Exploring Human Computer Interactions Issues for Older Novice Users

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Outline

- Introduction
- Older Novice Population
- Research Areas
- Documented Problems
- Proposed Solutions
- Future Work
- Conclusion
- References & last word

First...

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Introduction

- World populations are skewing older
- Internet is becoming essential
- Older users have barriers to computer use
- HCI designs can address needs of older and novice users

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Older Novice Population:

- “older” undefined, often over 55
- “novice” undefined, range of illiteracy and technophobe
- U.S. Census, 2009: 42% no computers over 55

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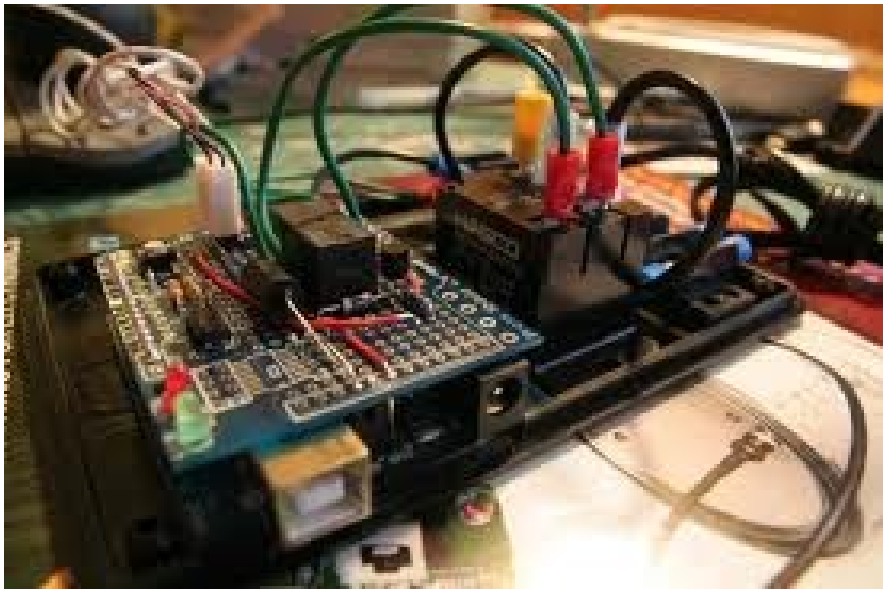
Research Areas

- Categorizing the population
- Understanding the limitations
  - Medical
  - Psychosocial
  - Cultural
  - Motivational
  - Attitudes
  - Existing Design

Research Areas

- Proposed solutions
  - Hardware
  - Software
  - Interface
  - Training
  - Attitudes



Missing Research Area

- Benefits of Computer
- Why internet?
- Why computer?

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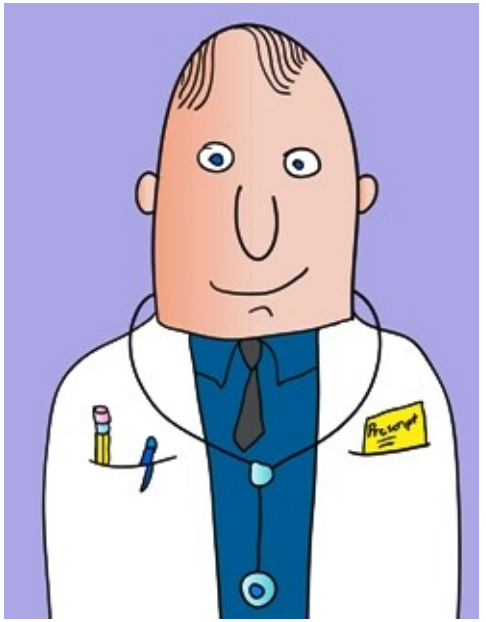
Barriers
Problems
Limitations

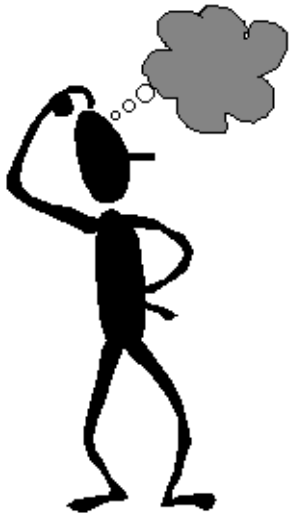
Oh so many...

Build a User

- Story of a universal older novice user
- Meet Dr. Penny, MD: age 61, smart, computer illiterate



Limitations: Physical



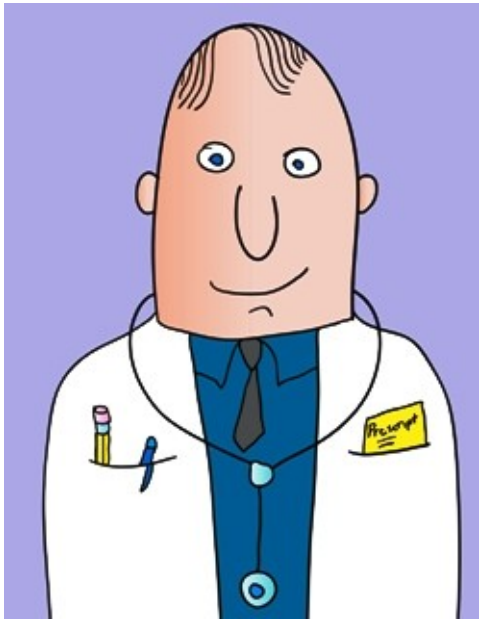
- Cognitive decline is sub-clinical (seem normal and unimpaired) - confusion
- Fluid memory loss affects navigating and the unfamiliar
- Vision and hearing changes

