Video Chat: Virtual presence

Context

New family structures and far-flung networks of family ties are driving the need for new forms of communication to keep the family community alive.
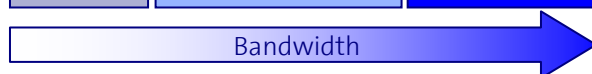
The development of communication services that go beyond local boundaries (mobile communications, e-mail, video chat, instant messaging) is creating a flexible dimension to individual lifestyles.

Sufficient bandwidth will enable scenarios based on parallel bandwidth-intensive applications that convey the feeling of a virtual presence.

Increase in virtual presence

Nowadays the Internet is increasingly being used as an interactive real-time communication medium. Besides e-mail, we are seeing a growing trend towards services that convey a virtual presence, such as instant messaging and video chat. Such services call for ever higher bandwidths.

Yesterday	Today	Tomorrow
• **Telephony** • **Post**	• **Email** • **Instant messaging** • **Presence information** • **Video chat (low resolution,**	• **Telepresence (HD, low-delay)** • **Web 2.0 (Second Life, YouTube, …)**

Bandwidth →

Telephony:
Audio, 64 Kbps

Video chat (e.g. Skype):
Audio and video, low resolution, with motion delay movement, 300 Kbps (symmetrical)
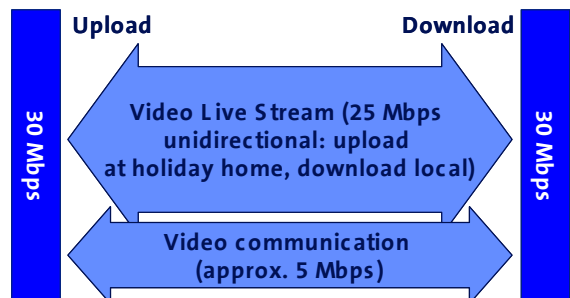
Telepresence:
Audio and video in HD quality, low delay, min. 4 Mbps (symmetrical)

Demand for higher bandwidth

The majority of today's DSL networks are asymmetrical, i.e. they provide more bandwidth for downloading (receiving) than for uploading

(sending). This makes sense for the classic client-server architecture. Broadband connections, however, enable symmetrical, direct connections between users, resulting in much higher-quality resolution and shorter delays for video communication than today's video chat applications.

Moreover, different communication channels can be used simultaneously and integrated in an in-house communication system. Besides video communication, Showcase also offers the option of HD-quality video transmission, for example from a holiday home.

Upload — Download
30 Mbps — 30 Mbps
Video Live Stream (25 Mbps unidirectional: upload at holiday home, download local)
Video communication (approx. 5 Mbps)

The video communication solution shown here uses a webcam with SD-quality resolution. Video and audio are synchronised by delaying the sound. The live stream is generated using a network camera based on 1600x1200 pixels and 24 images, compliant with the HD-720 specification.

Outlook

A natural virtual presence can be achieved by further enhancing picture resolution and reducing the delay to approach the physically possible limits. Larger bandwidths are also supporting new services and quality/performance enhancements for Web 2.0 applications such as Second Life and YouTube.