



Universal Design & Assistive Technology Solutions that Benefit Everyone

Session presented by:

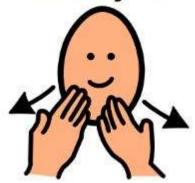
Carolyn Phillips & Sam Peters – Tools for Life

With contributions from James Mueller & John Rempel

AMAC Accessibility Solutions and Research Center College of Architecture | Georgia Institute of Technology



thank you









Georgia Design and Technologies
Tech

for Healthy Aging

Shell of Indulted Disp.

AMAC Accessibility Solutions

 AMAC Accessibility is a social change organization on a mission to create affordable services for governmental, private and nonprofits organization working with individuals with disabilities. Services include e-text, braille, captioning, assistive technology, office management software and consulting.



Accessibility Made Smart



AMAC creates practical solutions that work, with a focus on utility, ease of use, and high quality.

- Accessibility Consulting focuses on organizational accessibility needs with evaluation, technical assistance, customer support, and website accessibility solutions.
- Braille Services produces customized projects from both print materials and electronic text including partial books and chapters or graphics only using cutting-edge technology.
- Captioning Services makes classrooms, meetings, labs and other audio environments fully accessible for deaf or hard-of-hearing.
- Professional E-Text Producers provide high-quality e-text in many formats such as PDF, DOC, DAISY, and HTML.
- **Certified Assistive Technology team** provides on-site and remote assessments, demonstrations, training and technical assistance for education, work, and daily living environments.

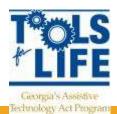
For more information, please visit our website at www.amacusg.org

Tools for Life Mission



We're here to help Georgians with disabilities gain access to and acquisition of assistive technology devices and assistive technology services so they can live, learn, work, and play independently in the communities of their choice.



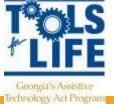


Why Assistive Technology?



- For a person without a disability, technology makes things easier....
- For a person with a disability, technology makes things possible.
- TIP: USE AT. I have yet to meet a successful student with disabilities who doesn't use Any AT.









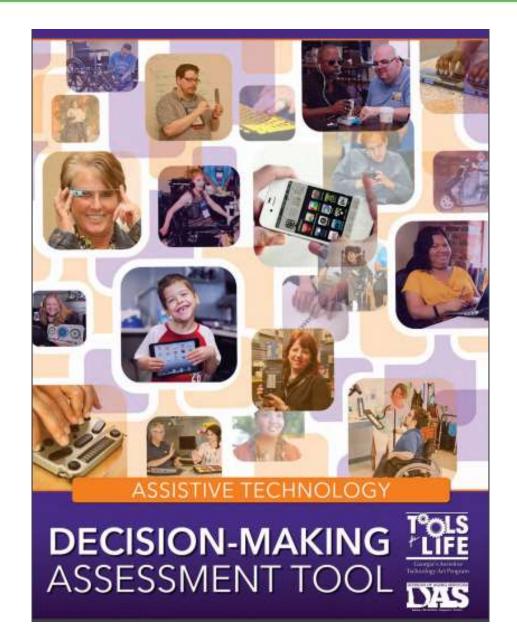
Rehabilitation Engineering Research Center on Technologies to Support Successful Aging with Disability

TechSAge research is funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number 90RE5016-01-00). NIDILRR is a Center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS).

