Digital Imaging and Communications in Medicine (DICOM)

Supplement 54: DICOM MIME Type

Prepared by:

DICOM Standards Committee, Working Group 10, Working Group 6

1300 N. 17th Street

Rosslyn, Virginia 22209 USA

VERSION: Version 2

                    March 7, 2000

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Open Issues

1	Is the DICOMDIR mandatory within MIME Entity including multiple DICOM files ?

Foreword

The American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA) formed a joint committee to develop a standard for Digital Imaging and Communications in Medicine (DICOM). This DICOM Standard and the corresponding Supplements to the DICOM Standard were developed according to the NEMA procedures.

DICOM is developed in liaison with other standardization organizations including CEN TC251 in Europe and JIRA in Japan, with review also by other organizations including IEEE, HL7 and ANSI in the USA.

This document is a Supplement to the DICOM Standard. It is an extension to PS 3.11 and 3.12 of the published DICOM Standard which consists of the following parts:

PS 3.1	Introduction and Overview
PS 3.2	Conformance
PS 3.3	Information Object Definitions
PS 3.4	Service Class Specifications
PS 3.5	Data Structures and Encoding
PS 3.6	Data Dictionary
PS 3.7	Message Exchange
PS 3.8	Network Communication Support for Message Exchange
PS 3.9	Point-to-Point Communication Support for Message Exchange
PS 3.10	Media Storage and File Format
PS 3.11	Media Storage Application Profiles
PS 3.12	Media Format and Physical Media for Media Interchange
PS 3.13	Print Management Point-to-Point Communication Support
PS 3.14	Grayscale Standard Display Function
PS 3.15	Security Profiles

These parts are related but independent documents.

This Supplement includes the definition of DICOM MIME Type definition, which enables applications to exchange DICOM objects with other applications that support communication by e-mail.

1   Supplement Scope and Field of Application

2   This Supplement describes the DICOM MIME Type as if it where media. MIME (Multipurpose Internet Mail Extension) describes how to include attached files as "parts" into internet mail, these may be sent by
4   protocols such as SMTP (Simple Mail Transfer Protocol).

DICOM network protocols are widely used for applications that:

6   — involve primary diagnosis and review,

— are used within a tightly integrated imaging department

8   — are used when there is controlled distribution of images (and other DICOM objects) to other departments which also support DICOM protocols.

10 DICOM network protocols are less frequently used for applications in areas less amenable to tight integration, such as:

12   — hospital-to-doctor DICOM object distribution for reviewing or referral purposes

— exchange of DICOM objects for testing purposes

14   — DICOM object distribution for education, scientific cooperation and contract research

— interpretation by professionals at home (e.g. teleradiology)

16 These applications are characterized by:

— greater desire to integrate with consumer desktop applications

18   — lower expectations of image quality, fidelity, reliability of delivery and conformance

— less centralized control over system setup and configuration

20 There has been an increasing demand for the ability to exchange DICOM objects by e-mail.

The DICOM MIME Type concept covers two levels:

22   — the DICOM File level, using the `Application/dicom` MIME Type

— the DICOM File-set level, using the `Multipart/mixed` MIME Type with some constraints
24   (naming, parameters)

    Note: No `Image/dicom` MIME type is proposed, because DICOM objects may also contain other information,
26   not only images.

    Since this document proposes changes to existing Parts of DICOM the reader should have a working
28 understanding of the Standard.

After having introduced the interest of such an extension of DICOM, this document includes a number of
30 Addenda to existing Parts of DICOM:

        PS 3.11 Addendum   Annex XX: General Purpose MIME Interchange Profile

32   PS 3.12 Addendum   Annex XX: DICOM MIME Type

    In addition, it contains the official text of the RFC (Request for Comments) to be submitted to the Internet
34 Engineering Task Force (IETF) and defining the `Application/dicom` MIME Type.

Finally it presents two examples of e-mail messages that can be generated by using DICOM MIME Type.

Part 11, Body Addendum

2 | **Add the following definitions to Section 4. Symbols and abbreviations.**

4   Symbols and abbreviations

4   IETF   Internet Engineering Task Force

MIME   Multipurpose Internet Mail Extension

6   RFC   Request for Comments

SMTP   Simple Mail Transfer Protocol

8 | **Add the following Annex at the end of the document.**

Annex Y (Normative) - General Purpose MIME Interchange Profile

10 **Y.1   PROFILE IDENTIFICATION**

This Annex defines an Application Profile Class including all defined Media Storage SOP Classes. This
12 class is intended to be used for the interchange of Composite SOP Instances via e-mail for general
purpose applications.

