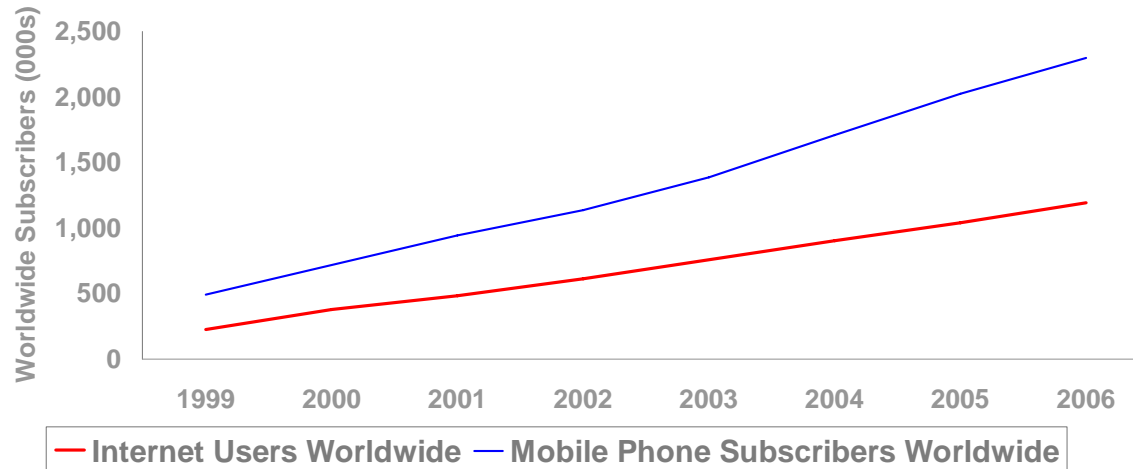




The Mobile Web in Developing Countries

Contributors: Ravi Jain, MT Raghunath, Sreeram R, Prasenjit Phukan

More mobile phone users than Internet users



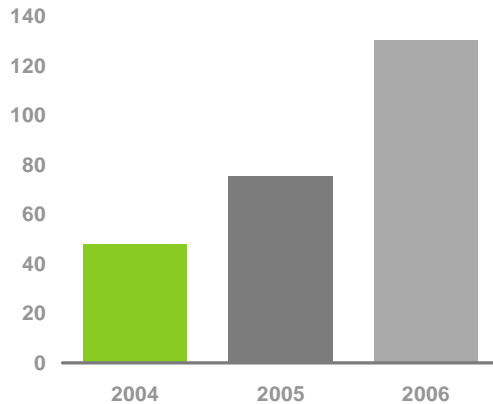
Country	Mobile Users (MM)	Internet Users (MM)	Mobile Phone to Internet User Ratio	Installed PCs (MM)
China	363	100	3.6:1	53
US	177	211	0.8:1	207
India	120	20	6:1	20
Japan	88	78	1.1:1	55
Germany	69	51	1.4:1	39
UK	54	37	1.5:1	26

Source: Euromonitor, CNNIC, World Bank, Morgan Stanley Internet Research (July 2005)



