

Moving to the Web: A Glimpse of the Future

Internet Communications for Cancer Registr

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Key Issues

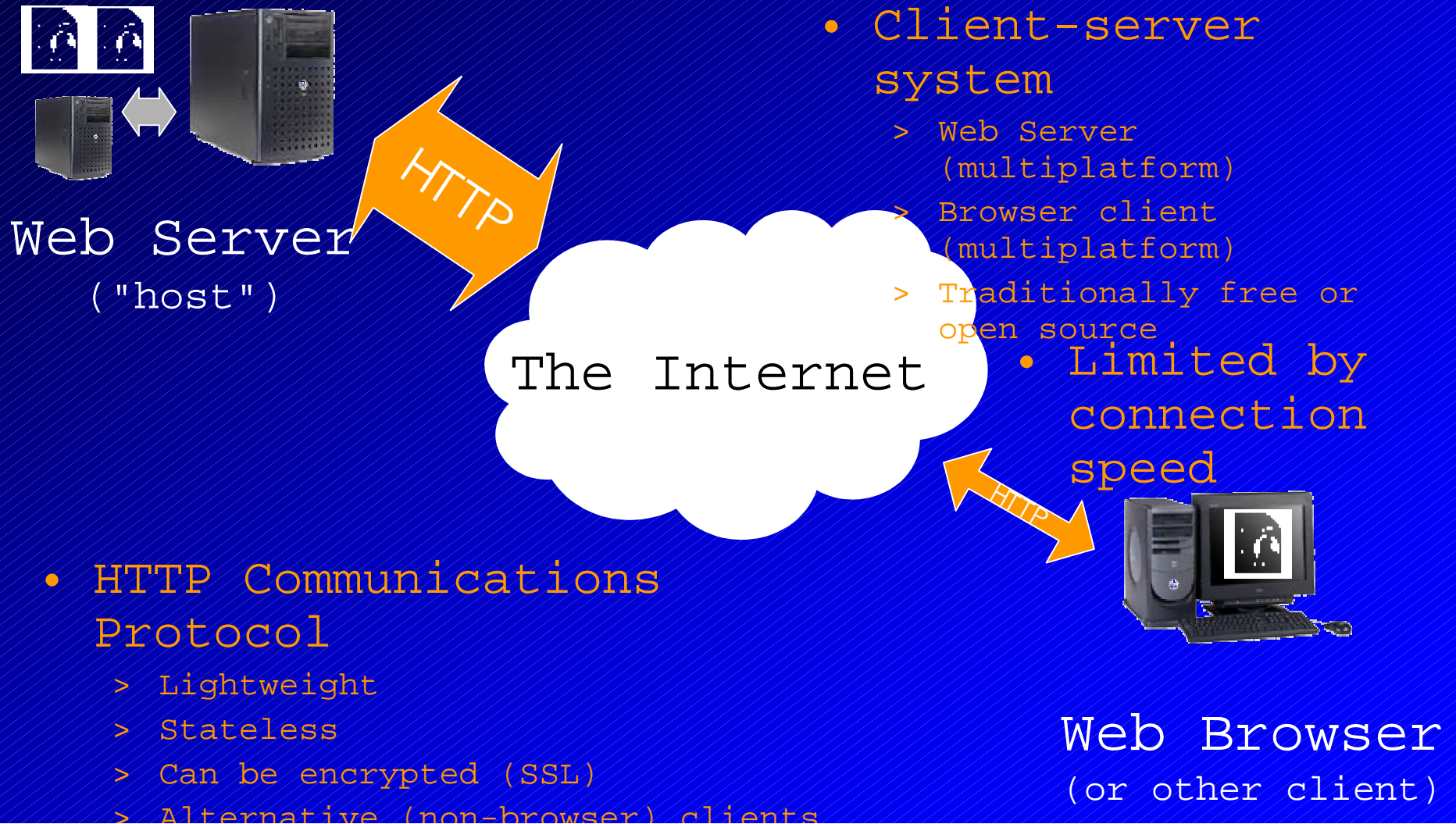
- What is the Web?
- Management of Web resources
- Application to Cancer Registries
 - > Public information and marketing
 - > Delivery of statistical analyses and raw data
 - > Data abstraction
 - > System interfaces

The Web:

A Global Multimedia Hypertext Internetwork (Internet)

