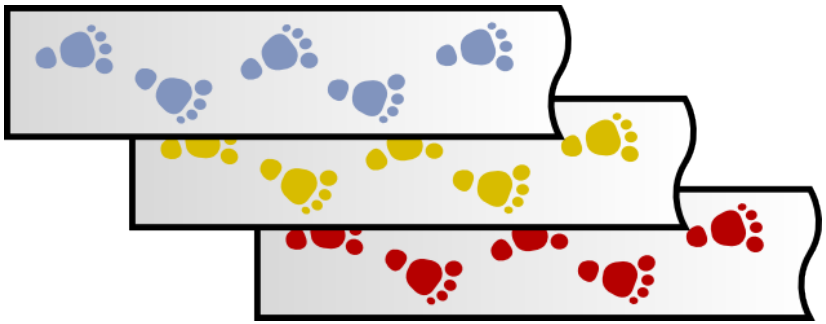
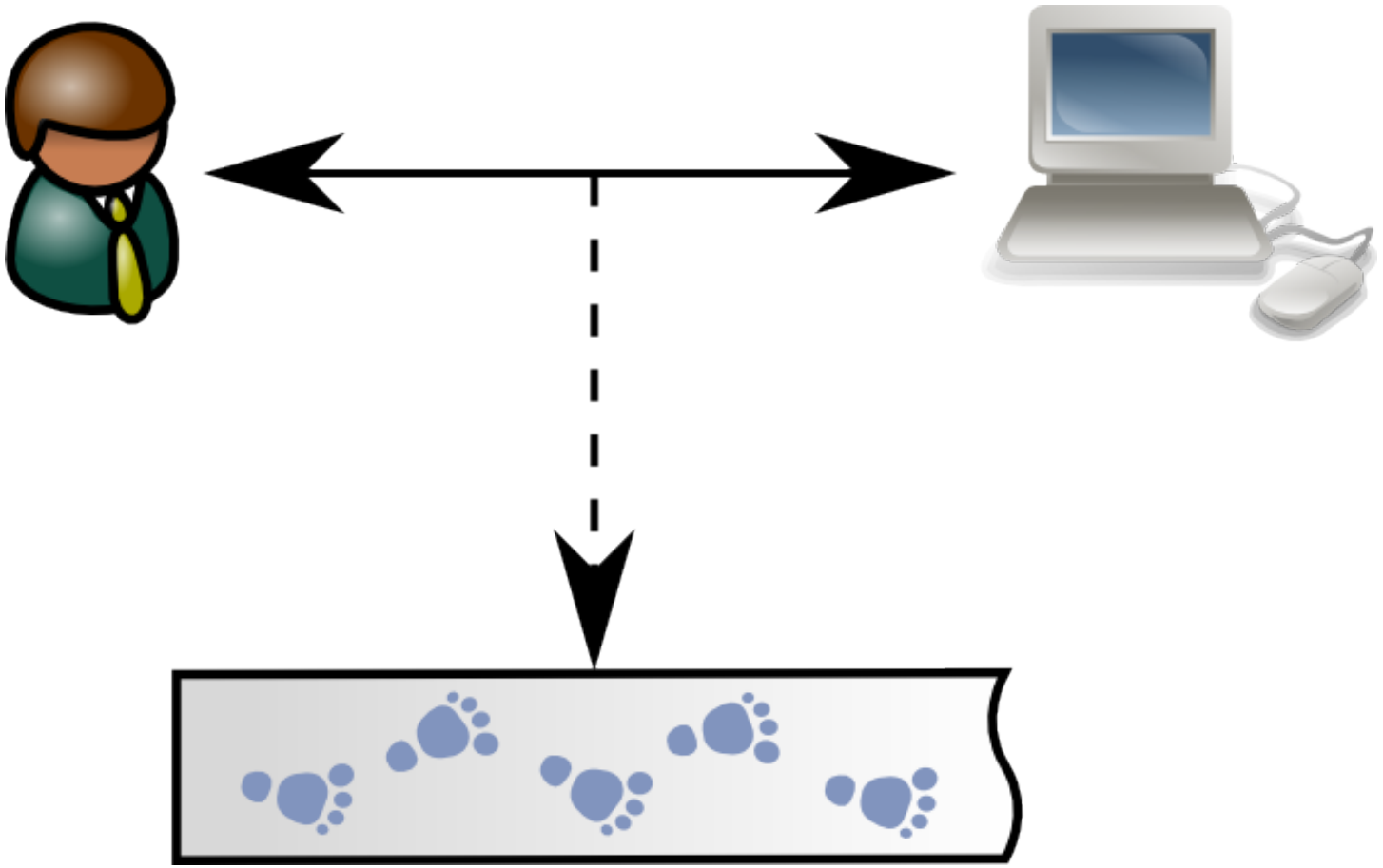
Trace-Based Reasoning for user assistance



An adapted presentation for...

AGENCE NATIONALE DE LA RECHERCHE ANR kOIflow



Trace?

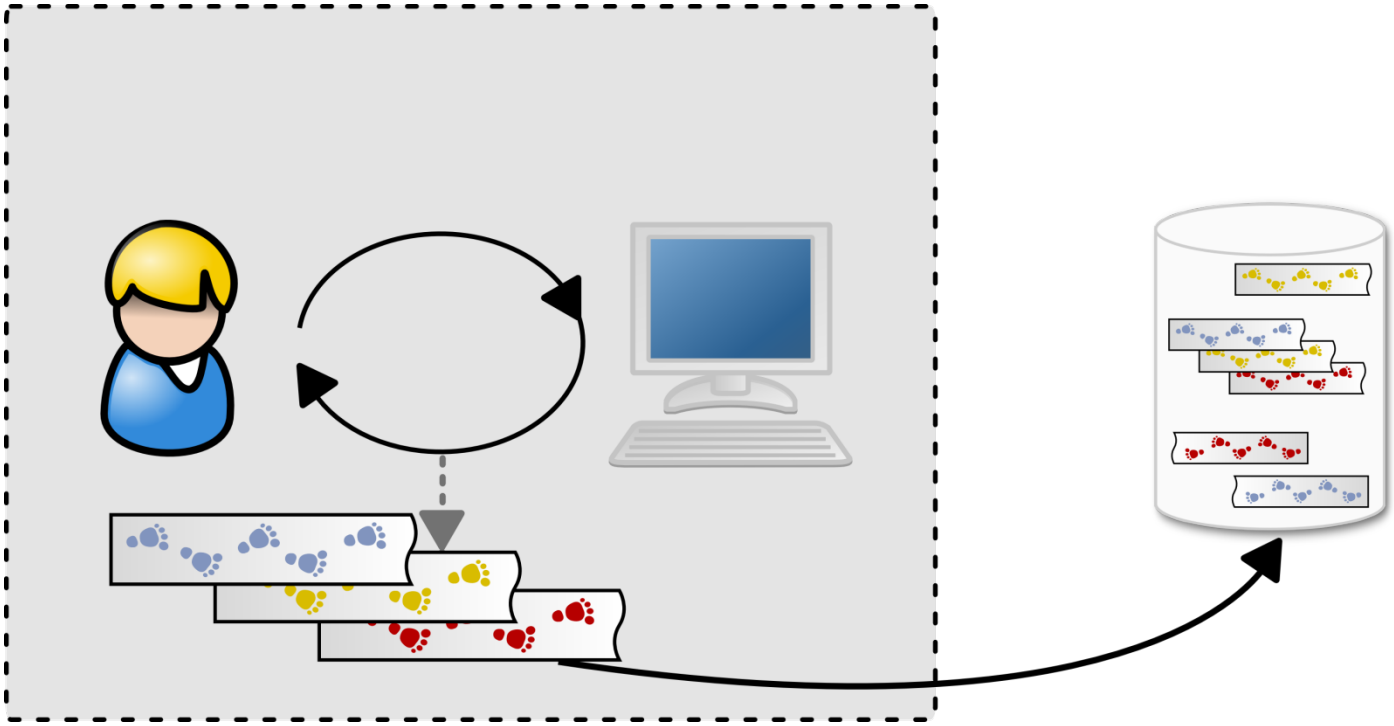
A trace is an experience container!

