DISABILITY AND AGING: DYNAMIC DIVERSITY

Vicki L. Hanson

B. Thomas Golisano College of Computing and Information Systems

Rochester Institute of Technology

CCC
Computing Community Consortium
Catalyst

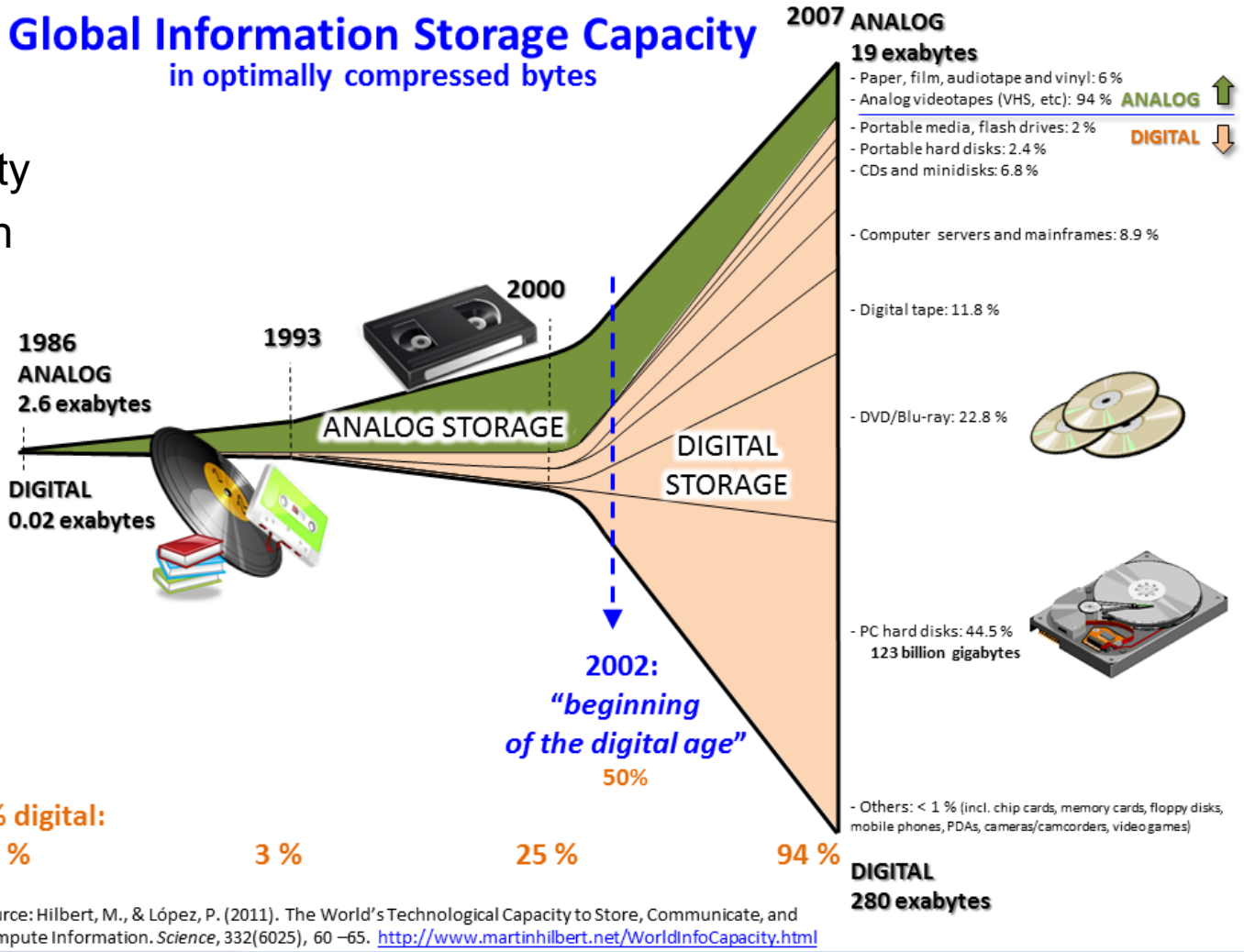
QUESTION:

Computing has made significant advances that allow for an ever-increasing amount of information capture and storage about people's activities. What makes sense to do? And is privacy a thing of the past?

