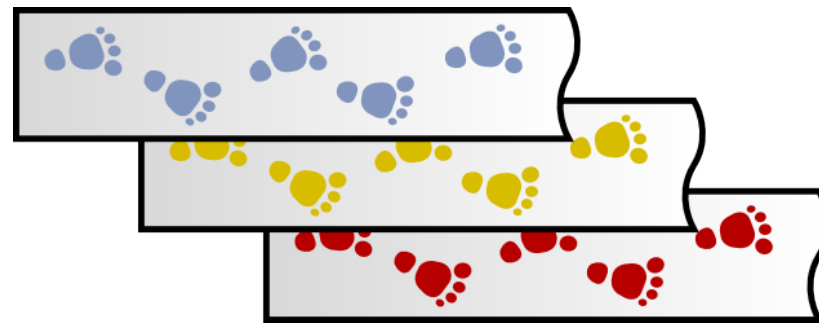
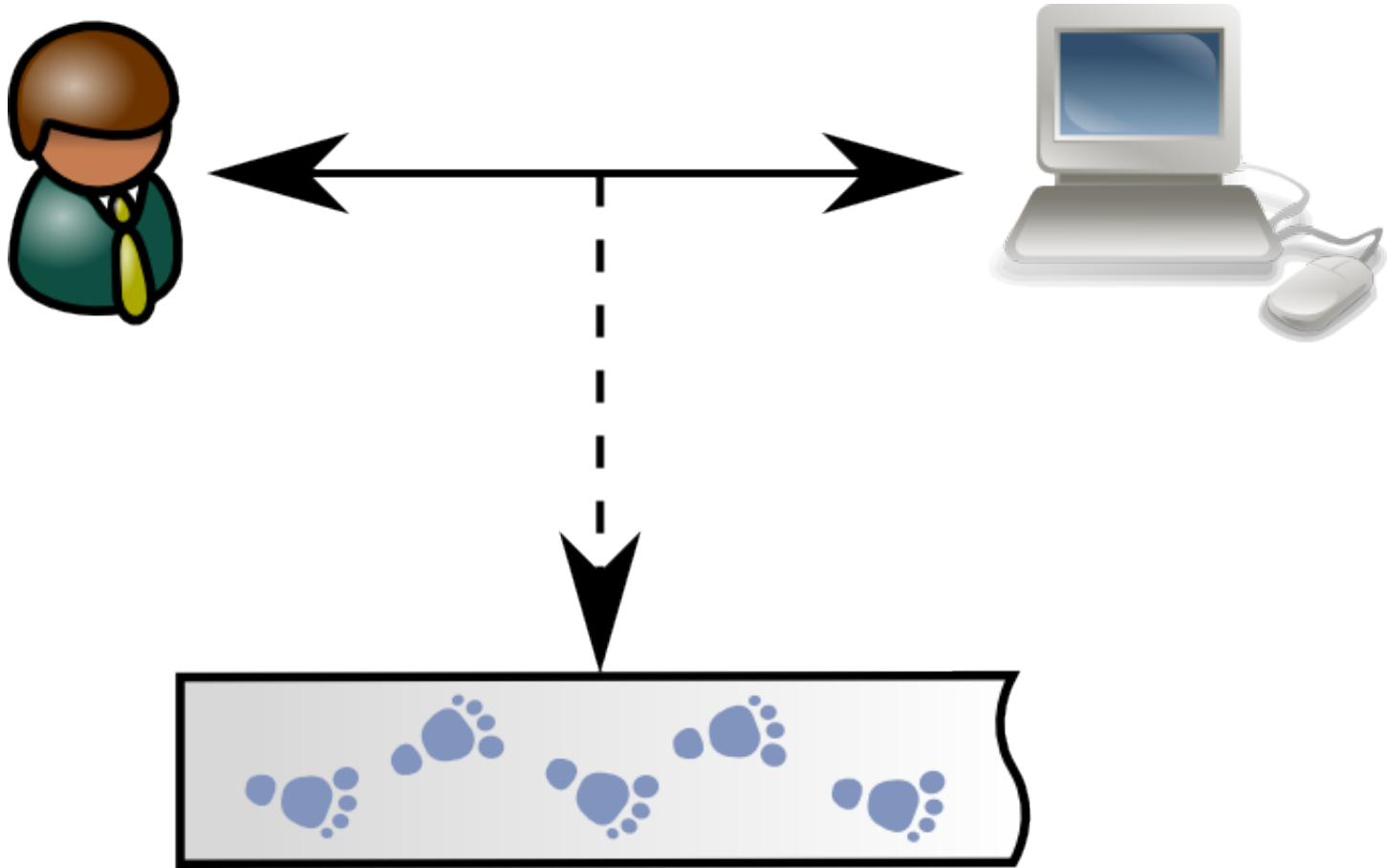


# Trace-Based Reasoning for user assistance



An adapted presentation for...



Trace?



A trace is an experience container!

