Privacy Perception of Elders

L Jean Camp Infosecon.net Ijean.com

Net Trust: Cyber Hygiene for All Generations

Change elders' perception of security risk

 Make them aware of the risk
 Without increasing anxiety

 Empowering them to to manage what they can manage

 Manage what they cannot

 Side benefit increases elder use of all net services

Net Trust: The Technical Result

Interaction customized for elders ✓ Usable for any business / Interaction customized for different populations Most vulnerable to fraud off-line Have the most wealth Side benefit could be used by any business with employees access company sites from home

Working with BITS

Create awareness of the need for design for elders and design for security **SBIR** opportunities ✓ Technology transfer ✓ DHS cooperative support Partnership with Indiana University Center ✓ Individual companies partner ETHOS ✓ For previews of work ✓ Annual presentations and product previews

Overview

Technology results

 Three prototypes, three variables

 Representative survey

 Results

 Design principles

Three Prototypes. Three Variables

Three Prototypes
 Trust cube
 Presence clock
 Beacon strip

Three Prototypes. Three Variables

Three Variables
Utility =perceived usefulness & perceived risk
Activity sensitivity
Data recipient
Data granularity

Demographics

34 males and 67 females
23 people lived alone and 78 other
Demographics
Three prototypes
Willingness to pay

Outcome

High degree of correlation
Perceived usefulness
Perceived risk
Activity sensitivity (measured as intimacy)
Data recipient
Data granularity

Survey

101 participants, five useful sections
 Demographics
 Three prototypes
 Willingness to pay

Willingness to Pay

Major correlations
 Utility (benefit v risk)
 Overall anxiety
 Income
 Technology use

Willingness to Pay

Risk is a component of willingness to pay
Data sharing correlated
Privacy inversely correlated
Privacy is inversely correlated with income
Distinct from previous populations

What to Do?

Change risk perception
 Change perceived benefit
 Illustrate utility

How?

Translucent Design Single narrative Visible information No overwhelming detail

Beacon Strip

Utility visible
 Data invisible
 Risks minimal



Presence Clock

Utility visible
Data visible
Risks social



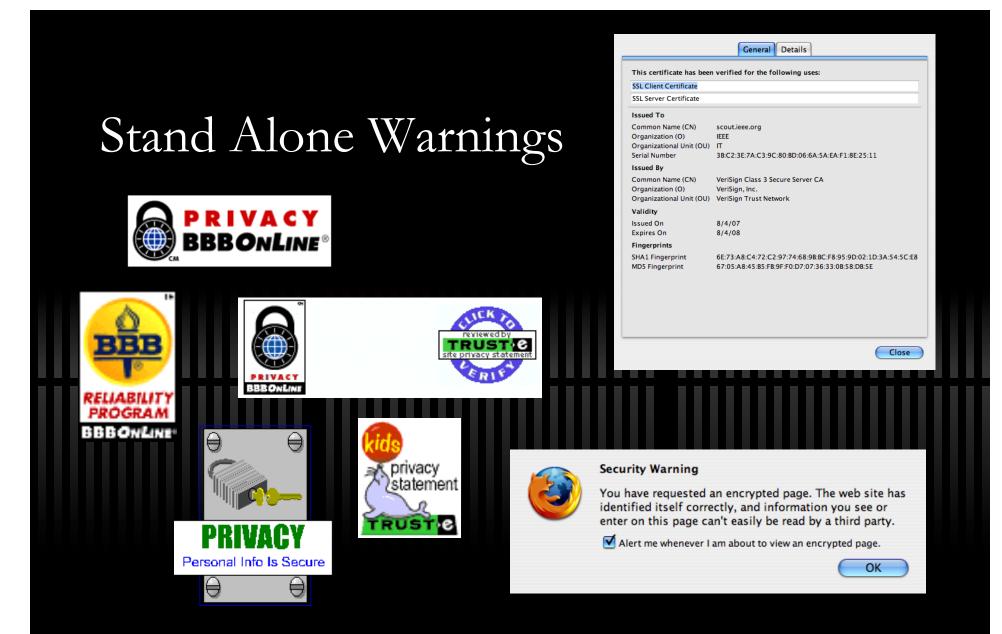
Ambient Cube Case Study

Ambient Cube Case study Technology as risk communication Balance

Risk communication

Avoid anxiety

Requires empowering technology



Traditional mechanisms to communicate trustworthiness.













Advanced to the dual core.

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Mental Models in Security Literature







Safety in numbers









Trust and Context



Resource Verification

Resources can be identified as new versus established; by location; and the by surrounding context.

