

Privacy Perception of Elders



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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

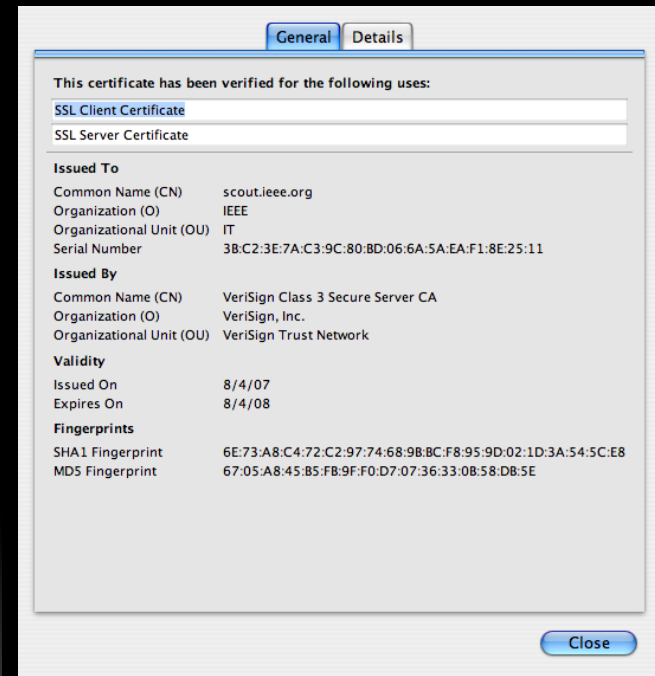
- ✓ Utility visible
- ✓ Data visible
- ✓ Risks social



Ambient Cube Case Study

- ✓ Ambient Cube Case study
- ✓ Technology as risk communication
- ✓ Balance
 - ✓ Risk communication
 - ✓ Avoid anxiety
 - ✓ Requires empowering technology

Stand Alone Warnings



Traditional mechanisms to communicate trustworthiness.



TAKE WITH
FOOD

© 1990



DO NOT CHEW
OR CRUSH,
SWALLOW WHOLE.

© 1990



Scary?

Advanced to the dual core.



Mental Models in Security Literature



Safety in numbers



Trust and Context



vs.



Resource Verification

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

Trust and Context



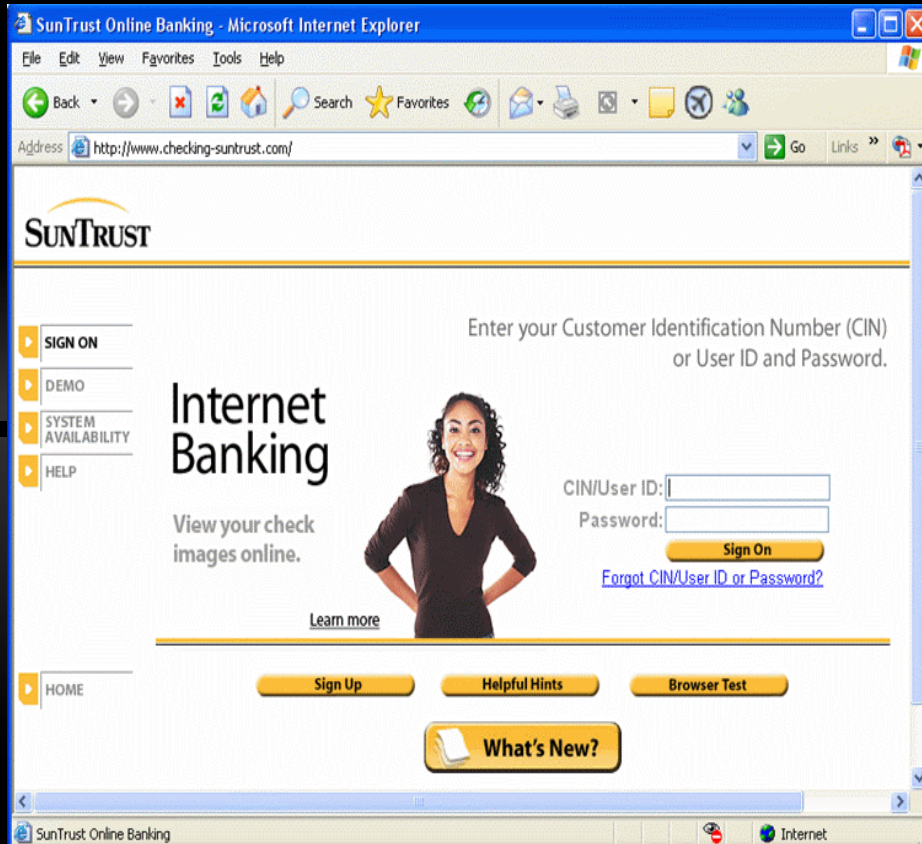
vs.



