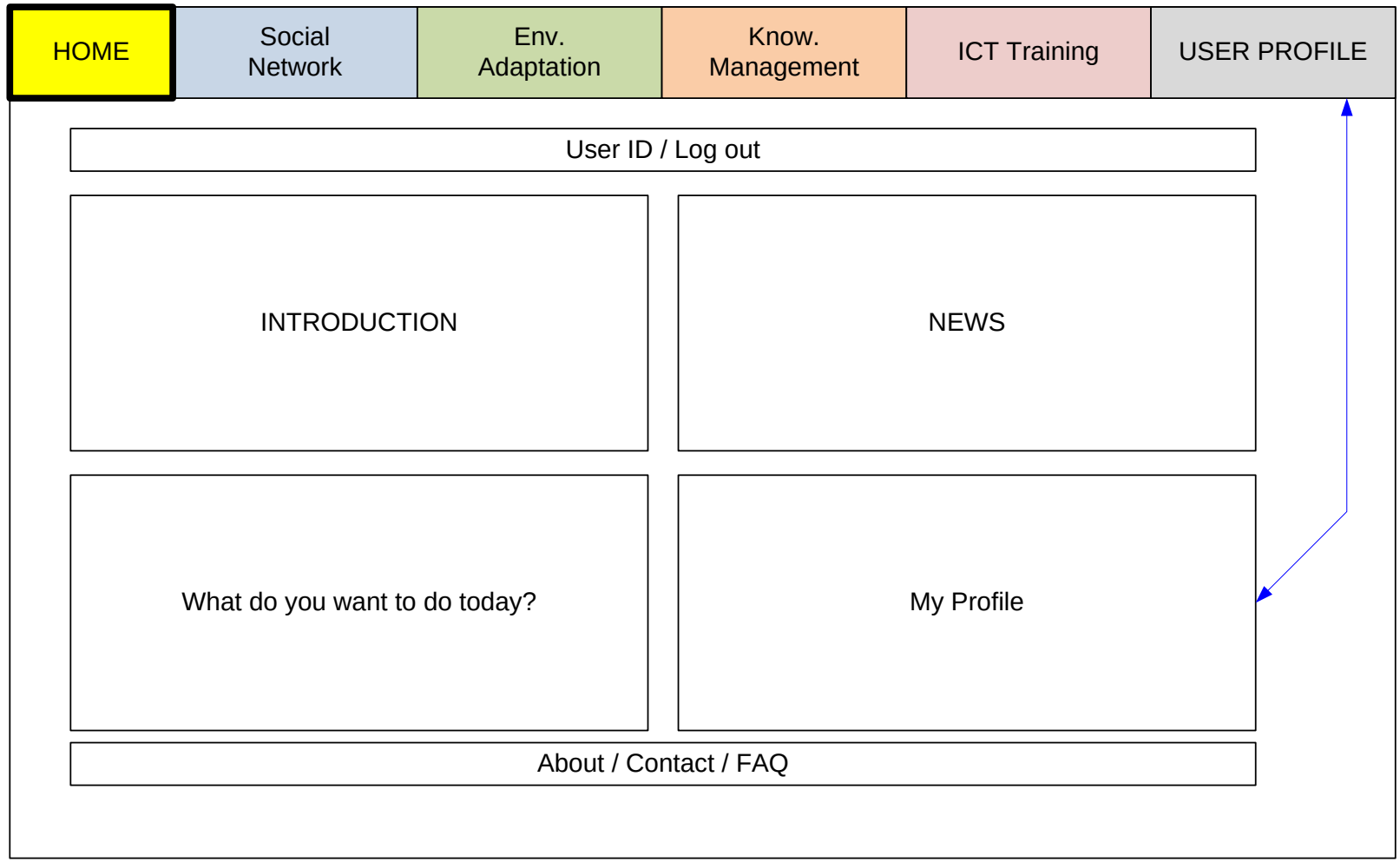
Tree types of users will be defined in the system:

- **Administrators** (private environment): Access for persons responsible in companies. This access will manage the structure and content of the specific AWARE site for the company. Likewise from this account, it will be possible to manage access and permissions for users.
- **Company users** (private environment). From this account will be possible to access the private site of the company to which the user (employee or ex-employee) is attached. The account will provide access to the specific contents and to the personal profile management.
- **General users** (public environment): The registration will allow access and use of the public content of the platform, as well as to the personal profile management.

