

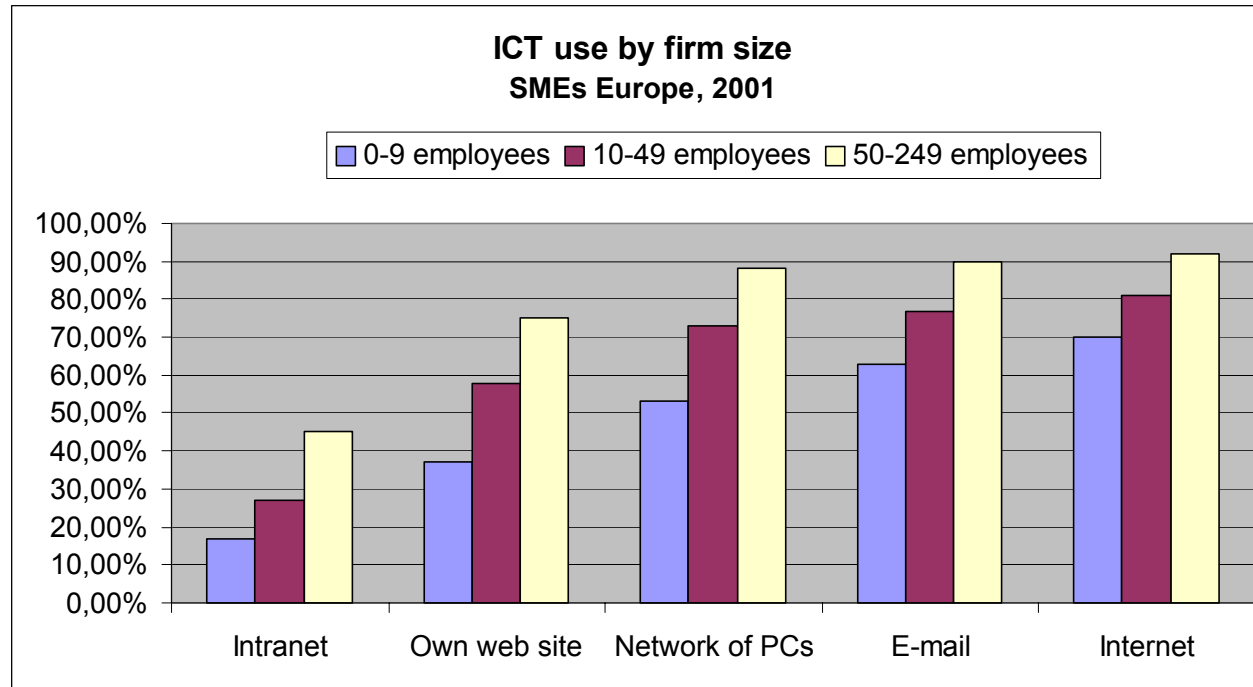
Semantic Web per la piccola e media impresa: il progetto SEWASIE

