

Process Mining focuses on the development of a set of intelligent tools and techniques aimed at *extracting process-related knowledge from event logs* recorded by an information system.

- **conformance checking** - reflecting on the observed reality, i.e. checking whether the modeled behavior matches the observed behavior;
- **process model discovery** - constructing complete and compact process models able to reproduce the observed behavior,
- **process model extension** - projection of information extracted from the logs onto the model, to make the tacit knowledge explicit and facilitate better understanding of the process model.

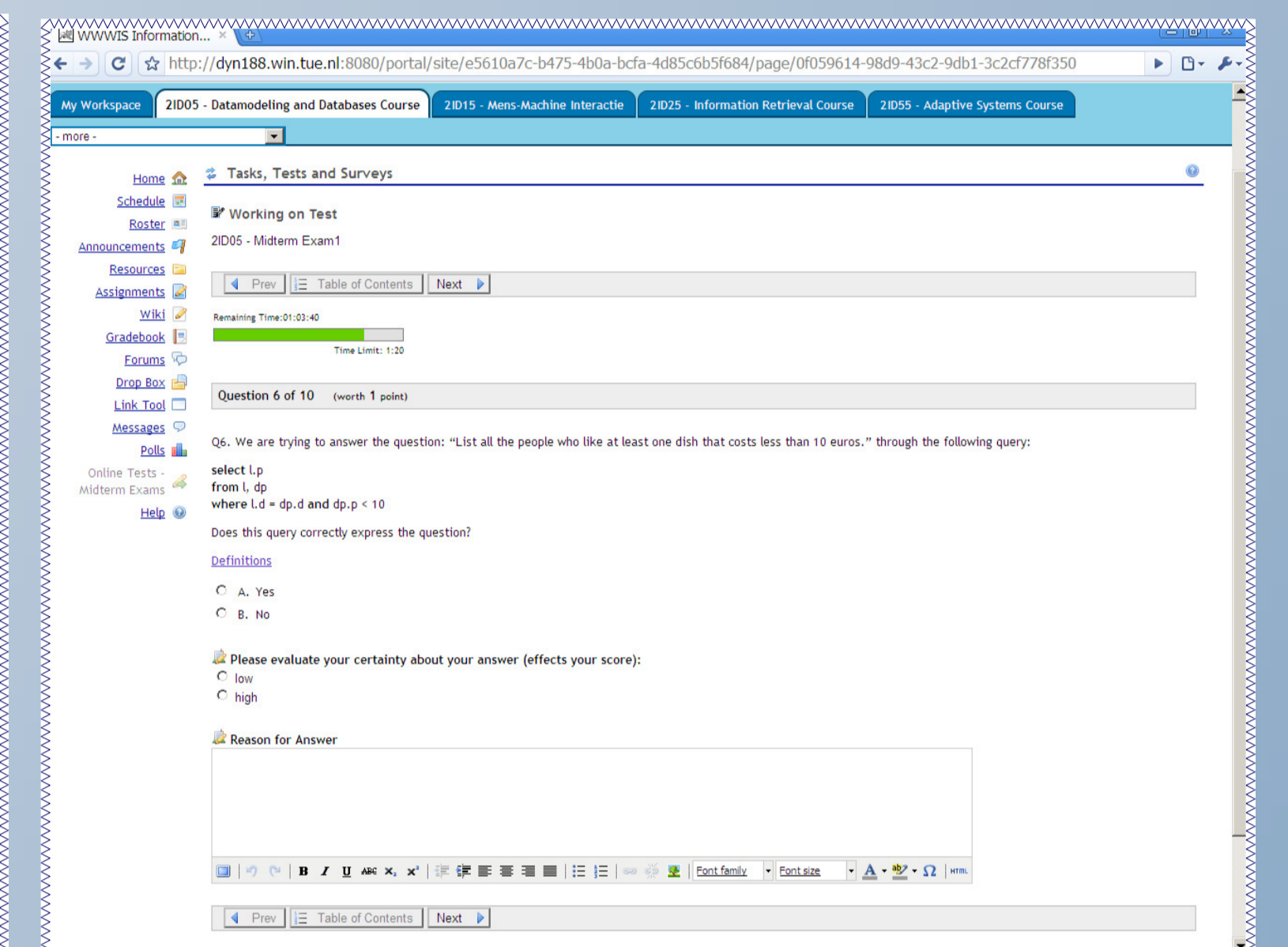
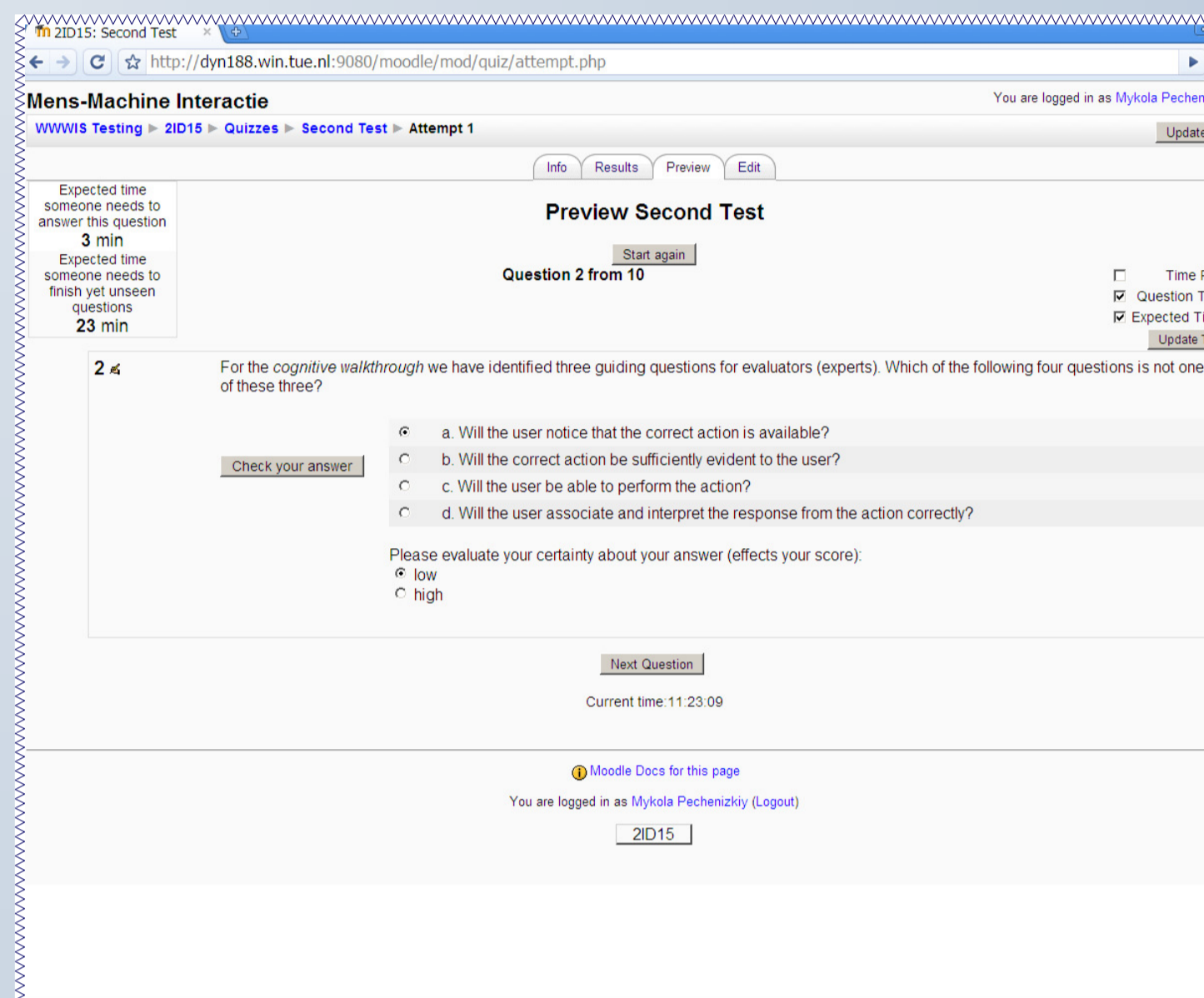
Case Studies with ProM

Online confidence-based assessment:

- a series of the multiple-choice question tests,
- with strict order vs. flexible navigation.

