



# I can **SEE** what you **HEAR!!**



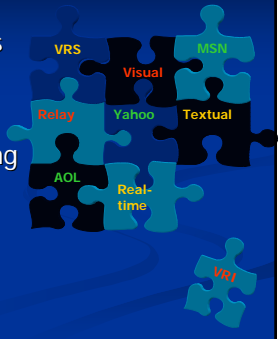
Paper presented at the Instructional Technology and Education of the Deaf Symposium  
National Technical Institute for the Deaf  
Rochester, New York June 2005  
<http://www.rit.edu/~techsym>

## Agenda

- Classroom Access
- Communication Technologies
- Signaling Devices

## Overview

- Internet technology is transforming the interactions of individuals who are deaf or hard of hearing
- Textual, visual and real-time alternatives for accessible communications




## Classroom Access

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## Video Remote Interpreting (VRI)

- Uses video-conferencing technology to provide interpreting services from off-site locations
- What's needed?
  - Web camera(s)
  - Display screen
  - Microphone/speaker
  - Software
  - Fast internet connection



Amy Hogle, UWM Interpreter Coordinator, working in the PantherCom studio.

## Choosing VRI

- Effective strategy in areas without a large pool of qualified interpreters
- Requires good connectivity in classroom
- Class format – lecture or interactive group?
- One-way or two-way connections? Consider student participation
- Reading sign language from the screen may be more difficult than in person
- **Firewalls** may pose problems!

## CART Communication Access Realtime Translation

### ■ What is it?

- Speaker's words displayed on screen or laptop
- Usually a *verbatim* readout with disk/printout available after class

### ■ When is it used in higher education?

- Classroom settings, meetings, assemblies

## CART Communication Access Realtime Translation

### ■ Who's the typical student using it?

- Student in courses with complex terminology; oral deaf or late-deafened individual

### ■ Who provides it?

- Skilled stenographers with additional training in captioning



## Speech-to-Text Systems

### ■ What are they?

- Speaker's words displayed on screen or laptop
- Provides *meaning-for-meaning* translation
- Uses word processing software aided by abbreviation software

### ■ C-Print®

- Developed at NTID, based on years of research
- Automatic speech recognition available
- Online training!

### ■ TypeWell

## Speech-to-Text Systems

### ■ Who's the typical student using them?

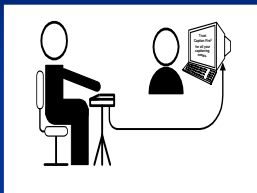
- Students for whom English is their first language; hard-of-hearing, oral deaf or late-deafened individuals

### ■ Who provides it?

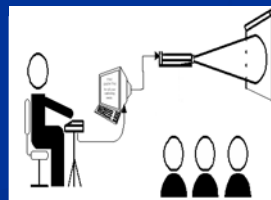
- Trained captionists who use laptops and software



## How Is It Set Up?



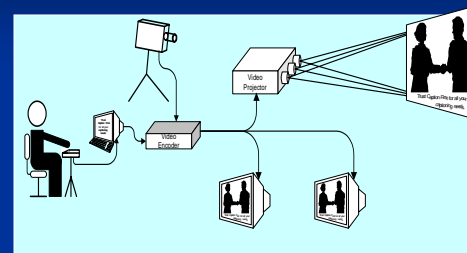
One-on-one Captioning



Overhead Captioning

Graphics courtesy of Caption First

## How Is It Set Up?



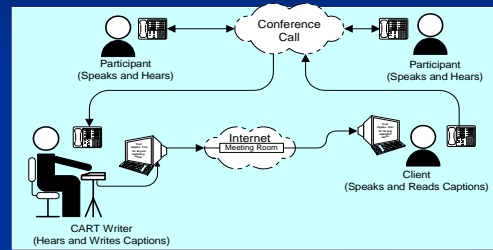
Speaker Image Captioning

Graphic courtesy of Caption First

## Remote CART

- CART provider listens to the speaker via telephone
  - Writes the realtime account
    - to a Web site that the student is logged onto
- OR**
- Text appears on the student's computer screen

## How Is It Set Up?

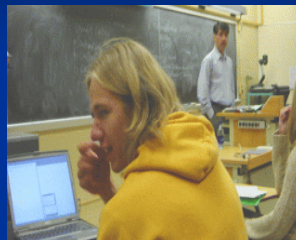


### Remote CART via Internet

*Graphic courtesy of Caption First*

## Remote C-Print®

- C-Print® provided for student access
- Service provider is at remote site
- Connections through phone lines and internet



Karsten Powell, University of Wisconsin-Eau Claire student, using PantherCom remote C-Print captioning in class.

