



HL7 Germany



ESPERIENZE INTERNAZIONALI:

HOW HL7 GERMANY GOES FHIR AND BEYOND...

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1° HL7 Italia FHIR Workshop: potenzialità
e prospettive comuni, Florence
4 dicembre 2015

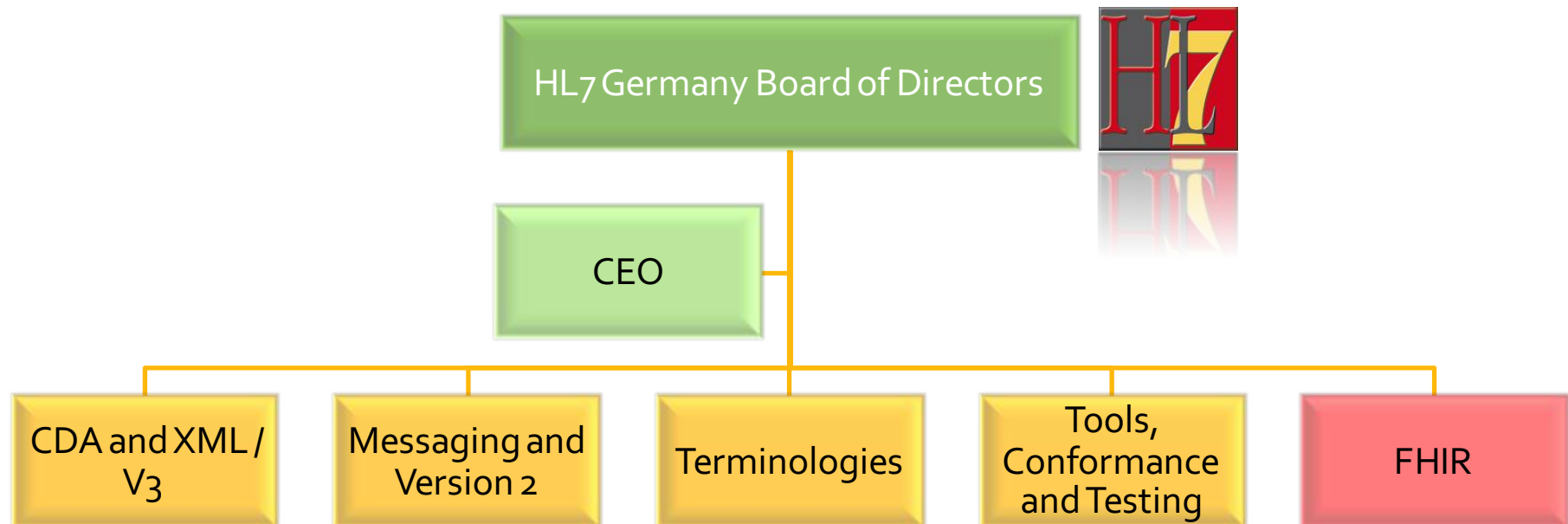
Agenda



- FHIR Structures in Germany
 - ▶ Technical Committee: a Strategy and a Task List
 - ▶ HL7: Three Generation of Standards!
 - ▶ Tooling – now and in the Future
- FHIR's diabolic components
 - ▶ Critical Factors and Criticism
- Conclusion

