A Pattern-based Framework for Representation of Uncertainty in Ontologies
Miroslav Vacura, Vojtěch Svátek, University of Economics, Prague.
Pavel Smrž, Brno University of Technology.
Nick Simou, National Technical University of Athens

Problem
• While OWL datatypes provide means for including numeric uncertainty measures and necessary structural foundations ad hoc, there is no standardized way of representing uncertainty.
• Some known solutions: extending syntax, "Best Practices" W3C document, etc.
• Our aim:
  − use only standard OWL.
  − no need to reengineer existing ontologies, when adding uncertainty.
  − possibility to use existing reasoners.

Solution
Instantiation Fuzzy –OWL axiom.
• Describing certainty, that given person, belongs to class problem-person.
• Add-on ontology pattern.

Crisp OWL DL ontology
<rdf:Description rdf:about="#person-1"/>
<rdf:type rdf:resource="#problem-person"/>
</rdf:Description>
<rdf:Description rdf:about="#problem-person"/>
<rdf:type rdf:resource="http://www.w3.org/2002/07/owl#Class"/>
</rdf:Description>

Fuzzy add-on ontology

Fuzzy-OWL role axiom
Solution

- Example: fuzzy ontology.
- Add-on ontology requires metamodelling, so is OWL Full compliant.
- We can model also probability in the same ontology.

THANK YOU FOR LISTENING.