



# AN ONTOLOGICAL APPROACH TO COMPETENCY MANAGEMENT

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## Summary

- Purpose
- Proof of concept
  - Comparison tool example
  - Prototype Ontology
- Future work



## Purpose

- What should be achieved?
  - TRANSPARENT Competences in Europe
- How can something be transparent?
  - Allowing others to view it
  - Enable others to read it
  - Enable others to understand it



## Purpose

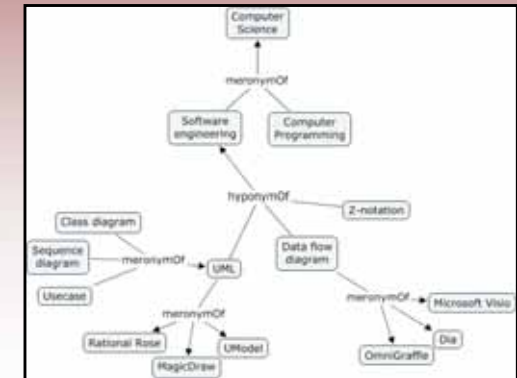
- Individuals
  - Create a shareable representation / reification of your competencies, which enables
    - Automated job search
    - Life long learning tools
    - “Internationalise” yourself
- Organisations
  - Allow automated competency based HR
  - Transparency between competency frameworks
  - Organisational Learning
  - Communities of Practice

# Challenge

- Automation of the processes
  - Need a competency representation
    - Reusable Competency Definition (RCD )
      - IEEE 1484.20.1
    - Competency Mapping
      - Simple Reusable Competency Mappings
        - » IEEE proposal lead by Claude Ostyn
  - Semantic Understandable by computers
    - Ontology

# Ontology

- In computer science an Ontology is a data model used to describe semantics within a domain
- Definitions of
  - Classes
  - Attributes
  - Individuals
  - Relations

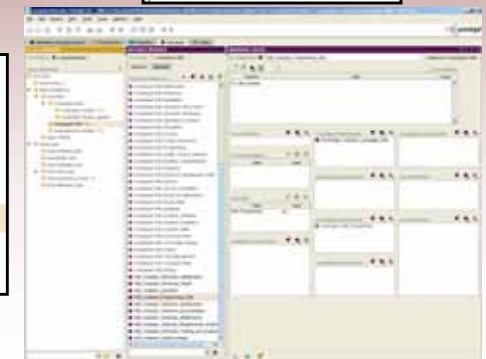
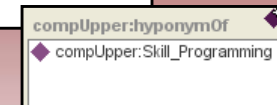
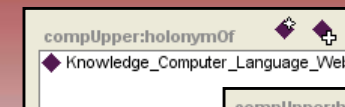
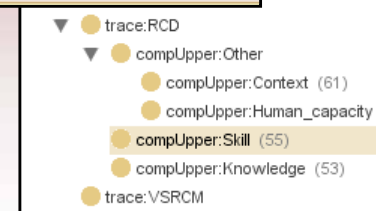


# Prototype Ontology

- O\*NET
  - Knowledge, Skill, Other (KSO)
- EQF
  - Level of qualification used as measure of proficiency in a competency.
  - And Knowledge and skill is also part of EQF
- Linguistic relationships are used between KSO's for ontological reasoning
  - Synonym, meronym, hyponym etc.

# Ontology

- ◆ compUpper:Skill\_Technical\_Skills
- ◆ compUpper:Skill\_Technology\_Design
- ◆ compUpper:Skill\_Testing
- ◆ compUpper:Skill\_Time\_Management
- ◆ compUpper:Skill\_Troubleshooting
- ◆ compUpper:Skill\_Writing
- ◆ Skill\_Computer\_Hardware\_Maintenance
- ◆ Skill\_Computer\_Hardware\_Repair
- ◆ Skill\_Computer\_Operation
- ◆ Skill\_Computer\_Programming\_Web



