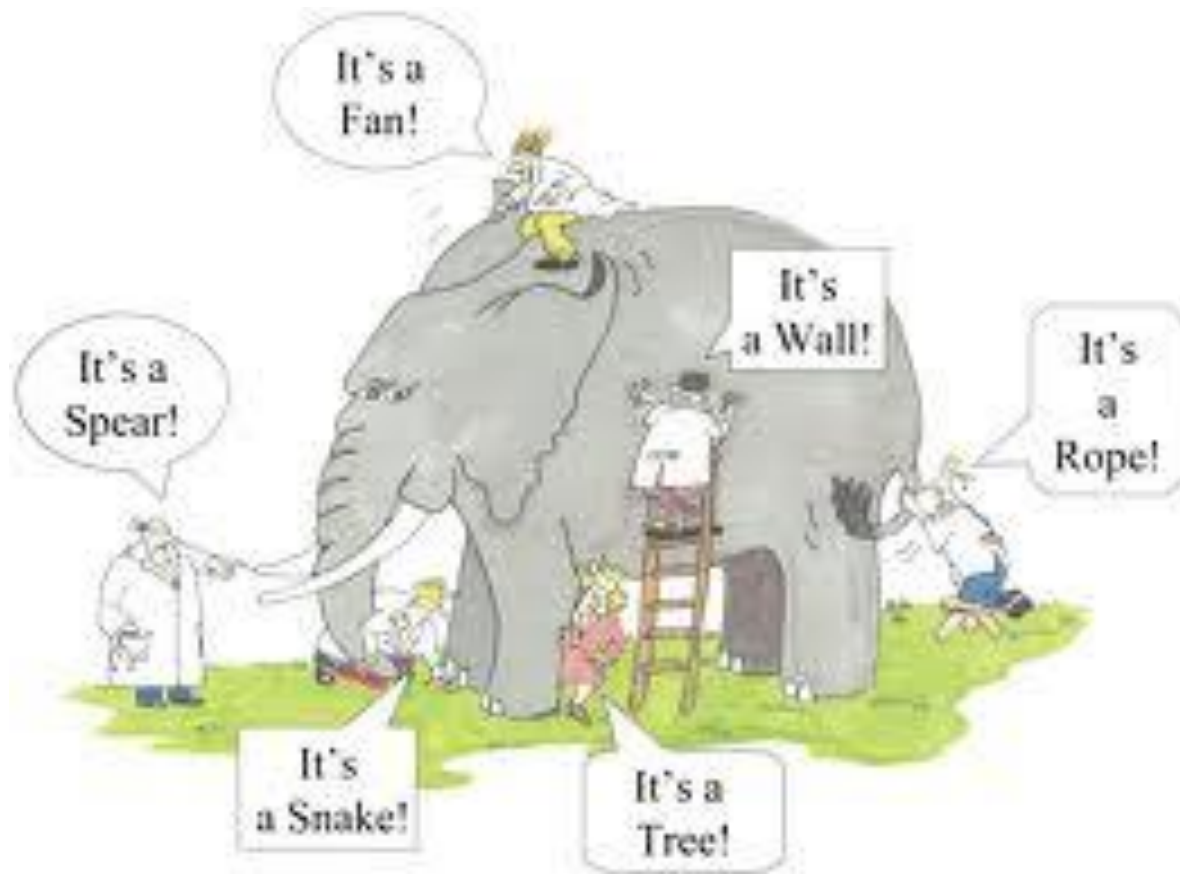


Mobile Social Search

Ramesh Jain
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An Elephant and Six Blind Men



An Elephant is NOT

- Wall
- Rope
- Snake
- Spear
- Tree
- Fan

An Elephant is ...
an Elephant



Mobile Social Search (MSS)

is NOT Mobile

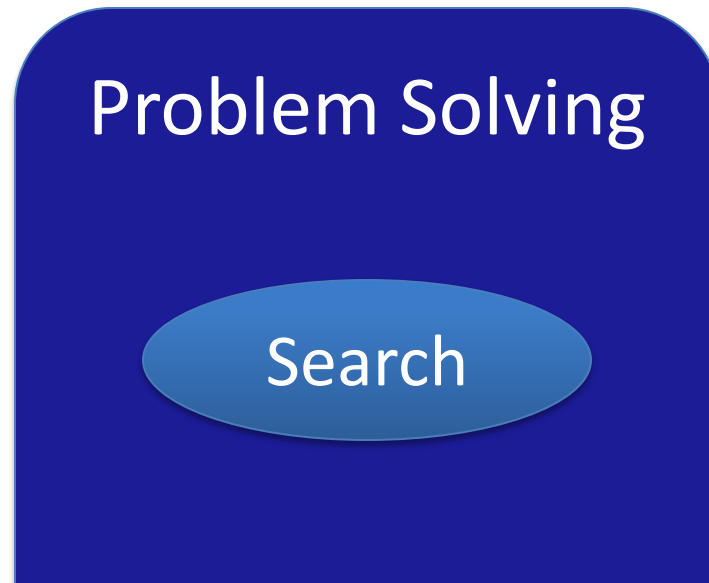
is NOT Social

is NOT Search

Is Mobile Social Search

Changing Times in *Search*

Mobile Social Search: Search 'inside'
problem solving in real time.



MSS: A Problem of Riches



When we were (data) poor –
we searched.

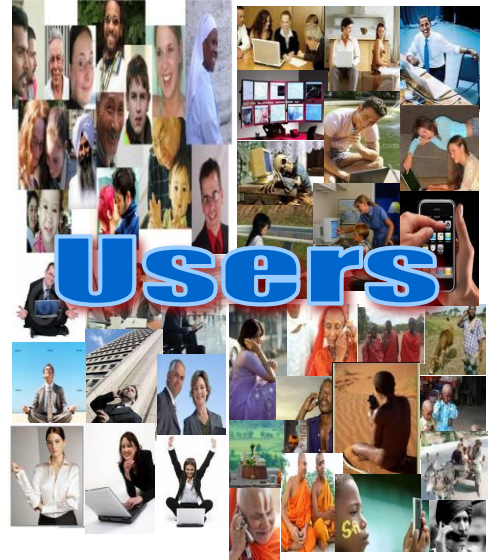
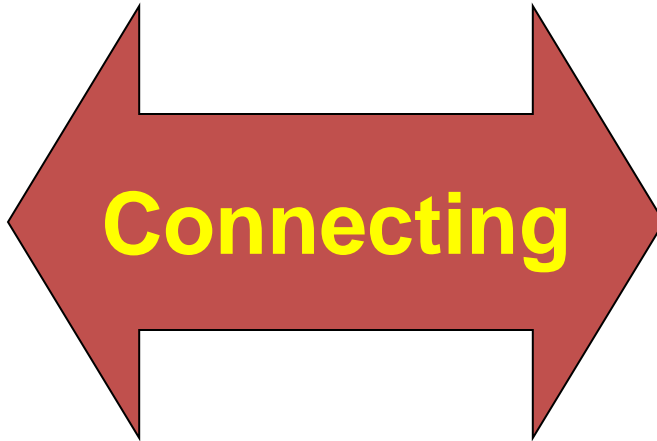
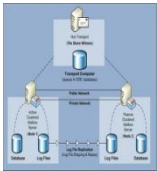
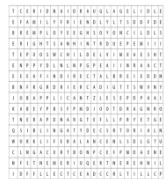
Now that we are (data) rich –
we need mobile social
search.