Trust and Context

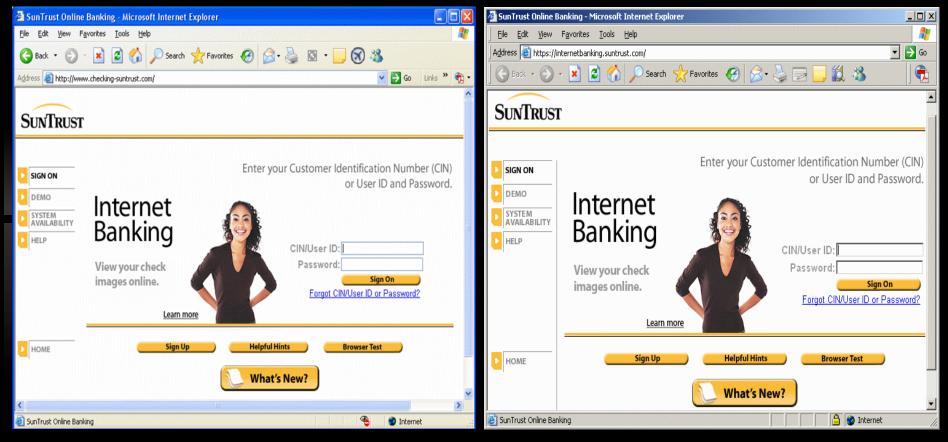




Resource Verification

Resources are often fairly easy to identify as "good" or "bad" in physical realms

Trust and Context



Contextual Information is not available on the web.

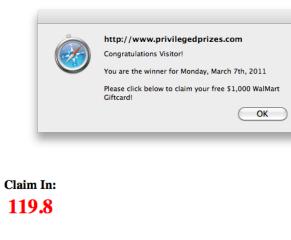
Useful?

Defendable?

Thank you for visiting!

You are Monday's Winner!

CONGRATULATIONS



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03/7/2011

Understandable?

	General Details	
This certificate has been	a verified for the following uses:	1
SSL Client Certificate		
SSL Server Certificate		
Issued To		E
Common Name (CN) Organization (O) Organizational Unit (OU) Serial Number	scout.ieee.org IEEE IT 3B:C2:3E:7A:C3:9C:80:BD:06:6A:5A:EA:F1:8E:25:11	
Issued By		
Common Name (CN) Organization (O) Organizational Unit (OU)	VeriSign Class 3 Secure Server CA VeriSign, Inc. VeriSign Trust Network	
Validity		
Issued On Expires On	8/4/07 8/4/08	
Fingerprints		
SHA1 Fingerprint MD5 Fingerprint	6E:73:A8:C4:72:C2:97:74:68:9B:BC:F8:95:9D:02:1D:3A:54:5C:E8 67:05:A8:45:B5:FB:9F:F0:D7:07:36:33:0B:58:DB:5E	

Close

Understandable?

General Details

This certificate has been verified for the following uses:

SSL Client Certificate

SSL Server Certificate

Issued To

 Common Name (CN)
 scout.ieee.org

 Organization (O)
 IEEE

 Organizational Unit (OU)
 IT

 Serial Number
 3B:C2:3E:7A:C3:9C:80:BD:06:6A:5A:EA:F1:8E:25:11

 Issued By
 Issued By

Accept this or the web won't work

Close

Understandable?

General Details

This certificate has been verified for the following uses:

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 Serial Number
 3B:C2:3E:7A:C3:9C:80:BD:06:6A:5A:EA:F1:8E:25:11

 Issued By
 Issued By

Accept this or the web web't Accept this if you trust the Elbonian Secret Police

Close

On Fire



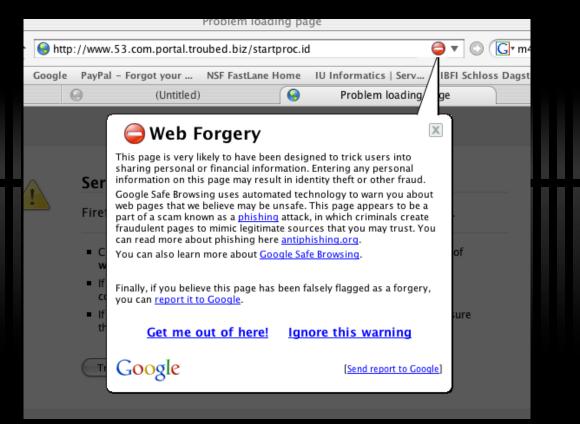


Sharing Firewall Active

The sharing firewall (System Preferences > Sharing > Firewall) is active. It may interfere with network profiling. The communication port-number range used by this application (7475 - 7480) should be added to the firewall's list of trusted service ports. Otherwise, network profiling will fail.

naring

A Safe Place?