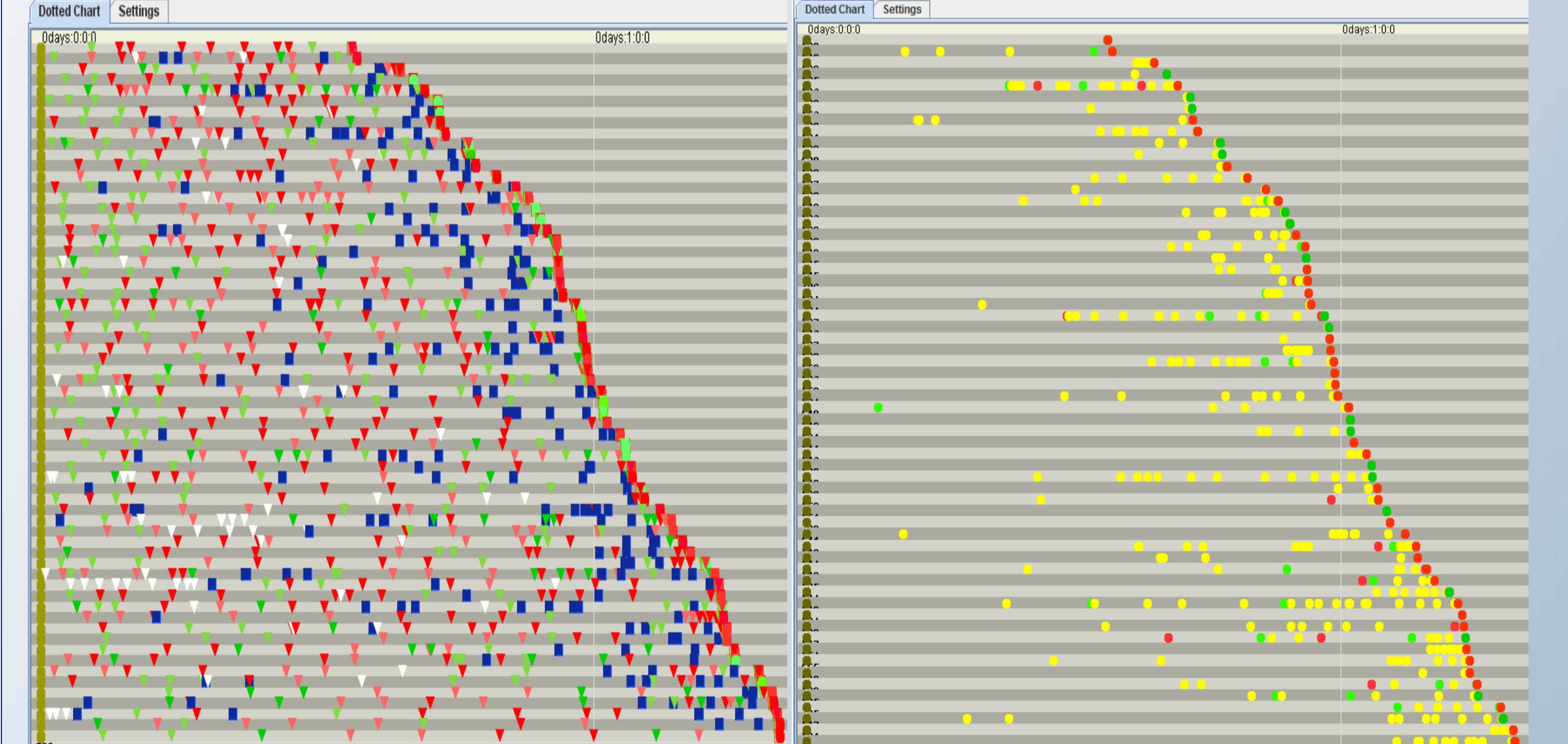
Collected Data:

- correctness, certitude, time spent for answering;
- *strict-order navigation*: feedback requests, time spent for studying feedback;
- *flexible-order navigation test*: how many times a question/answer was skipped and/or revisited.