Search



Data

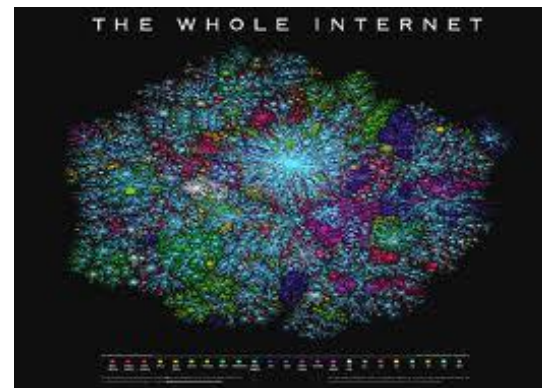


Users

Data



Then



Now



Users



Then



Now



Changes in Search 1: Restaurant

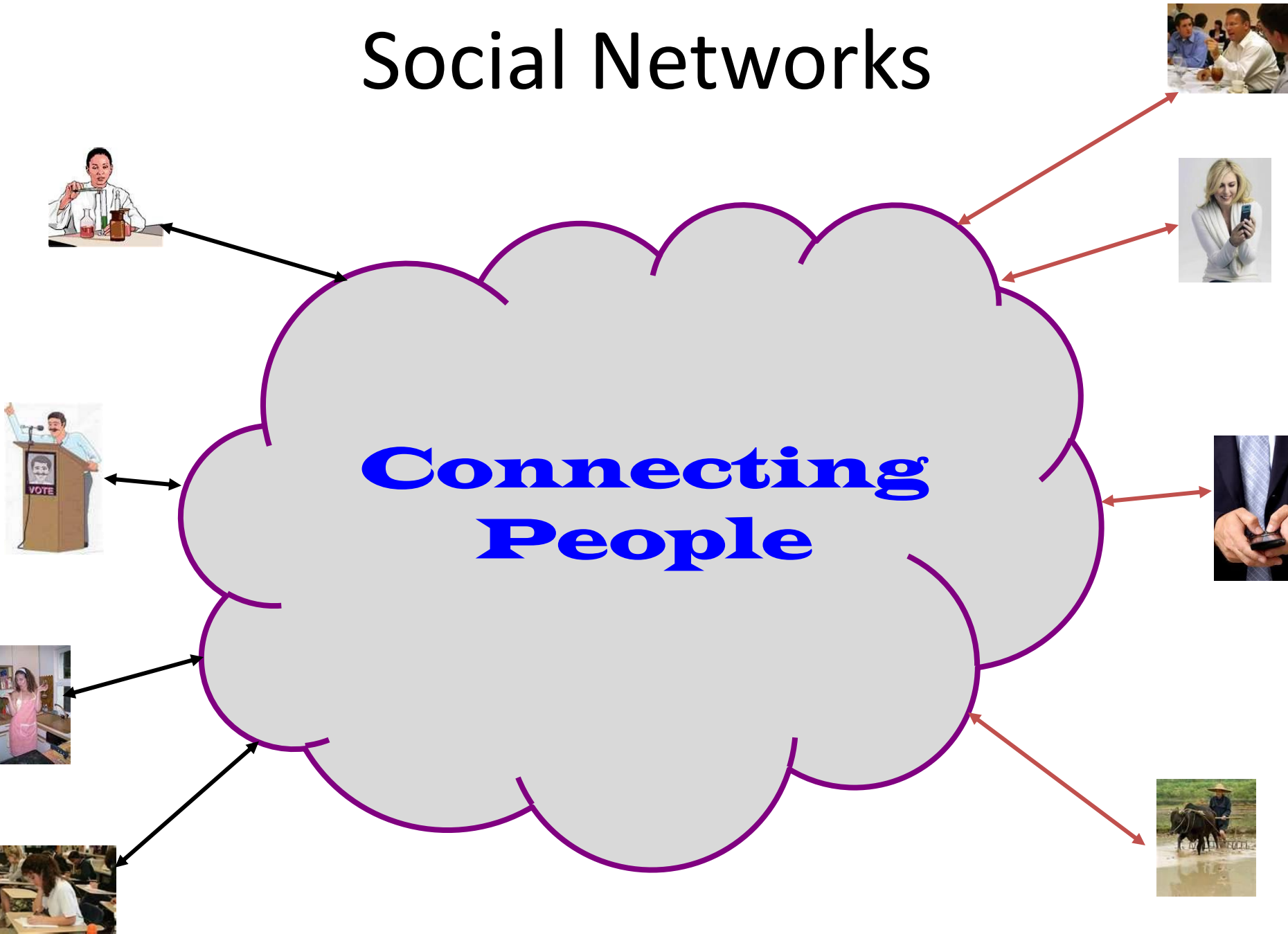
- What is an Italian Restaurant?
 - List Italian Restaurants in Brussels.
- Show me Italian Restaurants?
 - Use Yelp (or any other social approach) and distance from me to rank them.
- Where should I go to eat Italian food ***NOW?***
 - Consider time taken, current ambiance, and quality of food into consideration.

