

HL7 v3

Encounters & Demographics

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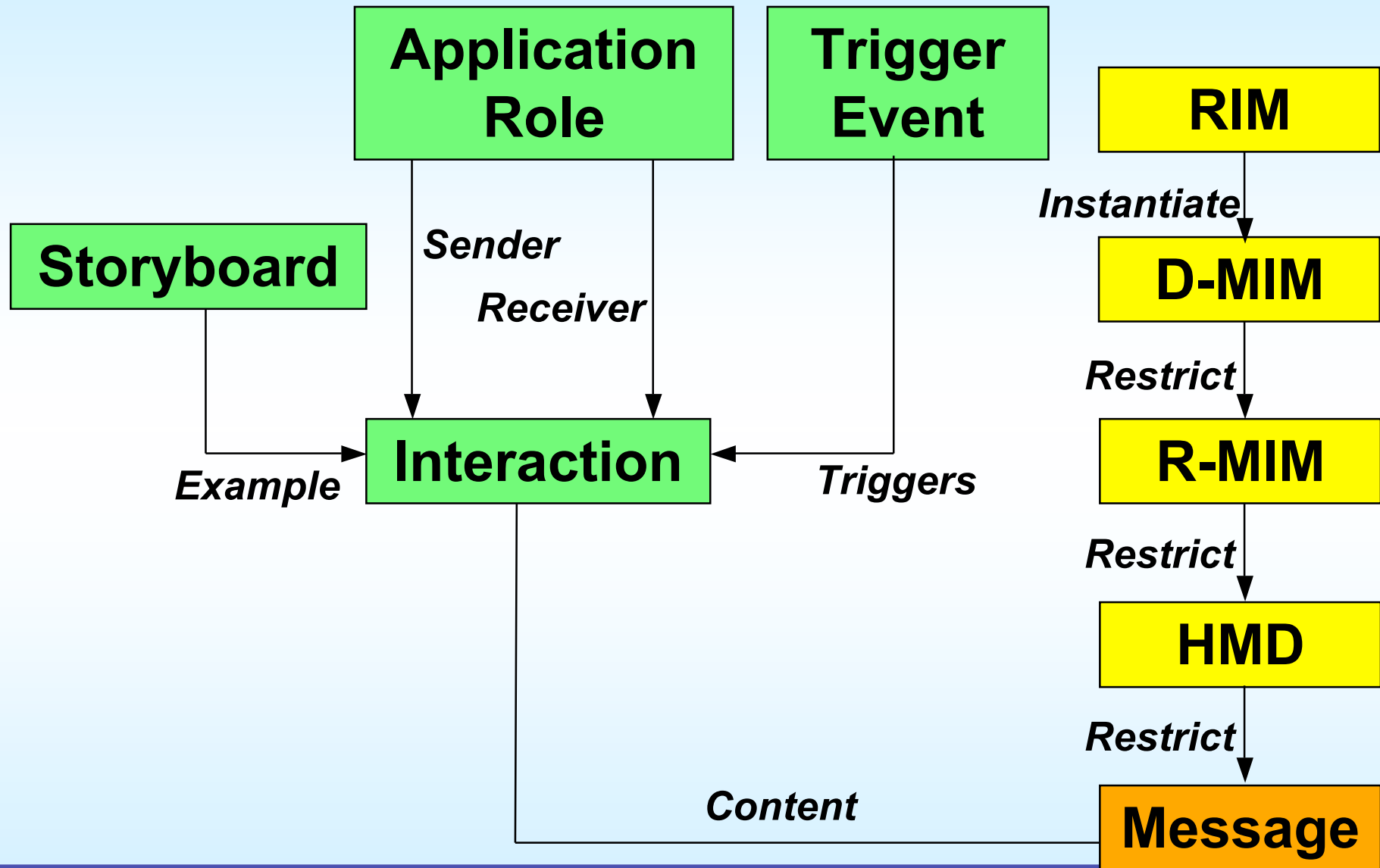


Patient Administration

- The Patient Administration domain defines person and patient demographics and visit information about patients.
- Generally, information is entered into a Patient Administration system and passed to nursing, ancillary and financial systems.

