International Classification for Patient Safety (ICPS)

a Project funded by the World Alliance for Patient Safety of the World Health Organization (WHO)

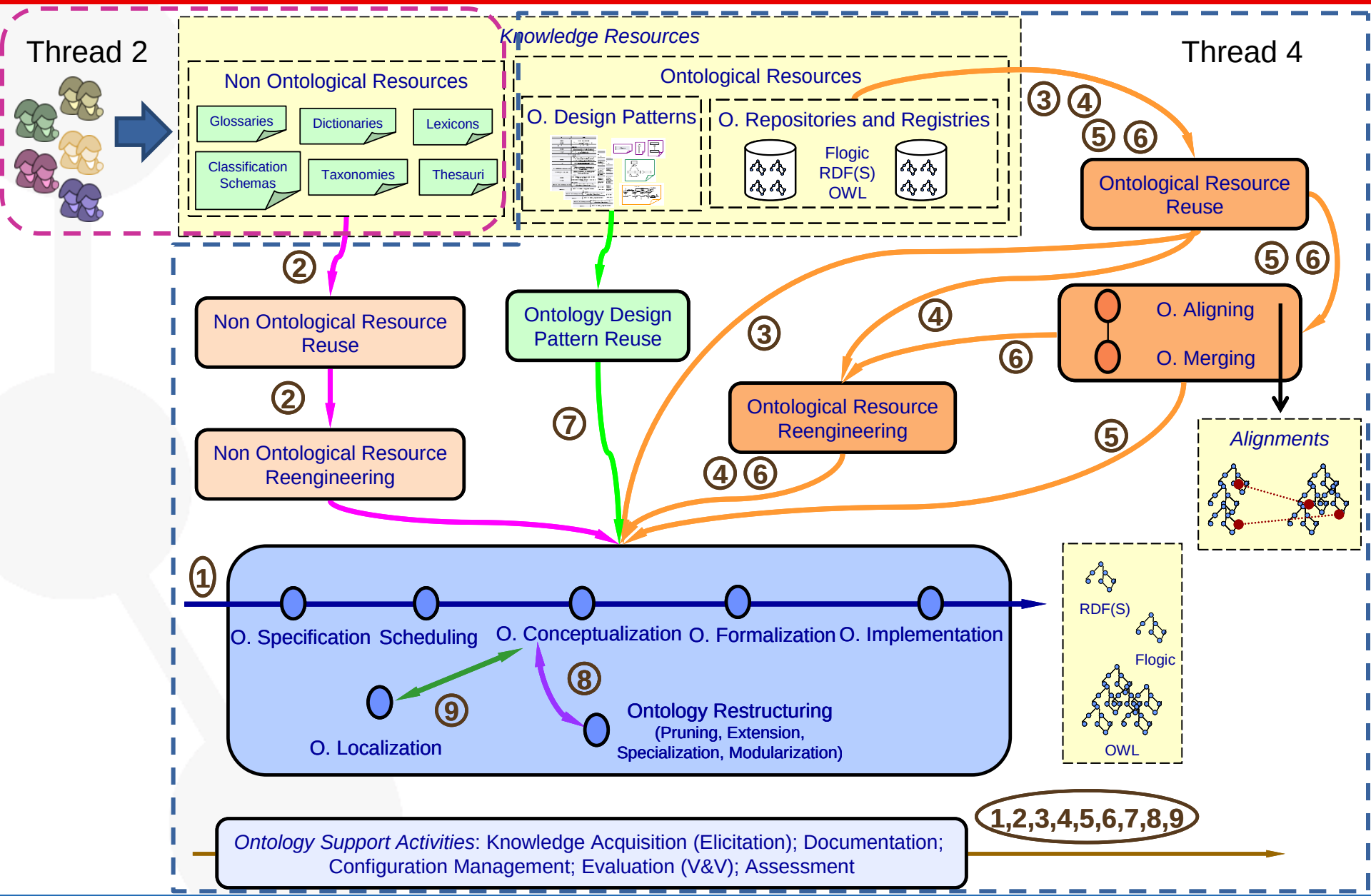
María Poveda, Elena Montiel-Ponsoda,
Mari Carmen Suárez-Figueroa, and Oscar Corcho
Ontology Engineering Group. Departamento de Inteligencia Artificial.
Facultad de Informática, Universidad Politécnica de Madrid.
Campus de Montegancedo s/n.
28660 Boadilla del Monte. Madrid. Spain
mpoveda@delicias.fi.upm.es, {emontiel, mcsuarez, ocorcho}@fi.upm.es

