

An approach to modeling short messages in spatio- temporal networks

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Outline

1. Concept & Objective
2. The Radio Social Platform
3. Realisation
4. Contribution
5. Perspectives
6. Current Works

Short messages

- People prefer to communicate with short messages
 - Time constraints
 - Easy to produce & to share
- Technical limitations/restrictions of mobile sensors

Motivation

« This traffic jam bothers me! »

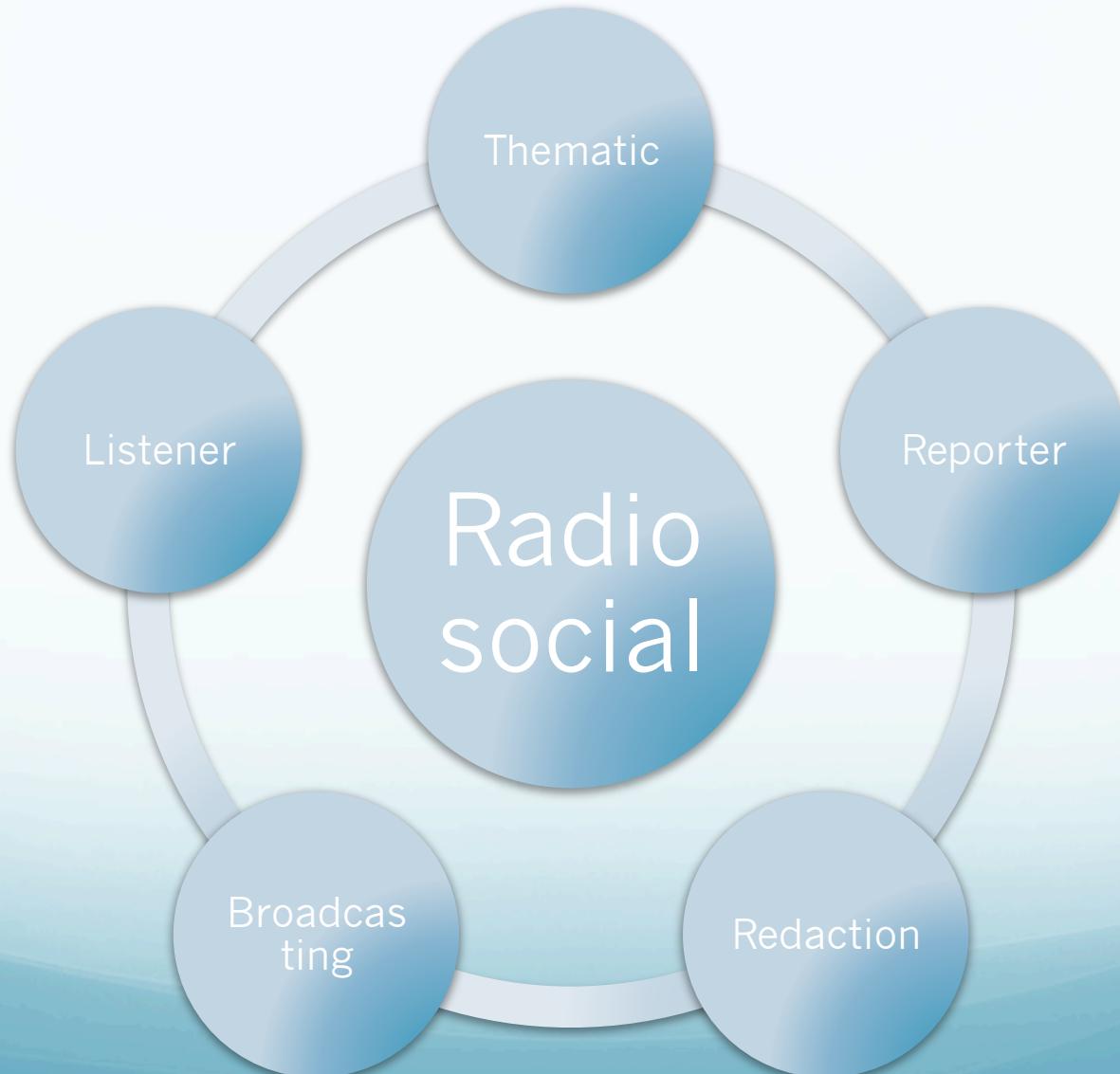


« I am on Route des Lucioles at 6:00 P.M and there is a traffic jam which bothers me »

Objective

- Semantic enrichment
 - Spatial properties & thematic
- Platform for creating, managing and sharing spatio-temporal information.

