



International Telecommunication Union
International Multimedia Telecommunications Consortium



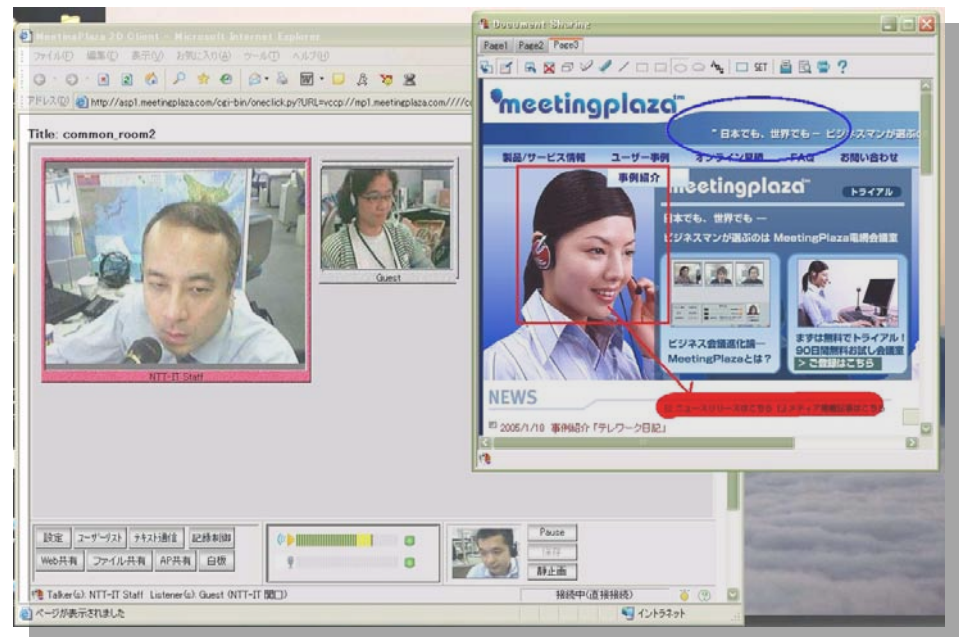
A Web Conference System Architecture for the Broadband Era

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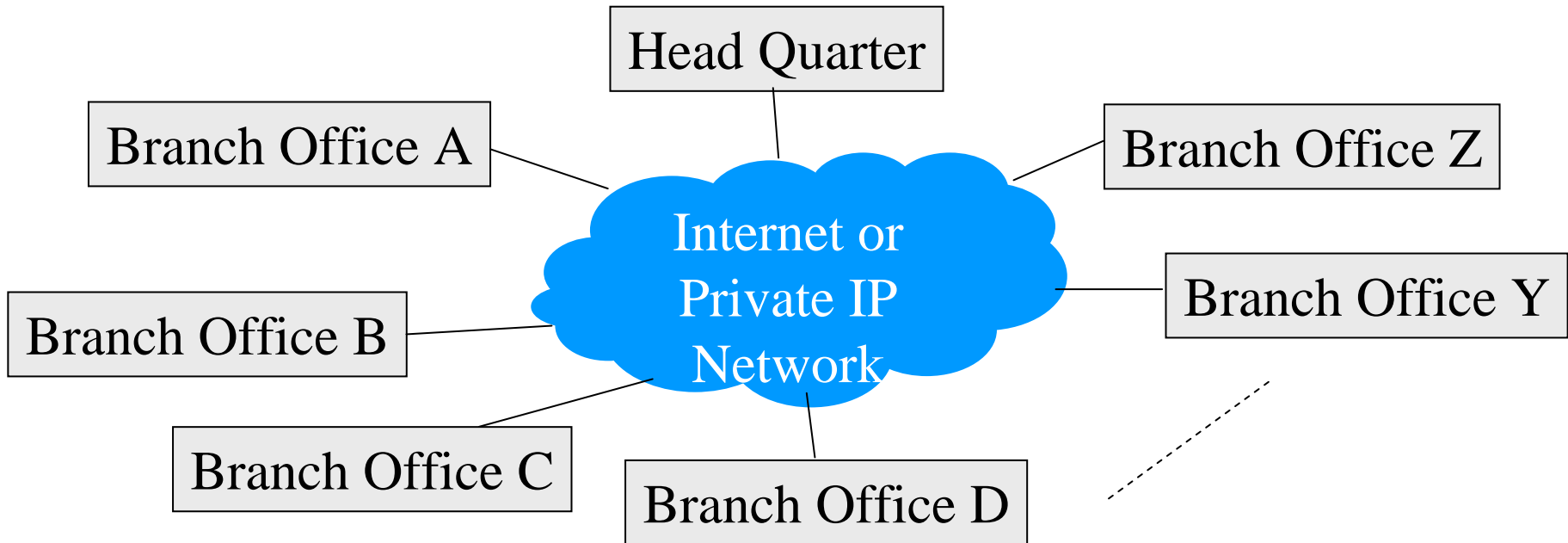
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- “Web Conference System/Service” is gaining recognition in Japan. The term means a system with the following aspects:
 - All software based (clients running on PC/PDA).
 - Using IP networks.
 - Multi-user.
 - Audio.
 - Video.
 - Document Sharing.