Changes in Search 2: Swine Flu

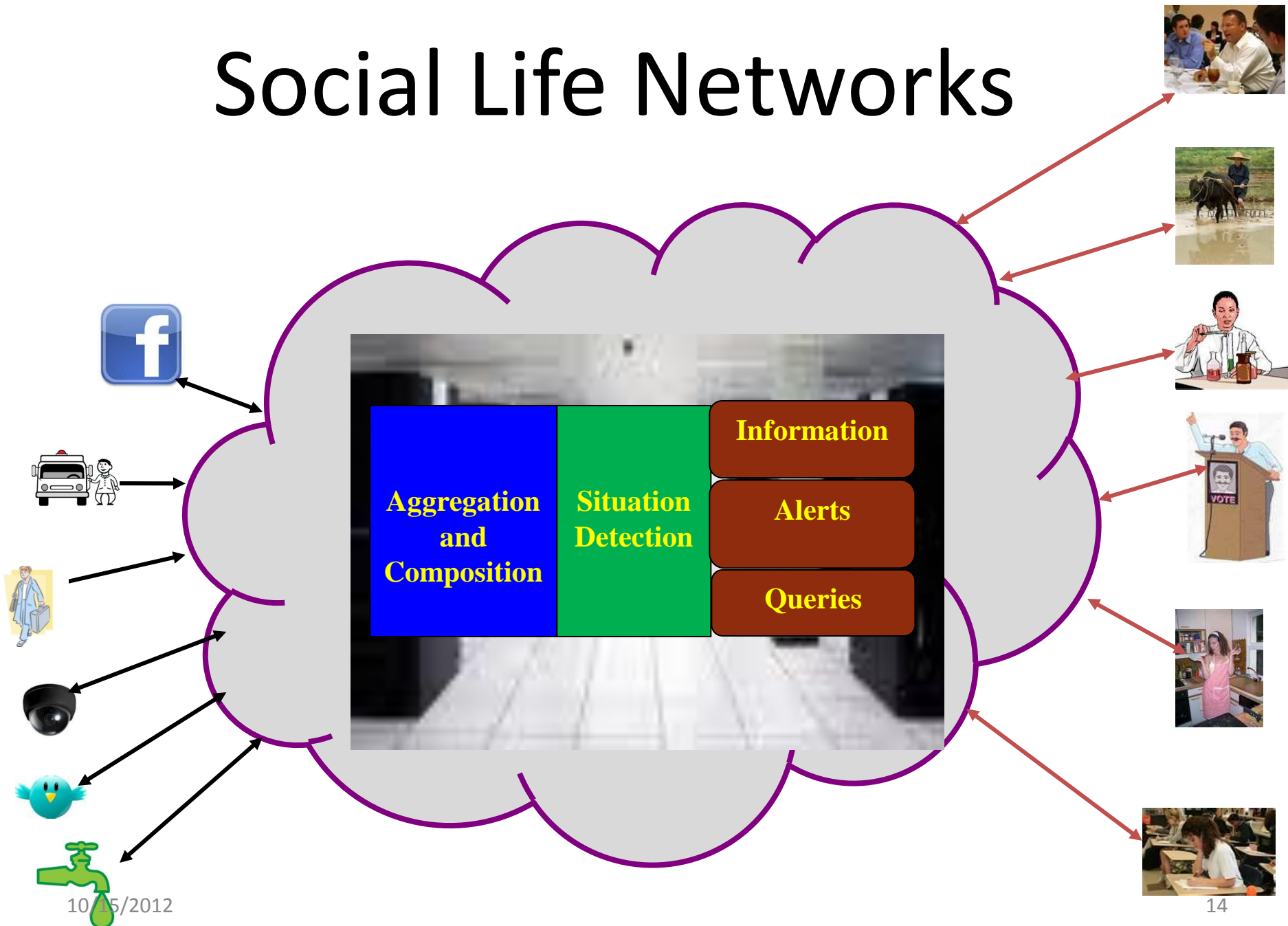
- What are symptoms of Swine Flu?
- Is there a major Swine Flu outbreak in my area?
- You are likely to be very sick with extreme case of Swine Flu soon, your doctor is ready with the set up.



Social Networks



Social Life Networks



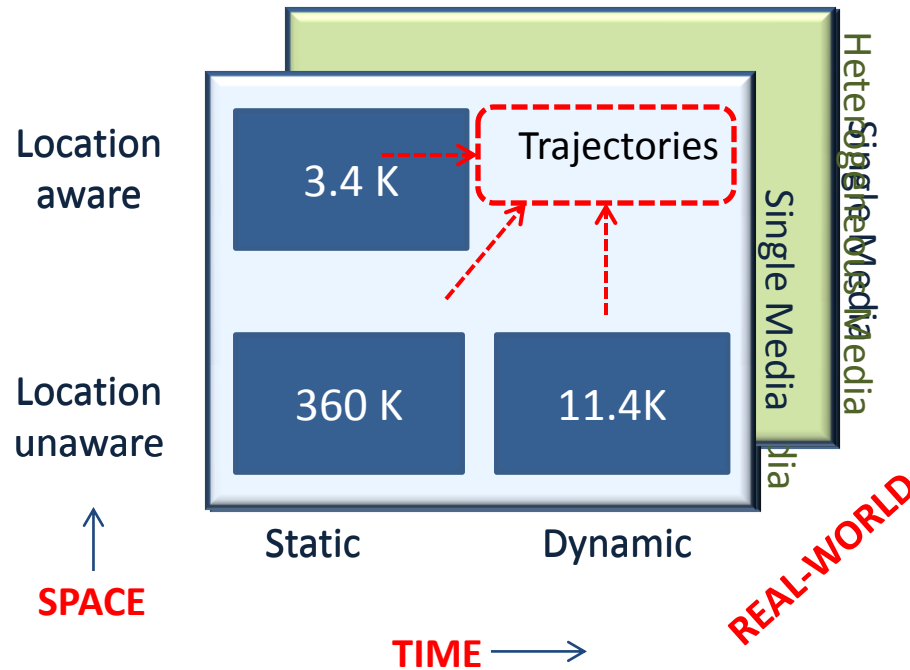
Concept recognition from *data*

Google

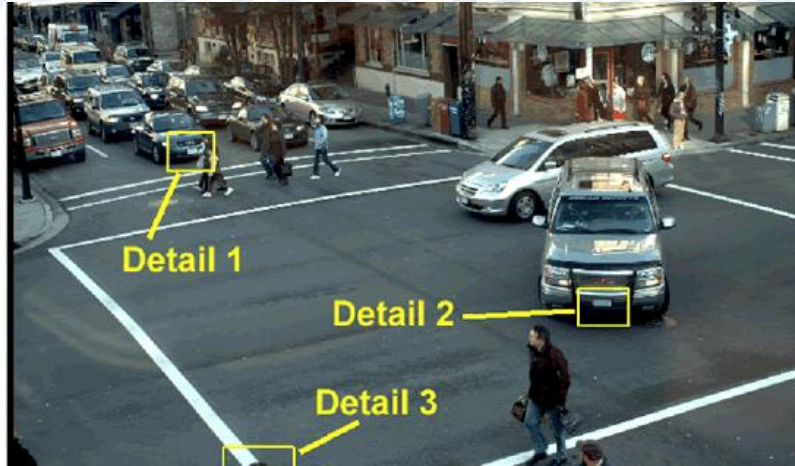
"object recognition"

Scholar

About 360,000 results (0.10 sec)