Objects

- Obsel
- Model
- KTBS

Processes

- Collect
- Transformation



KTBS: a Kernel for Trace-Based Systems

Properties

- Open source
- Simple data model
- Extensible

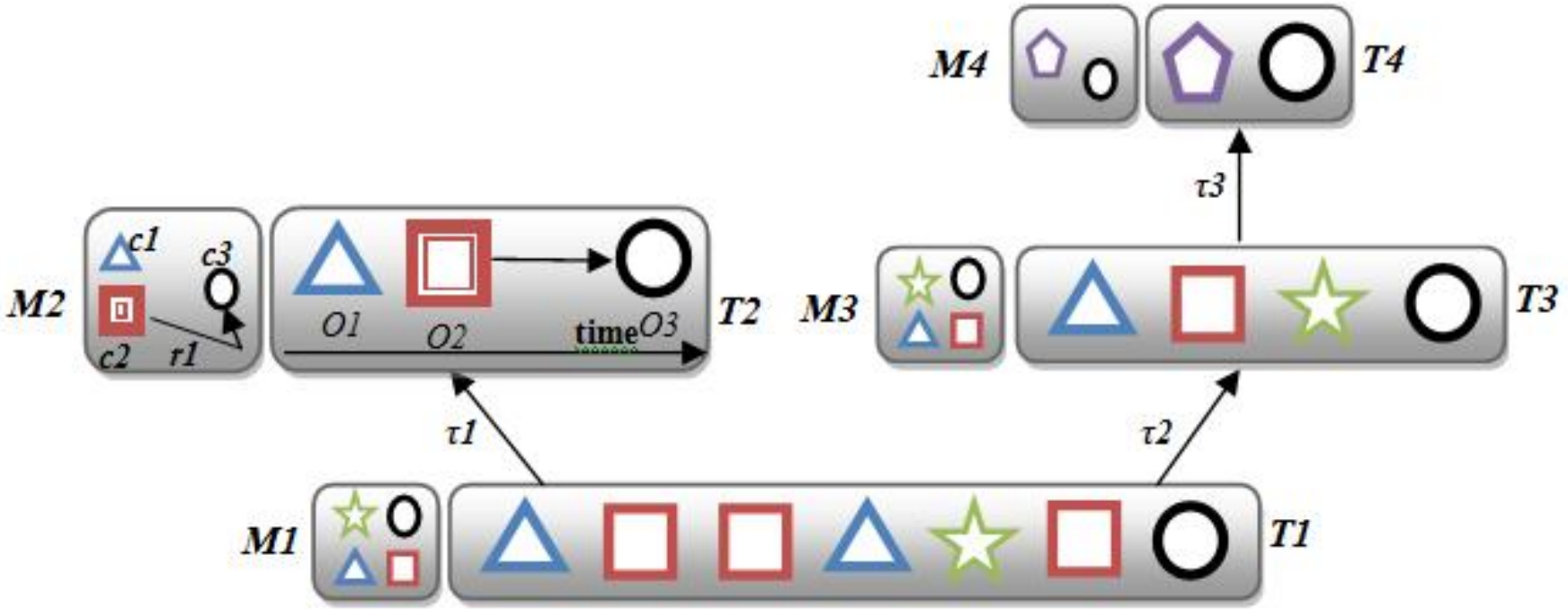
http://liris.cnrs.fr/sbt-dev/ktbs/

Technical details

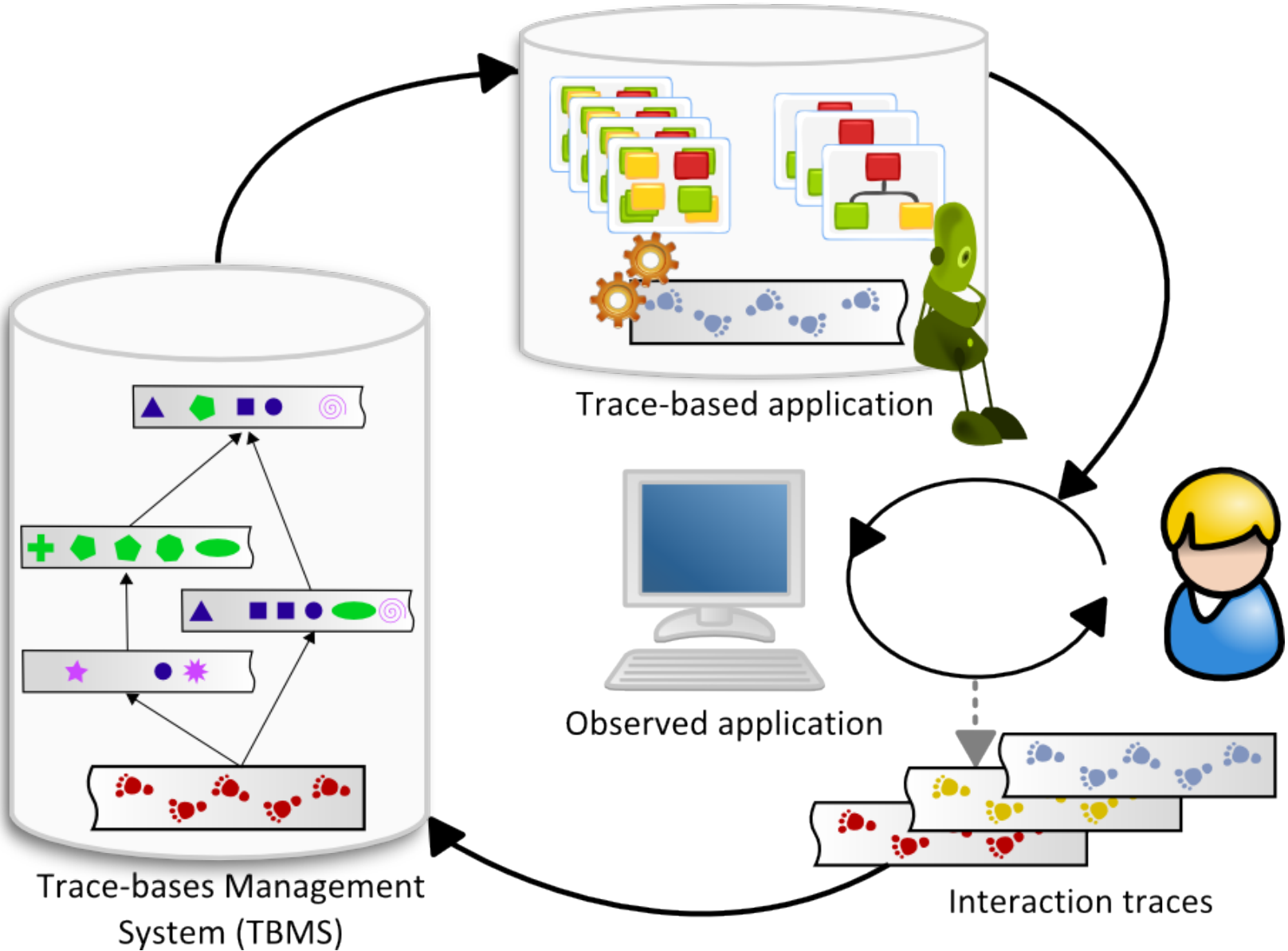
- RDF for representing its data
- RESTful HTTP for interaction
- Available in all programming languages
- Client API in Python, Java, ActionScript

KTBS stores traces!

Transformations



Trace-Based Reasoning for user assistance



What can we do with traces?

Knowledge acquisition

Replay

Visualisation

Learning

Assistance

Assistance

Task 4 – Team SILEX

Pierre-Antoine Champin, Amélie Cordier,

Elise Lavoué, Marie Lefevre and Alain Mille

An assistance, what for?

- Where can we provide assistance?
- What is relevant for...
  - Users
  - Researchers (research questions)

Methodology

- Brainstorming: how to assist a DSMW user?
- Categorisation of the various types of assistance
- Matching between research questions and assistance categories

List of scenarios

- Assistance for resources edition
  - Creation / modification / merging
- Assistance to the designer of the semantic queries tool
  - Identification of the anti-patterns
  - Heuristics for the assistance while typing semantic queries
- Assistance while using DSMW
  - Creation of HowTo, Tutorials, etc.
  - Identification of key people in the community
  - Automation of some tasks
  - Define equivalent actions (shortcuts)
- Define communities: practices, interest, etc.

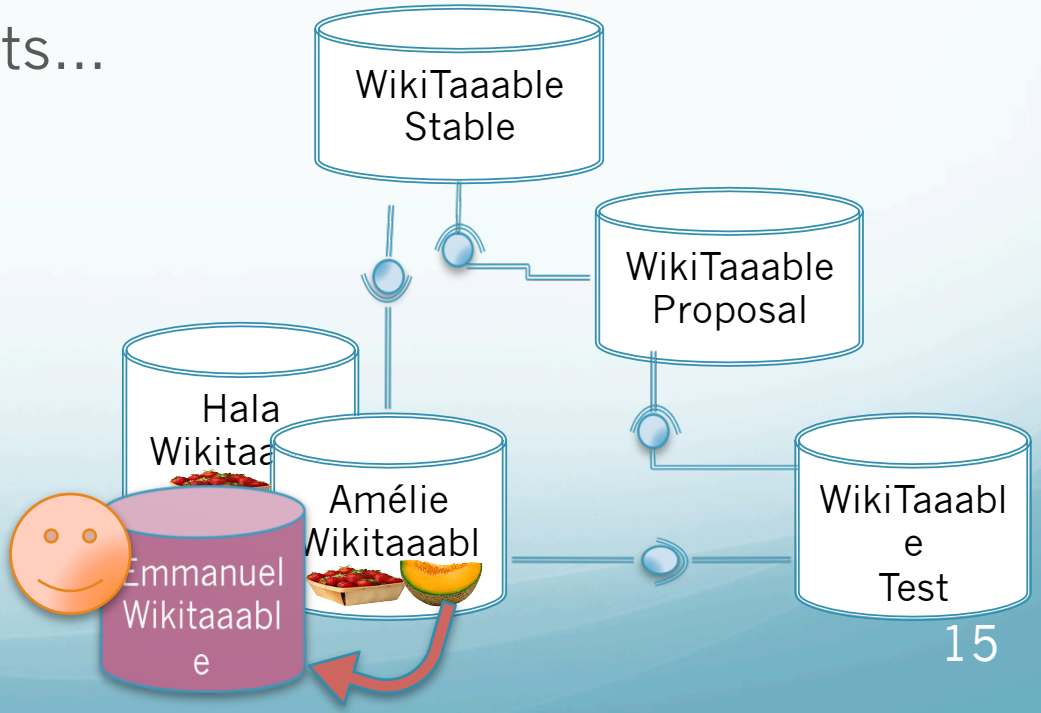
Preamble

- Resource =
  - Ontology
  - Terminology
  - Wiki page
  - User feedback
  - Comment