14   Note: This Media Storage Application Profile Class is not intended to replace the more robust DICOM Storage
Service Class.

16 Objects from multiple modalities may be included on the same e-mail. A detailed list of the Media Storage
SOP Classes that may be supported is defined in PS 3.4.

18   **Table Y.1-1**
STD-GEN-MIME Profile

Application Profile	Identifier	Description
General Purpose MIME Interchange	STD-GEN-MIME	Handles interchange of Composite SOP Instances by e-mail.

20

The identifier for this General Purpose MIME Interchange profile shall be STD-GEN-MIME.

22 Equipment claiming conformance to this Application Profile shall list the subset of Media Storage SOP
Classes that it supports in its Conformance Statement.

Note: Since it is not required to support all Media Storage Classes the user should carefully consider the
subset of supported Media Storage SOP Classes in the Conformance Statements of such equipment to
establish effective object interchange.

Y.2   CLINICAL CONTEXT

This Application Profile facilitates the interchange of images and related data through e-mail.

This profile is intended only for general purpose applications. It is not intended as a replacement for specific Application Profiles that may be defined for a particular clinical context.

Note: The present Application Profile does not include any specific mechanism regarding privacy. However it is highly recommended to use secured mechanisms (e.g. S/MIME) when using STD-GEN-MIME Application Profile over networks that are not fully integrated inside a same medical institution.

Y.2.1   ROLES AND SERVICE CLASS OPTIONS

This Application Profile uses the Media Storage Service Class defined in PS3.4 with the Interchange Option.

The Application Entity shall support one or two of the roles of File Set Creator (FSC) and File Set Reader (FSR), defined in PS 3.10. Because the exchange of e-mail does not involve storage, the role of File Set Updater (FSU) is not specified.

Y.2.1.1   File Set Creator

The role of File Set Creator may be used by Application Entities which generate a File Set under this Interchange Class of Application Profiles.

File Set Creators may be able to generate the Basic Directory SOP Class in the DICOMDIR file with all the subsidiary Directory Records related to the Image SOP Classes included in the File Set.

The Application Entity acting as a File Set Creator generates a File Set under the STD-GEN-MIME Application Profile.

Note: A multiple volume (i.e. a logical volume that can cross multiple media) is not supported by this class of Application profile. Because MIME is a virtual medium and since e-mail mechanisms include some way of fragmenting MIME parts to be sent through limited size e-mail, there are no needs for multiple volume.

Y.2.1.2   File Set Reader

The role of File Set Reader shall be used by Application Entities which receive an exchanged File Set under the Image Interchange Class of Application Profiles.

File Set Readers may be able to read the DICOMDIR directory file and shall be able to read all the SOP Instance files defined for this Application Profile, for which a Conformance Statement is made, using the defined Transfer Syntax.

Y.3   STD-GEN-MIME PROFILE

Y.3.1   SOP Classes and Transfer Syntaxes

This Application Profile is based on the Media Storage Service Class with the Interchange Option (see PS 3.4).

Table Y.3-1
STD-GEN-MIME SOP Classes and Transfer Syntaxes

Information Object Definition	Service Object Pair Class UID	Transfer Syntax and UID	FSC Requirement	FSR Requirement
Basic Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian Uncompressed 1.2.840.10008.1.2.1	Mandatory	Mandatory
Composite Image & Stand-alone Storage	Refer to: PS 3.4 for SOPs UID definitions	Defined in Conformance Statement	Defined in Conformance Statement	Defined in Conformance Statement

The SOP Classes and corresponding Transfer Syntax supported by this Application Profile are specified in the Table Y.3-1. The supported Storage SOP Class(es) and Transfers Syntax(es) shall be listed in the Conformance Statement using a table of the same form.

Y.3.2 Physical Medium and Medium Format

The STD-GEN-MIME application profile requires the DICOM MIME medium as defined in PS3.12.

