Characteristics of Mobile Web Content

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Text Block #3
Contact, Department,
or Other Information

Background

Mobile vs. Non-Mobile Devices

Non-mobile devices

- Great computation power
- Larger display
- Faster and more reliable internet connection

Mobile devices

- Low computation power
- Smaller display
- Slower internet connection
- Input is a hassle

Motivations

- How is the content of mobile web pages *geographically distributed*?
- What's the ratio of *images/markup* content? Average page *size*?
- What's the degree of *connectivity* on mobile web pages?
- How often are *unique schema* used?
- How prevalent are *advertisements*?

WAP

- First Mobile Web protocol originally meant to connect laptops, PDAs and mobile phones
- Very lightweight, uses WML for coding purposes
- WAP 1.0 is connection-oriented
- Notion of WML cards
- Maximum speed of 9.6 Kbps

WAP (cont.)

- WAP 2.0 was introduced 3 years later
- Allowed users to surf web, check email and view images
- Maximum speed of 384 Kbps
- Runs over packet-switched networks
- Still had support for WAP 1.0

C-HTML

- *i-mode was* created in Japan in 1999
- Loosely based on WWW protocols
- Users could e-mail, surf web, exchange images
- Programmed in C-HTML
- Required users to have a special handset

XHTML-MP

- The most recent protocol for mobile web pages
- Extends XHTML by adding features to enhance web experience on mobile devices
- XHTML-MP 1.2 DTD is the current mobile web recommendation

Mobile Content Crawler

- **Modified Larbin to create Mobile Content Crawler**
- **Used diverse sites as a starting point for crawler**
- **Collected site data and stored in a database**

TABLE I

SEARCH KEYWORDS USED FOR CRAWL SEEDING

news	sports	weather
games	portal	science
health	business	finance
arts	shopping	world
site:.jp	site:.uk	site:.ja
site:.au	site:.ve	site:.cn
site:.kp	site:.ca	

Results

Page Statistics

- **WML pages far exceed the number of other pages**
- **HTML has the most servers with C-HTML having the least**
- **C-HTML far behind in many areas**

TABLE II

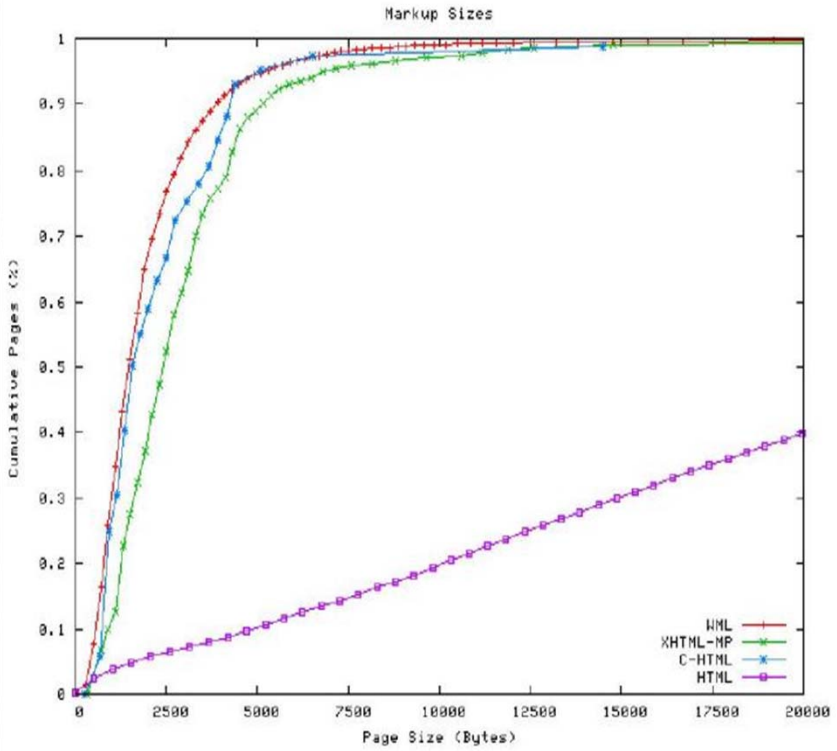
PAGE, SERVER AND DOMAIN CONTENT TYPE STATISTICS