Limitations: Physical

- Decision making confidence declines
- Eye-hand coordination
- Arthritis and tremor affect manual dexterity

Dr. Penny – physical limits

- Invisible (sub-clinical) decline: confusion when navigating and multi-tasking
- “What?” says Dr. Penny, “I didn’t hear you.”
- “The mouse won’t line up!”



Limitations: Physical

- Loss of inhibition
- Unable to ignore irrelevant information
- Confusion between relevant and irrelevant

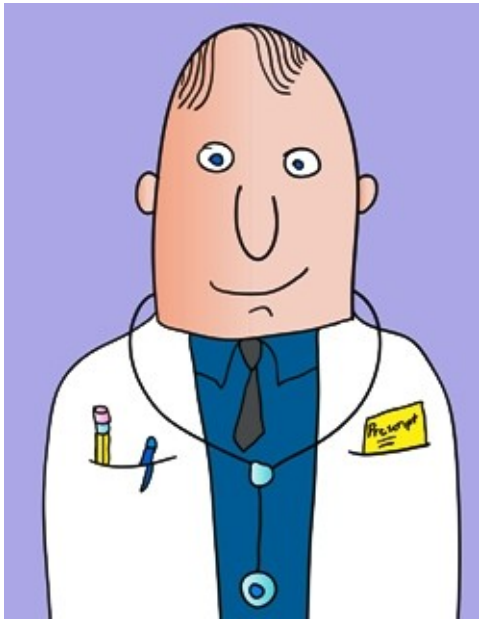
Limitations: Physical

Daily variations from hour to hour due to:

- Eyestrain
- Bereavement
- Drug regimens
- Tiredness
- Previous illness
- Distraction
- Other stressors

Dr. Penny – daily limitations

- “Don’t tell me what to do, just show me”
- “The scroll bars are a different color on this webpage, is that OK?”