3.4.2. Detailed structure

A clear and simple structure is proposed, with six sections: 4 devoted to the specific contents of AWARE, a home page and a configuration section:

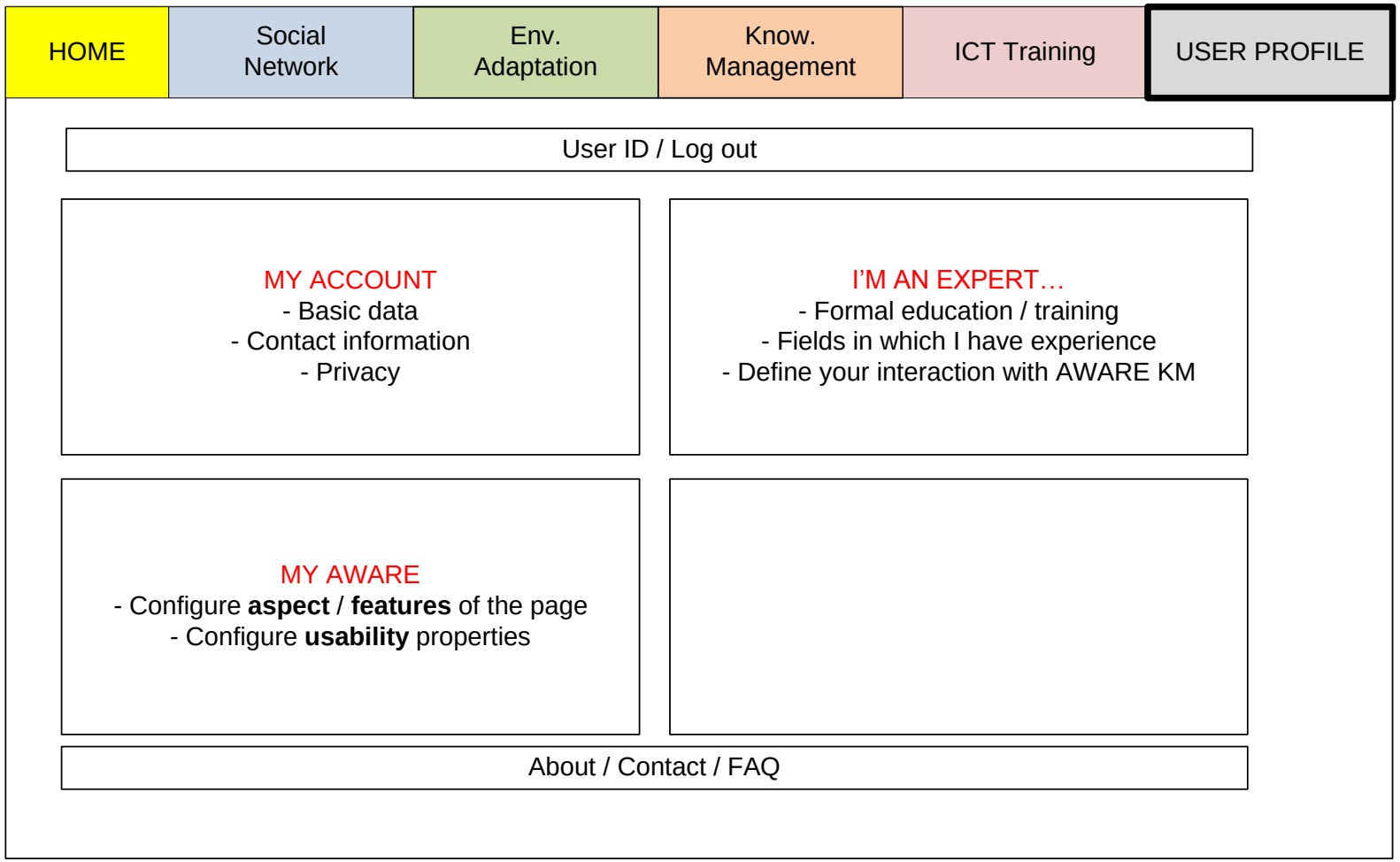
- **HOME PAGE**: The initial page will be different depending whether the user is registered or not:
    - If the user has not registered yet, the page will contain a brief presentation of the AWARE system, a section to register and/or log in and other section related to FAQs.
    - If the user is a registered one, the home page will show the following sections:
        - Introduction
        - News
        - What do you want to do today?
        - My Profile.
    - In both cases, the page will include links with the common information of web pages: about, contact and FAQs.