- Global
 - > 130 sites in June '93; 623 in Dec '93
 - > ~ 10 million sites by 12/99
 - > 800,000,000 pages and 6 terabytes of text in 2/99 (est)
- Multimedia
 - > Exponential growth began with inclusion of images with text in pages (Mosaic in 1993)
 - > "Plugin" technology added sound and video
 - > "Forms" allowed data entry and interactivity
- Hypertext
 - > Documents are interlinked and traversable

Web Communications



- Client-server system

- > Web Server (multiplatform)
- > Browser client (multiplatform)
- > Traditionally free or open source

- Limited by connection speed

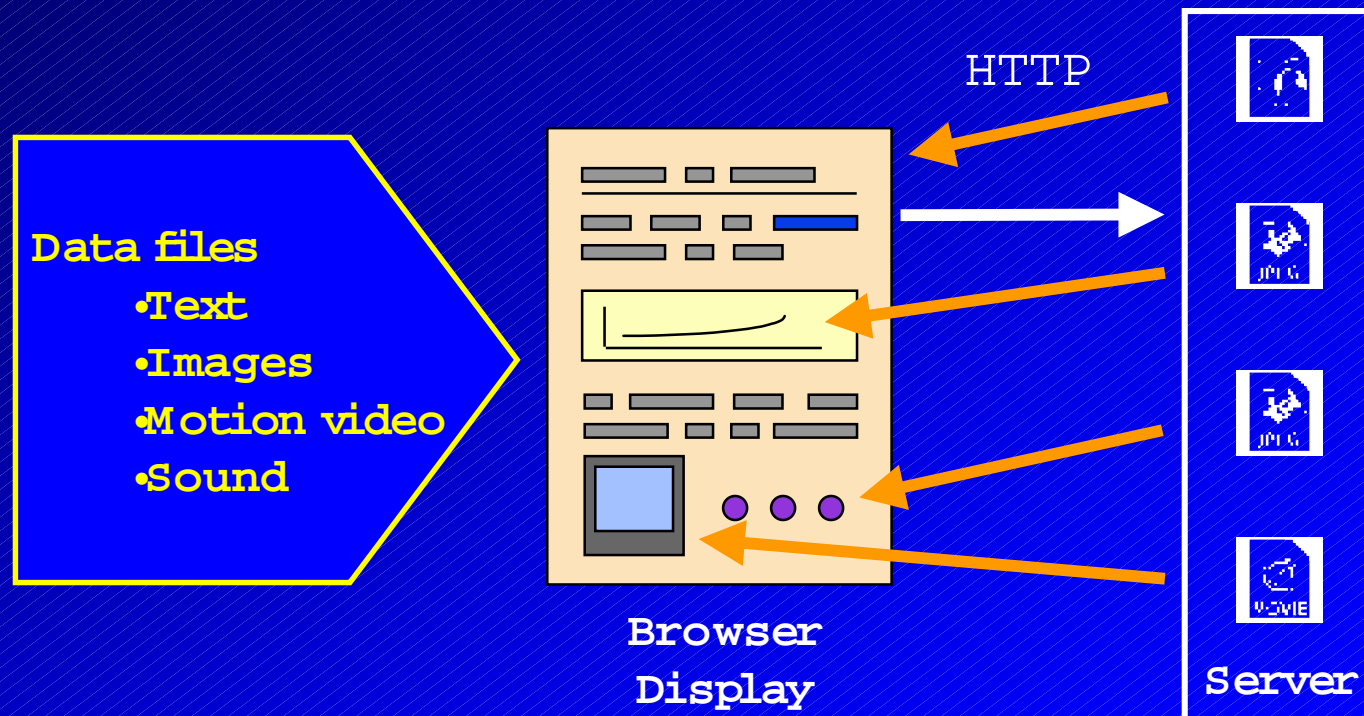
- HTTP Communications Protocol

- > Lightweight
- > Stateless
- > Can be encrypted (SSL)
- > Alternative (non-browser) clients

Web Browser
(or other client)