Radio Social



Use case



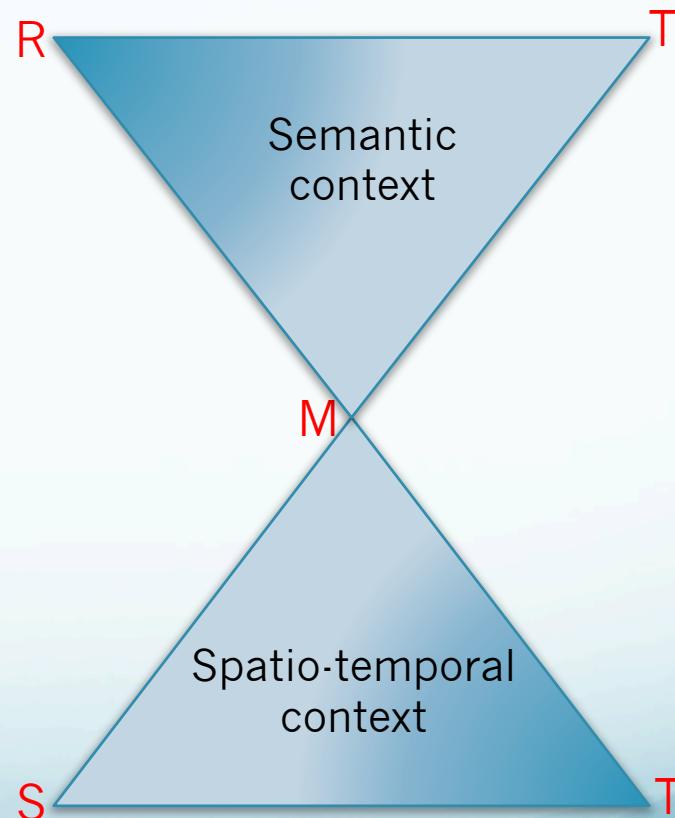
Message structures

- Defined by the thematic
- Qualificative : tags, symbols
- Descriptive

BRIEF

Message modeling & context enrichment

- Message
- RS metadata
 - Thematic
 - Reporter
 - Space
 - Time

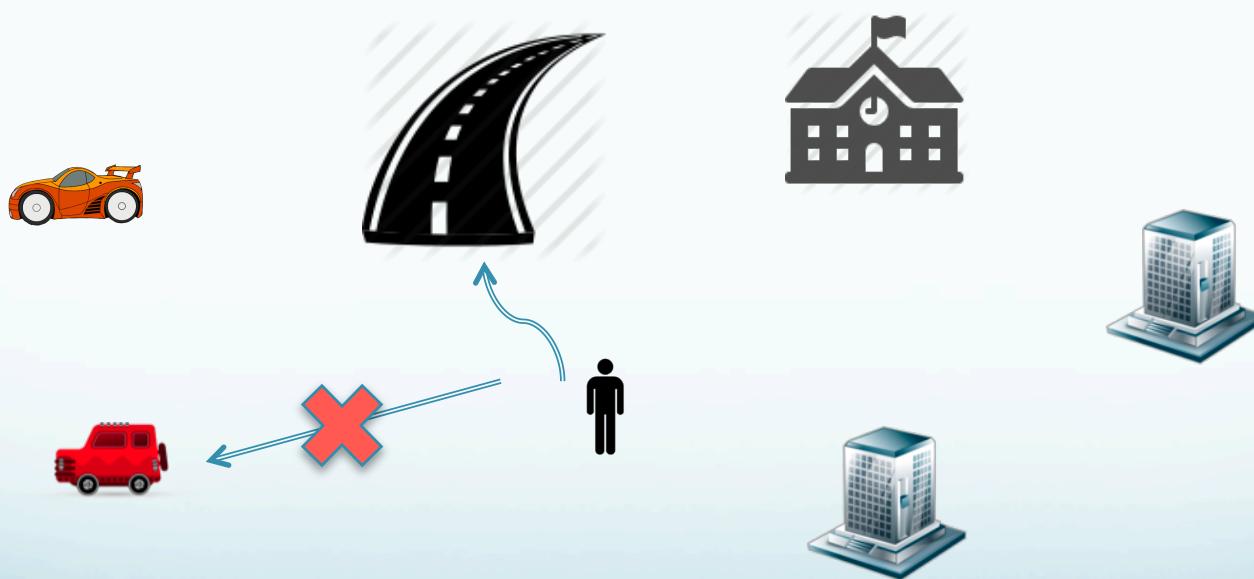


Context inferring

- Top down approach → Non trivial problem
 - Bottom up approach → The approach we use
- We aim to enrich the information context regard to user context

