An Experiment Data Analysis Framework: Evaluating Interactive Information Behaviour with R

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Interactive information behavior is concerned with analyzing large volumes of user data and applying results to improve information search systems. This paper describes a system framework that 1) supports the collection of a wide variety of interactive user data through experimentation and 2) processes (integrates and segments) and analyses this data with the integrative application of R.

The *experiment system*, described in more detail in [1], combines an extensible set of tasks with progress and control management and allows researchers to collect data from a set of extensible logging tools collecting data on both server and client.

The *analysis system* unifies the data and allows researchers to segment data in semantic units (e.g. based on screen regions or user decisions) and develop models of information behaviour (e.g. for detecting reading activity and predicting usefulness of web content). R is closely integrated with the framework to enable models that can process millions of data points and visualize results for the researcher through a web-based user interface. Integration with Java is facilitated through JRI [1] at the modeling layer and through **RJDBC** at the database back-end.

Our work presents an application of R in information science and points to a promising open source project that allows for an integrative use of R for experiment data analysis in interactive information behavior.
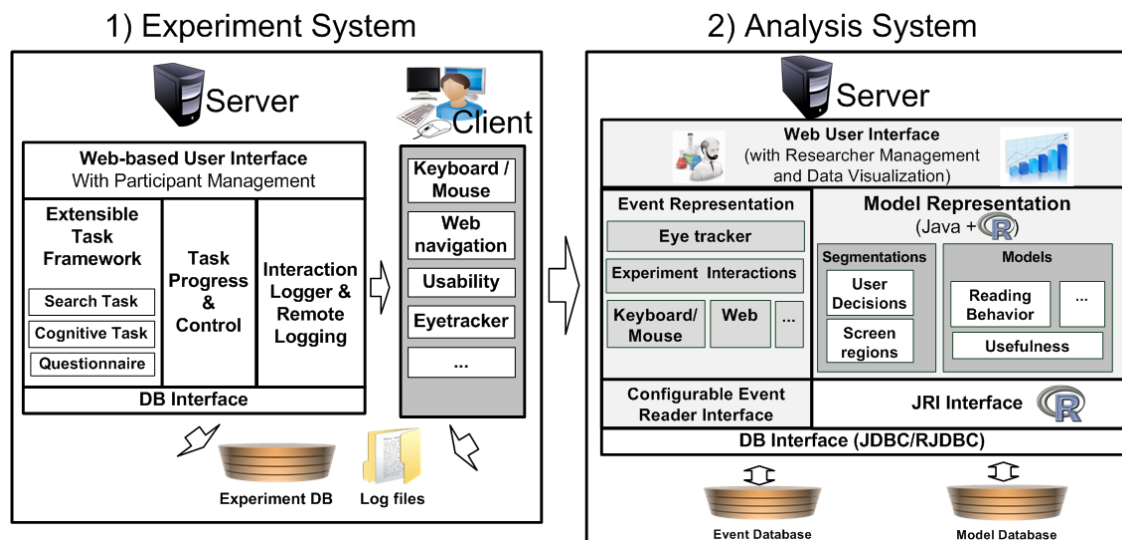

Figure 1: Components of the experiment and analysis system framework

References

[1] Ralf Bierig, Jacek Gwizdka, and Michael Cole, *A user-centered experiment and logging framework for interactive information retrieval*, SIGIR 2009 Workshop on Understanding the user - Logging and interpreting user interactions in IR (Boston, MA) (Nicolas J. Belkin, Ralf Bierig, Georg Buscher, Ludger van Elst, Jacek Gwizdka, Joemon Jose, and Jaime Teevan, eds.), 2009.

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[1]http://www.rforge.net/JRI