

# Context Acquisition, Representation and Employment in Mobile Service Platforms

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# Overview

- **Introduction and Motivation**
- **Context Acquisition**
- **Context Representation**
- **Context Employment and Use**
- **Conclusions**

# Introduction to SPICE

- **Total number of partners: 22**
  - **Industry: 15**
  - **Research: 7**
  - **Coordinator: FT**
- **Duration: 30 months (Jan. 2006 – Jun. 2008)**
- **Type: EU IST IP**
- **Total project cost: 22 M Euro**

# Introduction to Service Platforms

By a *service platform* we understand the following:

- an environment for services and applications to operate in, standardized access to the data of system and physical communication layers,
- a provider of service enablers:
  - specific functionality support: call control, instant messaging, streaming, location retrieval, etc.
  - general service management: service discovery, composition, brokering, mediation, QoS management, AAA/A4C management, etc.
- an aggregator, manager and provider of the context data coming from outside of the system (e.g., from the Web) and physical layers.

# Context vs. Knowledge

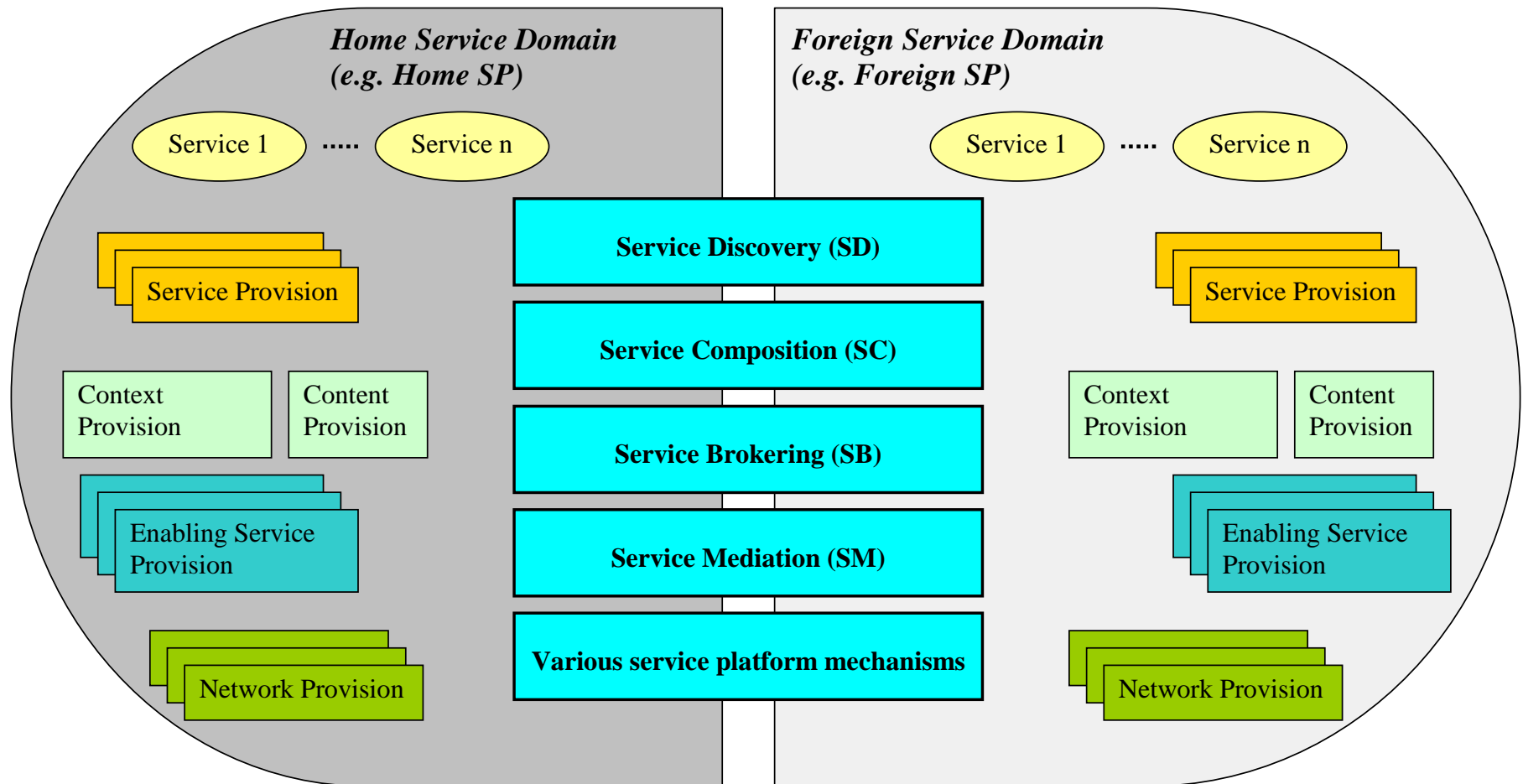
- ***context*** = any information that can be used to characterize the situation of entities (i.e., whether a person, place or object) that are considered relevant to the interaction between a user and an application [Dey, 2001]
- ***data*** = un-interpreted signals without application, i.e. the syntactic level
- ***information*** = data in an application scenario, already equipped with meaning on the semantic level
- ***knowledge*** = information used for solving specific problems, representing the pragmatic level

