

Business Semantics in Service Oriented Architectures

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A Snapshot of the Service Interface

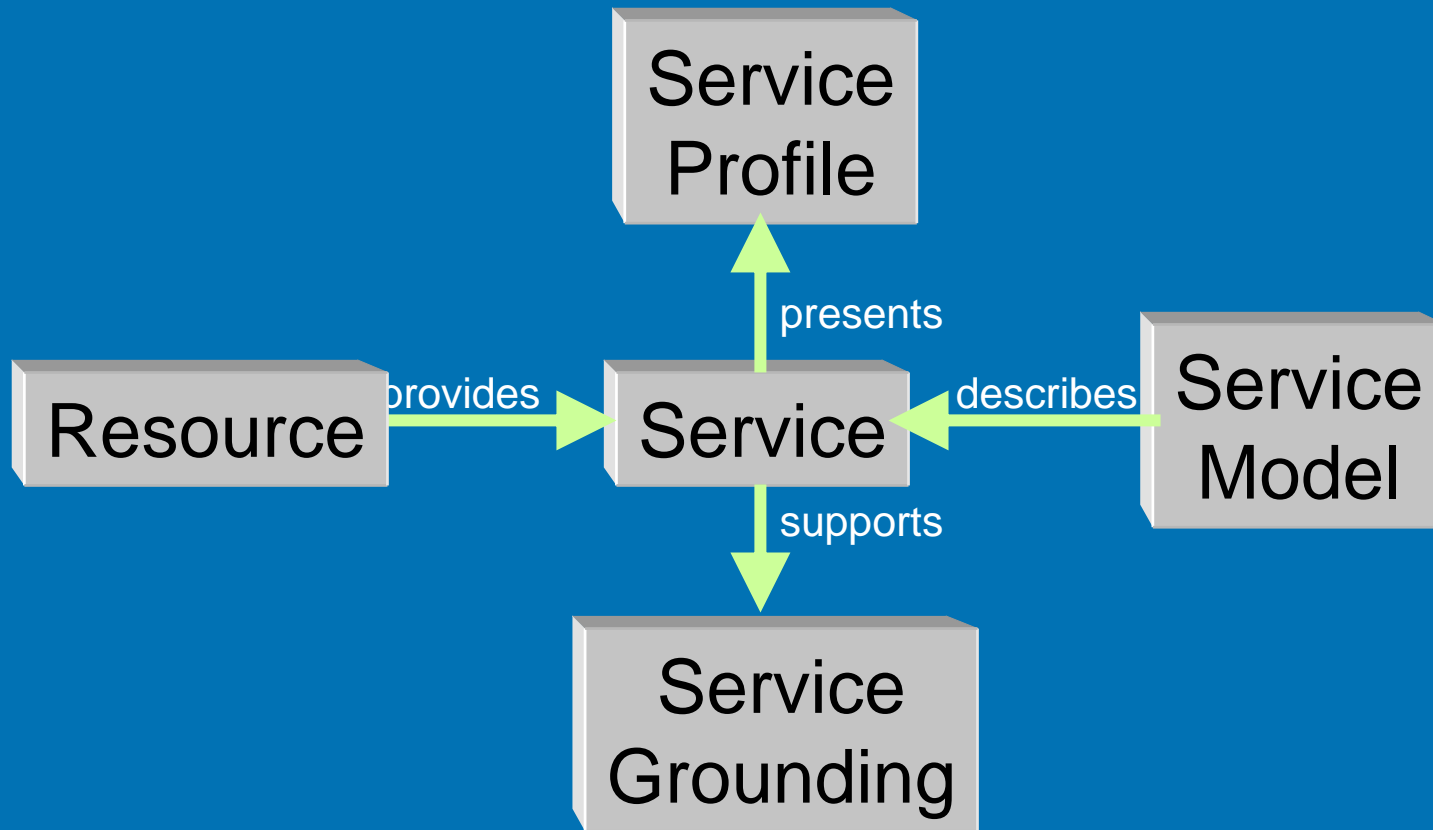
- The Semantic web provides an approach to capturing business ontology that embodies the open/diverse nature of the web.
- The **OWL-S** ontology for services was one of the first attempts to describe service semantics, capturing a *glass-box model* .



Service ontology is alive and well



- OWL-S defines the actions that a service can perform in terms of inputs, outputs, (pre) conditions, and effects.
- It offers a tantalizing vision of the future, but does it go far enough?



OWL-S ontology for services

Service Grounding

- The OWL-S grounding focuses on inputs and outputs.
- **SAWSDL** builds on an approach touched on in OWL-S, embedding semantic annotations directly in WSDL.