## Objects

Obsel

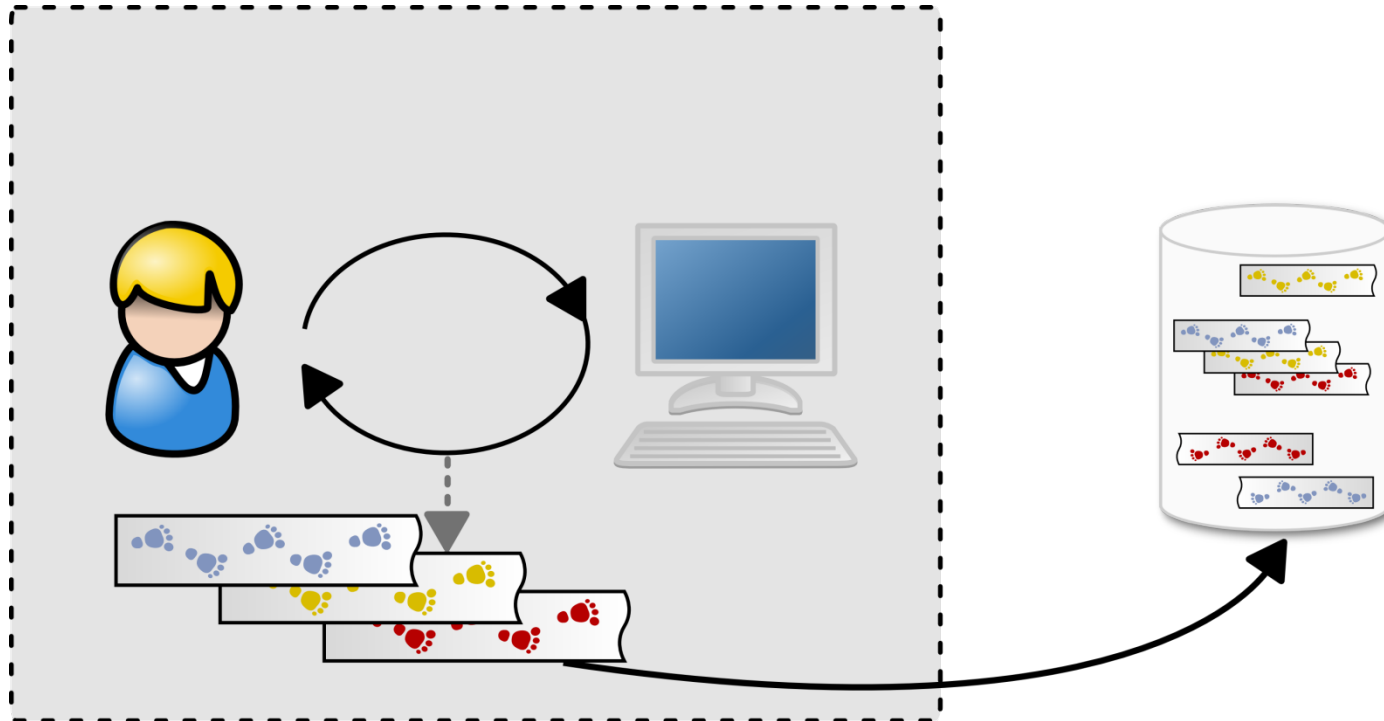
Model

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

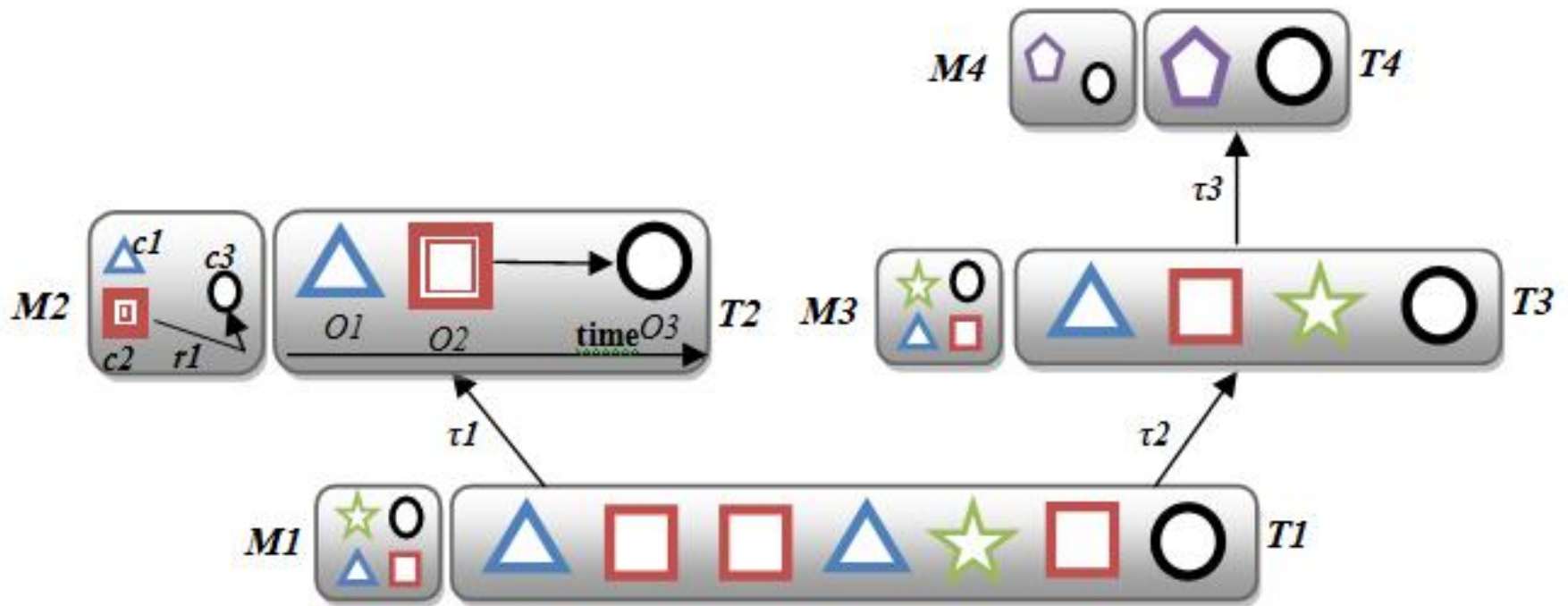
Available in all programming languages

Client API in Python, Java, ActionScript

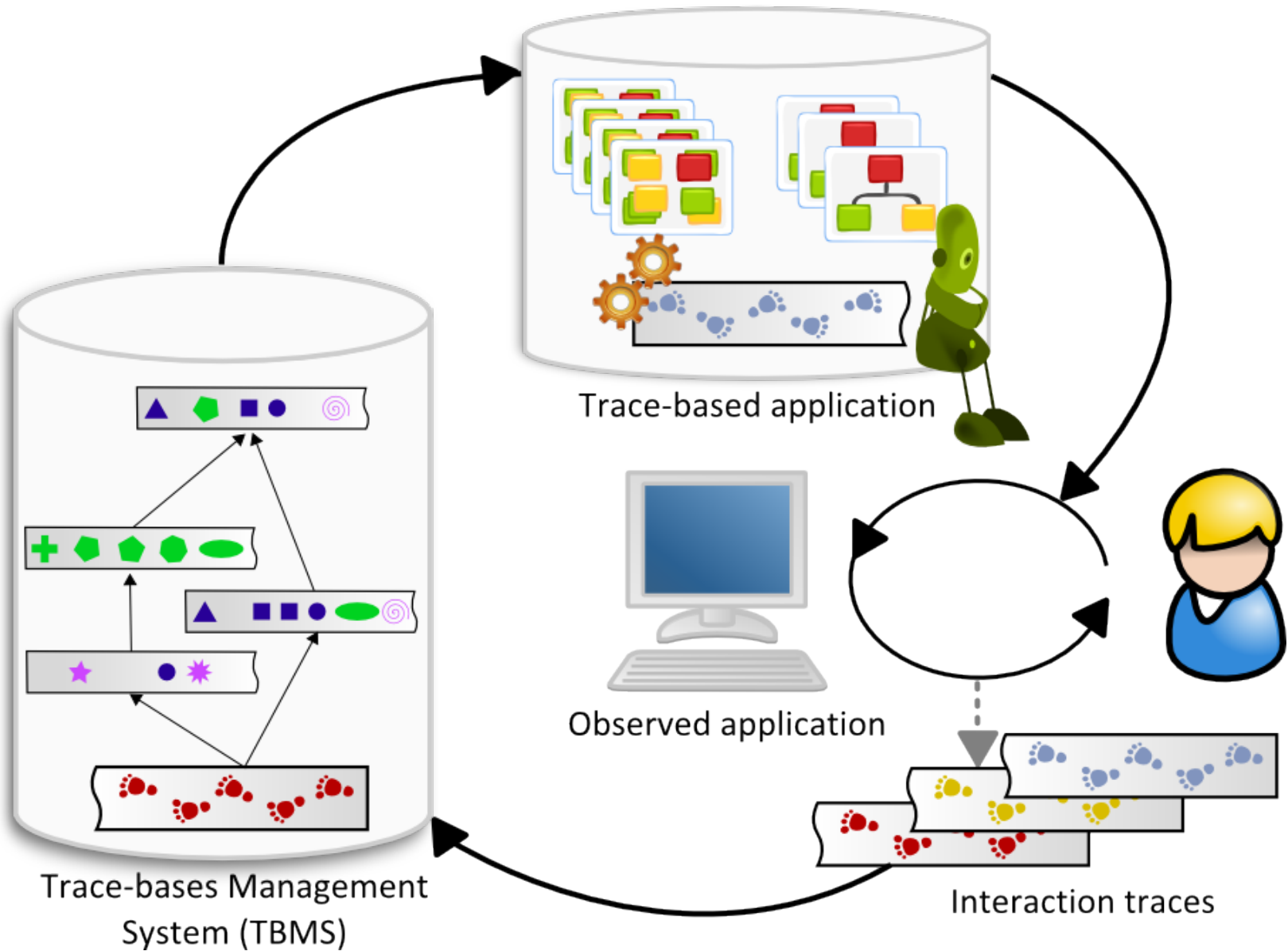


KTBS stores traces!

# 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.

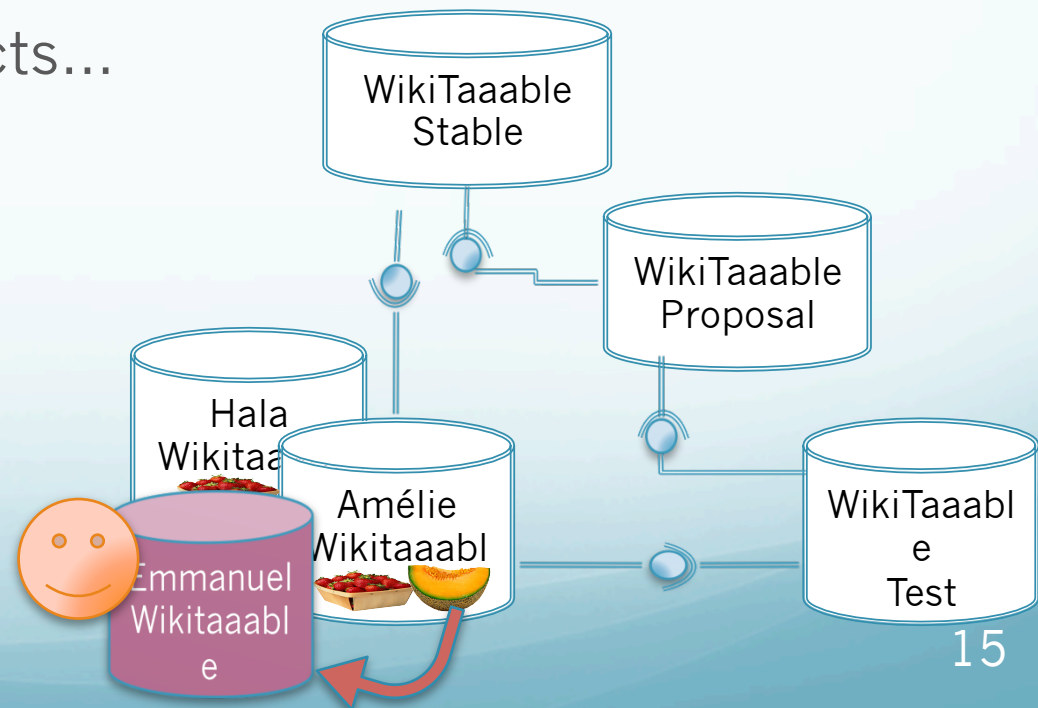
# Preamble

- Resource =
  - Ontology
  - Terminology
  - Wiki page
  - User feedback
  - Comment
- Construction
  - Manually
  - Through configurable bots

