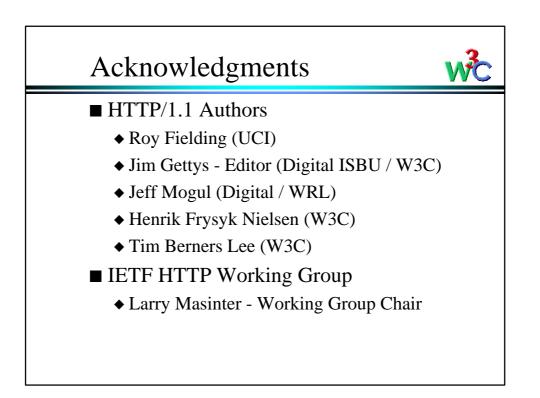
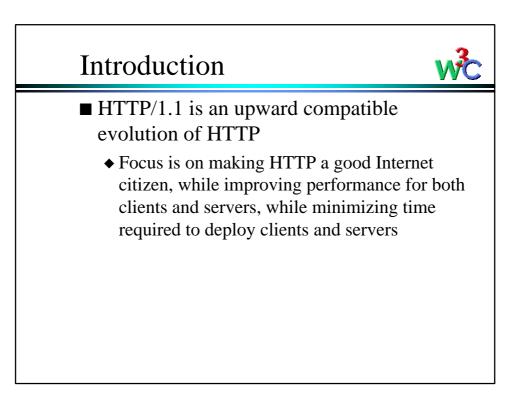
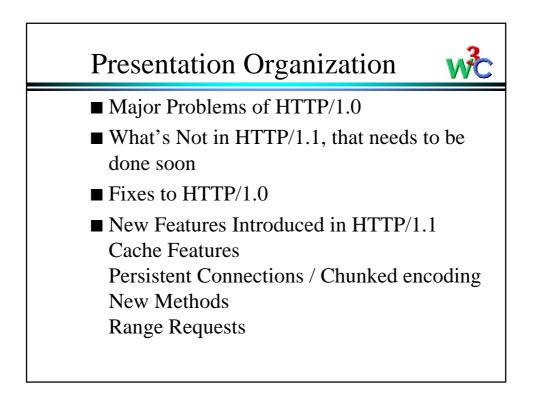
## Hypertext Transport Protocol HTTP/1.1

Jim Gettys Digital Equipment Corporation, ISBU Visiting Scientist, World Wide Web Consortium 10/17/96



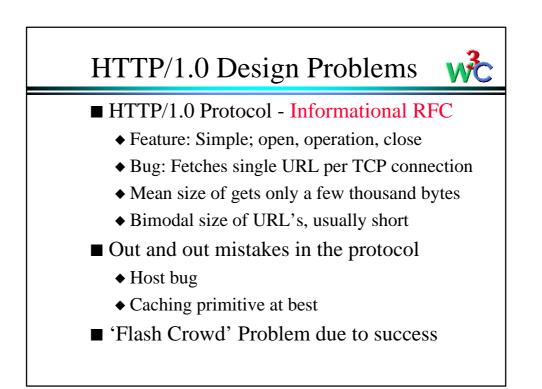




## **HTTP Structure**



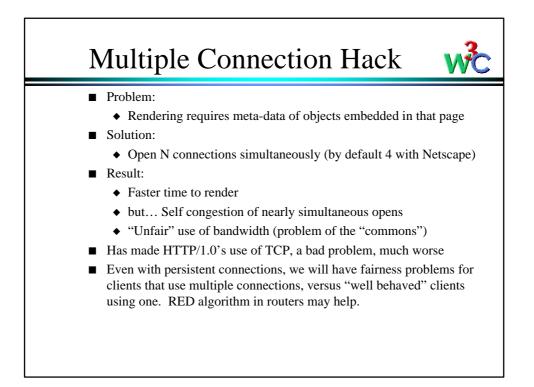
- Very good idea: adoption of MIME type registry
- Less good idea: HTTP Based on Internet Mail Protocols (SMTP, MIME)
- Different enough from and similar enough to MIME to confuse MIME wizards
- Consequences
  - ♦ Slow to parse
  - ◆ Verbose, therefore high latency
  - Don't know length of a request/response until after parsing the protocol



## Consequences of HTTP/1.0



- Closing connection causes loss of congestion information
- Connection opens may be congesting low bandwidth links, due to lack of flow control on TCP opens and closes
- Poor user perceived performance (most connections in slow-start)
  - Workaround has been opening multiple simultaneous connections, with resulting congestion problems
- Servers have thousands of connections in close\_wait state
  - e.g. AltaVista server is at > 20 million connections/day, or >230/second averaged over 24 hours
  - Cost is primarily memory, on systems running reasonable TCP implementations
- Vanity servers with HTTP result in big servers using 100's of I.P. addresses and consequential routing headaches
- Caching model is primitive, and broken enough that content providers often defeat caching



## Goals of HTTP/1.1



- 1) Reduce HTTP's impact on the Internet, and make HTTP a 'well behaved' Internet protocol
- 2) Finish HTTP/1.1 quickly (see 1.)
- 3) Be as compatible as possible with HTTP/1.0, particularly for origin servers and clients (see 2.)

Now an IETF Proposed Standard

