

# Internet Based Collaboration Tools

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## ABSTRACT

This structured literature review examines the digital tools used to facilitate distance collaboration and the available research relative to the use of those tools. The purpose of this paper was to contribute to a better understanding of Internet based professional collaboration tools, their features and benefits, and best research based professional practices. The authors examined 33 refereed or peer reviewed articles published from 2002 to 2015 that addressed the use of Web-based digital tools to support professional collaboration. Authors who are considered experts in the areas of virtual communities, digital collaboration, social psychology and technology and who publish in other forms were also included in the paper. In addition to providing a definition, a description and available research for each tool type, the Fit-Viability Model (Tjan, 2001) is presented as part of this paper to guide digital collaborators in digital tool selection. The review and synthesis of the literature suggest an emerging need for a range of knowledge of Internet-based professional collaboration tools. Important elements of this knowledge include an understanding of the types of tools available and their features, limitations, and use. These insights empower digital collaborators with the ability to choose an appropriate and efficient tool for the collaborative project.

## KEYWORDS

Blogs, Collaborative Decision Making, Computer Mediated Communication, Digital Collaboration, Discussion Boards, E-Collaboration, Electronic Discussion Lists, Email, Forums, Inter-Organizational Collaboration, VoIP, Web 2.0, Web Conferencing, Wikis

## INTRODUCTION

Professional, collaborative relationships are changing. No longer are we working solely across from one another at the same table sharing the same space. We can now exchange ideas and partner with someone in another time zone, in another country, or on the other side of the planet by using a myriad of distance communication tools available through computers, smart phones and other devices. This ever-expanding array of tools from which to choose provides exciting new ways to collaborate, however, it also challenges users to make informed decisions concerning time invested in learning and understanding the considered tools. Some tools may be chosen because they are appropriate for specific types of collaboration, while others may be chosen based on user preferences and project needs.

The potential positive influence that these Internet-based technologies can provide for collaborative efforts are significant. Achieving this potential is contingent upon those involved being knowledgeable about the available Web-based collaborative resources and their features and benefits. This manuscript offers a comprehensive review of Internet-based collaboration tools organized by asynchronous, synchronous, and hybrid use, and synthesizes relevant published research from 33 peer reviewed publications and additional sources related to online professional collaboration.

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## BACKGROUND

The use of Internet-based collaboration tools is a relatively recent phenomenon and a natural extension of the increasing role of the Internet in society. General Internet use has risen steadily among American adults from 14% in 1995 to 87% in 2014, with near saturation in households earning \$75,000 or more (99%), young adults ages 18-20 (97%), and college degree holders (97%) (Fox & Rainie, 2014). A 2010 U.S. Census report showed that the number of home-based workers had grown 35 percent from 9.2 million workers in 1997 to 13.4 million workers in 2010 (Mateyka, Rapino & Landivar, 2012). This 2010 report was written in reaction to advances in communication and technology allowing more work to be performed at home. Using a larger set of surveys than the U.S. Census Bureau, the Telework Research Network's report, *The State of Telework in the U.S.*, put the total number of U.S. workers whose job is compatible with telework at forty-five percent (Lister & Harnish, 2011). They also found that regular telecommuting grew by 61 percent between 2005 and 2009.

In 2004, as part of the Consolidated Appropriations Act, the United States government asked that the Departments of Commerce, Justice, State, the Judiciary, the Securities and Exchange Commission and the Small Business Administration "certify that telecommuting opportunities are made available to 100 percent of the eligible workforce." The Telework Enhancement Act of 2010 was signed into law on December 9, 2010 with the intention of (a) improving continuity of operations during emergency situations, (b) promoting management effectiveness through reductions in management costs, environmental impact, and transit costs and (c) enhancing work-life balance (United States Government Office of Personnel Management & General Services Administration, 2014). The implementation and impact of this 2010 Act will depend upon the ability of people to effectively and productively collaborate from a distance.

The choice of communication tool is critical to best support collaborative efforts (Lee & Panteli, 2010). Online collaboration tools can significantly vary from each other, with some based on older forms of Internet-based technologies, while others are based on the more current "Web 2.0" technologies. These latter technologies allow digital collaboration efforts through computer-mediated communication (CMC) mediums to achieve similar outcomes and benefits as that of face-to-face collaboration. Examples of these powerful communication tools are wikis, blogs, forums, RSS feeds, opinion polls, community chats and social networking (Turban, Liang, & Wu, 2011). The use of Web 2.0 tools, referred to collectively as Collaboration 2.0 (Turban, Liang, & Wu, 2011), allows for robust real time collaboration at a distance that in many situations can be as effective as traditional face-to-face forms of collaboration.

Older forms of CMC tools can also be effective for facilitating communication and developing working relationships. Some of these older tools (e.g., email, text messaging) do not allow for visual and audio cues such as facial expression, body language, or voice inflection. However, research suggests that people can have meaningful and social interactions online without these visual cues (Ogbeide, Fenich, Scott-Halsell & Kasteron, 2013). The Social Information Processing theory (SIP), developed by Joseph Walther in 1992, indicates that online personal relationships can develop without the traditional visual and audio cues associated with face-to-face interpersonal relationships. The online relationship may take more time to develop than its face-to-face counterpart, but once developed may demonstrate the same relationship qualities.

Online relationships were studied by Antheunis, Schouten, Valkenburg, and Peter (2012). The researchers randomly assigned 81 cross-sex dyads to a face-to-face communication condition, a visual and text CMC condition (no audio), or a text-only CMC condition for a one-hour conversation in order to observe language-based strategies used to reduce uncertainty that could in turn lead to positive interpersonal attraction. More verbal statements of affection (the indicator of successful reduction in uncertainty) were made in both CMC groups than in the face-to-face condition as a result of greater question asking and self-disclosure. The authors' findings were consistent with SIP theory. They concluded that question asking is an especially important uncertainty reduction mechanism and can

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