

Search Computing

November 7, 2011

Stefano Ceri ... and the SeCo Project Team

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- “Where can I find a theater close to Union Square, San Francisco, showing a recent thriller movie, close to a good steak house?”

Search For a Solution Using All Keywords



movie theater San Francisco Union Square steak house



Search

Instant is on ▼
SafeSearch off ▼

About 2,620,000 results (0.19 seconds)

[Advanced search](#)

Everything

Images

Videos

More

Los Angeles, CA

Change location

Show search tools

[Century San Francisco Centre 9 - Union Square - San Francisco, CA](#) 🔍

★★★★☆ 383 reviews

San Francisco, CA 94103. Neighborhoods: **Union Square**, SOMA When I first heard about this **movie theatre** I thought what an ideal location. ...

www.yelp.com/.../century-san-francisco-centre-9-san-francisco - Cached - Similar

[Tad's Steakhouse - Union Square - San Francisco, CA](#) 🔍

★★★★☆ 234 reviews - Price range: \$\$

My boyfriend and I had an hour to kill before our **movie** and we didn't want ...

www.yelp.com/biz/tads-steakhouse-san-francisco-2 - Cached - Similar

Show more results from yelp.com

[San Francisco Restaurants | Downtown & Union Square Restaurants ...](#) 🔍

Steakhouse. A sleek, modern **San Francisco steakhouse**, cityhouse in the Parc is located in **San Francisco's Theater** District downtown near **Union Square**. ...

www.sanfrancisco.com/restaurants/union-square.html - Cached - Similar

[Morton's The Steakhouse :: Union Square :: Shopping, Dining ...](#) 🔍

Morton's The **Steakhouse**. 400 Post Street **San Francisco**, CA 94108. (415) 986-5830 Reserve Now! Web Site. Hours Mon-Thu 5:30pm-11pm. Sat 5pm-11pm ...

www.unionsquareshop.com/pages/mortons.html - Cached - Similar

[Union Square :: Shopping, Dining & Travel Guide :: San Francisco](#) 🔍

Union Square Experience the unique character of **San Francisco's Union Square** ...

www.unionsquareshop.com/ - Cached - Similar

Show more results from unionsquareshop.com

Ads

[Ruth's Chris Steak House](#)

Enjoy a complete three-course meal for only \$39.95! Reserve today.

www.ruthschris.com

6100 Topanga Canyon Blvd Suite 1360

[See your ad here »](#)

Split the task, and search for theaters first



movie theater San Francisco Union Square

Search

SafeSearch off ▼

About 5,020 results (0.17 seconds)

Everything

Images

Videos

Places

More

Los Angeles, CA

Change location

Opera Plaza Cinema 🔍

www.landmarktheaters.com/market/SanFrancisco/OperaPlazaCinema.htm

A 601 Van Ness Ave, San Francisco, California
(415) 267-4893

yelp.com (81) - zvents.com (5) - when.com (2) - citysearch.com (2)

★★★★☆

52 reviews

Place page

San Francisco Doll House 🔍

maps.google.com

B 80 Turk Street, San Francisco
(415) 673-2577

Place page

Cutting Ball Theater 🔍

cuttingball.com/

C 141 Taylor Street, San Francisco
(415) 292-4700

Place page

AMC Theatres - Van Ness 14 🔍

AMC Van Ness 14. (415) 674-4630

www.amcentertainment.com/VanNess/

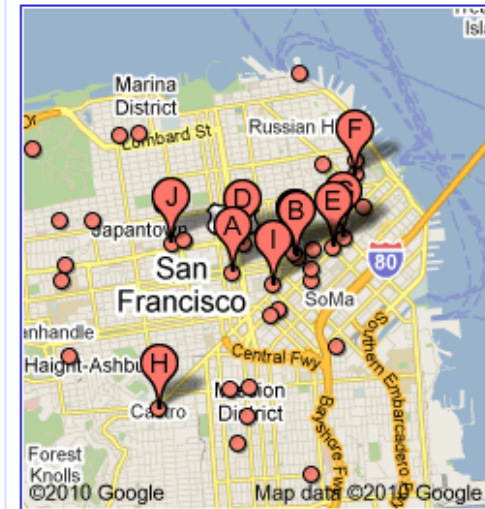
D 1000 Van Ness Ave, San Francisco - (888) 262-4386
"Lots of reviews for this cinema! I love AMC Van Ness 14 on Van Ness!" - citysearch.com (18)

yelp.com (346) - yahoo.com (8) - collegeproowler.com (7)

★★★★☆

90 reviews

Place page



Ads

Ruth's Chris Steak House

Dine on US Prime Steak at Ruth's Chris. Official Site. See Our Menu!

www.RuthsChris.com

1601 Van Ness Avenue, San Francisco, CA

But there's no thriller!

Opera Plaza Cinemas

601 Van Ness Avenue, San Francisco, CA, United States - (415) 267-4893

Today's Special

1hr 39min - Rated R - Comedy - [IMDb](#) - : ☆☆☆☆
2:25 4:55 7:25pm

Client 9: The Rise and Fall of Eliot Spitzer

1hr 57min - Rated R - Documentary - [Trailer](#) - [IMDb](#)
2:30 5:10 8:00pm

Ahead of Time

1hr 13min - Documentary - [IMDb](#) - : ☆☆☆☆
2:40 4:40pm

Genius Within: The Inner Life of Glenn Gould

1hr 49min - Documentary - [IMDb](#) - : ☆☆☆☆
2:20 4:50 7:20pm

- Try another theater: Found! (The Next Three Days) close enough to Union square....

Showtimes for Union Square, San Francisco, CA

Change Location

Change

Today

[Tomorrow](#)
[Saturday](#)
[Sunday](#)

All times

[Morning](#)
[Afternoon](#)
[Evening](#)
[Late](#)

Theaters

[Movies](#)

Show list view

[Show map view](#)

Century San Francisco Centre 9 and XD

835 Market Street, San Francisco, CA - (800) 3263264 x991#

Burlesque

1hr 40min - Rated PG-13 - Drama - [Trailer](#) - [IMDb](#) - : ☆☆☆☆
10:50am 1:00 1:50 4:00 7:00 8:00 10:00 10:45pm

Tangled in Disney Digital 3D

1hr 40min - Rated PG - Animation/Comedy
11:00am 12:00 1:40 2:40 4:25 5:25 7:10 9:50pm

The Chronicles of Narnia: The Voyage of the Dawn Treader in Digital 3D

1hr 52min - Rated PG - Action/Adventure/SciFi/Fantasy - [IMDb](#) - : ★★★★★
12:01am

Love and Other Drugs

1hr 53min - Rated R - Drama - [Trailer](#) - [IMDb](#)
11:15am 12:30 2:00 3:30 4:50 6:30 7:40 9:20pm

Tangled

1hr 40min - Rated PG - Animation/Comedy - [Trailer](#) - [IMDb](#)
10:40pm

Due Date

1hr 35min - Rated R - Comedy/Drama - [Trailer](#) - [IMDb](#) - : ☆☆☆☆
12:20 2:50 5:20 7:50 10:10pm

The Next Three Days

2hr 2min - Rated PG-13 - Drama/Romance/Suspense/Thriller - [Trailer](#) - [IMDb](#)
1:30 4:30 7:30 10:35pm

Skyline

1hr 40min - Rated PG-13 - Suspense/Thriller/SciFi/Fantasy - [Trailer](#) - [IMDb](#) - : ☆☆☆☆
11:20am 1:50 4:40 7:20 9:40pm

The Tempest (2010/II)

1hr 50min - Rated PG-13 - SciFi/Fantasy/Drama/Romance - [Trailer](#) - [IMDb](#) - : ★★☆☆☆
12:05am

Independent search for steak house



steak house san francisco union square

Search

SafeSearch off ▼

About 11,400 results (0.33 seconds)

Ruth's Chris Steak House

Ad

www.ruthschris.com Enjoy a complete three-course meal for only \$39.95! Reserve today.
[+ Show map of nearby ruthschris.com locations](#)

Alfred's Steakhouse - Best Steak in San Francisco

Alfred's **Steakhouse** is the best and the oldest **steakhouse** in **San Francisco**. Since 1928, Alfred's means: Real Steaks, Real Martinis, Real **San Francisco**.

[Menus](#) - [Contact Us](#) - [Parking](#) - [Business Hours](#)
www.alfredsteakhouse.com/ - [Cached](#) - [Similar](#)



659 Merchant Street, San Francisco - (415) 781-7058
"Overall, it was a nice dinner but not the best experience.
Special Features:Late-Night Find, Special Occasion" - [opentable.com](#)
[yelp.com](#) (218) - [citysearch.com](#) (66) - [zagat.com](#) (43)

★★★★☆
202 reviews
[Place page](#)

San Francisco Steakhouse Restaurant | Morton's The Steakhouse San ...

Morton's The **Steakhouse** **San Francisco** is the top steak restaurant and fine dining ...
Celebrating 15 years in **San Francisco's** world-famous **Union Square**, ...

www.mortons.com/sanfrancisco/ - [Cached](#) - [Similar](#)



400 Post Street, San Francisco - (415) 986-5830
"All in all not really worth the price tag of about \$295 for three." - [opentable.com](#)
[yelp.com](#) (366) - [citysearch.com](#) (32) - [kudzu.com](#) (29)

★★★★☆
169 reviews
[Place page](#)

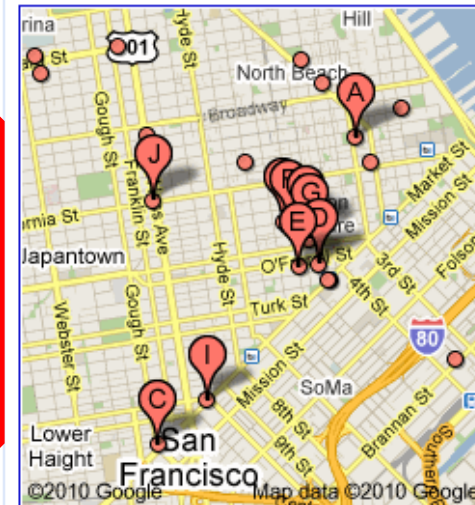
Espetus Churrascaria Brazilian Steak House

www.espetus.com/



1686 Market St., San Francisco - (415) 552-8792
"We enjoyed dinner very much. Pricy, but the quality and flavors were excellent." - [opentable.com](#)
[yelp.com](#) (1143) - [citysearch.com](#) (55) - [zagat.com](#) (47)

★★★★☆
289 reviews
[Place page](#)



Ads

Best of San Francisco

Find Which Restaurants Were Voted Best in **San Francisco** - City's Best CitysBest.com

San Francisco Restaurant

Guide to the SF Dining Experience
Only in **San Francisco**, Reserve Now!
www.onlyinsanfrancisco.com

[See your ad here »](#)

Done! Close enough! (data integration and ranking in the user's brain)

Google maps

steak house san francisco union square

Search Maps

Show search options

[Get Directions](#) [My Maps](#)

[Edit this place](#) - [Business owner?](#)

[Print](#) [Email](#) [Link](#)

Alfred's Steak House

659 Merchant Street, San Francisco, CA 94111-2505

(415) 781-7058

alfredssteakhouse.com

[Directions](#) [Search nearby](#) [more](#)

Category: Steak House

Price: \$\$\$ **Reservations:** opentable.com

Hours: Today 11:30 AM – 2:30 PM 5:30–9:30 PM

Transit: [Metro Montgomery Station/Downtown](#) (0.4 mi) F, J, K, L, M, N,

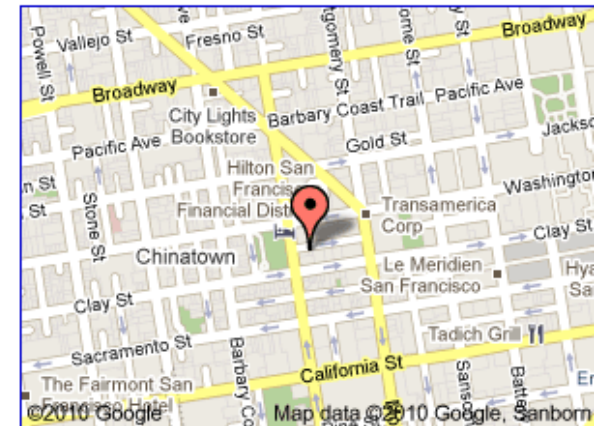
T, ... 5, 6, 9, ...