Home page structure (registered users)

- **USER PROFILE**. This section is intended to allow the user to configure some parameters that respond to the following questions:
    - How do I manage my personal data?
    - How do I configure the features of the application?
    - How do I adapt the way of functioning and the aspect of the system to my personal needs and preferences?
    - How do I show the others what is my knowledge and expertise?

  To answer this question, the user profile will include the following sub-sections:
    - **My account**: management of the personal data:
        - Basic data.
        - Contact information.
        - Privacy options
    - **My AWARE**: adapt several options of the system to the user's needs:
        - Configure the features of the page.
        - Configure the aspect of the page and the distribution of elements
        - Configure usability and accessibility properties.
    - **I'm an expert...**: Manage the CV and the expertise of the user:
        - Formal education / training.
        - Fields in which the user has experience.
        - Definition of the user's interaction with the AWARE Knowledge Management (KM) Module.

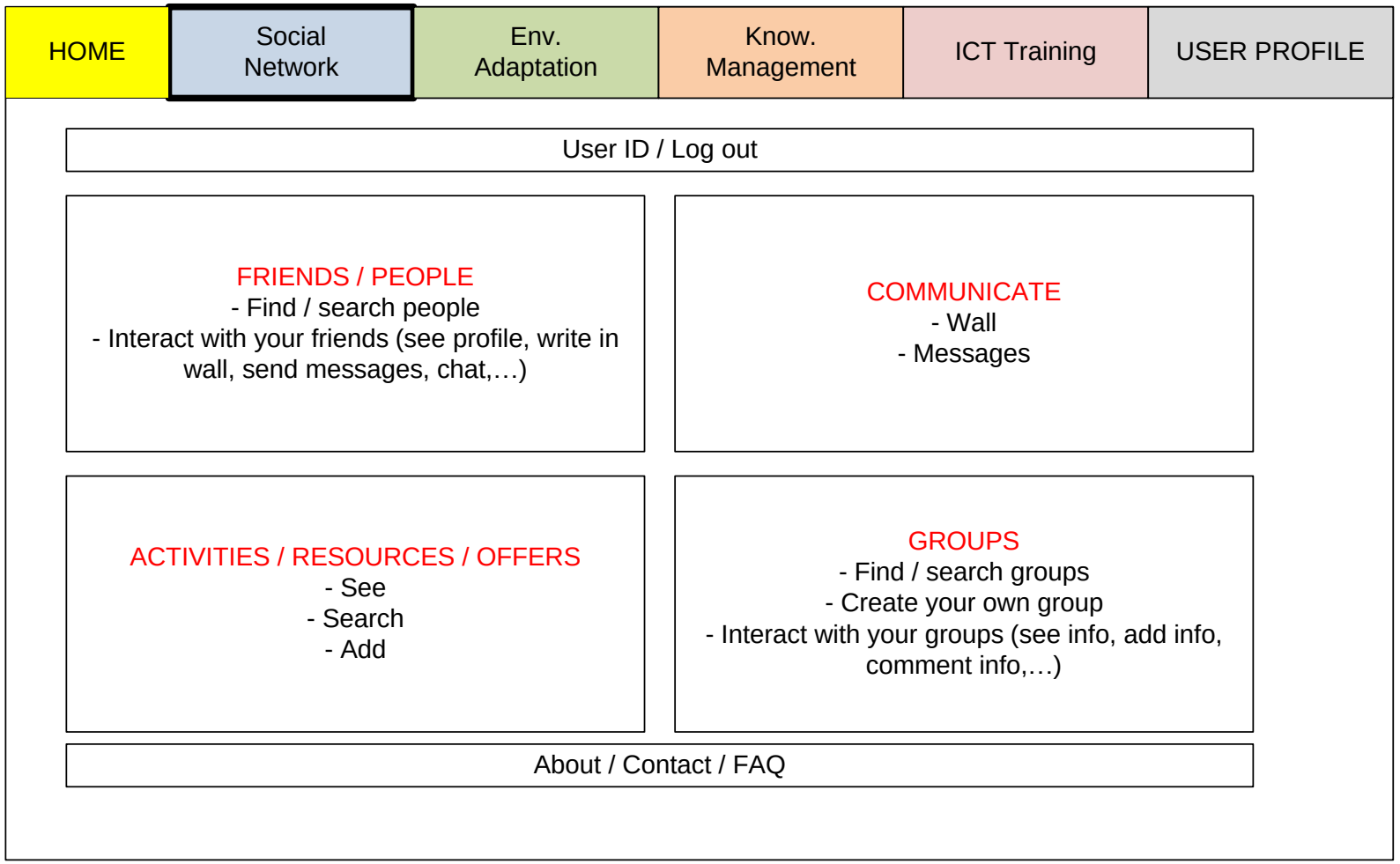


User profile page (registered users)

- **SOCIAL NETWORK**. The concept of social network implies "an online platform that focuses on building and reflecting of social networks or social relations among people. A social network service essentially consists of a representation of each user (often a profile), his/her social links, and a variety of additional services. Social networking sites allow users to share ideas, activities, events, and interests within their individual networks" (Wikipedia). The Social Network included in the AWARE platform will provide these features, based on the principles of the social network, where its services (chatting, blogging, etc) will be complemented by specific services oriented to aging workforce and elderly people needs.

  Therefore, the Social Network section will include the elements of social networks relevant and demanded by users, with particular attention to the link with the other system modules. The sub-sections planned are:

  - **Friends / People**: Contact and communication with specific persons. Creation of the own social network:
    - Find / search people
    - Interact with your friends (see profile, write in wall, send messages, chat,…).
  - **Communicate**: Users may express their ideas, thoughts and opinions (wall) or to send messages to others, included or not in their social network (messages to friends, e-mails, sms, etc.).
  - **Activities**: Users may search, find and add different activities, resources, events or offers. The application will pay special attention both to provide flexible search alternatives and to filter the local resources of the user.
  - **Groups**: Users may add their contacts into a group, find and join groups of their interest, communicate and interact with groups, etc.