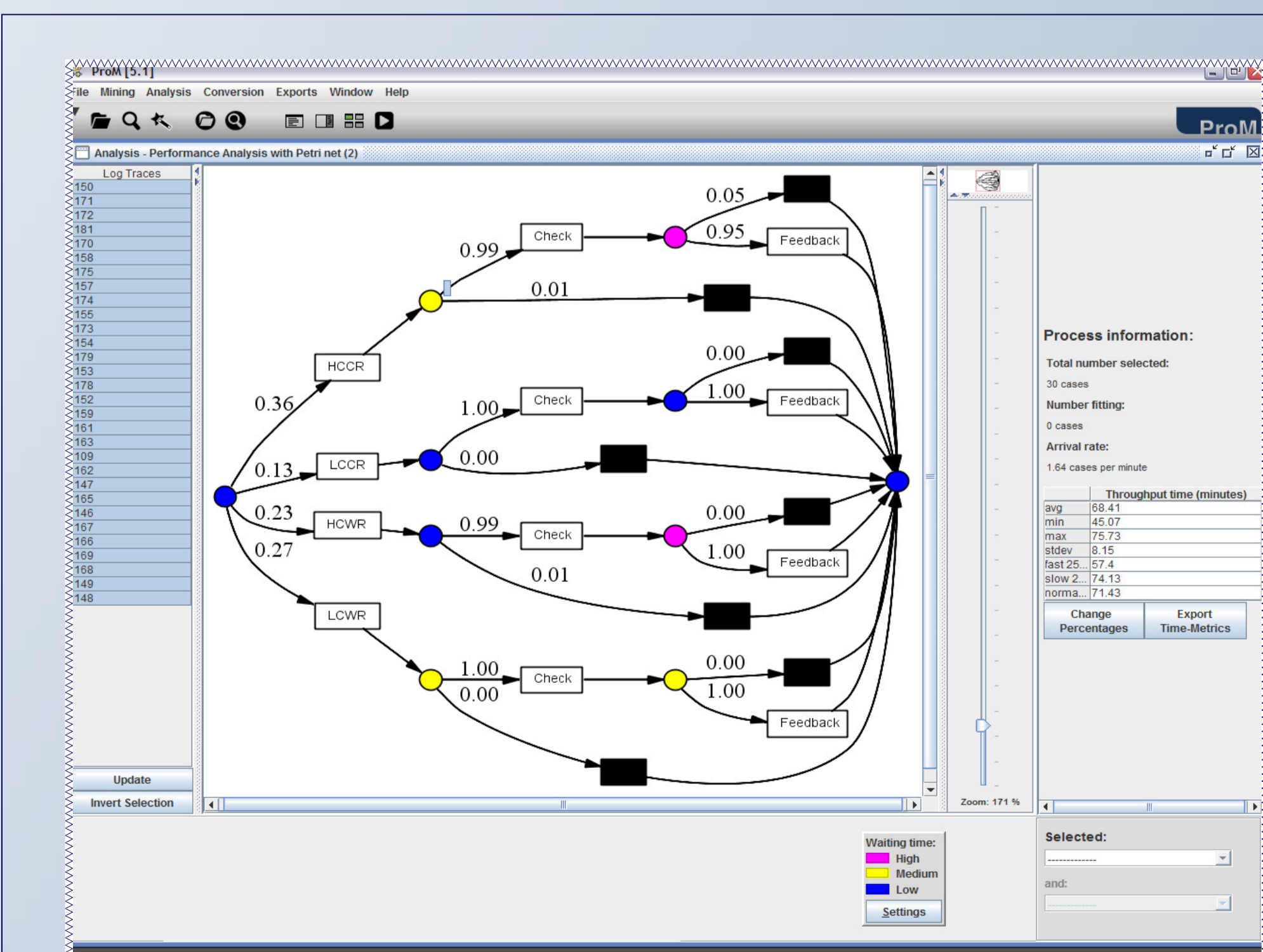
Snapshots of the tests with strict (left) and flexible (right) order navigation