[Schreiber et al., 2000]

# Motivation

to attain integration of the state of the art *context acquisition* and *representation* practices on mobile service platforms, making the corresponding components *mutually interactive* within and across service platforms, and *enabling* and *use* of context in building services and applications

# Example – Service Roaming



# Context Acquisition

- **Sensors (7 types: *movement/acceleration, light, proximity, audio, temperature, mechanical force, and humidity* [Beigl et al., 2004]): distribution, heterogeneity, scalability**
- **Knowledge Management Framework (ContextWrappers)**
- **Convergence with WWW and Internet (ontology technology)**

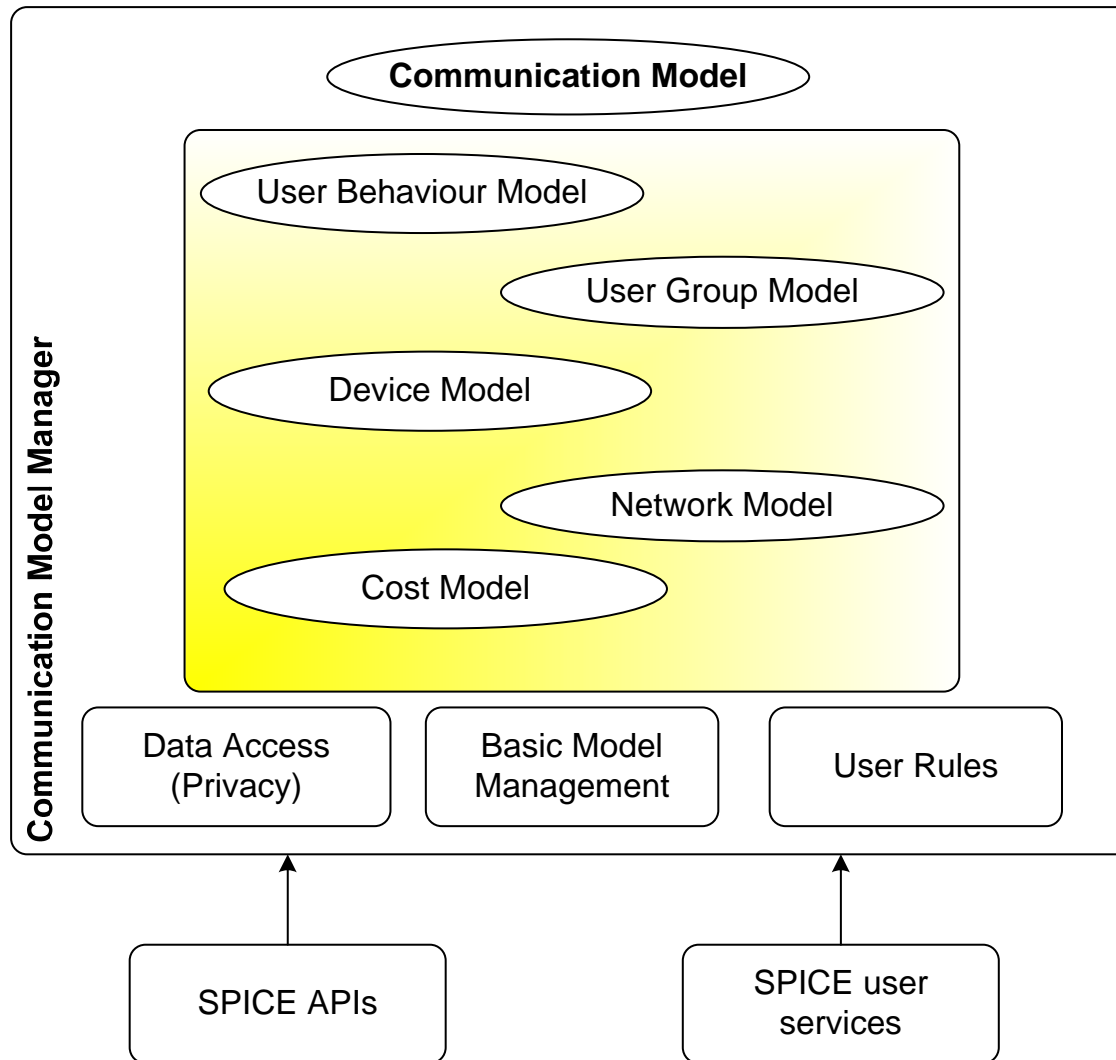
# Context Representation

- Knowledge Management: Context Broker, Context Provider, Provisioning Framework

- Ontology capturing mobile communications domain: in OWL, RDF

<p><b>DCS Basics</b></p> <ul style="list-style-type: none"> <li><a href="#">CommunicationSphere</a></li> <li><a href="#">CommunicationModel</a></li> <li><a href="#">AccessMethod</a></li> <li><a href="#">Availability</a></li> <li><a href="#">PhysicalLocation</a></li> <li><a