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ITHACA
Telematics for Integrated Client Centred Care

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Abstract: ITHACA is a project supported by the healthcare telematics programme of the European Commission's Fourth Framework Programme. The user organisations involved in ITHACA shared a philosophy of community based care that focuses on the client and development of the multi-disciplinary care team, involving a range of professionals delivering care to clients in their own homes or community facilities. The focus of ITHACA system is to support client case management which includes client assessment, care planning, delivery and evaluation of care outcomes. System analysis and design process identified that practices and procedures in health and social care are very similar throughout the diverse sites represented in ITHACA and they are represented in a generic model that describes the great majority of local health and social care requirements. The ITHACA demonstrator will consist of a client/patient centred community care information system, which is distributed across a number of community care centres within a given region and covers the homes of selected clients.

1. Introduction

ITHACA is a project supported by the healthcare telematics programme of the European Commission's Fourth Framework Programme. The project commenced in January 1996 and will end in December 1998. Health authorities in Europe are facing similar challenges in providing community health and social care [1], including:

- Rising costs of care within institutional settings and the need to develop primary care.
- An expectation by the citizen to be able to make choices about their own care.
- The need for agencies to work together to provide co-ordinated care for vulnerable people in the community.
- The need to provide care which is effective, outcome-oriented and demonstrates value for money.
- A shift in demography with an increasing proportion of elderly people in the population.

It is the need to address these challenges that has lead to the creation of the ITHACA project to seek common solutions.

The user organisations involved in ITHACA have a shared philosophy of community based care that focuses on the client of the services and development of the multi-disciplinary care team, involving a range of professionals delivering care to clients in their own homes or community facilities. Care provided should be goal-oriented with the involvement of

the client in setting their own objectives in negotiation with professionals. The goal of care for very frail or vulnerable clients is to help them maintain their autonomy within home care settings and the use of telematic solutions may provide the means to do this. The focus of ITHACA is on support for case management which includes client assessment, care planning and delivery of care. The demonstrator will consist of a client/patient centred community care information system, which is distributed across a number of community care centres within a given region and covers the homes of selected clients. The core functionalities of the system will be: assessment, care planning, care delivery, optimisation services for management/administration and home telecare services

2. Objectives of the Project

The overall aim of the ITHACA project is to achieve improved quality of care and quality of life, access to services, empowerment and choice for patients and clients through support for:

- client focused care
- multidisciplinary and inter-agency working
- improved access to information

and for health care provider organisations:

- secure better value for money
- support new models of care/re-engineered processed
- provide more care in the community
- impact on European strategy
- develop an market for products

To achieve this high level aim, a number of specific objectives have been defined, These are:

- *To implement and validate demonstrators based on generic functional specifications for mental health, maternal and child health and elderly incorporating the generic concepts and components of EPIC.*

User requirements have been collected from all of the ten sites involved in the ITHACA project using a common methodology. This information has been consolidated into a common user requirements functional model with the common requirements for all client groups and sites identified. This has been used to develop generic functional specifications for the demonstrators for the four lead sites (Andalucia, Belfast, Porto and Turku).

- *To tailor the system developed to new pilot sites with different primary care systems using the experience of the existing sites to provide further validation of the system.*

All ten sites have been involved in the description of user requirements so that their needs could be included within the functional model and any differences identified. The new sites, termed replication sites, will be offered the opportunity to chose the application from any of the four lead sites that best meets their needs following verification and early validation.

- *Agree common values and standards for care in the community and achieve consensus on assessment, care planning and outcomes.*

A multidisciplinary users' group has been formed from all ten ITHACA sites, including doctors working in the specialities of mental health, elderly care and maternal and child health as well as general practitioners, nurses, social workers, health service managers and other allied professions such as occupational therapists and physiotherapists. The users' group has worked assessment and the development of generic multidisciplinary assessment, care planning, confidentiality and security, critical success factors and the re-engineering of services, relevant to ITHACA.

- *Survey and integrate existing tools which will improve the effectiveness and efficiency of services e.g. data access tools for professionals working from the clients homes.*

A survey of existing technologies relevant to ITHACA has been completed. Based on the user requirements, candidate technologies for integration with ITHACA are being selected, for example, the use of hand held computers and bar coding for health care workers visiting clients a home.

- *Integrate home telecare management and evaluate its value in maintaining dependent people at home.*

For the elderly, home telecare services will be integrated within ITHACA. This means that the home telecare operators operating a 24 hour alarm service will have access to information held within the clients community care record and that the report of any event dealt with by the alarm operator will be available to the professionals normally responsible for the care of individual clients.

- *Investigate the potential of existing technologies to analyse information on client centred database and optimise services using executive information systems and geographical information system.*

An important aspect of ITHACA is the opportunity provided by a person centred information system to aggregate and analyse the information within the system to improve the services provided. Working with Ordnance Survey, Northern Ireland, a demonstrator of the possible uses of a geographical Information System for the management and planning of community services using data from a person centred information system will be created and the potential scenarios for this demonstrator have been described.

- *Create common products.*

To ensure that a working demonstrator is provided at each of the lead sites, one developer is working with each of the lead sites. Each developer is working from the generic functional specification and have collaborated in the design and modelling of the ITHACA prototypes to identify those software objects which have a common definition and behave in a consistent way within a core data model.

