



Modelling Properties of Services

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Agenda

Introduction

Properties Model

Application

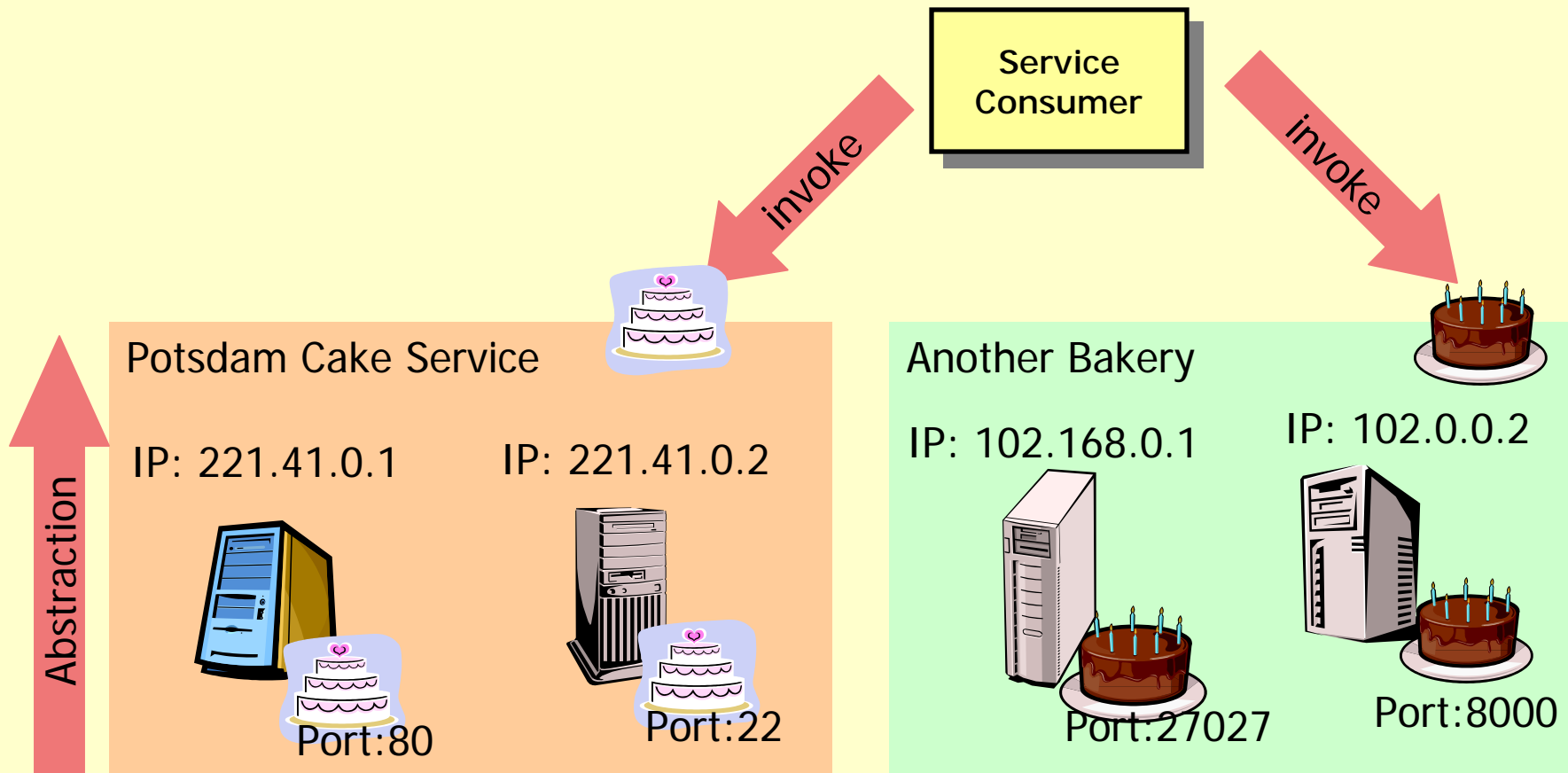
Outlook

- Introduction
 - Service orientation
 - Service Model
- Modelling properties of services
 - Terms
 - Properties
- Application
 - Discovery
 - Service Processes
- Outlook