“MeetingPlaza”: a web conference system widely used in Japan

A Typical Application: Meetings with branch offices and the head quarter

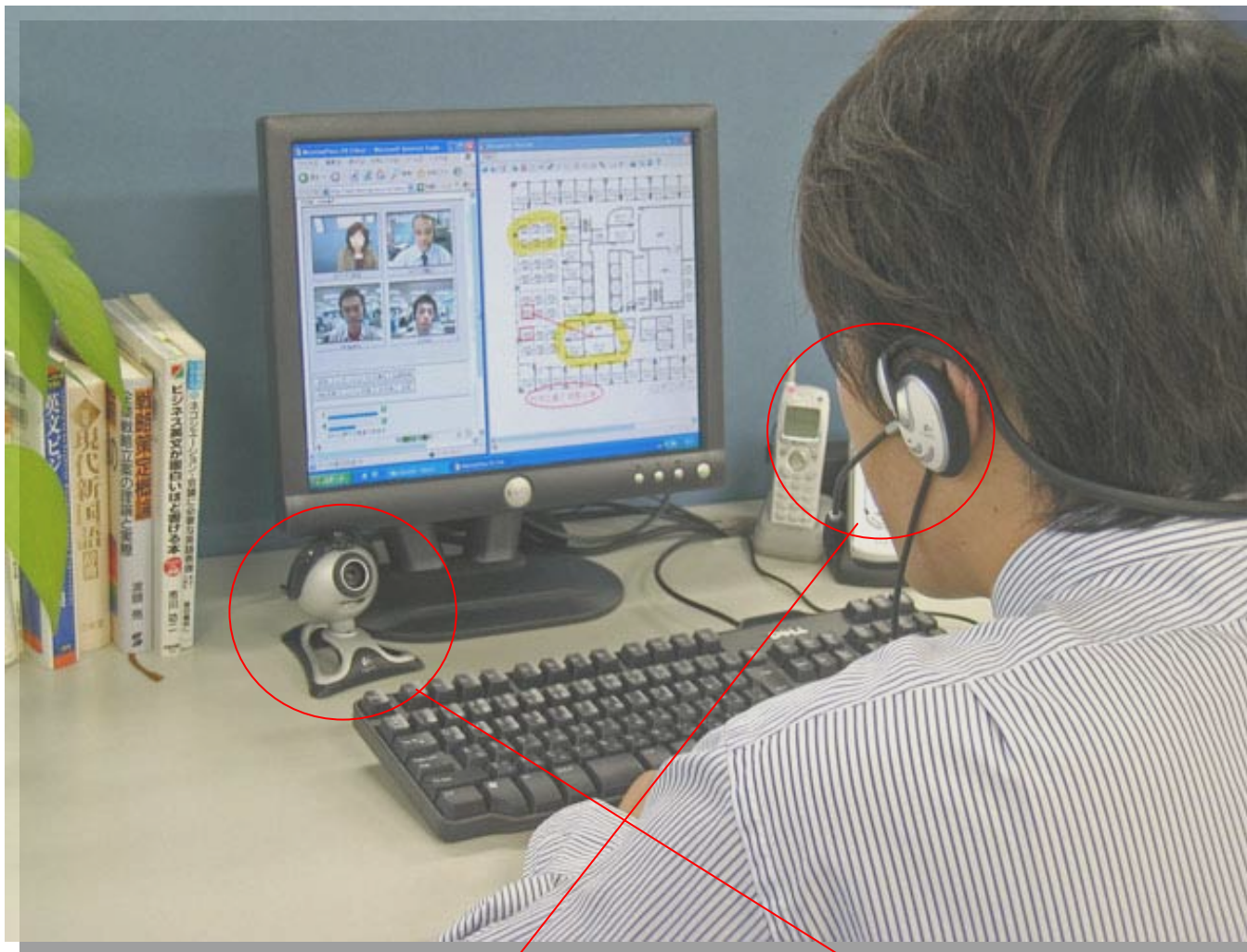


Purpose: Regular Meetings, Information Sharing, etc.