- *Provide adequate mechanisms for confidentiality, security and privacy.*

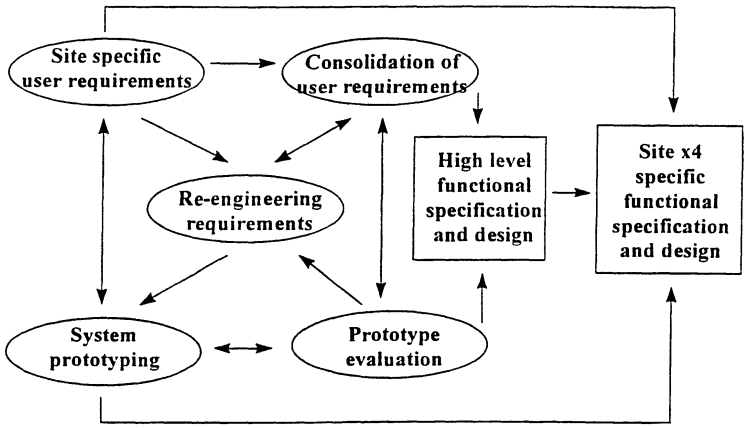
The importance of confidentiality and security has been recognised by the project and the users have undertaken a security risk analysis for ITHACA. Further work of agreeing access rights will be undertaken locally.

3. Progress of the Project

The first year of the project has been mainly devoted to the collection of user requirements. the development of the functional specifications and identification of suitable technologies and software tools for service optimisation and home care. A great deal of effort was given to the development of the functional specifications and the system high level which defines a common community care framework that is applicable to all ITHACA client groups (Elderly, Mother & Child and Mental Health) at all 10 user sites around Europe and Canada.

The diagram below shows the steps, the activities and the approach that resulted to system specification and design.

SYSTEM SPECIFICATION AND DESIGN



Site specific user requirements for the above mentioned client groups at the ten user sites around Europe and Canada were collected using a common methodology. They were processed, evaluated and *consolidated into a generic report of user requirements* across all client groups and sites. A *system prototype* was developed and translated to the language spoken in every user site. It was *evaluated* and adopted to local requirements. *Re-engineering requirements* for managing and operating community client centred care services were identified by managerial and health and social professionals. An iterative process between the activities described in the above diagram resulted to the *high level functional specification and design models* of the ITHACA system. The *high level functional specification and design* models are tailored to meet the *site specific requirements* of the four demonstration sites.

One of the aims of the ITHACA project is to identify best practice in community health and social care throughout the EEC, using the countries and sites involved as representative samples of different European practices. Through the modelling process it was identified that practices and procedures in health and social care were very similar throughout the

diverse sites represented in ITHACA and they could be represented in a generic model that describes the great majority of local health and social care requirements.

The development of the application software for the demonstrators, based on the ITHACA generic models, will take place during the first half of 1997 and the verification and early validation of the demonstrators will take place during the second half. During 1998, the demonstrators will be implemented in all sites and full demonstration and validation of the ITHACA system will take place.

4. Concluding remarks

The Community care functions and tasks described in user requirements appeared to suggest unique requirements at local sites, however by a long iterative process of modelling and abstraction, it has been identified that there are essentially generic. Furthermore, the exercise of modelling the user requirements was highly instructive in providing a forum for particular ideas to be tested in a wider context, regarding better ways of practice and re-structuring particular processes of the community care system.

The success in defining an applicable generic model has implications within and beyond the ITHACA project. There is a reference model that can be used for the evaluation of any local healthcare procedure, facilitating the identification of 'best practice' and supporting the endeavour of re-engineering healthcare processes where appropriate. Prototype and system development benefits from having a well-defined structure for all the key software components that is needed in end-user applications. Finally, commercial system developers have an added incentive for developing applications that have a pan-European scope.

5. ITHACA Consortium

- South and East Belfast Health and Social Services Trust, Northern Ireland (Co-ordinators)
- Systems Team Group, U.K.
- Irish Medical System, Republic of Ireland
- Ordnance Survey, Northern Ireland
- Federation des Associations de Coordination Sanitaire et Sociale de L'Oise, France
- ETC - Societe Anonyme, France
- Azienda USSL, Italy
- TSD-Projects, Italy
- Servicio Andaluz de Salud, Spain
- Empresa Publica Hospital Costa del Sol, Spain
- Ingenia, Spain
- Health Office City of Turku, Finland
- Tampereen Tiedonhallinta Oy, Finland
- VTT Information Technology, Finland
- City Council of Gothenburg, Sweden
- Administracao Regional de Saude do Norte, Portugal
- Instituto de Engenharia de Sistemas e Computadores, Portugal
- Maternidade de Julio Dinis, Portugal
- Hospital Magalhaes Lemos, Portugal
- National Technical University of Athens, Greece
- Hellenic Red Cross, Greece
- Municipality of Amaroussion, Greece
- Grupo de Bioingenieria y Telemedicina Universidad Politecnica de Madrid, Spain
- Prodimed, Spain
- Saskatchewan, Canada

6. References

[1] L. Boydell, European Commission health telematic projects: The Belfast Experience. British Journal of Health Care Management, 1995, vol. 1, No 6, 297-301.