Web Services Architecture
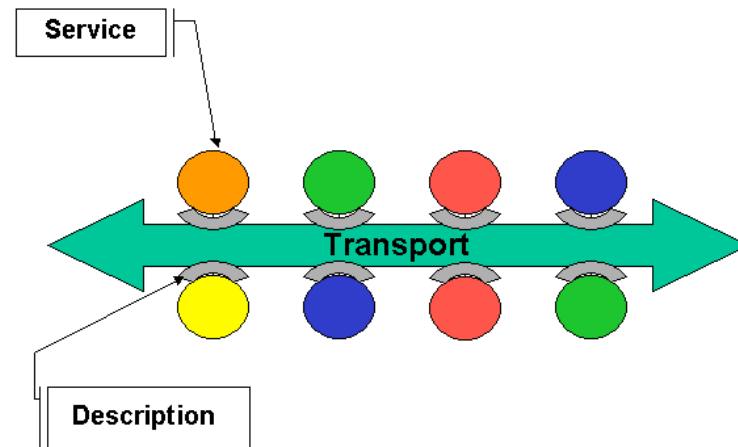
An interoperability architecture for the World Wide Service Network

Outline

- Service Oriented Architecture
- Contract With the reader
- Concepts and relationships
- Stakeholder's viewpoints

Service Oriented Architecture

- Services invoked by message exchange
  - Stateless connections
- Services have descriptions
- Agents offer services
- Agents use services

Contract with the reader

- Intended to guide Web services product implementers, Web services specification authors, Web services application developers, and Web services students.

- A context for understanding Web services

- A context for placing Web services specifications and technologies into relationships with each other and with other technologies outside the WSA
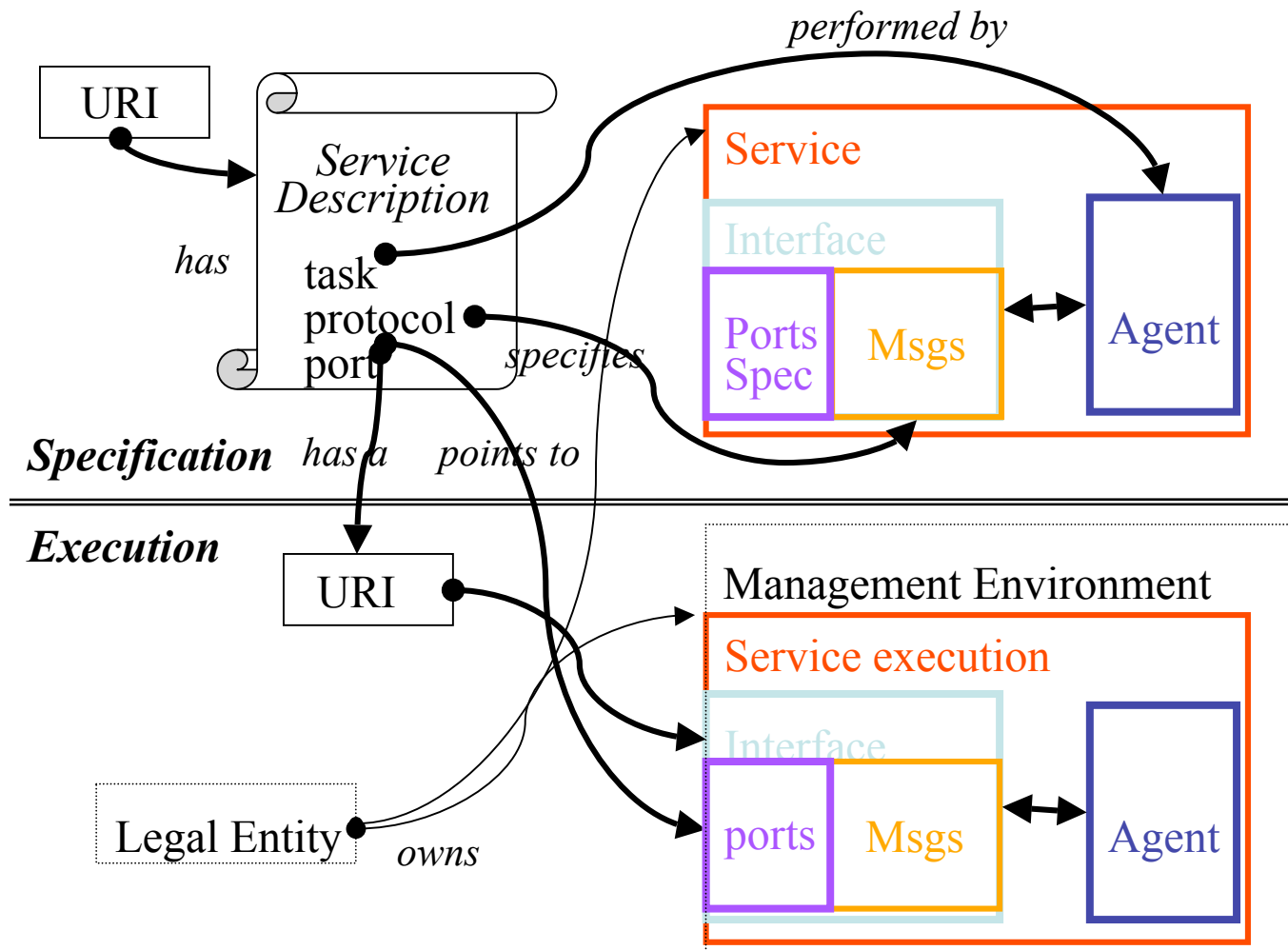
Main goals of the architecture