Y.3.3 Directory Information in DICOMDIR

If the DICOMDIR is included, conformant Application Entities shall include in it the Basic Directory IOD containing Directory Records at the Patient and the subsidiary Study and Series levels, appropriate to the SOP Classes in the File Set.

All DICOM files in the File Set incorporating SOP Instances defined for the specific Application Profile shall be referenced by Directory Records.

Note: 1. DICOMDIRs with no directory information are not allowed by this Application Profile.

2. In the DICOMDIR each object may be referenced by a referenced file ID (e.g. 000/000) which contains multiple values corresponding to a path for physical system, since the MIME organization is flat. There is no requirement that this path will be used by the receiving application to create file hierarchy.

There may only be one DICOMDIR file per File Set. The Patient ID at the patient level shall be unique for each patient directory record in one File Set.

Y.3.3.1 Additional Keys

No additional keys are specified.

Part 12, Body Addendum

2 | **Add the following definitions to Section 2. References.**

2   References

4 The concepts "MIME", "Media Type", "MIME Entity", "MIME Part", "Content-Type", "`Multipart/mixed`", "`Message/partial`", "Content-Transfer-Encoding", "Content-ID" and "`Application/xx`" are developed

6 in IETF "Multipurpose Internet Mail Extensions", or "MIME", described in RFC (Request for Comments) number 2045, 2046, 2047, 2048 and 2049 (see http://www.imc.org/rfc2045 and ftp://ftp.isi.edu/in-

8 notes/rfc2045.txt).

Add the following Annex at the end of the document.

10   **ANNEX X (Normative) DICOM MIME media**

X.1 DICOM MAPPING TO MIME FORMATS

12 **X.1.1 DICOM File set**

One DICOM File set shall be contained in a MIME `Multipart/mixed` Media Type, called "DICOM File

14 set" MIME Entity.

   Notes: 1. It may be necessary to fragment a message by using the `Message/partial` Media Type format.

16   2. A "DICOM File set" MIME Entity may contain MIME Parts other than `Application/dicom` which may be ignored by the DICOM application.

18 **X.1.2 DICOM file**

Each generic DICOM file shall be encoded as a MIME `Application/dicom` Media Type, called "DICOM

20 File" MIME Part, with the following parameters:

-    "id" is mapped to the DICOM File ID. The total length is limited to 71 characters (to avoid that the e-

22   mail application splits the id string). Each component is limited to 8 characters. The delimiter is a forward slash "/". There is never a leading delimiter (i.e. this is not a traditional path from a root

24   directory).

     For example: "ROOTDIR/SUBDIR1/MRSCAN/A789FD07/19991024/ST00234/S00003/I00023"

26 -   "name" is mapped to the last DICOM File ID component, that means the "file name" without "path" information, completed by the extension ".dcm" (except for the DICOMDIR).

For example: "I00023.dcm"

2   Note: 1. Email clients typically use this parameter as the default name with which to save the file. If used for
            only one "DICOM File" Part (versus one DICOM File set), the length of this parameter is not restricted
4   (unlike the "id" parameter).

            2. This name can not be the same than the name inside the DICOMDIR where the file extension is
6   forbidden.

The other fields of the header of this "DICOM File" MIME Part are respecting the general rules of MIME.

8 **X.1.2.1 DICOMDIR**

One and only one DICOMDIR File may be present in any "DICOM File set" MIME Entity. It is encoded as
10 the generic "DICOM File" MIME Part, with a DICOM File ID set to "DICOMDIR" and the "name" parameter
set to "DICOMDIR".

12 **X.3 LOGICAL FORMAT**

The MIME logical format is used. The Content-Transfer-Encoding shall allow the transfer of binary
14 information (e.g. typically base64 if the higher level does not allow transfer of binary information).

Recommendation for "`Application/dicom`" MIME Type to be submitted to IETF
2   **through IANA Procedure (Informative)**

Date : 2000-3-10

4

>From : Dave Snavely (DICOM Secretariat) dav_snavely@nema.org

6 To: ietf-types@iana.org

Subject: Registration of MIME media type Application/dicom

8

MIME media type name:

10 Application

12 MIME subtype name:

dicom

14

Required parameters:

16

"id" is mapped to a DICOM File ID (see DICOM 3 PS3.11). The total length is
18 limited to 71 characters. Each component is limited to 8 characters. The
delimiter is a forward slash "/". There is never a leading delimiter (i.e.
20 this is not a traditional path from a root directory). If a DICOMDIR is
present in the Multipart/mixed set, then it will refer to other DICOM files in
22 the file set by use of this File ID. The File ID is not encoded within each
DICOM file. If a DICOMDIR is not present, then the "id" parameter shall be
24 absent.

