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DICOM Correction Proposal

STATUS	Letter Ballot (2nd Ballot)
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Correction Number	CP-2163
Log Summary: Add term to represent the local client copy buffer to CID 405 for Data Export	
Name of Standard PS3.15, PS3.16	
<p>Rationale for Correction:</p> <p>PS3.15, <i>Table A.5.3.4-1. Audit Message for Data Export</i>, the row, Active Participant: Media (1), Media Type reference values selected from DCID 405 "Media Type Code".</p> <p>PS3.15 and PS3.17 do not include options that address the use case of exporting media to a client, such as exporting data to the client desktop or copying data into the clipboard buffer.</p> <p>Destination Media is intended to represent persistent media storage devices that have an identity of their own and that could potentially be transferred across security domain boundaries.</p> <p>The term "Clipboard Manager" reflects the terminology in general use today. Windows, Linux, MacOS, IOS, and Android all offer the potential to install a "clipboard manager" from at least 10 different vendors. From the perspective of the user these all provide at least "cut and paste" in a GUI environment with a variety of additional vendor specific features.</p> <p><i>[Ed.Note: Contrast the DCM definitions of "email" with:</i></p> <p><i>MSH: "Messages between computer users via computer communication networks. This feature duplicates most of the features of paper mail, such as forwarding, multiple copies, and attachments of images and other file types, but with a speed advantage. The term also refers to an individual message sent in this way." [http://meshb.nlm.nih.gov/record/ui?ui=D034742]</i></p> <p><i>NCIt: "E-mail is short for "electronic mail" and refers to composing, sending, and receiving messages over electronic communication systems. Most e-mail systems use the Internet." [http://ncit.nci.nih.gov/ncitbrowser/ConceptReport.jsp?dictionary=NCI_Thesaurus&ns=ncit&code=C25170]</i></p> <p><i>UMLS: MSH:D034742 and NCIt:C25170 are considered equivalent in UMLS term for email, electronic mail [http://uts.nlm.nih.gov/uts/umls/concept/C0013849]]</i></p>	

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4 Add PS3.15 Section A.5.2.7 RoleIDCode as follows:

5 A.5.2.7 RoleIDCode

6 The RoleIDCode is a multi-valued field that is used to identify the type of active participant, differentiating
7 physical from virtual media, such as network access points and applications, in order to provide
8 traceability of the imported, exported or transferred instances in relevant system logs.

- 9 • Physical media is identifiable by a unique identifier, such as a partition ID on a USB drive, a
10 physical label on a CDROM, or the message-ID of an email message. When a media ID is
11 available, the RoleIDCode shall be (110154,DCM,"Destination Media") or (110155,DCM,"Source
12 Media"). MediaType shall also be present for this participant.

- Network access point is a type of virtual media that can be identified by a NetworkAccessPointID, such as DICOM Application Entities described as a process or endpoint. The RoleIDCode shall be (110153, DCM, "Source Role ID") or (110152, DCM, "Destination Role ID"). MediaType and MediaIdentifier may also be present for this participant.
- Applications, another type of virtual media, are services incapable of identifying an endpoint, message, or media and identified by name or a process identifier. For example, clipboard managers and some messaging systems, including some email systems, lack message-IDs. In such cases, the intended destination or claimed sender is identified, e.g., <mailto://person@example.com>, or the name of the local service. For these, the RoleIDCode shall be (110150, DCM, "Application").

This serves a dual purpose:

1. Locating identifiable media. For example, email folders and databases can be searched for an email message-ID; partition-ID in system device logs can be searched for system media mounts identifying a USB device.
2. Facilitating the discovery of other relevant system logs. For example, a transfer labeled as "to" or "from" "sms://123456789" can indicate that the SMS logs are pertinent.

Modify PS3.15 Table A.5.3.4-1 Audit Message for Data Export as follows

Table A.5.3.4-1. Audit Message for Data Export

...			
Active Participant:	UserID	M	See Section A.5.2.1
	AlternativeUserID	U	See Section A.5.2.2
Media (1)	UserName	U	not specialized
	UserIsRequestor	M	Shall be FALSE
	RoleIDCode	M	EV (110154, DCM, "Destination Media") <u>Values selected from DCID 402 "Audit Active Participant Role ID Code"</u> <u>See Section A.5.2.7</u>
	NetworkAccessPointTypeCode	MC	Required if being exported to other than physical media, e.g., to a network destination rather than to film, paper or CD. May be present otherwise.
	NetworkAccessPointID	MC	Required if Net Access Point Type Code is present. May be present otherwise.
	MediaIdentifier	MC	Volume ID, URI, or other identifier for media. Required if digital media. May be present otherwise.
	MediaType	MC	<u>Values selected from DCID 405 "Media Type Code"</u> <u>Values selected from DCID 405 or DCID 4xx.</u> <u>Required if NetworkAccessPoint ID is not present.</u> <u>May be present otherwise.</u>

Modify PS3.15 Table A.5.3.5-1 Audit Message for Data Import as follows

Table A.5.3.5-1. Audit Message for Data Import

...