Net Trust



"The number of websites hosting keylogging crimeware systems rose by over 1,100, reaching 3,362, the second highest number recorded in the preceding 12 months." Websense Security Lab

Avoiding Malicious Sites

Net Trust

This requires variables that cannot be controlled by the phisher

- Includes "do NOT trust" signals
- Includes other "quality of site" signals
- ✓ Design goal: Minimize trust required for toolbar

Do Not Assume Trust

- Reputation based on
- Implicit based on behavior
 - First visit results in delayed rating
 - Time delay is roughly equivalent to lifetime of phishing sites 72hrs
 - ✓ 1-nth visit increased by one
 - Increases up to nth visit, decreases to as low as n/2 after a delay
 - ✓ Trust fades over time

Do Not Assume, but Enable

Explicit based on direct entry
Rating and comments do not change
Set by user
Combine peer and centralized ratings sources
Minimize explicit user-rating actions

User- Centered Signaling

del.icio.us

- ✓ Embedded in browsing
- Requires making all information public
- Google
 - Requires discrete search
- Blogs, Epinions, Amazon Reviews
 - ✓ Can be anonymous, rarely is

Net Trust View

Using a user's **social network** (known as a buddy list) as well as user-selected **centralized authorities** (known as broadcasters) the Net Trust system displays meaningful information to the user so they can make an educated decision about the trustworthiness of a website.

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Apply			Apply									

Alternative Interface

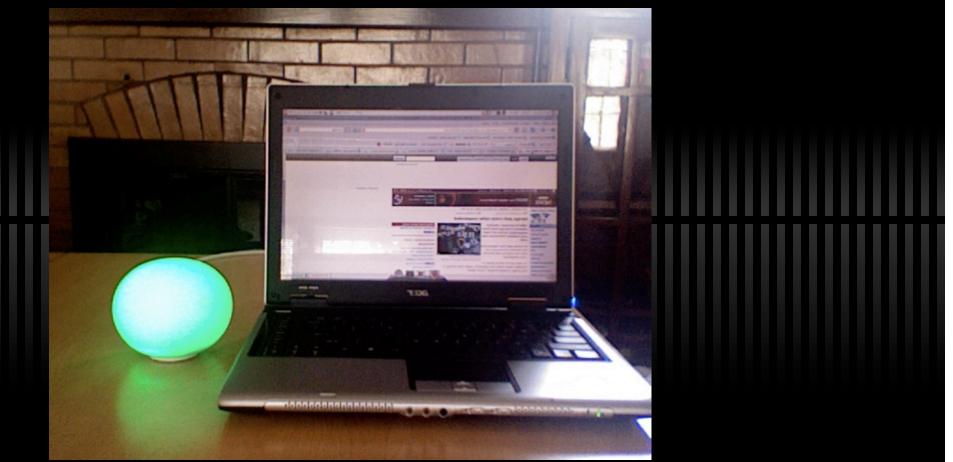
Elderly testing
Too much cognitive load
Unaware of risks
In denial about privacy issues
No understanding of social networks

SWAT: Surfing With Ambient Trust

Touch pressure alters the rating

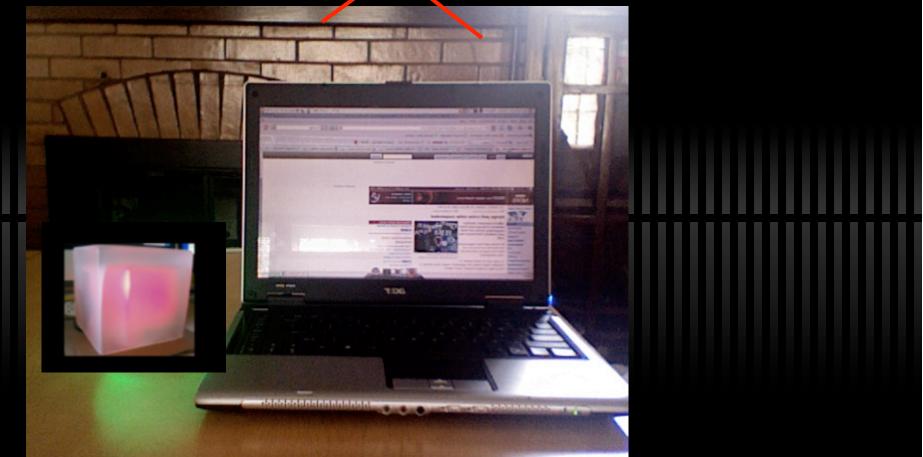
100

Ambient Trust Orb



✓ All ratings are added together with third party dominance or integration

Ambient Trust Orb Cube



✓ All ratings are added together with third party dominance or integration

User- Centered Security

This is not a bank. If you enter your bank information your money can be stolen.



User- Centered Security

This is not a bank. If you enter your bank information your money can be stolen.

 This is a bank. Please wait one moment while your security settings are changed appropriately.



Design Principles

Align with their mental models Enable them to utilize their social network Build for human trust decisions not technical analyses

Closing

Translucent design
Risk communication, consider cognitive load
Make utility clear
Connect to activity
Automate, inform, empower