Date: 17/12/2009

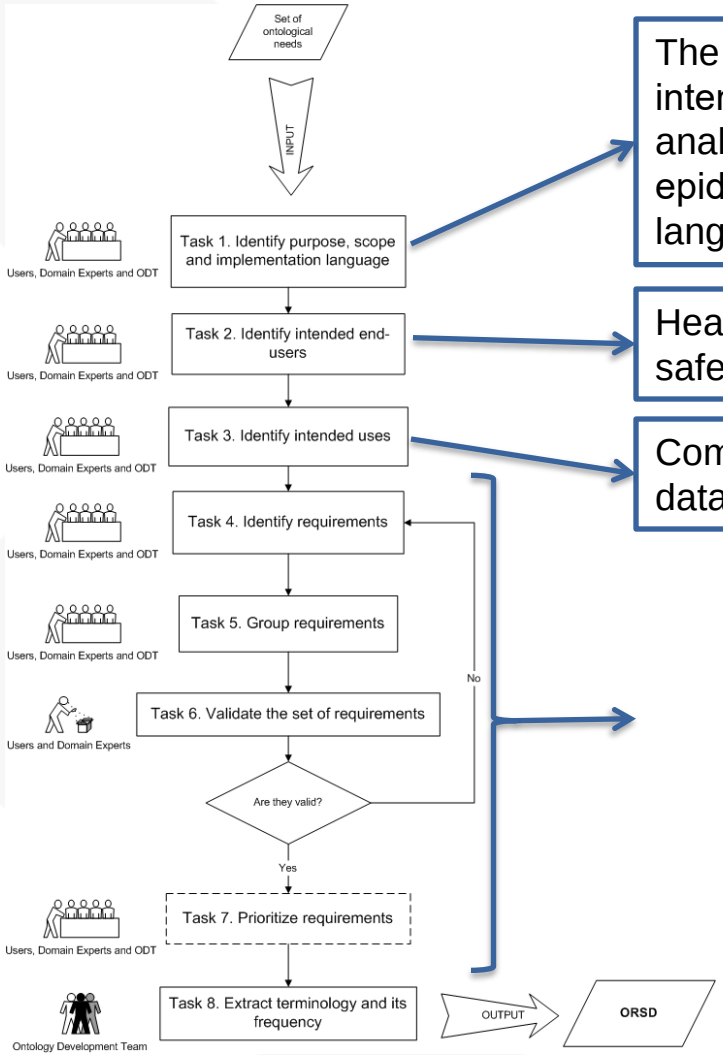
Introduction

- Objectives of the *International Classification for Patient Safety* (ICPS) Project:
  - To create a **conceptualization** of the ***patient safety*** domain to enable an efficient monitoring, analysis and interpretation of the info.
  - To enable **interoperability** with existing international classifications.
  - To improve **patient care** and health policy plans all over the world.
- Methodological background: *NeOn Methodology*
  - Focus on: ontology networks (modularity), reuse of existing resources, adaptation in the interface generation
- Initial domains for ontology development:
  - Falls & Pressure Ulcer

Methodological Background: NeOn Methodology



Ontology Specification Requirements



[Suárez-Figueroa, et al., 2007]

The *International Classification for Patient Safety* (ICPS) project is intended to facilitate "description, comparison, measurement, monitoring, analysis and interpretation of information to improve patient care, and for epidemiological and health policy planning purposes". The ontology language in which the ontologies are going to be implemented is OWL.

