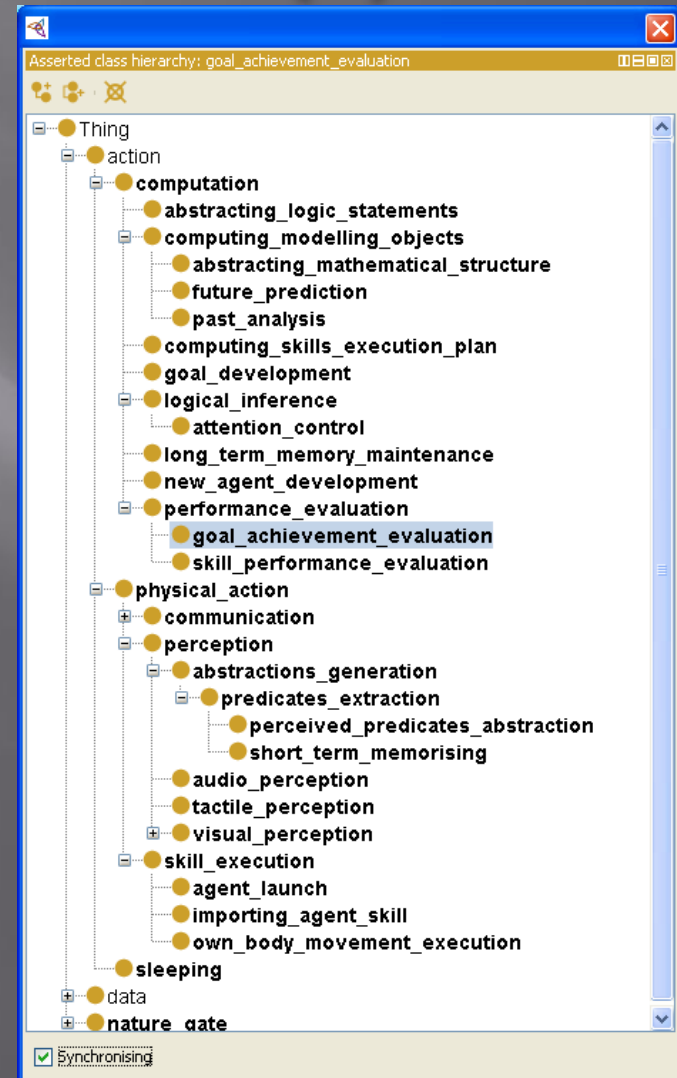


HOW BROAD IS THE CLASS OF AGENTS THAT CAN READ SKILLS DEFINED IN sENGLISH TEXTS?

Sandor M Veres
University of Southampton, UK

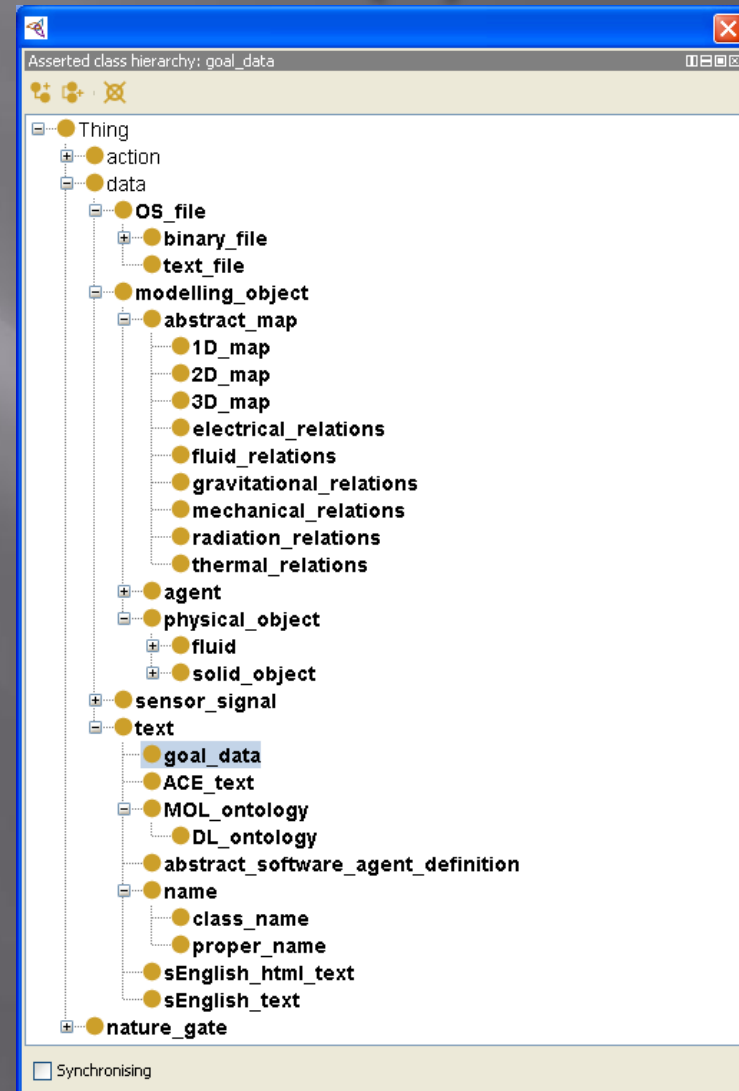
The agent reference ontology (ARON) on the semantic web (1)

