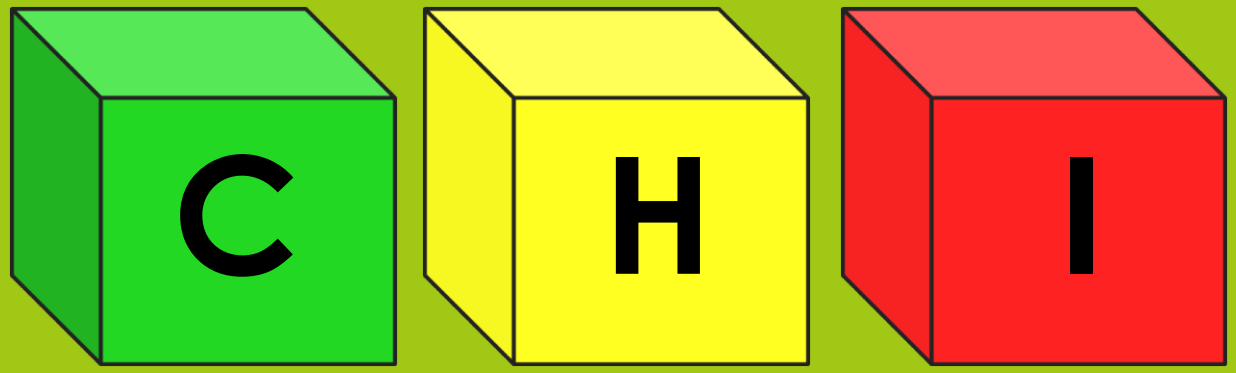

2010

Elder-friendly Design's Effect on Acceptance of Novel Technologies

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***ETHOS**: Ethical Technologies in the Homes of Seniors*

Motivation

- As of 2004, 22% of American older adults (65+) have internet access (www.pewinternet.org)
- 47% increase since 2000
- Translates to 8 million people

Significance

- Ideal target for financial scams
  - High purchasing power
  - Less likely to report due to shame or uncertainty about where to report (FBI, 2001)
  - Often makes poor witness (FBI, 2001)
- In 2005, 21% of people who were phished were older adults (www.fraud.org)
- In 2009, average 35,211 phishing cases reported.

Source: FBI Congressional Testimony before Senate Special Committee on Aging

Mitigating Phishing Attacks: Net Trust

- Firefox Browser toolbar (like StumbleUpon)

- Users share website reputation ratings through private social network

- User study findings:
  - The way risk data was displayed is confusing
  - Social network is not a familiar concept to older adults
  - Therefore, elders rejected it because it was "unusable"

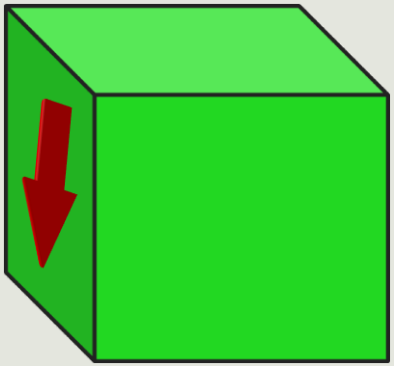
The Next Step

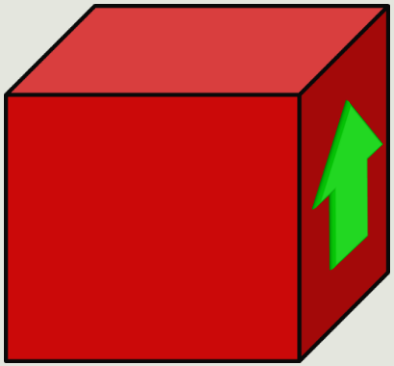
- **Challenge**:
  Create a security interaction for Older Adults that:
  - Is engaging
  - Is easy to see (No cognitive overload)
  - Enhances financial security without sacrifice
  - Abstracts complicated security mechanisms
  - Allows Older Adults to participate in sharing ratings
  - Encourages (not enforces) safe behavior online

A Novel Solution: Ambient Trust

- Alternative interface to Net Trust for Older Adults
- Cube-shaped light that ambiently displays ratings from the Net Trust toolbar

Ambient Trust: Design





- Pulses red for negative rating, green for positive, yellow for neutral
- Touch-sensitive arrows for users to rate up/down
- Physical interface separate from the computer
- Same risk indicator represented in an abstracted, elder-friendly, usable way (theoretically!)

Ambient Trust User Evaluations

- Focus group
  ~50 elders (65+) as part of a larger project
  - All would share reputation ratings
    - ***so long as they can't be identified***

Liked:
- Non-personally-identifiable ratings
- Immediate feedback on website reputations
- Easy to see & immediately understandable

Concerns:
- Color Blind Accessibility
- Being tracked online

In-situ Study

- In-situ Study
  5 elders (65+), 3 Cube Users, 2 Toolbar Users
  - Three weeks of use for each
  - At end all participants were Phished
    - Devices both provided feedback
  - Semi-structured interview by outside researcher for evaluation

No participants fell for the Phishing attack!

User Evaluations

- Toolbar Users' Responses
  - "Takes too much space"
  - "I forgot how to use it"
  - "I already have a search toolbar. With this one added my screen is getting too small!"
- Cube Users' Responses
  - "Easy to see and easy to use"
  - "I'll keep and use the cube"
  - "I'd buy a marketed version of the cube"

Main Point

- Interviews of both groups suggested that cube was more accepted
  - However, cube users did not see general benefit of using the cube
  - Although this was the case, participants could give many examples of times it helped them.
    - "When it glowed red

Perceived benefits did not seem to align with actual benefits of using the Cube.

Open Questions

- Is elder-centered design enough to encourage acceptance?
  - In this case, elder-centered design proved to be usable and useful and more accepted *but failed to convey its usefulness.*
  - Could this hinder initial acceptance outside of a study?
  - Could the complete abstraction (Ambient Display) of the mechanism masked the usefulness?
    - Too transparent?
- Do we need to design things so that usefulness is more obvious?

Thank you!

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