DEVELOPMENT OF MOBILE SEARCH APPLICATIONS
OVER STRUCTURED WEB DATA THROUGH
DOMAIN-SPECIFIC MODELING LANGUAGES

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Introduction

• Usage of mobile applications is increasing.
  ▫ Devices are widespread.
  ▫ Connection speeds are high.

• Importance of searching is increasing as well.
  ▫ Users need answers to more complex queries.

• The aim of the project is to fulfill these needs by developing the mobile web application of The Search Computing (SeCo) project.
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Multi-domain Search

• Multi-domain search applications handle data coming from different semantic fields of interest.
• Its result set may also contain different data types for each domain of interest.
  ▫ Q1: “Washington D.C.” (mono-domain)
  ▫ Q2: “rock concert Washington July 2010 good restaurant” (multi-domain: city, restaurant, concert)
Exploratory Search

- Exploratory search applications support following phases of information acquisition:
  - Formulating users’ interest
  - Exploring most relevant and credited information sources
  - Establishing of relationships among relevant information elements.
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The Search Computing Project

- "Search Computing is a multi-disciplinary science which will provide the abstractions, foundations, methods, and tools required to answer multi-domain queries over heterogeneous data sources."

- "Its aim is finding answers to complex search queries such as “Where can I attend an interesting conference in my field close to a sunny beach?” by cooperating search services, user ranking and joining of results."
The Search Computing Project

• In our thesis project, two ReST APIs have been used:
  ▫ Mart Repository ReST API: It contains the structural data of the searching system.
  ▫ Query Processor ReST API: It manages operations which are needed to answer queries.
Mart Repository

- Four different elements of the repository have been used:
  - Service Marts: They are the conceptual type which the user is looking for.
  - Access Patterns: They express the road that can be used to access the Service Mart.
  - Service Interfaces: They map concrete data sources.
  - Connection Patterns: They introduce a pair-wise coupling of Service Marts.
Hierarchy of Mart Repository Elements
Query Processor Repository

- Following operations have been carried out using the Query Processor:
  - Session creation
  - Query submission
  - Result acquiring
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mobl

- mobl is a free and open source language designed especially to speed up building mobile applications.
- Some principal features of the language are:
  - iOS, Android, WebOS, Safari and Chrome support the applications developed with mobl.
  - It allows to access existing JavaScript libraries and widgets easily.
  - It can access to web services through AJAX easily and import JSON data.
  - All aspects are integrated into a single language.
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Analysis and Design
User Interface Elements

• Accordion List
  ▫ to see the main attributes at a glance
  ▫ to hide large amount of data

• Map View
  ▫ to visualize location data

• Table View
  ▫ to allow comparison between the attributes

• Tab Set
  ▫ to separate different states of the application
  ▫ to let user being able to access history without losing its state
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search of Real Estate with Zillow b...

Type

Latitude
40.7

Longitude
-74
choose
tupleScore: 0.64

city: Brooklyn
street: 57 Montague St APT 2F
state: NY
longitude: -73.99723815917969
latitude: 40.69566345214844
zipcode: 11201
type: makeMeMove
hashCode: Cooperative
details:
http://www.zillow.com/homedetails/57-
This service searches jobs with California criteria.

- **Keywords**
- **Longitude**: -73.99723815917969
- **Latitude**: 40.69566345214844
<table>
<thead>
<tr>
<th>JOB TITLE</th>
<th>STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help Desk - I.T. Support</td>
<td>VA</td>
</tr>
<tr>
<td>IT Manager</td>
<td>TX</td>
</tr>
<tr>
<td>IT Manager - Oracle R12</td>
<td>GA</td>
</tr>
<tr>
<td>Enterprise Services</td>
<td></td>
</tr>
</tbody>
</table>
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Conclusion

- A lite version of Search Computing Project has been implemented by keeping the core functions.
- It is observed that mobile devices are very convenient for these type of search platforms.
  - Few number of interactions
  - Location data
- It is also observed that mobile web applications reduce the development time comparing to individual native applications on different operating systems.
THANK YOU FOR LISTENING