

American Dental Association
Technical Report No. 1051

DICOM Requirements for Digital Imaging in Institutional Dentistry

A Technical Report prepared by the American Dental Association and registered with ANSI.

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AMERICAN DENTAL ASSOCIATION TECHNICAL REPORT NO. 1051 FOR DICOM REQUIREMENTS FOR DIGITAL IMAGING IN INSTITUTIONAL DENTISTRY

The Council on Dental Practice of the American Dental Association has approved American Dental Association Technical Report No. 1051 for DICOM Requirements for Digital Imaging in Institutional 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. 1051 was confirmed by the ADA SCDI on August 11, 2009.

Publication of this technical report that has been registered with ANSI has been approved by the American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611. This document is registered as a technical report according to the *Procedures for the Registration of Technical Reports* with ANSI. This document is not an American National Standard and the material contained herein is not normative in nature. Comments on the content of this document should be sent to the American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611.

The ADA Standards Committee on Dental Informatics thanks the members of Working Group 12.1 on Digital Imaging and the organizations with which they were affiliated at the time the specification was developed:

Allan G. Farman (co-chairman), University of Louisville, Louisville, KY;
John Goyette (co-chairman), Schick Technologies, Inc., Long Island City, NY;
Andrew Casertano (project leader), Department of Defense Military Health Systems, N. Potomac, MD;
Scott Benjamin, Advanced Integration and Mentoring, Inc., Hancock, NY;
Eric Blaschka, Sirona USA, Charlotte, NC;
Chris Bope, Soredex, Tuusula, Finland;
Xavier Carayol, Trophy Radiologie, Croissy-Beaubourg, France;
Richard M. Celko, P&R Dental Strategies, Inc., New York;
Igor Chertok, Gendex Dental Systems, Wooddale, IL;
Hartmut Feuerhahn, Dexis, LLC, Berlin, Germany;
Gilbert Frellick, Air Techniques, Inc., Melville, NY;
Jim Garrett, Patterson Dental, Effingham, IL;
Richard Gregory, private practice, Quincy, IL;
Lance Guffey, Patterson Dental, Effingham, IL;
Glenn T. Haggan, Department of Veterans Affairs, Washington, D.C.;
William E. Harrell, Jr., American Association of Orthodontists, Alexander City, AL;
Jim Hughes, Henry Schein Practice Solutions, American Fork, UT;
Ari Kontkanen, Planmeca, Inc., Roselle, IL;
Denise Krause, University of Mississippi School of Dentistry, Jackson, MS;
Erkki Lehto, Planmeca, Inc., Roselle, IL;
Jolanta Majewska, ADSTRA Systems, Inc., Toronto, Canada;
Roberto Molteni, QR, Verona, Italy;
J. Martin Palomo, Case Western Reserve University, Cleveland, OH;
Eleonore Paunovich, Department of Veterans Affairs, San Antonio, TX;
James Pearson, American Association of Orthodontists, St. Louis, MO;

AMERICAN DENTAL ASSOCIATION TECHNICAL REPORT NO. 1051 FOR DICOM REQUIREMENTS FOR DIGITAL IMAGING IN INSTITUTIONAL DENTISTRY

Manny Pena, Schick Technologies, Inc., Long Island City, NY;

Yehuda Rosenstock, Air Techniques, Melville, NY;

Alan T. Smith, Department of Defense Dental Information Management, Falls Church, VA;

Theodore Steinhausen, Aribex, Inc., Orem UT;

Scott Trapp, White Earth Health Center, Ogema, MN;

John A. Valenza, University of Texas Dental Branch at Houston, TX;

Don Vu, J. Morita Mfg. Corp., Irvine, CA;

Winston Williams, Henry Schein Practice Solutions, American Fork, UT;

Gregory G. Zeller, Department of Veterans Affairs, Baltimore, MD; and

Jurgen Zimmermann, Sirona Dental Systems, Bensheim, Germany.

AMERICAN DENTAL ASSOCIATION TECHNICAL REPORT NO. 1051 FOR DICOM REQUIREMENTS FOR DIGITAL IMAGING IN INSTITUTIONAL DENTISTRY

FOREWORD

(This Foreword does not form a part of ADA Technical Report No. 1051 for DICOM Requirements for Digital Imaging in Institutional 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.”

The ADA endorses the use of DICOM as the standard means for exchange of all digital dental images. DICOM allows providers a lossless exchange of patient images in their original diagnostic quality and enables a direct comparison between current and former examinations of the patient. In the institutional setting, dental imaging interoperability includes the ability to order, acquire, store, retrieve, archive and share DICOM radiographic and photographic images. In addition to the interoperability within and between institutions, it may be required that these images be attached to an electronic patient record. Therefore, in an institutional setting, interoperability is required functionality among various digital acquisition devices and DICOM conformant storage devices both stand alone and integrated with an electronic patient record.

These guidelines are written as guidance for the present and near-future “standards of care” relevant to imaging interoperability. It provides typical use cases and offers DICOM services to solve these interoperability scenarios. A DICOM glossary is provided to assist with terms and concepts used. ADA Technical Report No. 1051 builds upon ADA Technical Report No. 1023: Implementation Requirements for DICOM in Dentistry.¹ The final section goes into further detail into specific technical requirements that support interoperability. The complete DICOM standard provides additional details and specific explanations that are beyond the scope of this ADA technical report. The complete DICOM Standard is available on the website of the National Electrical Manufacturers Association (NEMA).²

¹American Dental Association Technical Report No. 1023: Implementation Requirements for DICOM in Dentistry. Chicago: American Dental Association, 2005

² DICOM (Digital Imaging and Communications in Medicine). Rosslyn: National Electrical Manufacturers Association (<http://medical.nema.org>)

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1 SCOPE

This report provides a technical specification based on the DICOM Standard as it applies to dentistry with the goal of increasing interoperability within and between institutional digital radiographic systems. This report will illustrate through high-level interaction use cases how to achieve interoperability for typical dental imaging tasks. They are: (1) view images on removable media; (2) create interoperable removable media images; (3) share images among various networked multi-vendor storage and acquisition systems; (4) ability to exchange visible light photographic and endoscopic images within a dental image acquisition context; (5) create and exchange DICOM structured display objects; (6) perform scheduled workflow to integrate digital images with an electronic dental records system; (7) import and reconcile Images from outside the institution into the electronic dental records system; (8) securely transfer DICOM images via email, and; (9) access DICOM images via the Internet. These use cases show the DICOM requirements in context, describing them in clear relationship to the clinical tasks of the dental provider.