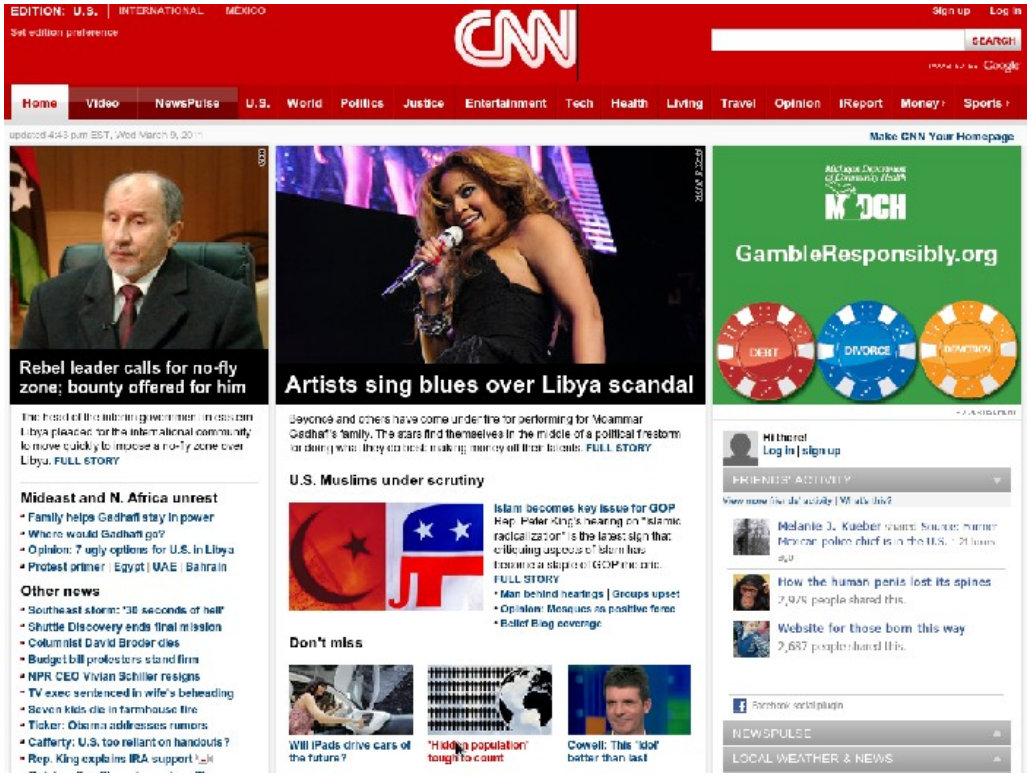


Limitations: Concepts

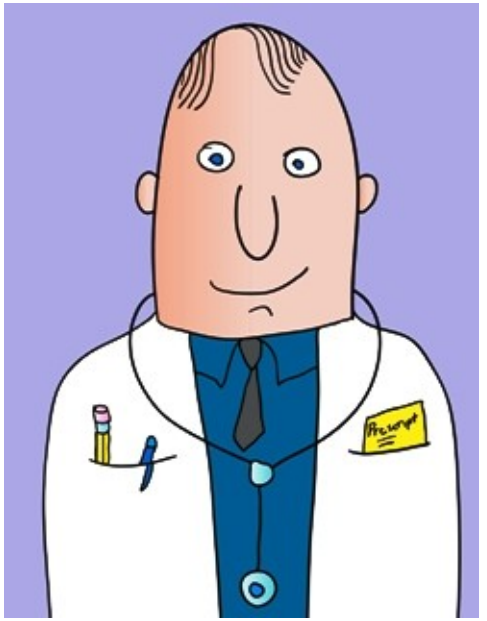
- Conceptual models unfamiliar
- No match with real world
- For example: where is remote control to change the internet?

Limitations: Concepts

- Acronyms and metaphors
- Where does search engine go to look “it” up?
- Disconnect and clutter of web pages



Dr. Penny – conceptual limits



- “How do you turn this thing on?”

Limitations: Attitude

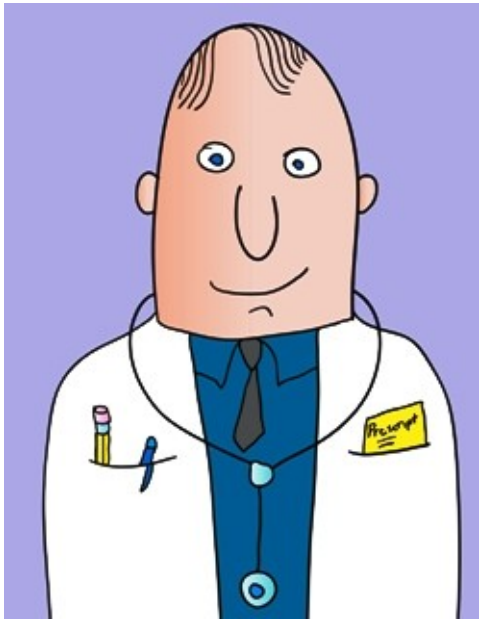
- Anxieties, resistance, reluctance
- Fear of looking or being stupid
- Frustration, error shame
- Fear of failure, easier to quit
- Inexperience
- Confused by change

Limitations: Attitude

- Internet not marketed to older people
- Only hear about fraud, theft, scams and viruses
- Fears for privacy

Dr. Penny – attitude limits

- “I don’t need the inter-whatsy!”
- “It’s full of perverts and rip-off scams.”

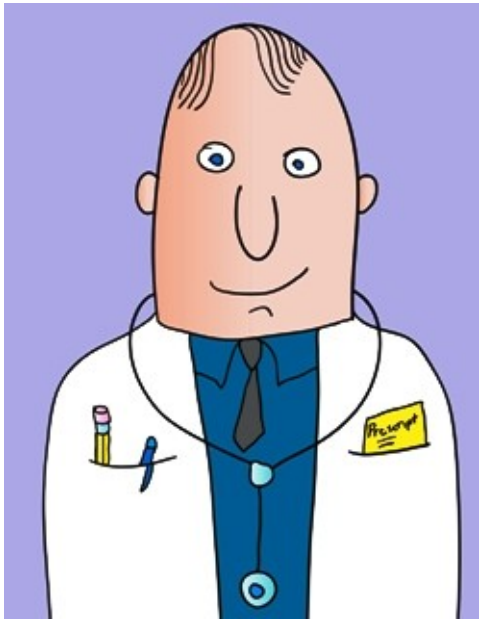


Limitations: Psychosocial

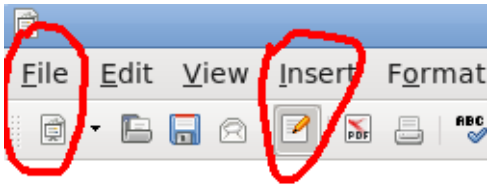
- Money
- Education level
- Missing motivation
- Lack of Interest
- Physical remoteness from internet provider
- No time or no teacher for learning

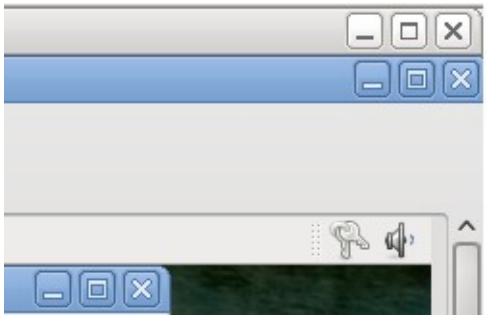
Dr. Penny – psychosocial limits

- “It costs how much?! Every month? Just to send an email?”
- [muttering] “Wasting time holed up in their room”



