



Speech Recognition Software, How it is Used, and What You Should Know About When Authoring Web Content

March 19, 2015

Presented by

Jonathan Avila

Chief Accessibility Officer – SSB BART

The Session begins at 1:00 pm CST

We will be testing audio quality periodically

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Useful Keyboard Shortcuts

- Full list - Keyboard Shortcuts from the Help menu on the Menu Bar.
- Speaker level Up:
 - Windows: Ctrl+Alt+Up Arrow
 - Mac: Command-Option-Up Arrow
- Speaker level Down:
 - Windows: Ctrl+Alt+Down Arrow
 - Mac: Command-Option-Down Arrow
- Chat: Move cursor to the Message text box
 - Windows: Ctrl+M
 - Mac: Command-M

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More keyboard shortcuts

- Open Closed-Captioning window
 - Windows: Ctrl+F8
 - Mac: Command-F8
- Close Closed-Captioning window
 - Windows: Alt+F4 or Ctrl+W
 - Mac: Command-W

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- You can control the audio broadcast via the Audio & Video panel. You can adjust the sound by "sliding" the sound bar left or right.
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Listening to the Webinar, *continued*

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This is **not** a Toll Free number

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Listening to the Webinar, *continued*

MOBILE Devices supported include iPhone, iPad, Android Devices, Kindle Fire HD)**

Individuals can download the free Blackboard Collaborate App from the Apple Store, Google Play or Amazon



**Closed Captioning is not visible via the Mobile App and there is limited access to the white board for individual's using voice over technology

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Captioning

- Real-time captioning is provided during this webinar.
- The caption screen can be accessed by choosing the  icon in the Audio & Video panel.



- Once selected you will have the option to resize the captioning window, change the font size and save the transcript.

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Submitting Questions

- You may type and submit questions in the Chat Area Text Box or press Control-M and enter text in the Chat Area
- If you are connected via a mobile device you may submit questions in the chat area within the App
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Customize Your View

- Resize the Whiteboard where the Presentation slides are shown to make it smaller or larger by choosing from the drop down menu located above and to the left of the whiteboard. The default is "fit page"



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Customize Your View *continued*

- Resize/Reposition the Chat, Participant and Audio & Video panels by “detaching” and using your mouse to reposition or “stretch/shrink”. Each panel may be detached using the  icon in the upper right corner of each panel.

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Setting Preferences

- Depending on your system settings you may receive visual and audible notifications when individuals enter/leave the webinar room or when other actions are taken by participants. This can be distracting.
- To turn off notifications (audible/visual)
 - Select “Edit” from the tool bar at the top of your screen
 - From the drop down menu select “Preferences”
 - Scroll down to “General”
 - select “Audible Notifications” Uncheck anything you don’t want to receive and “apply”
 - Select “Visual Notifications” Uncheck anything you don’t want to receive and “apply”
 - For Screen Reader User – Set preferences through the setting options within the Activity Window (Ctrl+slash opens the activity window)

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Technical Assistance

- If you experience any technical difficulties during the webinar:
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 2. Email webinars@ada-audio.org; or
 3. Call 877-232-1990 (V/TTY)

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Agenda

- Overview
- What is Speech Recognition?
- Who Benefits from Speech Recognition?
- Features
- Supported Platforms
- Sample Speech Commands
- Using Speech Recognition on the web
- Designing Websites for Speech Recognition
- ARIA and Speech Recognition
- Resources

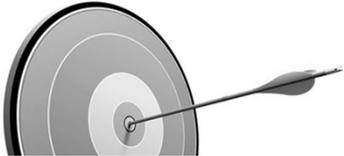


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Course Objectives

- List the people who use or may benefit from speech recognition software
- Describe the main features of speech recognition software
- Explain what techniques to use to ensure accessible web access by users of speech recognition



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 **What is Speech Recognition?** 

Converts spoken words into text used for:

- Dictation and/or
 - Type emails and write documents; fill out forms
- Command and control
 - Browse the web; control your computer

May require training to learn speaker's voice and commonly used words

- More accurate with training and scanning of words you use most.

