

ProShare brings PC users face to face

Although getting the requisite ISDN service may be difficult, Intel's videoconferencing software is a boon for PC users who need to communicate and share data.

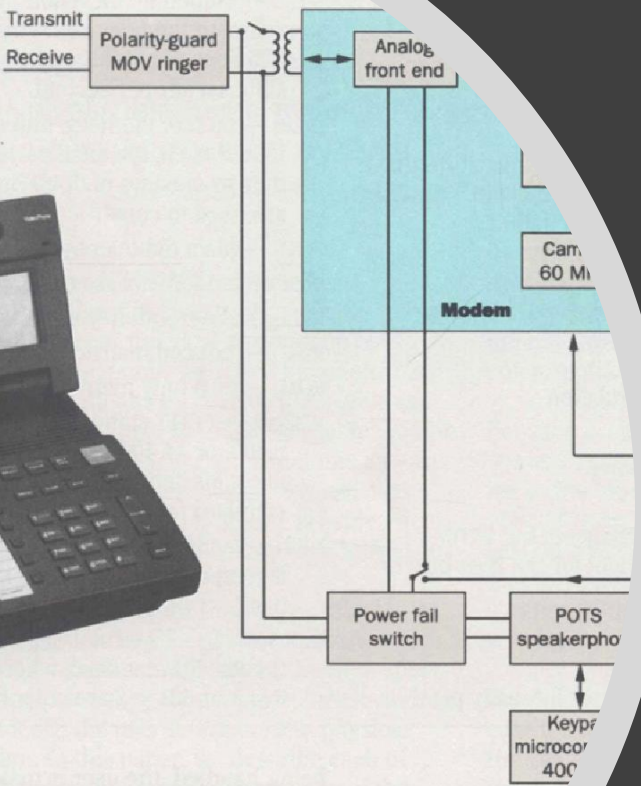
By KRISTIN MARKS

Operations looking for PC-based video and document sharing tools to bridge the geographic divide that often separates employees have one option to turn to: ProShare. This software, developed by Intel's Personal Computing Division, is designed to let users share their screens, documents, and data over a videoconferencing connection. It's a boon for PC users who need to communicate and share data.

Intel is looking to put to alleviate these difficulties. It has long been a leader in the field, and its software is designed to let users share their screens, documents, and data over a videoconferencing connection. It's a boon for PC users who need to communicate and share data.

Intel's ProShare software is designed to let users share their screens, documents, and data over a videoconferencing connection. It's a boon for PC users who need to communicate and share data.

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Video Conferencing: Silicon Valley's 50+ Year History

An IEEE Silicon Valley Technology History Committee Event
July 22nd, 2020, 1:30 to 2:30 PM PDT
via video conference, of course



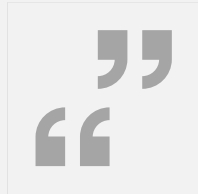
(a)

(b)

Agenda



System diagram



A brief history from the 1870s to the 1970s



Silicon Valley's
Influence

Intel
Compression Labs
8x8

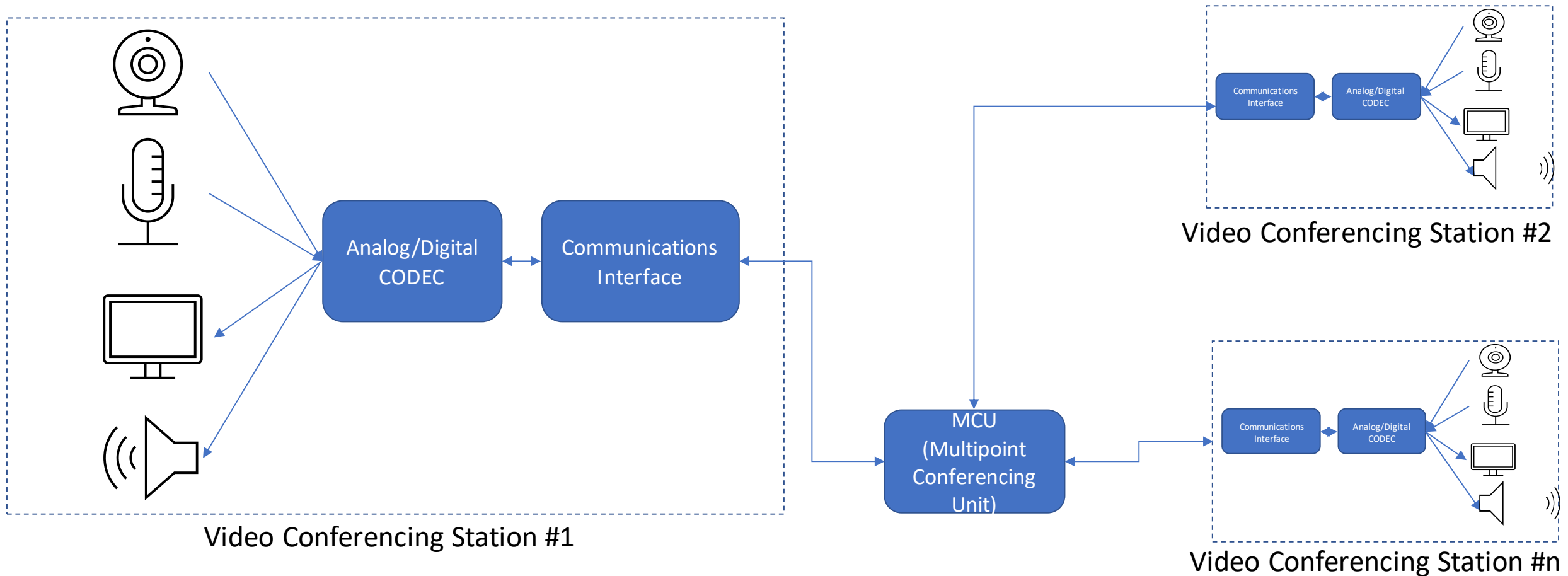
High-Level Video Conferencing Block Diagram

