# Journée des doctorants du LIG

## Appréhender l'hétérogénéité à (très) large échelle

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*sous la direction de*

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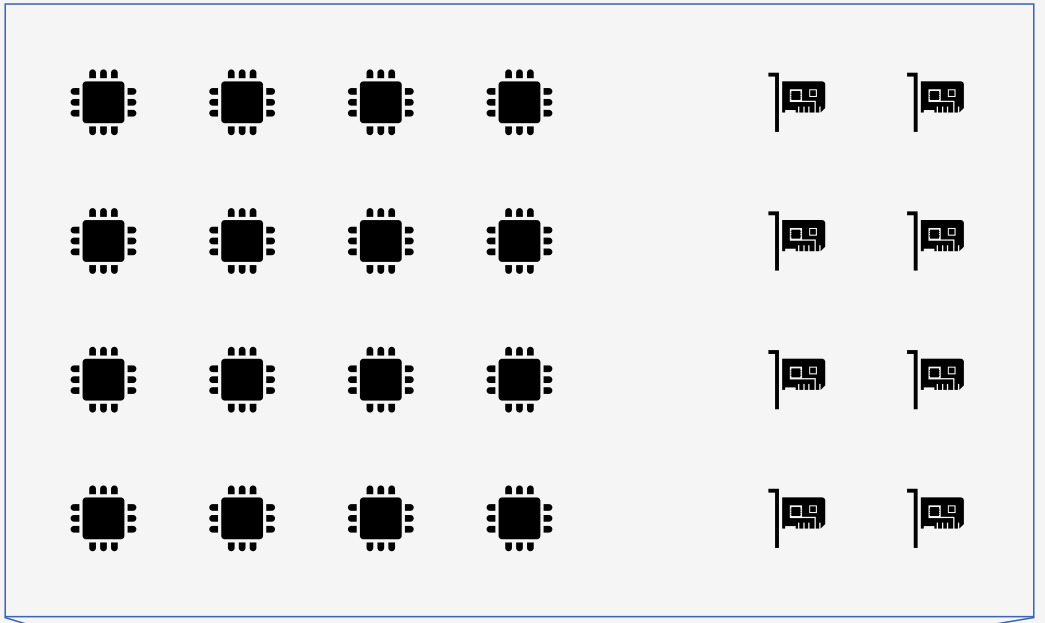
MOAIS

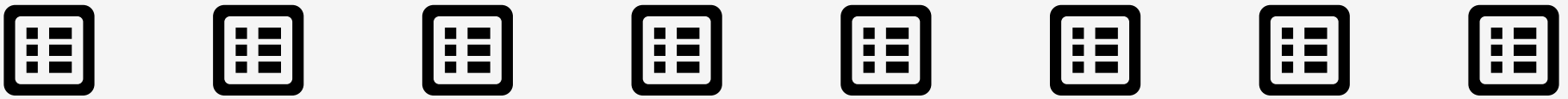
—

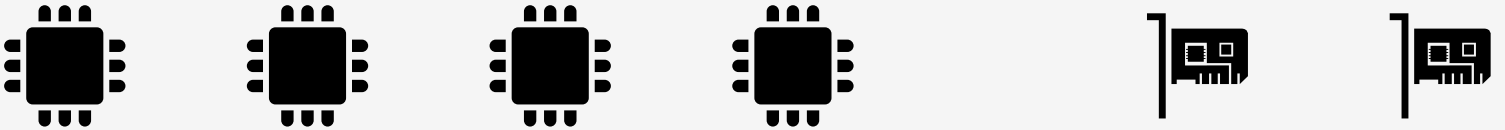


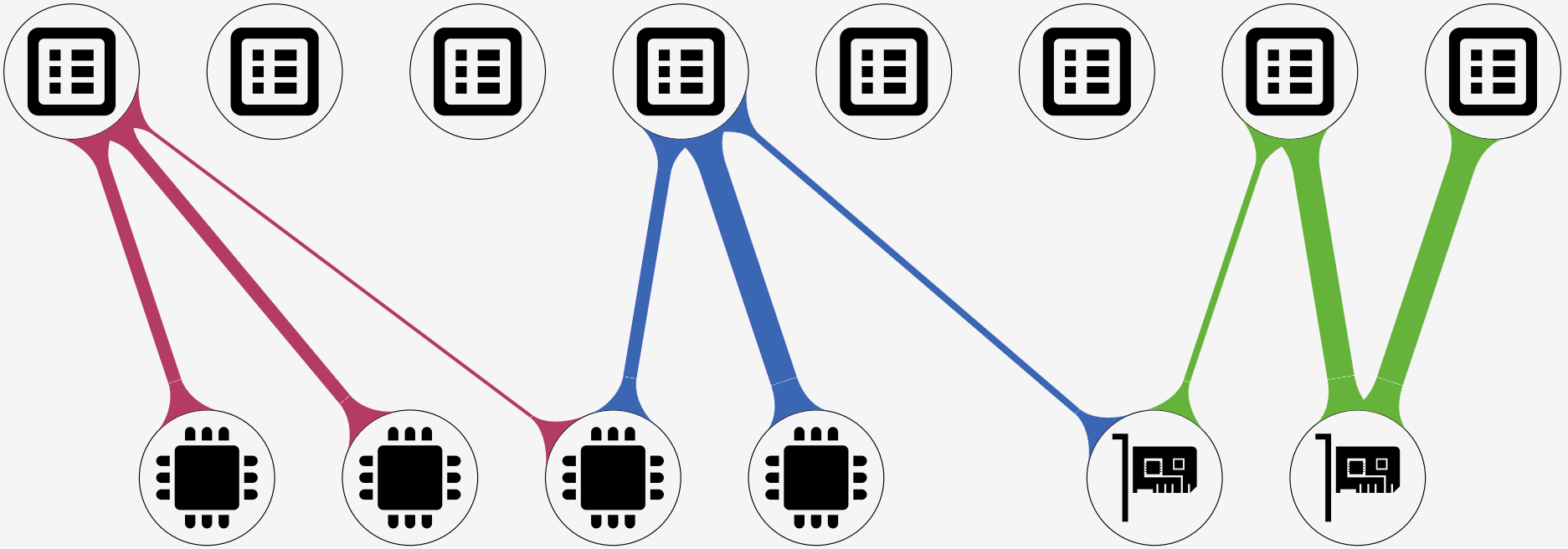

26 mars 2015

$10^{18}$










LET'S GO
MASSIVELY PARALLEL

# An approach to reasoning about graph transformations

Jon Hal Brenas, Rachid Echahed, Martin Strecker

LIG, IRIT

26/03/2015

# Example

We give a small example:

Pre: $R : \mathit{Researcher} \wedge L : \mathit{Lab}$

**addR**($R$ `Member` $L$);

**while** $(\exists \tau. \neg(L$ `T_i` $\tau) \wedge R : \exists \mathtt{Pub}.(\exists \mathtt{T}.\{\tau\}))$ {

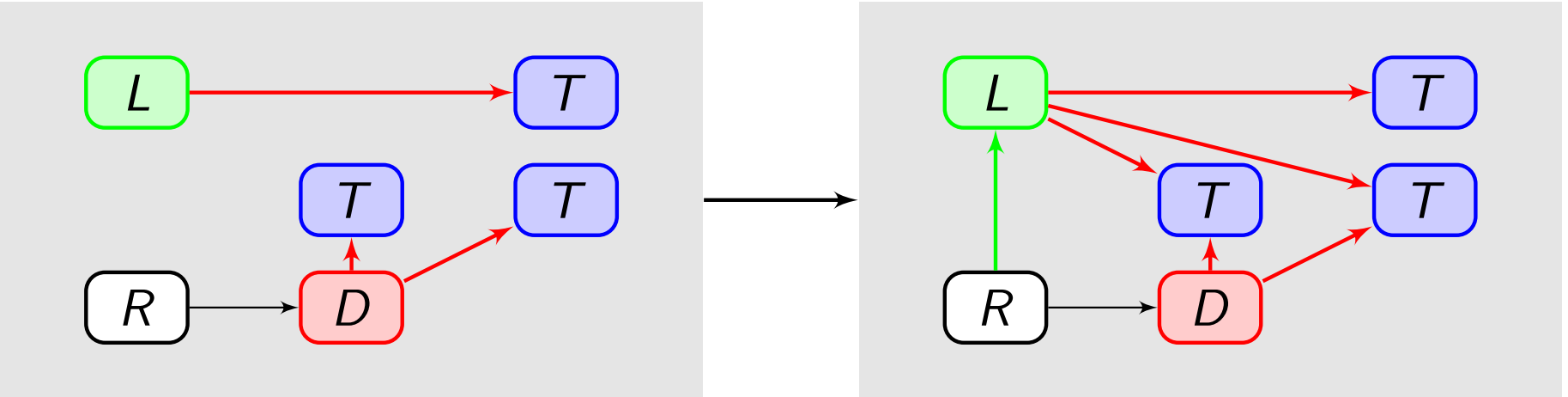
Inv: $R : \mathit{Researcher} \wedge L : \mathit{Lab}$

**select** $\tau$ **with** $\neg(L$ `T_i` $\tau) \wedge R : \exists.\mathtt{Pub}(\exists.\mathtt{T}\{\tau\})$;

**addR** $(L$ `T_i` $\tau)$

};

Post: $R : \mathit{Researcher} \wedge L : \mathit{Lab} \wedge R : \forall \mathtt{Pub}.(\forall \mathtt{T}.(\exists \mathtt{T\_i}^{-}.\{L\})) \wedge R$ `Member` $L$



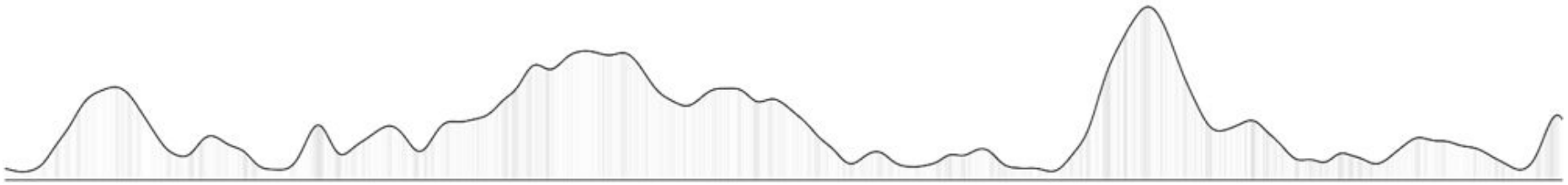
# Thanks

Thank you for your attention.

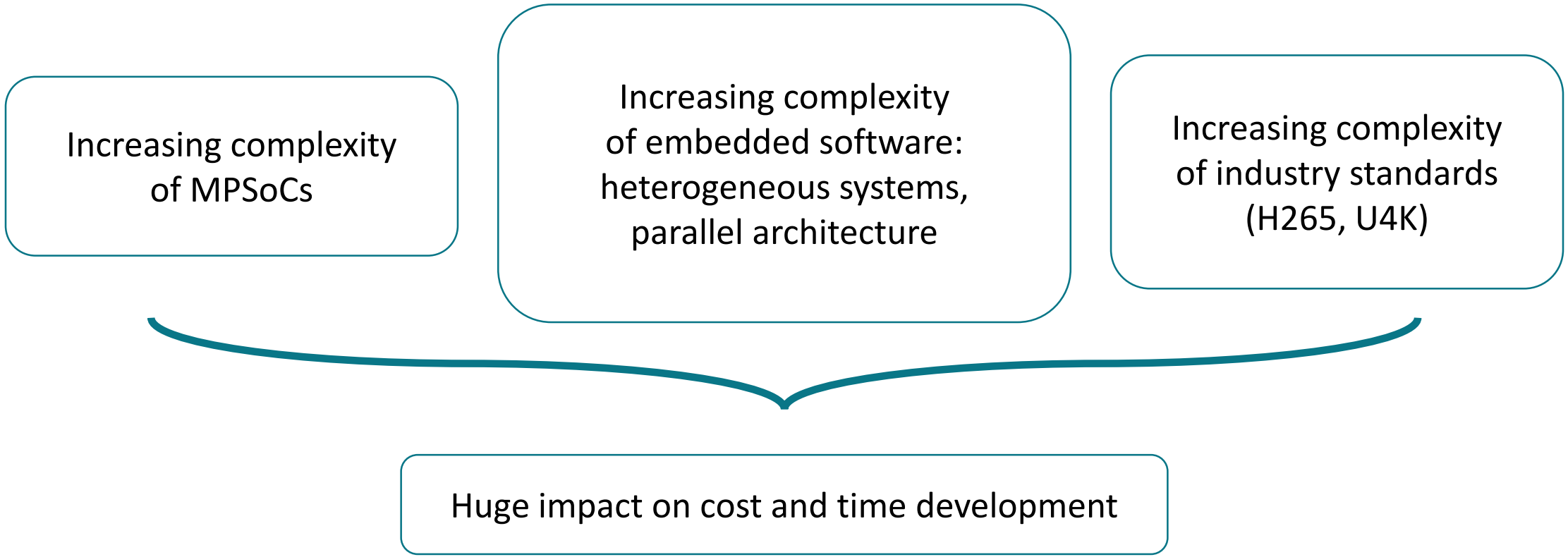
# Multi-scale Interaction Techniques for the Interactive Visualization of Traces of Execution

Rémy Dautriche

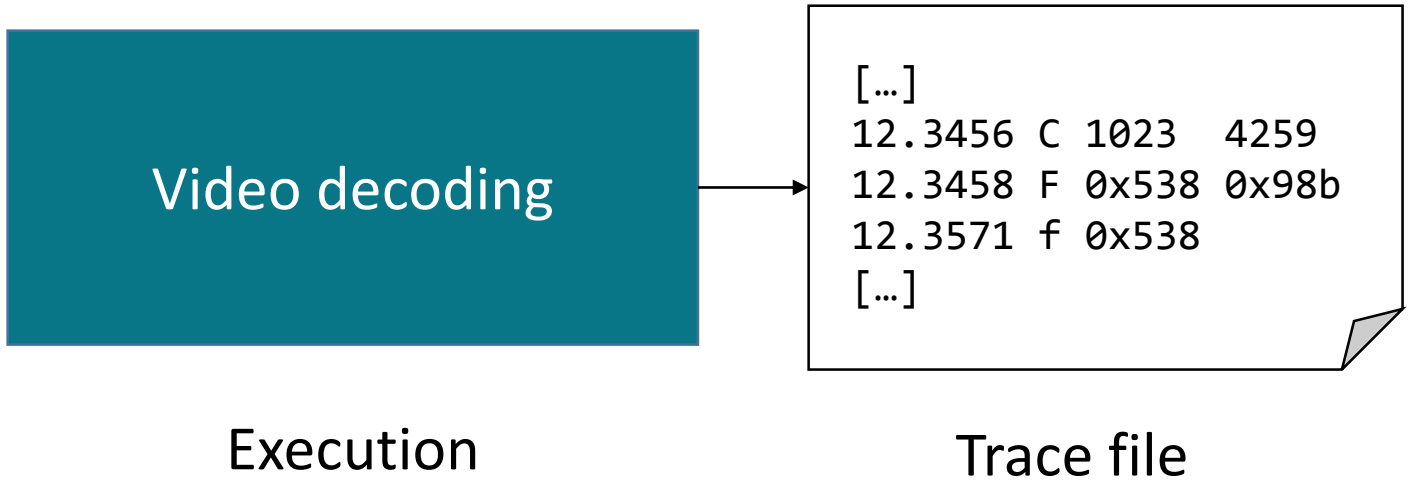
Supervised by: Renaud Blanch, Alexandre Termier and Miguel Santana



# Why?


Increasing complexity of MPSoCs
Increasing complexity of embedded software: heterogeneous systems, parallel architecture
Increasing complexity of industry standards (H265, U4K)
Huge impact on cost and time development

