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# Semantic Analysis of Learning Traces

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## LIRIS lab, TWEAK team [iris.cnrs.fr/tweak](http://iris.cnrs.fr/tweak)

The activity of the TWEAK team relates to the fields of AI and Knowledge Engineering, exploring more specifically two dimensions: TELS and the Web. We are particularly interested in the co-evolution of user-machine systems in computer-supported environment, with a knowledge-oriented stance.

## Expertise in the field of TEL

- Models and tools to
  - Build profiles of learners from their traces
  - Generate activities according to pedagogical needs of each teacher
  - Adapt content of TEL for each learner
  - Acquire teachers' knowledge

**Keywords :** interaction traces, traces models, traces visualization, indicators, teachers, analysts



### KTBS : a kernel for Trace-Based Systems

The TWEAK team defines *Trace-Based Systems* as systems that tap the knowledge available in users' interaction traces.

KTBS is an open reference implementation of TBS based on RDF.

- A trace is a set of *obsels* (observed elements).
- An obsel has :
  - a type
  - 2 timestamps (begin and end)
  - attributes, and relations to other obsels
- A trace is linked to a *trace model* that describes :
  - the obsel types that the trace can contain
  - their attributes and their relations
- A trace can be computed by a *transformation method* in order to create other traces.

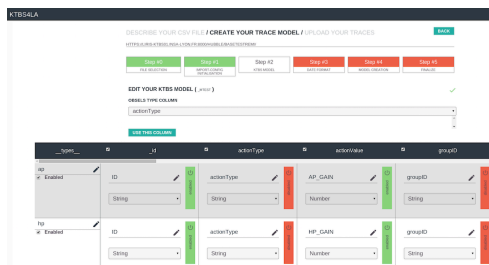
### KTBS4LA : KTBS for Learning Analytics

**Objective :** enable an analyst to use KTBS in order to interpret learning traces.

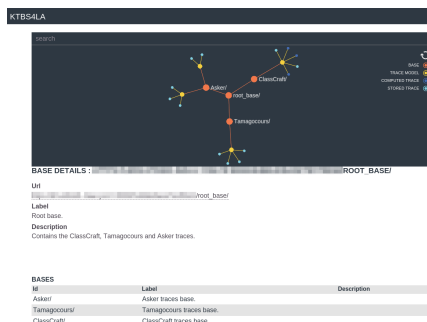
**Scenario :** an analyst wants to understand how learners use a TEL system *T* and to compute indicators about learners activities or skills.

Using KTBS4LA, he/she can :

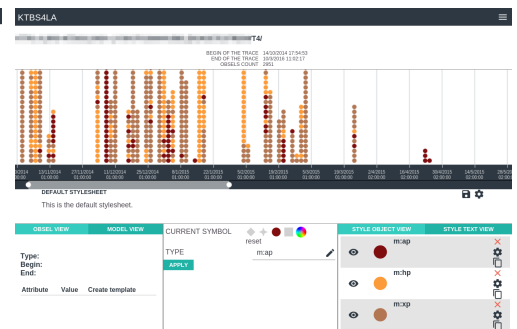
- import traces to the platform and define a trace model for *T*
- visualize the traces, each type of obsel being represented differently
- compute new traces (e.g. filter)
- define requests to compute indicators



Creating a trace model while importing traces



Visualizing bases of traces



Visualizing a trace

- A. Mille, P.-A. Champin, A. Cordier, O. Georgeon & M. Lefevre. **Trace-Based Reasoning - Modeling interaction traces for reasoning on experiences.** FLAIRS 2013, USA, pp. 1-15.
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