

The Project at a glance

SEWASIE is a 36 months research project, started in May 2002. SEWASIE aims at implementing an advanced search engine, which will provide European SMEs with intelligent access to heterogeneous information on the Internet. Relying on an architecture that organises information based on its semantic values, the SEWASIE search engine will detect meaningful data complying with user preferences and requests. Integrating the search and negotiating facilities in user-friendly interfaces, SEWASIE will reduce transaction costs for SMEs, powerfully enhancing their access to key technologies and business opportunities.

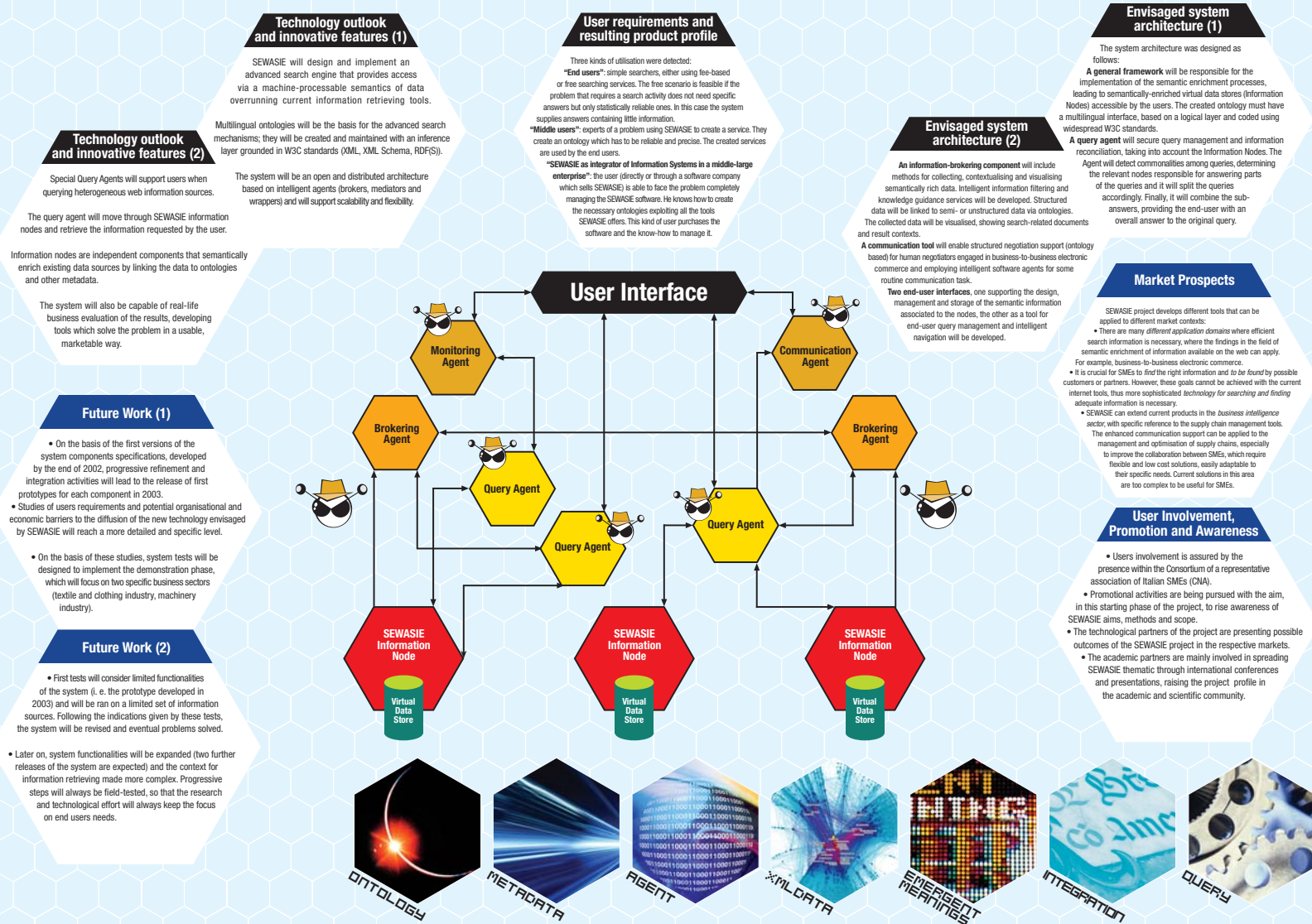
Consortium Members

- ▶ **Università degli Studi di Modena e Reggio Emilia (I, coordinatori)**
- ▶ **CNA Servizi Modena S.c.a.r.l. (I)**
- ▶ **Università degli Studi di Roma "La Sapienza" (I)**
- ▶ **Rheinisch-Westfaelischen Technischen Hochschule Aachen (D)**
- ▶ **Libera Università di Bolzano (I)**
- ▶ **Thinking Networks AG (D)**
- ▶ **IBM Italia S.p.A. (I)**
- ▶ **Fraunhofer Gesellschaft zur Förderung der angewandten Forschung eingetragener Verein (D)**



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SEMantic Webs and Agents in Integrated Economies



Technology outlook and innovative features (1)

SEWASIE will design and implement an advanced search engine that provides access via a machine-processable semantics of data overrunning current information retrieving tools.