Active Participant: Source Media (1)	UserID	M	See Section A.5.2.1
	AlternativeUserID	U	See Section A.5.2.2
	UserName	U	not specialized
	UserIsRequestor	M	Shall be FALSE
	RoleIDCode	M	<u>EV (110153, DCM, "Source Media")</u> <u>Values selected from DCID 402 "Audit Active Participant Role ID Code"</u> <u>See Section A.5.2.7</u>
	NetworkAccessPointTypeCode	MC	Required if being exported to other than physical media, e.g., to a network destination rather than to film, paper or CD. May be present otherwise.
	NetworkAccessPointID	MC	Required if Net Access Point Type Code is present. May be present otherwise.
	MediaIdentifier	MC	Volume ID, URI, or other identifier for media. Required if digital media. May be present otherwise.
	MediaType	MC	<u>Values selected from DCID 405 "Media Type Code"</u> <u>Values selected from DCID 405 or DCID 4xx.</u> <u>Required if NetworkAccessPoint ID is not present.</u> <u>May be present otherwise.</u>

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37 *Modify PS3.15 Table A.5.3.7-1 Audit Message for DICOM Instances Transferred as follows*

38 **Table A.5.3.7-1. Audit Message for DICOM Instance Transferred**

...			
Active Participant: Process that sent the data (1).	UserID	M	not specialized
	AlternativeUserID	U	not specialized
	UserName	U	not specialized
	UserIsRequestor	M	not specialized
	RoleIDCode	M	<u>EV (110153, DCM, "Source Role ID")</u> <u>Values selected from DCID 402 "Audit Active Participant Role ID Code"</u> <u>See Section A.5.2.7</u>
	NetworkAccessPointTypeCode	U	Required if being exported to other than physical media, e.g., to a network destination rather than to film, paper or CD. May be present otherwise.
	NetworkAccessPointID	U	Required if Net Access Point Type Code is present. May be present otherwise.
	<u>MediaIdentifier</u>	MC	<u>Volume ID, URI, or other identifier for media.</u> <u>Required if digital media. May be present otherwise.</u>
	<u>MediaType</u>	MC	<u>Values selected from DCID 405 or DCID 4xx.</u> <u>Required if NetworkAccessPoint ID is not present. May be present otherwise.</u>
Active Participant:	UserID	M	not specialized
	AlternativeUserID	U	not specialized
	UserName	U	not specialized

Process that received the data (1).	UserIsRequestor	M	not specialized
	RoleIDCode	M	EV (110152, DCM, "Destination Role ID") Values selected from DCID 402 "Audit Active Participant Role ID Code" See Section A.5.2.7
	NetworkAccessPointTypeCode	U	Required if being exported to other than physical media, e.g., to a network destination rather than to film, paper or CD. May be present otherwise.
	NetworkAccessPointID	U	Required if Net Access Point Type Code is present. May be present otherwise.
	<u>MediaIdentifier</u>	MC	<u>Volume ID, URI, or other identifier for media.</u> Required if digital media. May be present otherwise.
	<u>MediaType</u>	MC	Values selected from DCID 405 or DCID 4xx. Required if NetworkAccessPoint ID is not present. May be present otherwise.