Technical Committees

- Board of Directors drives and supervises the Technical Committees



FHIR Technical Committee

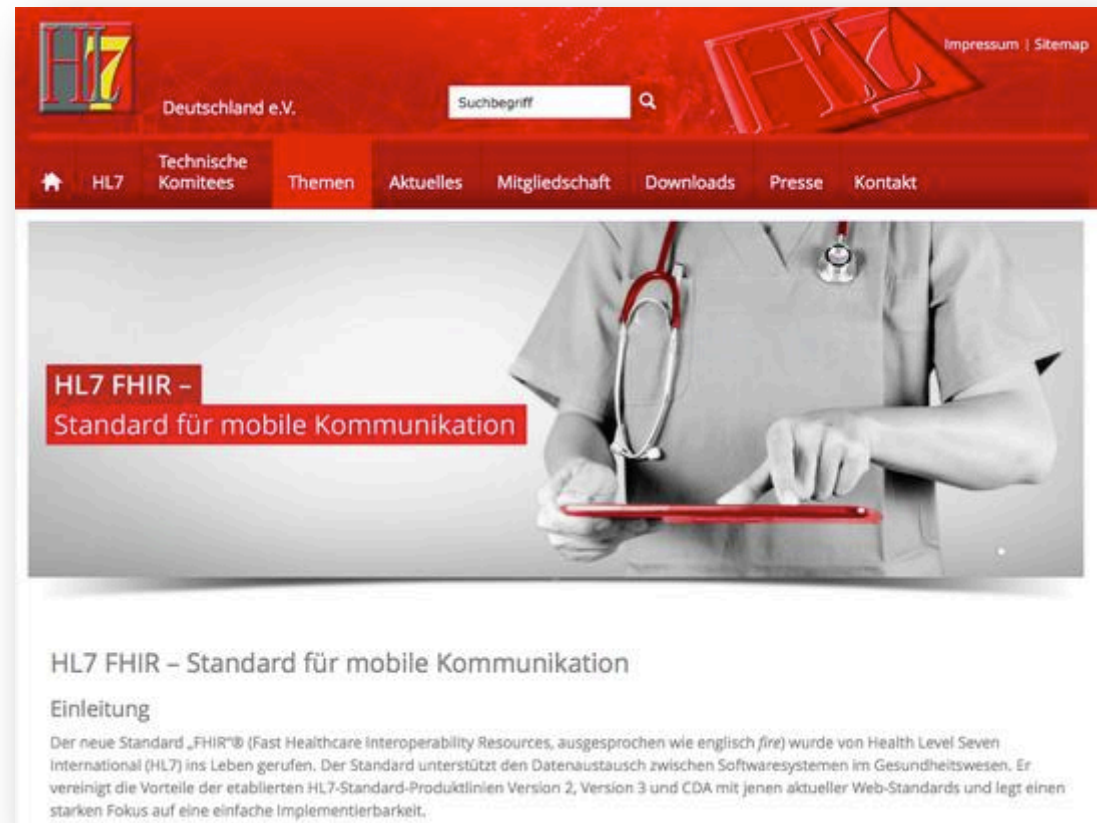


- Information and Education
- Community Formation
- Meetings and Work Groups
- Create and maintain Profiles and Value Sets
 - ▶ Connect-a-thons
 - ▶ Infrastructure
 - ▶ Tools and Best Practice
- Bring FHIR into Politics, Science and Industry
- International Representation / Reports

Information and Education



- Website Top Topics
- Tutorials at our Annual Meetings
- Hack-a-thons
- Videos (hl7.tv)
- Presentations at other meetings





Information and Education

- Calm down your membership
 - ▶ “Don’t kick the other standards out of the door”
 - ▶ ...warn, encourage... and show Best Practices
- Expectation Management
- Migration Strategies
- Pilot Projects
- Blessing and curse: New and young generation of App builders – with no medical background at all

HL7-Standards-Family

- Version 2.x
 - ▶ Messages (1987..)
 - ▶ v2.xml (2003..)
- Version 3
 - ▶ Messages (1995..) and Services
 - ▶ **Documents = Clinical Document Architecture CDA (1999..)**
- **FHIR** (Fast Healthcare Interoperability Resources, 2012..)



Interoperability Paradigms



- REST
 - ▶ Core of FHIR, with GET and POST etc.
- Documents
 - ▶ Like CDA, Bundles of Resources
- Messages
 - ▶ Like v2 und V3, Bundles of Resources
- Services
 - ▶ Service Oriented Architecture
- Also important – Formats: XML vs JSON



Convergence of Problems/Solutions



- Segments
- Datatypes
HL7 v2
- Profile
- Z-Segments
- Machine only
- Ad-hoc Coverage