# Merging of resources

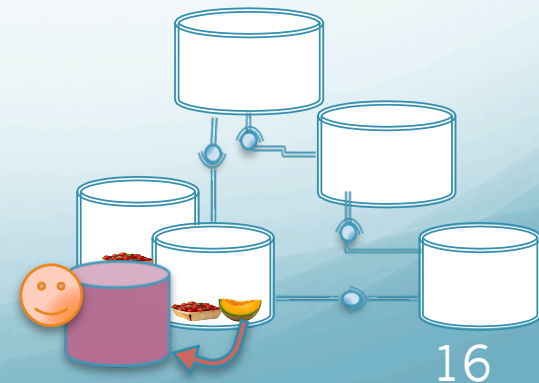
## Importation of resource (1/4)

- 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)

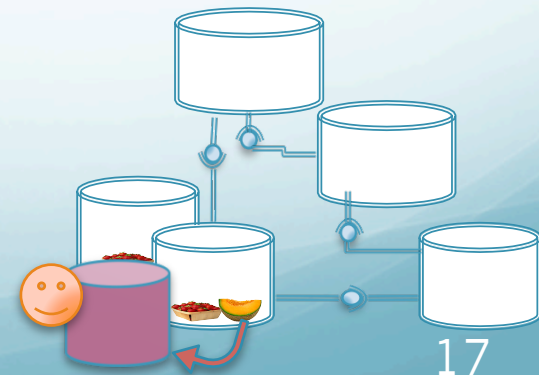
- Hypotheses
  - We are able to identify conflicts
    - Task 3: inconsistency detection while merging ontologies?
  - We are able to highlight two conflicting resources
    - Who?





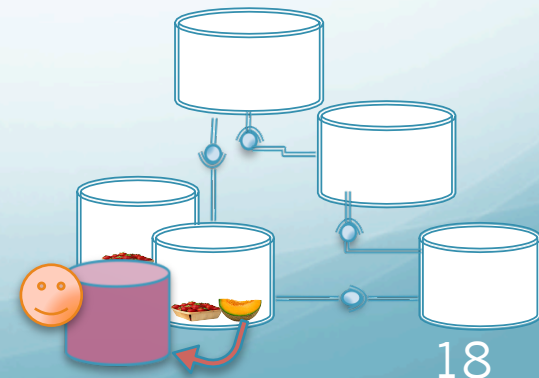
# Merging of resources: Importation of resources (3/4)

- 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)

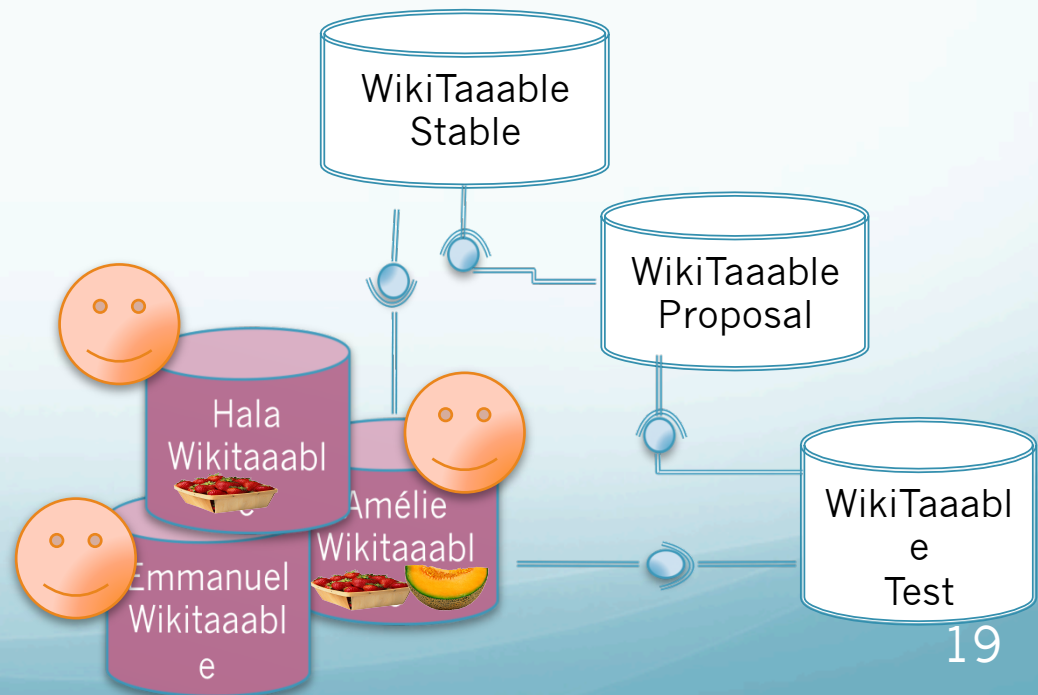
- Role of the assistant:
  - Assist while solving conflicts
    - ⇒ Detection of conflicts
    - ⇒ Reconstruction of “filtered” history for the resources
    - ⇒ Display “filtered” history



# Merging of resources:

## Merging of X resources (1/2)

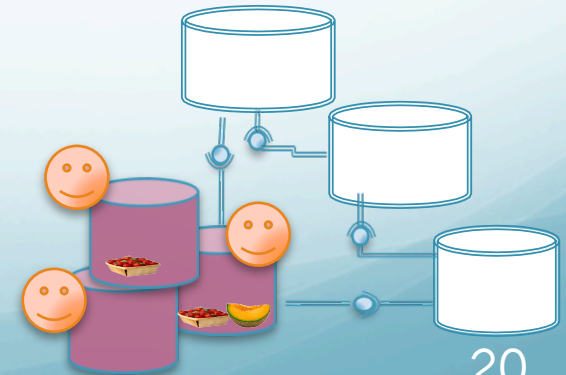
- Context:
  - Emmanuel, Amélie and Hala merge their versions of WikiTaaable
- Problems:
  - There is conflicts...
    - In ontologies
    - In recipes



