



# University of Twente

Web Services as Product Experience  
Augmenters and the Implications for  
Requirements Engineering: A Position Paper

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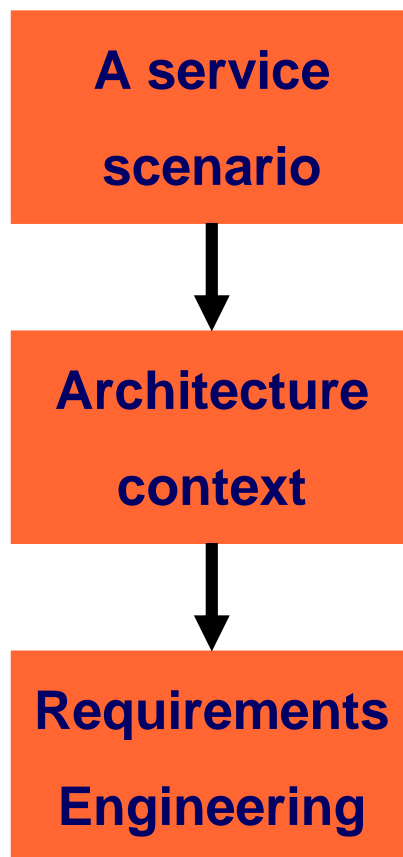
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**University of Twente**  
*The Netherlands*



# Agenda



- Step 1: How do we think **services** will be **offered** in the future?
- Step 2: What is the existing **architecture context** into which services will be embedded?
- Step 3: What does this imply for **requirements engineering**?



# Web services or e-services?

- E-service:
  - “Electronic offering available for rent”
  - Delivering/selling services on-line (as opposed to e-retailing)
- Web service: “Services are autonomous platform-independent **computational elements** that can be **described, published, discovered, orchestrated and programmed using XML artifacts** for the purpose of developing **massively distributed interoperable applications**” (ICSOC CfP)
- Semantic Web Service: same, XML artifacts have formally defined semantics

In this presentation: all of them



# Step 1: Service Scenarios

How do we think services will be offered in the future?



## Example 1: SMS flight updates

- Schiphol (Amsterdam Airport) travel service offers:
  - Transportation (primary service)
  - Free flight data updates via SMS
    - Free because no-one wants to pay for it
    - Augments the perceived quality





## Example 2: TSMC

- TSMC is the world's largest semiconductor foundry
- Supply chain disintegration: separate IP, design, foundry, assembly, testing and packaging
- TSMC's clients can stop the manufacturing process almost at any step from anywhere in the world

Based on Quincy Lin's (senior vice president and CIO of TSMC) keynote address at EEE'04, Taipei, Taiwan, March 28-31, 2004.



## TSMC characteristics

- TSMC needs {web|e}-services for coordination in their supply chain
- The {web|e}-service is not in itself something of value
- No-one is willing to pay for it ...
- ... but TSMC needs to have it to compete (dissatisfier)
- Augments primary product/service



# Services as product experience augmenters: characteristics

1. Responsibility of Marketing & Sales or operations, not of IT
2. Have to fit in existing processes and supporting IT systems
3. No-one will pay for them, therefore have to be dirt cheap
4. Part of brand identity, long-term relations