Spatial Representation

- Geographical space
- Set of dynamic and static objects



Spatial modeling

- Dynamic spatial entities are modelized regard to static entities
- Semantic and GIS infrastructures
 - Google Maps & Places services
 - Geonames ontology

Exemple

Geonames & Google Places

43.6161871, 7.0677087

{

"long_name" : "Route des Lucioles",

"short_name" : "Route des Lucioles",

"types" : ["route"]

},

:geo a :Feature

shortName : "Route des Lucioles";

name : "Route des Lucioles";

wgs84_pos:lat "43.6161871";

wgs84_pos:long "7.0677087";

Spatial layers overlapping



Time modelling

- We used the OWL Time
- Instant for messages

```
:messageTi me
  a :Instant;
  :inXSDTime : 2014-03-20T10:30:00-5:00 ;
```

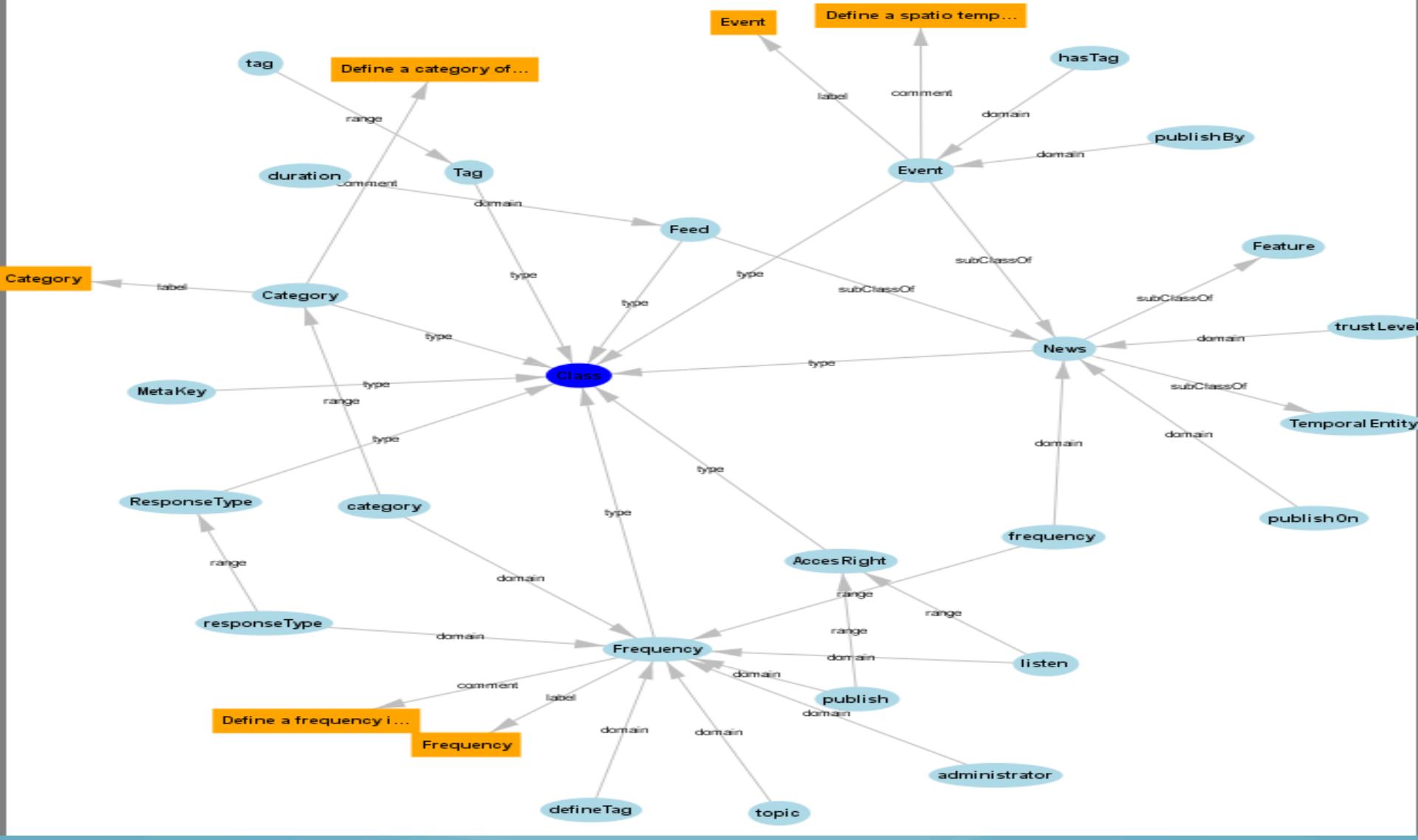
- Interval for event

```
:eventTime
  a :Interval;
  :hasBeginning: :eventStart ;
:eventStart
  a :Instant;
  :inXSDTime 2014-03-20T10:30:00-5:00 ;
```

