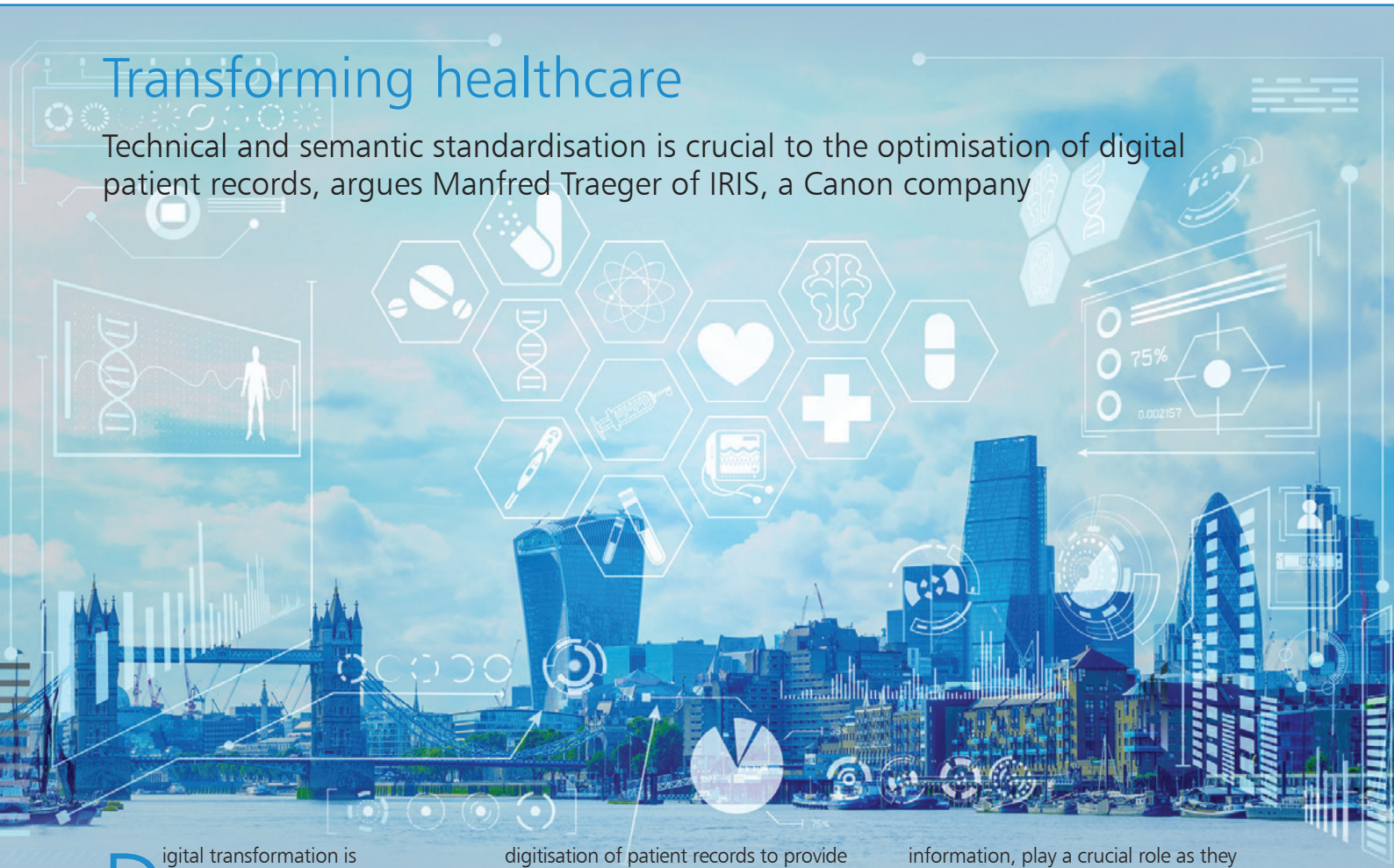
# Transforming healthcare

Technical and semantic standardisation is crucial to the optimisation of digital patient records, argues Manfred Traeger of IRIS, a Canon company



Digital transformation is revolutionising industries worldwide, and healthcare is no exception. The healthcare sector faces the challenge of managing increasing patient care complexity while controlling rising costs. Here, digital patient records based on modern document management concepts being part of E-Health-Strategies offer a transformative approach. They enable more efficient management of health data and contribute to cost reduction by eliminating manual processes and significantly improving access to and distribution of information.

Following on the insightful article by Grace Schneider from Storetec in a recent issue of Document Manager Magazine, which highlighted the benefits of dental records in paperless dental practices, this article extends the dialogue to hospitals and illustrates the comprehensive benefits of this technological approach. Particular attention is paid to the importance of technical and semantic standards in the digitisation of patient records to provide uniformity to all stakeholders.