# Merging of resources:

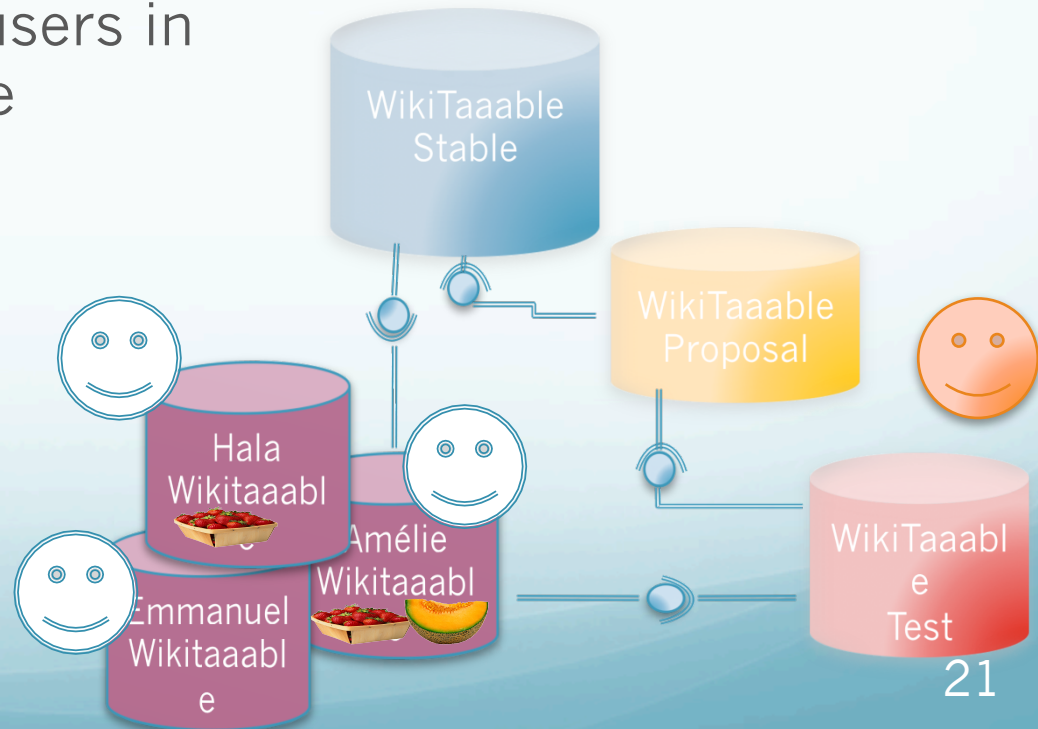
## Merging of X resources (2/2)

- 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 negotiation
- ⇒ Co-construction of sense between humans
  - ⇒ Rememoration of collective experience



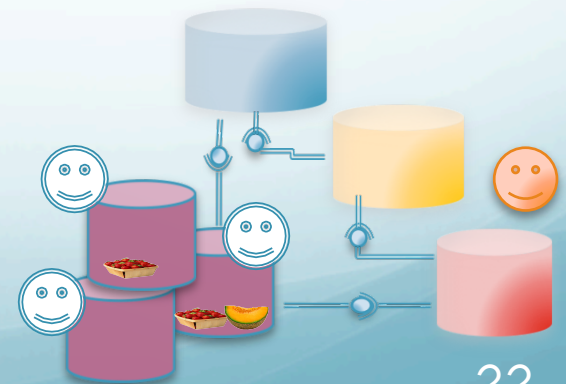
# Merging of resources: Moderator (1/2)

- Context:
  - Hector is the moderator of community of chocolate 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

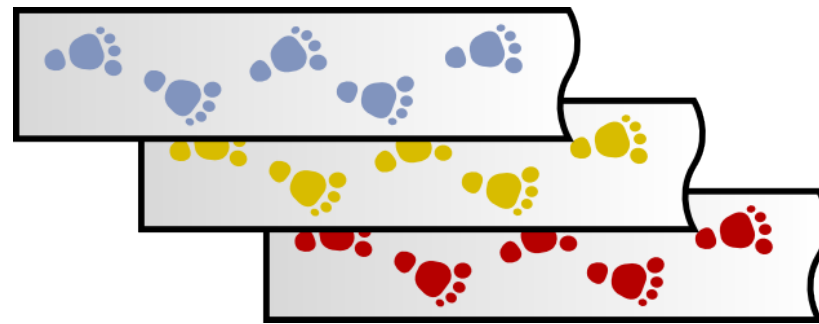
- Trace Theory and Trace Based Reasoning (TBR)
- Framework for traces management (kTBS)
  - Storage, Transformation
- Ad-hoc tools for traces analysis
  - Using data mining techniques, finite state machines
- Ad-hoc tools for traces visualisation



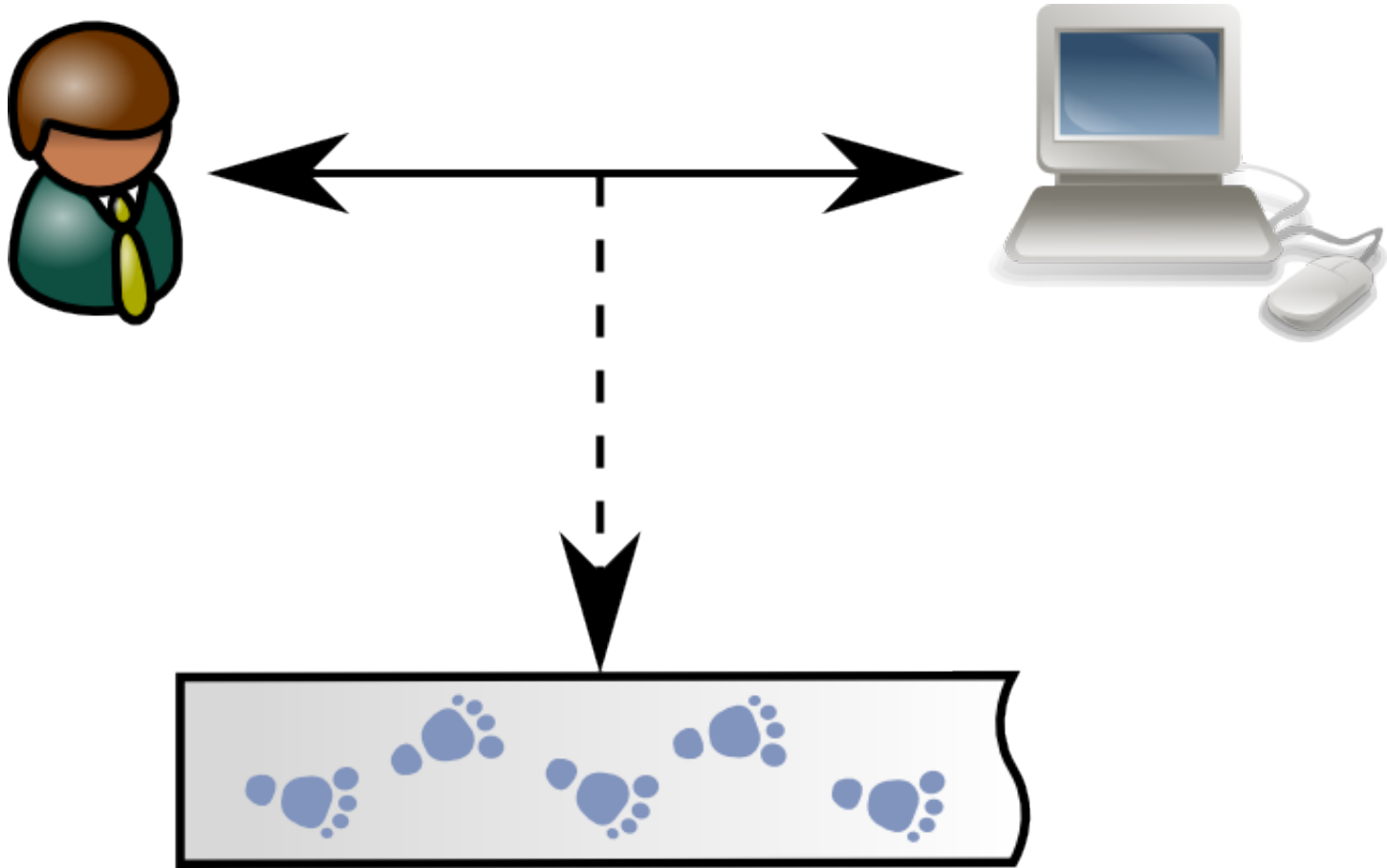
# Which implies...

- 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



An adapted presentation for...



Trace?



A trace is an experience container!