★★★★☆ 202 reviews 1 **Your rating:** ★★★★★

"Great food, great value, good atmosphere" - [tastyr.com](#) ... "Service slow and inattentive" - [zagat.com](#) ... "This is about steak cooked to perfection in a great traditional atmosphere" - [tastyr.com](#) ... "Overall very fine meat-emphasized food and traditional elegant ambience" - [citysearch.com](#) ... "Classy unpretentious dining" - [zagat.com](#)



citysearch.com



Ads

[San Francisco Coupons](#)

1 ridiculously huge coupon a day.

Get 50-90% off the Bay's best!

www.Groupon.com/San-Francisco

VISION

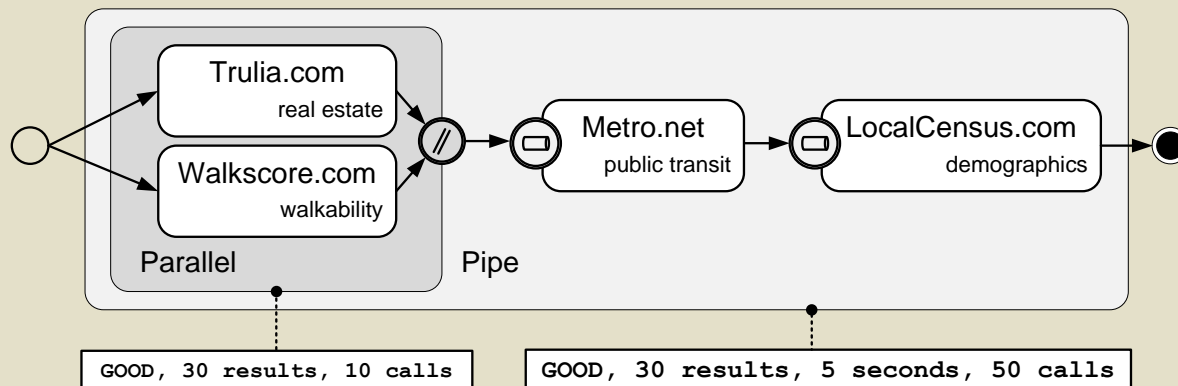
The Search Computing Project

- ERC-funded project
- 5 years – Started in 2009, now at month 36
- Build theories, methods and tools to support search-oriented multi-dimensional queries
 - Given a **multi-domain** query
 - Build global solutions by integrating data produced by **search services**
 - Rank global solutions according to a **global rank function** and output results in rank order
 - Support **user-friendly interfaces** for query definition and result browsing, which allow adding search domains while the search process proceeds and possibly change the relative weight of each ranking

Search Computing = Search Service Composition

11

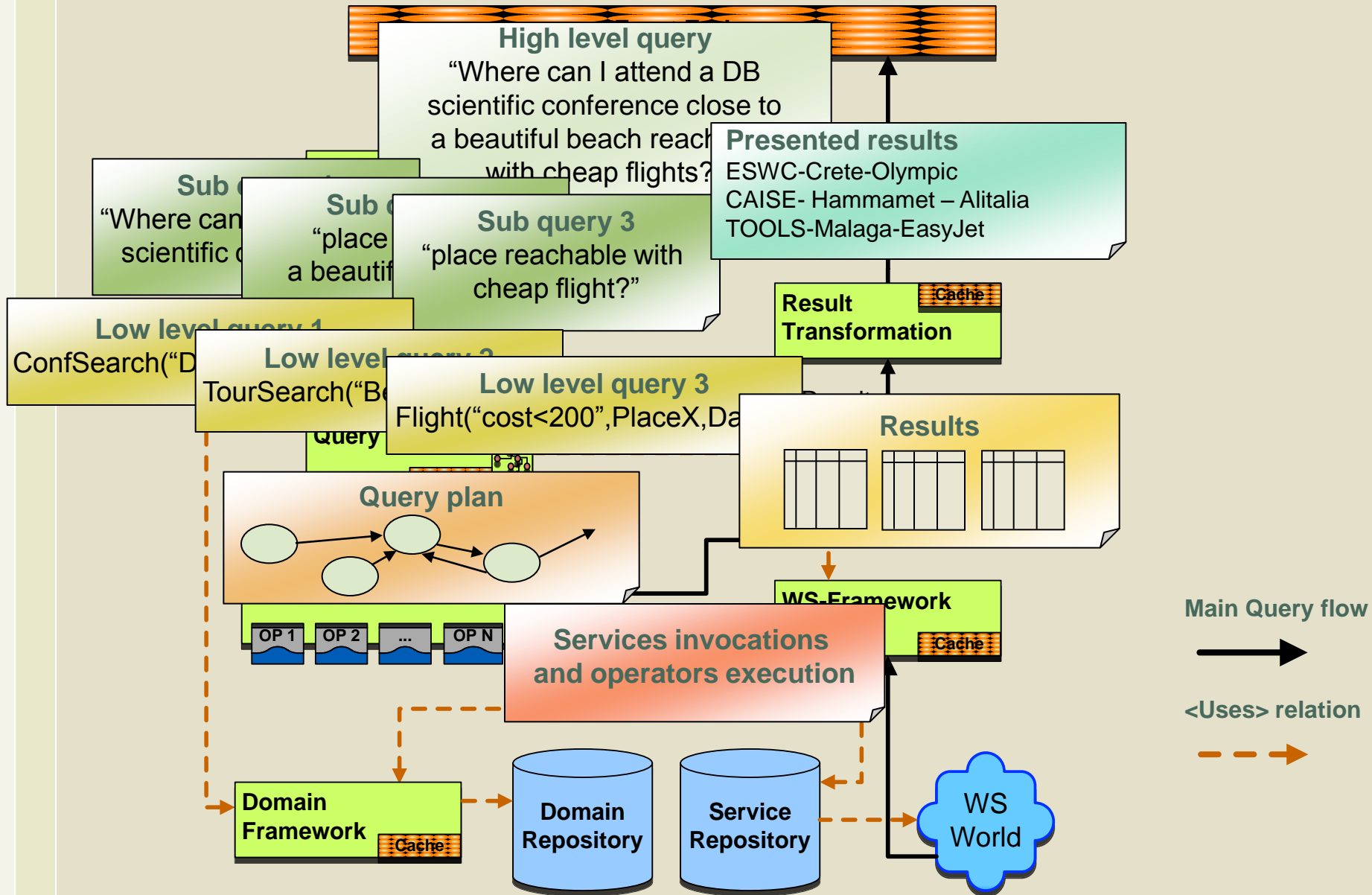
- Searching the Web of Data requires demand-driven service composition
- Composition abstractions should emphasize few elements: service invocations, fundamental operations, precedences, global constraints on execution
- Data composition should be search-driven – producing few top results very fast



- New generation software for building focused search applications
- Covering the functionalities of vertical search systems (e.g. “expedia”, “amazon”) on more focused application domains (e.g. localized real estate or leisure planning, sector-specific job market offers, support of biomed research, ...)
- Should be easy-to-build, easy-to-query, easy-to-maintain, easy-to-scale...

TECHNOLOGICAL FRAMEWORK

Search Computing architecture: overall view



Prototype 4:
NL or keyword queries

Prototype 3:
Ontology-driven search

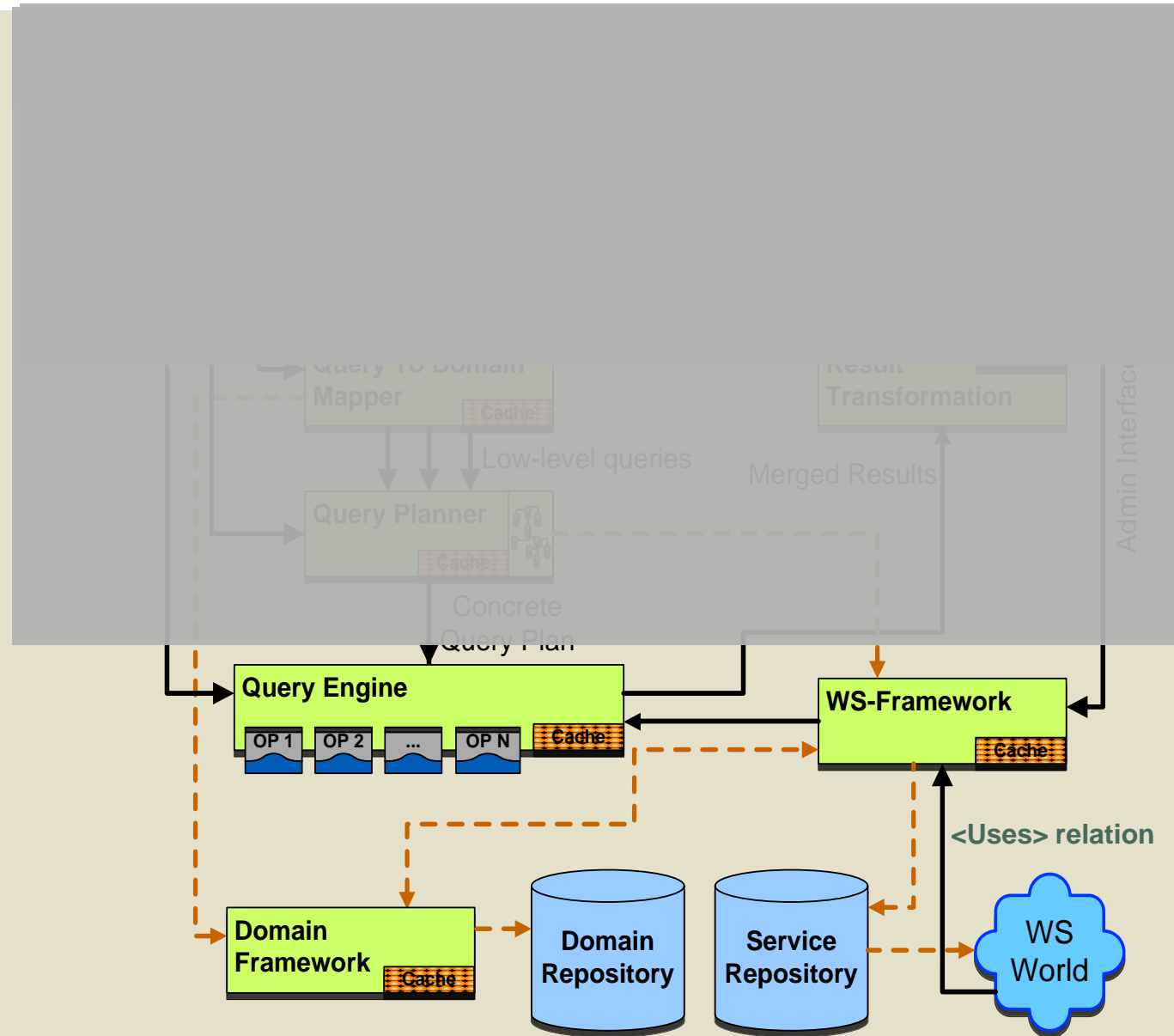
- Ontological query interpretation
- Ontological description & annotation of services

Prototype 2:
Vertical solutions

- ER Domain description
- Query planner
- Application design tools

Prototype 1:
Core behaviour of the system.

