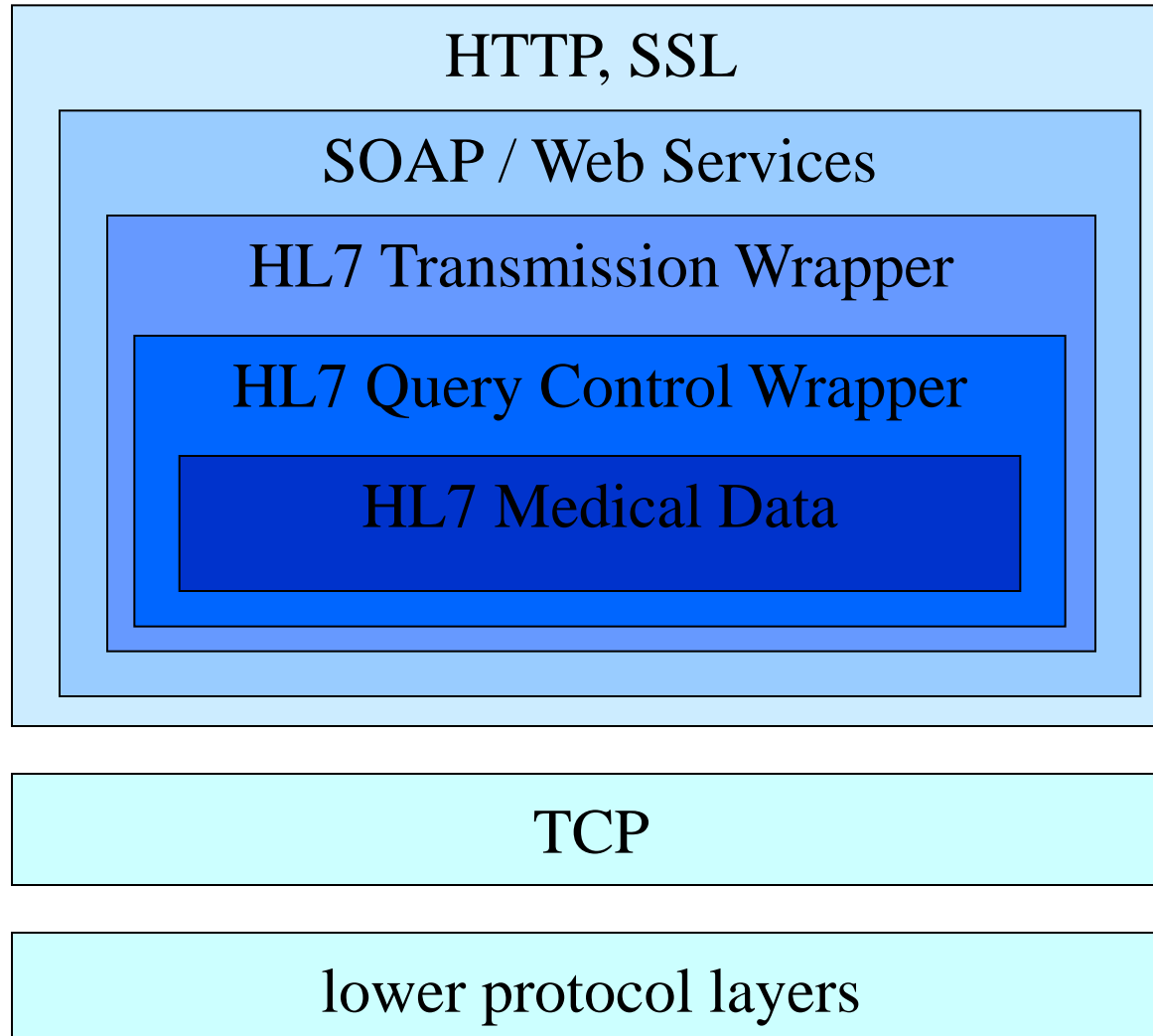


HL7v3, the vocabulary

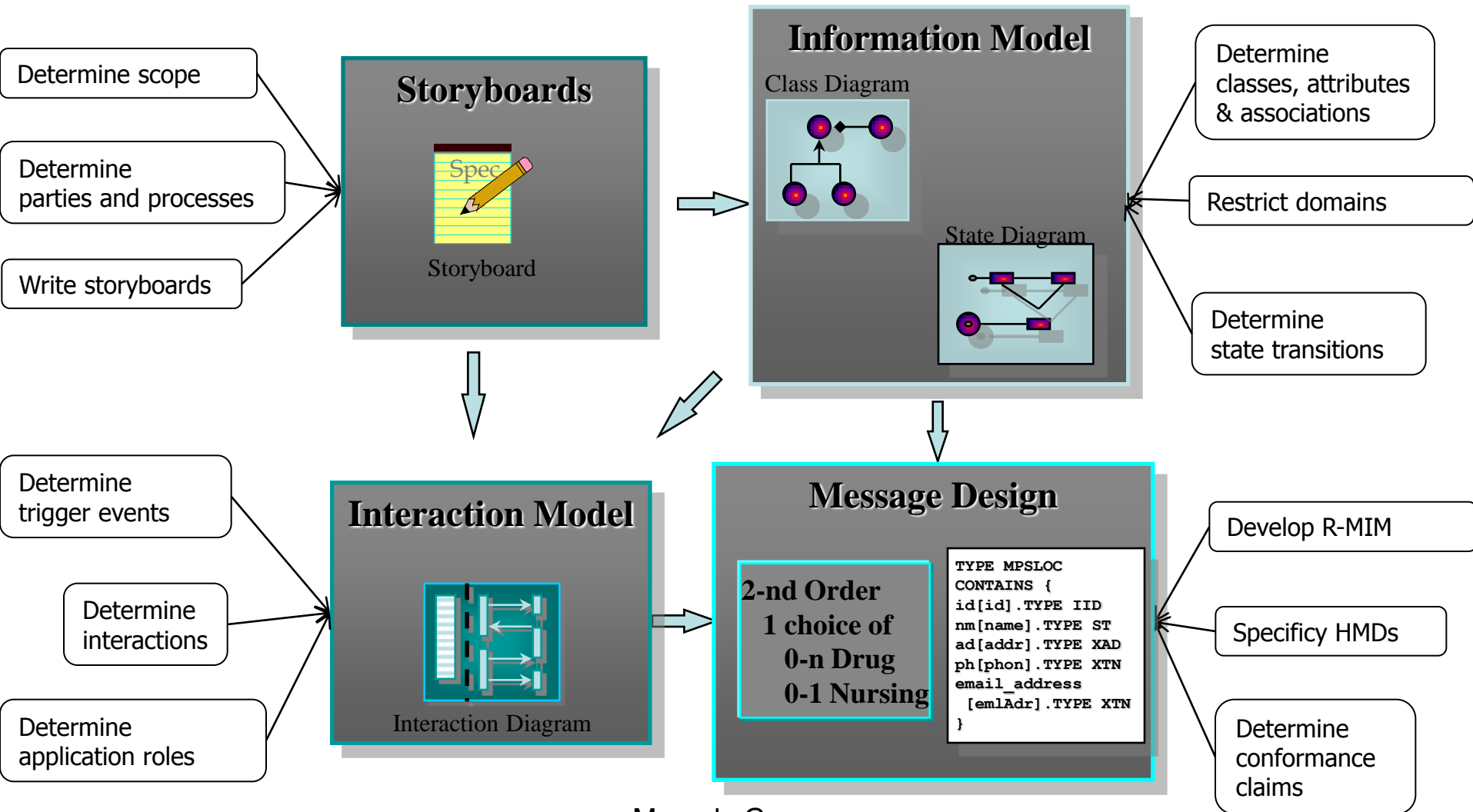
Just enough HL7

- HL7 version 2 : currently used
- HL7v3:
 - XML based
 - Reference Information Model