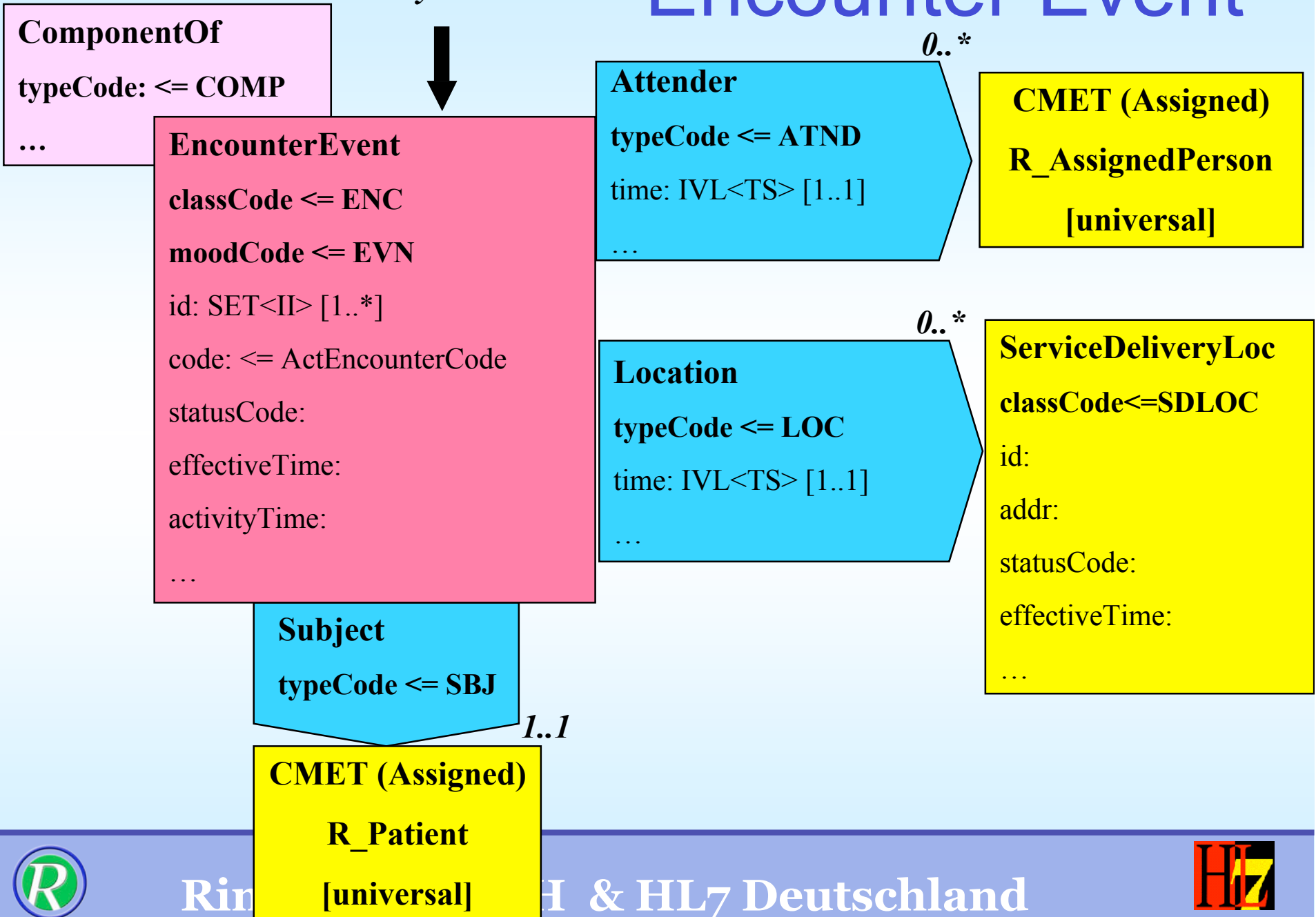


Messaging v. Modeling

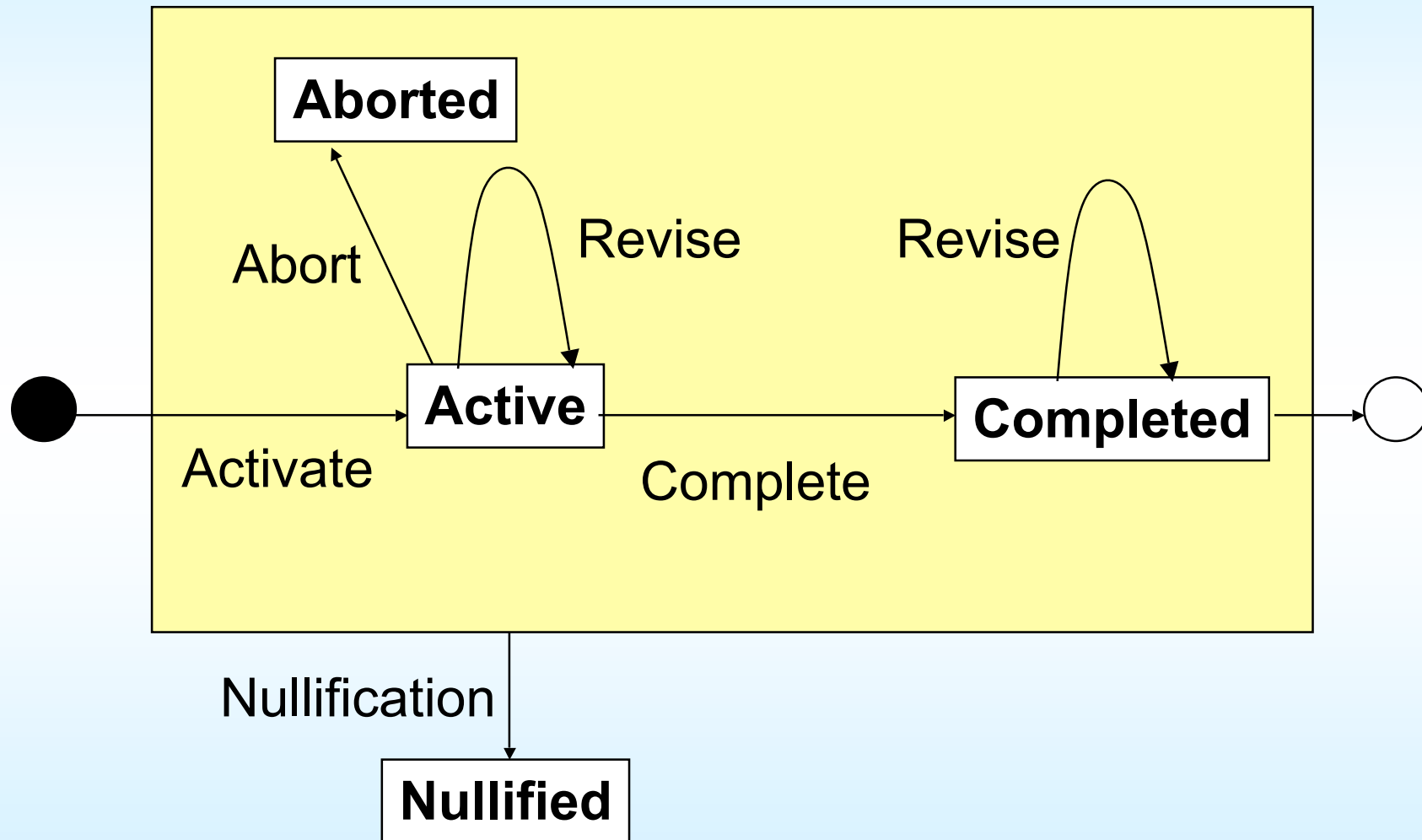


Encounter Event

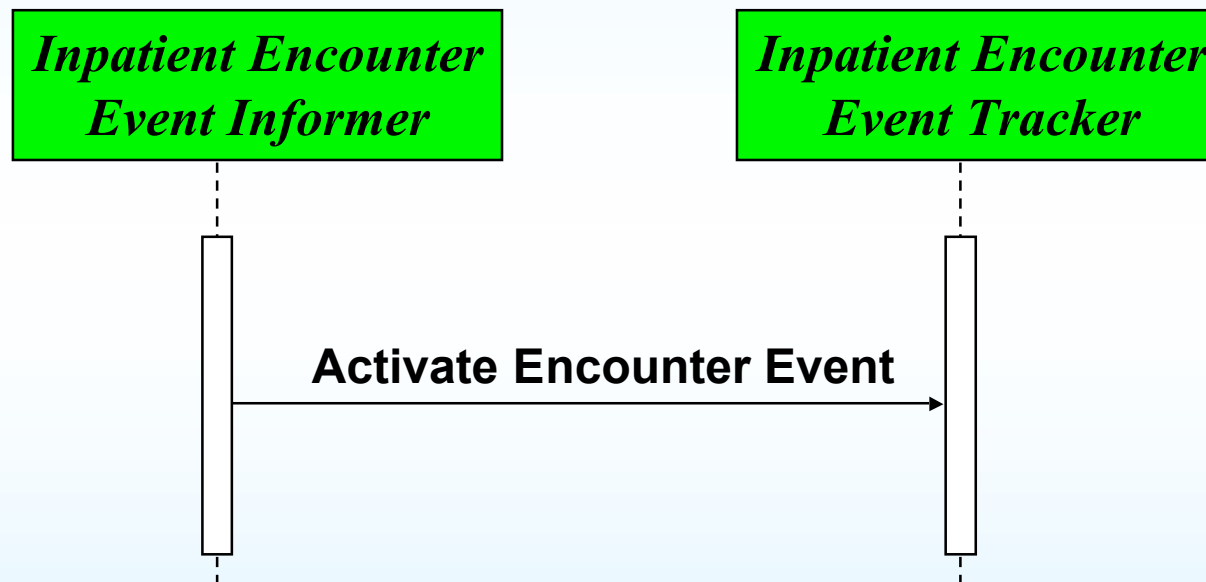
Entry Point



State Transitions (partial)