- Construction
  - Manually
  - Through configurable bots

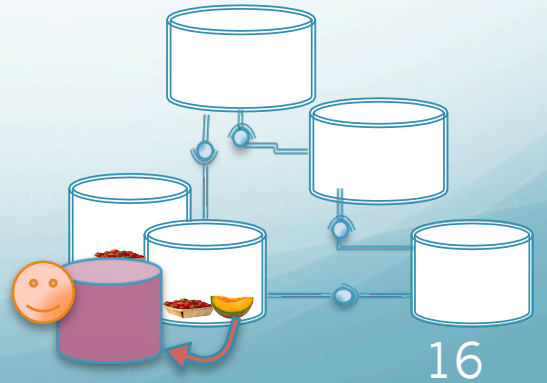
Merging of resources Importation of resource (1/4)

- Context:
  - Emmanuel gets the “Melon pie” recipe of Amélie in order to integrate it in his instance of Wikitaaable
- Problem:
  - There is some conflicts…
    - Another recipe with the same name
    - Where is the melon in the ingredient ontology?



Merging of resources: Importation of resources (2/4)

- Hypotheses
  - We are able to identify conflicts
    - Task 3: inconsistency detection while merging ontologies?
  - We are able to highlight two conflicting resources
    - Who?

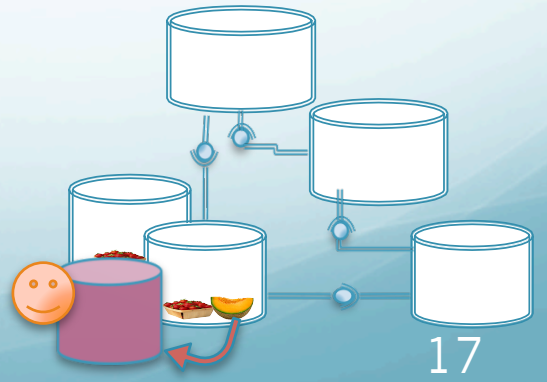


Merging of resources: Importation of resources (3/4)

- Role of the assistant:
  - Display the steps to follow in order to import resources

  ⇒ Identification of the steps using traces analysis

  ⇒ Visualisation of the traces and navigation through "filtered traces"



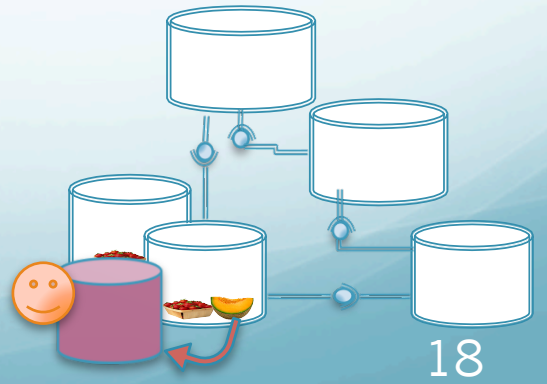
Merging of resources: Importation of resources (4/4)

- Role of the assistant:
  - Assist while solving conflicts

  ⇒ Detection of conflicts

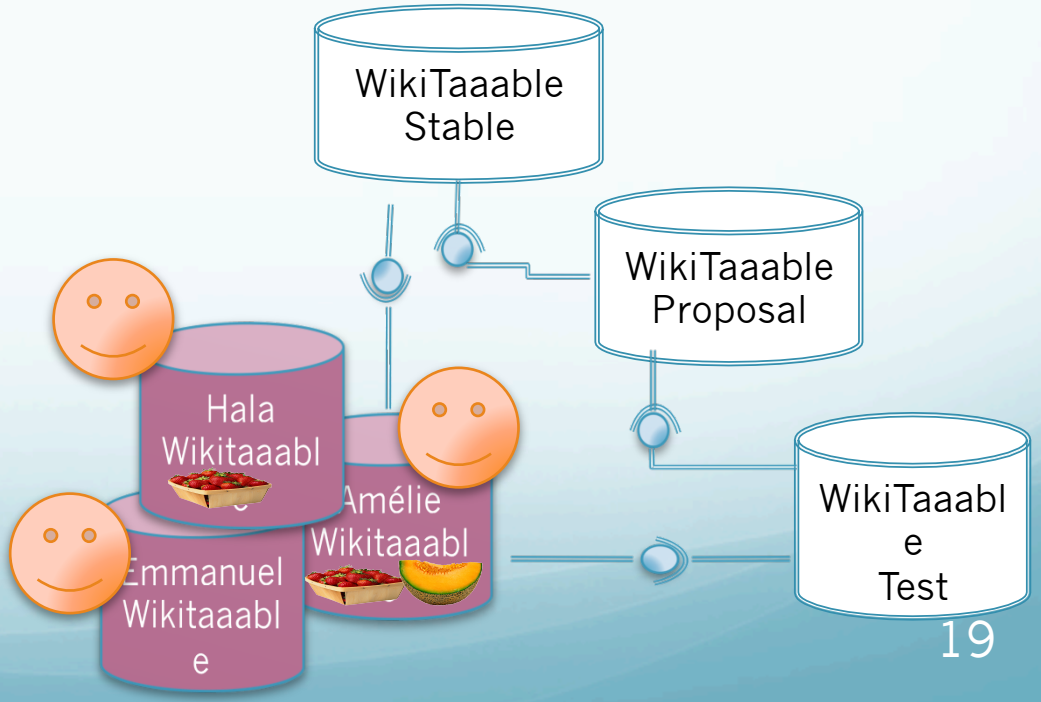
  ⇒ Reconstruction of "filtered" history for the resources

  ⇒ Display "filtered" history



Merging of resources: Merging of X resources (1/2)

- Context:
  - Emmanuel, Amélie and Hala merge their versions of WikiTaaable
- Problems:
  - There is conflicts...
    - In ontologies
    - In recipes



Merging of resources: Merging of X resources (2/2)

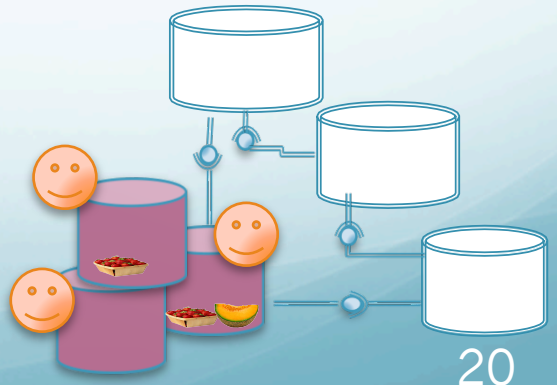
- Same hypotheses on conflicts detection

- Role of the assistant:
  - Display the steps to follow for merging resources
  - Assist while solving of conflicts

  ⇒ Assistance to sense negociation

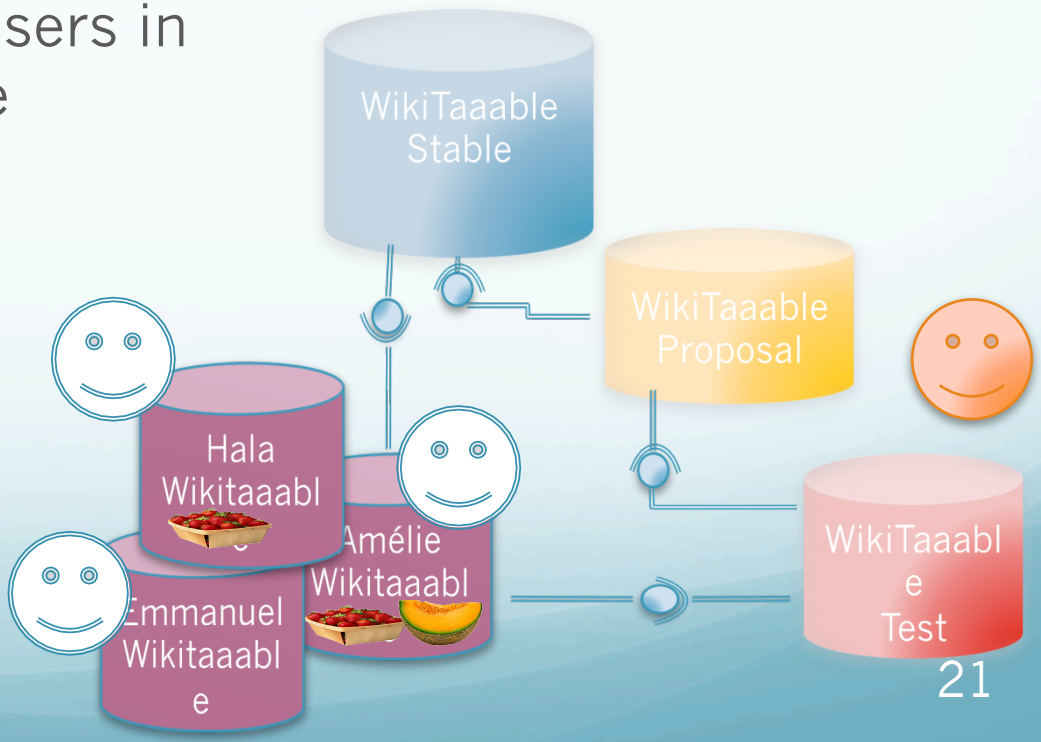
  ⇒ Co-construction of sense between humans

