



## Birthcare FHIR model in the Netherlands

Lilian Minne Nictiz/Firely



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ORGANIZED BY **firely**

## Who am I?

- Lilian Minne
- FHIR consultant
- Firely/Nictiz



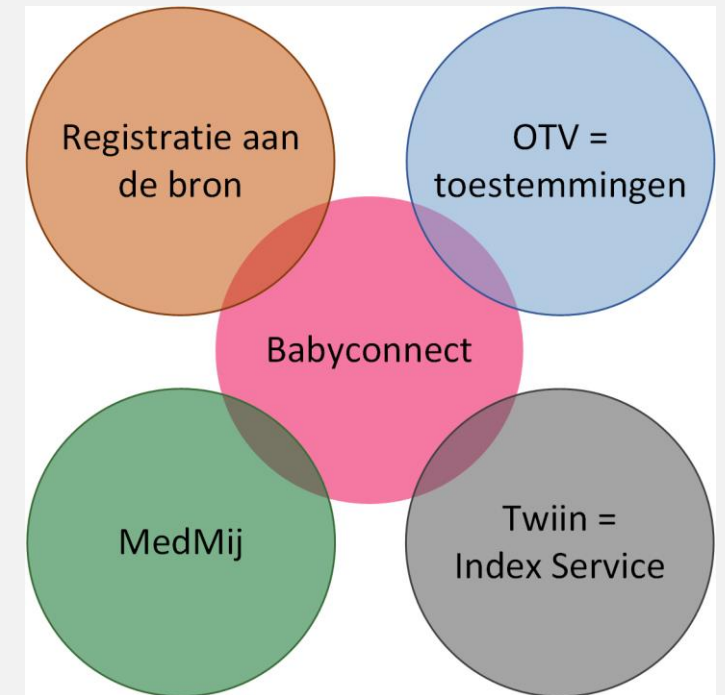
## Dutch FHIR birth care model



- Woman
- Pregnancy
- Birth
- Delivery
- (Unborn) child

## BabyConnect VIPP program

- Aims to facilitate data exchange between
  1. Care providers
  2. Care providers & clients
- Healthcare information models (HCIM)
- Modular design (A, B1/B2, C, D1/D2, E)
- Supported processes: publish, consult, permit, share, collect



