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DICOM Data Migration to Enterprise Imaging

EMP 1.1.2 CSV Flat File Export Format

IITS Global Professional Services
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ABOUT THIS DOCUMENT

OBJECTIVE

The target audience of this document is Agfa professional services resources and customers seeking an overview of the DICOM data needed for Enterprise Imaging migration using the Enterprise Migration Platform 1.1.2. The document aims to describe the supported layouts for the different types of data.

DOCUMENT HISTORY

Version	Author	Date	Remarks
1.0	Andrew Skelton	14 Apr 2023	First version

PACS/VNA DATA – FLAT FILE DEFINITIONS

The following definitions are guidelines for the flat file DICOM attributes that are necessary when migrating legacy PACS or VNA data to Agfa HealthCare Enterprise Imaging.

The following data file layouts are supported: **STUDY, SERIES, INSTANCE, and TEACHING.**

The sections on the following pages describe the different layouts per data type.

Each data file **MUST** contain a **header line** and at least one record.

Required fields **MUST** be present in the file header.

Optional fields **MAY** be omitted from the header line when no data is expected in there.

The header row **MUST** refer to the Field Tags, e.g. 'study_uid', as specified in the corresponding flat file specification.

The sequence in which the values are provided for each row **MUST** match at all times the sequence of the Field Tags from the header row.

Leading zeroes **MUST** be included in all fields where the value must be displayed with leading zeroes on the target PACS, e.g. Patient ID and Accession Number.

The columns in each file **MUST** be delimited. The | character (pipe) must be used as the field separator. All files **MUST** use **UTF-8** character-encoding.

Files **CANNOT** be larger than **2GB** in size.

The following characters in the exported data **MUST** be escaped:

| (pipe character) needs to be represented as \F\
A line feed needs to be represented as \.br\

The sections on the following pages describe the different layouts per data type.

Some explanation on the values used in the R/O column:

R Required
R* Required when another related field has a value (Please see comments)
O Optional. If no data is to be migrated for this field, it can be omitted from the file

O
R* The combination of fields highlighted in red (and grouped with brackets) needs to be unique.

SERVICES FLAT FILE

R/O	Field name	Comments	Max length
R	ae	AE title the service is listening on	16 chars
R	hostname	FQDN or IP address	255 chars
R	port	TCP port the service can be reached over	Number

Services Example:

```
ae|hostname|port  
PACS1|pacs1.med.com|104  
PACS2|pacs2.med.com|104
```

FILE SYSTEMS FLAT FILE

R/O	Field name	Comments	Max length
R	share	UNC formatted path where the filesystem root can be accessed. Format: \\<fqdn or ip>\<sharename>	512 chars
R	type	Fixed value CIFS	4 chars
R	domain	User domain	256 chars
R	user	Username which has (at least) READ access to the shared folder.	256 chars
R	password	Password of the user	256 chars

FileSystems Example:

```
share|type|domain|user|password  
\\pacs1\cache\CIFS|sourcedomain|cacheuser|cachePassword  
\\pacs2\cache\CIFS|sourcedomain|cacheuser|cachePassword  
\\archive1\archive\CIFS|sourcedomain|archiveuser|archivePass
```

STUDY FLAT FILE

R/O	DICOM Tag	Field Name	Expected value	Max length
R	(0020,000D)	study_uid	Study Instance UID Needs to be unique	64 chars
R	(0020,1208)	number_of_instances	Number of Instances in the study, meaning the distinct number of sop instance uids this study comprises. Agfa will use this number in order to verify the migrated number of instances associated to the study.	Number
O	(0008,0005)	specific_character_set	If the study does not use the default character set, this field identifies the extended set used to encode some text based DICOM elements. Only used for metadata migrations. Only needed if the source data uses non-default encodings. Alternatively, EMP supports use of a configurable default value. Separate multiple values with a backslash (\). Supported values can be confirmed by cross referencing section C.12.1.1.2 of the DICOM specification with the dcm4che5 DICOM conformance statement.	16 chars
R	(0008,0020)	study_date	Study Date YYYYMMDD	8 chars
O	(0008,0030)	study_time	Study Time HHMMSS.FFFFFFFF	13 chars
R	(0008,0050)	accession_number	Accession Number	16 chars
R	(0008,0061) or (0008,0060)	modality	Modalities in Study or Modality	16 chars
R	(0008,1030)	study_description	Study Description	64 chars
R	(0010,0010)	patient_name	Patient's Name lastname^firstname^middlename	200 chars
R	(0010,0020)	patient_id	Patient ID	64 chars
R	(0010,0021)	issuer_of_patient_id	Issuer of Patient ID	64 chars
R	(0010,0030)	patient_birth_date	Patient's Birth Date YYYYMMDD	8 chars
R	(0010,0040)	patient_sex	Supported values: M – Male, F – Female, O – Unknown	1 char
R*	N/A	study_location	DICOM AE titles where this study can be accessed. Must match a SERVICES AE value ! At least one study location is required when the study needs to be accessed over DICOM	16 chars
O	N/A	study_location1, study_location2, ...	Additional DICOM AE titles for this study Columns can be added as needed (Numbering starts with 1)	16 chars
R	N/A	his_ris_verified	Number to indicate whether the study was HIS/RIS verified. Supported values: 0 – Unknown or not verified 1 – Verified -1 – Failed Verification	Number