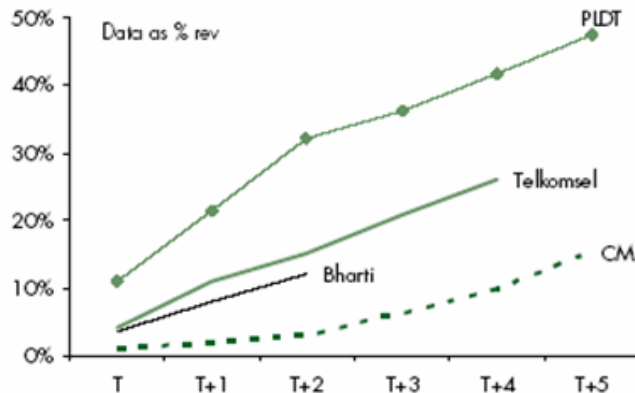
Key market trends – India as an example

Mobile Subscriber Growth



Source: TRAI

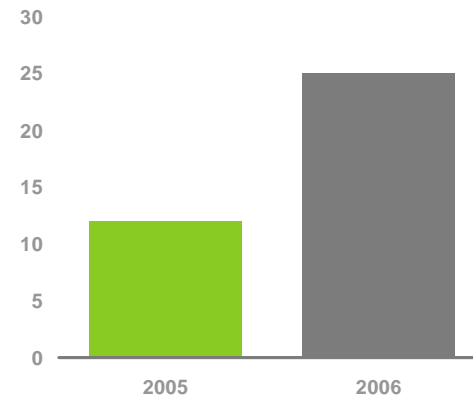
- Mobile penetration will far outpace PC/Internet growth
- Operators pushing data services to make up for low voice ARPU
- SMS rules



China and Philippines: T=1999; Indonesia: T=2001; India: T=2003

Source: Lehman Brothers report on "Mobile Data in India"

SMS Volume (in Billions)

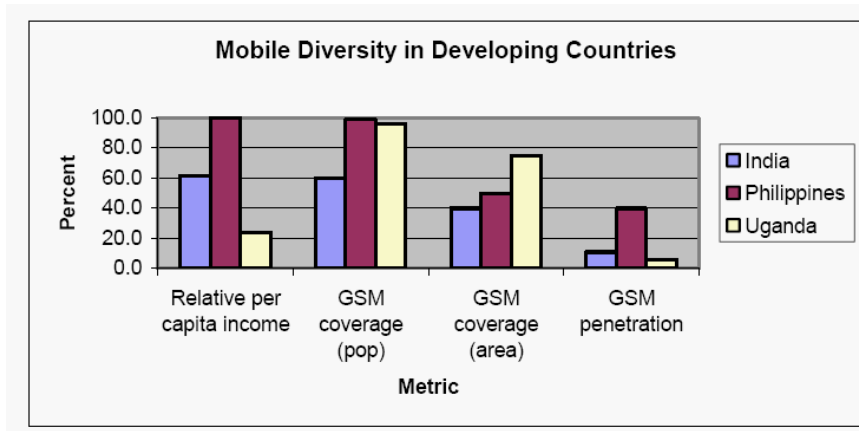


Source: TRAI



Mobile Web challenges in Developing countries

- Connectivity, cost, coverage
 - Issues even for voice
- Literacy levels and language diversity
 - Impedes creation of local content
- Other environmental factors
 - Government regulations, demographics