Add the following to PS3.15, Section 2 Normative References:

[RFC 2822] IETF. April 2001. Internet Message Format. <http://www.rfc-editor.org/info/rfc2822>

[RFC 3986] IETF. January 2005. Uniform Resource Identifier (URI): Generic Syntax. <http://www.rfc-editor.org/info/rfc3986>

Editorial note: PS3.16 Chapter B Table CID 405. Media Type Code is included for reference

Table CID 405. Media Type Code

Coding Scheme Designator	Code Value	Code Meaning
DCM	110030	USB Disk Emulation
DCM	110031 cp2163-04	Email Message
DCM	110032	CD
DCM	110033	DVD
DCM	110034	Compact Flash
DCM	110035	Multi-media Card
DCM	110036	Secure Digital Card
DCM	110037	URI
DCM	110010	Film
DCM	110038	Paper Document

Add a new Context Group to PS3.16 Chapter B as follows

CID 4XX APPLICATION TYPE CODE

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML

Keyword: MediaTypeCode

FHIR Keyword: dicom-cid-xxx-ApplicationTypeCode

Type: Extensible

53 **Version: 202xxxxx**

54 **UID: 1.2.840.10008.6.1.xxx**

55 **Table CID 4xx. Application Type Code**

Coding Scheme Designator	Code Value	Code Meaning
DCM	cp2163-02	Clipboard
DCM	cp2163-01	Messaging System
DCM	110037	URI

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57 *Add the following to PS3.16 Chapter D Table D-1. DICOM Controlled Terminology Definitions (Coding*
 58 *Scheme Designator "DCM" Coding Scheme Version "01")*

59 **Table D-1. DICOM Controlled Terminology Definitions (Coding Scheme Designator "DCM" Coding**
 60 **Scheme Version "01")**

Code Value	Code Meaning	Definition	Notes
...			
110030	USB Disk Emulation	A device that connects using the USB hard drive interface. These may be USB-Sticks, portable hard drives, and other technologies.	
110031	Email	Email and email attachments used as a media for data transport.	
110032	CD	CD-R, CD-ROM, and CD-RW media used for data transport.	
110033	DVD	DVD, DVD-RAM, and other DVD formatted media used for data transport.	
110034	Compact Flash	Media that comply with the Compact Flash standard.	
110035	Multi-media Card	Media that comply with the Multi-media Card standard.	
110036	Secure Digital Card	Media that comply with the Secure Digital Card standard.	
110037	URI	URI Identifier for network or other resource, see <u>RFC3968 [RFC 3986]</u> .	
110038	Paper Document	Any paper or similar document.	
110154	Destination Media	Audit participant role ID of <u>persistent or transient storage</u> media receiving data during an export.	
110155	Source Media	Audit participant role ID of <u>persistent or transient storage</u> media providing data during an import.	
<u>cp2163-04</u>	<u>Email Message</u>	<u>A message transported by email.</u>	
<u>cp2163-03</u>	<u>Application Service</u>	<u>Audit participant role ID for an application entity, a software service, or a network service. For example, a clipboard manager</u>	

		<u>would be a kind of application service.</u>	
<u>cp2163-02</u>	<u>Clipboard Manager</u>	<u>A service that manages multiple copied or cut items and allows pasting of content within and between applications. A clipboard manager may have multiple independent storage areas and keep a history of copied items.</u>	
<u>cp2163-01</u>	<u>Messaging System</u>	<u>A service that communicates messages between applications or systems, which does not provide message by message identification or tracking, and identifies the intended destination or claimed source. Examples include some email systems, mms, and chat applications.</u>	<u>URI schemes can be used to identifying and locate resources (e.g., mailto:, mms:, or im:)</u>

Add the following to PS3.16, Section 2.1 General:

RFC 3986 IETF. January 2005. Uniform Resource Identifier (URI): Generic Syntax. <http://www.rfc-editor.org/info/rfc3986>

Add the following to PS3.17 Chapter WW Audit Messages (Informative)

WW.X Data Export of Media to Web Client Desktop Example

An example of the Media Active Participant and the Participant Object for an Audit Message in the case of a user exporting data from a browser-based image display to a client desktop is shown in Example WW.X-1. See Table A.5.3.4-1. Audit Message for Data Export in PS3.15.

Example WW.X-1. Sample Data Export Event Report

```

<ActiveParticipant
  UserID="smitty@readingroom.hospital.org"
  UserIsRequestor="true"
  NetworkAccessPointID="DOMAIN\COMPUTER"
  NetworkAccessPointTypeCode="1">
  <RoleIDCode
    csd-code="110153"
    codeSystemName="DCM"
    originalText="Source Role ID"/>
</ActiveParticipant>
<ActiveParticipant
  UserID="file:///C:/Users/smitty/Desktop/image.jpg"
  AlternativeUserID="NTFS"
  UserIsRequestor="false">
  <RoleIDCode
    csd-code="110154"
    codeSystemName="DCM"
    originalText="Destination Media"/>
  <MediaIdentifier>
    <MediaType
      csd-code="110037"
      codeSystemName="DCM"

```

```

105         originalText="URI"/>
106     </MediaIdentifier>
107 </ActiveParticipant>

```

WW.Y Data Export to Clipboard Example

An example of the Active Process Participant and the Media Active Participant for an Audit Message in the case of a user copying an image from a client application to the client clipboard is shown in Example WW.X-1.