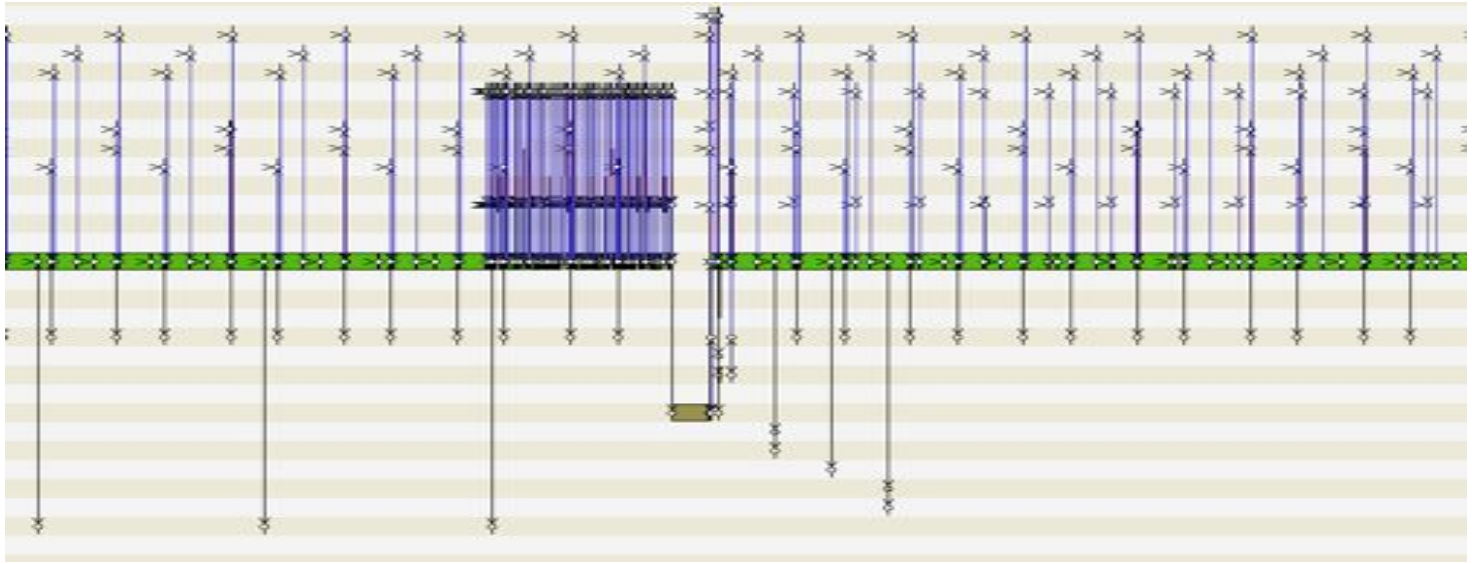
# Data: Execution Traces



# Data: Execution Traces


**~$10^6$ to $10^9$ events**

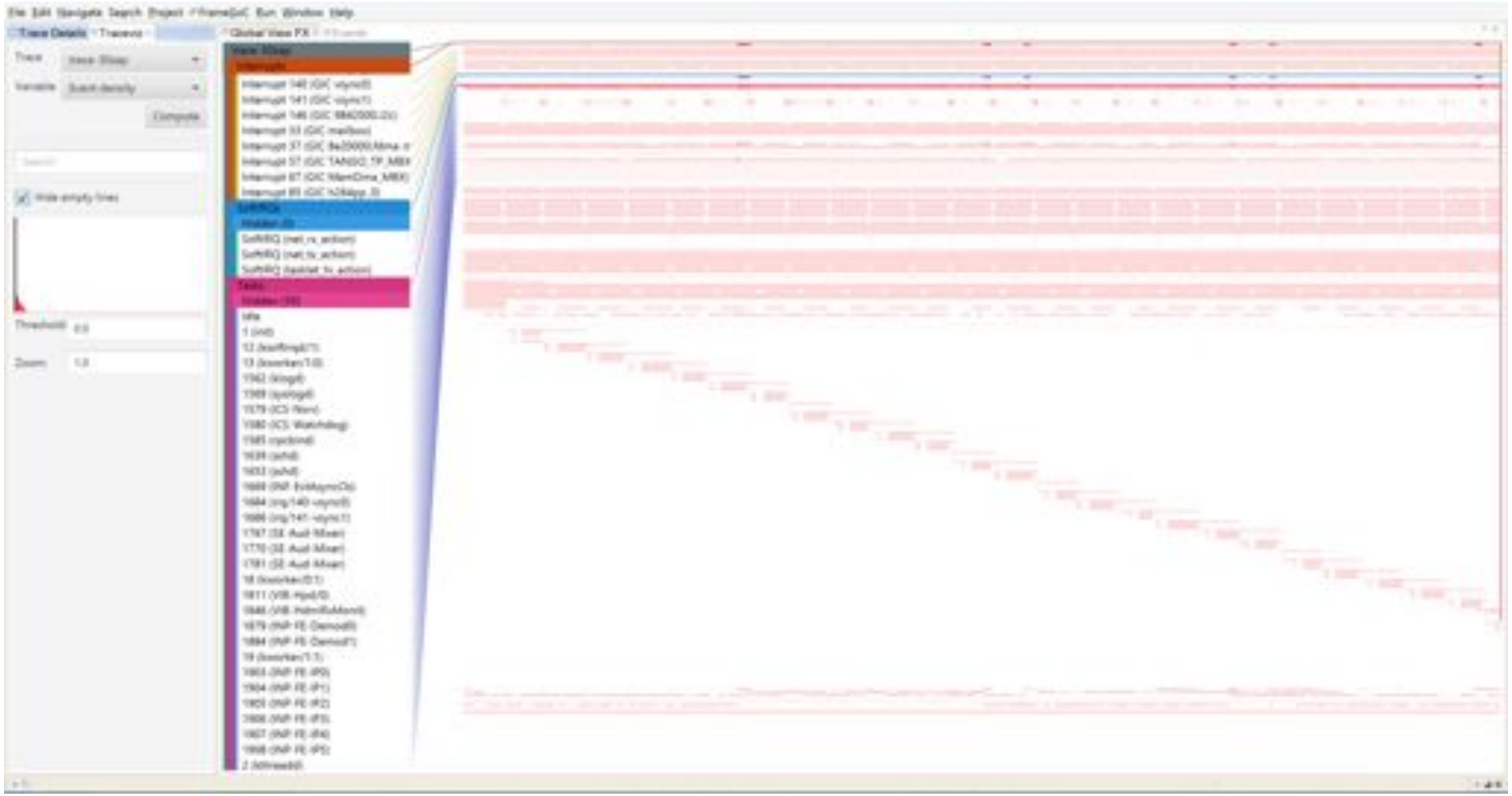
# Challenges



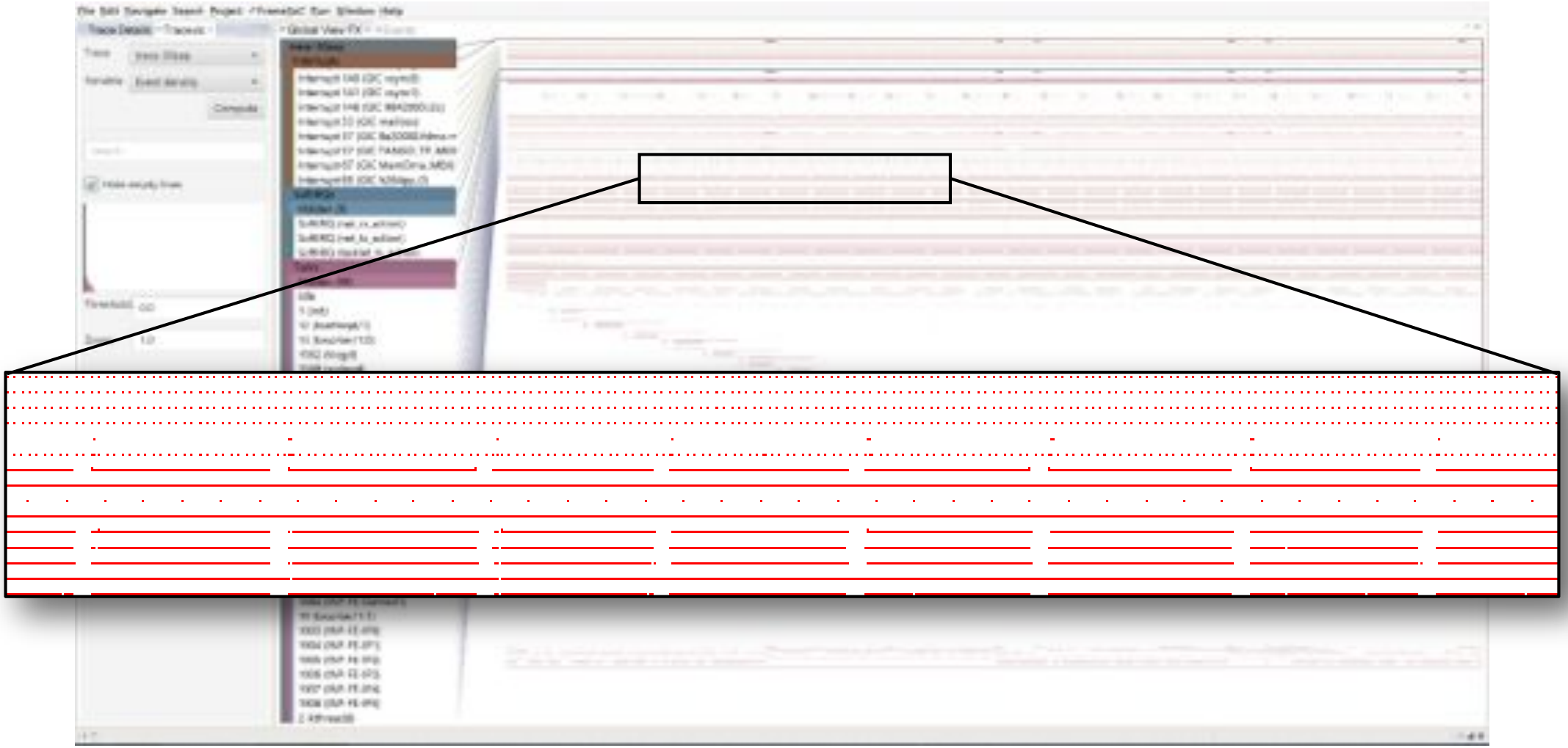
Current tools do not scale

Develop new visualization techniques
to handle this amount of data

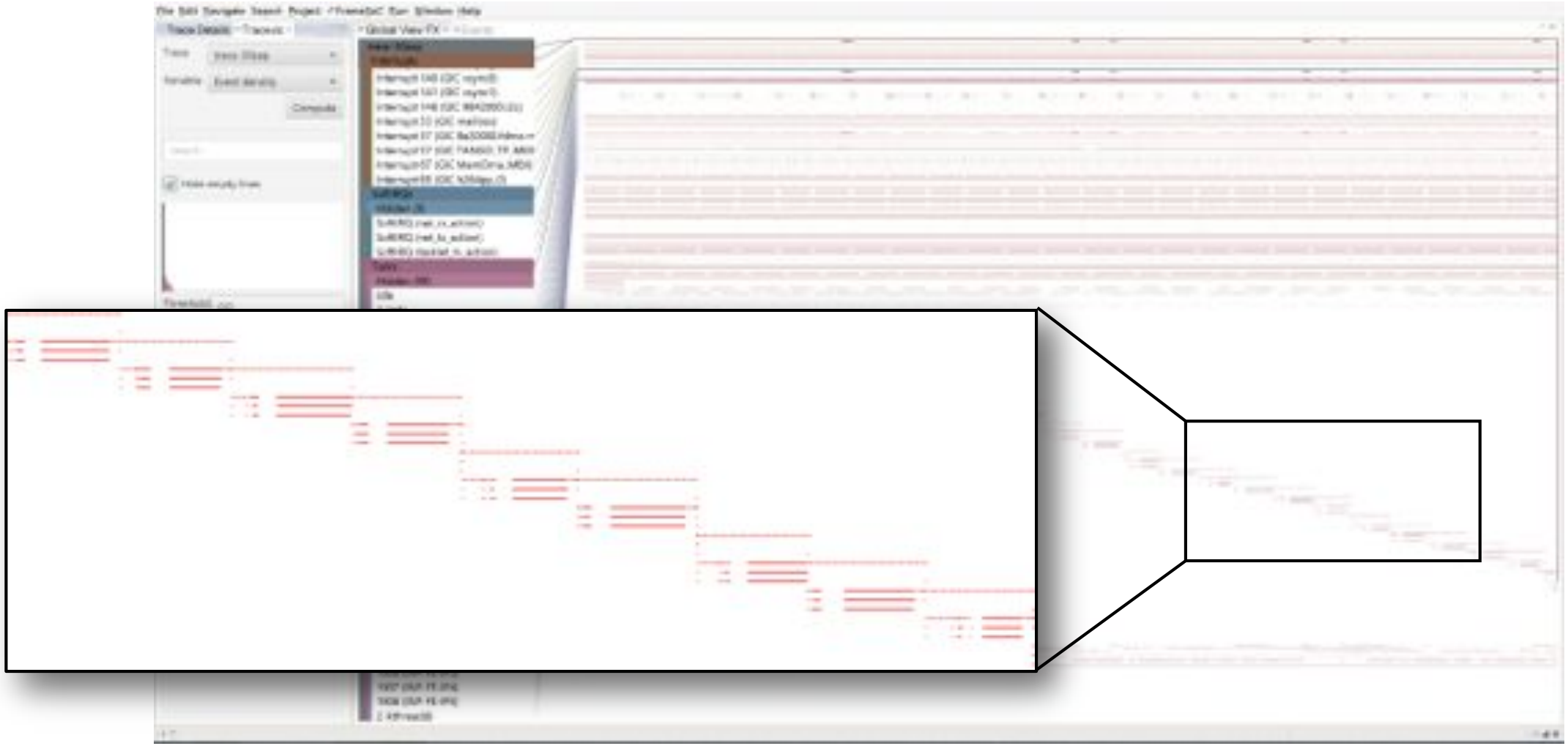
# TraceViz: Overview of trace + filtering



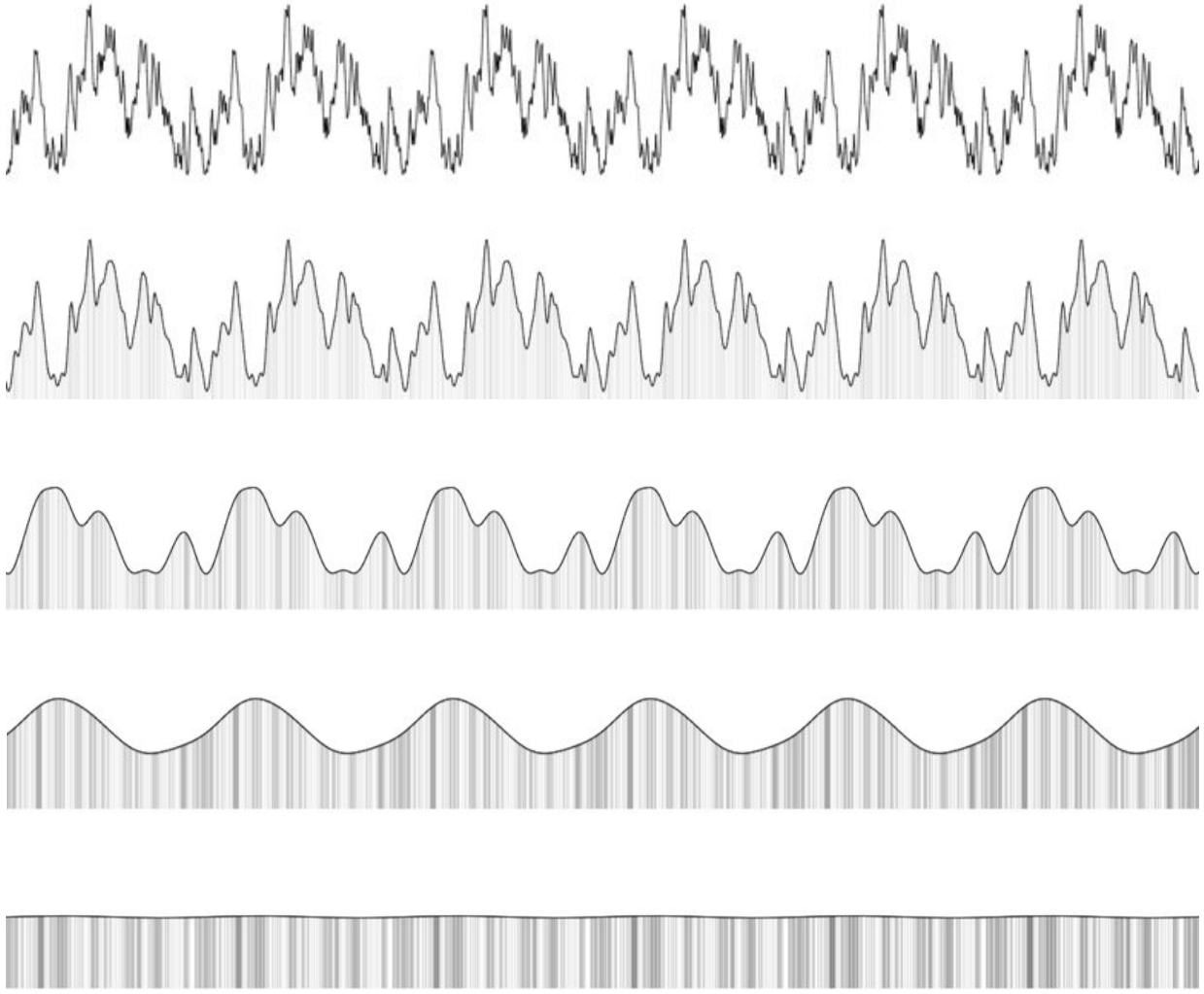
# TraceViz: Detect similar and periodic behavior



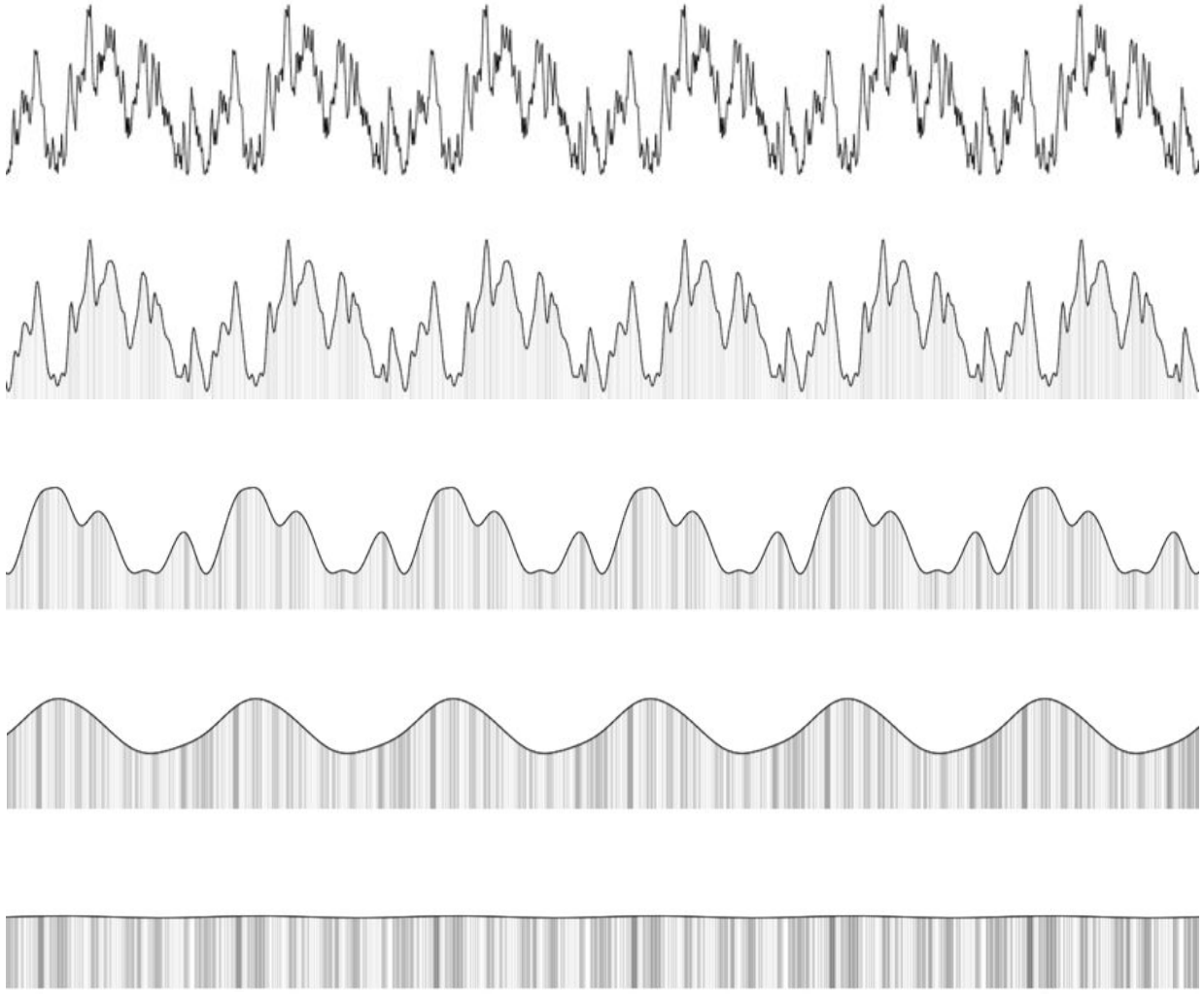
# TraceViz: Identify execution patterns



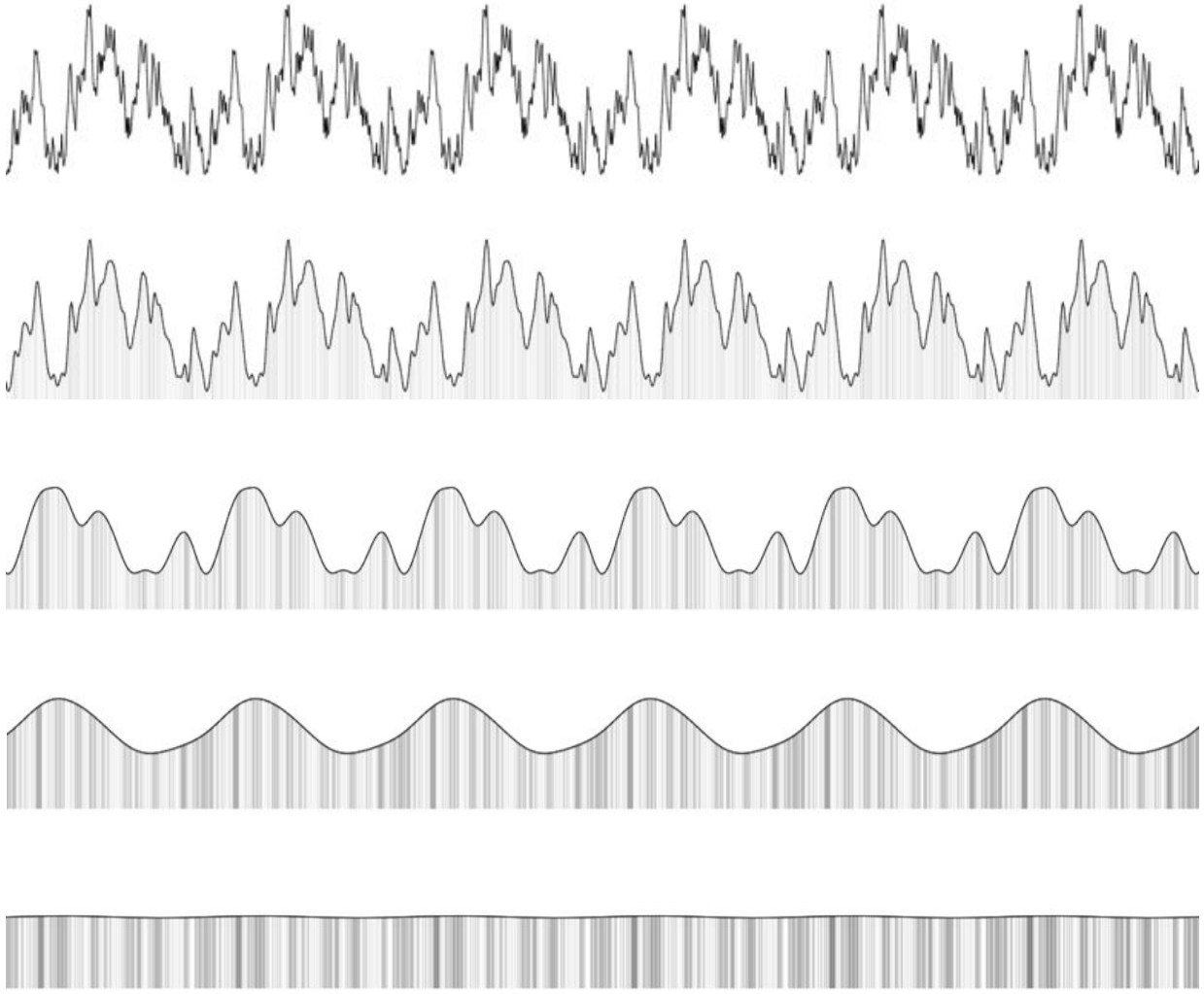
# Slick Graphs: Interactive smoothing technique



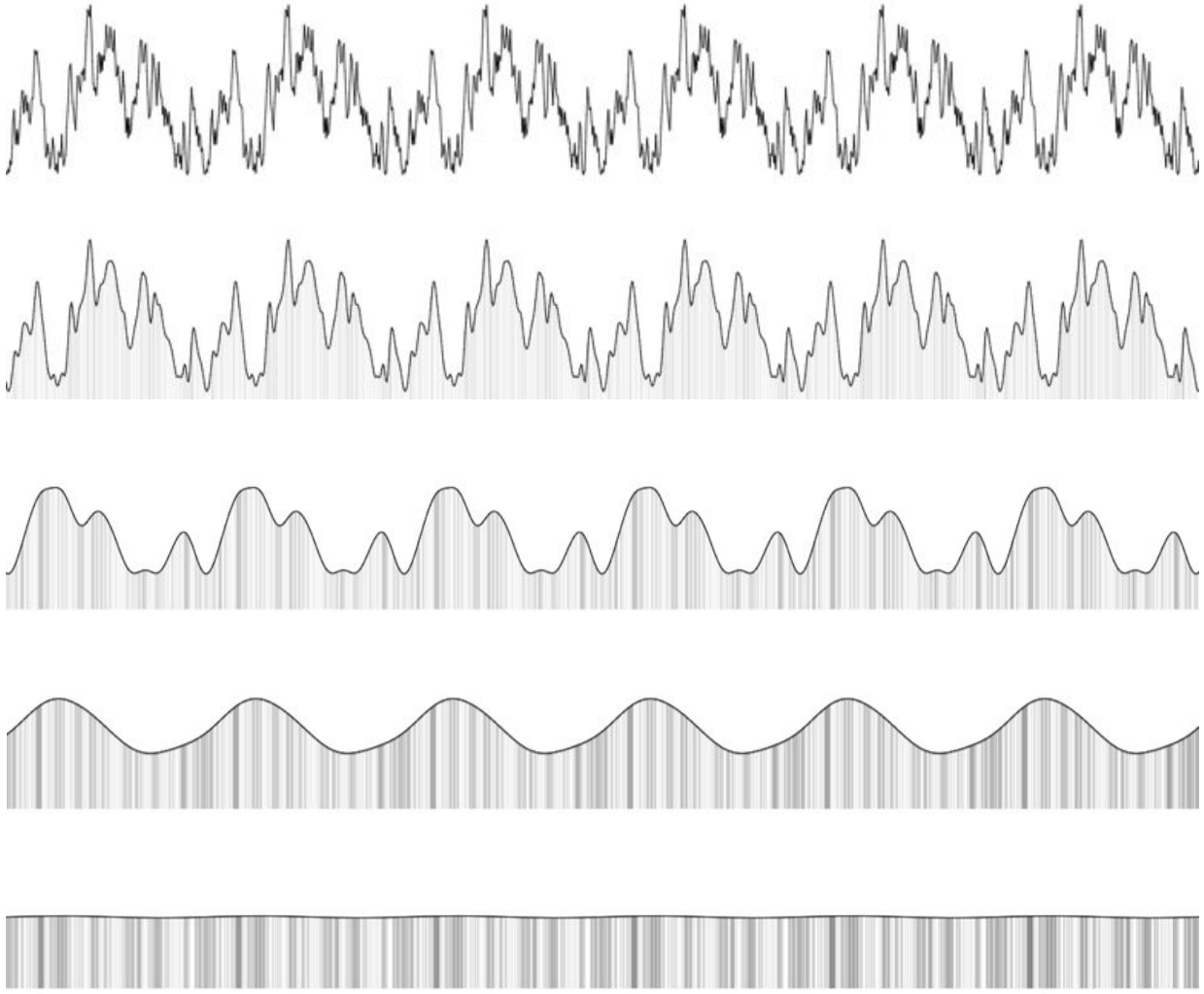
# Slick Graphs: Period detection



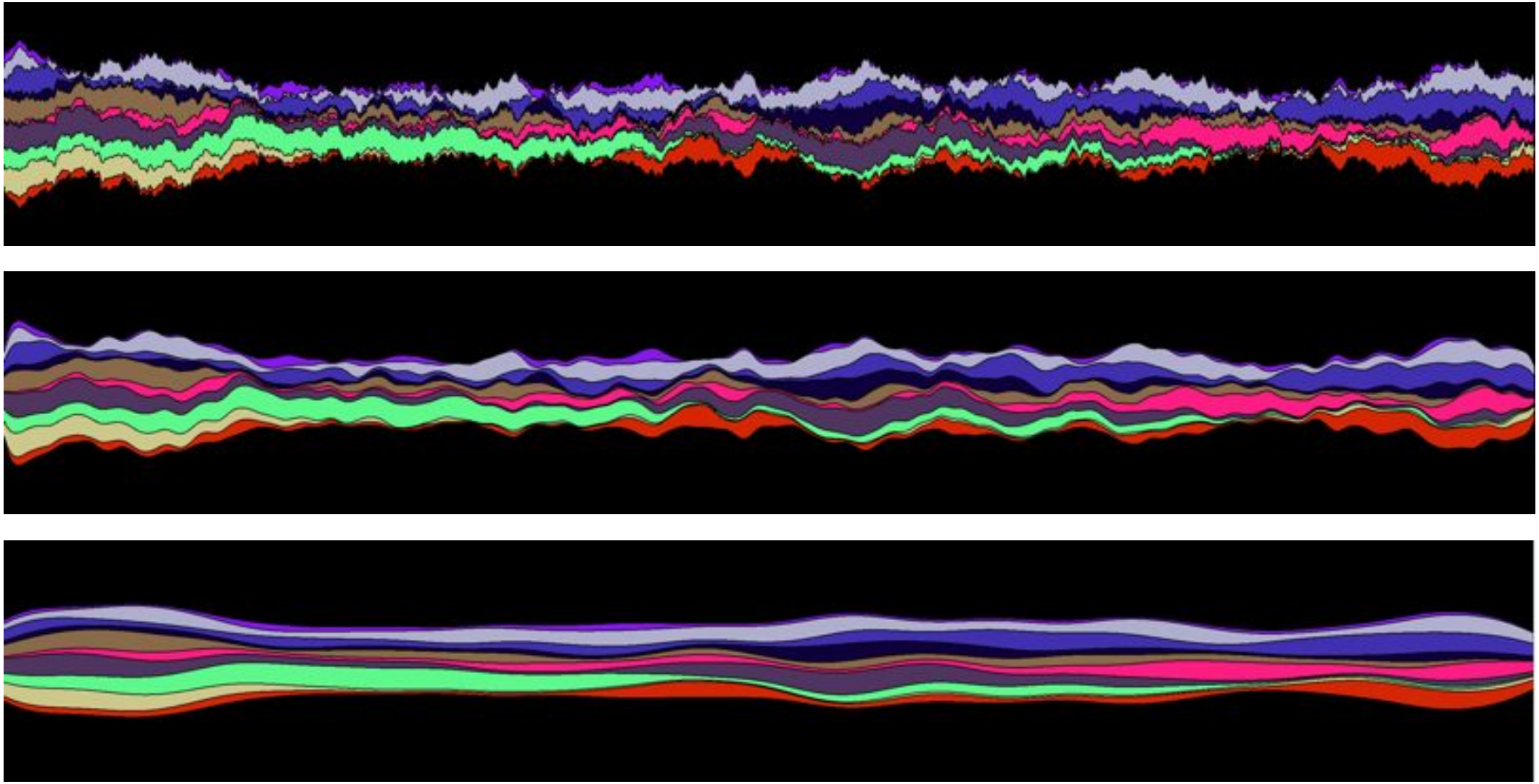
# Slick Graphs: No information loss



# Slick Graphs: Scalability



# Slick Graphs: Integration with existing techniques



# What’s next?

- Integrating TraceViz and Slick Graphs
  - Industrial deployment at STMicroelectronics
- Enrich visualizations using data mining techniques for
  - Automatic error detections
  - Pattern detections

# Thanks !

Journée des doctorants
Laboratoire d'Informatique de Grenoble

# Construction de protocoles de soins auto-adaptatifs pour le suivi des maladies


Amira Derradji - 2ère année Thèse CIFRE

Encadrants

**Recherche (LIG - SIGMA)**
Agnès Front
Christine Verdier

**Industriel (Arcan Systems)**
Vincent Bouzon


26 mars 2015

# Prise en charge médicale à domicile


**Le protocole de soins …**

**HYPOGLYCEMIE** : Taux inférieur à 0.6 g/l voir 0,8g si hyperglycémies prolongées antérieures

- Variable d'un sujet à autre, toujours les mêmes pour un même patient.
- Irritabilité, vision floue, fatigue, comportement inhabituel, trouble parole, somnolence, palpitations, pâleur, **sueurs, tremblements**, faim, céphalées.