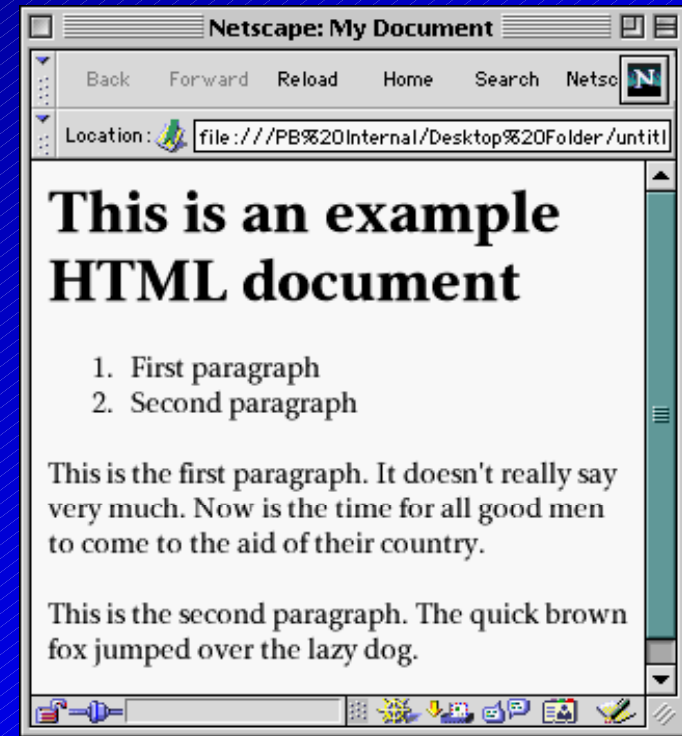
World Wide Web Documents

- Written in Hypertext Markup Language (HTML)
- Integrated display of many data types derived from multiple server files



A Hypertext Markup Language Document

```
<html>
<head>
<title>My Document</title>
</head>
<body>
<h1>This is an example HTML document</h1>
<ol>
<li>First paragraph</li>
<li>Second paragraph</li>
</ol>
<p>This is the first paragraph. It doesn't really
say very much. Now is the time for all good men
to come to the aid of their country.</p><p>This
is the second paragraph. The quick brown fox
jumped over the lazy dog.</p>
</body>
</html>
```



Text editors for simple documents
Web management software:
FrontPage, Dreamweaver, GoLive

Managing Web Resources

- Domain names (www.myregistry.org)
 - > Use parent organization, hospital, academic institution domain
 - > Independent domain names ~\$35 per year
- Site hosting
 - > Hospital/parent organization IT unit, commercial Web hosting
 - > Simple sites: \$30 - \$100/month
 - > HTML development and maintenance
 - Student: \$10 per hour
 - HTML developer \$30+ per hour
 - In-house staff
- Database connectivity/application programming: \$\$\$
- Software: Apache, Microsoft IIS, numerous others
 - > Registry-specific software: Vitalnet Oncogram, Electronic Registry Syst.
- Data security and encryption: expertise (\$\$)

Application: Public Information and Marketing

- University of Pittsburgh Cancer Center
- Texas Cancer Registry
- NCI SEER Program
- OncoNavigator (Registries)

Application: Data Delivery

- NCI SEER Program
 - > [Overview](#)
 - > [Incidence statistics](#)
 - > [Graphical output](#) (note available tabular and delimited data)
- Cancer Surveillance Online
 - > [Overview](#)
 - > [Incidence by province](#) (data download)
- NAACCR
 - > [CiNA](#)
 - > Data selection and specification
 - > Graphical output
- Summarized data and delivery of data files for analysis

Application: Data Abstraction

- Belgian Thyroid Cancer Registry
 - > Task Selection
 - > Forms Index
 - > Registration form
 - > Preliminary surgery
 - > Pathology
 - > Update

Application: System Interfacing

- HTML is limited to a fixed set of text markup tags
- XML is a Web-compatible markup framework allows definition of domain-specific tags
- XML documents are transportable by Web techniques
- XML-tagged data can be processed by low cost existing software modules available to users and vendors
- HL7 v3 is defining a set of domain-specific XML tags
- Thus Web technology with XML may be useful in integrating registry software with other healthcare systems
- GTDS in Germany (<http://www.gtds.de/>)

Summary

- The WWW is a widely available set of communications tools
- Registry Web sites can improve the visibility and utilization of registries
- The Web can also provide a useful mechanism for distributing standard analyses or data sets
- Some registries are experimenting with through-the-Web data abstraction
- Web communications features are beginning to appear in standard registry software packages
- Web-style communications are likely to be used in the future for data reporting and system-system interfaces

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