
FlowerGarden: An Interactive Visualization of Concept-Sharing

Maria Lantin

The Banff Centre
Visualization Lab
Box 1020
Banff, AB T1L 1H5 Canada
maria_lantin@banffcentre.ca

Greg Judelman

CBC New Media
Toronto, On Canada
judelman@isnm.de

Abstract

In this paper we describe flowerGarden, a real-time interactive social network and concept-sharing visualization created in a rapid prototyping session between a designer and a computer scientist. We describe the visualization itself and the context in which it was deployed, including a description of emergent participant engagement and behaviour. We continue with a reflection on the interdisciplinary creation process of this visualization and lessons learned from this and other art/science collaborations at the Banff Centre Visualization Lab.

Keywords

Social network, concept-sharing, visualization, collaboration, design process

ACM Classification Keywords

H.5.3 Group and Organization Interfaces – Synchronous interaction, H.5.2 User Interfaces – Screen Design, H.5.2 User Interfaces – Prototyping

Introduction

FlowerGarden [1] is an interactive visualization of concept sharing within a small group (30-80 individuals). It was created at The Banff Centre Visualization Lab in a rapid prototyping collaborative effort between a designer and a computer scientist. It was deployed at the Bodies in Play Summit held at the Banff New Media Institute in May of 2005 [3]. FlowerGarden is a Flash web application that invites

participants to enter information on what concepts are being shared and with whom. Participants are also asked to assign a flower petal to represent a conversation event. The petal can be purely an aesthetic choice, or be a reflection of some qualitative aspect of the conversation. The conversation data is visualized as an overlapped combination of a social network graph and a word cloud concept map. Each participant is represented as a flower with their initials in the centre, and one petal for each conversation they have entered. Participants who have had conversations are linked by a vine. Over the course of the event, the flowerGarden grows from a few sparse flowers to a lush garden as the number of participants (flowers) and conversations (flower petals) increases. The concepts are arranged in a map of concentric ellipses with concepts closer to the centre having been mentioned in more conversations than those at the periphery. The font size of the concept represents the number of participants who have shared this concept. Figure 1 shows the input screen for entering the information. Figure 2 shows the visualization after several entries with one participant highlighted.

Possible exploratory interactions with the visualization include:

- Rolling over a flower: Highlights the flower by increasing its size and starting a slow rotation. Also highlights linked flowers and gathers all shared concepts around the flower (see Figure 2).
- Rolling over a petal: Highlights the conversation data associated with the petal by highlighting the participants and the concepts involved.

- Rolling over a concept: Highlights all the participants (flowers) that have shared the concept.

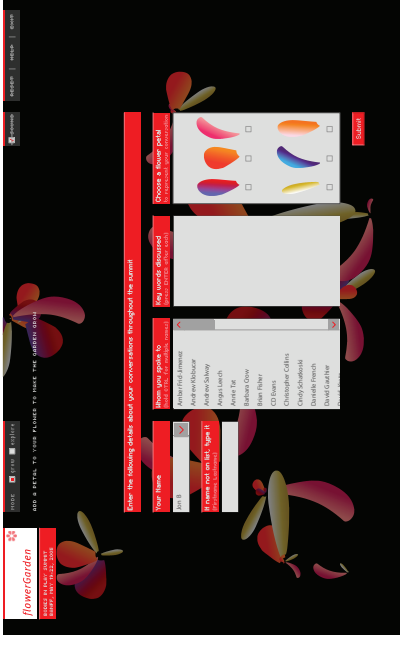


Figure 1: Input screen for flowerGarden visualization

Through other interface elements it is possible to locate a particular flower and change the look of the visualization by adjusting the relative brightness of the social network graph and concept map.

The flowerGarden was set up as an installation in the event space, prominently projected onto a large screen at all times. There were approximately 80 participants, of which 52 were included in the visualization either directly (by entering data), or indirectly (by being named in a data entry). At the end of the summit, 308 entries had been submitted for a total of 767 concepts. The real-time updating coupled with the ambient display of the visualization motivated participants to enter data and play with the visualization in ways we had not anticipated. Quickly, a playful competition for

words emerged, to self-promote or spread personal agendas. One participant created a word (“dustank”) and managed to promote his word to the inner circle. Participants also competed for biggest and prettiest flower. Some participants “designed” their flowers consciously, choosing particular petal patterns, others chose petals intuitively or randomly.