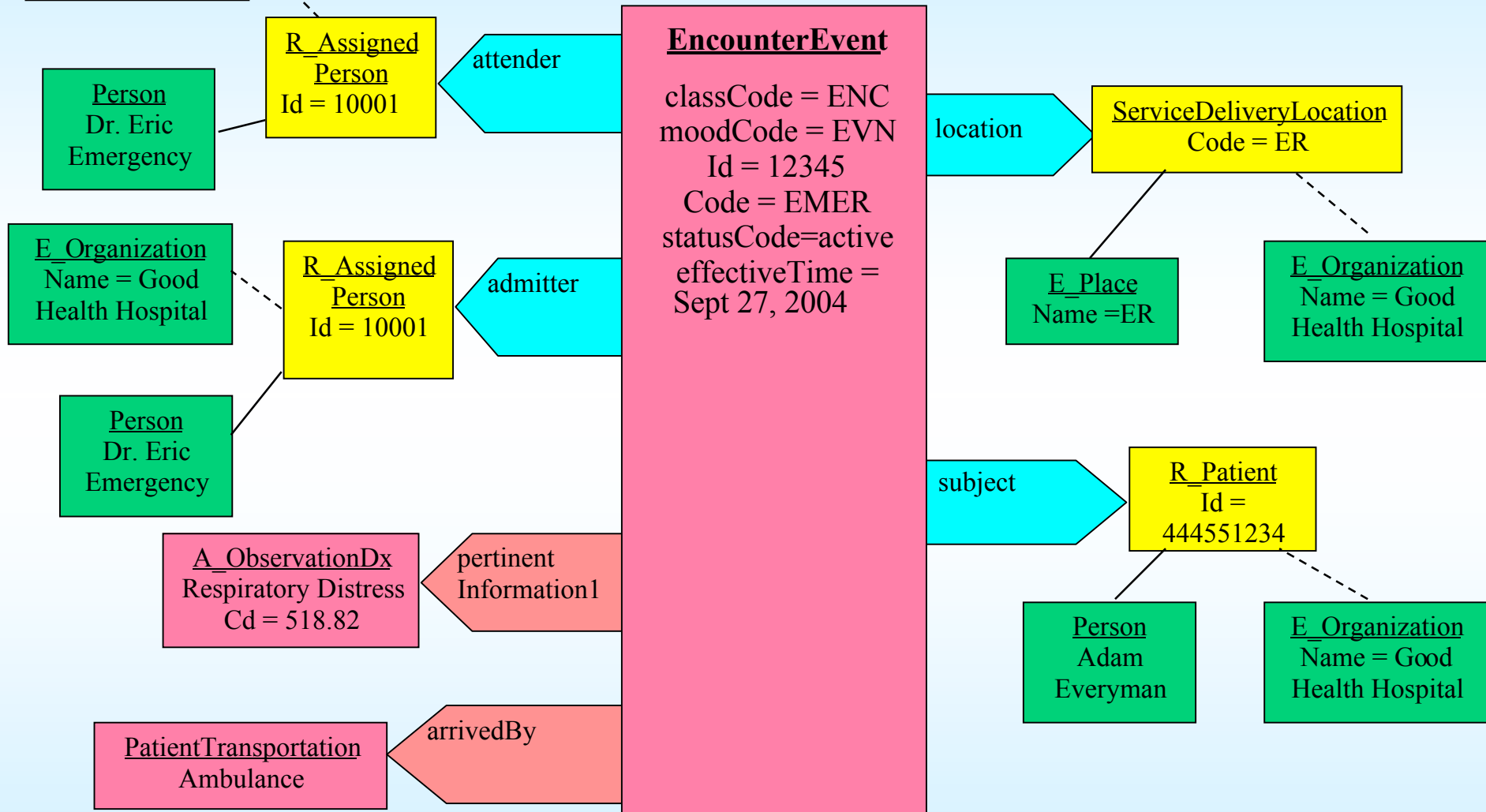
Use-Case: Inpatient Encounter Event Activate Notification PRPA_IN402001



Status changes of the Encounter Event are sent by Informer to Tracker.



Active Emergency Encounter



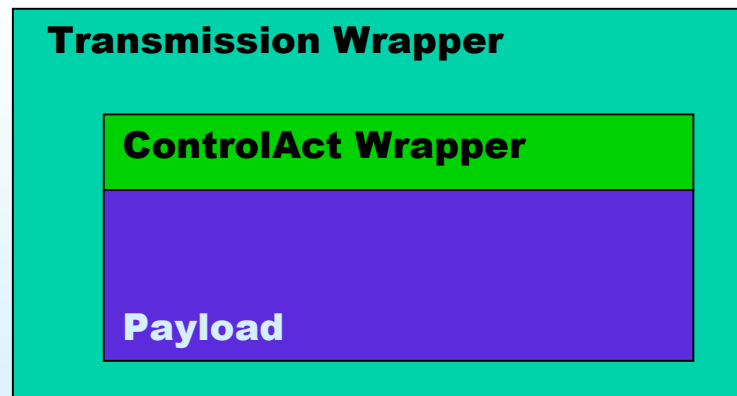
```
- <EncounterEvent>
  <id root="2.16.840.1.113883.19.3.2409" extension="12345" displayable="true" />
  <code code="EMER" codeSystem="2.16.840.1.113883.5.4" codeSystemName="ActCode"
    displayName="emergency" />
  <statusCode code="active" />
- <effectiveTime>
  <low value="20040927095000" inclusive="true" />
</effectiveTime>
<priorityCode code="EM" codeSystem="2.16.840.1.113883.5.7" codeSystemName="ActPriority"
  displayName="emergency" />
<confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25" codeSystemName="Confidentiality"
  displayName="normal" />
<reasonCode code="MEDNEC" codeSystem="2.16.840.1.113883.5.8" codeSystemName="ActReason"
  displayName="Medical_Necessity" />
<admissionReferralSourceCode code="7" codeSystem="2.16.840.1.113883.5.39"
  codeSystemName="EncounterReferralSource" displayName="Emergency_Room" />
<specialCourtesiesCode code="NRM" codeSystem="2.16.840.1.113883.5.40"
  codeSystemName="EncounterSpecialCourtesy" displayName="normal_courtesy" />
- <subject>
- <patient>
  <id root="2.16.840.1.113883.19.3.2409" extension="444551234" displayable="true" />
  - <addr use="HP">
    <streetAddressLine>2222 Home Street</streetAddressLine>
    <city>Ann Arbor</city>
    <state>MI</state>
    <postalCode>99999</postalCode>
    <country>USA</country>
  </addr>
  + <patientLivingSubject>
  + <providerOrganization>
  </patient>
</subject>
```