CCC
Computing Community Consortium
Catalyst

COMPUTING POWER HAS RADICALLY IMPROVED

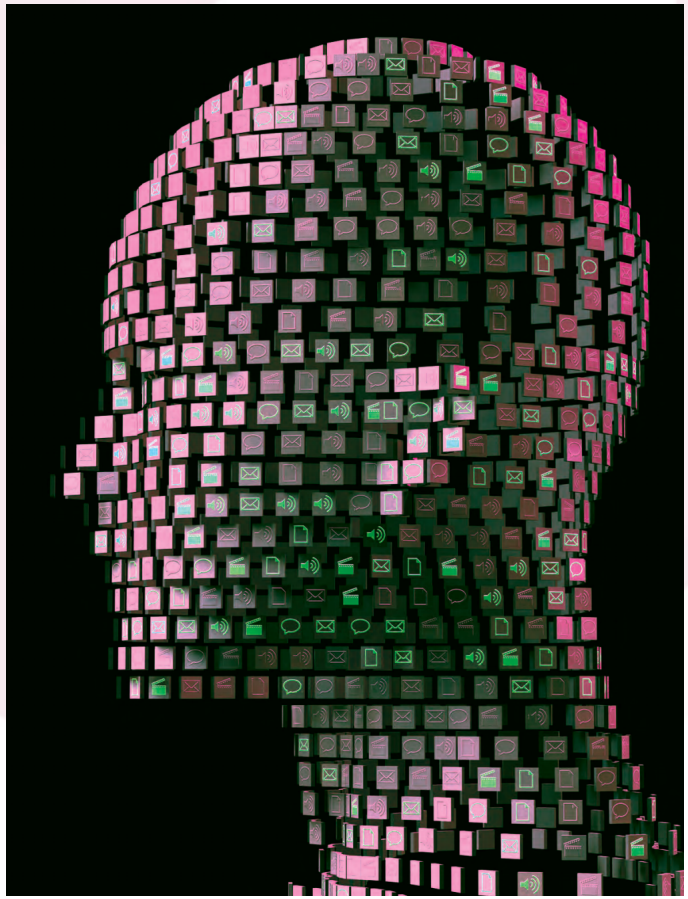
- Wearable sensors
- Processing capacity
- Network bandwidth
- Storage capacity



Source: Hilbert, M., & López, P. (2011). The World's Technological Capacity to Store, Communicate, and Compute Information. *Science*, 332(6025), 60 –65. http://www.martinhilbert.net/WorldInfoCapacity.html

LIFELOGGING

- New advances underlie lifelogging
  - Recollect events (episodic memory); help recall names
  - Reminisce (emotions) with others
  - Reflection of life experiences
- Verdict is still out
  - Little demonstrated benefit in real life
  - Still hard to access
- What do people find valuable?
- How might this be useful with dementia?



Sellen & Whittaker (2010)

NSF

NIH National Institutes of Health

CCC Computing Community Consortium Catalyst

QUESTION:

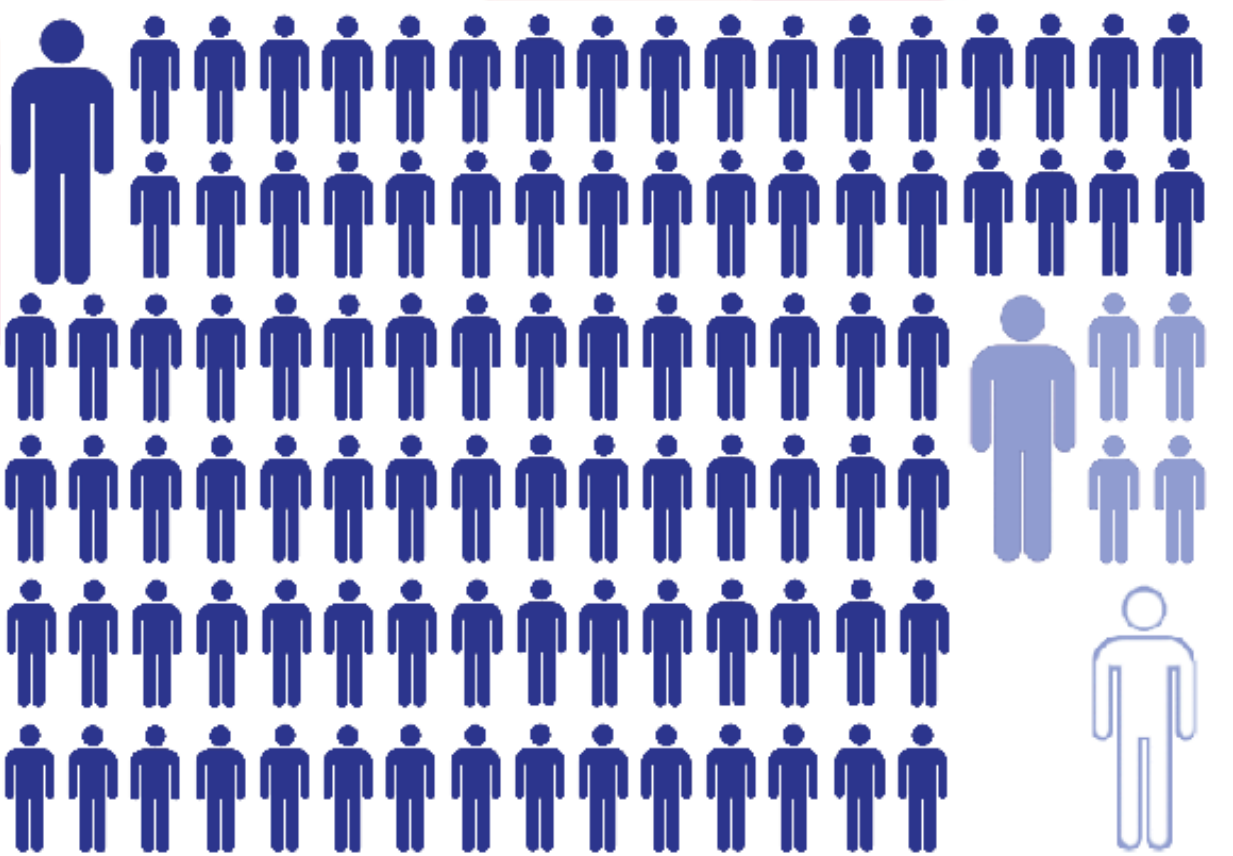
Given multiple and interacting age-related disabilities, how do we design for usable technology interactions?

