



IHE[®] | EXPERIENCE
EUROPE DAYS

VIENNA 2025
24-25 JUNE 



Multi-Country Working Group (MCWG) on Image Information Sharing

*Adoption of MCWG
recommendations for ehealth
national imaging and impact on
EHDS*

Charles Parisot, Coordinator MCWG

Multi-country Working Group (MCWG) Timeline

Creation decision by
MCWG membership &
IHE-Europe Executive
Committee approval of
the MCWG taskforce

Support by



December 2022

Completion of first
3 sets of MCWG
Recommendations*

Q1 2024

Updated MCWG
Recommendations
Central QIDO Hub
and Central Viewer
Hub Extensions*

Q3 2024

Recommendation
on Exchange of
Significant
images*

Q4 2024

Deployment Tools
and Clinician Use
of Metadata
Guidance

Q1 2025

MCWG created

MCWG Recommendations Published

99% closing the gap for national imaging interop framework deployment

MCWG Approved Recommendation on Imaging Information Sharing

www.ihe-europe.net/multi-country-working-group-Imaging-Information-Sharing

Scope:
Deployment of interoperability
for Imaging Exchange

- **National or regional level**
- Complementary to Cross-Border imaging exchange focus of EU Commission (eHN, JA9).

Goal:
Deliver design analysis for
specific extensions

- Extensions are needed to **effectively deploy IHE Profiles, DICOM, FHIR** and other standards within countries' ehealth services. Complementary to eHDSI for Cross-Border.

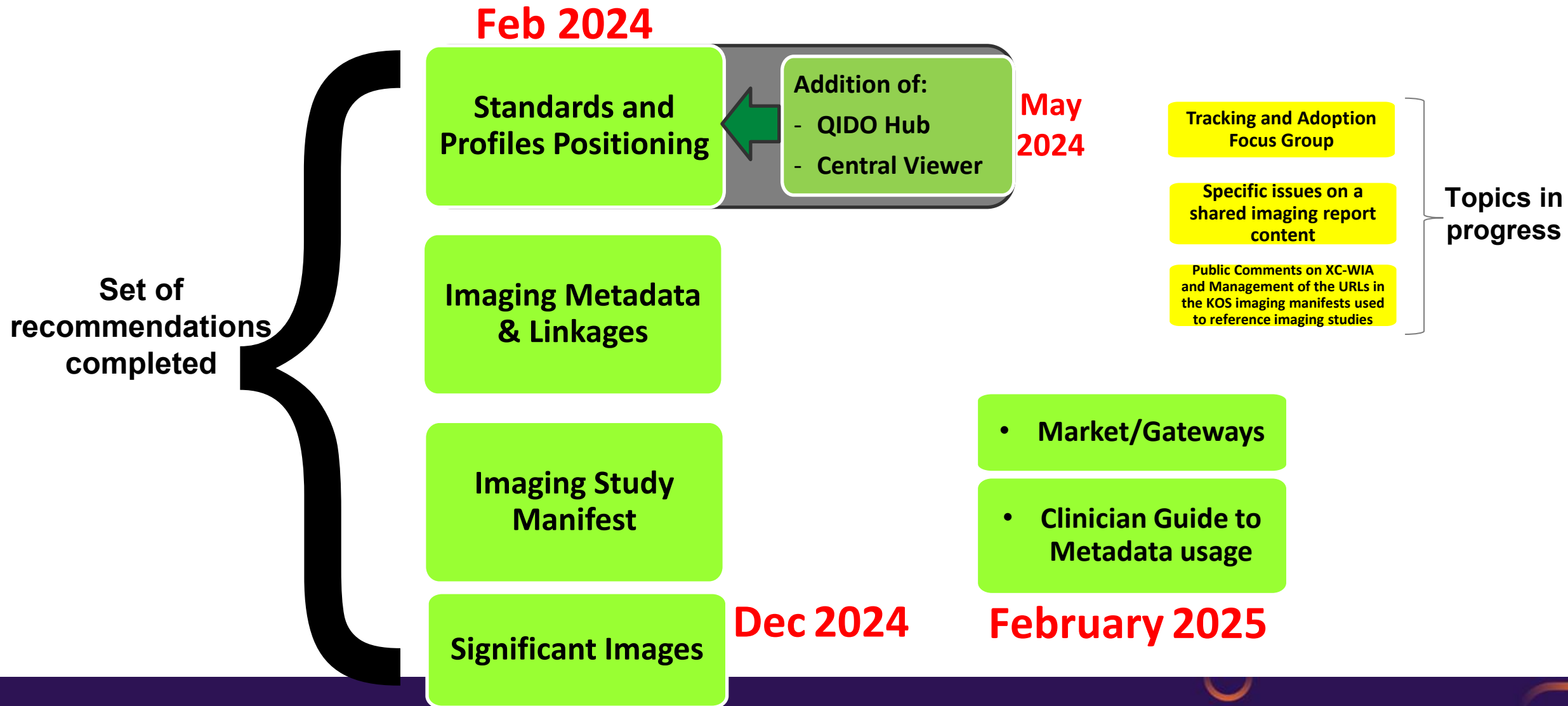
Currently includes
representatives from
11 countries