Dotted Chart Analysis

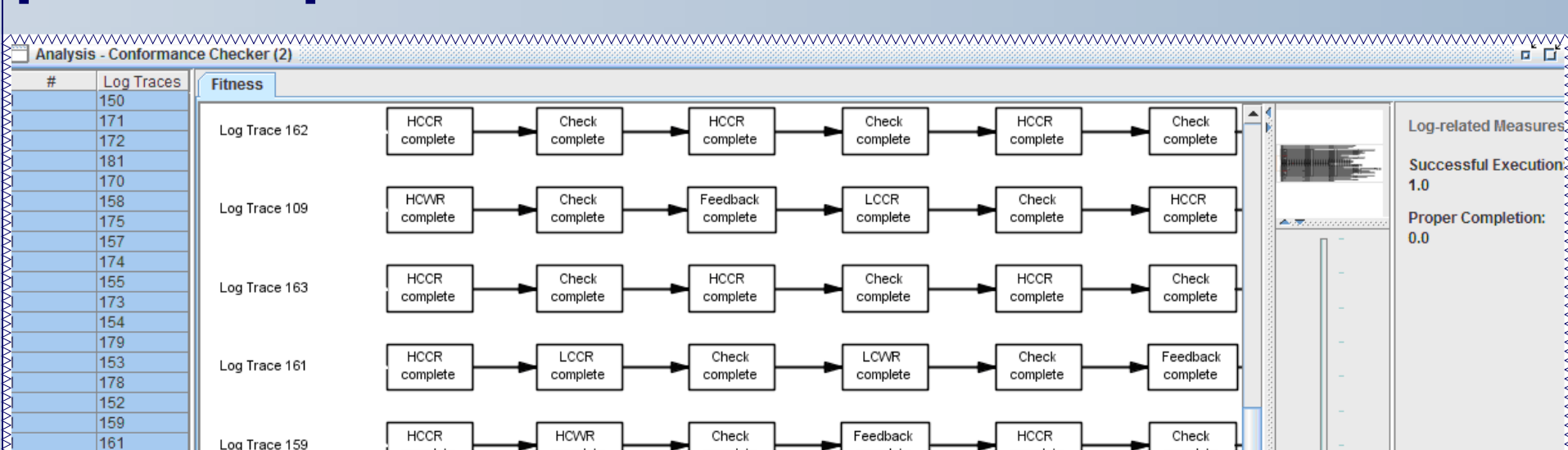


Case of flexible order navigation. Each dot corresponds to a certain event in the log. Left figure - all events, right figure - highlight of the revisions