- HL7v3 Message contains:
 - medical payload
 - Trigger Event Wrappers (Query Control etc.)
 - Transmission Wrapper

HL7v3 Layered Model



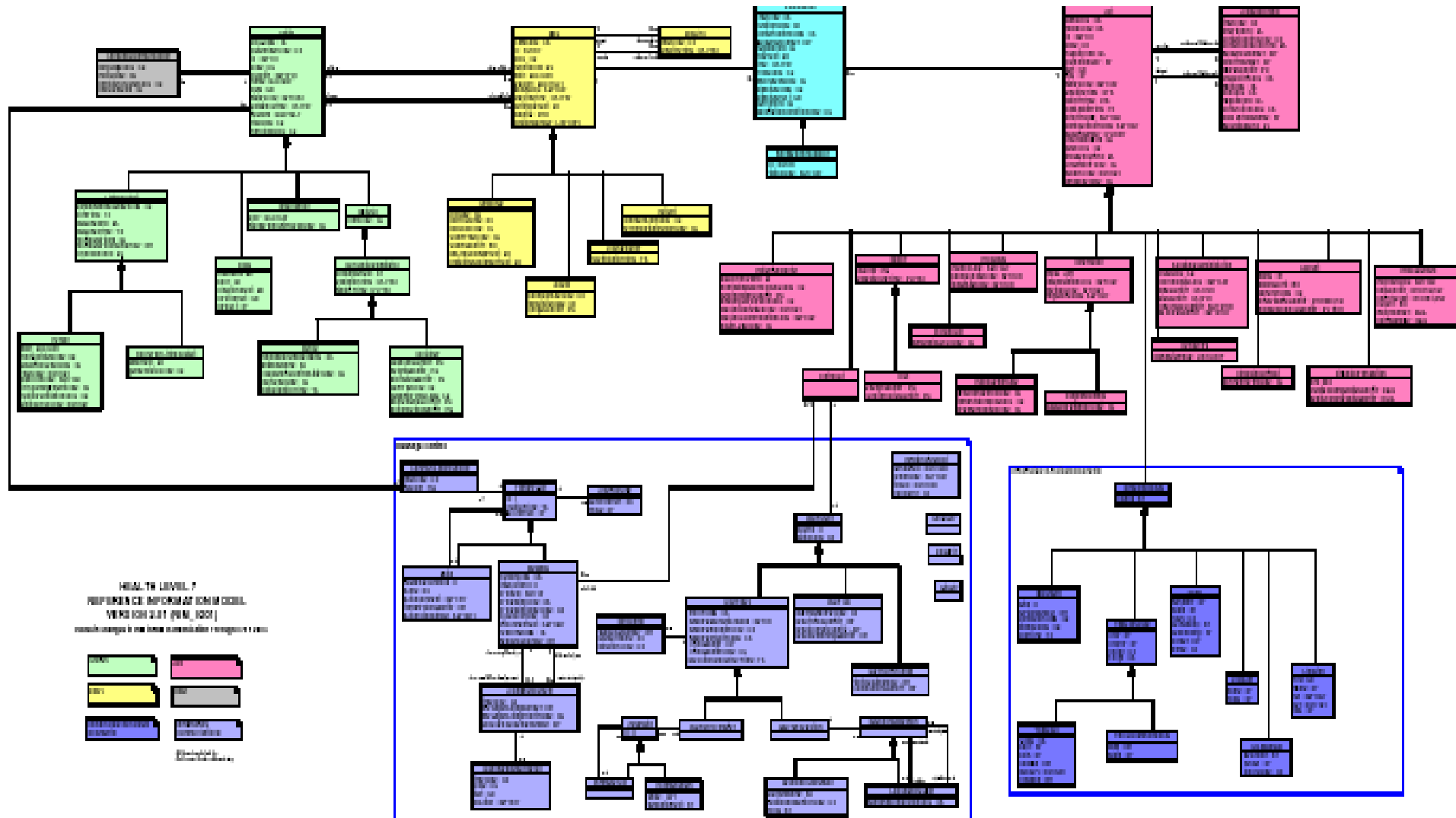
HL7 Development Framework (HDF)



