Social Computing

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INTRODUCTION

Broadly speaking, social computing encapsulates the idea of making technologies more aware of, and more in alignment with, the social needs of their users. Often, this allows for the introduction of new modes of communication and collaboration among users, the ability to establish and evolve communities of various constitutions, as well as for more dynamic and large-scale content creation, dissemination, and evaluation. By its very nature, social computing relies on the inherent drive of its constituents to be more connected and involved in the lives of others, or to derive value from the individual and collective wisdom that a myriad of social platforms provide a gateway to.

This article serves the ternary purpose of establishing a broad definition of social computing, both as it stands today and is expected to evolve in the near future; providing an overview of the practical applications of social computing; and examining the present and historical research themes that have made an impression on social computing as an area of academic intrigue. The article is intended to be accessible to casual readers, practitioners, and academicians alike, with little technical depth and broad focus throughout, in order to instill an initial acquaintance with the field of social computing.

BACKGROUND

Throughout the last few decades, computational technologies have grown increasingly more capable, useful, and connected at an exponential rate. While this general boon in computational power may have occurred fairly recently, discussions relating to the ideas of interconnected computational systems and instantaneous, widespread information exchange began much earlier. As one example, we can turn to the early efforts of Vannevar Bush, who helped facilitate and institutionalize cooperations between the United States government, business communities, and academicians for the advancement of military-centered scientific research endeavors. This formal cooperation would pave the way for later initiatives, such as the Advanced Research Projects Agency (ARPA, and subsequently DARPA) and the project, ARPANET, which would serve as a precursor to the modern Internet.

The real fruits of early theoretical and engineering groundwork such as this, however, would become apparent on a much larger scale beginning in the 1980's and throughout the early 1990's, a timeframe that would mark the development of several early communications technologies, including Usenet (a decentralized system of distributed discussions), Internet Relay Chat (IRC; a real-time, multiparty text communication system), and the World Wide Web (WWW), which would set a new standard for the electronic presentation and dissemination of text and media contents.

Though some of the fundamental characteristics of social computing had already been cemented even in these early technologies (real-time user content distribution, for example, was a natural prerequisite of Internet-mediated chat), the Web and consumer technologies were still in their infancy. Technical limitations (such as a lack of bandwidth for widespread distribution of rich media, as well as limited processing power available to consumption devices), lack of user adoption, and the lengthy development of new standards for how best to utilize new mediums for communication each constricted the advancement of more powerful social computing applications.

By the start of the new millennium, however, a movement known as "Web 2.0" was quickly gaining traction. The motivation behind this development was to acknowledge the evolving state of 1) consumer Web-enabled technologies, which boasted continuously increasing processing and display capabilities, 2) advancements in the overarching Internet infrastructure which allowed for decreased latency and increased

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throughput of data transmissions, 3) more widespread adoption of Web technologies, and 4) increased user and developer activity surrounding collaborative and social technologies. As Fischer (2009) observed, this paradigm could be succinctly characterized by its objective of "fostering and supporting social production and mass engagement and collaboration."

While this term (Web 2.0) may have been merely a label — considered little more than jargon even by Sir Tim Berners-Lee, the creator of the World Wide Web (Laningham, 2006) — the notions it represented provided the foundation for social computing as we know it today. Through the course of just over a decade, the Web had gone from the nascent realization of a technical dream, to a medium where users could stay constantly connected via the exchange of text, images, audio, and video media, from the comfort of their home, or abroad with their mobile devices.

Today, social computing-related activities are among the most common uses of networked devices, and the evolution of mobile technologies has established social computing as an outstanding example of pervasive or ubiquitous computing technologies. In fact, recently the terms "pervasive social computing" (see, for example: Mokhtar & Capra, 2009) and "ubiquitous social computing" (for example: Motahari et al., 2007) have been coined to express exactly this dynamic, and to reflect the increasing prevalence of this relationship. Now, more than ever, individuals are staying connected with one another via the use of social technologies at home and on-the-go, and new innovations are quickly being developed to help augment this pervasiveness and the facilitation of social interactions in new and imaginative ways.

With this understanding at hand, the definition of social computing employed within this article will be as follows: *The use of computational devices to facilitate or augment the social interactions of their users, or to evaluate those interactions in an effort to obtain new information*. This aligns well with previous descriptions (see: Schuler, 1994; Charron et al., 2006; Parameswaran & Whinston, 2007a). Of note, however, is that this definition explicitly acknowledges the uses of social computing as an analysis and prediction tool, and does not impose limits upon the influence of institutions or technology providers over the social interactions of their users (which we will not automatically judge to be beneficial or detrimental, due to how varied those influences may be). This definition is intentionally abstract, so as to encompass social computing not only for what it is today, but for what it may become in the not-too-distant future.

PRACTICAL APPLICATIONS OF SOCIAL COMPUTING

The applications of social computing technologies are many and diverse in nature. While this is so, perhaps the most prominent and widely used of these applications can be seen in general purpose, online social networks. These networks have been defined as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system" (Boyd & Ellison, 2007). Typically, these networks allow the exchange of short posts of information or other media contents to a timeline of activity visible to the public, their friends, or a more limited audience. Facebook, Twitter, and Google+ are each well-known examples of online social networks.

Web logs or *blogs* represent another application of social computing principles. Blogs allow users to create content that is typically of greater length than the concise updates that proliferate in social networks. These blog posts are usually related to a specific interest or subject matter explicitly defined by the blog author. Though some blogging platforms allow users to interact on a limited basis — such as via comments, follower relationships, votes, or blogrolls (collections of links to related or otherwise interesting blogs, curated by the blog author) — as a whole, these interactions tend to be much more localized, and their networked nature less explicit. A few well-known blogging platforms include Google's Blogger, Yahoo's Tumblr, LiveJournal, Medium, and WordPress.

Wikis and collaborative editing systems, such as Wikipedia and Basecamp, allow users to create and edit articles, to-do lists, events, rich media such as images and videos, and a variety of other documents in shared contexts, and at least in some cases, in real-time. Though users are the driving force in any collaborative effort, in these systems, the focus is on content and how users can help develop and curate those contents as an engaged, participatory community.