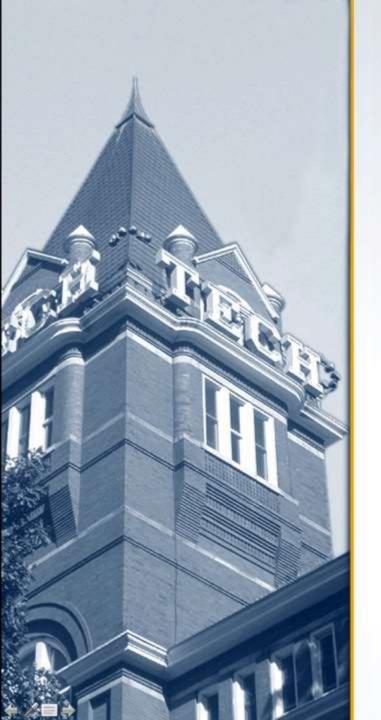












Design, Technology & Aging From Problem to Product

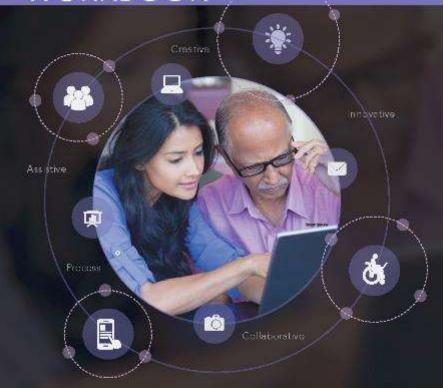
Brian D. Jones
Director, Aware Home
Senior Research Engineer, Interactive
Media Technology Center, RERC
TechSAge, Wireless RERC

brian.jones@imtc.gatech.edu



INNOVATIVE DESIGN CREATION PROCESS

WORKBOOK



SOLUTIONS TO IMPROVE THE LIVES OF OLDER ADULTS











Georgia Design and Technologies Tech for Healthy Aging





Georgia Design and Technologies
Tech for Healthy Aging

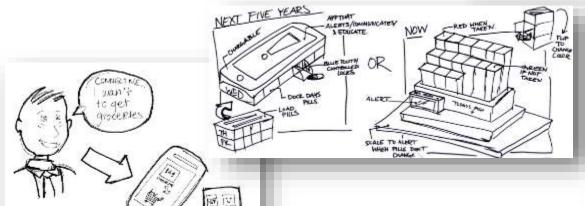


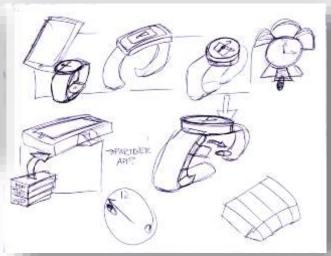
Rapid-Fire (Brainstorming) Breakout Sessions

What is the goal?

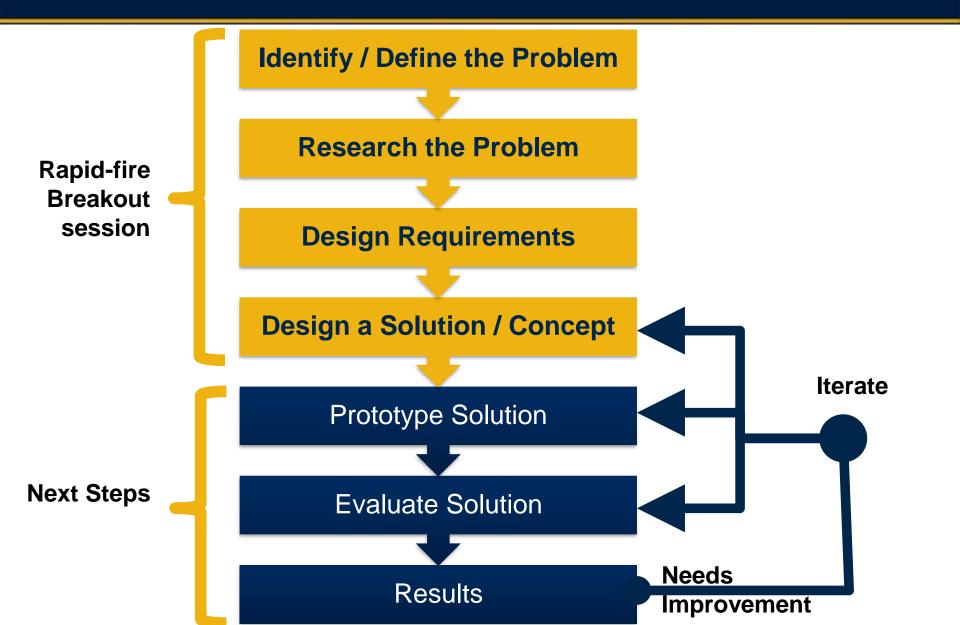
- Consumers (end users)
- Practitioners
- Industry Reps
- Researchers
- Designers







