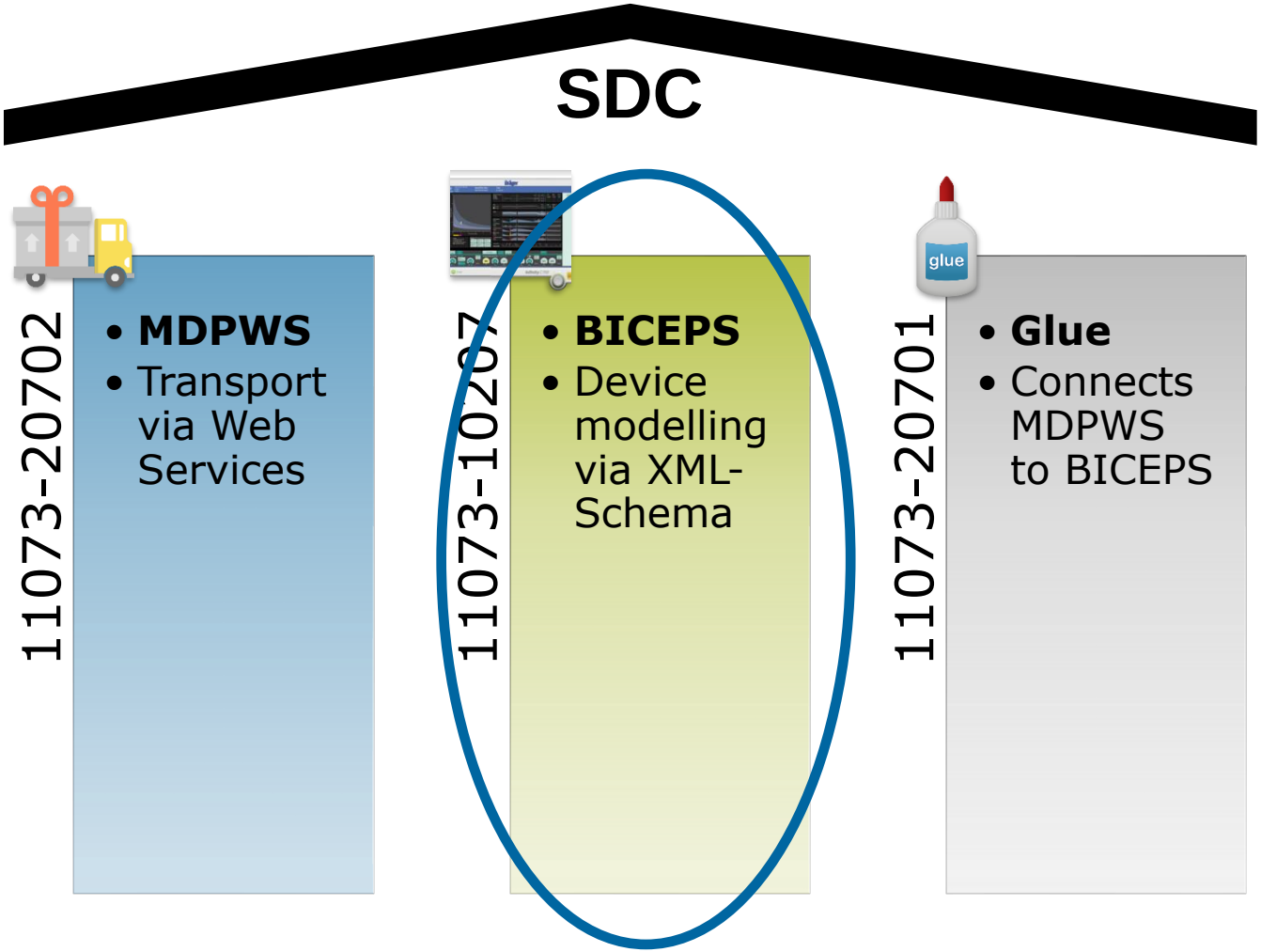
BICEPS Modelling of Alert Systems

Revision 1,
2018-10-04

IEEE
Advancing Technology for Humanity

Orientation



DEFINITION

Definition
Context

Within BICEPS, a context is defined as the relationship of a medical device system with its usage environment.