For example:

26 "ROOTDIR/SUBDIR1/MRSCAN/A789FD07/19991024/ST00234/S00003/I00023"

28 "name" is mapped to the last DICOM File ID component, that's mean the "file
name" without "path" information, completed by the extension ".dcm" (except
30 for the "DICOMDIR" file which has no extension). Email clients typically use
this parameter as the default name with which to save the file. The length of
32 this parameter is not restricted (unlike the "id" parameter).

For example:

34 "I00023.dcm"

Optional parameters:

2 none

4 Encoding considerations:

6 The DICOM information is binary, therefore the encoding used shall support
lossless transfer of binary information. Typically, the Content-Transfer-
8 Encoding would be set to "Base64".

10 Multiple DICOM parts may be included as a Multipart/mixed entity, in which
case one of the parts may be a DICOMDIR. In which case, all the files referred
12 to by the DICOMDIR shall also be present. The DICOMDIR is not required to be
the first Application/dicom part encoded in the message, however.

14

Multiple DICOM Application/dicom parts may be included with other types of
16 parts as a Multipart/mixed entity.

18 Security considerations:

20 Application/dicom parts contain medical information, including individual
demographic information. Accordingly, their exchange should be restricted to a
22 secure network or within a secure wrapper that protects a patient's right to
confidentiality according to local and national policy. The specific security
24 mechanisms are outside the scope of this proposal. Such mechanisms as Secured
MIME (S/MIME) or similar might be appropriate.

26

Interoperability considerations:

28

Because DICOM information is specific to the medical (imaging) domain, generic
30 e-mail applications may not be able to interpret the information. The Media
Type has been designed in order to allow for

32 (i) DICOM aware applications to interoperate,

(ii) generic applications to save the files in a form recognizable as DICOM
34 files, that a DICOM application may subsequently use.

36 Published specification:

38 This specification is a recommendation of the Digital Imaging and
Communications in Medicine (DICOM) Standards Committee and published by the
40 National Electrical Manufacturers Association (NEMA), 1300 N. 17th Street,
Rosslyn, Virginia 22209 USA, (http://www.nema.org).

2 Applications which use this media type:

Biomedical imaging applications.

4

Magic number(s):

6 The four characters "DICM" after a preamble of 128 bytes can be used to recognize a DICOM PS 3.10 encapsulated file.

8

File extension(s):

10 The use of the three letter extension "dcm" is recommended for DICOM files saved to disk (with the exception of the file named "DICOMDIR" which has no
12 extension), but is not required by this recommendation.

14 The use of the four letter Macintosh File Type "DICM" is recommended for DICOM files saved to disk on a MacOS system, but is not required by this
16 recommendation.

18 Person & email address to contact for further information:

Dave Snavely (DICOM Secretariat)

20 National Electrical Manufacturers Association (NEMA),

1300 N. 17th Street,

22 Rosslyn,

Virginia 22209 USA

24 http://www.nema.org

mailto:dav_snavely@nema.org

26

Intended usage:

28 COMMON

30 Author/Change controller:

DICOM Standards Committee.