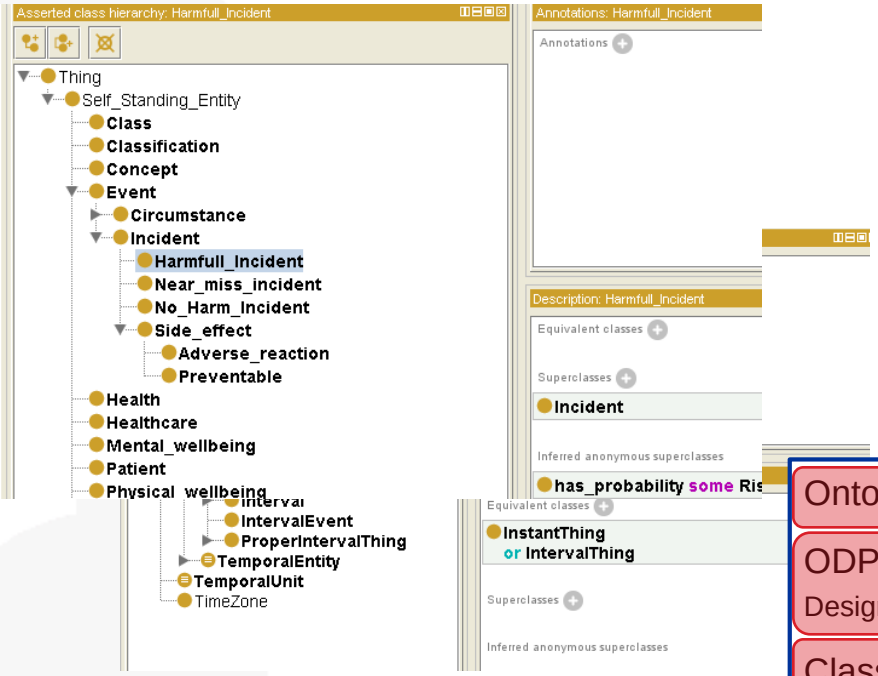
Health care professionals, developers of patient safety reporting systems, Ministries of Health...

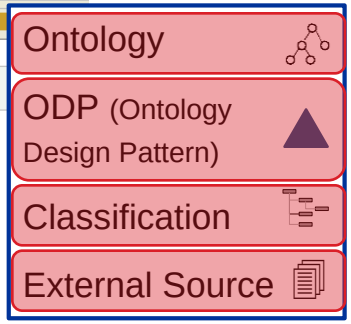
Comparing data, trending patient safety incident data, investigating patient safety incidents...

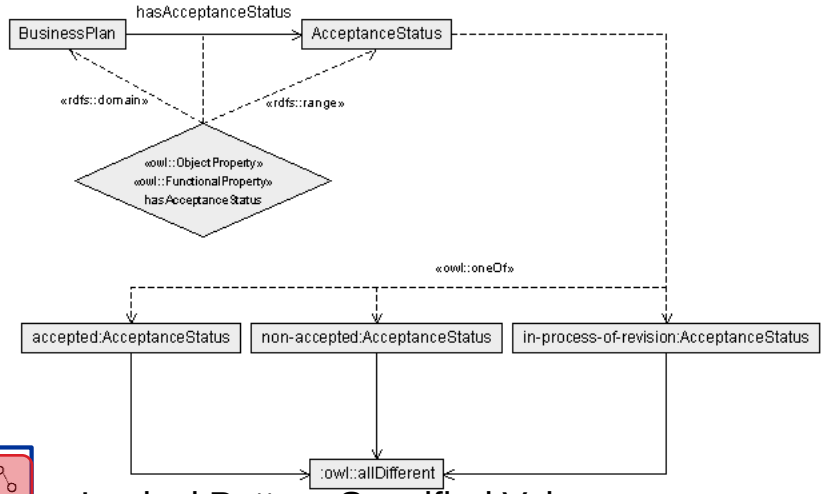
Number	Competency Questions (CQs) -Pressure Ulcer	Answers
CQ1	What is a pressure ulcer?	Type of incident
CQ2	Where was the pressure ulcer detected?	Community Care Facility; Hospital
CQ3	Which are the types of facilities?	Community Care Facility; Hospital
CQ4	When was the pressure ulcer detected in the Community Care Facility?	Before commencing care (in a Community Care Facility); after cor
CQ5	When was the pressure ulcer detected?	on admisssion to hospital; during stay in hospital
CQ6	Where is the pressure ulcer detected?	head; neck; trunk; limbs
CQ7	In which parts is the head divided?	Scalp; ear; face
CQ8	Which are the parts of the face?	eye; nose; lip; mouth; chin
CQ9	Which are the parts of the trunk?	shoulder area; chest; scapula; breast; abdominal area; back (uppe
CQ10	Which are the types of limbs?	arms and legs
CQ11	Which are the parts of the arm?	upper arm; elbow; forearm; wrist; hand
CQ12	In which parts is the hand divided?	digits; back of the hand; palm
CQ13	Which are the parts of the leg?	thigh; knee; lower leg
CQ14	Which are the parts of the thigh?	upper thigh and lower thigh
CQ15	Which are the parts of the knee?	back of the knee; front of the knee; lateral inner aspect; lateral out
CQ16	In which parts is the lower leg divided?	ankle; calf; shin
CQ17	Which are the parts of the ankle?	lateral aspect; medial aspect
CQ18	Which are the parts of the foot?	heel; sole; toe and top
CQ19	Which are the stages a pressure ulcer can go through?	stage 1; stage 2; stage 3; stage 4; unstageable; Suspected Deep
CQ20	How many stages did the pressure ulcer advanced during the patients stay?	