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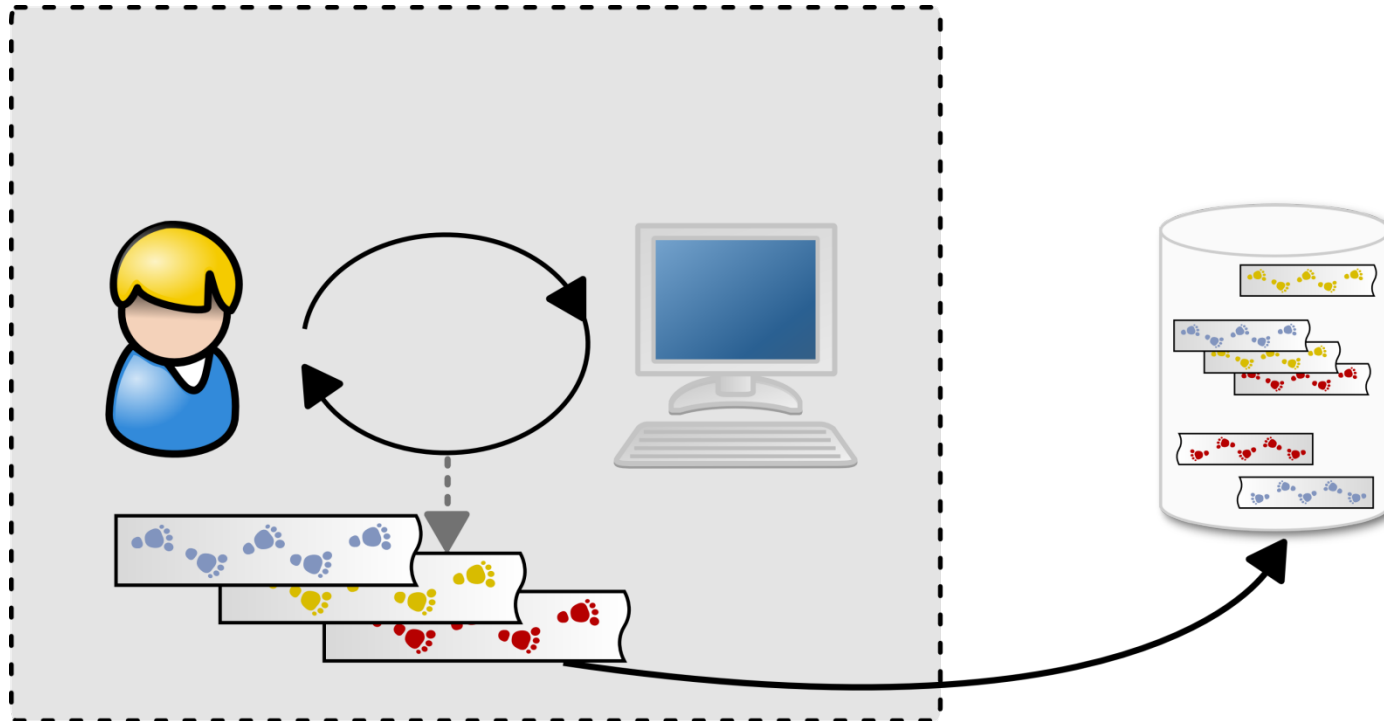
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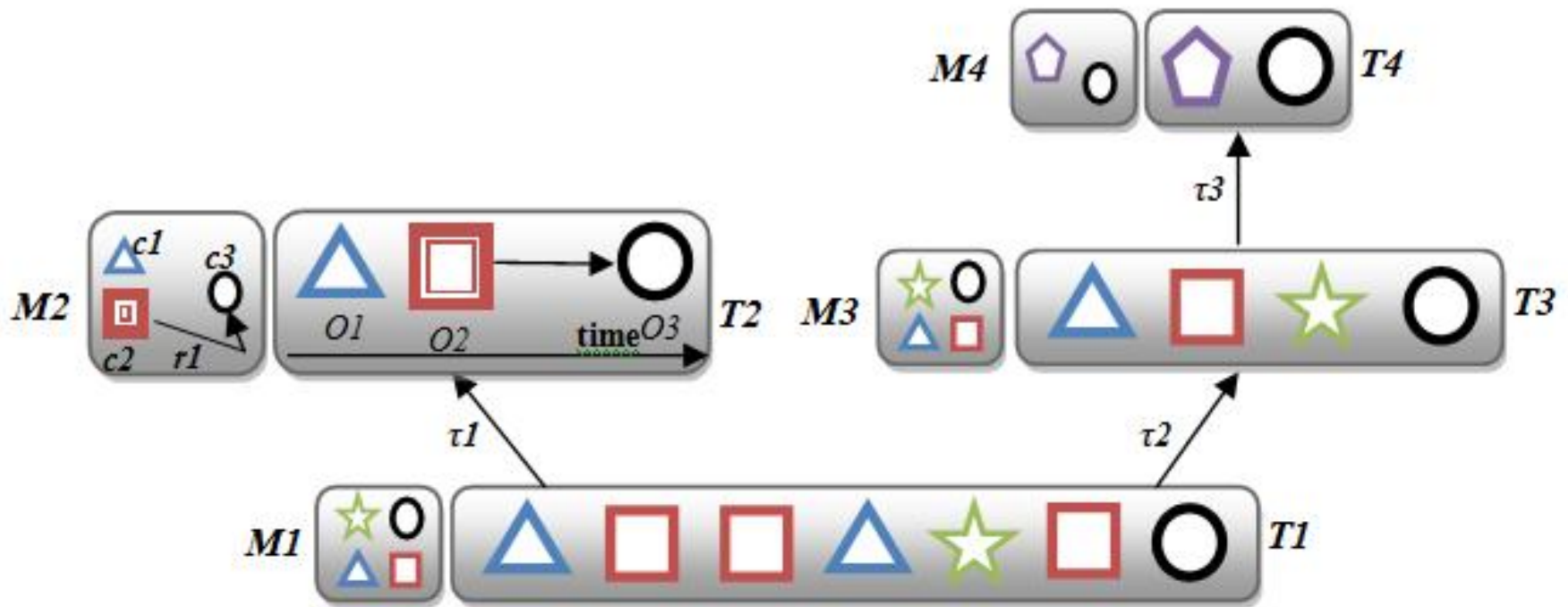
Available in all programming languages

Client API in Python, Java, ActionScript



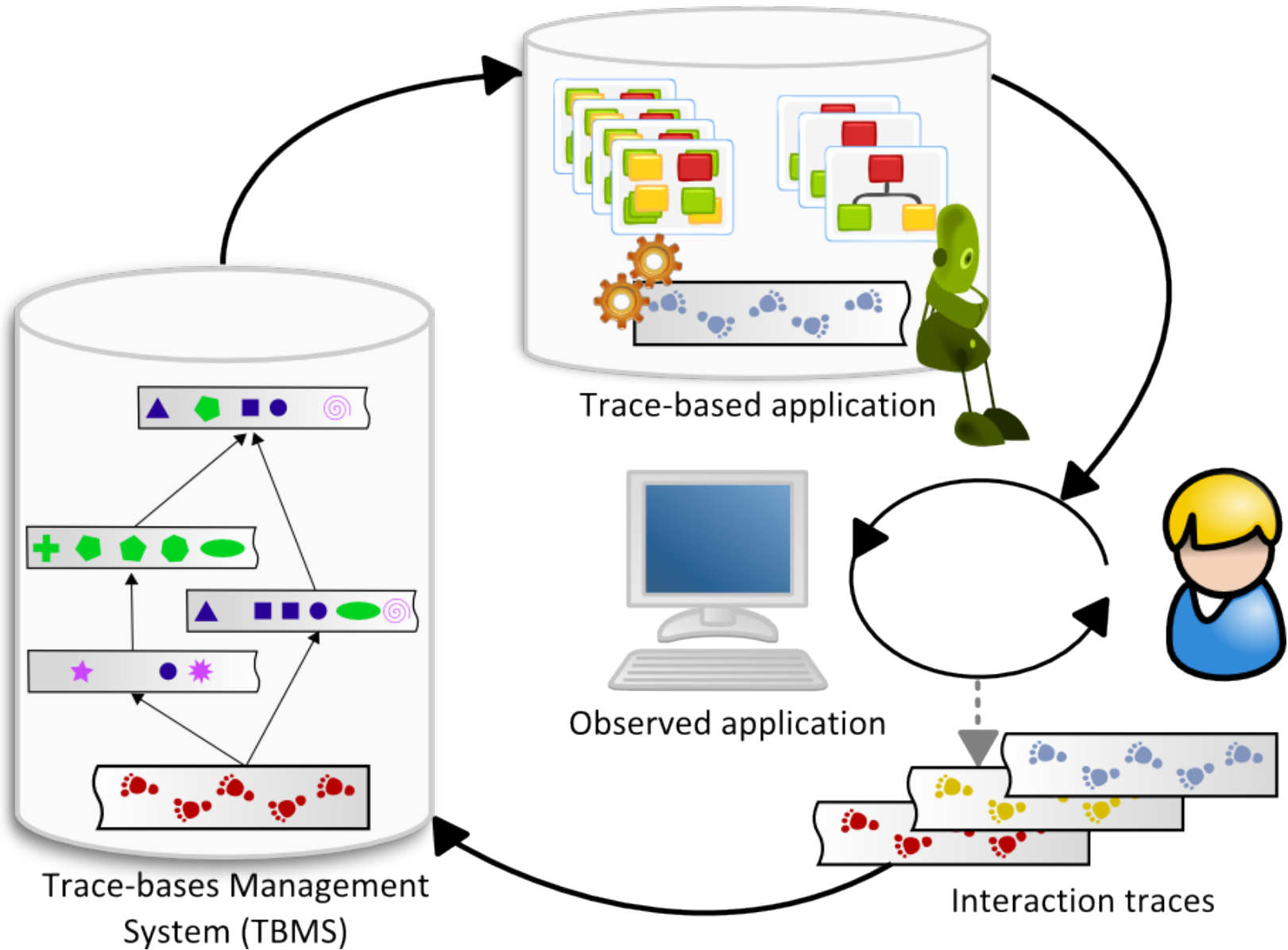
KTBS stores traces!