Example 1: Simple DICOM File MIME message (Informative)

```
 2  From: "Dr Smith" <smith@provider1.com>
    To: "Dr Johnson" <johnson@provider2.com>
 4  Subject: test DICOM Mime Type
    Date: Fri, 5 Nov 1999 15:15:35 +0100
 6  MIME-Version: 1.0
    Content-Type: Multipart/mixed;
 8          boundary="-----=_NextPart_000_0027_01BF27A0.9BE21980"

10  This is a multi-part message in MIME format.

12  ------=_NextPart_000_0027_01BF27A0.9BE21980
    Content-Type: text/plain;
14          charset="iso-8859-1"
    Content-Transfer-Encoding: 7bit

16
    Message text: this is a DICOM MIME Type example for DICOM File.

18
    ------=_NextPart_000_0027_01BF27A0.9BE21980
20  Content-Type: Application/dicom;
            name="i00023.dcm"
22  Content-Transfer-Encoding: base64
```

```
24  byEAALcAAABbAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
    AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
26  AAAAAAAAAAAAAAAAAABESUNNAgAAAFVMBACgAAAAgABAE9CAAACAAAAAAECAAIAVUkaADEuMi44
    NDAuMTAwMDguNS4xLjQuMS4xjcAAgADAFVJFgBFeGFtaW5lZC1eS1ESUNPTS4xLjEAAgAQAFVJ
28  FAAxLjIuODQwLjEwMDA4LjEuMi4xAAIAEgBVSRYAMS4yLjI1MC4xLjU5LjMuMS4xMQIAEwBT
    SBAARVRJQU1fRENNCVEtfMzMxMIAgAAAAAVTAQAdgAAAAgAFgBVSRoAMS4yLjg0MC4xMDAwOC41LjEu
30  NC4xLjEuNwAIABgAVUkWAEV4YW1pbmVkLWJ5LURJQ09NLjEuMQAIACAAREEAAAgAMABUTQAACABQ
    AFNIAAAIAGAAQ1MCAE9UCABkAENTBABXU0QgCACQAFBOAAAAQAAAAVUwEAEYAAAAQABAAUE4QAERJ
32  Q09NIE1JTUVeVHlwZSAQACAATE8MAERJQ09NLVNUUDU0IBAAMABEQQgAMjAwMDAzMTAQAEAAQ1MC
    AE0gIAAAAFVMBABkAAAAIAANAFVJEgBFeGFtaW5lZC1ieS1ESUNPTQAgAA4AVUkUAEV4YW1pbmVk
34  LWJ5LURJQ09NLjEAIAAQAFNIEgBFeGFtaW5lZC1ieS1ESUNPTSAgABEASVMCADEgIAATAElTAgAx
    ICgAAAABVTAQAZAAAACgAAgBVUwIAAQAoAAQAQ1MMAE1PTk9DSFJPTUUyICgACACABJUwIAMSAoABAA
36  VVMCAB8AKAARAFVTAgAkACgAAAAFVUwIACAAoAAEBVVMCAAgAKAACAVVTAgAHACgAAwFVUwIAAADg
    fwAAVUwEAGgEAADgfxAAT0IAAFwEAAAAAAAAAAAAAAAAAAAAAAAAAAAJJjosEAIAAAAACSY8
38  KAAPLS0tFgAAB4tLS0AABZTW0QAAAA3YmUjBQAWLRYAAyI9IwAtt7e3t5APAIm3t7cAHqeniadb
    AHq3mKC3PQBbt5AAAKC3WwAtt1sATLdxAACJtwAAkLceABY9JrdxAACgpw9bt7cmRLe3WwAtt1sA
40  AJi3AACJtwAAt4kAAAAAW7ctAABbty1bt5BxoIm3WwAtt1sAAAJi3AACJtwAAt5gAAAAAW7c1AAABj
    ty1btya3pz23WwAtt1sATLdxAACJtwAAgbc9ACZMFreQDxanoABbtwCBWy23WwAtt7e3t5APAIm3
42  t7cAD5i3t7dEAD2nt7egHgBbtwAAC23WwAPLS0tFgAAB4tLS0AAAeLQ8AAAAPLS0AAAAWLQAAA
    AA8tLFgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
44  AAAAAA8tHgAADy0eAB4tLS0AHi0PAAAeLQ8PLS0tLR4AAAAAAAAAC23pw8AcbeJAIm3t7cAibdb
    ABa3ty0tt7e3t4kAAAAAAAAAC23t1sWt7eJAACJtwAAibenD3G3ty0tt1sAAAAAAAAAAAC23
46  iaBxkLeJAACJtwAAiZinW7eBty0tt6CJiUQAAAAAAAAAC23Pae3JreJAACJtwAAiYlbt5Bbty0t
48  t4lbWy0AAAAAAAAAC23LVuBALeJAACJtwAAiYkWiTVbty0tt1sAAAAAAAAAAAAAAAC23LQAAALeJ
    AIm3t7cAiYkAAABbty0tt7e3t4kAAAAAAAAA8tDwAAC0eAB4tLS0AHh4AAAAWLQ8PLS0tLR4A
50  AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
    AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
52  AAAWLS0tLS0mLRYAABYtDy0tLS0AABYtLS0tFgAAAAAAAAAAABbt7e3t7c9p6ccPD6CQALe3t7eg
    Flu3t7e3WwAAAAAAAAAAAAAAFu3LQAATLdqW7ceALeJAEy3W1u3LQAAAAAAAAAAAAAAAAAAAAFu3
54  LQAAJi3p1sAALeJAEy3U1u3mImJHgAAAAAAAAAAAAAAAAFu3LQAAAB63oA8AALe3t7eQD1u3cVtb
```

