# Assistive Technology Abandonment and Adoption

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# Assistive technology

- Definition
- Why what we are doing is AT
- The existing world of AT

# Categories of AT

- Motoric
  - Wheelchairs
  - Prosthetics
- Sensory
  - Eyeglasses
  - Hearing aids
- Cognitive
  - AAC
  - Task and schedule support
  - Memory support

# Abandonment Examples

- The Visions system and the Imagine Centre for Developmental Disabilities
- Liberator AAC and the BVSD
- Hearing aids

# The Horrible Truth

- 1/3 of all AT is abandoned in first month of ownership
- Abandonment is higher as technology gets more complex
- Abandonment is higher as application moves from sensory to cognitive

# Even worse

- Abandonment has been found to be as high as 70% and often is above 50%

# Why?

Surprising lack of studies

# Obvious ones

- I don't need it anymore
- Lack of training
- Hard to maintain or setup
- Device aesthetics (Dorky)
- Complex written instructions,
- Bad device performance
- Difficult to use / doesn't fit me

# Not so Obvious ones

- Changes balance of power in family
- Initially works but doesn't fit me now
- Requires personal help I can't afford to keep it going

# Why can't the system just be self-adapting?

- An example - lots of failed attempts to automate the choice of AT
- AT is more art than science currently
  - At least in non-motoric domains
  - It's not a well bounded problem

# My work on this problem

- High functioning cognitive AT
- Universe of 1 requires deep configuration
- Adapt to change of-
  - User (short and long term)
  - Task or application
  - Environment
- Caregivers must be involved (post sales)
- Two user types & one system

# What to do

- Pay attention to system over the life of the system
- Pay attention to caregiver role
  - Stakeholder analysis
- Design with, not design for
- Pay attention to your model of the end user
- Be humble

# Further reading


- Scherer, M. J. (1996). Living in the State of Stuck: How Technology Impacts the Lives of People with Disabilities.
- Scherer, M. J. and J. C. G. (1996). Evaluating, Selecting, and Using Appropriate Assistive Technology
- Reimer-Reiss, M. (2000). Assistive Technology Discontinuance. Technology and Persons with Disabilities Conference.
- LoPresti, E. F., A. Mihailidis, et al. (2004). "Assistive technology for cognitive rehabilitation: State of the art." Neuropsychological Rehabilitation

# The other side of the coin adoption

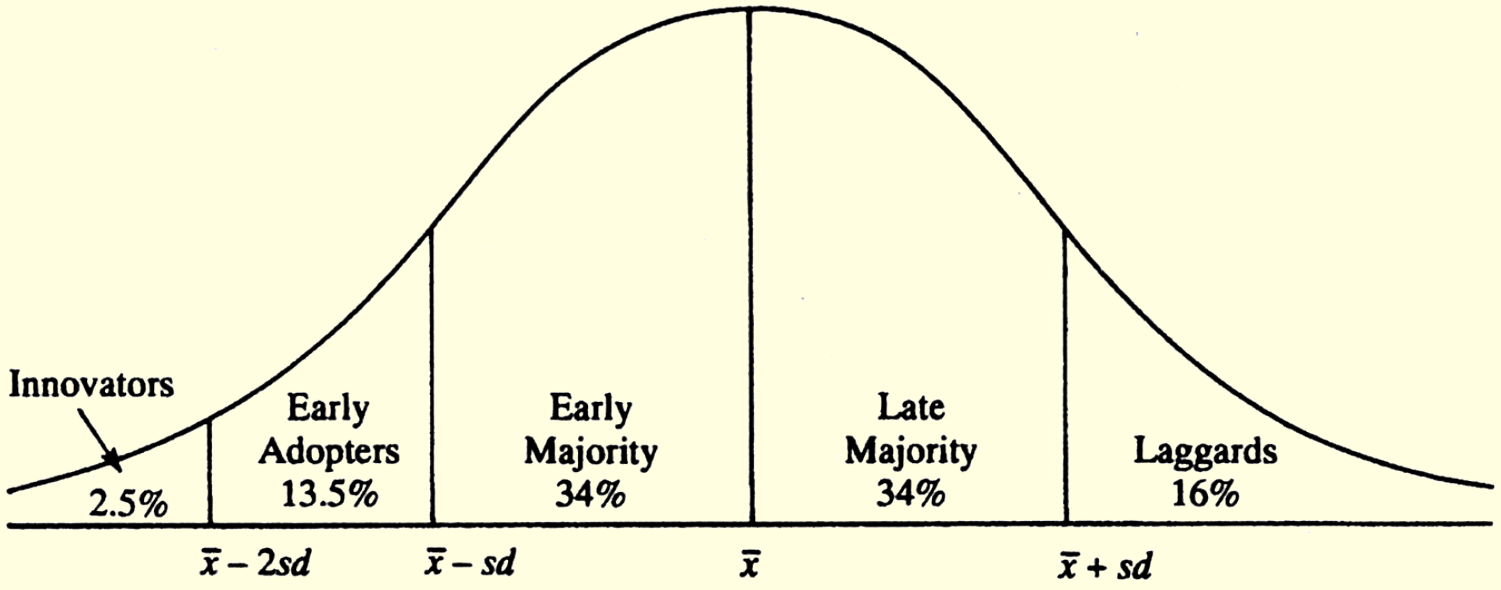
- How do we adopt new technologies?
- Why do we care about this

# Rogers, the father of adoption studies

- *Diffusion of Innovations* (1962-2003)
- Looking at how a new technology is adopted
- Sociological approach (i.e.the whole picture)

# Players

5 kinds of adopters - partitioned by average and SD



# What are they like?

- Innovators:.
  - disposable income .
  - technical knowledge
  - Patience and motivation
- Early Adopters
  - High status
  - Look to innovators for guidance
- Early Majority
  - between the very early and the relatively late to adopt makes them an important link in process
- late majority
  - Need peer pressure to adopt
- Laggards
  - Reluctant to change (economics)
  - Resistant to change (social structure)

# What does this tell us

- Don't do usability tests with innovators
- Don't do design work with late adopters & laggards

# Perceived attributes of innovations

- Relative Advantage
  - Is this better than what I have?
- Compatibility
  - Will this work with what I have (what I already know?)
- Complexity
  - How hard is this to learn?
- Trialability
  - Can I just try this or do I have to throw away the old thing before I even try it?
- Observability
  - If the neighbours see the new thing, it's easier for them to adopt

# Other adoption perspectives

## Technology Acceptance Model
## Fred Davis

- Factors influencing how and when adoption happens:
  - Perceived usefulness (PU) - "the degree to which a person believes that using a particular system would enhance his or her job performance".
  - Perceived ease-of-use (PEOU) - "the degree to which a person believes that using a particular system would be free from effort"
- Good way to look at why to choose AT in the first place
- Focus on person out of context of use and culture

# How adoption studies help design

- Study existing work practices
- Understand how technology is embedded in cultural matrix - not in isolation
- *Adoption* is part of use

# Thanks!