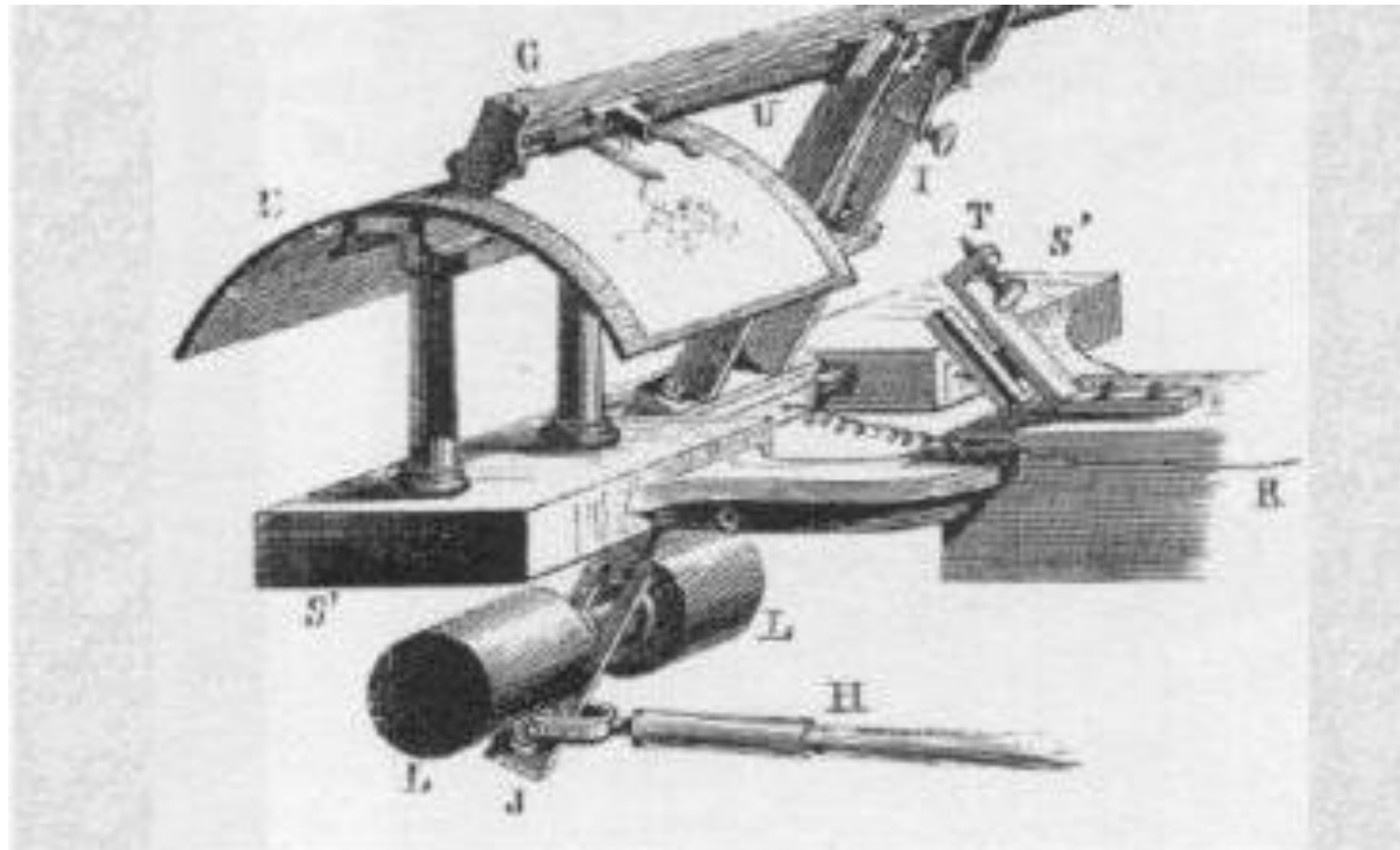
Video/Audio
Capture & Display

Compression
Decompression

Network
Interface

Communications
Network(s)