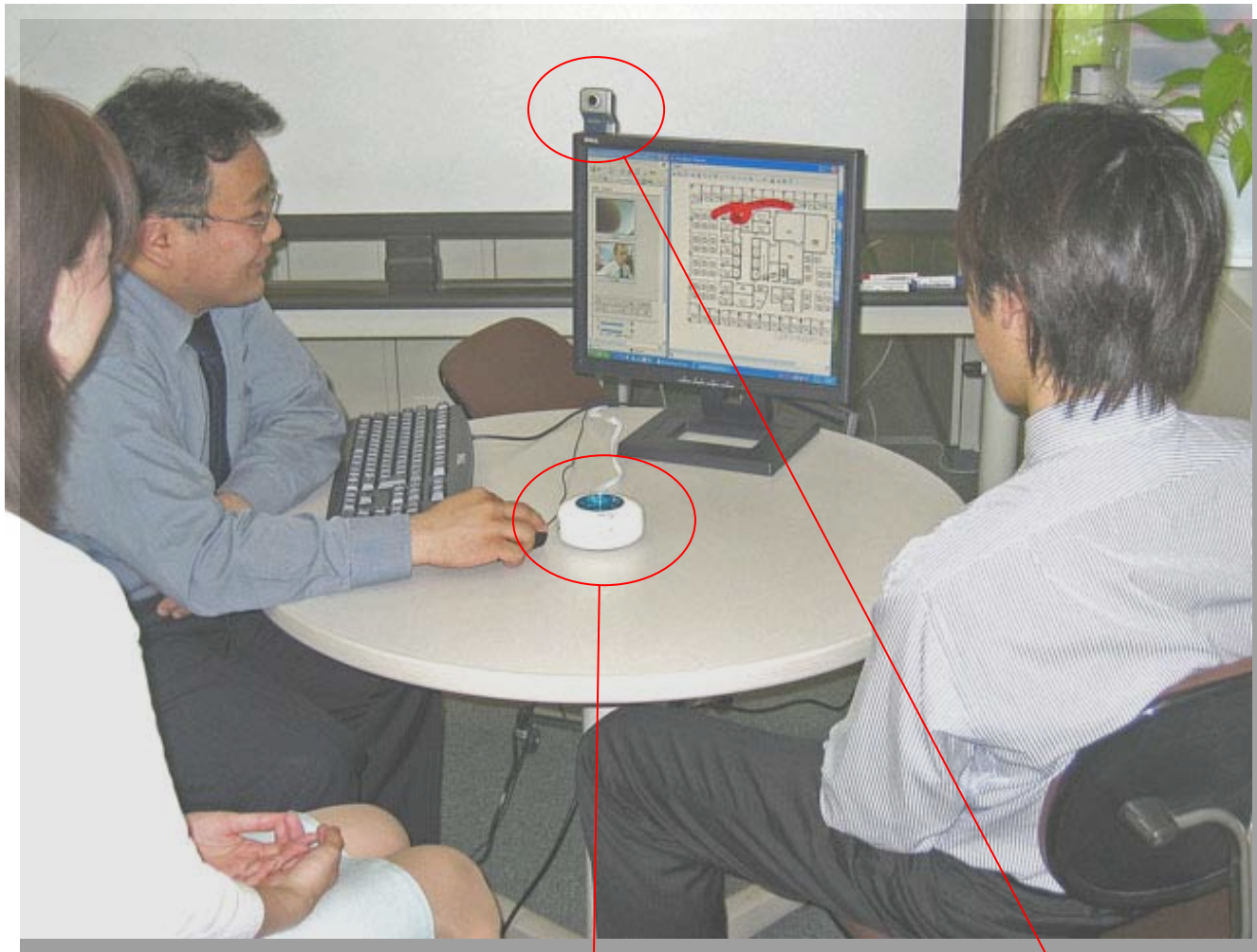
Number of locations: 3 – 30+ ~100

Number of participants/location: 1 - 10