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Summary

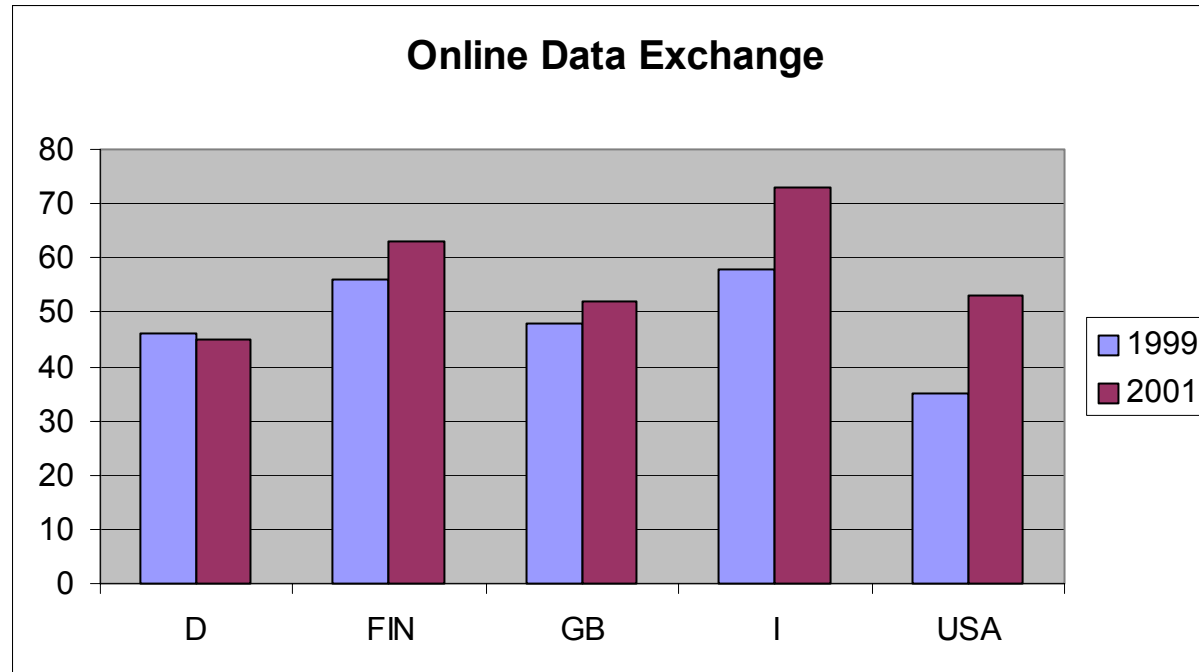
- Modern ICT and SME, an overview
- SEWASIE official presentation (Prof. Sonia Bergamaschi - D7.5)
- Open issues and discussion

ICT and SME in Europe



2001 ENSR Survey on SMEs, DG Enterprise, European Commission

Online Data Exchanges



BMWT (2001), Stand und Entwicklungsperspektiven des elektronischen Geschäftsverkehrs in Deutschland, Europa und den USA unter besonderer Berücksichtigung der Nutzung in KMU in 1999 und 2001

Barriers (1)

Type of barriers	Examples
Perceived benefits and costs	<ul style="list-style-type: none"> Unproven benefits E-business does not apply to the enterprise/products Set-up costs Maintenance costs Relevant organisational changes Set-up times Limited resource for experimentation
Organisational readiness	<ul style="list-style-type: none"> Lack of technological skills and knowledge Inadequate or no internal IT staff Unawareness of the full e-commerce potential Lack of managerial commitment Poor external support
External environment	<ul style="list-style-type: none"> No critical mass No confidence in regulatory-legal system Unwillingness to exchange information Lack of trust Existing market relationships Lack of external pressure to adopt Lack of standardised solutions

Anna Tavernari, CNA: Analysis of the critical economic, organisational, and technical factors hindering the use of semantically rich information and tools, SEWASIE D7.8 (c)

Barriers (2)

“More recent data (European Commission, 2003) show that the diffusion of the basic ICT infrastructure (e-mail and WWW) among European companies is quite completed, while it is still in its infancy the implementation of real e-business solutions, especially for most SMEs.”