Resource Verification

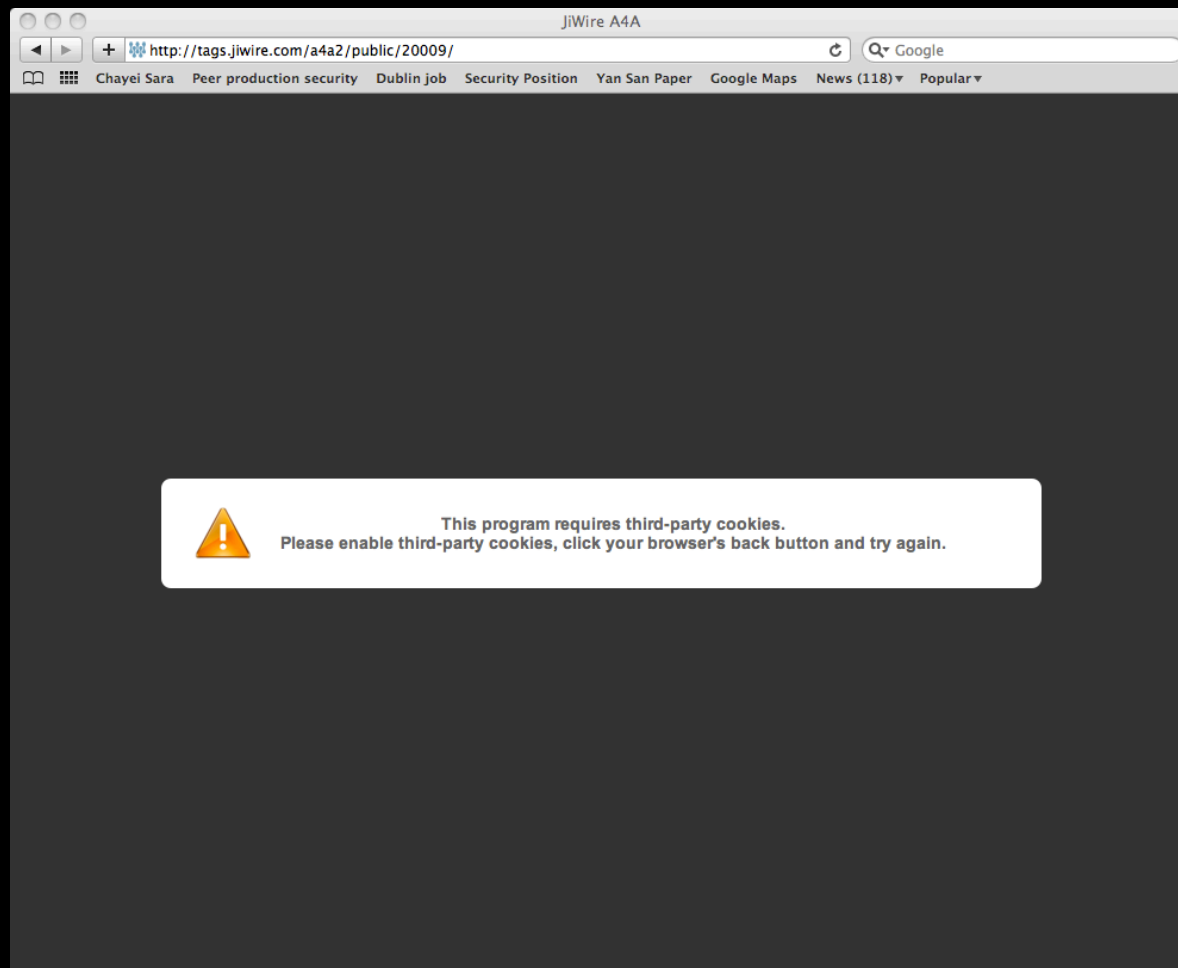
Resources are often fairly easy to identify as “good” or “bad” in physical realms

Trust and Context



Contextual Information is not available on the web.

Useful?

