

Chapter 8.19

Visualization in Support of Social Networking on the Web

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ABSTRACT

In this chapter the authors explore the contribution visualization can make to the new interfaces of the Semantic Web in terms of the quality of presentation of content. In doing this they discuss some of the underlying technologies enabling the Web and the social forces that are driving the further development of user-manipulable interfaces.

INTRODUCTION

The internet is a communication device. Its interface consists not just of static text but other static and dynamic constructs e.g., tables, images, animations

and customised web applications. Some of these elements hold meaningful content while others are used for graphic reasons¹. The rise of social networking in the form of Weblogs, discussion boards, wikis, and networking sites allows the general public to share content on the web. Such non-technical users require high level web-apps to help design and deliver their content with as little explicit dependence on the technicalities as possible.

Before talking about social networking on the web it is worth considering what this means. The expression ‘Social Networking Sites’ is used for sites with the primary purpose of supporting or creating sociable relationships, prominently friendships, but we use ‘social networking’ in a more inclusive way to include the formation of all kinds of networks such as those, for example, that form to collaborate on a task (as with an open source development).

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The naming conventions used within visualization can confuse, this relates to the difficulty in producing a visualization taxonomy which is discussed later. Visualization is a visual means to analyse data and is cross-disciplinary. The name of the discipline normally identifies a particular theme but where the name of the discipline is also the name of a technique the naming convention lacks clarity. For example social networking visualization could be the use of visual methods to show and analyse social networks or could be the use of visualizations in the support of social networking i.e., as a means to help people form and co-ordinate their activities. This chapter looks at the latter, at how visualization can aid communication on the web. Whilst this can include the visualization of social networks (because users of the web may like to understand the social networks they participate in) that is not the primary focus.

In this chapter we introduce visualization, its history and the two main visual paradigms in use, dividing the visualization community between those concentrating on scientific and information visualizations respectively. We survey the technologies that shape the web and the applications running on it. This allows us to look at how the technology shapes visualization systems (the visualization pipeline and the flow of data) and how these can be distributed to work efficiently in web environments. Finally we review some web applications that support social networking and consider what future trends may be.

WHAT IS VISUALIZATION?

The History of Visualization

There is no accepted definition of visualization but it can be adequately summarized for our purposes as using visual means to aid the communication and understanding of information. Modern visualization increasingly uses computer graphics technology to make information acces-

sible. Visualization's long history predates the origin of computers by at least 8 thousand years. Maps are one of the oldest forms of graphical aid whose continued usefulness is demonstrated by the fact that mapping applications are amongst the most popular web-based applications. Before computers visualizations generally were not interactive, though there are exceptions to this as some scientists developed models and pop ups in books to explain their ideas but these were rare and expensive (Tufte, 1997; Tufte, 2001).

The roots of visualization are tangled into our history; a timeline of visualization is available on the internet (Friendly, 2008). Many historical breakthroughs were made possible through visualization, such as John Snow's use (in London in 1854), of maps to show the distribution of deaths from cholera in relation to the location of public water pumps. Visualization has never been an isolated discipline; it has been an integral element of scientific, intellectual and technical developments.

The timeline of visualization shows that the development of visualization has accelerated since 1975, since when important changes have depended upon advances in computing. Improved computer speed and capacity increasingly allow data to be visualized by increasingly intensive computational methods. Computers make visualizations more interactive and allow direct manipulation of data, e.g. selecting data by linking, brushing or using animation in grand tours. Also driving the development of visualization is the fact that visualization methods are being applied to and developed for an ever-expanding array of problem areas and data structures, including web applications that enable social networking.

Modern Visualization

Modern computer-based visualization developed through the accumulation of three specific areas (Schroeder, 1997). Scientific visualization was the first. It is a discipline stemming from computa-

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