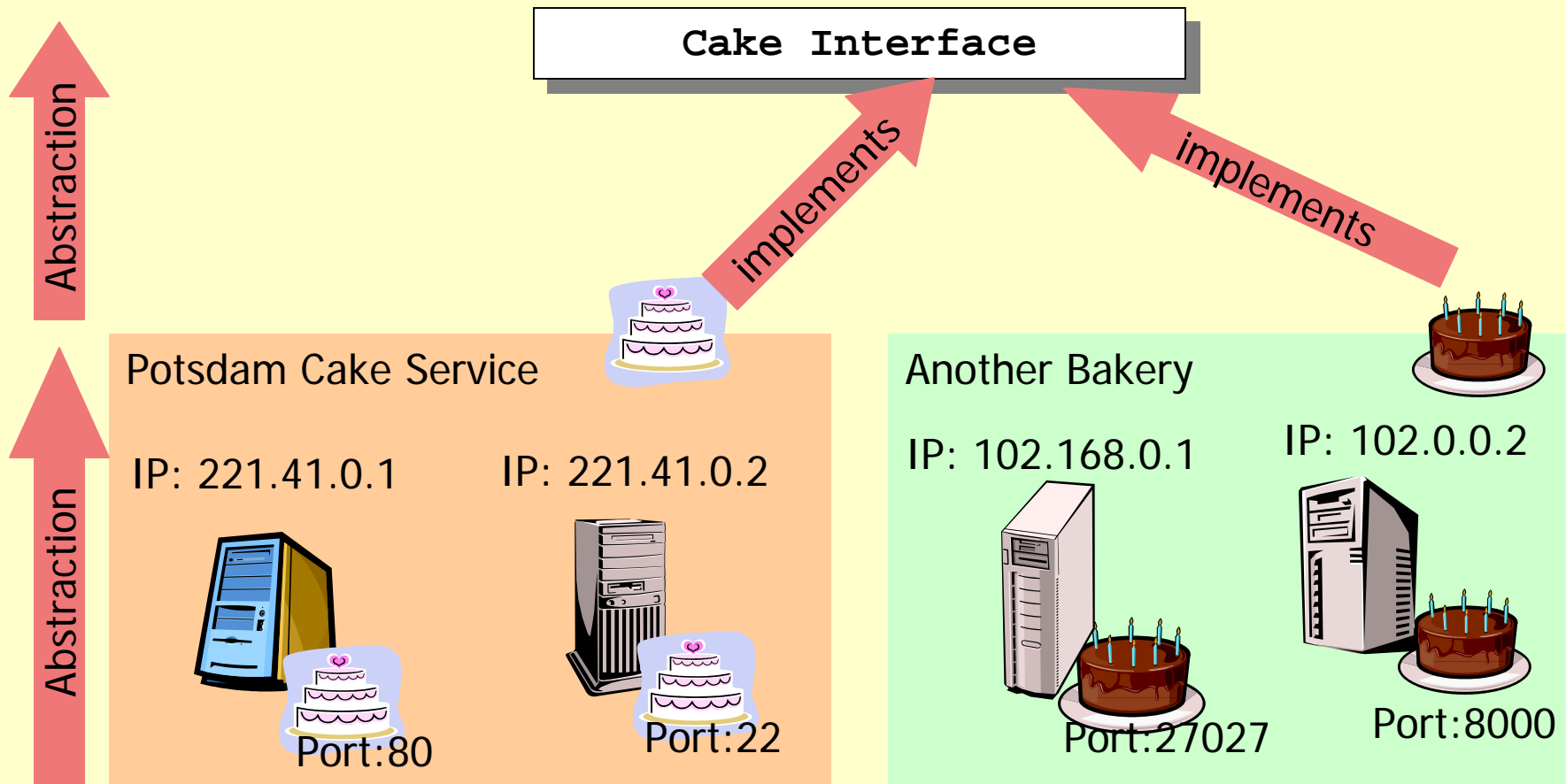
Idea of Service Orientation

Introduction



Idea of Service Orientation

Introduction



Idea of Service Orientation

Introduction

```
CakeInterface{  
    CakeOffer(In:CakeType, Out:Price)  
    Order(In:CakeType, In:CreditcardNo,  
          In:DeliveryAddress) }
```