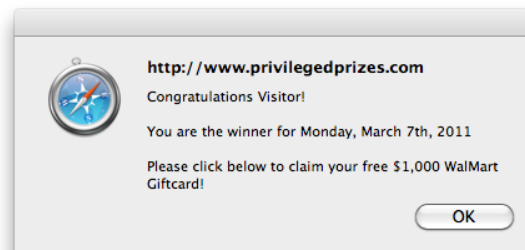


Defendable?

Thank you for visiting!

You are Monday's Winner!

CONGRATULATIONS



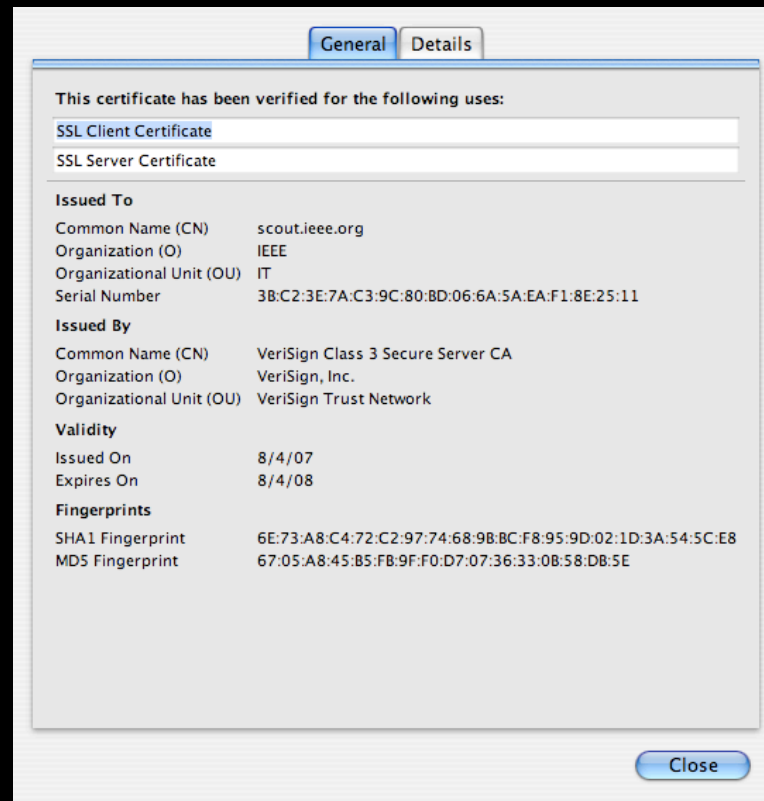
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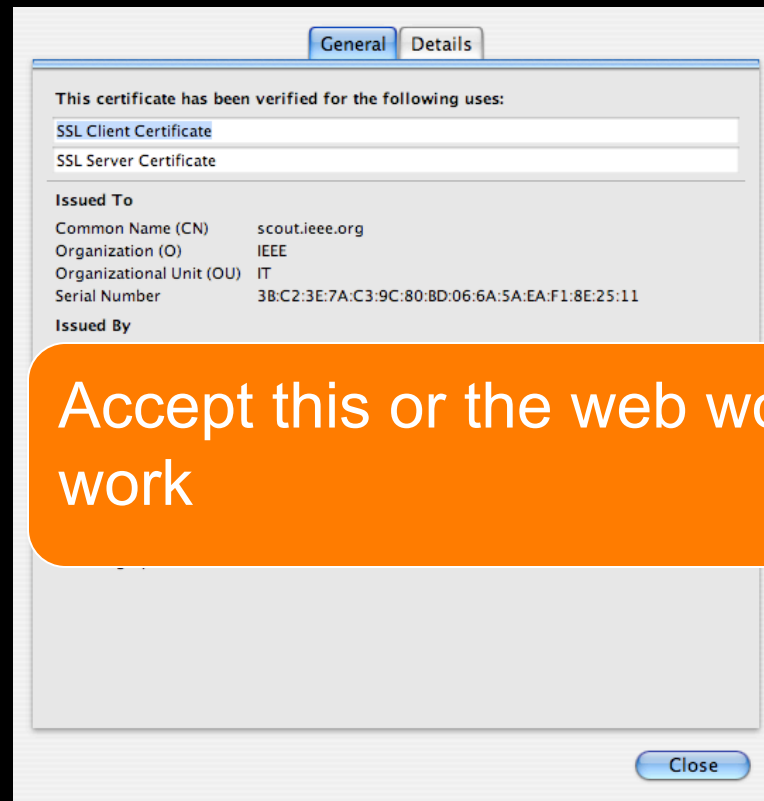
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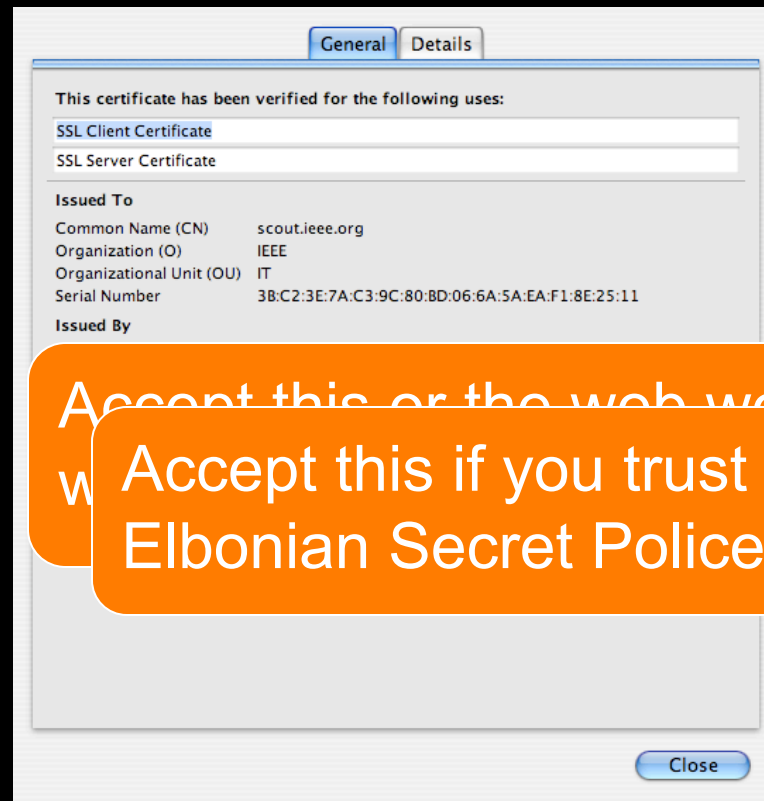
Understandable?



