

# DESIGNING INCLUSIVE USER EXPERIENCES

## MICROSOFT'S VISION:

ACCESSIBILITY ENABLES PEOPLE OF ALL ABILITIES TO REALIZE THEIR FULL POTENTIAL. MICROSOFT CREATES TECHNOLOGY THAT IS ACCESSIBLE TO PEOPLE AROUND THE WORLD—OF ALL AGES AND ABILITIES.

Annuska Perkins  
Accessibility Group  
Microsoft

Stanford Engr 110/210  
Perspectives in Assistive  
Technology  
Winter Quarter 2012



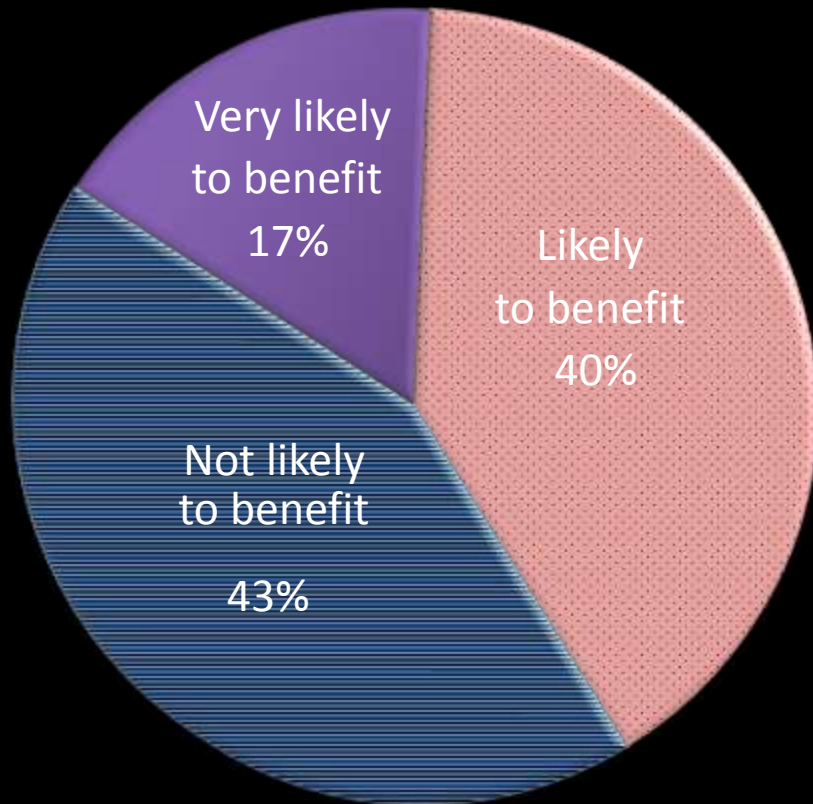
# Presentation Objectives

1. Microsoft's goals and vision for accessible technology
2. Understanding customer needs and inclusive design
3. Creating innovative solutions
4. Resources for college students

# Natural User Experiences



# Accessibility Market in U.S.



**57%** of computer users (age 18-64) are likely or very likely to benefit

- 1 in 4 users experiences a visual difficulty.
- 1 in 4 experience pain in our wrists or hands.
- 1 in 5 has a hearing difficulty.

Base: US 18-64 year old computer users

# New Perspective on "Accessibility"

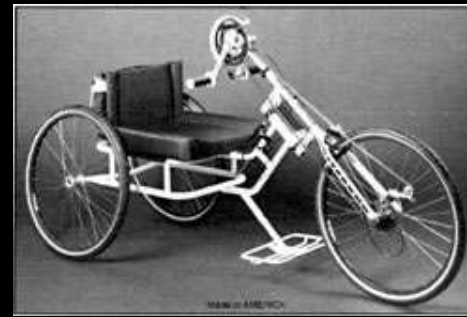
- Accessibility is not limited to people with disabilities – it represents the ability for anyone to use technology
- Overlap in requirements from disabilities, seniors, illiteracy, QA testing, speech commanding, ...
- Accessibility improves customer reach and satisfaction
  - Assistive Technologies finding new up-take in healthcare
- Accessibility is defining the "mainstream" customer of tomorrow







# Inclusive Design is a process



# Customers have a range of customization needs



## Traditional Disability

- Blindness
- Color Blindness
- Low Vision
- Deafness or Hard of Hearing
- Dexterity
- Language & Learning