Limitations: Interface Design



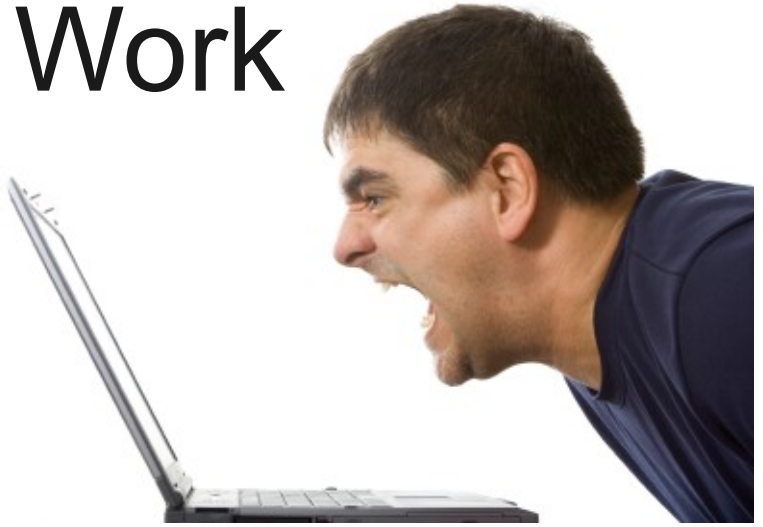


- Menus look like they refer to buttons
- “X” to close document closes application instead
- Scroll bars are obscure and scrolling up arrow makes page go down
- Multiple ways to do same thing: confusion!

Limitations: Interface Design

- Selecting before doing command: e.g. copy
- “undo” only works in app, not across operating system
- Overlapping windows: where did work go? How to control which one is selected
- Where are files stored?
- Each application looks different

Limitations: “Lost” Work

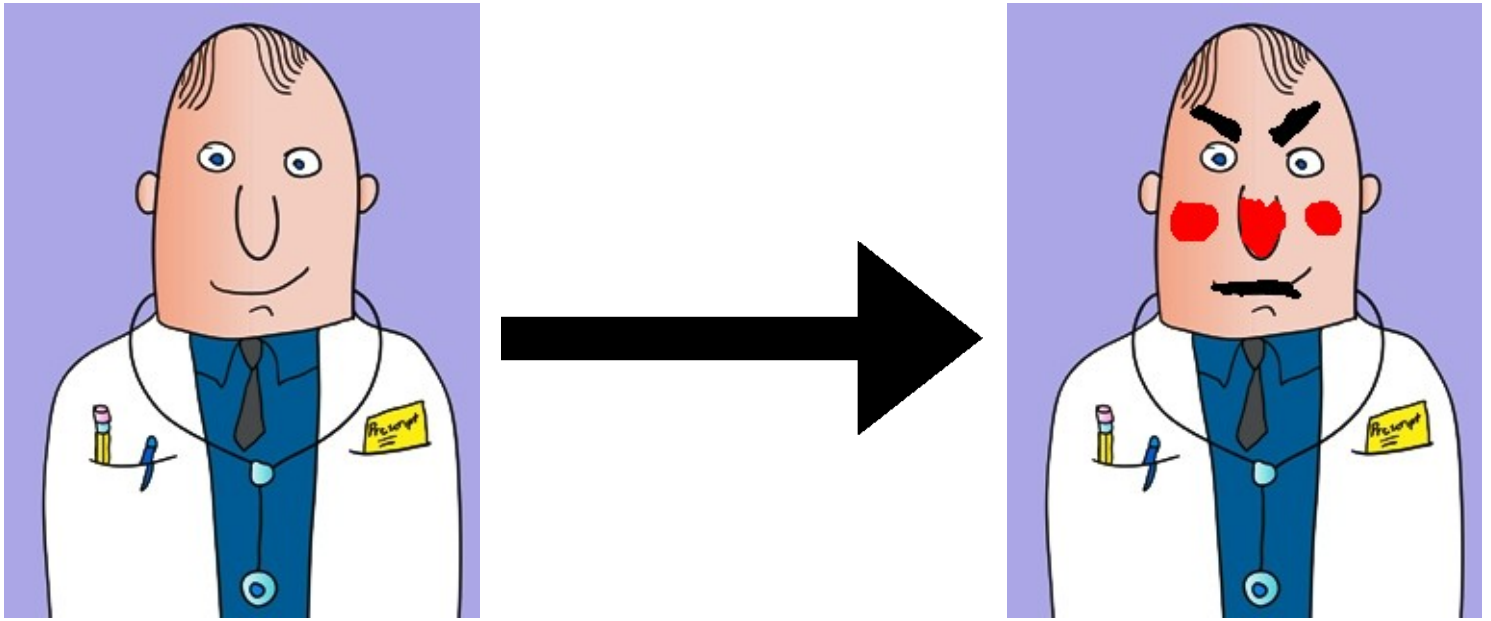


Crush any confidence!

How is work “lost”?

- Overlapping windows or pop ups in way
- Leaning on space bar or return
- Clicking minimize button
- Opening new program or window on top
- Panicking & random clicking of pop ups

Dr. Penny – interface design



- “Now I’m just plain angry.”
- [muttering] “But it was just there and now it’s completely gone!”