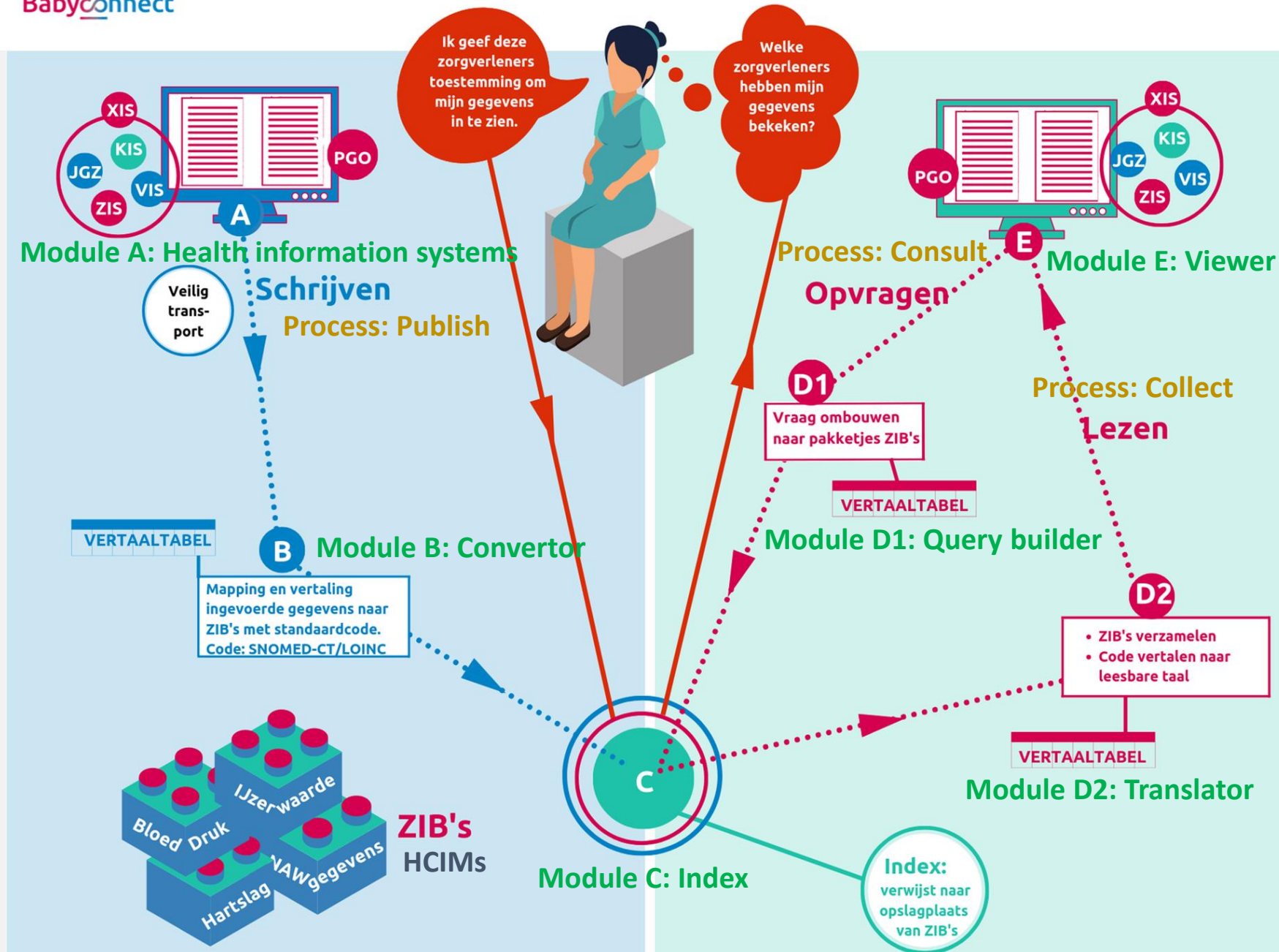


# Architecture

Babyconnect

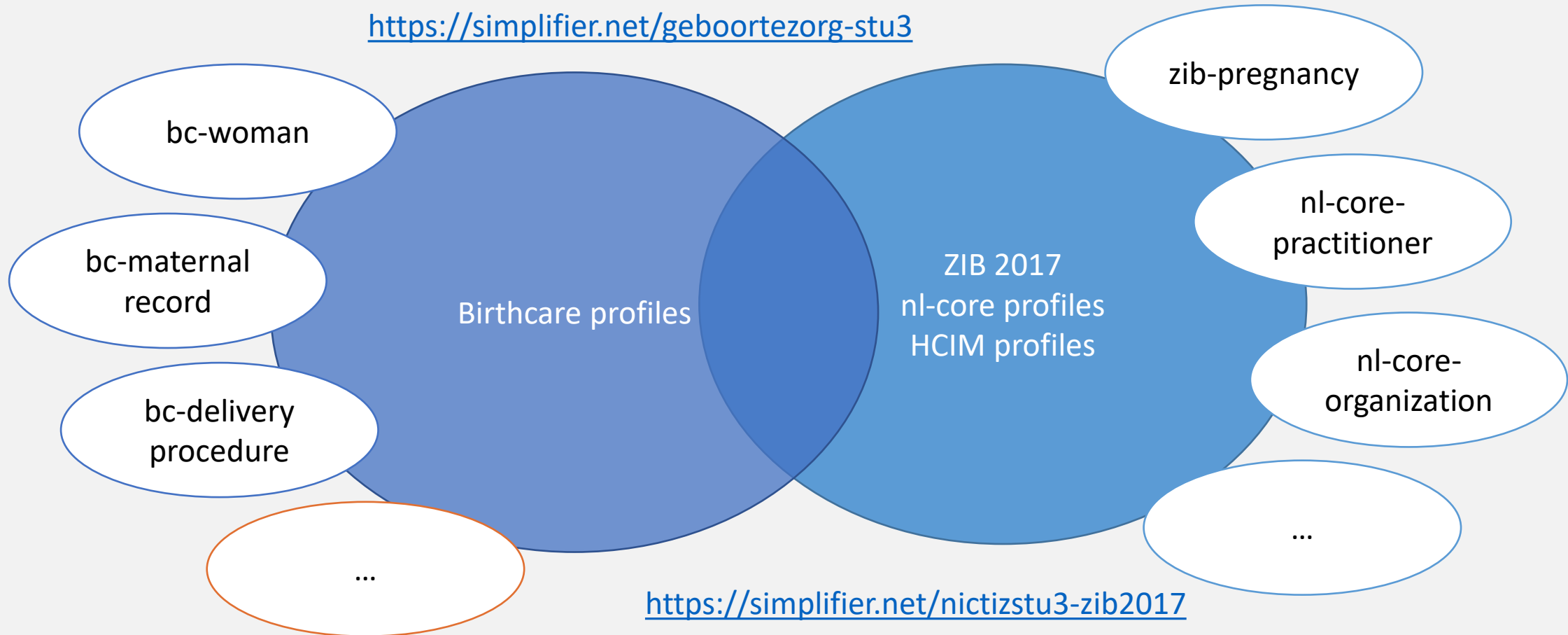
perined

Nictiz

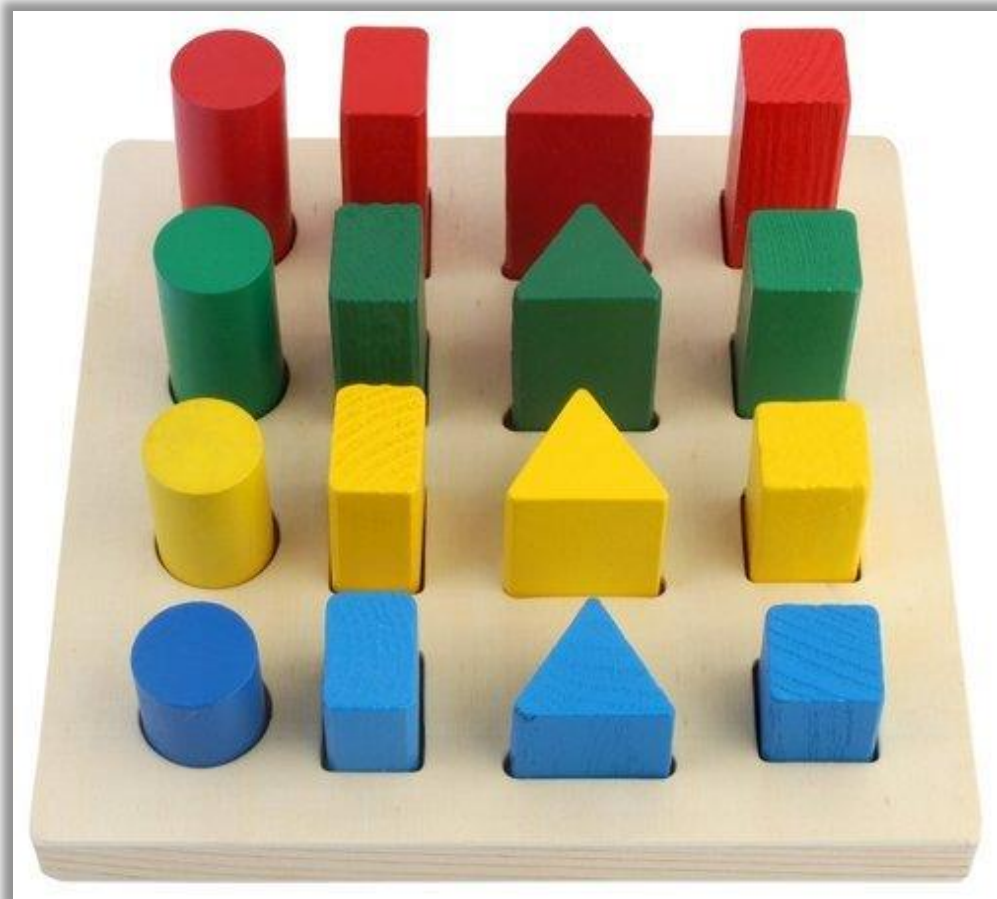


# Dutch FHIR birth care model

<https://simplifier.net/geboortezorg-stu3>



## Dutch FHIR birth care model

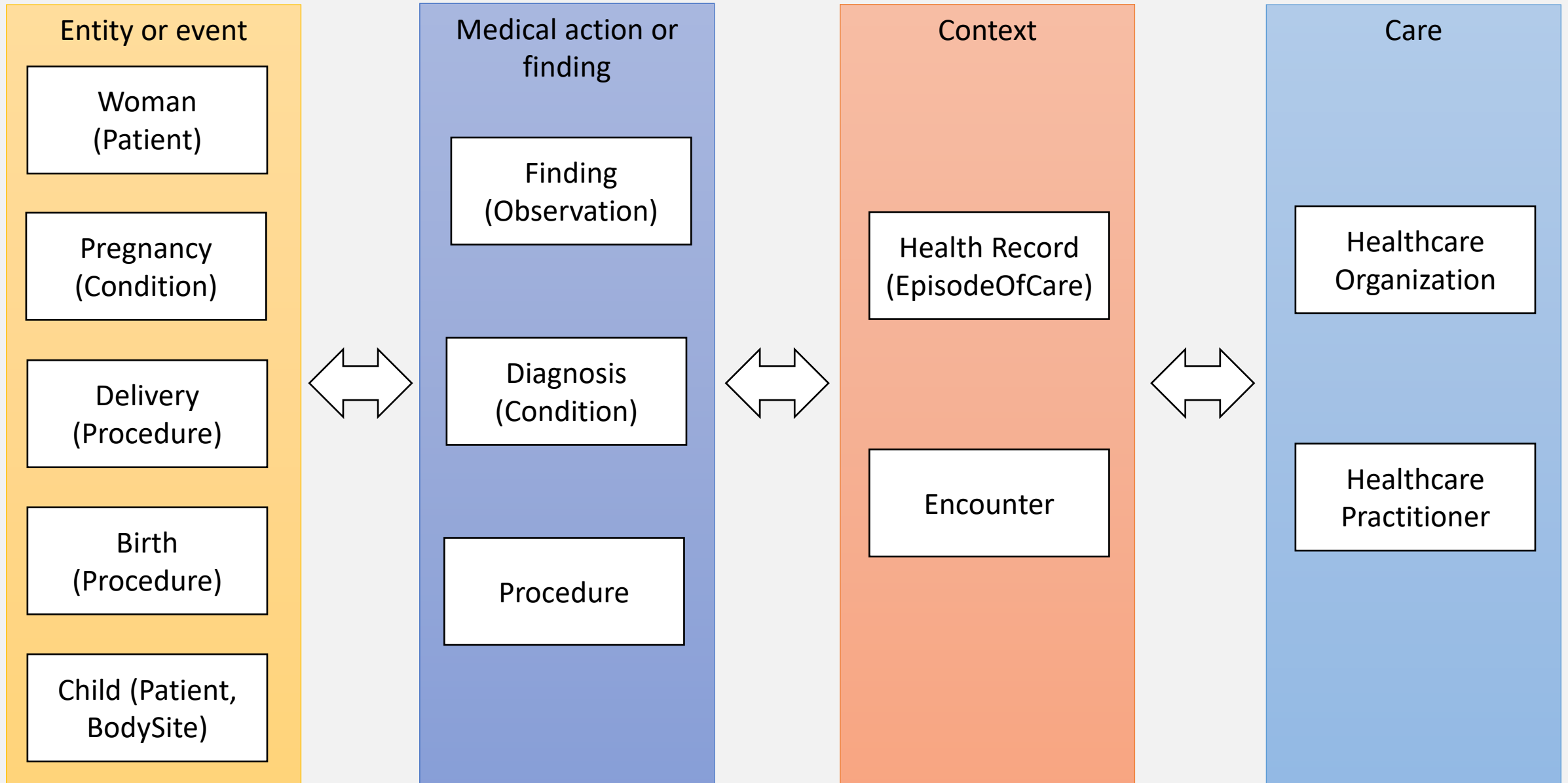


Dutch birth care model

ZIB 2017

NL core

FHIR core

