

Master's Thesis

This page contains the original masters thesis submitted and approved at the Universidade de Brasília, department of electrical engineering, networking laboratory for the obtainment of a degree in telecommunications.

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Below you can find a link to both versions, and to the PDF presentation, which was very successfully held on August 24th, 2006 in Brasília at the Universidade de Brasília (UnB).

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Abstract

As of today the exchange of orthodontic clinical information between different software systems is a challenge: there is no standard written or developed specifically for orthodontics. The widespread use of medical informatics systems has caused this problem to require immediate attention. This work proposes a detailed methodology on how to proceed to create an orthodontic electronic patient record standard by integrating three well established and developed medical informatics standard developing organizations: HL7, DICOM and the ADA Standards Developing Committee (SCDI). It then limits its scope to digital cephalograms, a fundamental part of the orthodontic clinical record, by proposing a standard for digital cephalogram, and a JAVA implementation of it. This work offers a practical contribution to the development of an orthodontic informatics standard, hence addressing directly orthodontic software interoperability.

Structure

The document addresses directly the issue of solving incompatibilities between orthodontic software through the development of a software standard. The thesis is divided in 5 chapters and appendix:

Introduction: Explanation of the problems, and the reason of the work.

Orthodontics: A quick review of orthodontics and its patient record elements.

Literature review: A review of HL7, DICOM and ADA SCDI, both as an organization and as standards.

Scientific contributions: A proposal for the process required for the development of an orthodontic electronic patient record standard, a proposal for a DICOM digital cephalogram standard, and a simple JAVA implementation of the proposed standard.

Conclusions

Appendix: More details on ADA SCDI Specification 1000 by Mark Diehl, mathematical explanations and my contribution in the LaTeX world (document typesetter).

The document was originally written in English and translated into Portuguese by Emerson Ribeiro. Further refinement was then performed to conform with Brazilian writing style. Please note that the English version was written as a draft for the Portuguese version, which is therefore more organic, complete and better written.