Abstraction

Potsdam Cake Service



IP: 221.41.0.1

IP: 221.41.0.2



Port:80



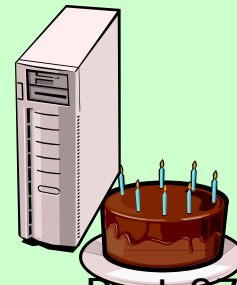
Port:22

Another Bakery

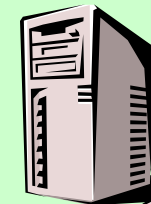


IP: 102.168.0.1

IP: 102.0.0.2



Port:27027



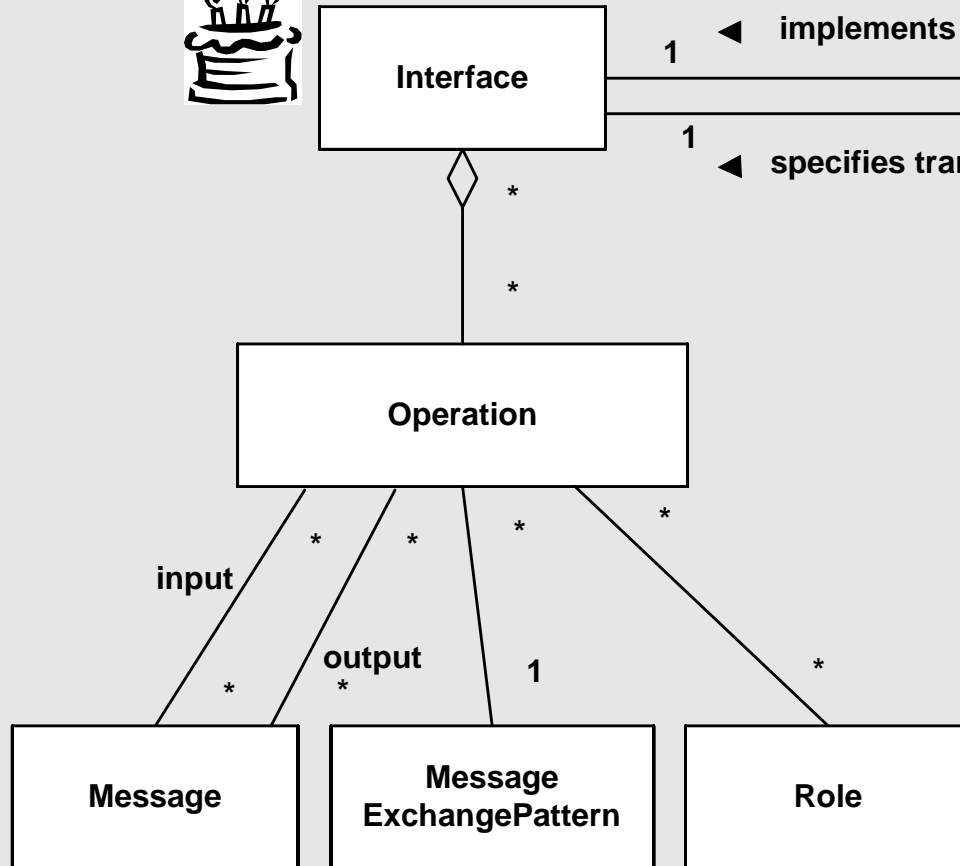
Port:8000

Abstraction

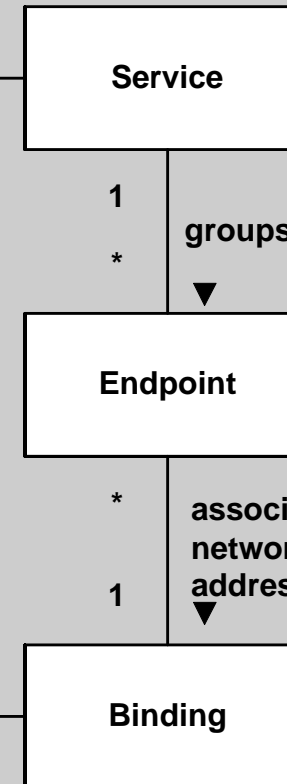


The Service Model

Abstract



Concrete



Potsdam Cake Service
 IP: 221.41.0.2
 IP: 221.41.0.1
 Port:22
 Port:80

Service Orientation's Heart