Action classes
to fit most
agent
architectures



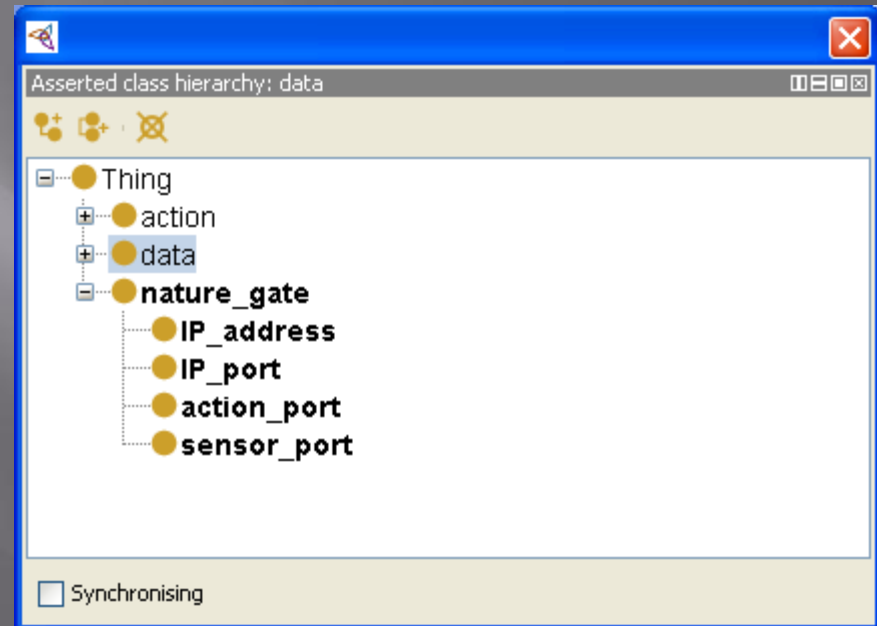
The agent reference ontology (ARON) on the semantic web (2)

- ▣ Data and world model classes to fit most agent architectures



The agent reference ontology (ARON) on the semantic web (3)

- ▣ Connections to the real world



ARON is very general and developed by consensus

Tell me any agent or robot operation and I will tell you how it can be described by terms in ARON !

Kept at sysbrain.org/aron, publicly available but not editable.

Recommendations for extension or alteration accepted by electronic voting.

ARON features and uses

- ▣ It is written in the most general formal description logic (DL) of the semantic web with all its benefits for global search
- ▣ It is used for highest level abstract definitions of agents
- ▣ Agent descriptions using ARON do not provide the algorithmic details of agent operations – inserted sEnglish documents do
- ▣ Enables automatic code generation and update of agents from resources on the semantic web

Agent definitions in ARON

Simple agent definition:

- ▣ Sleeping > {awake(perception > communication > computing skills execution plan) .|. skill execution}
- ▣ Hardware > {nature gate}

+ Role descriptions of perception, communication, computing skills, execution plan, skill execution.

Automatic code generation by use of matching
sEnglish descriptions

How does an agent know that an sEnglish sentence matches an action?

- ▣ The roles defined in the ARON definition of the agent are referred to by sEnglish sentences
- ▣ The available and resulting objects match with those in the ARON definition.
- ▣ Responsibility of good performance relies with the author of the sEnglish document
- ▣ There is no guaranteed performance for an imported skill – the agent must try and evaluate how it works!

sEnglish documents of skills and agent descriptions

- ❑ Main depositories at system-english.com and sysbrain.org – perception, action skills, logic inference and attention control methods
- ❑ sEnglish documents can be kept anywhere on the web
- ❑ Reader agents are free –authoring tools are for a fee
- ❑ Some sEnglish documents are Skill Libraries without agents
- ❑ Some sEnglish documents can describe all operations of an agent that can update its skills on a network or the Internet

Benefits Summary

- ▣ ARON and sEnglish use OWL on the semantic web and natural language programming
- ▣ This system can accelerate the development of properly intelligent machines.
- ▣ This system is inherently verifiable due to the code generation system - supports fundamental robot safety in human environments
- ▣ The core ontology can be shaped by the development community