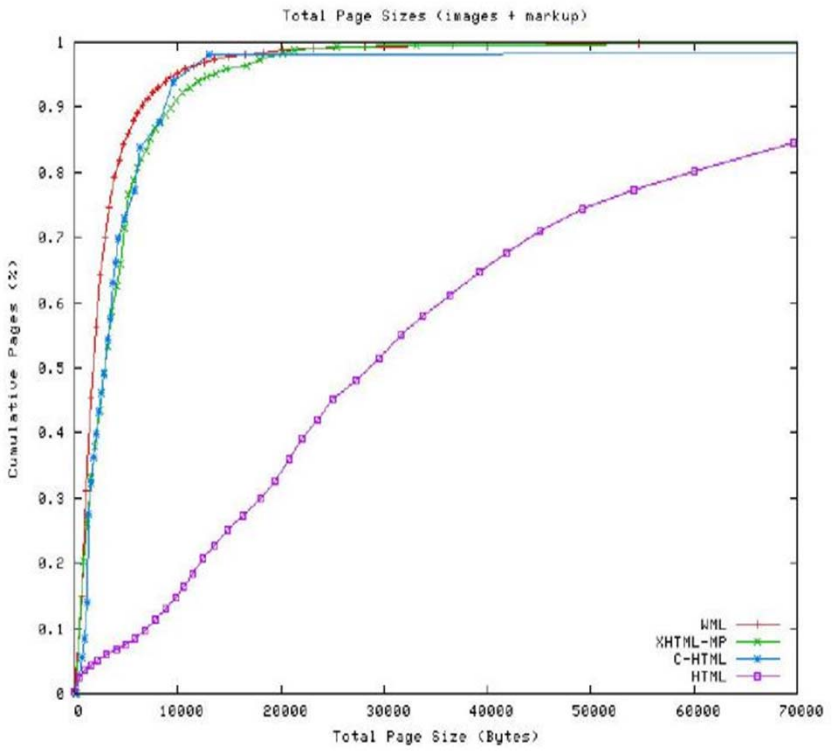
Type	Num. Pages	Num. Servers	Num. Domains	Avg Pages/Server
WML	1,055,589	13,672	5,734	77
XHTML-MP	145,314	842	446	173
C-HTML	14,206	27	26	526
HTML	227,462	47,110	38,143	5

Page Size Comparison

- WML had the smallest page size with 2159 bytes
- XHTML-MP had the largest mobile page size with 3018 bytes
- All pages were orders of magnitude less than HTML which comprised of 35490 bytes

