



Providing ART-DECOR ValueSets via FHIR Terminology Servers – A Technical Report

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Jahrestagung der GMDS 2021

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- ValueSets available from ART-DECOR in FHIR R4 format
 - IHE ValueSets for Sharing
 - provision in a local FHIR Terminology Server (Ontoserver)



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- CodeSystems not available from ART-DECOR currently, and not elsewhere available either
 - for the most part, anyways: identify those that are available
- Lack of CodeSystems prohibits use of operations on FHIR TS
- Generate CodeSystems from the available ValueSet resources



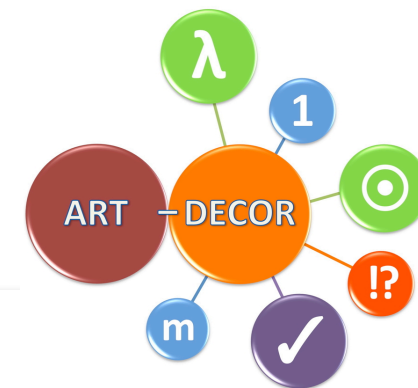
Integrating the Healthcare Enterprise (IHE)



- IHE defines several integration profiles
 - e.g., XDS.b: Cross-Enterprise Document Sharing for exchange of documents (e.g. patient files)
- XDS.b requires use of coded information in the meta-model
 - “Container format” that can be used for exchange of machine-readable documents (e.g. HL7 CDA) alongside human-readable documents (e.g. scanned PDF documents)
 - Identification of metadata elements in container using standard terminology

ART-DECOR

- “Advanced Requirements Tooling using Data Elements, Codes, OIDs and Rules”
 - System for development of data set specifications
 - Used extensively for HL7 Clinical Document Architecture (CDA) profiling
- Implementation-independent logical models of the data sets
 - Transformation of models to e.g. FHIR, openEHR, CDA et al.



Covid-19 Research-Dataset - Datasets

Project | Datasets | Scenarios | Terminology | Templates | Issues

Concepts Forschungsdatensatz GECCO | Datasets

Chronische Lungenerkrankungen

Id: covid19f-dataelement-1.1130 | Version: 2020-04-08
 Status: Final | Version Label: 1.0

Description: Leidet der/die Patient*in unter einer chronischen Lungenerkrankung? An welcher chronischen Lungenerkrankung leidet der/die Patient*in?

Comment: FHIR-Mapping: Condition

Code	Display Name	Codesystem
J98.4	Sonstige Veränderungen der Lunge	ICD-10 International (WHO) (German Variant)
413839001	chronische langziekte (aandoening)	SNOMED Clinical Terms

Value

Type: Code

Value Set Association:

- required ● Uncertainty of Presence (Dynamic)
- required ● DataAbsentReason (Dynamic)
- extensible ● Chronische Lungenerkrankungen ICD (Dynamic)
- extensible ● Chronische Lungenerkrankungen (Dynamic)
- required ● Certainty of Presence (Dynamic)
- required ● Certainty of Absence (Dynamic)

Concepts (Click the value set for full detail. Showing 20 of 73)

Concept	Code	Display Name	Codesystem
Asthma	J45.9	Asthma bronchiale, nicht näher bezeichnet	ICD-10 International (WHO) (German Variant)
	195967001	Asthma (disorder)	SNOMED Clinical Terms
COPD	J44.9	Chronische obstruktive Lungenerkrankung, nicht näher bezeichnet	ICD-10 International (WHO) (German Variant)

ART-DECOR and IHE ValueSets

IHE Deutschland e. V. - Value Sets

Navigation: Home, Search, Project, Datasets, Scenarios, Terminology, Templates, Issues, Login

Current View: IHE XDS authorRole – 2021-06-25 13:21:07 (v3)

History (1)

Usage (0)