SITUATIONS

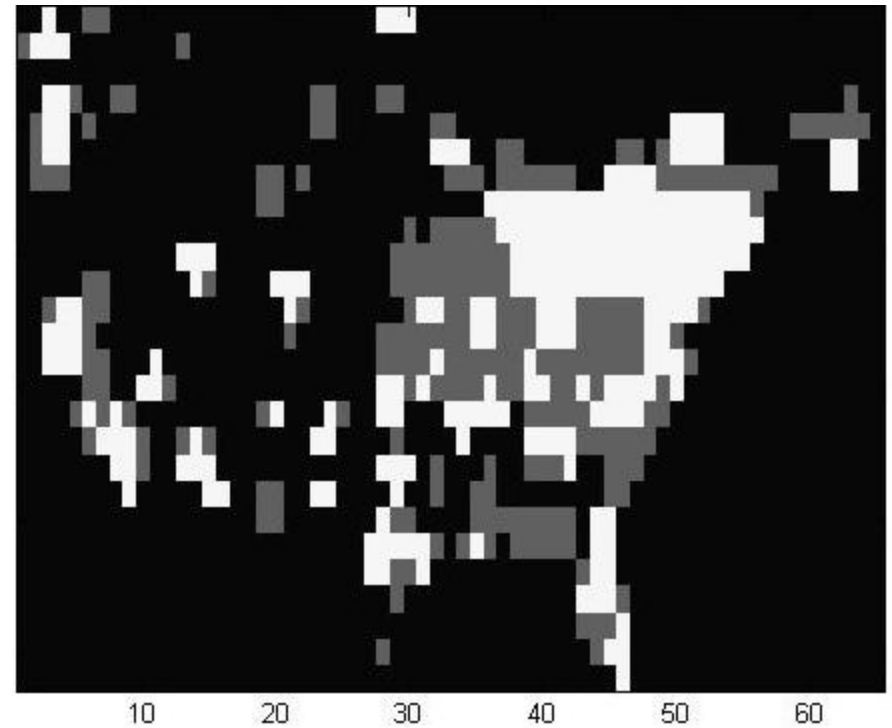
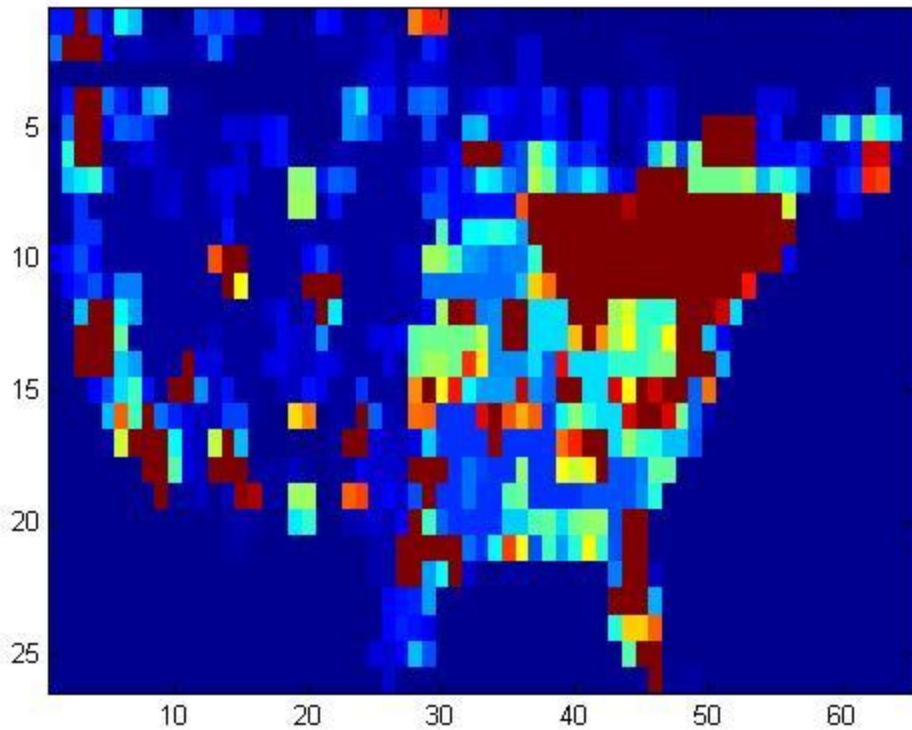


Situation Recognition

- Situation: **An actionable abstraction of observed spatio-temporal characteristics.**
- Allow users to define their own spatio-temporal features and create the situation detection filters.

Swine flu: Situation Segmentation

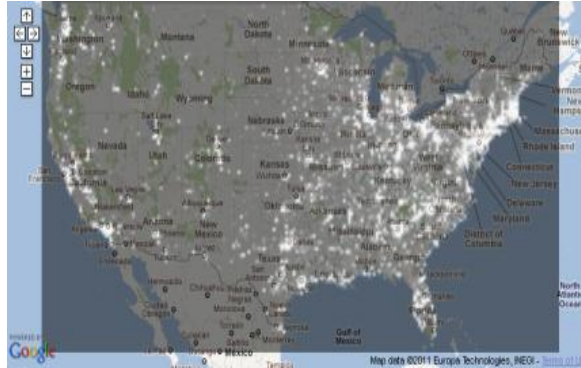
into 'high' and 'low' activity zones.



New Problem: Too Much Diverse Data



(a) Pollen levels (Source: Visual)



(b) Census data (Source: text file)



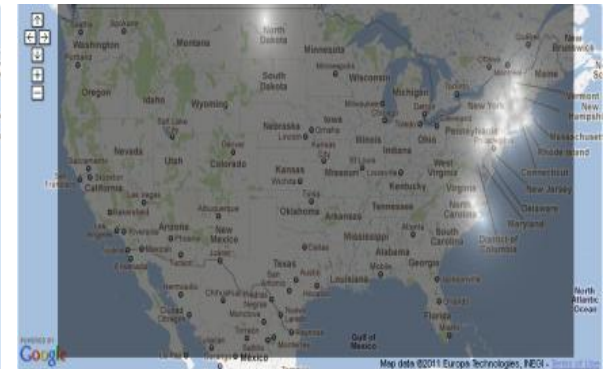
(c) Reports on 'Hurricanes' (source: Twitter stream)



(d) Cloud cover (Source: Satellite imagery)



