

# Mobile Multi-domain Search over Structured Web Data

Atakan Aral<sup>1</sup>, Ilker Zafer Akin<sup>2</sup>, Marco Brambilla<sup>2</sup>

<sup>1</sup>Department of Computer Engineering, Istanbul Technical University

<sup>2</sup>Dipartimento di Elettronica e Informazione, Politecnico di Milano  
aralat@itu.edu.tr, ilker.akin@mail.polimi.it, mbrambilla@elet.polimi.it



## ABSTRACT

So far, web search applications have been primarily designed for access through personal computers, because this represented by far the most widespread usage scenario. However, the wider and wider adoption of web-enabled smartphones, tablets and embedded devices are opening completely new scenarios for applying search technologies in everyday life of people. In this paper we propose an approach and a concrete architecture for optimizing exploratory search tasks on mobile devices. Our claim is that new search paradigms may let users conduct the search on small devices without being hampered by the limitations of the devices themselves. Even better, appropriate solutions may also exploit the advantages of such devices for further improving the overall search experience.

## PROBLEM DEFINITION

- Web search applications are primarily designed for access through PC's
- Adoption of web-enabled smartphones, tablets and embedded devices:
  - Different application goals and user expectations
  - Limitations and opportunities
  - Different interaction methods
- Basic text-based search is not acceptable anymore due to:
  - Technological advances (Broadband internet, Device mobility)
  - New trends (Web 2.0, Semantic web)

## OBJECTIVES

We aim to propose a novel search paradigm focusing on:

- Mobile devices
  - Utility information on concepts and on geo-located entities, rather than web pages
  - Less complicated interaction and minimal textual input
- Multi-Domain search
- Exploratory search
- Enhanced presentation of results

## MULTI-DOMAIN SEARCH

Answers queries that are over more than one semantic field of interest.

- Automatically combine the results of domain-specific searches
- Provide answers originating from various domains

'Find a Cinema in Istanbul that has a romantic movie on display with a good, nearby Chinese restaurant'

## EXPLORATORY SEARCH

Blends querying and browsing strategies from retrieval that is best served by analytical strategies.

- Increasing human interaction in search
- Supporting the user in every step of the search process
  - Identification and formulation of the query
  - Exploration of most relevant and credited information sources
  - Presentation of results
  - Possible improvement of the query (specify or broaden)

