




Device Independent Web - D4

A man in a dark suit and glasses is looking down at a small mobile device he is holding. The background behind him is a large, semi-transparent circle with a grid of dots. In the foreground, there are several concentric, glowing orange circles on a dark surface, suggesting a ripple effect or a digital interface.

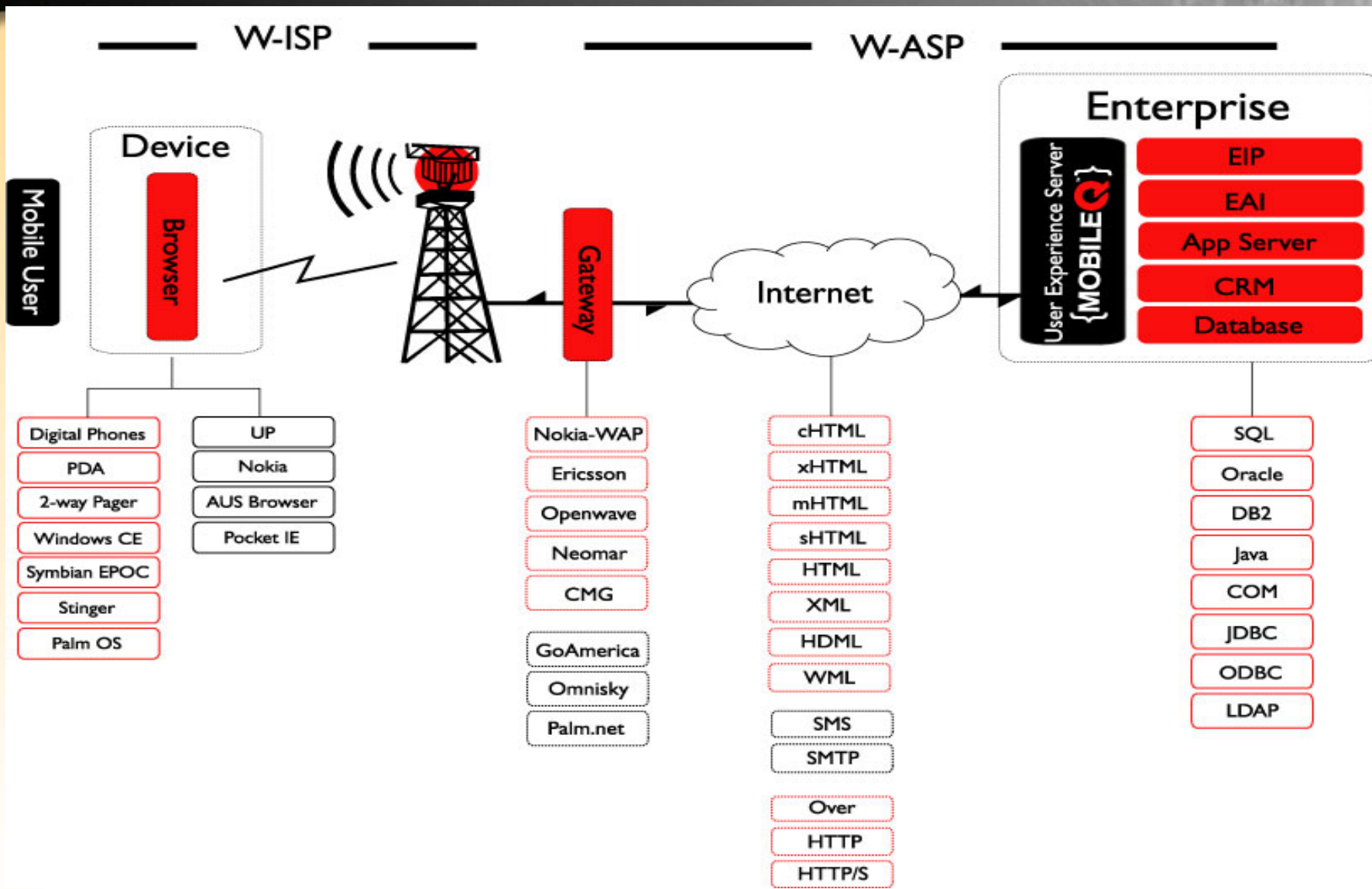
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Overview



- **Mobility Landscape**
- **Challenges of Mobility**
- **Example**
- **Development Approaches**

The Mobility Landscape



An Extension of the Existing Internet Infrastructure



- **The same protocols (e.g. HTTP)**
 - WTP/S (the transport protocol of WAP) is typically translated to HTTP/S by the gateway
 - Most protocols are coming back to HTTP, the wireless specific ones are network level below TCP/IP
- **The same markup languages (e.g. HTML)**
 - Most devices are converging towards XHTML
- **Think of Mobile Devices as being equivalent channels to the wireless internet**

But there are big differences...