  ⇒ Rememoration of collective experience



Merging of resources: Moderator (1/2)

- Context:
  - Hector is the moderator of community of chocalate cake lovers
  - He is in charge of integrating the proposals of all users in order to have a stable Wikitaaable
- Problems:
  - There is conflicts...
    - In ontologies
    - In recipes



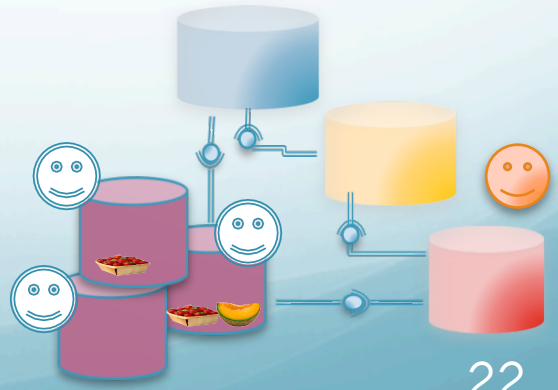
Merging of resources: Moderator (2/2)

- Same hypotheses on conflicts detection

- Role of the assistant:
  - Identify the steps of the process
  - Help to manage conflicts

  ⇒ Put Hector in relation with users involved in the sense negotiation process

  ⇒ Identify the new practices of the community



Questions about assistance

- From the traces:
  - Identify patterns in traces
    - Steps of a process
  - Rebuild the history of a resource using different sources
  - Adapt the results
    - Filtering the history of a resource
    - Adaptation of the process to a specific need
    - Adaptation according to the user profile
  - Traces visualisation
  - Navigation in the traces
  - Assist co-construction of sense between humans…

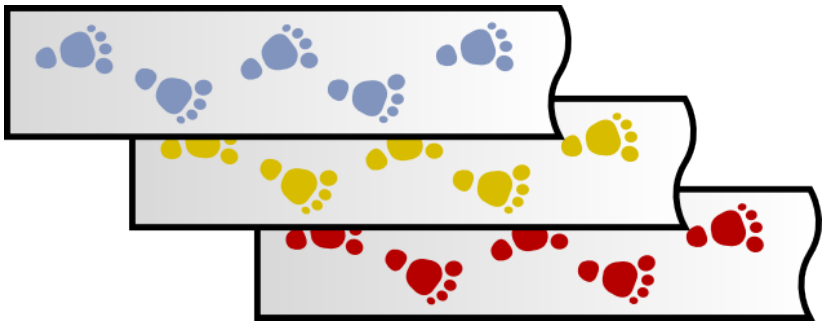
Resources of Silex

- Trace Theory and Trace Based Reasoning (TBR)
- Framework for traces management (kTBS)
  - Storage, Transformation
- Ad-hoc tools for traces analysis
  - Using data mining techinques, finite state machines
- Ad-hoc tools for traces visualisation

Which implies...

- Having traces
  - Development of a traces collector for DSMW
  - Link between the collector and the kTBS
- How to reuse/adapt ad-hoc tools for analysing and visualising traces
- .... And a lot more ☺

Trace-Based Reasoning for user assistance



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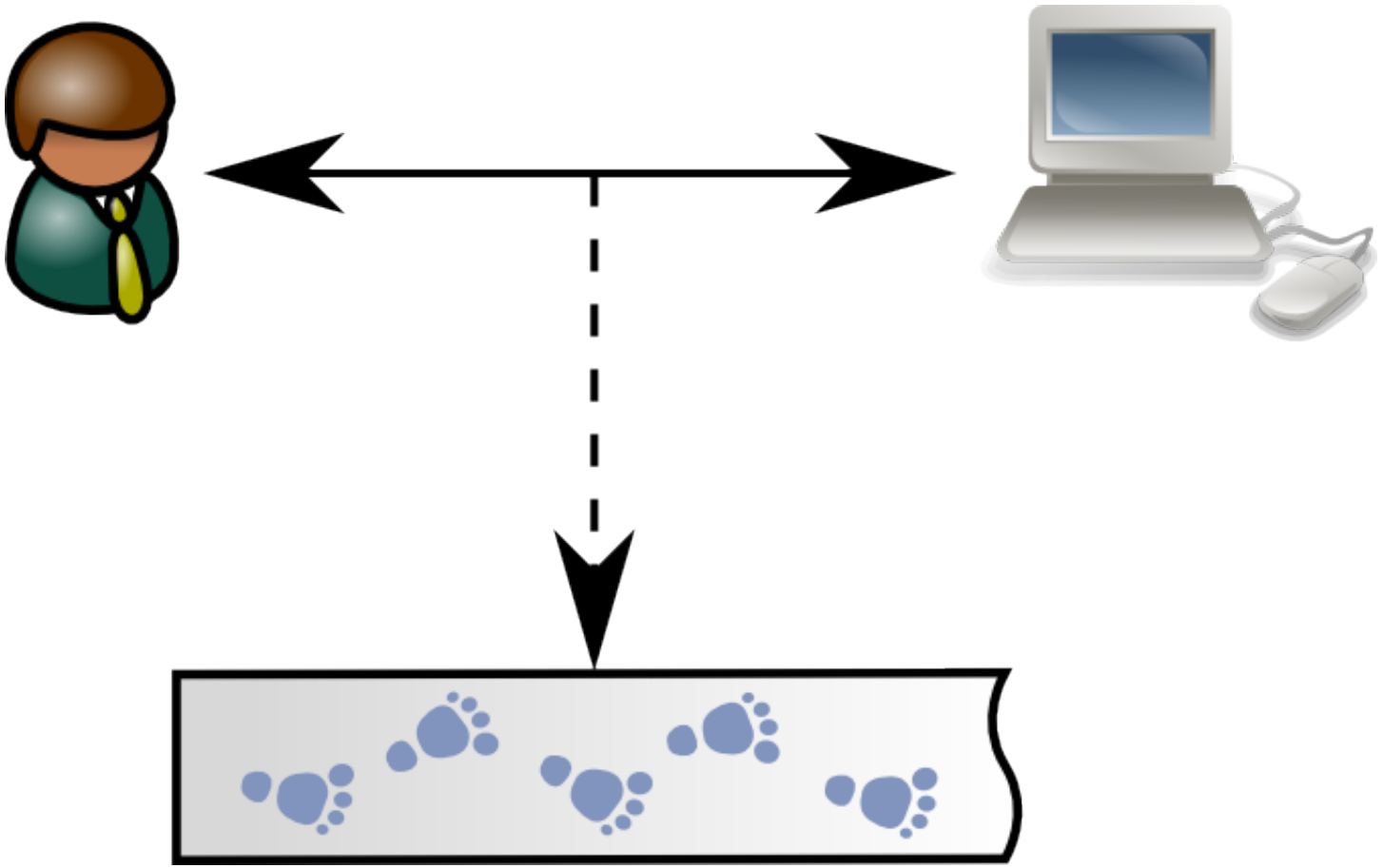

