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*A Goal Driven Approach to  
Deal with Quality of Service as  
Potential Aspects*

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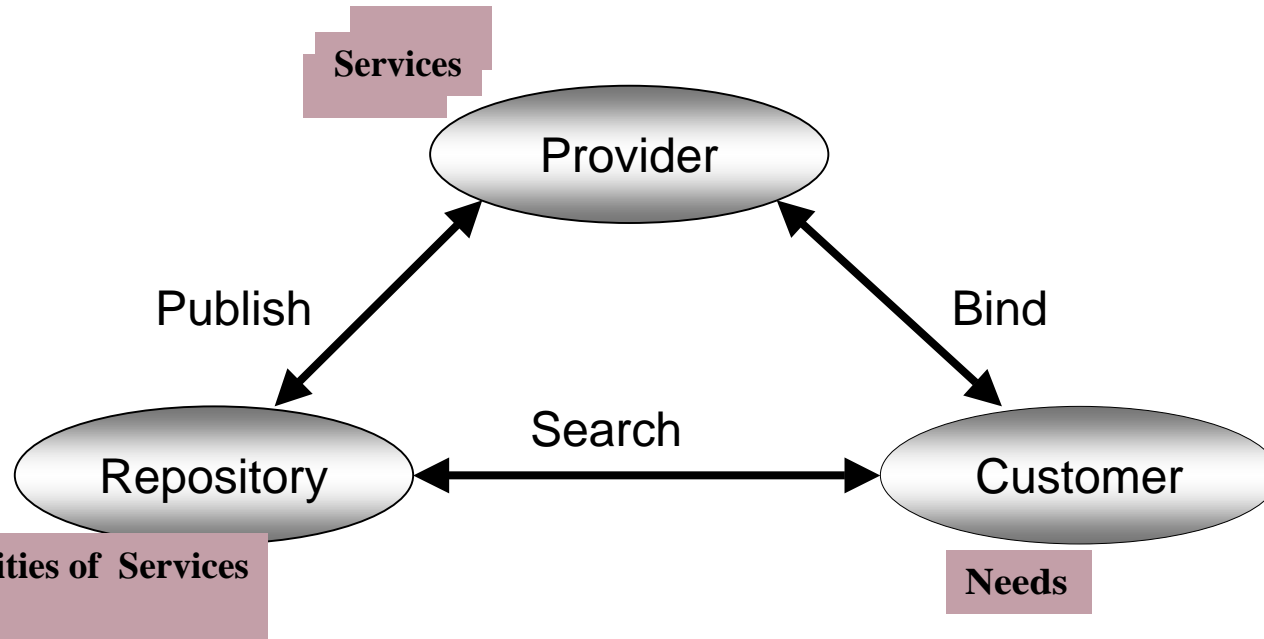