Actions

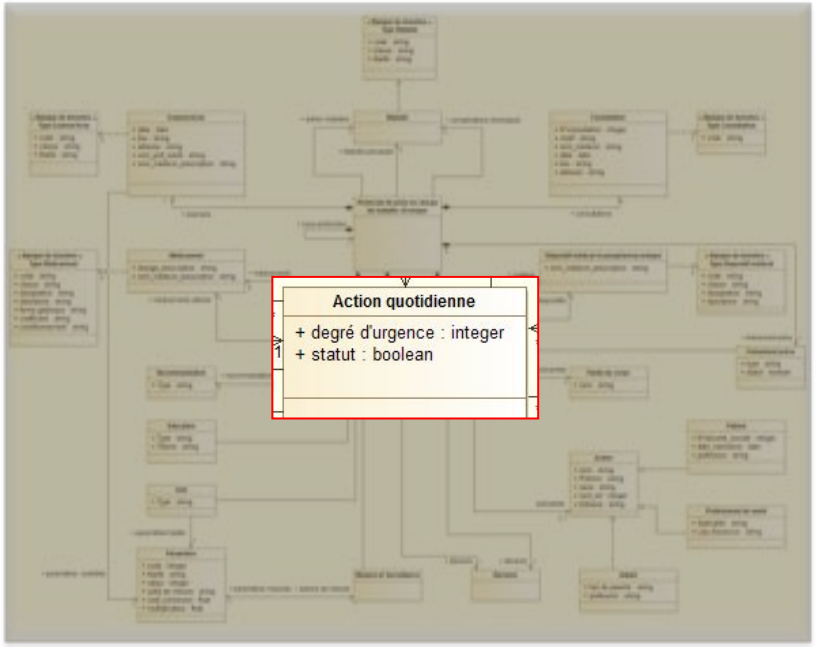
- Arrêt de l'activité et s'asseoir.
- Se resucrer avec 3 sucres soit 15 g de sucre ou équivalents jus de fruit, 1 càS de confiture ou de miel (éviter biscuits et chocolat).
- Tout de suite après faire glycémie dans les 15 mn suivant resucrage.
- Contrôler de nouveau la glycémie 30 mn plus tard si reste bas, reprendre 15 g de sucres et un sucre lent.
- **Si inconscient glucagon en IM.**
- Rechercher la cause de hypo.
  - quantité féculent insuffisant repas sauté
  - activité physique plus importante
  - stress infection
  - médicaments
  - erreur dans traitement etc
- Prévoir ultérieurement une adaptation du traitement ou alimentation en cas d'activité plus importante



- **Non personnalisé pour le patient**
- **Non adapté au patient ( forme orale, texte ou graphique)**
- **Ne permet pas le suivi à distance par l'équipe médicale**
- **Ne permet pas de prendre en compte les imprévus**

- ✓ **Workflow Management System (WFMS)**
- ✓ **Approches d'adaptation**

# Langage orienté patient






**Filtrer les imprévus**

**Adapter le protocole de soins**

**Améliorer l'IHM patient**
**Reconnaissance de la parole**

# Merci de votre attention

# Vers un outil auteur pour des EIAH destinés à l'apprentissage de méthodes de résolution

Awa Diattara, équipes : MeTAH - LIG & TWEAK - LIRIS

## OBJECTIF

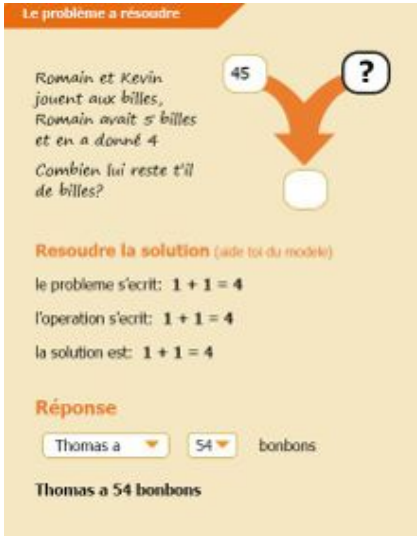
**Permettre à un enseignant de n'importe quel domaine de pouvoir concevoir lui-même un EIAH de type AMBRE**

## POINTS CLES

- Assistance à l'utilisateur
- Généralisation à partir d'exemple

## QUESTIONS DE RECHERCHE

1. Acquisition des connaissances suffisantes pour faire du raisonnement?
2. Comment concilier l'acquisition des connaissances avec la conception de l'interface de l'EIAH?




Exemple de l'EIAH AMBRE-add

Ambre

**A**pprentissage de
**M**éthodes
**B**asé sur le
**R**aisonnement à partir de l'
**E**xpérience

Contact : awa.diattara@imag.fr

Encadrantes : Vanda Luengo (LIG) & Nathalie Guin (LIRIS)








# DESIGN OF A BAYESIAN MACHINE

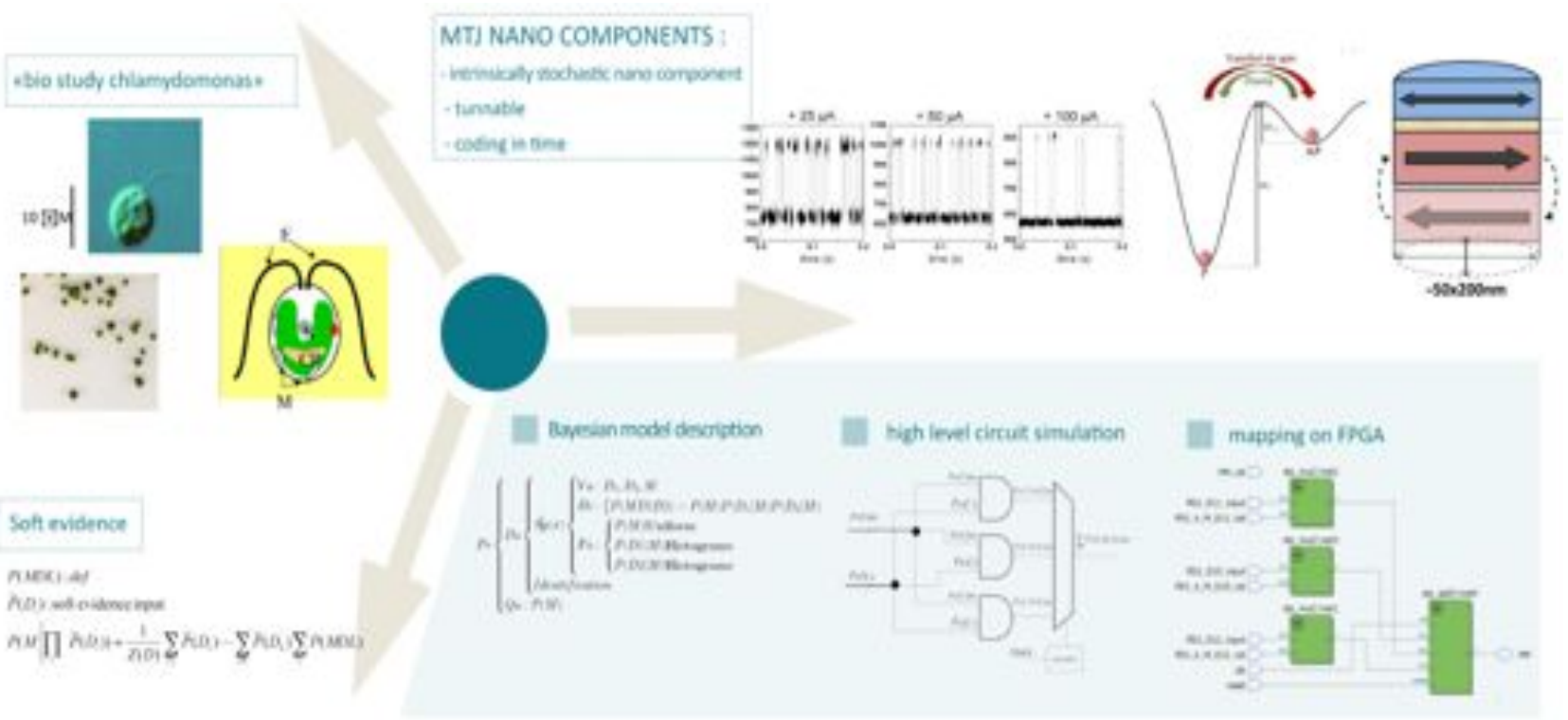
Marvin Faix

PhD Student day's 26-03-15

Thesis director : Emmanuel Mazer, LIG-INRIA

Thesis co-director : Laurent Fesquet, TIMA

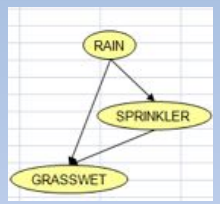
# BAMBI PROJECT



- How to represent a probabilistic data ?
- What is a probabilistic chip ?

## Algorithmic

- Bayes Inference Problem

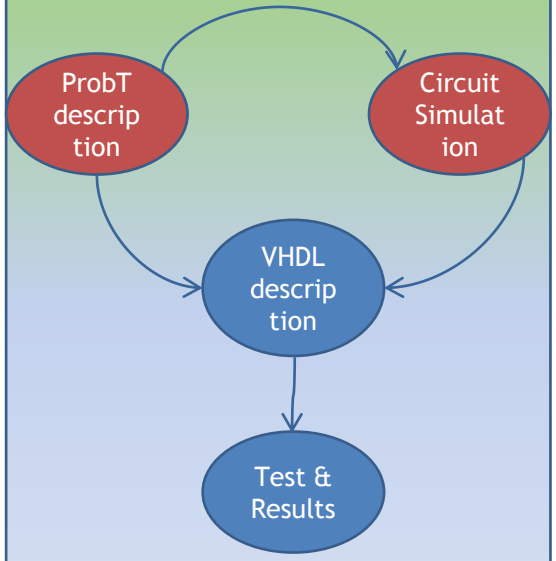



$$\frac{\sum_{s\in\{0,1\}} P(\text{RAIN}=1)\,P(\text{SPRINKLER}=s\,|\,\text{RAIN}=1)P(\text{GRASSWET}=1\,|\,\text{SPRINKLER}=s\,\text{RAIN}=1)}{\sum_{r\in\{0,1\}}\sum_{s\in\{0,1\}} P(\text{RAIN}=r)\,P(\text{SPRINKLER}=s\,|\,\text{RAIN}=r)P(\text{GRASSWET}=1\,|\,\text{SPRINKLER}=s\,\text{RAIN}=r)}$$

- Soft Inference:

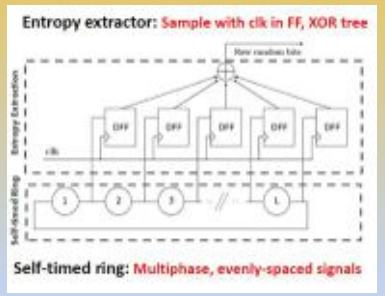
  P(S | P(D1) …… P(Dn))

## Software/ compiler

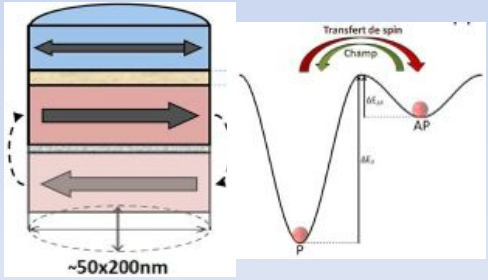



## Innovative Hardware

- CMOS approach: TRNG




- Nano device approach



# Efficient algorithms to mine per-item patterns in user-generated data

**Martin Kirchgessner**
SLIDE team
advised by Sihem Amer-Yahia & Vincent Leroy


martin.kirchgessner@imag.fr
Journées des doctorants du LIG - Mars 2015

# Efficient algorithms to mine per-item patterns in **user-generated data**

ie., any data organized as "(plenty) lists of items"

# Efficient algorithms to mine per-item patterns in **user-generated data**

ie., any data organized as "(plenty) lists of items"

- Supermarket receipts (Datalyse project)
- Playlists (the poster's examples)
- Web history
- ...

# Efficient algorithms to mine per-item patterns in **user-generated data**

1. eggs, sugar, flour, butter, nuts
2. flour, sugar, eggs, milk
3. paper, flour, eggs, sugar
4. flour, eggs, sugar
5. butter, bread, cheese
6. flour, sugar, eggs, bread, carrots
7. salad, bread, sugar, flour, eggs

...

# Efficient algorithms to mine per-item **patterns** in user-generated data

1. eggs, sugar, flour, butter, nuts
2. flour, sugar, eggs, milk
3. paper, flour, eggs, sugar
4. flour, eggs, sugar
5. butter, bread, cheese
6. flour, sugar, eggs, bread, carrots
7. salad, bread, sugar, flour, eggs

...

# Efficient algorithms to mine per-item **patterns** in user-generated data

1. eggs, sugar, flour, butter, nuts
2. flour, sugar, eggs, milk
3. paper, flour, eggs, sugar
4. flour, eggs, sugar
5. butter, bread, cheese
6. flour, sugar, eggs, bread, carrots
7. salad, bread, sugar, flour, eggs

...

But we have a billion receipts !

# Efficient algorithms to mine **per-item patterns** in user-generated data

We propose a way to:

- organize the result set
- reduce the result set

# **Efficient** algorithms to mine per-item patterns in user-generated data

ie. “parallelized”

- on multi-core
- on Hadoop clusters

# Find me in front of:

## Efficient algorithms to mine per-item patterns in user-generated data

Martin Kirchgessner, advised by Sihem Amer-Yahia & Vincent Leroy

Preliminary works with Alexandre Termier & Marie-Christine Rousset

**We adapt pattern mining to user-generated data, at Web scale.**

▸ Many systems record per-user (or per-action) lists of items: retail tickets, playlists, browser logs...

▸ Patterns (here, sets of artists) allow an analyst to:
- summarize the data by highlighting co-occurrences
- link each pattern back to the concerned users, for further analysis

GOALS

**Frequent** Itemset Mining can find that
- 294,720 people listen to Radiohead
- 61,487 to {The Beatles, The Rolling Stones}
- 73,666 to {Coldplay, Muse} .... and millions of such sets !

Lesser-known artists are also part of interesting patterns !

CHALLENGES

FIM can't find
- The 19,882 people who all listen to {Franz Ferdinand, Radiohead, Interpol} ?
- 1,995 hipsters listening to {Vitalic, Hot Chip} ?
- 1,994 (metal) fans of {Children of Bodom, In Flames, Arch Enemy, Eternal Tears of Sorrow}
- 200 (likely French) listeners of {Tryo, Les Wriggles, Fabulous Trobadors}
- 10 eclectic users who know {Sido, B-Tight, Tony D, G-Hot, Fler, Sido, Alpa Gun} ?

We propose

**TopPI**

**The first algorithm and implementation to find Per-Item patterns**

### READABILITY ASSUMPTIONS

**1. It's OK to study 2 or 3 dozens of patterns**

**2. The analyst usually jumps in the results via a key item**

"What's related to The Beatles ?"

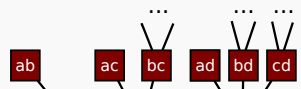
### A NEW PROBLEM STATEMENT

**Given transactions over a set of items $I$ and an integer $k$, return, $\forall i \in I$, the $k$ most frequent closed itemsets containing $i$.**

**↳ We get, for each artist $a$ listened to at least 2 times, $k$ sets of artists including $a$**

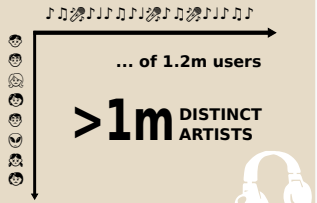
### MINING, ALL AT ONCE

**WHY** **Mining {a,b,c} is much more profitable if it it's a top-pattern for a, b and c**

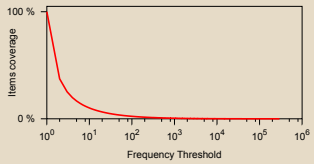



### EXAMPLE : LastFM

Listing the 50 favorite artists...




... but most artists are far from frequent



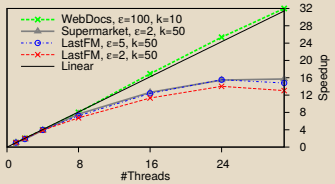

### BIG DATA SYSTEMS

Modern systems are heavily parallel. Our algorithms leverage such architectures, to analyze datasets at all scales.

### On multi-core

**TopPI's solution space is a tree.**

By assigning a branch to each available core [2], we achieve good speedups :




Examples presented here are extracted

SLIDE

ation Discovery and Exploitation"

# Spatio-Temporal Concept Drift Exploration

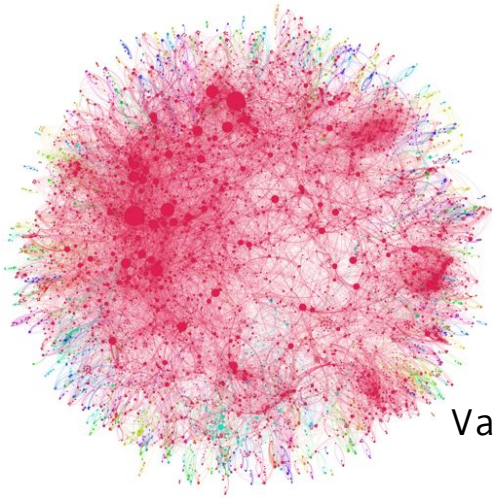
Sofia Kleisarchaki

Advisors: Sihem Amer-Yahia, Ahlame Douzal-Chouakria, Vassilis Chistophides

# Context

- Imagine the ‘Universe of Data’
  - Consists of data forming *concepts evolving in spacetime*
- Analysts as Observers & Explorers
  - Observe the universe to *reveal concept drifts*
  - Explore the observable space to *query time and space dynamics* of concept drifts

Challenges



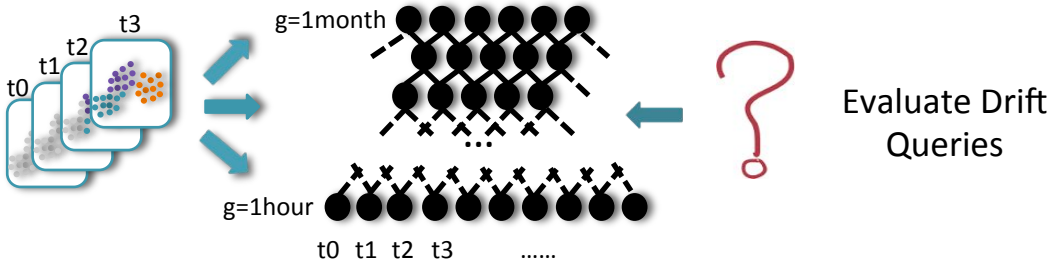
High volume data → Need for scalable structures & efficient query exploration algorithms

Varying distributions → Need for dynamic learning of concept drifts parameters

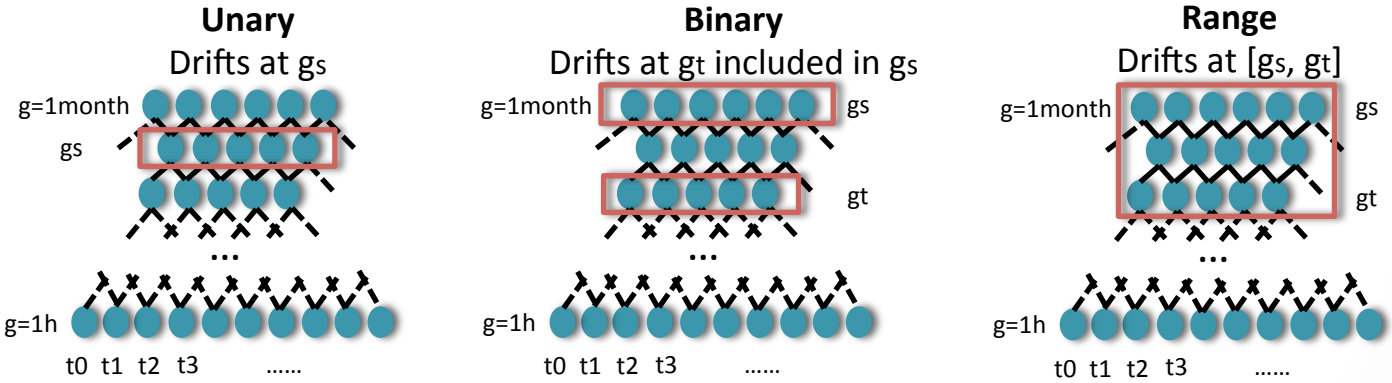
Varying arrival rates → Need to explore multiple time and space granularities

# Approach & Contributions

- Provide a scalable drift index maintaining concepts in multiple time granularities

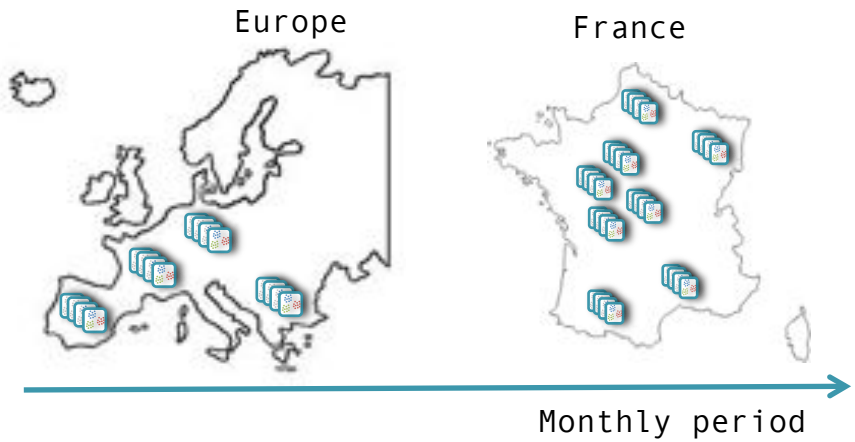



- Formalize flexible drift queries and evaluate efficiently



# Future Work

- Explore the spatial dimension of geo-annotated data
  - Drifts occur at several geographic levels (e.g., Europe, France) and time granularities (e.g., day, month)




- Provide a flexible approach for querying spatio-temporal concept drifts

# Développement d'un robot attentionné pour l'aide aux personnes en situation de fragilité


Quentin Labourey

Directeurs :
Olivier Aycard – LIG
Denis Pellerin – GIPSA-lab

# Pourquoi ?

- ✓ Surveillance de personnes fragiles par des capteurs dans l'infrastructure (caméras, micros…) est mal acceptée
  - ➢ Capteurs trop intrusifs, intégration coûteuse et complexe
- ✓ Développer un robot compagnon attentif pour la surveillance d'un ensemble de personnes en situation de fragilité
  - ➢ Robot bien visible équipé d'une tête
- ✓ Robot compagnon attentif capable de
  - ➢ Percevoir son environnement
  - ➢ Analyser des situations complexes
  - ➢ Focaliser son attention
  - ➢ Naviguer dans un environnement dynamique

# Comment ? Meet Qbo !


Capteurs : Caméras & Micros
Actionneurs : Tête et base

Qbo = Système de perception active

Mes travaux portent sur :

- La perception (Détection de locuteurs, classification de sons, détection de visages…)
- La navigation « intelligente » (Comment construire son itinéraire pour la surveillance ?)