Id	1.2.276.0.76.11.30	Gültigkeit	2021-06-25 13:21:07
Canonical URI	http://ihe-d.de/ValueSets/IHExDSauthorRole		
Status	Definitiv	Versions-Label	v3
Name	IHExDSauthorRole	Bezeichnung	IHE XDS authorRole
Beschreibung	<p>authorRole (XDSDocumentEntry or XDSSubmissionSet) Represents the role of the author with respect to the patient at the time that an XDS Document or XDS Submission Set was created.</p>		
2 Quell-Codesysteme	<p>1.3.6.1.4.1.19376.3.276.1.5.13 - <i>Prozessrollen für Autoren - urn:oid:1.3.6.1.4.1.19376.3.276.1.5.13</i></p> <p>1.3.6.1.4.1.19376.3.276.1.5.14 - <i>Patientenbeziehungsrollen für Autoren - urn:oid:1.3.6.1.4.1.19376.3.276.1.5.14</i></p>		

Alles ausklappen | Alles einklappen | Suche auf Name

Level/ Typ	Code	Bezeichnung	Codesystem	Beschreibung
0-L	1	Einweiser	Prozessrollen für Autoren	Die Person, die die Einweisung veranlasst hat. (Sie wird auch als Zuweiser bezeichnet.)
0-L	2	Entlassender	Prozessrollen für Autoren	Die Person, die für die Entlassung verantwortlich ist.
0-L	3	Überweiser	Prozessrollen für Autoren	Die Person, die die Überweisung veranlasst hat.

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Image: ART-DECOR ValueSet, Project IHE XDS ValueSets for Sharing, <https://art-decor.org/art-decor/decor-valuesets--ihede-> [accessed 2021-09-2021]

ART-DECOR and IHE ValueSets

IHE Deutschland e. V. - Value Sets

Warning! Code systems integrated in DECOR are a temporary solution. We are working on a more capable and scalable solution for ART-DECOR 2.0. This is why there currently is no editor.

DICOM PS3.16 CID 29 Acquisition Modality

Usage (...)

Id	1.2.840.10008.6.1.19	Gültigkeit	
Name	DICOM_Acquisition_Modality	Bezeichnung	DICOM PS3.16 CID 29 Acquisition Modality
Beschreibung	Reference to another code system with id='1.2.840.10008.6.1.19' and name='DICOM PS3.16 CID 29 Acquisition Modality'		

PracticeSetting doctoral (v3)	0-L	1	Einweiser	Prozessrollen für Autoren	Die Person, die die Einweisung veranlasst hat. (Sie wird auch als Zuweiser bezeichnet.)
PracticeSetting non-doctoral (v3)	0-L	2	Entlassender	Prozessrollen für Autoren	Die Person, die für die Entlassung verantwortlich ist.
	0-L	3	Überweiser	Prozessrollen für Autoren	Die Person, die die Überweisung veranlasst hat.

Specifications for terminology

- Terminology must be exchangeable across institutions
 - Specifications for the representation and exchange of terminological artefacts needed

