Assistive Technology – Our Scope and Challenges

IS&T
Customer Support
Assistive Technology Information Center
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Assistive Technology Information Center (ATIC)

Our scope

- Assistive technology to perform tasks related to work and study at MIT (not living or recreational needs)
- Commercially available hardware and software: desktop, mobile, or standalone apps and devices

Our goals

- Accessibility of MIT academic course materials
- Match assistive technology to individual needs
- Provide specialized assistive technologies for students with disabilities

Universal and Accessible Design

Universally designed products are designed with the widest possible audience in mind.

Most products are made accessible in one of 4 ways:

- Directly accessible
  - …a open captioned video is directly accessible to the deaf
- Accessible via standard options or accessories
  - …the iPhone is accessible to the blind via VoiceOver option
- Compatible with third party assistive technologies
  - … web pages that interact with JAWS screen reading
- Require custom modification(s)
  - … No current commercial product meets the need of the user

ATIC – Initial Conversation with Customers

- Functional needs or gaps
  - Physical and situational
- Task goals (reading, writing)
  - Area of study or work
- Technical skills, expertise, preferences
  - Operating system (Windows/Mac)
  - Hardware (Laptop, Tablet)
  - AT or strategies they have tried
- Support network
  - Family, friends, care providers, government/nonprofit agencies

ATIC – Technology Research and Trials

1. ATIC consultants research and test products
   - Requirements, Operating System
   - Feature Sets match needs?
   - Try them out for functionality, usability
   - Make recommendations
2. Students/staff try out products
3. Product selection reviewed, re-evaluated
   - Person's abilities and needs may change over time (stable vs. progressive disability)
   - Tasks or tools required may change

Our Challenges

- STEM (Science Technology Engineering Math) materials difficult to read/create with current technologies

- Standard assistive technologies meet standard disability types
  - Real people have more complex needs / preferences
  - Personal preferences don't match existing products

- Rates of abandonment high
  - time to learn technology
  - training and support is hard to find or non-existent
  - usability/ease of use over time is poor
  - AT is expensive and can become obsolete quickly

ATIC Example

- Blind student needed access to biology and physics visuals
- Scope out technology to meet student need: IVEO tactile graphics tablet
- Team formed to create graphics, including subject matter experts and those with drawing expertise
- Team produced simplified Braille diagrams over 3 months
- Student tried diagrams with assistance from tutors and did not find them useful
- Back to square one!? #%*

…hopefully, another student will utilize the diagrams

Assistive Technologies Commonly Used at MIT

Technology Category / Products	Access created through / Disability-type
Alternative Keyboards and Pointing Devices *Kinesis Advantage Contoured, Evoluent Mouse*	Modified position *Repetitive Strain Injury, Physically impairment*
Captioning *CART (Communication Access Realtime Transcription)*	Visual rendering of all audio content *Hearing-impairment, Visual learner*
Magnification *VisioVoice, ZoomText, Amigo, Acrobat LCD*	Enlargement of standard sized text/images *Low-vision*
Reading software and devices *Kurzweil 3000, ReadtoGo, DAISY readers*	Reading with audio and/or visual support *Auditory learner, Visual impairment*
Screen Reading Software *JAWS, Window-Eyes, NVDA, Orca, VoiceOver*	Keyboard only control Audio reading of visual content *Blindness, Low-vision*
Speech Recognition Software *Dragon Natspeak / Dragon Dictate*	Control with speech *Physical impairment, Hand injury*

Operating System Built-in Accessibility Options

Accessibility Feature	Operating System
Screen Reading	Mac OS X – Voiceover iOS Ubuntu - Orca
Magnification and Enhanced Display Options	Mac OS X - Zoom Windows 7 – Magnifier iOS Ubuntu - Magnifier
Sticky Keys – a sequence of keys can be pressed instead of a key combination	Mac OS X Windows 7 Ubuntu
Slow Keys – key must be held down for a specific amount of time to activate	Mac OS X Windows 7 Ubuntu
Mouse Keys – Use keyboard numpad as a mouse	Mac OS X Windows 7 Ubuntu

AT Equipment at MIT

ATIC, Room 7-143, provides:
- Desktop computers (Windows, Macintosh, DebAthena)
- Assistive Software (JAWS, ZoomText, Kurzweil, etc.)
- Alternative keyboards and pointing devices
- Scanners (High-speed document, flatbed)
- Note taking devices (EchoSmart Pen)
- Reading devices (Kindle, iPad)
- Braille devices (Viewplus Premier, Perkins Brailler)
- Tactile tablet (IVEO)
- Magnifying devices (Note-Taker, Acrobat)

ATIC Devices/Examples With Us Today

IVEO Tablet Braille Diagrams

Perkins Brailler

Reading App: iPad Read2Go

Magnifier: Amigo Handheld

One-handed Keyboards

      BAT, FrogPad, Mini keyboard

Pointing Devices

      BIGTrack, Bili Footmouse

Recommended Resources

- DO-IT (Disabilities, Opportunities, Internetworking, and Technology) at U of Washington http://www.washington.edu/doit/
- CATEA (Center for Assistive Technology and Environmental Access) at Georgia Tech http://catea.gatech.edu
- Trace Center, University of Wisconsin-Madison
  http://trace.wisc.edu/resources/at-resources.php
  http://trace.wisc.edu/resources/ud-resources.php
- Scherer, Marcia. *Living in the State of Stuck – How Assistive Technology Impacts the Lives of People with Disabilities*

Contacts / Questions

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QUESTIONS?