href="#">Modality</a></li> <li><a href="#">InputModality</a></li> <li><a href="#">OutputModality</a></li> <li><a href="#">Cost</a></li> <li><a href="#">Time</a></li> <li><a href="#">AccessParameter</a></li> <li><a href="#">consistsOf</a></li> <li><a href="#">associatedWith</a></li> <li><a href="#">characterizedBy</a></li> </ul>	<p><b>Users and Groups</b></p> <ul style="list-style-type: none"> <li><a href="#">Person</a></li> <li><a href="#">UserGroup</a></li> <li><a href="#">Mood</a></li> <li><a href="#">UserRule</a></li> <li><a href="#">CurrentActivity</a></li> <li><a href="#">isUserDefaultActivity</a></li> <li><a href="#">isWillingToCommunicate</a></li> </ul>	<p><b>Terminals</b></p> <ul style="list-style-type: none"> <li><a href="#">Terminal</a></li> <li><a href="#">TerminalParameter</a></li> <li><a href="#">hasPreferredTerminal</a></li> </ul>
<p><b>Services</b></p> <ul style="list-style-type: none"> <li><a href="#">QoS</a></li> <li><a href="#">hasPreferredService</a></li> </ul>	<p><b>Networks</b></p> <ul style="list-style-type: none"> <li><a href="#">Network</a></li> <li><a href="#">hasPreferredNetwork</a></li> </ul>	