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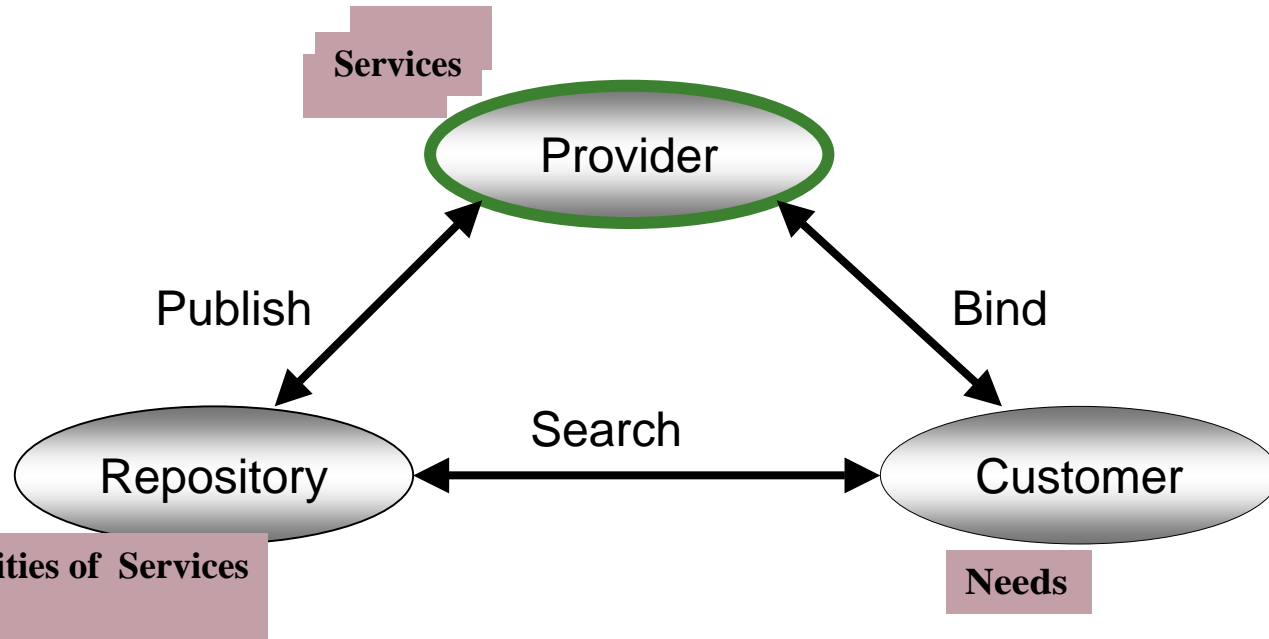
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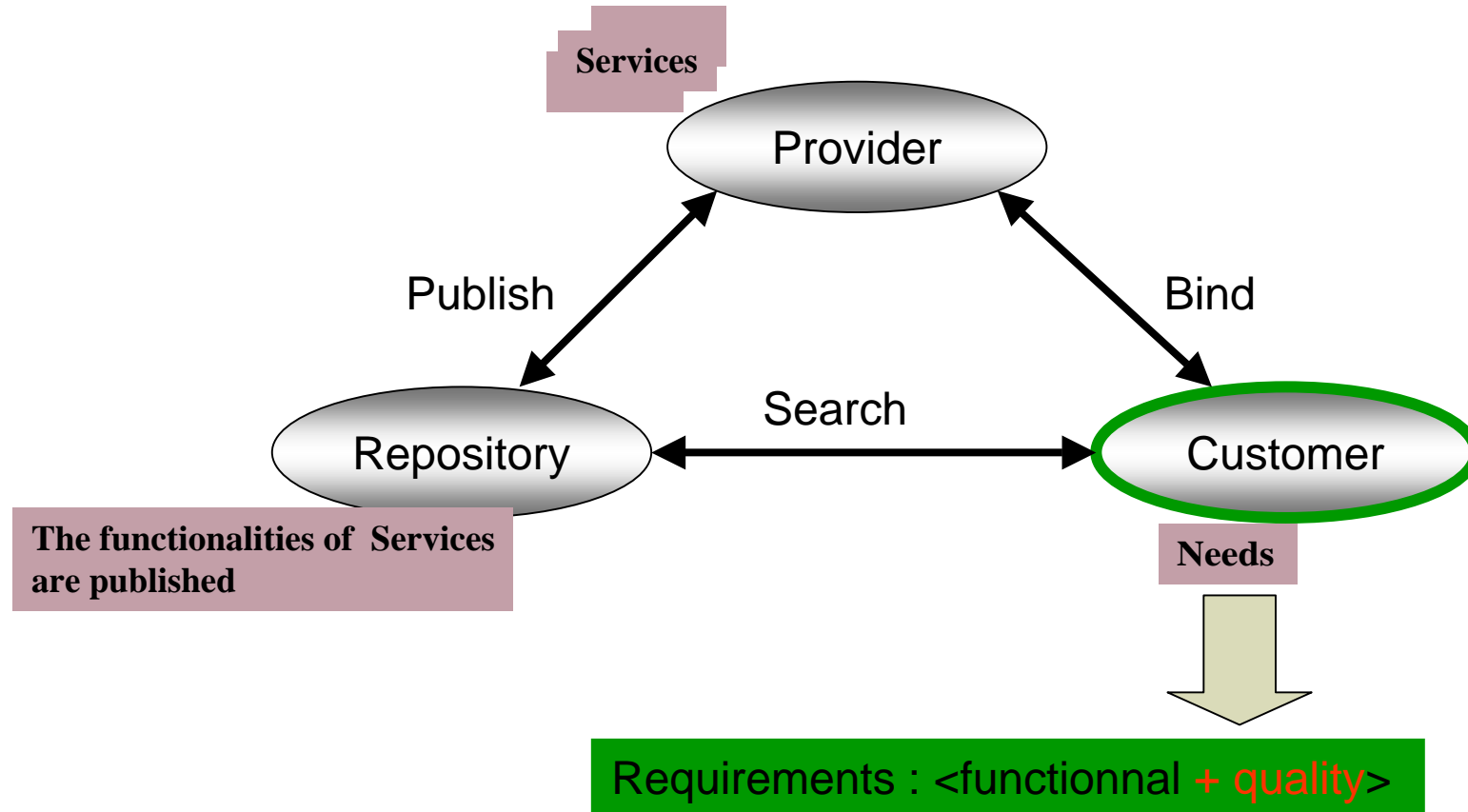
# Context