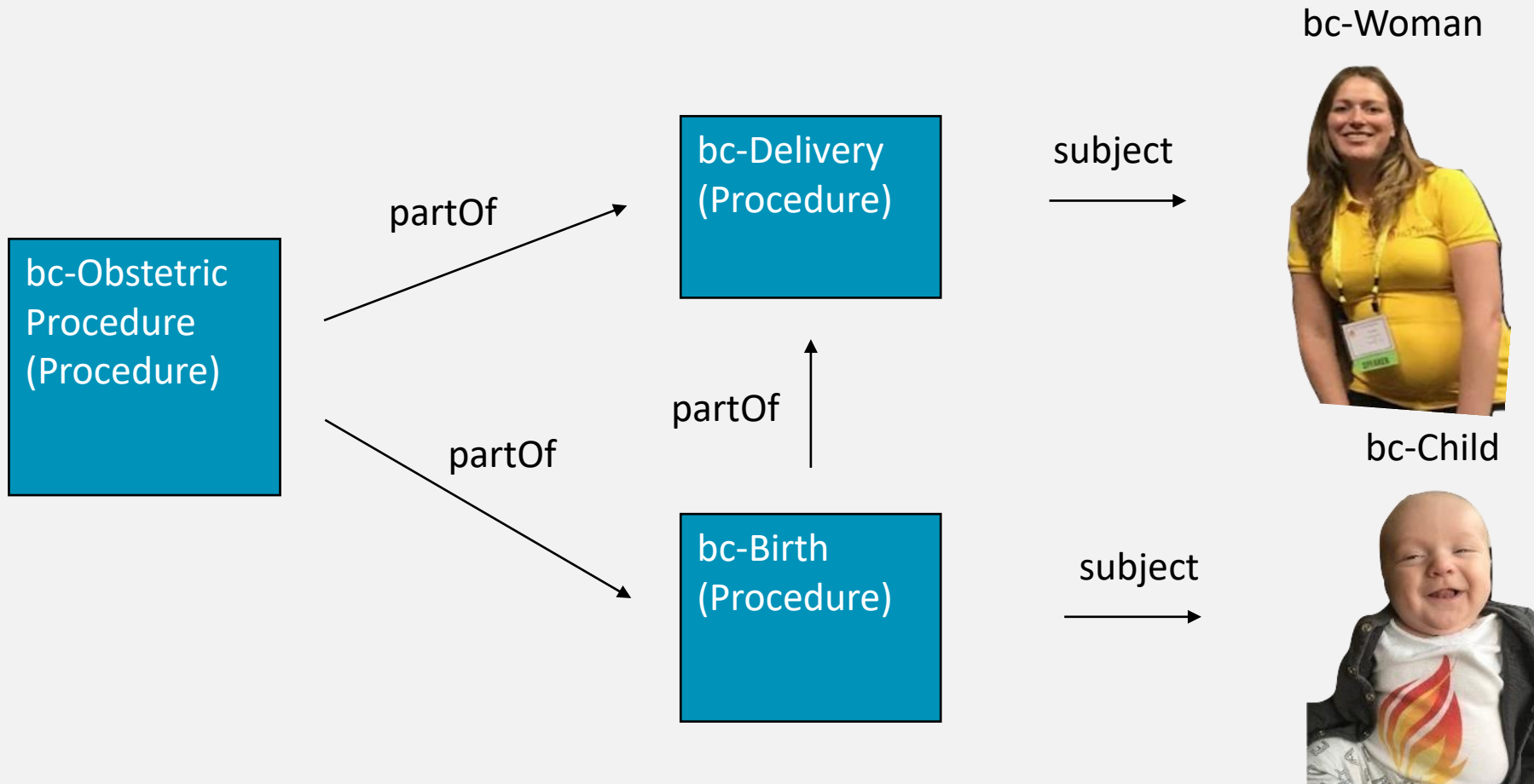




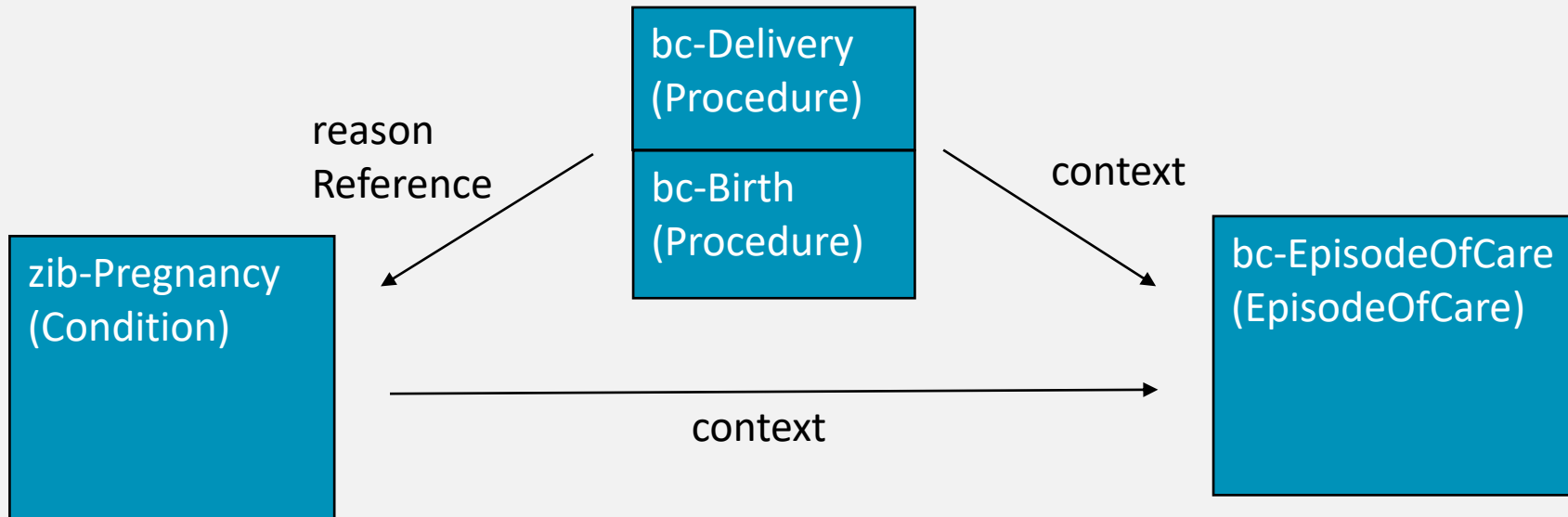
# Pregnancy file



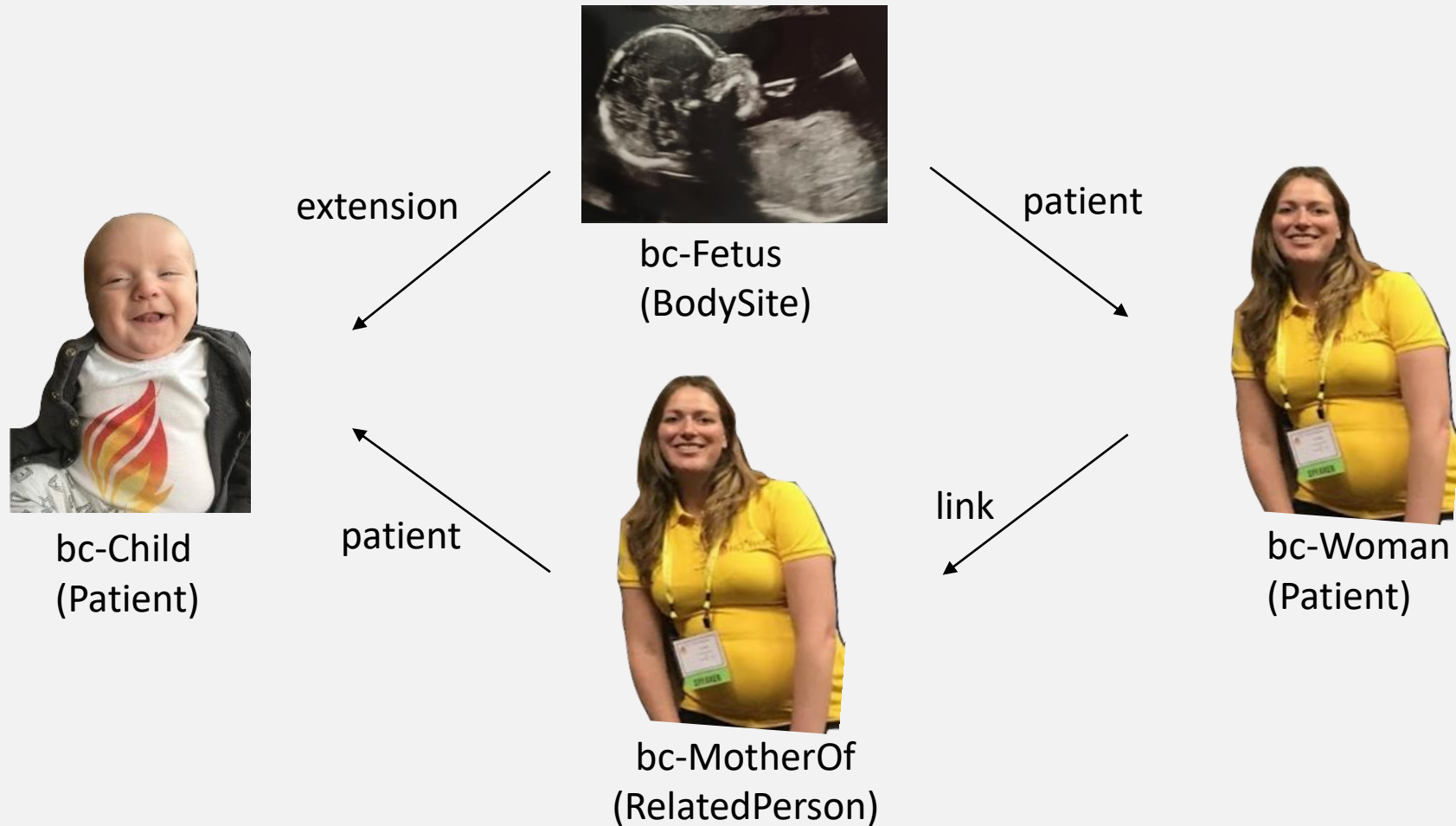
# Birth & delivery



# Relation pregnancy & delivery



# The (unborn) child



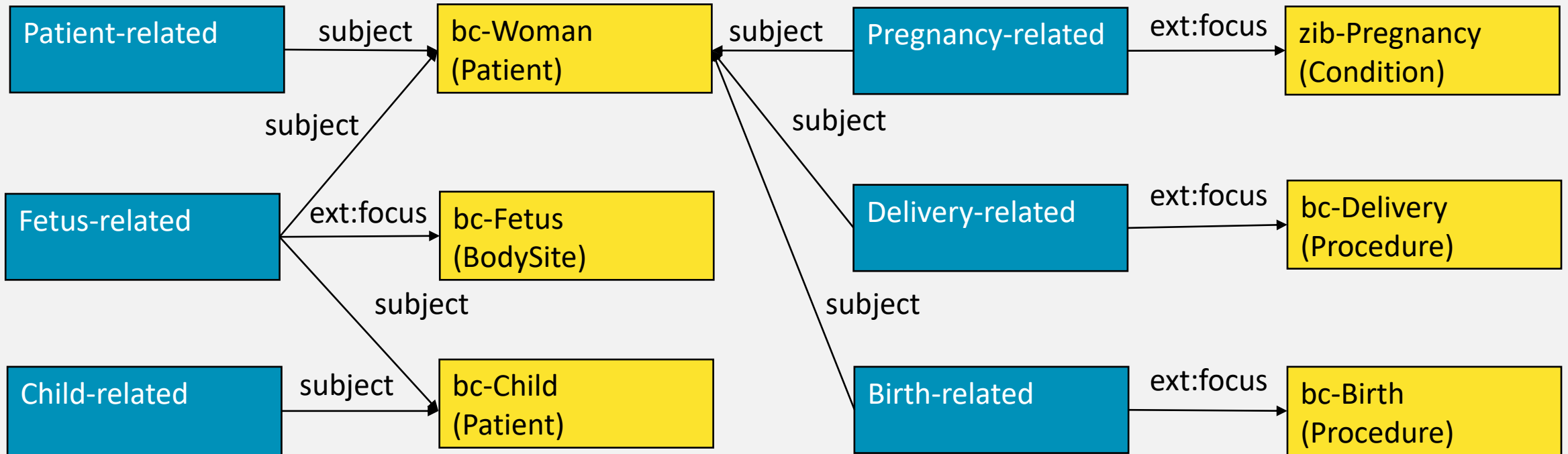
## Medical findings - Patterns



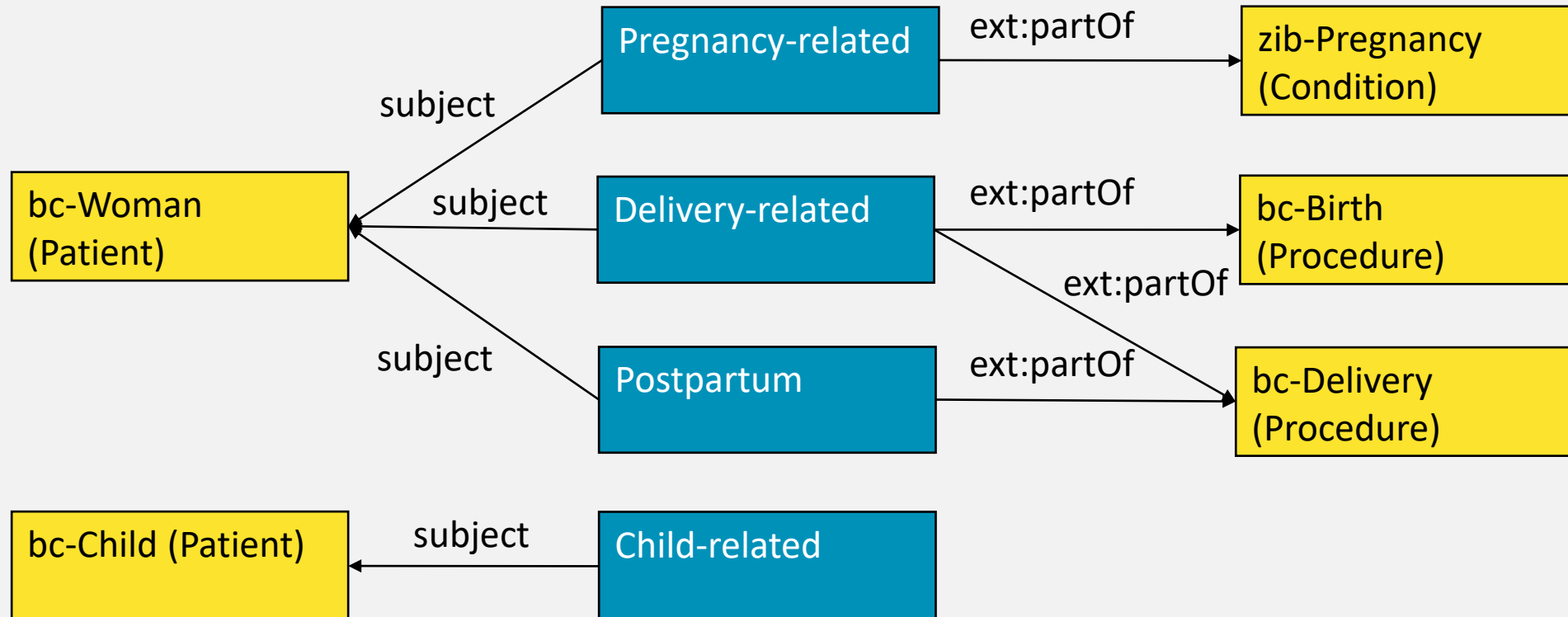
- Observations
  - patient-related
