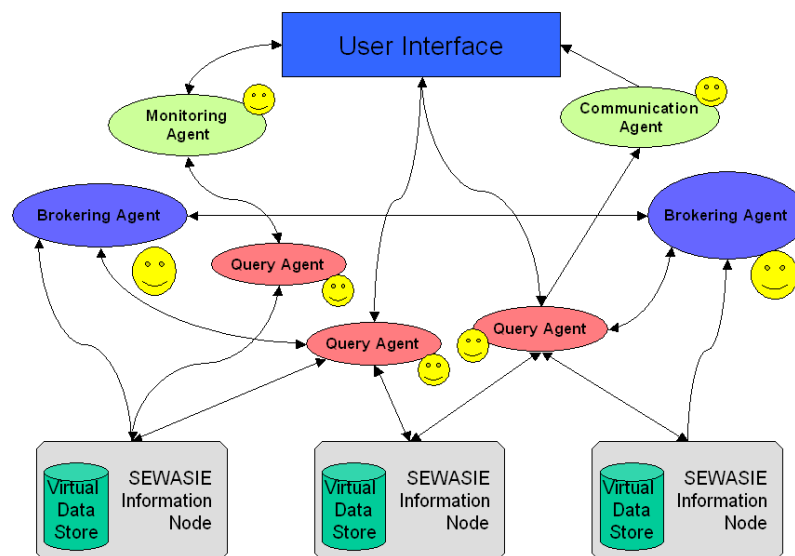


SEWASIE Annual Report 2004



<http://www.SEWASIE.org/>

SEWASIE aims to design and implement an advanced search engine enabling intelligent access to heterogeneous data sources on the web via semantic enrichment to provide the basis of structured secure web-based communication.



Summary of Activities

- Following the design phase and the parallel development of the first core modules (query management, ontology design, user interface) the project achieved the first integration of the core and auxiliary modules into a first semantic search engine prototype. Software agents have been used to implement the software modules and enact user-relevant policies like identification.
- While several query types are already supported, more subtle and complex query formats are being explored to define common interpretations and query management policies. Ontology management issues will be tackled next. Techniques have been studied and tested to improve the workflow at the user end, at the intermediary level, and at the source end. This is particularly significant both from the design and development point of view, since it extends the general “ergonomics” of the system. It is also significant from a general economics point of view, since the deployment of the system in a real work environment will require an enterprise or even sector-level strategy to achieve an opportunity threshold whereby the users perceive the system as

a useful tool to use due to available content and quality of results, with a favourable cost/benefits ratio.

- The final year of the project aims for a stable and general purpose reference prototype of the system, implementing the advanced features (multiple brokering agents, changing and multilingual ontologies), as well as a significant and autonomous deployment in a real working context.

Integration of core modules in an agent-based architecture

- The SEWASIE core modules consist of the user interface and support environment, the intermediate brokering infrastructure, the information (source) node environment, and the query agent. While early prototypes of the source node environment management and of the query management functions had been developed during the first year of the project, the second year has seen the accomplishment of all components and their first integration. The core modules support the basic interaction of the end user with the search engine; namely, the user defines a query through the user interface, using semantic rewriting of terms to help disambiguation, and then issues a query agent with the request to the system. The query agent addresses a brokering agent and requests directions to sources with information which may satisfy the query. After receiving the directions to the sources it rewrites the query as a set of partial queries to be submitted to each source. The responses are collected and reconciled, and finally returned to the user in terms of the original ontology used for the formulation of the query.

Integration of extended feature modules

- The extended features of the system include negotiation systems, OLAP systems, monitoring and visualization components. All of these may be integrated with the basic search engine user interface to provide an integrated user environment where sophisticated analysis and processing may be performed. This may require substantial user interaction, like in a negotiation system where results from a query for suppliers of certain goods are injected to allow the establishment of (possibly several) contacts leading to competitive bids and a final contract. Alternatively, it may require no or minimal user participation while monitoring a certain information domain for specific events to occur, the events being defined as changes to the information content of some sources, content whose presence or absence may be decided with a query which is repeated periodically.
- These systems have been enhanced to match the interfaces of the query management system, and thereby integrated into the user environment in a modular fashion. This will allow the development of a modular offer, which may include a larger set of functionalities to support more sophisticated environments and market niches.

User testing and feedback, general market prospects

- User testing is under way and more testing is currently being planned to validate the integrated system in more and more complex and demanding environments.
- The first test activities focused on the textile sector of a dynamic industrial district in the province of Modena (Italy), involving CNA and SMEs, and in collaboration with some medium-sized German firms (specifically for the OLAP, monitoring, and visualization modules).
- A second test plan is being finalised to focus on a mechanical high tech industry (moulding of plastic and metal)

Dissemination and exploitation

- Extensive dissemination is taking place, presenting the results obtained both at the research level and at the development and exploitation levels. The following has been achieved during the first part of the project.
 - 10 journal publications
 - 45 presentations at conferences
 - 14 presentations at meetings
 - 3 chapters in books
 - 26 invited talks and tutorials
 - 1 patent application
 - 1 award
 - 35 conference sections organised

Establishing contacts with other initiatives in the Semantic Web area

- Contacts have been established with the SWAP project, which focuses on similar goals as SEWASIE with an emphasis on peer to peer architectures.
- Several of the SEWASIE partners are engaged in networks of excellence and are using these networks to announce and disseminate results. For example FUB is engaged in **AGENTLINK** and **CoLogNET**, and UNIMO participates in **AGENTLINK** as well, UNIROMA participates in **INTEROP** and FUB in **KNOWLEDGEWEB**.
- The networks support the dissemination of results obtained in the SEWASIE project by providing sufficient infrastructure (event calendar, mailing lists, summer schools, etc.).
- The Query Manager and the Ontology Builder core components will be tested within the Emilia-Romagna (Italy) funding project CROSS (*Centro per l'innovazione ed il trasferimento tecnologico per l'interoperabilità e le reti di imprese*), PPRRIIT 2004, mis. 3.4, Emilia Romagna, Italy.

User Involvement, Promotion and Awareness

- Several formal and informal meetings have been conducted with prospective and potential users, the main aim being the identification of important features which might help identify the system as a secure and effective work tool for the exploration of (a portion of) the Internet.
- Several refinements have been adopted as a result of user recommendations, and while such activities are requiring significant resources it is widely held that this effort will ultimately lead to a significantly better product.

Future Work

Future work includes completion of the prototype sequence leading to the final project prototype, and the definition of the ensuing dissemination and exploitation phase.

Further Information

More information will be posted and updated on the project web site at <http://www.sewasie.org/>