

MoEOWL-S

**Personalized Mobile-oriented
Web Service Orchestration System**

Yang Hao

Beijing University of Posts &
Telecommunications



Outlines:

- Overview of mobile oriented service orchestration system
- Divides the mobile context-related issues into four domains
- Four domains architecture and implementation
- System usage in MoCIS (Mobile-oriented City Information System)
- Future works

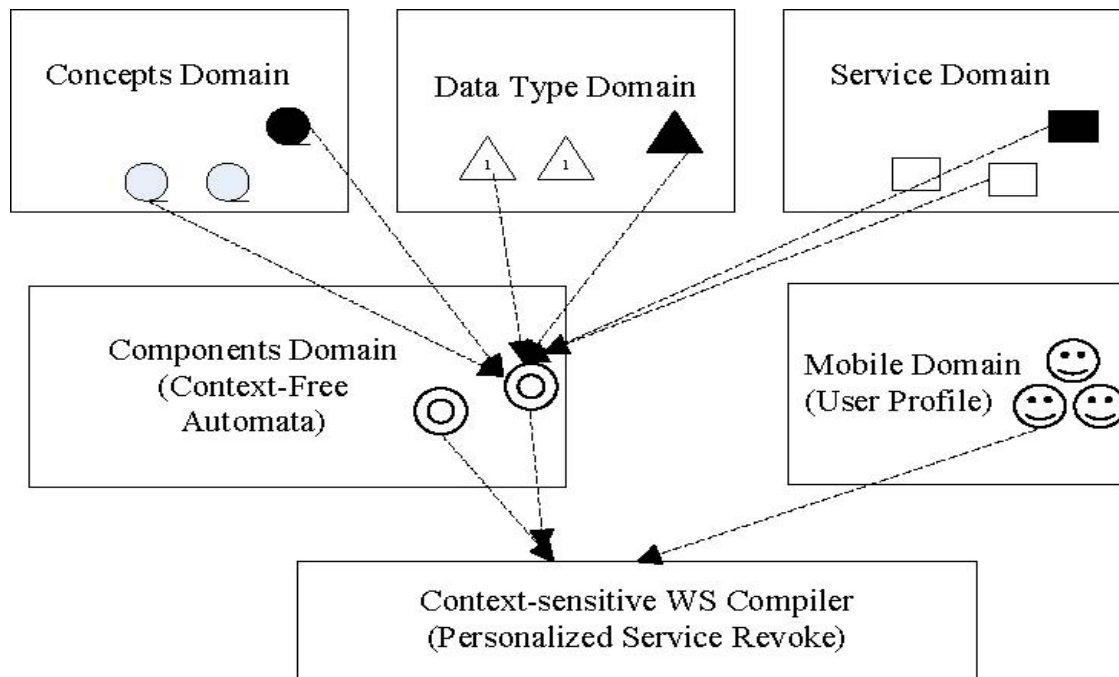
Overview of mobile oriented service orchestration system

- Context-sensitive
- Thin-client
- Complex Service composition
- Efficiency

Divides the mobile context-related issues into four domains (continued)

- Semantic Domain
- Data Type Domain
- Logic Domain
- User Profile Domain

Divides the mobile context-related issues into four domains



- Predicate Concepts
- ▲ Simple Data Type
- Atom Service
- Noun Concepts
- △₁ Compound Data Type
- Complex Service

The first – Semantic Domain

- **The first domain, Semantic Domain, majors in the concepts in mobile service, departing those concepts into “predicates” and “nouns”, and then we describes the service with a Regular grammar upon these concepts. These concepts are described with Resource Description Framework(RDF)**

The second – Data Type Domain

- **Data type Domain majors in the output and input data type, by extending and compositing XML Schema (XSD) and Resource Description Framework Schema (RDFS). And also provide a interface to support complex data type for self-defining.**