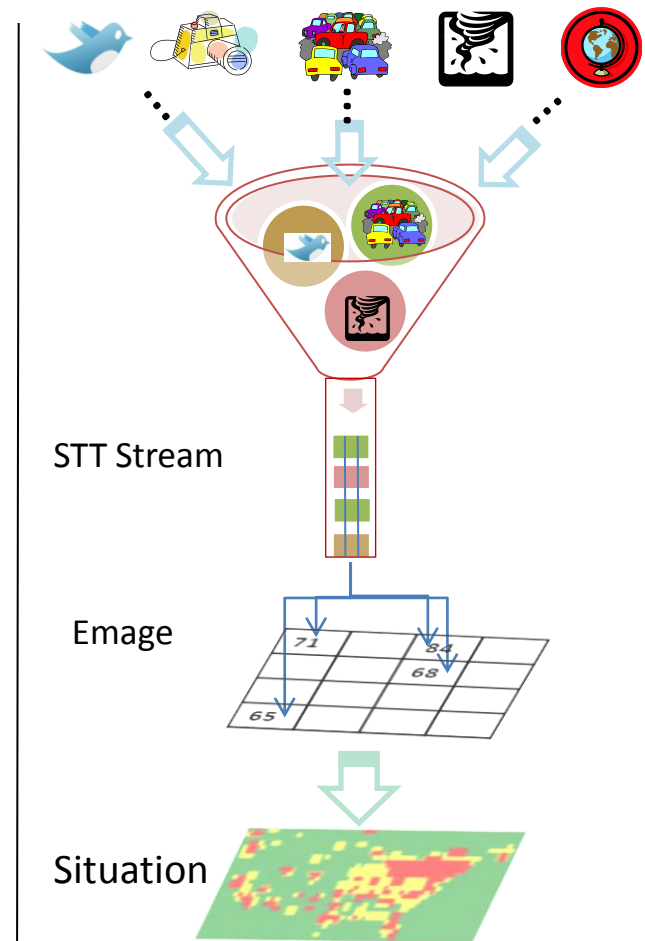
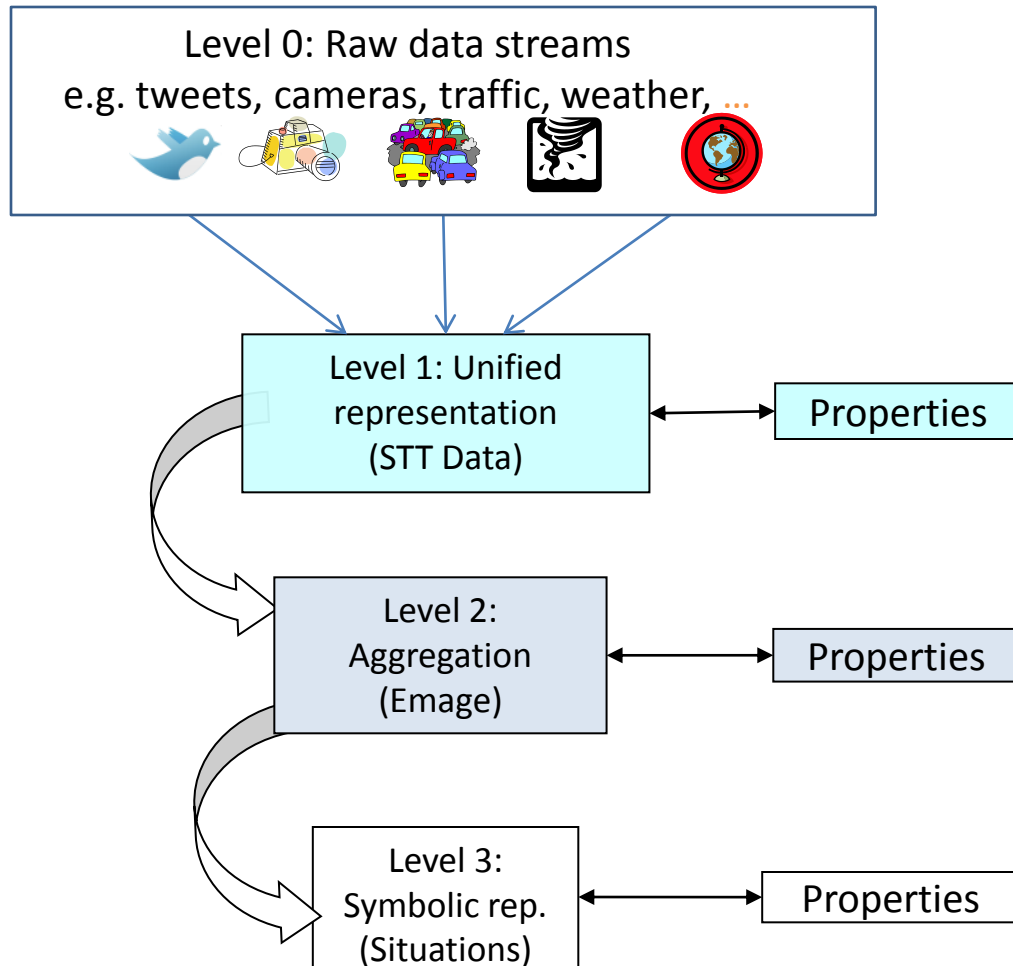
(e) Predicted hurricane path (source: KML)



(f) Open shelters coverage (Source: KML)

Representation for different data sources into a common spatio-temporal format.

Data and Processing Levels



Eventshop

Billions of data sources.

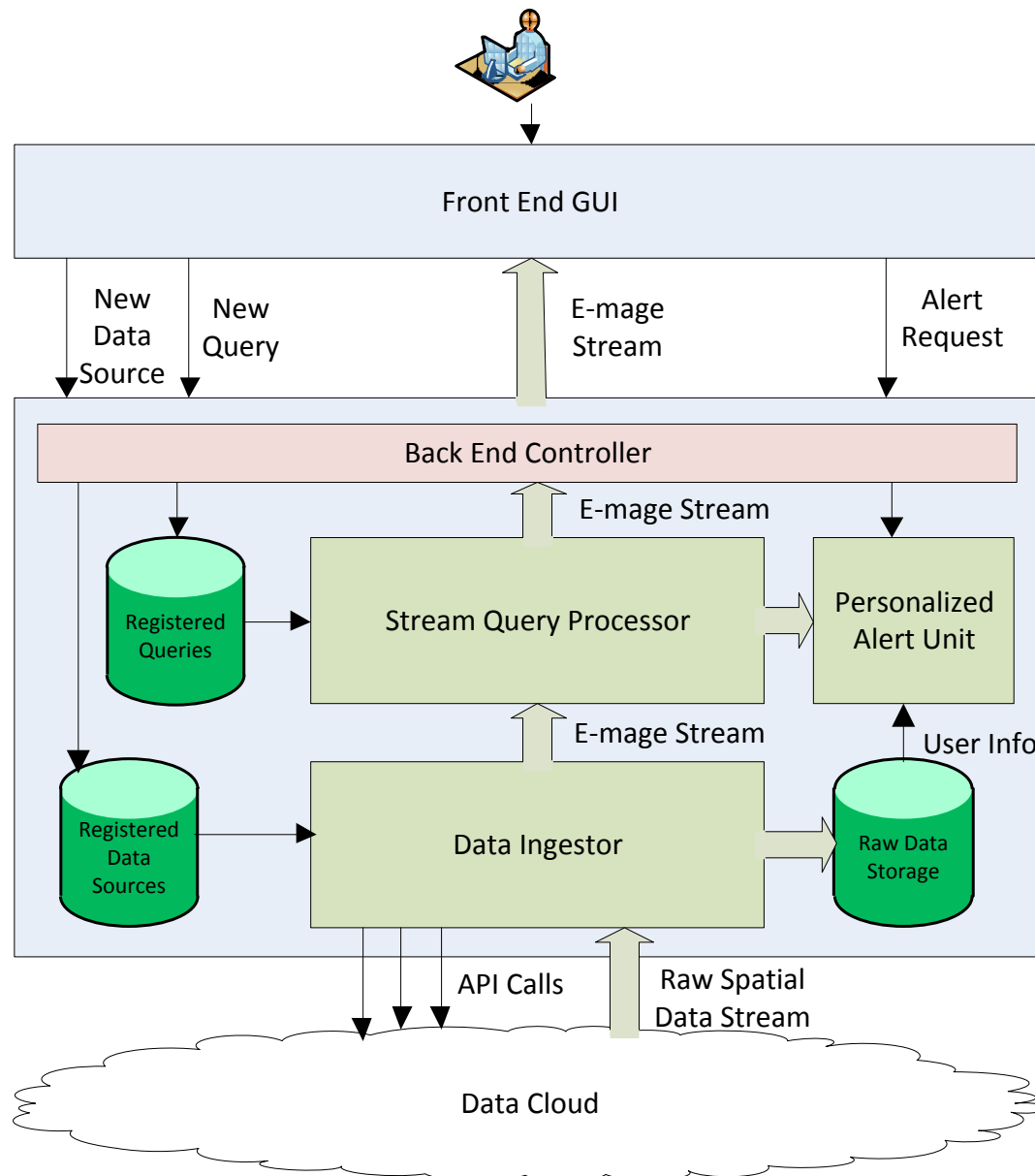
Selecting and combining appropriate sources to detect situations.