M.C. Suárez-Figueroa, G. Aguado de Cea, C. Buil, K. Dellschaft, M. Fernández-López, A. García, A. Gómez-Pérez, G. Herrero, E. Montiel-Ponsoda, M. Sabou, B. Villazon-Terrazas, Z. Yufei. *NeOn D5.4.1: NeOn Methodology for Building Contextualized Ontology Networks*. NeOn project. http://www.neon-project.org. February 2008.

Candidate Reusable Resources







Logical Pattern Specified Values: Set of Individuals

ICECI

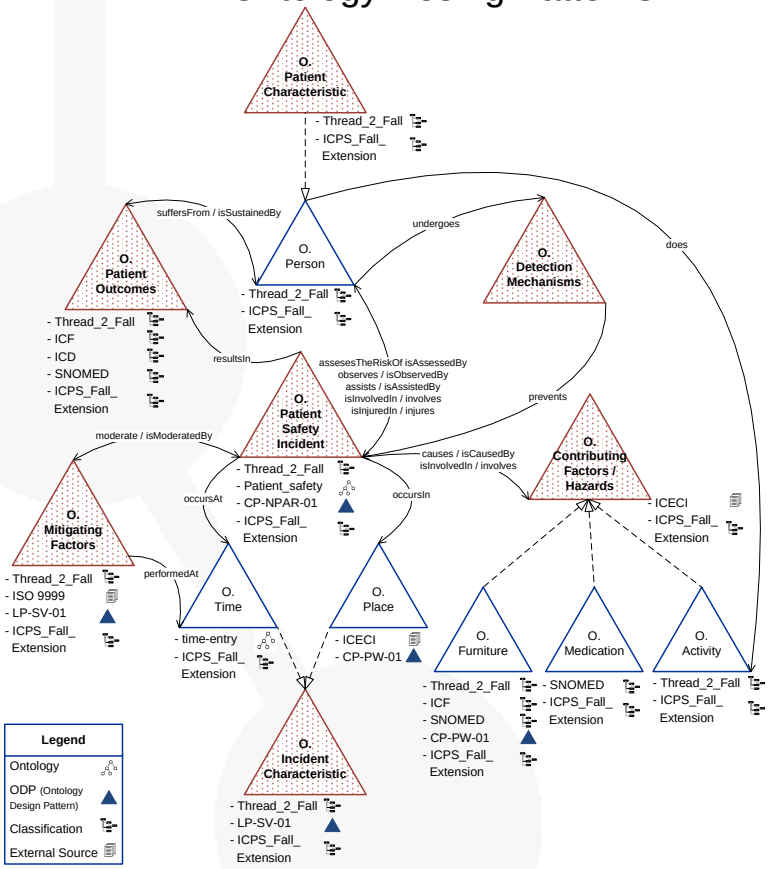
M1 - MECHANISM OF INJURY—SHORT VERSION: LIST OF CODES