Page Size Comparison

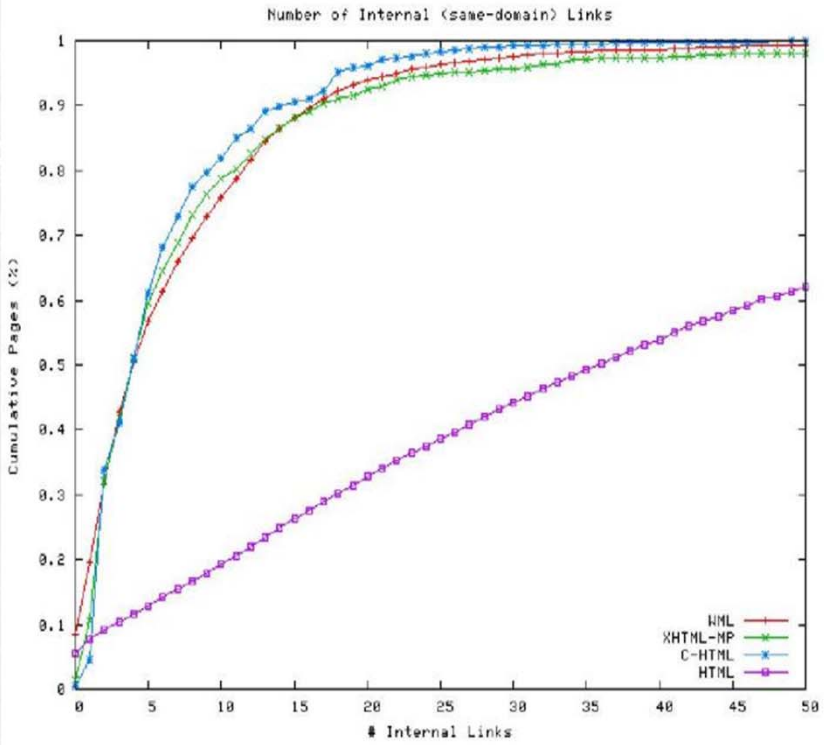




Connectivity Comparison

- Significantly fewer links than non-mobile sites
- Design choice? Keep pages concise
- 10% of mobile web pages did have 20+ links
- Mobile web pages had higher link density than HTML web pages