## Temporary Condition

- Repetitive Stress Injury
- Eye Fatigue
- Injury or Surgery
- Environmental Factors
  - Noise & Lighting



## Customer Preference

- Simpler User Interface
- Customize display
- Input Device
  - Mouse vs. Stylus
  - Keyboard vs. Speech
- Work and learning styles





# Personas

Impairment	Description	Solutions
Low Vision	Sales manager and busy mom utilizes magnification and screen reader	Allison's tools include screen and portable magnification, and a screen reader.
Blindness	Banker enjoys urban exploration with a Pocket PC and screen reader	Michael relies on several assistive technologies including a Pocket PC and screen reader to work
Dyslexia	Student, and future fashion designer, uses learning software to help with dyslexia	Vanessa uses a computer equipped with learning software (such as a talking dictionary, phonetic spell-checking and word-prediction)
Senior	Active retiree makes her computer easier to see and use	
Mobility	Medical researcher, card shark, and speech recognition fan	Garrett uses a sip-and-puff input device to interact with his on-screen keyboard.
Low Vision	Sales manager and busy mom utilizes magnification and screen reader	Allison's tools include screen and portable magnification, and a screen reader.

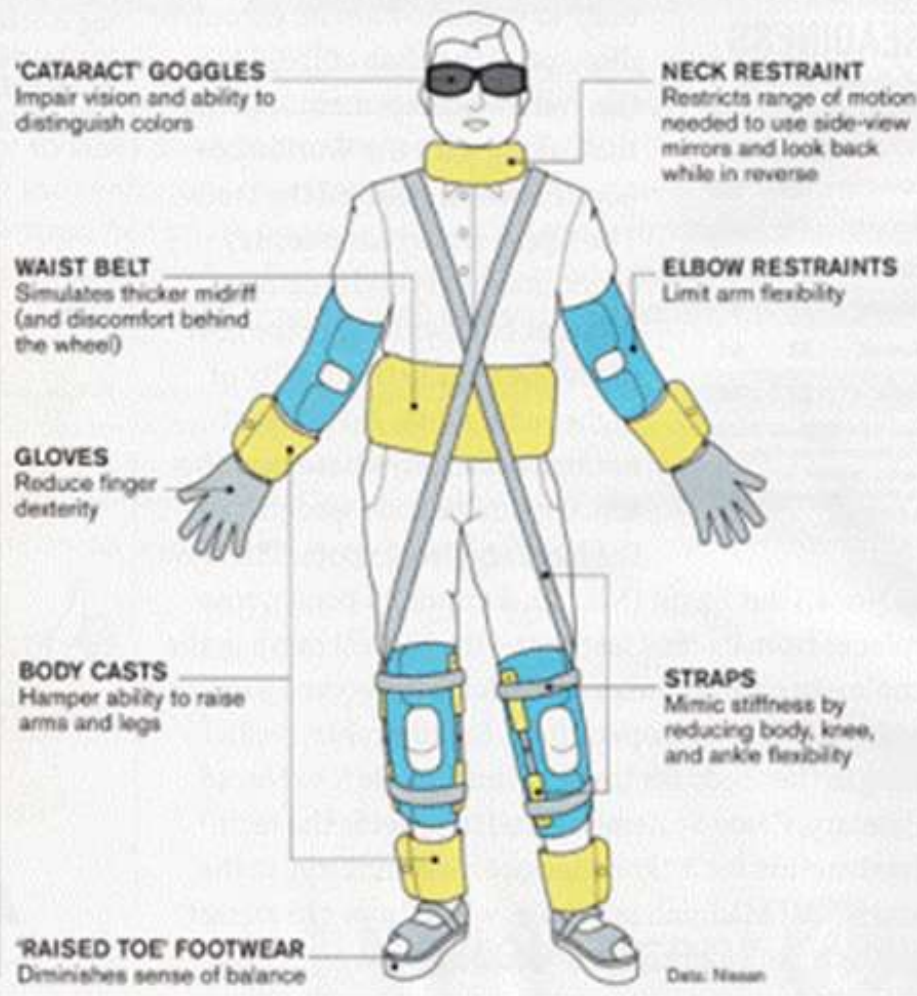


# User's Perspective

1. How do you do that without a mouse?
2. If you can't see?
3. If you're looking at a 200px by 200px area in a screen magnifier?
4. What happens if the fonts get big?
5. How can you optimize usability?