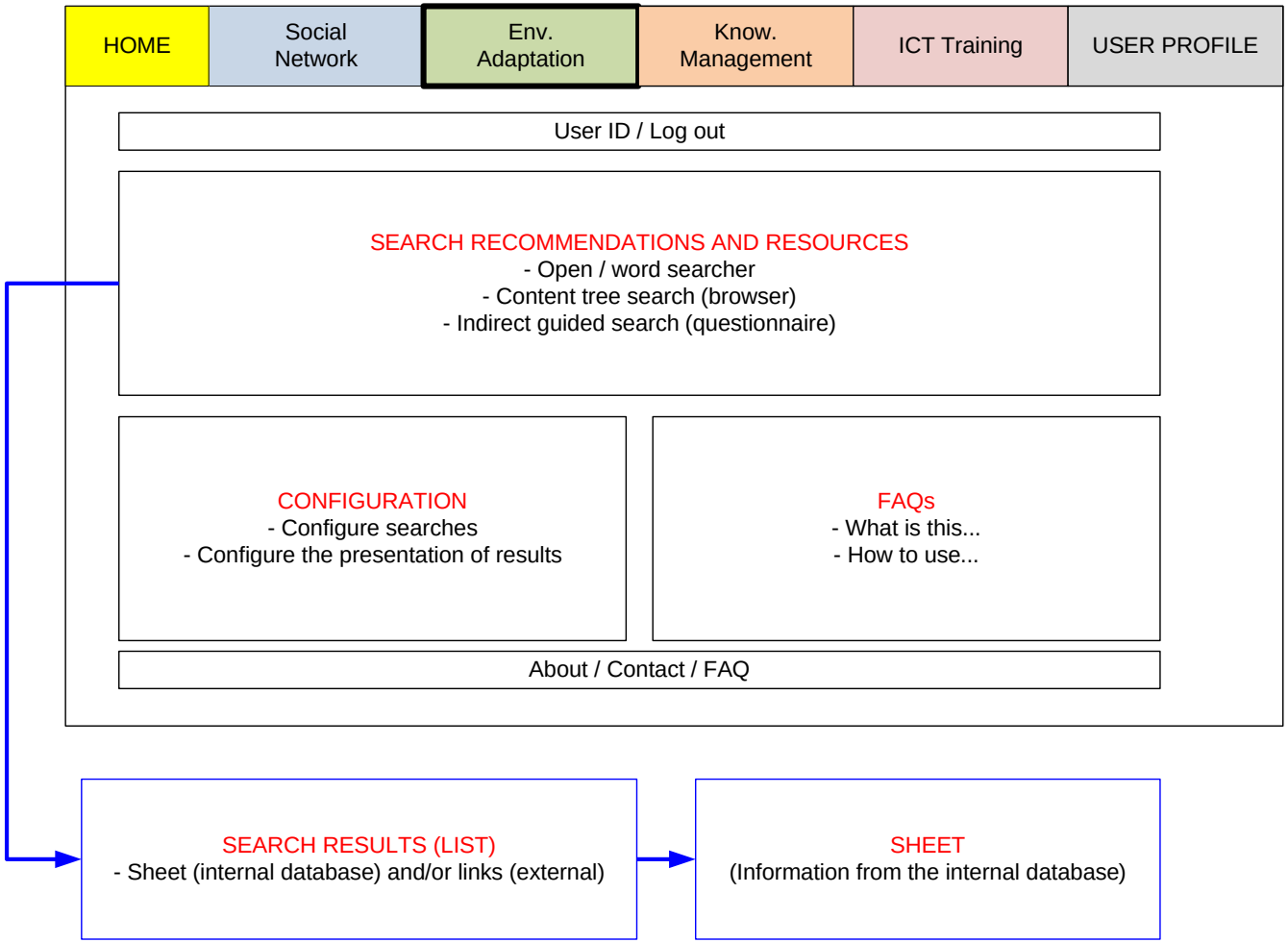


Social Network Module

- **ENVIRONMENT ADAPTATION**. This module will provide an adaptation plan for every kind of environment (workplace, home, etc). The service will be provided by an intelligent web searcher focused on automatic updating of information and knowledge, based on semantic rules or ontologies.

  The planned contents of this module are:

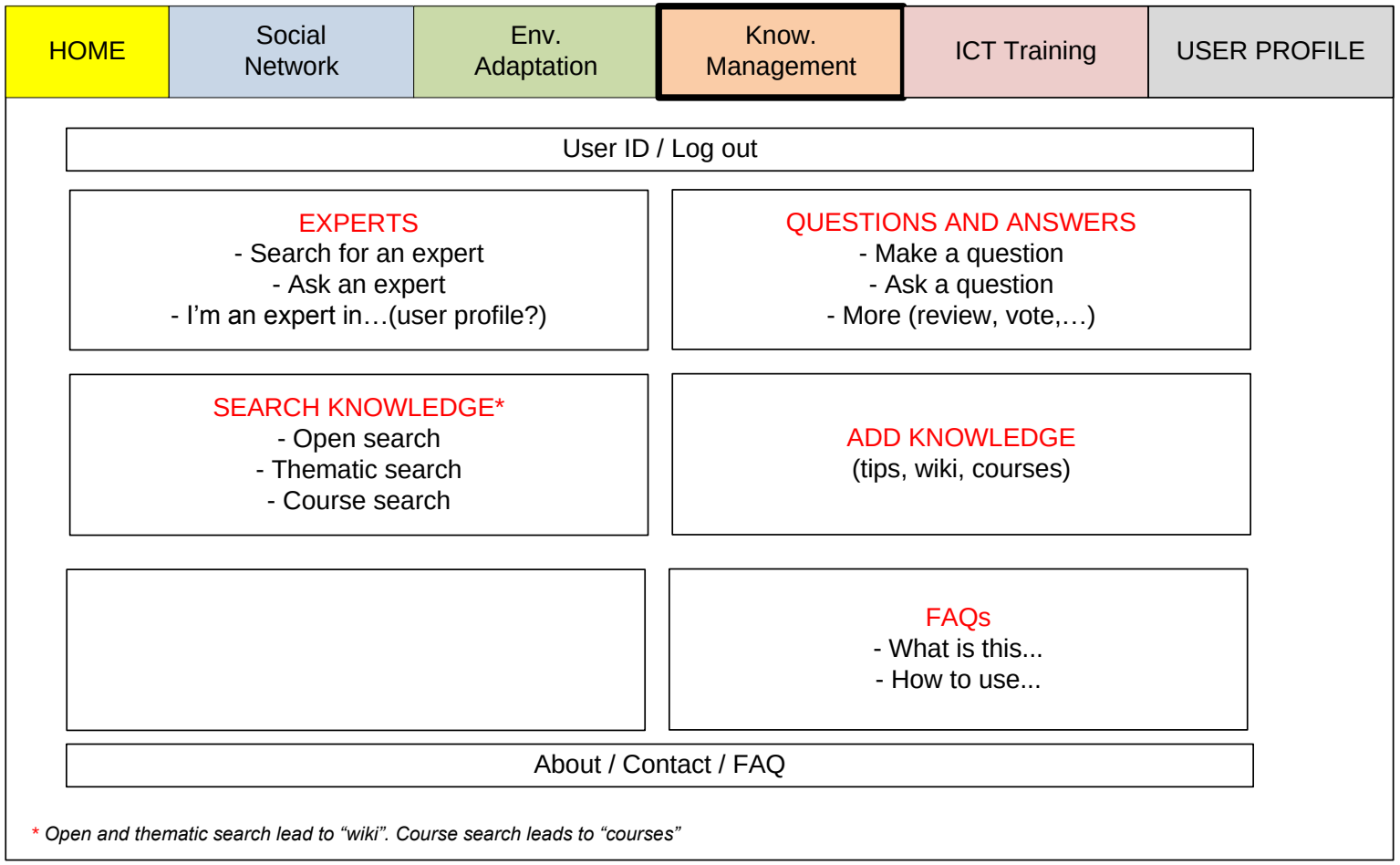
  - **Configuration** of searches and results.
  - **FAQ**
  - **Search recommendations and resources**. This is the main section of this module. It will include several alternatives of search: *open / word searcher; Content tree search (browser); Indirect guided search (questionnaire).* Once entered the search parameters, the user will receive a page with a "list of results". This list may contain links to both internal recommendations from the database system, as to external resources and sites. The internal recommendations will be displayed as interactive sheets.