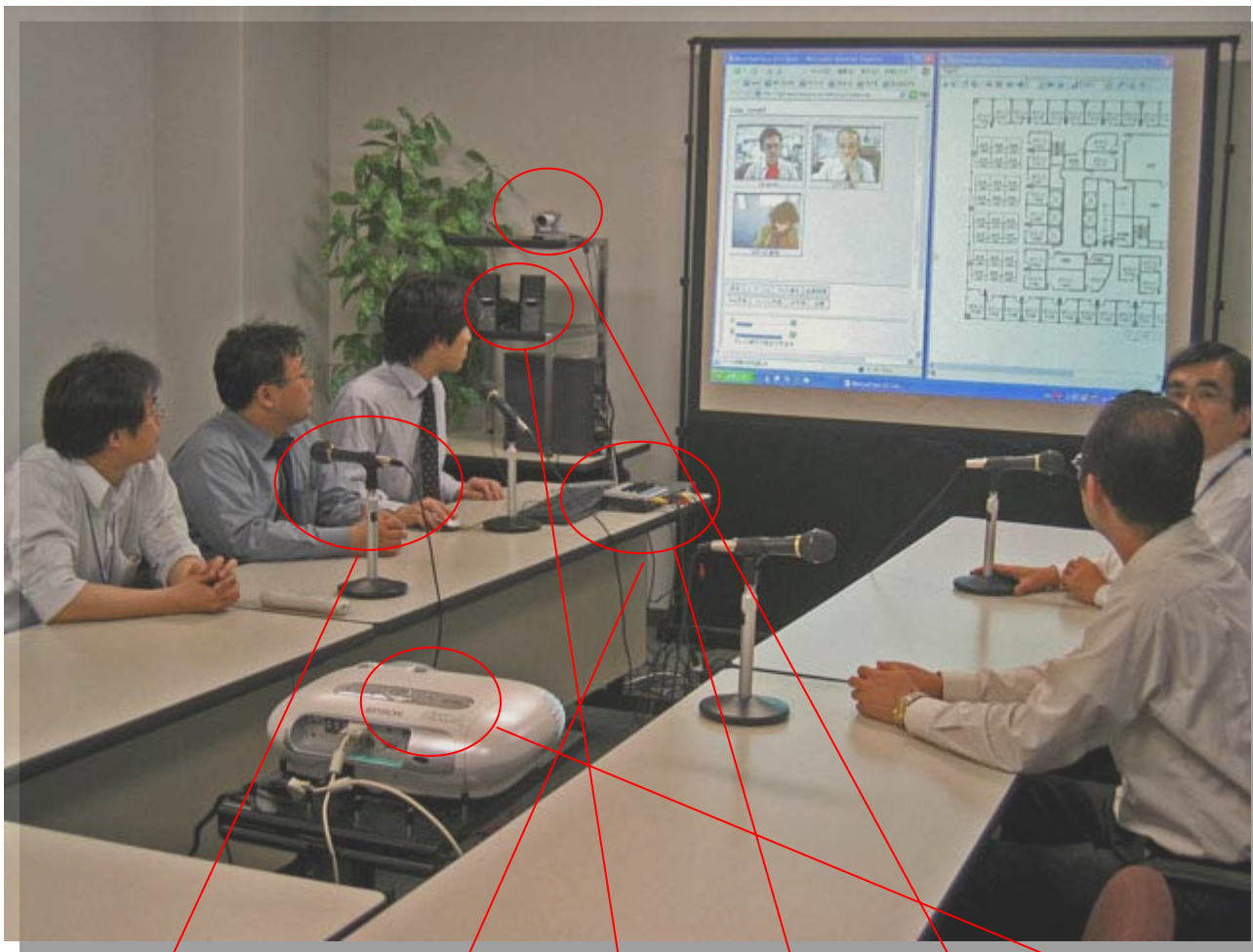
Other Applications: Meetings among the members of an association
Learning for medical representatives