- Interoperability between Web services
- Integration with the World Wide Web
- Reliability of Web services
- Security of Web services
- Scalability and extensibility of Web services
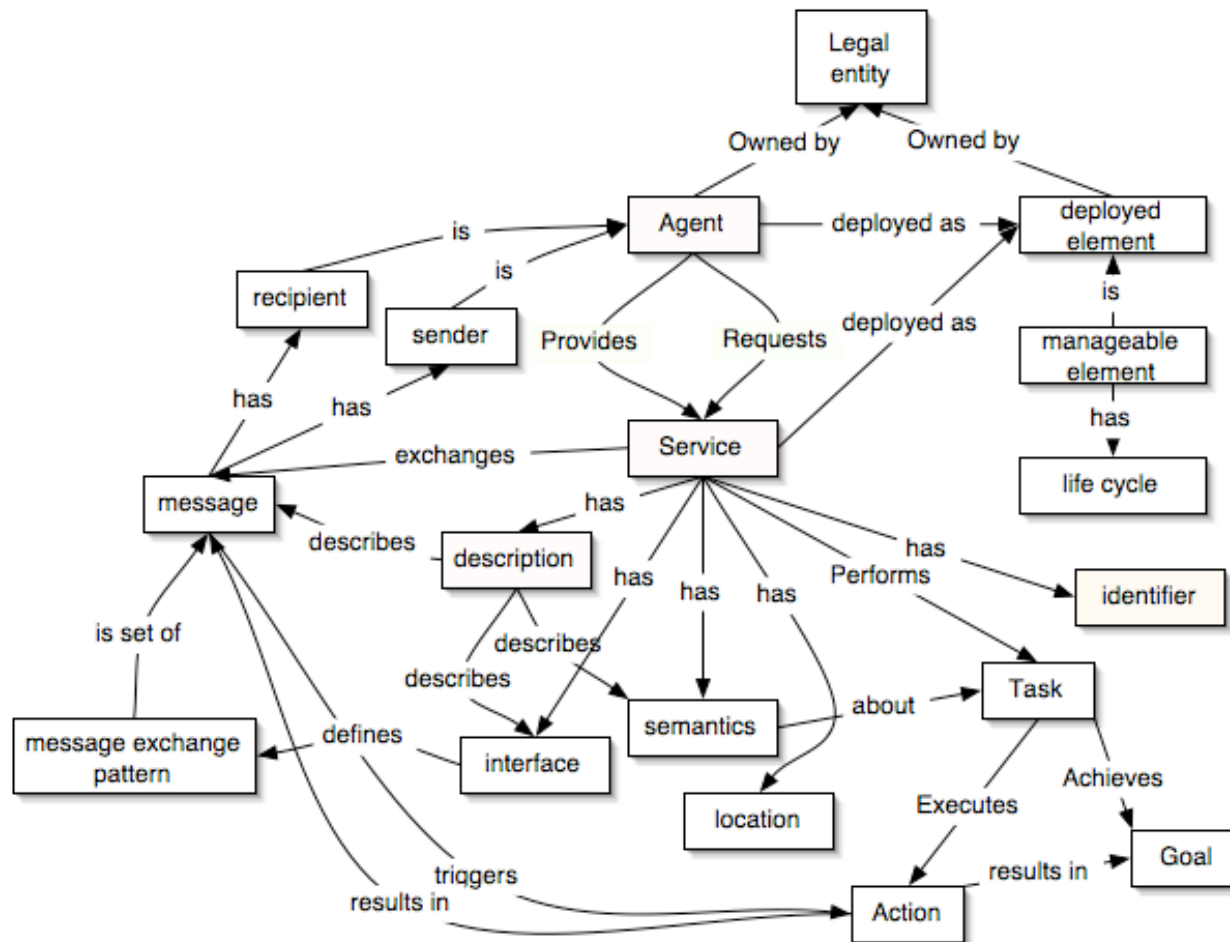- Manageability of Web services.