The third – Service Domain

- **Service Domain, provides the abilities in the orchestration of services or web service composition, based on the Business Process Execution Language for Web Services (BPEL4WS or BPEL for short). This domain provides a link interface for implementing service compositions logic, and this interface has three instances, “implies”, “and”, “or”, individually describing service including, service revoking sequence, and service switching.**

The last – User Domain

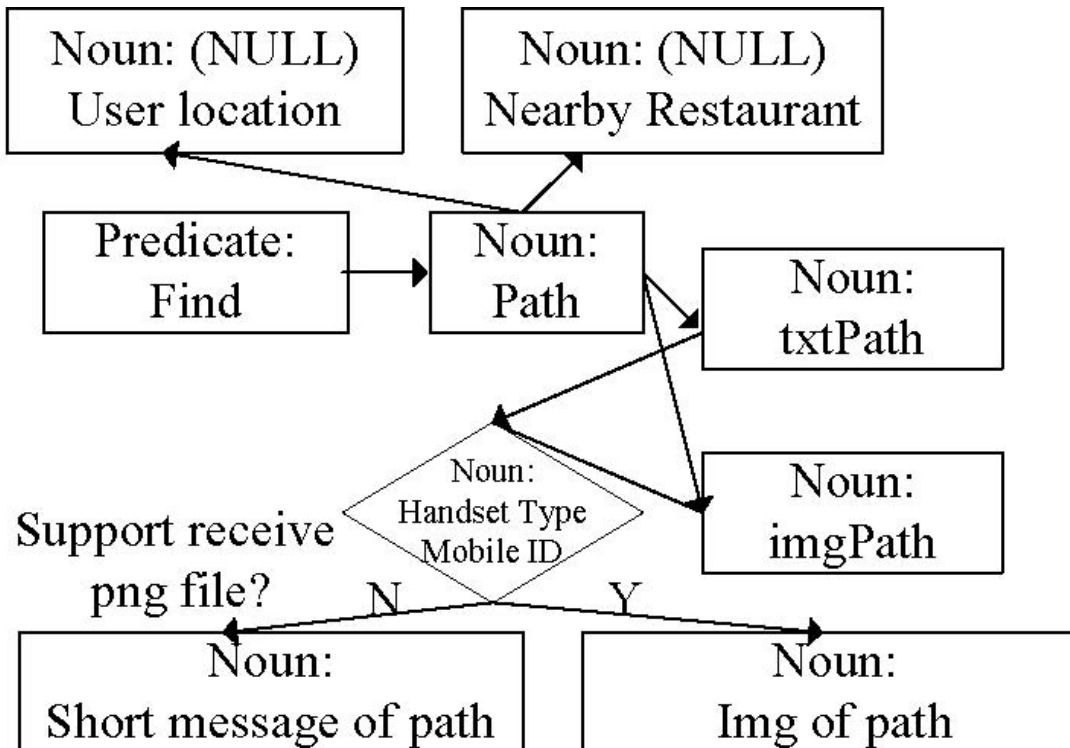
- **User Domain, considers the key issues with user information in wireless system, such as handset type, dynamic location, and so on, and helps to provide personalized service. For efficiency, we save all User Domain info in database.**

MoEOWL-S Implementation

- Based on Jena Framework. Jena is a Java framework for building Semantic Web applications. It provides a programmatic environment for RDF, RDFS and OWL, SPARQL and includes a rule-based inference engine.
- Lexical Analysis & Language. The core domains , including concepts domains, data type domains, logic domains, user domain are described in English
- Plug & Play adapter. With a adapter layer, provide service with Chinese Gbk, Tanwan or Hongkong Big5, or Japanese. The reflection can be implemented easy with keywords set and later be upgrade with NLP to erase ambiguous language.