Engineering Design Process



Universal design is design for everyone who lives long enough

In the Shadows - Mainstream



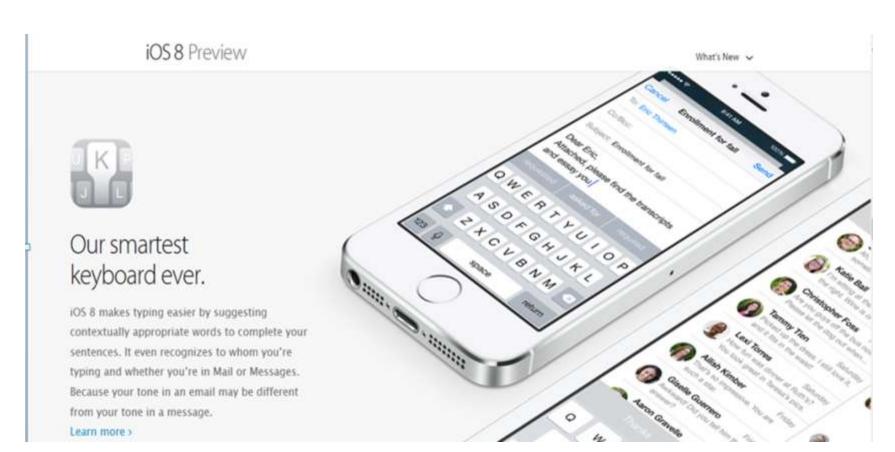
- Tim Cook, Apple Chief Executive
- 2013 speech at Auburn University
- ...people with disabilities are "in a struggle to have their human dignity acknowledged."
- "They're frequently left in the shadows of technological advancements that are a source of empowerment and attainment for others."

Mainstream Example: Mobile/Smart Phones

- · iPhone mobile phone in the mainstream market.
- Apple included a screen reader in the IOS for every iPhone.
- Increased Access for everyone especially individuals with disabilities
- Decreased Cost not as costly as it would be for a company specializing on screen readers
- Moved us Out of the Shadows, Into the Light!

iOS 8 – released in 2014





Assistive Technology (AT) Versus Mainstream Technology (MST): The Research Perspective

- AMAC
 Accessibility for All
- Emiliani, Pier Luigi; <u>Technology and Disability</u>, Vol. 18, No. 1, pp. 19-29
 Publication Date: 2006
- Paper focuses on how the concept of universal design can be applied not only to architectural elements, but to information technology as well.
- The researchers developed a web-based information system that supported accessibility for all users.
- The system included the following components:
 - (2) the User Modeling Server, which maintained individual user profiles,
 - (4) the Hyper-Structure Adaptor, which adapts information content according to user characteristics, preferences, and interests, and
 - (5) the User Interface component, which also adapts itself to user preferences. A discussion of the system's technological design is included.
- Published by: <u>IOS Press</u>
 Association for the Advancement of Assistive Technology in Europe (AAATE)

UD and the Japan Airlines Co., Ltd. (JAL)

- "Attention to Quality"
- Adding psychological value from the perspective of the customer is also important.
- Added three more principles to the 7
 Principles of Universal Design

Additional Three UD Principles of JAL



- Principle 1: High quality and beautiful
 - Have materials and functions been utilized to make it functional and beautiful?

- Principle 2: Comfortable
 - Has a pleasant environment been provided for both customers and staff?

- Principle 3: Sense of security
 - Is it assembled or is it a service that can be used securely for a long time?

Exploring when UD becomes AT



 Companies that consider how people with varying abilities will use their mainstream products, websites and services are at a competitive advantage.

 Many Apple, Android and Microsoft products now have screen readers, enlarging programs and other adaptations for people with disabilities built in.

When UD becomes AT



- Products designed with Universal Design in mind (designing for the broadest range of human ability) are products that are not only more usable by people with disabilities, but more usable by everyone.
- For example: a website that has good color contrast is more usable by people with limited vision - but everyone will appreciate a site where the text is easy to read.

