

# What is a service?

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A forensic approach to  
developing a common  
understanding of Service across  
business and IT

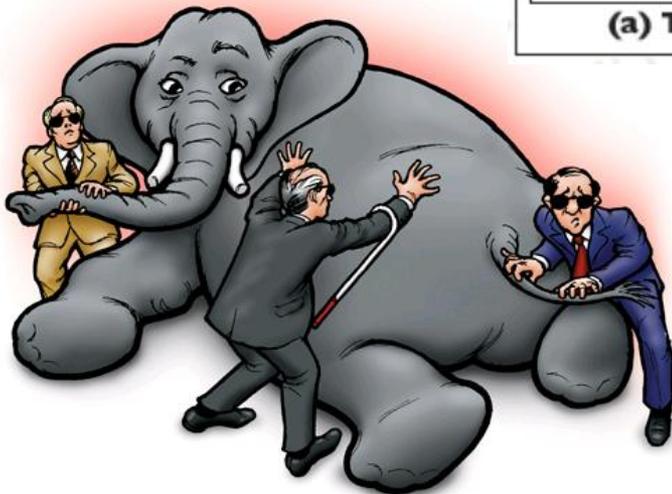
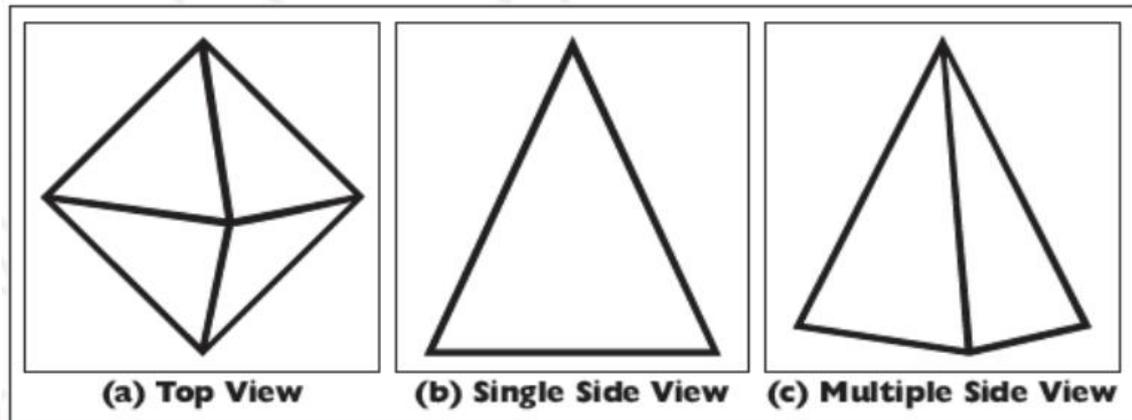
Integrated EA 2011

Tuesday, 2<sup>nd</sup> March 2011  
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- The situation:
  - MOD has a Service Oriented approach for the delivery of capabilities, but there is no common understanding or definition of what a service is, or the types of services used in Defence.
- The task:
  - To conduct an analysis of services in Defence, to help provide a clear and unambiguous definition of what services are, how they are categorised ...

# An integrated view

- A major issue:
  - To provide a notion of service that integrates both business and IT notions of service.



# The deliverable

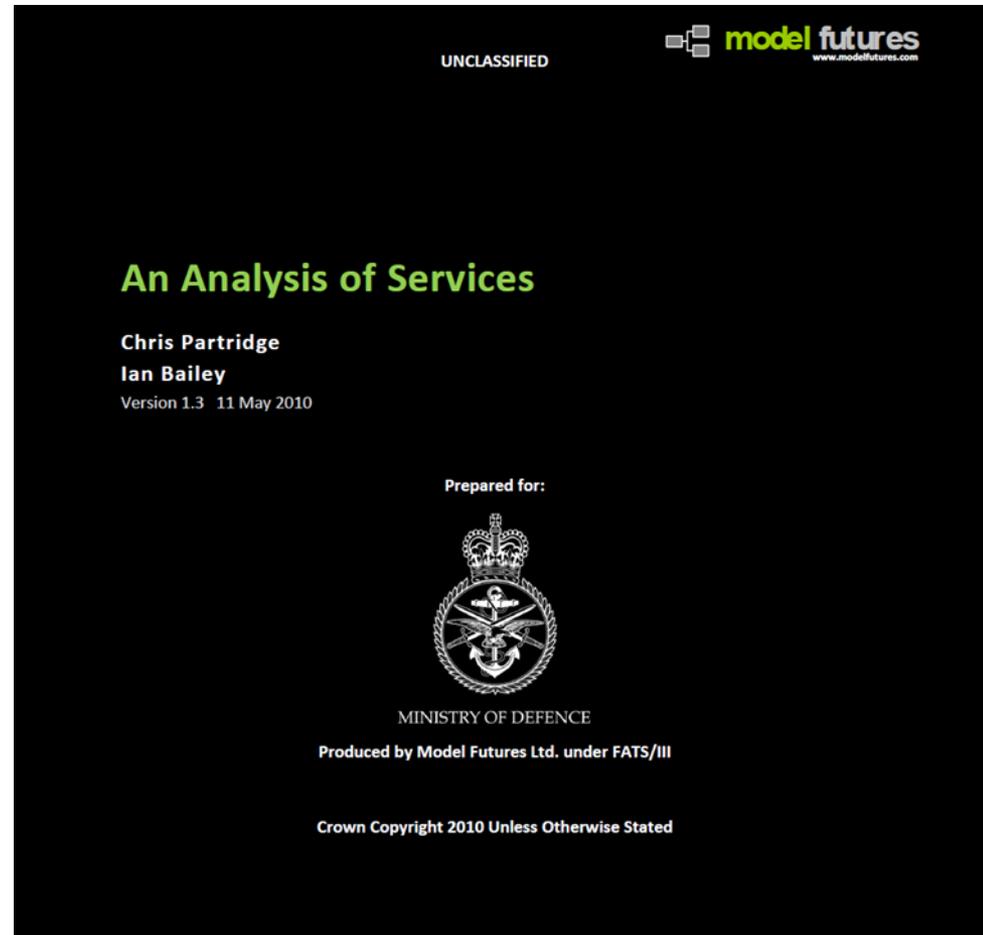
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## • The problem:

- The term “service” is widely used, and has a number of different senses, some of which are only subtly different.
- Any attempt to define services from first principles is almost certainly going to lead to either
  - a replication of one of the currently used senses of the word, or
  - an altogether new sense of the word – neither of which is much use to the MOD.

## • The solution:

- A forensic approach.
  - Harvest and harmonise the business knowledge in the major standards around service orientation that are of interest to MOD.
    - Identify the underlying business patterns and assemble them into a conceptual model.

# The sources harvested

<b>OASIS</b>	SOA-RM 1.0	OASIS-RM	12 October 2006
<b>The Open Group</b>	SOA Ontology	TOG-SO	14 July 2008
<b>OMG</b>	SoaML 1.8	SoaML	25 August 2008
<b>The Open Group</b>	SOA Source Book	TOG-SSB	29 April 2009
<b>OASIS</b>	SOA-RAF 1.0	OASIS-RAF	14 October 2009

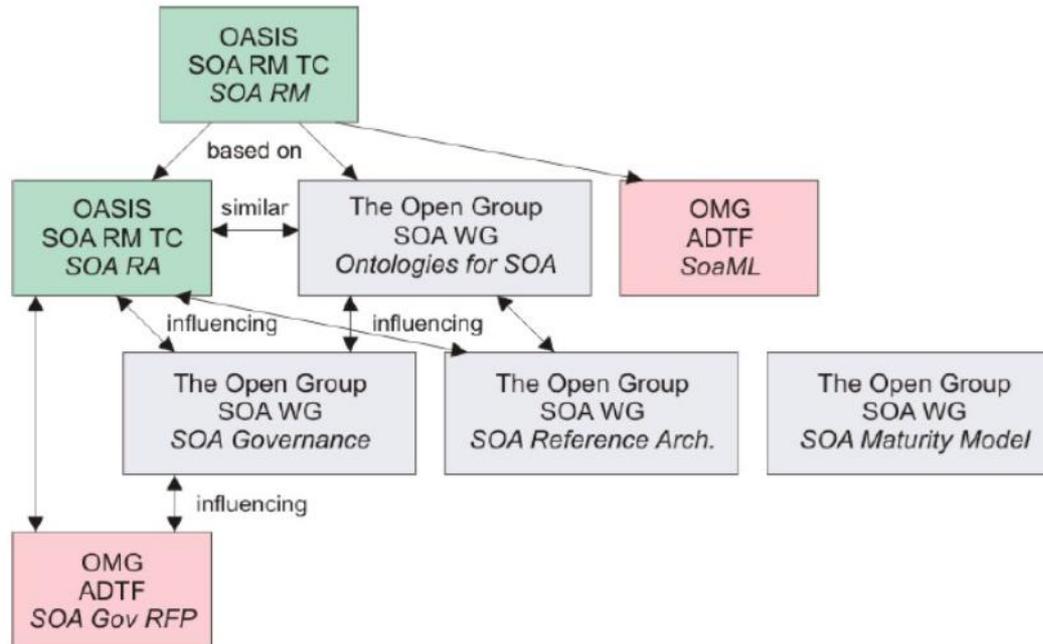


Figure 2: Relationship between Relevant SOA Open Technical Products

Extract from the Joint OASIS, OMG and TOG Paper - Navigating the SOA Open Standards Landscape Around Architecture (November 2009)