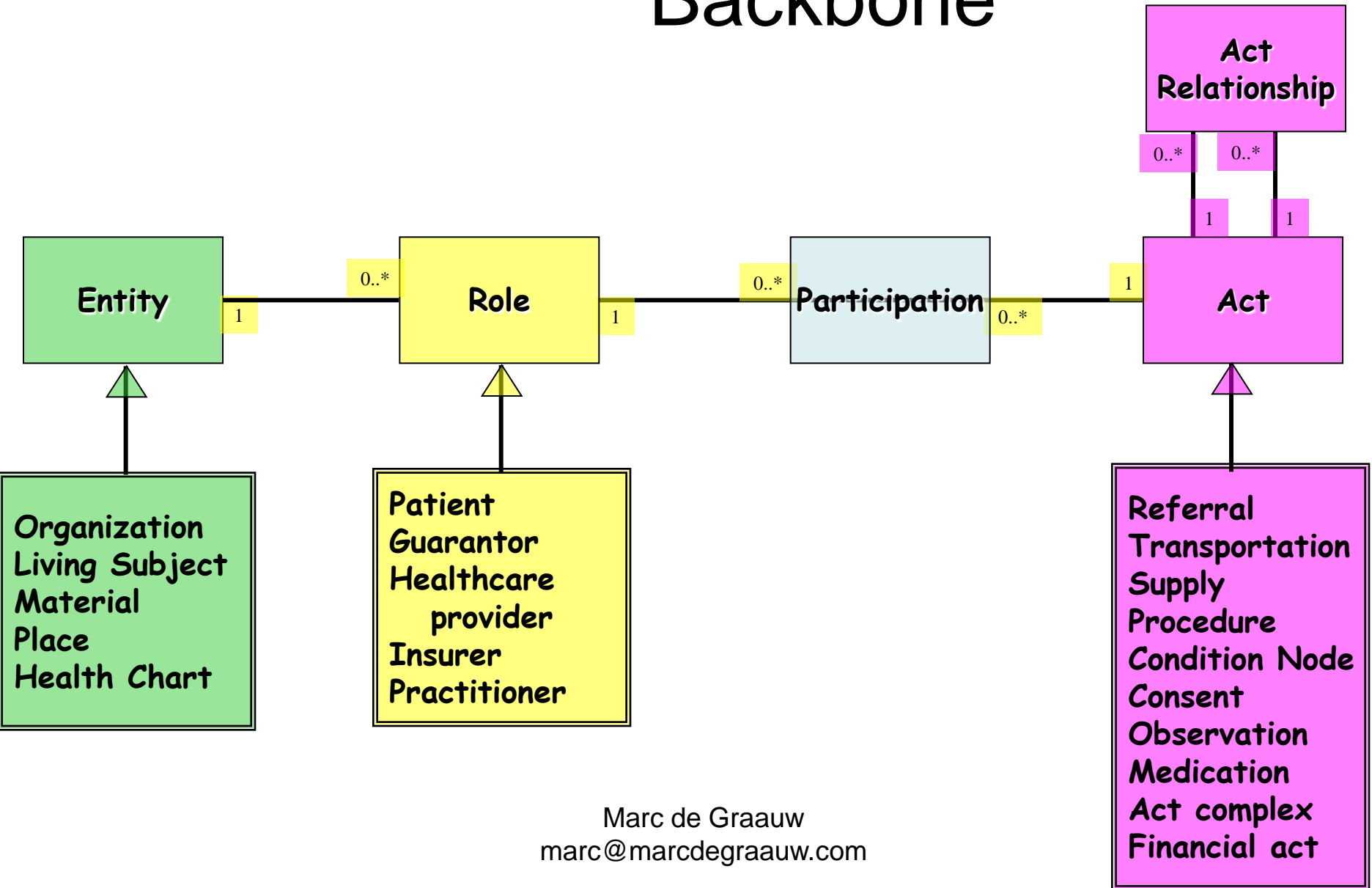
Storyboard

Mevrouw Jansen komt langs bij apotheek 'De Gulle Gaper' met een handgeschreven recept van haar huisarts Dr. van Beek. Het recept is voor 2x daags 1 tablet Diazepam 250 mg, gedurende 4 weken. De apotheker van de Gulle Gaper, Dr. Poeder, pakt een een doosje met 5 strips van 10 tabletten en voegt daar een 6e strip van tabletten aan toe. Het geheel van 60 tabletten Diazepam 250 mg wordt overhandigd aan mevr. Jansen, inclusief een bijsluiter en met het gebruiksvoorschrift (van de huisarts) op de verpakking.