# Rendez-vous au poster !

# Platform of Contextualization for the Personal Cloud

LIG PhD day – 26 March 2015

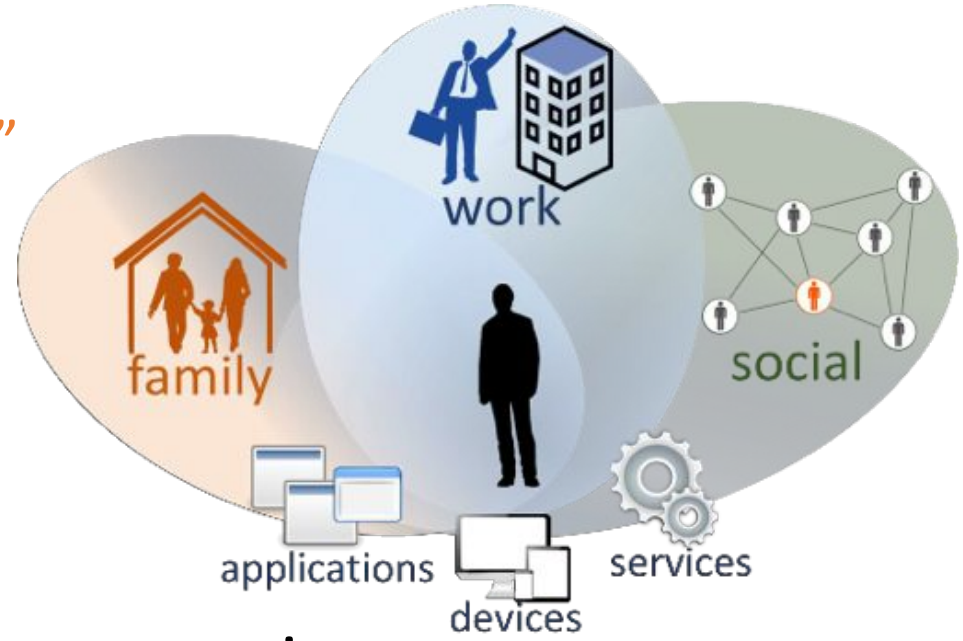
Anh Dung LE - SIGMA

# Personal Cloud and Contextualization

- Personal Cloud

  "A place where I interact in safe with my digital life"

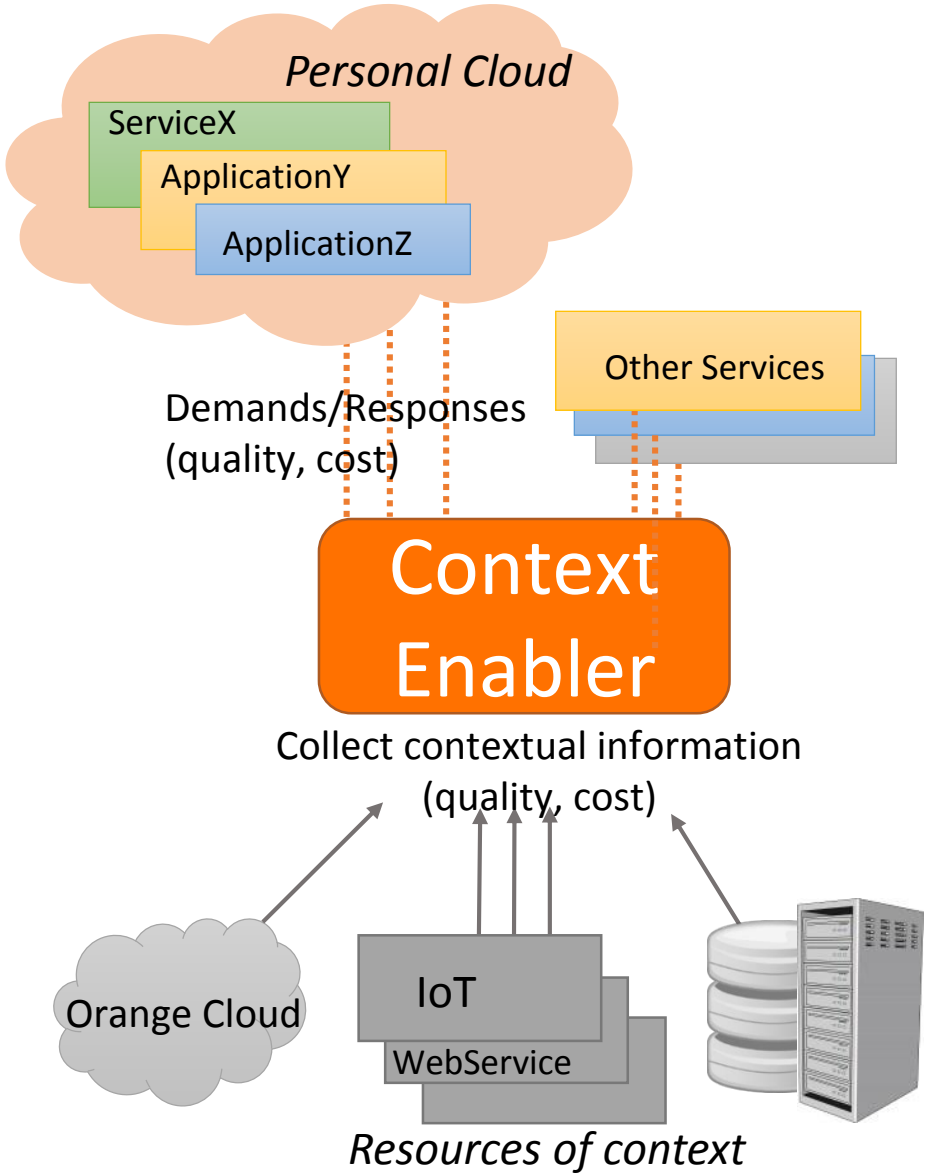
  - Facilitate the management, the execution and the interaction of the user with his digital universe
  - Personalized user experience



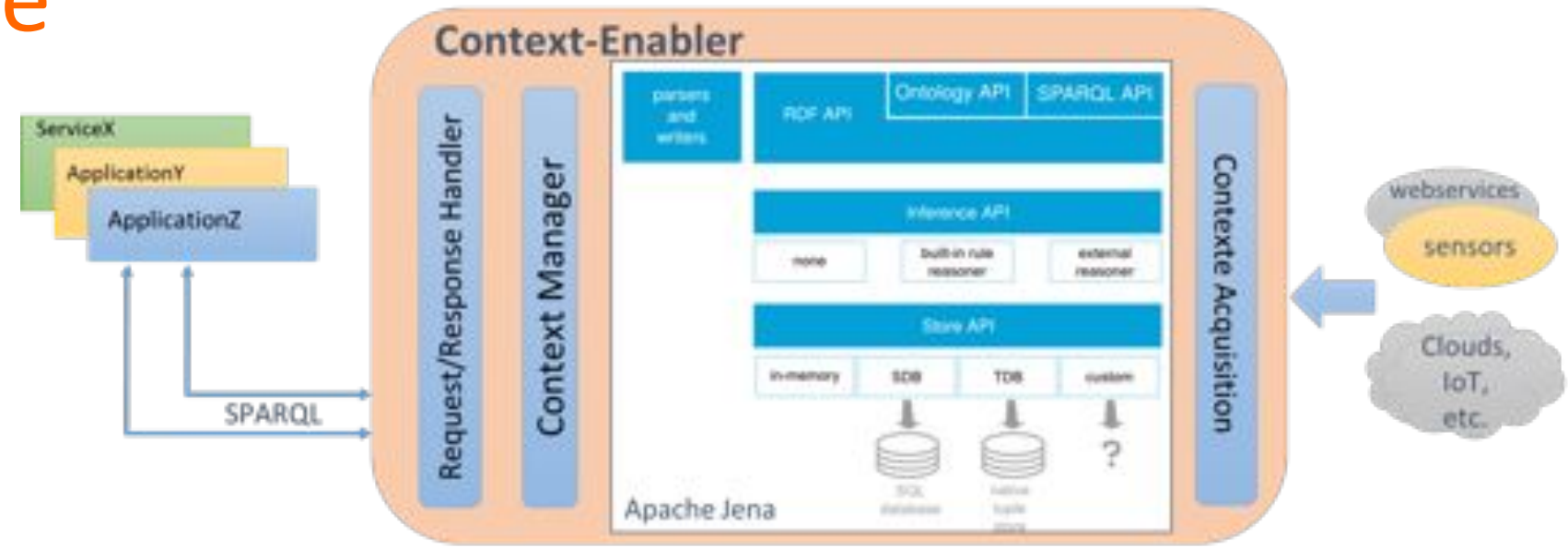

- How ? → *Context-awareness* to personalize the execution of application/service with:
  - Functional context: location, temperature, time, etc.
  - Execution context: resources, data, user's profile, etc.

# Feeding the Personal Cloud with a quality and cost-aware Context-Enabler

- Applications demand context with quality and cost constraints
- Semantic description, quality and cost information to classify and to make choices of context resources
- Continuous responses by adapting dynamically its context provisioning chain



# Prototype




Context representation: Ontology OWL/RDF
RDF framework: Apache Jena
Rules of reasoning: SWRL

Query language: SPARQL, C-SPARQL
Communication/Messaging : RabbitMQ

# Research perspectives

- Definition and implementation of the Quality and Cost of context aspects
- Representation and manipulation of semantically equivalent resources
- Language to query and to handle complex-context information
- Techniques to allow the dynamic adaptation of the Context-Enabler

# Thank you ☺

# Scheduling with contiguity and locality

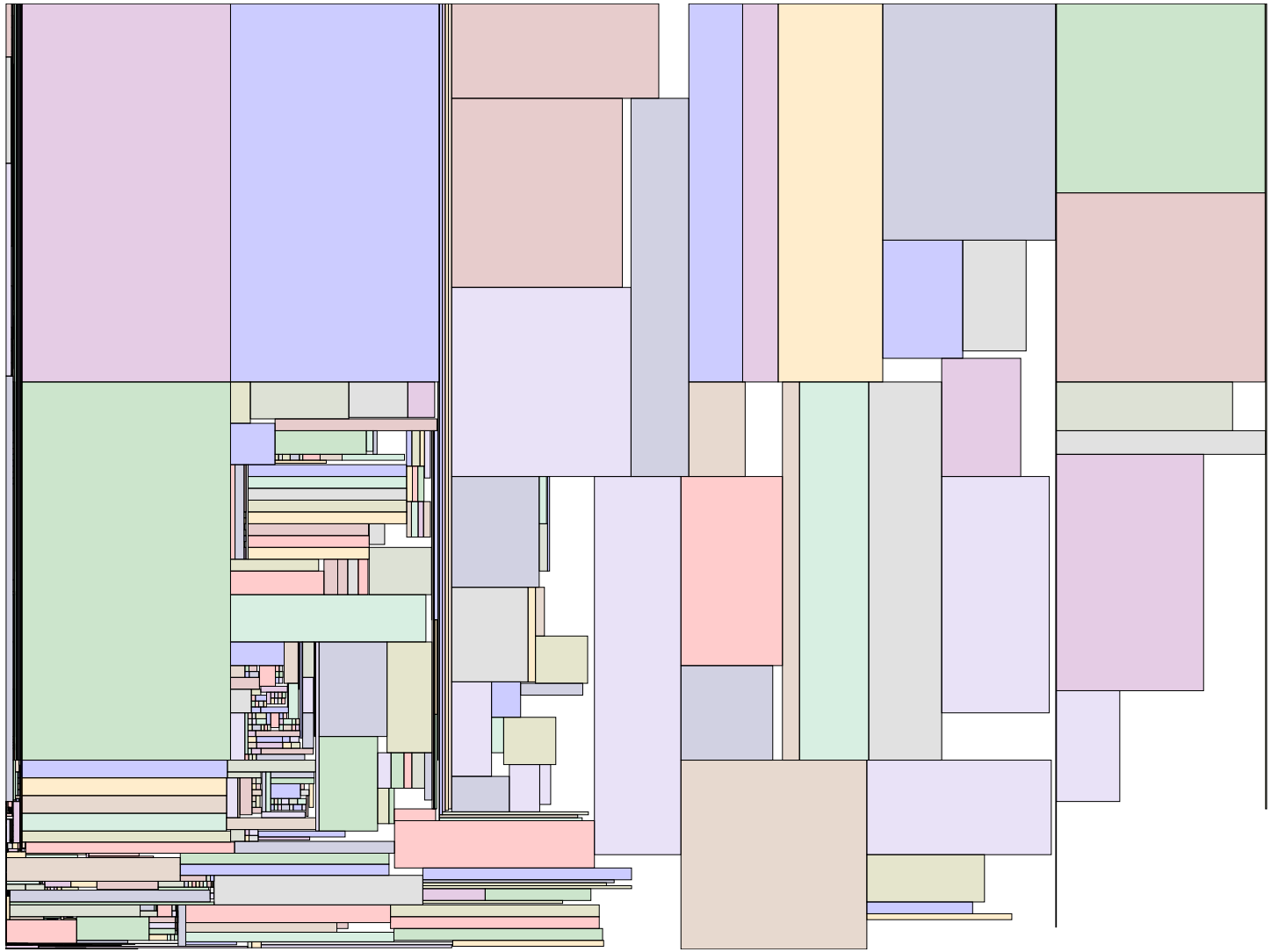
Fernando Mendonca
supervised by
Denis Trystram  Frédéric Wagner



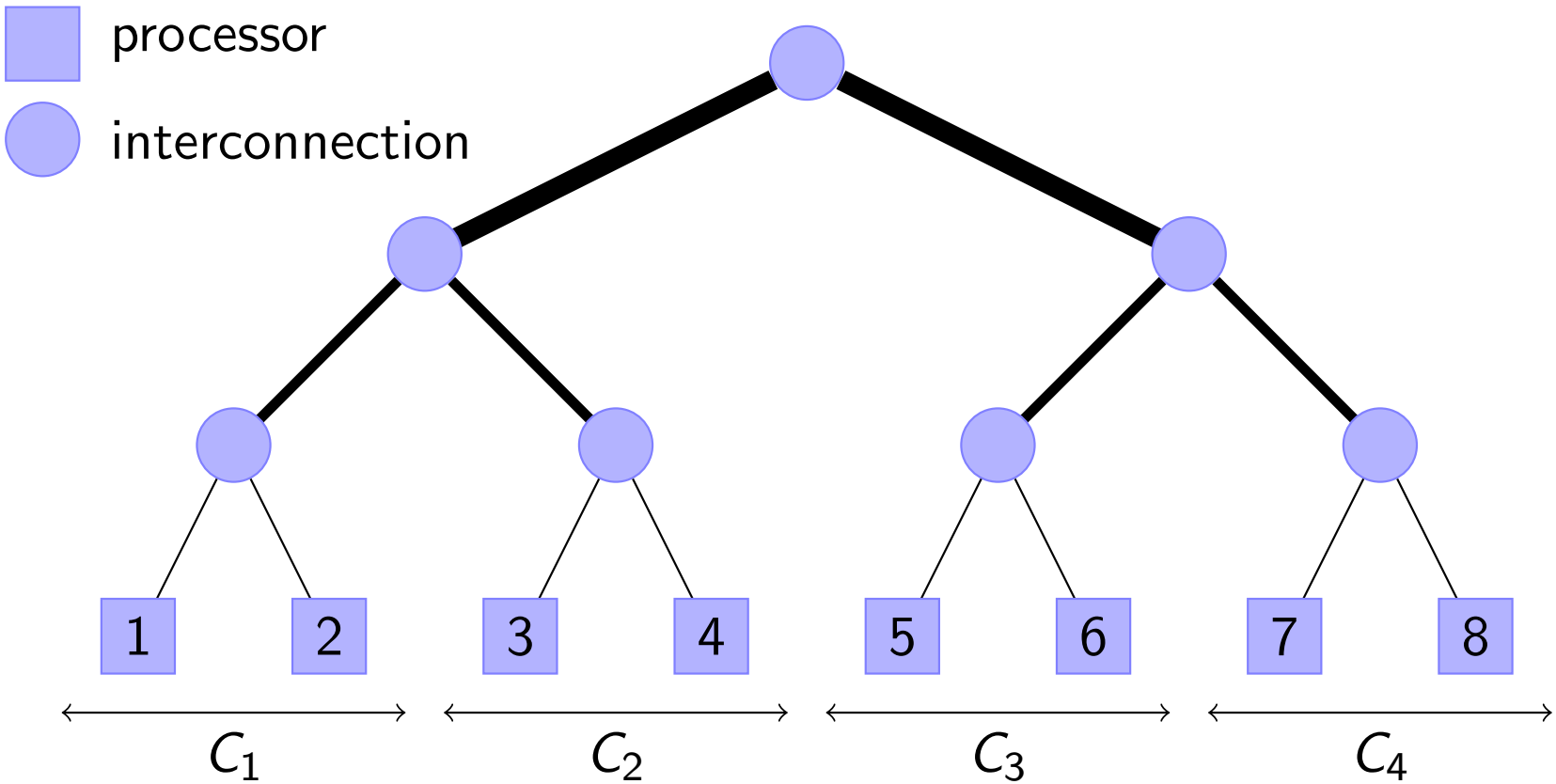
MOAIS

March 25, 2015

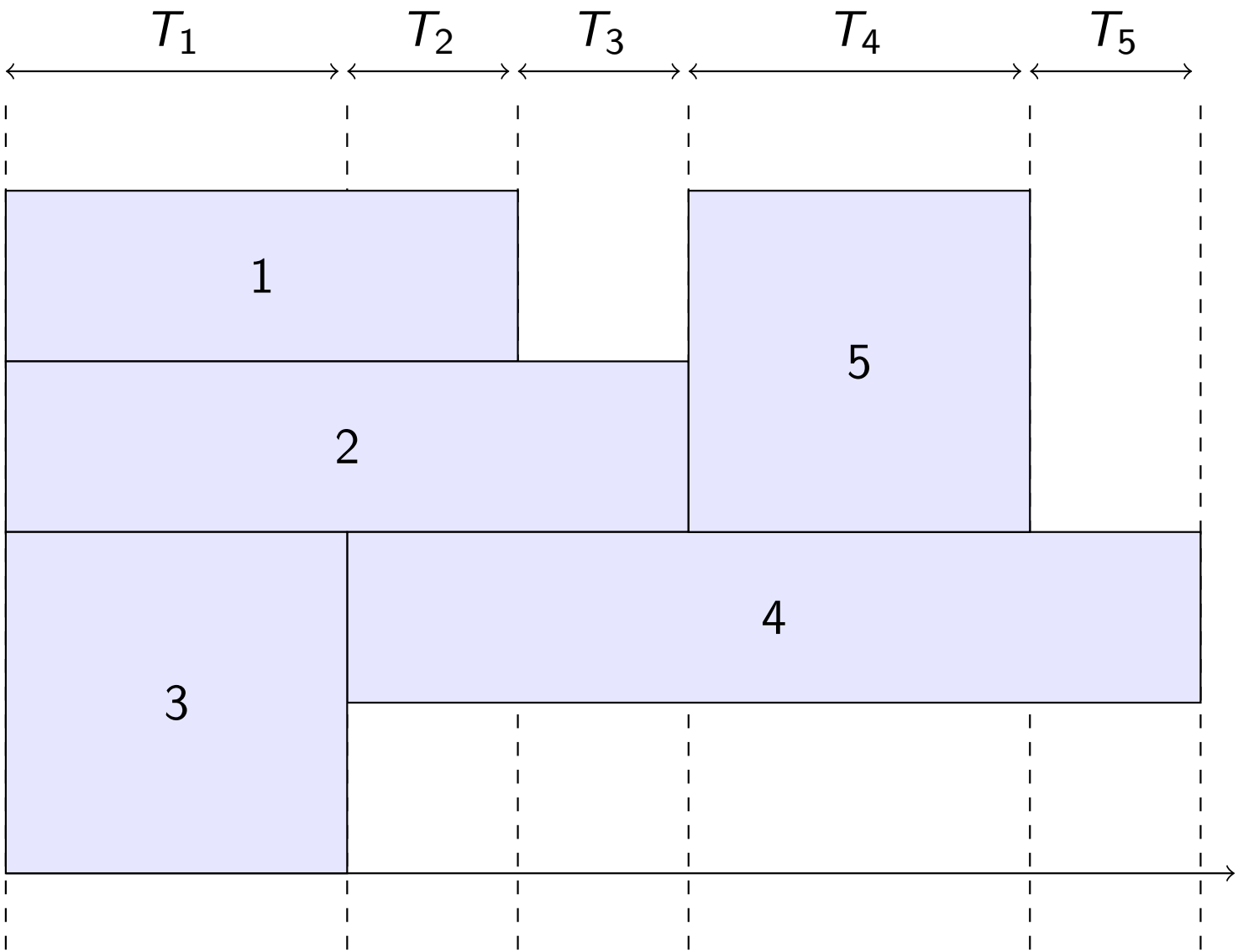
# Batch schedulers

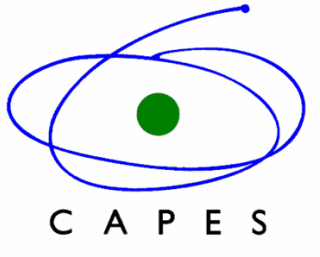


# Platform



# Algorithm









# Privacy-aware Personal Information Discovery

Thiago Moreira da Costa

Supervisor: Hervé Martin

CAPES

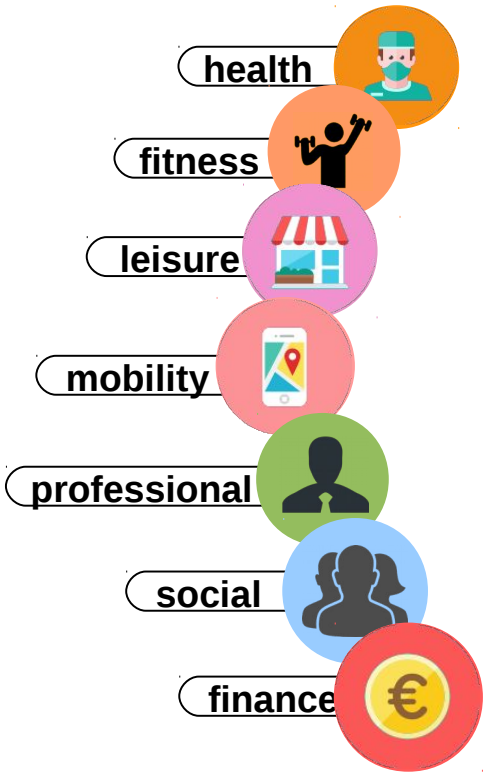
UNIVERSITÉ GRENOBLE ALPES

L I G

Steamer

# How to control personal privacy In the Big Data Era?

# Big Data
## Privacy Threats




**Individual**

**Life Logging**

**Data Mining**

**Privacy Threats**

- Itinerary prediction
- financial profile
- sedentary life style profile
- relationship status
- health-status discovery
- address discovery
- addiction discovery
- unaware surveillance

# Personal Privacy

What to share?