# Conceptual model – meta-reference model

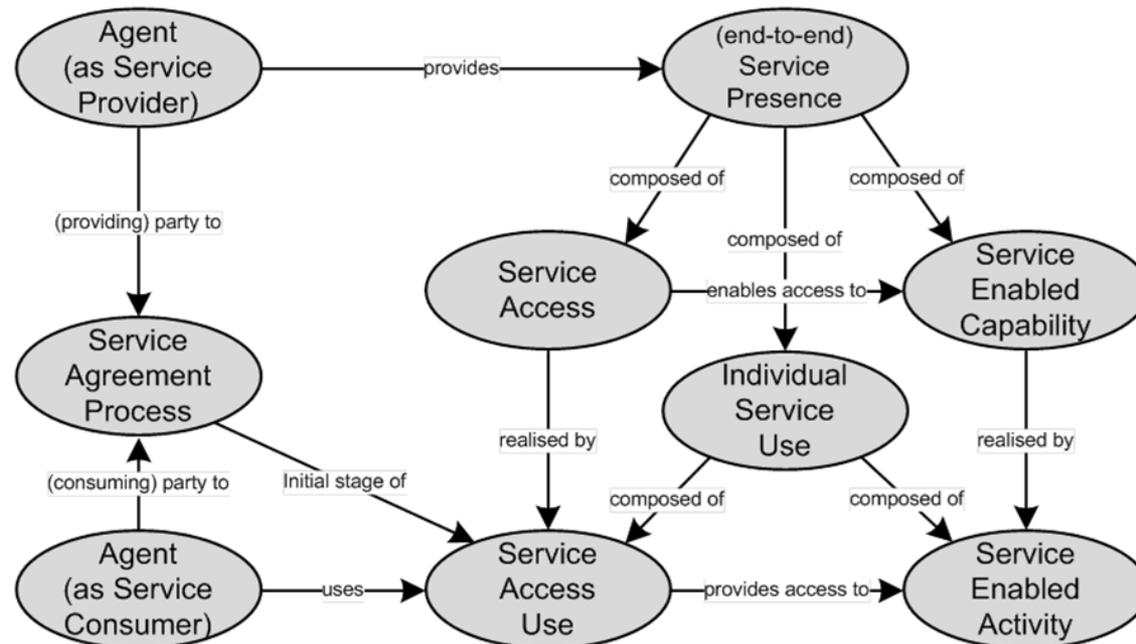
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- NOT 'Yet Another Reference Model' (YARM),
  - Instead a common understanding for a common reference model.
  - A meta-reference model.
  - A model that provides a business-driven ontological picture of service's underlying nature that spans the business-IT divide and resolves the identified differences.
- As none of the existing reference models has a top ontology, we used the BORO-based IDEAS model as the foundation for the ontological analysis.

# Conceptual model

## Key aspects of the conceptual model are:

- It frames the Service elements in terms of their business nature – so that the business drives the structure.
- It includes the OASIS notion of considering Service as necessarily having a way of accessing a capability rather than the accessed capability.
  - To make this clear, this is named 'Service Access' in the conceptual model. This can be used as a tool to identify simplistic re-badging of processes as services.
- It clearly distinguishes the business elements of service.



# Report's main findings - Summary

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- The analysis revealed three main issues:
  - It confirmed that “there is no common understanding or definition of what a service is”.
  - There is not yet a clear conceptual picture of the underlying nature of what a service is – encompassing both its business and formal characteristics.
  - Though there is a clear aspiration amongst the standards considered to provide an all-encompassing framework for services – spanning business and IT – there is still work to be done to achieve this ...

# Presentation Structure

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- Not enough time to go through the report in detail
- Focus on highlighting a couple of main issues
  - Report is there for whoever wants to dig deeper.
- Structure
  - Context
  - Main issues considered:
    1. What is the extent of a service?
    2. Service as delegation