Study Example:

```
study_uid|number_of_instances|study_date|accession_number|modality|study_description|patient_birth_date|patient_id
|issuer_of_patient_id|patient_name|patient_sex|study_location|his_ris_verified
1.2.1234567|2|20171003|001234|CR|XR THORAX|19990125|000012872|HIS1|Doe^John|M|PACS1|0
1.2.840.6.1.4.1.32839.99.2.25|1203|20160323|002456|CT|CT HEAD|19450317|000003983|HIS1|Smith^John^F|M|PACS1|1
1.3.2.3456588367|1|20170415|001357|US|ECHO ABDOMEN|20041031|024644|HIS1|Charles^Sam^J|F|PACS2|0
```

SERIES FLAT FILE

This is the second highest level in the data hierarchy.

Each study can contain one or more series. Each series must belong to exactly one study.

R/O	DICOM Tag	Field Name	Expected value	Max length
R	(0020,000E)	series_uid	Series Instance UID Needs to be unique	64 chars
R	(0020,000D)	study_uid	Study Instance UID Must have a matching value in the STUDY flat file.	64 chars
R	(0008,0060)	modality	Modality	16 chars
R	(0008,103E)	series_description	Series Description	64 chars
R	(0020,0011)	series_number	Series number	12 chars

Series Example 1:

```
series_uid|study_uid|modality|series_description|series_number  
1.3.6.1.4.1.32839.99.2.2587679862|1.2.840.6.1.4.1.32839.99.2.25|CT|TTP_OLEA_ANALYSIS|1  
1.3.6.1.4.1.32839.99.2.2587679923|1.2.840.6.1.4.1.32839.99.2.25|OT|TMAX_OLEA_ANALYSIS|2
```

INSTANCE FLAT FILE

This is the lowest level in the data hierarchy. Each series can contain one or more instances. Each instance must belong to exactly one series.

R/O	DICOM Tag	Field Name	Expected value	Max length
R	(0008,0018)	sop_instance_uid	SOP Instance UID Needs to be unique	64 chars
R	(0008,0016)	sop_class_uid	SOP Class UID	64 chars
R	(0020,000E)	series_uid	Series Instance UID Must have a matching value in the SERIES flat file.	64 chars
R	(0020,0013)	instance_number	Instance number	12 chars
R*	N/A	path_root	UNC share through which the file can be accessed. Must match a FILESYSTEMS share value ! Examples: \\<server>\share \\<ip>\share At least one instance location is required when the study needs to be accessed on a filesystem	512 chars
R*	N/A	path_file	Remainder of the full UNC path to the standard DICOM part-10 file or the packaged/archived DICOM part-10 file(s) where this specific DICOM instance is stored. These types of archives are allowed: zip, tar, 7z, IMPAX blob Examples: folder\subfolder\abcde.dcm, folder\series.tar, folder\series.blob The full UNC path will be constructed out of the <pathroot> and <pathfile> values when the data is imported : <pathroot> \ <pathfile>	4096 chars
O	N/A	path_root1, path_root2, ...	Additional UNC shares Columns can be added as needed (Numbering starts with 1)	512 chars
O	N/A	path_file1, path_file2, ...	Additional DICOM instance locations Columns can be added as needed (Numbering starts with 1)	4096 chars

Instance Example 1 (minimal):

```
sop_instance_uid|sop_class_uid|series_uid|instance_number|path_root|path_file
1.2.840.113619.2.80.977011908.123|1.2.840.10008.5.1.4.1.1.1|1.3.6.1.4.1.32839.99.2.2587679862|1|\\pacs2\cache|2016
0605\1735\3c445.dcm
1.2.840.113619.2.80.9770112.1352|1.2.840.10008.5.1.4.1.1.1|1.3.6.1.4.1.32839.99.2.2587679923|2|\\pacs1\cache|20200
105\1145\5e8995.dcm
```