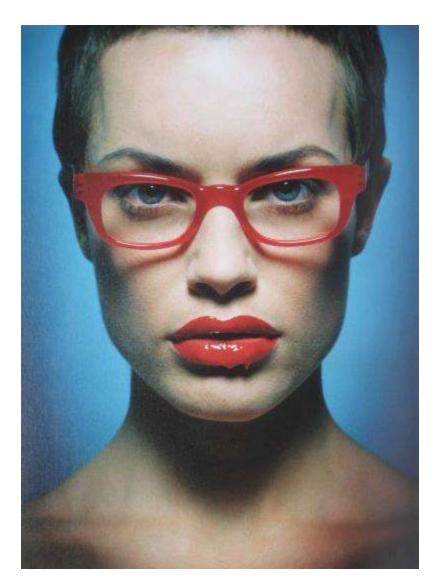
Designing for AT Efficiency



- Make no assumptions
- Design for inclusion
 - Who is the end-user?
 - What is their mode of access?
 - Consider:
 - How many keystrokes/clicks does it take to get from here to there?
 - Can I use my voice to enter information?

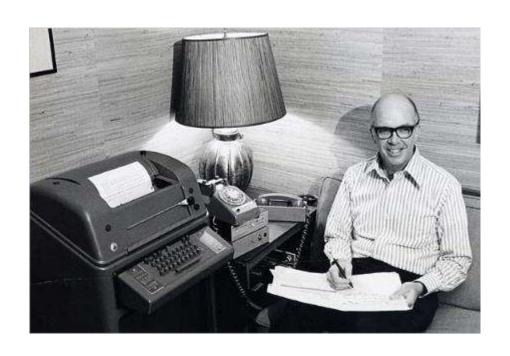
Universal design and assistive technology

Accessible? Usable? Assistive?