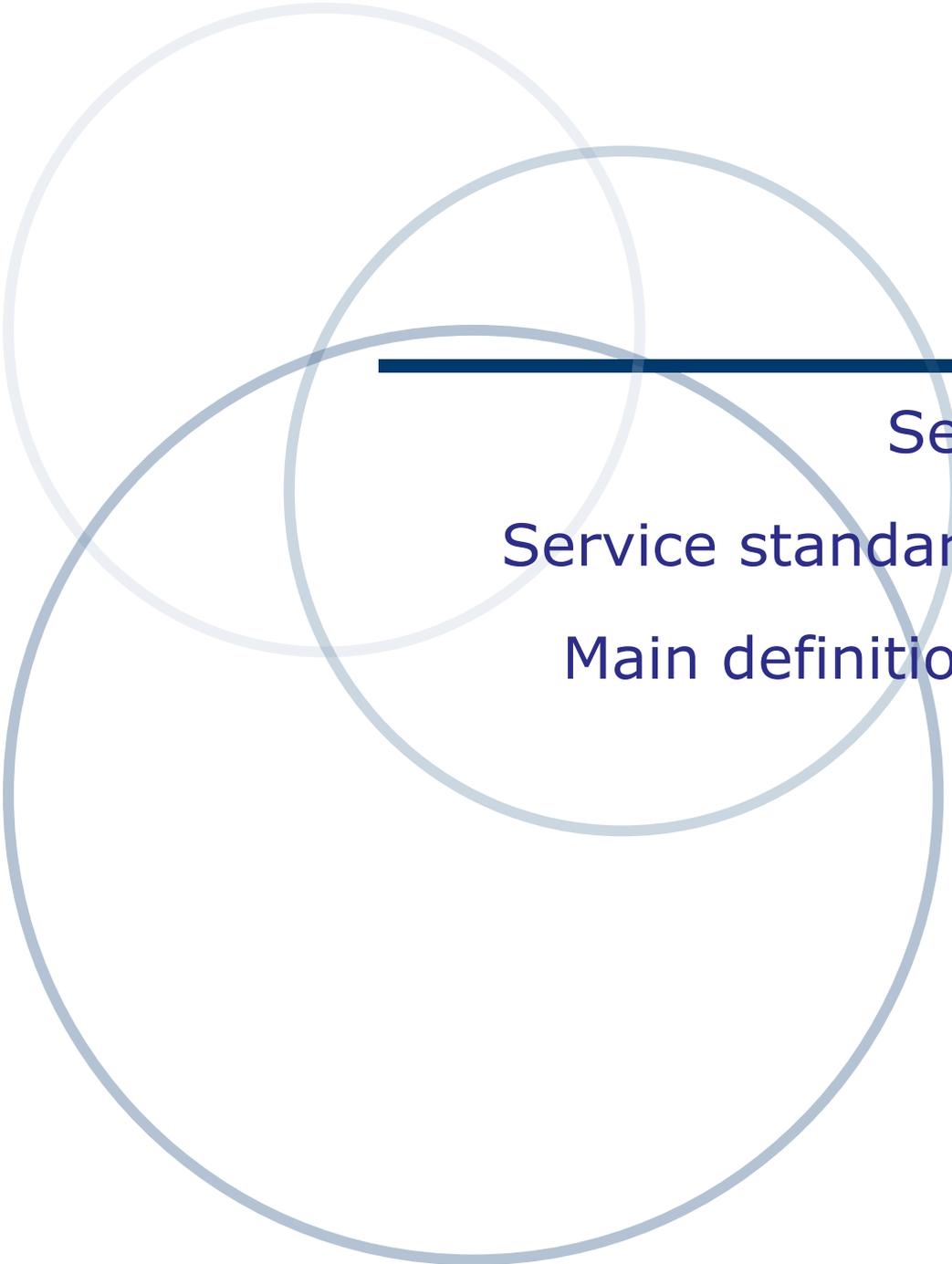
# Context

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Service overview

Service standards' aspirations

Main definitions of a service



# Context - Service overview

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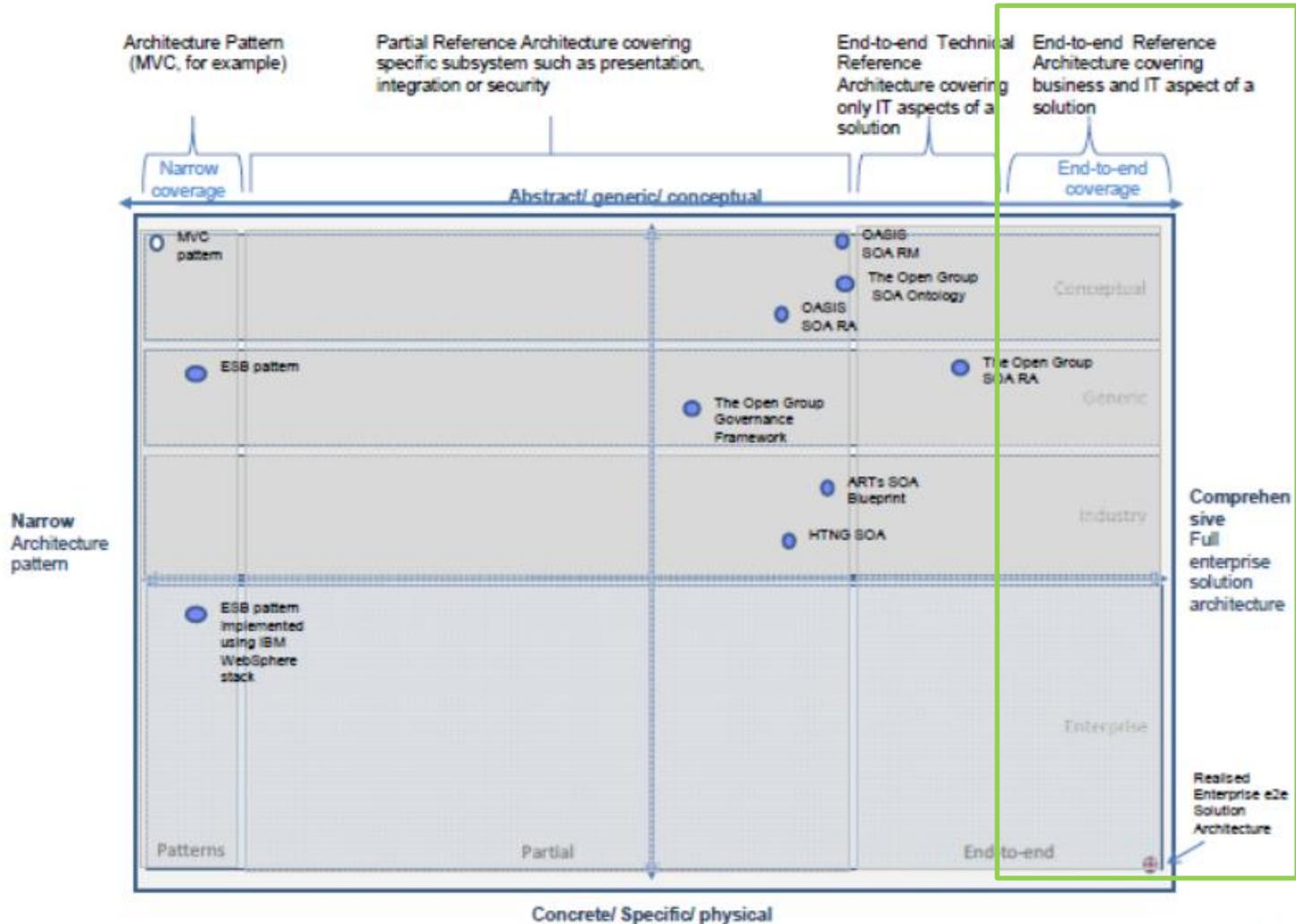
- From a business perspective:
  - The notion of service as the 'performance of any duties or work for another' is well-established and supported by economic and legal notions as well as common sense – where service is 'an act of helpful activity' as in 'to do someone a service'.
- From an IT perspective:
  - The emergence of IT services (particularly web services) has brought the need for (and focus on) a sufficiently formal structure for services to enable them to be automated.
  - The increase in scale of IT services has driven a need for an architectural approach.
  - This is a key driver for the SOA standards. It is also the root for one of its challenges – how to interpret the formal structures in business terms. And, in particular, what the parallels for these structures are in non-IT business services.
- There is also a keen appreciation that an SOA approach can deliver two major categories of business value:
  - Sharing (also called leverage and reuse)
  - Agility (ability to change more rapidly)
- The aspiration is that this approach can be applied broadly across the enterprise – to business as well as IT systems.

