

“Tech Talk” TV Show

Video Conferencing Episode

The text “VIDEO” is typed on the screen.

A voice says, “...is an adjective from the Latin, videre, meaning vision.”

The text “/TELE” appears next to VIDEO.

A voice says, “...comes from the German, tele, meaning far off.”

The text, “CONFERENCE” appears under VIDEO/TELE.

A voice says, “...comes from the French, conference, or the Middle Latin, Conferencia; means the act of conversing on a serious matter.

Tech talk intro plays.

Susan: Hello and welcome to Tech Talk from the University of Minnesota, your source of information about the technology that surrounds us every day. I’m your host, Susan McKinnell. Here’s the scenario: your daughter and her husband have just had their first child and your first grandchild. Getting to Europe is a little more than difficult these days. A letter is nice and an email is great, a telephone call to hear the child’s healthy hungry cry is better. Pictures are wonderful, but isn’t there some way that you could use that computer in front of you to not only contact them by word but by voice and by live-action camera? Well, there is. Business has used it for years, educators and researchers for almost as long, it’s called videoconferencing and yes; you can do it and it won’t cost an arm and a leg. Some of the terms you’ll hear today include webcam, video card and ISDN. One of our specialists today is David Farmer. He is a senior network design engineer and lead of the network design team for networking and telecommunication design services; part of the Office of Information Technology at the University of Minnesota. Among other duties, he is the technical lead for the University’s Internet II project and related activities including the Northern Lights Gigapop. Hi Dave!

Dave: Hello.

Susan: How are you doing today?

Dave: Just fine.

Susan: Great! Can we start out; what exactly is videoconferencing?

Dave: Well, think of it as a telephone with pictures to start with. You talk to someone and [are] able to see them at the same time.

Susan: Mm. Hmm.

Dave: That’s sort of more on a one-to-one you can also do a whole room full of people.

Susan: Mm. Hmm. I think that the really exciting thing, because the whole room full of people stuff has been going on for a long time, right?

Dave: Yeah.

Susan: But the idea of being one-to-one from my home computer to somebody else's home computer, that seems like sci-fi stuff or it did ten years ago.

Dave: Sure.

Susan: To me.

Dave: Yeah.

Susan: So what is the history of videoconferencing?

Dave: Well, some research that I've done, the first that I would call videoconferencing was done in 1927 as an experiment where AT&T showed television signals across their phone line from New York to Washington D.C. and did a nice little demo and I think we're going to show a web page on that.

Susan: You've got this right up here and we can see the two guys with somewhat antiquated looking equipment.

Dave: Well, yeah. It's 1927.

Susan: Absolutely. Who would have thought that videoconferencing goes back that far?

Dave: Yeah.

Susan: Now, obviously, this did not start being in everyday use immediately.

Dave: No, this is just a demo, this is...

Susan: far ahead of ...

Dave: This is where some of the things that we're going to talk about in a little bit are today.

Susan: So when did videoconferencing become more of an everyday thing for...

Dave: Well, the next thing that I sort of found was picture phone which really isn't videoconferencing but it's a close cousin and it's sort of like what people are doing with cell phones today with picture cell phones.

Susan: Taking a little snapshot.

Dave: Taking little pictures and doing a snapshot but this you could get a picture of who you were talking to.

Susan: So this was just sending a still picture, a photograph in essence.

Dave: Yes. It was a photograph in essence; maybe low bandwidth or slow moving pictures. I haven't actually personally seen it. It's rather old technology.

Susan: And this is what, around 1970?

Dave: This is '62. It was demoed at the World's Fair in 1962. This particular picture is from shortly thereafter.

Susan: Mm. Hmm. That's a great advertisement picture there.

Dave: Yeah. It's a neat piece of, you know, Americana from that time.

Susan: Uh huh. What was the next step after this?

Dave: Well, then, after that is in...it really took off—videoconferencing—in the early 1980's when people did ISDN videoconferencing.

Susan: What does ISDN...

Dave: ISDN is Integrated Switch Digital Network. It's a high-speed digital telephone service that's pretty much on its way out now.

Susan: Okay. But what was the key thing with that; that it was high-speed?

Dave: Well, it was higher speed, but the main key thing was that it was digital. Instead of an analog signal, it was a digital signal and it was a switched...it was pretty much a digital phone signal.

Susan: Okay.

Dave: And you could then use that to send pictures or sound or whatever. That's the whole thing of digital is that they're bits; it doesn't matter what it is.

Susan: Mm. Hmm.

Dave: They would use those, the digital circuit to send video across and so this was started, you know, became popular in business in the early to mid '80's; very expensive at the time. The only people who could afford it would be large, you know, international corporations.