1	**Blunt force**
1.1	**Transport injury event: motor vehicle occupant**
	Equivalent categories: Item C2 1.1.1
1.2	**Transport injury event: pedestrian**
	Equivalent categories: Item C2 1.1.2
1.3	**Transport injury event: pedal cyclist**
	Equivalent categories Item C2 1.1.3
1.4	**Transport injury event: motorcyclist**
	Equivalent categories: Item C2 1.1.4
1.5	***Transport injury event*: other & unspecified event**
	Equivalent categories: Item C2 1.18, 1.1.9
1.6	**Falling, stumbling, jumping, pushed**
	Equivalent categories: Item C2 1.5n

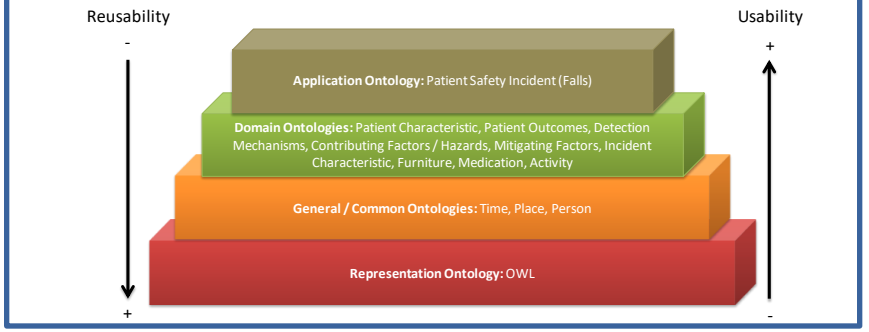
Ontology Conceptualization (I)

1. **Upper Level** Conceptual Model:

- Identify main concepts and domains
- Identify main relationships
- Identify possible resources to reuse
  - Ontological Resources
  - Non Ontological Resources
  - Ontology Desing Patterns

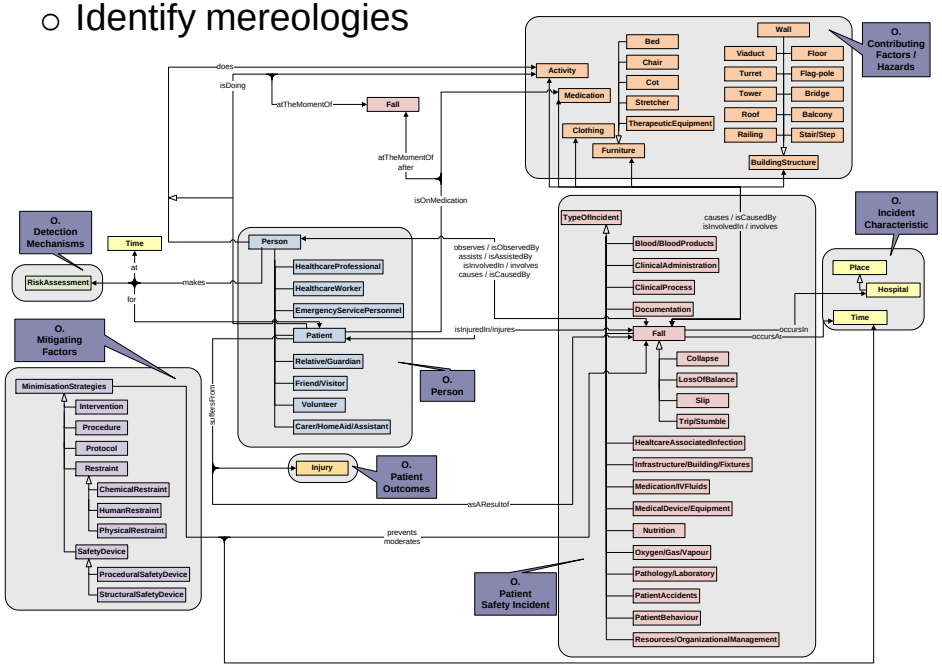


2. **Pyramid** of reusable/usable ontologies



3. **Detailed** Conceptual Model:

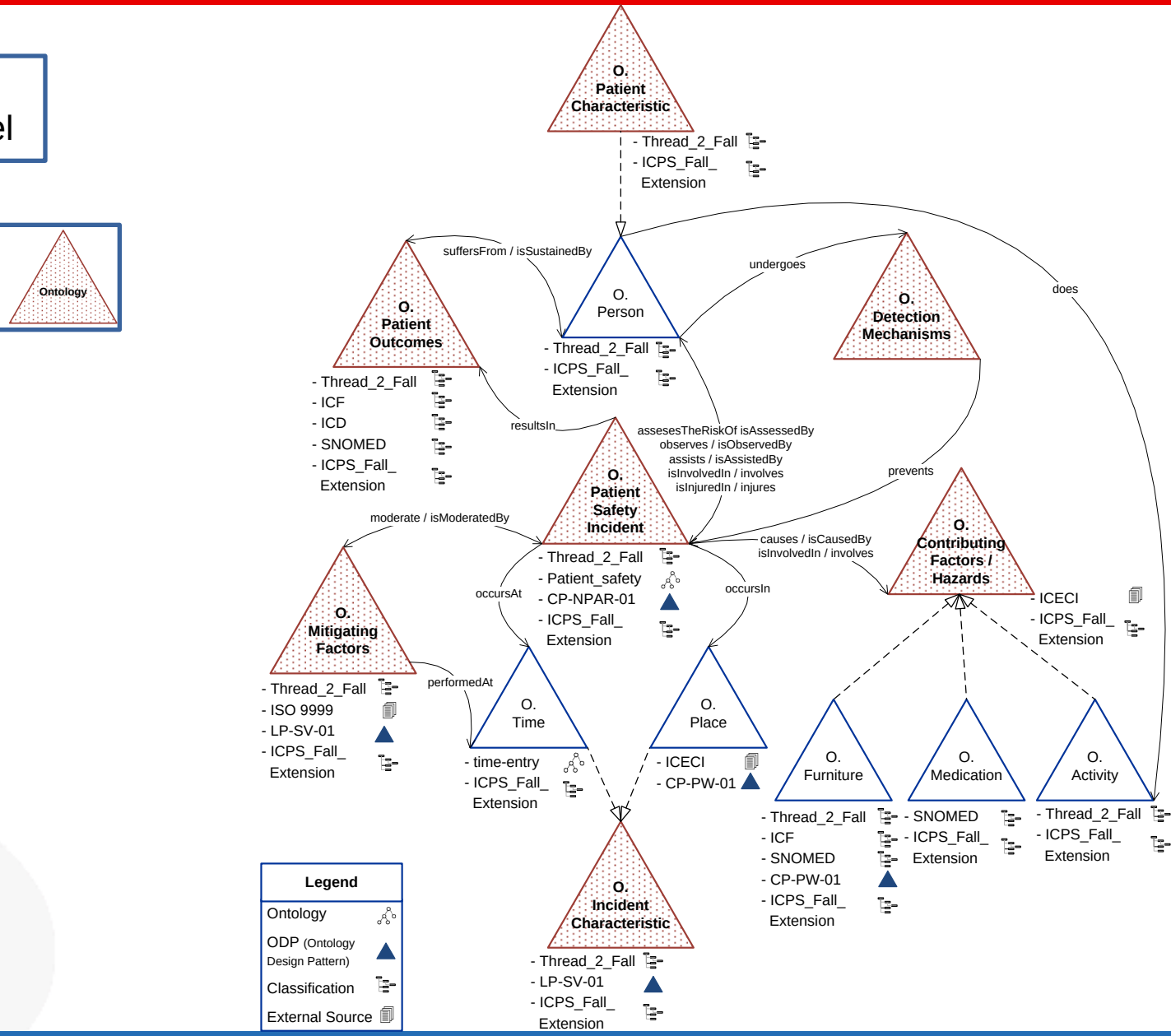
- Identify taxonomies and main concepts within domains
- Identify binary and n-ary relationships
- Identify mereologies



Ontology Conceptualization (II)