Understandable?



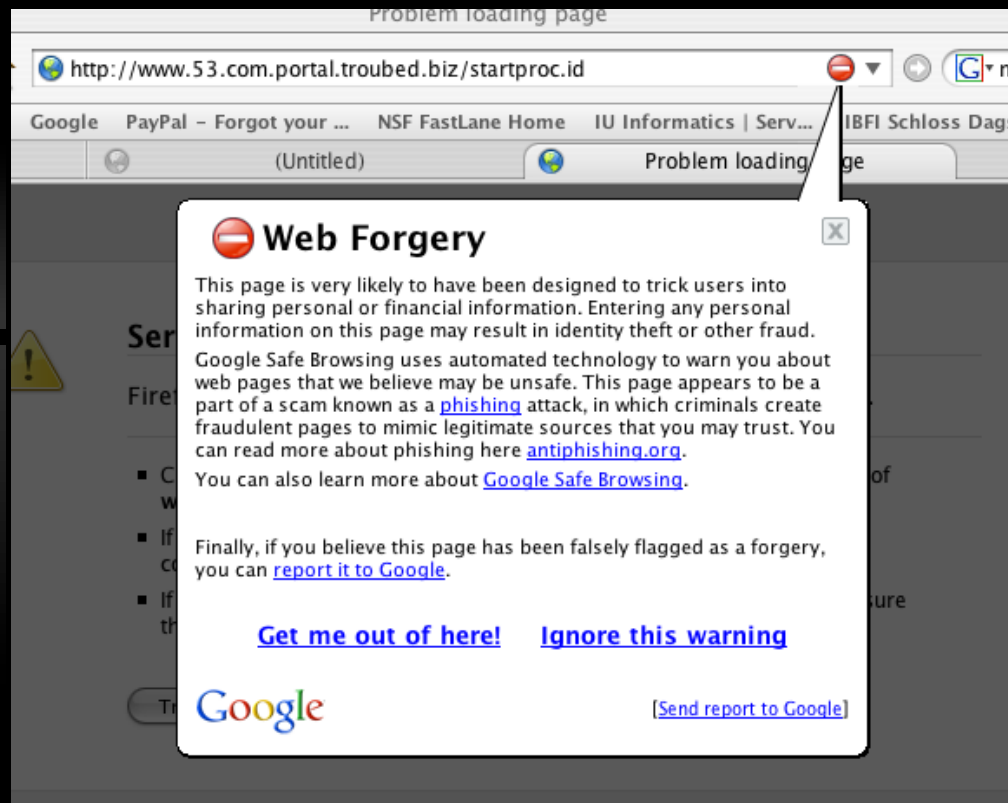
Understandable?