Part 2..

```
- <subject>
  + <patient>
  </subject>
+ <location>
+ <admitter>
+ <attender>
+ <notificationContact>
- <pertinentInformation1>
  <priorityNumber value="1" />
- <pertinentObservationDx negationInd="false">
  <code code="ADMDX" codeSystem="2.16.840.1.113883.5.4" codeSystemName="ActCode"
    displayName="admitting_diagnosis" />
  <statusCode code="active" />
  <value code="518.82" codeSystem="2.16.840.1.113883.5" codeSystemName="ICD9"
    codeSystemVersion="9" displayName="Acute Respiratory Distress" />
  </pertinentObservationDx>
</pertinentInformation1>
+ <pertinentInformation2>
- <arrivedBy contextControlCode="OP" contextConductionInd="true" typeCode="ARR">
  - <arrivalPatientTransportation moodCode="EVN">
    <text mediaType="text/plain">Ambulance</text>
  </arrivalPatientTransportation>
  </arrivedBy>
</EncounterEvent>
```

Composite Message Payload

1. the outer *HL7 Transmission Wrapper*,
2. the intermediate *HL7 Trigger Event Control Act Wrapper* (conditional).
3. a message payload specified by an HL7 domain technical committee (conditional).



Identification Schemes and Classifications

OIDs



Issues: examples ...

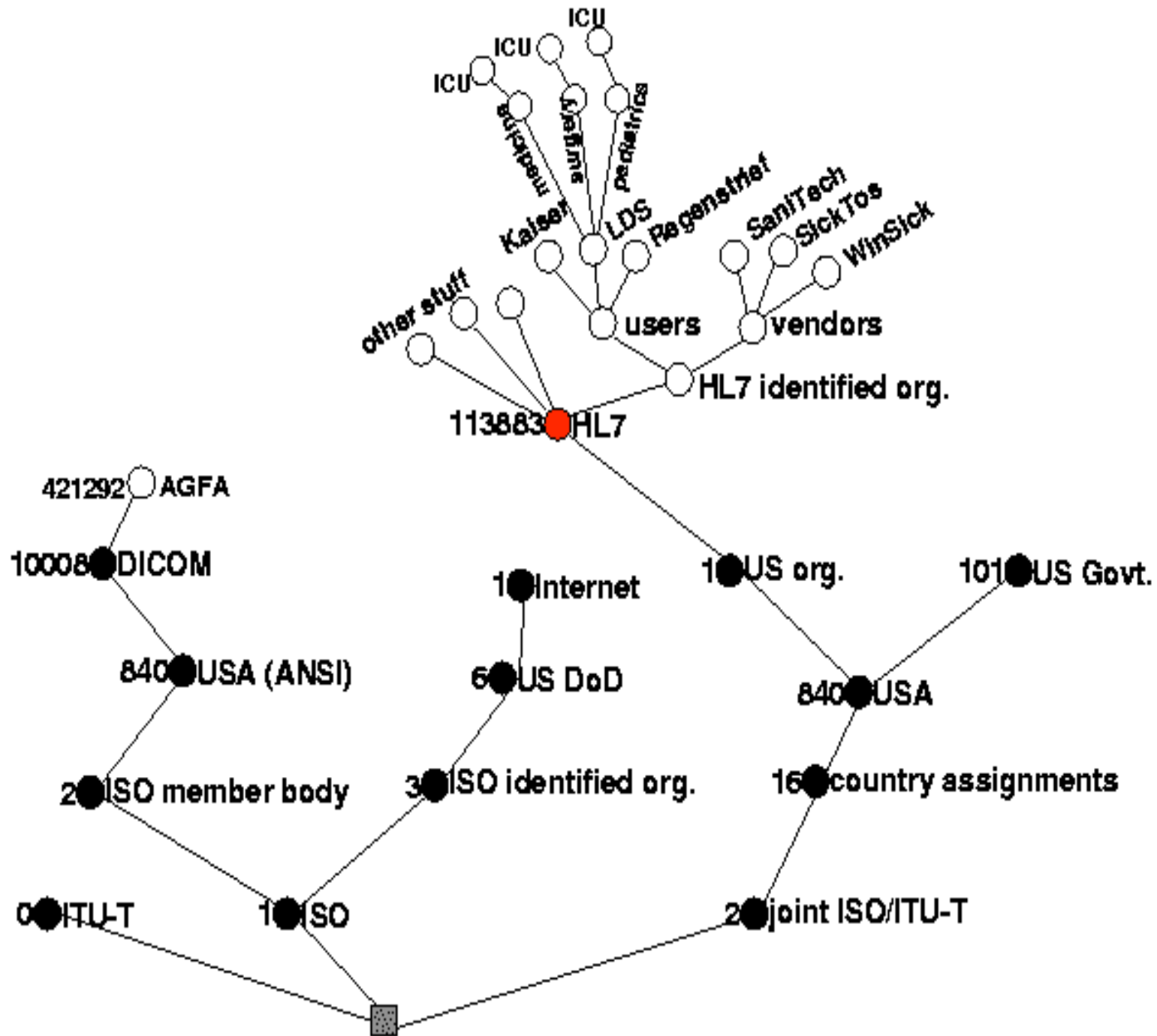
- Regional exchange of data:
 - Information related to patient 3245545 is sent from provider A to provider B.
 - Has this number been created by A ? By B ?
Or by yet another organization ?
- Regional order for laboratory test:
 - A hospital sends an order for test 'B345' to a regional laboratory.
 - Is this a hospital code for a test ?
A code as known by the laboratory ?
Or a reference value from an international vocabulary ?



OIDs can be used for unique identification

- OID = **Object Identifier**.
- All identification schemes and coding tables are assigned a unique OID identification
- The combination of the identification, and the identification of the identification scheme is unique.
- The combination of a code, and the identification of the coding scheme is unique.





Usage of OIDs with HL7 v3

- Example: The datatype II (Instance Identifier) contains both a root as well as an extension.
 - 2.16.840.1.113883.2.4.6.2.5432.1 is the **root** (OID)
 - 67543242 is the **extension** (the patient ID)
- Example: The datatype CD (Concept Descriptor) contains both a coding system ID as well as the code itself.
 - 2.16.840.1.113883.6.3 is the **coding system** ID of ICD10
 - I59.13 is the **code** of appendicitis according to ICD-10



"German" OIDs

"OIDs für das deutsche Gesundheitswesen":

OID-Register:

- <http://www.dimdi.de/static/de/ehealth/oid/index.htm>

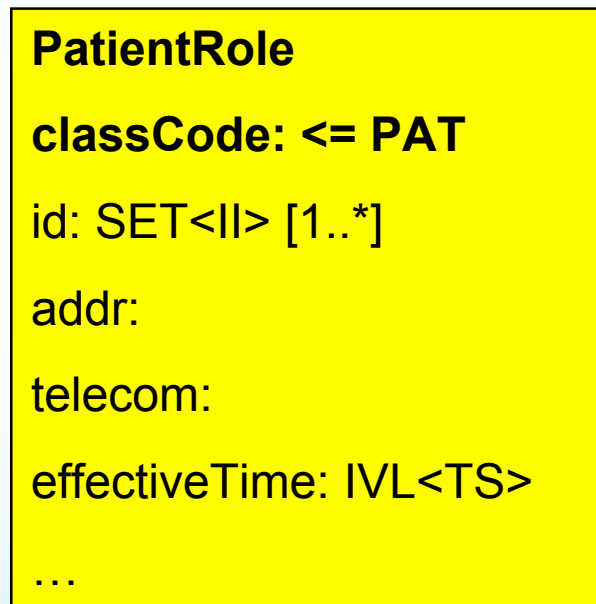


Demographische Daten

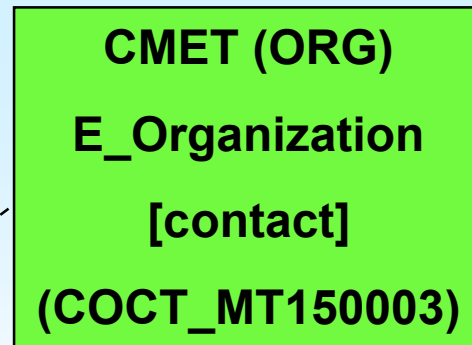


PatientLivingSubject CMET

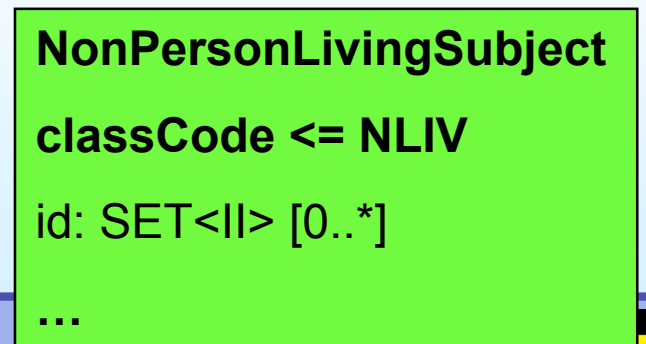
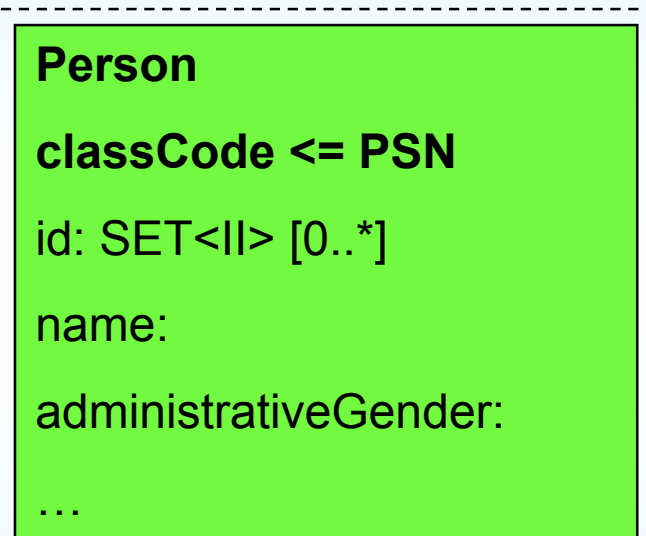
Entry Point



*1..1
providerOrganization*



*1..1
patientLivingSubject*



Example: PatientRole

```
- <PatientRole>
  <id extension="197245" root="1.2.276.0.76.2"
    assigningAuthorityName="eGK" />
  <id extension="4532" root="2.16.840.1.113883.2.6.88.1"
    assigningAuthorityName="Alpha Klinik" />
- <Person>
- <name use="L">
  <given>Gabriele</given>
  <family>Mustermann</family>
</name>
  <administrativeGenderCode code="F"
    codeSystem="2.16.840.1.113883.5.1" />
  <birthTime value="19751017" />
</Person>
- <Organization>
  <id extension="123456" root="2.16.840.1.113883.2.6.99.3" />
  <name use="L">Alpha Klinik</name>
</Organization>
</PatientRole>
```

Konformanz



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Dialyse Leitfaden: Demographischen Daten