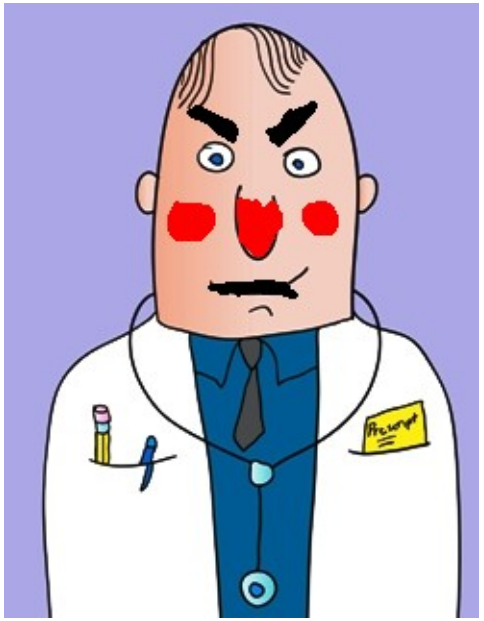
Limitations: Hardware

WIMP (windows, icons, menus, pointers) hard for so many reasons

- Mouse double click, click and drag too difficult
- Which mouse button and when
- Pop up menus are a surprise, why in the middle
- Qwerty keyboard is illogical
- Looking down at keys or mouse don’t notice screen response/non-response

Dr. Penny – hardware limits

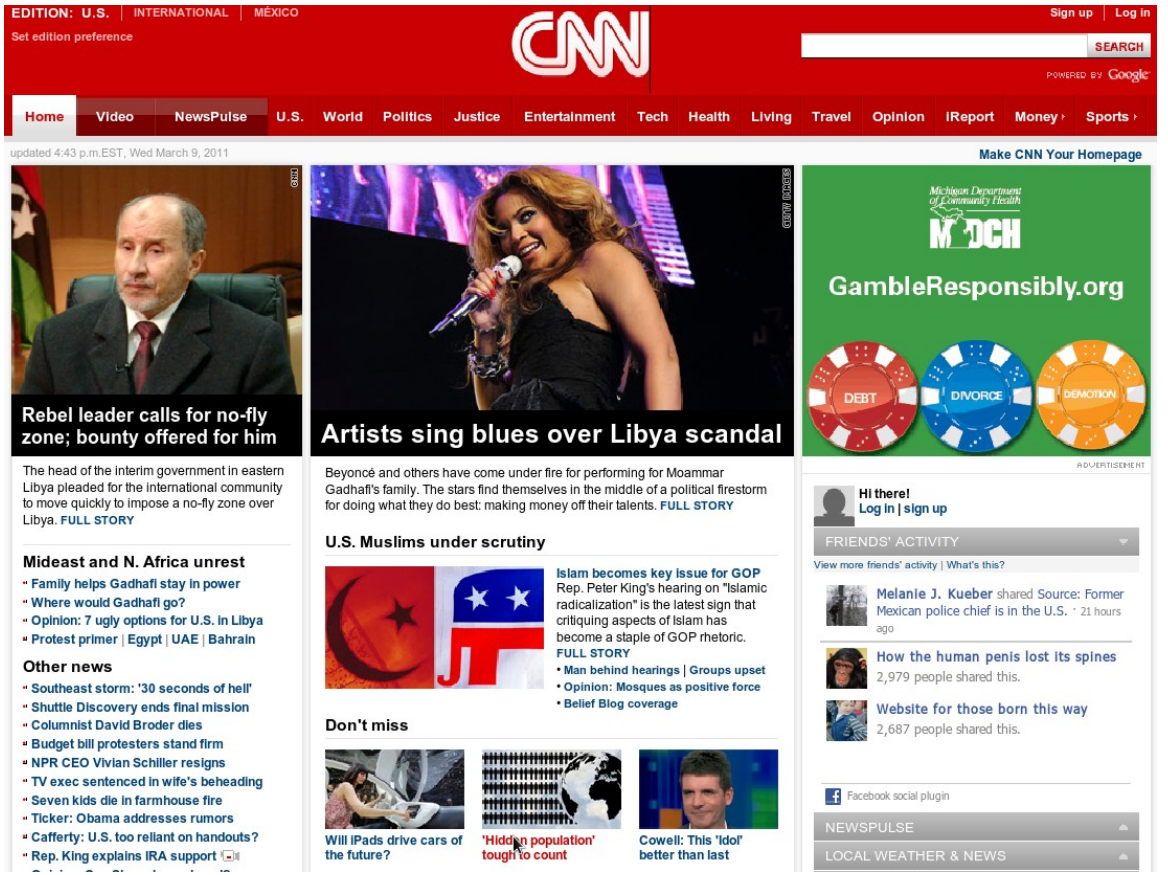
- [to himself] “Hmm, push this one, no, that one. Wait, what’s this now?”
- “I’m not a monkey! I can’t look at the screen AND the keyboard.”