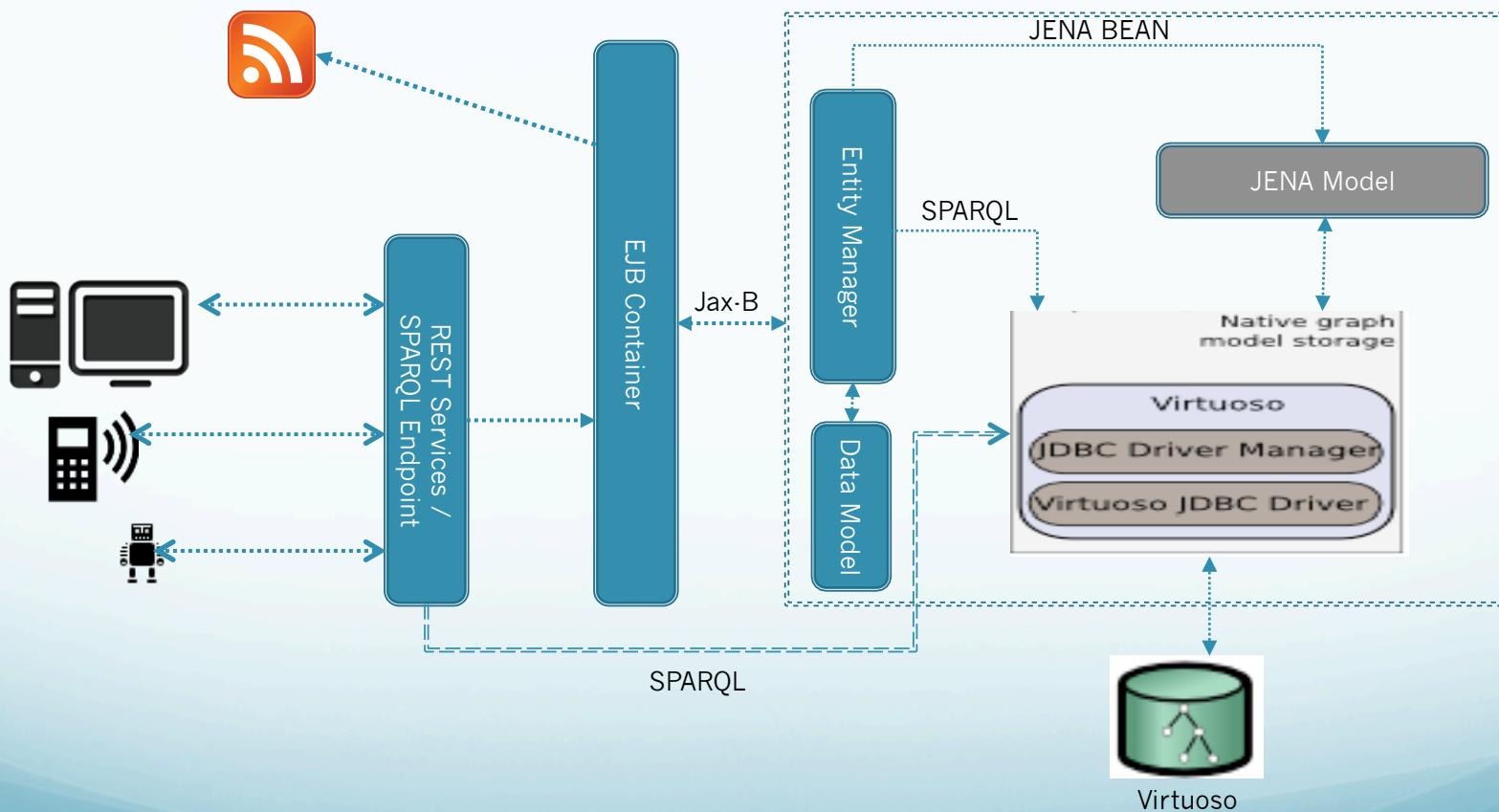
The Ontology

- 9 classes
- 13 ObjectProperty
- 6 DatatypeProperty
- Using existing ontologies
 - OWL Time
 - GeoNames & WGS84
 - FOAF