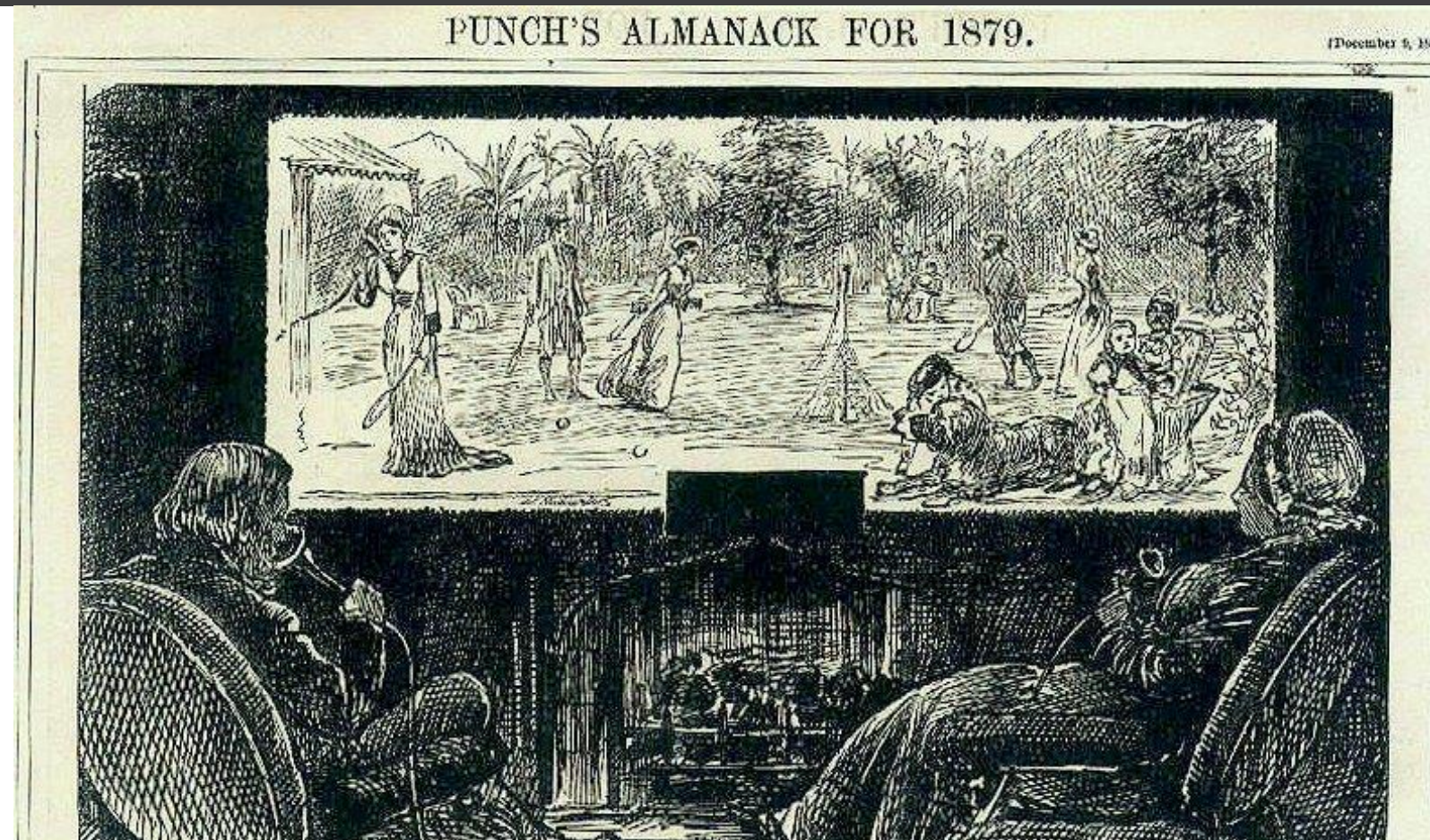




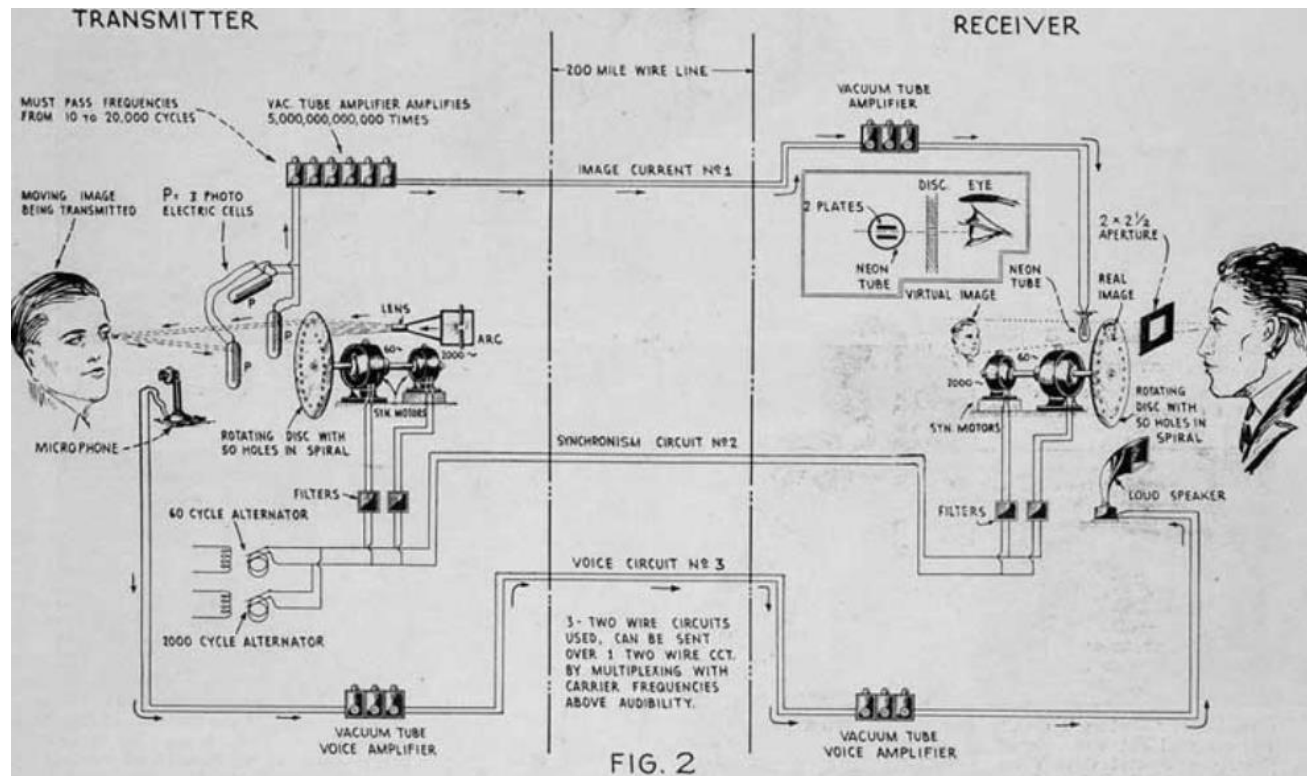
L. Figuiet "*Les Merveilles de la Science*", Paris, 1866

1860s
Pantelegraph
The First Fax
Machine

Telephonoscope Concept - 1879



Block Diagram of 1927 Bell 1-Way Video, 2-Way Audio



AT&T's Post-War Efforts to 1978

After the transistor was invented at Bell Labs in 1948, an AT&T electrical engineer predicted:

“...whenever a baby is born anywhere in the world, he is given at birth a... telephone number for life [and]... a watch-like device with ten little buttons on one side and a screen on the other... when he wishes to talk with anyone in the world, he will pull out the device and [call] his friend. Then turning the device over, he will hear the voice of his friend and see his face on the screen, in color and in three dimensions. If he does not see and hear him he will know that the friend is dead.”

—Harold Osborne, 1948 [20]



Western Electric
crossing a telephone
with a TV set.



When you're in a hurry, call through a Western Electric set, one of the communications of the future. Only it will let you see who you're talking to, and let them see you.

Western Electric built everything you see here. Western Electric is working hard to build the future.

A Mathematical Theory of Communication

By C. E. SHANNON

INTRODUCTION

THE recent development of various methods of modulation such as PCM and PPM which exchange bandwidth for signal-to-noise ratio has intensified the interest in a general theory of communication. A basis for such a theory is contained in the important papers of Nyquist¹ and Hartley² on this subject. In the present paper we will extend the theory to include a number of new factors, in particular the effect of noise in the channel, and the savings possible due to the statistical structure of the original message and due to the nature of the final destination of the information.

The fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point. Frequently the messages have *meaning*; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic

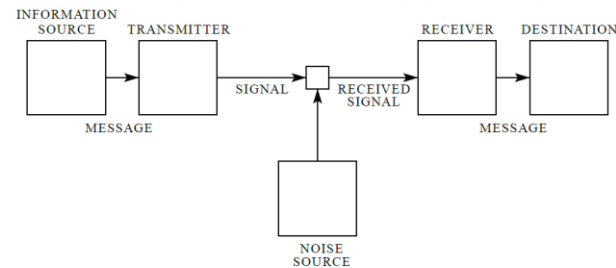


Fig. 1—Schematic diagram of a general communication system.