Technically, a context can be understand as a token that

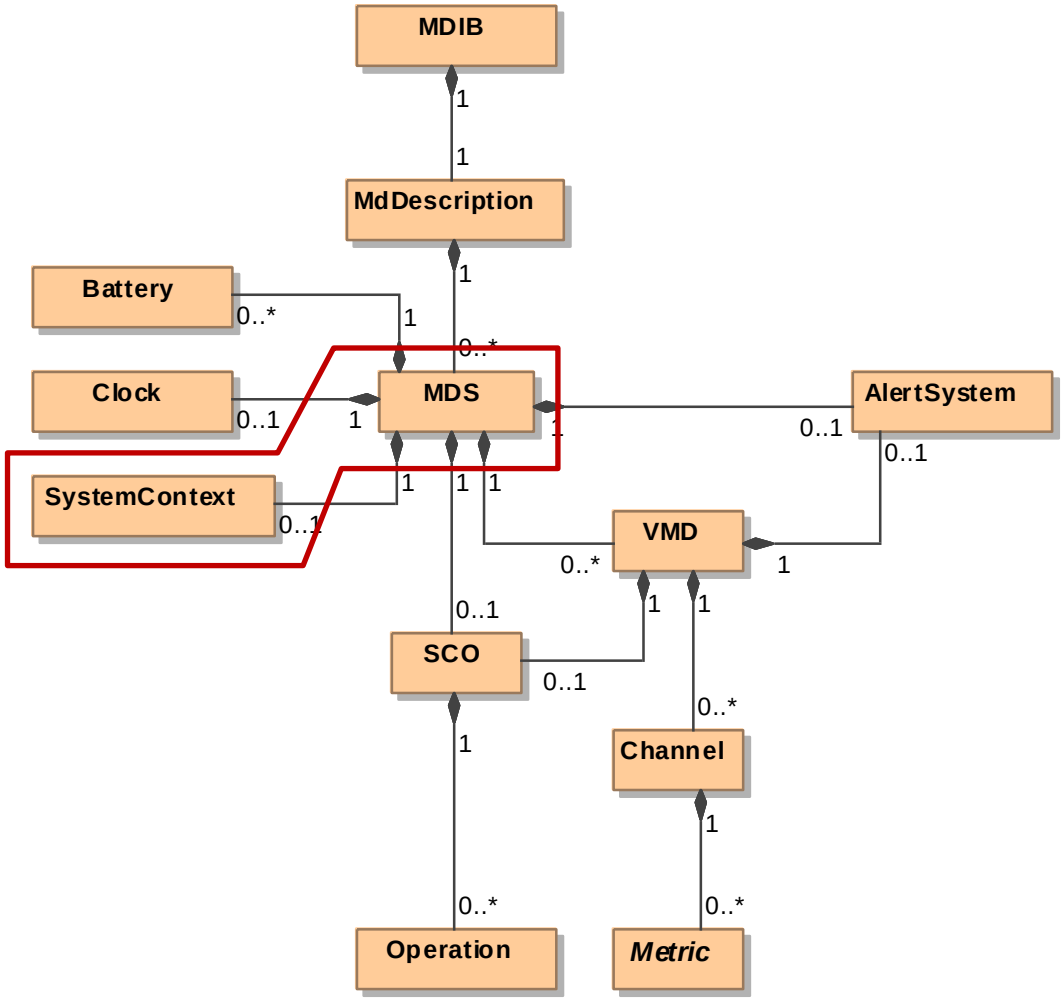
is shared between two or more medical device systems to let them know they are "talking about the same things"