PC, Headset, Web Camera



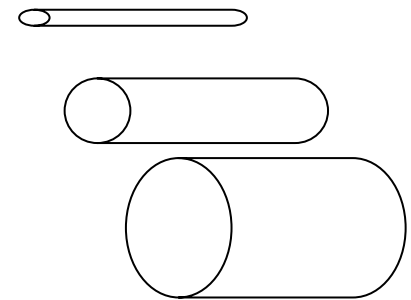
PC, In-expensive Mic/Speaker with EC, Web Camera



PC, Microphones, Mixer, Speaker, EC, Camera, Projector

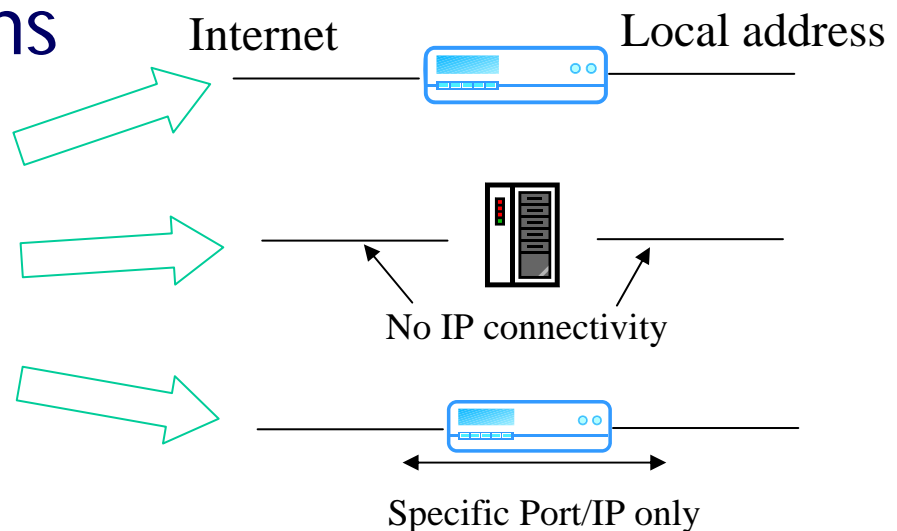
o Various Speed (20Kbps ~ 10Mbps)

- 20Kbps~ Modem/ISDN/Mobile
- 200Kbps~ ADSL/Cable
- 2Mbps~ LAN/Fiber Optics



o Various Configurations

- NAT/IP Masquerade
- HTTP Proxy
- F/W (port filtering)
- Virus scanners...





What is important (user's voices)?



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- Most important medium: Audio
 - Without this, no communication established...
- Next: Document Sharing
 - In contemporary meetings, “document sharing” is essential.
-
-
- Necessity of video is less...
 - But comparing to Audio/Document conferences, users recognize it is more comfortable feeling “other people” in distance conferences through video.
 - To “feel” other people, small/slow image is enough in many applications.



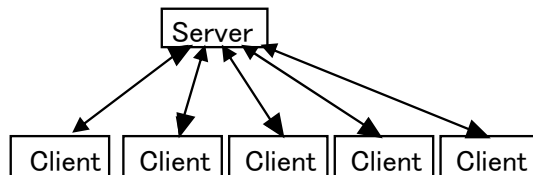
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Audio (most important medium)