TTY's to text messagers

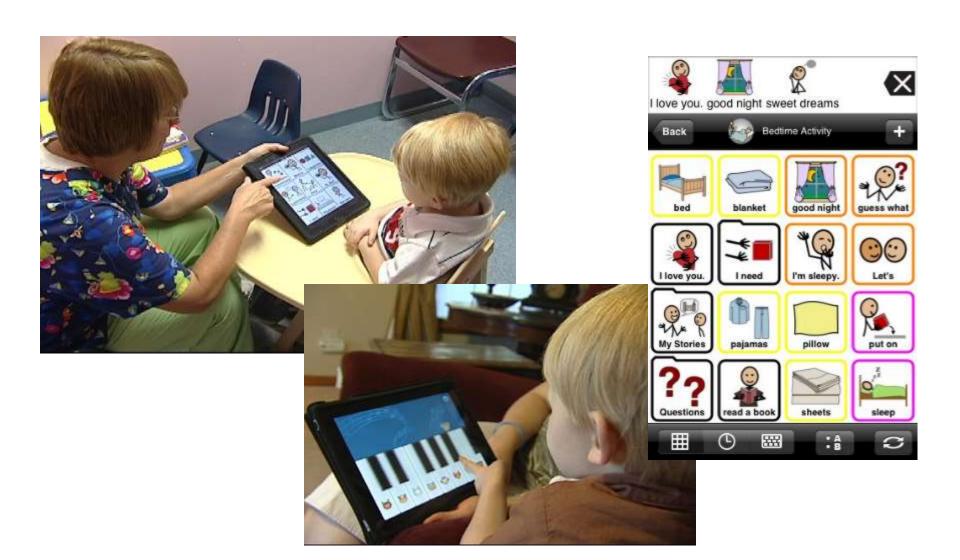




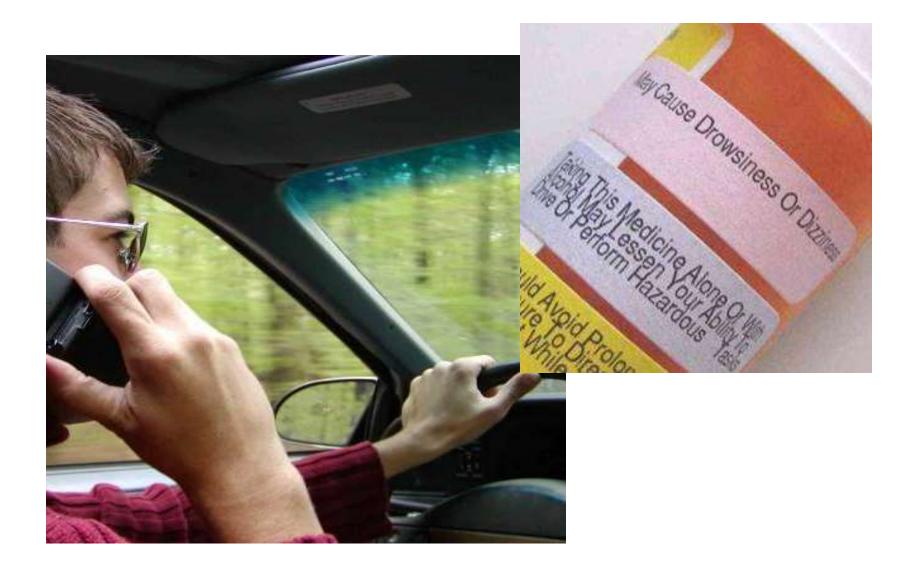
Desktop magnifiers to phone apps



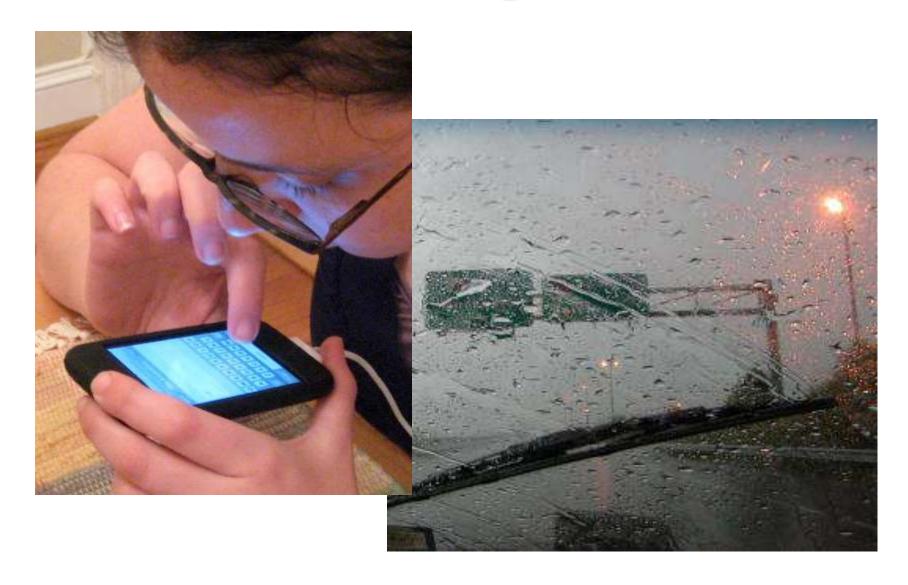
Tablets + apps = assistive technology



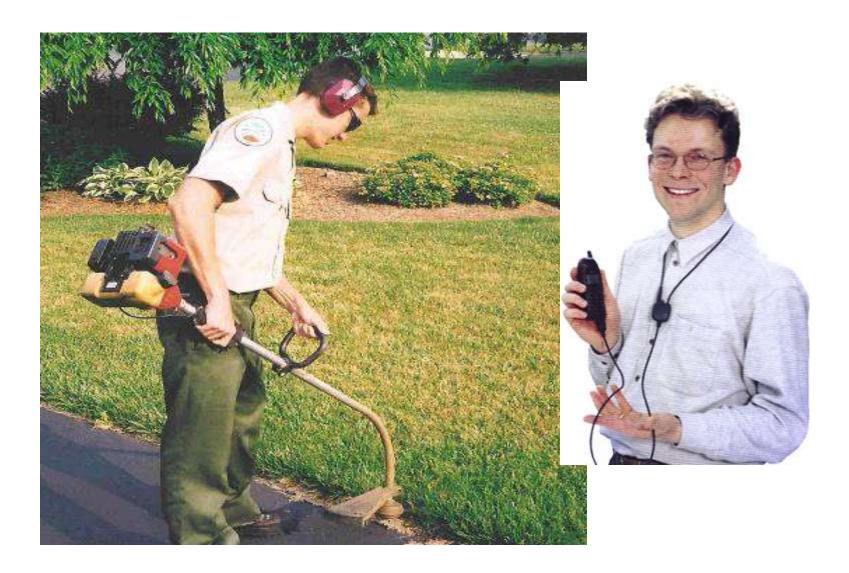
Thinking



Seeing



Hearing



Handling





Mobility





Universal design

Doesn't it begin with U?