<Patient>

<id extension="347" root="2.16.840.1.113883.2.6.15.3.347.1"/>

<id extension="000197" root="2.16.840.1.113883.2.6.15.3.347.1"/>

<addr>

<postalCode>50997</postalCode>

</addr>

<statusCode code="active"/>

<Person>

<name/>

<administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1"/>

<birthTime value="19370330"/>

<maritalStatusCode code="M" codeSystem="2.16.840.1.113883.5.2"/>

<educationLevelCode code="HS" codeSystem="2.16.840.1.113883.5.1077"/>

<livingArrangementCode code="H" codeSystem="2.16.840.1.113883.5.63"/>

<employment>

<negationInd value="false"/>

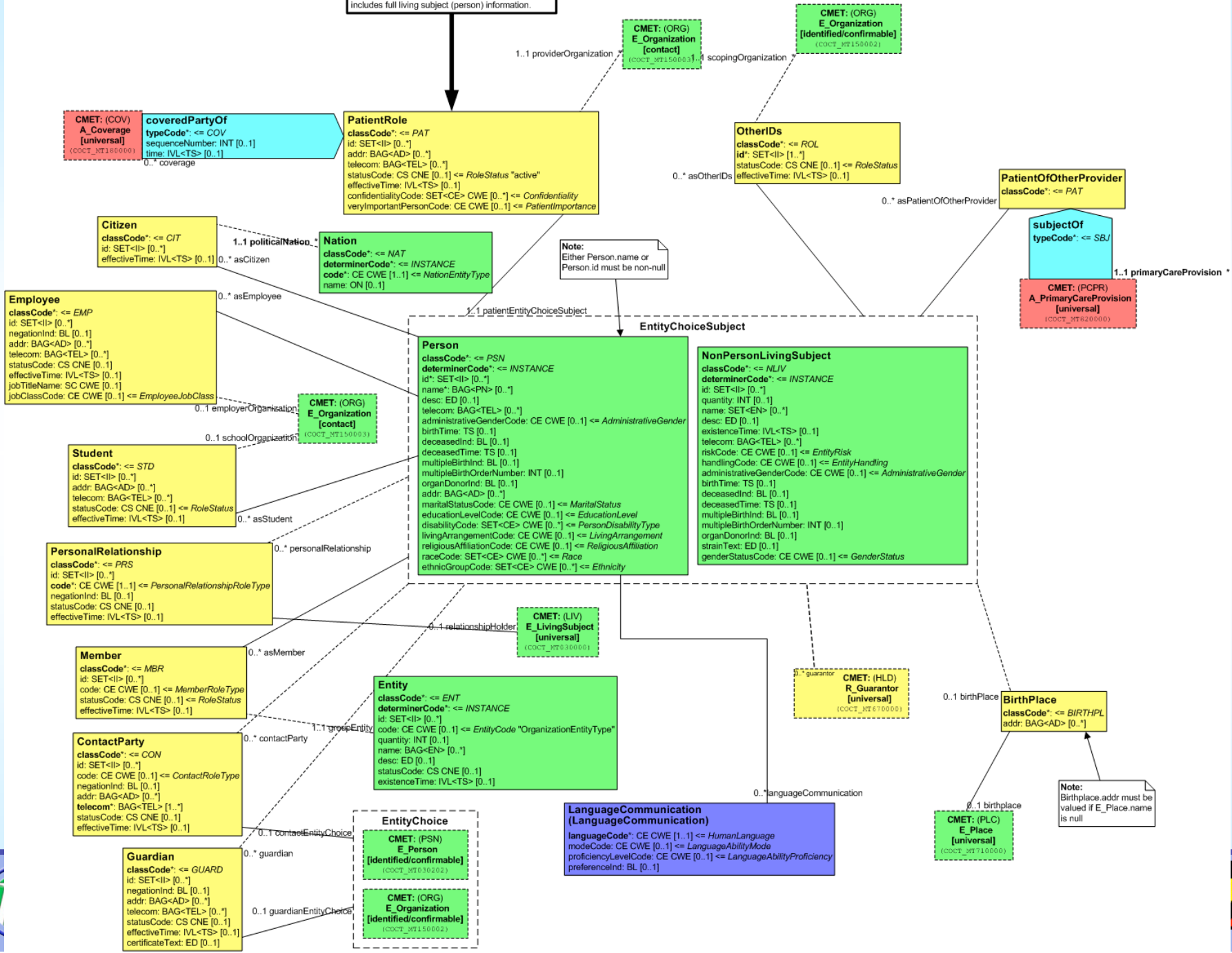
</employment>

</Person>

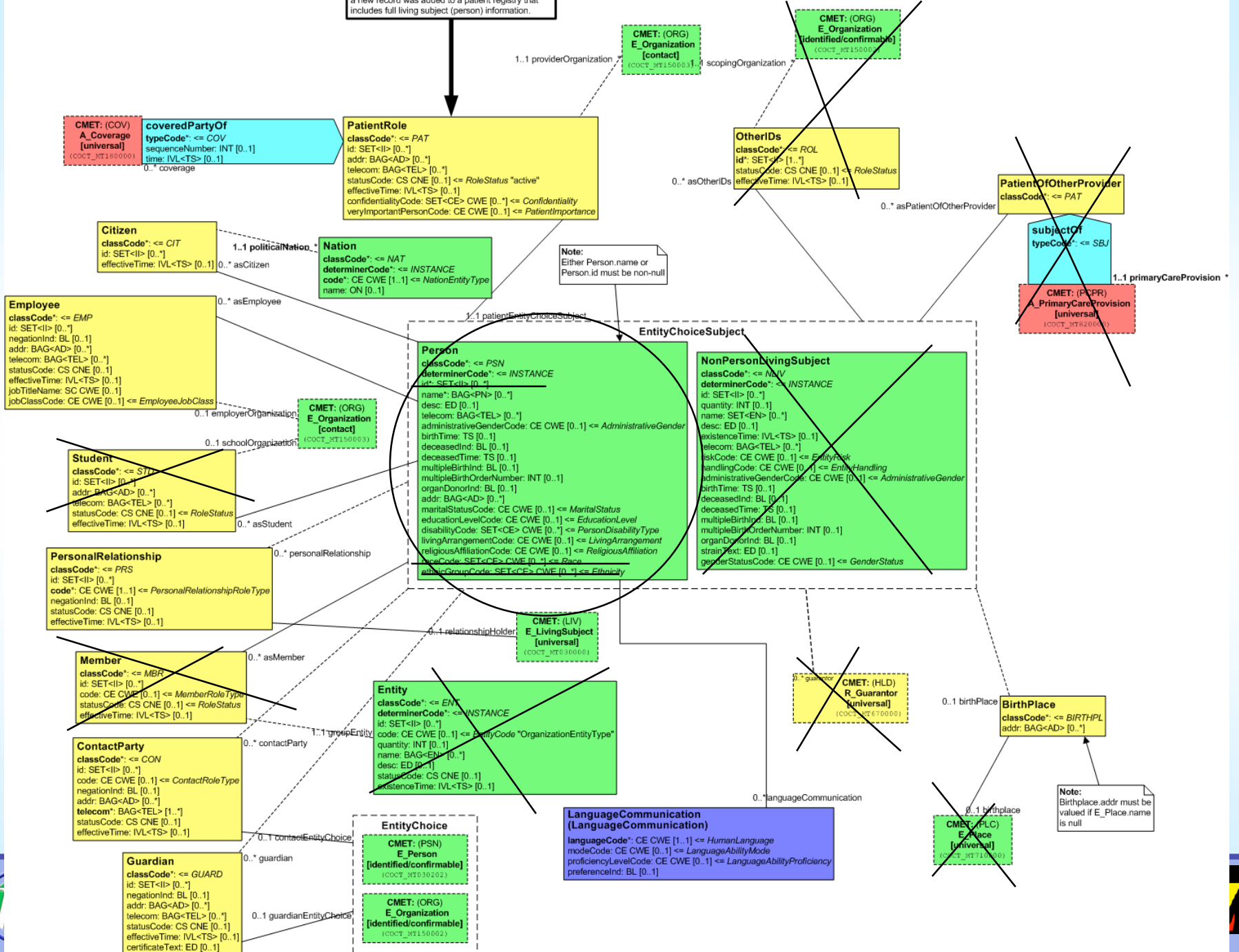
</Patient>



New Patient
 (PRD, R4.011101)
 This R-MIM defines the message used to report that a new record was added to a patient registry that includes full living subject (person) information.



New Patient
 (PRR, R401101)
 This R-MIM defines the message used to report that a new record was added to a patient registry that includes full living subject (person) information.



Conformance = Constraints

- **Appearance constraints** determine whether a particular element must appear in models or messages derived from the base model, and/or whether the element is precluded from appearing therein.
- **Cardinality constraints** define the number of repetitions that may occur for a given element.
- **Type constraints** limit the structure or "type" of the element in question. These are constraints upon the data types for attributes and the use of Common Message Element Types (CMET) for associations.
- **Value set constraints** limit the set of values (also known as the vocabulary domain) that is applicable for an element.
- **Other value constraints** provide for declaration of constraints stated as text to establish "business rules", and for the assertion of default values.