Enter the 1970s and Silicon Valley....Some of the Silicon Valley Ties to Video Conferencing

1970s – 1990s (today's discussion)

2000s (future discussion)

Ataritel Mitsubishi



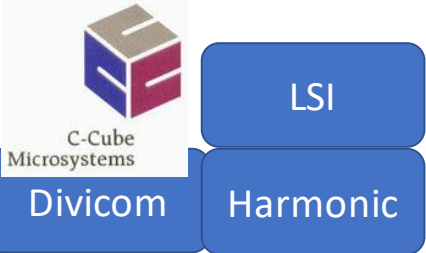
CLI AT&T 2500 8x8



Sarnoff Intel



C-Cube Microsystems LSI Divicom Harmonic




WebEx Cisco Zoom

Apple BlueJeans Verizon

WebRTC Google 8x8 jitsi

Some uses of CATV technology in land mobile communications
F.A. Genocchio
31st IEEE Vehicular Technology Conference
Year: 1981 | Volume: 31 | Conference Paper | Publisher: IEEE
Cited by: Papers (3)
Abstract (1015 kb)



Many land mobile system designers and users do not realize that CATV technology can provide a means of solving system problems. This paper will describe how CATV equipment and networks can be used to expand traditional land mobile services and to encourage designers to explore uses for CATV technology in innovative system development. Off the shelf hardware, including CATV amplifiers used for ampl... [Show More](#)

PictureTel Polycom

FOR IMMEDIATE RELEASE
For more information contact: Corporate Marketing at IVCI 631-273-5800
SOURCE: Polycom, Inc.
Polycom to Acquire PictureTel Corporation for Approximately \$362 Million in Stock and Cash
Agreement to Enable Significant Expansion of Video Communications Industry
MILPITAS, Calif. and ANDOVER, Mass., May 24 /PRNewswire- Polycom®, Inc., a worldwide leader in broadband communications solutions, and PictureTel Corporation, a worldwide leader in integrated collaboration, today announced an agreement under which Polycom will acquire PictureTel.
Under the terms of the agreement, Polycom will announce an offer to purchase all of the outstanding shares

Note: Company names depicted above intended to show relationships.

- Some were customer-supplier
- Some were acquisition paths
- Some were technology
- Some represent where the founder(s) worked prior to starting a particular company

INSIDE TRACK

Shocker at the **CD-ROM Conference**; **DVI blows CD-I away**. Phillips loses out; Microsoft cashes in.

Date: March 2-6. **Place:** Seattle. **Event:** **CD-ROM Conference**. **Sponsor:** Microsoft. **Theme:** Confusion, part II.

It was the same as last year: confusion, head scratching, shoulder shrugging, handwringing, and itchy knees. It seems that the entire **CD-ROM** scene is turning into a soap opera. It's now obvious (after this year's affair) that **breakthrough technologies** that "make it a whole new ball game" will be released

the whole town was aware of the RCA stuff. I guess the Frenchmen were too busy checking the stock price of another fine Thompson investment—Fortune Systems.

Facts: The two-chip RCA video display processors can turn a plain-vanilla compact disk into a device that pumps out real-time full-color **action-packed video** with digital sound. Seventy-two minutes worth to be exact. Phillips hoped to get 7 or so minutes of real-time video

So expect nothing to come of the RCA chips and expect the confusion in the business to remain, thus allowing the clunky **CD-ROM** standard to gain the foothold it needs to survive. More moola for Microsoft.

You'll never get anyone to admit that the game is nothing more than jockeying for quick bucks. I ask about the **DVI**: "Is it a CD-I killer?" "I wouldn't want to be quoted saying that," said Gates smiling. "Is it a CD-I killer?" "I wouldn't want to be quoted saying that," said Arthur Kaiman, RCA Digital Products Lab Director, smiling and **obviously reading from the same script**.

Okay, I'll say it. It's a **CD-I killer**.



Dave House – Ex-Intel

COMEX PREVIEW: SUBNOTEBOOK SPLASH
Epson and Toshiba lead charge with lightweight 486 portables

By Neil Banerjee
A portable PC blitz at Comdex later this month will hit just in time for users frustrated with the current crop of subnotebooks. Epson America Inc. and Toshiba America Information Systems Inc. will lead the way with new lightweight 486 models, and Hewlett-Packard Co. will kick its Omnibook up to the 486 level, sources close to those companies said.

Epson will showcase at the Las Vegas trade show its ActionNote 700—a full-featured color notebook light enough to compete against subnotebooks, sources said. The Torrance, Calif., company also will demonstrate a color notebook, the ActionNote 508C, priced to compete against monochrome portables, the sources said.

Desktop videoconferencing edges closer to prime time
Wave of new products bringing technology within users' reach

By Eric Schreiber and Stephen Landwehr
The march of technology is moving videoconferencing from paraded boardrooms to the desktops of end users. A handful of small companies, capitalizing on lowest hardware and high-bandwidth networking, aim to make desktop videoconferencing a tantalizing choice for information systems managers, with hardware/software systems priced as low as \$2,000 per user.

Get the picture?
Key videoconferencing issues for users

- Number of users supported
- Compression
- Quality of video
- Compatibility with standards
- LAN and WAN support
- Price

ProShare, a videoconferencing software from the regional Bell holding company, helps speed nationwide deployment of ISDN technology. In addition, users who face resistant phone company representatives — ours laughed at us when we asked for an ISDN line — can call the Intel ISDN Connectivity Information Center a 800 number to find out if ISDN is available in their area.

Unfortunately, the infrastructure necessary to support desktop videoconferencing isn't in place yet. ProShare requires an Integrated Services Digital Network line to carry on a videoconference, and this is where many potential users will confront their first obstacle. Getting this digital phone line isn't necessarily easy, as our experience indicates.

We went to three different states in the Northeast before we got a line, finally ending up at OmniTech Corporate Solutions in Teaneck, N.J., a systems integrator specializing in communications for the corporate market. Rumor has it that getting ISDN is easier in other parts of the country. (Maybe New York isn't the center

of the phone companies. Other companies, such as ShareVision Inc., VTEL Corp., Northern Telecom Ltd., NCR, IBM, and Sun Microsystems Inc., already offer or are developing PC-based videoconferencing packages. At the same time, established vendors are starting to offer downsized versions of their more expensive board-room products.

For example, Compression Labs Inc., of San Jose, Calif., began shipping its **ProShare** software, and Intel will ship its **Windows-on-Unit** software this month, but it may have significant bugs. **Page 8**

ProShare brings PC users face to face

Although getting the requisite **ISDN** service may be difficult, Intel's videoconferencing software is a boon for PC users who need to communicate and share data.

Organizations looking for PC-based video and document conferencing tools to bridge the geographic divide that often separate employees have someplace to turn. We recently spent some time using Intel Corp.'s **ProShare Personal Conferencing Video System 200** product and were quite impressed with its capabilities. Its interface is close to impeccable, and the documentation, which isn't even needed, is easy to read. The hardware, in turn, is well designed and a snap to install.

Users simply need to give their area codes and the first three digits of their phone numbers, and Intel will tell them if their central office supports ISDN. Users who live in Bell Atlantic Corp. or Pacific Bell territory have the best hope for ISDN connectivity, while NYNEX Corp. customers have very little chance of obtaining it.

Users who get by this first hurdle must order the Intel Blue version of Basic Rate service. Sites may want to consider ordering the ISDN Ordering and Provisioning document (Document 810) from Intel's FAX-back System by calling 800-525-3019. This document gives every detail of the specification and is worth ordering for the glossary of terms alone. It also has detailed instructions for placing an ISDN order.