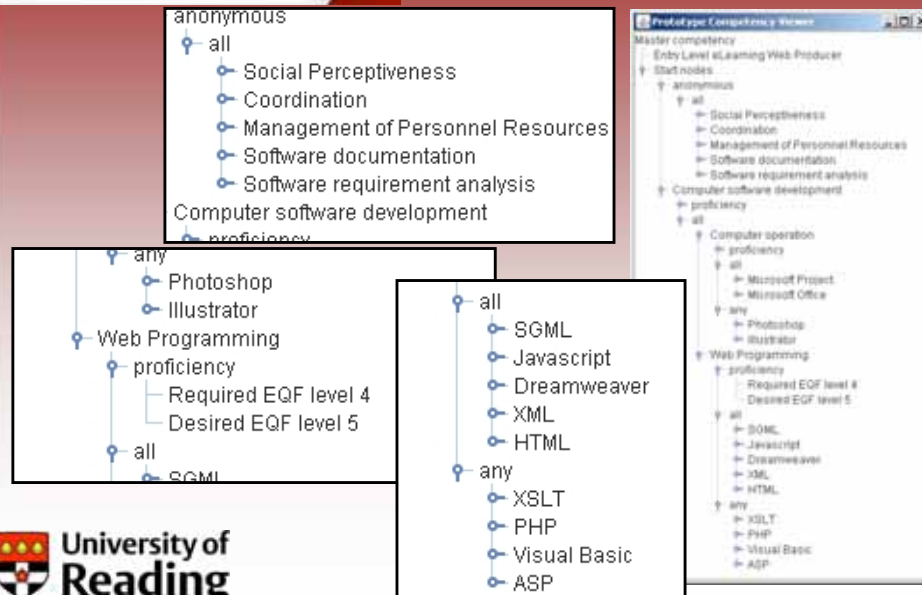
# Proof of Concept

- Comparison tool between a job profile and a personal profile
  - The first step towards many other tools
    - Comparison between other types of competency profiles, such as competency frameworks
      - They just need to use RCDs and Competency Mappings and share the same ontological commitment
    - Skill gap analysis
  - Ontological reasoning can be tested without information overload
  - Can be used in prototyping and testing of other tools

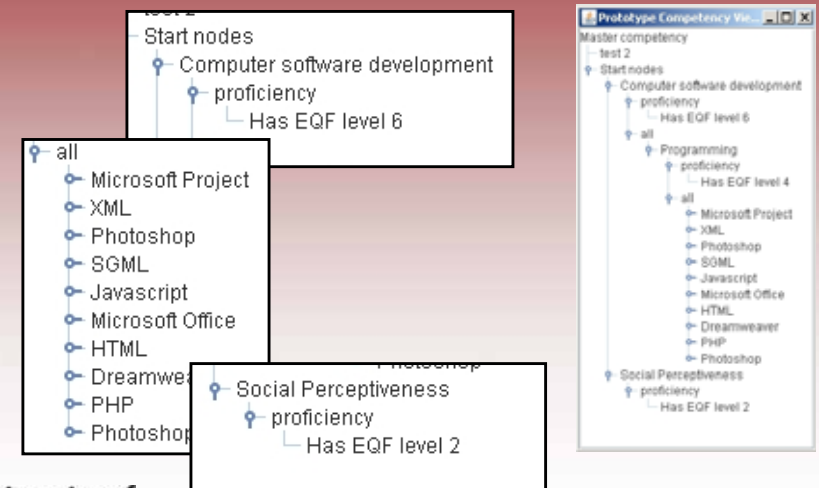
# Competency Maps

- Job profile
  - Found on monster.com
  - An Entry level e-Learning Web Producer
- Personal profile
  - An example of an IT graduate
- Transformed into a competency map using the prototype ontology

# Job profile



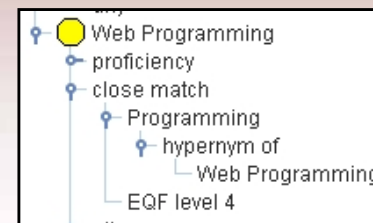
# Personal Profile



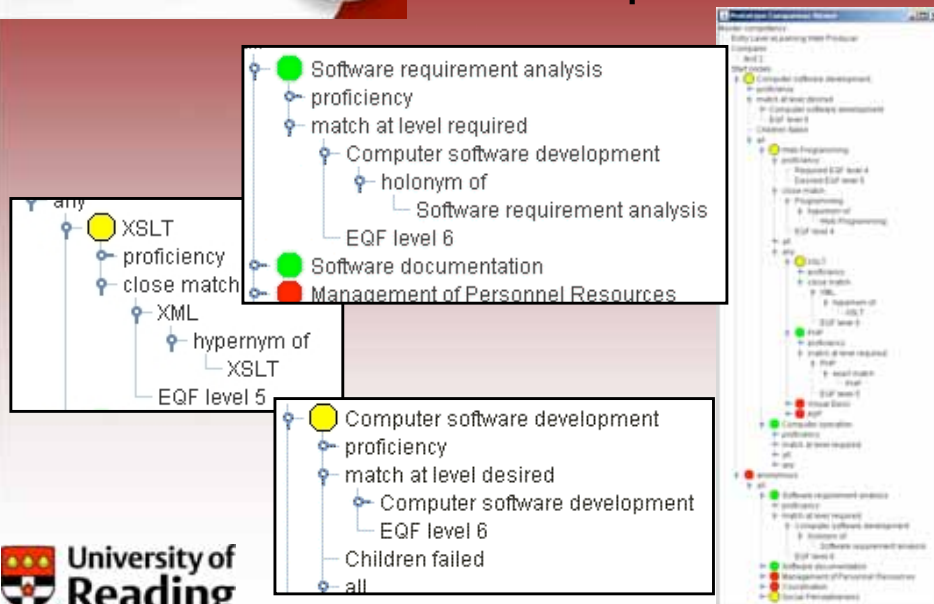
## Comparison

- The Personal profile is matched with the job profile
- The different competencies are compared using ontological based inferences, which enables automated reasoning which would not otherwise be possible

## Comparison



## Comparison



## Future Work

- More prototyping and tools
  - Especially with frameworks
  - More improved ontological reasoning
  - ePortfolio tools
    - for instance with europass
    - Validation tools
    - Security of information
- Ontology needs improvement and consensus
  - Although the nature of ontologies allow stakeholders to add to them themselves
  - Tools needed to enable users to do it

Thank You!