Address Data Type Flavours

```
<addr use="H" updateMode="altered">
  <streetAddressLine>HEXAGON HOUSE</streetAddressLine>
  <streetAddressLine>PYNES HILL</streetAddressLine>
  <streetAddressLine>RYDON LANE</streetAddressLine>
  <streetAddressLine>EXETER</streetAddressLine>
  <streetAddressLine>DEVON</streetAddressLine>
  <postalCode>EX2 5SE</postalCode>
  <addressKey>12345678</addressKey>
  <id root="2.16.840.1.113883.2.1.3.2.4.18.1" extension="P000000011" />
</addr>
```

UK

```
<addr use="HP">
  <streetName>Vondelstraat</streetName>
  <houseNumber>23a</houseNumber>
  <postalCode>1200 BR</postalCode>
  <!-- Geen woonplaats, maar gemeente in antwoordbericht -->
  <county>Den Haag</county>
</addr>
```

NL

```
<!-- > Domicilio del paciente </ -->
<addr>
  <city>Harragoz</city>
  <country>Cernia</country>
  <streetName>La Cienaga</streetName>
  <houseNumberNumeric>1231</houseNumberNumeric>
</addr>
```

AR

```
<addr use="HP">
  <streetAddressLine>28C rue des cigales</streetAddressLine>
  <postalCode>13720</postalCode>
  <city>Aix en Provence</city>
  <country>FRANCE</country>
</addr>
```

FR



AD Datatype

Adresse (AD)

Elemente dieses Datentyps haben eine Substruktur mit Elementen, die eine Adresse aufnehmen können.

Eine Adresse wird in HL7 Version 3 als Serie von AdresNameParts wiedergegeben, beispielsweise Straßename, Stadt usw. Meist (aber nicht notwendigerweise) werden diese Bestandteile durch partType Elemente umschlossen. Dadurch ist es möglich, eine Adresse so anzugeben, dass sie direkt angezeigt werden kann, während die spezifizierten Teile durch die System bestimmt bzw. verwendet werden können, die auch eine genauere Speicherung der Teile einer Adresse realisiert haben.

Tabelle X: Domain AddressNamePartType Elementnamen

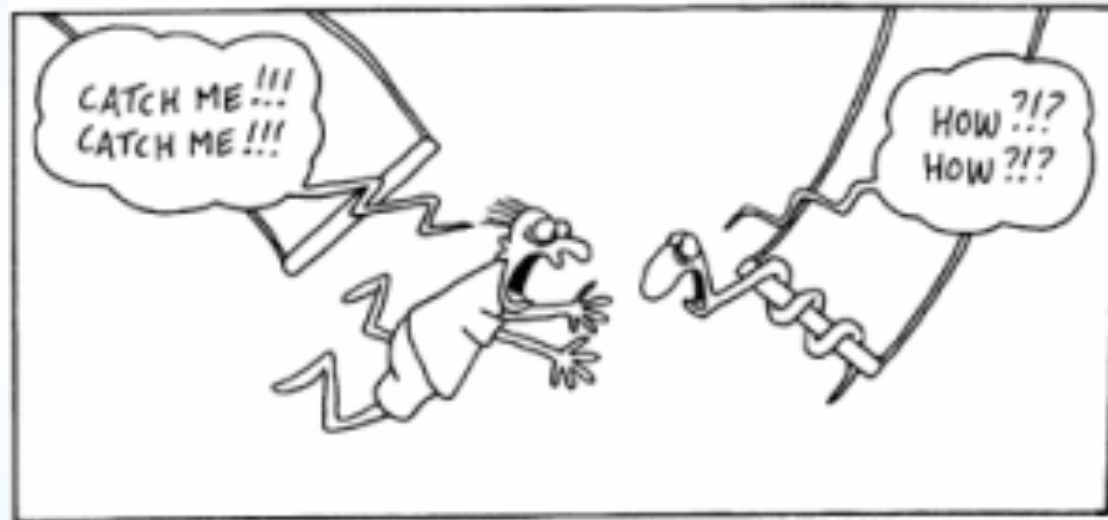
| <i>Elementname</i> | <i>Definition</i> |
|---------------------------|---------------------|
| <u>city</u> | Stadt |
| <u>postalCode</u> | Postleitzahl |
| <u>streetAddressLine</u> | --nicht verwenden-- |
| <u>houseNumber</u> | |
| <u>houseNumberNumeric</u> | |
| <u>direction</u> | |
| <u>streetName</u> | |
| <u>streetNameBase</u> | |

Data Type Constraints

| Data type in source model | Allowed constraints in derived model |
|--------------------------------|--------------------------------------|
| Data type Any (ANY) | Any of the other data types |
| Encapsulated Data (ED) | String (ST) |
| Concept descriptor (CD) | Coded with Equivalents (CE) |
| ...Coded with Equivalents (CE) | ...Coded Value (CV) |
| ...Coded Value (CV) | ...Coded Simple Value (CS) |
| General Timing Spec (GTS) | Set of time stamp (SET<TS>) |
| ...Set of time stamp (SET<TS>) | ...Time stamp (TS) |
| General Timing Spec (GTS) | Interval of time (IVL<TS>) |
| ...Interval of time (IVL<TS>) | ...Time stamp (TS) |
| Entity Name (EN) | Person Name (PN) |
| Entity Name (EN) | Organization Name (ON) |
| Entity Name (EN) | Trivial Name (TN) |
| Bag of type T (BAG<T>) | List of type T (LIST<T>) |
| ...List of type T (LIST<T>) | ...Type T (T) |
| Bag of type T (BAG<T>) | Set of type T (SET<T>) |
| ...Set of type T (SET<T>) | ...Type T (T) |



Conformance Issues



(Inklusive Prozess-Standardisierung..)