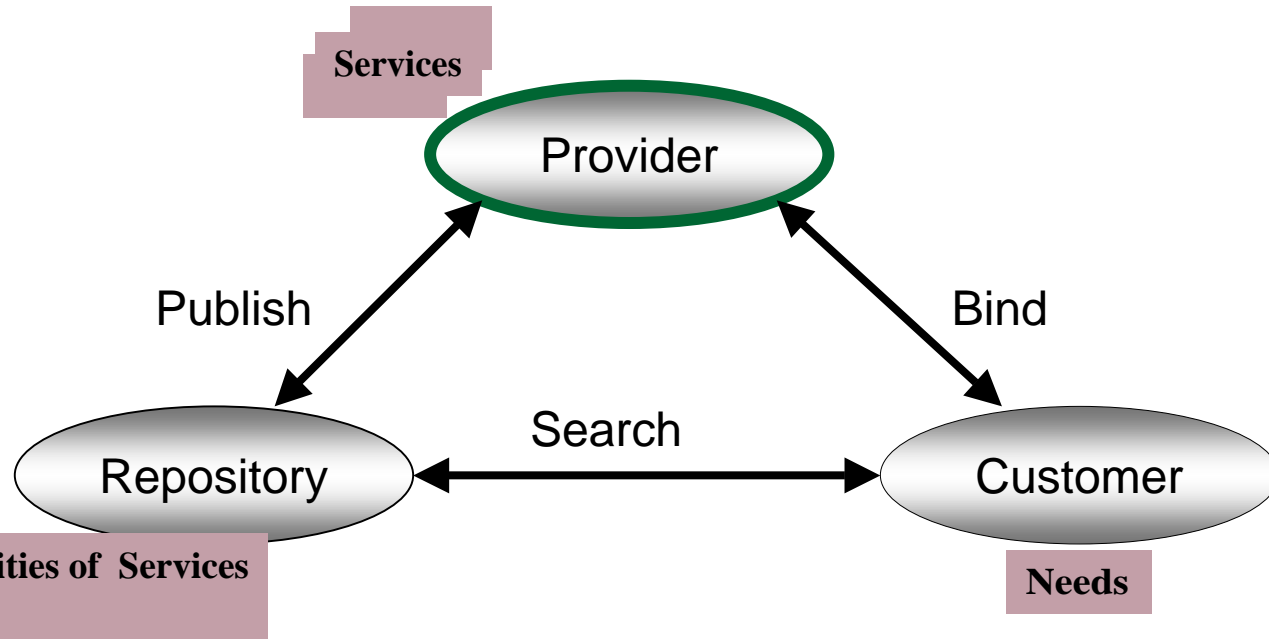
# Context



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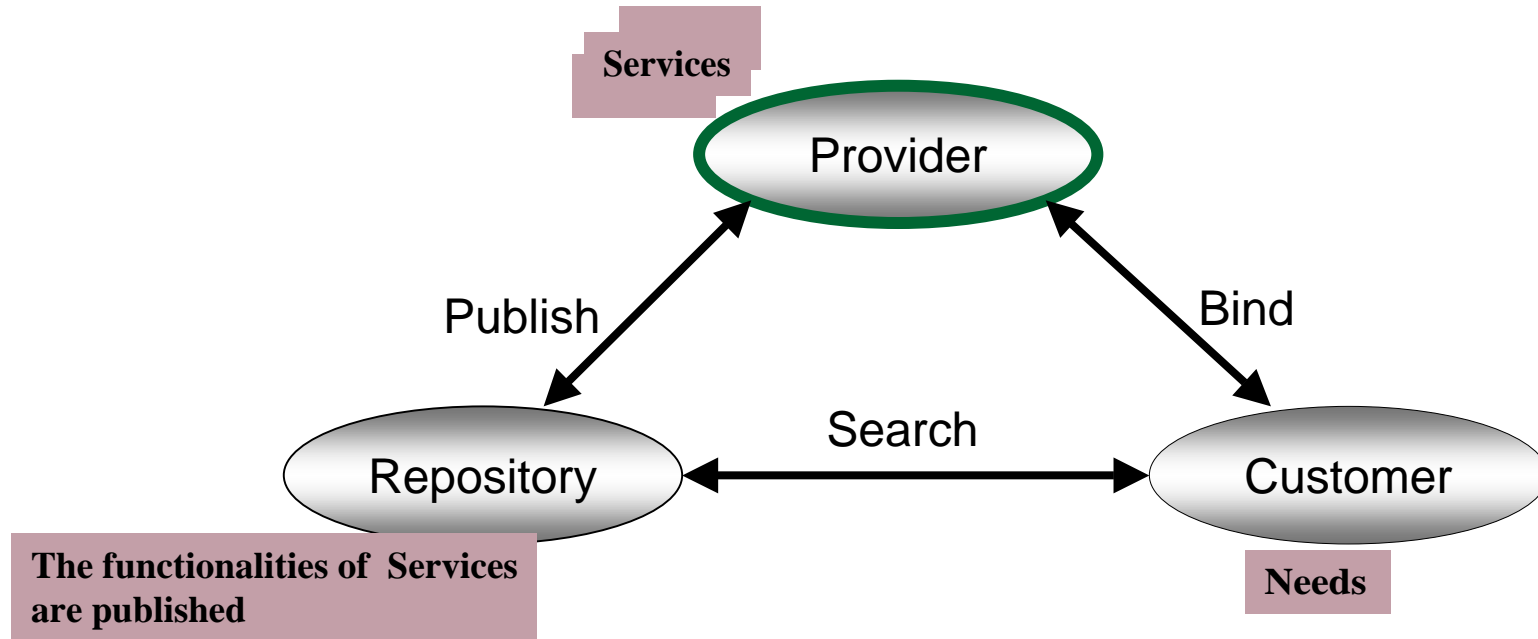


Provider :

*Satisfy a wide number of customers*

- Service meets the Functional Requirement
- **variability of QoS policy**

# Problematic



Adapt dynamically services to quality requirements

The SoC using one-dimensional “service” involves that some concerns, namely QoS are cross-services functionality

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## Related works

1. (Tomaz et al, 06) propose a weaving tool by implementing aspects - QoS - as services, whose aspects can be woven and adapted dynamically to service functionality.
2. (Courbis and Finkeltein,05) modify the Business Process Execution Language (BPEL) by using aspect specification.