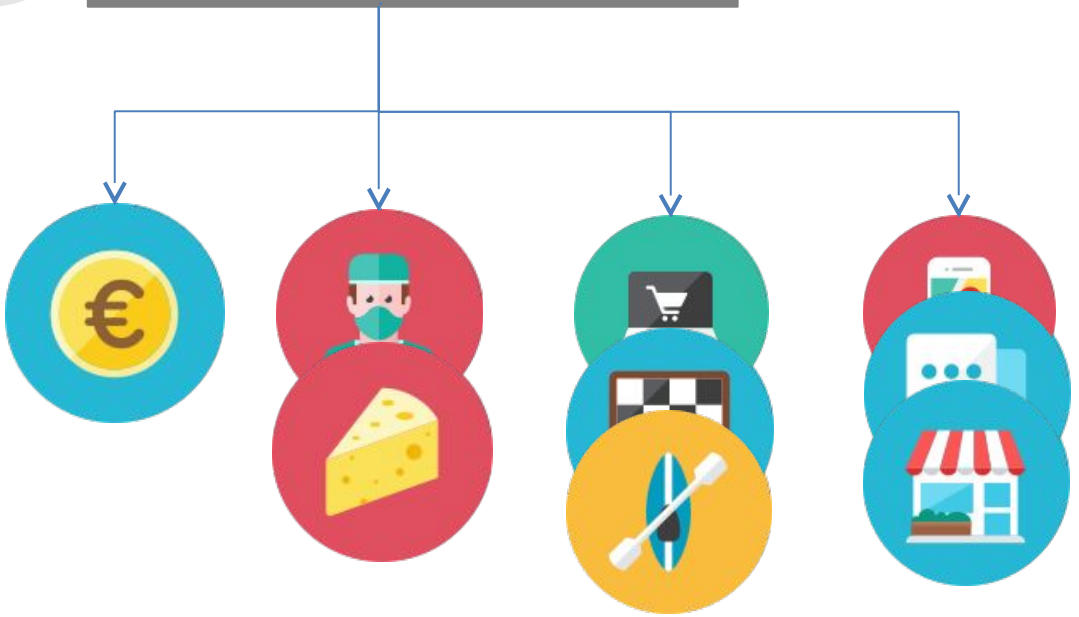
To whom?

When to share?

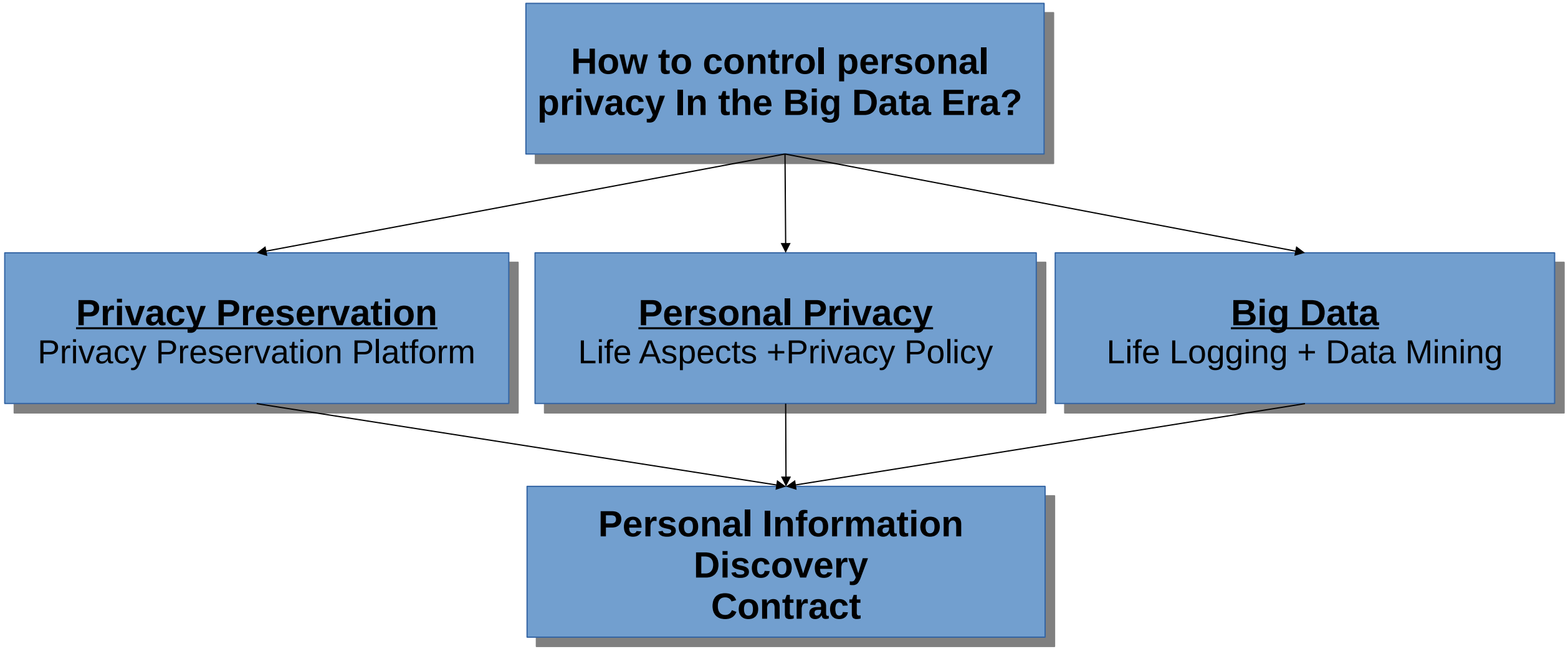
=

Life Aspects

Privacy policy

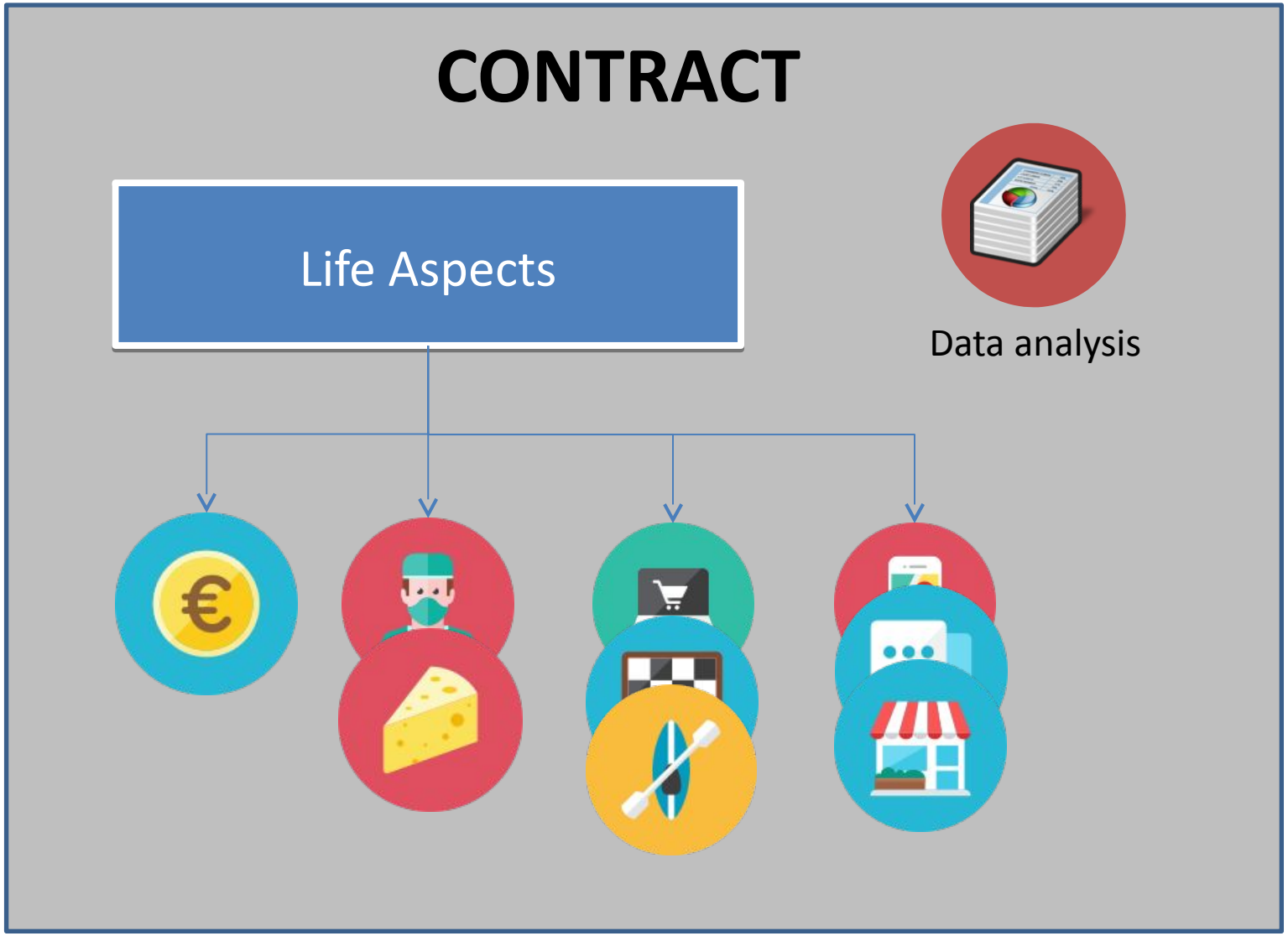


Finance Health Leisure Social

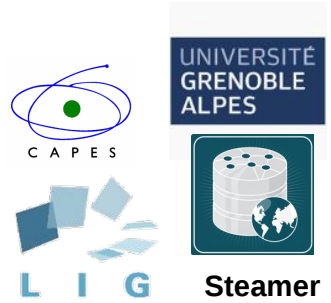

How to control personal privacy In the Big Data Era?
Privacy Preservation
Privacy Preservation Platform
Personal Privacy
Life Aspects +Privacy Policy
Big Data
Life Logging + Data Mining
Personal Information
Discovery
Contract

# Personal Privacy

Data Producer




Data Consumer




# Thank You!

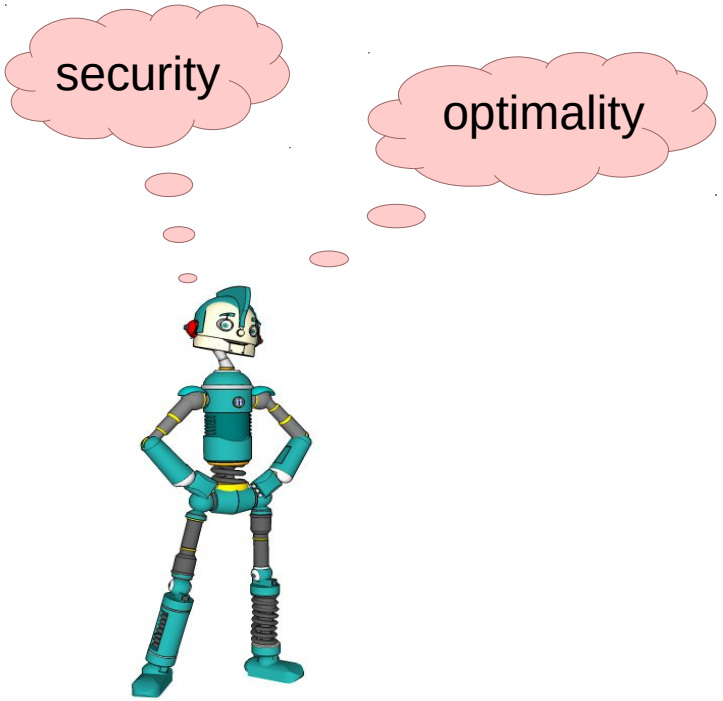


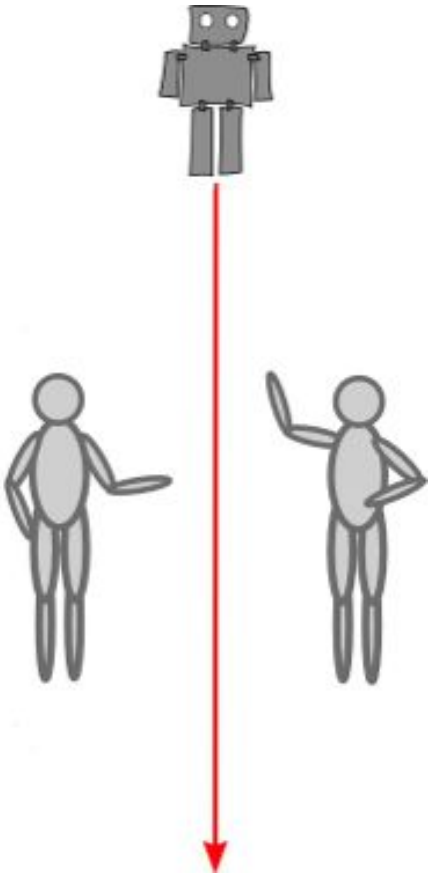

# Human-Robot Motion: an Attention-Based Navigation Approach

Rémi Paulin
LIG – INRIA, équipe PRIMA
Supervisors : Thierry Fraichard and Patrick Reignier

*Journée des doctorants LIG 2015*
*26 Mars 2015*


**Robots see humans as mobile objects.**



motion safe and optimal
but inappropriate

**2005** **now**

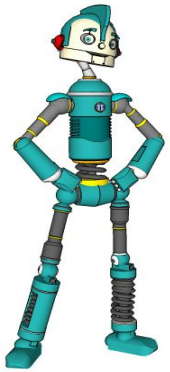
## Robots see humans as social entities.

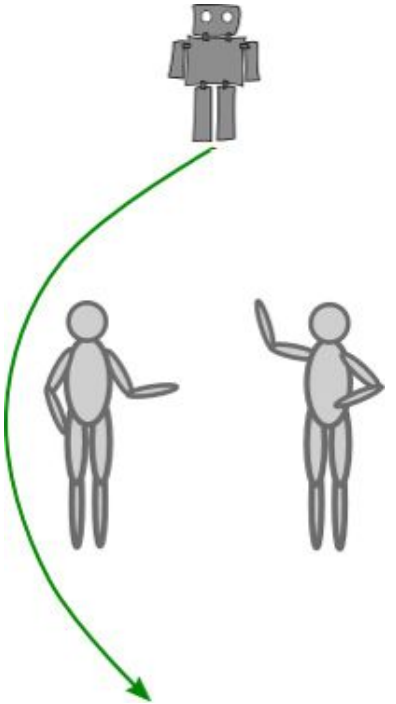
politeness

Not causing discomfort

security

optimality



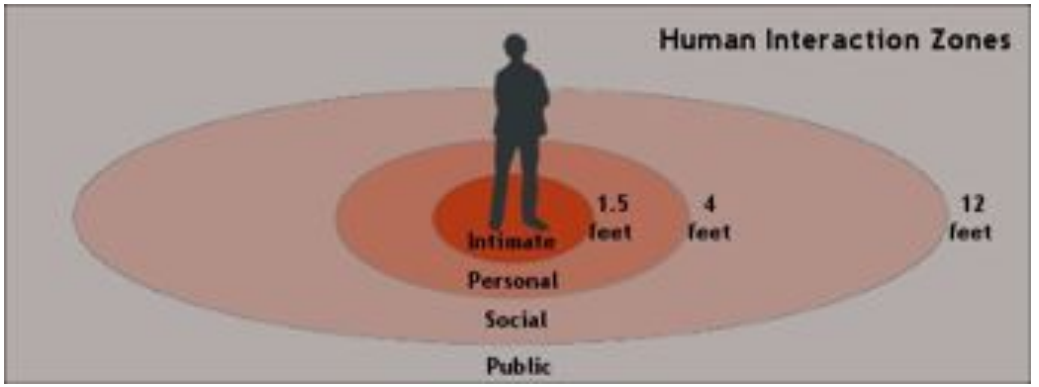


More appropriate motion

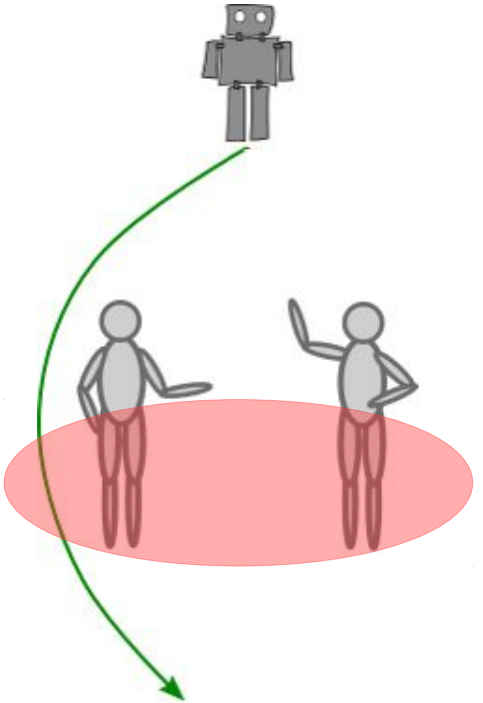
# State-of-the-art: social spaces

[Lindner & Eschenbach 11]

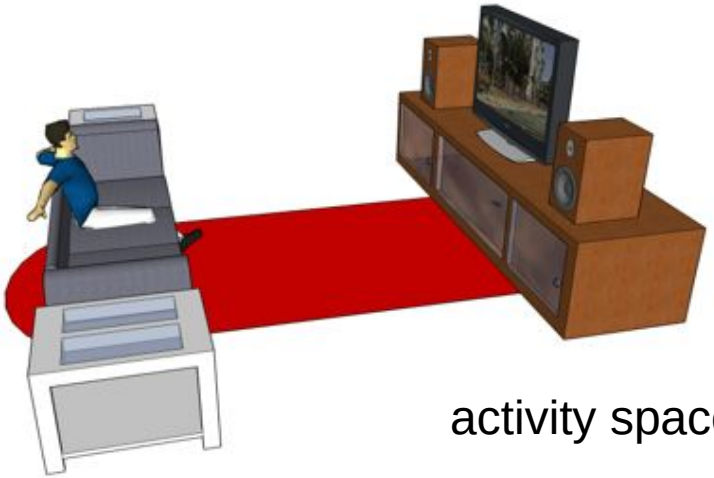
Social space: regions of space where the presence of others causes discomfort.




personal space

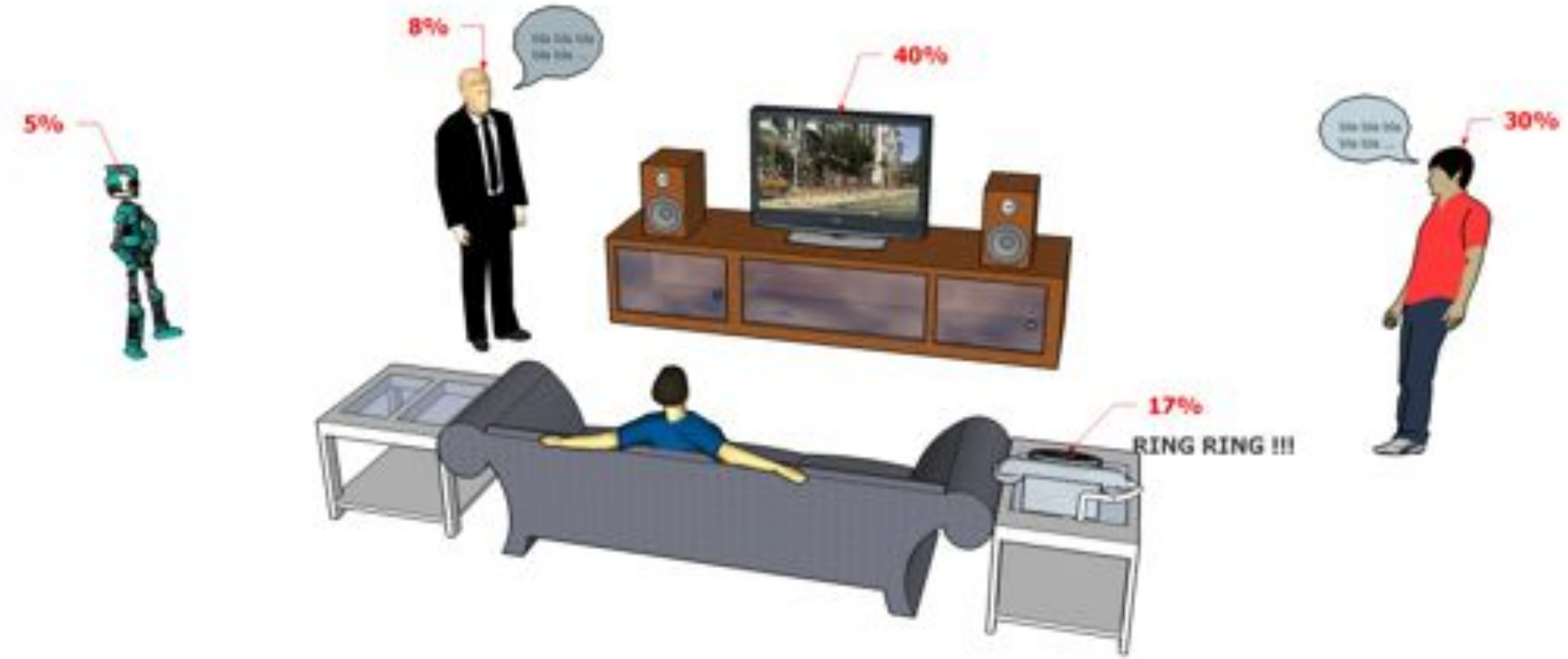


interaction space



activity space

# Attention: a new tool for navigation



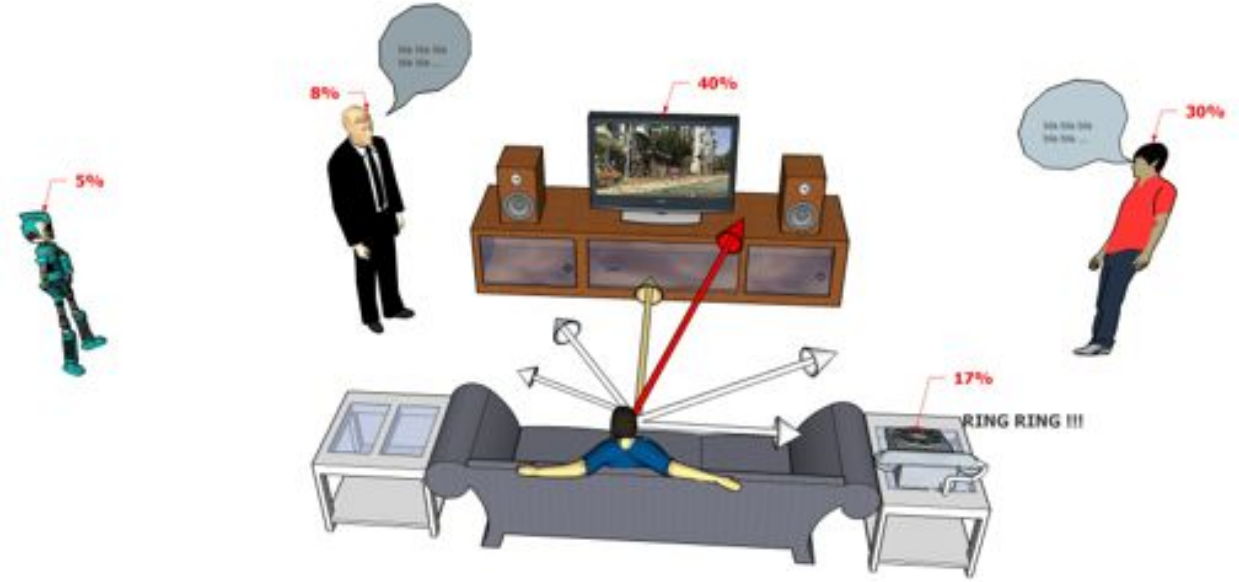
# Attention Model [Maisonnasse et al 06]

*Attention = f(Intention, Distractions)*

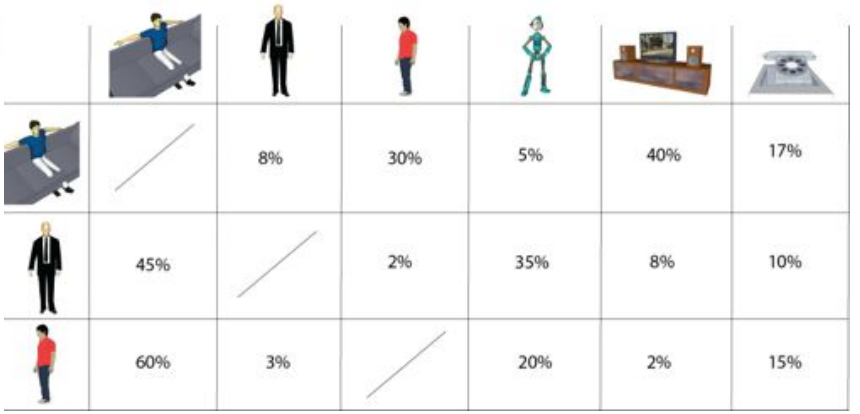
Individual's activity

Salience of entities

general direction of attention focus.

