The Need for Multiple Gigahertz Bandwidths in Future Systems:

It is necessary to look at some of these applications that are currently being worked out, in order to understand the bandwidth requirements for systems currently being designed today.

In the search for which applications will drive the bandwidth requirements for future systems, there are several types of data to be considered. Included with these are audio data, video data, and computer (digital) data. Of these three, the first (audio data) uses by far the least amount of bandwidth.

The next type of application, video, requires much higher bandwidths than voice. Digital Television (DTV) is actually not a single format, but rather a set of different standards for digital video signals. Instantaneous Video on Demand (IVOD) and Near Video on Demand (NVOD) systems are the next steps after digital television is implemented. What VOD is, is a method of letting the user make the decision of which signal will be transmitted to them. Another level of complexity up from VOD is the idea of interactive television. (ITV) This builds on the idea that instead of simply just choosing which video signal the user wants to see, the received video signal will actually be modified based upon input back from the user. Another leap forward in video technology is that of 3-dimensional video. Ultimately, instead of sending a series of video channels corresponding to a set of camera locations, it is desirable to pre-process this information to generate a 3-dimensional model of the scene, and sending this model over the video channel.

The third type of data listed above, computer data, is much less definitive that the others, and has the potential to require even greater bandwidths than video signals. Following the exponential increase in computational power and memory storage in the last 20 years, the need for computers to communicate with each other has also been expanding at an exponential rate.

As technology works out the details of the above systems, The bandwidths of video distribution systems and computer information networks will have to increase in order to keep up with the state of the art.