# Transformations





# Trace-Based Reasoning for user assistance



# What can we do with traces?

Knowledge acquisition

Replay

Visualisation

Learning

Assistance



**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>

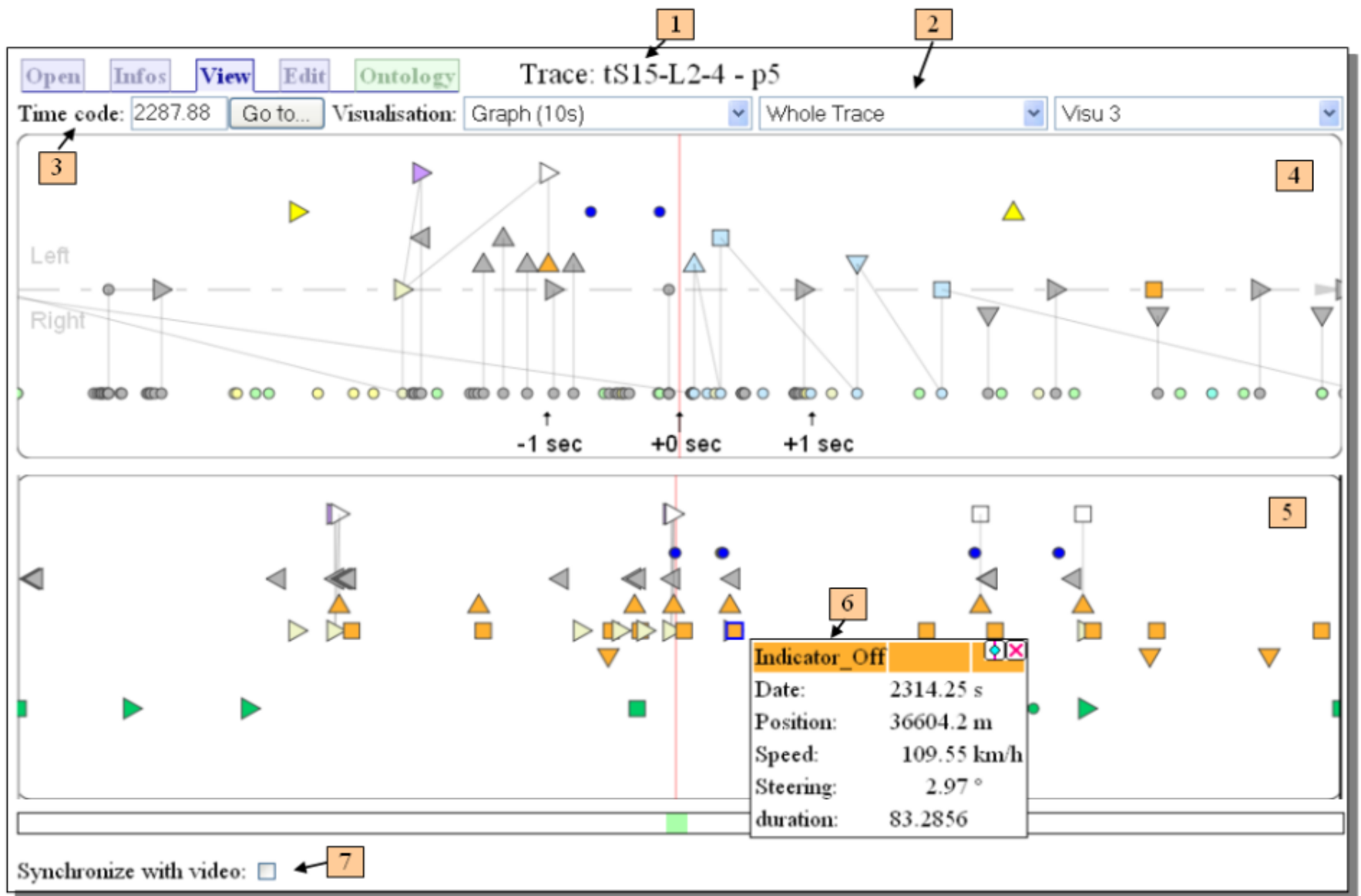


# Case study: Analysis of drivers' behaviours



**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)

Interval symbol  
(Fields are xpath expressions)

Begin condition:

Begin event properties

Shape:

Color:

Share customization

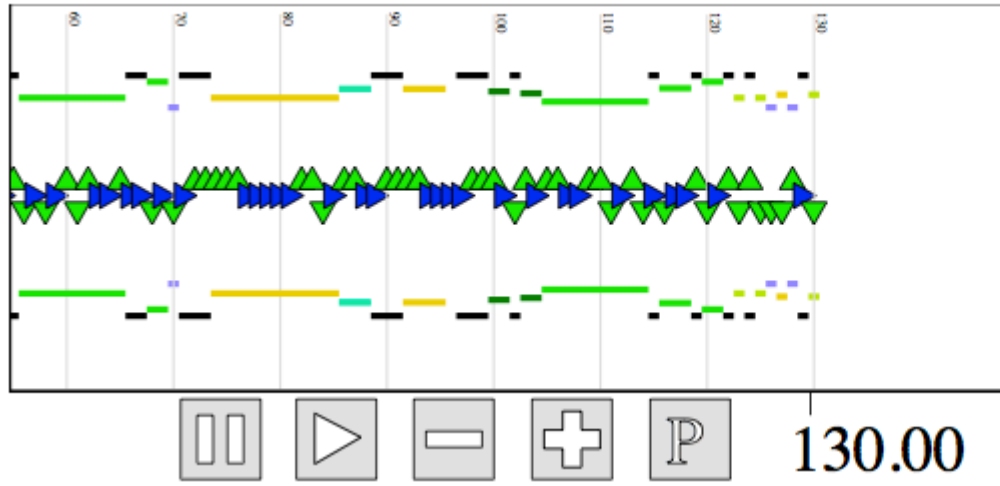
Save customization as  
Name:

Customization list

Trace list  
•  10    
 Always play last

Upload a trace

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/>



**Information Spaces**

**Category Values**

Home | Explore: UNData1 | Search Results: Asia | Explore: test2

Bookmark | Email | **Export** | Find | Refreshed on: 2010/03/31 17:28 Records 3,2

Measures (1/3 max)

**Trade USD (SUM)**

Trade Import U...

Trade Export US...

Weight Tons (S...

Occurrences (C...

Add Calculation...

Commodity Group	Commodity	Continent Name	Country Prefix
99 Commoditi...	2782768453...	Commodities ...	2782768453...
88 Aircraft, s...	2540706796...	Fixed wing air...	1265570190...
10 Cereals	4997533484...	Aircraft parts ...	7149218940...
97 Works of a...	4538950736...	Paintings/dra...	3226813606...
47 Pulp of wo...	2893068197...	Fixed wing air...	3212957904...
96 Miscellane...	1607176319...	Maize except ...	2202269049...
75 Miscellane...	1567012610...	Maize except ...	166000160...
Explore more...		Explore more...	