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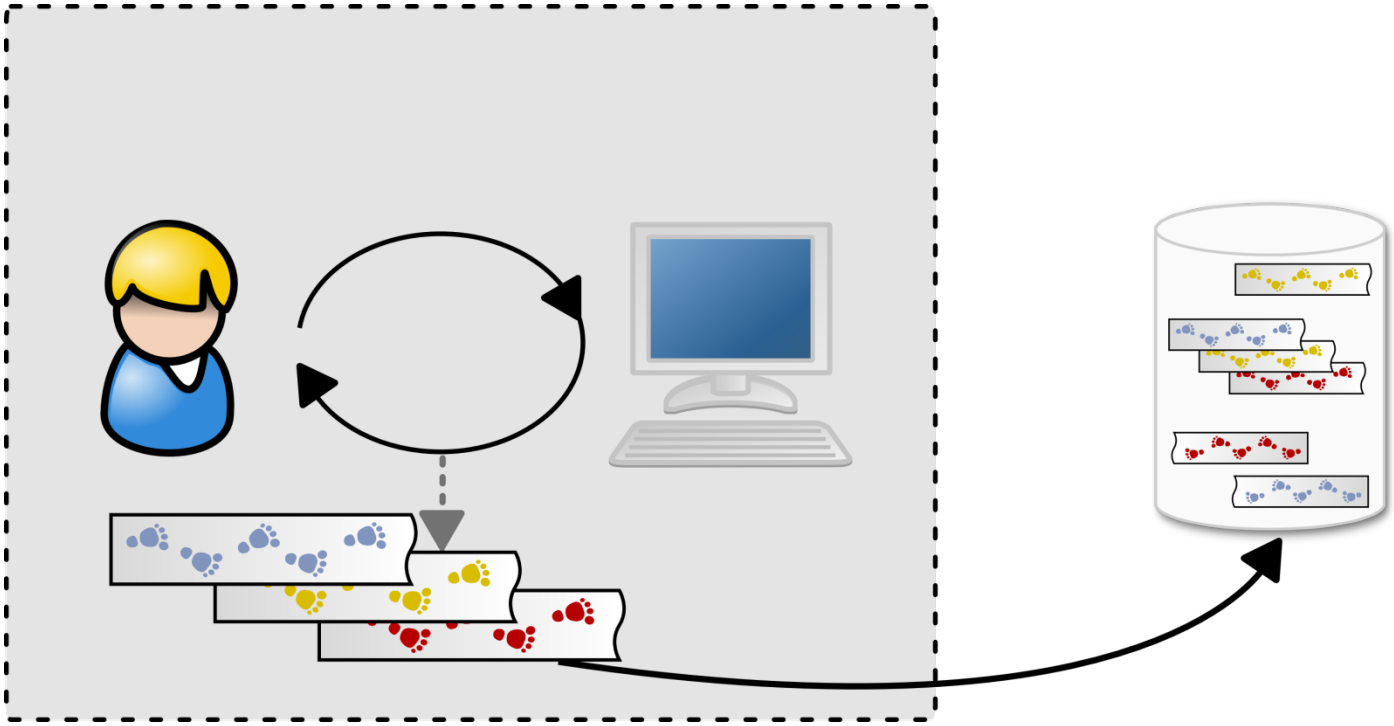

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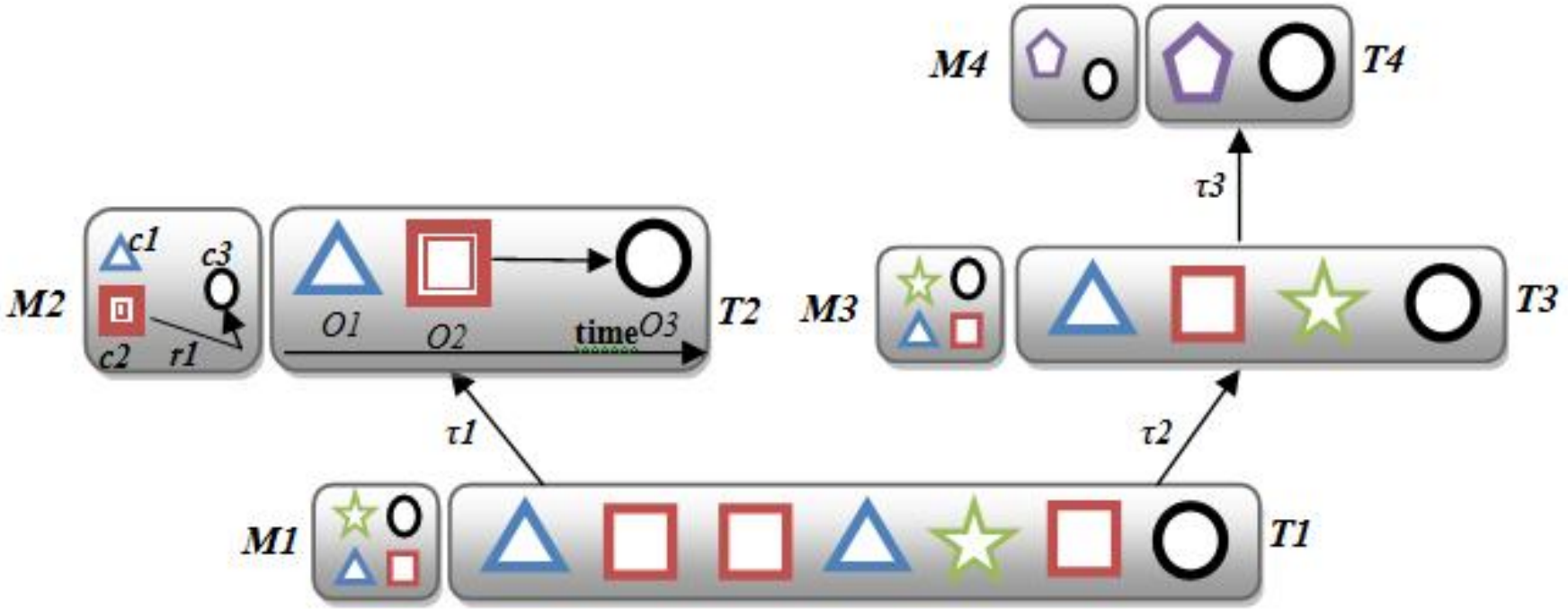

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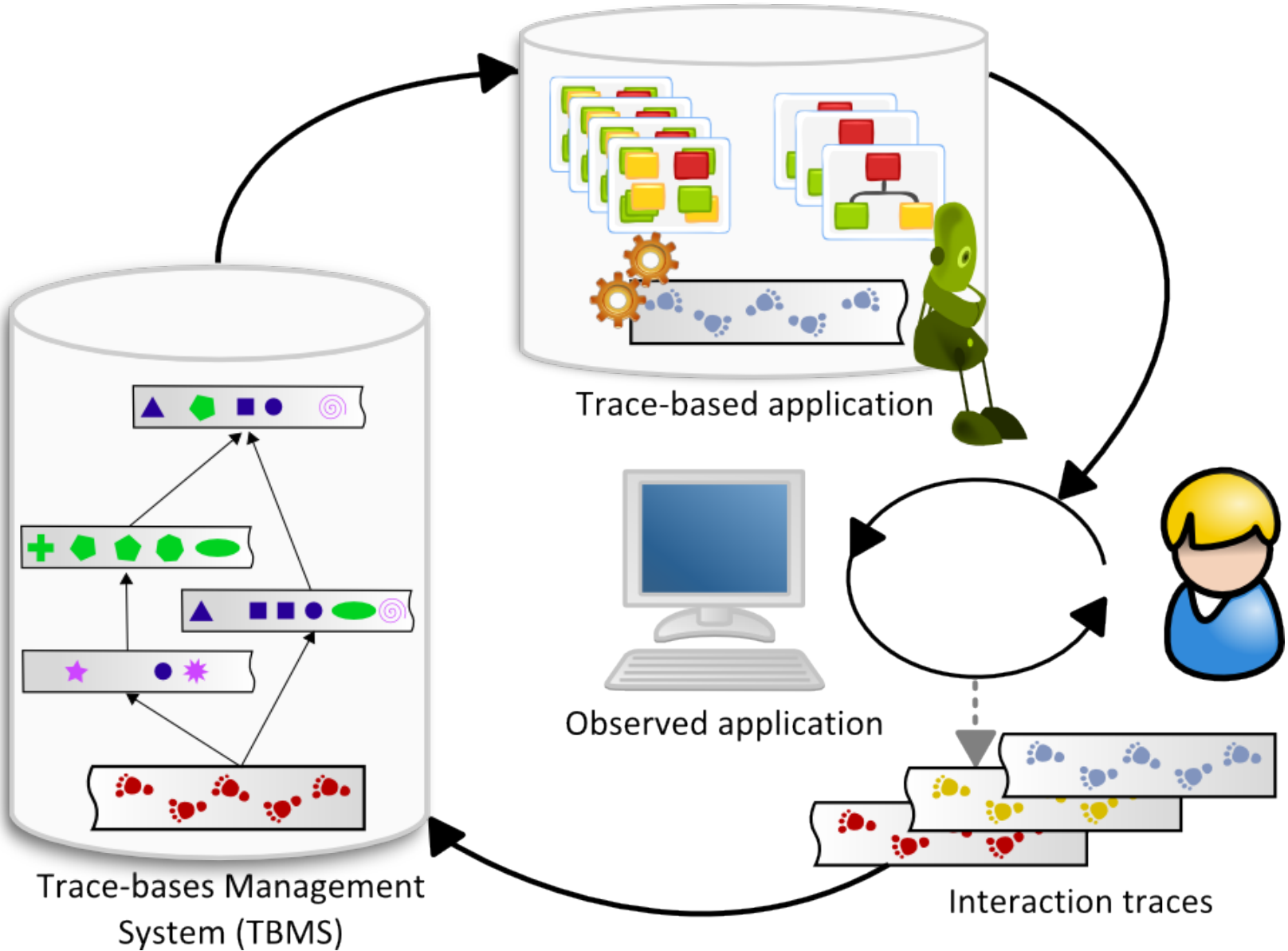

What can we do with traces?

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Applications

Name: **Abstract** and **Abstract Lite**

Author: Olivier Georgeon (et al.)

Project Type: PhD thesis (and more...)