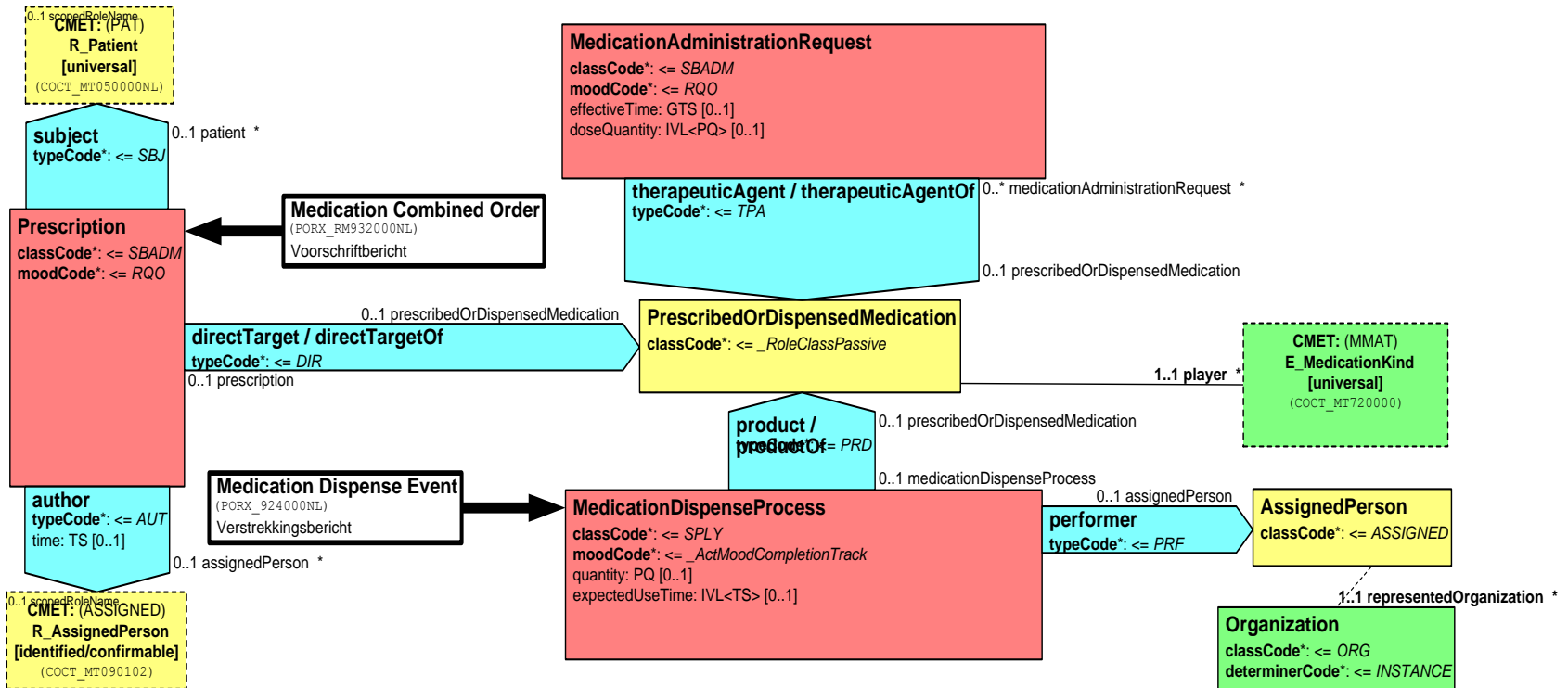
RIM (Reference Information Model)