- **Austria, Belgium, Canada-Quebec, Czechia, Denmark, England, Finland, France, Netherlands, Norway and Spain**
- MCWG is working on expanding that list. **Other countries European and non-European are welcome**

MCWG produced 6 sets of
recommendations
one year

- Recommendations **sufficiently mature, complete (multi country consensus) and stable to be offered for adoption into national interoperability frameworks.**
- **Publicly available documents.** MCWG members to ensure rapid feedback as they apply.

MCWG Recommendations and work in progress



1. Standards and Profiles Positioning

Topic description and scope

Recommendation

Standards
and Profiles
Positioning

Tracking and
Adoption Focus
Group

Imaging
Metadata &
Linkages

Imaging
Study
Manifest

Significant
Images

Clinician
Guide

Deployment
Gateway

Use Case aligned with the
eHN Guidelines on Medical imaging studies and reports :

https://health.ec.europa.eu/document/download/0079ad26-8f8f-435b-9472-3cd8625f4220_en?filename=ehn_mi_guidelines_en.pdf

- search and select imaging studies of interest
- access to images
 - **links in report to server-side or centrally hosted image viewer**
 - **to native DICOM images by a requester-side viewer/processor.**

Choice of profiles and standards

- Position the role of HL7 FHIR in the sharing of imaging information architectures
- **Select profiles and standards for the use case** (IHE MHD (FHIR), IHE/XDS-I, IHE/XCA-I, DICOM WADO-RS)

1 - Standards and Profiles Positioning

Recommendation Highlights

Recommendation

Standards and Profiles Positioning

Tracking and Adoption Focus Group

Imaging Metadata & Linkages

Imaging Study Manifest

Significant Images

Clinician Guide

Deployment Gateway

Three different deployment architectures may coexist (See Note) :

- A. Country (or stand-alone Region) with a **central document registry** both with distributed PACS/VNAs
- B. Country with **federated document registries** & regions with distributed PACS/VNAs
- C. Country (or region) with a **central document registry and a central VNA**

Note: Manifest Document Repositories whether centralized or distributed is possible in all three architectures.

Imaging Study Manifest (DICOM KOS) used in all deployment architectures.

Transactions are from the following profiles:

- A, B or C: **IHE MHD** (FHIR based with document reference resource) + **DICOM WADO-RS** (Rest)
- A or C: **IHE XDS-I** (WS SOAP-Based) + **DICOM WADO-RS** (Rest)
- B : **XCA-I** (WS SOAP based) + **DICOM WADO-RS** (Rest)

2. Imaging Metadata & Linkages

Topic description and scope



Recommendation

Standards
and Profiles
Positioning

Tracking and
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Ensuring effective sharing with linkages

- **For clinician as well as for imaging production**
- Both for imaging reports and imaging studies.
- Linkages with clinical orders and imaging procedure requests

Defining a robust imaging metadata strategy

- **For filtering access in queries** (key filtering elements) for imaging studies.
- **For selecting** among filtered imaging studies returned