Our Question to You: What have You Learned today?



The Tools for Life Team



Carolyn Phillips
Director, Tools for Life
Carolyn.Phillips@gatfl.gatech.edu



Ben Jacobs
Accommodations Specialist
Ben.Jacobs@gatfl.gatech.edu



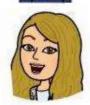
Sarah Endicott
Research Scientist
Sarah.Endicott@design.gatech.edu



Krista Mullen
Speech Language Pathologist
Krista.Mullen@gatfl.gatech.edu



Tori Holder
Outreach Specialist
Tori.Holder@gatfl.gatech.edu



Samantha Peters
Program Specialist
Samantha.Peters@gatfl.gatech.edu



Danny Housley
AT Funding & Resource Specialist
Danny.Housley@gatfl.gatech.edu



Liz Persaud
Training Coordinator
Liz.Persaud@gatfl.gatech.edu



Justin Ingham
Support Specialist
jingham3@gatech.edu



Rachel Wilson AT Specialist

Martha Rust
AT Specialist
Martha.Rust@gatfl.gatech.edu

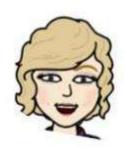
Technology Act Progran



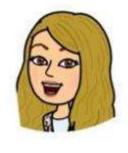
















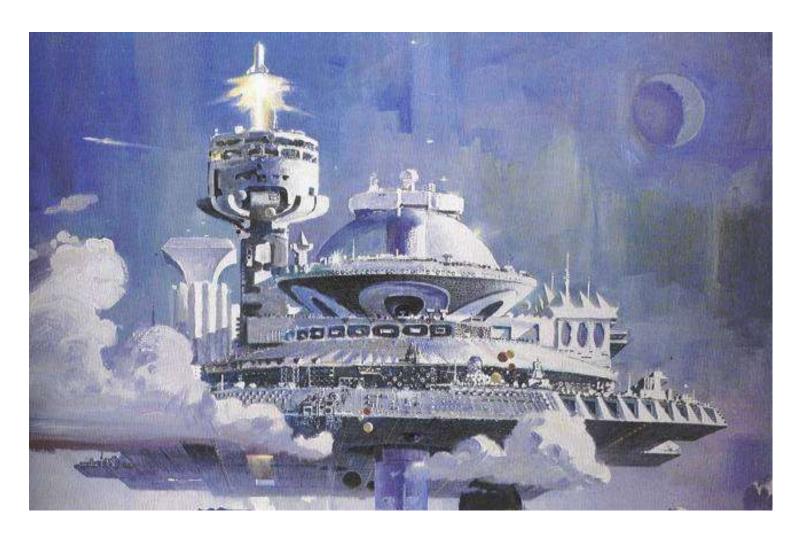








What is universal design?



"Universal Design is the design of all products and environments to be usable by people of all ages and abilities, to the greatest extent possible, without the need for adaptation or specialized design."

