# Cardiff University Project Heralds New Approach to IT in Healthcare

*Healthcare@Home*, the research project led by Cardiff University in partnership with IBM has developed a new approach to the use of information technology in healthcare. The project delivers an open-standard framework for earlier detection of disease that allows healthcare providers globally to "plug and play" a wider range of technical solutions to deliver more 'personalized' and cost-effective services to their patients. The government's Technology Strategy Board is commending the project as an example of best practice.

Cardiff University's Diabetes Research Unit (DRU) in the School of Medicine and the Welsh e-Science Centre (WeSC) in the School of Computer Science have devised an approach based on real-world NHS processes for the management of long-term conditions, such as diabetes, that offers improved monitoring of outcomes. Patients' variables of interest (for example: blood glucose levels in the case of diabetes) can be monitored via sensors that use wireless communications to connect into mobile or home hubs to securely transfer the data to health service databases. Information based on specific trends in that data can be fed back to the patient for ongoing monitoring. *Healthcare@Home* offers national-scale consistency for measurement and prediction of acute and long-term disease risk, life-long health trends and evidence of treatment results for individual patients.

Ian Osborne, director of the Grid Computing Now! Knowledge transfer Network explains: "In targeting diabetes, the *Healthcare@Home* team has built a practical, innovative and integrated system for monitoring blood sugars which, when connected to the healthcare system, gives easy access to test results and the potential for identifying deterioration in health early, thus saving lives and treatment costs. It is an excellent example of the innovation that e-Science computing experts can bring to challenges in healthcare IT. Using the vision and power of grid computing, the team has built not just a solution for diabetes, but a platform for a wealth of other similar measurement protocols, vital in keeping chronic disease at bay."

Professor David R. Owens, CBE, and Director of the Diabetes Research Unit at Cardiff University said: "The initiative has usefully integrated several different technologies, clinical standard datasets, care pathways and advanced risk analysis via an uncomplicated approach that supports good clinical decision-making. The style is one that clinical teams will be familiar with as it comes directly from the policy drivers and clinical standards of the National Service Framework. If implemented, this project will allow staff to better prioritise the use of their time and resources and to direct more effort towards those patients having difficulty self-managing or at higher risk of developing complications. By allowing patients' access to and control of their own data, they will be able to gain greater understanding of their condition." Dr. Ed Conley, the project's business requirements analyst said: "Our approach has been driven by healthcare business processes, not led by technology. The result is a potentially disruptive model for the use of IT in healthcare."

John Crawford, Healthcare Solutions Manager for IBM in the UK and Ireland said: "With ever increasing pressures on acute healthcare services, many countries are starting to focus on how to keep people healthy, and manage chronic diseases, using new and more affordable models of healthcare delivery. In particular, supporting those with long-term conditions through the use of remote monitoring and patient feedback shows great promise across several disease types. This landmark project clearly demonstrates the potential of clinically-driven innovative thinking, underpinned by information technology, to transform how long-term conditions are managed, whilst improving the patient experience and outcomes"

Other companies have played a key role in making *Healthcare@Home* a success. Smart Holograms of Cambridge Science Park have developed wireless sensors that measure blood glucose and other analyte concentrations, while Zarlink Semiconductor have created technologies to assist in authentication of patient identity. Standardised means for 'binding' of device data to authenticated identity is a critical step for maintenance of safe and secure electronic health records.

Aspects of the *Healthcare@Home* project will be demonstrated at the Technology Strategy Board's *Innovate '07* event at: 1.15pm on Thursday, 8th November at the Queen Elizabeth II Conference Centre, Westminster, London.

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About the Healthcare @Home project, www.healthcareathome.info

*Healthcare@Home* tracks patients in the home by enabling devices such as blood glucose and blood pressure monitors to collect and transmit patient health data to their local clinic. The data for each patient enables clinicians to spot, and react to, trends in the patient's progress. Patients are encouraged to use educational tools and methods built into the system to help monitor their own condition. As the patient moves through the NHS Diabetes Care Pathway, which has been embedded into the *Healthcare@Home* Environment, clinicians can set upper and lower targets for each of the states monitored, and are therefore alerted to abnormal states in the patient condition. The solution also allows the clinical staff to track variables, for example, waist size, that could give patients a predisposition for certain conditions, and which will offer clinicians the opportunity for earlier intervention.

WeSC and DRU have worked with IBM on a scaleable Service Oriented Architecture (SOA) approach to monitoring. Grid computing techniques are used to federate distributed data repositories and to support data mining and analysis. Scaleable service-oriented technologies, such as those that IBM has contributed to *Healthcare@Home*, have already shown success in national healthcare programmes elsewhere. For example, Denmark's national eHealth Portal (sundhed.dk) has demonstrated improved adherence to care guidelines, faster exchange of test results, fewer duplicate procedures and more time for clinicians to spend with patients.

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## About Grid Computing Now!

The Grid Computing Now! Knowledge Transfer Network is a UK government intervention to stimulate the market adoption of grid computing to increase the UK competitiveness of UK plc. For more information, visit www.gridcomputingnow.org

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