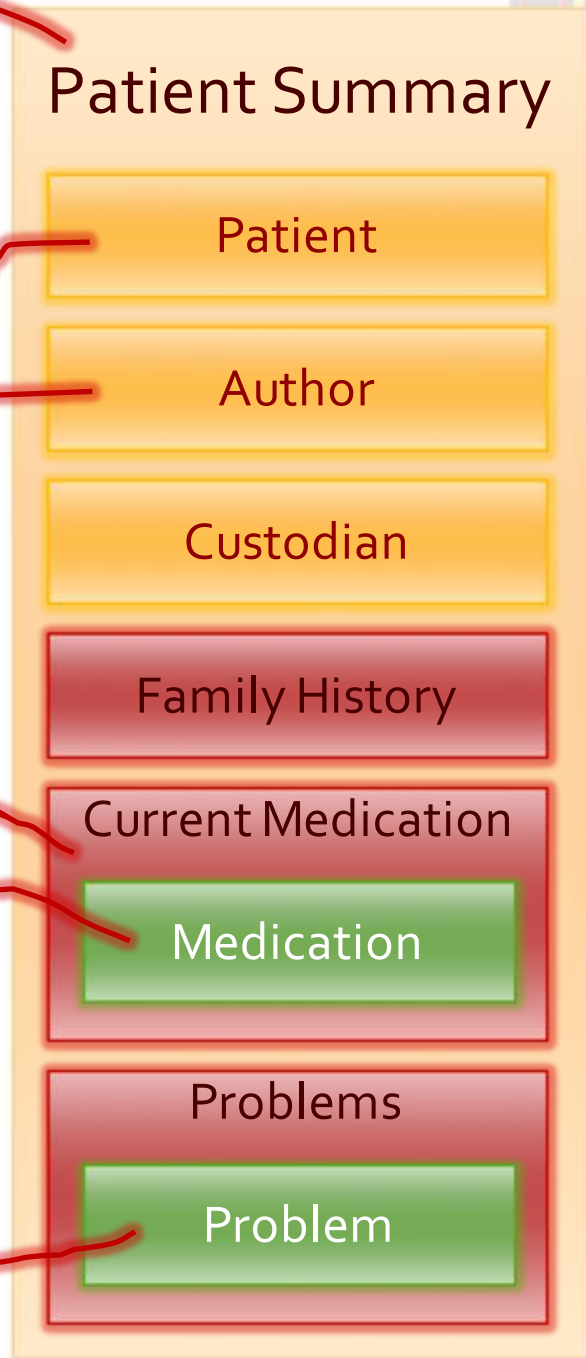
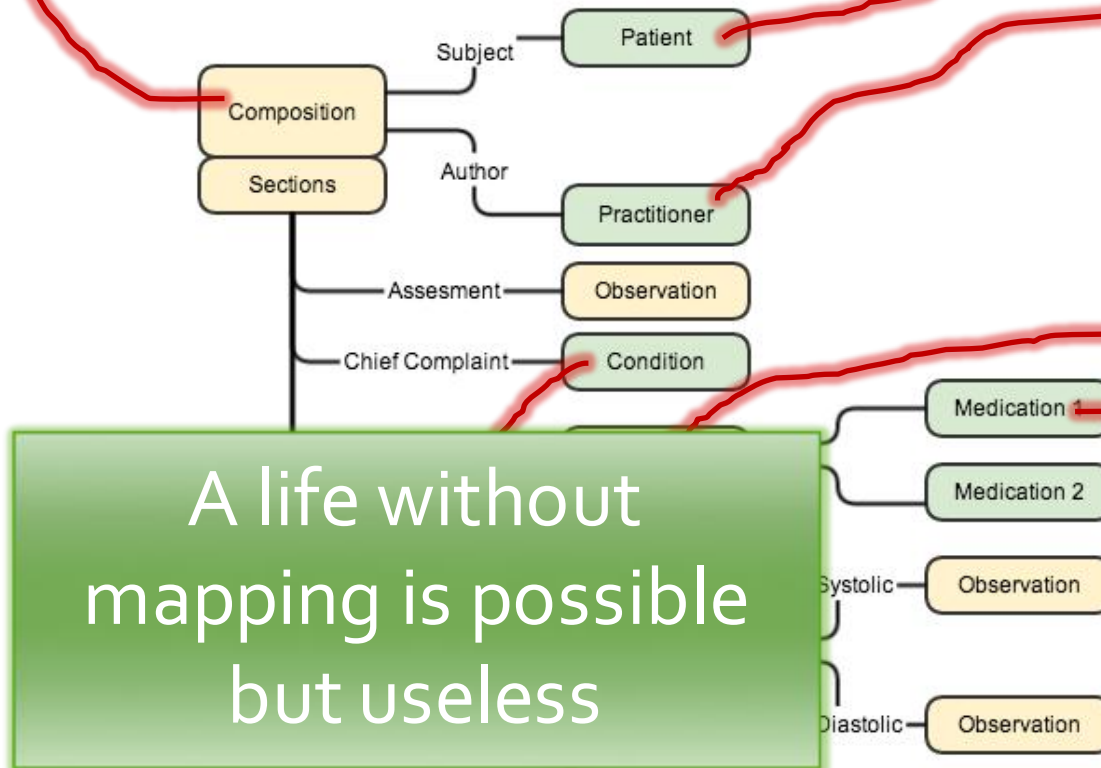
- Model (V3)
- Datatypes
HL7 R1.1
- Templates
- Informal Extensions
- Human/Machine
- 100% Coverage