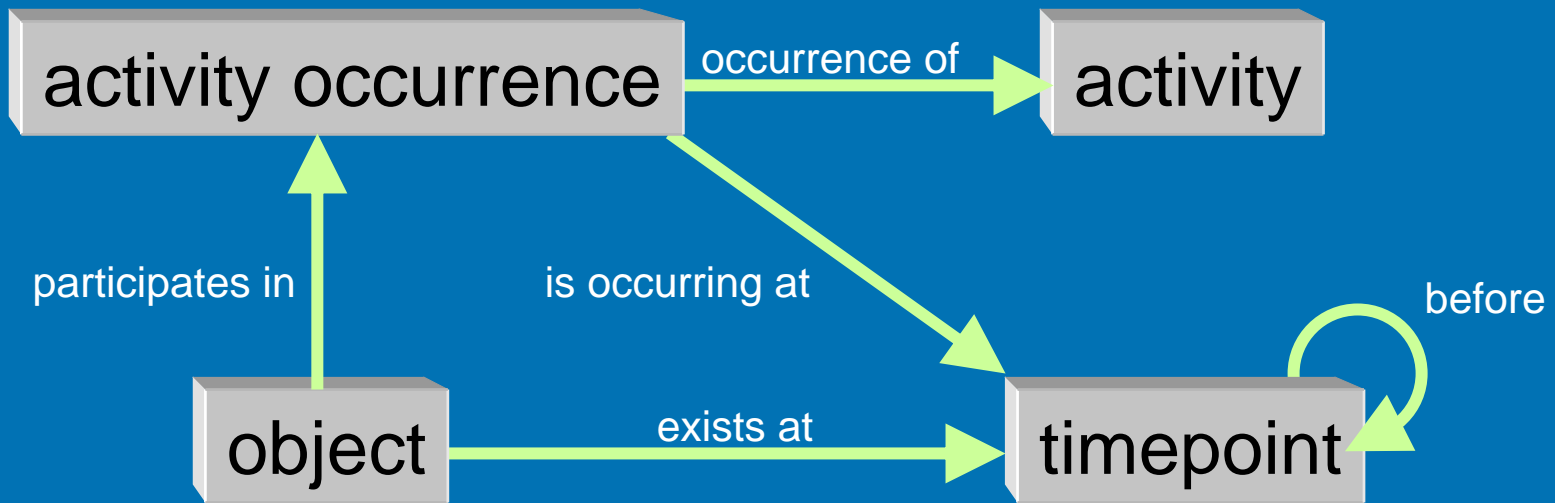


This provides basic hooks into the message content where the real semantics begins.

Process Models

- Does OWL-S describe only *necessary* (non-executable) process constraints or *sufficient* information to describe an executable workflow (orchestration)?
- **SWSF** sought to underpin the process model with a deeper analysis based on the Process Specification Language (PSL).





Process Specification Language (PSL core)

Service Profile

- OWL-S profile is surely the place where we finally get to describe the actual *service* being offered?
- **WSMO** includes rich service descriptions, enabling matching of service offers to requests in service discovery.



The medium is not the message



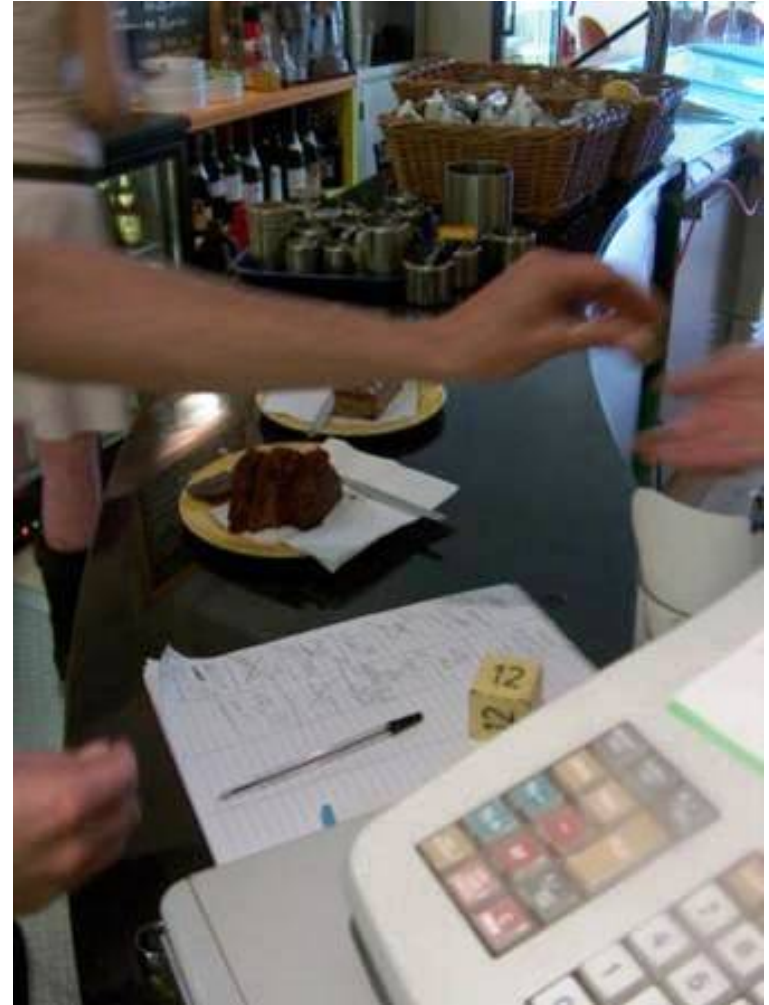
XML is the de facto standard for business messages in SOAs. Why switch to RDF?