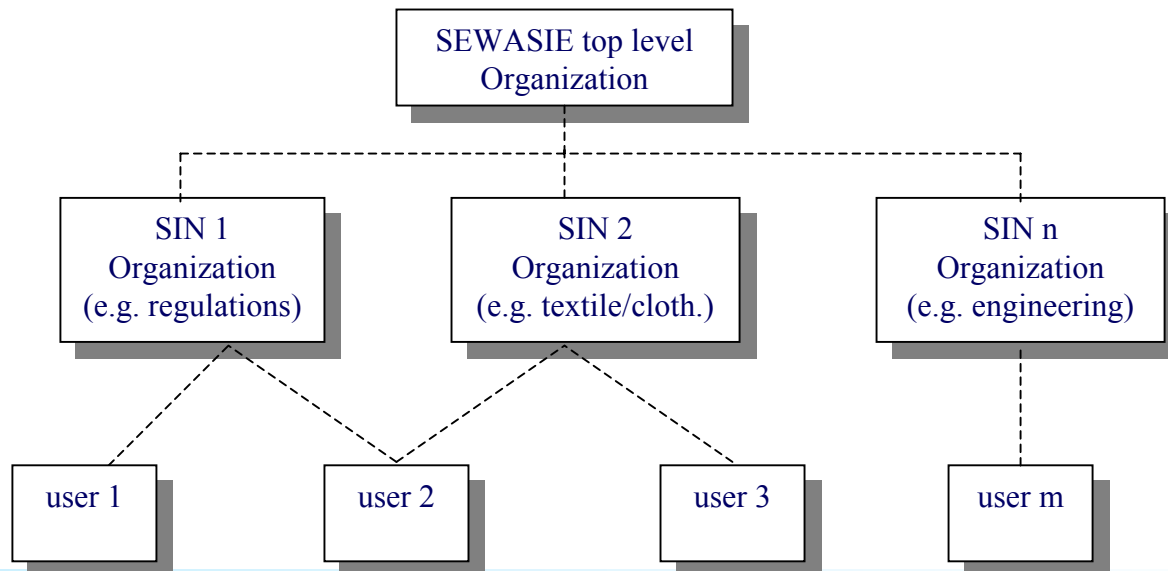
“More than other business users, SMEs have a strong interest in standardised and fully compatible ICT solution that stay relatively stable over time. Currently, the complexity and the lack of robustness of many e-commerce solutions are discouraging SMEs. In particular, since they do business with many different clients, they run the risk of becoming “locked-in” to a specific technology, used by a buyer but not others”

“A recurring problem in the development of network technologies such as e-commerce is the setting of *standards* (Electronic Markets, 2001). Different issues are raised at different levels: interoperability, portability, common semantics of messages, etc, each requiring specific solutions”

Anna Tavernari, CNA: Analysis of the critical economic, organisational, and technical factors hindering the use of semantically rich information and tools, SEWASIE D7.8 (c)

SEmantic Web and AgentS in Integrated Economies (SEWASIE)

SEWASIE aims at designing and implementing an advanced search engine enabling intelligent access to heterogeneous data sources on the web via semantic enrichment, thus improving the capability of SMEs to make a strategic use of information available online.



Project Presentation: SEWASIE aims and key features (Deliverable D7.5)