and/or

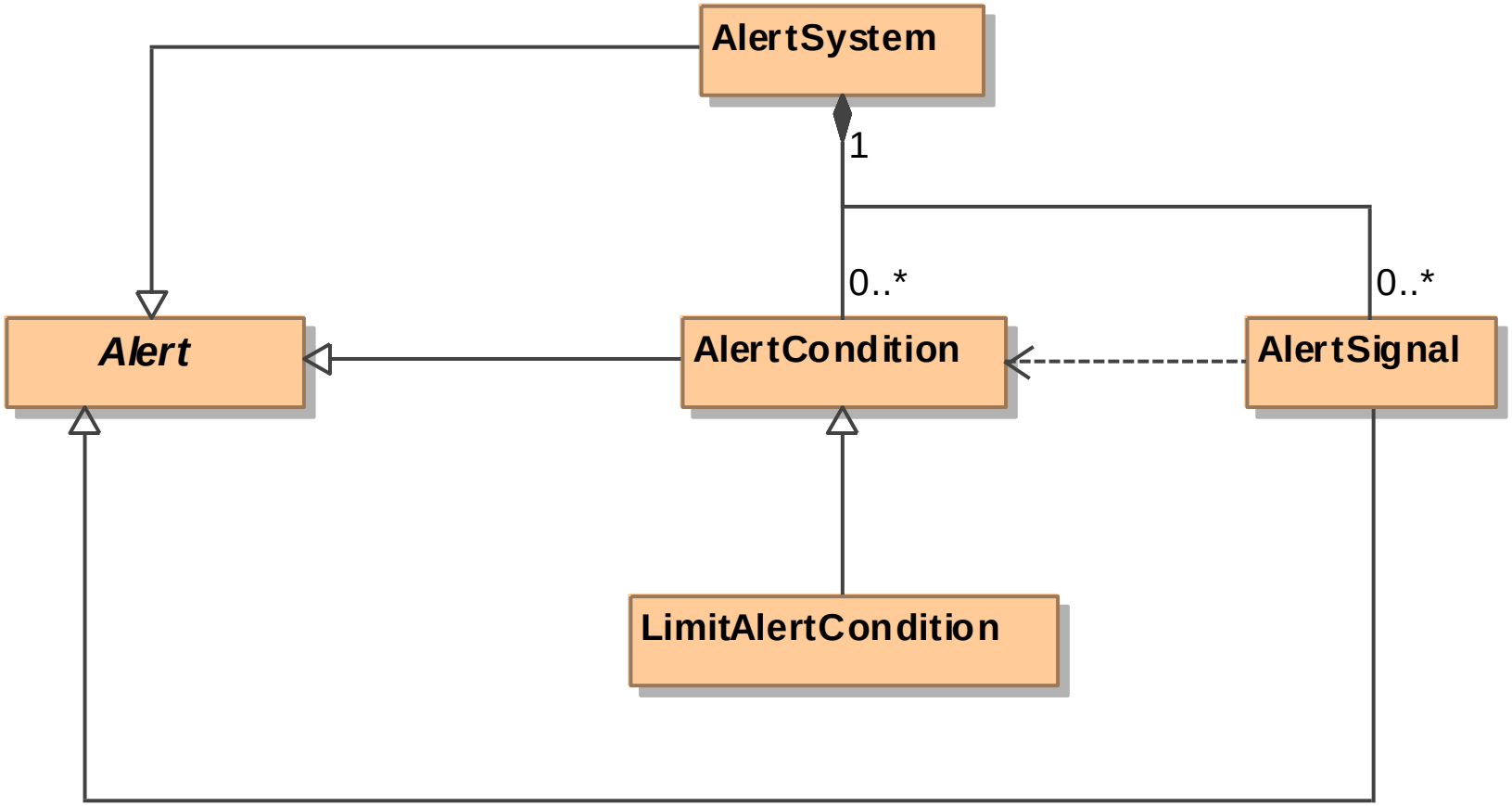
is used to provide contextual information like location information or patient demographics.