## The proverbial example revisited

you are a company that offers a service to help someone who is

Service provider viewpoint

~~“Suppose you are in a foreign city and want to go to the movies ...”~~

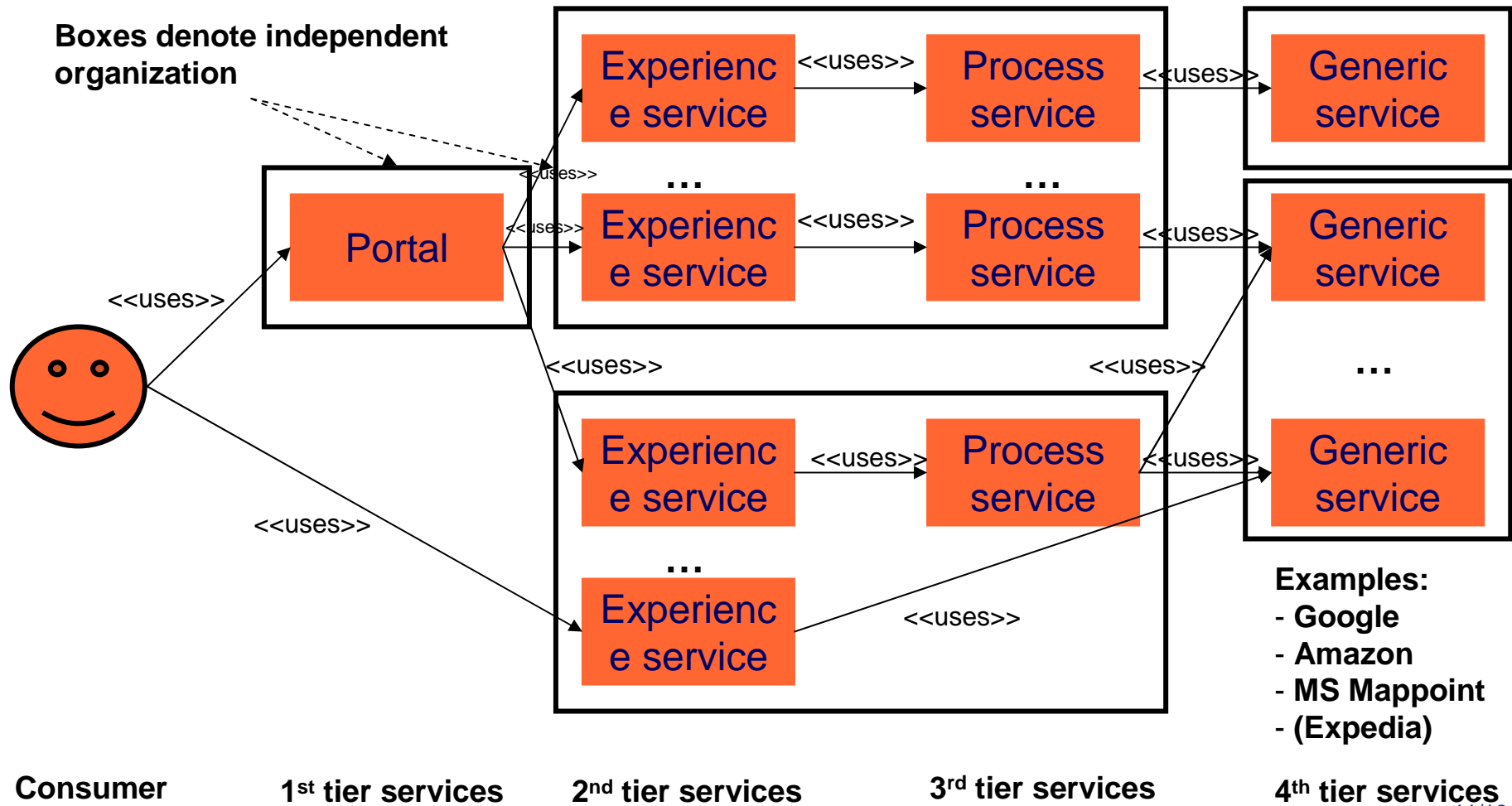
Service consumer viewpoint

- Both are valid viewpoints for research
- We focus on the provider viewpoint



Step 2: What is the existing  
architecture context into which  
services will be embedded?

