

useworld.net - An open user adaptive internet portal for the scientific community

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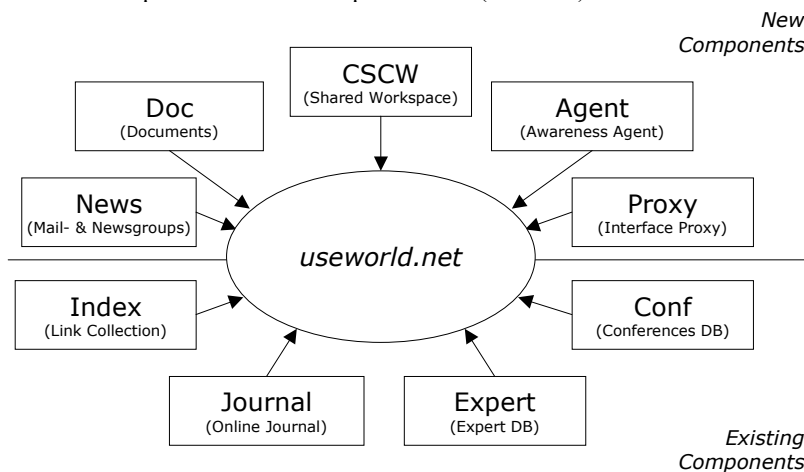
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Abstract

useworld.net is a user adaptive internet portal that supports information exchange and cooperation in research and development in the area of human machine interaction. The portal went online in March 2003 and will be operated by an independent and open incorporated society. It integrates manifold information services (online-journal, different thematic link collections, conference database, expert database) and a sophisticated cooperation component to support distributed teams by providing shared workspaces. Software agents for community awareness tasks and a clean and consistent interaction design complete the solution and support the portals innovative operation concept which intends to activate the users to become editors.

1 Introduction

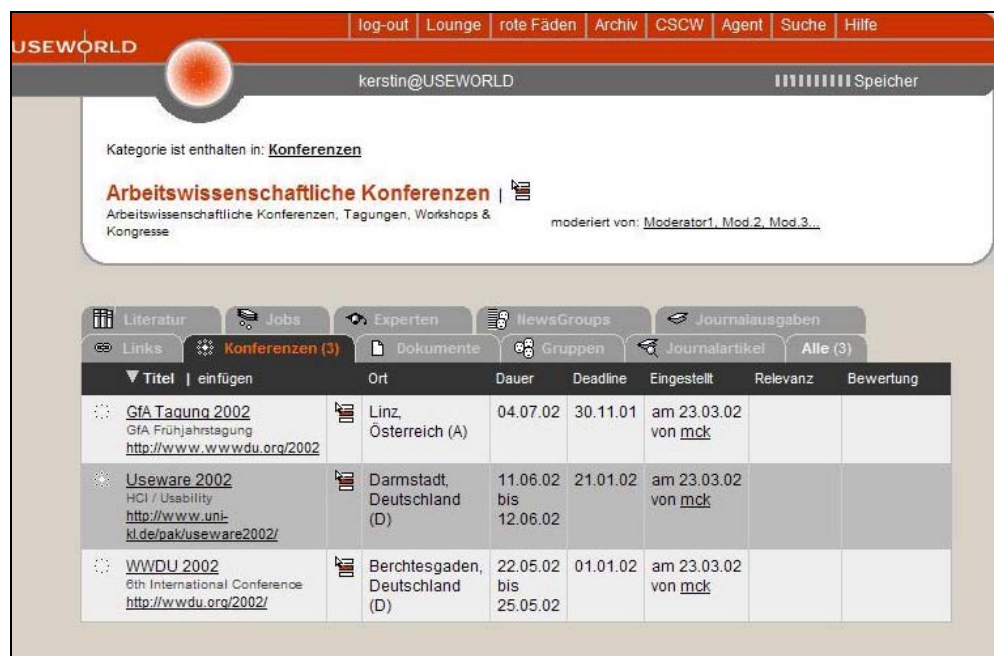
The scientific community working on human-machine interaction is as heterogeneous as the thematic area they are working on. To meet the manifold challenges of human-machine interaction the scientific community includes members from very different disciplines like engineering, information science, design, ergonomics, applied psychologies, etc. The open scientific internet portal useworld.net, which was jointly developed by a distributed interdisciplinary team at four German universities (Röse et al., 2002), tries to address the information and cooperation needs of the German-speaking part of that community by integrating different information services with collaboration components and user adaptive means (Picture 1).



Picture 1 – component of useworld.net

The different information services are tied together utilizing the metaphor of a catalogue. The catalogue provides a heterarchical structure, that is, all of the content objects of the distinct services belongs to at least one node in the catalogue. At any node of the heterarchy the relevant content objects of all of the different services - an extant electronic journal, conference announcements, www-links, job postings, literature references, metadata of mailing lists, a preprint-server and an expert database - are collected and presented in sortable lists (picture 2). Access to the information collection is provided by traversing the heterarchy of the catalogue nodes on the one hand. Direct access on the other is granted through a search engine. The search engine indexes the textual content as well as the metadata of the information objects. This is also true for the content of external pages referenced by the www-links (as long as robots are allowed on the referenced site). The catalogue is fully readable by everybody, adding and changing of content is restricted to registered users. In addition, the registered users are able to asynchronously cooperate in distributed work groups with the help of a shared workspace component (Künzer & Schmidt, 2002). This service is integrated with the public catalogue, i.e. there are efficient means to exchange information objects between catalogue and workspace.