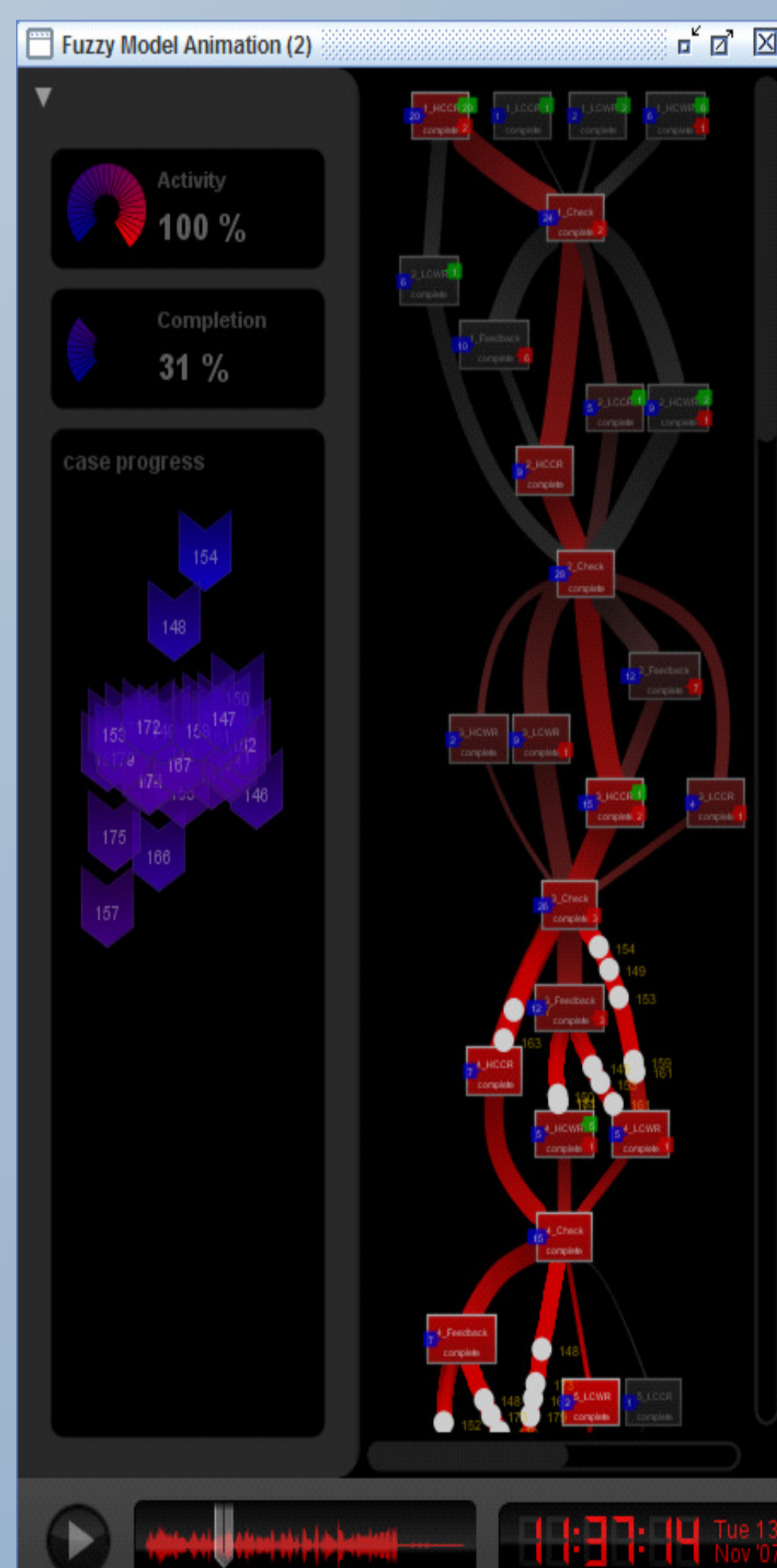
Process analysis



Conformance checking of Petri net representing the question pattern of the test with strict order navigation