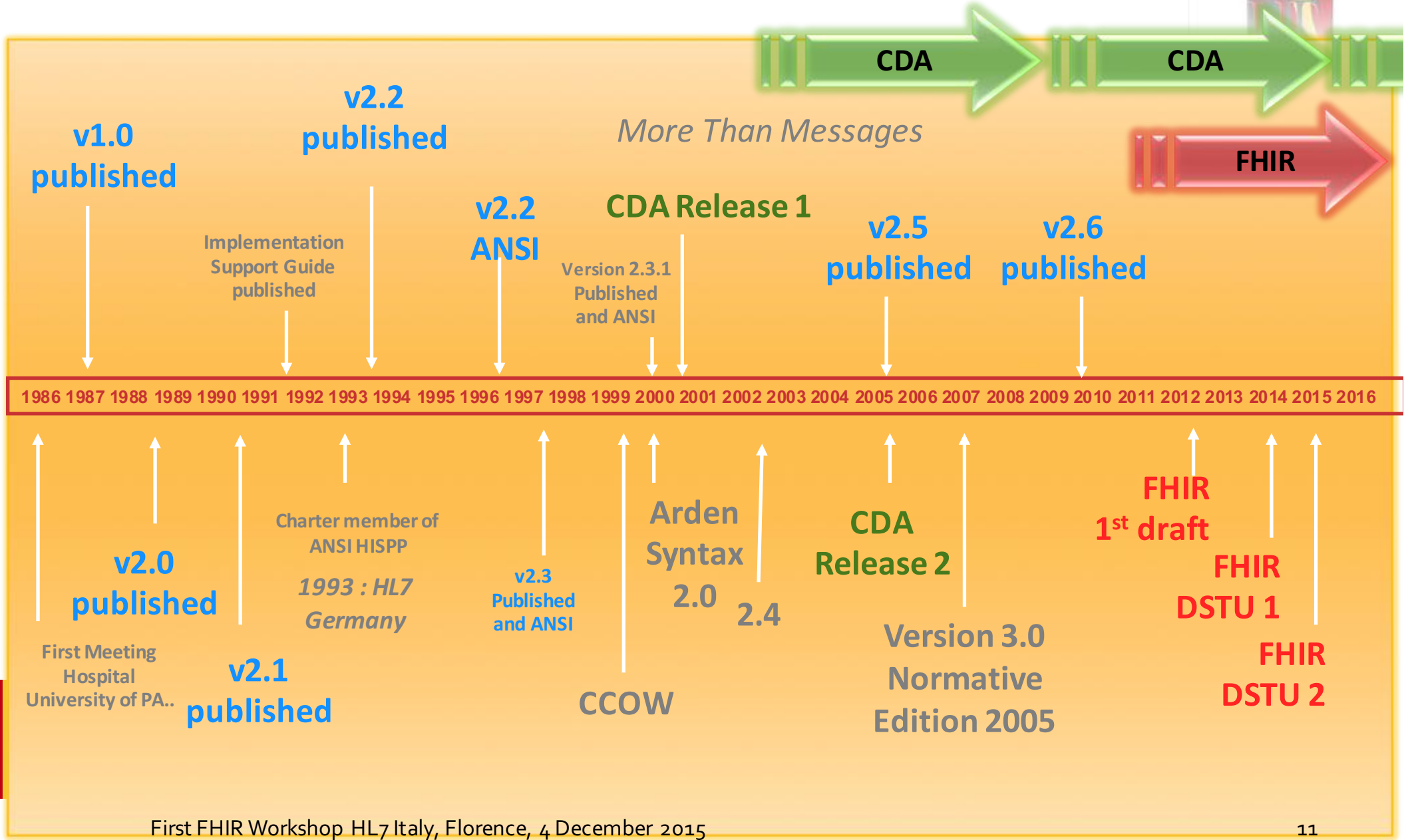
- Resources
- Datatypes
Partially HL7 R2 / ISO 21090
- Profile
- Featured Extensions
- Human/Machine
- 80% Coverage

Convergence of Problems/Solutions

- Templates / Profile



What happens when?