FgAAAAAAAAAAAAAAAFu3LQAAAC3iQAAALeYLR4AAFu3LQAAAAAAAAAAAAAAAAFu3LQAAAC3

2 iQAAALeJAAAAAFu3t7e3WwAAAAAAAAAAAAAAABYtDwAAAAtHgAAAC0eAAAAABYtLS0tFgAAAA=

4 ------=_NextPart_000_0027_01BF27A0.9BE21980--

Example 2: DICOM File Set MIME message (Informative)

```
 2  From: "Dr Smith" <smith@provider1.com>
    To: "Dr Johnson" <johnson@provider2.com>
 4  Subject: DICOM File set MIME Example
    Date: Tue, 29 Feb 2000 09:28:06 +0100
 6  MIME-Version: 1.0
    Content-Type: Multipart/mixed;
 8        boundary="----=_NextPart_000_0007_01BF8297.490E26C0"

10  This is a multi-part message in MIME format.

12  ------=_NextPart_000_0007_01BF8297.490E26C0
    Content-Type: text/plain;
14        charset="Windows-1252"
    Content-Transfer-Encoding: 7bit

16
    Text of the message: this is a demo message of the DICOM MIME type, for a DICOM File
18  set.

20  ------=_NextPart_000_0007_01BF8297.490E26C0
    Content-Type: Multipart/mixed;
22        boundary="----=_NextPart_000_0007_01BF8297.490E26C1"

24  This is a multi-part message in MIME format corresponding to a "DICOM File set" MIME
    Entity.
26
    ------=_NextPart_000_0007_01BF8297.490E26C1
28  Content-Type: Application/dicom;
          id="i00023"; name="i00023.dcm"
30  Content-Transfer-Encoding: base64
```

```
32  byEAALcAAABbAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
    AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
34  AAAAAAAAAAAAAAAAAAABESUNNAgAAAFVMBACgAAAAAgABAE9CAAACAAAAAAECAAIAVUkaADEuMi44
    NDAuMTAwMDguNS4xLjQuMS4xLjcAAgADAFVJFgBFGFtaW5lZC1ieS1ESUNPPTS4xLjEAAgAQAFVJ
36  FAAxLjIuODQwLjEwMDA4LjEuMi4xAAIAEgBVSRYAMS4yLjI1MC4xLjU5LjMuMC4zLjMuMQIAEwBT
    SBAARVRJQU1fRENNVEtfMzMxIAgAAABVTAQAdgAAAAgAFgBVSRoAMS4yLjg0MC4xMDAwOC41LjEu
38  NC4xLjEuNwAIBgAVUkWAEV4YW1pbmVkLWJ5LURJQ09NLjEuMQAIACAAREEAAgAMABUTQAACABQ
    AFNIAAAIAGAAQ1MCAE9UCABkAENTBABXU0QgCACQAFBOAAAQAAAAVUwEAEYAAAAQABAAUE4QAERJ
40  Q09NIE1JTUVeVHlwSQAQACAATE8MAERJQ09NLVNVUDU0IBAAMABEQQgAMjAwMDAzMTQQAEAAQ1MC
    AE0gIAAAAFVMBABkAAAAIAANAFVJEgBFeGFtaW5lZC1ieS1ESUNPTQAgAA4AVUkUAEV4YW1pbmVk
42  LWJ5LURJQ09NLjEAIAAQAFNIEgBFeGFtaW5lZC1ieS1ESUNPTSAgABEASVMCADEgIAATAElTTAgAx
    ICgAAABVTAQAZAAAACgAgBVUwIAAQAoAAQAQ1MMAE1PTk9DSFJPTUUyICgAACABJUwIAMSAoABAA
44  VVMCAB8AKAARAFVTAgAkACgAAFVUwIACAAoAAEBVVMCAAgAKAACAVVTAgAHACgAAwFVUwIAAADg
    fwAAVUwEAGgEAADgfxAAT0IAAAFwEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAJJjosEAIAAAAACSY8
