

11.2 Mobile Device Solutions

Dr. Arun Tanksali, Jatayu Software

Mobile Device Solutions

Arun Tanksali
Jatayu Software
tanksali@jatayusoft.com

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Mobile web

- Mobile web – an outcome of device limitations
- Its definition has evolved – proprietary access, WAP1, WAP2, imode, and now MWI
- Its real today – WAP1, WAP2 and imode today generate significant traffic
 - In comparison to earlier years
 - re the full web, still very small

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State of the mobile web

- Defining mobile web broadly, to include all data services,
 - the mobile web is having pockets of success
 - imode browsing in Japan
 - Instant Messaging in the US, and China
 - WAP browsing in UK
 - WAP browsing and MMS in regions of India
 - Synchronization services in enterprises
 - Push email services by RIM, Good and others
 - Device management services in Japan
- Amazing possibilities exist
 - and success in these pockets promise wide-spread adoption

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What's driving it?

- Information on the move
- Ability to club mobile specific attributes like location and push to provide truly compelling services
- Convenience of accessing information when required
- In addition, particularly relevant to India and countries in a similar position, mobile web is possibly the first web access for a large number of people (and almost certainly for private use)
 - Enormous potential springs up

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Why Web?

- High content availability
- Rich and varied content
- WAP, though increasing usage rapidly, is still not popular enough
- Web based services have changed the very way we think, work and live; having it available all the time (via a mobile device) is a kind of utopian ideal now

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Web Browsing Challenges

- Multiple levels
 - Specification
 - Compatibility
 - Expectation
- Apart from the "usual" mobile constraints
 - Bandwidth
 - Processing power
 - Battery life

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Specification Challenges

- Markup
 - Frames, iFrames
 - Image maps
 - Nested tables
 - Applet
 - Fonts
- Scripting
 - Complex DOM
 - Textual ECMAScript execution
- Protocol
 - Large object and content sizes

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Solving the Challenges

- Specification
 - Some are time, effort linked
 - Some need workarounds
 - Some need more device resources
- Compatibility
 - Aim for best effort
 - Graceful feature handling
- Expectation
 - Consider usability factors and packaging
 - Expectation management by operators, media
- Many organizations are working towards addressing these challenges over a period of time
 - Leading this is the Mobile Web Initiative of W3C
 - Jatayu is a Founder Sponsor of this initiative

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Compatibility Challenges

- Rich and varied content
 - Too rich and widely varying quality of standards adherence
- Content formats
 - Flash, PDF, Applets, Video, ActiveX etc
 - Many difficult to implement
- Content designed for PC form factor
 - Mobile phones have screen real estate 2-5%
 - Most often no touch screen

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Solving the Challenges

- Different approaches possible
- Rendering algorithms are the key
 - No unique way to adapt widescreen content to fit mobile screens
 - Each presentation may vary in the details
 - "Best" fit still to be discovered
 - Largely driven by a few basic criteria
 - Avoid two dimensional scrolling; constrain only to up-down movement of page
 - If possible, wrap into multiple lines; if not shrink to fit width of screen

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Expectation Challenge

- User expectation conditioned by desktop experiences
 - Increasingly that of broadband access
- Navigation of virtual widescreen content
 - May be non-intuitive for many
- Features may be limited in scope or complex in usage
 - Printing, saving, multiple windows, memory-aids
- Downloadable enhancers
 - Yahoo, Google toolbars and the like

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Mobile device evolution

- The mobile web definition has kept pace with increasing device capabilities
 - Today's high end smartphones are no less capable than desktop PCs a few years ago
- More memory, more processing power, more battery life, larger and richer screens, better bandwidths
 - Everything is either more or better
 - Except input – which has remained largely unchanged since mobile devices came up, save perhaps the arrival of predictive input

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Mobile device - inside

- Very high similarity of basic phone usage
 - Hides the amazing complexity and diversity of what's inside
 - Practically every aspect of the phone differs from model to model and across manufacturers
 - Processors, chipsets, radio components, operating environments, protocol stacks, applications, amount of memory, display dimensions, ...
 - That a user can switch phones, without a second thought on whether he can use it or not, is a tribute to the standards organizations and the specifications they produce
 - Unfortunately, the moment we move from basic phone usage, this simplicity of use breaks and switching phones for "advanced" services requires complete relearning

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Differentiation

- Key differentiators
 - Applications
 - Look and Feel (Personalization)
- Design globally
 - adapt locally
- Applications - key layer



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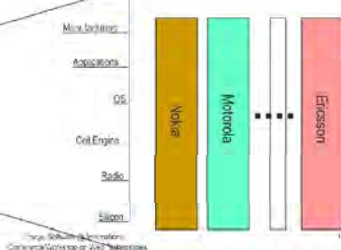
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Mobile Handset

- Complex products
 - mechanical, silicon, hardware, power, network protocols, environments, MMI, utilities, applications, entertainment, accessories.

- Monolithic companies

- continues with Nokia



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Consumer

- Communication
- Information access
- Others
 - entertainment



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Industry Stratification

- Different layers
 - Silicon
 - Radio
 - Cellular engine
 - OS
 - Base services
 - Applications
 - MMI
 - VMs
 - Look&Feel
 - Manufacturing etc
- Specialization leads to
 - Efficiency
 - Time-to-Market



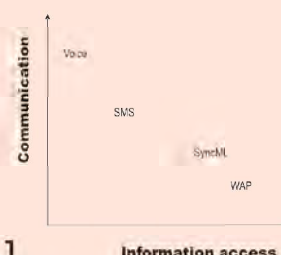
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Converging tech

- Voice
- SMS
- MMS
- SyncML
- IM
- EMS
- WAP
- Web
- All used for both purposes - varying degree



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Which buzzwords?

- Communication
 - Richer
 - More interactive
 - More immediate
 - More intimate
 - More available
 - Less intrusive
- More senses?
 - Feeling?
 - Smell?



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Standards

- Customer-expectations, interoperability, industry readiness
 - Traffic proportional to Square of Users
- W3C
- 3GPP
- OMA
- IETF
- ETSI
- ECMA
- Others

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Mobile Browser



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Other mobile devices

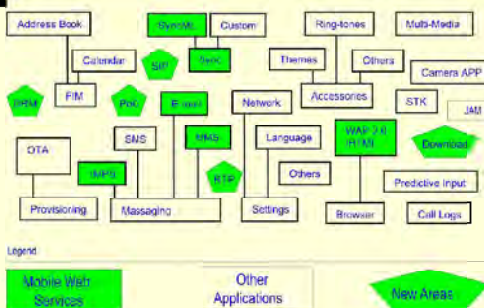
- Car navigation systems
- Handheld scanners
- Cordless phones
- Non-mobile constrained devices

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Mobile Web Services



Legend

Wireless Web Services

Other Applications

New Apps

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