Introduction

- Service description
 - Technical specification
 - Stored in Repository
- Key principles
 - Distribution, Loose coupling, Process orientation
 - Based on acceptance → Standards
 - High degree of automation
 - Discovery: Interface level

Discovery

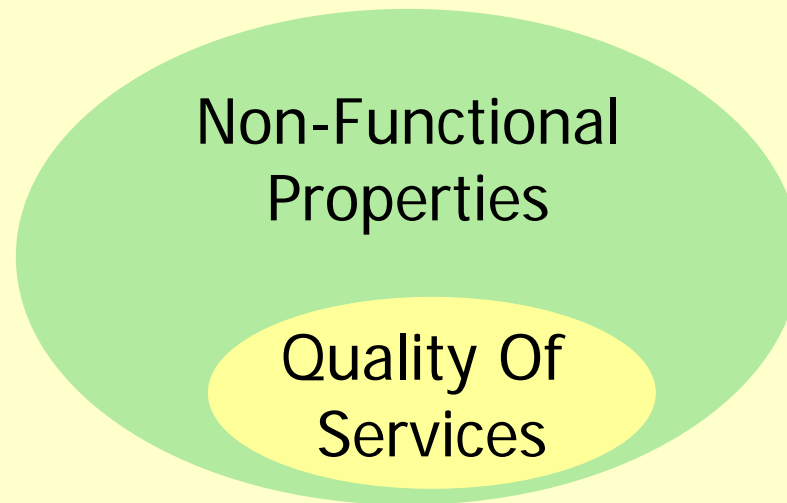
Introduction

- Interface level is not appropriate
 - Missing
 - Consumer's restriction and requirements
 - Provider's unique features
- Idea
 - Modelling properties of services