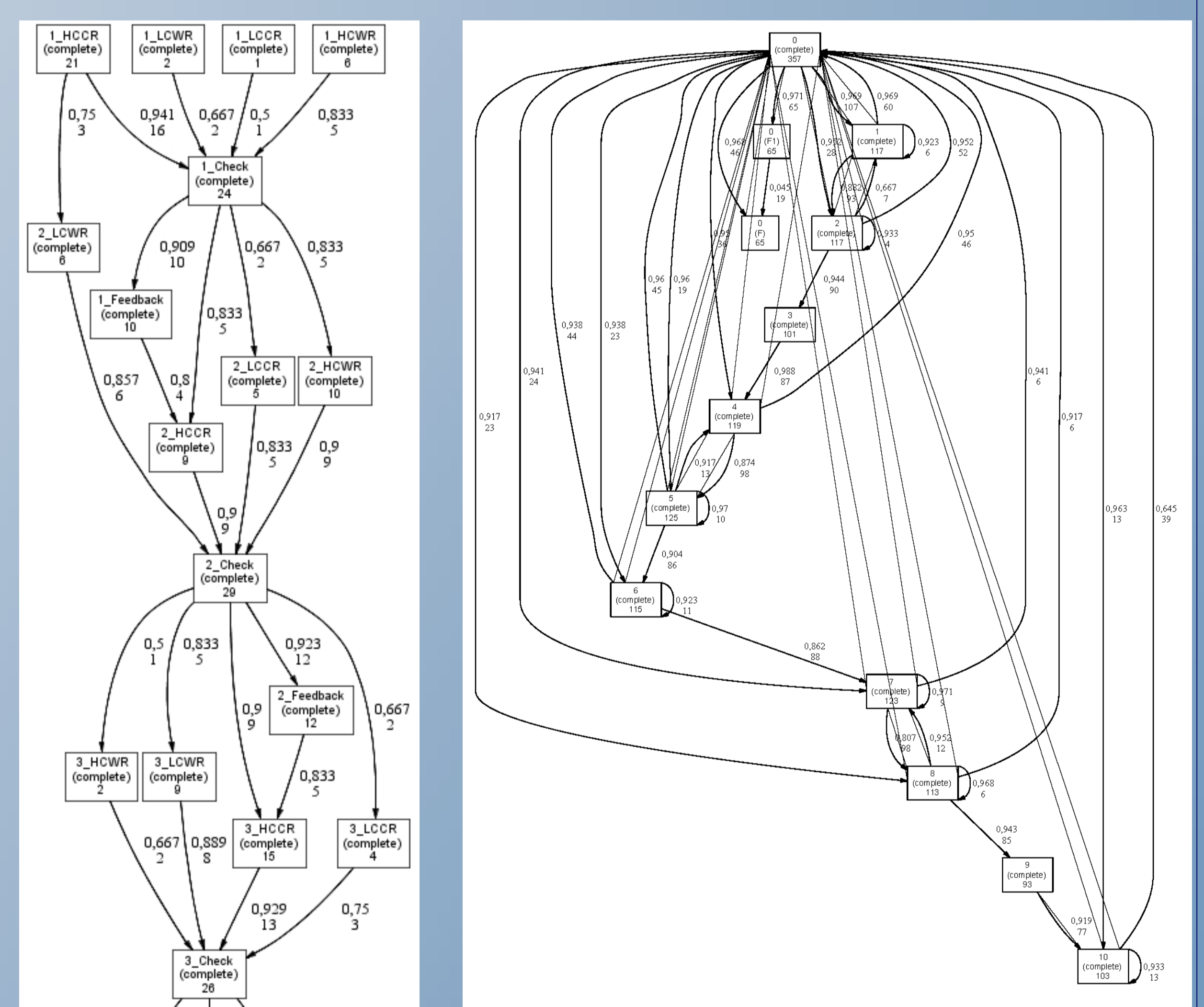


Conformance checking, log perspective

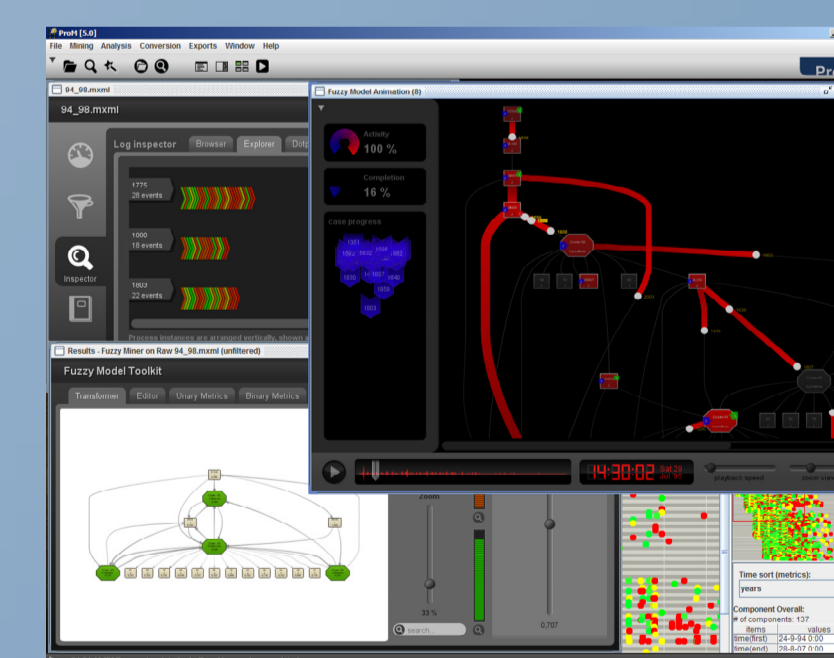


Fuzzy model animation of strict-order test

Process discovery with Heuristic nets



Heuristic nets of strict order (left) and of flexible order (right) tests



Ask for DEMO

Future work: development of

- *EduProM* plugins to bring process mining tools closer to the domain experts and better address some of the EDM specific challenges related to data (pre)processing and mining;
- *Authoring tools* pluggable to popular LMS and facilitating use of *EduProM*.