Design Process

FlowerGarden was created in 20 days in a rapid prototyping session between a designer and a computer scientist. The process began as a desire to create a playful tool for self-reflection aimed at the participants of the Bodies in Play summit. Summits of the Banff New Media Institute are intimate gatherings for the sharing of ideas and we thought it would be appropriate to give participants a chance to capture and visualize that sharing and the social space in which it sits.

The rapid nature of this collaborative effort created both challenges and opportunities. Time constraints forced an efficient design and production process, from idea brainstorming through the finalization of mapping and interactive concepts and eventually implementation. There was little time to negotiate decisions, and design features were strictly prioritized. The design and implementation plan, including a precise division of labour and timeline, was clear enough to drive the parallel design/technical production but flexible enough to adapt to unexpected problems. In our case, once the concept was mutually developed, the designer created the interface elements while the computer scientist worked on the data model and background scripts to interface with the graphical symbols.



Figure 2: flowerGarden with one flower highlighted.

While there are no surefire ways of creating a successful collaboration, it is our experience that mutual respect (especially across disciplines) is a necessary foundation. The designer relies heavily on the programmer to understand and implement subtle and sophisticated ideas, often using only static screen mocks or sketches to express design concepts. Likewise, the programmer has deep insight into technical feasibility and complexity of different production tasks, but must rely on the designer to determine the look and feel of the interface and interaction flow. The push-pull nature of this relationship, especially under strict time constraints, requires deep trust and respect among collaborators to ensure a creative, productive, and healthy working process.

The Role of Aesthetics in HCI

We believe that while well-structured visual and interaction design is essential to smooth information transfer, the beauty or aesthetic quality of an interface is equally significant. This is particularly true in the case of interactive visualizations requiring the participation of users. When users find an interface to be "beautiful" or "fun", it complements the informational practical aspect of the experience with an emotional stimulation. This encourages participation by making interaction with the system more compelling. In the case of flowerGarden, the incentive to participate was closely tied to seeing one's own flower grow and seeing its overall effect in the garden. Rolling over flowers gave another, more personalized, look at the visualization which again gives an incentive to interact. The possibility of beautifully enhancing a visualization is the impetus to add one's voice.

A particular challenge, and an aspect requiring further research, lies in finding an appropriate balance between designing for information density and making the interface aesthetically beautiful [4]. In our design process, we could have used more efficient geometric shapes to allow a greater number of people to be coherently visualized. The flowers are aesthetically interesting, but constrain the scale of representation to a reduced social group. This tension between efficiency and beauty is always present in visualization design.

Conclusion

The flowerGarden, developed in a 20 day rapid prototyping session by a designer and a computer scientist, is a web-based flash application that visualizes the emergent social network and concepts

discussed by event participants. Set up as an installation (projection) in the event space, the flowerGarden grows over the course of the event as participants continually enter information about who they talk to and what about.

The development and execution of this project raised important issues with respect to: the use of visualization to encourage real social interaction, the art-science collaborative process, and the role of aesthetics in encouraging user participation.

Acknowledgments

Many thanks to David Kretz for his invaluable expert Flash help. And thanks also to Sara Diamond for creating the original fertile ground for this work and remaining a great believer in Art/Science collaborations. And a final gratitude to Gustav Klimt for his painting "Flowergarden" (1905) which greatly inspired the initial conceptualization of this project.

Citations

- [1] flowerGarden online demo, www.collaborativenet.banffcentre.ca/gardenDemo
- [2] Simulation and Other Re-enactments: Modeling the Unseen, Banff New Media Institute, 2004, <http://www.banffcentre.ca/bnmi/programs/archives/2004/simulation/>
- [3] Bodies in Play: Shaping and Mapping Mobile Applications, Banff New Media Institute, 2005, www.banffcentre.ca/bnmi/programs/archives/2005/bodies_in_play/
- [4] Judelman, G. *Knowledge Visualization: Problems and Principles for Mapping the Knowledge Space*. M.Sc. Thesis, Lübeck, Germany, 2004 (www.gregjudelman.com/thesis.html)