Definition of Terms

Properties Model



Definition of Terms

Properties Model

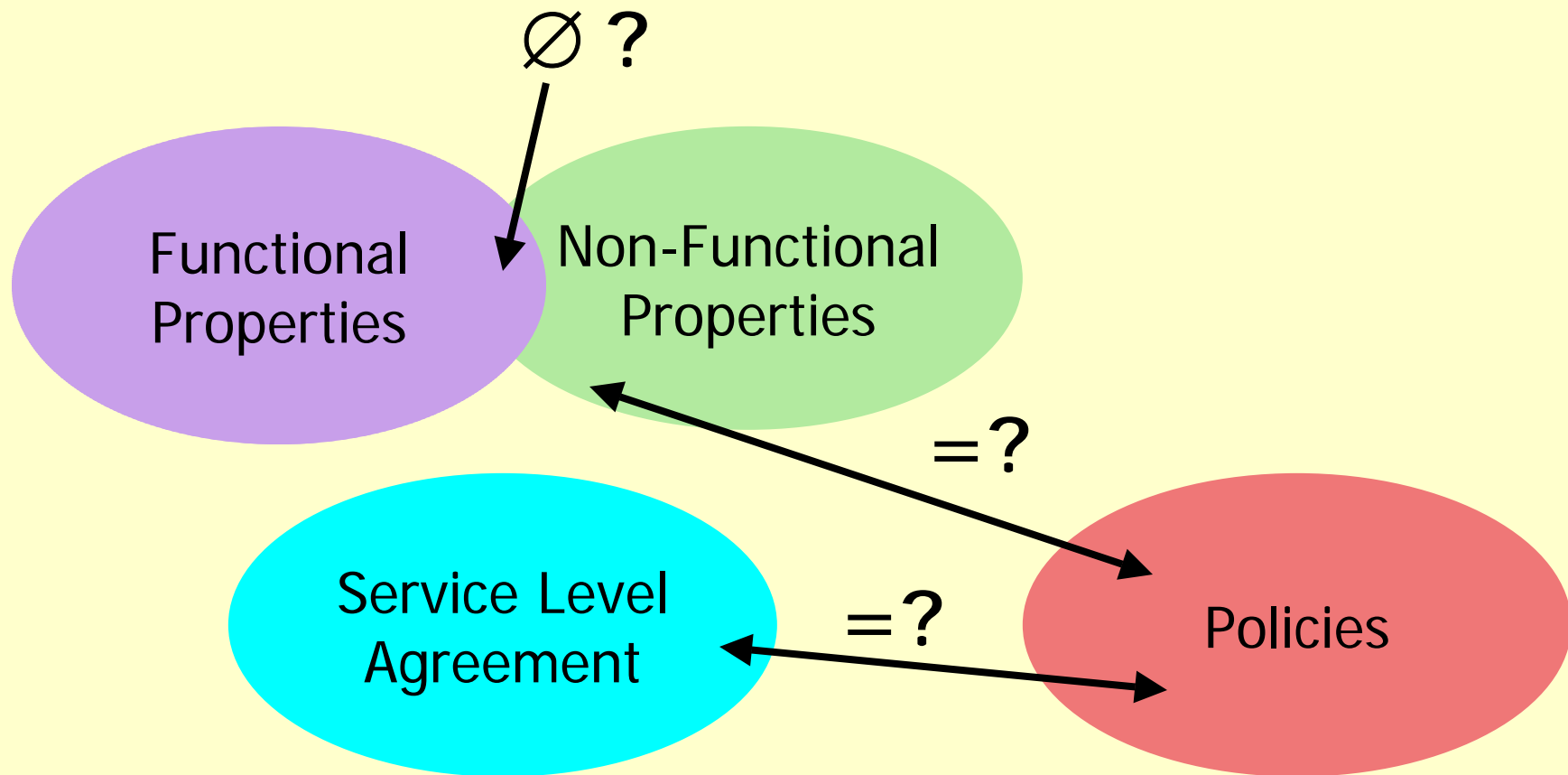
Functional
Properties

Quality Of
Services



Definition of Terms

Properties Model



Definition of Terms

Properties Model

Properties



Cake Example

Properties Model

Service	Flavour	Price	Layers	Region	Payment
Postdams Cake Service	cheese, chocolate	20,- €	1,2,3	Potsdam, Berlin	Bill, Online: Visa, Master
Bakelt	cheese, cream, chocolate	19.99 US-\$	1,3	Europe, Nothern America	Online: PayPal
Delicious	cream	£ 15	-	Leicestershire	At Delivery