Have daily AT users try prototypes of UI Designs

Elderly drivers make up a growing share of Japan's auto market – and its accident statistics, according to Japanese broadcaster NHK. Now, to help them drive more safely (and comfortably), engineers at Nissan are donning “old” suits that simulate the effects of aging. “It's not always practical to recruit older motorists for product research,” says design engineer Etsuhiro Watanabe. – Ian Rowley



# Accessible Media Player

Full text  
Transcript

Audio  
Description

Sign  
Translation

Captions

Accessible  
controls

Transcript  
[Open on a man in a white shirt and tie in front of a plain wall with a background waving. An email address sean@windows.com is overlaid.]  
Sean: Hello. I'm a PC, and I've been made into a stereotype.  
Uche: I'm a PC, and I'm not what you call hip.  
[Woman in casual clothing stands in front of a white board covered in technical diagrams. An email address uche@windows.com is overlaid.]  
Bill Gates: I'm a PC, and I wear glasses.  
[Bill Gates holds groceries in a parking lot. An email address bill@windows.com is overlaid.]

Bill Gates holds groceries in a parking lot. An email address bill@windows.com is overlaid.

Bill Gates: I'm a PC, and I wear glasses.

00:00:08 | 00:01:01

- Adequate contrast
- Keyboard model
- Visible focus
- Adjustable text size
- AT interoperability





# Kinect for Xbox and Windows



 MOTION SENSOR

 FACIAL RECOGNITION

 SKELETAL TRACKING

 VOICE RECOGNITION

# Imagine Cup

*“Imagine a world where technology helps solve the toughest problems facing us today.”*





# United Nations' Millennium Development Goals



1. **Eradicate extreme hunger and poverty**
2. **Achieve universal primary education**
3. **Promote gender equality and empower women**
4. **Reduce child mortality**
5. **Improve maternal health**
6. **Combat HIV/AIDS, malaria and other diseases**
7. **Ensure environmental sustainability**
8. **Develop a global partnership for development**



# Competitions

- Software Design
- Information Technology
- Game Design
- Windows Phone
- Windows Azure
- And more!

<http://imaginecup.com/>

# Student Xbox game for rehabilitation



Miguel López Pérez  
Salvador López Solís  
Dario Castrejón Morales  
Guillermo Barrios Zacarías



# Mobile Communication Devices for Kids with Autism



- Picture Exchange Communication System (PECS)
- <http://www.communicationautism.org>
- Research conducted by Gondy Leroy (Claremont Graduate University) and Gianluca De Leo (Virginia Modeling, Analysis and Simulation Center at Old Dominion University)
- Funded by Microsoft External Research

# Summary: Inclusive Innovation is the Key

- **“Inclusive Innovation”** combines the principles of usability, accessibility, and user-centric design with forward-looking technology trends to redefine how we build new products
- Key Considerations
  - Adaptive Computing Environments will play a key role
  - Better tools & technologies can help but cannot solve the problem
  - Educational curriculum and training programs must be developed
  - All forms of information must be included
    - Documents, audio, video, and other forms of electronic media

# Resources

- Marketing and User Guides
  - [www.microsoft.com/enable/](http://www.microsoft.com/enable/)
  - [www.microsoft.com/enable/news/subscribe/](http://www.microsoft.com/enable/news/subscribe/)
- Accessibility Developer Center
  - <http://msdn.microsoft.com/en-us/accessibility/>
- Augmented Cognitive Research
- .toolbox <http://www.microsoft.com/design/toolbox/>
- Accessible Media Player
  - <http://www.codeplex.com/amp>
- Free development software for high school and university students
  - [www.dreamspark.com](http://www.dreamspark.com)
- NonVisual Desktop Access (NVDA)
  - <http://www.nvda-project.org/>

# Resources

- Microsoft Office Articles & Templates for Primary & Secondary Research
  - <http://office.microsoft.com/support/> and Search for “Conduct Research”
- Office UX Research  
<http://blogs.technet.com/b/office2010/archive/2009/10/29/ux-research-tools-and-techniques.aspx>
- UX Design Tools & Techniques  
<http://blogs.technet.com/b/office2010/archive/2009/11/16/ux-design-tools-techniques.aspx>