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American Dental Association

Technical Report No. 1091

Cloud Computing: Implications and Recommendations for Dental Practice

ADA American Dental Association®

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AMERICAN DENTAL ASSOCIATION TECHNICAL REPORT NO. 1091 FOR CLOUD COMPUTING: IMPLICATIONS AND RECOMMENDATIONS FOR DENTAL PRACTICE

The ADA Standards Committee on Dental Informatics (SCDI) has approved American Dental Association Technical Report No. 1091for Cloud Computing: Implications and Recommendations for Dental Practice. Working Groups of the ADA SCDI formulate this and other specifications and technical reports 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. The ADA SCDI confirmed approval of ADA Technical Report No. 1094 on November 27, 2017.

This technical report was prepared by ADA SCDI Working Group 11.1 on Standard Clinical Data Architecture. It was begun by Mark Diehl, in whose memory this project is respectfully dedicated, and was completed by Terry O'Toole, at the request of Amit Acharya, chairman, SCDI Subcommittee on Clinical Informatics. The ADA SCDI thanks the members of Working Group 11.1 and the organizations with which they were affiliated at the time the report was developed:

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FOREWORD

(This Foreword does not form a part of the American Dental Association Technical Report No. 1091for Cloud Computing: Implications and Recommendations for Dental Practice.)

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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Introduction

Dentists today see a surge in dental cloud computing and countless mobile apps are now available for both dental professionals and our patients. In many ways, this is reminiscent of the initial explosive growth in microcomputer dental systems and a turbulent marketplace for dental computer systems in the 1980s. Over the past several decades while the dental computer marketplace stabilized, our society began a transition from stand-alone computer systems to client-server systems and to enterprise computing, increasingly expanding people's access to information and computing capabilities. The *Cloud* is the latest step along that transition, the newest frontier in information management and technology. *Cloud Computing* is what we have come to consider as accessing remote computing capabilities and information using computers and hand-held mobile devices through a network. Dental practitioners may see considerable benefit from the use of cloud computing in research and industry. The ability to aggregate and analyze data from many sources is already providing clinicians with more information to assist in decision making.

The growth of cloud computing in healthcare over the past few years has been widely reported. Bartels and Rymer at Forrester, for example, found growth of the cloud computing market at nearly $100 billion exceeds predictions of just a few years ago by 20%.[1] In 2015 the US and Canadian healthcare and life sciences cloud computing market was reported to be $4.49 billion and expected to reach $11.43 billion by 2020 with a compound annual growth rate (CAGR) of 20.5%.[2] Likewise the global Mobile Health (mHealth) market, including remote monitoring, diagnosis and consultation, treatment, medical reference, personal health records, diagnostic apps, and continuing medical education is predicted to reach $49.2 billion by 2020.[3]

Yet such market reports are meaningless to dentists who need information on what cloud computing can do for us, what are the issues, and whether it makes business sense for our practices. A growing number of articles in the dental trade press discuss these points.[4,5] This report distills down the mass of currently available information about cloud computing and data storage. The intent is to provide the essential information dentists need to make informed decisions about which cloud capabilities are appropriate for their practice and about what cloud computing issues they should consider.

Purpose and Scope

The purpose of this document is to describe cloud computing and data storage, its use in dental practice, its benefits and risks, and recommendations for use by dental practitioners.

The scope of this document is four areas of cloud computing applied to dentistry:

1. What cloud computing entails,

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[1] A. Bartels, J. Rymer, J. Staten. Forrester report: The Public Cloud Market Is Now In Hypergrowth. April 24, 2014.
[2] MarketsandMarkets. North American Healthcare Cloud Computing Market. Report HIT 2258. November, 2015.
[3] https://globenewswire.com/news-release/2015/03/06/713123/10123619/en/mHealth-Market-Forecasted-To-Be-Worth-49-119-2-Million-by-2020-New-Report-By-Grand-View-Research-Inc.html
[4] C. Salierno. 4 ways cloud computing will change dentistry for the better. Dentistry IQ. http://www.dentistryiq.com/articles/2012/01/4-ways-cloud-computing-will-change-dentistry-for-the-better.html
[5] M. Uretz. Cloud Computing at Three Dental Practices. Dental Software Advisor. August 29, 2012. http://www.dentalsoftwareadvisor.com/2012/08/29/cloud-computing-at-three-dental-practices/

2. How it benefits the dental practice,
3. The risks and issues associated with cloud computing and cloud storage, and
4. The business aspects of cloud computing and data storage.

Terms, acronyms, and definitions are presented in an appendix for reference.

Intended audience

The intended audience is the private practitioner who may be considering using cloud computing and data storage.