**Country:** United States of Am... | **Years:** 2000-2009

Displaying: Trade USD | < Best guess > : Commodity Group |  Other Values

Chart Types

- Comparison
- Percentage
- Correlation

Commodity Group	Trade USD
99 Commodities not	33.45 % [27827684531
88 Aircraft, spacecra	30.54 % [25407067964
10 Cereals	6.01 % [4997533484E
97 Works of art, colle	5.46 % [4538950736E
47 Pulp of wood, fibr	3.48 % [28930681972
Total (30)	831807908719.00

Current Trace

Trace Level 2 ▼

Obsel Description

Replay

- Input
  - openInfoSpace (16:21:34 GMT+0200)
  - systemDefaults (16:21:51 GMT+0200)
- Exploration
  - measureSelected (16:21:51 GMT+0200)**
  - categoryValueSelected (16:21:55 GMT+0200)
  - categoryValueSelected (16:21:59 GMT+0200)
  - drillDown (16:22:08 GMT+0200)
- Visualization
  - groupingSortingChanged (16:22:19 GMT+0200)
  - chartTypeChanged (16:22:23 GMT+0200)
- Output
  - email (16:22:27 GMT+0200)
  - closeInfoSpace (16:22:44 GMT+0200)

Attribute	Value
label	measureSelected
startTime	Mon Aug 9 16:21:51 GMT+0200 2010
endTime	Mon Aug 9 16:21:51 GMT+0200 2010
block	2
category	Exploration

- values
  - dataSource (id="f7784ce2-0bf3-47d7-aa10-fd5c9e2abfe0")
  - selectedMeasureForFacetValue
    - measure (id="DS0.DO94", name="Quantity sold", aggregationFunction)
  - selectedMeasures
    - measure (id="DS0.DO94", name="Quantity sold", aggregationFunction)**

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

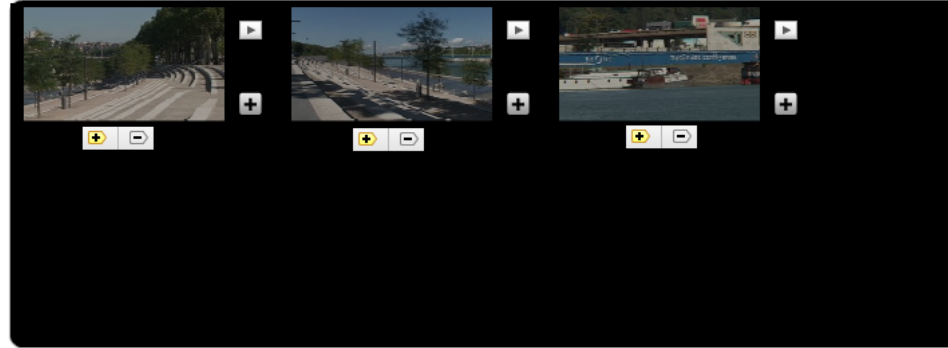
Trace-based recommendations

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



Selection II Selection III

( 50 / 6661 ) Résultats Trouvées

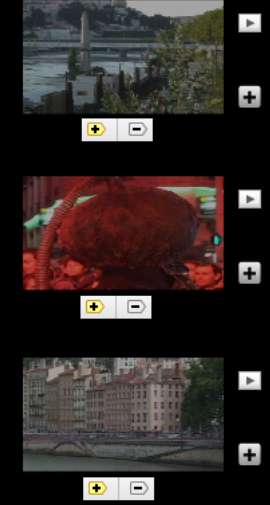


Proposition de montage: 5

< (5) >

Select

Recommandations



Espace media



Espace de travail



glisser vos objets pour les supprimer

Lire la selection

Vider cet espace



Name: IDEAL: Implementation of  
DEvelopmentAl Learning

Author: Olivier Georgeon

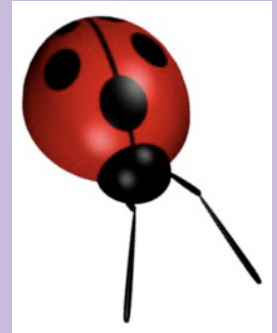
Project Type: ANR RPDoc

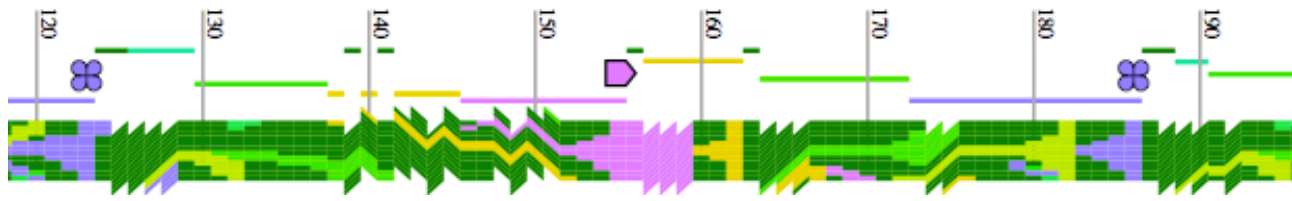
Date: 2010-2013

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

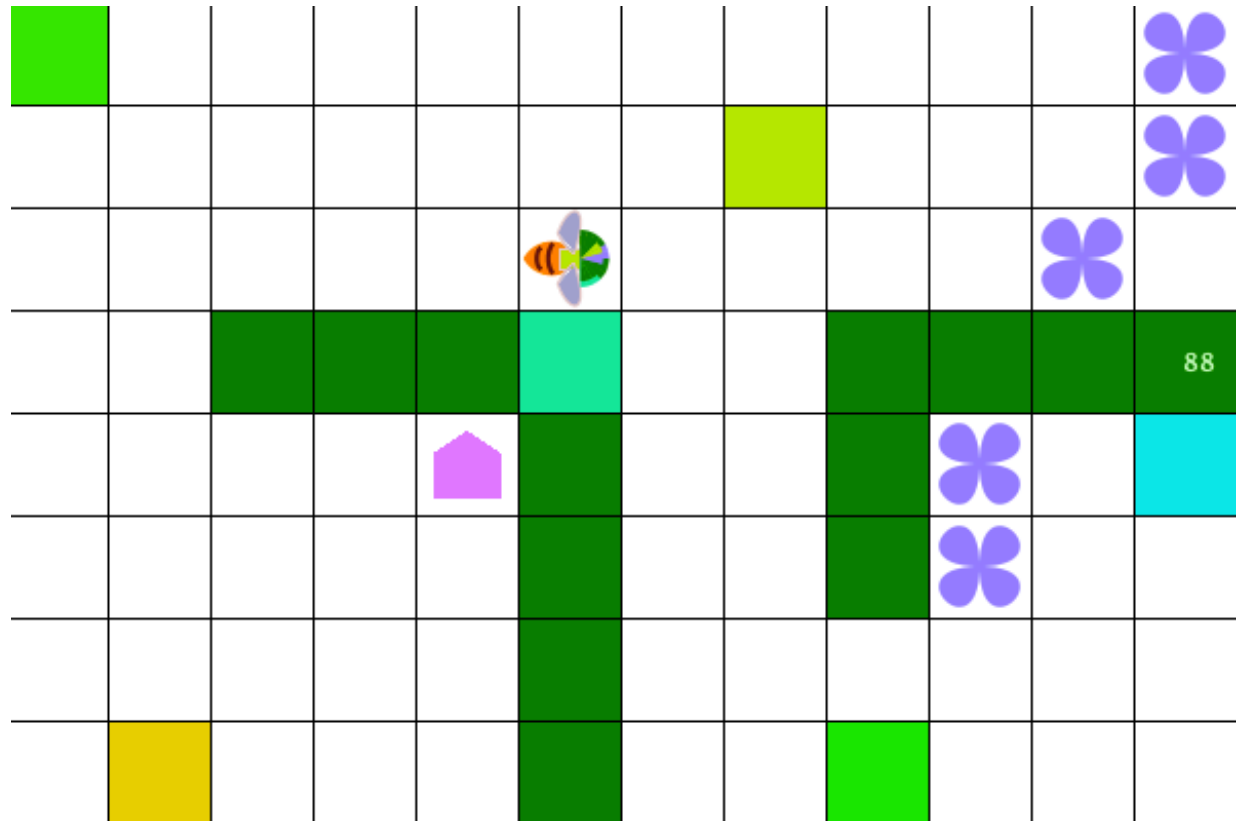
Research issues: Early-stage cognitive development  
Intrinsic motivation  
Emergent situation awareness  
Autonomous hierarchical skill learning