Susan: Mm. Hmm.

Dave: But then saving air travel, they could save a lot of money.

Susan: That's the question; why? Why would business want to use video? What's the great thing about it?

Dave: It is to save on travel.

Susan: Mm. Hmm.

Dave: It's also, I don't know how many of you have ever tried to arrange for a meeting someplace else well, it takes weeks of arrangement to make sure that all the people show up at the right place.

Susan: That they've all got the right time.

Dave: Exactly.

Susan: Absolutely.

Dave: And that they all get on the airplane and go.

Susan: But why can't they just pick up the telephone and have a regular old telephone conference.

Dave: Well, you could do that but what the videoconference delivers is body language and other things that when you're talking about maybe a contract negotiation for millions of dollars of a contract, you know, those things, you know, knowing when somebody is looking concerned that's not something you hear on a telephone.

Susan: Mm. Hmm. I would think that it's useful for other things too, like interviewing new employees.

Dave: Yes.

Susan: Well, any sort of thing where body language is important.

Dave: Anything where the emotional context is an important piece.

Susan: And of course with videoconferencing I suppose you could compare it to a telephone like you compare television to radio.

Dave: Exactly.

Susan: Filling in a huge part of the picture. So in the early '80's things started to take off with the ISDN.

Dave: With ISDN videoconferencing and then that's actually still in somewhat common use today, in the past few years people have been moving versions of that technology onto the internet.

Susan: Mm. Hmm.

Dave: And that has becoming fairly common today to use H.323 videoconferencing which is a...

Susan: Is most of our videoconferencing going through the internet these days?

Dave: I wouldn't say most of it. I would say a lot of it. There is still a lot of it using the ISDN videoconferencing.

Susan: Okay.

Dave: But more and more, sometime in the next, you know it might be as soon as six months, we're close to the point where we'll cross over. But I wouldn't say that we've crossed over yet where most videoconferencing is going out over the internet.

Susan: And is that an advantage, having it over the internet?

Dave: Well, the internet is a ubiquitous technology. It's being delivered to people's homes, most people don't have ISDN phone lines into their homes, a lot of people have high speed broadband it's growing everyday.

Susan: So is this where we're seeing the difference, traditionally, videoconferencing was used a lot in business and used education as well?

Dave: Used very much in education but in fixed, in, you know, distance learning and things like that or bringing in special teachers to, you know, remote locations. But it's fixed locations whereas as videoconferencing comes into the home, there are all sorts of possibilities.

Susan: And not just educational possibilities but personal possibilities as well.

Dave: But think of home learning.

Susan: Mm. Hmm.

Dave: with videoconferencing.

Susan: Absolutely, so you could get up in your pajamas and go to class just in the kitchen or wherever you happen to have your computer.

Dave: Exactly.

Susan: Absolutely. How does this technology work? Just the very basics, of course.

Dave: Well, basically as we had said, you take a picture and you turn it into digital information; bits; ones and zeros. And those are sent across the internet or across a special digital phone line to the other end. And you take both the video and the audio portion of the signal and you send them across. One thing that's very important on the technology side is that actually the audio is very important. And it's more important that the audio get through clearly than the video.

Susan: Because it's very frustrating to hear disjointed audio.

Dave: Yes. Yes.

Susan: Absolutely. Where is this technology going?

Dave: Well, today it's being used for things like virtual field trips and that's sort of the near-term future. These are new things that are happening.

Susan: In schools?

Dave: In schools. Things like virtual fieldtrips taking a class and having a conversation with a field archaeologist in Egypt.

Susan: Okay. Now that sounds worthwhile because it makes it sound like they're not going to get on the school bus and go down there.

Dave: No, no, no. The idea is to take a fieldtrip to someplace that you would never go as an elementary school student at least.

Video

Scientist: And here we are in the Amazon trying out some cacao, chocolate, the way it comes down here.

Susan: That scientist and this one are thousands of miles from these children in an American classroom. But they're joined together by satellite and by internet technologies. What you're looking at is exactly what Dave Farmer was talking about. It was the dream of this man, oceanographer and scientist, Bob Ballard, the same Bob Ballard who discovered the sunken ocean liner, The Titanic. The realization of Ballard's dream allowing students to be with scientists as they did research, wherever that research was occurring is called, "The Jason Expedition." This fifteen-year-old endeavor has teleconferenced children all over America; to the bottom of the ocean, where kids had a

chance to operate and undersea robot; to volcanoes; to South American jungles and they not only saw, they were able to talk to the scientists.

