

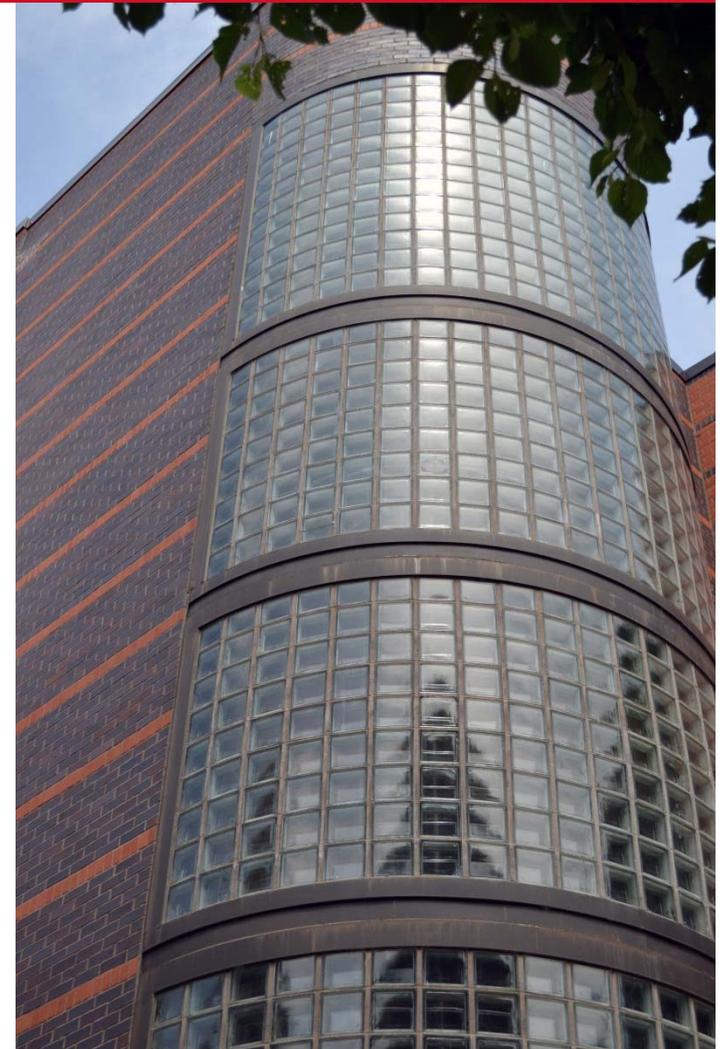
**IOWA STATE UNIVERSITY**  
**College of Engineering**

**Technology, Product Design,  
Life Span and Aging**

**Iowa's Prospects for  
Independent Living  
Conference**

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**Assistive technology** is any solution (equipment, software, etc.) which enhances the performance or enjoyment of any area of life, including recreational activities and everyday tasks for a person with a disability.

# Assistive Technology Categories

- Aids to Daily Living
- Mobility
- Communication
- Environment
- School/Workplace
- Athletics and Recreation



See more at KIDS TOGETHER, Inc. <http://www.kidstogether.org/>

# Assistive Technology Motivation

- 35 million people in US have a disabling condition
- 53% of US population are with disabilities at any one time
- Steady increase as “baby boomer” generation ages
- \$6 Billion is spent on adaptive equipment each year
- 94% chance that you will acquire a disability of some type in your life time
- **Average American spends 12 years with some form of disability**

# Objectives

- Respond to apparent need and growing demand for assistive technologies
- Provide outreach to disabled community
- Provide an interdisciplinary education
- Promote the integration of research and education activities for students and faculty



**Universal Design** is a series of principles used when designing any product so that the product can be used “universally” by virtually anyone in society, regardless of ability. This concept is called “Design for All” in Europe, a term that better defines it. Good design embraces virtually all potential users. Universal Design is essentially just “good design”. Good design should consider the needs of all users.

# Universal Design

**Seven principles have emerged to guide designers**

## **Equitable Use**

The design is useful and marketable to people with diverse abilities

## **Flexibility in Use**

The design accommodates a wide range of individual preferences and abilities

## **Simple and Intuitive Use**

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level

## **Perceptible Information**

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities

# Universal Design (seven principles continued)

## **Tolerance for Error**

The design minimizes hazards and the adverse consequences of accidental or unintended actions