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# Statement

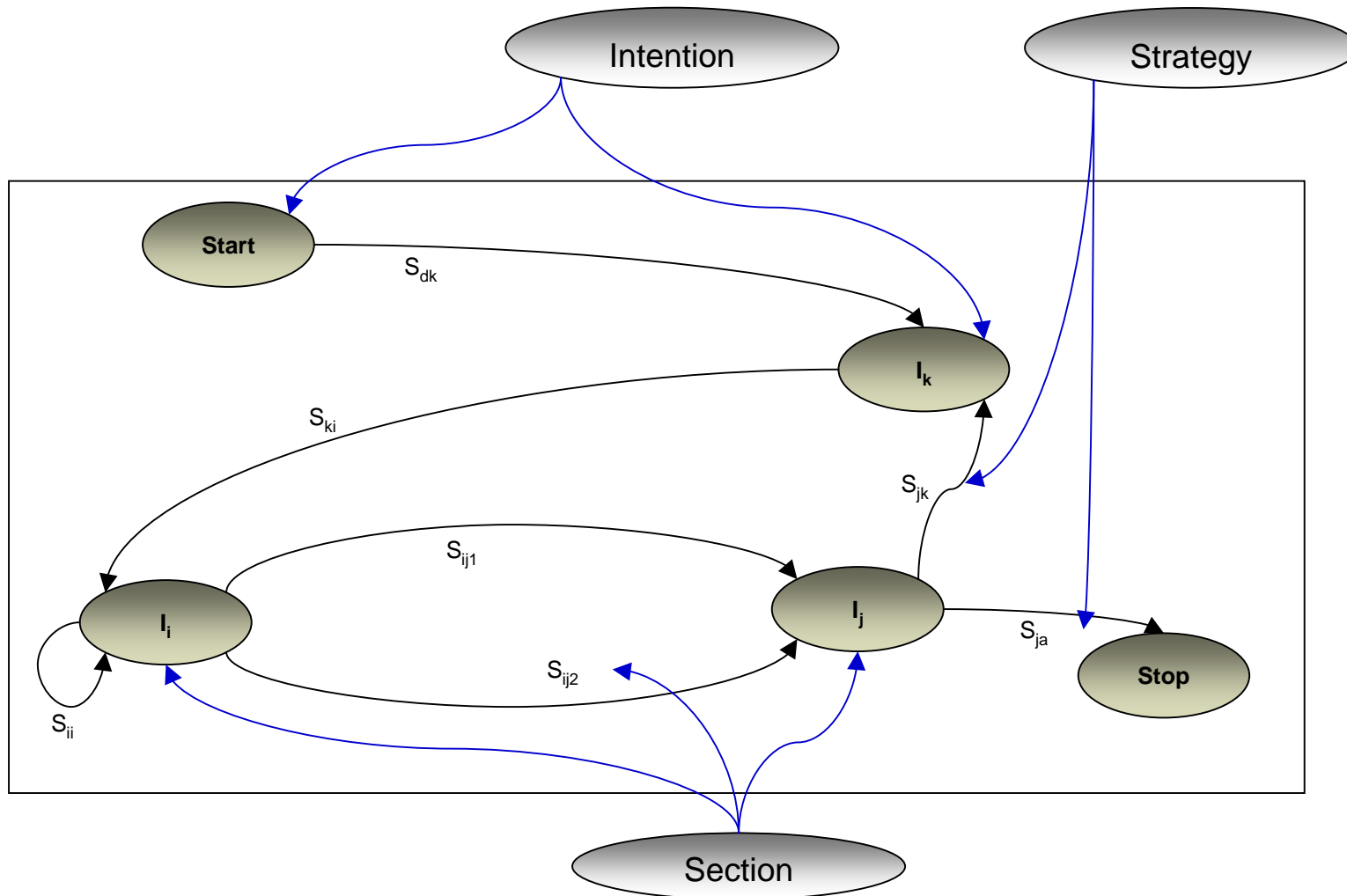
1. There is a lack concerning dynamic adaptability of the business-logic services to QoS at the intentional level.
2. An intentional approach to deal with the business-logic service exists.
  - it omits the 'quality' dimension of services.