- All services implement **CakeInterface**
- Table holds Services Properties

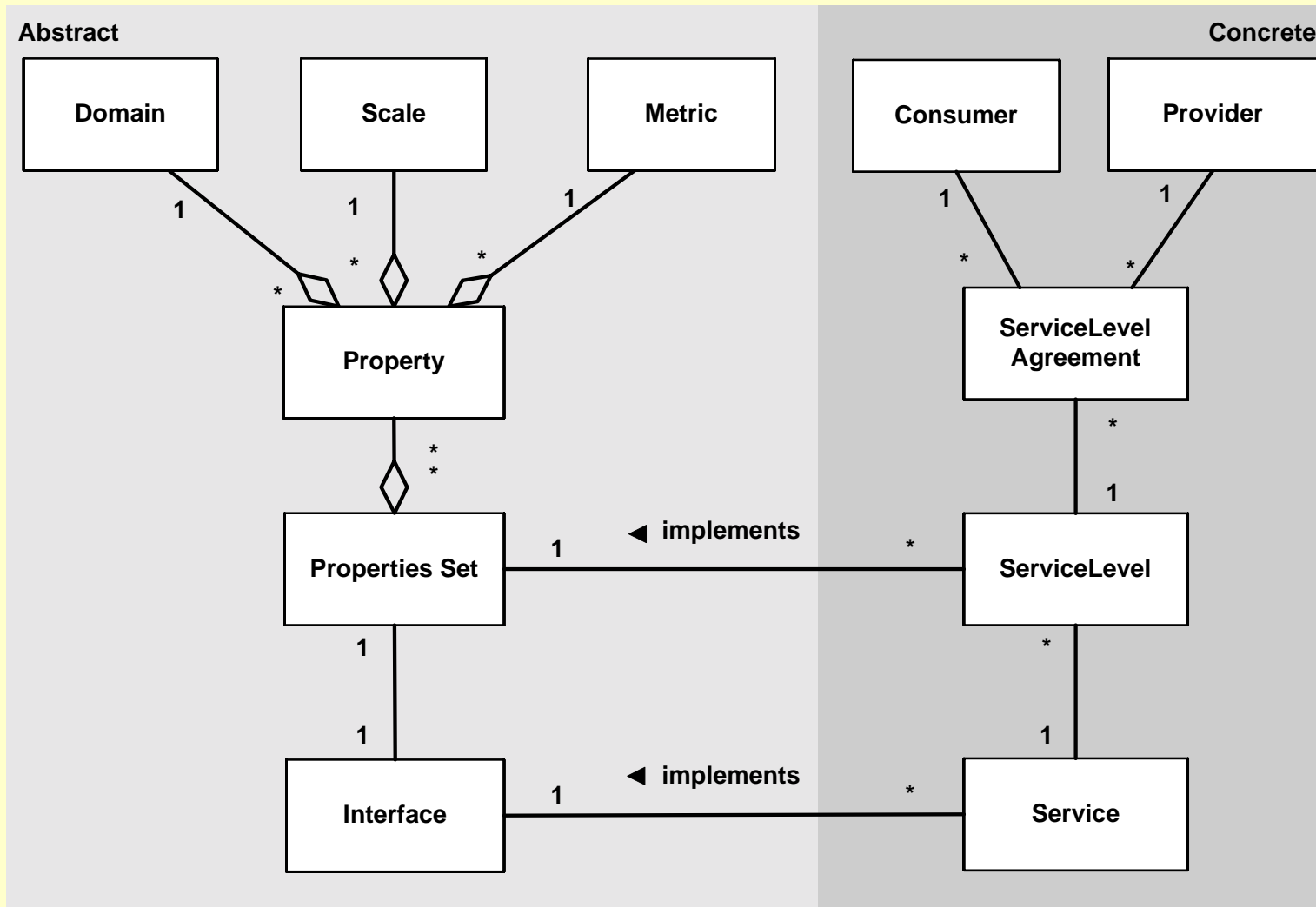


Aspects (excerpt)