Limitations: Internet

Internet is:

- Transient, changing
- Distracting with information at every edge
- Flexible and nonlinear



Limitations: Internet

Internet causes older user limitations of:

- Disorientation
- Loss of concentration
- Failure to comprehend
- Inability to track and remember disjoint pages
- Cognitive overload, can’t ignore irrelevant
- “obligation to read” factor

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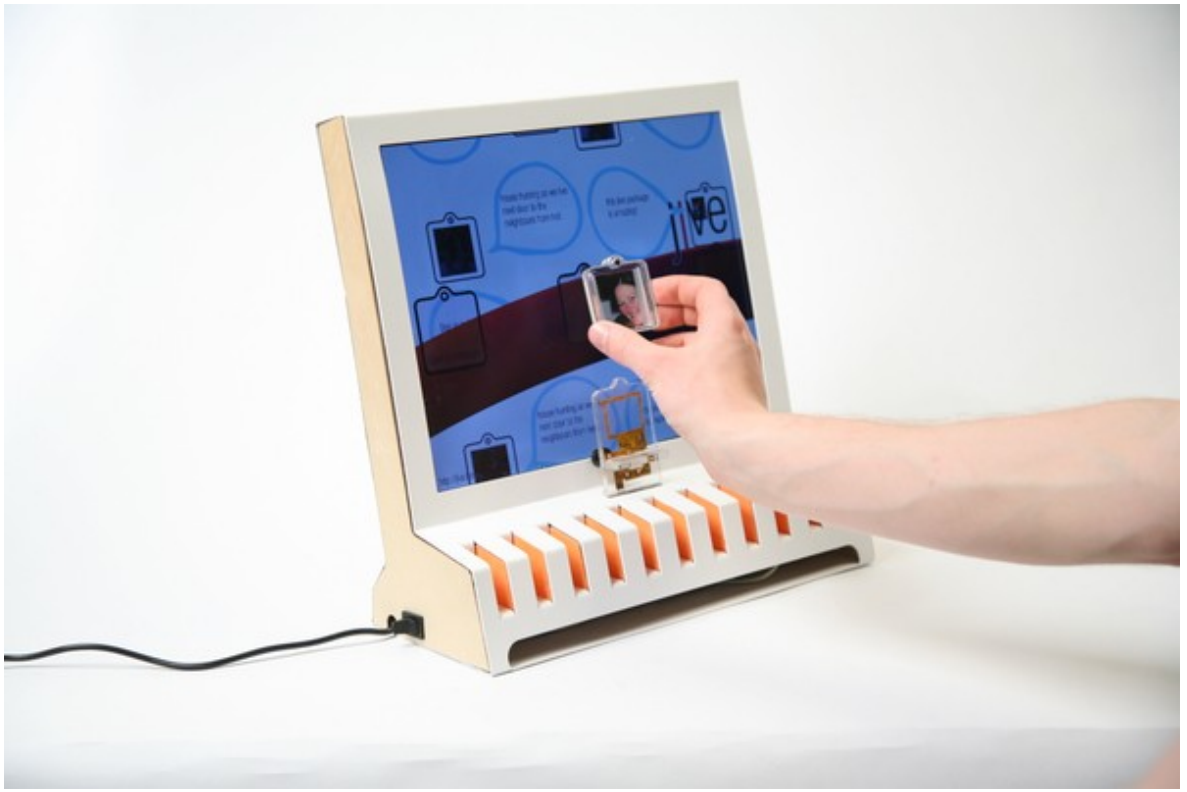
Solutions!

lots of them

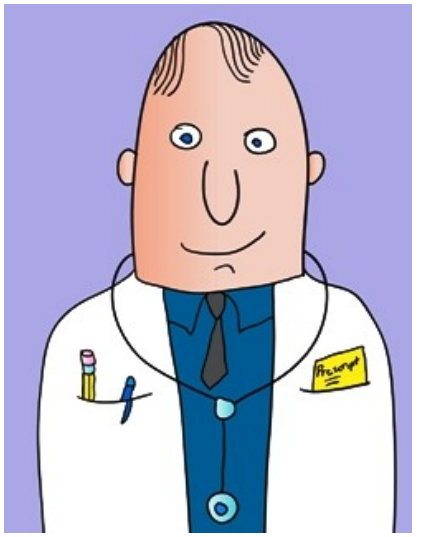
Solutions: Familiar Controls

- Concept is familiar
- Physical action matches function



Solutions: Interface

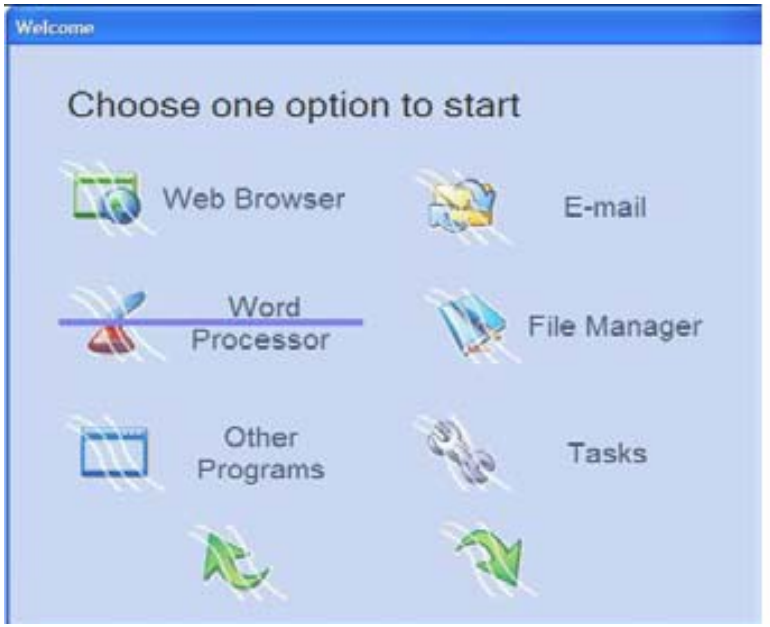
- Empowering Seniors
- “Connecting Families”
- “You can’t make a mistake”