Community Formation



- BLOG, Community Mailing List, Twitter, Facebook, “smotare con bierra”

A screenshot of the website fhirabend.de. The page has a dark background with a fire image on the left. The main heading is 'Fhir.Aabend' with the tagline 'Interoperability. After dark.' Below this is a navigation bar with 'Blog', 'Über FHIR', and 'Aktuelles'. The main content area features a date 'Mittwoch, 23. September 2015' and a prominent announcement: '+++ Breaking News: DSTU 2 veröffentlicht!!! +++'. Below the announcement, it says 'Es ist soweit:' followed by a paragraph: 'Das FHIR-Team freut sich, die Veröffentlichung des FHIR DSTU* unter http://hl7.org/fhir zu verkünden. Die 2. Edition ist eine umfangreiche Neufassung aller Teile der Spezifikation. Die wichtigsten Punkte umfassen'. A list of bullet points follows: '• eine Vereinfachung der RESTful API', '• Erhebliche Erweiterungen der Such- und Versionierungs-Funktionen', '• Verbesserung von Bedeutung und Tragkraft der Conformance-Ressourcen und -Werkzeuge', and '• Definition von Terminologie-Diensten'. On the right side, there is a 'Über mich' section for Simone Heckmann, Health-Comm GmbH, with links to 'Mein Profil XING' and 'LinkedIn Profil'. Below that is a 'Blog-Archiv' section showing '2015 (19)' and 'September (5)', with the same breaking news announcement repeated at the bottom right.

FHIR Profiles + Value Sets



- Creation
 - ▶ German Profiles
 - ▶ German Datatypes
 - ▶ German Extensions
 - ▶ German Value Sets
- Maintenance
 - ▶ Registry for profiles, extensions and value sets
 - ▶ Multi-Purpose Tooling (Terminology Servers, Forge, ART-DECOR)



ART-DECOR in 4 bullets (1)

- ...is an open-source tool and a methodology for various **multidisciplinary** stakeholders of healthcare information exchange



ART-DECOR in 4 bullets (2)



- ...supports comprehensive **collaboration of team members** within and between governance groups
- ...allows separation of concerns and different views on one **single documentation for different domain experts**
- ...supports **creation and maintenance of HL7 templates** (DSTU), value sets, data sets and more

ART-DECOR main objective



- One of the main objectives
 - ▶ Separation of concerns towards a comprehensive specification
 - ▶ Different views on one single documentation
 - With changing focus on different artifacts
 - For different domain experts



Overview ART-DECOR[®]

HL7 Deutschland



Concept	Scenario	Rules	Identifiers	Codes	Issues
					
<ul style="list-style-type: none">• Concept Group / Item• Data type• Concept list• Properties	<ul style="list-style-type: none">• Actor• Transaction• Cardinality• Conformance• Test suite	<ul style="list-style-type: none">• Templates• Elements• Attributes• Constraints• Validation	<ul style="list-style-type: none">• OID registry• Summary of IDs	<ul style="list-style-type: none">• Value Sets• Terminology Associations• Coded Concepts	<ul style="list-style-type: none">• Change Management• Status• Assignment

ART-DECOR®



- Used in Germany for
 - ▶ Creation and Maintenance of CDA-related Definitions
 - Templates
 - Value Sets
 - ▶ Datasets (e.g. functional view on a diagnosis, an allergy, a procedure)
 - ▶ Terminology Reference and Service
 - ▶ Application Prototype Building
 - ▶ Building Block Repository (BBR)

ART-DECOR templates



Demo 5: Vital Signs CDA Document Templates

DECOR Project Datasets Scenarios Terminology Templates Issues

Login English (en-US)

Templates

Search

- CDA document level template
 - Vital Signs Summary CDA document
- CDA header level template
 - CDA author
 - CDA typeId
 - CDA title
 - CDA confidentialityCode
 - CDA Organization Elements
 - CDA recordTarget**
 - CDA custodian
 - CDA id
 - CDA effectiveTime
 - CDA Person Elements
 - AssignedEntityElements
- CDA section level template
 - Vital Signs Section
- CDA entry level template
 - Vital Sign Observation
 - Mean blood pressure
 - Body Weight
 - HeartRatePeripheral

