

Assistive Technology – Scope and Challenges



IS&T

Customer Support

Assistive Technology Information Center

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Assistive Technology Information Center (ATIC)

Our scope and services

Our scope:

- Assistive technology needed to perform tasks related to work and study at MIT (not living or recreational needs)
- commercially available hardware and software

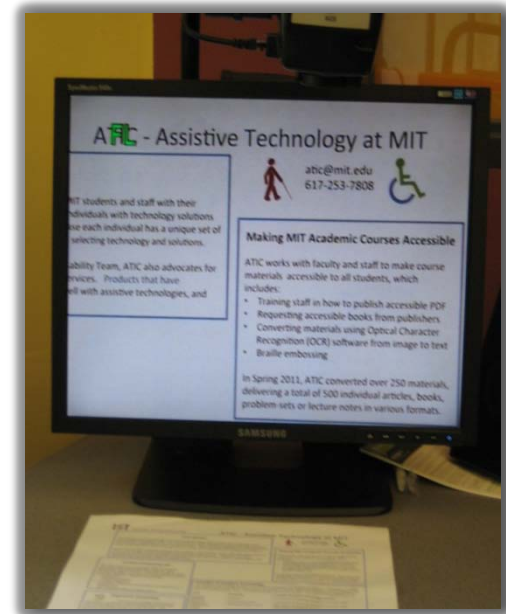
Our core services:

- Match assistive technology to individual needs
- Accessibility of MIT academic course materials
- the “Lab”, a computer study pace for students with disabilities

The ATIC “Lab”

Started in 1992 to provide specialized equipment for MIT students with disabilities. The facility is open 24/7 for students. Equipment includes:

- 8 desktop computers (6 Windows, 1 Macintosh, 1 DebAthena)
- 25+ assistive software applications
- Tiger Braille embosser
- IVEO tactile tablet
- Acrobat LCD video magnifier
- scanners
- alternative keyboards and pointing devices
- standalone devices for notetaking and reading



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
 - ... primarily what we help identify in ATIC
- Require custom modification(s)

ATIC – How We Engage with Customers

Initial conversation is key; gather information on:

- 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



ATIC – Selecting Technologies

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

Traditional Methods of IT Use

Device / Method	Required Ability
Keyboard	Mobility, strength, dexterity
Mouse	Mobility, strength, dexterity
Display / Video	Vision, Visual processing/cognition
Audio	Hearing

When one of these methods is not usable by an individual with a disability, an assistive technology is developed to fill that need.

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

Assistive Technologies Commonly Used

Technology	Access created through
Speech Recognition Software <i>Dragon Natspeak / Dragon Dictate</i>	Hands free control with speech <i>no keyboard or mouse required</i>
Screen Reading Software (video demonstrating JAWS) <i>JAWS, Window-Eyes, NVDA, Orca, VoiceOver</i>	Keyboard only control Audio reading of visual content <i>no mouse or display required</i>
Alternative Keyboards and Pointing Devices <i>Bili footmouse</i>	Modified position
Captioning <i>CART (Communication Access Realtime Transcription)</i>	Visual rendering of all audio content <i>no audio required</i>
Onscreen Keyboard <i>Keystrokes</i>	Mouse only control <i>no keyboard required</i>
Magnification Software or Standalone Device <i>VisioVoice, ZoomText, Amigo, Acrobat LCD</i>	Enlargement of standard sized text/images

Demos of Assistive Technology

Augmentative Communication

Assistive Chat

Screen Reading

VoiceOver for Mac OS X

Magnification

VisioVoice

Amigo magnifier

DAISY book reader

Victor Reader Stream

One-handed keyboard

BAT

Foot Mouse

Bili Slipper Mouse

Alternative keyboard

DataHand

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 is hard to find or non-existent
 - usability/ease of use over time is poor
 - AT is expensive and can become obsolete quickly

Recommended Resources

- DO-IT (Disabilities, Opportunities, Internetworking, and Technology) at U of Washington
<http://www.washington.edu/doit/>
- Cateea 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*

Contact Information

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QUESTIONS?