Interactions with different types of Users

Decision Makers

Individuals

Eventshop: Architecture



Eventshop: Interaction Environment

The screenshot shows the Eventshop web application running in a Mozilla Firefox browser. The interface is divided into several functional panels:

- a) Data-source panel:** A table listing various data sources with their IDs and statuses.

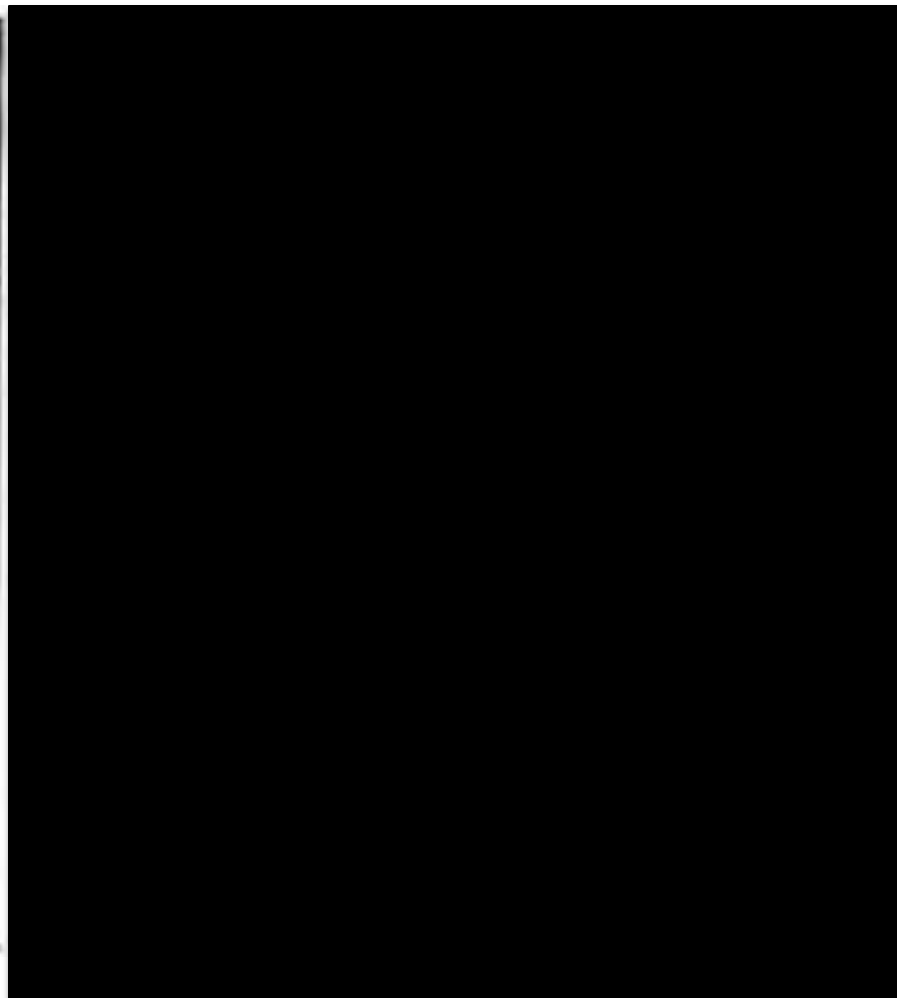
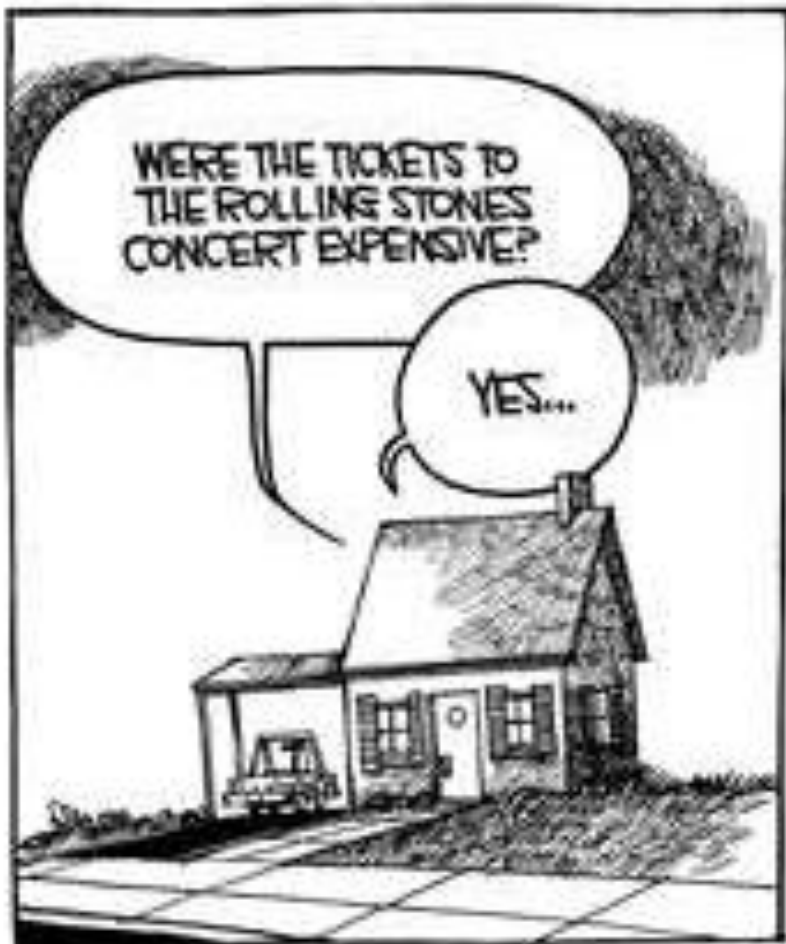
Source Name	Source ID	Status
Twitter-Obama	0	Available
Twitter-Happy	1	Available
Twitter-Sad	2	Available
CSV-Population	3	Available
Visual-Pollen	4	Available
Visual-Infrared	5	Available
Visual-AQI	6	Available
Twitter-Asthma	7	Available
KML-HurForecast	8	Collecting..
KML-Shelters	9	Available
Twitter-Hurricane	10	Available
Visual-Flood	11	Available
Visual-HurStorm	12	Available
Visual-Fire	13	Available
Simulator-Hurricane	14	Available
- b) Operators panel:** A set of icons representing different data processing operations such as filtering, aggregation, and visualization, along with 'Execute' and 'Take Action!' buttons.
- c) Intermediate query panel:** A text input field containing the query string 'spmatching.fromFile_ds14'.
- d) Registered queries:** A table showing the status of registered queries.

QID	Status	Query String
4	stopped	grouping(agg.AggsUM(filter_c
13	stopped	agg.AggsDIV((spchar.splitsum(
14	running	spmatching.fromFile_ds14
- e) Results panel:** A visualization area featuring a map of the United States and a timeline. The map shows a red location marker and a 'Value 0.78' at the current time. The timeline below shows a blue bar representing the data value over time from Saturday, October 1st to Tuesday, October 4th. A 'Numeric value' field displays '0.784084'.