  - fetus-related
  - child-related
  - pregnancy-related
  - delivery-related
  - birth-related
  
- Conditions
  - pregnancy-related
  - delivery-related
  - post-partum
  - child-related



# Observations



# Conditions



## Patterns

- Generic profile definition
- XML fragment
- Valuation table

- Example

- [https://informatiestandaarden.nictiz.nl/wiki/Gebz:FHIR\\_bc-PregnancyObservation](https://informatiestandaarden.nictiz.nl/wiki/Gebz:FHIR_bc-PregnancyObservation)



# XML fragment (example)

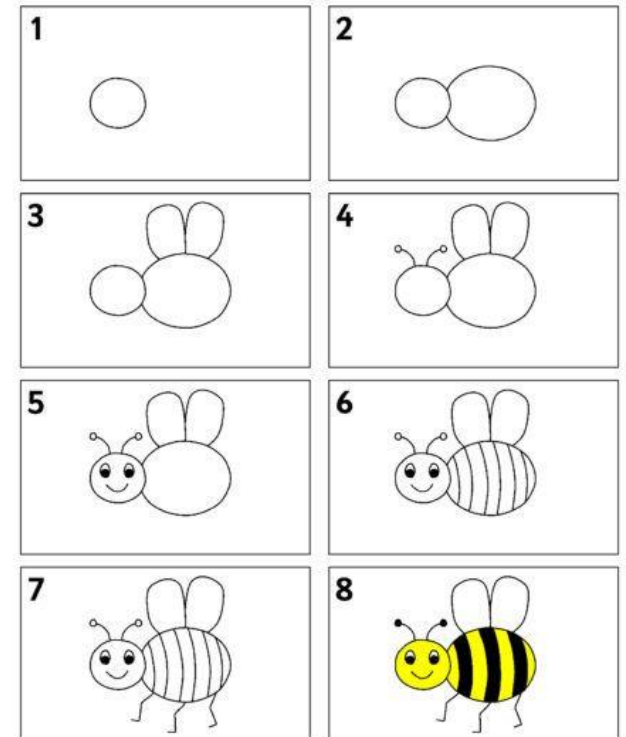
```

<Observation xmlns="http://hl7.org/fhir">
  <id value="[[a unique id]]"/>
  <meta>
    <profile value="http://nictiz.nl/fhir/StructureDefinition/nl-core-observation"/>
    <profile value="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation"/>
  </meta>
  <extension url="http://nictiz.nl/fhir/StructureDefinition/Observation-focus-stu3">
    <valueReference>
      <reference value="[[reference to the pregnancy | Condition/wouden-zwanger1]]" />
    </valueReference>
  </extension>
  [[! Other values than final should be avoided ]]
  <status value="final"/>
  <code>
    <coding>
      <system value="[[system, see below | http://loinc.org]]"/>
      <code value="[[code, see below | 11996-6]]"/>
      <display value="[[display, see below | Gravidity]]"/>
    </coding>
  </code>
  <subject>
    <reference value="[[reference to the Mother Patient | Patient/XXX-VDWOUDEN" />
    <display value="[[display of reference | Patient van der Wouden]]" />
  </subject>