some non-Goals

- to specific programming model or programming technology
- to specify the internal architecture and implementation of specific Web services
- to demonstrate how Web services are constructed
- to be specific about how messages or other descriptions are formatted
- to determine specific technologies for messaging, discovery, choreography etc.

Service block diagram

performed by

URI

Service Description

has

task
protocol
port

specifies

Specification *has a* *points to*

Execution

URI

Legal Entity *owns*

Service

Interface

Ports Spec | Msgs

Agent

Management Environment

Service execution

Interface

ports | Msgs

Agent

Concepts and relationships

Concepts

- Alphabetically organized
- Represent conformance points
- Relationships also formalized (to some extent)

Message

Summary

A message is the basic unit of interaction with Web services. The architecture defines an interaction between software agents as an exchange of messages.

Relationships to other elements

a message is a unit of interaction between agents

a message may be part of a message exchange pattern

a message has zero or more message headers

a message has an message envelope

a message has a message content

a message has a message sender

a message may have a message identifier

a message has zero or more message recipients

Legal entity

Summary
A legal entity such as a person or a corporation — may be the owner of agents that provide or request Web services.

Relationships to other elements
a legal entity may be an owner of an agent
a legal entity has a presence in the physical domain
a legal entity may have a physical address, telephone number, etc.
a legal entity may agree to a legally binding contract
a legal entity has a name

Description
Legal entities are represented by agents and Web services. Legal entities are individuals (i.e., humans) and organizations. Both are legal entities in that they have the right to enter into contracts -- which is the critical property from the perspective of this architecture.

Stakeholder's viewpoints

- Demonstrate how the architecture meets requirements
- Entry point for specific perspectives on the architecture:
  - Introduction, security, Web integration, extensibility, manageability, overall 'grokking'.
- Integrated, non-alphabetical organization

Managing Web services

- Goal AG007 identifies manageability as a major goal
- A set of capabilities for discovering the existence, availability, health, and usage, as well the control and configuration of resources, where resources are defined as Web services, agents providing and requesting services.
- Manageable element
 - Management interface, metrics, events, configuration control