# Standards' aspirations - examples

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- Standards aspire to encompass both business and IT.
- Examples:
  - OASIS- RM - 2.1.1 A worked Service Oriented Architecture example
    - "An electric utility has the capacity to generate and distribute electricity (the underlying capability). The wiring from the electric company's distribution grid (the service) ..."
  - SoaML - Example Participant Services Architecture
    - "... shows a participant's services architecture. The "Manufacturer component" is composed of "Accounting" and "Order Processing." The "seller" service port ..."

# Mapping the standards' aspirations



September 2007, v0.1

SOA-enabled Business Transformation Framework (SBTF)

33

Enterprise Reference Architecture, A. Fattah; paper presented at 22nd Enterprise Architecture Practitioners Conference, London, UK, April 2009: [www.opengroup.org/london2009-apc/fattah.htm](http://www.opengroup.org/london2009-apc/fattah.htm)

# Context - Main definitions of a service

<b>OASIS RM</b>	a mechanism to <b>enable access to one or more capabilities</b> , where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description.
<b>TOG SO</b>	A logical <b>representation of a repeatable business activity</b> that has a specified outcome (e.g., check customer credit; provide weather data, consolidate drilling reports). It is self-contained, may be composed of other services, and is a “black box” to its consumers.
<b>SoaML</b>	<p>Service is defined as a resource that <b>enables access to one or more capabilities</b>. Here, the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description. ... A service is provided by an entity - called the provider - for use by others. The eventual consumers of the service may not be known to the service provider and may demonstrate uses of the service beyond the scope originally conceived by the provider.</p> <p>Identifies or specifies a cohesive set of functions or capabilities that a service provides.</p>

The OASIS-RM definition is used in DM2 and noted in M3.

## What is the extent of a service?

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Disposition or manifestation?

Representation or represented?

Access or capability?

Why service as access?

# Disposition or manifestation?

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- TOG-SO versus OASIS-RM and SoaML
  - For TOG-SO a service is a (logical representation of a) “repeatable business activity”.
  - For OASIS-RM and SoaML it is a mechanism or resource to enable access to one or more capabilities.
  - These are NOT the same thing.
- The core distinction that divides the two sets of definitions is between the dispositional and manifestation aspects of Service.
  - OASIS and SoaML see the service as the dispositional ability to deliver the effect, whereas TOG focuses on the process that delivers the effect.
  - Consider a taxi service.
    - The dispositional view sees a key feature of the taxi service is its ability to provide taxis. Under this view, the service exists whether or not any taxis are actually in use, provided the ability exists.
    - The manifestation view sees the service as the process of providing a taxi ride. This however does not exist when there are no taxi rides being provided.
    - So depending on which view one uses, one could give different answers to the question whether there is a taxi service here now.

# Representation or represented?

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- Two different definitions:
  - Random House Dictionary - “an act of helpful activity; help; aid: to do someone a service”.
  - TOG SO - “A logical **representation** of a repeatable business activity”
- Consider the taxi service again.
  - The man on the Clapham Omnibus, when talking of a taxi service would regard the provision of the taxi (the “repeatable business activity” – but not its representation) as the service.
  - Is TOG SO confusing the representation with what it represents?
  - Note: The OASIS-RM and SoaML definitions do not talk about representation either.

# Access or capability?

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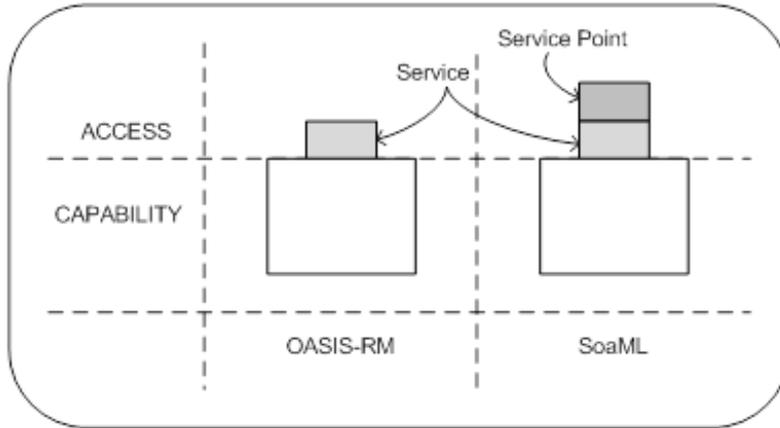
- The OASIS-RM and SoaML definitions refer to a mechanism/resource to “enable access to one or more capabilities”
- Consider the taxi service again.
  - The man on the Clapham Omnibus, when talking of a taxi service would regard the provision of the taxi as the service.
  - He would find a sense that excluded this and only focussed on the related “enabling access” – which in this case might be a telephone call booking the taxi – as unusual.