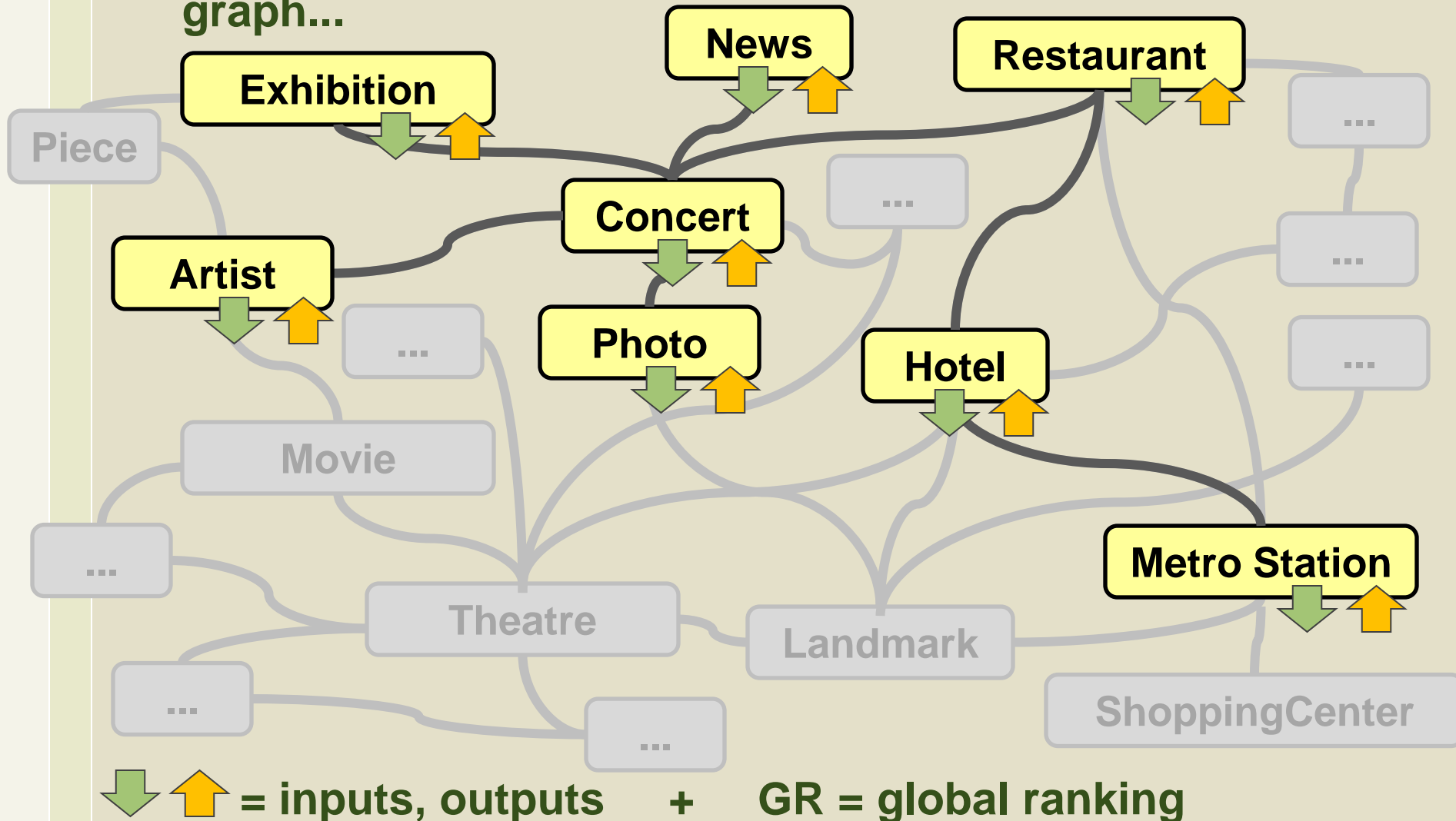
- Query engine
- Domain repository
- Service repository
- Result presentation



LIQUID QUERY INTERFACE

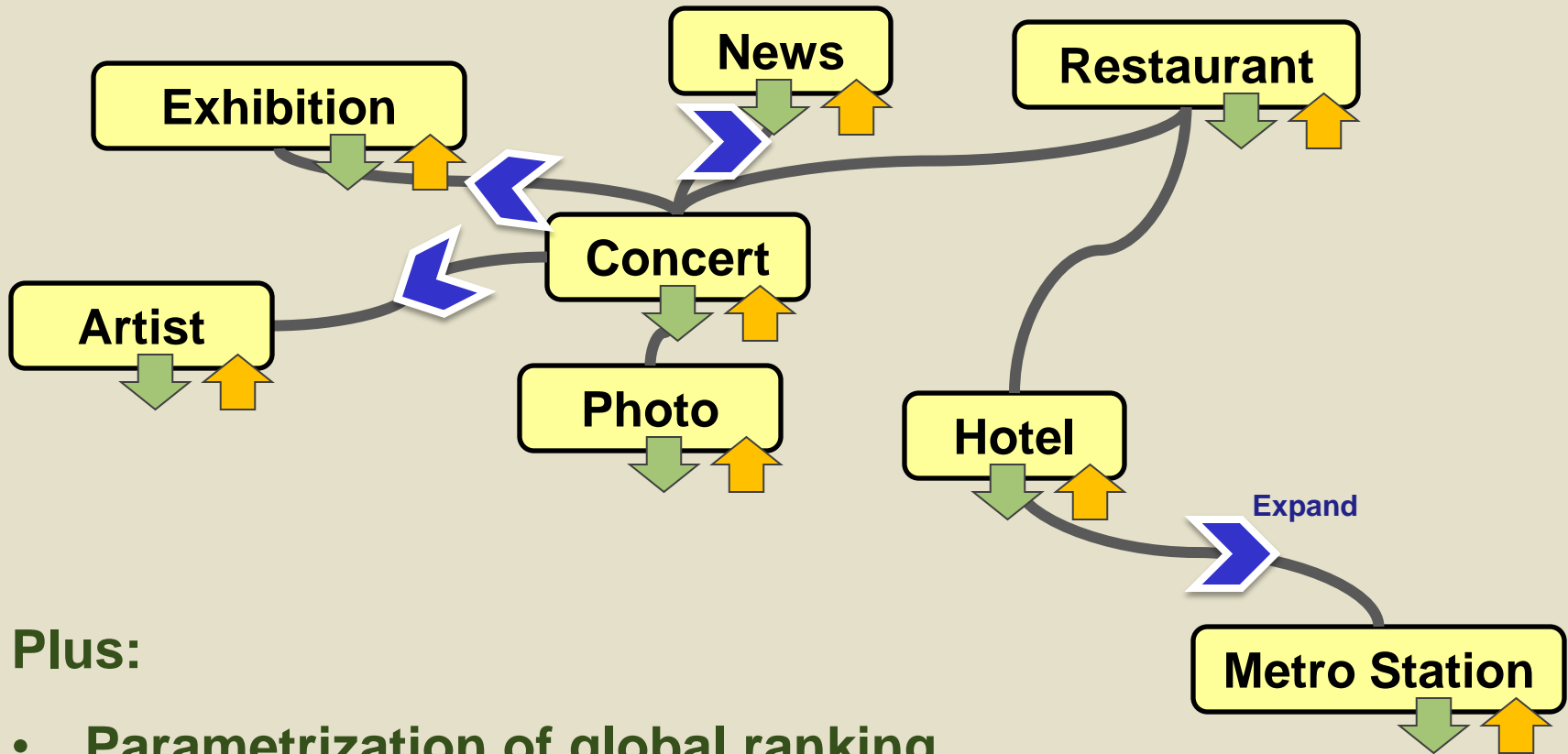
Liquid query definition

It consists of subsetting and parametrizing the resource graph...



Liquid query definition

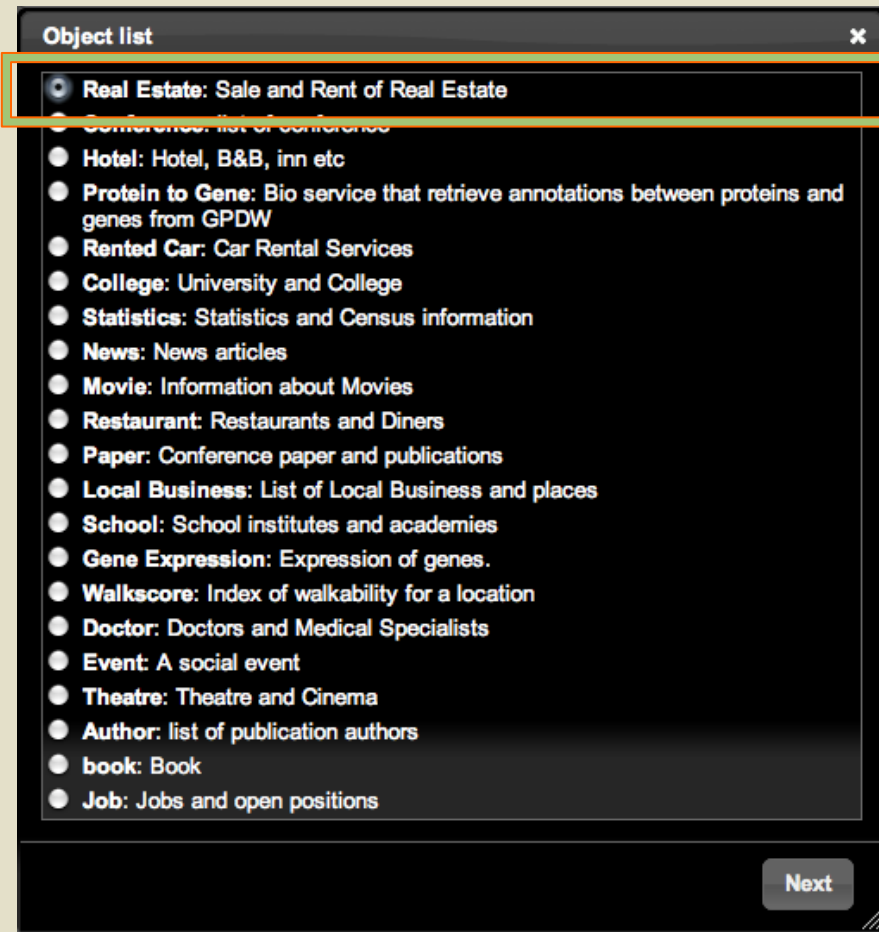
... And then characterizing the user interaction



Plus:

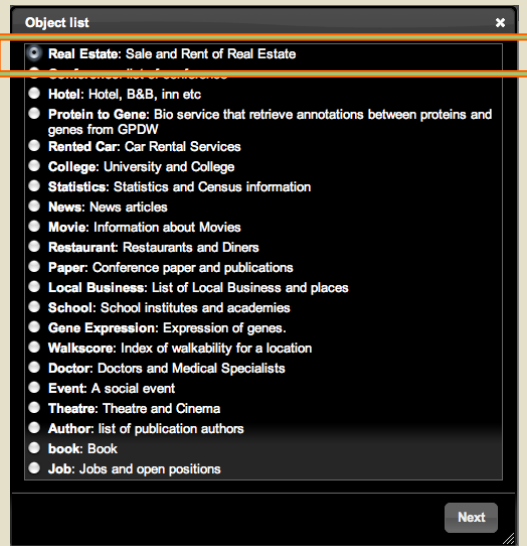
- Parametrization of global ranking
- Data visualization options
- .. and so on