Further services, which might round up the portfolio of scientific portals, like project management or synchronous communication support were rejected in conformance to the results of a user requirements analysis with members of the target group (Leuchter, Rothmund & Kindsmüller, 2002).



Picture 2 – screenshot of a catalogue node with information objects

2 Community Building as Design Objective

useworld.net explicitly tries to come to life without an editorial office (except for the scientific online journal). We applied the idea from several successful online communities that all registered users can act as editors. To activate the future users to become editors, development and design of the open scientific portal focused on a small set of main objectives:

User Activity: The success of a community relies mainly on the activity of its users which will most often only engage if they gain a benefit. In a scientific community the avail of the users is the content offered by other users as well as the support of individual tasks like communication in distributed work groups, working together on the preparation of conference articles or even collecting, structuring and retrieving bits of information. Furthermore the cost of contributing to the community in terms of learning and execution time has to be considered. In particular, we expected the majority of our users to be sporadic contributors only. This had to be considered in designing the interaction design and the overall layout. For instance, the context specific main actions on content objects in all areas were realized with drop-down menus and identical icons. Nevertheless, to support the perception of the functional differences between catalogue and workspace, different colour-schema are used.

Quality of Content: In open systems like useworld.net, where every registered user is allowed to add new information in public readable sections, quality assurance is a central topic. In useworld.net we chose to provide registered users with the possibility to rate content. These ratings are used to filter and sort the content during presentation. In consequence, low rated items will not be displayed at a prominent place. Due to heterogeneous nature of the interdisciplinary community, a simple average of all applied ratings fails to meet the greatly differing interests and needs of individual portal users. To qualify other users' ratings for the current query, user adaptive relevance information is inferred from different sources like use of same workspaces, profile information (in means of catalog categories), activities in the catalogue, and adoption of certain roles within the community. Further information is derived from monitoring the users interaction with the information services of the portal by a so called "socialware layer". Some of the activities help the socialware layer to form a representation of single users and their relations to other users (working groups, interest groups). Examples for such activities are inviting to work groups, cooperation on an object in a shared workspace, discussions, rating of elements in the information space, or creation of new elements.

Community Building: Further effort was found to be necessary to motivate users to act as content producers. useworld.net addresses online community building by a multitude of measures, including aspects of social functions, interaction design, technical functions as well as software organizational issues. Registered users may adopt moderator roles, the rating task was designed to be a fast one-click-operation and is graphically

emphasized, easy incorporation of new external web-information into the catalogue is supported by an proxy and special attention was put on privacy and security issues. To further gain the benefit of the individual users and particular work and interest groups that are part of the online community useworld.net offers a integrated system for both direct cooperation in shared workspaces and for indirect cooperation through information sharing, discussing, and publishing in the catalogue.

3 Evaluation

The first evaluation of the prototype was carried out with 20 subjects from mostly university background (engineers, computer scientists, psychologists) that were expected to be potential future users of useworld.net. Average computer experience was 12 years, average internet and search engine usage was 6 resp. 5 years, all of them had no previous experience with useworld.net. A bundle of different tasks, that are expected to occur in real live situations in a comparable fashion, were tested with a scenario-based-approach, for instance "Invite member 'eva' into your workgroup and check the successful sending of your invitation to 'eva'". The evaluation started with a short pre-questionnaire about experiences with online-cooperation and internet-usage, followed by a scenario-based testing of selected usage-situations. A post-questionnaire about subjective satisfaction with the usage of the system and an open feedback discussion terminated the session.

The items of the post-questionnaire were structured into two categories: 'joy of use' and 'ease of use' and provided a rating with five steps. In the remainder, some selected results of this evaluation are reported. Over all, the user-satisfaction was agreeable for a prototype. In total the median for 'joy of use' (hedonistic differential) was 3.45 and for 'ease of use' 3.07. These results are not bad, but showed a potential for redesign. Interesting is the higher score for 'joy of use'.

Within the focus group feedback discussion the participants emphasized, that in their opinion useworld.net is an innovative and interesting approach, the high degree of freedom, in particular in the CSCW-part, was positively accentuated. All users commended the good correspondence of navigation and interaction design between the catalogue and the CSCW area.

4 Conclusions

The evaluation showed that participants were pleased of the variety of the possibilities the scientific internet portal offered for cooperation. In the scenario-based testing part 90% of all participants were able to execute the cooperative tasks successfully without any instructions. 77.7 % of the participants could see that other users are also active (logged in) in the community. The offer of global access to the community (independent of location or computer system in use), in combination with the possibility to create the own 'internet-workplace' and a private 'sub-community' integrated in a comfortable portal-community was a important aspect for all participants. Furthermore the evaluation identified some important flaws in functional and interaction design. The overall good result encouraged us to go online with an early production release in March 2003 and promote useworld.net on two German fairs (CeBIT, Hannover Industry Fair).

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