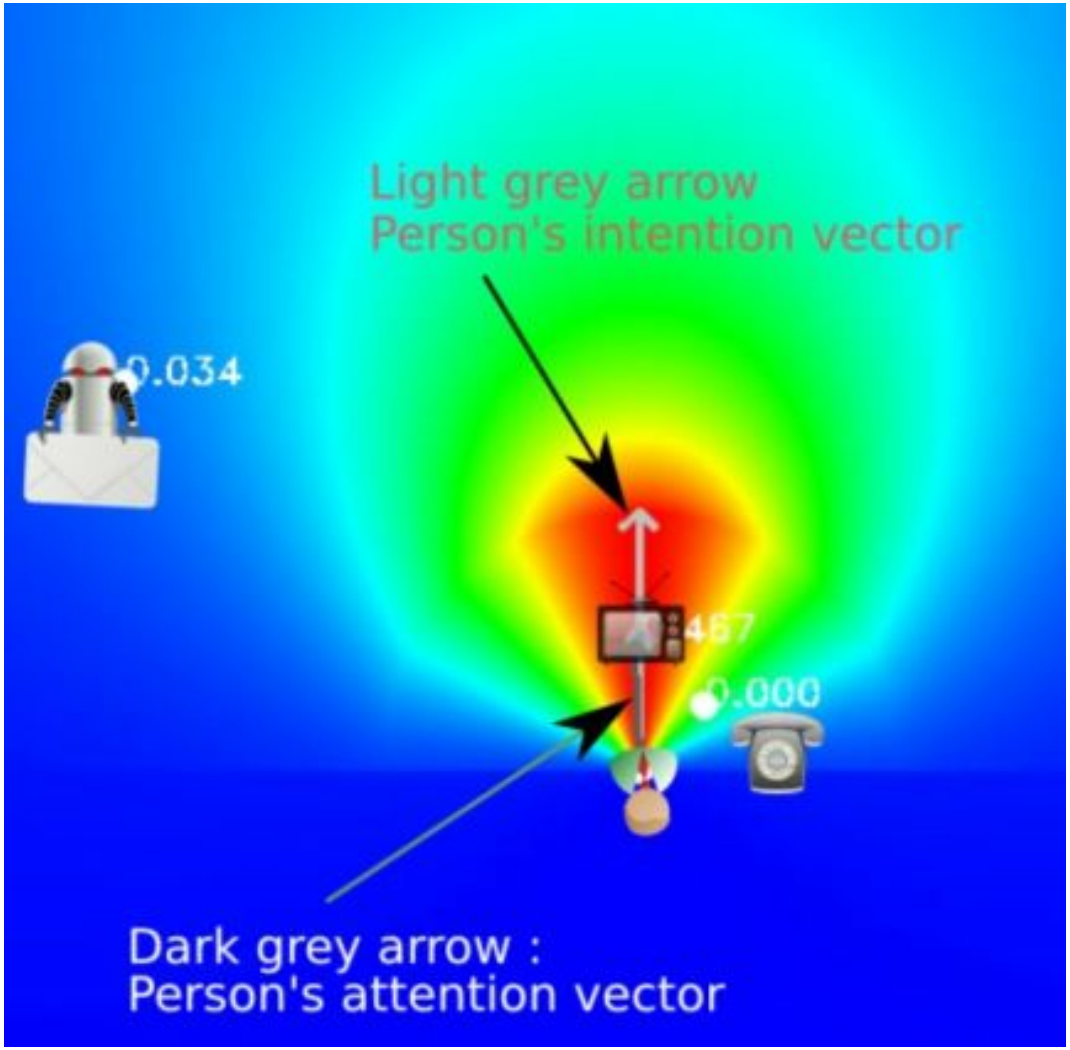



Scenario



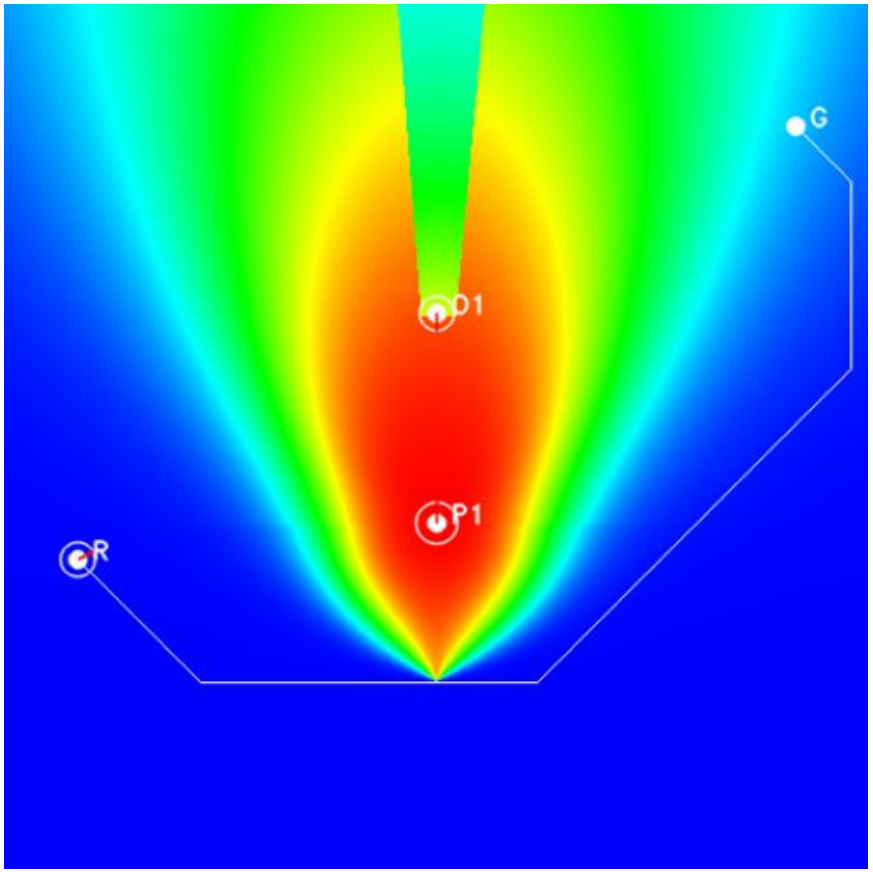

Attention matrix

# First results: Attention Field

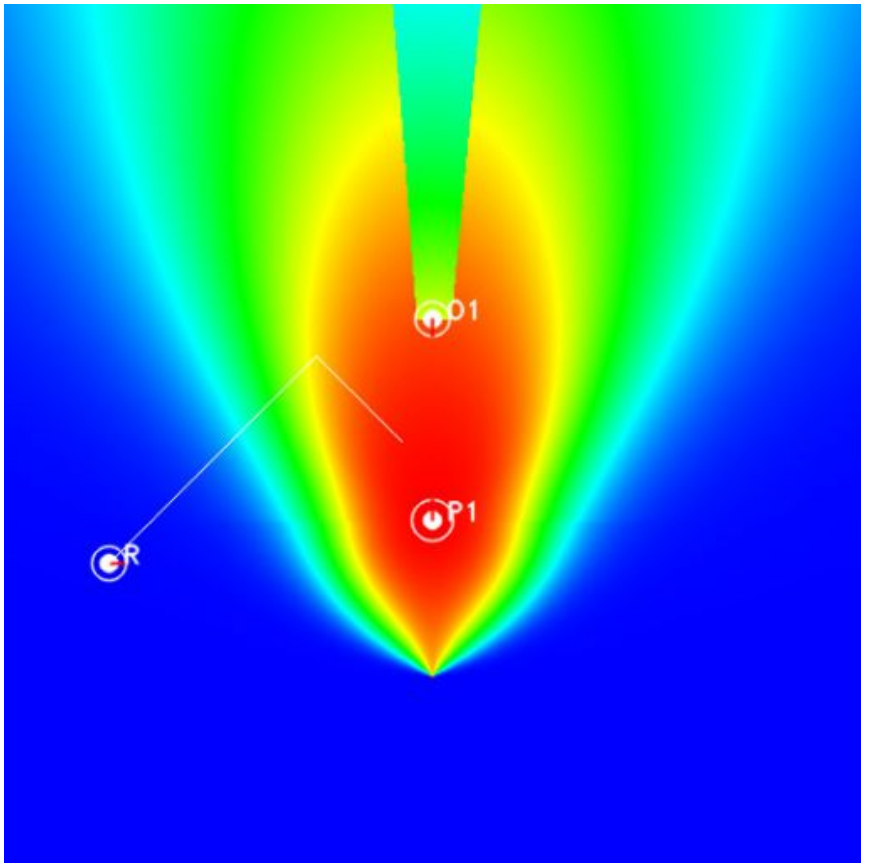



T. Fraichard, R. Paulin, and P. Reignier, *Human-robot motion: An attention-based navigation approach* (ROMAN14)
Nominated for best paper award

# Navigation based on the *attention field*

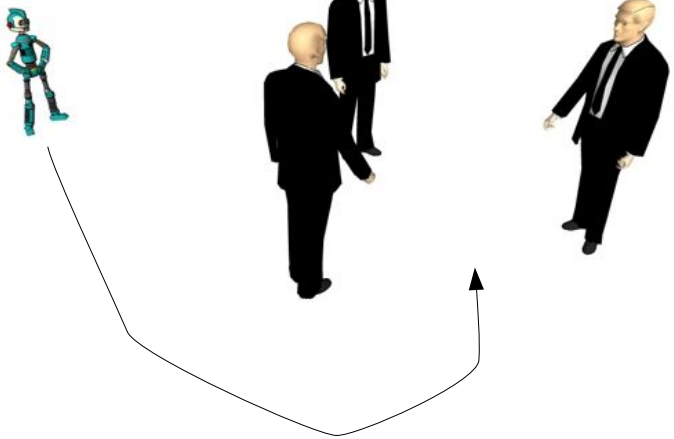



do not disturb

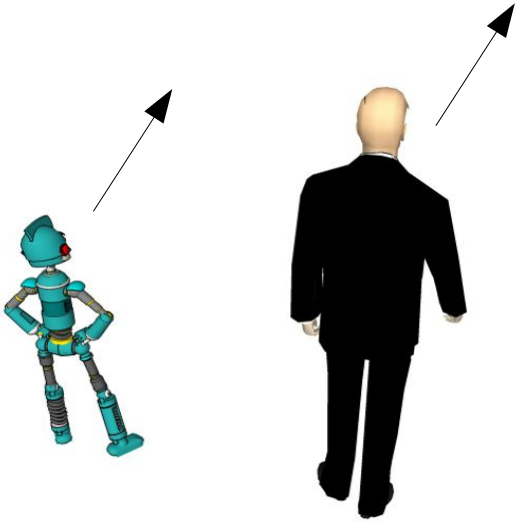



attract attention

# Ongoing work



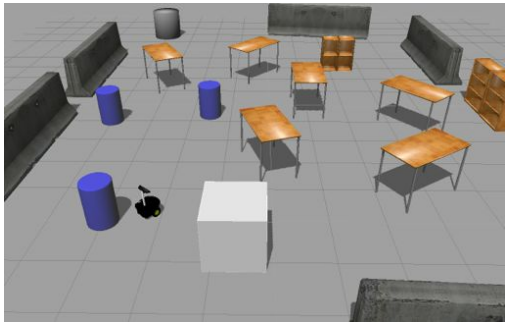
join a group



robot compagnon

message delivery

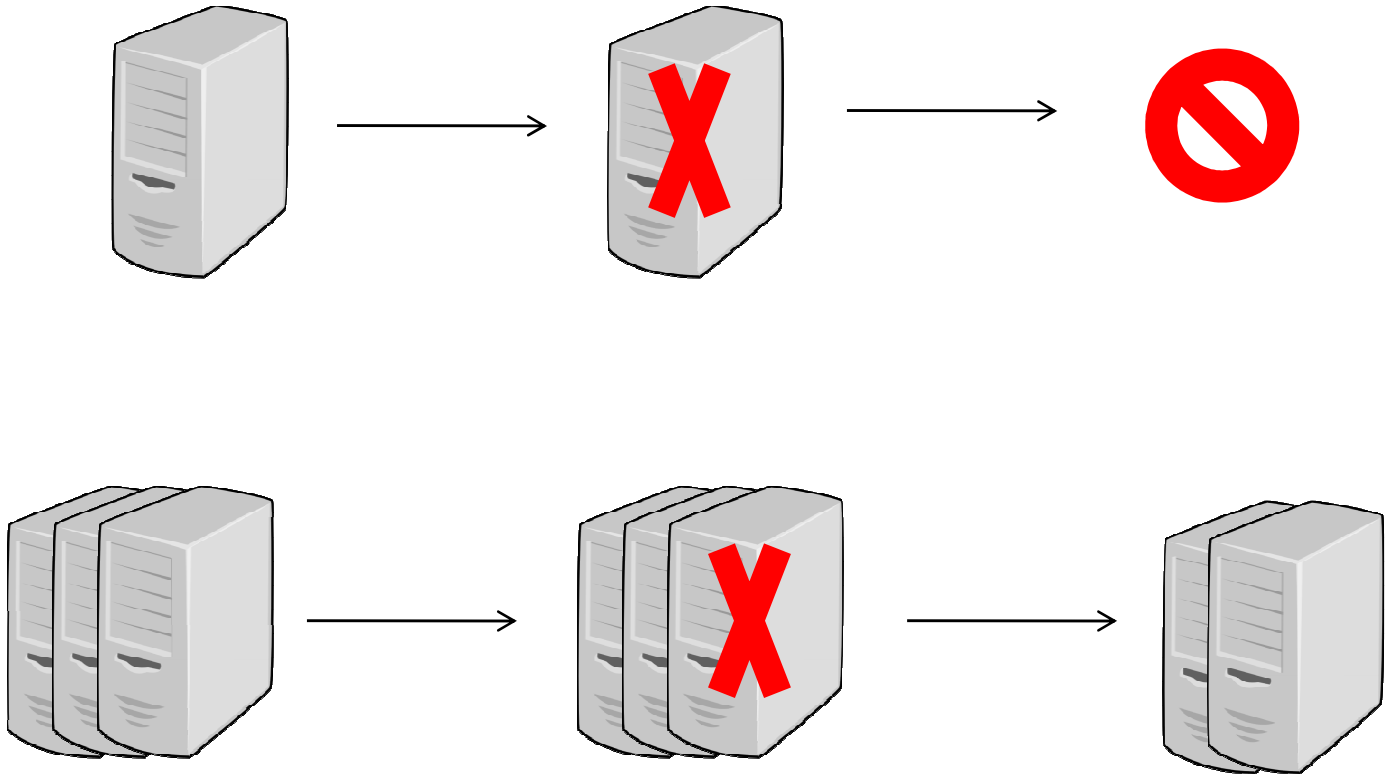
approach validation



# D’une tolérance aux fautes byzantines efficace à une tolérance aux fautes efficace

Lucas.perronne@imag.fr

# Tolérance aux fautes via réplication d'état machine



# Tolérance aux fautes byzantines

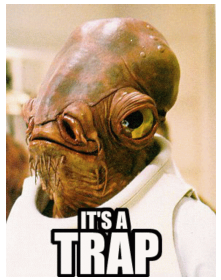
# Tolérance aux fautes byzantines

**Gégé a dit "A l'attaque!"**

**Gégé a dit "RETRAITE !!!"**

**Colonel « le fidèle » coco**

**Colonel « le dissident » coco**




**Dois-je attaquer ?**
**Dois-je battre en retraite?**
**A qui dois-je faire confiance?**

# Tolérance aux fautes byzantines : 3f+1

# Tolérance aux fautes byzantines efficace

# Tolérance aux fautes ~~byzantines~~ efficace





Journée des doctorants 2015

# Validation conjointe en UML et B de la sécurité des SI


Amira RADHOUANI

Directeurs de thèse: Yves LEDRU

Akram IDANI

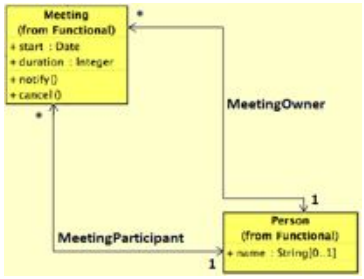
Narjes BEN RAJEB

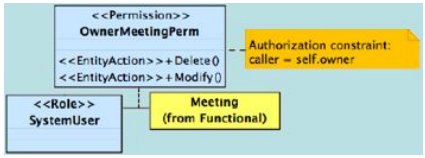
Laboratoire d'Informatique de Grenoble

# Contexte du travail

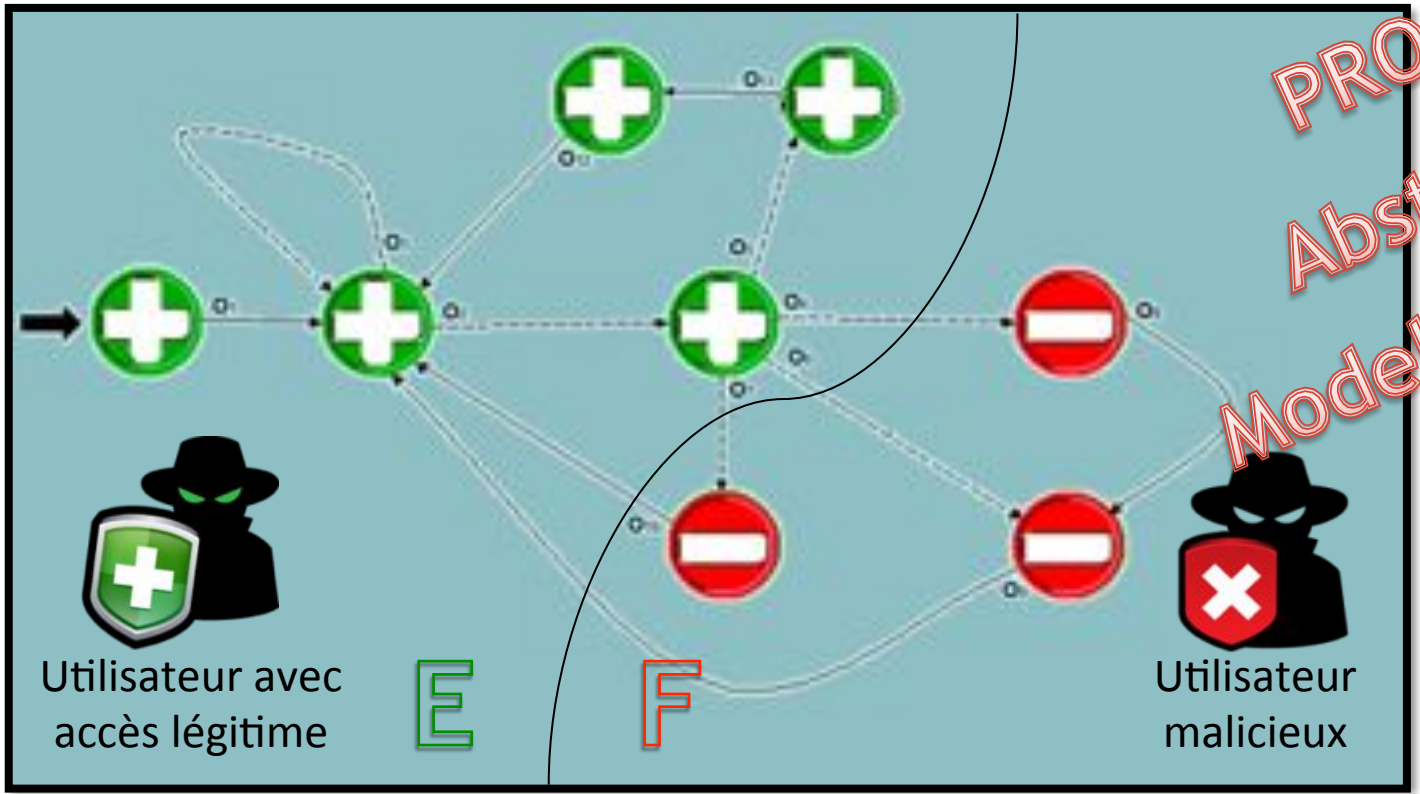
Validation conjointe en UML et B de la sécurité des SI

# Comment?




Traduction en spécification formelle




PROOF
Abstraction
Model-checking

Validation conjointe en UML et B de la sécurité des SI

# A+
# @poster session

# Peinture numérique 3D pour novices

Elisabeth Rousset / Equipe IIHM

Journée des doctorants 2015
Laboratoire d'Informatique de Grenoble

# Un public amateur


SketchUp

Autodesk®
123D™

123D

123D Make

123D Sculpt

123D Catch

SCULPTRIS

# La création de contenu 3D

# La création de contenu 3D

- Modélisation

# La création de contenu 3D

- Modélisation
- Application de texture

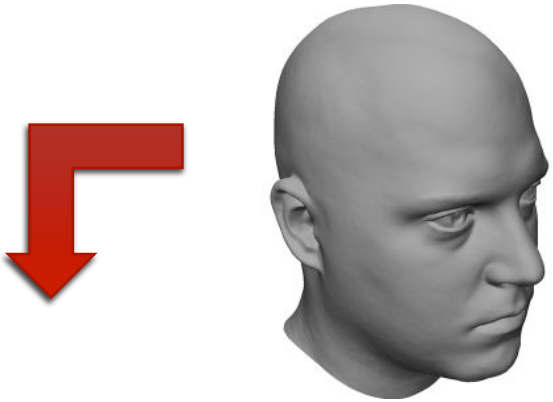
# La création de contenu 3D

- Modélisation
- Application de texture
- Animation

# La création de contenu 3D

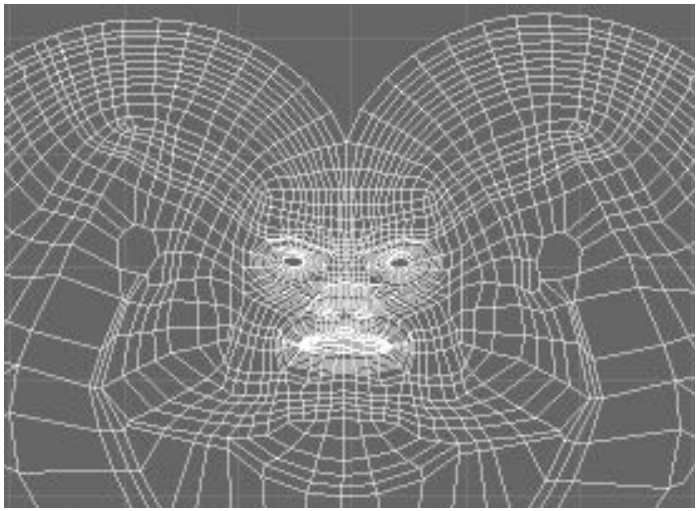
- Modélisation
- Application de texture → Peindre un modèle 3D
- Animation