Exploration of the Service Space



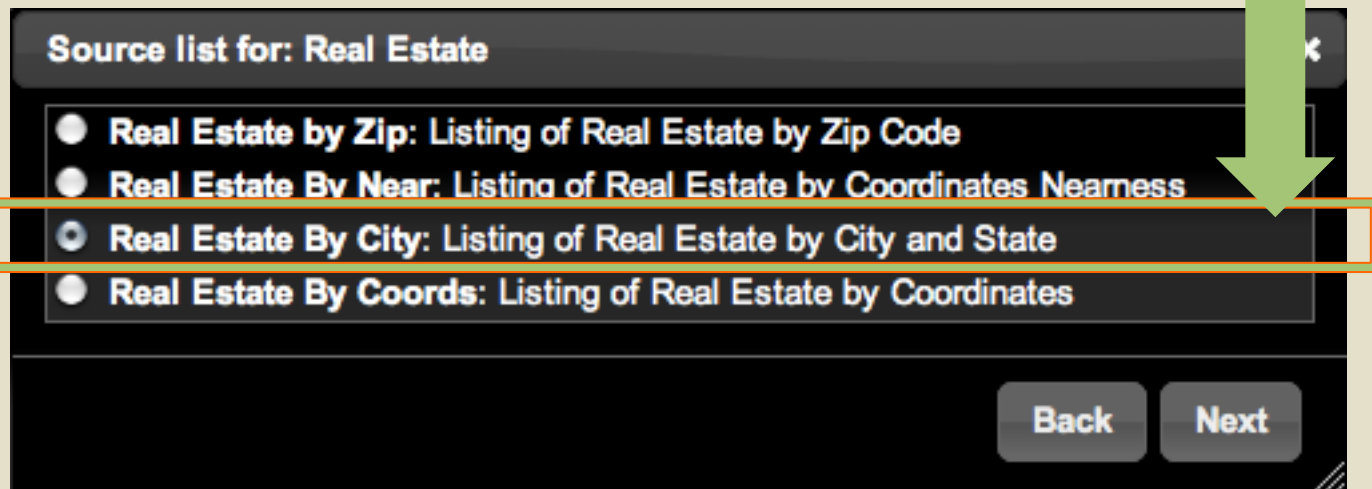
Entity
Selection

Exploration of the Service Space

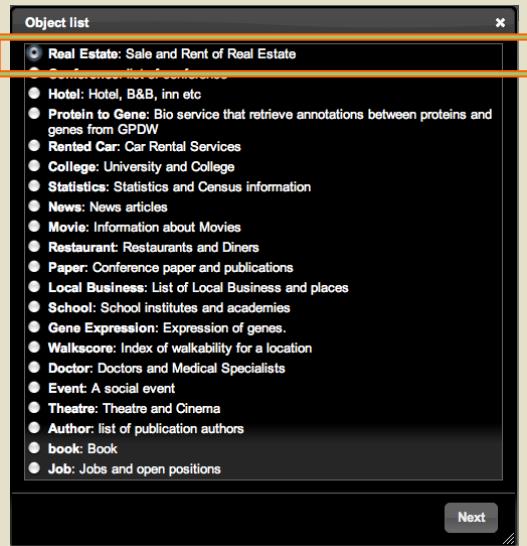


Entity Selection

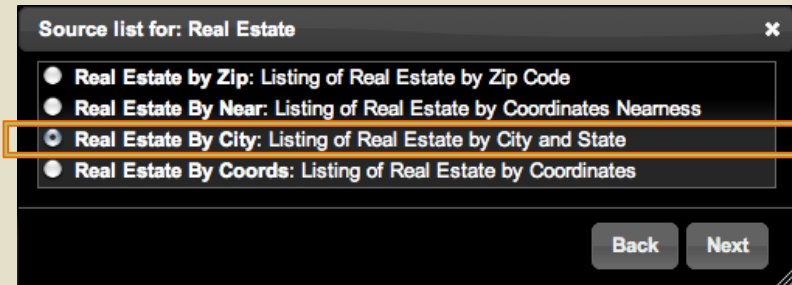
Service Selection



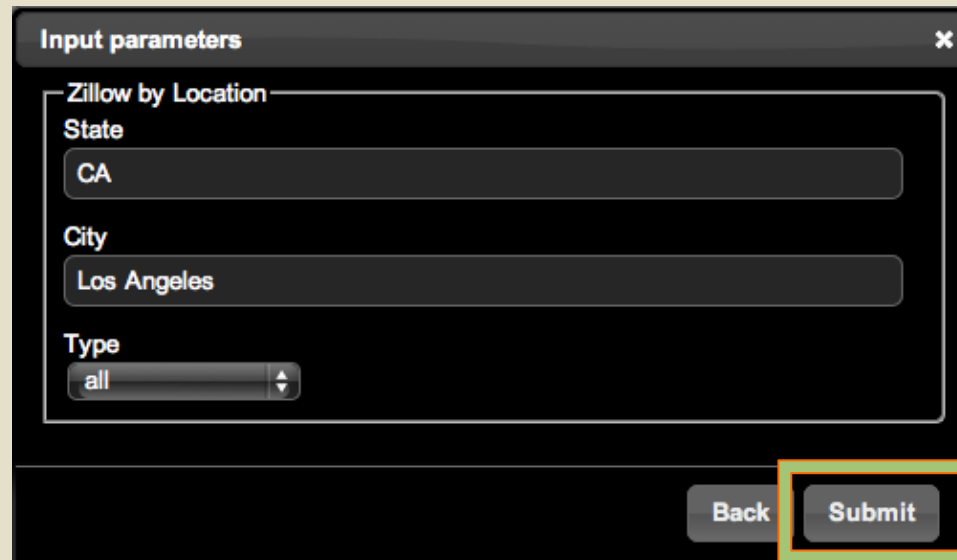
Exploration of the Service Space



Entity Selection



Service Selection



Query !!



Result Presentation

Tabular Representation

Search Computing Demo

Session 0

Visualization Source Session

Menu

Session: Session 0

Global tuple data Zillow By Coord

Global Score	tupleId	tupleScore	state	zipCode	city	street	longitude	latitude	type	useCo
0.41	gsp8CKMaYli9YlyEni48RHX	0.41	NY	11237	Brooklyn	426 Jefferson St	-73.92305755615234	40.70718002319336	makeMeMove	Multi Family
0.4	kSaf91vvCVI0vQhdGvsHzhC	0.4	NY	11221	Brooklyn	192 Suydam St	-73.92546081542969	40.69996643066406	makeMeMove	Multi Family
0.35	0el8fzbqXGNalsakZVeihBgC	0.35	NY	11211	Brooklyn	313 Devoe St	-73.9365463256836	40.7139892578125	makeMeMove	Single Family
0.25	J1Ln1JucS9iGpEqkT2cgoBC	0.25	NY	11211	Brooklyn	306 Leonard St APT J3	-73.94757080078125	40.714595794677734	makeMeMove	Condo
0.205	AN9oZdNK5HnqJnGF5XZ4Y	0.205	NY	11211	Brooklyn	444 Humboldt St APT 1	-73.94300842285156	40.717288970947266	makeMeMove	Condo
0.2	eB1LYR9znwfE3SnWJTPQK	0.2	NY	11211	Brooklyn	242 S 1st St APT 1C	-73.95765686035156	40.712318420410156	makeMeMove	Condo

Ranking Bar

Local

Order

Filter

Projection

Result Presentation (Map)

Session 0

Menu

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

0.41 0.4 0.35 0.25 0.20 0.2 0.16 0.0 0.0 0.0

Actions

More All More One Filter De-Filter

Exploration options from a given state

Related Entities

The screenshot shows a dark-themed dialog box titled "Object list" with a close button (X) in the top right corner. The first item in the list, "Expansion from_ Zillow By Coord (1)", is highlighted with a yellow rectangular box. An orange arrow points from the text "Related Entities" to this highlighted item. Below the highlighted item is a list of other categories, each with a radio button:

- School: School institutes and academics
- Walkscore: Index of walkability for a location
- Hotel: Hotel, B&B, inn etc
- Doctor: Doctors and Medical Specialists
- Theatre: Theatre and Cinema
- Event: A social event
- Rented Car: Car Rental Services
- Statistics: Statistics and Census information
- News: News articles
- Job: Jobs and open positions
- Restaurant: Restaurants and Diners

A "Next" button is located at the bottom right of the dialog box.

The screenshot shows a dark-themed dialog box titled "Service list for: Doctor By City" with a close button (X) in the top right corner. It contains a single list item with a radio button:

- doctor.com by city: This service returns available doctors, including geographical coordinates, nearby a given location.

At the bottom of the dialog box, there are two buttons: "Back" and "Next".

Result Presentation (Atom View)

Session 0

Menu

Session: Session 0

Menu

Zillow By Coord			
tupleid	useCode	price	bedrooms
<input type="checkbox"/>	Multi Family	590000.0	
<input type="checkbox"/>	Multi Family	600000.0	7.0

Menu

doctor.com by city				
tupleid	Name	Speciality	Street	City
<input type="checkbox"/>	Thao Ngo	Cardiologist	217 Ovington Avenue	Brooklyn
<input type="checkbox"/>	Selvaratnam Sinnapunayagam	Cardiologist	359 Avenue U	Brooklyn
<input type="checkbox"/>	Rosa Carrera	Cardiologist	1833 E 13th St	Brooklyn
<input type="checkbox"/>	ALIX DUFRESNE	Cardiologist	1166 Eastern Pkwy	Brooklyn
<input type="checkbox"/>	Dr. Sanford Leff	Cardiologist	47 Plaza Street West	Brooklyn
<input type="checkbox"/>	Dr. ADEOLA UTHMAN	Cardiologist	225 Parkside Ave	Brooklyn
<input type="checkbox"/>	RAYMOND LEVINE	Cardiologist	2700 Ocean Ave	Brooklyn
<input type="checkbox"/>	Ciprian Nedelcu	Cardiologist	121 Dekalb Ave	Brooklyn
<input type="checkbox"/>	TILAK WIKRAMANAYAKE	Cardiologist	108 Prospect Park W	Brooklyn
<input type="checkbox"/>	David Benson	Cardiologist	506 Sixth Street	Brooklyn

Filter tupleid

Filter tupleid

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19

Real Estate Service

Doctor Service

Association

Result Visualization – Combinations on Maps

Search Computing Demo

Visualization Source Session

Session 0

Menu

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

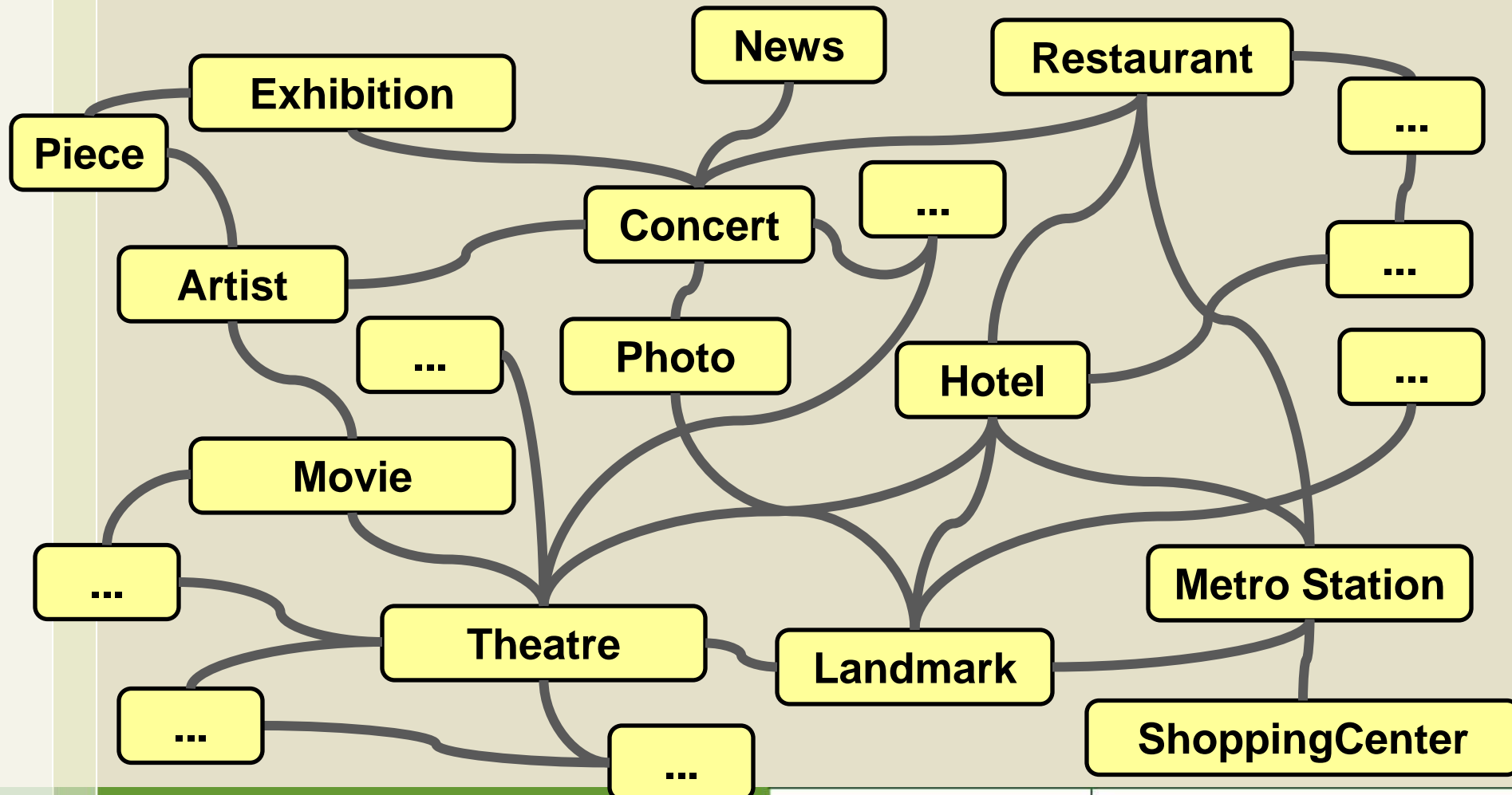
The map displays San Francisco with several search results marked by colored circles: a red circle, a blue circle, and two green circles. Lines connect these markers to a grid of numerical values at the bottom of the interface. The grid consists of two rows of 10 values each. The value 0.69 in the first row, 7th column is highlighted with a green border and a checkmark. The value 0.65 in the second row, 2nd column is also highlighted with a green border.

