Dagobert Soergel	Anita Komlodi
College of Information Studies,	Department of Information Systems,
University of Maryland	University of Maryland Baltimore County
dsoergel@umd.edu	komlodi@umbc.edu

i-Conference 2005 - Grand challenges

Supporting life – work and leisure – in inclusive communities

From this overall challenge follow many specific challenges.

A system to support intellectual work and daily planning and decision making must provide an environment in which the user can
   (1) focus on tasks rather than on computer applications, requiring *functional or vertical integration*, and
   (2) seamlessly communicate and collaborate with other people and systems, requiring *horizontal integration*.

Functional integration

The system's core would integrate planning and task management with a total activity history and the user's personal collection(s).. A central ontology and vocabulary (including folder and mailbox hierarchies) would support concept exploration, organizing the user's collections (with most metadata derived from intrinsic object characteristics and user activity on objects), search, finding the right word, spell check, translation, etc, scouring other sources as needed. The system would learn new concepts, terms, and relationships from user actions.

From this core many specific functions (Figure 1) could be accessed seamlessly, providing intelligent processing and support under user control. For example, a lawyer would
   - insert new issues arising from a case into the ontology and link them to Westlaw key numbers,
   - use them to search and to arrange search results,
   - start a brief using a document template augmented by the issues,
   - drop a quote from a decision into the brief (automatically linked to the source), and
   - have the system check that decisions cited have not been overturned.

Email would be composed with the user's word processor.

### Horizontal integration: Communication and collaboration

This involves
   - selective sharing of files, such as the core component, in a group,
   - easy publication in any format,

- easy annotation of texts to send to others, including voice annotation with automatic transcripton,
- seamless messaging, and
- a service for identifying people with similar or complementary interests.

Inclusive community

Participants need access to hardware and software **and** knowledge of the system's intellectual structure and use. Since most people are unwilling to explicitly learn about information systems, the system must be self-explanatory to the extent possible and surreptitiously tutor and teach users about itself to the extent necessary.
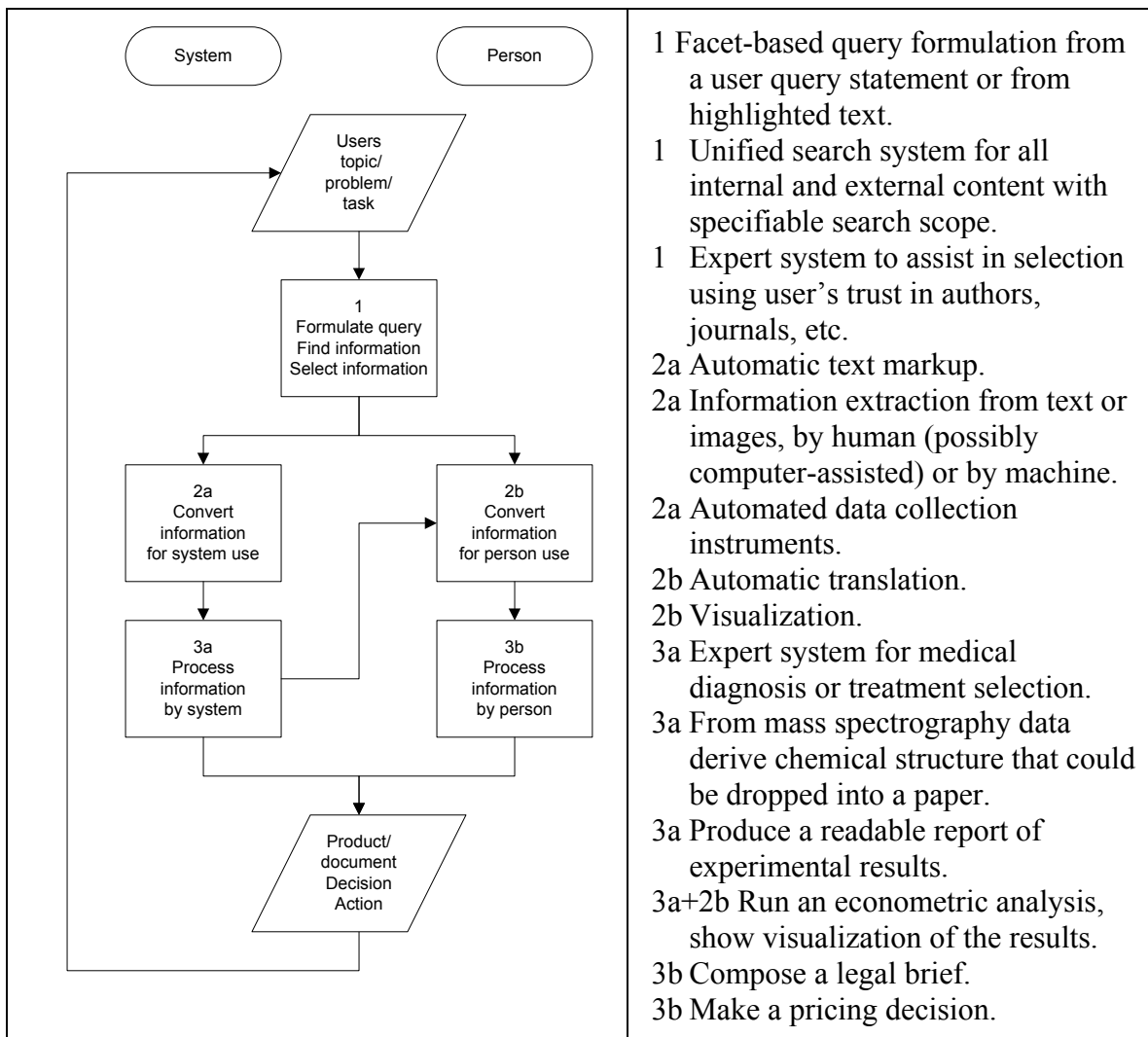
1 Facet-based query formulation from a user query statement or from highlighted text.
1 Unified search system for all internal and external content with specifiable search scope.
1 Expert system to assist in selection using user's trust in authors, journals, etc.
2a Automatic text markup.
2a Information extraction from text or images, by human (possibly computer-assisted) or by machine.
2a Automated data collection instruments.
2b Automatic translation.
2b Visualization.
3a Expert system for medical diagnosis or treatment selection.
3a From mass spectrography data derive chemical structure that could be dropped into a paper.
3a Produce a readable report of experimental results.
3a+2b Run an econometric analysis, show visualization of the results.
3b Compose a legal brief.
3b Make a pricing decision.

Figure 1. Task support information pipeline with example challenges