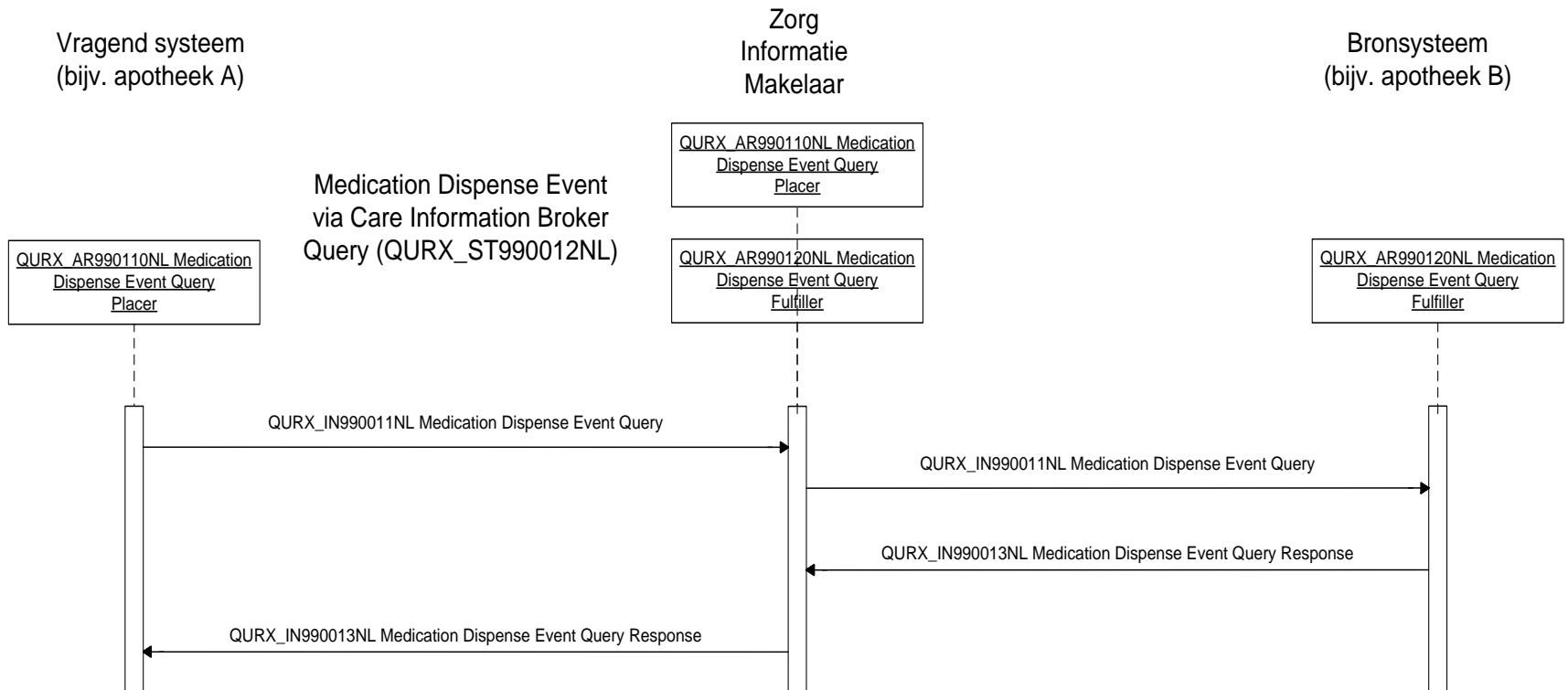
RIM (Reference Information Model) Backbone



Medication D-MIM

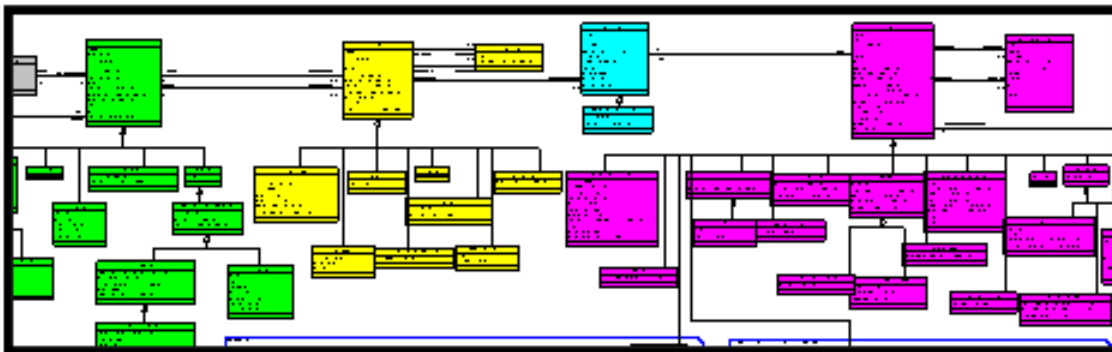


Interaction diagram



Refinement through 'Constraints'

