User Assistance for Collaborative Knowledge Construction

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Kolflow Project

How to convert data into knowledge?

- Automated Reasoning

- Collective Intelligence

A social semantic space to facilitate collaboration:

- Between humans

- Between humans and artificial agents

- Between artificial agents

What is DSMW ?

- DSMW: Distributed Semantic MediaWiki

- Wiki: website writable by users

- Semantic Wiki : wiki with semantics in the pages
  - Typed relations between pages
  - Formal description of the content

- Distributed Semantic Wiki : network of semantics wikis exchanging content
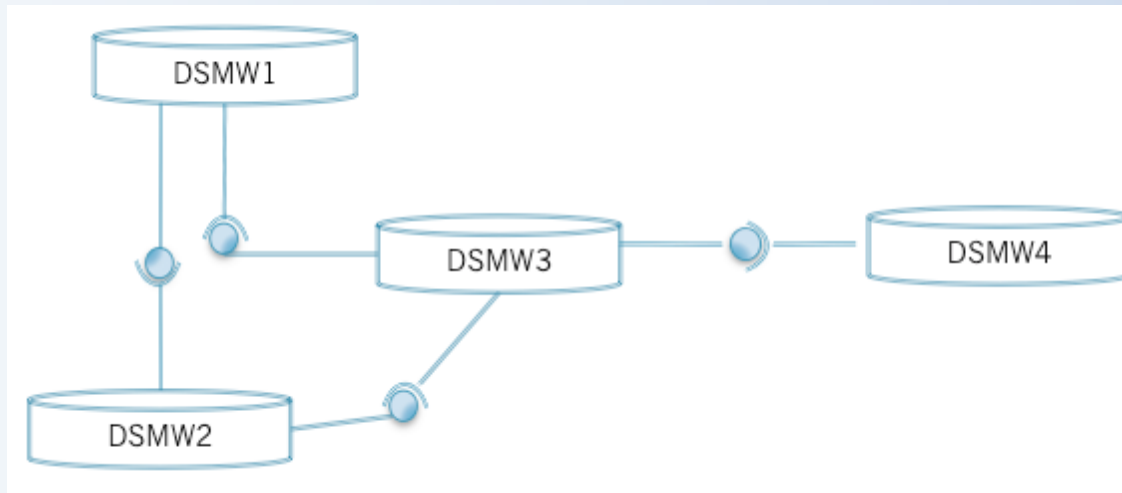
DSMW simple architecture

PushFeed

PullFeed

Wiki 1

A   B   C

Wiki 2

B   C
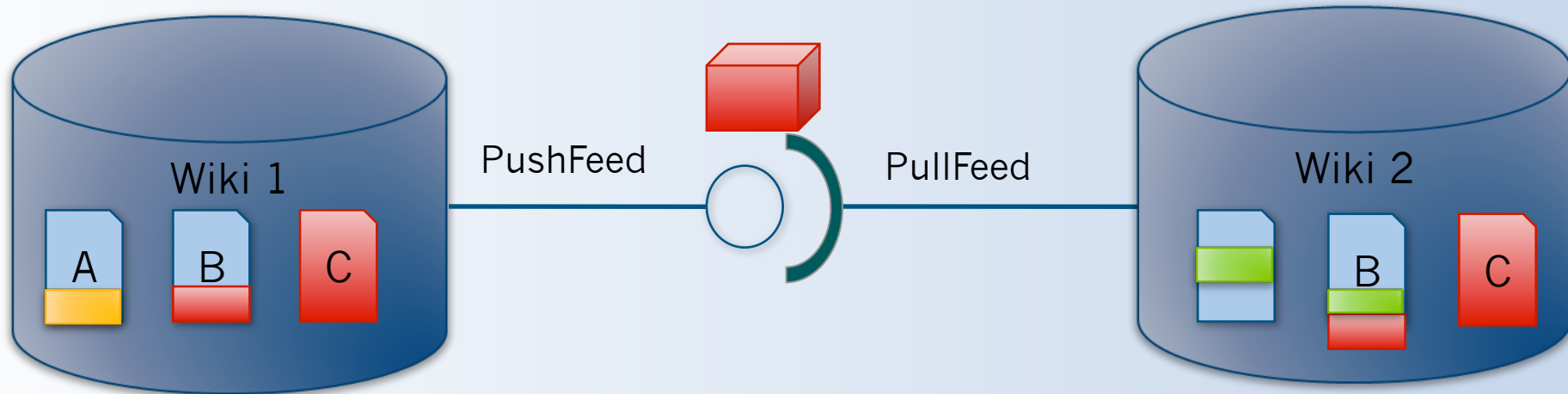
- Individuals actions
  - Edit
  - Create
  - ….

