Σ! 4053 RETEMES

Empowering healthcare with data exchange

The EUREKA RETEMES project improves healthcare industry standards for handling medical data. New developments in this field are critical – lives depend on the information processed. The successful implementation of a new protocol for data exchange could help boost the industry and lower financial pressure on healthcare providers.

Over the last decade, with the increase of the use of health insurance cards and electronic medical equipment, the amount of information managed by healthcare professionals has grown dramatically. The full exploitation of this new influx of data is, however, lagging behind. Supported by EUREKA, the reliability testing of medical systems, or RETEMES, project developed a normalised approach for the European medical industry, to ensure that electronic devices communicate together unfailingly.

Technology plays a critical role in the processing of patient information, the monitoring of patient health and in offering high-end medical services. Implantable medical devices like pacemakers; health insurance cards; medical assistance apparatus for home or hospital use; these data carriers are now an important part of life for many of us. To allow them to all work together, an international framework was established already in 1987 – the health level 7 standard, or HL7, widely used in hospitals and laboratories. But with the rapid expansion of medical technologies, the latest health insurance products and medical data systems no longer comply with the standard. Another major setback: medical devices created by different vendors are often incompatible, even though they use the same HL7 protocol.

Real-world impact

The RETEMES project team of engineers and data scientists set itself the objective to fix those shortcomings. Three companies and two universities, based in Germany and Romania, participated in the research project led by Sepp.med, a small business in the so-called 'German Medical Valley', some 200 kilometres south of Berlin. For more than three years, they tested communication protocols between different types of medical devices and managed to optimise the way they connect together through the HL7 standard.

This highly technical system of communication has been adapted by this international team to be more user-friendly. This was achieved by using 'pictorial specifications' models, using the Unified Modelling Language, or UML, a standard in the industry. The pictures used to communicate information serve as a common language for the engineers creating medical devices - and for the doctors using them. Dr Armin Metzger, the RETEMES project leader, explains: 'We closed the gap between engineering and real-world application.'

'We realised improvements by automated validation of the HL7 communication protocol for medical devices using Testing and Test Control Notation technology - TTCN-3.' In the future, the RETEMES system could be used as a standard for certifying the reliability of medical devices.

In a test campaign, the system was integrated into a hospital setting in less than three hours. The RETEMES team has already begun testing it on a larger scale with hospitals and laboratories.

Rapid biomedical innovation, aging populations, obesity and an increased demand for high quality and timely healthcare, have made the control of healthcare costs a national priority for many governments. RETEMES helps with the containment of medical spending by reducing the costs associated with the introduction and integration of electronic medical systems. The HL7, UML and TTCN-3 standards used in the RETEMES project also help to handle large amounts of information in a sector where the management of big data is an opportunity to unlock major benefits in the future.

Project participants
Germany, Romania

Budget **0.93 MEURO**
Duration **37 months**

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