CCC
Computing Community Consortium
Catalyst

DISABILITY

NSF
NIH National Institutes of Health
CCC Computing Community Consortium Catalyst

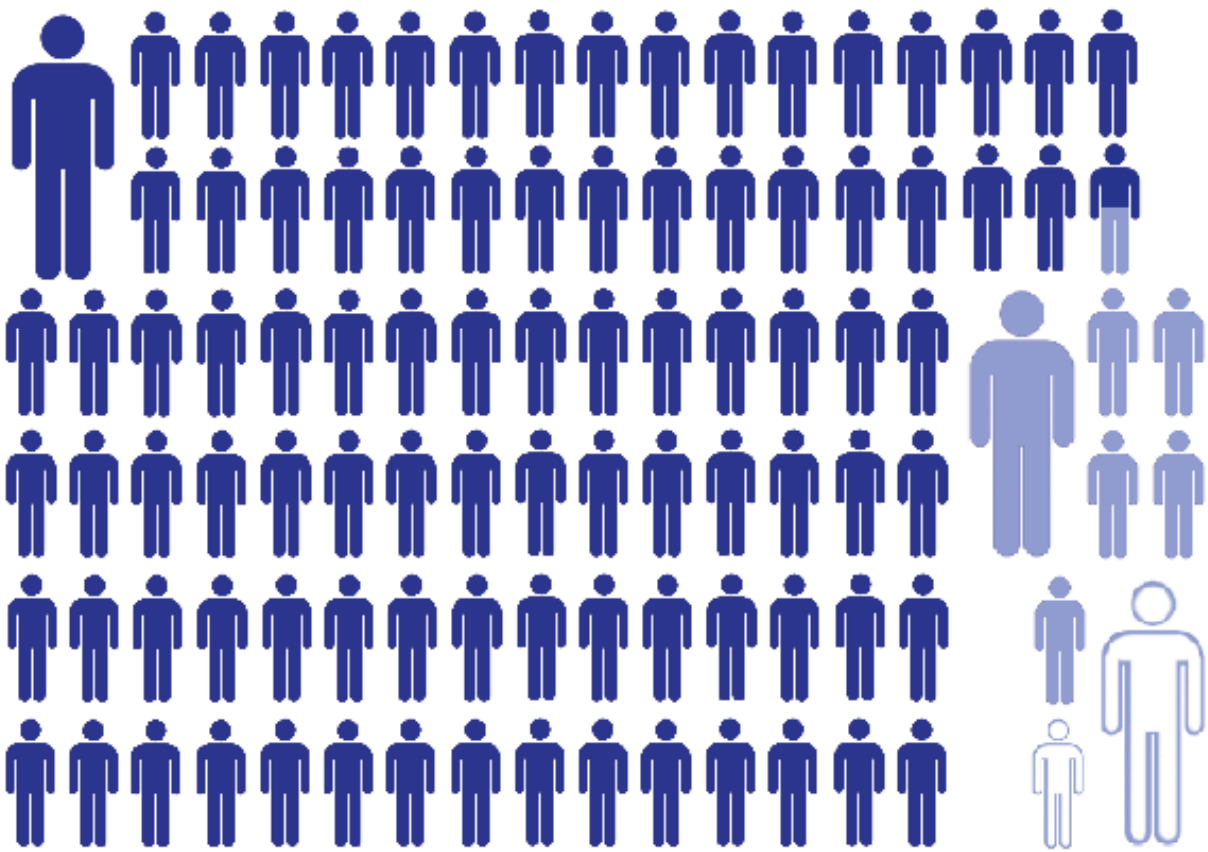
AGE 15 – 24



National Institutes of Health

CCC
Computing Community Consortium
Catalyst

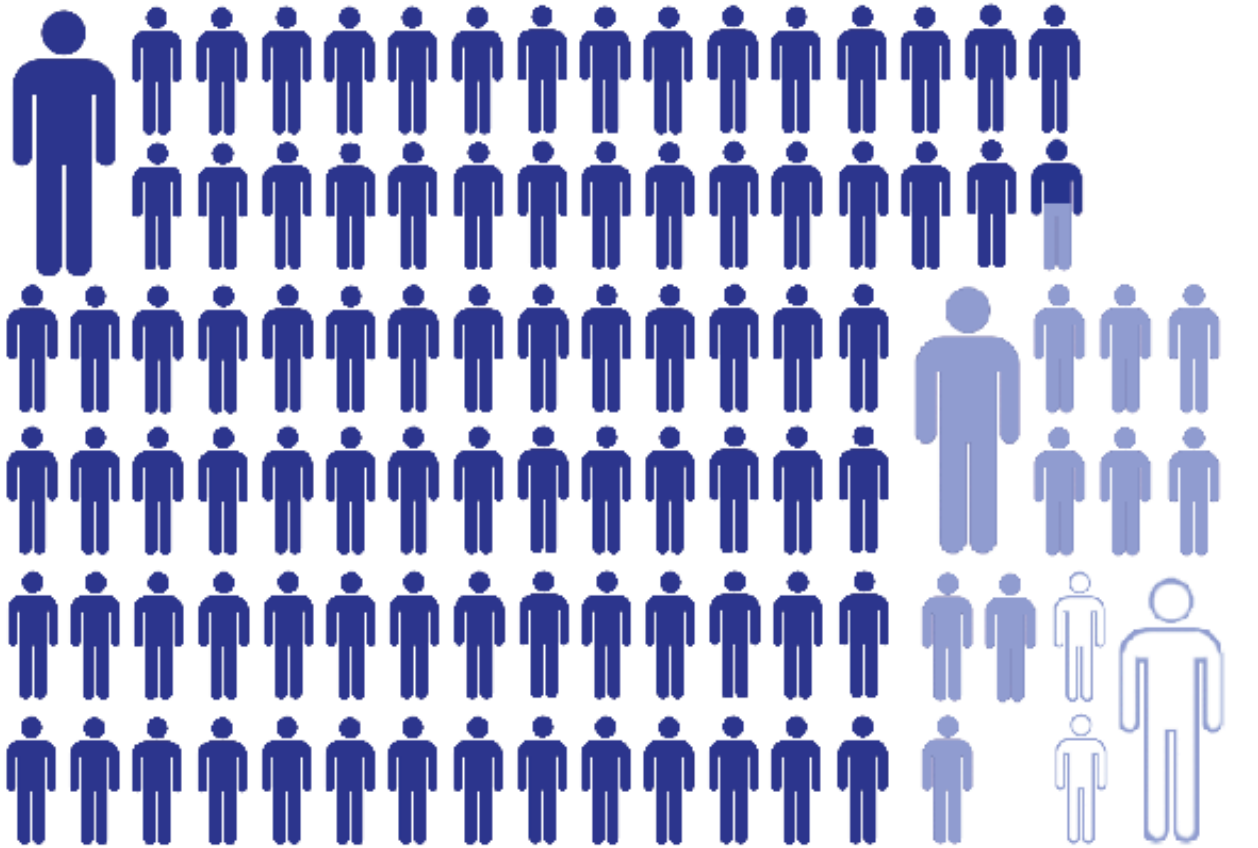
AGE 24 -25



National Institutes of Health

CCC
Computing Community Consortium
Catalyst

AGE 35 - 44

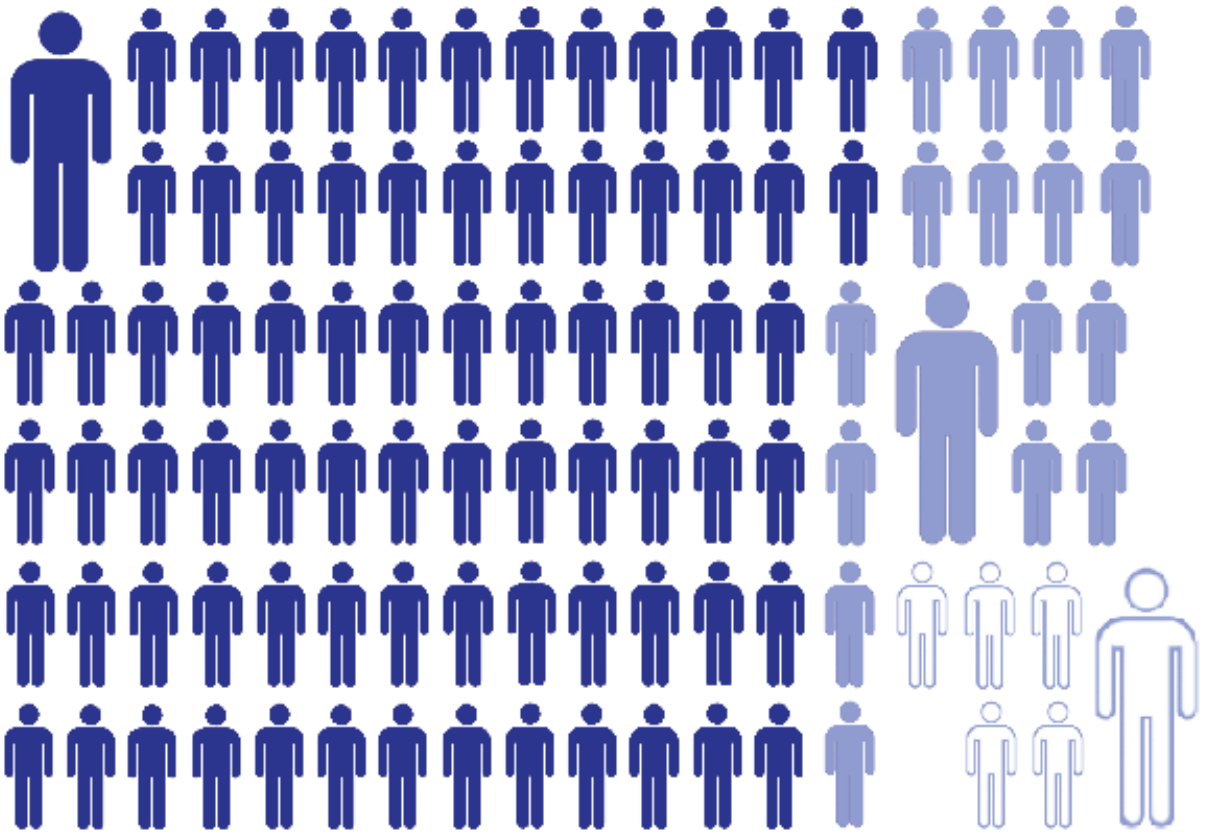


NSF

NIH
National Institutes of Health

CCC
Computing Community Consortium
Catalyst

AGE 45 - 54

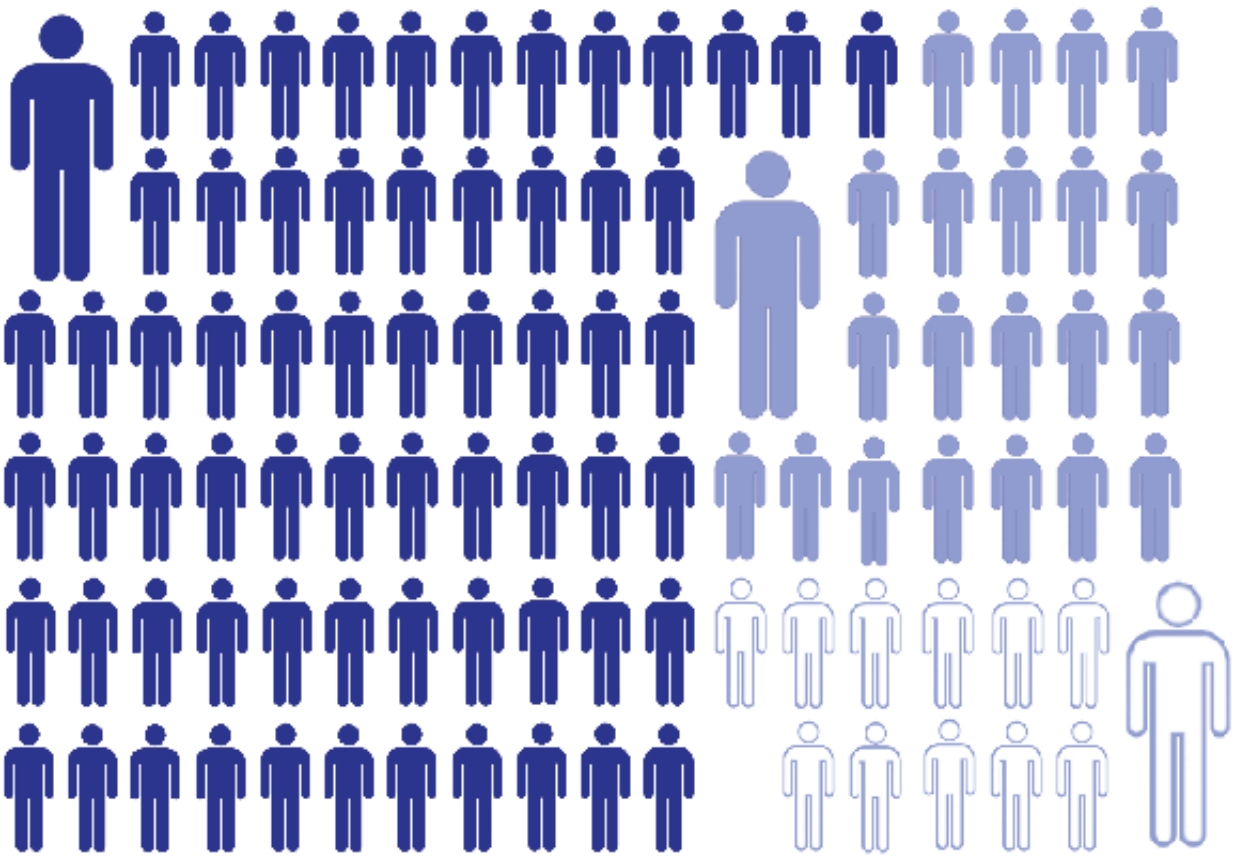