- Sharing Actions
  - CreatePushFeed
  - Push
  - CreatePullFeed
  - Pull

DSMW Network

Taaable

WikiTaaable in SMW

Our goal

- Assisting users in
  - sharing knowledge
  - negotiating meaning
  - capitalizing experiences

- Scenarios
  - Individual fusion
  - Collaborative fusion
  - Community fusion

Scenario 1: Personal fusion (1/2)

- Context:
  - Emmanuel gets the "Melon pie" recipe of Amélie in order to integrate it in his instance of WikiTaaable

- Main problems:
  - There are some conflicts...
    - Another recipe with the same name
    - Where is Melon in the ingredient ontology?
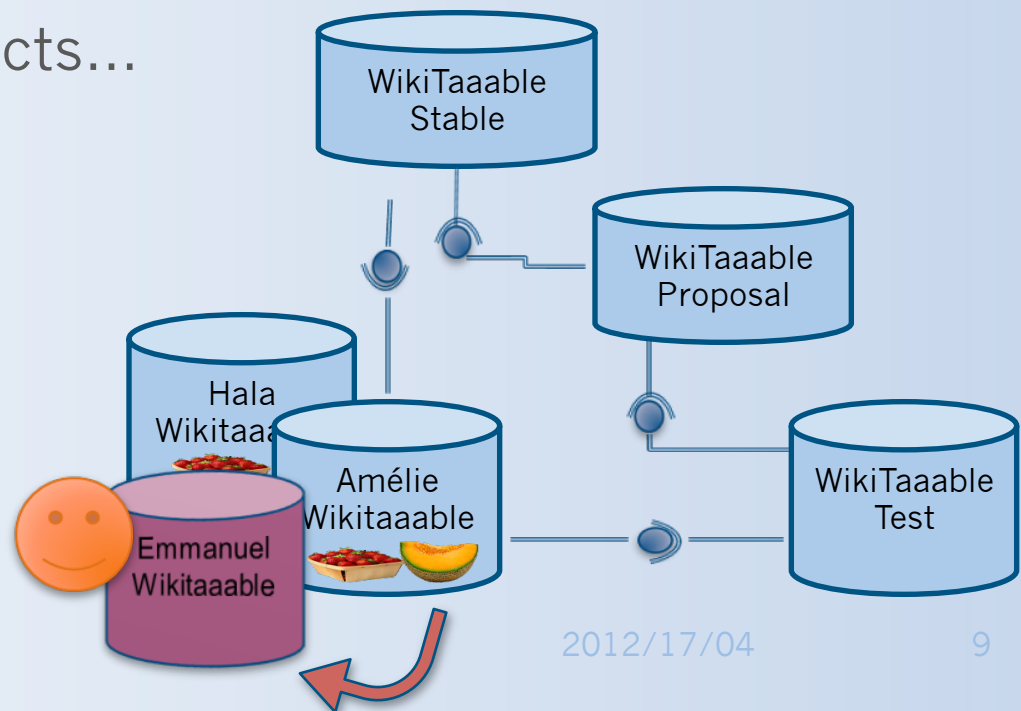
Scenario 1:
Personal fusion (2/2)

- Assistance requirements:
  - Actually importing things from another wiki
  - ⇒ Traces of using DSMW

  - Solving conflicts
  - ⇒ Detecting conflicts (formal, informal)
  - ⇒ Traces of solving previous conflicts
  - ⇒ Traces of using the knowledge
  - ⇒ Traces of the reasoner
  - ⇒ Traces of the other user?
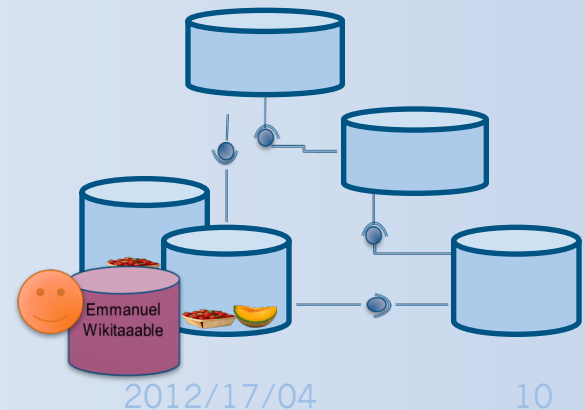
Scenario 2: Collaborative fusion (1/3)