CLASS DIAGRAM

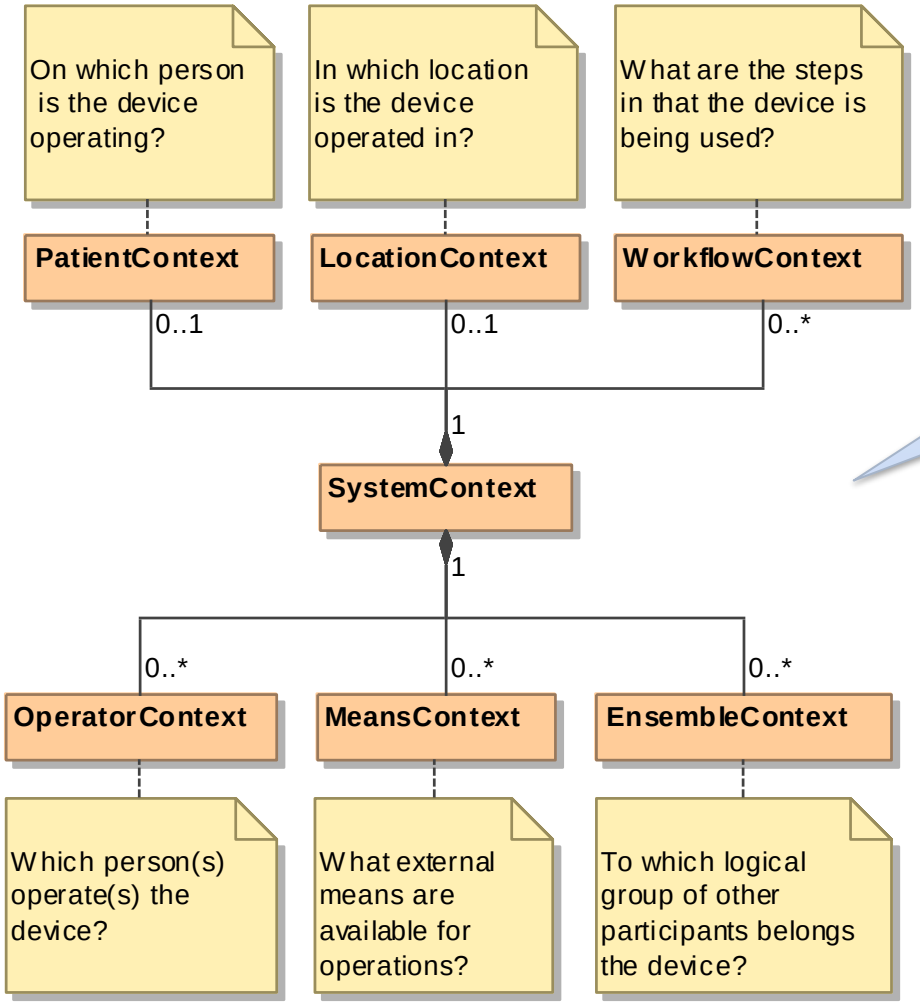
Class diagram
Placement in MDIB



Class diagram
Relationship and derived types

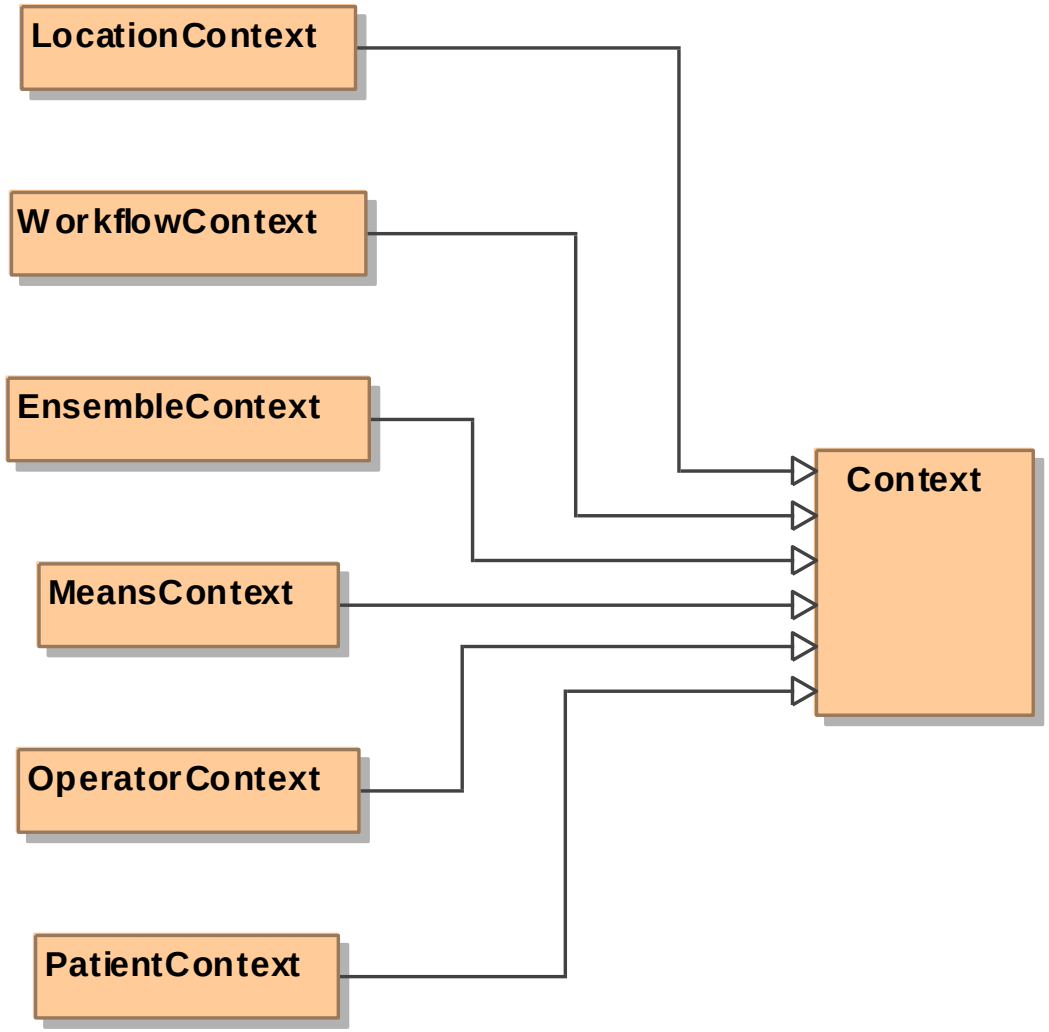


Class diagram
Context types and their intended use



Although PatientContext and LocationContext only support one associated context at a time, there can be zero or many available context states in the MDIB.

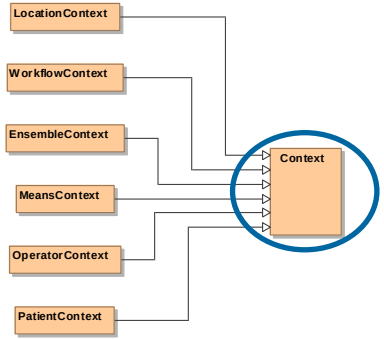
Class diagram
Context base type



PROPERTIES

Properties

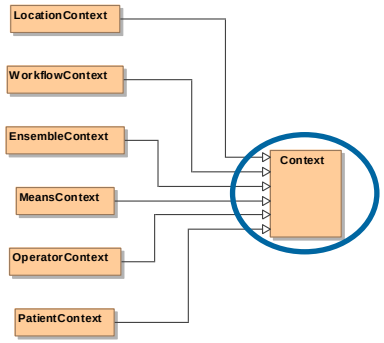
pm:AbstractContextDescriptor and any derived type



- No attributes defined

Properties

pm:AbstractContextState I



ContextAssociation

- Is the context currently being applied?
- Can be *not associated*, *pre-associated*, *associated*, *disassociated*

