Social Computing

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BACKGROUND

Throughout the last few decades, computational technologies have grown increasingly more capable, useful, and connected at an exponential rate. However, while this general boon in computational power has 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 look to the early efforts of Vannevar Bush, who helped facilitate cooperations between the United States government, business communities, and academicians for the advancement of military-centered scientific research initiatives. This formal cooperation would pave the way for later endeavors, such as the establishment of the Advanced Research Projects Agency (ARPA, and subsequently DARPA) and ARPANET, 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 marks 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 within 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 delayed development of 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) enhancements to the underlying network infrastructure which allowed for decreased latency and increased throughput of data transmissions across the internet, 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 the term (Web 2.0) itself may have been merely a label — considered little more than jargon even by Sir Tim Berners-Lee, the creator of the 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

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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 and 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, 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 chapter will be as follows: *The use of computational devices to facilitate or augment the social interactions and content sharing activities of their users, or to evaluate such interactions so as to obtain new information*. This aligns well with previous descriptions from the academic literature (see: Schuler, 1994; Charron et al., 2006; Parameswaran & Whinston, 2007a). Of note, however, is that this definition explicitly acknowledges the use of social computing as an analysis and prediction tool, does not impose limits upon the influence of institutions or providers over the social interactions of their users, and does not exclude anonymous or pseudonymous user interactions from its coverage. The definition is intentionally broad, 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 and Ellison, 2007). Typically, such 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 abound in social networks. These blog posts are often related to a specific interest or subject matter explicitly identified 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 notable blogs) — 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, Basecamp, or Genius, 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 behind 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.

An array of rich media sharing platforms also exist which rely on user-contributed media to make up either a large portion or the entirety of their respective content bases. Some examples include