- Context:
  - Emmanuel, Amélie and Hala want to gather all their recipes related to chocolate in a stable instance of WikiTaaable.
  - Some conflicts can only be solved by negotiating and finding an agreement among the three users.
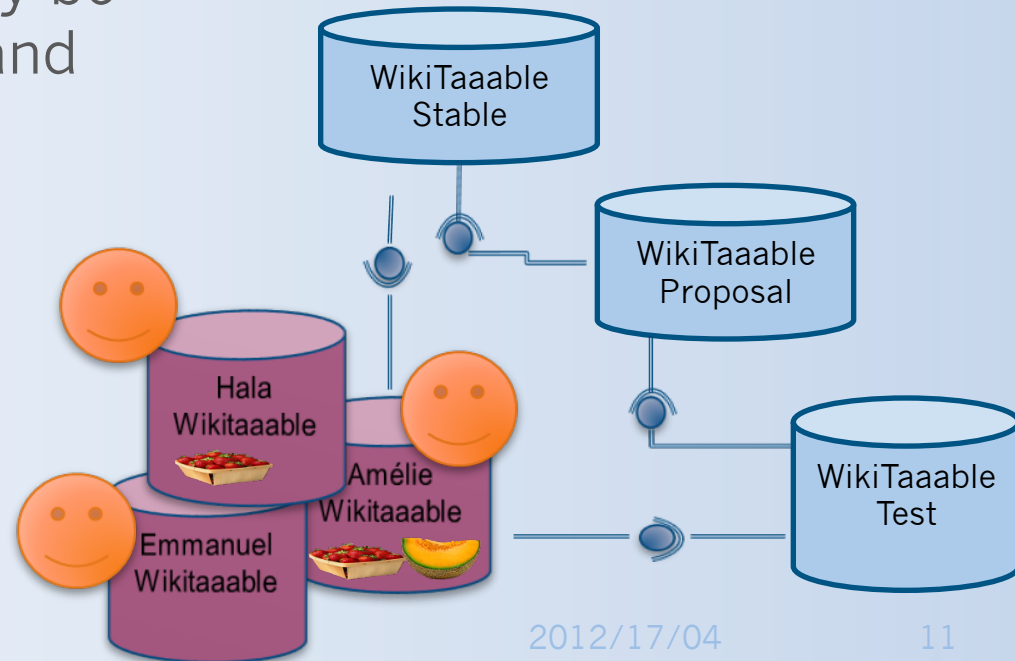
Scenario 2: Collaborative fusion (2/3)

- Assistance requirements
  - All of the previous ones, plus...
  - Negotiating a conflict, reaching a consensus
  ⇒ Traces of the use of the resources involved
  ⇒ Traces of previous negotiations
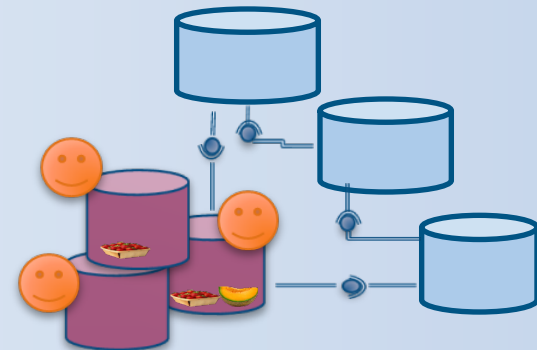
Scenario 2:
Collaborative fusion (3/3)