## THE SEARCH COMPUTING FRAMEWORK

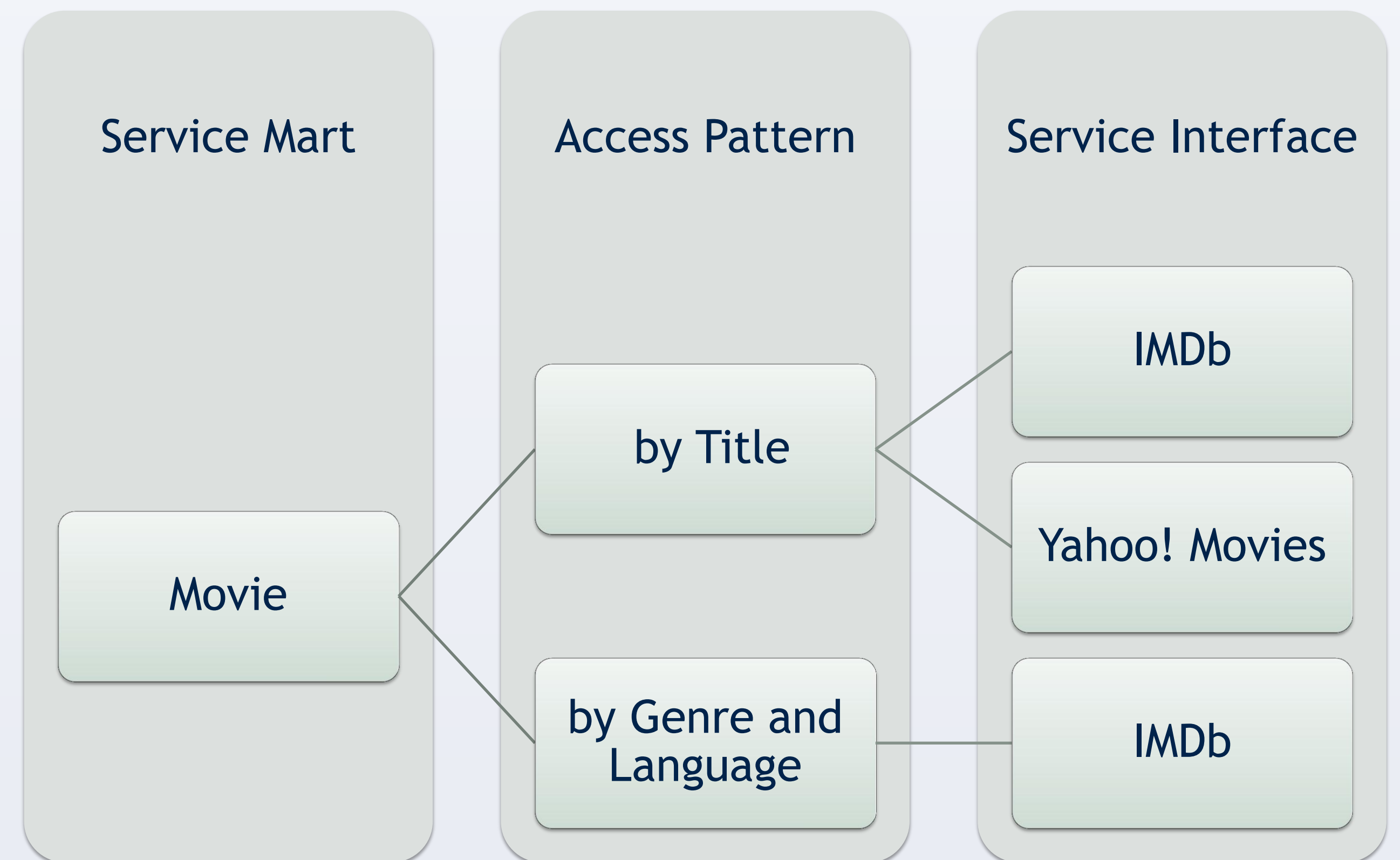
SeCo aims to build the answers to complex search queries

- by interacting with a constellation of cooperating search services
- using ranking and joining of results as the dominant factors for service composition
- DataBase Group at Politecnico di Milano
- Funded by the European Research Council
- November 2008 - November 2013
- <http://search-computing.com/>