Instance Example 2 (shared archive file for 2 instances):

```
sop_instance_uid|sop_class_uid|series_uid|instance_number|path_root|path_file|path_root1|path_file1
1.2.840.113619.2.80.977011908.123|1.2.840.10008.5.1.4.1.1.1|1.3.6.1.4.1.32839.99.2.2587679862|1|\\pacs1\cache|2018
0501\1526\1ab346b.dcm|\\archive1\archive|20180605\1452\347569.blob
1.2.840.113619.2.80.9770112.1352|1.2.840.10008.5.1.4.1.1.1|1.3.6.1.4.1.32839.99.2.2587679923|2|\\pacs1\cache|20180
501\1526\6b342c.dcm|\\archive1\archive|20180605\1452\347569.blob
1.2.840.113619.2.80.780112.15|1.2.840.10008.5.1.4.1.1.1|1.3.6.1.4.1.32839.99.2.2587679923|3|\\pacs2\cache|20190804
\1826\5a345c.dcm|
```

TEACHING FLAT FILE

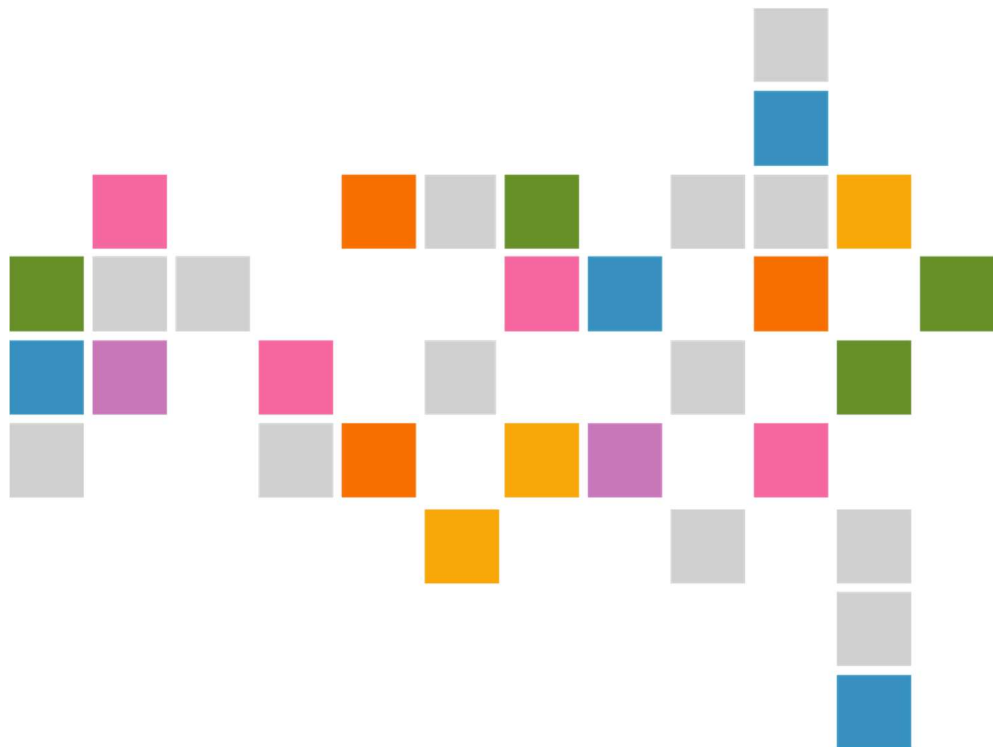
This is an optional categorization in the data hierarchy. There can be at most one teaching entry for any study entry.

R/O	DICOM Tag	Field Name	Expected value	Max length
R	(0020,000D)	study_uid	Study Instance UID Must have a matching value in the STUDY flat file.	64 chars
O	N/A	level	Number to indicate whether the teaching file is anonymized Supported values: 0 – Not a teaching file 1 – Anonymized teaching file 2 – Non-anonymized teaching file	Number
O	N/A	path	Full path of the teaching file on Impax ES	512 chars
O	N/A	path_category	The top level category of the path (ignoring root 'Teaching File' category)	512 chars
O	N/A	path_subcategory	The second level category of the path (ignoring root 'Teaching File' category)	512 chars
O	N/A	comment	Comment	512 chars
O	N/A	title	Title	512 chars

Teaching Example:

```
study_uid|level|path|path_category|path_subcategory|comment|title
1.2.840.6.1.4.1.32839.99.2.25|1|Teaching File#Heart and Great Vessels#Heart|Heart and Great Vessels|Heart|Blocked
artery in need of surgical repair|CT
1.2.840.6.1.4.1.32839.99.2.25|1|Teaching File#CHIRO#TEST|CHIRO|TEST|~40° S-shaped thoracolumbar scoliosis, with
other minor anomalies|MG-BREASTBIOPSY
```

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