May be speaker independent

- Less accurate
- May have limited set of commands of dictation
- May be cloud based



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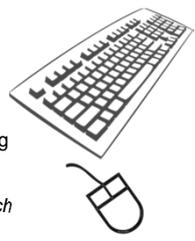
 **People who use and Benefit from Speech Recognition** 

Motor Impairments

Often used by people who have mobility challenges with their hands

- Ranging from mild repetitive stress injuries
- Dexterity challenges
- Other disabilities such as Multiple Sclerosis
- Typical aging factors that preclude using conventional computer input

May not be effective for people with speech impairments



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 **People who use and Benefit from Speech Recognition** 

Other Disabilities

 →  → **My Ideas as text**

- May be used in combination with other AT J-Say w/ JAWS
- Individuals with learning disabilities who have problems with thought-to-paper communication may possibly benefit
- Has promise to automatically generate captioning of conversations for people are deaf or hard of hearing, for situations such as discussions in conference rooms, classrooms, or religious services
 - Has limitations in accuracy among diverse speakers

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 **People who use and Benefit from Speech Recognition**

Non-disability

Legal and Medical Field

- Assist in transcription

Consumer Software

- Marketed as consumer software and its early popularity as dictation software
 - Supporting productivity
 - Hands-free control (e.g. in vehicles)

Isn't generally marketed as accessibility software for people with motor impairments



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 **Features of Speech Recognition Software**

Command and Control

- Open applications
- Perform commands like copy, paste, and selection
- Click links, buttons, or check checkboxes, etc.
- Scroll up, down, or move the cursor around

Dictation

- Input text, numbers, formatting, etc.
- Correct dictation mistakes
- Dictate into input controls that may not support speech

Control of pointer

- Mouse grid commands to click



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 **Platform Support**

Windows - Dragon from Nuance

Supports Apps

- Desktop, email, office apps, browsing, etc.
- IE, Firefox, and Chrome (through extensions)
 - Some ARIA support in version 13
- Most popular speech recognition
- Has text-to-speech supports
- Has multiple versions with customized dictionaries



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Platform Support



Windows - Dragon from Nuance (cont.)

- Supports different languages
 - English, French, German, Italian, Spanish, Dutch, Japanese
- Can be customized (scripted, macros created)
 - Insert custom text and graphics
 - Can issue keyboard commands in sequences
 - Limited accessibility API access
- Best on computer with powerful hardware and sufficient memory
- Person may not have latest version
 - E.g. due to cost or IT environment



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Platform Support



Windows Speech Recognition

- Similar to Dragon but with less options. Includes:
 - Profiles
 - Review docs for accuracy
 - Activation by voice
 - Web support for browsers w/ direct voice and show numbers
 - Text selection and formatting based on on-screen toolbar buttons
 - Mouse grid



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Platform Support



Mac OS X

- Mac Speech recognition
 - Dictation automatically available with Internet connection
 - Speech control must be enabled and downloaded on Mac
- Dragon Dictate available
 - Dictation only



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Mobile

- Siri (iOS)
- Cortana (Windows Phone 8.1)
- Google Now (Android)

Notes

- Control is limited to system commands and dictation in input fields
- Often no mechanism to delete text or change words that were incorrectly recognized
- Not sufficient solution for people who rely on speech recognition



Siri's help menu

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Mobile (cont.)

- May require internet connection
- Navigation in browser by voice is not supported unless special browser is used
 - Dolphin Sonar mobile browser – navigation and search by voice (iOS and Android)
- Dragon has dictation apps for different platforms
 - Dictation allows copy of text into common apps



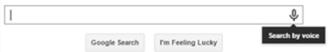
Dolphin Sonar Speech Input

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Other Uses

- YouTube
 - ASR – caption videos with some degree of accuracy
 - Can correct mistakes and turn ASR into captions/transcript
- Google Voice
 - Voicemail to text
- Smart TVs
- May be built in some browsers (Web Speech API)
 - May be available to web pages
 - May be part of browser control/dictation (e.g. Voice Opera)



Voice search field in Chrome

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 **How to use Speech Recognition** 

- Speak naturally and clear
 - Same tone, speed, and inflection that you normally speak
- Speak in phrases when possible
 - Don't add pauses between words
- Run audio setup, training, and add vocabulary
- If needed, you can force:
 - Commands
 - Dictation
 - Spelling
- May be helpful to add word signifying command
 - E.g. "click save" rather than "save"

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 **Demonstration** 

"Wake up"



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 **Demonstration** 

"Start Internet Explorer"



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Demonstration SSB BART GROUP

"Open top site for Amazon"

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Demonstration SSB BART GROUP

"Click Search"

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Demonstration SSB BART GROUP

"Click edit box"

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Additional Commands

- Voice keyboard commands (examples)
 - Press tab, press down, press spacebar, press enter
 - Press alt+n, Press p
- Start scroll up or start scroll down
 - Scroll faster, stop scrolling
- Move up or move down (n)
 - Move down by 3, etc.
- For controls that don't support input
 - Show dictation box
 - Copies text into input field