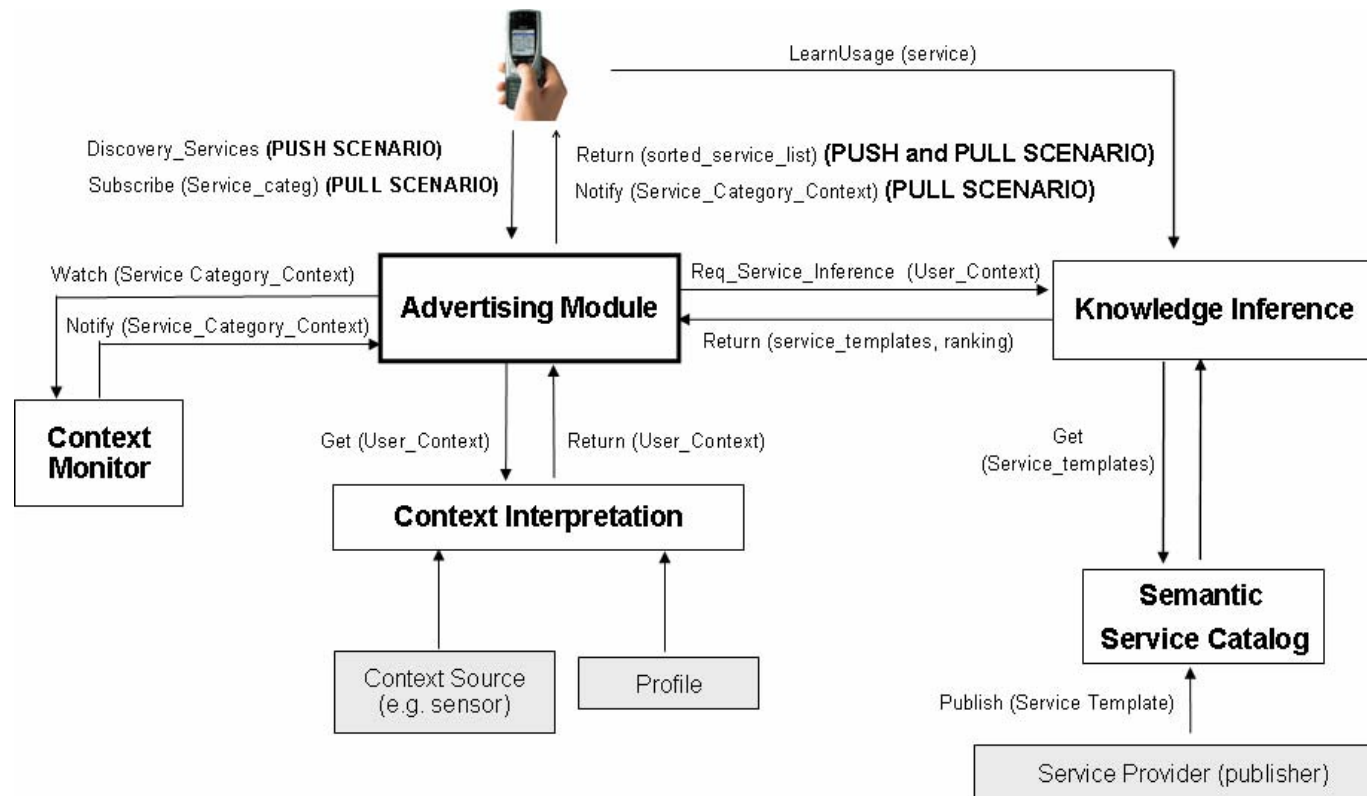
# Communication Data Model



Model = Ontology  
Model + Instance  
Model

# Context Employment

**Scenario “*Mobile Advertisements*”:** When a user enters the cinema’s foyer a selection of *individual* advertisements pops up on his mobile device. In order to choose which ads are most interesting to him/her the **SPICE Provisioning Framework** matches the cinema’s offers with his/her individual interests. If he/she chooses to view at least one of the short advertisements, the cinema will grant him a 5% discount on the tickets. The discount can even be extended to 10%, if he/she chooses to buy one of the offered products.



# Conclusions

- **Challenges in**

- **Context Acquisition**
- **Context Representation**
- **Context Employment and Use**

**or mobile service platforms are identified**

- **Approaches to solutions in SPICE are outlined**

**Thanks for listening!**  
**Questions?**

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