

## Chapter 28

# Electronic Health Record Proposal for Long- Term Preservation

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### **ABSTRACT**

*This chapter introduces a model approach to long-term digital preservation of Electronic Health Record (EHR). The long-term digital preservation is an emerging trend in the environment of digital libraries. However, legal or business needs may cause the use of digital preservation strategies in different fields. This is the case of the EHR as part of the information system of a healthcare institution. After a reasonable space of time without activity, an EHR becomes a passive information unit. Consequently, this passive information unit remains safe in a separate information system where the main purpose is digitally preserving this information on a long-term basis. There are two appropriate methodologies, Trustworthy Repository Audit and Certification Criteria (TRAC) and a Reference Model for Open Archival Information System (OAIS). These methodologies can widely be adopted by health care organizations to preserve EHR in the long-term.*

### **INTRODUCTION**

Development of trustful information systems to preserve Electronic Health Records on the long-term may facilitate among other questions medical research advances in the upcoming years. Digital libraries created digital preservation systems in the early stages. As an initiative to have a digital

heritage over digital objects created, cultural institutions are preserving scholarly publications, interactive multimedia presentations, sound archives, or films. In a healthcare environment mostly by legal obligations, in the near future, electronic health record systems will need digital preservation techniques applied to the Electronic Health Records. An Electronic Health Record

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contains information data about the operational process of an individual. A physician introduces patient information in a graphical form, text, or sound that must be available to both the practitioner and the patient when required. This data may be variables depending on different analysis or test that a person has taken from his birth throughout his life.

One of the challenges facing healthcare organizations in many countries is the enormous amount of data transcribed in analogical health records, represented in paper and other media such as video tapes, audio tapes, compact discs or microfilms. Altogether, this material makes medical facilities collapse, have transcription errors, unintentional loss of documentation, lack of integrity and inaccuracy of data. In most situations, there is a deficiency of mechanisms to control information lacks and effective security measures. This question not only facilitates the loss of patient information, but also loss of confidentiality and integrity of data patient. Medical care integrates new technologies and it is possible to find available and active health records in a wide variety of formats and expressions. In many cases, it is possible to find recorded information belonging to the same patient in a different space of time. Sometimes, this information is completely digitally born.

Accordingly, there are two important challenges to face. On the one hand, the conversion of ancient analogue records in any form of expression into a digital format. This conversion can be carried out through materials digitisation and its integrating them later in the hospital information system. In other intricate cases, this issue would require more data processing that is complex such, analyse obsolete media formats or migrate information into a new and updated digital format. Later, the information system would integrate these data.

On the other hand, the other major challenge is the digital preservation on the long-term EHR. To carry out this task, there are two complementary methodologies available. One of them is a

qualitative methodology and safety audit, the Trustworthy Repositories Audit and Certification (TRAC). The other one is the Reference Model for an Open Archive Information System (OAIS) that allows preserving digital data over time.

TRAC permits to produce a qualitative global analysis of the organization structure. Its primary goal is assessing the organizational infrastructure, the digital object management and the technical infrastructure. TRAC assessment allows producing a report pointing at the lacks of the whole structure. Through this report, it is possible to know conditions to accomplish by a repository or information system to be trustworthy. This auditing methodology is useful when a digital preservation program does not exist into an organisation or is completely ongoing. Its final result is a trustful system to preserve information. OAIS allows creating an archive to preserve information on the long-term. OAIS serves to archive both digital and analogical information, but it is widely used to preserve digital information, especially in aircraft industry and digital libraries.

## **BACKGROUND**

This section will introduce the terminology used in the digital preservation field, as well as different concepts and definitions. This introduction explains terms currently employed preserving information on the long-term; words such as digital preservation, repository and technological issues such emulation or migration processes are among these items. The description of other technological elements forms part of this section.

A review of scientific literature indicates the relevant aspects processing Electronic Health Records. This reviewed literature will point at some approaches to long-term preservation of Electronic Health Records, approaches to TRAC, some technology related as well as information on the OAIS model.

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