# Why service as access?

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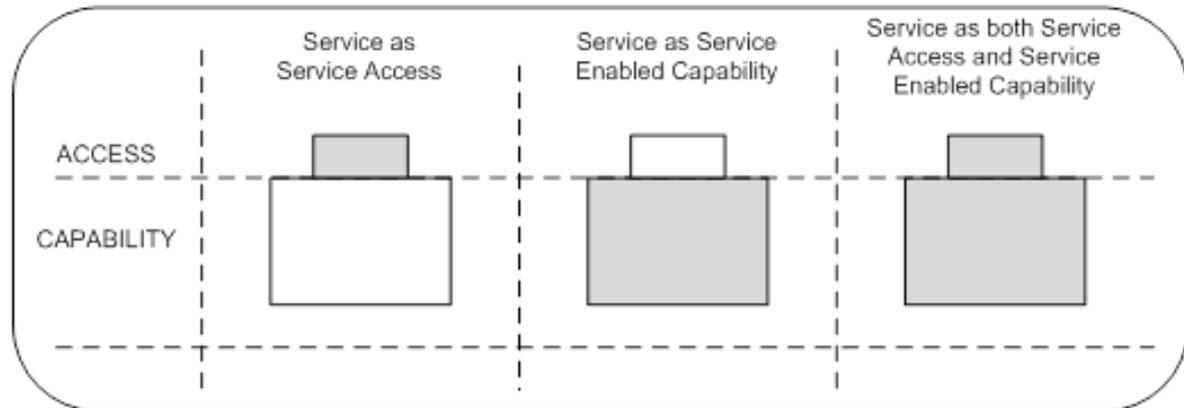
- OASIS-RM explain their motivation for choosing this unorthodox sense as follows:
  - *"The service concept above emphasizes a distinction between a capability that represents some functionality created to address a need and the point of access where that capability is brought to bear in the context of SOA. It is assumed that capabilities exist outside of SOA. In actual use, maintaining this distinction may not be critical (i.e. the service may be talked about in terms of being the capability) but the separation is pertinent in terms of a clear expression of the nature of SOA and the value it provides."*
- Service access is a key part of a SOA.

# What is the extent of a Service?



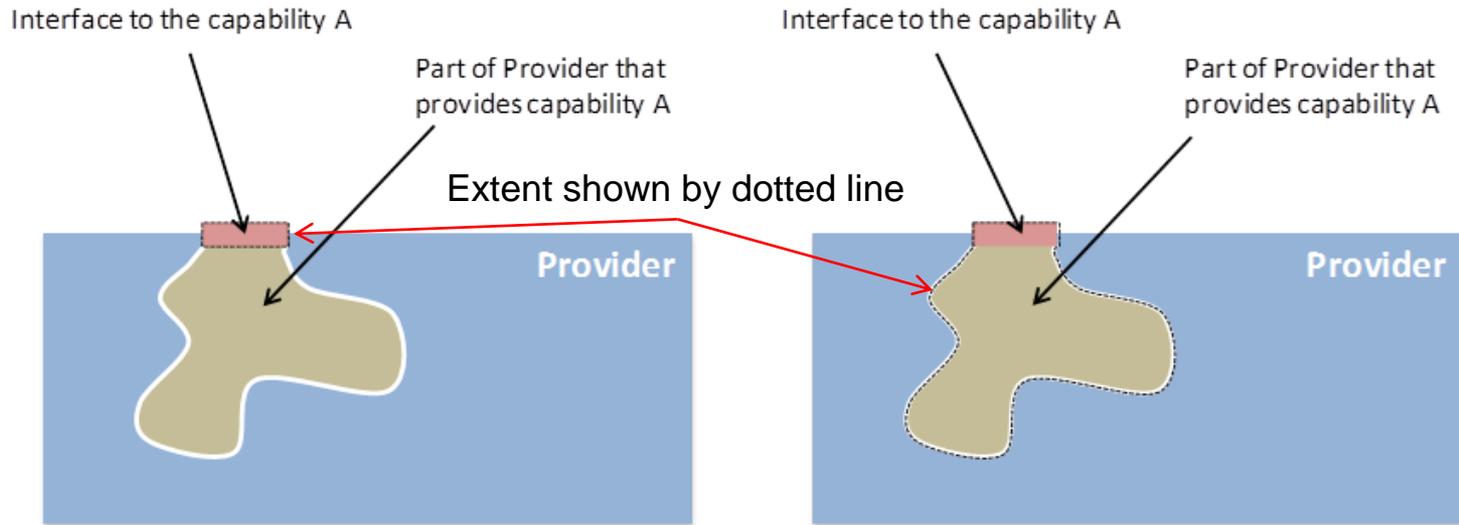
Similar OASIS-RM and SoaML views of Service (Service Point seems an oddity and so we ignored it).

Options for the extent of Service



- One challenge is clarifying what the extent of the Service should be:
  - The access point, what is accessed or both?
- Or, more relevantly; which of these extents is useful – and which are not?