46  KAAPLS0tFgAAAB4tLS0AABZTW0QAAAA3YmUjBQAWLRYAAyI9IwAtt7e3t5APAIm3t7cAHqeniadb
    AHq3mKC3PQBbt5AAAKC3WwAtt1sATLdxAACJtwAAkLceABY9JrdxAACgpw9bt7cmRLe3WwAtt1sA
48  AJi3AACJtwAAt4kAAAAAW7ctAABbty1bt5BxoIm3WwAtt1sAAAJi3AACJtwAAt5gAAAAAW7c1AABj
    ty1btya3pz23WwAtt1sATLdxAACJtwAAgbc9ACZMFreQDxano ABbtwCBWy23WwAtt7e3t5APAIm3
50  t7cAD5i3t7dEAD2nt7egHgHBbtwAAAC23WwAPLS0tFgAAAB4tLS0AAAAeLQ8AAAAPLS0AAAAWLQAA
    AA8tFgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
52  AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
    AAAAAA8tHgAADy0eAB4tLS0AHi0PAAAeLQ8PLS0tLR4AAAAAAAAC23pw8AcbeJAIm3t7cAibdb
54  ABa3ty0tt7e3t4kAAAAAAAAC23t1sWt7eJAACJtwAAibenD3G3ty0tt1sAAAAAAAAAAAC23
```

```
     iaBxkLeJAACJtwAAiZinW7eBty0tt6CJiUQAAAAAAAAAAC23Pae3JreJAACJtwAAiYlbt5Bbty0t
2    t4lbWy0AAAAAAAAAAC23LVuBALeJAACJtwAAiYkWiTVbty0tt1sAAAAAAAAAAAAAAC23LQAAALeJ
     AIm3t7cAiYkAAABbty0tt7e3t4kAAAAAAAAAA8tDwAAAC0eAB4tLS0AHh4AAAAWLQ8PLS0tLR4A
4    AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
     AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
6    AAAWLS0tLS0mLRYAABYtDy0tLS0AABYtLS0tFgAAAAAAAAAAABbt7e3t7c9p6cPD6CQALe3t7eg
     Flu3t7e3WwAAAAAAAAAAAAAAFu3LQAATLdqW7ceALeJAEy3W1u3LQAAAAAAAAAAAAAAAAFu3
8    LQAAAJi3p1sAALeJAEy3U1u3mImJHgAAAAAAAAAAAAAAFu3LQAAAB63oA8AALe3t7eQD1u3cVtb
     FgAAAAAAAAAAAAAAFu3LQAAAAC3iQAALeYLR4AAFu3LQAAAAAAAAAAAAAAAAFu3LQAAAAC3
10   iQAAALeJAAAAAFu3t7e3WwAAAAAAAAAAAAAAABYtDwAAAAtHgAAAC0eAAAAABYtLS0tFgAAAAA=

12   ------=_NextPart_000_0007_01BF8297.490E26C1
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14        id="DICOMDIR"; name="DICOMDIR"
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16
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22   TAQA6gIAAAQAMBFDUxIARVRJQU1fRENNRVlfFXzIuNDAABAAAElVMBABsAQAABAACElVMBABsAQAA
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24   TAQA7AEAAAQAMBRDUwgAUEFUSUVOVOVCAQABAAAUE4QAERJQ09NIE1JTUVeVFlQRSAQACAANTE8MAERJ
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26   ABAUVVMCAP//BAAgFFVMBACAAgAABAAwFENTBgBTVFVEWSAIACAAREEAAgAMABUTQAACABQAFNI
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32   AAQAEBRVUwIA//8EACAUVUwEAAAAAAAEADAUQ1MGAElNQUdFdFIAQAABVDUw4AAW1hZ2VzXGkwMDAy
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34   SUNPTS4xLjEABAASFVVJFAAxLjIuODQwLjEwMDA4LjEuMi4xAAgACABDUw4Abm8gaW1hZ2UgVHlw
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40
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