RIM



D-MIM



R-MIM



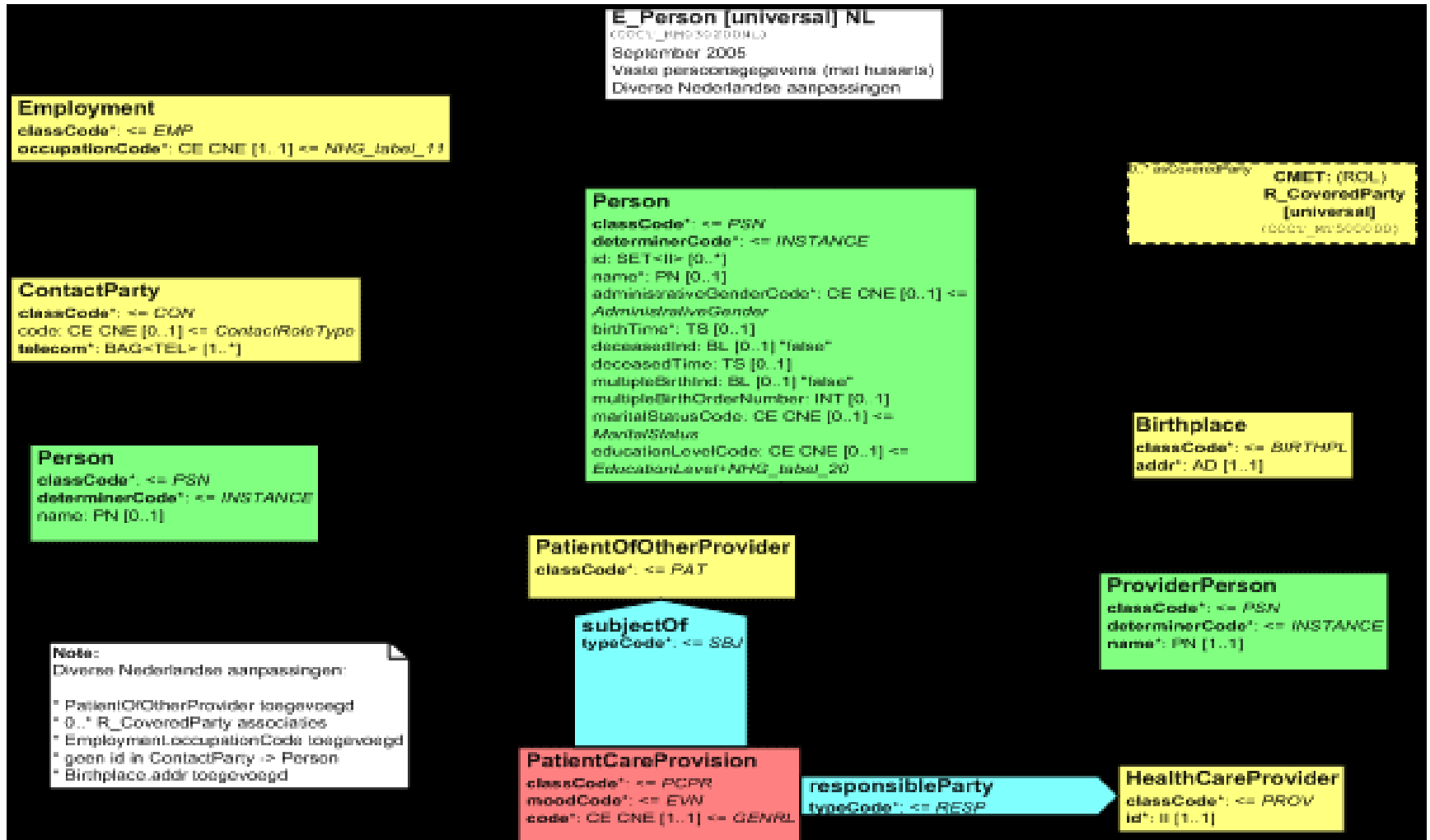
Class	Property	Message	Message	Message	Message
...

Message Type

XML fragment

```
<Prescription>
  <id extension="0003000201" root="2.16.840.1.113883.2.4.6.1.6005465.12.1"/>
  <statusCode code="active"/>
  <subject>
    <Patient>
      <id extension="012345672" root="2.16.840.1.113883.2.4.6.3"/>
      <statusCode code="active"/>
      <Person>
        <name>
          <given qualifier="IN">J.M.</given>
          <family>Breed</family>
        </name>
        <administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1"/>
        <birthTime value="19680816"/>
      </Person>
      <Organization>
        <id extension="06005465" root="2.16.840.1.113883.2.4.6.1"/>
      </Organization>
    </Patient>
  </subject>
```

Person Healthcare



```
- <xs:complexType name="COCT_MT030200NL.Person">
- <xs:sequence>
  <xs:element name="id" type="II" minOccurs="0" maxOccurs="unbounded"/>
  <xs:element name="name" type="PN" minOccurs="0" maxOccurs="1"/>
  <xs:element name="statusCode" type="CS" minOccurs="0" maxOccurs="1"/>
  <xs:element name="administrativeGenderCode" type="CV" minOccurs="0" maxOccurs="1"/>
  <xs:element name="birthTime" type="TS" minOccurs="0" maxOccurs="1"/>
  <xs:element name="deceasedInd" type="BL" minOccurs="0" maxOccurs="1"/>
  <xs:element name="deceasedTime" type="TS" minOccurs="0" maxOccurs="1"/>
  <xs:element name="multipleBirthInd" type="BL" minOccurs="0" maxOccurs="1"/>
  <xs:element name="multipleBirthOrderNumber" type="INT" minOccurs="0" maxOccurs="1"/>
  <xs:element name="maritalStatusCode" type="CV" minOccurs="0" maxOccurs="1"/>
  <xs:element name="educationLevelCode" nillable="true" type="CE" minOccurs="0" maxOccurs="1"/>
  <xs:element type="COCT_MT030200NL.Birthplace" nillable="true" minOccurs="0" maxOccurs="1" name="birthplace"/>
  <xs:element type="COCT_MT030200NL.ContactParty" nillable="true" minOccurs="0" maxOccurs="unbounded"/>
```

Person Healthcare

De klasse *Person* heeft de volgende attributen:

classCode	PSN (Person) Een persoon (mens)
determinerCode	INSTANCE Een specifiek persoon (individu)
id	Persoonsnummer
name	Naam
administrativeGenderCode	Geslacht
birthTime	Geboortedatum (en evt. -tijd)
deceasedInd	Overlijdensindicatie
deceasedTime	Overlijdensdatum (en evt. -tijd)
multipleBirthInd	Meerlingindicatie
multipleBirthOrderNumber	Meerlingvolgnummer
maritalStatusCode	Burgerlijke staat
educationLevelCode	Opleidingsniveau