CDA recordTarget

Version: 2014-07-08 | Status: Active

Version Label: | Id: demo5-template-2001

Name: CDArecordTarget | Display Name: CDA recordTarget

Description, model, context and examples

Description	The patient / client			
Classification	cdaheaderlevel			
Open/Closed	open			
Used by / Uses	Used by Template Id	as	Name	as of
	2.16.840.1.113883.3.1937.99.60.5.10.1	Inclusion	VitalSignsCDAdocument Vital Signs Summary CDA document	2014-07-08
Uses	Uses Template Id	as	Name	as of
	2.16.840.1.113883.3.1937.99.60.5.10.900207	Inclusion	NationalPatientIdentifier Burgerservicenummer	2014-07-08
Relations	Type	Model / Template	as of	
	Specialization	2.16.840.1.113883.10.12.101	2005-09-07	

Example: A simple patient, named John Doedidoe

```
<recordTarget>
  <patientRole>
    <id root="2.16.840.1.113883.2.4.6.3" extension="100202020" />
    <patient>
      <name>
        <given>John</given>
        <family>Doedidoe</family>
      </name>
      <administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1" />
      <birthTime value="19620219" />
    </patientRole>
  </recordTarget>
```

ART-DECOR[®] and FHIR Support



- Terminology Services
- Profiles and Extension Registry

Vaccination Certificates Document - Templates

DECOR | Project | Datasets | Scenarios | Terminology | Templates | Issues

Templates | **FHIR Profiles**

FHIR Profiles / FHIR Extensions

🔄 🔗 + ⏪

🔍

- [-] FHIR Profile
 - 🗑 Patient
 - 🗑 Practitioner
 - 🗑 Specimen Resource DE
- [-] FHIR Extension
 - 🗑 CC Practitioner

FHIR Profile: Patient (repository)

Id: Patient | Version:

This structure is derived from [Observation](#).

Name	Flags	Card.	Type	Description & Constraints
Observation		0..*	Observation	US Realm laboratory non-numeric results
identifier	S	1..*	Identifier	
use	S	1..1	code	
system	S	1..1	uri	
value	S	1..1	string	
status	S	1..1	code	
code	S	1..1	CodeableConcept	US Realm Laboratory Binding: US Laboratory Codes (extensible)

ART-DECOR® Projects (some)



- International projects (mainly in Europe)
 - ▶ Austria (ELGA National eHealth programme)
 - ▶ Netherlands (national screening programme on bowel cancer)
 - ▶ Netherlands (Nictiz, multiple projects)
 - ▶ Norway (HL7, regional Health networks)
 - ▶ epSOS/EXPAND (European eHealth programme)
 - ▶ Germany (HL7, national eHealth programme)
 - ▶ HL7 Poland iEHR with CDA
 - ▶ European Templates and Value Set Repository (nascent)
 - ▶ IHE Profile and Value Set Repository (in development)



ART-DECOR @ internet



- art-decor.org
 - ▶ Documentation
 - ▶ International site and international projects host
 - ▶ blog.art-decor.org etc.



- ▶ Sourceforge 

- decor.nictiz.nl
 - ▶ Dutch projects host
 - ▶ Documentation, specification



FHIR Persons (DE)

- Simone Heckmann
FHIR TC
Lead



- CEO, BoD and other TC Leads



- Working Groups



Politics, Science, Industry

- Bring FHIR into Politics, Science and Industry
- eHealth Law
 - ▶ Contact with Politicians
 - ▶ Position/Opinion Papers
 - ▶ Hearings
 - ▶ “Bundestag”
- Easier: Science, Industry – because we are better in reaching our members

Foto © Bundesregierung / Henning Schacht



Politics, Science, Industry

HL7 Deutschland



- HL7 Newsletter
 - ▶ DE, CH, AT, LU
- Press Releases
HL7 Germany
- Opinion Papers with
other organizations
e.g. IHE, Vendor
Associations etc.



International Representation



- FHIR Connect-a-thons
- FHIR Developer Days
- Reports to membership
- Work with FHIR and tools to make it a better standard
- Re-think and re-fine concepts
- Identify threats



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FHIR'S DIABOLIC COMPONENTS

We are not yet there...