HOME
Social Network
Env. Adaptation
Know. Management
ICT Training
USER PROFILE
User ID / Log out
SEARCH RECOMMENDATIONS AND RESOURCES
- Open / word searcher
- Content tree search (browser)
- Indirect guided search (questionnaire)
CONFIGURATION
- Configure searches
- Configure the presentation of results
FAQs
- What is this...
- How to use...
About / Contact / FAQ
SEARCH RESULTS (LIST)
- Sheet (internal database) and/or links (external)
SHEET
(Information from the internal database)

- **KNOWLEDGE MANAGEMENT**. This module will provide mechanisms for sharing knowledge both between private users, private users with companies and workers/retired workers with companies.

  The planned contents of this module are:

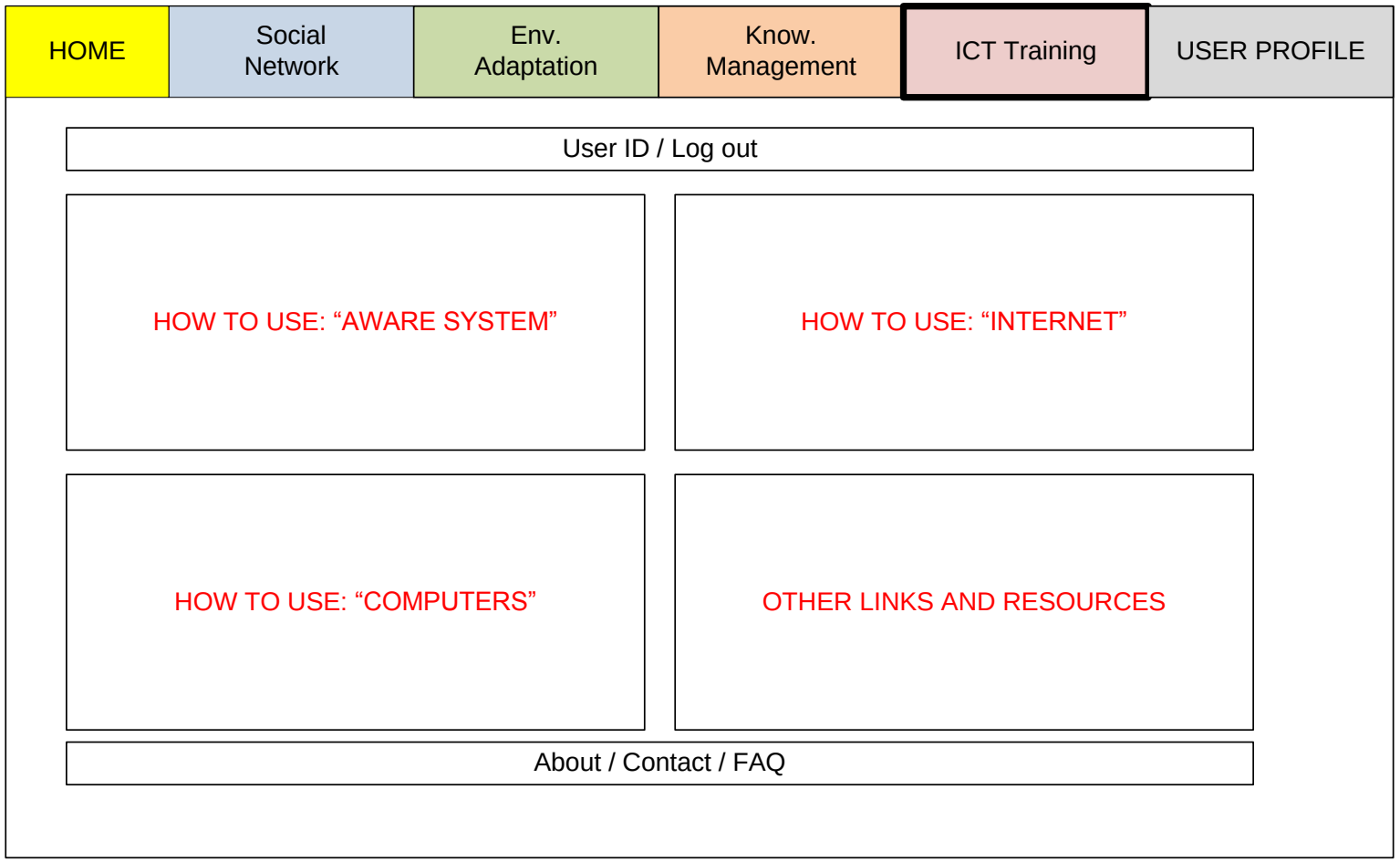
  - **Configuration and FAQs** of searches and results.
  - **EXPERTS**. Users will be able to find people that have experience in one field of interest. Once found the experts, the users may both ask a question or establish a contact.
  - **QUESTIONS AND ANSWERS**. This subsection will allow users to both submit questions to be answered and answer questions asked by other users. The site will give users some incentives as a way to encourage participation. The model can be similar to the 'Yahoo! Answers' site.