Date: 2007-2011

Collaborations: INRETS

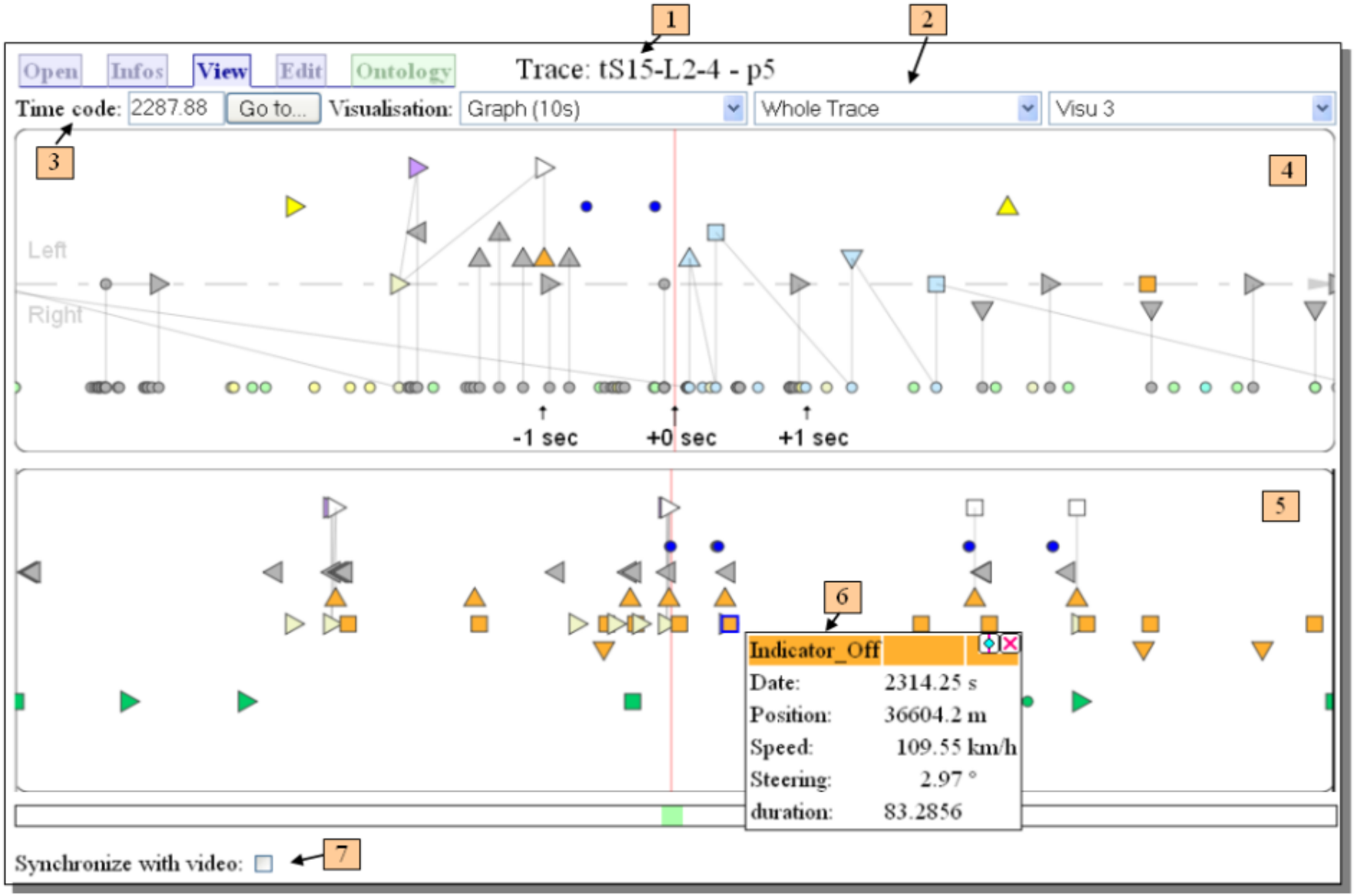
Research issues: Activity traces visualization
Tools for human activity analysis
Knowledge discovery
(a lot of application domains)

Websites: http://liris.cnrs.fr/abstract/
http://vm.liris.cnrs.fr:34080/abstract/lite

Case study: Analysis of drivers' behaviours

Abstract

A.B.S.T.R.A.C.T.



Abstract

A.B.S.T.R.A.C.T.

Disconnect Change password My cookie Help

Instantaneous symbol Not playing

(Fields are xpath expressions)

Condition:
Shape:
Color:
Vertical offset:
Image URL: (if shape evaluates to 'image')
X scale: (leave empty if none)
Y scale: (leave empty if none)
Rotation: (leave empty if none)
X skew: (leave empty if none)
Y skew: (leave empty if none)
Send

Interval symbol

(Fields are xpath expressions)

Begin condition:
Begin event properties
Shape:
Color:

Share customization

Share current customization publicly

Save customization as

Name: Save

Customization list

Trace list

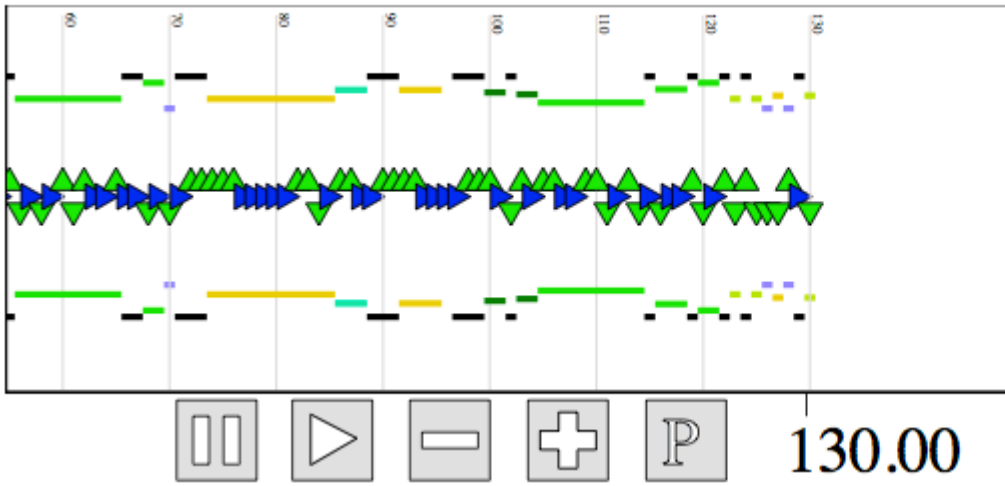
• ▶ 10 ✗ ⇩

Always play last

Upload a trace

Parcourir... Upload

Disconnect Change password My cookie Help



Abstract-lite A.B.S.T.R.A.C.T.

Name: SAP-BO Explorer

Author: Raafat Zarka

Project Type: Master Research project

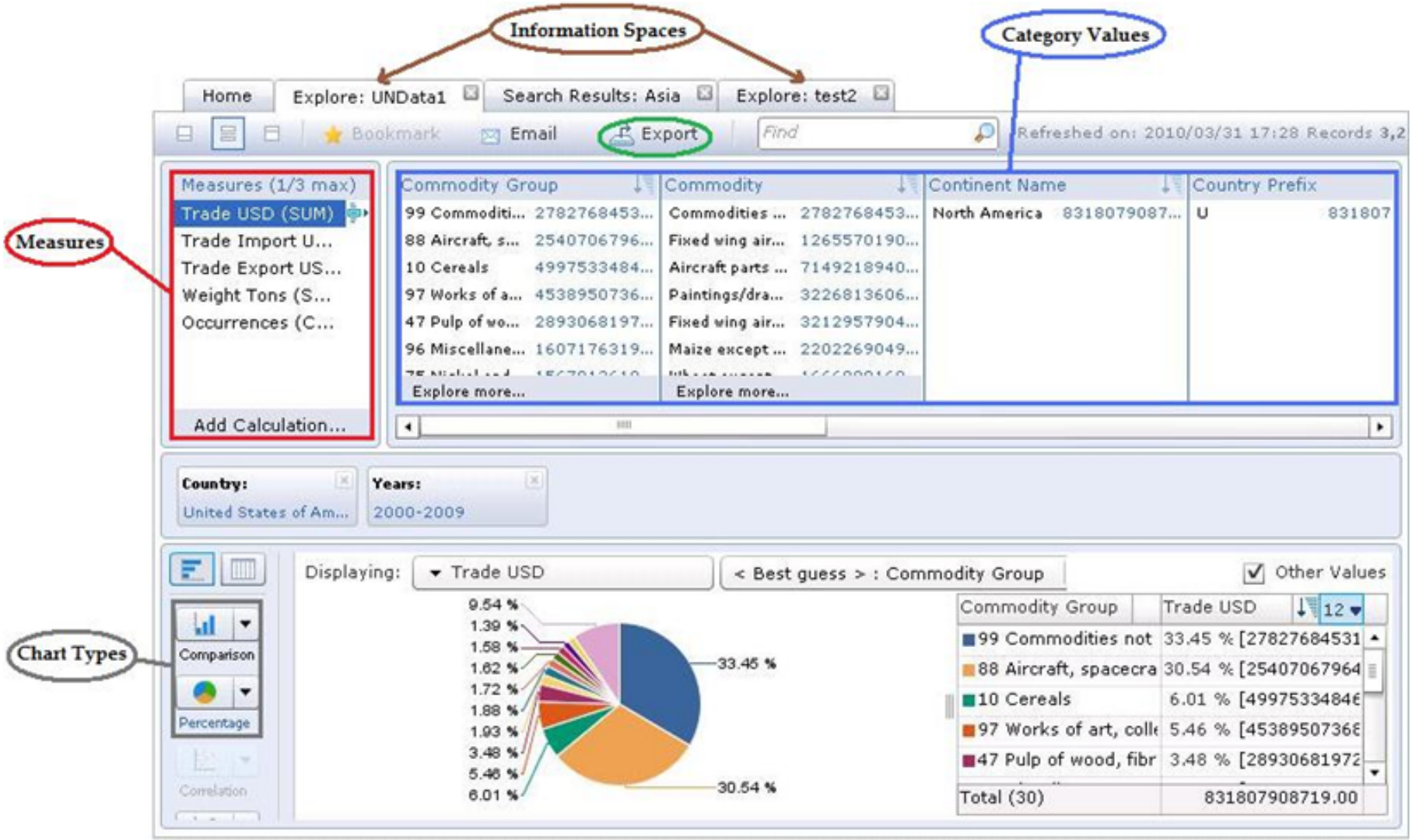
Date: 2010

Collaborations: SAP (Paris, France)