NSF

NIH
National Institutes of Health

CCC
Computing Community Consortium
Catalyst

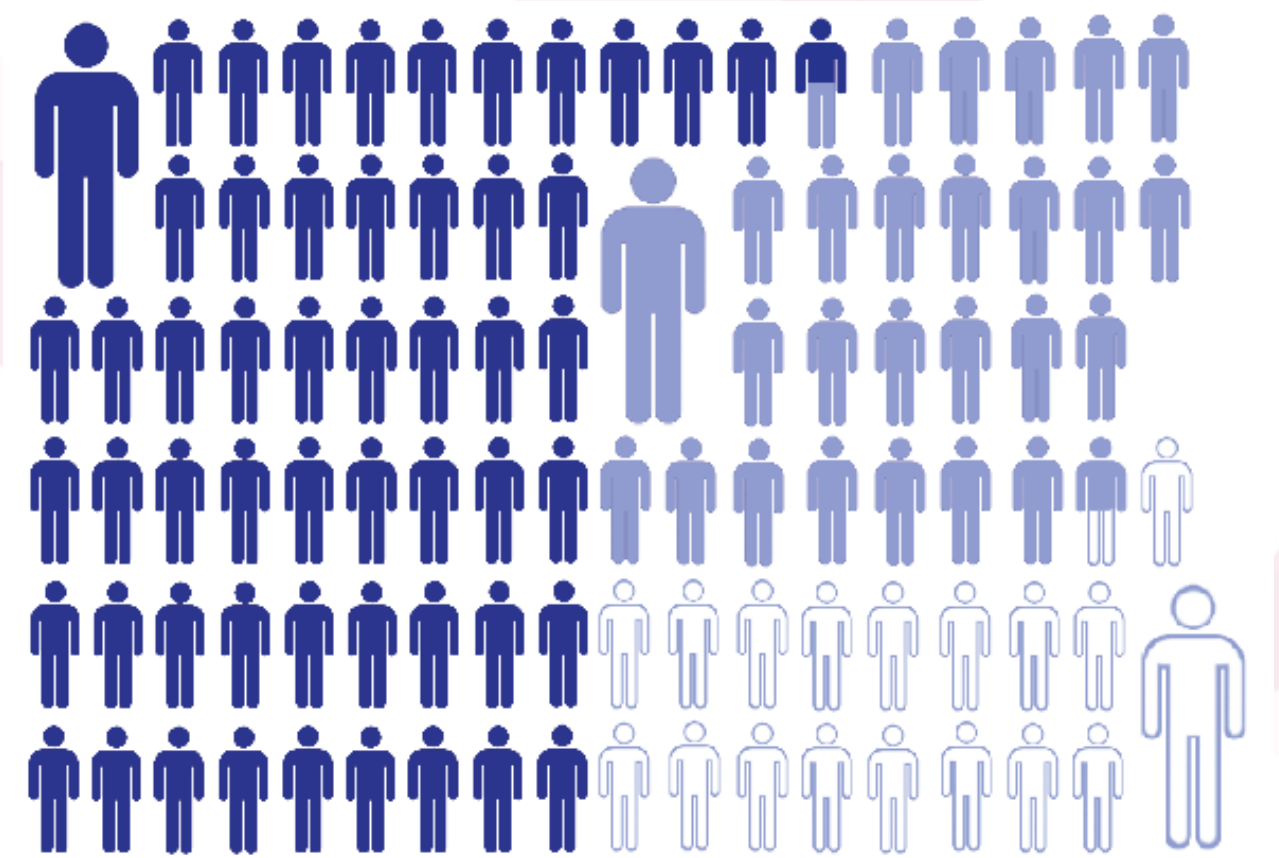
AGE 54 - 66



National Institutes of Health

CCC
Computing Community Consortium
Catalyst

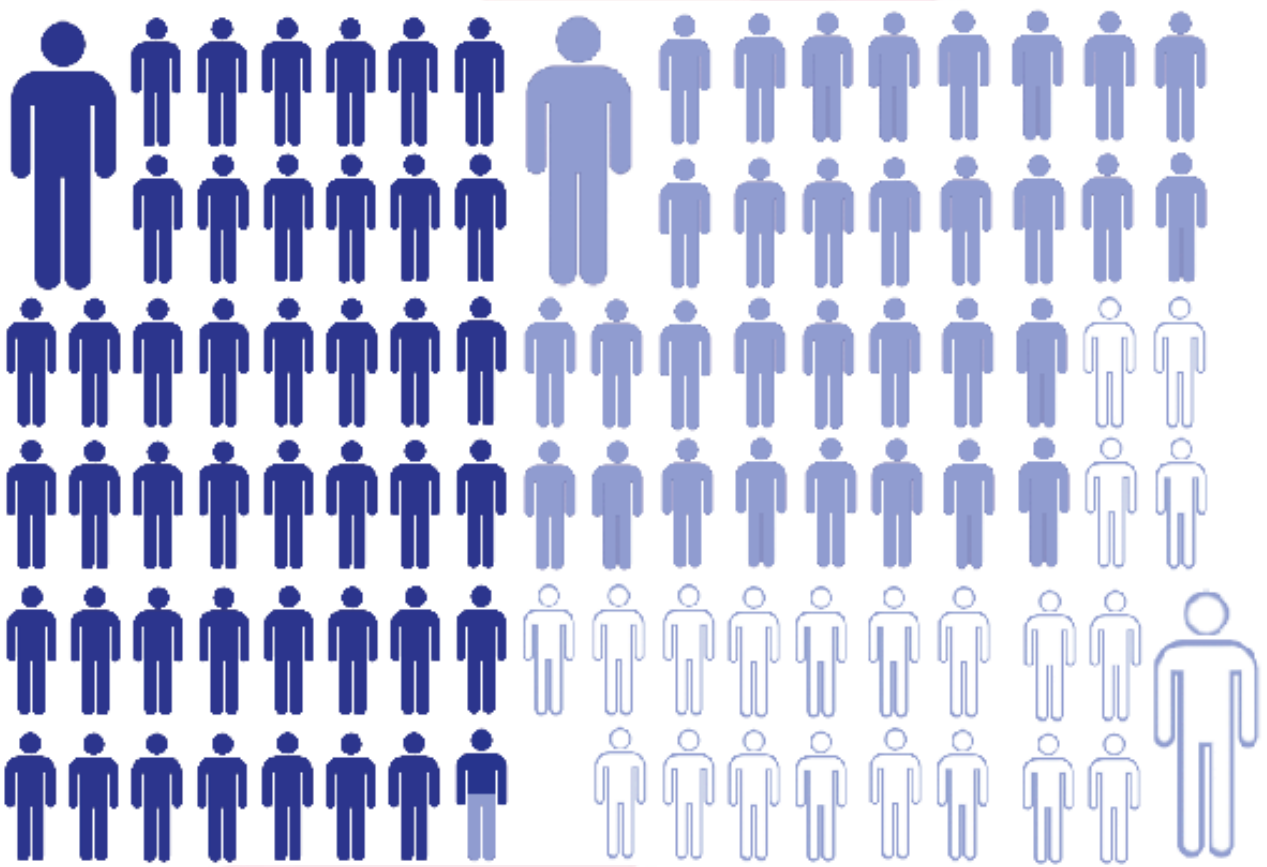
AGE 65 - 74



National Institutes of Health

Computing Community Consortium
Catalyst

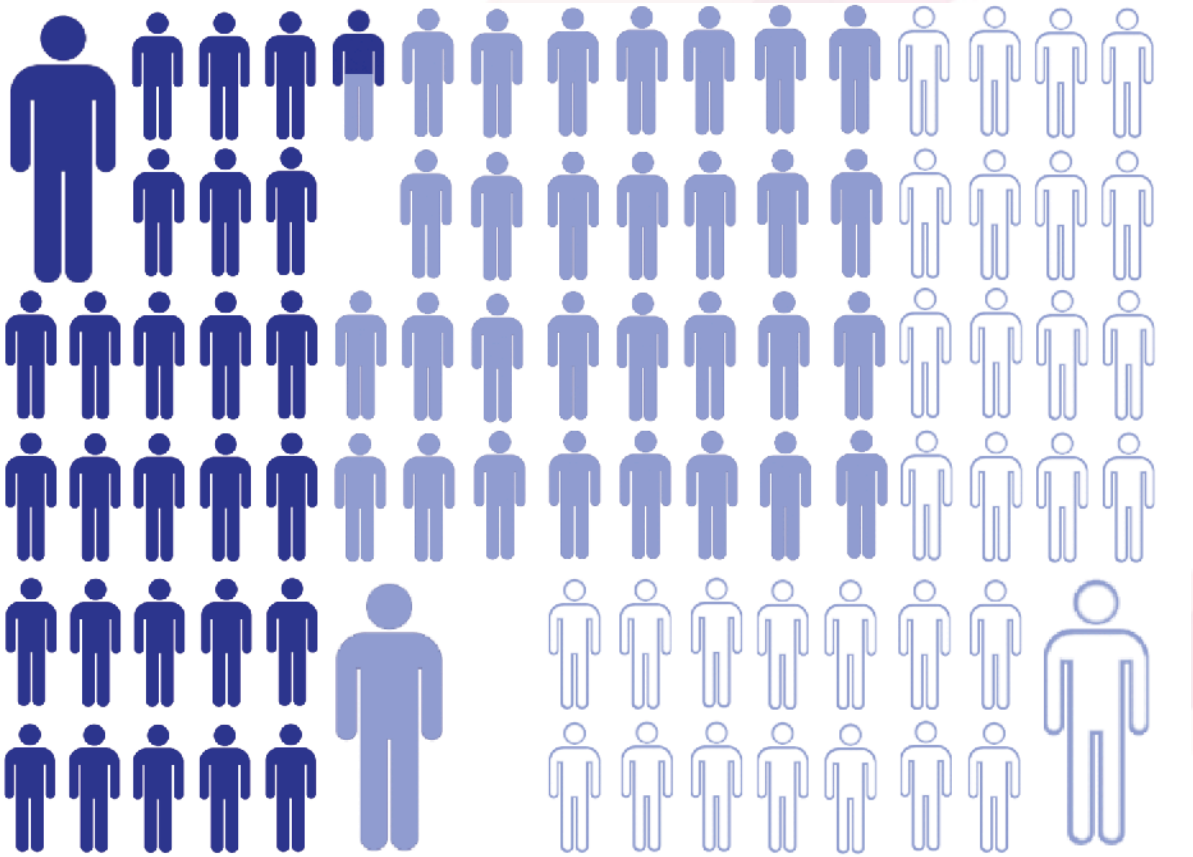
AGE 70 - 74



National Institutes of Health

CCC
Computing Community Consortium
Catalyst

AGE 75+



NSF

NIH
National Institutes of Health

CCC
Computing Community Consortium
Catalyst

ACCESSIBILITY – DYNAMIC DIVERSITY