Video

Scientist: We're going to go ahead and take another question.

Kelly Wetzel, age 11: How would our earth be affected if the Amazon River were to dry up?

Scientist: If the Amazon River were to dry up, we'd be in deep trouble.

Susan: Students converge in one location where there is a satellite downlink. It is there that they are able to ask questions on the face-to-face link up. After the program, students can ask questions of the researchers in the safety and comfort of their own classrooms via the internet.

Video

Scientist: In our lab at the research station we don't have electricity so we have to look at everything with flashlight microscopes but in actual fact there is a pollywog in there, I can see.

Susan: This is teleconferencing on a massive, world-wide scale. Ballard believes that, quote, "Taking advantage of cutting edge communications technology is helping to revolutionize the way that science is taught."

Video

Scientist: Good morning and welcome to this year's Jason Project.

Dave: These are things that are sort of where we're going today, kind of, happening. Further into the future is we're trying...starting to merge videoconferencing with virtual reality. Virtual reality...think of Star Trek "Holo-deck"

Susan: Where you go into this made-up environment, everything is false but it looks real.

Dave: Exactly.

Susan: Mm. Hmm.

Dave: And we're not there yet, but there are people doing, using what we have for today's technology to do you know figure out how to make these work as we move forward.

Susan: We've got a little example of that in here don't we?

Dave: Yes.

Susan: Office of the future.

Dave: Office of the future.

Susan: Mm. Hmm.

Dave: So you see a couple of pictures here, I'm not sure how well they show up for the people on the television, but you'll see a person sitting at a work station that has other people virtually at the work station with them.

Susan: He's just in the corner of his office, but it sure looks like he's got someone sitting across from him and someone over here and I assume these people are in completely different locations.

Dave: Exactly.

Susan: Mm. Hmm.

Dave: They could be across the world even. Although videoconferencing still has a bit of a problem with going across the world because we like to sleep on our own schedules.

Susan: Oh. Yeah. That's a little bit of a problem; making people get up in the middle of the night in their pajamas.

Dave: So yeah at two o'clock in the morning...

Susan: Well, David, thank you so much this is such exciting technology. Thanks for being here with us today. I think I'm going to take advantage and check out what's going on at home right now.

Dave: Okay.

Susan uses the laptop to videoconference to her family at her home.

Susan: Hey Charles!

Charles: Hi!

Susan: How are you guys doing?

Charles: Ah, we thought you were taping today.

Susan: I just wanted to take a few minutes to see how you guys were doing, though.

Charles: Oh, we're doing well.

Susan: That's great. Hey there, Louis! Arthur, are you having a good time off of school today?

Arthur: Yeah.

Susan: Oh, that's good. Are you guys going to stop by the library later on?

Charles: Yes, we need to take those books back.

Susan: Good, if you could pick up a couple videos that would be great too.

Charles: Okay.

Susan: Okay. I'll see you guys when I get home, okay?

Charles: Good to talk to you. Bye-bye.

Susan: Yeah, Bye-bye. See you later.

Susan: **Lance** Cunningham is here to show us how to set up what I just showed you.

Lance has been with the U's Digital Media Center ever since he graduated, two years ago with a degree in Scientific and Technical Communication. He advises faculty on the integration of digital video and audio in courses and presentations. Thanks for being here with us.

Lance: It's good to be here.

Susan: So what do we need, I see we have lots of stuff here, in order to do videoconferencing.

Lance: Well, first of all, of course, you need a computer.

Susan: The basics.

Lance: Right. Basically any computer that was purchased in the last couple of years is definitely more than enough that is needed. The biggest thing is a decent video card and also a sound card to handle the audio back and forth.

Susan: Now, just to make it even a little more basic, does every computer come with a video card?

Lance: Every computer does come with a video card because it controls the monitor signal so...

Susan: Okay, what is showing up on the monitor?

Lance: Yep.

Susan: And how do we know that we've got a decent one?

Lance: The basic thing is the video memory. To do videoconferencing you need least 16 megabytes; anything within the last ten years would probably have a video card with 16 megabytes or more in it.

Susan: Sounds good. Okay. And as far as sound, as long as it has a jack to plug in and a microphone type-thing is that the deal?

Lance: Right. A lot of laptops will have a built-in microphone.

Susan: Okay.

Lance: There is also on most laptops and home computers the sound card will have an input jack to plug in an external microphone if you want to use that.

Susan: Okay; sounds good. So, we've got our computer, now what else do we need?

Lance: Well, for doing videoconferencing you need something to put video into the computer. So you are going to want a video camera of some sort.

Susan: Mm. Hmm.