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

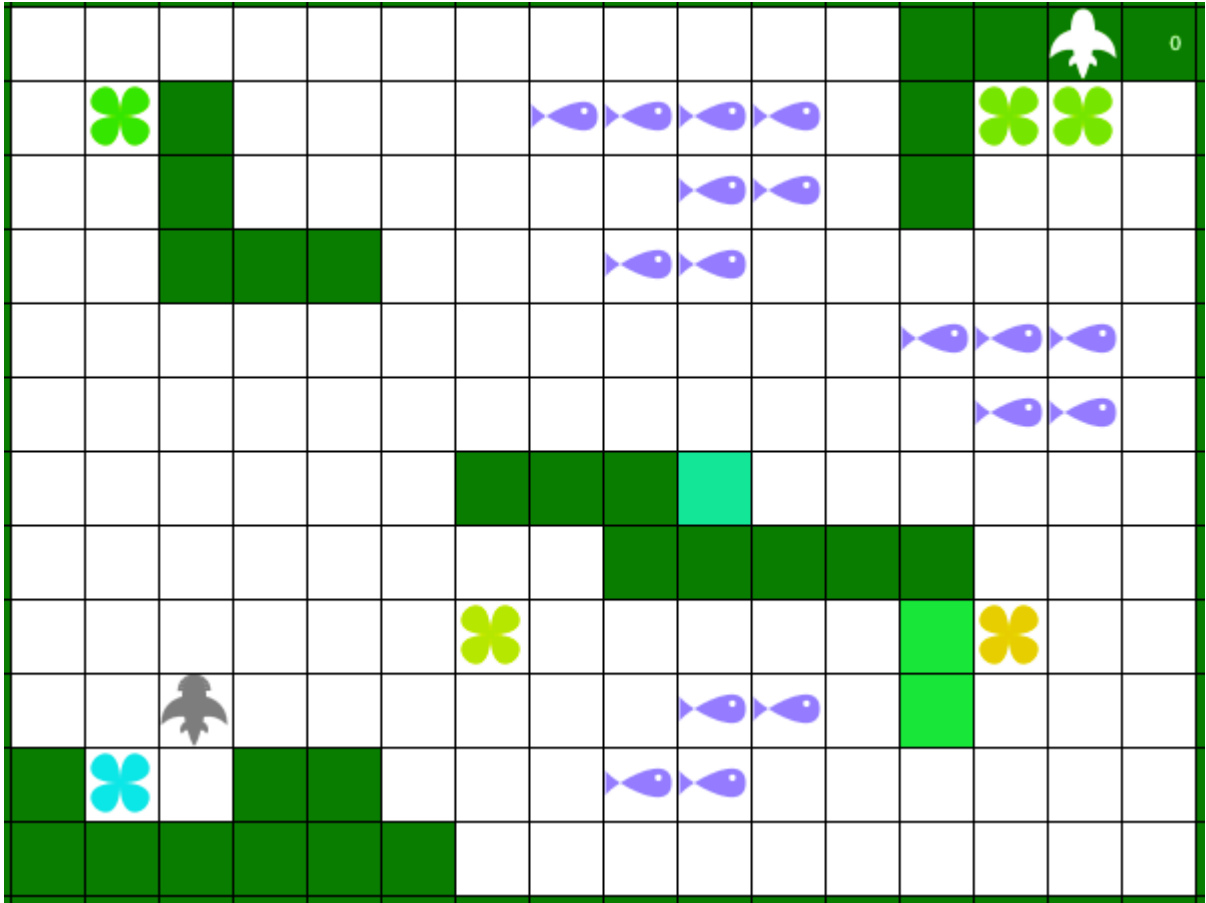




Ernest leaves traces!

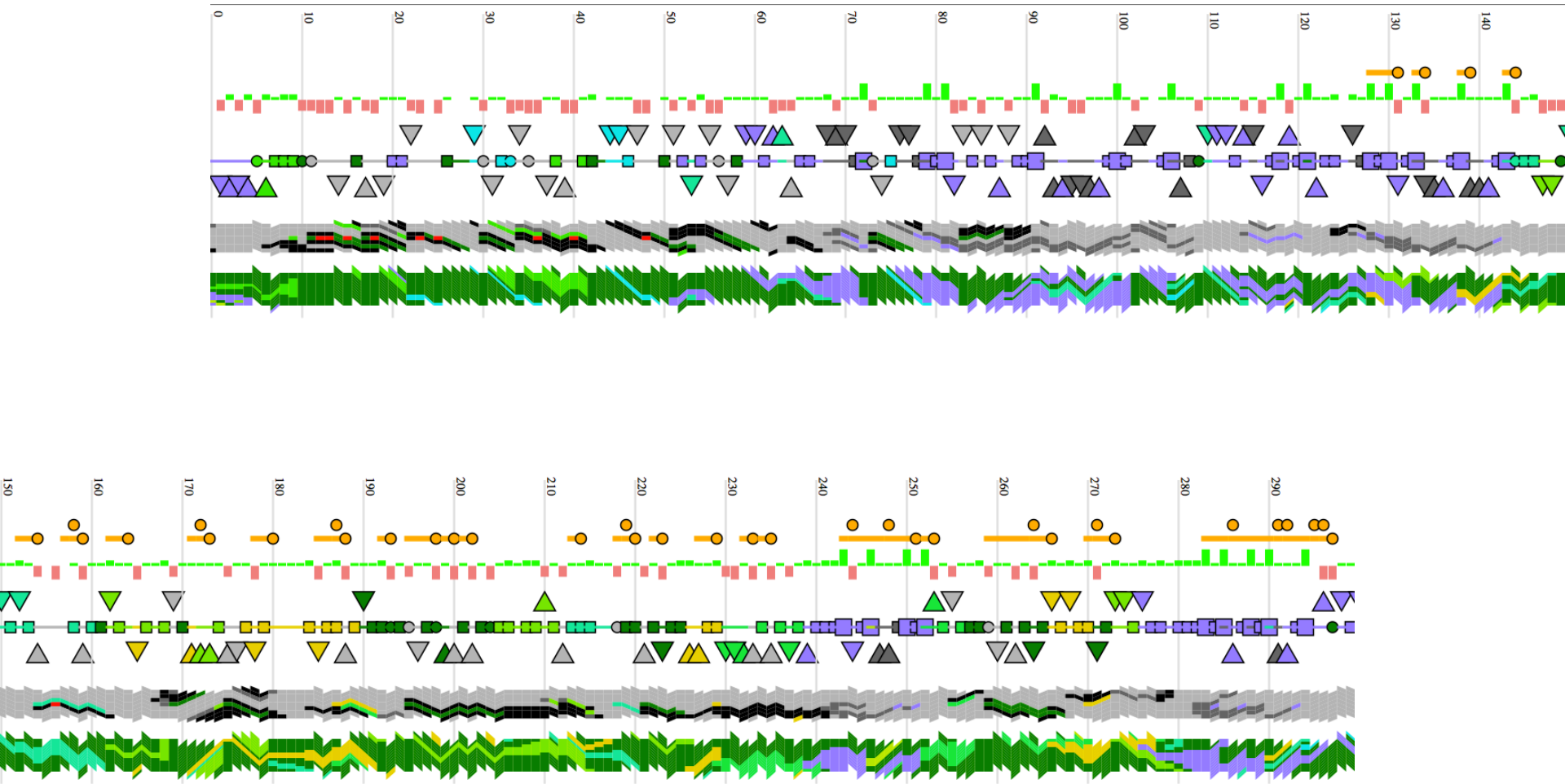


# An evolution of Ernest

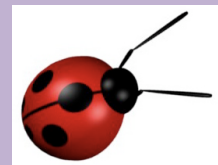


**IDEAL**





IDEAL

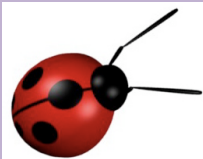




# Interact with Ernest in 3D



**IDEAL**



A yellow diamond-shaped sign with a black border and the text "What's Next?" in bold black letters. The sign is mounted on a metal post. The background is a blurred desert landscape with a blue sky, a green sign, and some structures.

**What's  
Next?**