0.75	0.75	0.75	0.73	0.71	0.71	0.69	✓ 0.69	0.68	0.67
0.67	✓ 0.65	0.63	0.57	0.56	0.56	0.52	0.47		

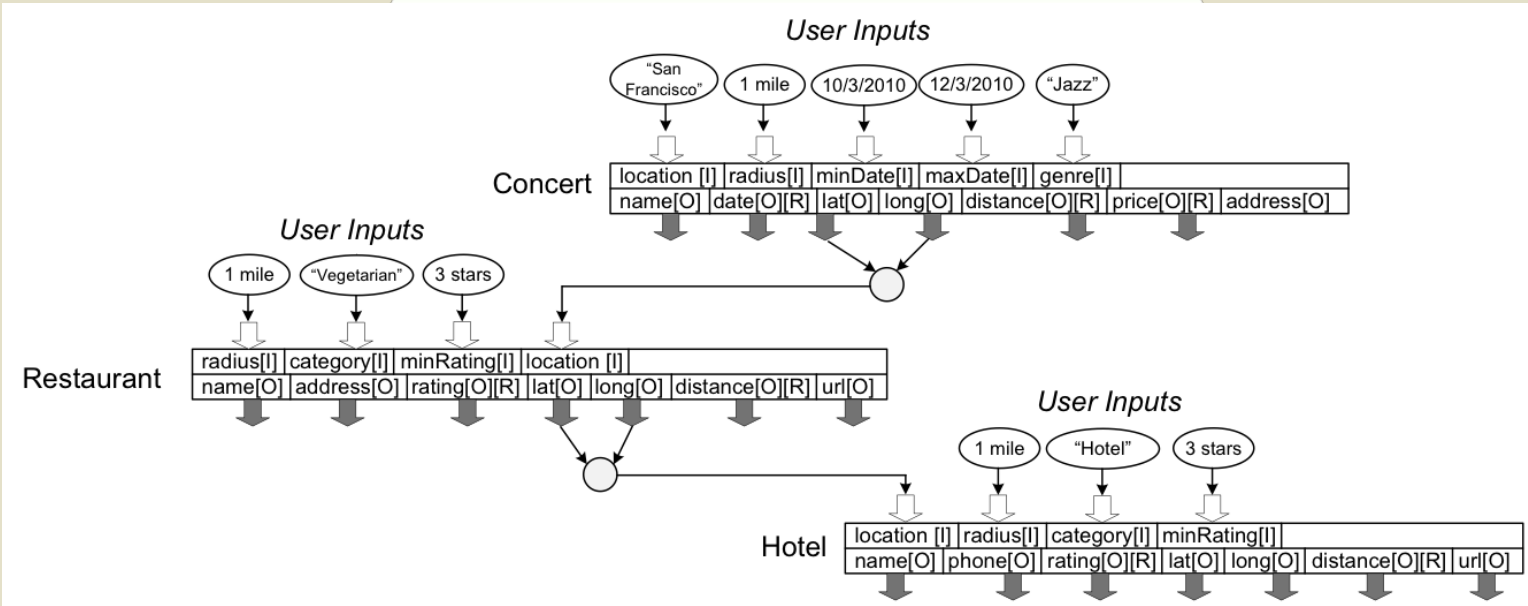
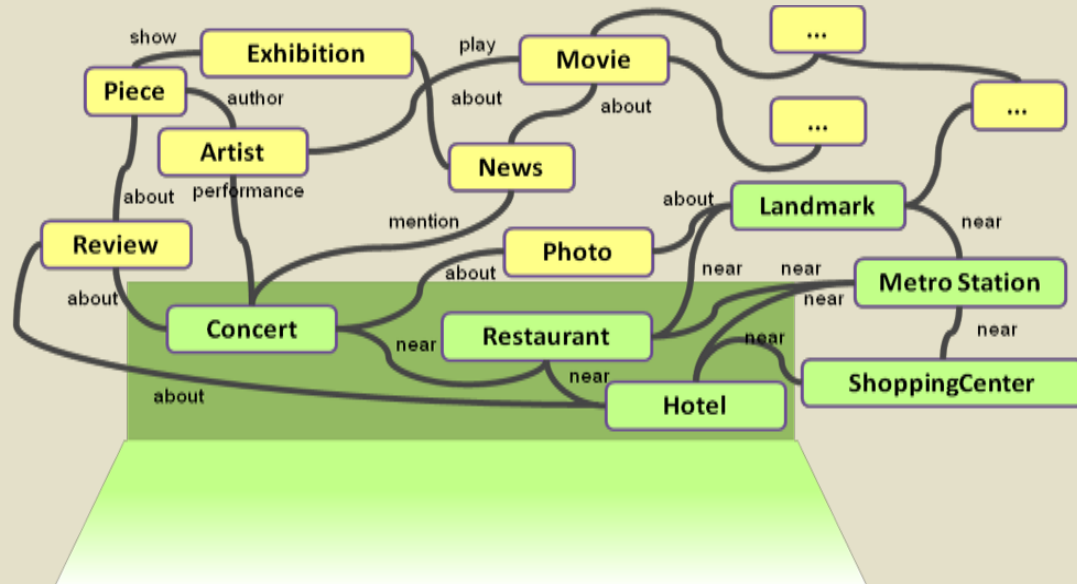
SERVICE REGISTRATION

Rationale of Service Registration

- Providing a “Semantic Resource Framework” (SRF) where concepts of the real world are mapped to entities and interconnected by relationships
- Along the idea of the “web of objects” instead of the “web of pages”

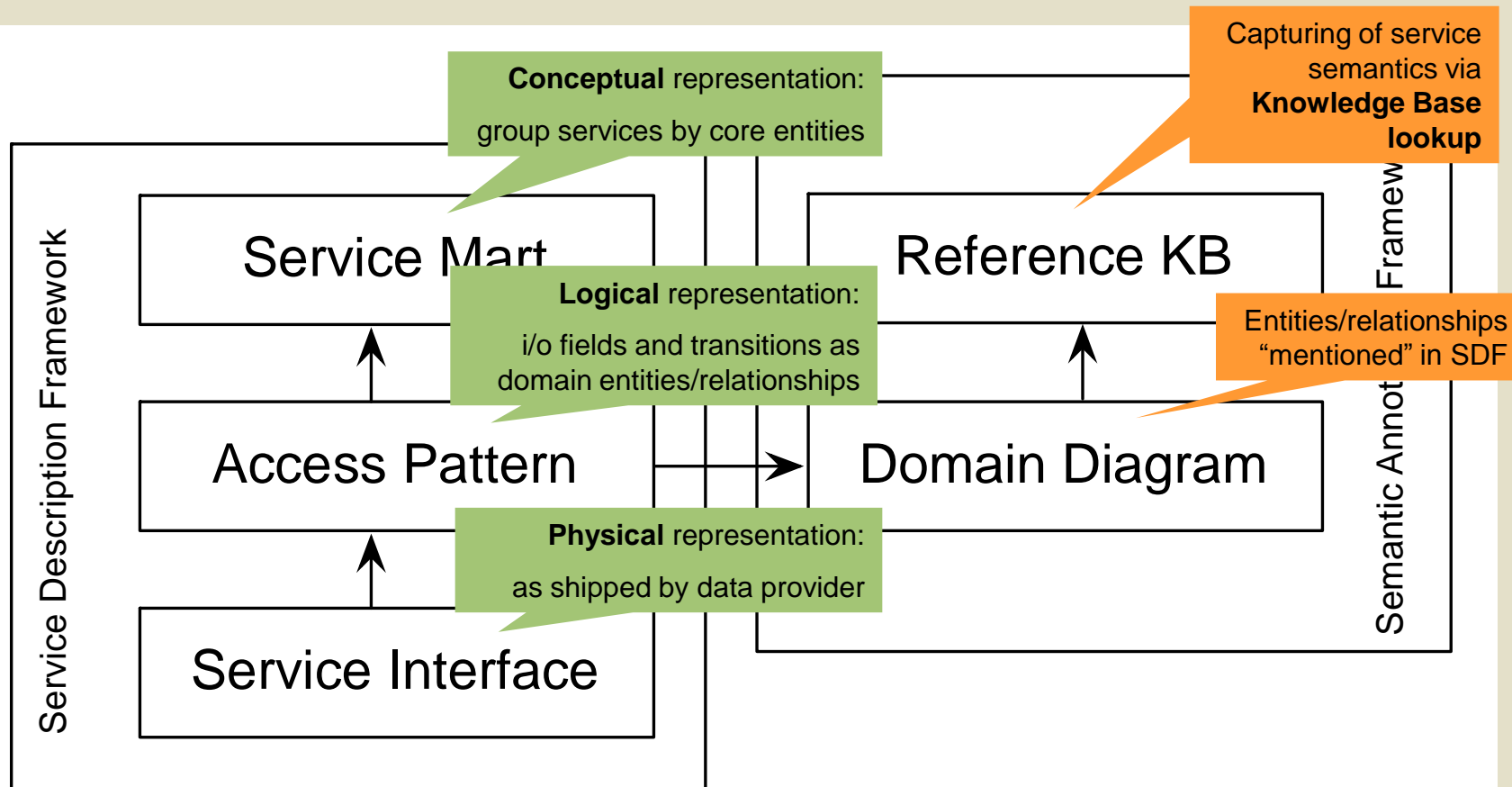


Under the scene...