Lance: The basic concept that a lot of people use is a simple web camera.

Susan: Okay. That's a cute little thing.

Lance: Yeah. Right here we have a simple web camera made by Logitech it's called a Quick Cam Pro 4000.

Susan: Okay.

Lance: I'd use a simple USB so it plugs into a USB port right into the back of computer or the back of your laptop.

Susan: And I think that every computer nowadays is shipping with USB ports.

Lance: Right.

Susan: Yep. And how much about these do...I know there is a wide variety. About how much are webcams?

Lance: This particular unit runs around 80 to 90 dollars. Webcams vary pretty greatly in price anywhere down to \$20 all the way up to \$100 and beyond.

Susan: Okay and for most home users, are they going to be satisfied with the 20 dollar version?

Lance: The difference between the 20 dollar version and the ones closer to a hundred dollars is usually; sometimes the resolution isn't quite as good so you would have maybe a little more pixilated image.

Susan: It would be a little more choppy a little [grainier.]

Lance: Right. Or the light response might not be quite as good so you might not have as accurate of color.

Susan: Mm. Hmm.

Lance: Some of the other differences in the cheaper ones is that they don't have built-in microphones. This model, for example, has a built in microphone so you wouldn't need to plug in another microphone to do videoconferencing.

Susan: Great. Is this the only kind of way you can get the video into your computer?

Lance: No it's not. Actually with the new digital video camcorders you can actually plug one of those into a firewire port and then a lot of videoconferencing software can utilize that as well.

Susan: So if you just have your own digital video camera then you should be good without purchasing a separate webcam.

Lance: Right.

Susan: Great. And I see you've also got a headset over there; is that necessary?

Lance: I do. It's not absolutely necessary. This particular one looks just like a pair of headphones but also has a microphone attached on a little boom arm here. In some instances that is recommended you can use the microphone that is built into the web camera and some speakers there are some situations where you'd rather use headphones and a microphone like this instead. An example of that would be because when audio is coming from the other people through the speakers it can feed back through the microphone and you can hear yourself like a couple seconds later which makes people a little uncomfortable and that sort of thing.

Susan: It would be a little hard to talk over yourself when you are hearing yourself at the same time.

Lance: Right. You can also get some feedback like squeals that aren't very pleasant.

Susan: Yeah. I wouldn't think that'd be much fun. What I also think that might be useful when you're in kind of a noisy situation or some sort of situation where there's a lot of background noise, that type of thing.

Lance: Right.

Susan: Great. And these head sets are really relatively inexpensive right, isn't that the case?

Lance: Right. They are. They also range between 10 and 50 dollars.

Susan: Is there anything in particular that we have to watch out for in order to put that into the computer or is there just a standard?

Lance: Not really. The headsets like this come with two different plugs. They look similar; one is black, one is red. The black one simply plugs into where you normally plug in your headphones into your computer. The red one is for the microphone, so that would plug into the microphone input jack on your soundcard.

Susan: And your computer is always smart enough to have those close by, right?

Lance: Usually.

Susan: Ha Ha! One hopes so.

Lance: Right.

Susan: Okay, so now you've got the hardware; it's really not that expensive once you have the computer. What sort of software do you need for videoconferencing?

Lance: Well, these days, there is actually a wide variety of different kinds of software. There are some that do video only; one-to-one. Some of those are like Yahoo; Instant Messenger has a webcam component.

Susan: Video only; so it's not going to be sending any sound?

Lance: Right.

Susan: Okay.

Lance: So you can just kind of watch each other while you're chatting, for example.

Susan: While you're chatting with text.

Lance: Right.

Susan: Absolutely.

Lance: Some of the other ones are iChat for the Macintosh.

Susan: And iChat is what I was using just a minute ago with my family.

Lance: That is right. That does allow for video and audio both ways but that is also one to one; you can't do multiple people at once.

Susan: Okay.

Lance: Some of the others...

Susan: Windows has something similar to iChat.

Lance: Right. Windows has a product called NetMeeting which is also a one-to-one audio and video. NetMeeting also has the option to...if you have the access to what's called NetMeeting Server which would allow several people to connect together and have a conversation between multiple places.

Susan: But that would be a separate purchase.

Lance: It wouldn't necessarily be a separate purchase. It wouldn't necessarily be something that someone would set up on their own. It would be more like if a company or a corporation would have one of those set up or maybe through your ISP, they might offer access to a NetMeeting Server.

Susan: Speaking of ISPs, Internet Service Providers, is there anything I need from mine in order to do videoconferencing?

Lance: No. You would want to use a broadband connection, I would recommend.

Susan: Not just a basic telephone modem connection.