Management Viewpoint
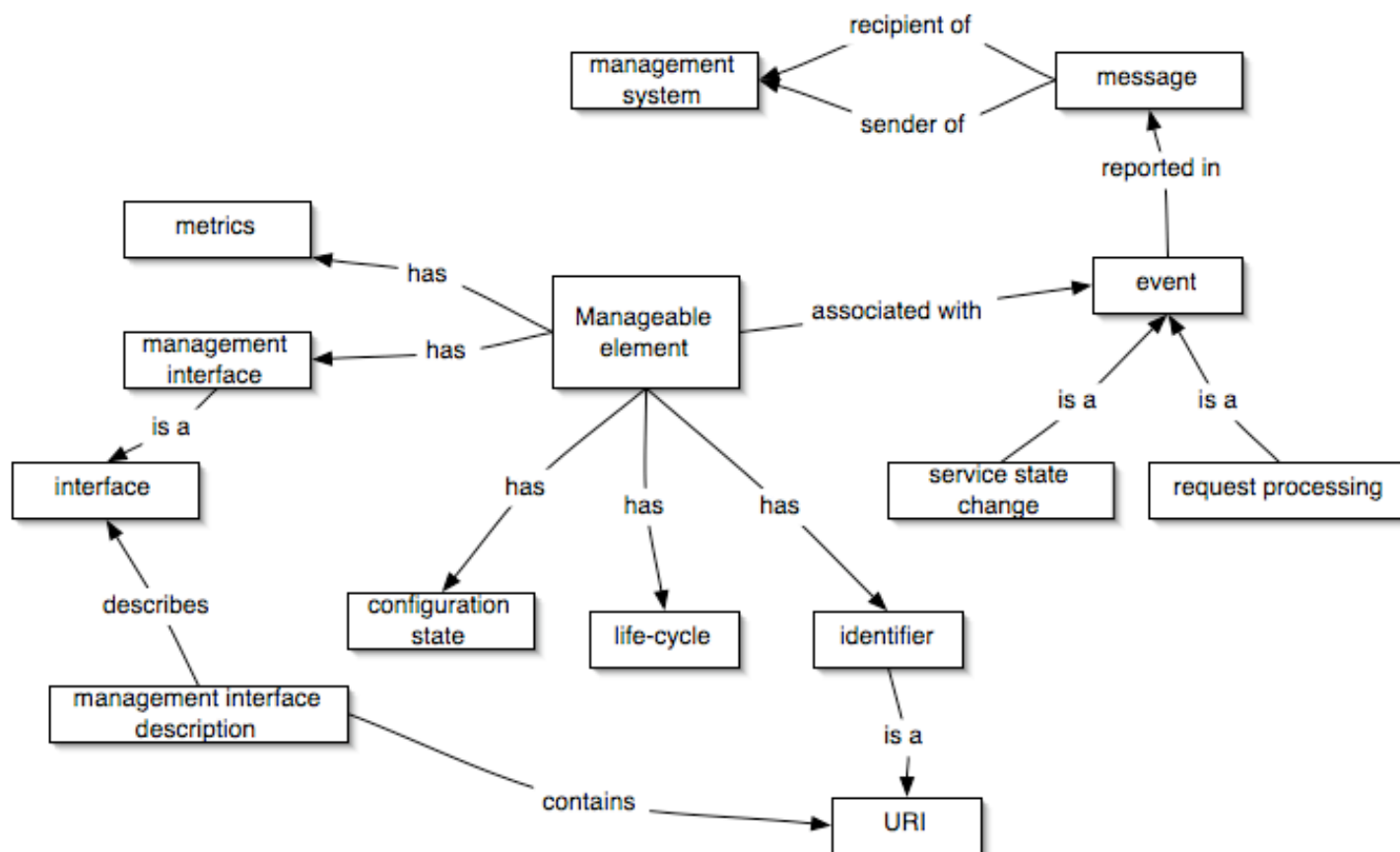
Ensuring peers

- Many possible message exchange patterns
    - Request-response, publish-subscribe,…
- Agents and services have identifiers
    - Allows long-running conversations
- Service provider and requestor are roles
    - Agents may adopt both/either at different times
- Services are discoverable
    - by searching for suitable descriptions