2. Imaging Metadata & Linkages

Recommendation Highlights

Recommendation

Standards and Profiles Positioning

Imaging Metadata & Linkages

Imaging Study Manifest

Significant Images

Clinician Guide

Deployment Gateway

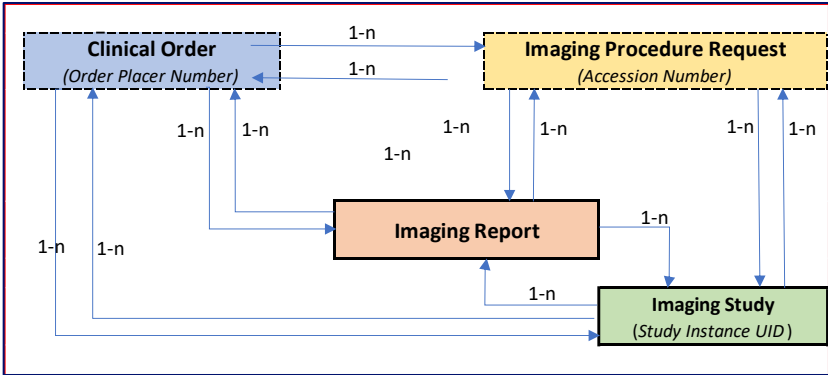
Tracking and Adoption Focus Group

Filtering in queries :

Criteria needed for health professionals (imaging and others) when exploring a patient imaging records:

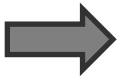
Linkages for relationships between various entities

Metadata element	Description	Query level
Anatomical Regions	Set by RIS per each imaging procedure code	1 (or 2)
Study level modality	Set by RIS per each imaging procedure code	1 (or 2)
Study Instance UID	Set by RIS (sometimes by modality)	2 (or 1)
Accession number	RIS generated imaging procedure request identifier	2 (or 1)
Order Placer number	From ordering module EHR/EMR	2 (or 1)
Imaging Procedure Code	Set by RIS per each performed procedure code	2



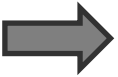
- Initial filtering request (level 1)
- Subsequent selection (level 2) among il list of responses to initial request

Use of Display Names and Codes Value Sets



- Imaging Procedure
- Laterality

Non-imaging specific metadata



- Document Classes: Imaging or Report
- Practice Setting (source Specialty=.

Workflow



- Publication trigger
- Imaging reports header data

3. Imaging Study Manifest

Topic description and scope

Recommendation

Standards
and Profiles
Positioning

Tracking and
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Imaging
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Definition of Imaging Study Manifest

- Based on [eHN Guidelines on Medical imaging studies and reports](#)
- Based on DICOM and IHE XDS-I

Analysis of the detailed content of the imaging manifest (KOS)

- National and local patient IDs,
- Accession numbers,
- Additional content in study/series/instance descriptions for technical or clinical efficiency.

3. Imaging Study Manifest

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- DICOM KOS vs FHIR Document bundle (incl. Imaging Studies Resource). Choice of standard: DICOM KOS



DICOM KOS is a better use case match


- Neutral: Content match 90+% covered – Both are missing only a few standard attributes:
- **Imaging SW Alignment for consumption with 80% created from Imaging Data**
- **Much wider Adoption** – 84 vendors passed Connectathon testing of KOS Manifests (XDS-I). Over 100 sharing environments (Hospital, Regional, national) deployed in Europe
- Transaction to support sharing of manifests and workflows variants
- Key requirements on SOP Classes retrieved by WADO-RS
- Detailed recommendations for manifest content (what needs to be added, why and how)
 - Patient Identification,
 - Study Information,
 - Workflow/identifiers,
 - Series and Instance Information
- Retrieval
 - Locating the Referenced Studies, Series and Instances.
 - Management of retrieve URL and location OIDs
- Selection of Significant Images (IHE KIN)








A checklist is available to assess your countries national image sharing infrastructure alignment with the MCWG recommendations:

To date the following countries have completed the adoption checklist.

MCWG Recommendations Adoption Dashboard

22-05-2025 Feedback from the following countries:



 Austria	 Norway	 Alberta
 France	 Quebec	 Spain
	 England	

MCWG Recommendations Adoption Dashboard



1 Adoption of MCWG Standards Positioning Recommendations

Deployment Architecture Used

Regional or National

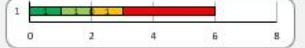
1.2.1 Use deployment architecture A.

A Country (or a single stand-alone Region) with a central document registry both with distributed PACS and/or VNAs.

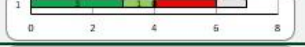


1.2.2 Use deployment architecture C.

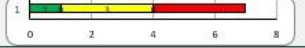
A Country (or region) with a central document registry and a central VNA.