  - **SEARCH KNOWLEDGE**. Users may find knowledge through different types of searches (open, browser, guided, etc.). The knowledge is stored in different ways: tips, wiki or courses.
  - **ADD KNOWLEDGE**. Users may add and classify knowledge to the system: tips, wiki and courses. This feature is central when the users are company related.


HOME
Social Network
Env. Adaptation
Know. Management
ICT Training
USER PROFILE
User ID / Log out
EXPERTS
- Search for an expert
- Ask an expert
- I'm an expert in…(user profile?)
QUESTIONS AND ANSWERS
- Make a question
- Ask a question
- More (review, vote,…)
SEARCH KNOWLEDGE*
- Open search
- Thematic search
- Course search
ADD KNOWLEDGE
(tips, wiki, courses)
FAQs
- What is this...
- How to use...
About / Contact / FAQ
* Open and thematic search lead to "wiki". Course search leads to "courses"

- **ICT TRAINING**. This module will be a trainer tool for the platform and the provided services. It will be focused on pedagogical methodologies adapted for elderly people.

  The planned contents of this module are:

  - How to use **the AWARE System**
  - How to use **Internet**
  - How to use **Computers**
  - Other links and resources.


HOME
Social Network
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USER PROFILE
User ID / Log out
HOW TO USE: “AWARE SYSTEM”
HOW TO USE: “INTERNET”
HOW TO USE: “COMPUTERS”
OTHER LINKS AND RESOURCES
About / Contact / FAQ