Specifications for terminology

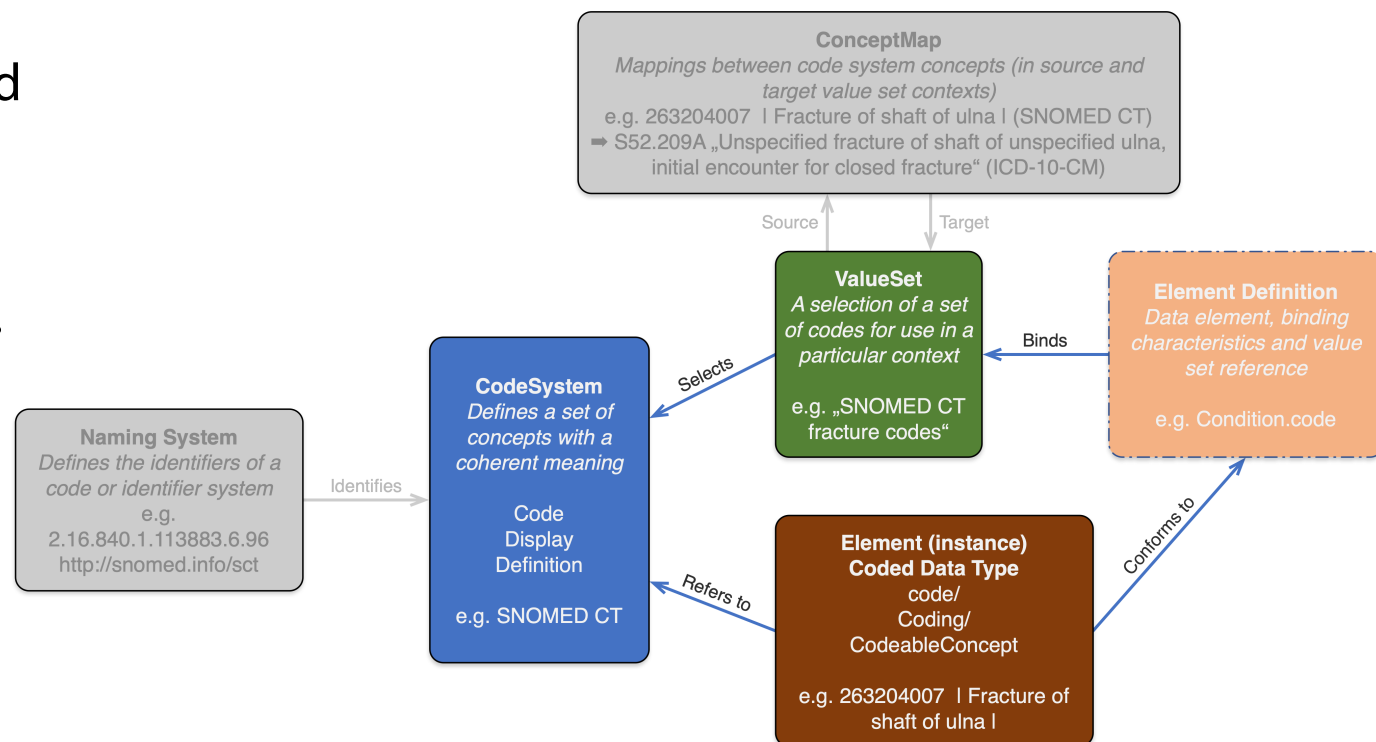
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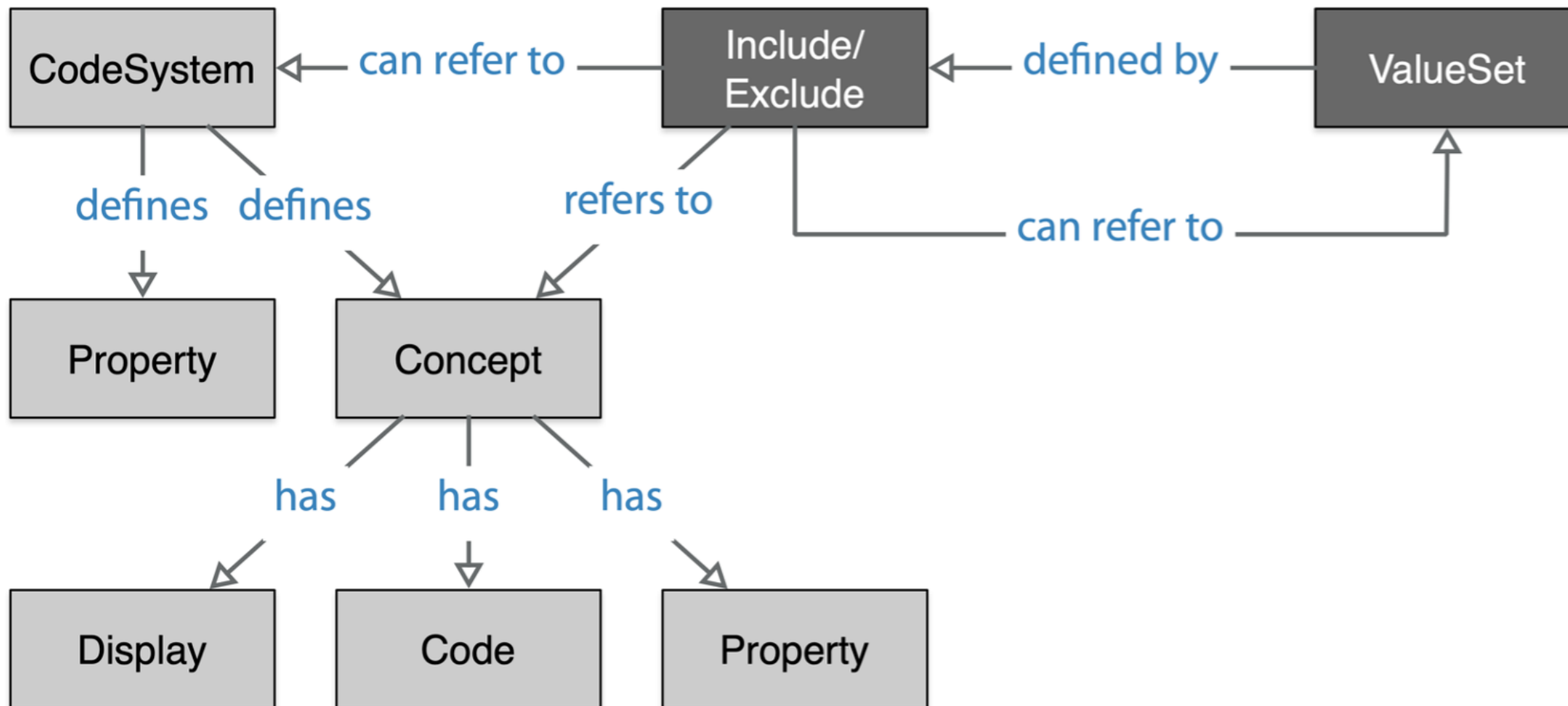
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- Utilization of terminology servers (TS) and standard-compliant resources
 - HL7 FHIR R4 Terminology Package
 - Resources
 - Operations

