

# Security Considerations for Online Research

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# Preview

- What is online research?
- Security and the Internet
- Secure web sites
- Anonymity
- Confidentiality
- Data Security
- Security of servers
- Downloading data
- Discussion

# What is Online Research

■ The use of Internet technologies for conducting research

■ technologies:

■ email

■ web

■ research tasks:

■ recruitment

■ delivery of questionnaires, etc.

■ receipt of completed questionnaires

# Examples: Email

- Send bulk emails to recruit participants
- Send individual emails to participants as a reminder to participate
- Email questionnaires to participants and ask them to print and mail them in
- Email questionnaires to participants and ask them to email the completed questionnaire to the researcher

# Examples: Web

- Provide questionnaires on a web site and ask participants to download, print, and mail them in
- Provide a questionnaire form on a web site that emails the responses to the researcher
- Provide a questionnaire form on a web site that stores the responses in a database.

# Security Concerns

- If all the information provided by our participants is assumed to be anonymous and confidential, then we must ensure the security of the methods by which we collect the data
- Of these examples provided, which should we be concerned about from a security perspective?

# Security and the Internet

- The Internet is inherently insecure
- By default, email, web pages, and web form submissions are transmitted “in the clear” (i.e., unencrypted)
- This is a problem since we have little control over the route between our computer and the email or web servers