BindingMdibVersion, UnbindingMdibVersion

- Version range in which a context is *associated*
- BindingMdibVersion points to the MDIB version when the context was first associated
- UnbindingMdibVersion points to the MDIB version when the context was first disassociated

BindingStartTime [optional]

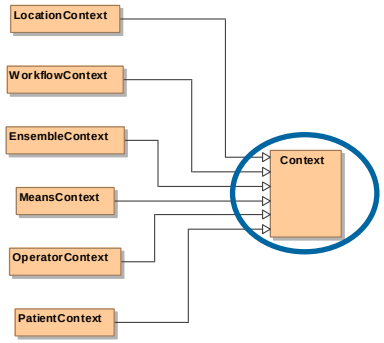
- Time measured when context was bound

BindingEndTime [optional]

- Time measured when context was unbound

Properties

pm:AbstractContextState II



Validator [list]

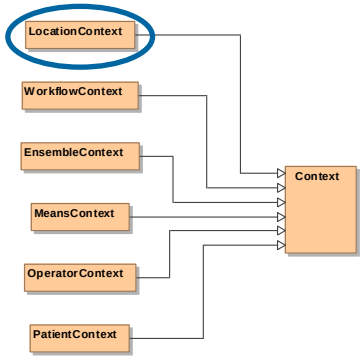
- Actors (e.g., persons, devices or any identifiable systems) as pm:InstanceIdentifier that have confirmed that a binding of a context state to an MDS is correct
- If this list is empty, then no one or nothing has validated the context state