1.2.3 Use IHE XDS-I with your deployment architecture.



1.2.4 Use IHE MHD (FHIR document reference) with your deployment architecture.



1.2.5 Use IHE XCA-I with deployment architecture B.

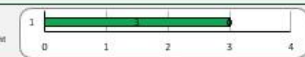
A Country with federated regional document registries and regions with distributed PACS and/or VNAs.



Image Study Access/Viewing

1.7.1 Use Requestor Viewing

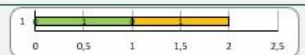
Allows the requesting system to request that copies of image instances available remotely be copied with the full information richness of a native acquired format in the requester's environment for further processing.



Server-Side Viewing

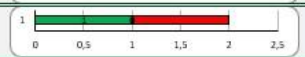
1.7.2 Use Central Hub Option for Server-Side Viewing

Allows the requesting system, with a simple web browser, to request that a centrally hosted viewer renders the images by accessing copies of the images from the source PACS/VNA.



1.7.3 Use Source Server Option for Server-Side Viewing

Allows the requesting system, with a simple web browser, to request that the server where the imaging study is stored renders the images in the simplest way based on a local integration with the source PACS/VNA.



1.8 Use WIA Façade Option

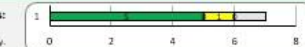
This WIA Façade option is used to access to the content of KOS Manifest of imaging studies per the IHE Profile WIA Use Case 4 design.



Query / Filtering

1.1 Use two level approach to query (filter) for Reports and/or Study Manifests:

Round query using coarse-grained based value sets as query keys.
Refined query or user selection based on returned metadata attribute values from the broad query.



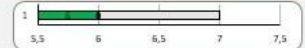
2 Adoption of MCWG Metadata / Linkage Recommendations

Imaging Report/Study Manifest Query and Selection

Level 1 Query

2.1 Use Anatomical Region/Body Part as broad query key (level 1)

(used as eventCodeList metadata attributes)
MCWG recommended SNOMED-CT coarse-grain Anatomical Region value set (10 values).



2.2 Use Study Level (Acquisition) Modality as broad query key (level 1)

(used as eventCodeList metadata attributes)



Level 2 Selection

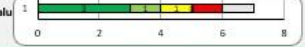
2.5 Use Imaging Procedure Code - Display Name

for selecting among query responses before retrieving (level 2)
(used as eventCodeList metadata attributes)



2.6 Use pre-coordinated (including Laterality) Imaging Procedure Code value sets

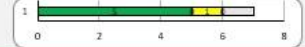
(used as eventCodeList metadata attributes)



Targeted Query

2.8 Use Accession Number as targeted query key

(used as referenceList - urn:ietf:rfc:2013:accession metadata attribute)



2.9 Use Study Instance UID as targeted query key

(used as referenceList - urn:ietf:rfc:2013:studyInstanceUID metadata attribute)

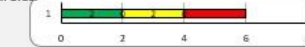


Imaging Report/Study Manifest Linkage

2.14 Use referenceList attributes to exploit all relationships (m-n) between Order

Placer Number(s), Accession Number(s) and Study Instance UID(s)

(used as referenceList - urn:ietf:rfc:2013:order, urn:ietf:rfc:2013:accession and urn:ietf:rfc:2013:studyInstanceUID metadata attributes)



Imaging Report/Study Manifest Publication Strategy

2.17 Use one of the two publication strategies for the Imaging Study Manifest:

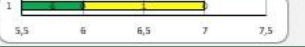
Case A: Validated Imaging Report used as trigger to publish the imaging manifest
Case B: Imaging Manifest published before the Imaging Report is validated and published



3 Adoption of DICOM KOS Imaging Manifest Recommendations

Imaging Study Manifest Type

1.4 Use a DICOM KOS based manifest (rather than a FHIR Imaging Study resource)

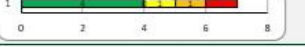


Publication Variant

3.2.1 Use Publication Variant A (When associated Imaging report is validated)



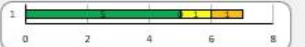
3.2.2 Use Publication Variant B (When Imaging Study acquisition is completed)



Patient Identification

3.4 Use the National (or Regional) Patient Identifier as the primary Patient ID

(0010,0020) attribute [with the corresponding Issuer of Patient ID (0010,0021)] for the KOS object instance



KOS Attribute Extensions

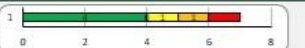
3.5 Study Level Extension

Use the Modalities in Study (0008,0061) attribute [as a study level extension of the Current Requested Procedure Evidence Sequence (0040,A375)]