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# Intentional process

1. Identify system goals by using map formalism,
2. Identify services from the map,
3. Distinguish different kinds of service,
4. Identify potential aspect.

# Map formalism

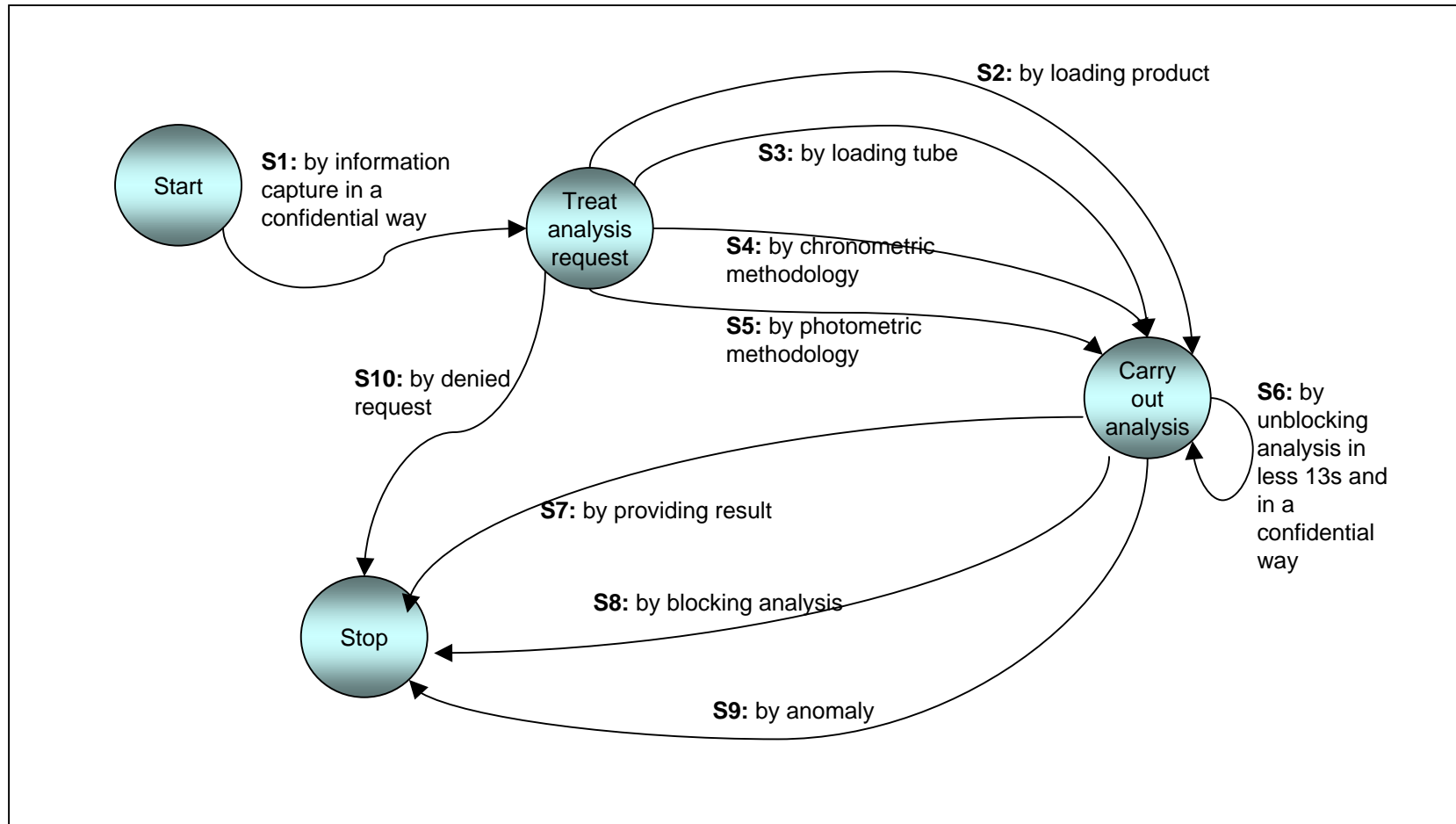


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# Case study

- The example is extracted from our industrial experience through a company that industrialize automatons that analyses blood plasma in order to detect some haemostasis anomaly.