1. Disabilities co-occur with age
   - Combined effect is worse than the two separately
   - Sensory, physical and cognitive impairment interact
     - Communication
     - Independence / navigation
2. Designing for the ‘brightest and the best’
   - How widely adopted can these be?
3. Design for young, congenitally disabled individuals
   - Disability that develops in old age is not the same

CCC
Computing Community Consortium
Catalyst

SPECIFIC CASE: ANALOG PHONES TO NEXT GENERATION IP NETWORKS

- Analog phones are familiar, reliable and accessible (usable)
- "Digital Divide" in reported smartphone usage
  - 79% of younger adults own smartphones (ages 18 – 24)
  - 18% of older adults own smartphones (age 65+)
- Also a divide for those who use analog TTY telecommunications for people with hearing loss and speech impairments
  - Users of analog communications averaged 10 years older the population census
- Current saturation: those who know ASL and have broadband
  - Analog TTY is those who can't use
  - Low resource
  - Underserved

NSF

NIH
National Institutes of Health

CCC
Computing Community Consortium
Catalyst

QUESTION:

How do we take advantage of technology without overwhelming its users?

CCC
Computing Community Consortium
Catalyst

USEFUL AND USEABLE

- Does technology do something people want?
  - Staying in own home may be a tipping point
  - But if this creates situations causing loneliness fear and is it acceptable?
    - Would technology mean fewer visits?
    - “What if I’m sick and the device doesn’t work?”
  - Lack of interest

CCC
Computing Community Consortium
Catalyst

CO-DESIGN

NSF

NIH
National Institutes of Health

CCC
Computing Community Consortium
Catalyst

USEFUL AND USEABLE

- How do older users deal with constant updating?
  - Migration to IP telecommunications
  - Constant versioning updates
    - Learning
    - Cost
  - Little interest among developers in supporting back-level devices or applications

NSF

NIH
National Institutes of Health

CCC
Computing Community Consortium
Catalyst

QUESTION:

In the future, “older adults” will have different technology experiences than those of today’s older adults. Technologies also will be different. Can we create principles for ‘future proofing’ rather than designing only for challenges of today’s older population?

CCC
Computing Community Consortium
Catalyst