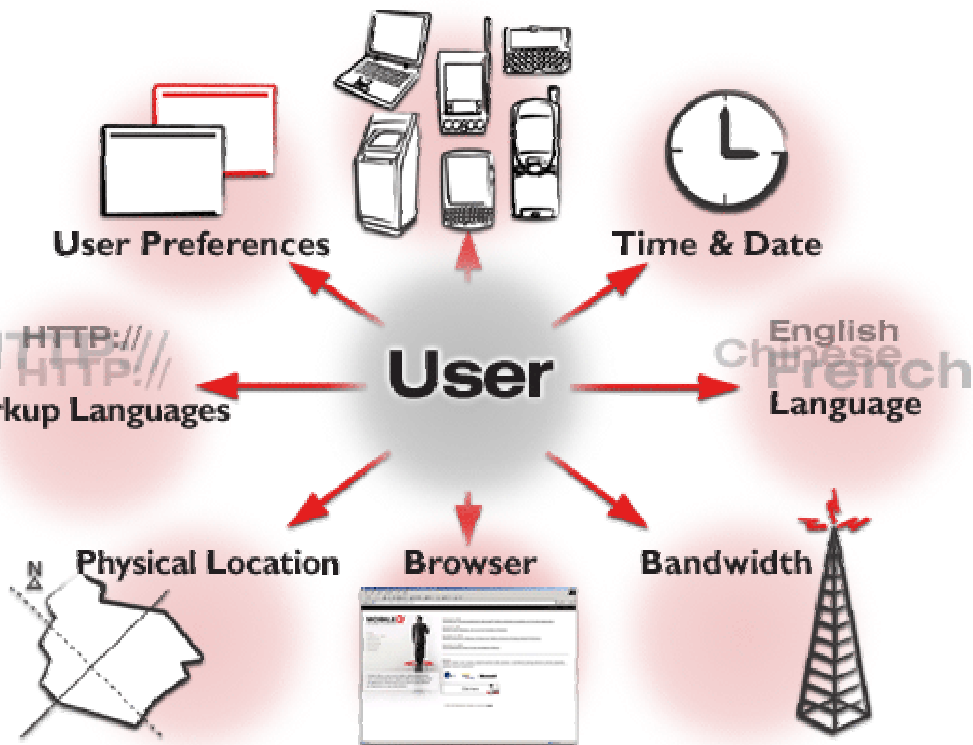


- **Device form factors, not markup languages, drive the user interface**
 - Different devices can drive totally different data and usability
- **You need to test across many browser/markup combinations**
 - There are no less than 175 combinations
- **The differences are not trivial and often require complex design and development**
 - e.g. On a phone call out to phone number for a contact page

The Market Evolution



- Exploding diversity of devices and standards
- GUI must adapt to device, language, etc.
- Device specific vs. device agnostic mobile experience
- Personalized and integrated experience, not monolithic apps
- Seamless continuity between work and home



Challenge: Device Proliferation/Diversity



■ Devices, Form Factors and Browser Proliferation

- Device proliferation
- Users have diverse devices
 - Users will use multiple devices to access application (Gartner group predicts 3-4 devices)
- Browser Proliferation
 - Support multiple browsers (not 2 as in web world)
 - Multiple language support (wml, hdml, html, chtml, ..) with multiple version support
- Hardware capabilities
 - CPU, Memory, Battery life
- Online, Offline and Voice

Differing Device Form Factors



- Simple Internet-enabled Phone
- Smart Phone
- Pagers
- Personal Digital Assistant (PDA)



Numeric keypad used to enter numbers, text and special characters. Special keys available to provide additional input.

Differing Device Form Factors



- Simple Internet-enabled Phone
- Smart Phone
- Pagers
- Personal Digital Assistant (PDA)



Numeric keypad or miniature keypad used to enter numbers, text and special characters.

Differing Device Form Factors



- Simple Internet-enabled Phone
- Smart Phone
- Pagers
- Personal Digital Assistant (PDA)



Miniature keyboard, roller dial, special buttons.

Differing Device Form Factors

- Simple Internet-enabled Phone
- Smart Phone
- Pagers
- Personal Digital Assistant (PDA)



Stylus for clicking, writing (character recognition) and tapping on a virtual keyboard. Some accept voice input.

Difference in Device/Browser Behaviour



Link Labels

- Most UP phones cut labels off at 6-7 characters for display
- Qualcomm 2760 will not display numerals in link label
- On some Samsung Phones large right link labels are displayed over left link labels

Titles

- Title text is cut off on most WAP devices, titles are not wrapped (exception UP.Browser V4)
- Ericsson will display URL if no title is specified
- UP.Browser and Go.Web browser can't display titles containing variables

Variables

- Nokia 7110 and AUSWAP browser fail if variable names start with numbers
- Most WML devices do not support required variables and variable masking
- Neopoint (UP.Browser) does not perform variable masking correctly

Developing the GUI



1. **Perl/ASP/JSP/etc.: Develop separate GUIs for each device**
 - Pro: Familiar technology
 - Con: Too many pages to develop
2. **XSL stylesheets: Develop separate XSL stylesheets**
 - Pro: Exploiting XML/XSL, have fine grained control of GUI
 - Con: Still have many stylesheets to develop
3. **Transcoders: Products automatically translate pages**
 - Pro: Develop once with
 - Con: The GUIs are unusable, no fine grained control
4. **XML-based mobility products**
 - Pro: Target many devices with minimal programming
 - Con: Many rely on a proprietary development language

Using XML/XSL



- **To use an XSL based solution you need:**
 - A processor to match the device and choose the right stylesheet
 - A processor to get the appropriate XML data and call the XSL interpreter
 - Some post processing to take care of encoding issues with different devices

The Configuration Management Headache



- **Writing all those stylesheets**
- **Testing all those devices**
- **Ooohh all those stylesheets**
- **Managing the links**
- **Dealing with pagination**
- **The exceptions**
- **Code page translations**

Tools can Help



■ XSL/XSLT Editors

- Support tools for authoring

■ EAI/EIP Vendors

- Legacy system access and integration

■ Mobile Platforms

- Frameworks for the unique challenges of Mobility

Conclusion

- **Mobility is really an extension of the existing infrastructure rather than a replacement**
- **The big difference is in the form factors and GUI choices, not the protocols/markups**
- **Standards like XML and XSL can help solve the problem of targeting many devices and still allowing customizations and tweaks**
- **There are many headaches in managing the XML/XSL for which freeware and packaged products exist**

Thank You



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