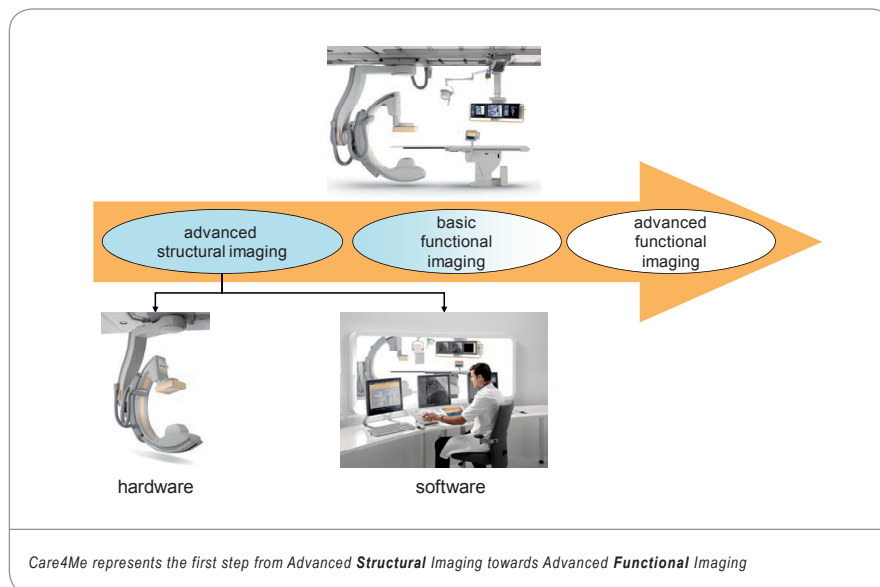


Project Profile

Overcoming healthcare dilemmas in an ageing population

A comprehensive approach to diagnosis and treatment based on new systems architecture

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The primary aim of Care4Me is to improve quality and productivity in healthcare using advanced medical imaging and decision-support methods combined with different knowledge sources, from early diagnosis to treatment and monitoring. The ultimate goal is to develop clinical prototypes of systems for cancer, cardiovascular and neurodegenerative diseases connected to hospital information systems in a new systems architecture. The project represents the first stage of a roadmap for future medical imaging systems.

As the average survival age of the Western population rises, healthcare services are faced with a growing number of chronic diseases requiring long-term treatment. The resulting costs and shortage of personnel present real challenges. This trend is driving healthcare innovation to the limit. Clinical and technological solutions are therefore required to collate medical data and knowledge from different sources and

domains in order to address the complete healthcare care cycle of all of those medical conditions.

MORE TREATMENT FOR THE SAME COST

Care4Me will develop advanced medical image analysis to provide clinicians with more functional and quantitative information, enabling earlier and more precise diagnosis. The result will be reduced cost per patient and the capacity to process more patients with the same number of medical staff.

The key technical innovation in Care4Me lies in developing new medical image-processing software capable of extracting relevant image information from very large data sets and combining this with other types of medical data and knowledge. This will enable greater functional and quantitative analysis of medical images and will facilitate earlier diagnosis and person-centric treatment.

CARE4ME (ITEA 2 ~ 08004)

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Partners

Alma IT Systems
Bull
CEA List
CIMNE
Compass
CVSS
Duodecim
Erasmus MC
ESI
HSP
HUS
INRIA
ISI
LUMC/LKEB
MediConsult
Medis
Nokia
Philips Healthcare
Philips Medisys
Pie Medical Imaging
Pohjola
Prowellness
Robotiker
UMC
VTT Technical Research Centre of Finland

Countries involved

Finland
France
Greece
The Netherlands
Spain

Project start

June 2009

Project end

June 2012

Contact

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Project Profile

IMPROVED MEDICAL CARE

The ultimate goal of Care4Me is to develop clinical demonstrators for three specific disease areas: cancer, and cardiovascular and neurodegenerative diseases. This will involve innovative medical image-analysis and decision-support systems, which will connect to current hospital information systems using newly developed systems architectures.