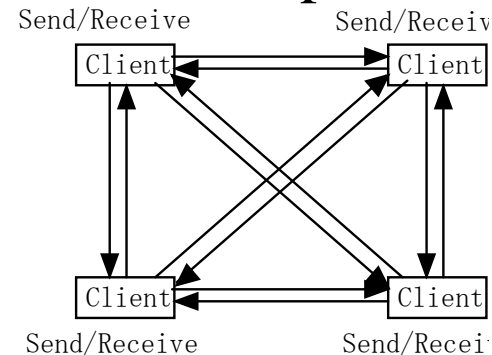


- o Robustness against:
 - Packet loss
 - ~10% packet loss observed in Japan-China connections these days...
 - Narrow bandwidth
 - 20Kbps ~
- o Simultaneous talking (~ 4 persons)
 - Bandwidth usage needs to be low
- o Audio Bandwidth (~ sampling freq.)
 - 8KHz -- Enough for most applications
 - 11KHz -- Foreign language lessons need at least this
 - 22KHz -- Special cases such as distance piano lesson (one example exists)

Server-Client



Peer to peer



Connectivity in various network configurations

GOOD using HTTP Tunneling/Client-leading session initiation

No connectivity when both clients are under F/W

Possible bandwidth bottleneck?

All traffic concentrate at the server

Receiving bandwidth increase as the number of client increase

Administration (user management, usage logging, etc.)

Easy

Not Easy

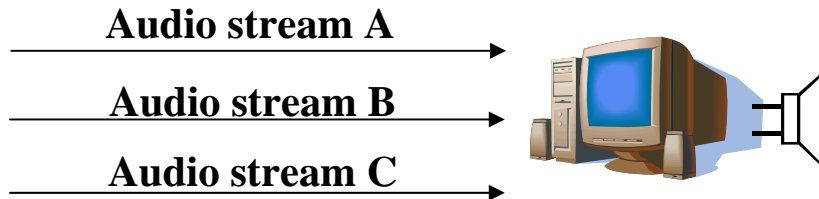


MeetingPlaza

Hybrid architecture may be possible (further study needed)

Server mixing or Client mixing?

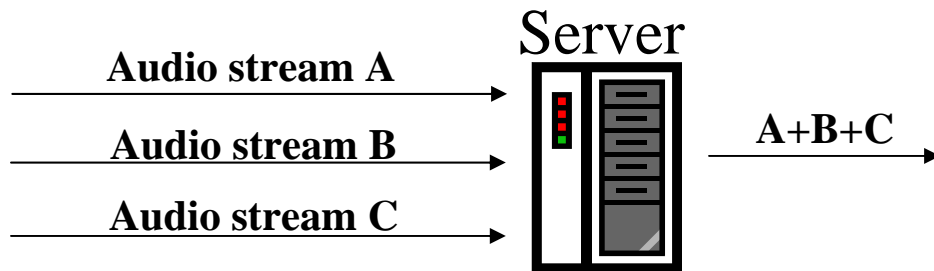
Client Mixing



Receiving plural audio stream at the same time (not usable with modem/ISDN/mobile)