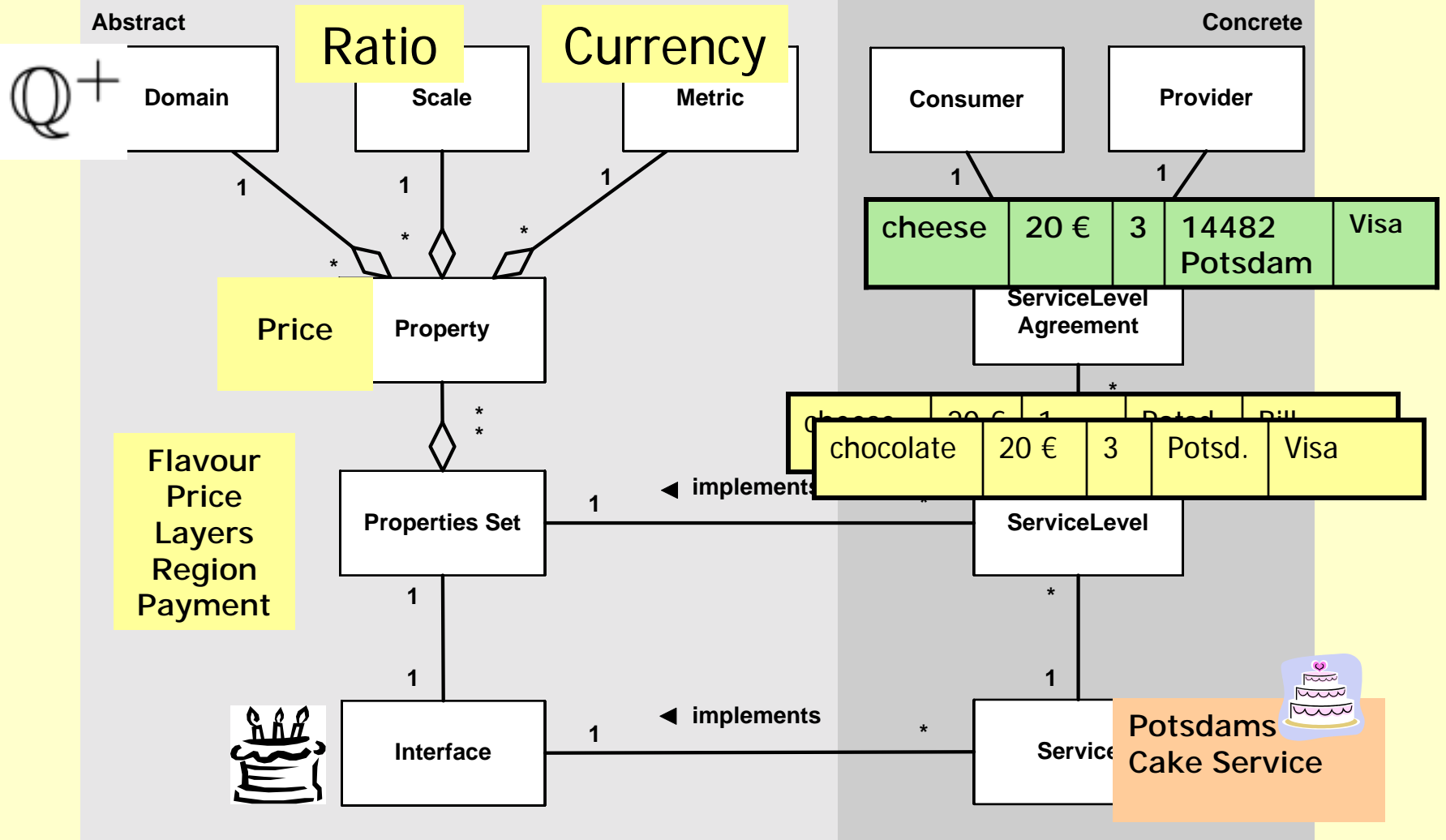
Properties Model

- Scales of Measurement
 - Nominal (flavour)
 - Ordinal (payment, security)
 - Interval (e.g. temperature)
 - Ratio (price, duration)
- Domain, e.g.
 - Flavour := {cheese, chocolate, cream, fruit, onion}
 - Price := \mathbb{Q}^+
- Metric
 - Where, when and how measured
 - Functions and definitions

The Properties Model



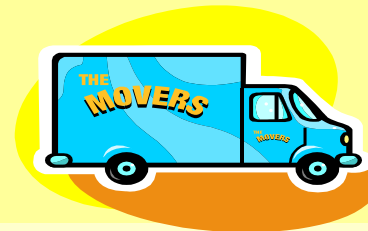
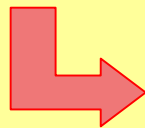
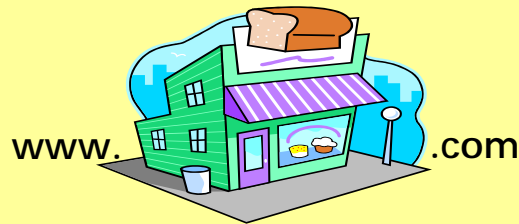
The Properties Model



Discovery

Application

- Discovery
 - Ad hoc service invocation, negotiation
 - Substitution, Service management
 - Composition → Service processes



Service Processes

Application



- Process composed of services
 - Properties of services *build* process properties
 - Process published as service
 - With aggregated properties
- Properties model for processes
 - Rules and algorithms for calculation
 - Approach: Workflow-Patterns
 - For each pattern
 - Define algorithm for each (class of) properties

Summary & Outlook

Outlook

- Generic Properties of Services Model
 - Scale, Domain, Metric
 - Classification of properties
- Service Processes Properties
 - Optimization
 - Algorithms for WF-Patterns
 - Interdependency (resources)

Thanks for your attention!

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