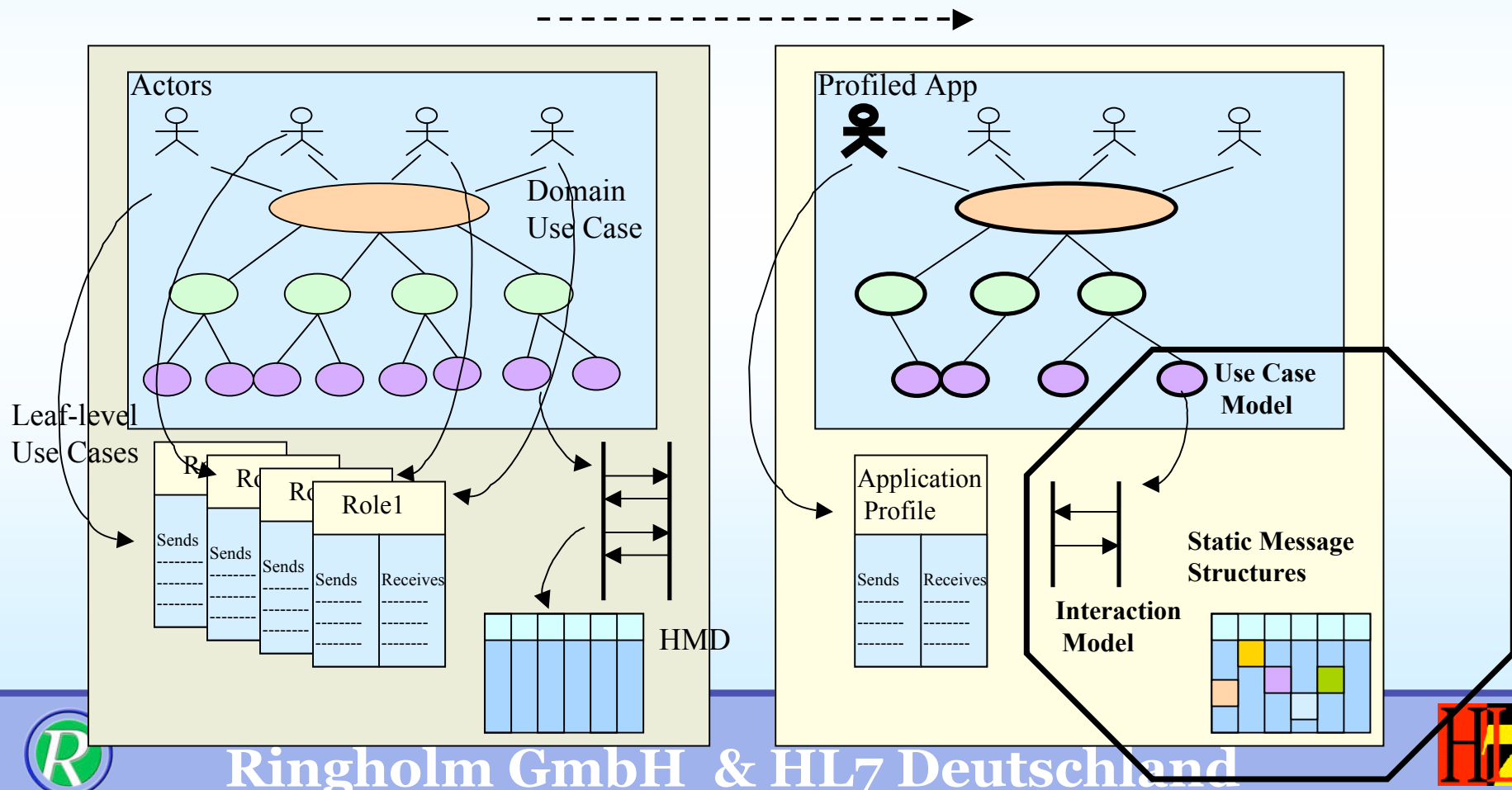
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V3 Conformance

Version 3 Deliverables
(for a given domain)

Version 3 Conformance
(for a given application)



Conformance Claims

- Version 3 supports strong conformance claims. This is essential to support plug-and-play application integration.
- Conformance claim = set of conformance statements: Functional en Technical.
- *Functional* statement: application roles. Support for interactions linked to roles. (as defined in a conformance *profile*). Interactions are based on static modeling artifacts; these are constrained as well in a conformance profile.
- *Technical* statement: XML ITS; batch- or sequence number protocol support.

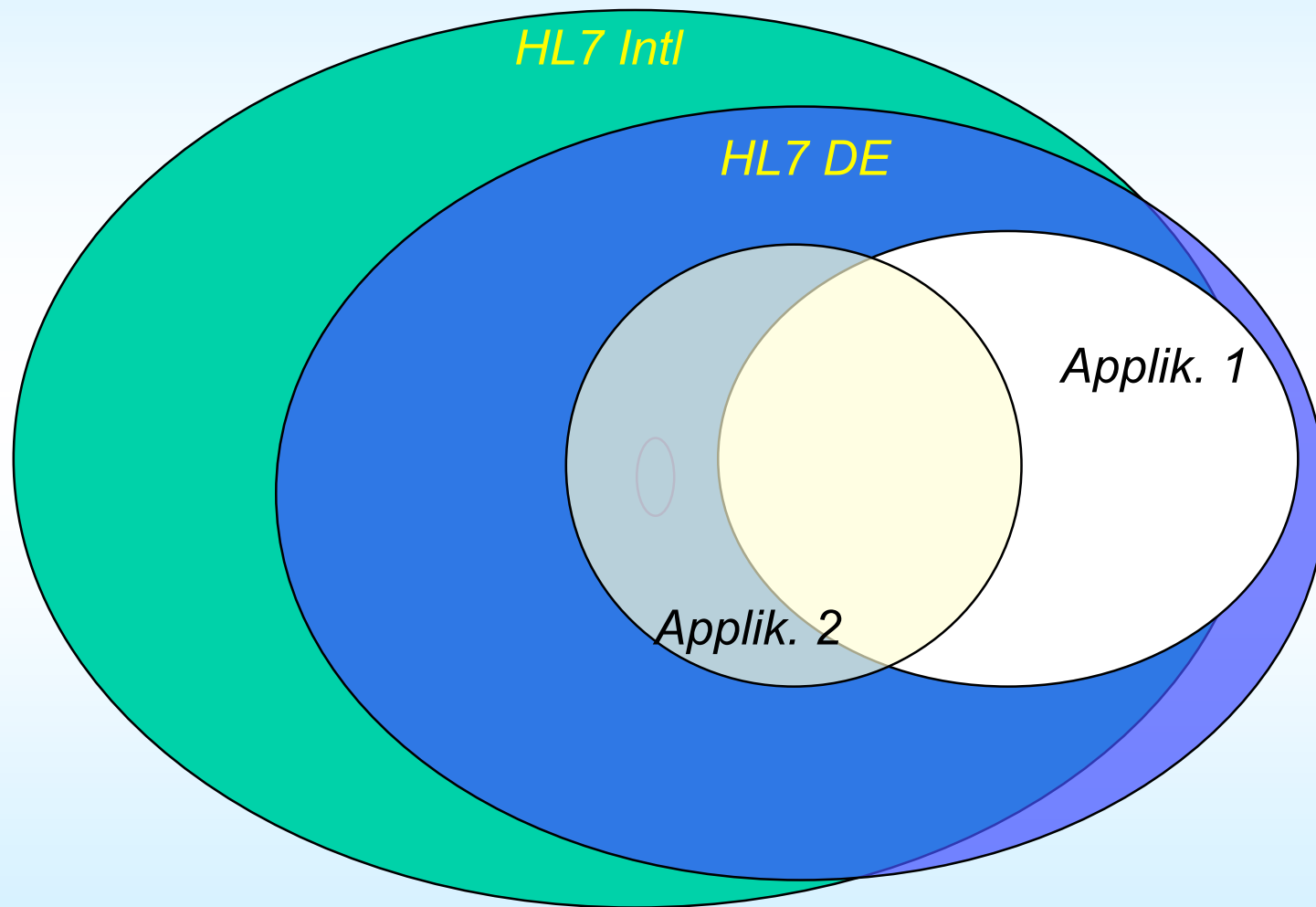


Conformance Statement

- HL7 DE (v3 TC) stellt Leitfaden her:
 - Dialyse Nachrichten
 - Versichertendaten §291a SGB V
 - Datatypen und CMETs (u.a. Patient und Heilberufler) (*im arbeit*)
 - Wrappers (*im arbeit*)



DE Conformance



***Nächstes v3 TC Treffen:
1./2. Dezember***

Fragen?