SEWASIE

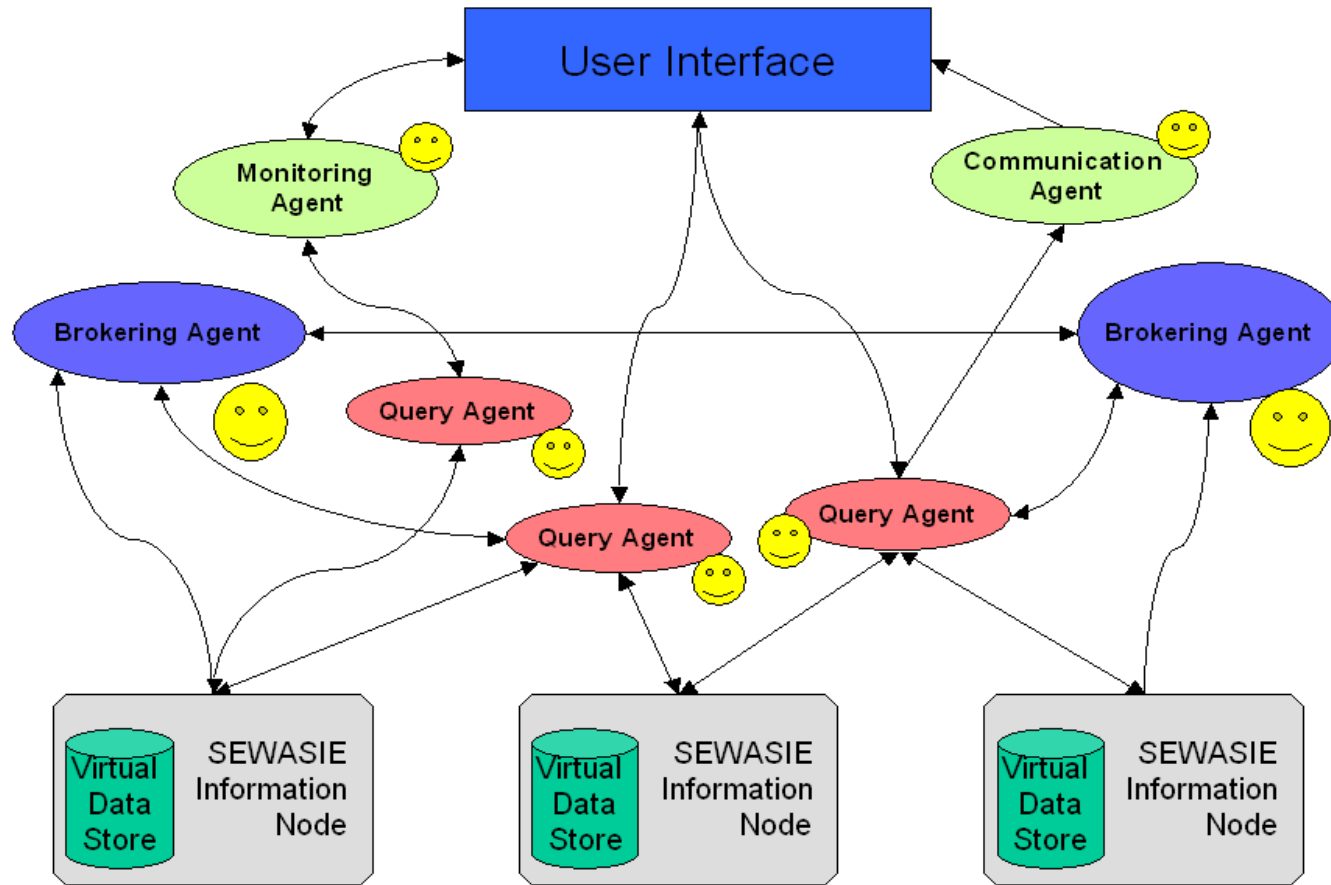
IST-2001-34825

Sonia Bergamaschi
Università di Modena

Short Project Description

- 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.
- Laying on an architecture that organises information on its semantic values, SEWASIE search engine will detect meaningful data, complying with users' preferences.
- Integrating the searching and negotiating facilities in user-friendly interfaces, SEWASIE will reduce transaction costs for SMEs, powerfully enhancing their access to key technologies and business opportunities.

Architecture of the SEWASIE System



Summary of 2002 Activities

- SEWASIE started on May 2002.
- Preliminary studies selected the basic common environment (methodologies, languages, tools) of reference for the project and the development and target platforms.
- Technical activities always focused on potential end-users requirements, which had been assessed in the early stages of the project, through an overview on SMEs informative and business needs.
- Specifications of the various system's components reached a first version by the end of the year.
- These versions will be progressively refined and integrated: 2003 will be very intense, since the release of first prototypes for each component is on schedule.

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 (that are the basis for the advanced search mechanisms) 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 accommodate scalability and flexibility issues.

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 have been analyzed:
 - "**End users**": simple *searchers*, either using charged or free searching services. The latter 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 running as well with the aim, in this starting phase of the project, to rise awareness of SEWASIE aims, methods and scope.
- The technological partners of the project are presenting SEWASIE possible outcomes in respective markets.
- The academic partners are mainly involved in spreading SEWASIE thematic through international conferences and presentations, raising the project's profile in the academic and scientific community.

Future Work (1)

- On the basis of first versions of the various system's 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 about 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.
- 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).

Future Work (2)

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

The SEWASIE Consortium

- Università degli Studi di Modena e Reggio Emilia (I, coordinator)
- CNA Servizi Modena S.c.a.r.l. (I)
- Università degli Studi di Roma “La Sapienza” (I)
- Rheinisch Westfaelische Technische 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)

Open issues (1)

The 'global view'

- If accuracy is an issue, then a 'sound' global view (ontology) is crucial
- Quality ontologies require human intervention
- Cost of acquisition and maintenance

Open issues (2)

Query formulation

- Structured queries are needed (conjunctive queries)
- Users must interact with the system
- Ontology navigation vs NL disambiguation

Open issues (3)

An open platform for Web ontologies

- Data integration systems based on global ontologies require a certain amount of centralized organization
- The Web, on the other hand, is decentralized and self-organizing
- Need for a decentralized, self-organizing platform for creating and exploiting ontologies over the Web