## KEY TO DIGITISATION: TECHNICAL INTEROPERABILITY

A central aspect of digitisation in healthcare is interoperability - the ability to effectively exchange information between different organisations and systems. Technical interoperability is the ability of systems to work together seamlessly and exchange data smoothly. This includes communication between very different IT systems, such as the hospital information system (HIS), the radiology information system (RIS) or the document management system (DMS).

In order to enable cross-sector communication, a so-called communication standard is required. Such an international standard was introduced back in 1987 by the Health Level Seven International organisation: HL7. Technical standards such as HL7 and DICOM, a standard to process medical imaging information, play a crucial role as they provide predefined structures for the digital exchange of health information.

These standards are supported by responsible government institutions, such as the NHS in the UK, other key organisations in healthcare and all relevant market participants. This comprehensive support is crucial for creating a seamless, integrated digital health system.

## THE IMPORTANCE OF SEMANTIC STANDARDS

However, the technical standards essentially define only how information is exchanged. Semantic standards complement these technical provisions by providing uniform professional content terminologies across organisations, so that information can be consistently used in different systems.

A Semantic standard refers to a guideline that defines how data and information should be unambiguously interpreted and used - particularly important in areas where data is exchanged between

"THE INTEGRATION OF BOTH TECHNICAL AND SEMANTIC STANDARDS IS OBVIOUSLY DECISIVE IN IMPLEMENTING EFFICIENT AND EFFECTIVE DIGITAL PATIENT RECORDS. IN THIS CONTEXT, ANOTHER VERY PROMINENT EXAMPLE FOR SEMANTIC STANDARDS IS THE CATEGORISATION OR NAMING OF MEDICAL DOCUMENTS IN PATIENT RECORDS; THIS IS CRUCIAL FOR CLARITY AND CONSISTENCY IN RECORD-KEEPING AND IMPROVES CROSS-ORGANISATIONAL DATA QUALITY AND USAGE. BY UTILISING SUCH SEMANTIC BEST PRACTICES ACROSS THE BOARD, THE HEALTHCARE SECTOR CAN BENEFIT FROM SIGNIFICANTLY IMPROVED INTEROPERABILITY AND EFFICIENCY IN DATA EXCHANGE. "

different systems, organisations, or sectors. Semantic standards ensure that the meaning of data is consistent and unambiguous for all parties involved, regardless of who is using it or in what context. SNOMED CT (Systematised Nomenclature of Medicine - Clinical Terms) is an example of such a comprehensive, multilingual clinical health terminology system that enables accurate and comprehensive coding of clinical specialist terms.

The integration of both technical and semantic standards is obviously decisive in implementing efficient and effective digital patient records. In this context, another very prominent example for semantic standards is the categorisation or naming of medical documents in patient records; this is crucial for clarity and consistency in record-keeping and improves cross-organisational data quality and usage.

By utilising such semantic best practices across the board, the healthcare sector can benefit from significantly improved interoperability and efficiency in data exchange. As the example from Germany (see boxout below) demonstrates, professional document management based on modern software solutions for automated classification and indexing of documents can make a very convincing contribution to making healthcare more efficient, cost-effective, and ultimately more patient-oriented.

## POSITIVE OUTLOOK

The future of healthcare lies in the further integration of digital systems and the continued use of technologies like Artificial Intelligence and Big Data. The ongoing development and adaptation of standards will continue to play a central role in improving the efficiency, safety, and quality of patient care. Other positive effects should not be underestimated, such as improving the education and training of medical and technical staff or simplifying the introduction of Governance strategies.

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## STANDARDISATION IN PRACTICE

One outstanding example of the practical and very successful application of the standardisation of unambiguous document categories is a project in Germany lasting several years, in which a service company digitised and automatically classified physical patient files of several hundred hospitals using pre-labelled examples.

The project initially began with individual and manually determined document categories of each hospital. The sample documents were trained by an advanced document capture software platform for automated self-learning classification and indexing of documents, thereby transforming document classification into a highly efficient automated digitisation process.

However, it was gradually discovered that despite clearly comparable medical services and treatment processes, the specialist clinics of the hospitals had nevertheless implemented different concepts for categorising the corresponding medical documentation in patient records. The patient records of different hospitals apparently had similar content and structure, but there were still relevant differences in the categorisation of documents and particularly a large variety of different names for similar or even congenial categories.

In the subsequent exploratory phase of the project, a comprehensive analysis of the highly complex data situation was carried out, with the document classification software being the crucial tool. It enabled the medical documents to be compared in terms of content and the document categories to be consolidated. Eventually, several thousand seemingly different document classes could be reduced to a few hundred unambiguous document classes across all hospitals.

In the conclusive phase of the project, the knowledge gained about possible standardisation of document categories was transferred into a broader professional discussion with relevant stakeholders in healthcare. The wide-ranging benefits of comprehensive content wise standardisation were quickly recognised by hospitals, health insurance companies, and system manufacturers, with the strong practical relevance of the concept being very convincing. This approach resulted in a new, now nationally recommended semantic standard for the categorisation of medical documents in Germany, known as the "Clinical Documentation List" which significantly improves the efficiency and quality of patient record management.