Decode and mixed in client

Server Mixing

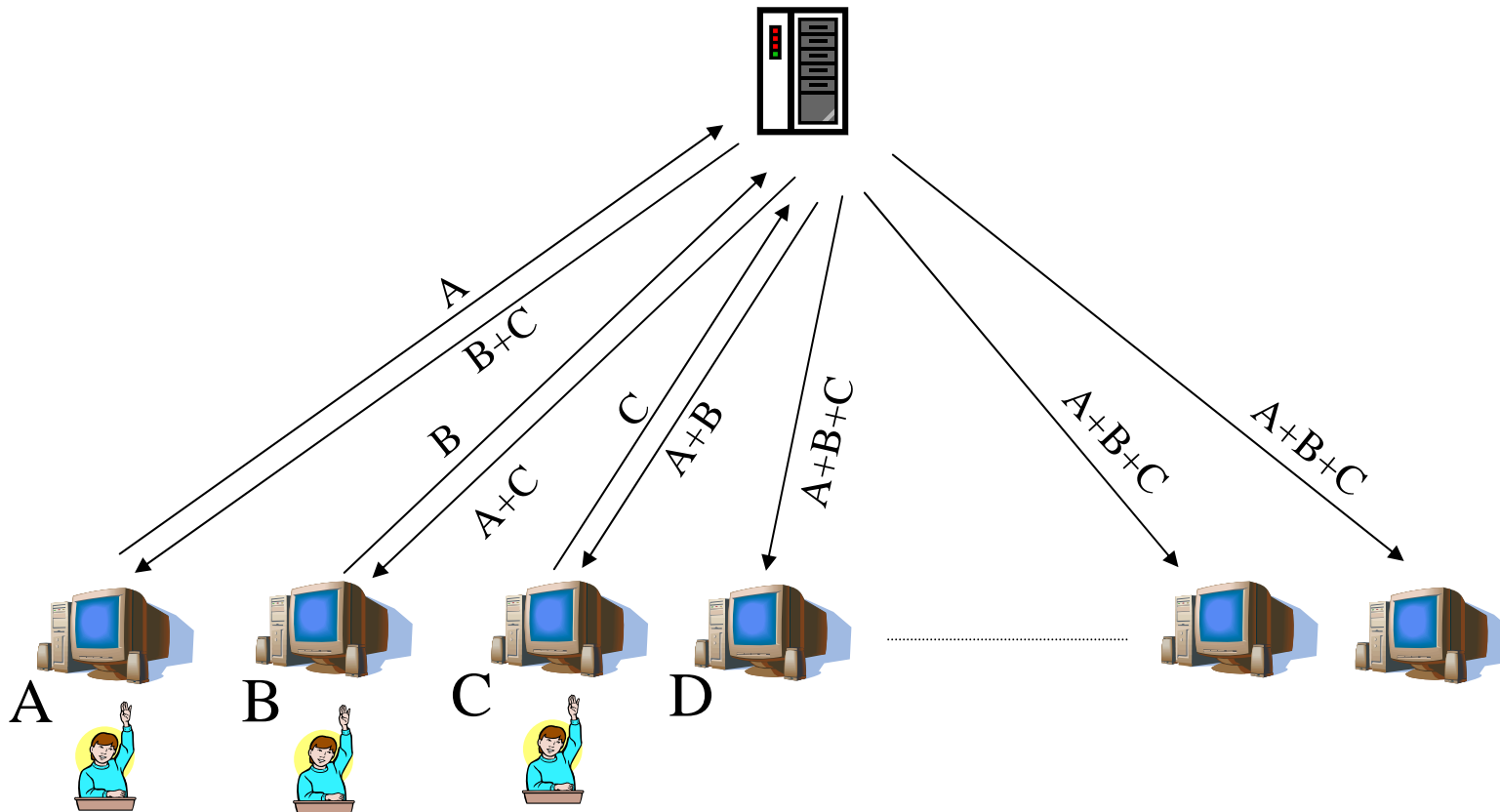


Receiving only one audio stream always (Usable with Modem/ISDN/mobile)