For brevity, only the Media Active Participant is shown.

Note

It is difficult (or impossible) to detect copy buffer activity from an application server. It is expected that the client application would notify the server of clipboard buffer activity through integrated clipboard functionality or screenshot detection.

See Table A.5.3.4-1. Audit Message for Data Export in PS3.15.

Example WW.Y-1. Sample Data Export Event Report

```

110 <ActiveParticipant
111     UserID="PID 3532"
112     AlternativeUserID="Clipboard User Service"
113     UserIsRequestor="false">
114     <RoleIDCode
115         csd-code="110150"
116         codeSystemName="DCM"
117         originalText="Application"/>
118     <MediaIdentifier>
119         <MediaType
120             csd-code="cp2163-01"
121             codeSystemName="DCM"
122             originalText="Clipboard Manager"/>
123         </MediaIdentifier>
124     </ActiveParticipant>

```

WW.Z Data Export to Email Example

Two examples of Email export. One specifying the Message-ID shown in Example WW.Z-1, and one using a messaging system to a destination is shown in Example WW.Z-2. Note that the email message is identified by the Message-ID in accordance with RFC2822 and RFC5321.

Example WW.Z-1. Sample Data Export Event Report

```

132 <ActiveParticipant
133     UserID="Message-ID: <5678.21-Nov-1997@example.com>"
134     AlternativeUserID="mailto://person@example.com"
135     UserIsRequestor="false">
136     <RoleIDCode
137         csd-code="110154"
138         codeSystemName="DCM"
139         originalText="Destination Media"/>
140     <MediaIdentifier>
141         <MediaType
142             csd-code="cp2163-04"

```

```

codeSystemName="DCM"
originalText="Email Message"/>
</MediaIdentifier>
</ActiveParticipant>

```

Example WW.Z-2. Sample Email Data Export Event Report

```

<ActiveParticipant
  UserID="mailto:person@example.com?bcc=badguy@malware.com"
  UserIsRequestor="false">
  <RoleIDCode
    csd-code="110150"
    codeSystemName="DCM"
    originalText="Application"/>
  <MediaIdentifier>
    <MediaType
      csd-code="cp2163-02"
      codeSystemName="DCM"
      originalText="Messaging Service"/>
    </MediaIdentifier>
  </ActiveParticipant>

```

Example WW.Z-3. Sample Chat Data Export Event Report

```

<ActiveParticipant
  UserID="sms:1234567890"
  UserIsRequestor="false">
  <RoleIDCode
    csd-code="110150"
    codeSystemName="DCM"
    originalText="Application"/>
  <MediaIdentifier>
    <MediaType
      csd-code="cp2163-02"
      codeSystemName="DCM"
      originalText="Messaging Service"/>
    </MediaIdentifier>
  </ActiveParticipant>

```

WW.ZA Data Import from Email Examples

Two examples of Email import. One import specifying the Message-ID shown in Example WW.Z-1, and one using a messaging system to import is shown in Example WW.Z-2. Note that the email message is identified by the Message-ID in accordance with RFC2822 and RFC5321.

Example WW.Z-1. Sample Data Import Event Report

```

<ActiveParticipant
  UserID="Message-ID: <5678.21-Nov-1997@example.com>"
  UserIsRequestor="false">
  <RoleIDCode
    csd-code="110155"

```



```

196         codeSystemName="DCM"
197         originalText="Source Media"/>
198     <MediaIdentifier>
199         <MediaType
200             csd-code="cp2163-04"
201             codeSystemName="DCM"
202             originalText="Email Message"/>
203     </MediaIdentifier>
204 </ActiveParticipant>
205
206

```

Example WW.Z-2. Sample Data Import Event Report

```

208 <ActiveParticipant
209     UserID="from: no-bounce@example.com"
210     UserIsRequestor="false">
211     <RoleIDCode
212         csd-code="110150"
213         codeSystemName="DCM"
214         originalText="Application"/>
215     <MediaIdentifier>
216         <MediaType
217             csd-code="cp2163-02"
218             codeSystemName="DCM"
219             originalText="Messaging Service"/>
220     </MediaIdentifier>
221 </ActiveParticipant>
222
223
224

```