Solutions: Tangible Interface

- TUI: tangible user interface
- RFID tags shaped like envelope to open email
- JIVE:
  - plug and play router
  - Place a friend tag on the screen
  - Use betty to connect

Solutions: Pen Based Interface



- Pen used in 6 motions
- Crossing Paradigm
- Only for steady hands
- Relies on recall of pen motions

Solutions: Picture Menu

- Go Computer, $800
- Function menus
- Review: menu choices?

Solutions: Website seniornet.org

- Bringing technology access and education to adults 50+
- Enrich their lives
- Enable them to share their wisdom

Solutions:
Voice & Gesture Recognition

- Touch screen
- Gesture on screen, gesture in air
- Voice recognition, talking web browser: BrookesTalk

Solutions: Improving Visuals

- Reduce glare
- Improve color and contrast
- Large icons
- User controlled text size
- Font sans serif

Solutions: Promote Literacy

Some sample non-profits:

- The Digital Inclusion Forum (industry)
- Per Scholas (USA)
- International Development of Computer Education (Thailand, Ghana, Poland, Kenya, Peru, and Zimbabwe)
- Partnership for New Development (Japan helping Africa)

Solutions: Teaching

- Panic sheet
- Tips for helping

How to help someone use a computer.

Phil Agre
http://polaris.gseis.ucla.edu/pagre/

Computer people are fine human beings, but they do a lot of harm in the ways they " everything I've been taught about helping people use computers.

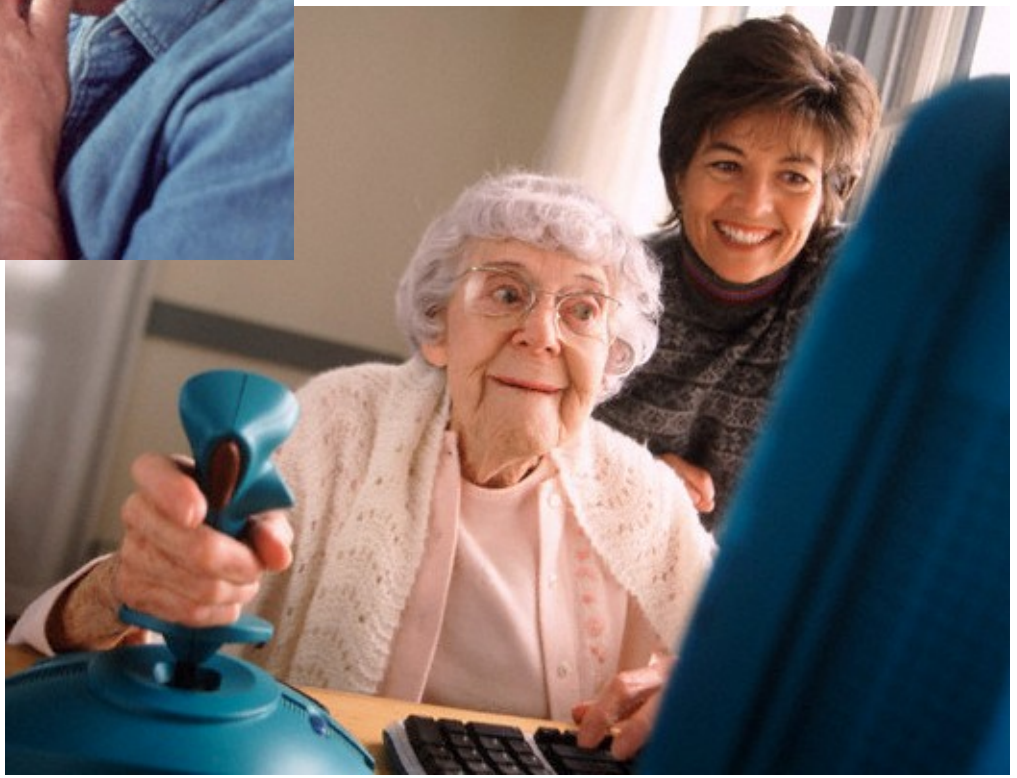
First you have to tell yourself some things:

> Nobody is born knowing this stuff.
>
> You've forgotten what it's like to be a beginner.
>
> If it's not obvious to them, it's not obvious.

Be sure your “help” is helping

Solutions: Teaching

What's wrong with method to left?



What's good about method to right?

Solutions: Expect in Future

- Hand held devices (small!)
- Touch screens, gesture & voice recognition
- Changing “look” of applications and web pages
- Constant change & everything online
- Universal Design, is it possible?

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Future Work: WHY?