It's not an either/or choice. RDF augments XML with a logical abstraction for modelling business objects.



From messages to dialogue

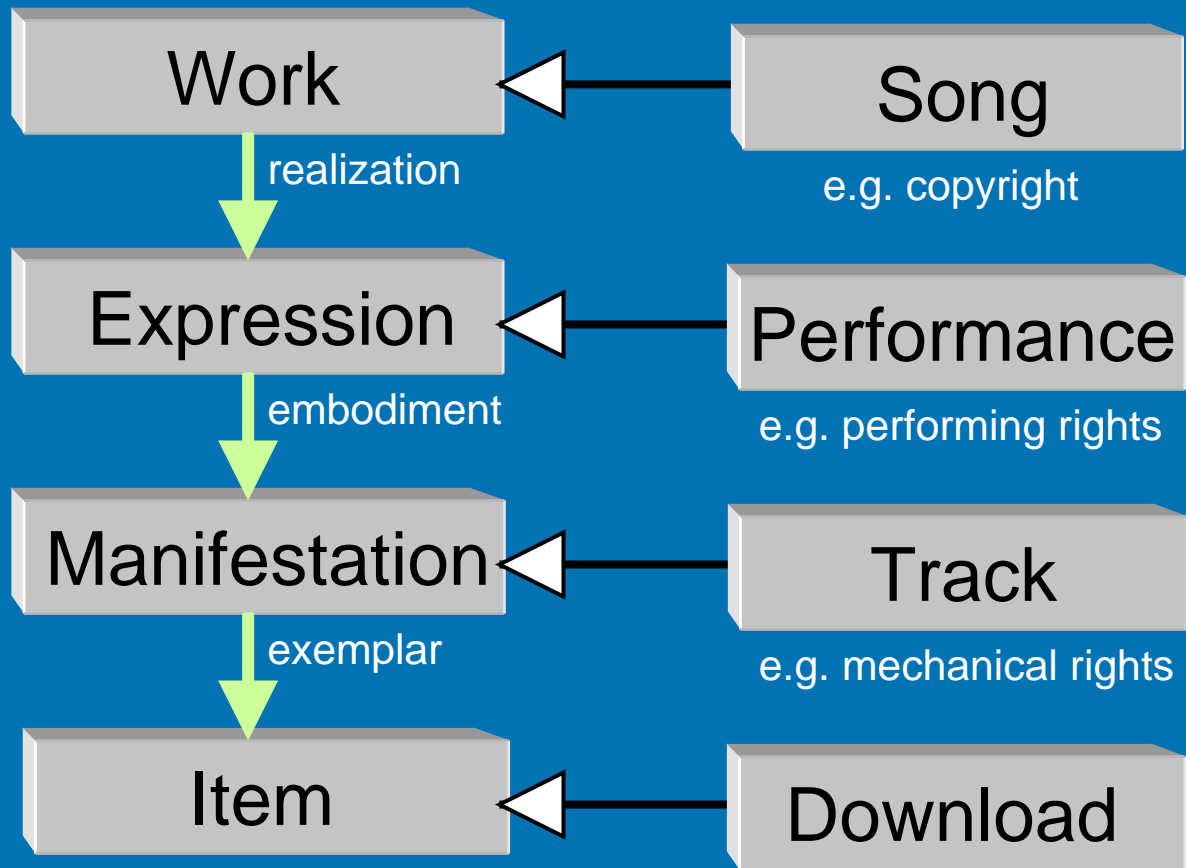
- We need sophisticated models that capture both message exchanges and their real-world semantics.
- Actions are understood in terms of the obligations and permissions they convey.



Where are the Business Ontologies?

