

American Dental Association
Technical Report No. 1023

Implementation Requirements for DICOM in Dentistry

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**AMERICAN DENTAL ASSOCIATION TECHNICAL REPORT NO. 1023 FOR IMPLEMENTATION
REQUIREMENTS FOR DICOM IN DENTISTRY**

The Council on Dental Practice of the American Dental Association has approved American Dental Association Technical Report No. 1023 for Implementation Requirements for DICOM in Dentistry. Working Groups of the ADA Standards Committee on Dental Informatics (SCDI) formulate this and other technical reports and specifications for the application of information technology and other electronic technologies to dentistry's clinical and administrative operations. The ADA SCDI has representation from appropriate interests in the United States in the standardization of information technology and other electronic technologies used in dental practice. Approval of ADA Technical Report No. 1023 was confirmed by the ADA SCDI on July 14, 2005.

The ADA SCDI thanks the co-chairmen of SCDI Working Group 12.1 for Application of the DICOM Standard to Dentistry, Allan G. Farman, University of Louisville, Louisville, KY; and John Goyette, Schick Technologies, Inc., Long Island City, NY; and the membership of Working Group 12.1, for their effort in the development of this technical report. This report was prepared under the direction of ADA SCDI Subcommittee 12 on Informatic Component Interoperability in Dentistry (S. Brent Dove, Chairman).

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FOREWORD

(This foreword does not form a part of American Dental Association Technical Report No. 1023 for Implementation Requirements for DICOM in Dentistry).

In 1992, there was interest in the standardization of clinical information systems related to electronic technology in the dental environment. After evaluating current informatics activities, a Task Group of the ANSI Accredited Standards Committee MD156 (ASC MD156) was created by the ADA to initiate the development of technical reports, guidelines, and standards on electronic technologies used in dental practice. In 1999, the ADA established the ADA Standards Committee on Dental Informatics (SCDI). The ADA SCDI is currently the group that reviews and approves proposed American National Standards (ANSI approved) and technical reports developed by the standards committee's working groups. The ADA became an ANSI accredited standards organization in 2000.

The scope of the ADA SCDI is:

"To promote patient care and oral health through the application of information technology to dentistry's clinical and administrative operations; to develop standards, specifications, technical reports, and guidelines for: components of a computerized dental clinical workstation; electronic technologies used in dental practice; and interoperability standards for different software and hardware products which provide a seamless information exchange throughout all facets of healthcare."

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1 INTRODUCTION

DICOM is the acronym for Digital Imaging and Communications in Medicine. This is the international standard used to permit exchange of diagnostic images from different radiographic systems. Extensions to the DICOM Standard include all aspects of digital and digitized dental radiographs. The ADA endorses the use of DICOM as the standard means for exchange of all digital dental images. However, the DICOM standard extends well beyond the needs of Dentistry and therefore it is necessary to select the relevant parts applicable to Dentistry.

2 SCOPE

This report provides a technical specification based on the DICOM version 3 Standard as it applies to Dentistry with the goal of increasing interoperability between digital radiographic systems. Digital radiography includes, but is not limited to, images captured using solid-state arrays (e.g. CCD and CMOS), photostimulable phosphor imaging plates, and the digitization of analog film radiographs by scanning or video capture. This report is restricted to grayscale dental radiographic images. It lists the components required for intraoral and extra-oral digital radiography.

The full DICOM version 3 Standard is available for download on the webpage of the National Electrical Manufacturers Association (NEMA), <http://medical.nema.org>. The DICOM Standard provides details and specific explanations that are beyond the scope of this ADA technical report.

3 ADA DICOM FUNCTIONAL PROFILES

The DICOM Standard covers different functions each of which should be considered separately. The Standard provides guidelines for vendor conformance statements that improve the likelihood of interoperability. This section introduces the basic DICOM functional profiles that may be present in a dental digital radiographic imaging system. These profiles can be used in various combinations and the vendor of the imaging system or associated device should clarify which profiles they certify to be conformant with ADA SCDI TR 1023.

DICOM Removable Media (RM)

The DICOM Removable Media requirement provides ability to exchange entire dental grayscale radiographic studies between practitioner using removable media such as a CD. The requirement provides for the ability to both read and write valid DICOM datasets as defined in the DICOM (Supplement 92) Media Application Profile for Digital Radiographic Images in Dentistry. The CD would also contain a viewer that provides basic display capabilities plus an optional print functionality.

DICOM Network Storage and Retrieval (NSR)

The DICOM Network Storage and Retrieval requirement provides for the ability to store dental grayscale radiographic studies from an image acquisition device (client) to a network DICOM archive (server). It also provides for the ability to search the DICOM archive for a specific dental radiographic exam using attributes such as patient name, patient ID, study date, retrieve the images and display them for diagnostic review.