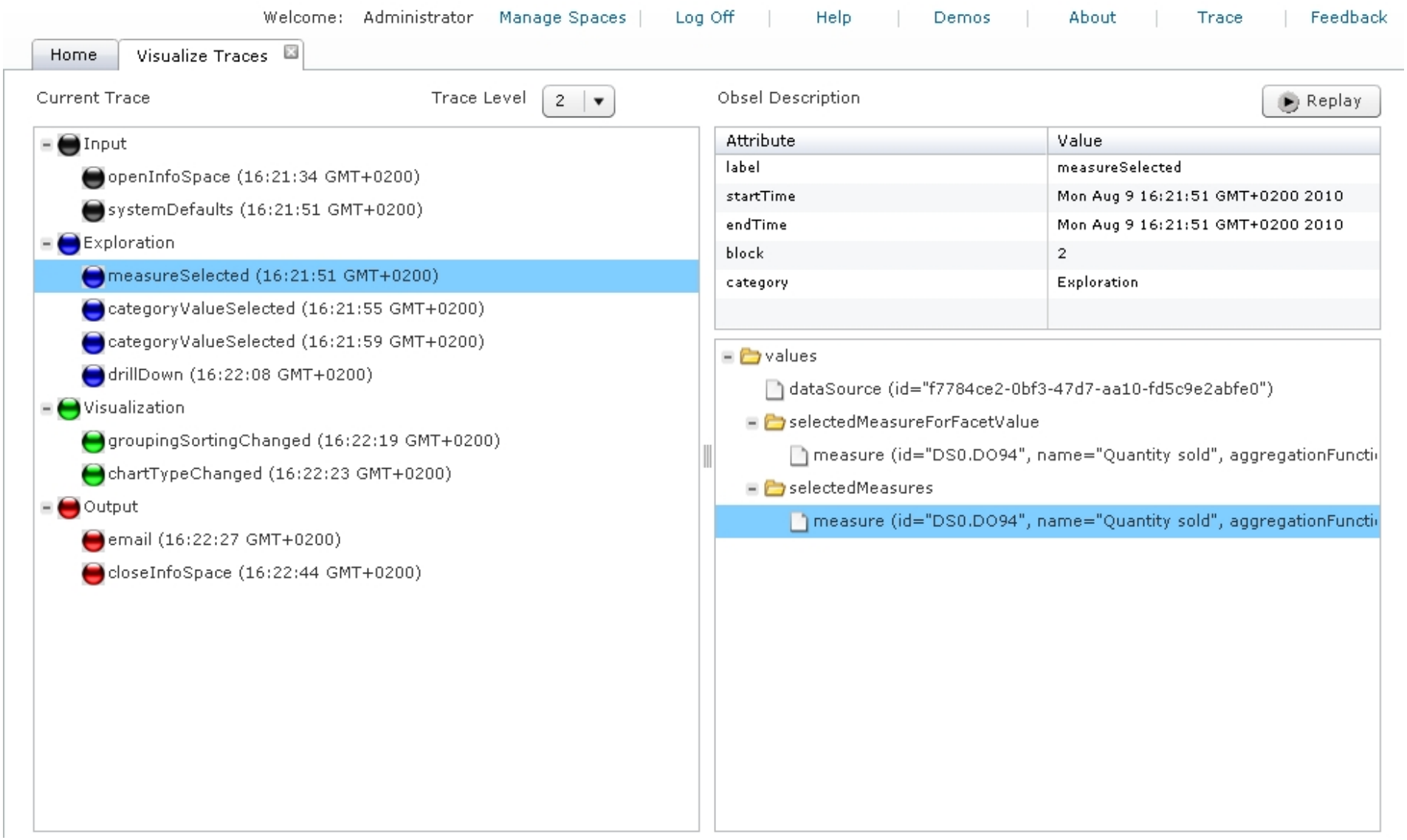
Research issues: Trace-based reasoning for user assistance

Collect of traces
Replay of traces
Impact propagation of changes

Website:
http://liris.cnrs.fr/raafat.zarka/ReplayTraceDemo/



SAP-BO Explorer



SAP-BO Explorer

Name: **Wanaclip**

Author: Raafat Zarka

Project Type: PhD (French National grant)

Date: 2011

Collaborations: Webcastor (Lyon, France)

Research issues: Trace-based reasoning for user assistance

Collect
Trace-based recommendations

Website: http://liris.cnrs.fr/raafat.zarka/

wanaclip

Trace: (Lyon) » (1) » (254) » (254) » (75) » (84) » (94) » (Bellcour) » (5) » (61) » (75)

Recherche | Selection | Vos médias | Publication | Déposer medias

Selection II | Selection III

(50 / 6661) Résultats Trouvées

Recommendations

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Proposition de montage: 5 < (5) > Select

Espace de travail

glisser vos objets pour les supprimer

Lire la selection | Vider cet espace

Text | Text

Wanaclip webcastor

Name: **IDEAL: Implementation of DEvelopmentAl Learning**

Author: Olivier Georgeon

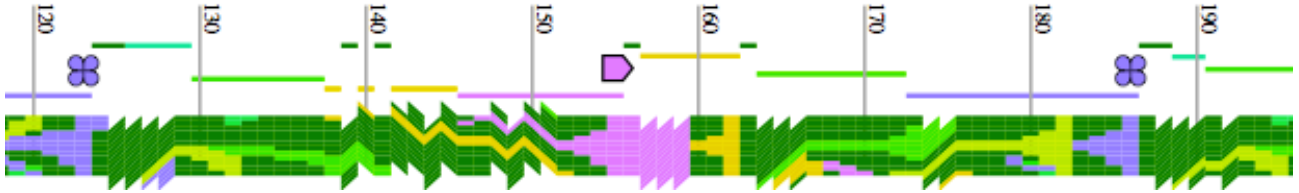
Project Type: ANR RPDoc

Date: 2010-2013

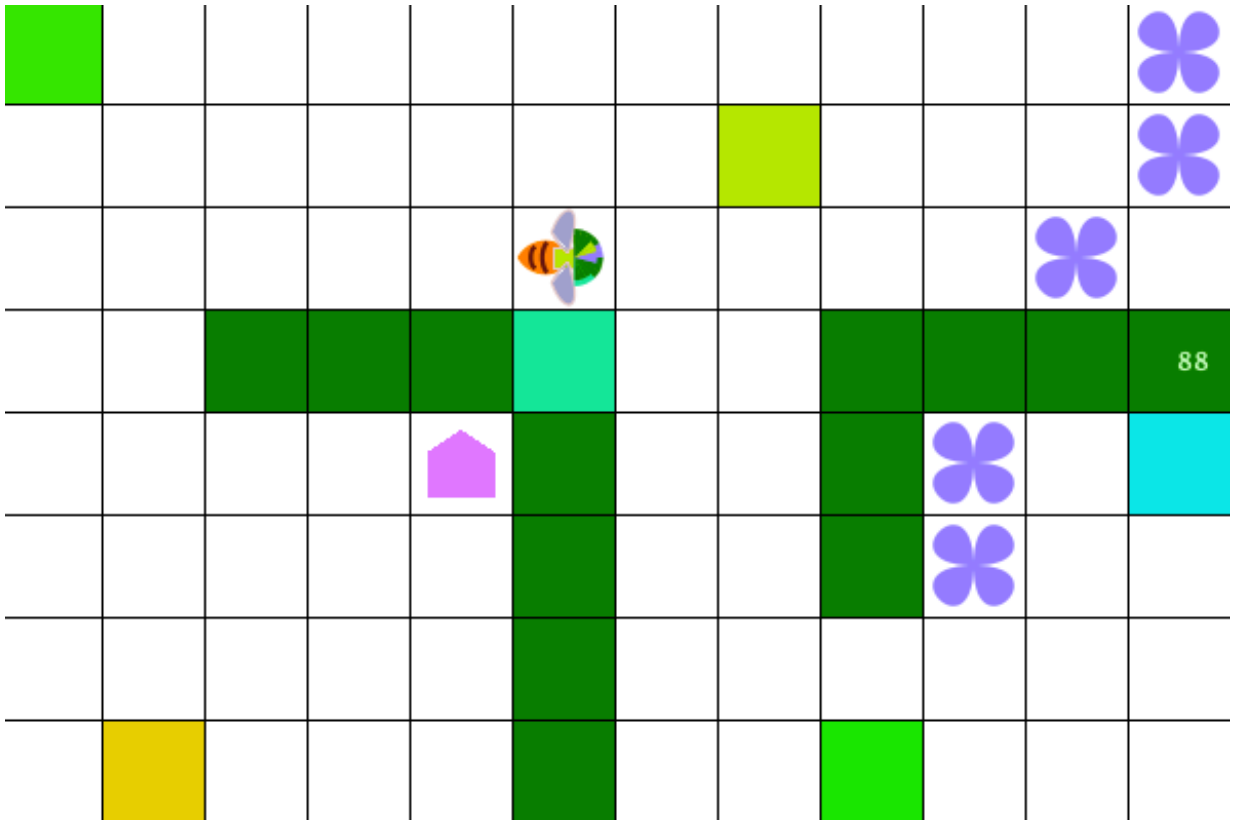
Collaborations: Pennsylvania State University,
Sarah Lawrence College (NY)