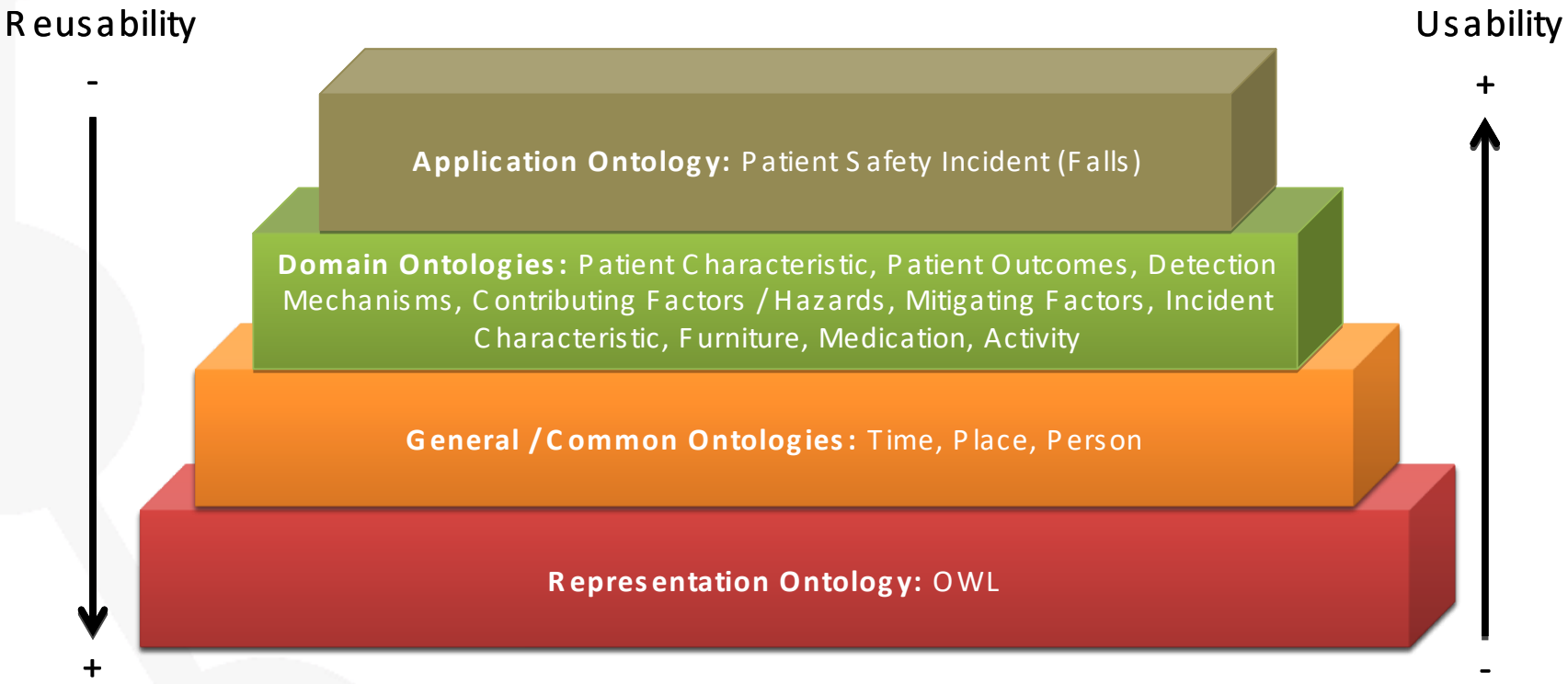
Falls Ontology Upper Level Conceptual Model

