PRIME: A Tool for Task-Specific Knowledge Delivery

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PRIME (*PRocess-oriented Information resource Management Environment*) is a system to proactively provide developers with access to relevant information specific to their current tasks and preferences. PRIME provides a technical infrastructure for a continuous, task-specific capture and dissemination of information needs that typically arise for developers, and of information resources considered to be useful for successful task completion.

Figure 1 shows a snapshot sequence from an example PRIME usage scenario: from her to-do list (Fig. 1a), developer Barbara launches a PRIME Information Assistant (Fig. 1b) for the selected task “Implement ECA rule editor”. The Information Assistant presents her with three lists of information resources, labeled “Private InfoNeeds”, “Peer InfoNeeds”, and “Global InfoNeeds”.

These lists consist of typical information needs (e.g. "*Where can I find a tutorial on EJB?*") assumed to arise for Barbara during her task, together with available information resources likely to satisfy those information needs (e.g. Sun’s Java Developer Domain). On issuing the "Show" command on a selected recommended information resource, a browser opens (Fig. 1c) with a list of links that have been transparently retrieved from the Developer Domain on the topic "EJB Tutorial/Instructions" via predefined query templates. Barbara can now refer to the hyperlinks to access those information items.

Moreover, while browsing the web for documents that help her in performing her task, Barbara adds bookmarks to documents that she considers as useful for her task (e.g. the EJB specification) to her task-specific list of “Private InfoNeeds”. Whenever she is unable to find the information she is looking for, she posts a question or information request to a task-specific message forum (see below). This forum is used by all team members as a means to support each other by posting answers to a colleague’s questions. The Information Assistant posts the user’s requests to a corresponding forum, and creates a new task-specific, private bookmark to the corresponding question/answer thread (rendered with a question mark, see Fig. 1b), providing Barbara with immediate access to her question threads.

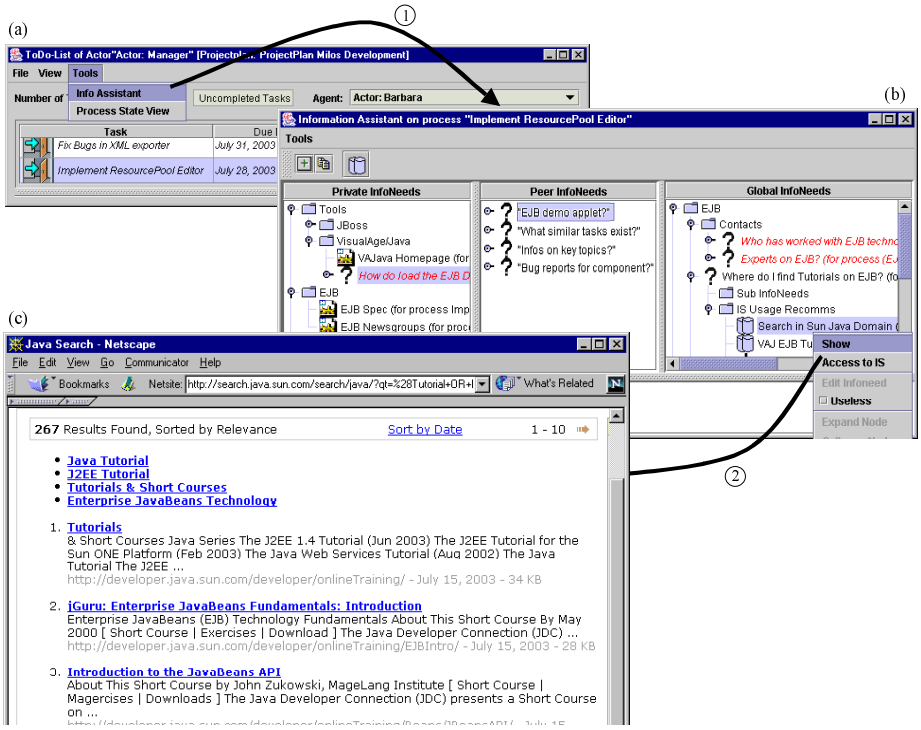

Fig. 1. PRIME usage scenario snapshots.

