

# Chapter 47

## A Framework for Analyzing Social Interaction Using Broadband Visual Communication Technologies

**Susan O'Donnell**

*National Research Council, Canada*

**Heather Molyneaux**

*National Research Council, Canada*

**Kerri Gibson**

*National Research Council, Canada*

### ABSTRACT

*Broadband visual communication (BVC) technologies—such as videoconferencing and video sharing—allow for the exchange of rich simultaneous or pre-recorded visual and audio data over broadband networks. This chapter introduces an analytical framework that can be utilized by multi-disciplinary teams working with BVC technologies to analyze the variables that hinder people's adoption and use of BVC. The framework identifies four main categories, each with a number of sub-categories, covering variables that are social and technical in nature: namely, the production and reception of audio-visual content, technical infrastructure, interaction of users and groups with the technical infrastructure, and social and organizational relations. The authors apply the proposed framework to a study of BVC technology usability and effectiveness as well as technology needs assessment in remote and rural First Nation (indigenous) communities of Canada.*

### INTRODUCTION

People, groups, organizations and communities are increasingly using broadband visual communica-

tion (BVC) technologies for social interaction in a wide range of settings - from institutional uses such as business, government, health and education to more informal uses, such as entertainment for family and friends, social networking and digital storytelling.

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Researchers use the terms *broadband visual communication* and *broadband video communication* interchangeably. The term *broadband* refers to both broadband networks and broadband Internet - telecommunication in which a wide band of frequencies is available to transmit information. BVC technologies allow both simultaneous and pre-recorded exchange of rich visual and audio data over Internet. The visual and audio data may also be accompanied by text data. The National Research Council Canada (NRC) has used the term “BVC” for many years to refer to videoconferencing which allows synchronous audio-visual communication. More recently, we use “BVC” to refer also to asynchronous communication using pre-recorded videos, such as video sharing on the Internet by people with the capacity to both create and view videos. Increasingly, synchronous and asynchronous BVC are used together for social interaction.

Videoconferencing was introduced commercially in the 1970s. For the next decades, it was used almost exclusively in health care, military, and educational institutions, failing to gain more widespread adoption. In the past few years the decreasing costs and increasing penetration of broadband Internet has stimulated a huge uptake in videoconferencing. Set-top videoconferencing units are now found not only in the previously mentioned settings but also in voluntary organizations, community centers, community health clinics, and schools. Videoconferencing has several immediate and tangible benefits: it encourages interaction between people who cannot meet in person and allows the exchange of visual information, such as facial expressions that encourage trust and intimacy; it encourages “green” meetings that reduce participants’ travel and carbon footprint. Videoconferencing can also be an important tool for knowledge sharing, provide essential social services, support for people in rural or remote communities, and aid in community building and development (Molyneaux et al., 2007a; Molyneaux et al., 2008a).

Sharing videos online has exploded in popularity in a very short time as home computers with webcams and digital video cameras have become ubiquitous. The most popular video sharing website, YouTube.com, claimed to receive more than 100 million views per day by more than 20 million users internationally with more than 65,000 new user-generated videos uploaded daily - a mere 22 months after its launch. YouTube users also posted millions of comments about the videos and engaged in exchanges with other users. In 2006, *Time Magazine* named its “Person of the Year” as “You,” claiming that the users of YouTube and other user-generated content-sharing Internet sites were “seizing the reins of the global media... founding and framing the new digital democracy ...and beating the pros at their own game” (Grossman, 2006).

The objective of this chapter is to discuss the requirements for analyzing social interaction using BVC technologies and to provide an overview of our solution – creating an analytical framework. The analytical framework is a common reference point for multi-disciplinary teams working with BVC technologies seeking to understand the variables that help and hinder people’s use of social interaction technologies. We use our research framework to understand the social implications of BVC technologies and the social aspects of technology design and implementation. We also apply the framework to the study of technology usability and effectiveness as well as technology needs assessments. We illustrate how this framework can be used by presenting a case study of BVC in remote and rural First Nations (Indigenous) communities in Canada.

## **BACKGROUND**

BVC involves both simple and complex social and technical interactions. The complexities arise as the interaction grows from communication between two individuals in the same location to

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