Identification [list]

- Elements as pm:InstanceIdentifier to create a context's identity
- The identification is the official use to uniquely identify a context
- This is the only source of data that should be used to group devices

Properties

pm:LocationContextState

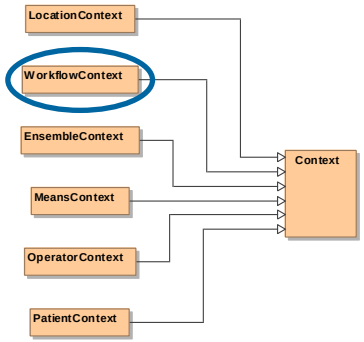


LocationDetail

- Detailed information regarding the location; picked from HL7
- For information purposes only; identification is done through the context's identification list
- Included data
  - PoC → Name of a point of care unit, e.g., nursing unit, department, or clinic
  - Room
  - Bed
  - Facility
  - Building
  - Floor

Properties

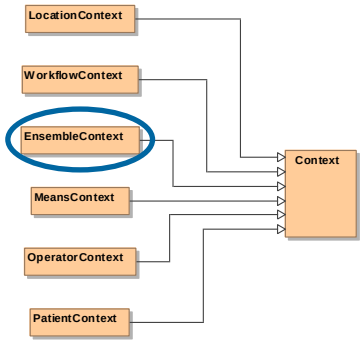
pm:WorkflowContextState



TBD

Properties

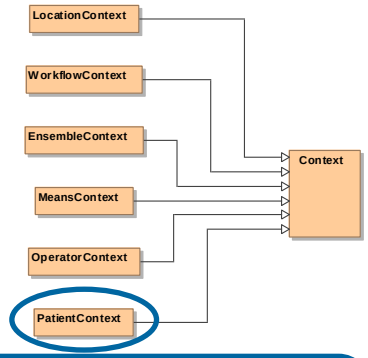
pm:EnsembleContextState



- The ensemble context has no special attributes to share
- It can be used to create arbitrary groups of devices or device sessions
  - Example: mobile devices that are moved from pre-op to OR room to postanesthesia recovery
- The context state‘s identification attribute is the exclusive way to designate an ensemble
- BICEPS does not define or prescribe how the identification is established

Properties

pm:PatientContextState

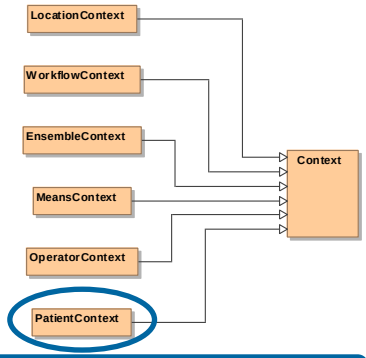


CoreData

- Observed information about a patient, e.g., demographics
  - contains information that is typically used in an anamnesis questionnaire header
- Data depends on patient type
  - adult, neonatal, ...

Properties

pm:PatientDemographicsCoreData



Name

- segregated by Givenname, Middlename, Familyname, Birthname, and Title

Sex

- male, female, unknown

PatientType

- unspecified, adult, adolescent, pediatric, infant, and neonatal

DateOfBirth

- As defined in FHIR, either date-time, date, year-month, or year

Height

- pm:Measurement (which is a tuple of a decimal value plus a unit)

Weight

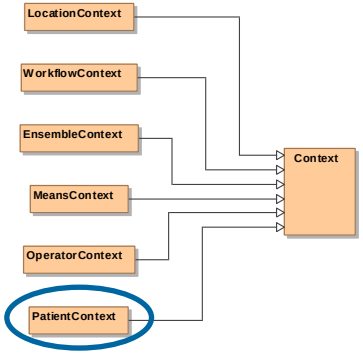
- pm:Measurement

Race

- To be specified by a pm:CodedValue

Properties

pm:NeonatalPatientDemographicsCoreData
(derived from pm:PatientDemographicsCoreData)



GestationalAge

- pm:Measurement

BirthLength

- Length at birth time, as pm:Measurement

BirthWeight

- Height at birth time, as pm:Measurement

HeadCircumference

- Head circumference at birth time, as pm:Measurement

Mother

- pm:PersonReference, which consists of an identification and a human-readable name

Thank you for your attention!

Contact information

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