

ORACLE MULTIMEDIA DICOM

The Oracle Multimedia DICOM (Digital Imaging and Communications in Medicine) feature enables Oracle Database to store, manage, and manipulate DICOM format medical content. DICOM, the format universally recognized as the standard for medical imaging, can include different types of data, such as single frame and multiframe images, waveforms, slices of 3-D volumes, video segments, and structured reports.

SUMMARY

In Oracle Database 11g Release 1, Oracle Multimedia (formerly Oracle *interMedia*) provides rich support for the DICOM format, making it possible to build large repositories of DICOM content that are managed and secured using powerful Oracle Database tools. DICOM support was initially introduced in Oracle Database 10g Release 2.

DICOM FEATURES

ORDDicom Object Type

Oracle Multimedia includes the new ORDDicom object type to natively support imagery produced by medical imaging devices. A Java proxy class enables ease-of-use in Java applications. By presenting DICOM content stored in a database as objects, Oracle enables both rapid application development and easy, secure management of large medical archives.

DICOM Metadata Extraction

In the initial release of Oracle Multimedia DICOM support, the most important metadata tags associated with DICOM content could be extracted into a fixed XML document that could then be indexed and searched to find DICOM content.

The DICOM metadata extraction capability is complete and extensible in this release. All DICOM metadata, including private tags, or any user defined subset of the metadata, may be extracted into an XML document using a user defined or Oracle provided default XML schema. The extracted metadata can then be stored in a table to facilitate DICOM content searching, based on DICOM attributes.

DICOM Conformance Validation

Given DICOM content and a set of user-specified conformance rules and actions, Oracle Multimedia can verify that the DICOM content adheres to the conformance rules. DICOM content is produced by many modalities. Some content conforms to the DICOM standard, but inevitably much of it does not. Oracle Multimedia can be used to facilitate application workflow based on DICOM conformance and to

reject or correct DICOM content that does not conform to the standard or to the institution's specific rules.

DICOM Image Processing

This release adds image processing methods and functions to copy and convert images from DICOM to JPEG, GIF, PNG, TIFF, and other formats, to generate scaled versions and thumbnail images, to compress images, and to perform several other image processing operations.

Anonymous DICOM Content

Oracle Multimedia offers methods and functions which can be used to generate a new copy of a DICOM image with user specified patient sensitive metadata removed or overwritten. These methods can be used to ensure that users of a DICOM medical archive see only the images with metadata that they are authorized to see, ensuring adherence to HIPAA and other privacy regulations.

Creation of DICOM Content

This release of Oracle Multimedia includes the ability to generate new DICOM content either by combining digital images such as JPEG images with an XML representation of the associated DICOM metadata or by updating metadata in existing DICOM content.

Run-time Updatable DICOM Data Model

A key feature of DICOM support in Oracle Multimedia is that its run-time behavior is determined by a set of user-configurable documents. This set of documents is managed by the data model repository, and includes the definition of the DICOM standard including private tags, how to map extracted DICOM tags into XML metadata documents, anonymity and conformance rules, and runtime preferences. This design enables customers to update to new releases of the DICOM standard and to modify the runtime behavior of Oracle Multimedia at any time, without interfering with a running DICOM archive.

BUILT ON ORACLE DATABASE 11g

The Oracle Multimedia DICOM feature is fully integrated with Oracle Database 11g to capitalize on the features of Oracle Database that support business critical 24 X 7 applications.

Copyright 2009, Oracle. All Rights Reserved.

Author: Carol Palmer, Melliyal Annamalai

This document is provided for information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor is it subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.