Based on the assumption that people who shared information needs in the past are likely to have the same information needs in similar, future situations, Barbara’s Information Assistant recommends certain “private” information resources in the list labeled “Peer InfoNeeds” that were added by her colleagues. For example, the information need “EJB demo applet?” that was posted recently by a

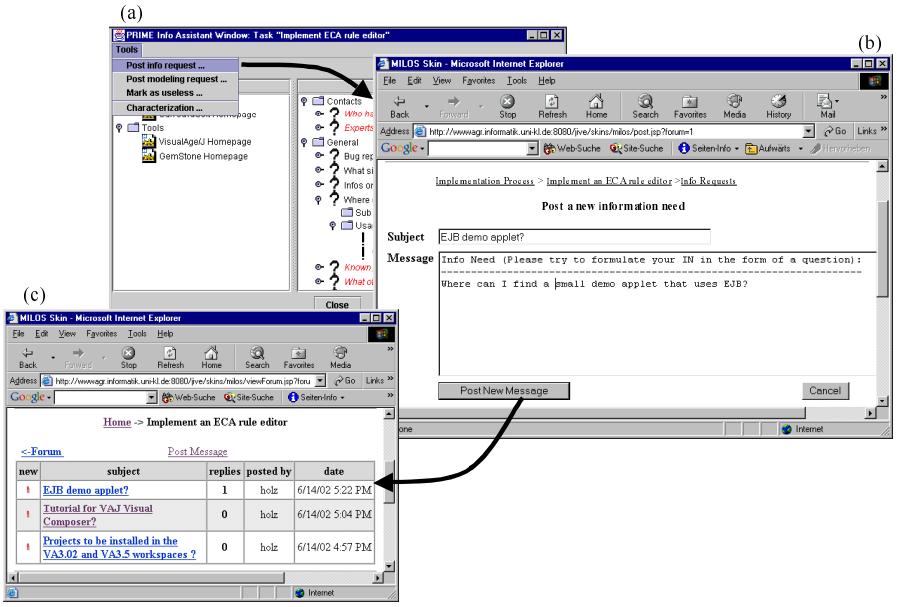

Fig. 2. The Information Assistant (a) allows its user to post a request (b) transparently to a forum (c).

colleague (see Fig. 2) is now offered to Barbara (see Fig. 1b). This information need is among the recommended resources because similarity between Barbara's selected task and the colleague's former task is sufficiently high (e.g. both are dealing with EJB technology), and their (implicit) ratings on information resources correlate sufficiently (e.g. both Barbara and the colleague accessed the EJB specification and the tutorial under the category "EJB").

Certain information resources are likely to be useful whenever a particular type of task is being performed, or whenever a certain tool, technology, language or software component is used. For example, Barbara might prefer to have access to the EJB specification whenever she is working on a task whose characterization references EJB technology. For this reason, PRIME allows users to define a shared, organization-specific domain ontology (here: a class hierarchy, together with instances of these classes), and to associate already captured information resources with these types and instances. Figure 3 shows a snapshot from the PRIME Information Need Manager window: from the tree in the pane labeled "Objects", Barbara has selected the instance "EJB" of class "Distribution" from the domain ontology. The tree in the pane labeled "Attached Information Needs" displays the information needs associated with entity "EJB", grouped under user-specified categories (e.g. "VisualAge for Java", "EJB", "EJB>Contacts", etc.). For example, Barbara has associated the EJB specification with entity "EJB".

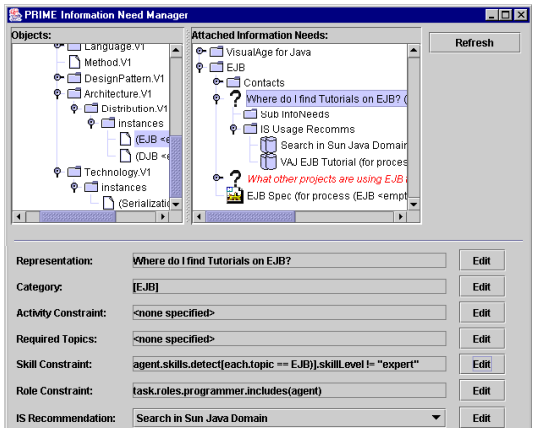

Fig. 3. Information Need Manager

The classes and instances defined in the ontology can also be used for task and product characterization. For a selected task, the Information Assistant will list in the pane labeled "Global InfoNeeds" (see Fig. 1b) all resources associated with a type whenever an instance of this type (or subtype) is referenced by the task characterization; resources associated with an instance are retrieved and offered by the IA whenever this particular instance is referenced by the task characterization. Accordingly, Barbara's Information Assistant will list her bookmark to the EJB specification for all future tasks whose characterization references "EJB".

Only when the situations in which an information resource should be offered need to be even further refined (e.g. because several factors need to be considered), or when access to the information source requires explicit query commands, a more formal specification might become necessary. To this end, PRIME provides the means to formally specify information needs, encompassing the specification of (i) *what* information might be useful (typically expressed as a question), (ii) *where* and *how* this information can be found, (iii) *when* it might be useful, and (iv) to *whom* it might be useful. In the Information Need Manager (see Fig. 3), the corresponding attribute values of the information need "*Where can I find Tutorial on EJB?*" are shown in the lower window pane. For example, the skill constraint specifies that the selected information need should only be offered to developers who (like Barbara) have not characterized themselves as an EJB expert.

For more information, please visit:
http://wwwagr.informatik.uni-kl.de/~holz/Prime