Then, of course, there's the pricing. We know of one firm that waited two months before its ISDN order was fulfilled. When it was, the price was twice the original quote.

ProShare also requires a Network Termination Type 1 (NT-1) box, which, as far as the phone company is concerned, serves as the ISDN line's termination point. As far as ProShare is concerned, it's simply the box that the ISDN card is plugged into. NT-1 boxes also allow the phone company to provide line maintenance and loopback testing.

Pricing for NT-1 boxes are not uniform. For instance, Northern Telecom, Inc. offers one for \$130, while AT&T's costs \$138. The Intel FAX-back document (Document 810) contains NT-1 ordering information.

Intel Corp.
5200 North Elm
Young Professional
Hillsboro, Ore. 97124
(800) 538-3373

ProShare is well put together

ProShare is well put together

Intel Inside the Computer Video Phone

Eric Dorsey, Ex-CLI



Key Dates in the History of Video Conferencing

- 1978 – Compression Labs (CLI) is founded by Wen Chen
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- 1986 – PictureTel releases product based on vector quantization selling for \$80K
- 1988 – CLI releases Rembrandt II for \$30K using TI C30 DSPs
- 1991 – CLI releases Rembrandt II/VP using VPC from IIT (8x8)
- 1992 – AT&T and CLI release 2500 Analog Videophone using 19.2Kbps modem
- 1997 – Vtel buys CLI
- 2001 – Polycom buys PictureTel
- 2006 – Cisco introduces Telepresence product line



Compression Labs Rembrandt II/VP and AT&T 2500



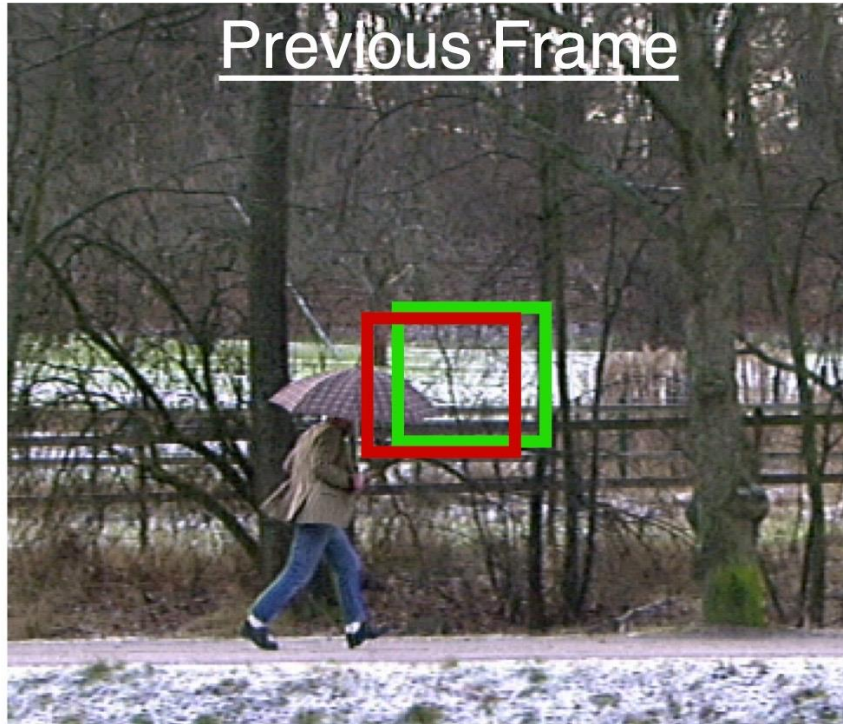
Key Dates in the History of Video Compression

- 1988 – H.261 – 1st video standard used in video conferencing created by CCITT using the DCT and entropy encoding with resolution of 352x288 at 30FPS
- 1995 – H.262 – Created for MPEG2 broadcast video and DVDs. Supports both SD and HD resolutions and multiple frame rates.
- 1996 – H.263 - Low latency codec for broadband use with resolutions similar to H.262.
- 2003 – H.264/AVC – Also known as MPEG4. Used in VC, broadcast and broadband applications. Supports 4K resolution and Blu Ray DVD. Has wider color gamut and color depth and supports 4x4 DCTs.
- 2013 – H.265 – Also known as HEVC. Supports up to 8K TVs and used by 4K Blu Ray players (UHD)
- 2019 – AV1 – Open Source video standard derived from VP10 work from Google.
- 2020 – H.266 – Ratified in July 2020 – supports fractional frame rates up to 120 FPS, HDR up to 10000 nits and wider color gamut

Major Components of Video Compression

- Differential encoding between frames
 - Break frames up into blocks and encode differences in frequency domain
- Motion Estimation
 - Track motion between frames to minimize differential error
- DCT (Discrete Cosine Transform)
 - Essentially a 2-dimension FFT, flips pixels from spatial domain into frequency domain
- Entropy encoding
 - Lossless encoding scheme based on Shannon's Source Coding Theorem. The length of each codeword is approximately proportional to the negative logarithm of the probability of occurrence of that codeword.

Motion Estimation



Measurement window is compared with a shifted block of pixels in the other image, to determine the best match



Block of pixels is selected as a measurement window



DCT Encoding

An example of an encoded 8x8 FDCT block:

$$\begin{bmatrix} -415 & -30 & -61 & 27 & 56 & -20 & -2 & 0 \\ 4 & -22 & -61 & 10 & 13 & -7 & -9 & 5 \\ -47 & 7 & 77 & -25 & -29 & 10 & 5 & -6 \\ -49 & 12 & 34 & -15 & -10 & 6 & 2 & 2 \\ 12 & -7 & -13 & -4 & -2 & 2 & -3 & 3 \\ -8 & 3 & 2 & -6 & -2 & 1 & 4 & 2 \\ -1 & 0 & 0 & -2 & -1 & -3 & 4 & -1 \\ 0 & 0 & -1 & -4 & -1 & 0 & 1 & 2 \end{bmatrix}$$

An example quantized DCT block:

$$\begin{bmatrix} -26 & -3 & -6 & 2 & 2 & -1 & 0 & 0 \\ 0 & -2 & -4 & 1 & 1 & 0 & 0 & 0 \\ -3 & 1 & 5 & -1 & -1 & 0 & 0 & 0 \\ -4 & 1 & 2 & -1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