On Fire



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.

The screenshot shows a Mozilla Firefox browser window with the eBay homepage. The address bar displays 'http://www.ebay.com/'. The Net Trust bar is visible, showing a persona 'camilo@play' and a ratings section with a mix of red and green squares. A pop-up window titled 'Comments for http://www.ebay.com/' is open, displaying a table of user comments and ratings.

Name	Rating	Comment
camilo@play	-3	Bad site
alex_main	3	Buyer beware!
Other_camilo	1	
jean_test_1	1	

Below the table, there is a 'Comment:' field with the text 'Bad site' and a 'Manual Rating Selection:' section with radio buttons for ratings from -5 to 5. An 'Apply' button is at the bottom of the pop-up.

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

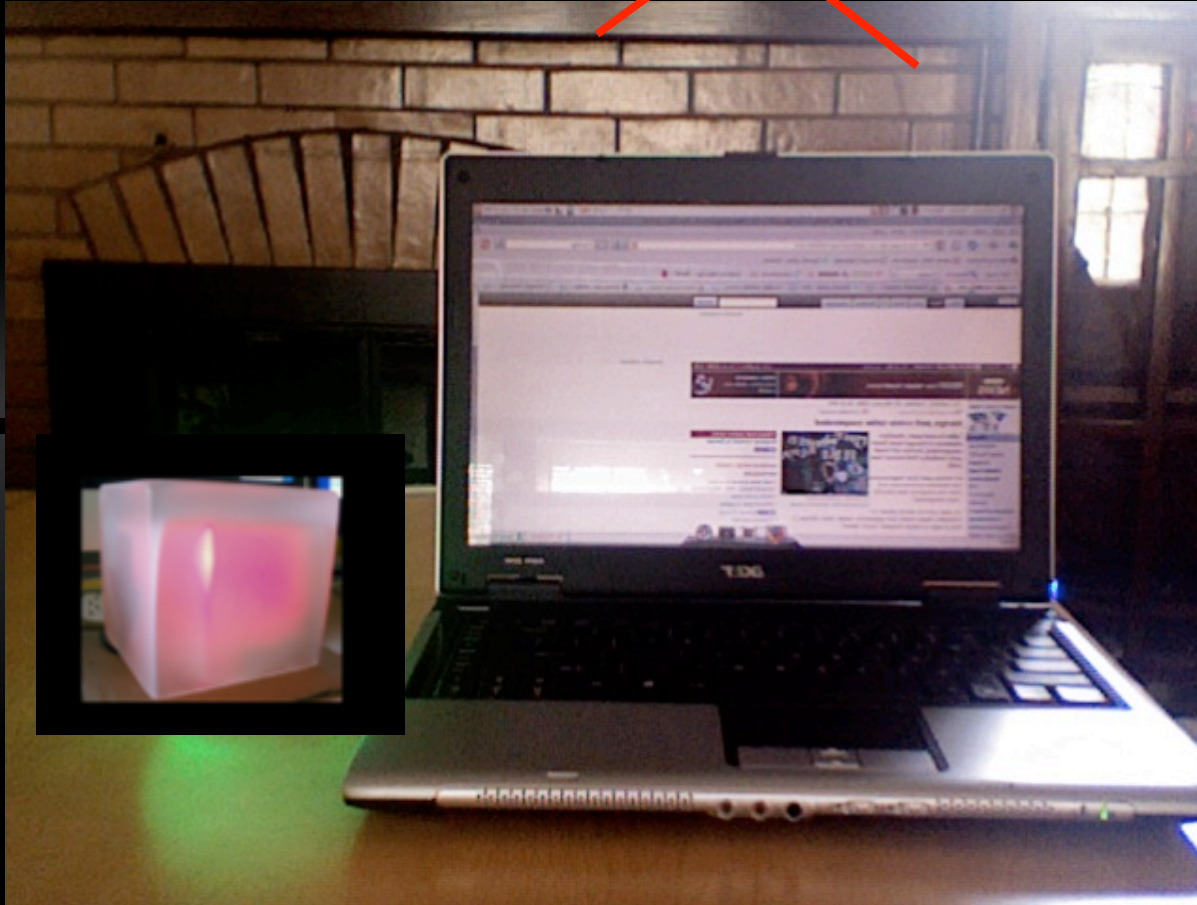


Ambient Trust Orb



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

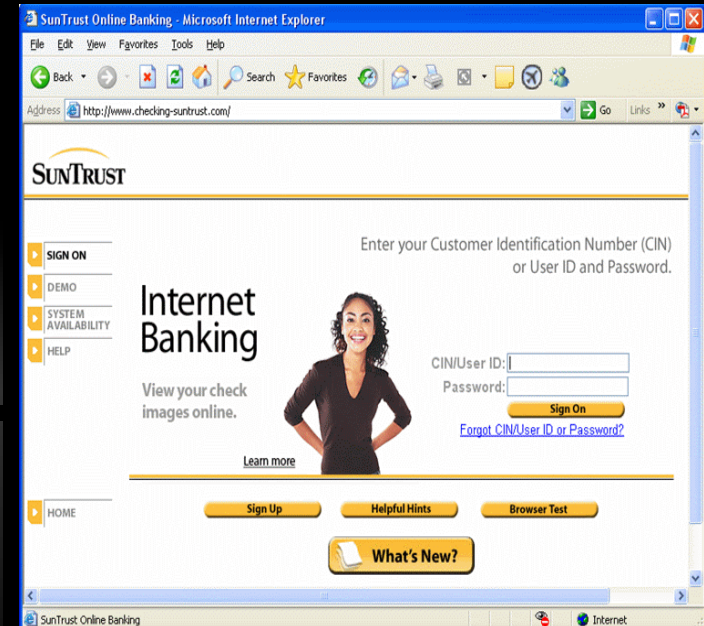
Ambient Trust ~~Orb~~ Cube



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

User- Centered Security

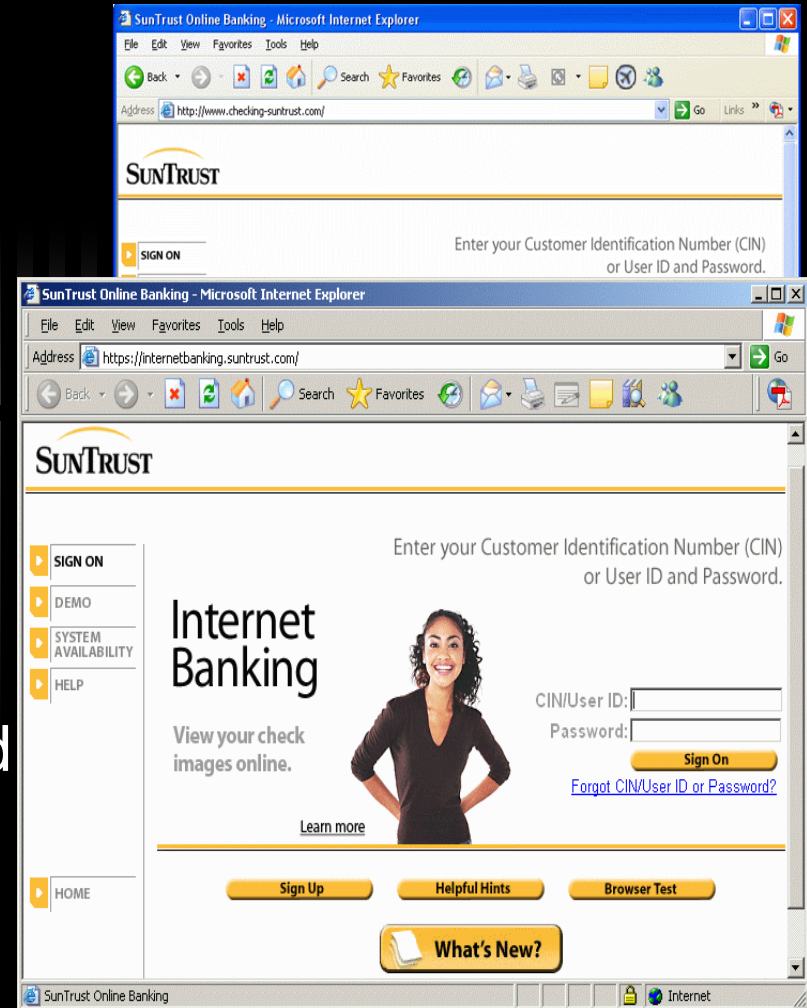
- ✓ This is not a bank. If you enter your bank information your money can be stolen.



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