## **Low Physical Effort**

The design can be used efficiently and comfortably and with a minimum of fatigue

## **Size and Space for Approach and Use**

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility

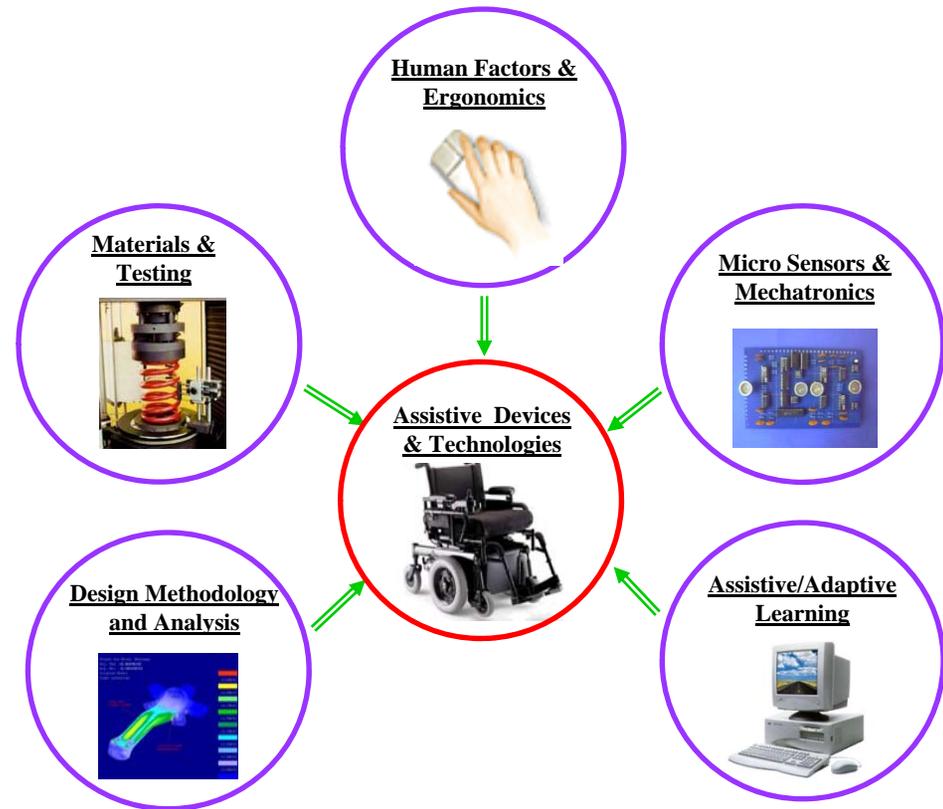


# Examples that come to mind ?

- Bad designs . . . and why
- Alternatives that are better ?
- [https://www.ksu.edu/humec/atid/UDF/7\\_principles\\_details.htm](https://www.ksu.edu/humec/atid/UDF/7_principles_details.htm)

# Assistive Technology/Universal Design

Limited Reach in Kitchen  
Access in/out of Automobiles  
Easy Passage Doors  
Golf T and/or Ball Placer  
Window Assistance  
Safer Crutch on Steps  
One-handed Jar Opening  
One-handed Dishwashing  
Folding Crutch  
etc ...



Freshmen, Sophomores, Seniors, Grad Students

# Example Student Projects

- 100s of students have enjoyed and excelled at AT/Universal Design projects
- Wide range of problems and projects
  - Golf ball and tee placer, one-handed jar opener, wine bottle opener, actuated motorcycle support, alarm clock for hearing impaired, one handed toothbrush-paste combo, auto throttle-brake aide, no-twist door opening, kitchen cabinets that raise-lower, stair-safe crutches ...





INTRODUCING  
FAMILY-MANAGED HEALTHCARE

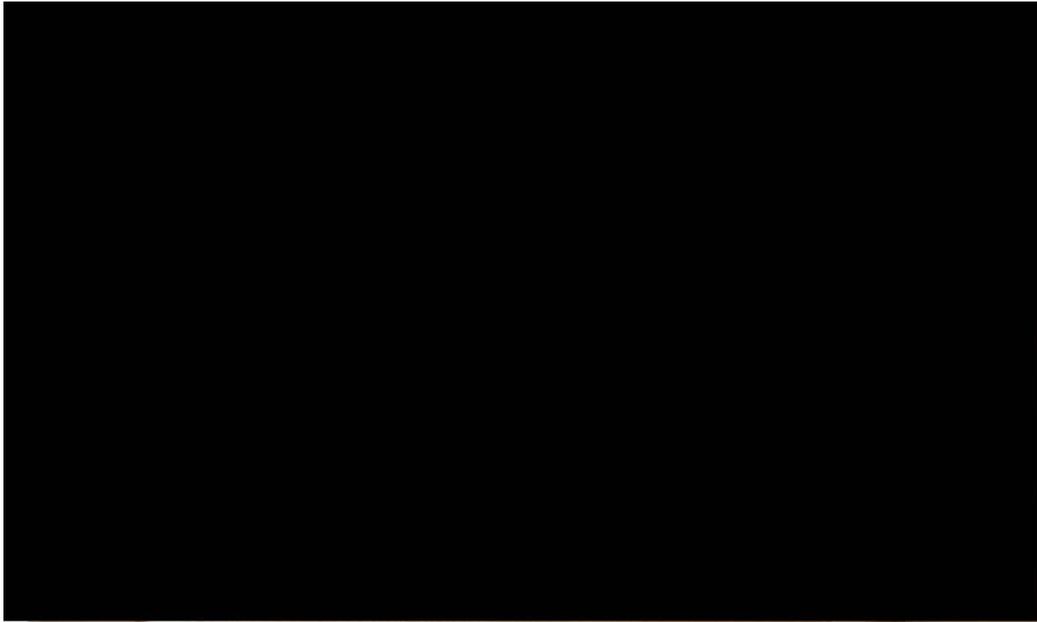


- [http://www.youtube.com/watch?feature=player\\_detailpage&v=qVenuZ7-WMo](http://www.youtube.com/watch?feature=player_detailpage&v=qVenuZ7-WMo)











# Think different



- [http://www.youtube.com/watch?feature=player\\_detailpage&v=FLV1xtZxCYs](http://www.youtube.com/watch?feature=player_detailpage&v=FLV1xtZxCYs)

# Thank you!

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# Questions ?