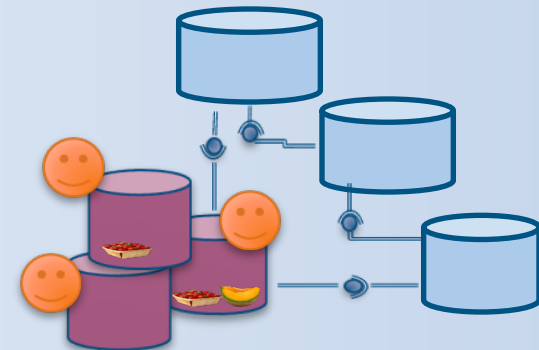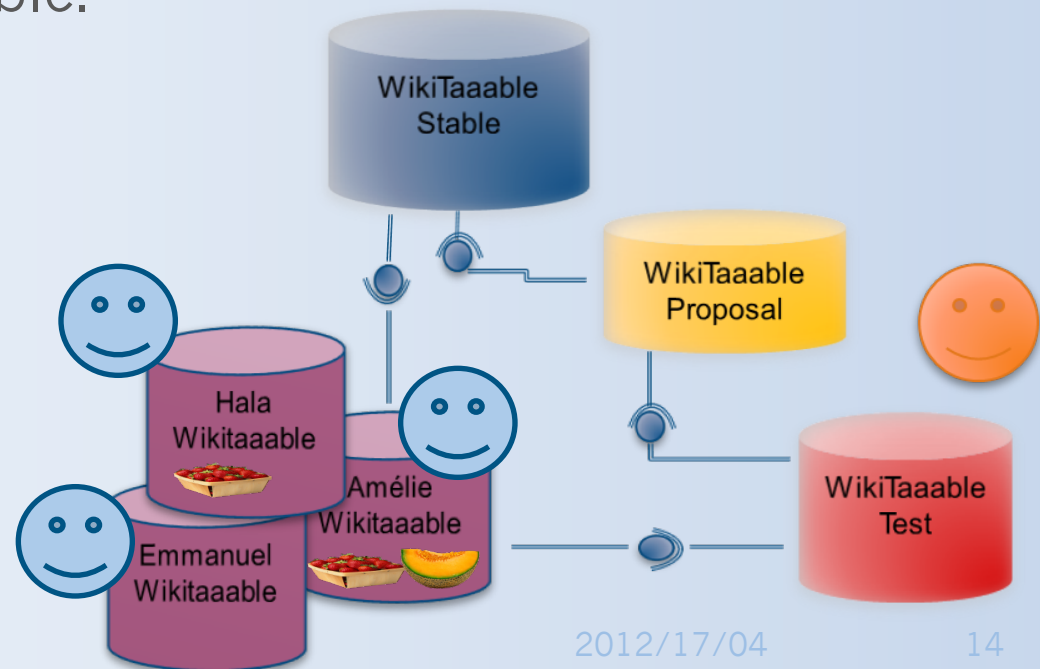- Specific research issues:
  - Building and presenting a relevant history of the ressources involved in a conflict
    - aggregating and filtering several traces
  - Negotiation may happen outside the wiki
    How to keep track of as much of them ?
  - Documenting a decision with the knowledge produced during negotiation
    - for the users
   - for the assistant

Scenario 3:
Community fusion (1/3)

- Context:
  - Hector is the moderator of a community of people interested in chocolate recipes.
  - He integrates all the users' suggestions in a stable instance of WikiTaaable.

Scenario 3: Community fusion (2/3)

- Assistance requirements:
  - Having a synthetic view of the community activity
  - Solving a conflict
  - Identifying which user can solve the conflict

- Specific research issues:
  - Which information to present to the moderator on a community management dashboard?
    - Warnings when there are conflicts. Information on who has imported which resource, how many people agree on it, which users are "expert" on a subject, etc.
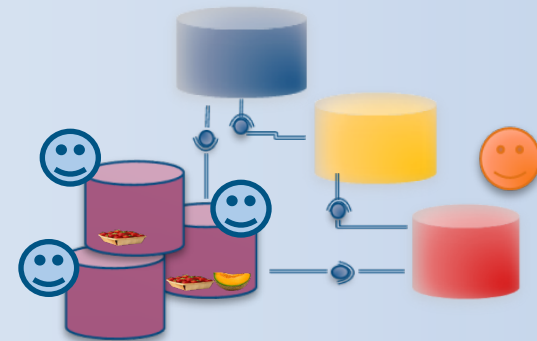
Scenario 3: Community fusion (3/3)

- Specific research issues:
  - Aggregating traces into a synthetic dashboard
    - that the moderator can fine-tune to their needs
  - Trust in users
    - Declared level of expertise?
    - Vote or rate (explicit or based on use traces)?
  - Trust in content
    - Majority?
    - Expertise of the author?
    - Automated reasoning?
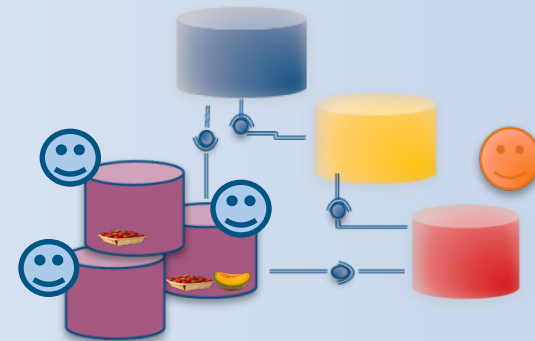
Where we are now

- Capturing activity traces
  - Trace storage/transformation engine: kTBS
  - Trace collecting plugin: Collectra

- Using activity traces
  - Transformation (aggregation, filters, …)
  - Preliminary trace visualization

- In progress
  - DSMW step-by-step tutorials (based on traces)
  - Better visualizations
  - To be continued