# Application de texture



- Dépliage de modèle et peinture 2D

  **Problème:** peindre sur une surface déformée



# Application de texture

- Peinture 3D par projection

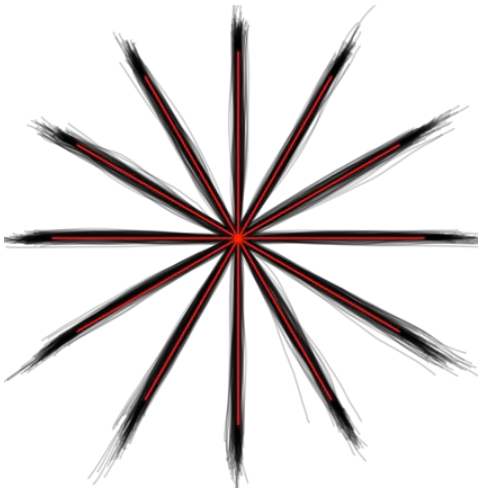
  **Problème:** manipuler le modèle de manière intuitive

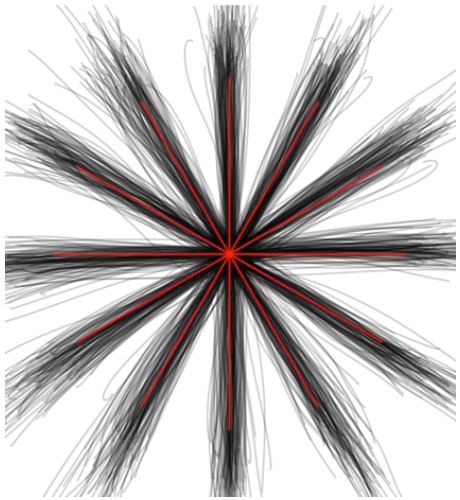
# Objectif

- Rendre la manipulation 3D transparente pour la tâche de peinture
  - Etudier le matériel adapté
  - Améliorer l'interaction 3D

# Dispositifs de peinture numérique

# Dispositifs de peinture numérique





# Merci

# Géovisualisations pour la représentation des dynamiques spatiales

## Application au risque d'inondation impactant le système ferroviaire

Cécile Saint-Marc

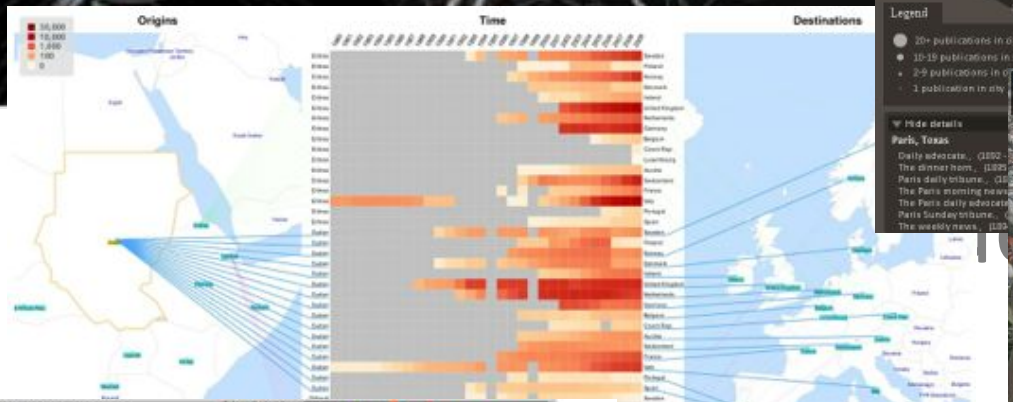
Thèse CIFRE SNCF – LIG
Ecole Doctorale ISCE

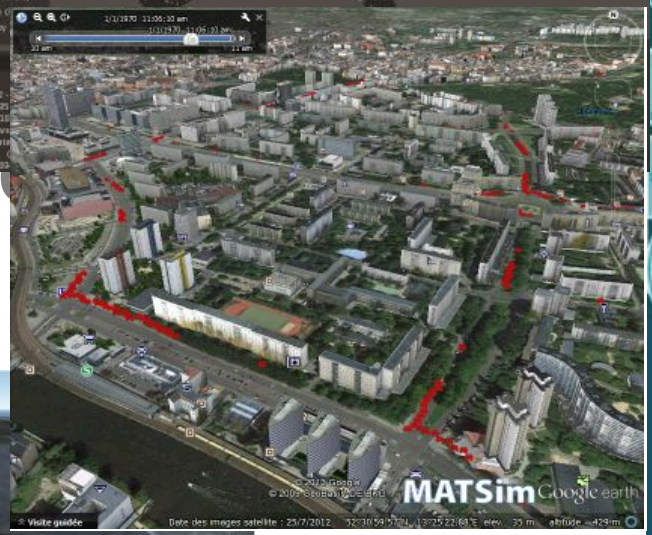
Discipline : Géomatique

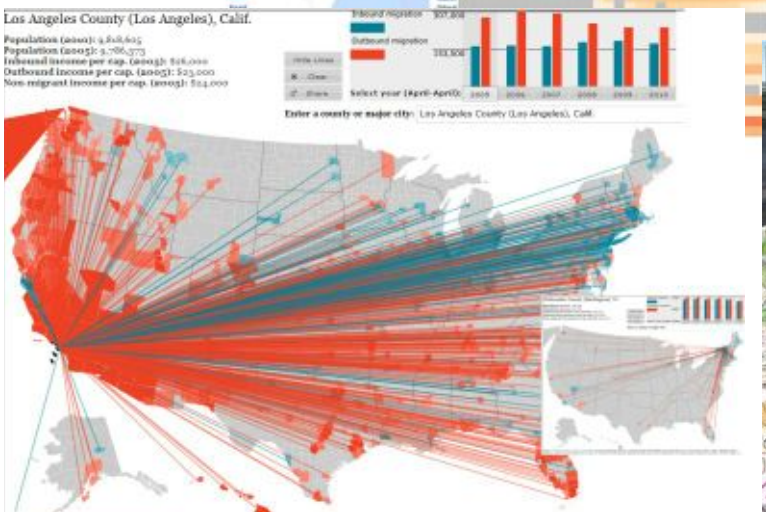
STEAMER

# Géomatique


The Growth of Newspapers Across the U.S.: 1690-2011
1896
Paris, Texas
Legend

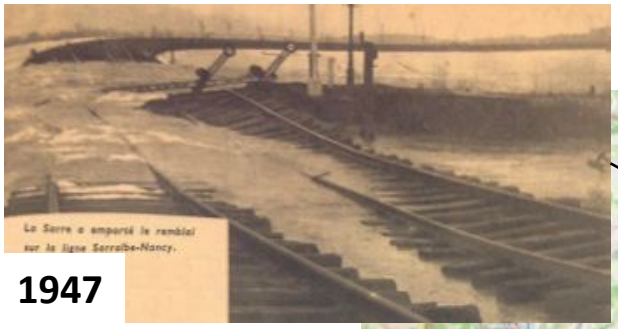

Origins
Time
Destinations


MATSim
Google earth


Los Angeles County (Los Angeles), Calif.


Google

# Catastrophes naturelles




1947

2010

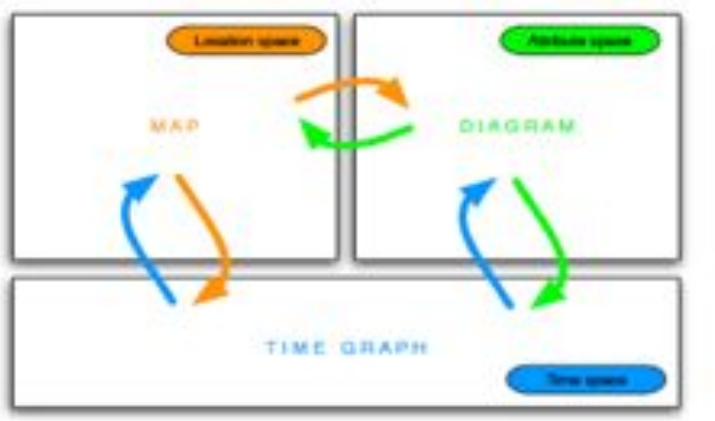



STEAMER

# Enjeux

Documents d'archives, témoignages

Données structurées




Géovisualisation

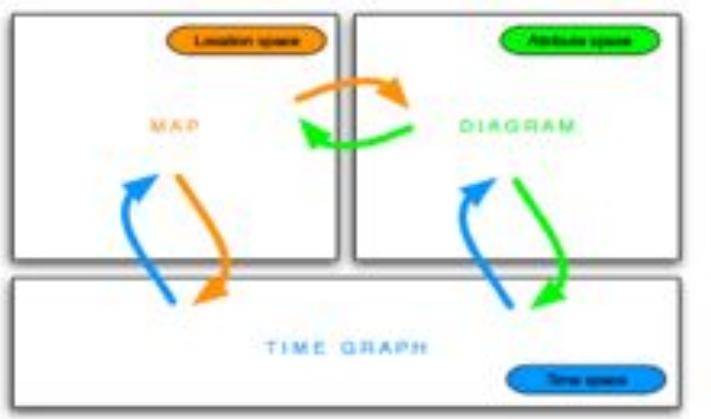
STEAMER

# Enjeux

Documents d'archives, témoignages

Données hétérogènes, peu structurées, imprécises

Données structurées




Géovisualisation

STEAMER

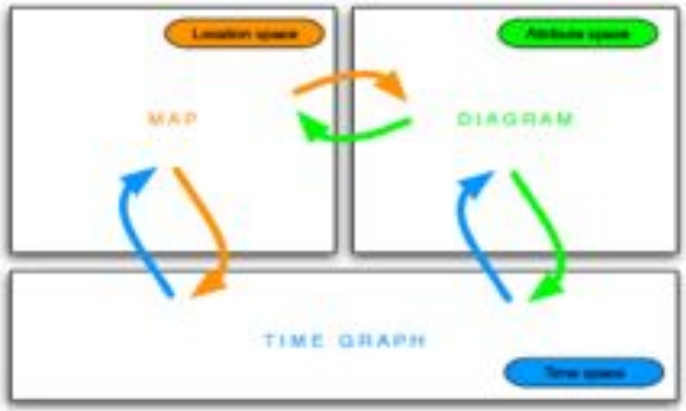
# Enjeux

Documents d'archives, témoignages

Données hétérogènes, peu structurées, imprécises

Données structurées

Visualiser la dynamique spatio-temporelle des processus pour l'analyser




Géovisualisation

STEAMER

# Enjeux

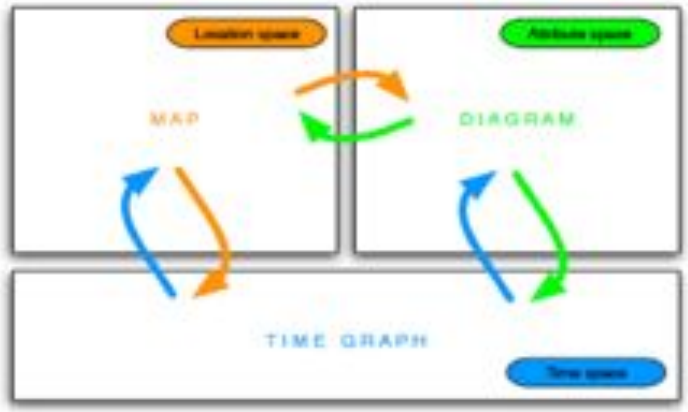
Documents d'archives, témoignages

Données hétérogènes, peu structurées, imprécises

Données structurées

Visualiser la dynamique spatio-temporelle des processus pour l'analyser

Visualiser les relations entre phénomènes variés




Géovisualisation

STEAMER

# Enjeux

Documents d'archives, témoignages

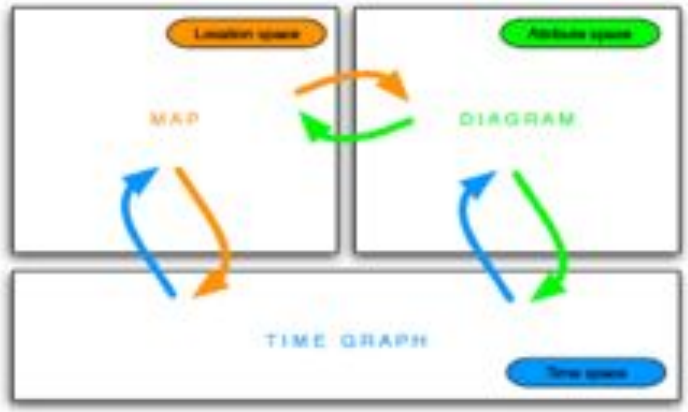
Données hétérogènes, peu structurées, imprécises

Données structurées

Visualiser la dynamique spatio-temporelle des processus pour l'analyser

Visualiser les relations entre phénomènes variés

Rendre compte des imperfections




Géovisualisation

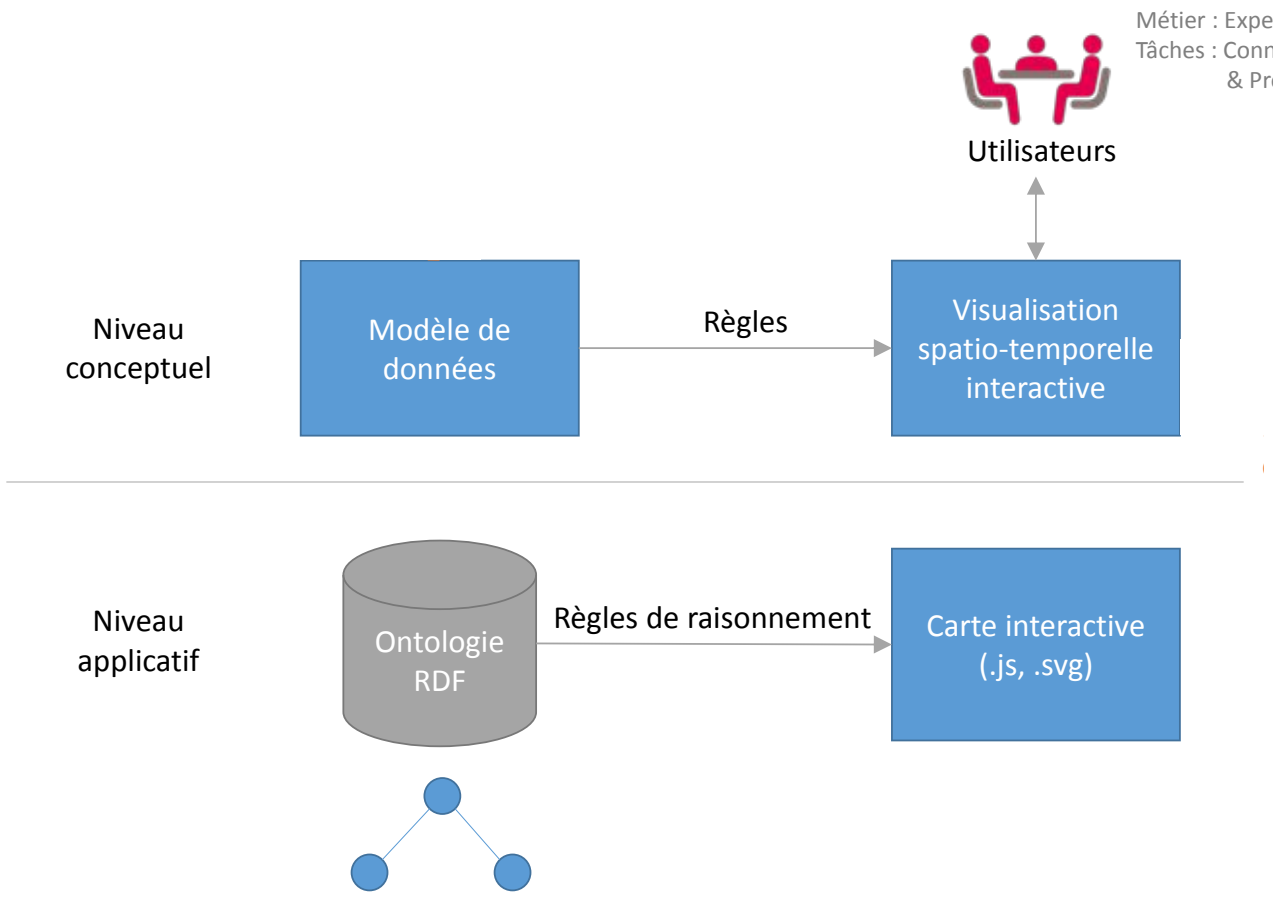
STEAMER

# Objectifs

- **Définir** des **modes de visualisation spatio-temporelle**, adaptés aux spécificités des données historiques et aux utilisateurs, pour faciliter l'extraction de connaissances sur les dynamiques liant phénomènes spatiaux et système ferroviaire
- **Systématiser** le processus de **construction de géovisualisation de dynamiques** en prenant en compte les caractéristiques des données et les besoins des utilisateurs

Cas d'application : inondations majeures ayant impacté le système ferroviaire.

# Démarche


Métier : Experts (Génie civil, circulation…)
Tâches : Connaissance du patrimoine historique
& Production d'études techniques
Utilisateurs
Niveau conceptuel
Modèle de données
Règles
Visualisation spatio-temporelle interactive
Niveau applicatif
Ontologie RDF
Règles de raisonnement
Carte interactive (.js, .svg)

# Démarche


1. Structurer la connaissance sur les inondations et leurs impacts à moyen terme sur le système ferroviaire

Utilisateurs

Métier : Experts (Génie civil, circulation…)
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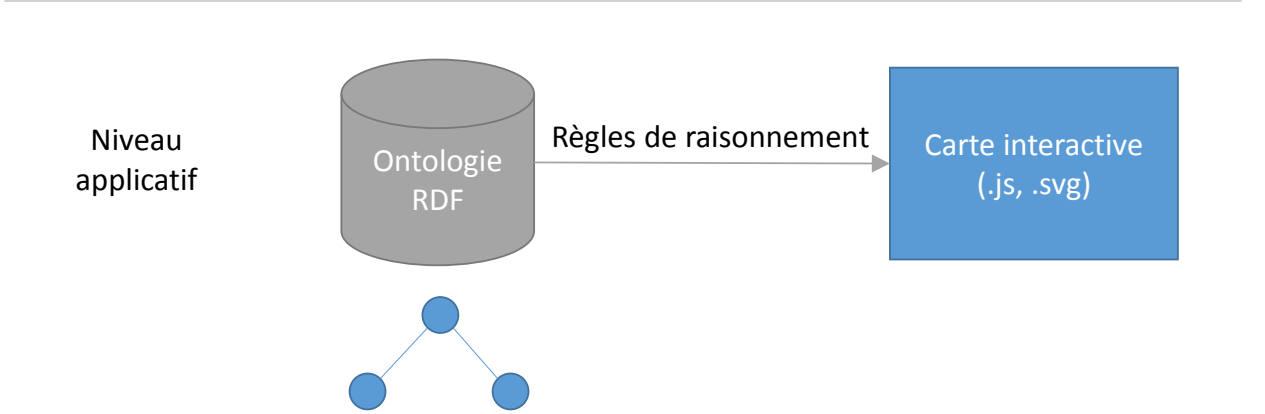

# Démarche


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Niveau conceptuel

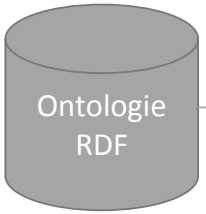
Modèle de données

Règles

Visualisation spatio-temporelle interactive

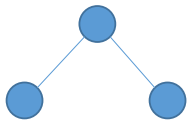
2. Elaborer des méthodes de visualisation spatio-temporelle montrant l'enchaînement des événements


Niveau applicatif




Règles de raisonnement

Carte interactive (.js, .svg)



# Démarche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3. Tester l'efficacité des propositions de visualisation via des méthodes de psychologie expérimentale

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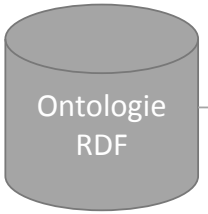
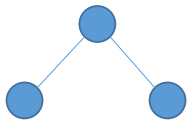



Règles de raisonnement

Carte interactive (.js, .svg)

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# Démarche


1. Structurer la connaissance sur les inondations et leurs impacts à moyen terme sur le système ferroviaire

4. Définir les règles associant type de données et modes de visualisation

Utilisateurs

Métier : Experts (Génie civil, circulation…)
Tâches : Connaissance du patrimoine historique & Production d'études techniques

3. Tester l'efficacité des propositions de visualisation via des méthodes de psychologie expérimentale

Niveau conceptuel

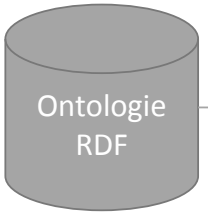
Modèle de données

Règles

Visualisation spatio-temporelle interactive

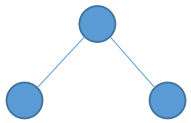
2. Elaborer des méthodes de visualisation spatio-temporelle montrant l'enchaînement des événements

Niveau applicatif




Règles de raisonnement

Carte interactive (.js, .svg)

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# Démarche

Ontologie IDISFER

1. Structurer la connaissance sur les inondations et leurs impacts à moyen terme sur le système ferroviaire

4. Définir les règles associant type de données et modes de visualisation

Utilisateurs

Métier : Experts (Génie civil, circulation…)
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Niveau conceptuel

Modèle de données

Règles

Visualisation spatio-temporelle interactive

2. Elaborer des méthodes de visualisation spatio-temporelle montrant l'enchaînement des événements

Premières propositions

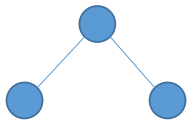
Niveau applicatif

Ontologie RDF

Règles de raisonnement

Carte interactive (.js, .svg)

5. Implémenter un prototype pour démontrer la faisabilité des propositions



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# Towards Matching Improvement between Tasks and Workers in Spatial Crowdsourcing Systems

André Sales Fonteles

*Advisors: Jérôme Gensel and Sylvain Bouveret*



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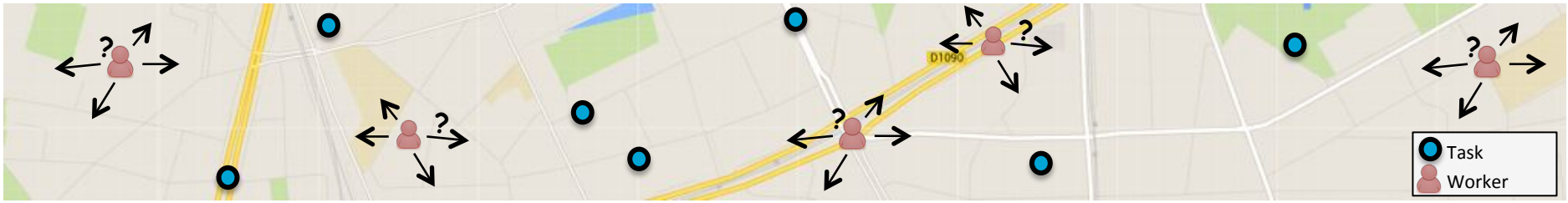
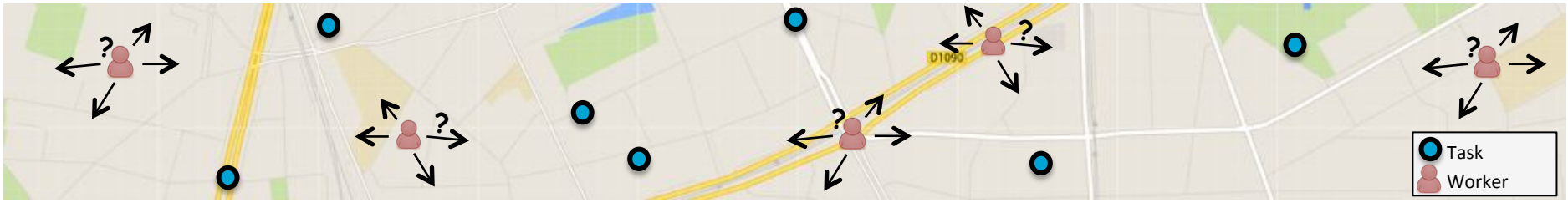
ET DE LA RECHERCHE

# Context



# Context




# Matching Points of View

## System

Maximize overall number of tasks accomplished.