Radio Sociale Ontology



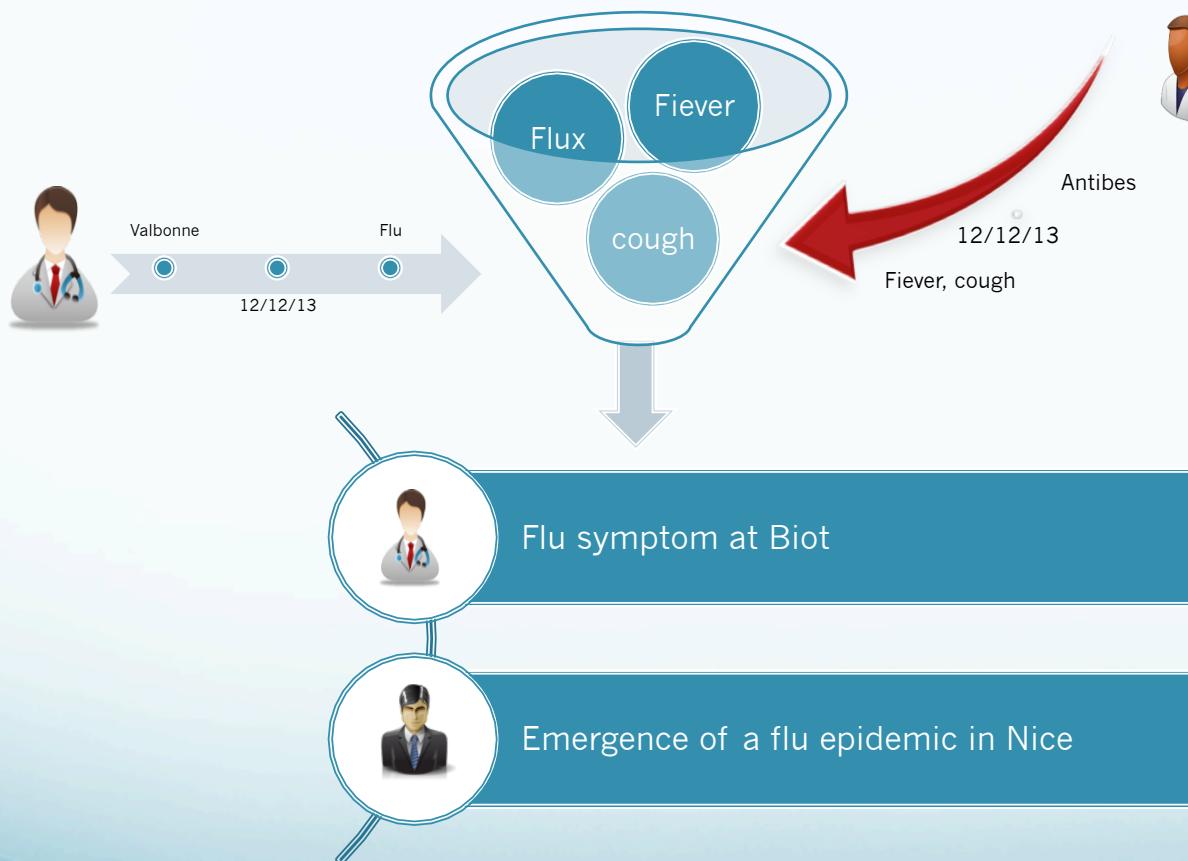
Technical architecture



Other use case

- Epidemic symptom report
- The frequency : RASE
- Annotation structure
 - Disease : Flu
 - Symptom : cough, rheum
 - Metakeys : reliability, certitude

RASE : Use case



Contributions

- Short messages modeling
- Spatial mobile Gentities modeling
- The radio sociale ontology
- Generic platform radio social platform

Research keys and limitations

- Modeling thematic using existing ontologies (DBpedia)
- Ontology-based user interfaces
- Spatial reasoning
 - What could be the incidence of an event on a region to others

Current works

- Qualitative spatial representation
- Spatial reasonning

Thank you !