- The automatons' hardware is composed of electronic and mechanical parts such as arm, drawer, needle, etc.
- The software manages the hardware to analyse the blood plasma, and other functionalities such as user authentication, sending analyse results and etc.
- Features, such as authentication, logging, or transactional mechanisms, must be considered.

# 1. Identify system goals

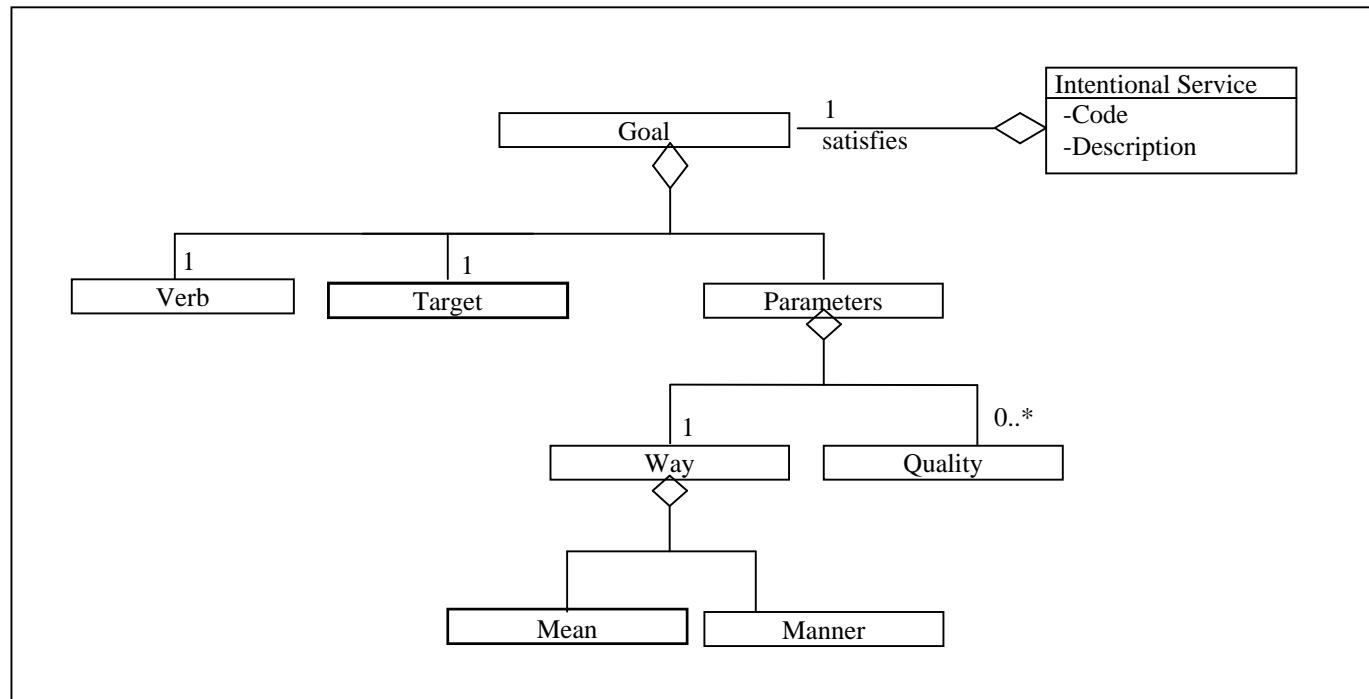


Goal: « Analyse blood plasma »

