eHealth: when transparency and reliability matter

New EU-funded research project will increase accessibility to trustworthy online medical information for the general public and medical experts.

The Internet is increasingly being used as a source of health information by the European citizens. The European eHealth Consumer Trends Survey conducted in seven European countries shows that 52% of the population used the Internet for health purposes in 2007 versus 42% in 2005, and that 46% perceived the Internet as an important source of health information. However the ePatient phenomenon bears risks for the health of European citizens: they tend to find their medical information by using one of the major search engine providers, and by doing so, retrieve information of varying quality and trustworthiness. Common search engines often rank sources such as discussion forums or wikis in the top 10 results, making non-peer reviewed articles with sometimes questionable sponsors an information source erroneously considered as reliable by the ePatient. Another problem of common search engines is that they do not provide relevant information based on the level of knowledge of the information seeker. Lay persons will need different information than medical experts used to special terminologies.

A newly started European research project plans to address both challenges of trustworthiness and complexity levels in online health information, among other topics. Funded under the EU 7th Framework Programme ICT theme, the project "Knowledge Helper for Medical and Other Information users" (KHRESMOI) starts on 1 September 2010. The project consortium, consisting of 12 partners from 9 European countries, will develop a web-based multi-lingual multi-modal search and access system for biomedical information and documents over the next four years. The system will allow querying in many languages, potentially in combination with image queries. It will return translated document summaries linked to the original documents. Next to the general public, medical doctors and radiologists will also benefit from KHRESMOI: the doctors by retrieving accurate answers more rapidly, the radiologists by having a tool to master the huge number of X-Ray, MRI, CT and fMRI images that need to be analyzed every day. KHRESMOI has a different emphasis to other eHealth projects in that it does not only process patient records, but also focuses on the huge amount of published and online medical information.

KHRESMOI will analyze medical information from various sources with different technologies and simplify and improve online access to it. Sources of medical knowledge include not only open information on the web, but also scientific publications and journals in the medical field, image and pharmaceutical databases and so forth. KHRESMOI will combine text and image retrieval, semantic analysis, but also multi-lingual information retrieval and machine translation technologies, coupled with question answering systems and innovative user interfaces. *"The successful integration of such heterogeneous knowledge and technologies to help medical professionals from general practitioners to clinicians, but also lay people is the main goal of KHRESMOI"*, states Henning Müller, University of Applied Sciences of Western Switzerland, coordinator of the project. Most of the technologies to be integrated have already been used and evaluated in various environments.

The consortium consists of leading research groups with expertise in:

- Information extraction from text (The University of Sheffield) and from medical images (Medical University of Vienna, University of Applied Sciences of Western Switzerland);
- Machine translation (Charles University Prague, Evaluations and Language resources Distribution Agency);

- Information retrieval (Information Retrieval Facility, Dublin City University)
- Semantic repositories and reasoning (Ontotext);
- Search interfaces (University of Duisburg-Essen).

The integration of the individual components into a complete and effective system will be coordinated and undertaken by Atos Origin, one of the largest IT integration company in Europe. The consortium includes partners providing realistic use cases with large groups of end users: a medical search engine with 11.000 queries per day (Health on the Net Foundation), an association of 2.700 medical doctors (Society of Physicians in Vienna), and two radiology departments (Medical University of Vienna and Geneva University Hospitals). It is planned that the new KHRESMOI technologies become rapidly available and usable on the Health on the Net search engine.

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