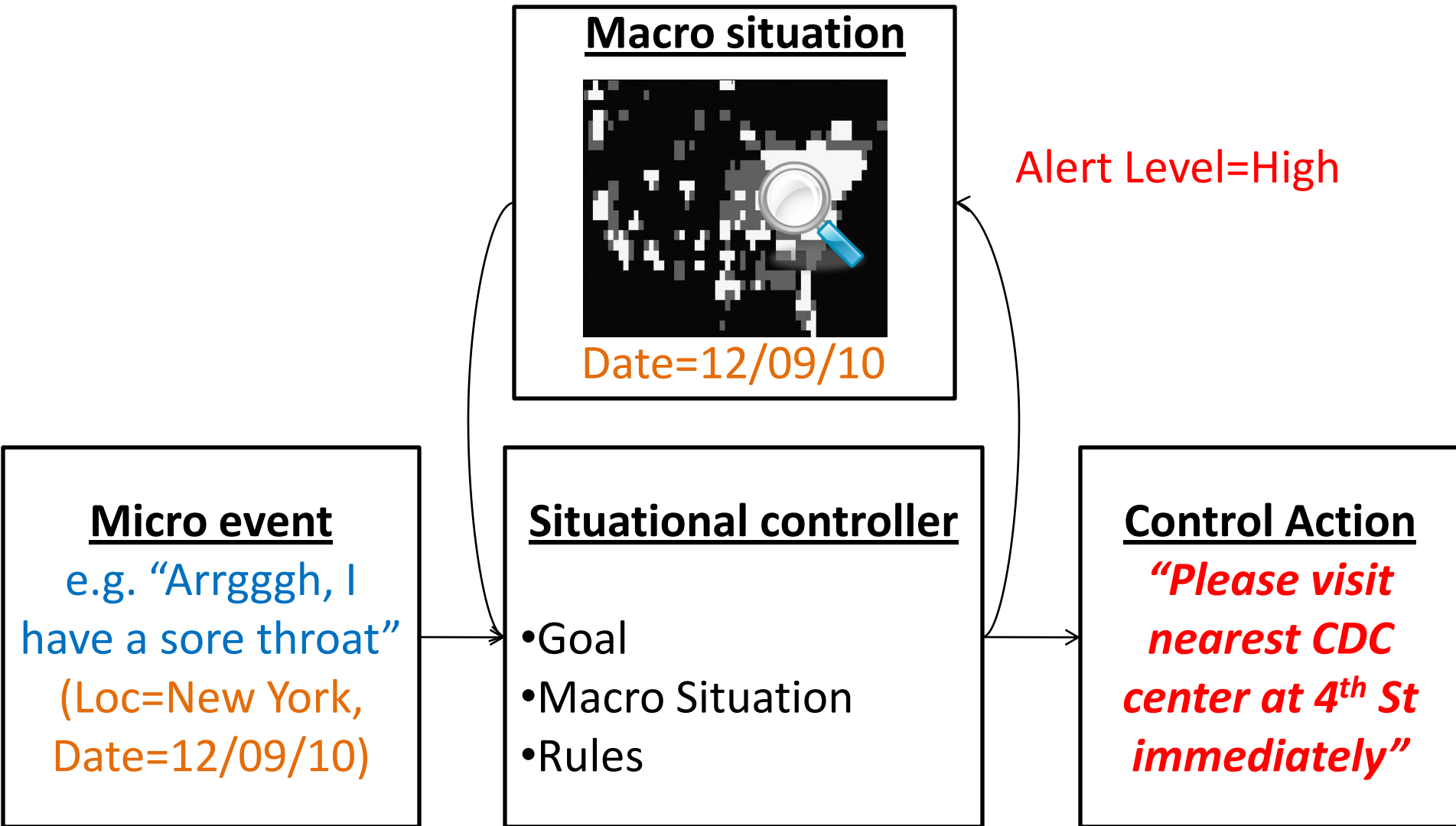
Situation characterization operators

S. No	Operator	Input	Output
1	Selection σ	Temporal E-mage Set	Temporal E-mage Set
2	Arithmetic & Logical \oplus	K*Temporal E-mage Set	Temporal E-mage Set
3	Aggregation α	Temporal E-mage set	Temporal E-mage Set
4	Grouping γ	Temporal E-mage Set	Temporal E-mage Set
5	Characterization : • Spatial ϕ • Temporal τ	• Temporal E-mage Set • Temporal Pixel Set	• Temporal Pixel Set • Temporal Pixel Set
6	Pattern Matching ψ • Spatial ϕ • Temporal τ	• Temporal E-mage Set • Temporal Pixel Set	• Temporal Pixel Set • Temporal Pixel Set

Personal Situation

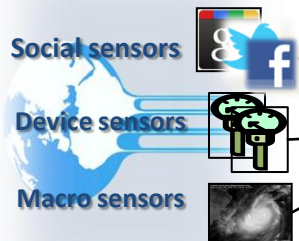


Personalized Situation Control

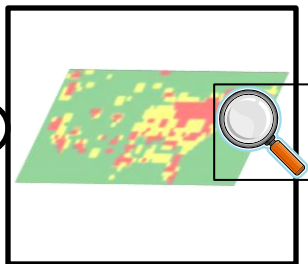


Level 1 personal threat + Level 3 Macro threat -> Immediate action

**Planetary
scale sensing**



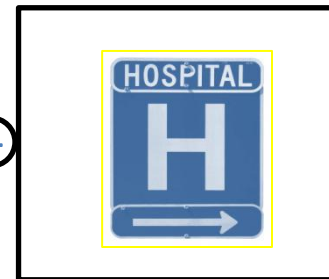
**1) Macro
situation**



**2) Personalized
situation**



**3) Recommend
Actions**



Taking personalized actions

The screenshot shows a web browser window with the URL `localhost:8080/eventshop/`. The interface includes a "Registered Queries" table, a "Data Source Panel", and a map of Thailand.

QID	Status	Query String
4	stopped	grouping(agg AggSUM(filter_c
13	stopped	agg AggDIV((spchar spfsum(
15	running	agg AggSUB(ds9,q14)
18	running	grouping_q17

Operators: [Funnel] [Pie Chart] [Bar Chart] [Line Chart] [Map] [Folder] [Up Arrow] [Execute]

Query: grouping_q17

Map: Thailand map showing flood risk levels. Legend: 1e+009 to -1e+009. Date: Wed Nov 02 14:39:00 2011.