## PROPOSED SOLUTION

### 1) Initial Formulation of the Query



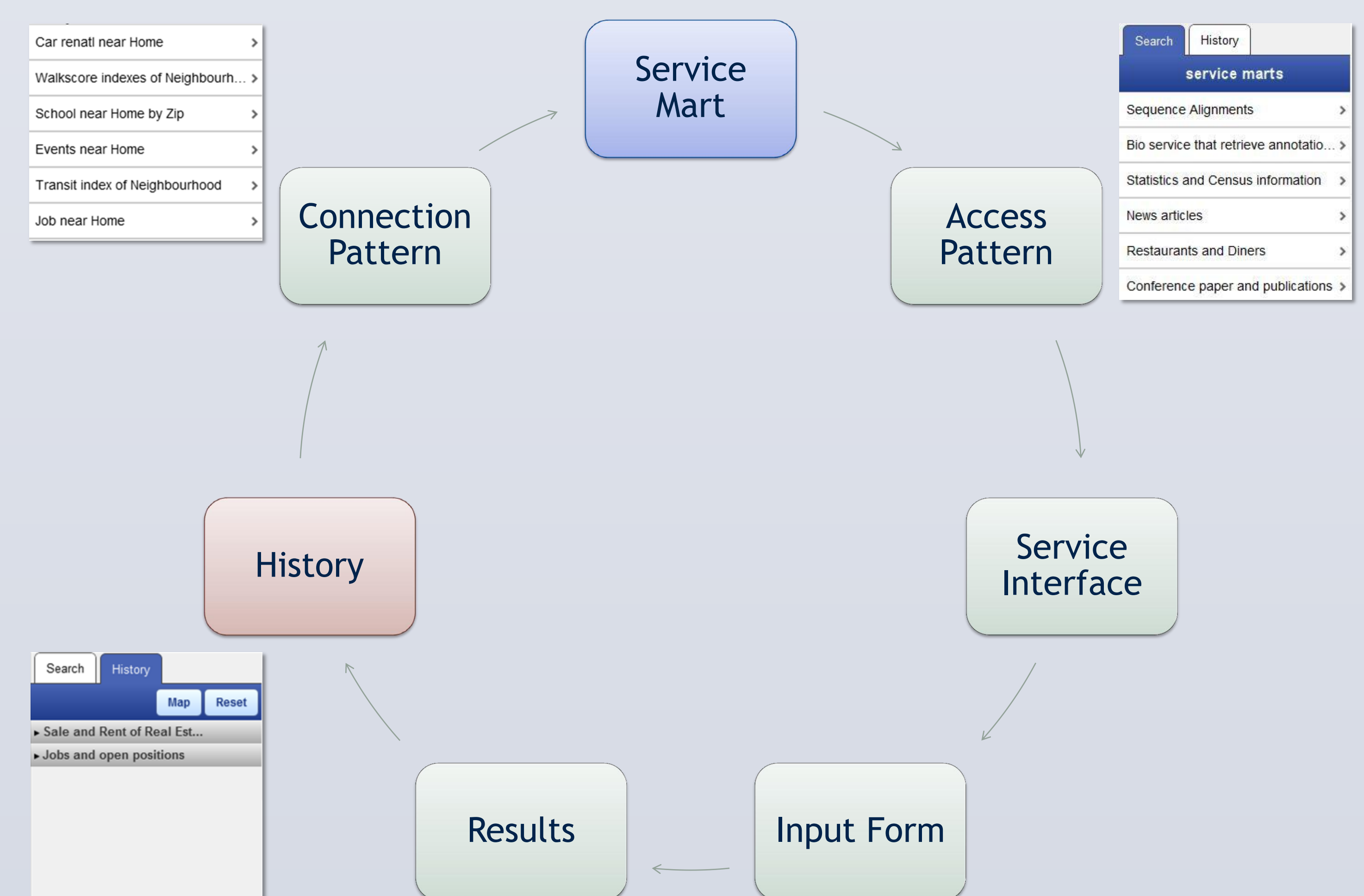
### 2) Collection of Input Parameters



### 3) Presentation of Results



### 4) Improvement of the Query



## EXPERIMENTAL RESULTS

ID	Interactions	Characters	DSSE	GPSE	Interactions	Characters	DSSE	GPSE
1	6	56	0	1	4	46	0	1
2	19	37	1	1	8	13	1	0
3	20	26	2	0	10	16	1	1
4	25	99	2	1	9	38	0	1
5	20	5	1	1	11	50	1	1
6	13	30	2	1	9	51	0	1
Avg.	17.17	42.17	1.33	0.83	8.50	35.67	0.50	0.83
Base.	14	2	-	-	13	20	-	-

"A real-estate for rent in the neighborhood you are in right now and a nearby job position in the IT sector"

"A good hotel and a Chinese restaurant near to Champs-Élysées"

A. Aral, I. Z. Akin, M. Brambilla, "Mobile Multi-domain Search over Structured Web Data", S. Ceri and M. Brambilla (Eds.): Search Computing III, LNCS 7538, pp. 98-110. Springer, Heidelberg (2012)