## Caption Mic

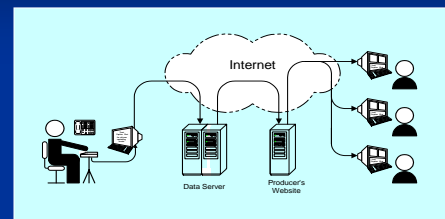


- Voice captioner uses a dictation mask or headset and "echoes" what is said in the classroom
- Speech recognition software converts speech into captions
- 4 -10 hours of speech model training required

## Liberated Learning Initiative

- Instructor "teaches" speech recognition software to understand his/her speech
- Uses wireless microphone connected to computer
- Custom software converts spoken lecture into text
- Uses pauses in speech to create visual breaks
- Text is displayed in class

## Captioning Webcasts



### Webcast Captioning

*Graphic courtesy of Caption First*

## Captioning of Videos

- Process of converting the audio portion of a film, video, or CD-ROM into text
- Open captions vs. closed captions
  - Check equipment to make sure captions will show!
- Captioning existing materials?
  - Professional services available
  - Can purchase software for in-house use

## Rear Window Captioning

- Movie-goer uses a transparent acrylic panel that attaches to the seat
- Captions are projected from rear of theater and appear to be superimposed on movie screen
- Panels are portable and adjustable



## Communication Technologies

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## TTYs: The Sixties



- 1964 – TTY invented
- Also known as a **TDD**
- Allowed deaf people to communicate with other TTY users without depending on hearing friends and family to interpret

## The Shrinking TTY



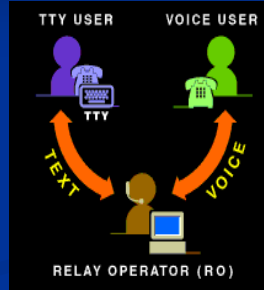
## On Campus TTY Access

- **Strategic locations on campus**
  - Student service offices
  - Library
  - Residence halls
  - Campus security
- **Pay phone TTY access**
  - After hours access
  - Community access



## Telephone Relay Services

- Access relay: Dial 711
- Deaf person types message on TTY
- Relay operator **voices** typed info and **types** what hearing caller says



## Videophones

- Tiny built-in camera allows direct communication
- 15 frames/sec.—very slow for smooth transmission of ASL
- Small screens



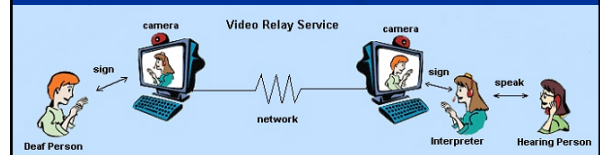
## Videophones—Advances!

- Big screen—uses TV!
- Smooth transmission of ASL
- Operates as a stand-alone device:
  - Plug into TV and high speed Internet connection
  - Make live video phone calls to all over the world
- D-Link i2eye™; '03 Electronic House Product of Year



## Video Relay Service (VRS)

- Allows sign language users and hearing persons to communicate via videoconferencing with a remote video interpreter
- Uses web-cam and high-speed internet connection
- Log onto VRS website; connect with video interpreter who calls any phone number



## VRS Advantages

- Ability to communicate in sign language
- Increased communication speed



- Enhanced communication with use of
  - Facial expression
  - Body language gestures

## Internet Relay Service

- Place text relay calls online without TTY
- Users connect to a Communications Assistant through the Internet relay website:
  - Type outgoing messages on computer keyboard
  - Read incoming messages on computer monitors



## Internet Relay - Advantages

- Larger text display area
- Up-front call instructions to the Communications Assistant (relay operator)
- Adjustable text sizes and colors for easier reading
- Split-screen mode to separate conversations