Lance: Right.

Susan: That's way too slow.

Lance: There is some basic conferencing you can do with a dial-up modem with audio only and maybe only a still frame being changed maybe every 10-15 seconds, you can do that for dial-up sometimes however DSL connection, cable modem and so forth would allow you to do more of the real time videoconferencing...see motion.

Susan: Yeah, get more into the video aspect of it.

Lance: Right.

Susan: Great. Now just a little bit more about the software; I know that iChat, NetMeeting, Yahoo; those are all free. Can I be on my Macintosh with iChat and talk to you with NetMeeting?

Lance: No you cannot. Almost all videoconferencing software requires that you be using the same software. iChat is Macintosh only. Yahoo, you can use on Macs and PCs.

Susan: So in order to bridge the world between Macintosh and Windows, you have to both be using Yahoo or something else.

Lance: Right.

Susan: But not iChat or NetMeeting.

Lance: Right.

Susan: So is there...So, that might be one reason you want to pay for something, except Yahoo is a free option. Is there any other reason that you might want to purchase some sort of videoconferencing software, I know that are some out there.

Lance: There are some options; companies that offer internet-based videoconferencing for a fee; some of those might—will offer you a slightly better quality of service—a little more reliable connections, that sort of thing.

Susan: Okay. So that you're not cut off in the middle?

Lance: Right.

Susan: Or does it actually improve the picture quality as well as a higher quality, more guaranteed quality service.

Lance: Right.

Susan: Okay, great. One other thing that I wanted to get into this whole videoconferencing thing is new to a lot of people and I know it's different than talking on a telephone. It's different from talking on email or whatever. There are always some etiquette issues, aren't there; with a new technology; with a new way of communicating?

Lance: There are. There are some things that you want to keep in mind that will actually help your video signal transmit better. One of the things is having a simple background behind you. You don't want to have a bunch of books or different colors behind you, like maybe even just a simple white background so the video signal doesn't have to transmit as much information. Another thing is sometimes with internet-based

videoconferencing—there is a bit of a lag which means that it takes a second or two for that audio to get to you and back to them so sometimes it's helpful when you're talking to just have a little patience and wait a second or two before you start talking otherwise you'd interrupt each other a lot.

Susan: So you don't want to be talking on top of everyone.

Lance: Right.

Susan: Well, thank you so much for being here with us today, **Lance**.

Lance: You're welcome.

Susan: Well, that's our show on videoconferencing. It's not as difficult as it appears, but a refresher is always welcome. So, here is today's For Your Files.

Dave Farmer, a design engineer at The U explained videoconferencing as...

Dave: ... [T]hink of it as a telephone with pictures... you take a picture and you turn it into digital information; bits: ones and zeros. And those are sent across the internet or across a special digital phone line to the other end. And you take both the video and the audio portion of the signal and you send them across.

Susan: Dave feels there are definite advantages to using videoconferencing.

Dave: what the videoconference delivers is body language...the emotional context is an important piece...you know, knowing when somebody is looking concerned that's not something you hear on a telephone.

Lance Cunningham, Technology Specialist gave us the details on what we'll need in order to do videoconferencing from our home computer.

Lance: Basically any computer that was purchased in the last couple of years is definitely more than enough that is needed. The biggest thing is a decent video card and also a sound card to handle the audio back and forth...for doing videoconferencing you need something to put video into the computer. So you are going to want a video camera of some sort.

Susan: When purchasing a webcam, Lance says there are differences between the low and high cost models.

Lance: The difference between the 20 dollar version and the ones closer to a hundred dollars is usually; sometimes the resolution isn't quite as good so you would have maybe a little more pixilated image.

Susan: It would be a little more choppy, a little [grainier.]

Lance: Right. Or the light response might not be quite as good so you might not have as accurate of color.

Susan: Mm. Hmm.

Lance: Some of the other differences in the cheaper ones is that they don't have built-in microphones.

Susan: **Lance** says there is a wide variety of software available for videoconferencing, some of which is free, however...

Lance: Almost all videoconferencing software requires that you be using the same software.

Susan: If you missed any portion of our program on videoconferencing or want to see it all again stop by our website. All of the programs we've done so far including this one are right there for your viewing. Our address is techtalk.umn.edu. And if you have a question about videoconferencing just post it on our website and we'll have one of our specialists answer it. Next week we're going to talk about accessibility. Can, in fact, anyone use not only the computer but the accompanying devices and the internet itself? Technology is changing the way all of us not only interact with our surroundings but interact with the people who surround us. Please join us. Until then, thanks for watching. I'm Susan McKinnell.

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