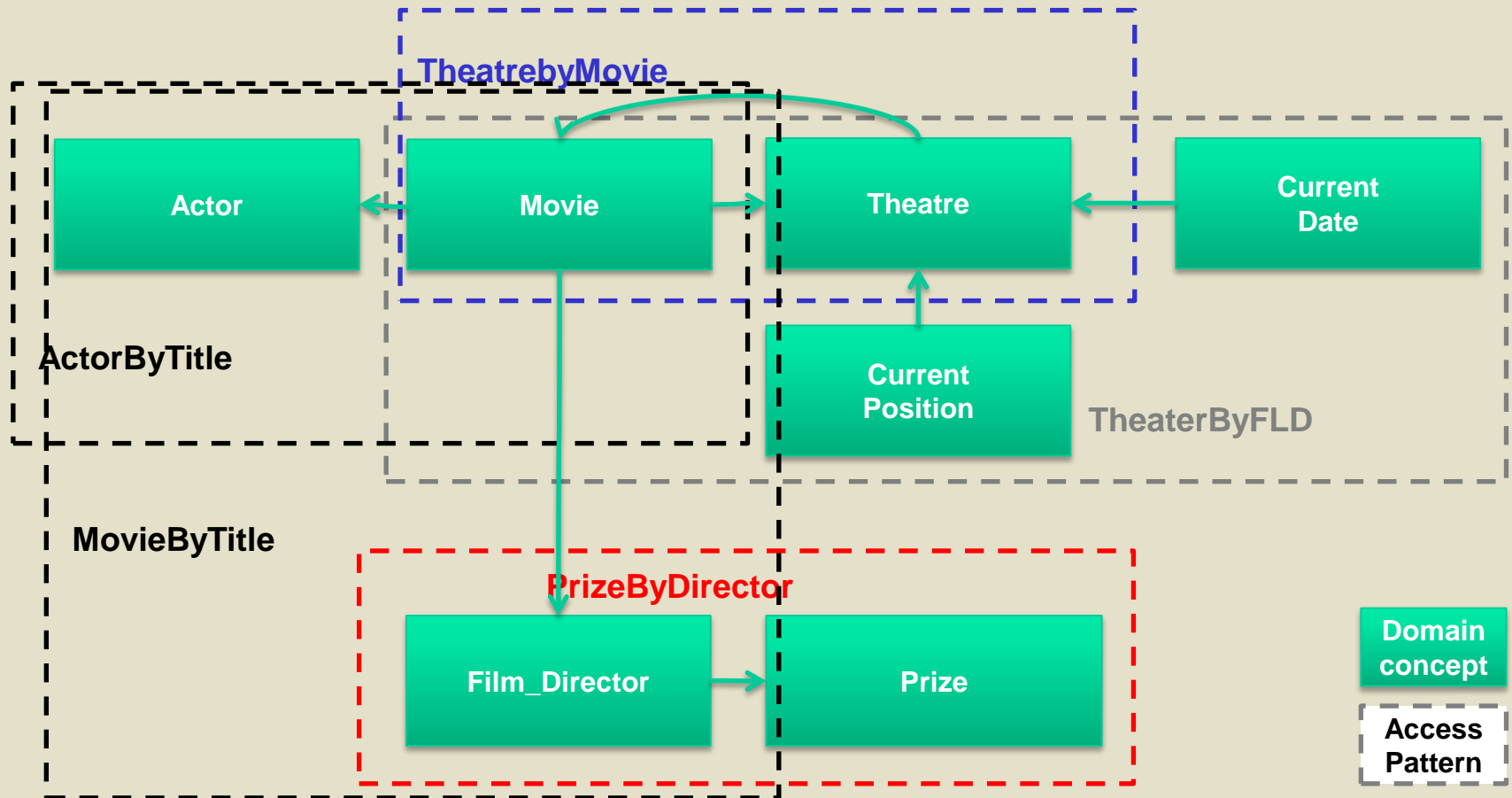


Service Framework in SeCo

- A Service Description Framework coupled with a Semantic Annotation Framework

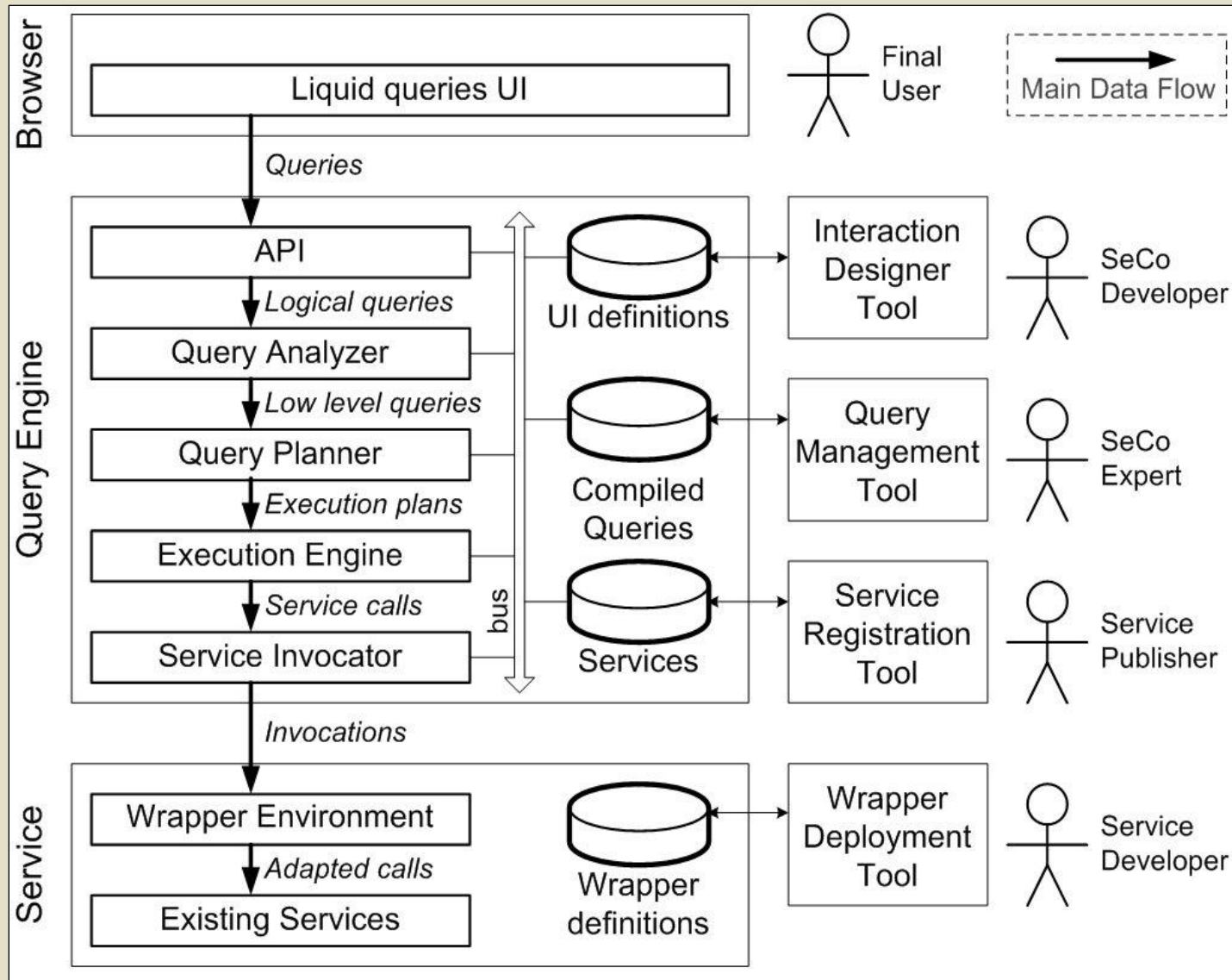


Semantic Framework: Domain Diagram and Access Patterns

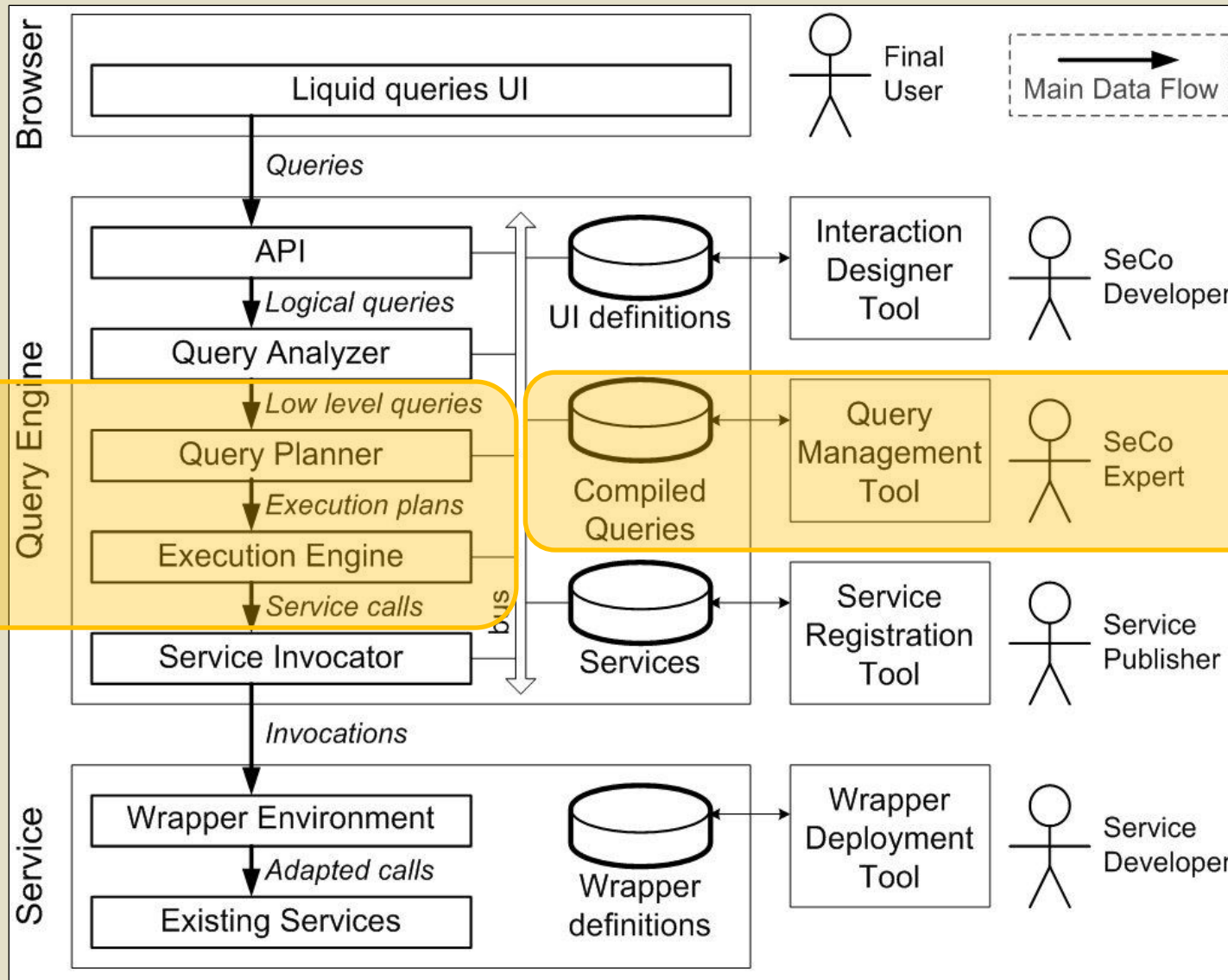


SECO ENGINE

The Query Processor in the Big Picture



The Query Processor in the Big Picture



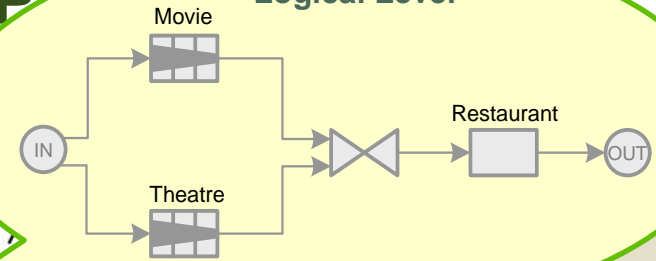
in the Big Pi

SeCoQL

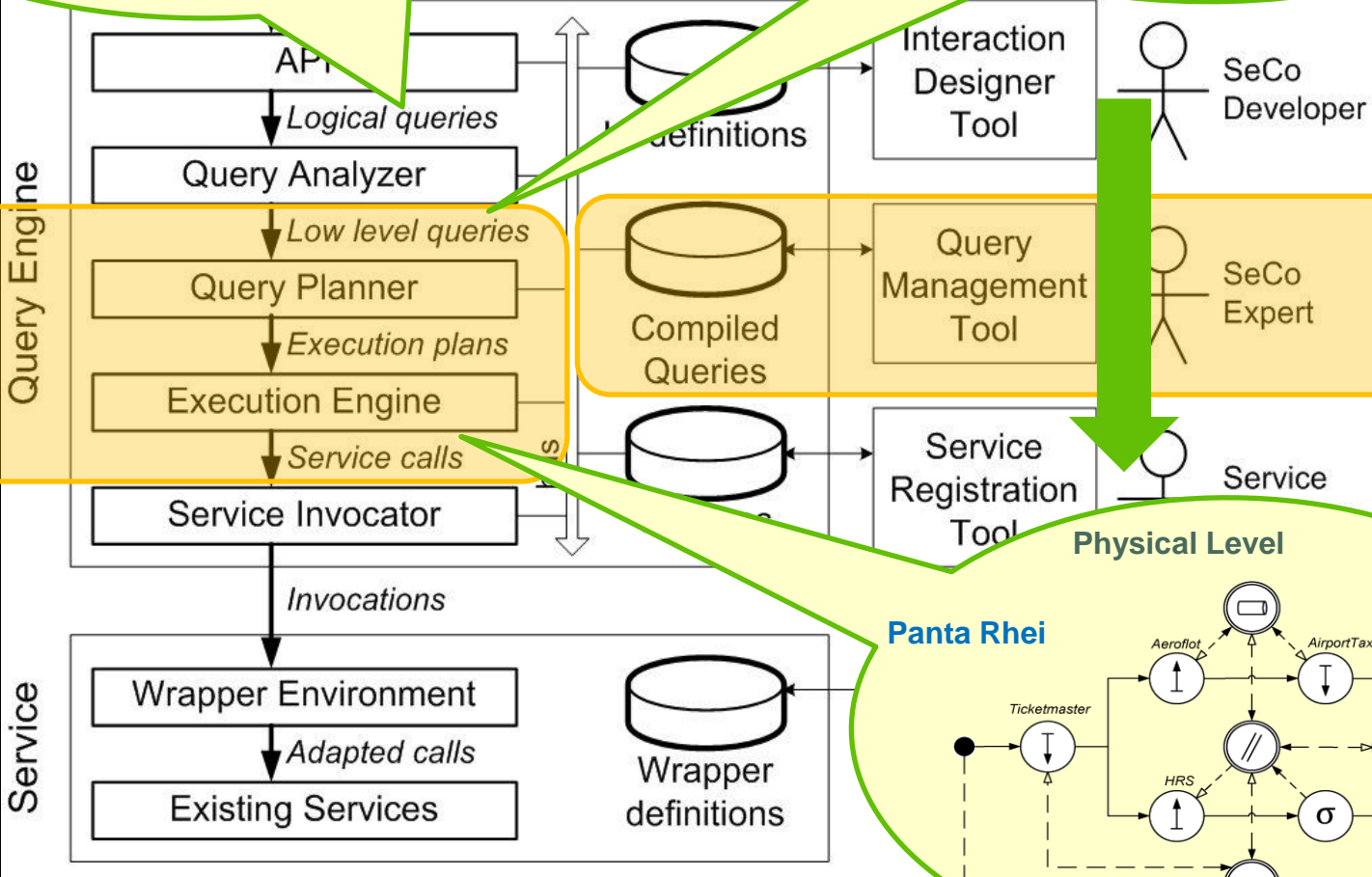
```

DEFINE QUERY NightOut ( $Address : String, $City : String, $Country : String ) AS
SELECT *
FROM theatre_by_address ( iAddress : $Address, iCity : $City, iCountry : $Country ) AS T USING Google_Theatre_by_Addr
JOIN Movies_by_Genre ( iGenre : Drama ) AS M USING IMDB_Movies_by_Genre
ON T.title = M.title
JOIN Restaurant_by_Address ( iAddress : T.address, iCity : $City, iCountry : $Country ) AS R USING Omaps_Rest_by_Addr
WHERE M.year < 2000
RANK BY ( T = 0.4, R = 0.5, M = 0.1 )
LIMIT 5 TUPLES AND 4 CALLS
    
```

Logical Level

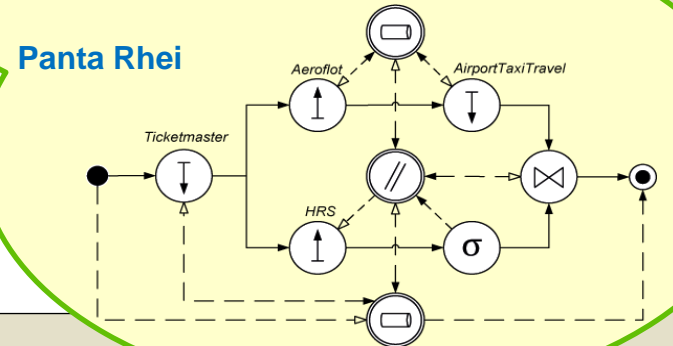


Query Processor



Workbench testing tool

Physical Level



SeCoQL

An old drama movie showing tonight in a theatre close to a good restaurant

NightOut(Piccadilly, London, UK)

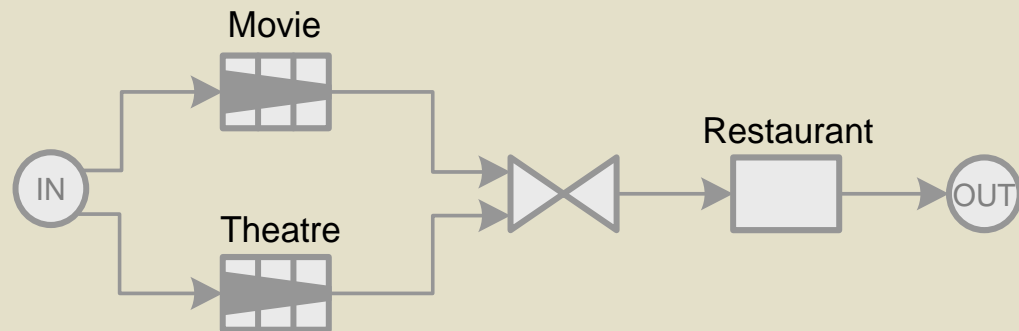
```
DEFINE QUERY NightOut ( $Address : String , $City : String , $Country : String ) AS
  SELECT *
  FROM theatre_by_address ( iAddress : $Address , iCity : $City , iCountry : $Country ) AS T USING Google_Theatre_by_Addr
  JOIN Movies_by_Genre ( iGenre : Drama ) AS M USING IMDB_Movies_by_Genre
  ON I.title = M.title
  JOIN Restaurant_by_Address ( iAddress : T.address, iCity : $City , iCountry : $Country ) AS R USING GMaps_Rest_by_Addr
  WHERE M.year < 2008
  RANK BY ( T = 0.4 , R = 0.5 , M = 0.1 )
  LIMIT 5 TUPLES AND 4 CALLS
```

First step: from conjunctive queries to logical plans

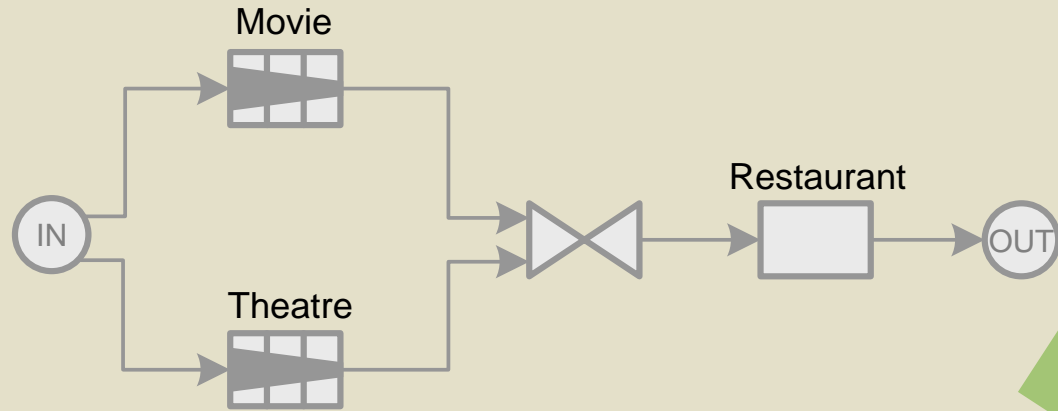
```
DEFINE QUERY NightOut ( $Address : String , $City : String , $Country : String ) AS
  SELECT *
  FROM theatre_by_address ( iAddress : $Address , iCity : $City , iCountry : $Country ) AS T USING Google_Theatre_by_Addr