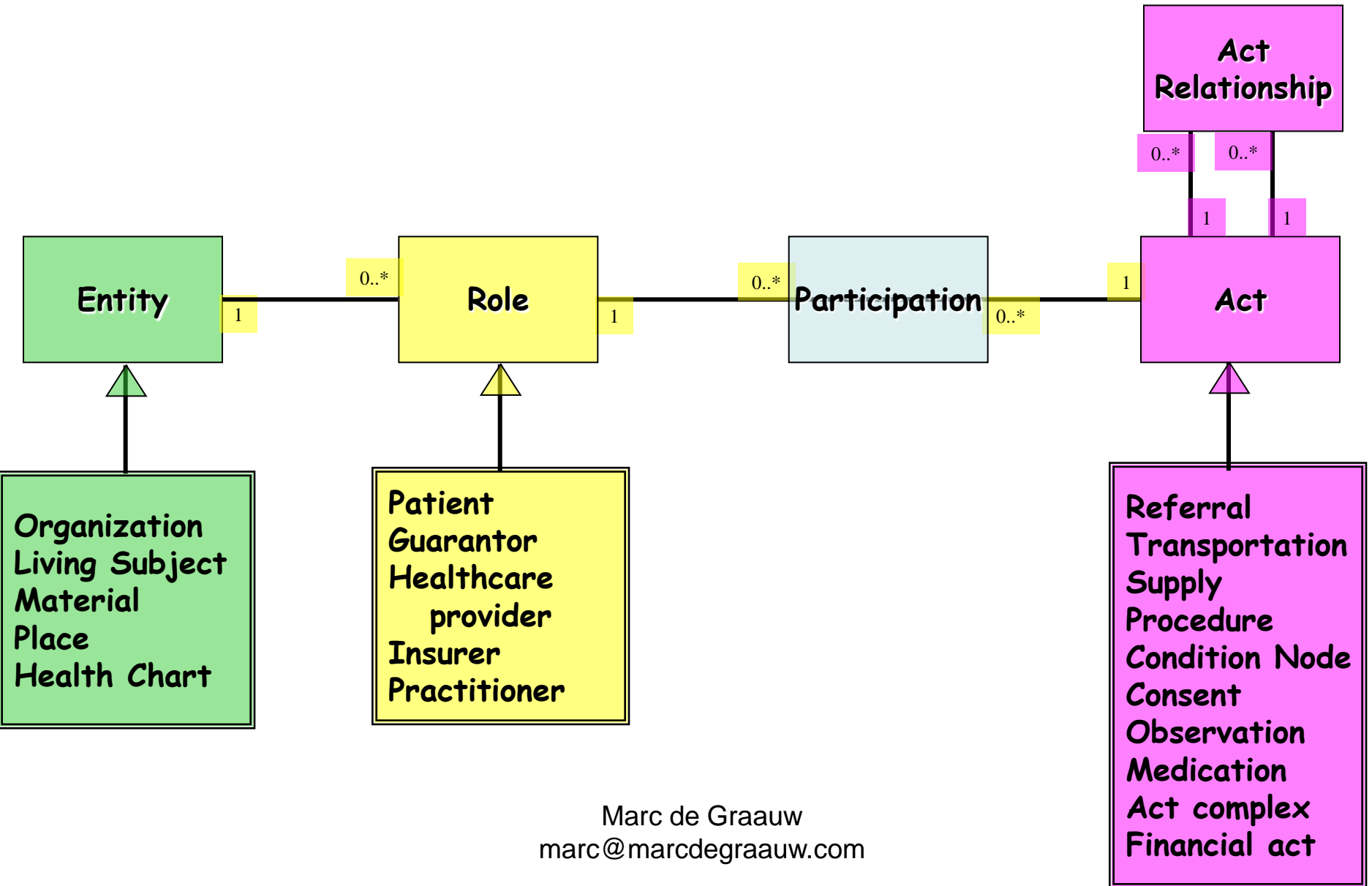
Person Healthcare

De klasse *Person* heeft de volgende associaties:

0..1	Employment	Beroep
0..*	ContactParty	Contactpers(o)n(en)
0..1	PatientOfOtherProvider	Relatie met de huisarts
0..1	Birthplace	Geboorteplaats
0..*	CoveredParty	Zorgverzekering(en)

Identification

RIM (Reference Information Model)



RIM

- Entities (Person, Organization, Medication)
- Roles (Registered Nurse, Anesthesia Resident)
- Participations (provider, recipient)
- Acts (administer, prescribe)