Decode/mix/re-encode at Server

 MeetingPlaza

- o Server-Mixing ("N-1" mixing)
 - Avoiding to here my talk with delay



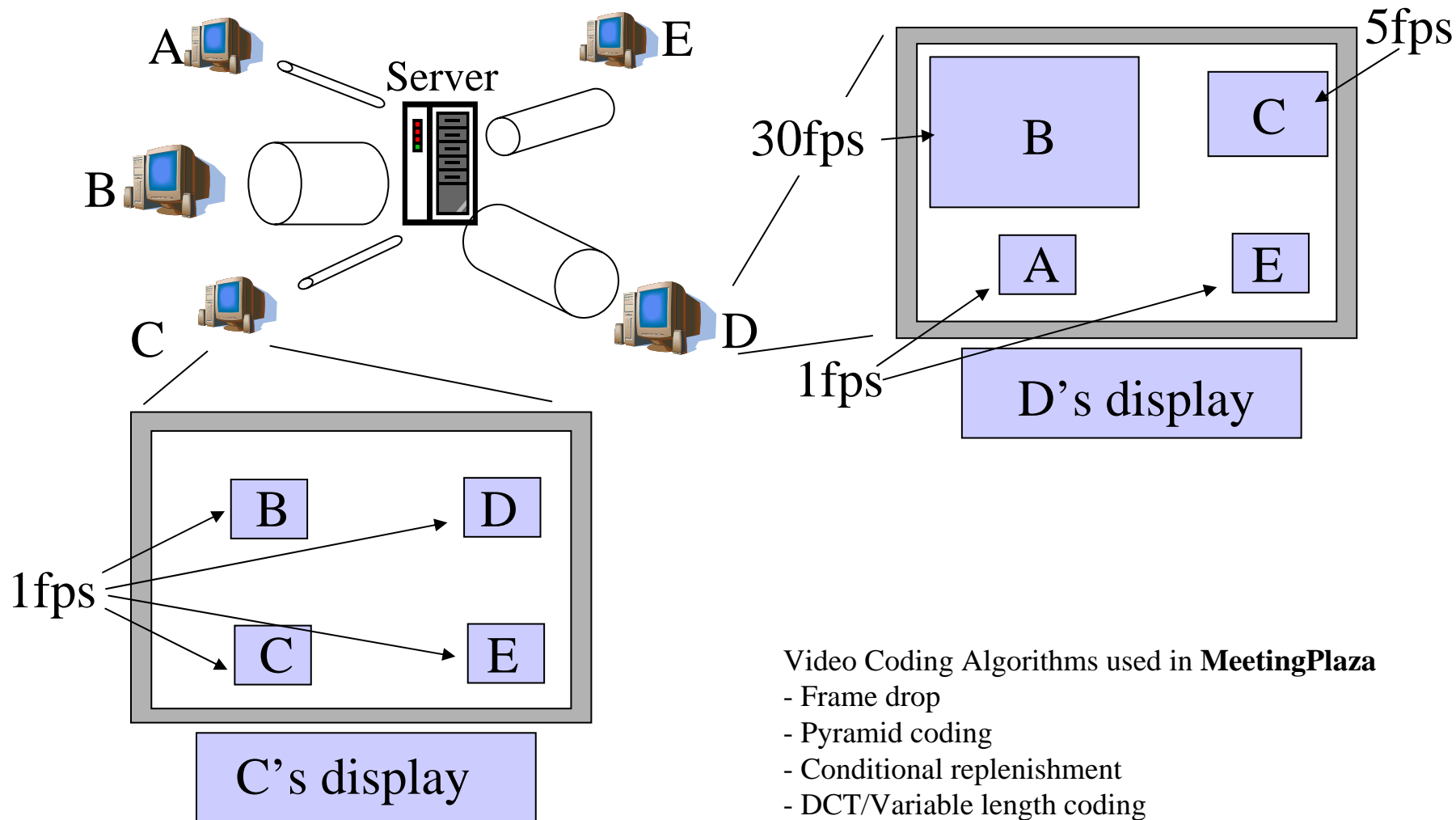


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Video Transmission Requirements



- o Optimized for:
 - Various network speed (20Kbps ~ 10Mbps)
 - Heterogeneous network configurations
 - Terminals with high speed connections can transmit larger/fast video each other
 - Terminals with different network speed can communicate at small/slow video
 - The above two must be realized at the same time (see next slide)
- o Robustness against:
 - Packet loss
 - Rapid bandwidth changing
 - Audio and document sharing data must have priority over video communication





Document Sharing Functions



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- Web Co-Browsing
 - URL/Input area/Scroll synchronized
- File Sharing
 - Slide page flip synchronization (PPT)
 - Scroll synchronization (text, images)
- Virtual Printer Image Sharing
 - Documents of any application with “print” menu can be shared
 - Scroll/Scaling/Page synchronization
- AP Sharing (display image sharing)
- Shared Whiteboard
- Annotation
 - Drawing on shared documents
- Cursor sharing

 See the demonstration

- o Live
 - Server: NY

- o Replay pre-recorded session
 - Video performance

What's the most crucial change from H.32x? It's: "All Software Based"

- The "Platform" of the system is:
 - Generic Personal Computer/PDA
 - The Internet or IP-based private networks
 - Server (may not be used always)
- PC or PDA works as "terminal".
- "Software" is available when needed.
 - "Downloadable", for example.



Terminals can communicate each other
(because they run the same software)



No protocol level standardization needed...

- o Definition of typical conceptual system structure
 - Example:
 - Category 1 Web Conference System: peer to peer based
 - Category 2 Web Conference System: server-client
 - Category 3 Web Conference System: mixed
- o Definition of capabilities
 - Like xx@yy in MPEG
- o ...
- o ...

- o Web:

- www.meetingplaza.com

- o Contact:

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