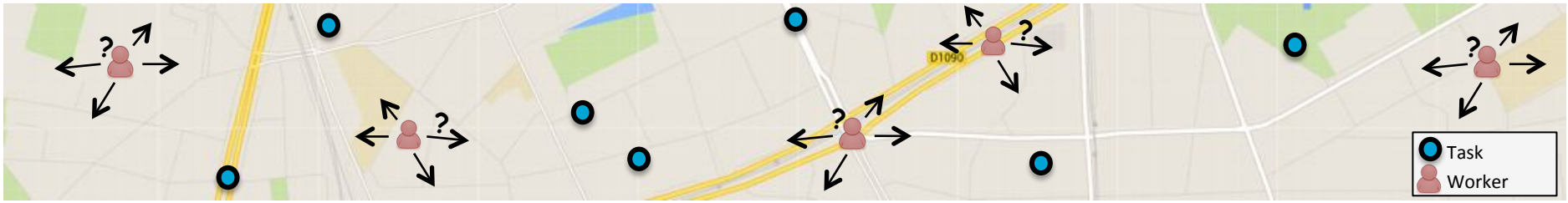
## Worker

Tasks that best match worker's preferences.

## Task

Workers that best match task required skills.

# Context




# Matching Points of View

## System

Maximize overall number of tasks accomplished.

## Worker

Tasks that best match worker's preferences.

## Task

Workers that best match task required skills.

# Current Objective

Help workers to find spatiotemporal tasks, and/or a sequence of them

- To improve the **overall contribution** of a worker.
- To increase the **quality of the service** provided by workers.

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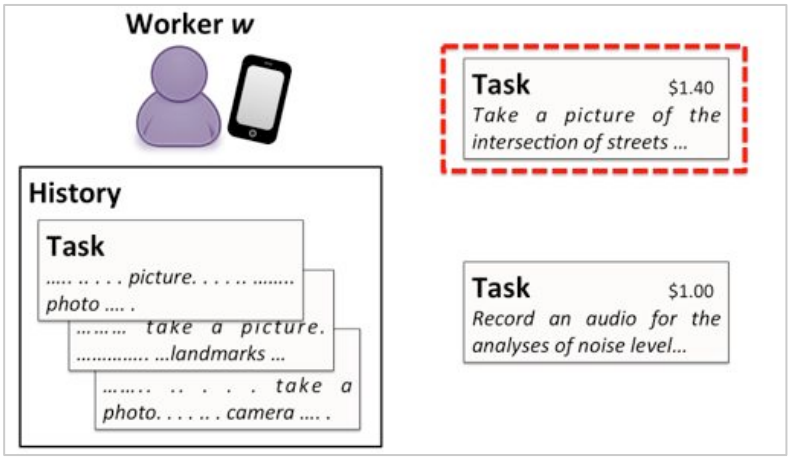
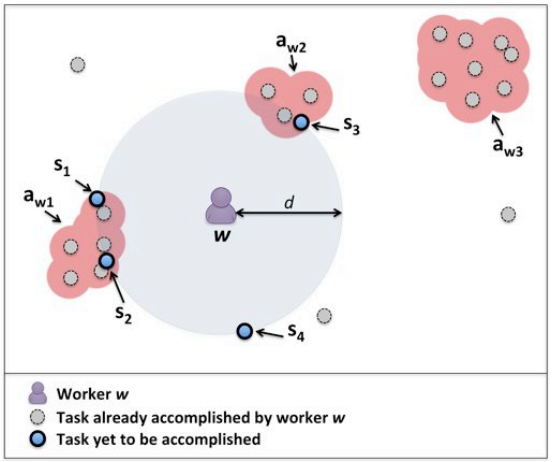
ET DE LA RECHERCHE

# Proposal

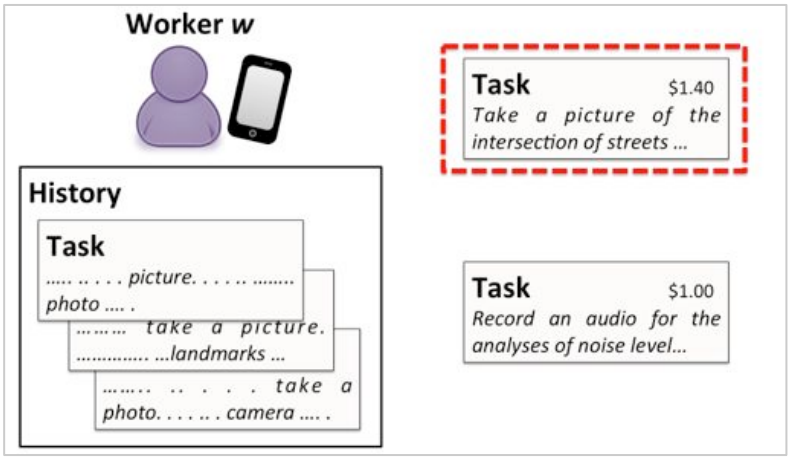
**Single Task Recommendation** *(Fonteles et al., 2014, MobiGIS) (Fonteles et al., 2014, SAGEO)*

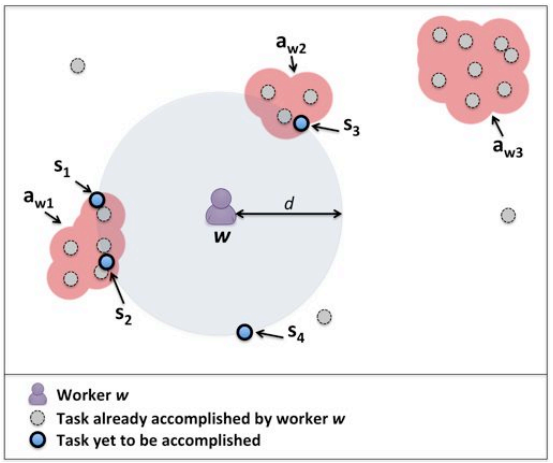


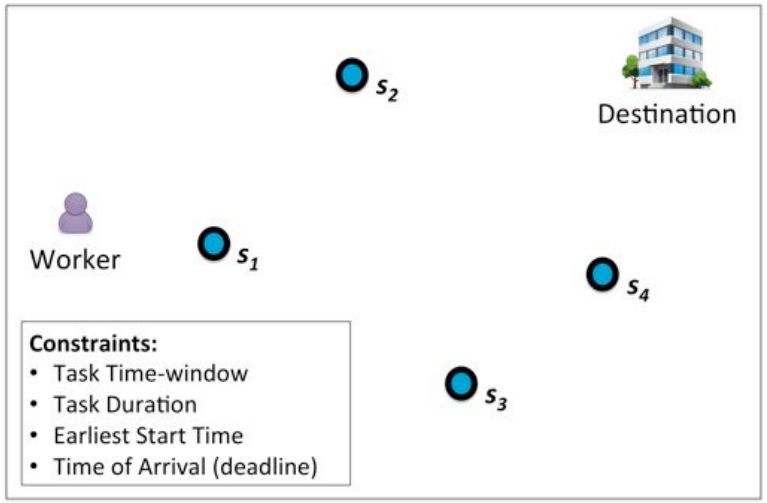
# Proposal

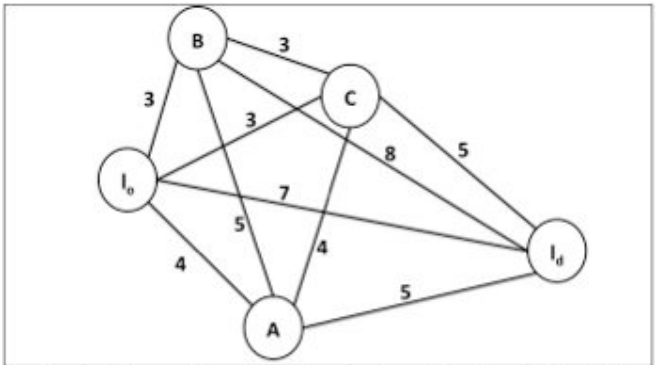
## Single Task Recommendation *(Fonteles et al., 2014, MobiGIS) (Fonteles et al., 2014, SAGEO)*




## Task Sequence Recommendation *(Fonteles et al., 2015, W2GIS)*




| Task | Time window ($[\tau_1,\tau_2]$) | Duration ($\delta$) | Utility ($u$) |
|---|---|---|---|
| A | [1:00 pm, 1:50 pm] | 5 minutes | 0.5 |
| B | [1:00 pm, 2:10 pm] | 15 minutes | 0.5 |
| C | [1:30 pm, 2:40 pm] | 10 minutes | 0.6 |

**Towards Matching Improvement between Tasks and Workers in Spatial Crowdsourcing Systems**

***For more information:***

# *Come to see the poster*

# *Merci!*

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RÉPUBLIQUE FRANÇAISE
MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

*Journée des Doctorants du LIG*
*26 Mars 2015*

# Socio-affective intelligence for a robot :

## interaction vocal and gestural primitives for a personalizable robot in a smart home

**Yuko SASA**

Supervisor: Véronique AUBERGÉ (LIG - CNRS)
Co-supervisor: Gang FENG (Gipsa-Lab)
Co-advisor: Yoshinori SAGISAKA (Waseda University)

# Context & paradigms

telepresence · beaming

telecare

companion

ecological corpus using language primitives

*human control*

*autonomous*

—

*minimal intelligence*

+

**Social role** :
smart home butler robot

emox
The Augmented Robot

AwAbot
Beyond Robotics

No Speech

« pure prosody » non phonological mouth noises

« pure prosody » phonological mouth noises

Micro-words & onomatopoeia

Socio-affective prosody on commands imitation

***+ Socio-Affective GLUE***

# Experiments

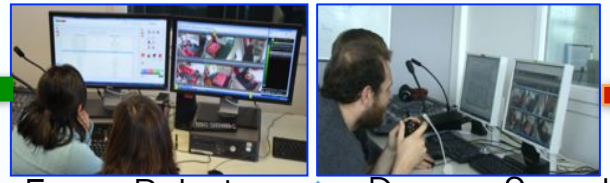
**EEE: Elderly Emox Expressions corpus**

**Let socio-isolated elderly talk to Emox with graduated socio-affective prosody, would it become a communication prothesis?**

*Scenario*

1) Visit of Domus all together
2) Prepare to leave the elderly alone (experimenters acting)
3) Introduction to the voice commanded Smart Home and its « butler » Emox
4) Emox-Elderly Interactions
5) Return of the experimenters and their accomplices
6) Debriefing

**EmOz : Wizard of Oz interface**



Emox Robot control

Domus Smart Home control


Domus: Smart Home / living-lab

# Results and perspectives

**Before ‘‘glue’’**

=> Reading attitudes

**After ‘‘glue’’**

⇒ Commands paraphasings
⇒ Prosodic focuses and characteristics
⇒ Caring, politness, guidance cues
⇒ Interaction tools change dynamically...

**EEE Corpus : Elderly Emox Expressions**

=> the dimensions of the ‘‘socio-affective glue’’
=> ‘‘socio-affective language interaction tools’’ train socio-isolated elderly to keep involve in communication with other humans

**Evaluation in the same experimental context**

# Thank you for your attention

Hope to see you at the poster session!

# Time Series Centroid Estimation under weighted and kernel dynamic time warping

**Saeid SOHEILY KHAH**

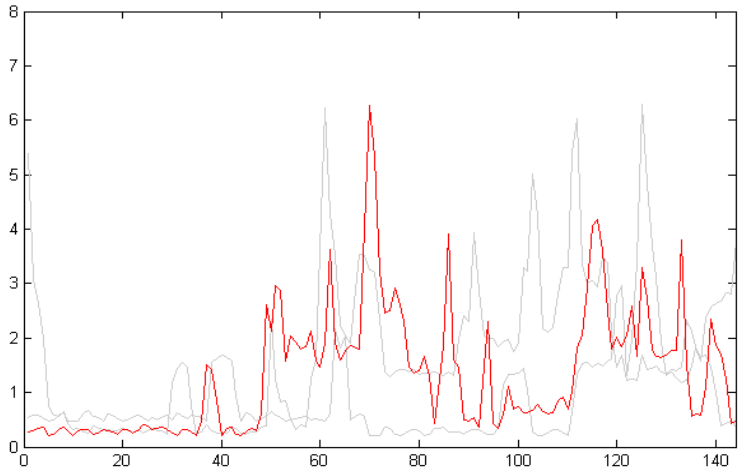
Supervisors : Ahlame DOUZAL , Eric GAUSSIER

# Time Series

A kind of **sequence** data:

- an ordered sort of elements
- order criteria : ***time***

**(exp. power consumption)**




**Averaging** a set of time series is involved in many data mining and machine learning processes as:

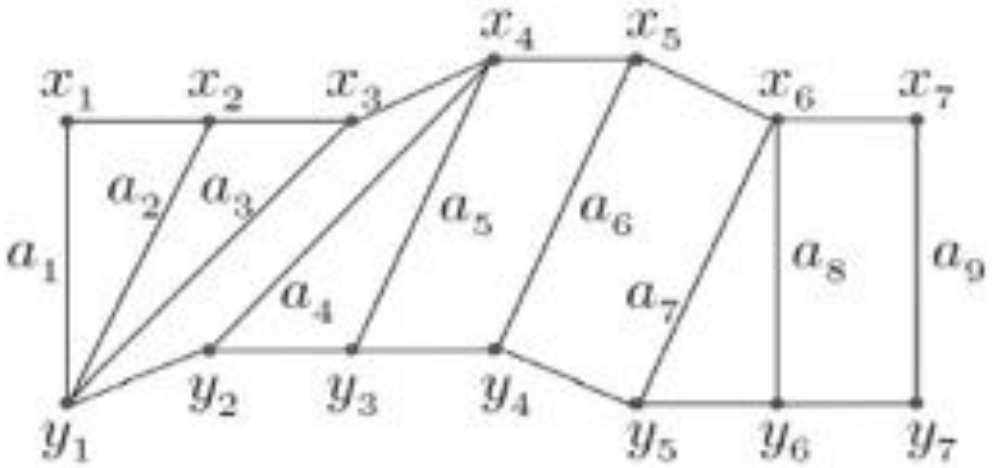
- **Summarizing** a set of time series
- Extracting temporal prototype
- **Clustering** time series

## Challenging Question

centering more than two times series under temporal warping

## n = 2

- pairwise alignment [one standard way]




| | 1 | 2 | ... | 9 |
|---|---|---|---|---|
| **x** | $x_1$ | $x_2$ | ... | $x_7$ |
| **y** | $y_1$ | $y_1$ | ... | $y_7$ |
| **c** | $\text{avg}(x_1, y_1)$ | $\text{avg}(x_2, y_1)$ | ... | $\text{avg}(x_7, y_7)$ |

## n > 2

- need to handle the problem of multiple temporal alignment

## Objective

**Formalize** the multiple time series averaging problem as an optimization problem

## Solution

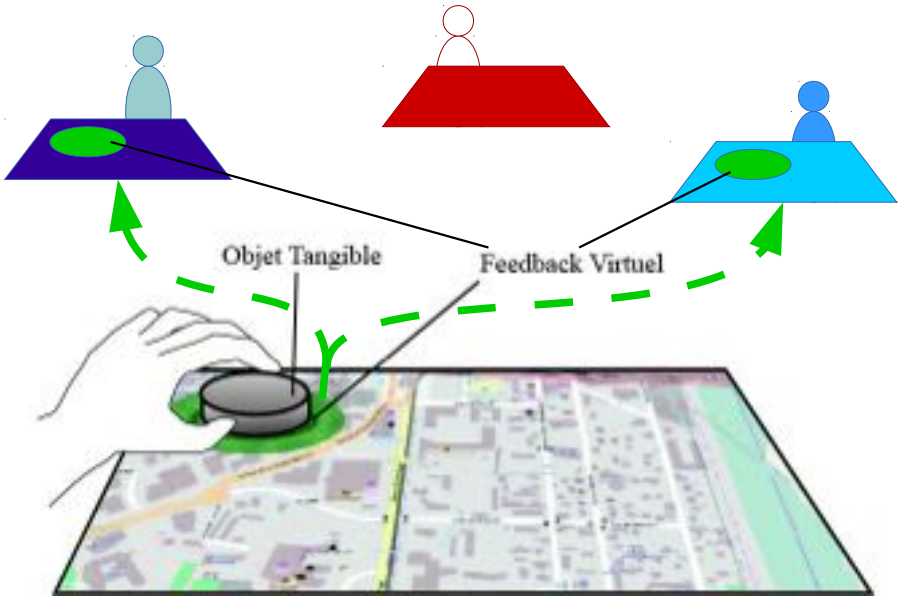
Propose an **optimal solution** for the barycenter estimation under:

- weighted DTW metric
- kernel DTW metric

That allow us to estimate:

- the time series centroid
- its weight vector

# Décisions collectives en environnements interactifs et collaboratifs complexes : Application à la gestion de crise



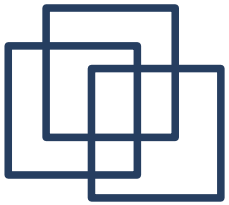

**Lauren Thévin**
**LIG-AMA**
**LIG-Magma**
**EMSE-Institut Henri Fayol/ISCOD,**

Projet soutenu par l'ARC 6 Région Rhône-Alpes (ARC-13-009716-01)
En collaboration avec l'IRMa

# Contexte

- Gestion de crise :
  - Risques majeurs(naturels, industriels, transport)
  - Acteurs secours et sauvegarde (pro et non pro)

  → Plan communal de sauvegarde
- Exercice avec Table TangiSense:
  - test et appropriation

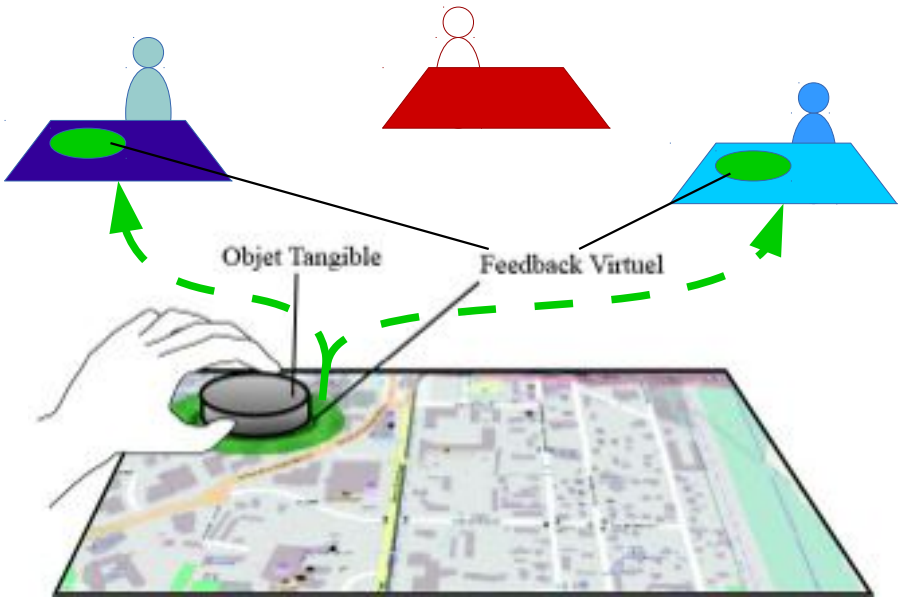


# Défis

- Points de vue organisationnel multiples
  - Partage : Environnement et Organisation
  - Aide : résolution de conflit
- Coordination à distance
  - Interaction tangible
  - Retour virtuel

# Merci de votre attention

- Pour en savoir plus, rendez-vous à la session poster



# Software Transactional Memory with Autonomic Management Techniques

Naweiluo Zhou – *Grenoble University/INRIA, France*
Gwenael Delaval –*Grenoble University,France*
Eric Rutten –*INRIA,France*
Jean-Francois Mehaut –*Grenoble University/CEA,France*

*Naweiluo.Zhou@inria.fr*

March 27th, 2015

# 1.Introduction to Parallel Program

## Multi-core Processor

- Multi-core processors are everywhere, more parallelisms/concurrency levels give higher performance?
- Many threads execute concurrently. Threads share data. More threads maybe more conflict!

## Synchronization VS Computation

A high concurrency level may decline computing time, but increase synchronization time. How to handle the trade-off between synchronization and computation?

# 1.Introduction to Parallel Program

## Locks

A traditional way for synchronization. But:

- Deadlocks, vulnerability to failures, faults...
- Difficult to detect deadlocks
- Hard to figure out the interaction among concurrent operations

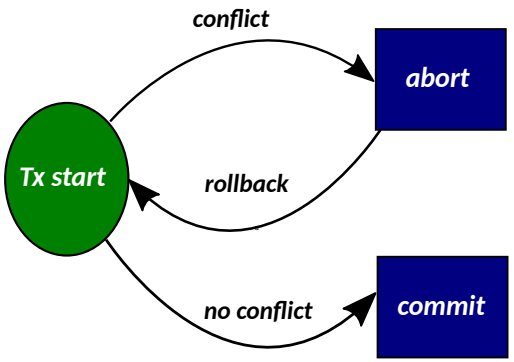
## Transactional Memory

Lock-free, therefore no deadlocks! But really? Any problems? Why transactional memory does not become the dominating memory system?

# 2.Transactional Memory

## Concepts

- Shared variables are wrapped by **transactions** (atomic blocks)
- concurrent accesses are performed inside transactions
- Transactions are executed speculatively and can either commit or abort.

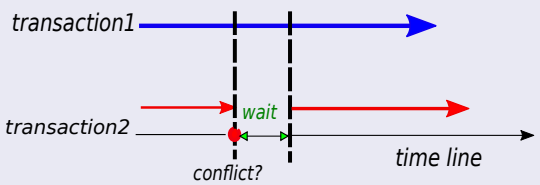


# 2.Transactional Memory

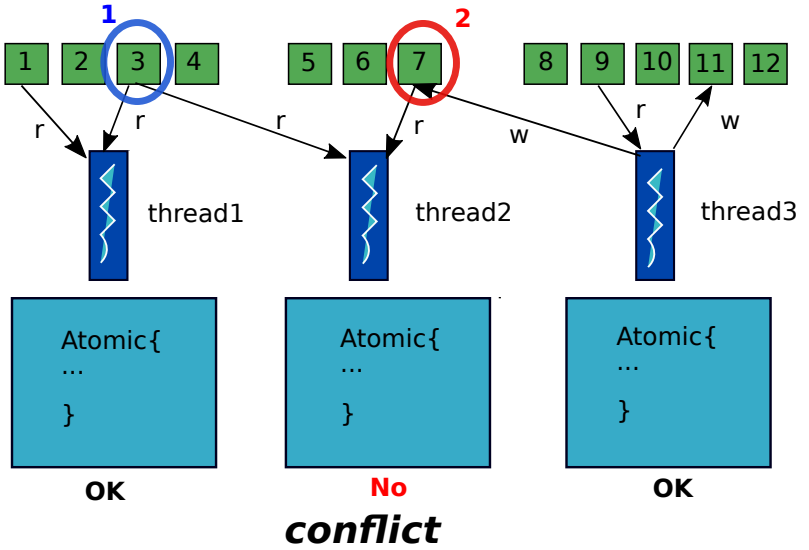
## Example

consider three threads read/write data from/to the objects of different memory locations. Access occur inside transactions

## how to solve the conflict




I detect the conflict, I wait then I continue



# 2.Autonomic Management

## Design the system wisely making it:

- **Self-configuration:** a new component learns the system configurations
- **Self-optimization:** seek to improve performance & effeciency
- **Self-healing:** recover from failures
- **Self-protection:** defend against attacks

# Questions?