# N-tier services



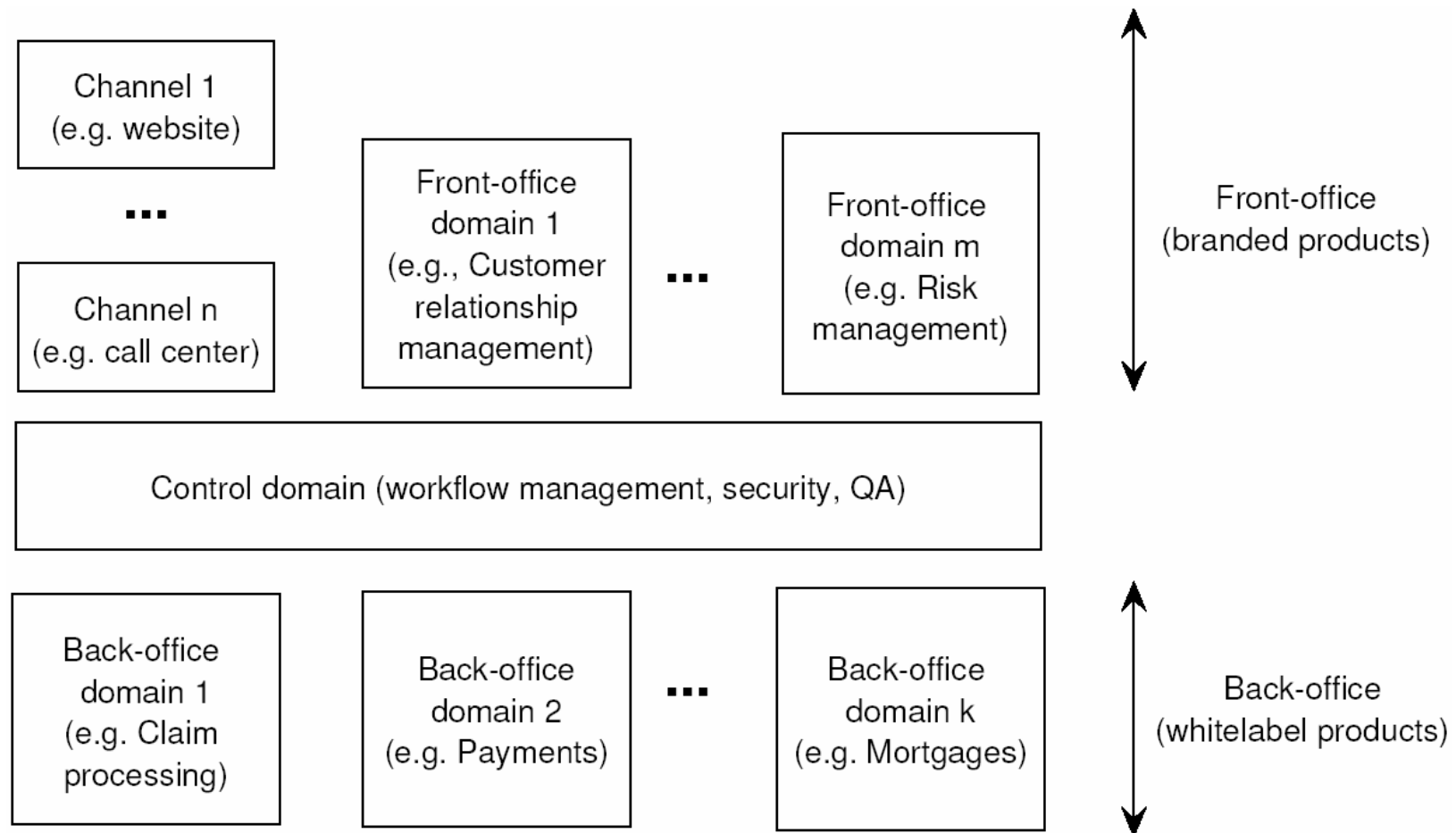


# Project GRAAL

- Guidelines Regarding Architecture  
ALignment
- Goal: to discover patterns in enterprise-level application architecture
- Based on case studies in Dutch financial services industry and large government branches



# Enterprise architecture pattern







# Looijen's IT management model

- Functional management
  - Part of the user organization
  - Responsibility: defining functional specifications
- Application management
  - Part of IT department, performed by “programmers”
  - Responsibility: realizing functionality, corrective and adaptive maintenance of software components
- Exploitation management
  - Part of IT department, performed by network and system administrators
  - Responsibility: providing IT infrastructure, running software components



## Four process areas

1. Processes needed to deliver primary product or service
2. Processes to deliver e-service (BPEL)
3. Processes needed to specify and design web services
4. Processes needed to implement web services



## Step 3: What does this imply for requirements engineering?



## Tasks for the Req. Engineer

- Web service semantics: mapping between external, standard ontology and existing knowledge domains (FO/BO)
- RE for web services
  - design processes of the second type
  - specify semantic mapping
  - and do so in cooperation with functional management, not technicians



## Conclusion

- Majority of {e|web}-services may be **sales-supporting services**
- Semantics are “established”, or “**grounded**” in the area of the **primary processes**, not the IT department
- Ultra-simple **methods & tools** needed for **functional specification** of services in terms of **primary processes and data**, and **higher-numbered tier services**