- Functional Requirements for Bibliographic Records (FRBR) for harmonization of media databases.
- Financial product Markup Language (FpML) for financial e-commerce.
- MIT Process Handbook and its OWL mapping
Captures over 5,000 business processes

The screenshot displays the MIT Process Handbook interface. At the top right, it says "MIT Process Handbook" and "Monday, September 24, 2007". The main heading is "Sell via physical store". Below this, there is a diagram with a central green star and four quadrants labeled "Generalizations", "Uses", "Parts", and "Specializations". To the right of the diagram are two links: "Show details" and "Back to Basic view". Below the diagram is a section titled "Generalizations" with a sub-section "Ancestors:". Under "Ancestors:", there are two horizontal lists of process terms connected by double-headed arrows. The first list is: Act ← Modify ← [Modify how?] ← Move ← Exchange ← [Exchange how?] ← Sell ← [Sell how?] ← Sell via store ← Sell via physical store. The second list is: Act ← Modify ← [Modify how?] ← Move ← Give ← [Give how?] ← Provide ← [Provide - why?] ← Sell ← [Sell how?] ← Sell via store ← S.

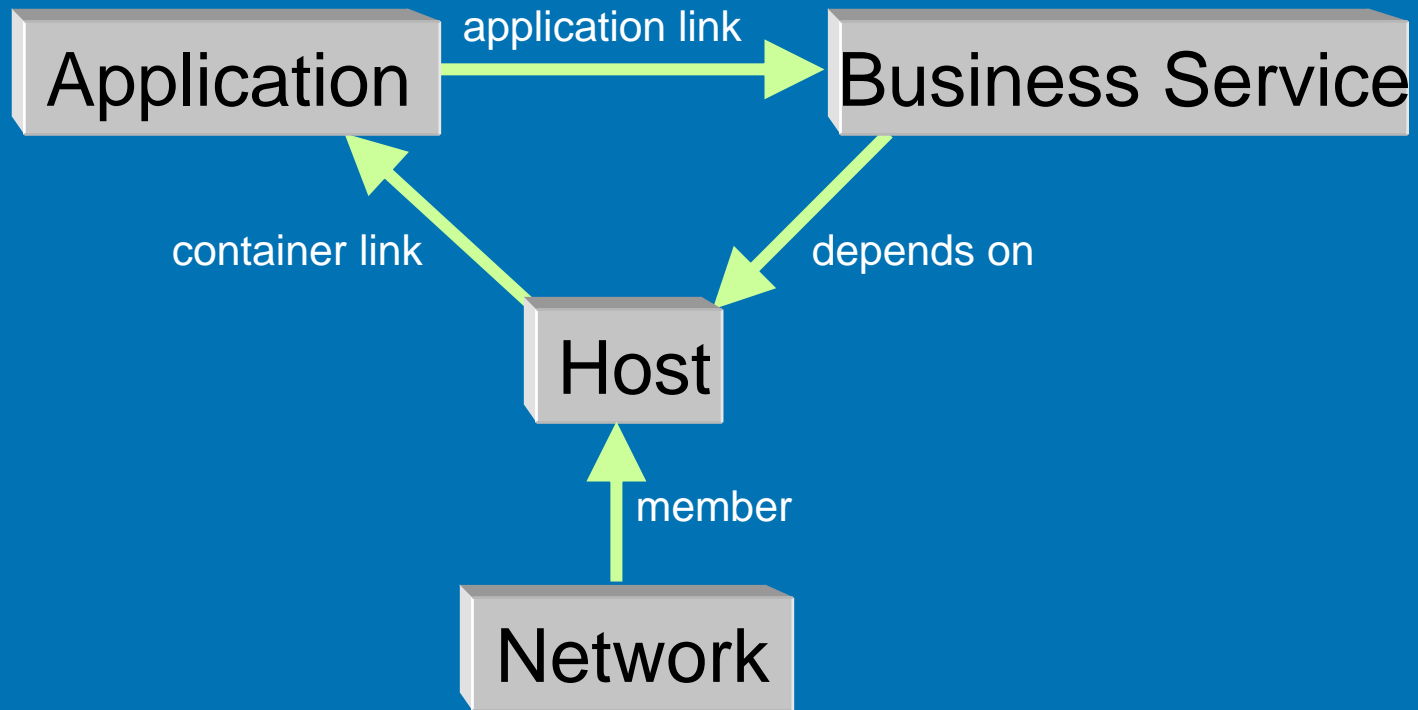


Functional Requirements for Bibliographic Records (FRBR)

Behind the interface: IT Service Management



- How does IT support business services?
- Service Management requires us to maintain dynamic models of business services and supporting assets.
- The configuration management database (CMDB) is at the heart of this process.



IT Service Management (ITSM) ontology

Conclusion

- Service ontologies can only address a small (the upper) part of the problem.
- Business ontologies are emerging in many forms – XML schema, FpML, FRBR, ITSM...
- The unifying glue is the semantic web.



Thanks to the staff and customers of

