

Ontologies as a Research Challenge in Network Management

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What is an ontology?

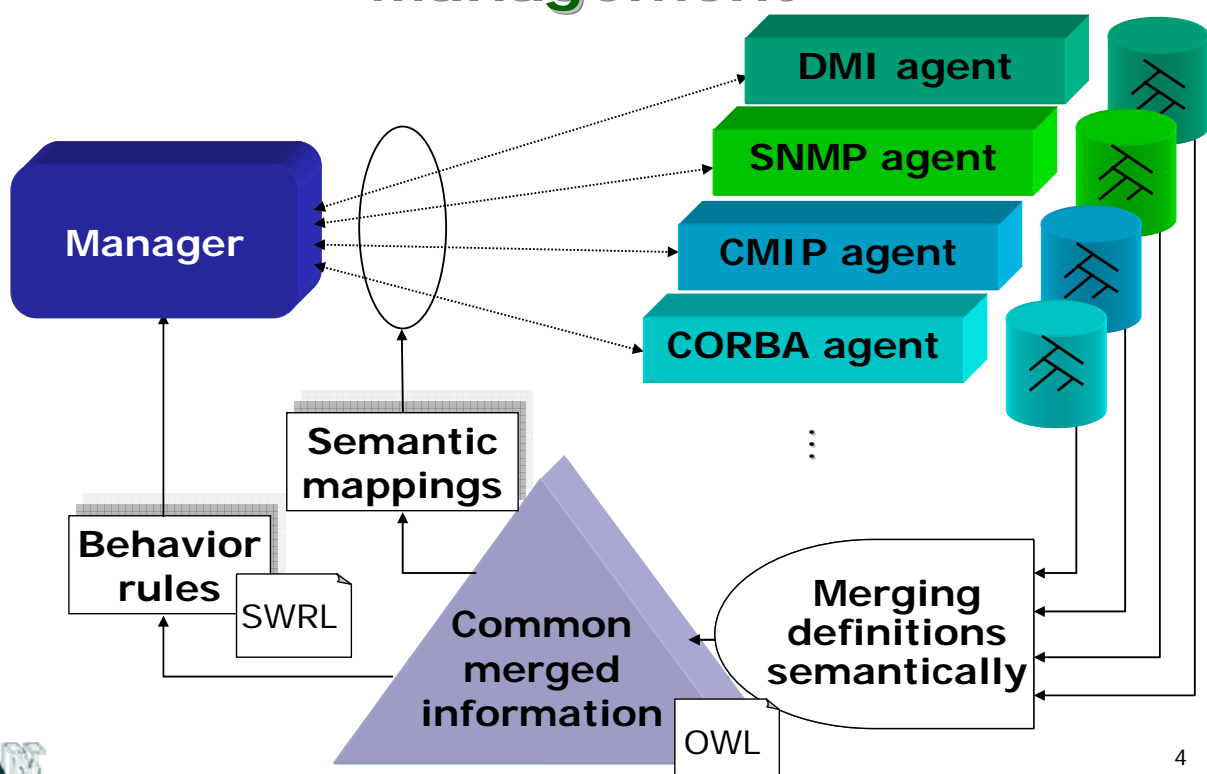
- “Explicit and formal specification of a shared conceptualization”
 - Representation of a set of classes, properties, relations and instances.
 - But not just another modeling technique
 - Focused on semantics
 - Formal: it can be interpreted by logic machines
 - Rules are useful to formally describe the behavior of the information
 - Generic and well-supported by the Semantic Web community: OWL, SWRL
 - Integration with Web Services: OWL-S, WSMO, etc.



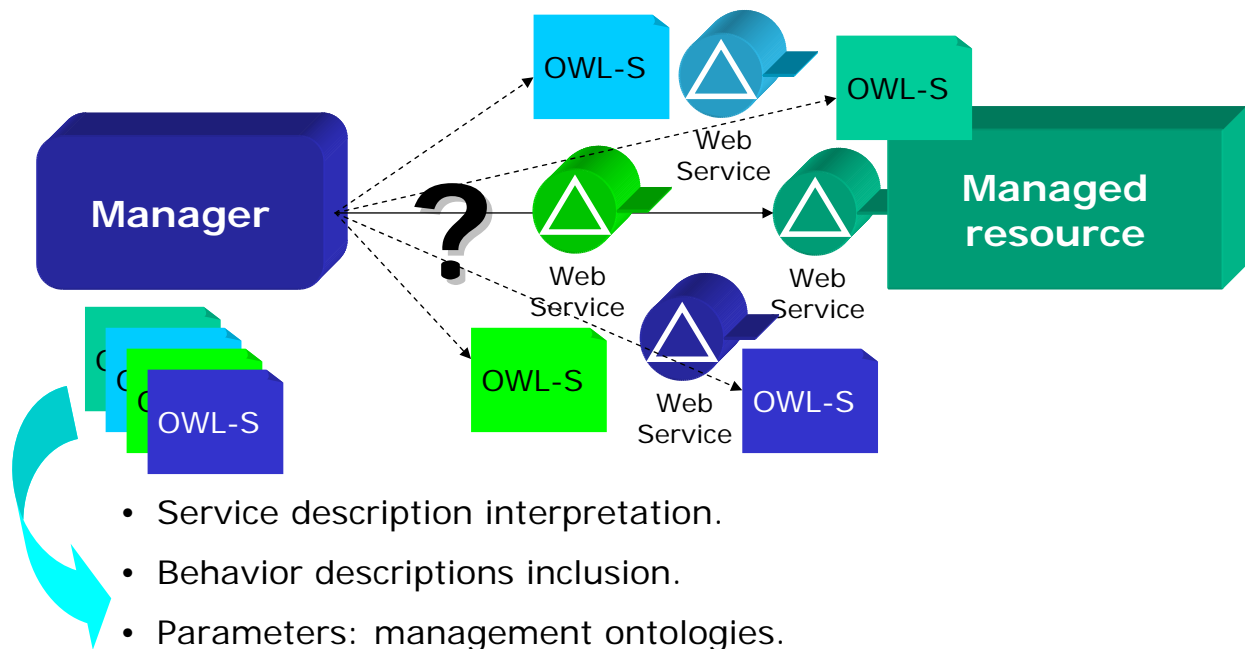
Are they useful in Network Management?

- Yes, many applications:
 - Define information management
 - Including behavior rules
 - Compare semantic expressiveness of current management information models
 - Map and Merge management information from different domains
 - Formalization of management web services
 - Specify the flow to perform management task
 - Self-* systems

Ontology-based Network Management



Semantic Web Services in Network Management



What else is needed?

- Ontology instance population
 - Obtained from resources and translated to the common ontology
- Ontology reasoners with full rule support
 - There are some in beta stage (Bossam, SWRL-Jess...)
- Service ontology engines
 - There are some in alpha stage (Mindswap, CMU...)