3.6.4 Series Level Extension

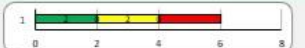
Use the Series Description (0008,103E) attribute [as a series level extension of the Current Requested Procedure Evidence Sequence (0040,A375)]



Locating Referenced Study

3.9.2 Use the Retrieve URL (0008,1190) attribute to define the WADO-RS retrieve

URL that can be used to retrieve the instances of the series where the Retrieve URL is placed in the tree of references



Significant (Key) Image Identification

3.11 Use the IHE KIN Profile to identify the selection of significant images in the

imaging study. The KIN will be included in the KOS Manifest as a referenced instance



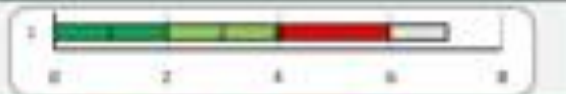
1 Adoption of MCWG Standards Positioning Recommendations

Deployment Architecture Used

Regional or National

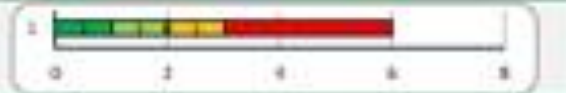
1.2.1 Use deployment architecture A.

A Country (or a single stand-alone Region) with a central document registry both with distributed PACS and/or VMAs.



1.2.2 Use deployment architecture C.

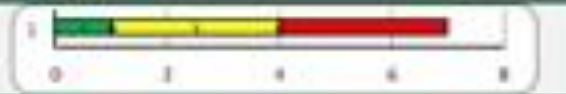
A Country (or region) with a central document registry and a central VMA.



1.2.3 Use IHE XDS-I with your deployment architecture.



1.2.4 Use IHE MHD (FHIR document reference) with your deployment architecture.



1.2.5 Use IHE XCA-I with deployment architecture B.

A Country with federated regional document registries and regions with distributed PACS and/or VMAs.



Image Study Access/Viewing

1.7.1 Use Requestor Viewing

Allows the requesting system to request that copies of image instances portable remotely be copied with the full information (format of a native acquired format) to the requester's environment for further processing.



Server-Side Viewing

1.7.2 Use Central Hub Option for Server-Side Viewing

Allows the requesting system, with a simple web browser, to request that a centrally located viewer renders the images by accessing copies of the images from the source PACS/VMA.



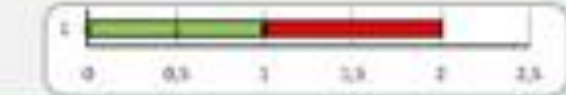
1.7.3 Use Source Server Option for Server-Side Viewing

Allows the requesting system, with a simple web browser, to request that the server where the imaging study is stored renders the images in the simplest way based on a local integration with the source PACS/VMA.



1.8 Use WIA Facade Option

This WIA Facade option is used to access to the content of XDS Manifest of imaging studies per the WIA Profile With the Case 4 design.



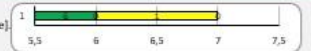
ion of Recommendations ion Dashboard



3 Adoption of DICOM KOS Imaging Manifest Recommendations

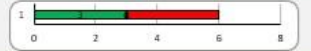
Imaging Study Manifest Type

1.4 Use a DICOM KOS based manifest [rather than a FHIR Imaging Study resource]

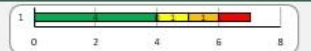


Publication Variant

3.2.1 Use Publication Variant A (When associated Imaging report is validated)

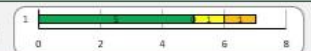


3.2.2 Use Publication Variant B (When Imaging Study acquisition is completed)



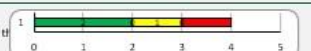
Patient Identification

3.4 Use the National (or Regional) Patient Identifier as the primary Patient ID (0010,0020) attribute [with the corresponding Issuer of Patient ID (0010,0021)] for the KOS object instance

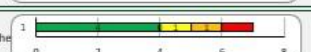


KOS Attribute Extensions

3.5 Study Level Extension
Use the Modalities in Study (0008,0061) attribute [as a study level extension of the Current Requested Procedure Evidence Sequence (0040,A375)]

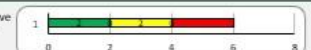


3.6.4 Series Level Extension
Use the Series Description (0008,103E) attribute [as a series level extension of the Current Requested Procedure Evidence Sequence (0040,A375)]



