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# BELIV'10: BEyond time and errors novel evaLuation methods for Information Visualization

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**Abstract**

Information visualization systems allow users to produce insights, innovations, and discoveries. Evaluating such tools is a challenging task. Current evaluation methods exhibit noticeable limitations and researchers in the area experience frustration with evaluation processes that are time consuming but often lead to unsatisfactory results. The goal of BELIV'10 is to provide a venue for researchers to report and discuss the latest innovations in this area.

**Keywords**

Information visualization, evaluation

**ACM Classification Keywords**

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

**General Terms**

Design, Experimentation, Human Factors, Measurement, Performance.

**Introduction**

Information Visualization (InfoVis) has recently gained much relevance for its ability to cope with complex data

analysis tasks and communication. Recent public successes like GapMinder, Many Eyes and Tableau demonstrate its impact on real world applications and the growing interest of a large community of casual and professional users.

Despite these success stories, InfoVis is still far from establishing itself as a solid science or design discipline for its lack of methods to evaluate its techniques and tools. Evaluation efforts must be targeted at the *component*, *system*, and *work environment* level to address unsolved issues like: a) guiding designers in the construction of tools that have a real impact in the domain of their end-users; b) understanding the limits and opportunities of the human perceptual and cognitive systems in visual thinking; c) understanding how InfoVis tools can smoothly integrate in established workflows and environments and bring a real value.

Even though established scientific methods like *controlled experiments* and standard metrics like *time* and *errors* continue to be the workhorse of evaluation, there is a growing sense in the community that InfoVis systems need special approaches and metrics to evaluation.

For instance, the iterative and often opportunistic nature of discovery and exploration does not permit InfoVis researchers to characterize visualization tools simply in terms of predefined tasks and task-completion time. Longitudinal field studies, insight-based evaluation and metrics adapted to the exploratory nature of discovery are needed. Usability studies tend to be limited, as high usability does not necessarily correlate to supporting end-users in discoveries or decisions. Intrinsic quality metrics or

benchmarks have just started to appear, but much more work is needed.

### **Workshop topics and goals**

This is the third edition of the BELIV workshop series, which we purposely organize biannually to continue to advance and reflect on current trends in information visualization evaluation. BELIV'06, at the Advanced Visual Interfaces (AVI) conference, introduced the problem to the community and helped increase awareness and interest in the topic. BELIV'08, at the ACM CHI conference, established the research area and featured lively discussions about the limits of current practices and several novel exploratory techniques for evaluation.

For BELIV'10, our aim is to maintain the high standards achieved in terms of publication quality by inviting paper submissions on cutting edge research contributions. This will allow workshop participants to learn and reflect on the latest advances in InfoVis evaluation that address questions such as:

- How can visualization help end-users make better and faster discoveries or decisions?
- How do we measure impact in the end-users' domain?
- How can we accelerate or facilitate adoption?
- How do we build benchmark datasets and ground truth to objectively compare different system?
- What is the best process to ensure usefulness of the developed system?

To this end, we solicit both position and research papers addressing, but not necessarily limited to, the following topics:

- Evaluation in the visualization development lifecycle
- Utility characterization
- Evaluation metrics
- Insight characterization
- Synthetic data sets and benchmarks
- Taxonomy of tasks
- Benchmark development and repositories
- Methods for longitudinal studies and adoption
- Evaluation of early prototypes
- Evaluation heuristics and guidelines.

Position papers are short statements (1-2 pages) describing ideas to discuss during the workshop. They will be selected by the organizers and made available on the website.

Research papers are longer (4-8 pages) and present unpublished scientific contributions. As in past editions, we will not consider papers that merely report on the evaluation of a system unless they also included lessons learned and new insights. The goal of research papers is to make progress toward newer methods, discuss benefits and limitations compared to traditional methodologies. Research papers will be peer-reviewed by members of the program committee.

Taking feedback from our past participants, BELIV 2010 will be extended to a two-day format to provide a better interactive environment to let participants produce tangible outcomes *during* the workshop that will have impact on the at-large InfoVis and CHI communities.

On day 1, the workshop will be driven by presentations and discussions. We plan to give 10 min to regular papers and 5 min to position papers. A larger portion of this time will be allocated for discussions rather than presentations. Presentations and discussions will be used to collect the main topics to discussion on day two. One of the organizers will be explicitly in charge of taking notes, which will be made available to workshop participants during the day and then published on-line so non-attendees can also benefit. Organizers will also set up a large poster board with post-it notes for participants to add their comments and ideas. At the end of day 1, organizers will compile a list of discussion topics to be used on day 2 to guide discussions. From our experience in workshops, a first day in thematic sessions greatly facilitates second day discussions.

Day 2 will start with a brief summary of the list of discussion topics collected on day 1. Participants and organizers will select eight of these topics for discussion in the course of the day, with four topics in the morning and four in the afternoon. Participants are free to form groups based on the topic of their interest. Each group will be led by two participants, who will also a presentation to summarize their discussion results at the end of day 2. In addition, the organizers will lead a discussion broader issues of the workshop: 1) how to impact the community (e.g., publishing a research agenda in a journal); 2) how to set up an infrastructure

to maintain the discussion alive beyond after the workshop; 3) how to better organize BELIV 2012.

To facilitate discussions, participants will be asked to read all the papers before the workshop.

The workshop website<sup>1</sup> will host all the research papers (which will also be published in the ACM digital library), the position papers and the presentations created by the working groups.

In addition, we expect to draft a research agenda to orient researchers and practitioners towards relevant and challenging directions in evaluation. This publication will be available on the workshop website and will be submitted for publication in a leading journal (e.g., the Information Visualization Journal).

Research papers from previous BELIV workshops are highly cited and are available in the ACM Digital Library:

- BELIV'06:  
<http://portal.acm.org/toc.cfm?id=1168149>
- BELIV'08:  
<http://portal.acm.org/toc.cfm?id=1377966>

### **Target audience of this workshop**

This workshop is intended for participants in all communities interested in the intersection of evaluation and information visualization. We hope to recruit participants from disciplines such as anthropology, computer science, design, sociology and visualization to contribute to both theoretical and practical issues concerning visualization evaluation.

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<sup>1</sup> <http://www.beliv.org/beliv2010/>

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