Identification in HL7

- HL7v3 datatype Instance Identifier

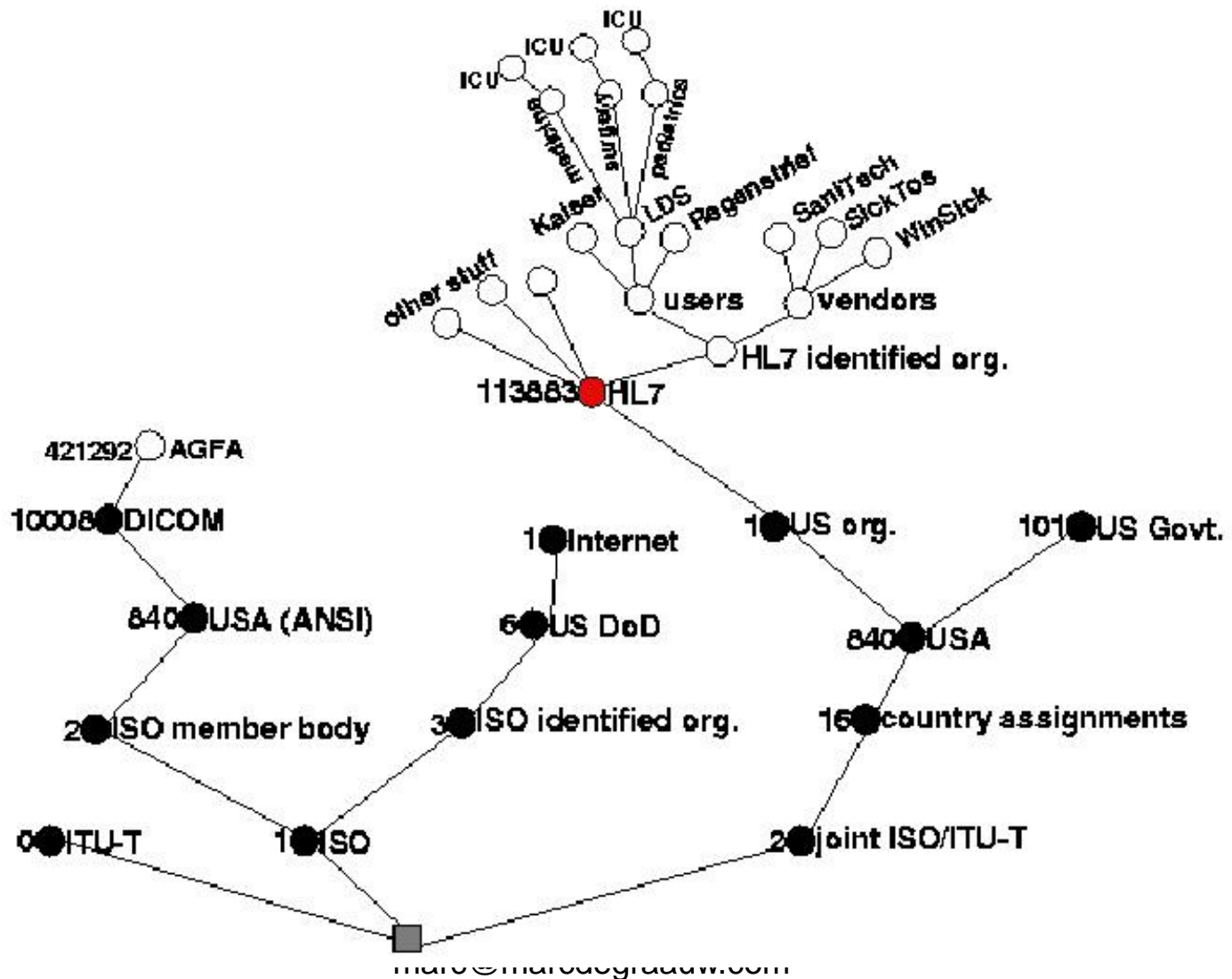
`<patientID>`

`<value extension="012345672" root="2.16.840.1.113883.2.4.6.3"/>`

`</patientID>`

- roots are OID's (Object Identifier)
- ITU-T ASN.1
- hierarchy
- extension is local identification system – in this case, BSN (social security number)

HL7 in the OID tree



A root OID

- 2.16.840.1.113883
 - HL7.org
- 2.16.840.1.113883.2
 - HL7 international affiliates
- 2.16.840.1.113883.2.4
 - HL7 Netherlands
- 2.16.840.1.113883.2.4.6
 - external id's
- 2.16.840.1.113883.2.4.6.6
 - AORTA application-id's
- 2.16.840.1.113883.2.4.6.6.1215432
 - root node app in hospital X
- 2.16.840.1.113883.2.4.6.6.1215432.4
 - prescription number within HIS

Marc de Graauw

marc@marcdegrauw.com

Identification in HL7

```
- <authorOrPerformer typeCode= AUI >
- <participant>
  - <AssignedPerson>
    → <id extension="012345678" root="2.16.528.1.1007.3.1" />
      <!-- specialist Dr. Jansen o.b.v. UZI nummer -->
  - <Organization>
    → <id extension="01234567" root="2.16.528.1.1007.3.3" />
      <!-- ziekenhuis Medisch Centrum Oost o.b.v. UZI abonneenummer -->
    </Organization>
  </AssignedPerson>
</participant>
</authorOrPerformer>
- <queryByParameter>
    → <queryId extension="0123456789" root="2.16.528.1.1007.3.2.1234567.2" />
      <statusCode code="active" />
      <initialQuantity value="1" />
  - <patientID>
    → <value extension="012345672" root="2.16.840.1.113883.2.4.6.3" />
      <!-- patiënt A. de Vries o.b.v. BSN -->
    </patientID>
```

Identification in HL7

```
</performer>
- <product>
  - <dispensedMedication>
    - <MedicationKind>
      → - <code code="14760371" codeSystem="2.16.840.1.113883.2.4.4.8"
          codeSystemName="G-Standaard Artikel" displayName="CLARITINE TABLET 10MG">
      → <translation code="619094" codeSystem="2.16.840.1.113883.2.4.4.7" />
      → <translation code="73563" codeSystem="2.16.840.1.113883.2.4.4.1" />
        </code>
      </MedicationKind>
    - <directTargetOf>
      - <prescription>
```