Foto © Fotolia.de: miroslavmisiura



Critical Factors and Criticism

- Instead of adoring the Modelers now adoring the Implementers
- 80/20 Rule
- Governance, Governance, Governance
- Health-IT is not complex because of the IT but because of Health
- Problems remain the same
 - ▶ What is an allergy?
- Many Problems to seen yet, yet to come



Tooling and Support growing

- Beyond technical and semantical connectivity
- Users at frontends
- Document view

Arztbrief auf der Basis von CDA Release 2

Patient Paul PAPPEN
Geburtsdatum: 17. Dezember 1955 (49 J.) **Geschlecht:** Männlich **Patienten-ID:** 6245 (2.16.840.1.113883.3.933) , 1543627549 (1.2.276.0.76.4.1)
Autor: Dr. med. Theo PHYLLIN , **Einrichtung:** Praxis Dr. med. Phyllin, **Erstellt am:** 29. August 2005

[Inhaltsverzeichnis](#)

29.08.2005: Anamnese
 Seit Jahren wiederholt **chronische Bronchitiden** besonders bei kalter Luft. Bei Anstrengung expiratorische Atemnot. Kontakt mit Haustieren.

29.08.2005: Befund

- Pulmo: Basal diskrete RGs
- Cor: oB
- Abdomen: weich, Peristaltik: +++
- Muskulatur: atrophisch
- Mundhöhle: Soor, Haarleukoplakie
- Haut: blass, seborrhoisches Ekzem, Schleimhäute blass, Hautrurgor herabgesetzt
- Neuro: herabgesetztes Vibrationsempfinden der Beine, distal betont, Parästhesien der Beine, PSR, AST oB und seitengleich.

29.08.2005: Pricktest

- Birke +++
- Haselstrauch ++
- Erle ++
- Keine Reaktion auf weitere Pollen, Katzen-/Hundehaare, Schimmelpilze

29.08.2005: Diagnosen mit ICD 10

Diagnose	ICD Code	Lokalisation	Zusatz
Allergisches Asthma	J45.0	--	G
Ausschluss Lungenemphysem	J43.9	--	A
V.a. Allergische Rhinopathie durch Pollen	J31.1	--	V

25.06.2005: Laborwerte

Bezeichnung	Test (LOINC Code)	Wert	Einheit	Normwert
Hämoglobin	HB (718-7)	8.7	mmol/l	8.7 - 11.2
Thrombozyten	THRO (777-3)	196	10 ⁹ /l	143 - 400
Leukozyten	LEUKO (6690-2)	7.98	10 ⁹ /l	3 - 9.6

Dokumenten-Id 6014161089 (1.2.276.0.76.3645.239) **Erzeugt am** 29. August 2005

Patient Paul PAPPEN
Geburtsdatum 17. Dezember 1955 (49 J.) **Geschlecht** Männlich

Kontakt-Daten Riedemannweg 59
 13627 Berlin
 Tel p: 030.456.345345 **Patienten IDs** 6245 (2.16.840.1.113883.3.933)
 1543627549 (1.2.276.0.76.4.1)

Autor Dr. med. Theo PHYLLIN , **Einrichtung:** Praxis Dr. med. Phyllin

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 51371 Leverkusen
 Tel g: 0214.2127070, Tel g: 0214.212707122

Information Recipient Dr.med. Kai HEITMANN

Rechtsgültig unterzeichnet Dr. med. Theo PHYLLIN of Praxis Dr. med. Phyllin signed am 29. August 2005

Verwalter Praxis Dr. med. Phyllin
Kontakt-Daten Krankenhausstraße 240
 51371 Leverkusen
 Tel g: 0214.2127070



Time Table for Tests

- Sept 2015: DSTU 2 published
- Jan 2016: DSTU 2.1 ballot
- Spring 2016: DSTU 2.1 published
- 2017: First Normative specification
- Additional releases every 12-18 months





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CONCLUSION



Conclusions: Strategy and Tasks



- Information and Education
- Community Formation, Meetings and Work Groups
- Create and maintain Profiles and Value Sets
 - ▶ Connect-a-thons, Infrastructure
 - ▶ Tooling and Best Practice
- Bring FHIR into Politics, Science and Industry
- International Representation / Reports
- Viva Italia! ...but don't forget Europe





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hl7.de
hl7.eu
hl7.org
hl7.tv



GRAZIE!
THANK YOU!

Questions?

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