Multilingual ontologies will be the basis for the advanced search mechanisms; they will be created and maintained with an inference layer grounded in W3C standards (XML, XML Schema, RDF(S)).

The system will be an open and distributed architecture based on intelligent agents (brokers, mediators and wrappers) and will support scalability and flexibility.

Technology outlook and innovative features (2)

Special Query Agents will support users when querying heterogeneous web information sources.

The query agent will move through SEWASIE information nodes and retrieve the information requested by the user.

Information nodes are independent components that semantically enrich existing data sources by linking the data to ontologies and other metadata.

The system will also be capable of real-life business evaluation of the results, developing tools which solve the problem in a usable, marketable way.

User requirements and resulting product profile

Three kinds of utilisation were detected: "End users": simple searches, either using fee-based or free searching services. The free scenario is feasible if the problem that requires a search activity does not need specific answers but only statistically reliable ones. In this case the system supplies answers containing little information.

"Middle users": experts of a problem using SEWASIE to create a service. They create an ontology which has to be reliable and precise. The created services are used by the end users. "SEWASIE as integrator of Information Systems in a middle-large enterprise": the user (directly or through a software company which sells SEWASIE) is able to face the problem completely managing the SEWASIE software. He knows how to create the necessary ontologies exploiting all the tools SEWASIE offers. This kind of user purchases the software and the know-how to manage it.

Envisaged system architecture (1)

The system architecture was designed as follows:

A general framework will be responsible for the implementation of the semantic enrichment processes, leading to semantically-enriched virtual data stores (Information Nodes) accessible by the users. The created ontology must have a multilingual interface, based on a logical layer and coded using widespread W3C standards.

A query agent will secure query management and information reconciliation, taking into account the Information Nodes. The Agent will detect commonalities among queries, determining the relevant nodes responsible for answering parts of the queries and it will split the queries accordingly. Finally, it will combine the sub-answers, providing the end-user with an overall answer to the original query.

Envisaged system architecture (2)

An information-brokering component will include methods for collecting, contextualising and visualising semantically rich data. Intelligent information filtering and knowledge guidance services will be developed. Structured data will be linked to semi- or unstructured data via ontologies. The collected data will be visualised, showing search-related documents and result contexts.

A communication tool will enable structured negotiation support (ontology based) for human negotiators engaged in business-to-business electronic commerce and employing intelligent software agents for some routine communication task.

Two end-user interfaces, one supporting the design, management and storage of the semantic information associated to the nodes, the other as a tool for end-user query management and intelligent navigation will be developed.

Market Prospects

SEWASIE project develops different tools that can be applied to different market contexts:

- There are many different application domains where efficient search information is necessary, where the findings in the field of semantic enrichment of information available on the web can apply. For example, business-to-business electronic commerce.
- It is crucial for SMEs to find the right information and to be found by possible customers or partners. However, these goals cannot be achieved with the current internet tools, thus more sophisticated technology for searching and finding adequate information is necessary.
- SEWASIE can extend current products in the business intelligence sector, with specific reference to the supply chain management tools. The enhanced communication support can be applied to the management and optimisation of supply chains, especially to improve the collaboration between SMEs, which require flexible and low cost solutions, easily adaptable to their specific needs. Current solutions in this area are too complex to be useful for SMEs.

User Involvement, Promotion and Awareness

- Users involvement is assured by the presence within the Consortium of a representative association of Italian SMEs (CNA).
- Promotional activities are being pursued with the aim, in this starting phase of the project, to raise awareness of SEWASIE aims, methods and scope.
- The technological partners of the project are presenting possible outcomes of the SEWASIE project in the respective markets.
- The academic partners are mainly involved in spreading SEWASIE thematic through international conferences and presentations, raising the project profile in the academic and scientific community.

Future Work (1)

- On the basis of the first versions of the system components specifications, developed by the end of 2002, progressive refinement and integration activities will lead to the release of first prototypes for each component in 2003.
- Studies of users requirements and potential organisational and economic barriers to the diffusion of the new technology envisaged by SEWASIE will reach a more detailed and specific level.

Future Work (2)

- On the basis of these studies, system tests will be designed to implement the demonstration phase, which will focus on two specific business sectors (textile and clothing industry, machinery industry).
- First tests will consider limited functionalities of the system (i. e. the prototype developed in 2003) and will be ran on a limited set of information sources. Following the indications given by these tests, the system will be revised and eventual problems solved.

- Later on, system functionalities will be expanded (two further releases of the system are expected) and the context for information retrieving made more complex. Progressive steps will always be field-tested, so that the research and technological effort will always keep the focus on end users needs.