Research issues: Early-stage cognitive development
Intrisic motivation
Emergent situation awareness
Autonomous hierarchical skill learning

Websites: http://e-ernest.blogspot.com/
http://liris.cnrs.fr/ideal/demo/

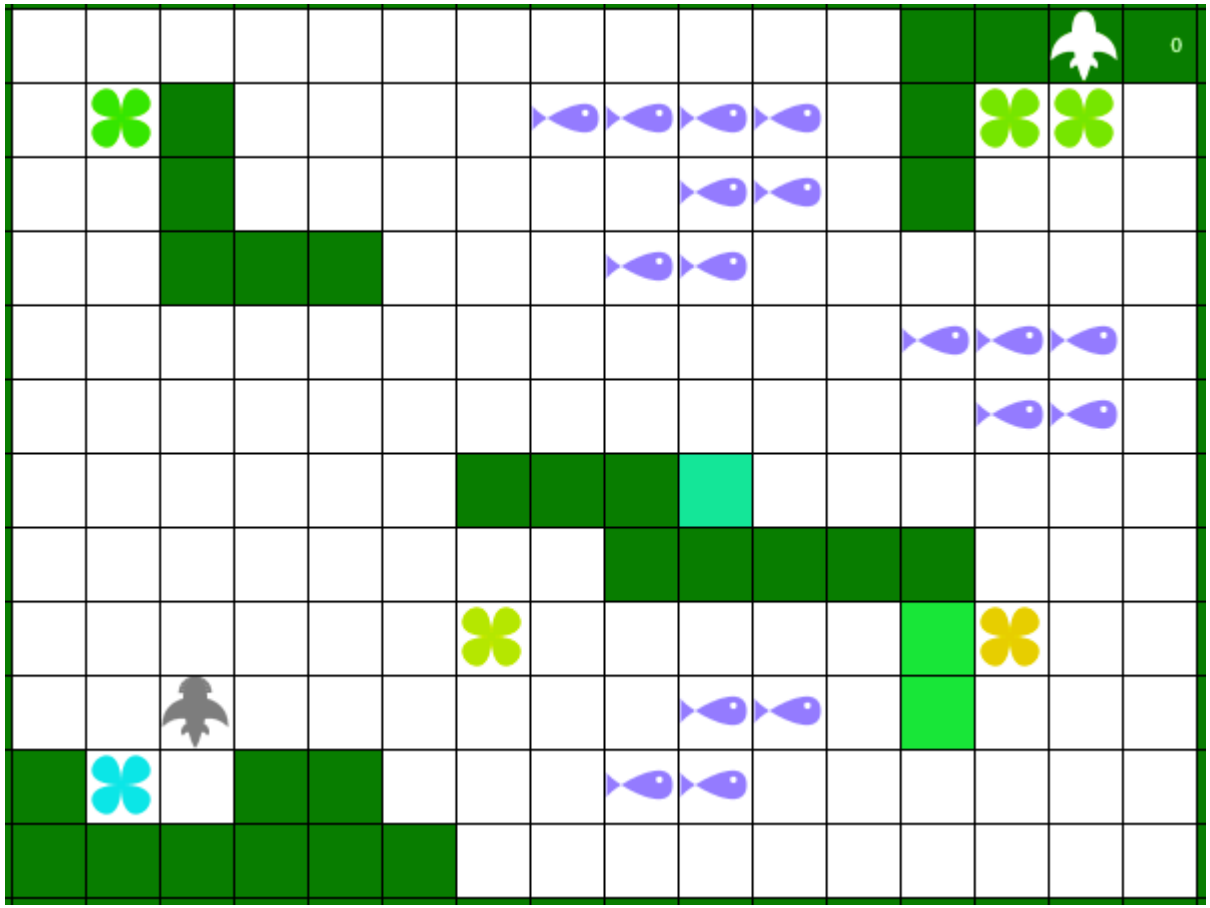


Ernest leaves traces!



IDEAL

An evolution of Ernest



IDEAL

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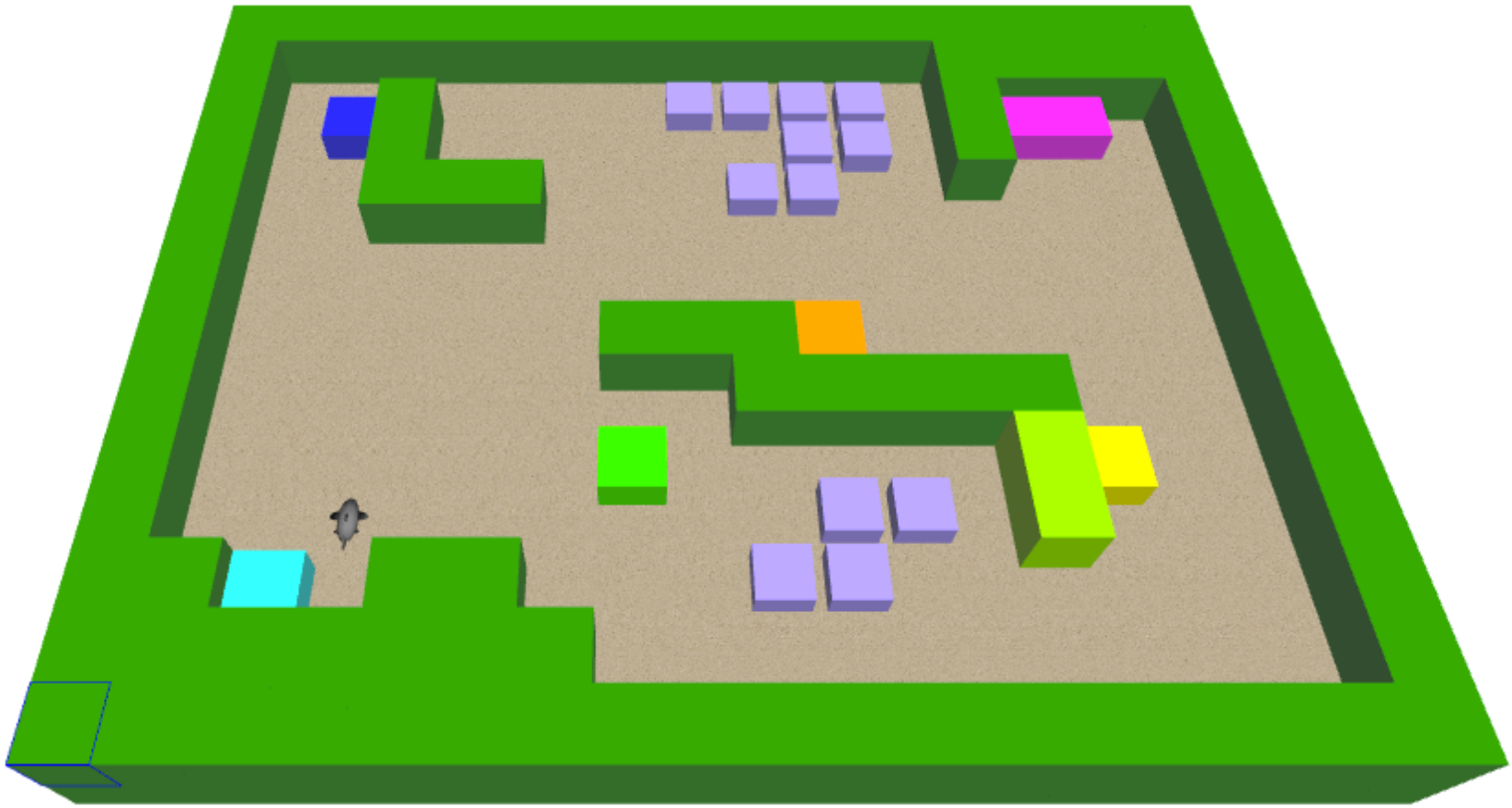
IDEAL

Interact with Ernest in 3D



IDEAL


What's
Next?