  JOIN Movies_by_Genre ( iGenre : Drama ) AS M USING IMDB_Movies_by_Genre
    ON T.title = M.title
  JOIN Restaurant_by_Address ( iAddress : T.address, iCity : $City , iCountry : $Country ) AS R USING GMaps_Rest_by_Addr
  WHERE M.year < 2008
  RANK BY ( T = 0.4 , R = 0.5 , M = 0.1 )
  LIMIT 5 TUPLES AND 4 CALLS
```



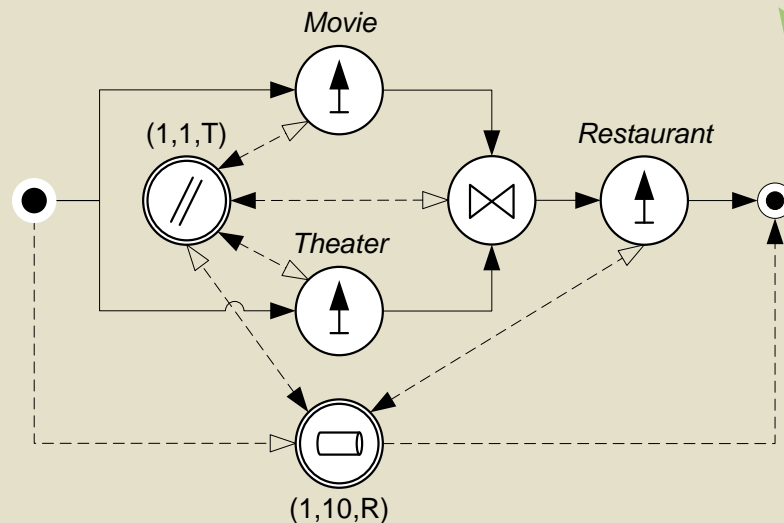
Generation of a logical plan



Second step: from logical to physical query plans



Then the planner generates a physical, executable query plan, expressed in *Panta Rhei*



Panta Rhei Plan

The screenshot displays a query execution workbench interface. On the left, a project browser shows a tree structure with folders for 'Declarative Queries', 'Logical Plans', and 'Physical Queries'. The main area shows a query plan diagram with nodes: 'Input', 'Parallel', 'PipeStr...', 'Joiner', and 'Output'. An orange box highlights the project browser and the query plan diagram. On the right, the 'Execution Inputs' panel shows a table of input variables and values:

Var name	Value
input.city	New York
input.jobType	Java
input.realEstateType	all
input.specialization	Audio
input.usState	NY

Below the inputs, there are buttons for 'Start session', 'Run', and 'Re-Execute'. The 'Execution Params' panel shows settings for 'Max tuples: 0', 'Max fetches: 20', and 'Max time: 0'. At the bottom, the 'Execution Timeline' panel shows a Gantt chart with nodes represented by colored bars over time (0 to 7000 ms). A legend at the bottom of the timeline identifies the nodes:

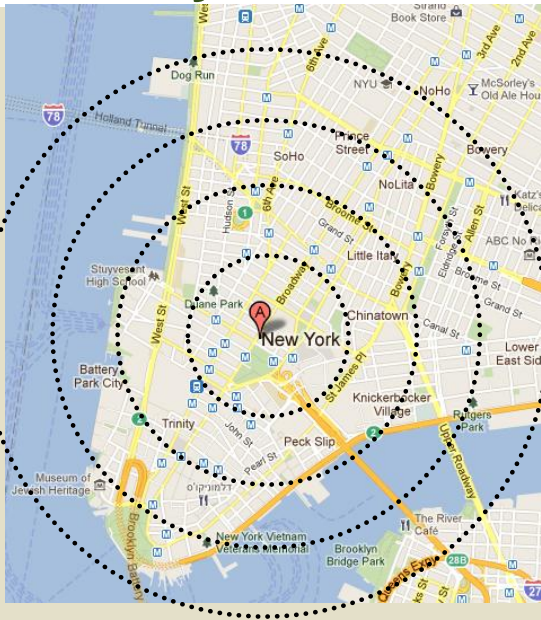
- 0 U0tEzpkctwJISYJeroH7H.a25e9Ej1t1qhbMqAUHIE
- 1 JoinerNode
- 2 PipeStrategyNode
- 3 AyMk7EP0XHTSvyQ2ANCLnCro4DRdybHQ1SuIbtdMC
- 4 src5m3AB6f1AtqH2JCR9QhG.amoUylm2T6CTHS6BBqt0J59J
- 5 ParallelStrategyNode

Query Lifecycle

Query Execution Report

THEORY

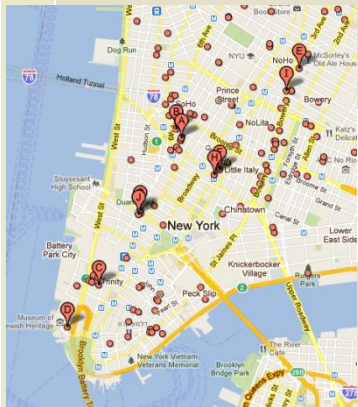
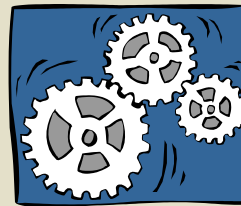
Proximity Rank Join (Martinenghi-Tagliasacchi, VLDB 2010)



Order by
-individual scores
-proximity from query
-Inter-object proximity
and return the top-K results

Too many results !