A series of clinical demonstrators will demonstrate the anticipated improvements from the project in the quality and efficiency of medical care. Different imaging techniques are being considered, including X-ray, computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET).

Key results of the Care4Me project will include:

- System architecture – an open and dynamic hospital-wide, service-oriented architecture (SOA) integrating models of anatomy and pathology, computer-aided detection and diagnosis components as well as decision-support tools. This system will be integrated into existing hospital infrastructures and information systems;
- Models of healthy and diseased organs and tissues that provide the knowledge needed to create a new generation of computer-aided detection and diagnosis processes. The models will map three types of frequently occurring disease in the ageing population: neurodegenerative disease – model of the ageing brain; cardiovascular disease – beating heart model; and cancer – perfusing tumour model;
- Image-analysis packages for computer-aided detection, quantification and diagnosis of disease progression over time; and
- Computerised decision-support systems to provide the clinician with a consistent overview of all information which is relevant for the individual therapeutic options or assessments and risk evaluations, taking into consideration the different medical procedures in the diagnosis and treatment of cancer, and cardiovascular and neurodegenerative diseases.

The Care4Me consortium combines strengths from various countries, involving

large and small medical equipment industries, research institutes specialising in service-oriented IT system design, implementation and deployment including the field of medical research. Finally, the consortium includes teaching hospitals that have experience and expertise in deploying innovative technologies for the benefit of their patients and society.

EUROPEAN AND WORLDWIDE IMPACT

Global economic growth, dramatic changes in demographics and the development of new medical diagnostic and interventional technologies have drastically altered the prevalence of diseases affecting mankind. The emergence of molecular healthcare and clinical information technology (IT) solutions are expected to deliver enablers to solve the problems of a healthcare system under increasing strain.

This ITEA 2 project fits within the long-term vision of a transition from structural to functional imaging in healthcare. This is expected to occur in three consecutive steps:

1. Advanced structural imaging;
2. Basic functional imaging; and
3. Advanced functional imaging.

Functional imaging not only detects the anatomy or structure of the body but also the condition at tissue level of organs within the body. To establish this transition, new detector electronics and new imaging software are required. This project is focusing on the first step in the innovative process – advanced structural imaging – and making a start on the second stage of innovation in terms of basic functional imaging.

Overall, Care4Me will deliver a new generation of medical imaging analysis software that provides more accurate, functional and quantitative information from the acquired images and combine this with clinical information and knowledge obtained from other sources. This will enable better patient care – particularly with regard to the ageing population – and it will also reduce healthcare costs. Through the approach, scale and composition of its consortium, this ITEA 2 project will strengthen the competitive position of Europe, especially for Care4Me consortium partners. This will in turn have an impact on worldwide marketing and employment opportunities.

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■ ITEA 2 – Information Technology for European Advancement – is Europe's premier co-operative R&D programme driving pre-competitive research on embedded and distributed software-intensive systems and services. As a EUREKA strategic Cluster, we support co-ordinated national funding submissions and provide the link between those who provide finance, technology and software engineering. Our aim is to mobilise a total of 20,000 person-years over the full eight-year period of our programme from 2006 to 2013.

■ ITEA 2-labelled projects are industry-driven initiatives building vital middleware and preparing standards to lay the foundations for the next generation of products, systems, appliances and services. Our programme results in real product innovation that boosts European competitiveness in a wide range of industries. Specifically, we play a key role in crucial application domains where software dominates, such as aerospace, automotive, consumer electronics, healthcare/medical systems and telecommunications.

■ ITEA 2 projects involve complementary R&D from at least two companies in two countries. We issue annual Calls for Projects, evaluate projects and help bring research partners together. Our projects are open to partners from large industrial companies and small and medium-sized enterprises (SMEs) as well as public research institutes and universities.



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