- Ronald L. Mace, 1991

Universal design is design for people of all ages and abilities

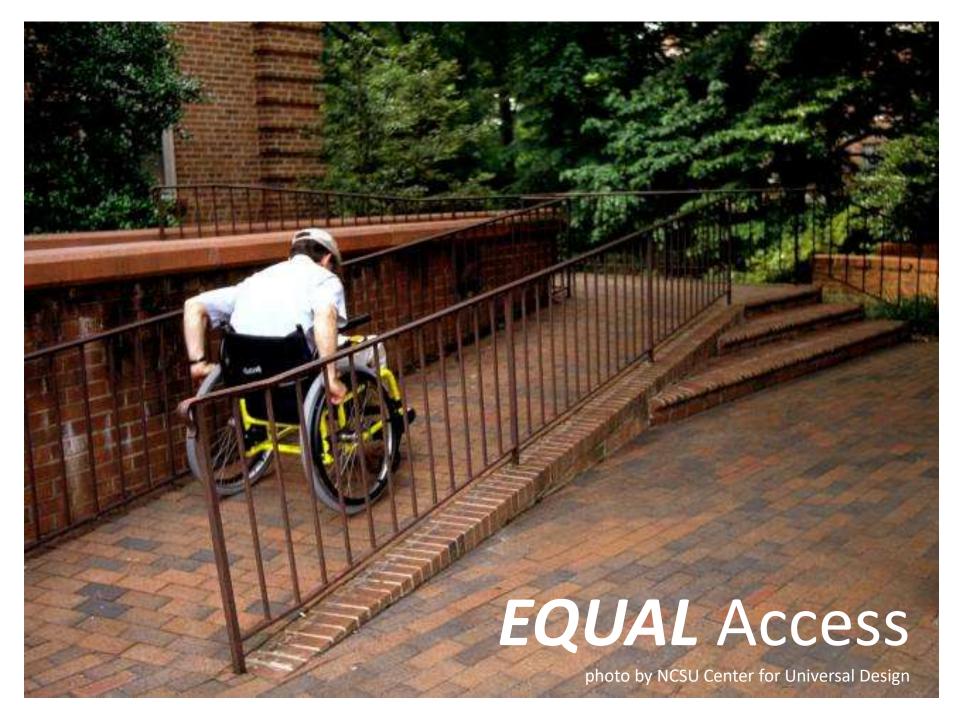
Universal design What took us so long?



Photo by U.S. National Archives and Records Administration







Why universal design?

- Longer lifespans
- Education mainstreaming
- Veterans with disabilities
- Workforce diversity
- Healthcare at home



By the year 2050, 20% of the world population will be over 60.

Most rapid growth worldwide Most desire to "age in place" Most caregivers are females over 75 Rising number caring for

Rising number caring for grandchildren





Lower care costs

Lower risk of infection

Lower re-admission rates

Greater patient well-being



100 million children with disabilities



More than 900,000 veterans with disabilities from wars in Iraq and Afghanistan



Shrinking working-age population

Business incentives

Government benefit savings

Universal design is design for all... But *NOT* one design for all

The 7 Principles of Universal Design

©1997 The Center for Universal Design
North Carolina State University

7. Size and Space for Approach and Use

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



6. Low Physical Effort

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



5. Tolerance for Error

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



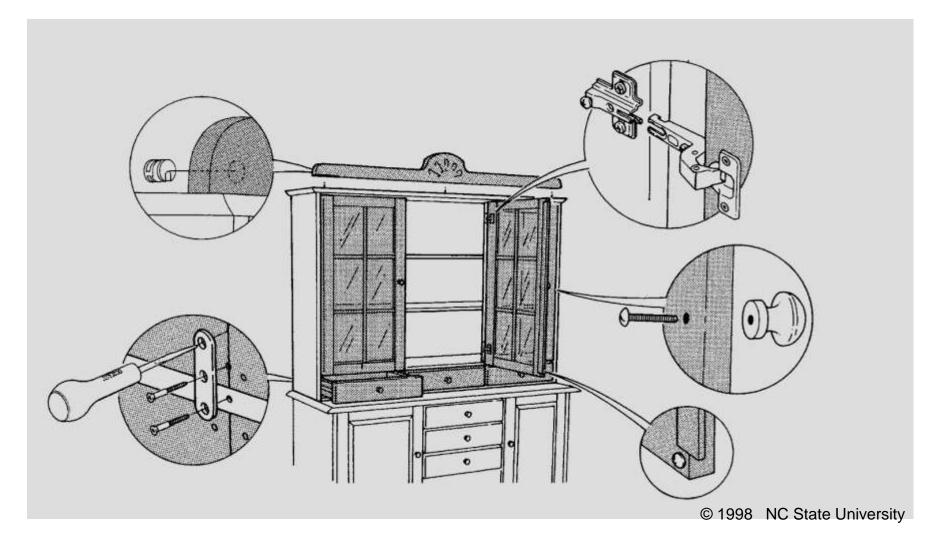
4. Perceptible Information

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



3. 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.



2. Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.



1. Equitable Use

The design is useful and marketable to people with diverse abilities