Connectivity Comparison



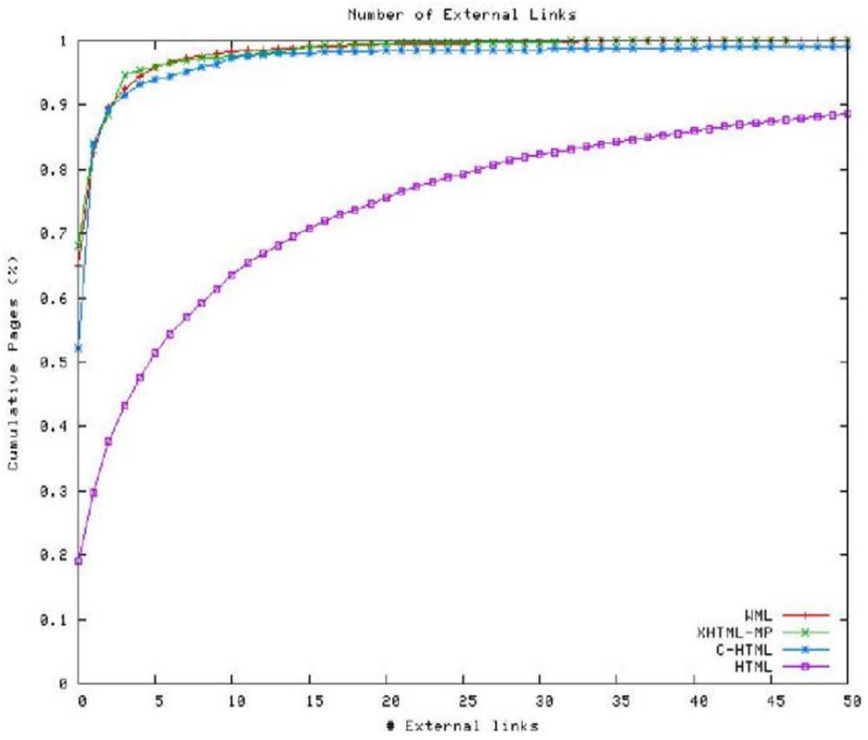
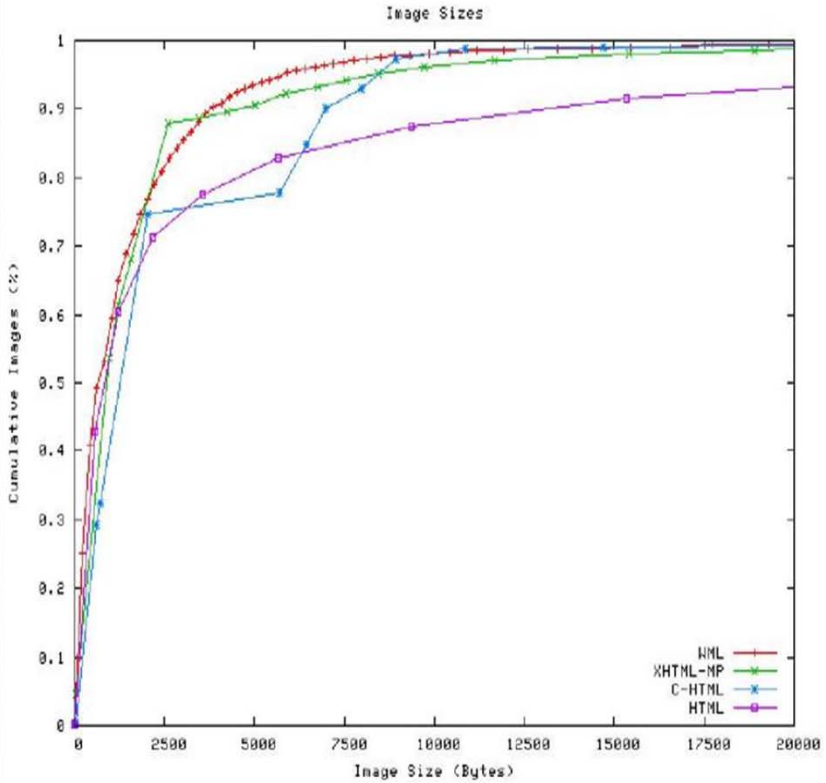
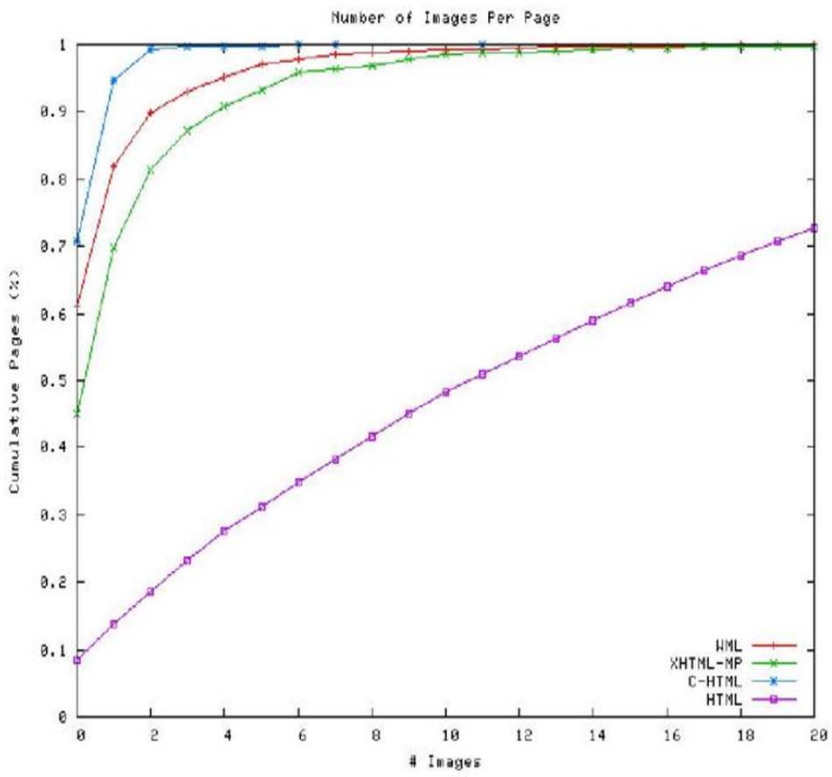


Image Usage Comparison

- Mobile web pages contain images of very small size
- Not many images per page
- Reasons for this include the need to provide optimal speed/less load time
- Large contrast with HTML

Image Usage Comparison





Other Observations

- Not a large use of WML cards due to lack of performance increase
- 50% of XHTML-MP sites incorporated User Agent Data in routing process
- Only .5% of WML pages did – probably due to legacy support
- Low presence of advertisements

Main Contribution

- Provided general observations of mobile web characteristics
- Enables content providers to provide content that runs at an acceptable rate
- Enables mobile web designers to make better design choices

Questions?