Knowledge Acquisition, Visualization and Assessment System

Fact Sheet

Project Information

<table>
<thead>
<tr>
<th>KAVAS</th>
<th>Funded under</th>
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<tr>
<td>Grant agreement ID: A2019</td>
<td>Specific programme of research and technological</td>
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<td>development (EEC) in the field of telematic systems</td>
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<td>in areas of general interest - Health care (AIM)</td>
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<td>- 1990-1994</td>
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<tr>
<th>Start date</th>
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<td>1 January 1992</td>
<td>31 December 1994</td>
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<tr>
<th>Total cost</th>
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<td>€ 0,00</td>
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<th>EU contribution</th>
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Objective

The project aims to develop a tool, named KAVIAR (Knowledge Acquisition, Visualisation, Assessment and Refinement), that assists the medical professionals to make their knowledge explicit and to determine the quality of it in practical application.

A tool, named KAVIAR (Knowledge Acquisition, visualization, Assessment Refinement), is being developed to assist the medical profession in making their and to determine the quality of it in practical application.

The achievements s preparation of the 2 specifications User Requirements
Specification and Function and Overall design of the KAVIAR Tool. A framework for quality assessment of med knowledge has been developed.

Emphasis has been put on initializing the integration in this specification and the early experimental part of the project. This has required selection of an implementation; selection of a common development methodology; a development platform; strict coding guidelines for KAVIAR tool; development of functionality for this integration.

Modern medical diagnostic technology generates increasing volumes of complex quantitative and qualitative data. Unfortunately, physicians are not equipped to handle the consequences of this high flow. The increase in volume and types of diagnostic procedures is therefore not necessarily matched by an equivalent benefit for the patient. Even worse, the high data and information load on the physician makes him incapable to distinguish the significant data buried in piles of insignificant chunks of data. Data and information pollution must be eradicated for full benefit of modern diagnostic technology at a reasonable cost. The project puts emphasis on providing a means for reducing this problems of data and information pollution.

Technical Approach

The prototype tool is based on a synthesis of techniques for knowledge acquisition from experts (knowledge elicitation techniques) and from database (machine learning techniques), and will contain methods for integrated knowledge verification and validation. The tool constitutes a toolkit incorporating several methodologies and techniques. Emphasis is put on the cognitive aspects in the user-computer interaction, i.e; in visualising the knowledge gained (deep and/or shallow) as well as its accompanying quality measures.

Key Issues

The key issues of the project work are:

- Development of a software tool for knowledge capture, evaluation and refinement. The role of the tool defined and planned is an assistant for medical experts and researchers to make explicit, qualify and refine their knowledge. It is not another tool for the knowledge engineer.
- User evaluation of the tool by physicians (therein clinicians). The pilot project KAVAS developed during the AIM Exploratory Action a rather exhaustive evaluation methodology for knowledge-based systems, which will now be further refined during its practical application for evaluation of the KAVIAR tool and its component parts and the medical knowledge they derive. Evaluators will be both the clinical sites within the project as well as the clinicians associated with the project.
- Transfer of knowledge: the project partners have previously experimented with
transfer of medical data, information and knowledge, and realised its central importance for the accomplishment of the telematics services within health care. It is essential for efficient and effective medical care in a European perspective that the derived knowledge is transferable. Transfer of knowledge is enabled by means of knowledge-based systems and medical teleconsultancy services. Requirements for achievement of telemedical consultancy services and methods and measures for transfer calibration/compensation will be dis-cussed.

- Quality assessment of medical knowledge, which is planned as an integrated functionality of the tool.

The project work is based on a feasibility study with pilot experiments performed in the KAVAS (A1021) Project under the AIM Exploratory Action.

Expected Impact

The leading philosophy of the project is to provide a means for the rationalisation and improvement of quality and efficiency of the Health Care Provision. Hence, the impact will be an improvement of quality and efficiency of the Health Care Service. For experimental purposes the medical domains have been narrowed to data rich domains within laboratory medicine and internal medicine, and in order to assess the generality of the KAVIAR tool immuno histology has been selected as a specific trial domain during the evaluation. The tool is widely applicable by nature, however, it is foreseen that the initial impact will be seen within the domains of laboratory medicine and internal medicine.

Relationship to Other Projects and Actions

The KAVAS 2 project participates in the Project Line "Knowledge Based and Decision Support Systems". The objective of this Project Line is to establish a set of workshops in connection with the Concertation Meetings, in which joint themes and issues are discussed on a scientific and/or development basis. The outcome of these workshops will be the synthesis of short position papers, each com-prising e.g. a summary, suggestions, guidelines, reference material, and alike, as agreed at the first Project Line Meeting.

Official links have been established with the OpenLabs (A2028) project resulting in joint publications, as well as with the IDMR (A2016) project. IDMR's data base will serve as a testbed for the tools developed; and a partner from IDMR will serve as an independent user evaluator in exchange for the knowledge elicited.

For further user evaluation a formal collaboration has been established with Prof. H.E. Solberg, Department of Clinical Chemistry, Oslo University Hospital.

Informal links exist due to the fact that various key persons are involved also in other
AIM projects and activities (GALEN, TANIT).

KAVAS 2 project partners, are associated with the purpose of getting access to most of the data material and domain knowledge needed; in return they get the intellectual right to the medical knowledge gained from the experiments.

Several members of the Consortium will be contributing to and participating in an accompanying measure on Assessment of Information Technology in Medicine (ATIM).

Dependencies

The project has no dependencies with other AIM, ESPRIT or other projects, but has several informal collaborations with clinical sites and independent researchers / organisations.

Testbed Sites and Verification

The project demonstrator concerns elicitation and transfer of medical knowledge-based systems with subsequent evaluation, and will be provided as part of the global evaluation and verification approach.

Fields of science

- medical and health sciences ➔ clinical medicine ➔ internal medicine
- natural sciences ➔ computer and information sciences ➔ artificial intelligence ➔ expert systems
- natural sciences ➔ earth and related environmental sciences ➔ environmental sciences ➔ pollution
- engineering and technology ➔ medical engineering ➔ medical laboratory technology ➔ diagnostic technologies
- natural sciences ➔ computer and information sciences ➔ artificial intelligence ➔ machine learning

Programme(s)

FP3-AIM 2 - Specific programme of research and technological development (EEC) in the field of telematic systems in areas of general interest - Health care (AIM) -, 1990-1994

Topic(s)

Data not available
Call for proposal
Data not available

Funding Scheme
Data not available

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No data

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