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Designing Websites for use with Speech SSB BART GROUP

On-screen Labels

- Provide on-screen labels
- On-screen label must exactly match the accessible name of the control
- Accessible name can be set by
 - Aria-labelledby (except button)
 - Aria-label
 - Label element (form fields except button)
 - Title attribute (forms only)
 - Value (input type button)
 - Alt text (input type image, image links) and text content



Associate labels and form fields whenever possible via label element or aria-labelledby (Dragon 13)

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Designing Websites for use with Speech SSB BART GROUP

- **Accessible Name Support Matrix**

Accessible Name	Supported?
aria-labelledby (except button)	Yes
aria-label	No
Title attribute (form field only)	Yes
Value (input type button)	Yes
Alt text (input type image)	Yes
Alt text in link or button	No
Link or button text	Yes
Explicit Label element (form field except button)	Yes
Implicit label (form field except button)	No

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Designing websites for use with Speech SSB BART GROUP

Assign Proper Roles

- If a control looks like it a button it should be a button
 - button element, input type button, ARIA role of button
- If it looks like a link it should be a link
 - a element, ARIA role of link



These look like buttons – are they really buttons, or links?

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Designing websites for use with Speech SSB BART GROUP

Keyboard Access

- Provide keyboard access
 - Benefits all users and required for keyboard-only users
 - Fallback for users of speech recognition
 - Only useful if they are documented and discoverable
- Avoid scrolling areas inside of a page
 - If you have to use them provide keyboard access to the area
- When drag and drop or rollovers are used
 - Provide alternatives, e.g. keyboard equivalents
- Dragon may change value of control directly without pressing keystrokes
 - In scripts: be aware that user may enter text without actual key being pressed.

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Designing Websites for Use with Speech SSB BART GROUP

Mouse grid commands

Mousegrid and Dragon's "mark" and "drag" mouse commands are not acceptable solution for not making content accessible



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Speech Recognition and ARIA



Standard HTML Element and Keyboard Patterns

- First rule of ARIA: use standard HTML element whenever possible
 - Use standard HTML elements and style as needed rather than creating custom widgets
- Implement keyboard access pattern for ARIA control
 - Arrow keys for page tabs, lists, menus, and comboboxes, etc.
 - All controls should be placed in the focus order
 - Provide visual indicator of keyboard focus
- Dragon will treat elements with tabindex and onclick as links
- MS speech recognition will not provide access to generic elements with tabindex or onclick.



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Speech Recognition and ARIA



Aria-labelledby and aria-label

- aria-labelledby support for form fields and links
 - E.g. input, checkbox, radio button, div with tabindex or onclick
 - Does not appear to be supported for buttons
- aria-label is not supported
- Practically speaking using tabindex and aria-labelledby (where appropriate) will allow *direct voice access* to all sorts of content found in ARIA widgets such as menus, trees, sliders, page tabs, accordions, combo boxes, etc.



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Speech Recognition and ARIA



WCAG Conformance

- ARIA can be used for WCAG conformance...
 - if accessibility supported
- e.g. If Dragon is part of the user agent supported technology stack for their WCAG conformance claims – content must be accessibility supported with Dragon



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 **Resources** 

- SSB Blogs on Speech Recognition
 - <https://www.ssbartgroup.com/blog/2014/11/14/considerations-for-testing-with-speech-recognition-software-such-as-dragon-naturally-speaking/>
 - <https://www.ssbartgroup.com/blog/2014/08/29/dragon-13-aria-support-is-here/>
- Dragon Naturally Speaking Shortcuts
 - <http://supportcontent.nuance.com/kbfiles/16477-dns13commandcheatsheet.pdf>

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 **Resources (cont.)** 

- Setting up Windows Speech Recognition
 - <http://windows.microsoft.com/en-us/windows/set-speech-recognition#1TC=windows-7>
- Information on Speech Recognition for the Mac
 - <https://support.apple.com/en-us/HT5449>
- The ARIA Specification
 - <http://www.w3.org/TR/wai-aria/>

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 **Thank You!** 

Contact Me

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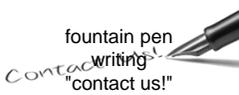
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Thank you for participating!

NEXT SESSION IS MAY 21, 2015

**Digital And Technology Access:
The Role of Law and The Limits of Law
With Lainey Feingold**

The session today was recorded
and will be archived at
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