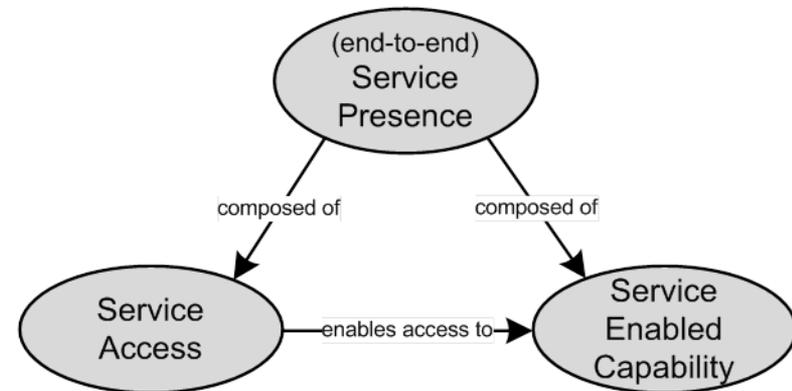
# Two main options for the extent of a service



- Does it matter whether which one you choose?
  - Not really
- Does it matter that both people in a discussion know which sense is being used?
  - YES!

# The anatomy of a service

- From the perspective of separation of concerns, it makes sense to distinguish between:
  - the Service Access and
  - the Service Enabled Capability.
- To avoid the use of the loaded unqualified term 'Service',
  - we qualify this as 'Service Access' and
  - introduce the terms
    - 'End-to-End Service Presence' and
    - 'Service Enabled Capability'.



*The whole-part (mereological) anatomy of a service*

# Showing an IT heritage

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- The definitions include these constraints:
  - SoaML and OASIS-RM
    - “the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description.”
- Are these really relevant business constraints?
  - It is unlikely that all (non-IT) business services.
    - How many taxi services are regimented to the extent that they have clearly prescribed interfaces, service descriptions with constraints and policies?
    - Would they be better businesses/services if they did?
  - This suggests that this is a description of an ideal situation in some (typically IT) contexts even though it is phrased as a necessary condition.

# Service as delegation

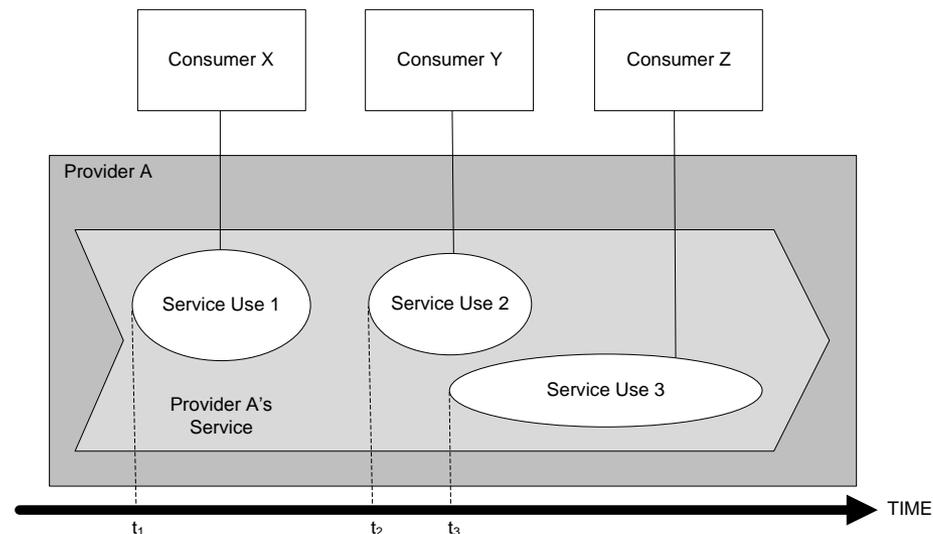
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Identifying (individuating) a service  
Service as delegation  
Direct responsibility  
Indirect responsibility



# Identifying (individuating) a service

- The service provider-consumer relationship is not symmetric – as TOG-SSB says; “A service has a provider, can have one or more consumers”. This tells us one part of what individuates a Service.
- Take an example:
  - The Acme Taxi Company provides a taxi service to a number of its customers.
  - These are different individual service uses of the same service from the same provider.



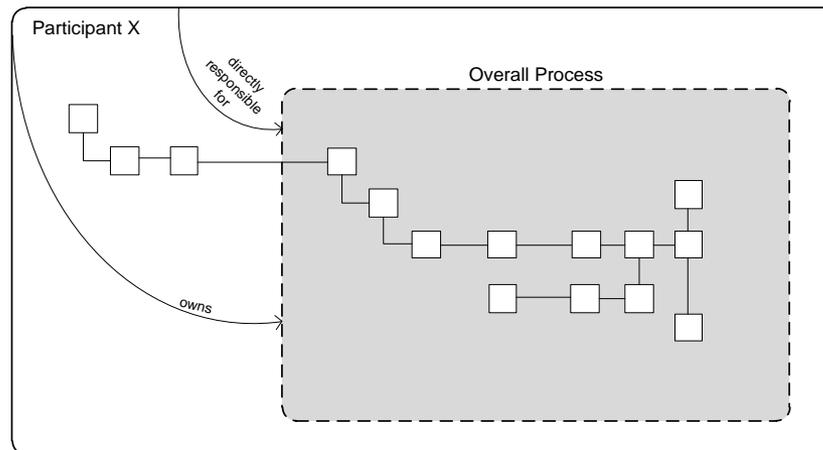
# Service as delegation

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- It is generally recognised that what underlies services from a business and conceptual level is delegation, and that delegation has been an important part of the ways humans manage, probably since they started managing.
- Delegation, by its nature, creates characteristic mereological (whole-part) structures that are a tell-tale sign that there is a service.
  - When an agent (an entity capable of action) is given responsibility for a task, it can decide to delegate some part of the task to another agent.
  - The first agent has overall responsibility for the overall task.
  - However, it only has direct responsibility for the parts of the task that are not delegated.
  - The second agent acquires direct responsibility for the sub-task that is delegated to it.

