

An Ontological Representation of Sex and Gender Information

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Plan

Motivations

Existing representations

Formalization of sex and gender informational entities

Discussion





Motivations

Context of a Learning Health System in Quebec (PARS3)

DEMO: DEMographics Ontology

Sex and gender are important health determinants





Sex & Gender: International standards

Canada Health Infoway Sex and Gender Working Group

 Distinction between sex and gender already acknowledged in main international health standards

HL7 FHIR, SNOMED CT, LOINC





Sex & Gender: medical records

Canada Health Infoway Sex and Gender Working Group

Distinction betherin main internal

Sex/gender

- M
- F
- Other/Unknown

ly acknowledged

HL7 FHIR, SNOMED CT, LOINC, DICOM





Sex and gender in ontologies

 Sex and gender VS. Sex and gender information content entity

The Gender, Sex and Sexual Orientation Ontology (GSSO)





Sex and gender information content entities (ICE)

Vaccine ontology (VO)

```
entity
continuant
generically dependent continuant
information content entity
data item
measurement datum
female biological sex datum
intersex biological sex datum
male biological sex datum
```





Sex and gender information content entities (ICE)

□-quality Vaccine ontology (VO) physical object quality organismal quality **⊟**-entity biological sex ⊟-continuant e-generically dependent continuant genotypic sex information content entity female genotypic sex is about ⊟-data item male genotypic sex -measurement datum mating type biological sex datum phenotypic sex female biological sex datum female intersex biological sex datum hermaphrodite male biological sex datum -male -pseudohermaphrodite

The Phenotype and Trait Ontology (PATO)





Sex and gender information content entities (ICE)

Ontology of Medically related Social Entities (OMRSE)

```
entity
continuant
generically dependent continuant
information content entity
social identity information content entity
gender identity information content entity
female gender identity information content entity
male gender identity information content entity
non-binary identity information content entity
```





Formalizing sex and gender ICE

DEMographics Ontology (DEMO)

- Formalize informational entities
- Expand the binary representation
- Take into account ambiguous record





Formalizing sex and gender ICE

Adding non binary/intersex classes in VO and OMRSE

DEMO:biological sex or gender identity ICE

Equivalent to: VO:biological sex datum OR OMRSE:gender identity ICE





Formalizing sex and gender ICE

Adding non binary/intersex classes in VO and OMRSE

DEMO: female biological sex or woman gender identity ICE

DEMO:male biological sex or man gender identity ICE

DEMO:intersex biological sex or non-binary identity ICE

identity ICE





Discussion

- Informational entities about intersex and non-binary gender
- Biological sex or gender identity ICE class as a catch-all solution

Rejected alternative: Ambiguous Biological sex or gender identity ICE





Discussion

Rejected alternative: Ambiguous Biological sex or gender identity ICE







Discussion

Created for medical records but could be useful elsewhere

 Future works on aboutness in order to link these classes to non-informational entities

Ethical implications as sex and gender are sensitive data





Thank you