Source: GSM Association, World Bank

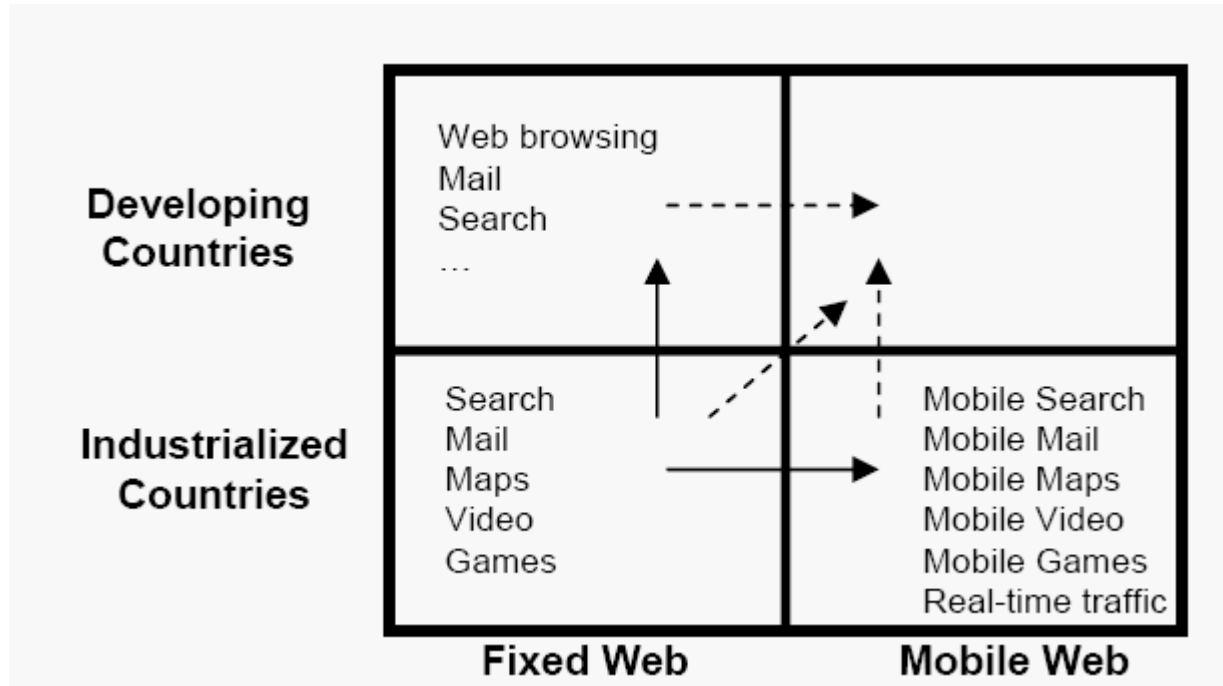




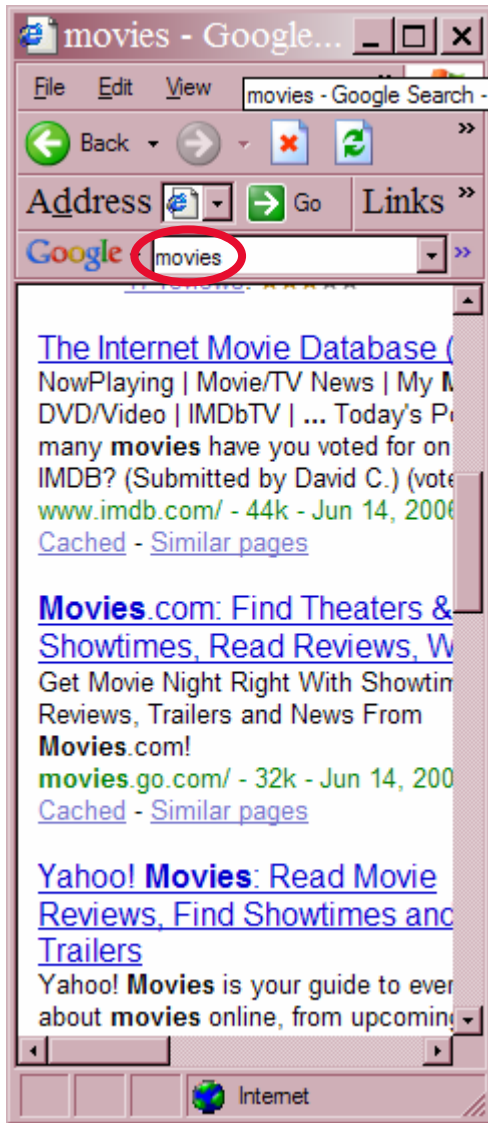
Global markets

Local opportunities

Towards new applications that users find valuable



Search => Mobile Search (US) => Mobile Search (IN)?



Region specific applications

- Example: Kiva.org
 - Direct micro finance loans to small entrepreneurs
 - Internet and Mobile technologies to facilitate increased transparency
 - Images of target business conditions and progress
- Many more will emerge
 - W3C role: standardization efforts where necessary



Network studies to facilitate application development

- Application architecture and design require an understanding of user and network dynamics
- Applications designed for high bandwidth environments, and high capability handsets may not work in the developing world
 - E.g. Google Mobile Maps with traffic on blackberry handsets
- Need research studies to collect user and network data



Security

- Transactions on mobile are already happening
 - Train tickets using SMS
- Attackers follow the money
 - Attack sophistication increases as transaction amounts increase
- Application developers need standard security mechanisms to protect against intrusion/hacks



Questions & Discussion...

- How W3C can help in
 - Market specific applications
 - User/network data profiling
 - Security standards
 - Other areas?