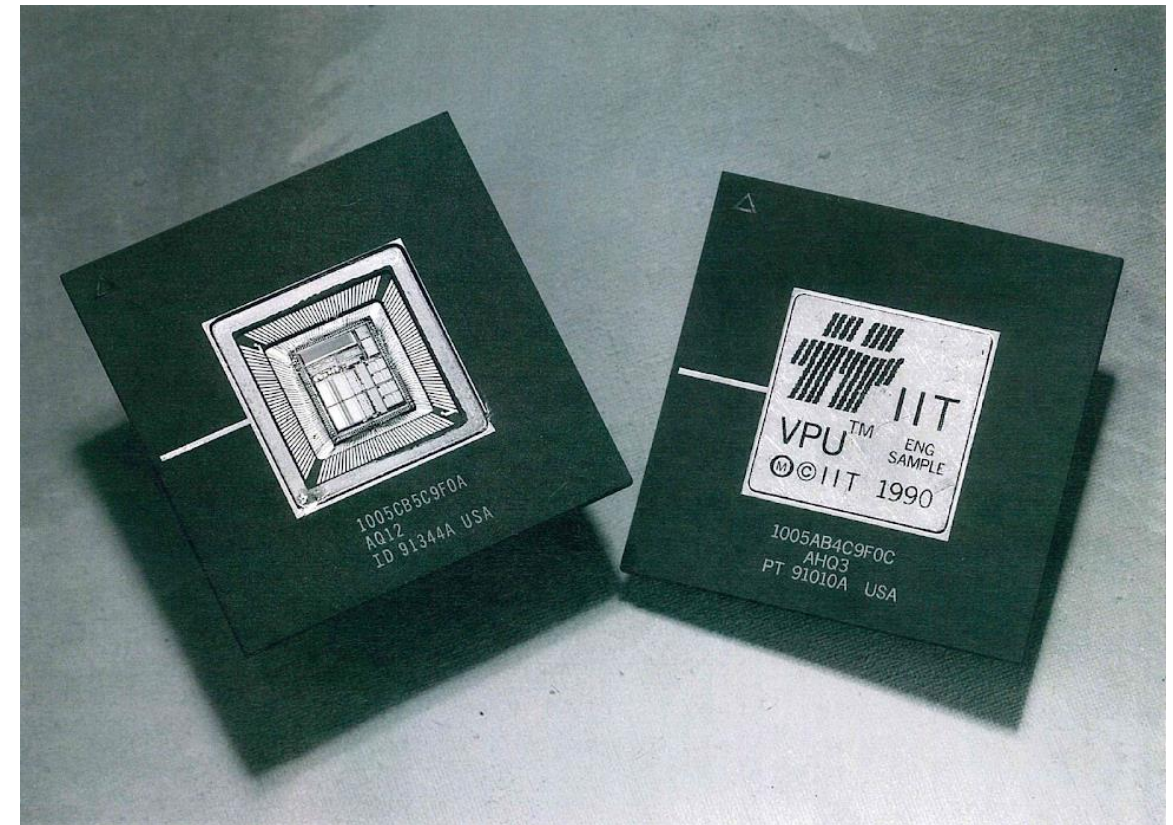
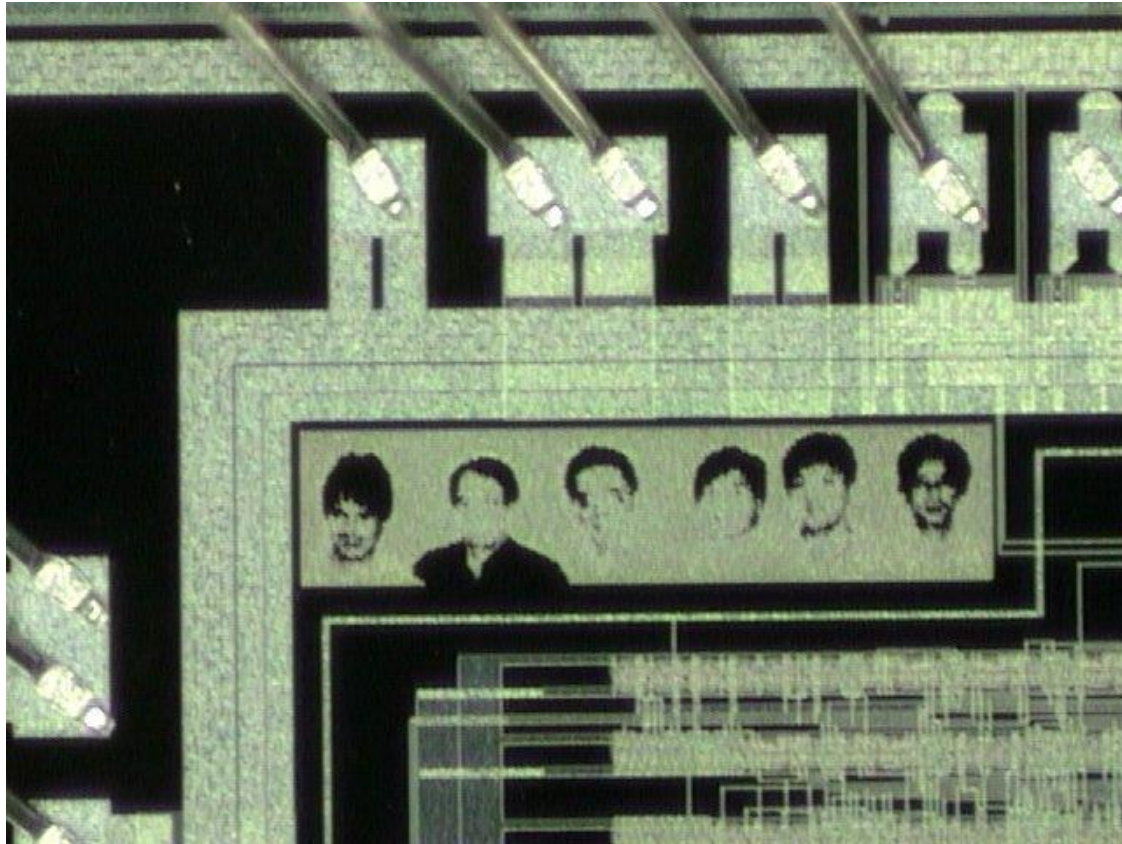
Bryan Martin, 8x8



Compression
Labs
Rembrandt
II/VP



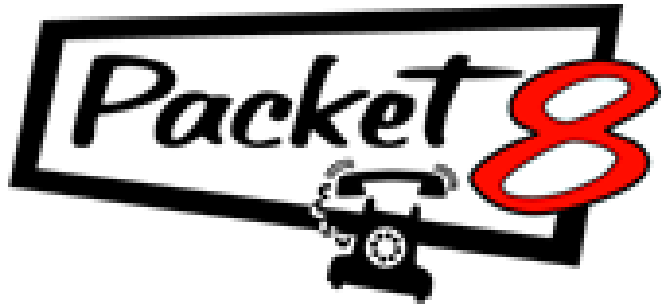
Original Vision Processor chip (1990)