## 2. Identify services from the map

<b>Code</b>	<b>Service</b>	<b>Description</b>
<b>S1</b>	Treat analysis request by information capture in a confidential way	This service provides the form to capture the necessary data about the information for the treatment of the analysis request. These include the name of user, the blood plasma tube, and the test to launch. These must be done in a confidential way.
<b>S2</b>	Carry out analysis by loading product	This service provides the form to capture the necessary data about the product for the carrying out of the analysis. These include the product identity, the name, the volume, and the expiration date.
<b>S6</b>	Carry out analysis by unblocking analysis in less 13s and in a confidential way	This service provides the form to capture the necessary data about the analysis to unblock it. These include the user that unblocks the analysis, the unblocked analysis. These must be doing in a fast way (less than 13s) and in a confidential way.

### 3. Distinguish different types of service



Example: (*Treat*)<sub>verb</sub> (*analysis request*)<sub>target</sub> (*by information capture*)<sub>manner</sub>  
(*in a confidential way*)<sub>quality</sub>

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## 3. Distinguish different types of service

- *We propose to consider* each quality parameter of the map section as quality of service.
- *Each section can have several qualities of service.*

Example: (Carry out)<sub>verb</sub> (analysis)<sub>target</sub> (by unblocking analysis)<sub>manner</sub> (in less 13s)<sub>quality</sub> and (in a confidential way)<sub>quality</sub>



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# Decomposition process

1. Input: service.
2. Build a business service from the verb, the target, the direction and the way parameters of the service goal.
3. Build a quality service, corresponding to the quality parameters :
  1. By giving a nominal expression to the quality parameter of the service goal. It becomes the target of the new service.
  2. By using 'satisfy' verb to build the new service.
4. Output: business service, quality service

# Example

Code	Service	Quality parameter
S1	Treat analysis request by information capture in a confidential way service	- in a confidential way
S2	Carry out analysis by loading product service	
S6	Carry out analysis by unblocking analysis in less 13s and in a confidential way service	- in less 13s - in a confidential way



Code	Service	Service type	
S1	Treat analysis request by information capture in a confidential way service	Information capture service	Business service
		Satisfy confidentiality service	Quality service
S2	Carry out analysis by loading product service	Loading product service	
S6	Carry out analysis by unblocking analysis in less 13s and in a confidential way service	Unblocking analysis service	Business service
		Satisfy performance service	Quality service
		Satisfy confidentiality service	Quality service

# 4. Identify potential aspect

An aspect definition contains

## Behaviour which is called *advice*.

*Satisfy confidentiality service*, *Satisfy performance service* are the potential advices;

- the former will be weaved '*before*' *Information capture service* and *Unblocking analysis service*,
- the latter will be weaved '*before*' and '*after*' *Unblocking analysis service*.

## Specification that expresses the *pointcut*.

*Information capture service* and *Unblocking analysis service* are the potential pointcuts. They are concerned by the introduction of quality behaviours.

## Weaving.

consists to compose quality service to business service.

Potential advice		Potential pointcut
Satisfy confidentiality service	before before	- Information capture service - Unblocking analysis service
Satisfy performance service	before, after	- Unblocking analysis service

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# Conclusion

An intentional process to deal with QoS as potential aspects.

1. A goal/strategy graph is used to represent the system' services:
  - map section definition.
2. The process proposes to distinguish quality service from the business one
  - service goal definition.
3. The quality services are designed as potential aspects.

The main characteristic of this approach is its goal emphasis, namely:

1. the capture of the enterprises wishes and goals in terms the stakeholders can understand and reason about easily,
2. the early identification of both business services and quality services that satisfy these goals.

Our Futur Works:

- Reasoning about the quality services (work to be published in INFORSIDE08),
- Introducing conflictual quality services,

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