Locating Referenced Study

3.9.2 Use the Retrieve URL (0008,1190) attribute to define the WADO-RS retrieve URL that can be used to retrieve the instances of the series where the Retrieve URL is placed in the tree of references



Significant (Key) Image Identification

3.11 Use the IHE KIN Profile to identify the selection of significant images in the imaging study. The KIN will be included in the KOS Manifest as a referenced instance



NEXT STEPS IN 2025 AND TIMELINE

Tracking and Adoption FG

On-going

Specific issues on a shared imaging report content

In progress

Public Comments on XC-WADO and Management of the URLs in the KOS imaging manifests used to reference imaging studies

In progress

The Multi-Country Working Group on Imaging Information Sharing is well established and has delivered valuable refinements to the available standards and profiles for a consistent deployment across multiple countries.

These companion recommendations are compact and assemble significant technical, imaging expertise with more than 15 years of standards deployment experience.

Adoption tracking and topics that support EHDS for imaging are the first half of 2025 priorities.

... Possible Future Topics such as: Image compression, URL Mgt, Security/Privacy, Imaging Report, Reformat Recommendations, etc.

Xt-EHR
(EHDS National
Interoperability
Specifications)

**MCWG on Imaging
– Core (Current)**

Ministries and eHealth Agencies

Adding Health Professionals, Industry,

**MCWG on Imaging
– Community of Doers**

IHE Europe

MyHealth@EU (Cross-Border)

- **Move *MCWG on Imaging-CoD* closer to Xt-EHR:**
 - Raise the visibility of MCWG Recommendations.
 - Visibility of IHE-Europe's convener role with large range of stakeholders.
- **Ensure that MCWG participants also engage into Xt-EHR WP7.2 (imaging) to ease MCWG Recommendations alignment.**
- **Ensure that MCWG participants also engage into MyHealth@EU to ease MCWG Recommendations adoption by EHDS.**

MCWG has provided specific contributions to Xt-EHR WP 7.2 Medical Imaging on the following:

- **Use of a common document management layer**

Across all Xt-EHR Prioritized Services (patient summary, ePrescription/eDispensation, lab results, medical imaging & hospital discharge) based on the **IHE MHD Profile** using the **FHIR DocumentReference** resource with generic search/filtering parameters.

- **European HL7 FHIR Implementation Guide on Imaging Report**

Explaining the need to keep the Imaging Study Manifest distinct (separate) from the Imaging Report – see [HL7 FHIR - Report and Manifest](#).

- **Imaging Study Manifest DICOM KOS specification**

A draft EHDS Imaging Study Manifest Specification (embedded) is under review by Xt-EHR WP 7.2. MCWG has collected review comments (embedded) from MCWG members and approved the submission to Xt-EHR WP 7.2 on March 3rd, 2025.



Xt-EHR EHDS
Imaging Study Manifest



EHDS Imaging
Manifest-Comments

- **Proposed encoding for the Imaging Study Manifest**

An analysis to choose the most appropriate encoding of an Imaging Manifest (embedded)
– Pivot format for cross-border/national/regional sharing is the widely deployed DICOM KOS but facilitating consumer side transformation to other (JSON) representations based on specific consumption use case requirements.



MCWG Analysis
most appropriate N

MCWG has provided specific contributions to MyHealth@EU (Medical Imaging) on the following:

- **Cross-border Proof of Concept (POC) Medical Imaging Studies (MIS)**

Analysis of the transactions required to support the eHN Medical Imaging Guideline – Use Case 1 with a comparison between a 2 and 3 step approach (embedded). The 3 step approach has been adopted:

1. Query for list of imaging reports and imaging study manifest matching a set of search parameters.
2. Selection and retrieval of relevant imaging report(s) and/or imaging study manifest(s).
3. Selection and retrieval of relevant imaging study parts (series/instances) using details from selected imaging study manifest(s).



- **Cross-border Instance (Image) Retrieval**

Advice on the potential use of the IHE XC-WADO Profile as the instance retrieval mechanism between NCPs.



IHE MCWG welcomes additional countries and looks forward to further collaborations with eHN groups and projects

*Questions, Comments and Suggestions are welcome
and should be sent to the IHE-Europe Secretariat: secretariat@IHE-Europe.net*