VCP chip which powered 8x8 ViaTV devices (1996)

- 8x8's first attempt to consumerize videophone technology – ViaTV set top box
- \$499 per videophone
- Full H.324 stack (PSTN modem), use existing TV and telephone for picture/audio
- H.263 Annex contributions to optimize video quality at low bandwidths





IP-based Videophones & VoIP (2000)



- 2003 - Microsoft announces Live Communications Server would only support SIP (Session Initiation Protocol)
- 2-way voice (Voice-over-IP) services launch with 8x8 and Vonage based on SIP (though video was always supported, just not used)
- Business models move to recurring Software-as-a-Service (SaaS) as opposed to hardware sales model
- Over the last 18 years voice and video have continuously benefited from:
 - Improved compute (move from hardware to software to WebRTC and public-cloud video bridges)
 - Improved transport (from PSTN/dialup to DSL to WiFi/Fiber)



jitsi.org (2006) and community.jitsi.org (2020)

- Public-cloud has enabled “reservation-less” video conferencing (see meet.jit.si)
- Pandemic has focused modern video communications on end-to-end encryption and security
- Jitsi.org – largest open source videoconferencing developer community (8x8 is Jitsi’s largest supporter)
- Continue to reimagine video collaboration needs in the new world of work/teach/play from anywhere

Join the weekly Jitsi Community video call • Mondays @ 10:30am CT [Details](#)

jitsi

Docs Projects Blog Community About [Download](#)

powered by 8x8

More secure, more flexible, and completely free video conferencing

[Learn more](#) [See it in Action! Start a Meeting](#)

This is what end-to-end encryption should look like!
APRIL 12, 2020

Work in Progress! Some of the people watching our repos have been asking us what the deal was with this little new HIPS project (which by the way stands for Hidden In Plain Sight). Well, [...] [Read more](#)

Jitsi Meet features update, April 2020
APRIL 7, 2020

Hello Fellow Jitsters! While we work on making sure our infrastructure is able to cope with the recent surge in traffic, we have managed to ship some features we think you may like, let's go! [...] [Read more](#)

Jitsi Meet Security & Privacy
APRIL 3, 2020

Jitsi Meet Security & Privacy For us Fellow Jitsters, developing a platform our users can rely on is the most important thing. That means, amongst other things, we are very mindful of the security and [...] [Read more](#)

[Read all Blog articles](#)

Question and Answer

From Personal Conferencing Work Group to h.323

"The 100-plus vendors that are members of Intel Corp.'s desktop videoconferencing consortium last week proclaimed they are serious about making their bevy of budding products interoperate with each other and H.320-based group conferencing systems." - David J. Buerger, Oct. 17, 1994

Back to Reality

IBM waxes a management Karat; video vendors wave their own flag.

BY DAVID J. BUERGER

I don't know about you but I'm getting tired of hearing about network management products that do little more than monitor network screwups. It's one thing to know when something breaks; fixing it is another. And that usually requires Joe Network Manager to leave his console-crammed war room and go to the trouble spot.

Often the biggest hassles are caused by glitches on one of the world's 170 million PCs, especially when it's part of a heterogeneous network. It's tough to diagnose PC problems because most are hidden from enterprise management platforms.

A slew of LAN management software vendors will read that and say, "Not with our product!" Trouble is, most require your network to be all Novell NetWare — and that just doesn't work in typical large environments.

What might work — possibly as soon as next year — is an emerging standard called the Desktop Management Interface from the Desktop Management Task Force. The DMTF has 75 formal members and 350 participating vendors.

Here's how the DMI will work. Vendors will embed software that complies with the spec in their products, such as LAN adapters, servers, printers, modems and applications. Service layer software running in the PC (using about 14K of memory) will pass operating information to a Management Information Format database, or MIF. That data is then passed to the management platform where applications allow net managers to monitor and manage the devices or applications.

Sounds simple. But does it work? Last week, vendors at the DMTF developers

than 30 DMI-enabled products. Specs for PCs and adapters are finished, while work is proceeding on other committees. The most impressive demo was IBM's, which showed SNMP-based Net-View for Windows remotely managing a variety of PCs, adapters and operating systems.

IBM's secret weapon was the Karat Common Agent, which is PC-based software that feeds information from the MIF into a SNMP Management Information Base, or MIB.

The beauty of this outgrowth of IBM's Karat management strategy is that it allows any SNMP-based enterprise management platform to manage PCs and devices with DMI-enabled hardware and software applications. Very cool.

Unfortunately, IBM plans a March 1995 release of this agent software only for workstations running OS/2 or AIX. Vendors of other operating systems have pledged to fill in the gap by building DMI service layer software into their systems. IBM may release agents for other operating systems later in 1995. The firm also plans to build DMI into OS/2 and AIX.

Microsoft Corp. says its next release of Windows (Windows95) will include DMI support. But only time will tell if Windows95 will work with any enterprise manager.

Microsoft has a powerful incentive not to provide that interoperability

Systems Management Server (SMS) — formerly called Hermes — late next month. SMS will contain its own service-layer implementation of the DMI. IBM is missing a terrific opportunity to make Karat a true gem and deliver Karat Common Agents for DOS/Windows and Macintosh OS right away. You know how hard it is to deal with applications on different management platforms. A common standard would be a godsend.

PCsee, PC do
The 100-plus vendors that are members of Intel Corp.'s desktop videoconferencing consortium last week proclaimed they are serious about making their bevy of budding products interoperate with each other and H.320-based group conferencing systems.

The Personal Conferencing Work Group demonstrated multipoint conferencing between PC-based and group systems. I like this technology, but one reader flogged me for pitching packet-based video on LANs. "Too bandwidth-intensive and hard to manage," he said. [That's why ATM vendors are licking their chops.]



that reader's skepticism, claiming most desktop videoconferencing systems will be circuit-switched for at least the next 18 months. Gartner claims that only 5,000 desktop units are installed worldwide and projects that just 60,000 units will ship in 1995. [1996 is the year of "sea change," Gartner said.] Pushing this technology is Intel's No. 2 priority, so expect lots of hype as you figure out how to manage yet another net on top of everything else.

ISDN update

NYNEX told me last week that in January it will roll out pervasive ISDN on Long Island and southern New York, much like Pacific Bell did in California. This will not be "pure" ISDN, however. Users without ISDN in their central office will receive the service from "foreign" switches, albeit at 56K instead of 64K bit/sec. NYNEX said it'll even throw in Intel ProShare videoconferencing for \$1,000, almost \$500 below its current street price.

Ya' know, I'm beginning to think this ISDN thing just might happen one of these years...

