Outline

- Intro
- Rule systems
- SWRL
- A tiny example
- A bigger example (with “code”)
Intro

- Motivation: Automated use of rules on ontologies
- Solution: Rule Systems
Rule systems

- If A is true B must also be true (A -> B)
- Horn Clauses
  - Conjunctions implies
- Logical programming languages (Prolog ++)
- Rule languages (SWRL ++)
- Rule engines (HermiT ++)
Semantic Web Rule Language (SWRL)

- Developed in 2003
- Extends OWL (specifically the rule axioms)
- Uses URI for ID, keeping in compatible with RDF
- Created in collaboration with RuleML
- Open world assumption and universal quantification
Quick example

Company(Aker), Employee(Stian), Resource(AkerIntranett), (Person worksAt Company), (Person hasAccessTo Resource)

RDF: (Stian hasAccessTo AkerIntraNett), not very general.

SWRL: Employee(?x), worksAt(?x, Aker) → hasAccessTo(?x, AkerIntranett), super duper general and readable
SWRL as RuleML, not so readable (for us)

<ruleml:imp>
  <ruleml:body>
    <swrlx:individualPropertyAtom swrlx:property="hasParent">
      <ruleml:var>x1</ruleml:var>
      <ruleml:var>x2</ruleml:var>
    </swrlx:individualPropertyAtom>
    <swrlx:individualPropertyAtom swrlx:property="hasBrother">
      <ruleml:var>x2</ruleml:var>
      <ruleml:var>x3</ruleml:var>
    </swrlx:individualPropertyAtom>
  </ruleml:body>
  <ruleml:head>
    <swrlx:individualPropertyAtom swrlx:property="hasUncle">
      <ruleml:var>x1</ruleml:var>
      <ruleml:var>x3</ruleml:var>
    </swrlx:individualPropertyAtom>
  </ruleml:head>
</ruleml:imp>
A more thorough example