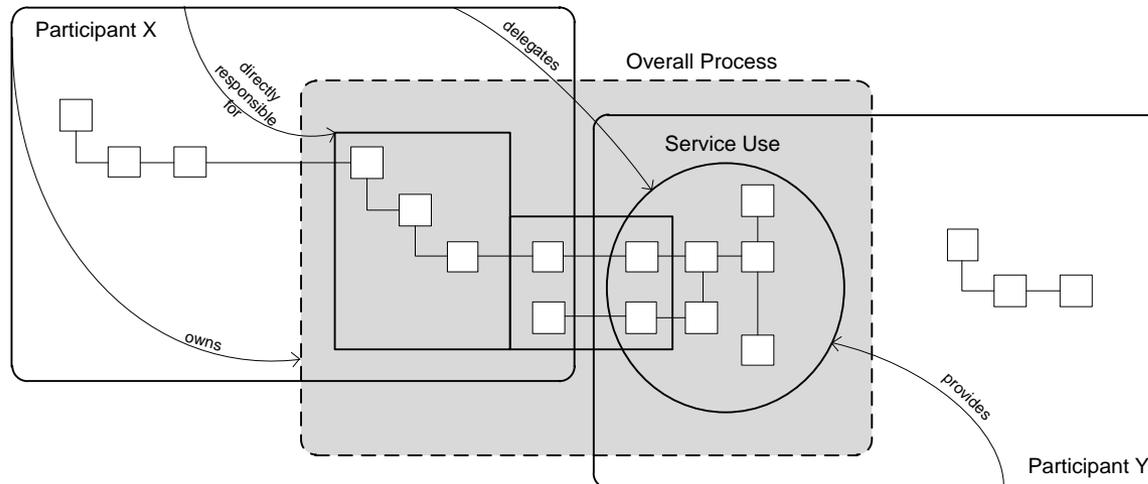
# Direct responsibility

- Where an agent has direct responsibility for a task, it undertakes the whole task – the overall process – so there is no distinction between what it owns and what it is directly responsible for and what it undertakes.

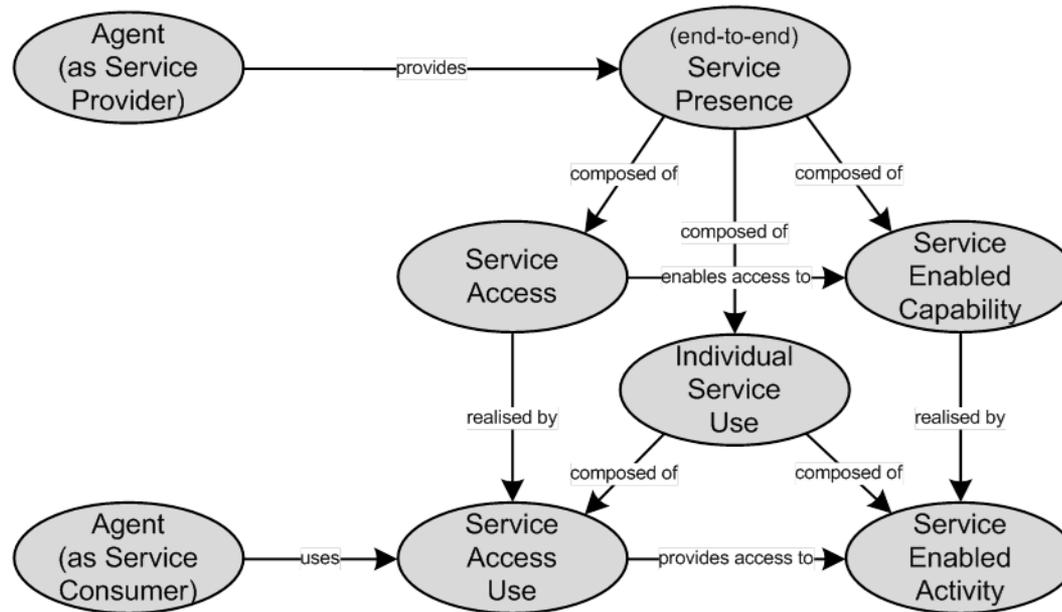


# Indirect responsibility

- However, when an agent delegates a task, it creates a distinction between what it owns and what it is directly responsible for (which is what it undertakes). There is a part of what it owns – the overall process – that is now part of another agent.
- Where, a number of different agents (consumers) can delegate the same type of task to a particular agent (provider), then there is a need to organise the delegation.



# Adding delegation to the conceptual model



- The existing standards, given the right tools, provide enough 'fodder' to build a common picture of services
  - The significant and important differences in the existing standards can be harmonised.
  - The resulting picture can provide the basis for realising the aspiration of integrating business and IT views of services.
- What is a service?
  - There are a number of different senses,
  - Reflecting that there are a number of components
    - e.g. service use and delegation.
  - Best to avoid arguments about terms and use qualifications to describe the components:
    - Service Use,
    - Service Presence, etc.