## NexTalk



- Call or accept calls from a TTY
- Live, direct text communication
- Web-based service--anyone on browser can call
- Advantages:
  - Server handles calls; no relay operator needed
  - Free calls and downloadable software
  - TTYs not needed in offices to receive TTY calls
  - Training of staff is simplified
  - Conversations can be documented, printed, archived

## Captioned Telephone (CapTel)

- CapTel phone used to place/receive calls
- Connects with captioning service
- Caller uses own voice; reads captions
- What's needed?
  - Captioned telephone
  - CapTel service
- Similar to 2-line VCO, but uses only 1 line and 1 device



## Two-Way Pagers



BlackBerry



T-Mobile Sidekick



Nokia



WyndTell RIM



Treo Smartphone

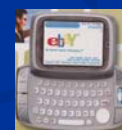
## Blackberry

- | Pros   | Cons   |
|--|--|
| <ul style="list-style-type: none"> <li>■ Excellent coverage</li> <li>■ Light &amp; thin, easy handling</li> <li>■ Use as phone (though may lack power needed for HH users)</li> <li>■ Syncs with MS Outlook</li> <li>■ Font size selections</li> <li>■ AOL AIM chat (though experiences are varied)</li> </ul> | <ul style="list-style-type: none"> <li>■ No relay access via internet</li> <li>■ Cannot use with camera</li> <li>■ Cannot download photos via email</li> <li>■ Expensive to purchase</li> <li>■ IM access may be weak</li> <li>■ Inadequate Web Browser</li> </ul> |



## T-Mobile Sidekick

- | Pros   | Cons  |
|--|---|
| <ul style="list-style-type: none"> <li>■ Relay is available!</li> <li>■ Can use with camera</li> <li>■ Decent coverage</li> <li>■ AOL AIM chat (Excellent access)</li> <li>■ Sells at many deaf events</li> <li>■ Use as phone</li> <li>■ Relay access via Terminal Client and/or IM Camera</li> <li>■ SK II has IntelliSync--- syncs with MS Outlook</li> </ul> | <ul style="list-style-type: none"> <li>■ Breaks easily</li> <li>■ Coverage not as good as major carriers</li> <li>■ One font size</li> <li>■ Faulty flipscreen</li> </ul> |





## Using Pagers with Students

- Ongoing communication between students and DSS staff
  - Use of email instead of phone or face-to-face interactions
- Just-in-time communication
  - Notification of schedule changes
- Document exchange
  - Class notes or transcripts
- Scheduling and alarm features

## Interpretype®

- Two pre-programmed laptop style computer devices
- Each device sends and displays typed messages to other device
- Log on to have a conversation by reading and typing
- Aids face-to-face communication



## AlphaSmart

- Low Cost
- Long Battery Life (700 hours on 3 AA batteries)
- Lightweight rugged design (less than 2 lb.)
- 4-line by 40-character LCD display
- International character support for Danish, Dutch, French, German, Italian, Portuguese, Spanish and Swedish



## Communication Assistant

- Provides text captions through a transmitter
- Tiny, wearable display for access to public events and places
- Developing at Georgia Tech Rehabilitation Engineering Research Center (RERC)– not yet available



[http://www.wirelessrerc.gatech.edu/projects/development/d2\\_survey.html](http://www.wirelessrerc.gatech.edu/projects/development/d2_survey.html)

## Instant Messaging

- **Benefits**
  - Cheap information and community tool
  - Promotes efficiency in getting answers to questions
  - Supports multi-user conversations
- **Drawbacks**
  - Often misused
  - Concerns about security

## Signaling Devices

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## Signaling Devices Used on Campus

- **Visual smoke detectors and flashing fire alarms**
  - Residence halls (common areas; student rooms)
  - Campus buildings
- **Door knockers**
  - Residence hall use
  - Portable units available
- **Captioned TVs in common areas**



## Postsecondary Education Programs Network



[www.pepnet.org](http://www.pepnet.org)

Click on "Resource Center" for PEPNet products

## Where to Get More Information?

### PEPNet Resource Center

<http://prc.csun.edu>

## Resources

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<http://www.rit.edu/~techsym>