# Security and the Internet

participant



email server



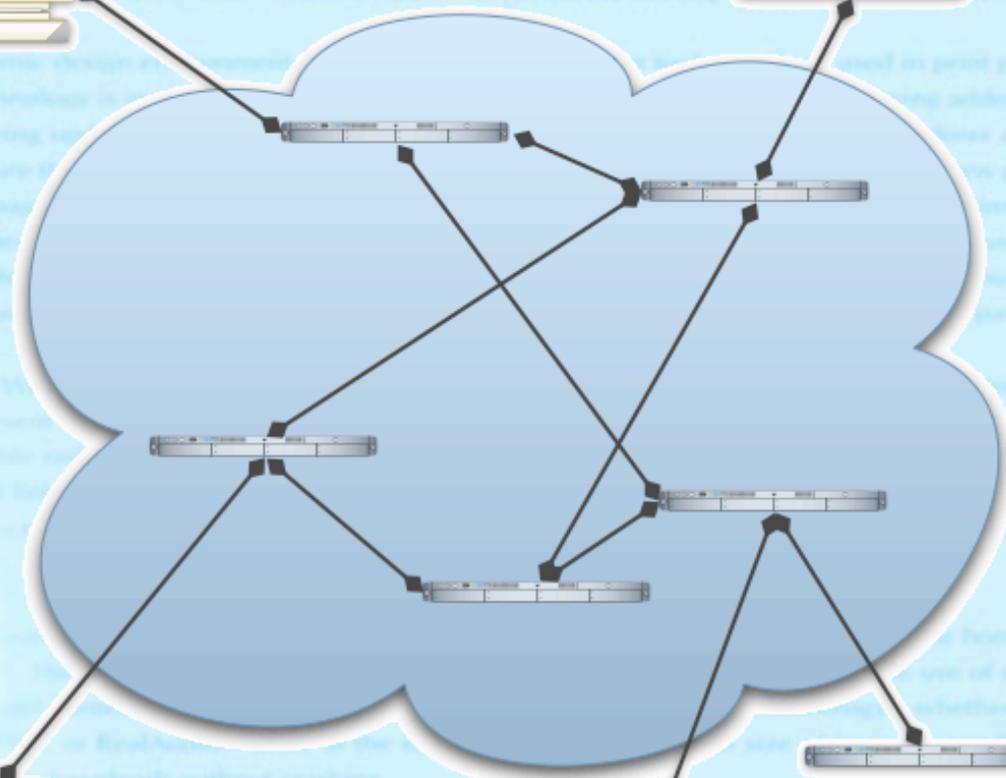
researcher



email server



web server

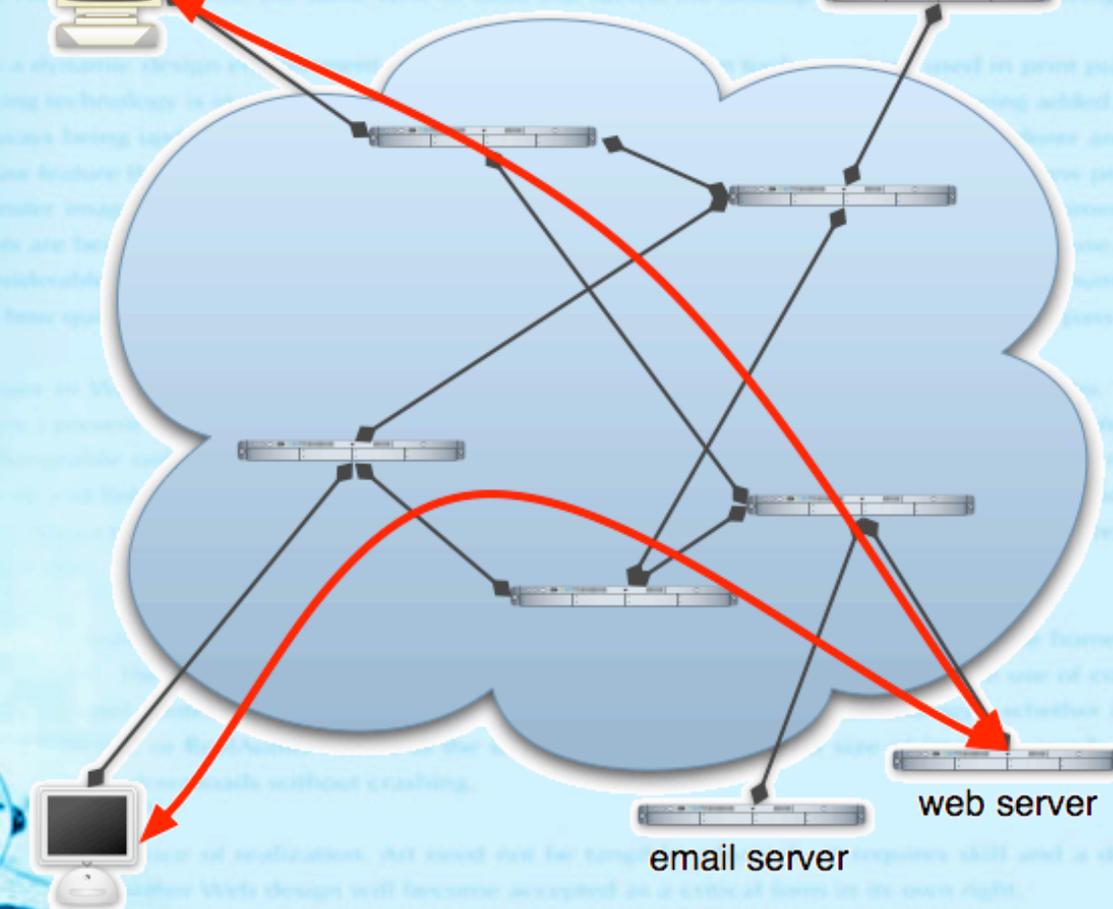


# Secure Communication

participant



email server



researcher

email server

web server



# Secure Web Sites

- Use a technology called Secure Sockets Layer (SSL)
- All data communications between the client computer and the web server is encrypted
- Requires no additional work on the part of the end user
- This is the same technology used for secure financial transactions on the web

# Secure Web Sites

■ How do you know if it is a secure web site?

■ `https://` instead of `http://`

■ lock icon

■ background of URL

# Secure Web Site Example

The screenshot shows a web browser window titled "chapters.indigo.ca: Sign-In". The address bar displays "https://shop.chapters.indigo.ca/AccountCentre". The page features a navigation menu with items like "Mac Stuff", "Research Stuff", "Cool Stuff", "Java", "Visual Search", "Vis", "HCI", "WI", "IR", "Web", "GSA", and "survey". The main content area is titled "Welcome" and includes a "Back to Previous" link. Below this, there are two sections: "Are You a Returning Customer?" and "Are You a New Customer?". The "Returning Customer" section has input fields for "E-mail:" and "Password:", a "Forgot Your Password? Click Here." link, and a "SIGN IN" button. The "New Customer" section has input fields for "E-mail:" (with an example "john\_sample@yahoo.com"), "Password:" (with a note "Should be between 6 and 16 characters in length."), and "Re-enter Password:", along with a "CREATE ACCOUNT" button. A "We Can Help You..." sidebar contains links for "Update Your E-Mail Address", "Change Your Password", "Update Your Personal Information", and "Feel Secure". The footer includes copyright information, legal notices, a privacy policy link, and a note that prices are in Canadian Dollars. The page is powered by ENDECA.

chapters.indigo.ca

Welcome

Shipping Gift Wrap Payment Summary

Welcome

You are on our Secure Server

Are You a Returning Customer?