Aligned with the ICPS framework



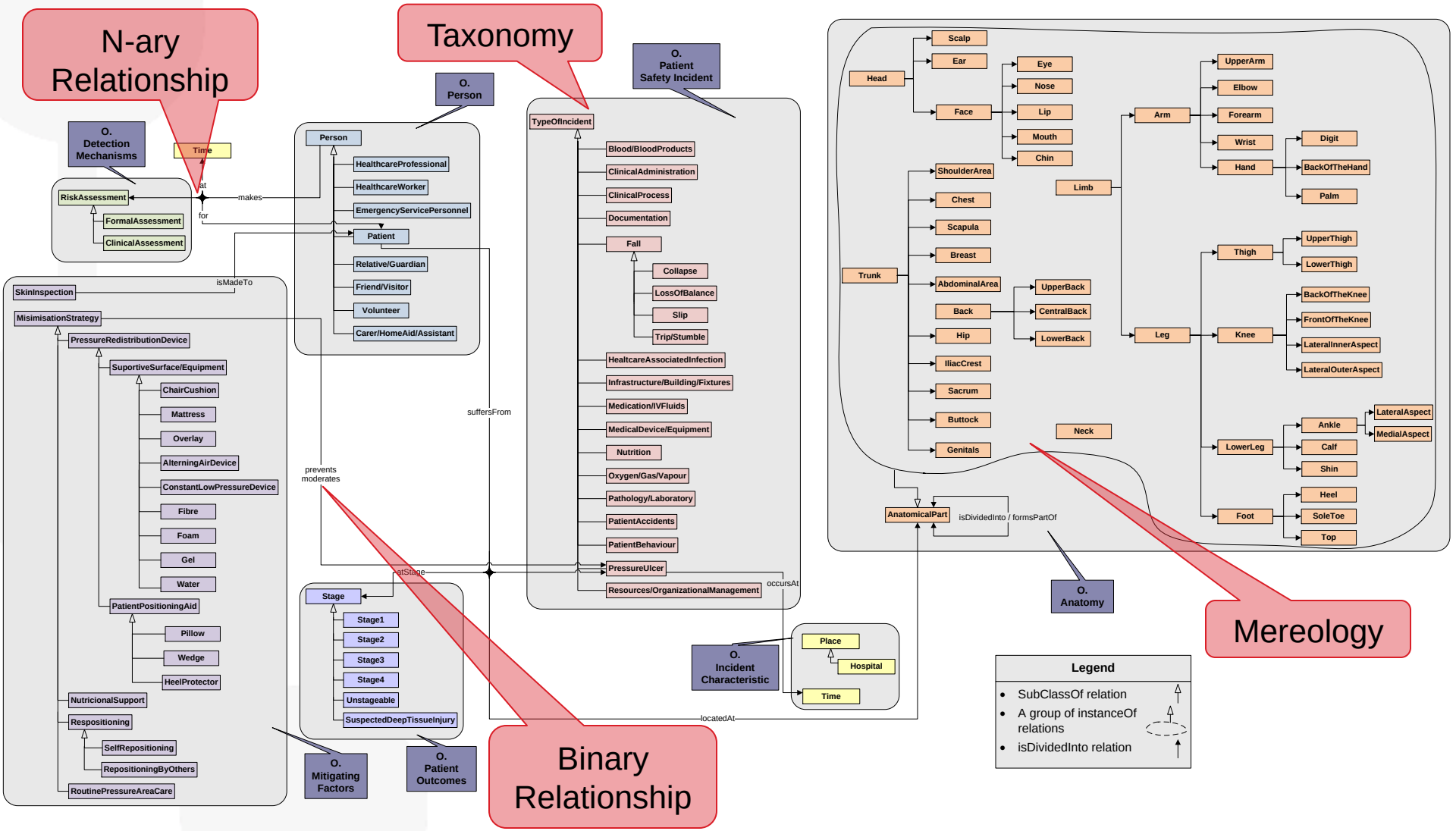
Ontology Conceptualization (IV)

Falls Ontology Pyramid



Ontology Conceptualization (V)

Pressure Ulcer Ontology Detailed Conceptual Model



International Classification for Patient Safety (ICPS)

a Project funded by the World Alliance for Patient Safety of the World Health Organization (WHO)

María Poveda, Elena Montiel-Ponsoda,
Mari Carmen Suárez-Figueroa, and Oscar Corcho
Ontology Engineering Group. Departamento de Inteligencia Artificial.
Facultad de Informática, Universidad Politécnica de Madrid.
Campus de Montegancedo s/n.
28660 Boadilla del Monte. Madrid. Spain
mpoveda@delicias.fi.upm.es, {emontiel, mcsuarez, ocorcho}@fi.upm.es

Date: 17/12/2009