Peer to peer concepts
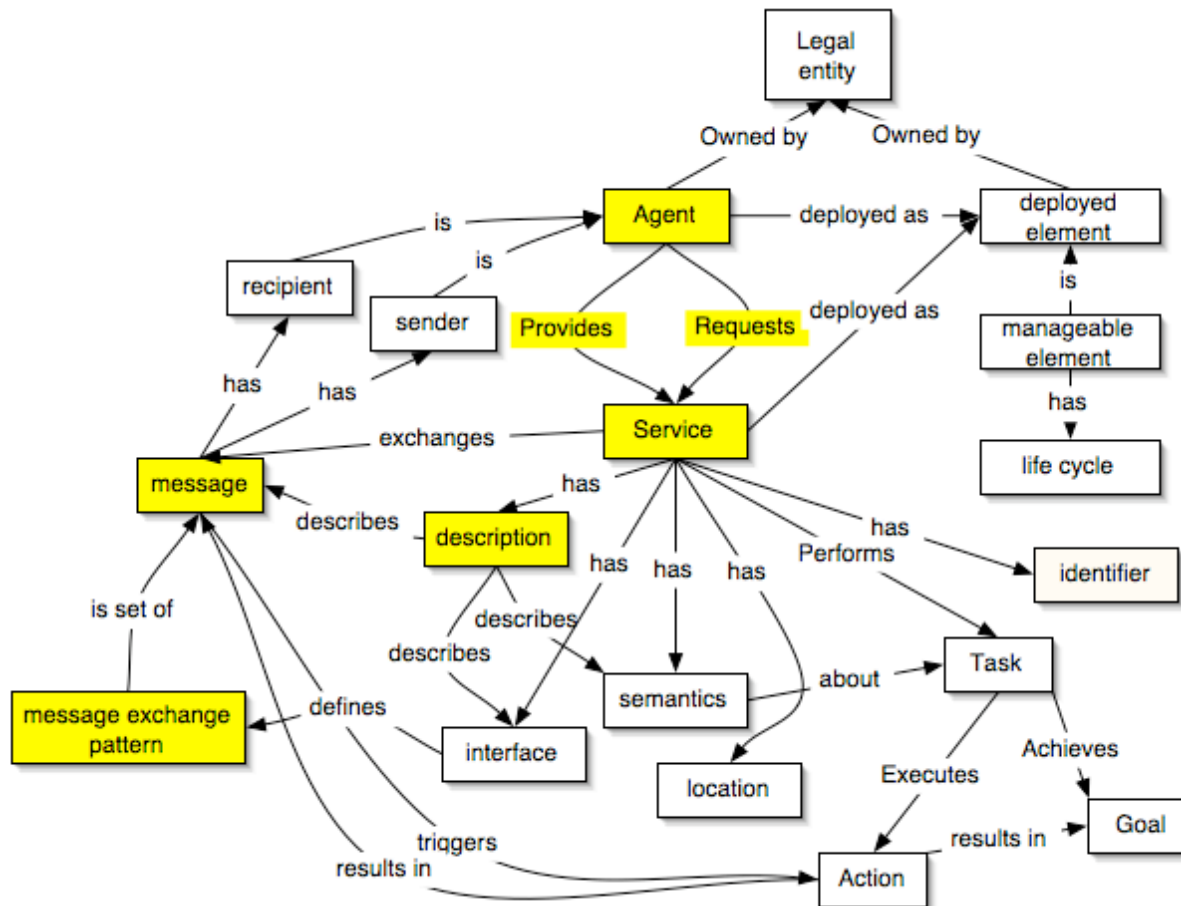
Issues

- Still has the look of a ransom note
- Need to check definitions
  - consistency with the glossary
- Need to revisit and complete set of concepts
- How to integrate management
- Specific matters
  - identifiers – what has one, and what doesn't
  - are resources manageable by definition
  - discovery and other services
- Security, reliability, …