E-mail: Password:

Forgot Your Password? [Click Here.](#)

SIGN IN

Are You a New Customer?

Enter your e-mail address and a password to **Create an Account.**

E-mail: Password:

(Example: john\_sample@yahoo.com) (Should be between 6 and 16 characters in length.)

Re-enter Password:

CREATE ACCOUNT

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All prices are shown in Canadian Dollars.  
All chapters.indigo.ca prices are applicable to online purchases only.

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Done shop.chapters.indigo.ca

# Secure Email

- It is possible to encrypt email transmissions
- With the current state of this technology, it requires extra work to be performed by the sender and the receiver
- May result in a barrier to participation

# Anonymity

- Anonymity ensures that no one knows who participated in the study
- Secure web sites encrypt all transmissions between the participants' computers and the web server
- Since the data is encrypted, others cannot tell which pages or forms an individual is viewing on a web site

# Confidentiality

- Confidentiality ensures that no one can identify who contributed which information
- Coupled with secure transmissions, confidentiality can be ensured by not asking identifying information

# Data Security

- The security of encrypted data can not be guaranteed 100%
- But if we avoid “in the clear” email and web transmissions, it at least makes it very difficult for others to view the data
- This is the same level of security used for credit card transactions on the web

# Security of Servers

- Even after we add security to the data connections, we should still be concerned about the security of the data stored on the server
- Any good web hosting company that offers SSL services will take measures to ensure the security of their servers
- But there are no guarantees...

# Downloading Data

- After all this work to setup a secure web server and database, we must be sure to not circumvent this security ourselves
- Use a secure connection whenever the data is downloaded from the server
- Not doing so is like building a fence but forgetting to install the gate

# Recommendations

- Secure web site (SSL)
- Data stored in database on web server
- Reputable web host
- Download data over secure connections
- Avoid sending confidential information via email

# Discussion...

...becomes viable, perhaps the terms "scan" or "close-up" will be used. The terms "link," "hotlink," and "hypertext" are also in digital content, evoking non-linear experiences, as does the term "Web" itself. It is exciting to know that there are cadres of talented individuals, young and old, who are earning a living designing and shaping the Web of the future. Surely that Web will be a rich and vibrant place.

...publishing applications such as Adobe PageMaker or QuarkXPress, which have recently added HTML (Hypertext Markup Language) tags for Web publishing, or even to add multimedia sound and user interactivity capability. Multimedia programs such as Macromedia Director have created applications that will strip files down to Web-compatible size. Macromedia's version of this is the Shockwave/Afterburner combination. Even basic word-processing programs have the option to add HTML tags to plain vanilla documents. Photoshop offers the option to save an image as a GIF (Graphic Interchange Format). In essence, the same suite of tools that fueled the desktop revolution is also driving the 72-dpi revolution.

...is a dynamic design environment. While the basic Web design tools are those used in print publishing and multimedia, underlying technology is in constant flux—always being improved, new features always being added. The basic HTML tag language is always being updated, as are browsers. Netscape Navigator and Microsoft Internet Explorer are the browsers of choice. With new feature the availability of table frame language to break up a single window page. New processes have been developed to transfer image-mapping programming from the server to the client to speed up download times considerably. Hardware demands are being shifted to the viewer and to the server company. If the server is brought in-house, then the design firm can incur a considerable expense in hardware, software, and maintenance personnel, depending on the number of hits they expect to receive and how quickly the site loads. Many firms transfer this responsibility to service providers and pass the costs on to the client.

...changes in Web tools, constant browser updates, new plug-ins (Java, Shockwave, RealAudio, Virtual Reality Modeling Language), present a challenge for designers and content developers. Whereas print and video professionals produce a static design, Web designers only with the intent of creating a new, "revised" edition—Web professionals create shifting sand dunes of design and links form and flow to incorporate and embrace change. Sites become obsolete and need easy, a tendency that Web design teams can anticipate and work around. This book tries to highlight sites that bring freshness and innovation to

...would have in common? They all pay attention to detail, not just on the home page, but on the subpages. They feature innovative, well-executed designs characterized by effective use of color and shape as well as pertinent content. They make efficient and sensible use of available technology—whether it's Java scripting, GIF89a images, or RealAudio—while at the same time keeping the total size of images, sounds, and animations small to ensure fast downloads without crashing.

...place of realization. Art need not be tangible, physical—it requires skill and a desire to communicate. If Web design will become accepted as a critical form in its own right,