## Resources: Captioning of Videos

- Captioned Media Program, SC  
[www.cfv.org](http://www.cfv.org)
- Closed Caption Maker, MD  
[www.ccmaker.com](http://www.ccmaker.com)
- NCI (National Captioning Institute), VA  
[www.ncicap.org](http://www.ncicap.org)
- WGNH/National Center for Accessible Media, MA  
<http://ncam.wgbh.org>
- Captioning Web  
<http://www.captions.org/softlinks.cfm>

## Remote CART

- <http://www.cartinfo.org/remotecart.html>
- <http://www.captionfirst.com/>
- <http://www.captionsunlimited.com/pages/1/index.htm>
- <http://www.educaption.net/>



## Remote C-Print ®

- Wisconsin: Panther project
  - [http://www.uwm.edu/Dept/DSAD/SAC/February2003/SAC\\_NEWS.html](http://www.uwm.edu/Dept/DSAD/SAC/February2003/SAC_NEWS.html)
  - Shannon Aylesworth [aylessr@uwm.edu](mailto:aylessr@uwm.edu)
  - Ginny Chiaverina [ginnyc@uwm.edu](mailto:ginnyc@uwm.edu)
- Maine:
  - Lisa Sorenson [207-282-3421](tel:207-282-3421)  
[act@maine.rr.com](mailto:act@maine.rr.com)

## Resources: Video Remote Interpreting (VRI)

- <http://www.interpretersinc.com/services.htm#2>
- <http://www.signonasl.com/video.htm>
- <http://mason.cuir.uwm.edu/panthercom/guidelines.html>
- [http://www.cacdhh.org/video\\_interpreting\\_services.html](http://www.cacdhh.org/video_interpreting_services.html)
- <http://www.signtalkamerica.com/pages/1/index.htm>
- <http://www.caninterpreters.com/>
- <http://www.sorensonvrs.com/what/faq.php>
- <http://www.interpretingsolutionsinc.com/Services.asp>

## Resources: Speech-to-Text Systems

- C Print ®  
[www.ntid.rit.edu/cprint](http://www.ntid.rit.edu/cprint)
- Typewell  
[www.typewell.com](http://www.typewell.com)
- Viable Technologies  
[www.viabletechnologies.com](http://www.viabletechnologies.com)

## Resources: Internet Relay Service Providers

ATT: [www.consumer.att.com/relay](http://www.consumer.att.com/relay)  
CSD: [www.c-s-d.org](http://www.c-s-d.org)  
Hamilton Telecommunications: [www.hiprelay.com](http://www.hiprelay.com)  
MCI: [www.ip-relay.com/index.htm](http://www.ip-relay.com/index.htm)  
Sorenson: [www.s-vision.com](http://www.s-vision.com)  
Sprint: [www.sprintvrs.com](http://www.sprintvrs.com)

## Resources: Video Relay Services (VRS)

ATT: [www.consumer.att.com/relay/video](http://www.consumer.att.com/relay/video)  
Communication Access Center for Deaf and Hard of Hearing: [www.cacdhh.org](http://www.cacdhh.org)  
CSD: [www.c-s-d.org](http://www.c-s-d.org)  
Hamilton Telecommunications: [www.hipvrs.com](http://www.hipvrs.com)  
Hands On Sign Language: [https://secure.hovrs.com/VRS\\_SSL/hovrs.aspx](https://secure.hovrs.com/VRS_SSL/hovrs.aspx)  
MCI (IP-Relay): [www.ip-relay.com/index.htm](http://www.ip-relay.com/index.htm)  
Sorenson: [www.s-vision.com](http://www.s-vision.com)  
Sprint: [www.sprintvrs.com](http://www.sprintvrs.com)

## Video Relay Service (VRS)

Demos:  
<http://www.relaycall.com/national/index.html>  
<http://www.ip-vrs.com/videorelay.jsp>

## Face-to-Face Communication

Interpretype: [www.interpretype.com](http://www.interpretype.com)

AlphaSmart: [www.alphasmart.com](http://www.alphasmart.com)

Communication Assistant:  
[www.wirelessrerc.gatech.edu/projects/development/d2\\_survey.html](http://www.wirelessrerc.gatech.edu/projects/development/d2_survey.html)

## Resources: Instant Messaging

- AOL Instant Messenger  
<http://www.aim.com/>
- MSN Messenger  
<http://www.msnmessenger-download.com/>
- Yahoo Messenger  
<http://messenger.yahoo.com/>