Join



Rating



Restaurants

Stars



Hotels



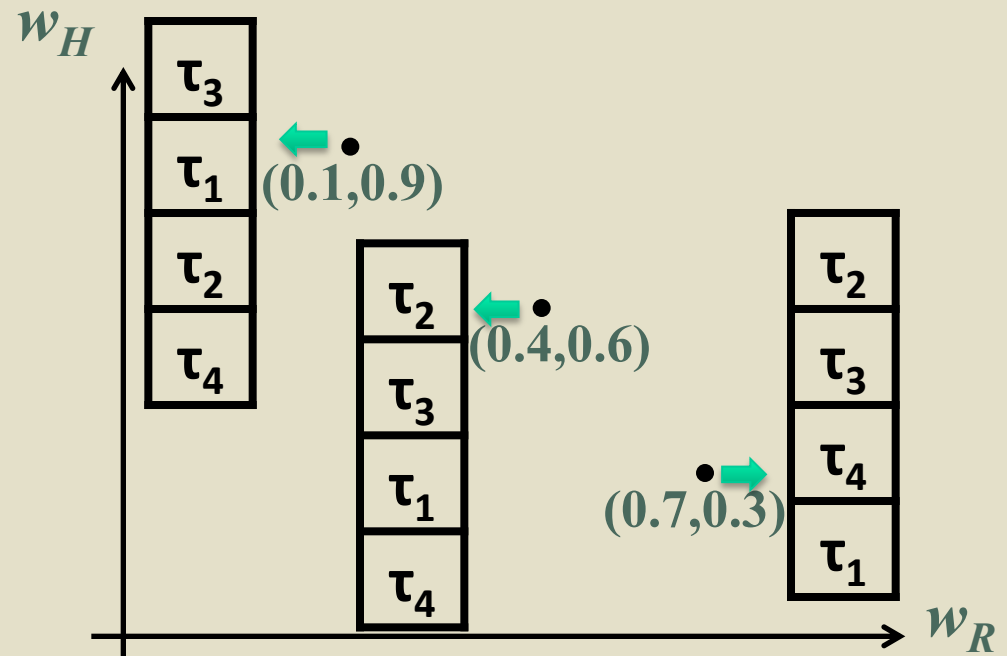
Ranking with uncertain scoring functions (Soliman, Ilyas, Martinenghi, Tagliasacchi, Sigmod 2011)

- How to select the right weights?

```

SELECT *
FROM Restaurants R, Hotels H
WHERE R.Location = H.Location
ORDER BY  $w_R \cdot R.Rating + w_H \cdot H.Stars$ 
LIMIT K
    
```

I D	Ratin g	Star s
τ_1	2	6
τ_2	7	5
τ_3	4	7
τ_4	5	2



CURRENT STANDING

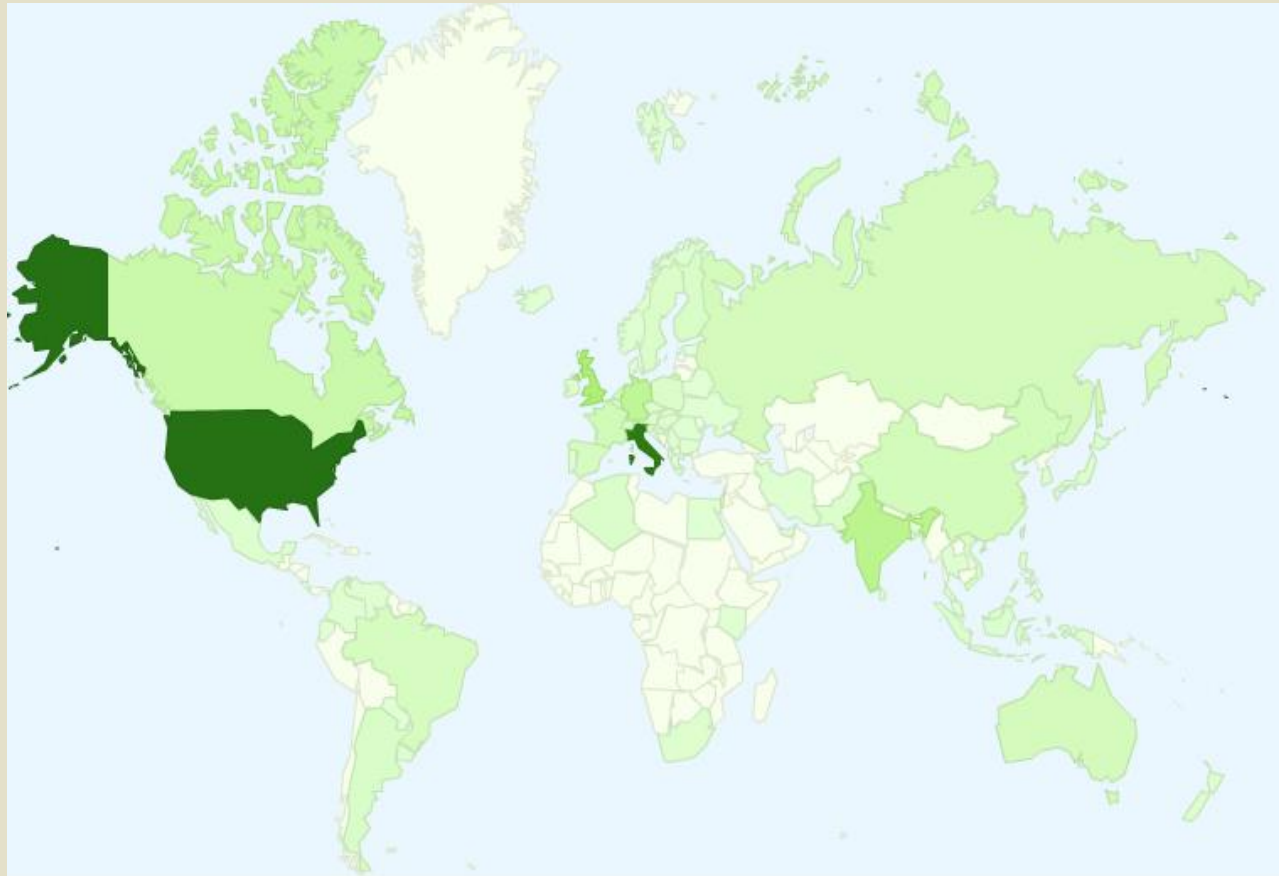
Results after 36 months

45

- Concepts
 - Service marts, join methods, panta rhei, liquid query
- Research results
 - LNCS: Search Computing Challenges and Directions (2010)
 - LNCS: New Trends in Search Computing (2011)
 - Publications (incl. VLDB, WWW, SIGMOD, TODS)
 - US Patent filed (top-k method, random & sequential services)
- Site: www.search-computing.eu
- Blog: <http://blog.search-computing.com/>
- Temporary research positions (3 phd, 5 post-ms, 3 post-doc)

Accesses to Web Site & Blog (2010)

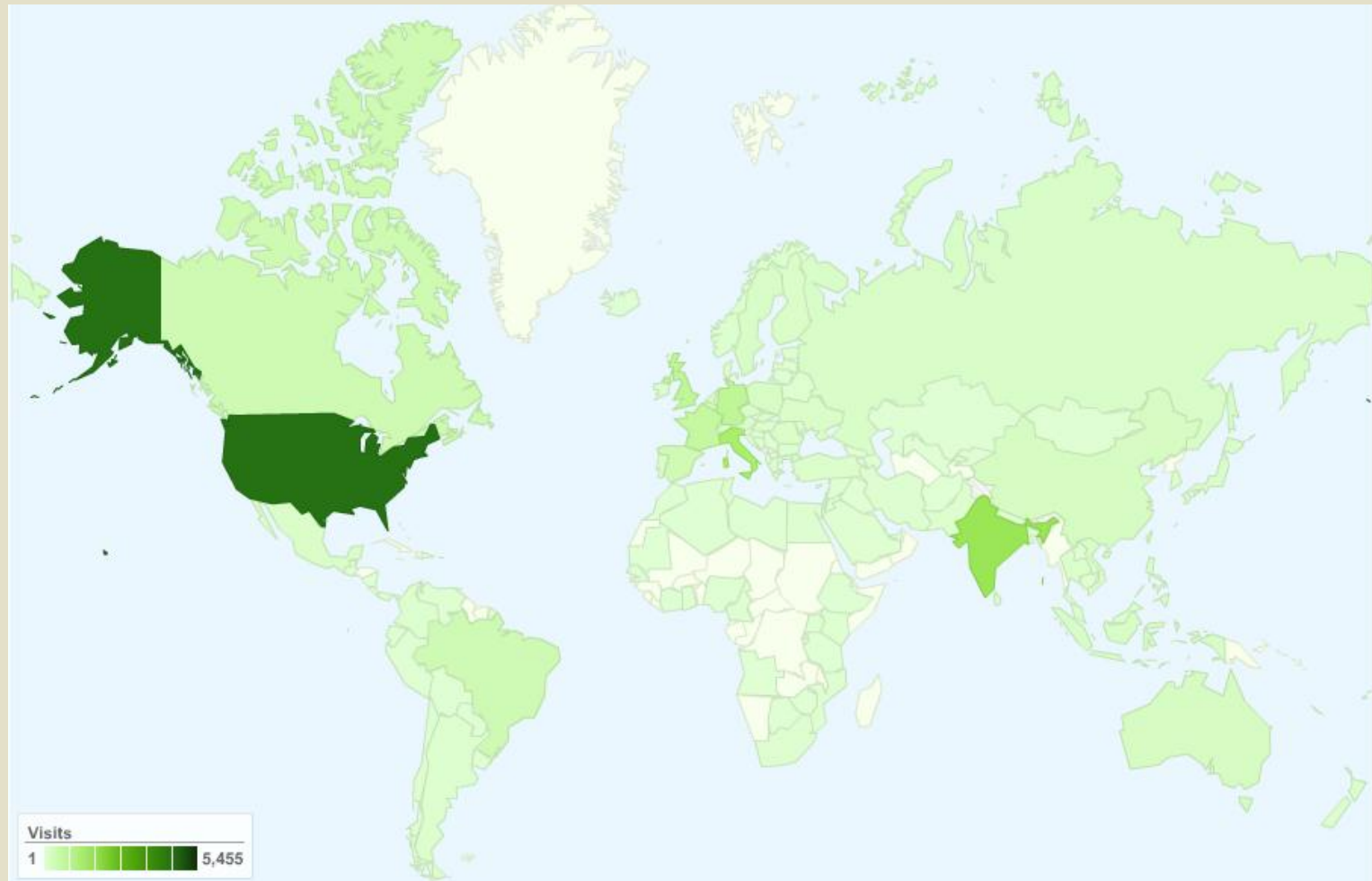
Visits: 20% USA, 18% Italy, 6% UK, 4% India, 4% Canada



Accesses to Web Site & Blog (2011)

47

Visits: 27% USA, 10% India, 8% Italy, 4% Germany – UK - France



Events in 2011

- Functionality Demo at WWW 2011 (Bangalore)
- Engine Demo at ACM-Sigmod (Athens)



- Workshops:
 - **ExploreWeb** (Brambilla, Fraternali, Schwabe)
<http://exploreweb.search-computing.org/>
 - **DBRank** Workshop (Chakrabarti, Martinenghi)
 - Very Large Data Search (**VLDS**) (Brambilla, Casati, Ceri)
<http://vlds2011.search-computing.net/>
 - Ordering and Reasoning (**OrdRing**) (Bozzon, Della Valle, Horrocks)
<http://ordring2011.search-computing.org/>
 - **DataView** 2011 (Bozzon, Comai, Norrie)
<http://dataview.como.polimi.it/2011/>

- Third LNCS Book ?

- Planned VLDB Journal special issue on “Web search over structured information and crowds” (tent. Title, Brambilla/Ceri/Halevy, Sept. 2012)

- NLP or keyword-based queries
 - focus on subquery partitioning & mapping to domains
- Social dimension
 - crowd-searching using social platforms
- Verticals
 - joint work with Diadem (Gottlob) on London real-estate
 - regional platforms for “quality of life”

问题？