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CodeSystem/ValueSet Dichotomy in HL7 FHIR



Conversion Process

- Input: native ART-DECOR JSON

```
▼ valueSet:  
  ▼ 0:  
    ▼ conceptList:  
      ▼ 0:  
        ▼ concept:  
          ▼ 0:  
            code: "1"  
            codeSystem: "1.3.6.1.4.1.19376.3.276.1.5.13"  
            displayName: "Einweiser"  
            level: "0"  
            type: "L"  
            ▼ desc:  
              ▼ 0:  
                language: "de-DE"  
                #text: "Die Person, die die Einw...;br clear=\"none\"/&gt;"  
          ▼ 1:  
            code: "2"  
            codeSystem: "1.3.6.1.4.1.19376.3.276.1.5.13"  
            displayName: "Entlassender"  
            level: "0"  
            type: "L"  
            ▼ desc:  
              ▼ 0:  
                {...}  
          ▼ 2:  
            code: "3"  
            codeSystem: "1.3.6.1.4.1.19376.3.276.1.5.13"  
            displayName: "Überweiser"  
            level: "0"  
            type: "L"  
            ▼ desc:
```

Conversion Process

- Input: native ART-DECOR JSON
- Assumption: all codes of CodeSystems are enumerated within the project
 - not necessarily within one resource
 - merging of resources during processing

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        concept:  
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              type: "L"  
              desc:  
                0: {...}  
            2:  
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 - merging of resources during processing
- Hierarchy of codes (level, type) to be mirrored
- Only render resources that are not elsewhere defined
 - OID matcher: ignore entire OID subtrees
 - e.g. HL7 Terminology 2.16.840.1.113883.5

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- FHIR JSON is easier than XML