♦ Buerger is an industry consultant and contributing editor to Network World. E-mail your reactions to dbuerger@pipeline.com or



	H.320	H.321	H.323	H.324
Approval Date	1990	1995	1996/1998	1996
Network	Narrowband Switched digital ISDN	Broadband ISDN ATM LAN	Non-guaranteed bandwidth packet switched networks	POTS, the analog phone system
Video	H.261 H.263	H.261 H.263	H.261 H.263	H.261 H.263
Audio	G.711 G.722 G.728	G.711 G.722 G.728	G.711 G.722 G.728 G.723	G.723
Multiplexing	H.221	H.221	H.225.0	H.223
Control	H.230	H.242	H.242 H.230	H.245
Multipoint	H.231 H.243	H.231 H.243	H.323	
Data	T.120	T.120	T.120	T.120
Communication Interface	I.400	AAL I.363 AJMI.361 PHY I.400	TCP/IP	V.34 Modem

Network World, Oct. 17th, 1994



Intel ProShare™

Conferencing Video System 200



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- 1992 – AT&T and CLI releases 2500 Analog Videophone using 19.2Kbps modem
- 1997 – Vtel buys CLI
- 2001 – Polycom buys PictureTel
- 2006 – Cisco introduces Telepresence product line



intel.

Intel ProShare

Some Questions

Network Questions

- How did AT&T's efforts inform the idea of an integrated network?
- What would have been the fate of Video Conferencing if the Internet & broadband not occurred?

Business Questions

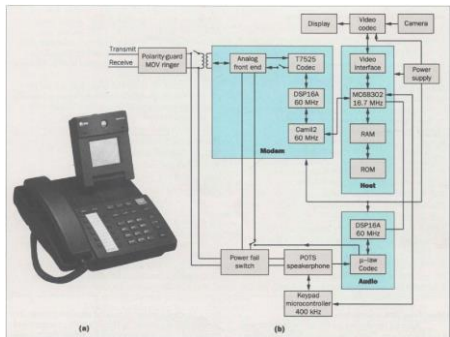
- Is video conferencing a product or a feature?
- What should be the priority & how do these priorities change with market (e.g. business, consumer, etc.)?
 - Video resolution?
 - Refresh rate?
 - Display size?
 - Mobility?
 - Form-factor?
 - Ease-of-use?
 - Comfort?
 - Audio crispness?
 - Audio latency?
 - Ability to share environment (e.g. be able to white board)?
 - Ability of video conferencing to adapt to the user environment (stand, sit, move-around, etc)?
 - Security?
 - Integrate other senses (touch, smell, immersion, in general)
- What sort of cultural barriers remain (e.g. people like to travel, particularly when others are paying for it)?
- Open-source, standards, & interoperability – How do these play out in the long-term?
 - From an end-customer perspective?
 - From an industry perspective

And more questions regarding technology

- Compression
 - Many different compression approaches - some of the more recent efforts, h.265, VP9, AV1, VVC and MPEG-5 Part 1, MPEG-5, Part2 (LCEVC) – does this hinder interoperability?
 - Not certain what other conferencing systems use, but it seems like [AV1 has some latency advantages and low-royalty costs](#)
 - What is the future role of WebRTC – will it require Apple to tip it over the edge?
- Displays and cameras – what should we expect?
- Audio is often overlooked – what are the speakers' thoughts on what is still needed with regards to audio?

Some References

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- Treasure trove of AT&T video archives <https://techchannel.att.com/>
- History of AT&T's picture phone <https://ethw.org/Picturephone>
- [Intel's ProShare circa July, 1994](#)
- VSee – Interesting perspective, particularly about the idea of the importance of the network effect for widespread video conferencing adoption <https://vsee.com/blog/video-conferencing-the-first-100-years/>
- <https://www.avinteractive.com/features/technology/av-at-40-video-conferencing-07-06-2012/>
 - Tim Duffy, formerly of PictureTel “The adoption of video conferencing is not a technology issue– it’s a perceived value issue. If Skype users had to pay for video, the usage would collapse.” Duffy added: “In my view, the future is clearly in the personal space. Combined unified communications (UC) clients supporting audio, video and web collaboration will replace hardware units, and everyone will want it for free.”
- **SMPTE Conference - The Origins of Audio and Video Compression: Some Pale Gleams from the Past -**
<https://ieeexplore.ieee.org/document/7269369>
- <https://www.vyopta.com/blog/video-conferencing/brief-history-video-conferencing/>
- [AT&T/CLI Analog Phone Line Chip Standard](#)
https://books.google.com/books?id=ShQEAAAAMBAJ&pg=PA41&lpg=PA41&dq=when+was+compression+labs+incorporated+formed&source=bl&ots=KpulDa9gQk&sig=ACfU3U31SaSsJkXNahXjIPrpTIPTS3DvOA&hl=en&sa=X&ved=2ahUKEwjDj6g_PrpAhUxJzQIHcl2DWs4ChDoATACegQIBRAB#v=onepage&q=when%20was%20compression%20labs%20incorporated%20formed&f=false
- <https://www.packetizer.com/ipmc/history-of-videoconferencing/>



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Some
other
images

AT&T, CLI to offer analog videoconferencing chipset

Product employs GVS, gives technology boost.

By Anne Cummings
Senior Writer
 SAN JOSE, Calif. — AT&T and Compaq today announced they are developing a chipset, based on their Global Video Standard (GVS) technology, that will enable third-party developers to build desktop videoconferencing systems that use analog phone lines.
 The move is an effort to make GVS a de facto desktop videoconferencing standard, according to an AT&T spokesman.
 "By making the technology available as a chipset rather than as a board-level product, we're making it easier for other companies to use it in a variety of products," she said. "And every product that uses GVS will be able to interoperate."
 AT&T has proposed the technology to ANSI and the Consultative Committee on International Telegraphy and Telephony for its inclusion in upcoming standards, the International Standards Organization is expected to present GVS to the public this month.
 The chipsets, which will be offered through AT&T Microelectronics, will include integrated circuits for video compression, audio compression and modem technology, as well as host processor support and interface specifications.
 The chips make it possible to support full-motion color video links at 19.2K bit/sec over dial-up analog lines.
 AT&T currently uses GVS technology in its VideoPhone 2500, a video-capable handset unveiled in January, and CLI has incorporated it into its Camino Personal Video System, an Apple Computer, Inc. Macintosh-based desktop videoconferencing system also announced in January ("New devices to boost desktop video market," EW, Jan. 13).
 The VideoPhone 2500 is targeted primarily at the consumer market, but the spokesman said that making the chipset available to third parties could result in products designed for business applications, such as present computer-based videoconferencing systems.
 She said AT&T is currently negotiating with some third parties interested in buying the chipset, but she declined to name them.
 The chipset is expected to be available in the second half of 1993. Pricing has not been set. □