Data Source Panel:

Source Name	Source ID	Status
Twitter-ThaiFlood	0	Available
Twitter-Happy	1	Available
Twitter-Sad	2	Available
CSV-Population	3	Available
Visual-Pollen	4	Available
Visual-Infrared	5	Available
Visual-AQI	6	Available
Twitter-Asthma	7	Available
KML-FloodedAreas	8	Available
KML-Shelters	9	Available
Twitter-Hurricane	10	Available
Visual-Flood	11	Collecting...
Visual-HurStorm	12	Collecting...
Visual-Fire	13	Collecting...
CSV-Traffic	14	Available

Buttons: Execute, Stop, View Data Source, Add New Data Source, Take Action!, OK

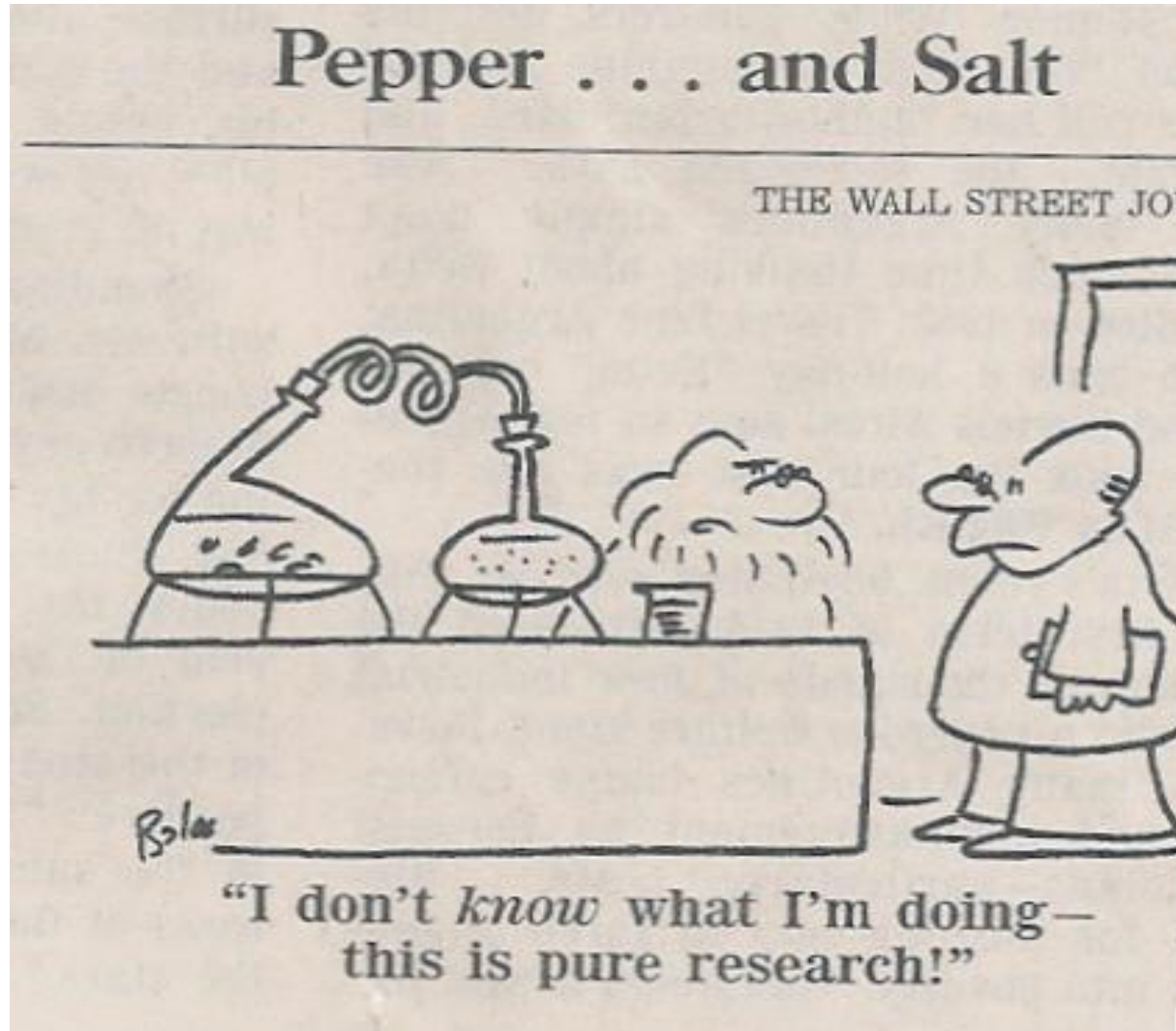
The screenshot shows a Twitter feed with the following tweets:

- pimsila** Kiringim - D
RT @SocLifeNetworks: @pimsila : (TEST ONLY #SLN): Nearest flood shelter: ตลาดนัดแดนทอง shelter.thaiflood.com/data.php?id=877 cc @prime2209 31 Oct
- SocLifeNetworks** Social Life Networks
@NattaChu : (TEST ONLY #SLN): Nearest flood shelter: ตลาดนัดแดนทอง shelter.thaiflood.com/data.php?id=877 31 Oct
- SocLifeNetworks** Social Life Networks
@yaiwoon : (TEST ONLY #SLN): Nearest flood shelter: ตลาดนัดแดนทอง shelter.thaiflood.com/data.php?id=877 31 Oct
- SocLifeNetworks** Social Life Networks
@Phitchy_Forez : (TEST ONLY #SLN): Nearest flood shelter: วัดเขานแก้ว จ.ชัยนาท shelter.thaiflood.com/data.php?id=358 31 Oct
- SocLifeNetworks** Social Life Networks
@NAM_TAAN : (TEST ONLY #SLN): Nearest flood shelter: วัดเขานแก้ว shelter.thaiflood.com/data.php?id=7 31 Oct
- SocLifeNetworks** Social Life Networks
@krmkppss : (TEST ONLY #SLN): Nearest flood shelter: วัดทับขี้เหล็ก จ.ชัยนาท shelter.thaiflood.com/data.php?id=349 31 Oct
- SocLifeNetworks** Social Life Networks
@_8777 : (TEST ONLY #SLN): Nearest flood shelter: วัดทับขี้เหล็ก จ.ชัยนาท shelter.thaiflood.com/data.php?id=349 31 Oct
- SocLifeNetworks** Social Life Networks
@pokhanate : (TEST ONLY #SLN): Nearest flood shelter: ตลาดนัดแดนทอง shelter.thaiflood.com/data.php?id=877 31 Oct
- SocLifeNetworks** Social Life Networks
@pimsila : (TEST ONLY #SLN): Nearest flood shelter: ตลาดนัดแดนทอง shelter.thaiflood.com/data.php?id=877 31 Oct
- SocLifeNetworks** Social Life Networks
@snook_sone : (TEST ONLY #SLN): Nearest flood shelter: วัดเขานแก้ว จ.ชัยนาท shelter.thaiflood.com/data.php?id=358 31 Oct
- SocLifeNetworks** Social Life Networks
@appleplease : (TEST ONLY #SLN): Nearest flood shelter: วัดเขานแก้ว shelter.thaiflood.com/data.php?id=7 31 Oct

Changing Nature of Search

- Was for Archived data and mostly for researchers (*using Desktop*).
- Currently: Mobile clients, Local data, and Social Graph (SoMoLo).
- Immediate Future: Situations from Real Time data and Recommendations.
- Future: Predictive control of emerging situations.

Thanks for your time and attention.



For questions: jain@ics.uci.edu