```

## How to Draw a Bee
















Use these instructions to help you draw a simple cartoon bee.



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# Valuation table

## Valuation table

Type	#	Concept	Profile	FHIR type	system+code	unit
	82501	Afwijkende groei foetus	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueCodeableConcept	<a href="http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.3.11.60.90.77.11.37--20141020151252">http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.3.11.60.90.77.11.37--20141020151252</a>	
	82524	Intra-uteriene vruchtdood	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueBoolean		
	82525	Vermoeden intra-uteriene vruchtdood?	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueCodeableConcept	<a href="http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.11.171--20130320000000">http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.11.171--20130320000000</a>	
	80823	Wijze einde zwangerschap	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueBoolean		
	82337	Definitieve à terme datum	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueCodeableConcept	<a href="http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.3.11.60.90.77.11.36--20141020145518">http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.3.11.60.90.77.11.36--20141020145518</a>	
	82314	Diagnose	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueBoolean		
	82317	Gynaecologische aandoening	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueBoolean		
	82318	Bloedverlies?	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueCodeableConcept	<a href="http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.3.11.60.90.77.11.37--20141020151252">http://decor.nictiz.nl/fhir/ValueSet/2.16.840.1.113883.2.4.3.11.60.90.77.11.37--20141020151252</a>	
	82320	Cervixinsufficiëntie?	<a href="http://nictiz.nl/fhir/S">http://nictiz.nl/fhir/S</a>	valueBoolean		
	82321	Infectie	<a href="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation">http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation</a>		<a href="http://snomed.info/sct">http://snomed.info/sct</a>	40733004 Infectious disease
	82322	Hyperemesis gravidarum?	<a href="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation">http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation</a>		<a href="http://snomed.info/sct">http://snomed.info/sct</a>	14094001 Excessive vomitir
	82323	Hypertensieve aandoening	<a href="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation">http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation</a>		<a href="http://snomed.info/sct">http://snomed.info/sct</a>	38341003 Hypertensive disc
	82324	Zwangerschapscholestase?	<a href="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation">http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation</a>		<a href="http://snomed.info/sct">http://snomed.info/sct</a>	235888008 Cholestasis of pre
	82325	Diabetes gravidarum met insuline?	<a href="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation">http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation</a>		<a href="http://snomed.info/sct">http://snomed.info/sct</a>	46894009 Gestational diabet
	82326	Afwijkende groei foetus	<a href="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation">http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation</a>		<a href="http://snomed.info/sct">http://snomed.info/sct</a>	276604007 Fetal growth abno
	82327	Dreigende partus immaturus?	<a href="http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation">http://nictiz.nl/fhir/StructureDefinition/bc-PregnancyObservation</a>		<a href="urn:oid:2.16.840.1.113883.2.4.4.13">urn:oid:2.16.840.1.113883.2.4.4.13</a>	PartusImmaturusDreig Partus immaturus



## Next steps

- Public consultation round
- BGPZ MedMij information standard
- Create test & kwalification materials
- CHOICE
  - Child Health & Obstetrics International Collaboration and Exploration
  - Australia, UK, Netherlands
  - <https://confluence.hl7.org/pages/viewpage.action?pageId=86973863>

# Documentation

- Simplifier
  - <https://simplifier.net/geboortezorg-stu3> (geboortezorg)
  - <https://simplifier.net/nictizstu3-zib2017> (nl-core en zib)
- FHIR Implementation Guide
  - [https://informatistandaarden.nictiz.nl/wiki/Gebz:FHIR\\_IG](https://informatistandaarden.nictiz.nl/wiki/Gebz:FHIR_IG)
- Information standard
  - <https://babyconnect.atlassian.net/wiki/spaces/VBC/overview>



## Contact

- During DevDays, you can find / reach me here:
  - Via Whova App – Speaker’s Gallery
  - Email: [lilian@fire.ly](mailto:lilian@fire.ly)
- And after that...
  - Email: [lilian@fire.ly](mailto:lilian@fire.ly)



# Q&A