- The forgotten research area: “why?”
- What motivation?
- What cost-benefit analysis?
- Individualism

Preliminary Reasons: WHY?

PRO Computer

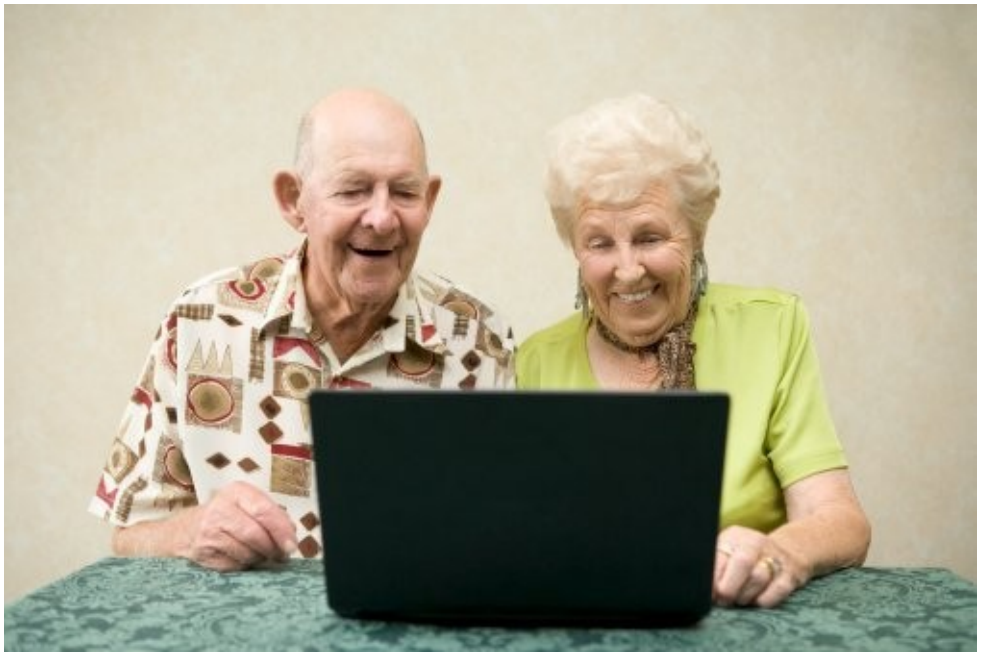
- Information is power
- Computer literacy breaks poverty
- Privacy to explore anonymously
- Entertainment
- Connection

CON Computer

- Expense & bother
- Risks to privacy?
- Benefits of direct human contact: phoning and visiting shops

Benefits Motivate Getting Online

- News, photos, friends
- Sense of community & connection
- Feel positive attitudes towards aging
- Cost benefit
- Use builds familiarity & leads to comfort



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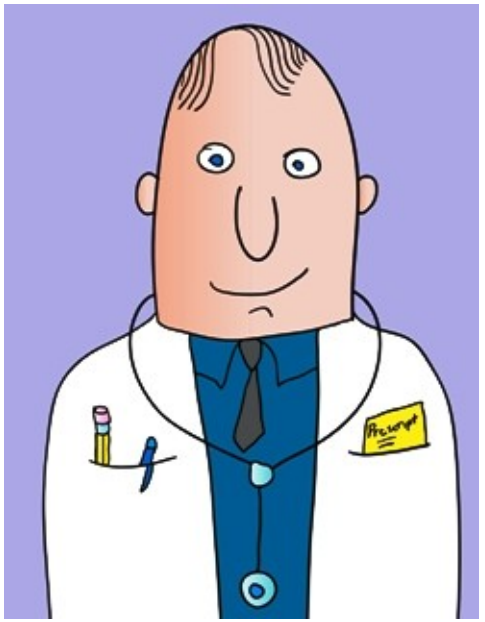
Conclusion: Older Novice Users

Even though...

many documented limitations using computer

Also...

good reasons to bother



Maybe...

analogy to cars

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Really?

http://www.youtube.com/watch?v=khhC5UkiNd4

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Internet Resources

U.S. Census:
http://www.census.gov/population/www/socdemo/computer.html

“We don't have a computer. Are we missing out?” (valid answer)

http://www.guardian.co.uk/money/blog/2011/jan/28/do-we-need-a-computer

“How to use your computer” (bad instructions with no pictures)

http://www.easycomputertips.com/article-howtouseyourpc-thebasics.html

“Old people use a computer: the game show” on collegehumor (humor)

http://www.youtube.com/watch?v=khhC5UkiNd4

Jive: http://jive.benarent.co.uk/index.html

Internet Resources

"How to help someone use a computer" by Phil Agre (sensible teaching suggestions)

http://polaris.gseis.ucla.edu/pagre/how-to-help.html

David Letterman explaining that he doesn't need a computer, 2006 (humor)

http://www.youtube.com/watch?v=nw_oCDdIMms

User interface for older users (product)

http://bigscreenlive.com/content/How_It_Works.htm

Senior Net (service)

http://www.seniornet.org/
http://www.youtube.com/watch?v=khhC5UkiNd4

Thank you for listening.
What do you think?
Can you help an older novice user?

Make sure you ask before helping.