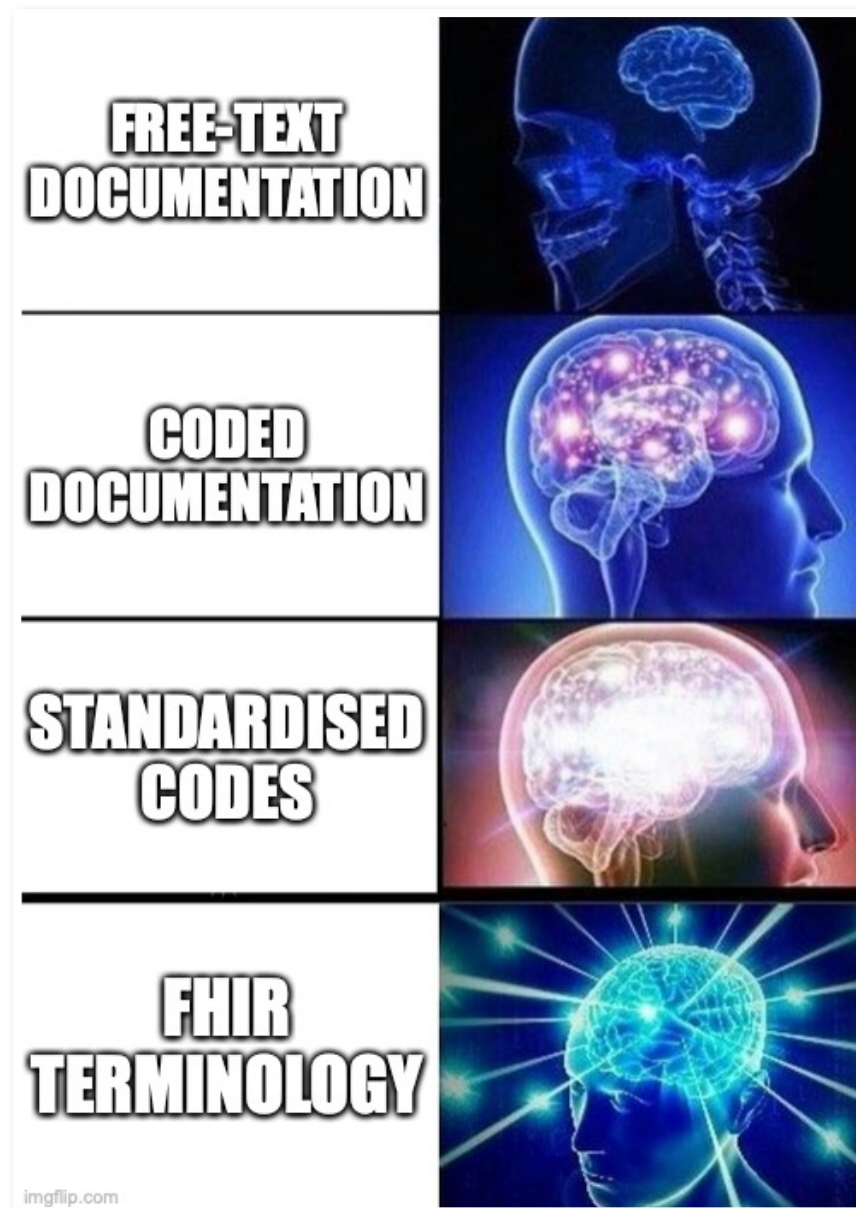
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- FHIR JSON is easier than XML 
- One resource converted manually using GUI tooling → tools exist!

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- FHIR JSON is easier than XML
- One resource converted manually using GUI tooling → tools exist!
- Go FHIR, it's not that hard!



Discussion

- In a FHIR-based world, terminology should be FHIR also
- Need for terminology servers to distribute resources across the ecosystem

Workshop „Terminologie-Management für nationale E-Health-Infrastrukturen“

[zurück](#)

 30.09.2021 10:00 – 15:30

 Satelliten Event

Zum Event: <https://www.gmds.de/de/aktivitaeten/medizinische-informatik/arbeitsgruppenseiten/medizinische-terminologien-und-klassifikationen-mtk/>

Ansprechpartner: Prof. Dr. Josef Ingenerf, GMDS-AG „Medizinische Terminologien und Klassifikationen“ (MTK)
Ansprechpartnerin: Prof. Dr. Sylvia Thun, GMDS-AG „Standards für Interoperabilität und elektronische Gesundheitsakten“ (SIE)



Contact

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- www.linkedin.com/in/jpwiedekopf