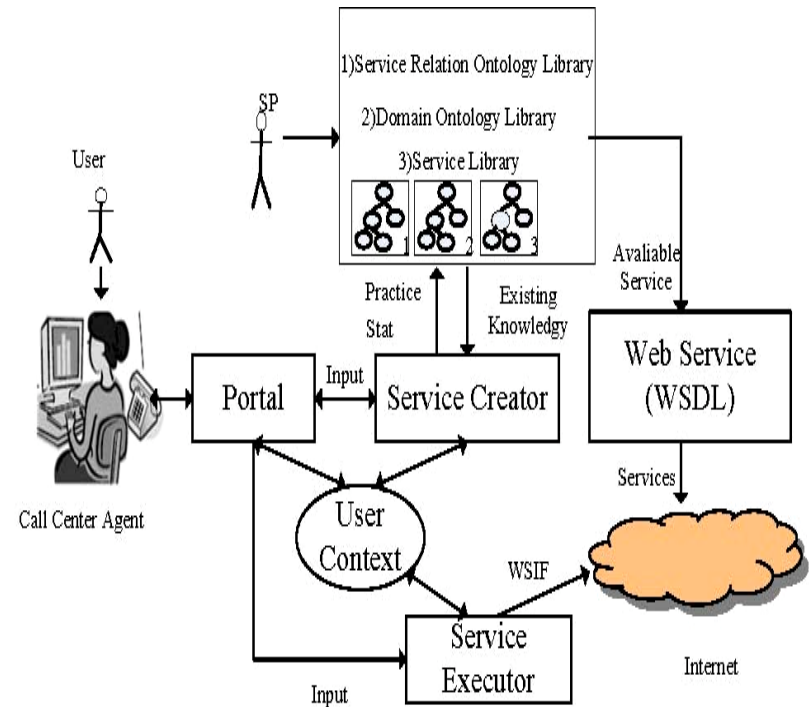
A simple application

- Find the path to nearby restaurant



System Usage – Mobile oriented City Information System (MoCIS) (Continued)

- MoCIS Figure is a mobile city information system based on MoEOWL-S. User can get the service from a call center, using a wireless client.



System Usage – Mobile oriented City Information System (MoCIS)

- find the WuDAOKou Cinema.

The screenshot displays the MoCIS web interface. At the top, the title bar reads "地理信息综合服务业务系统". Below the title bar, there is a header area with a soft phone icon, a status bar showing "坐席电话号码: 3158 当前状态: 忙", and a date/time display "2006-1-20 上午 10:30".

The main interface is divided into several sections:

- Left Sidebar:** A vertical menu with icons and labels for various services: 软电话, 注销座席, 插机, 挂机, 就绪, 休息, 呼叫保持, 保持重连, 电话咨询, 座席转移, and 座席会议.
- Map Area:** A central map of Beijing with various landmarks and streets. A blue box highlights the "五道口电影院" (Wudaokou Cinema) area. The map includes a search bar and a "发送彩信" button.
- Right Panel:** A sidebar with several sections:
 - 图层选择:** A list of map layers including "娱乐-影院", "电影院", "剧院", and "娱乐-餐饮".
 - 推荐服务:** A list of recommended services such as "影讯信息", "影院情况", "预定影票", "人均消费", "附近影院", "附近剧院", and "附近饭店".
 - 常用服务:** A list of common services including "发送信息", "发送邮件", "转接电话", "交通信息", "换乘路线", "导航路线", and "附近银行".
- Bottom Section:** A form area for sending messages. It includes a "目的地" (Destination) field with "五道口电影院" selected, a "提交" (Submit) button, and a "发送信息" section with fields for "地址" (Address: 北京市海淀区成府路23号) and "手机号码" (Mobile Number: 13310020031). There are also "发送彩信" and "发送短信" buttons.

Future works

- There are at least three major problems in our next work.
 - Merging problem, if merging two ontology library, the classes and terms maybe overlap.
 - Commitment problem. If the user request are not precise, more and more service including simple service and service composition, are provided. How to sort these service is still not take into account.
 - Changing problem. If one concept is updated,all the concept domain may be updated. How to update automatically and testing if new concepts relations have some bug are still not taken into count.

The End

- Thank you very much