B336 Advanced Internet Computing

Writing Wireless Applications with WAP (1)

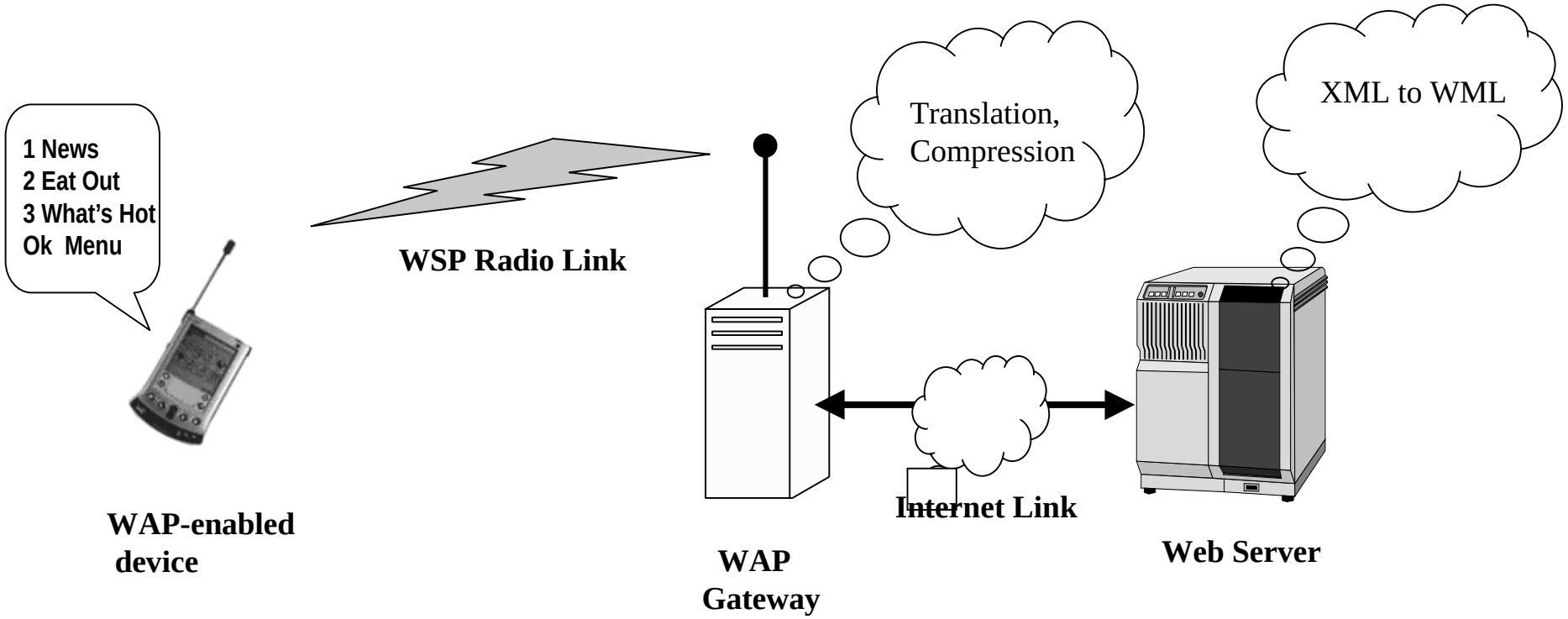
Learning Objectives

- Prepare to use WML to deliver Web content to WAP devices
- Overview the WAP solution to wireless delivery
- Understand the structure of WML documents
- Study meta information, text, tables and presentation
- Study timers

Outline

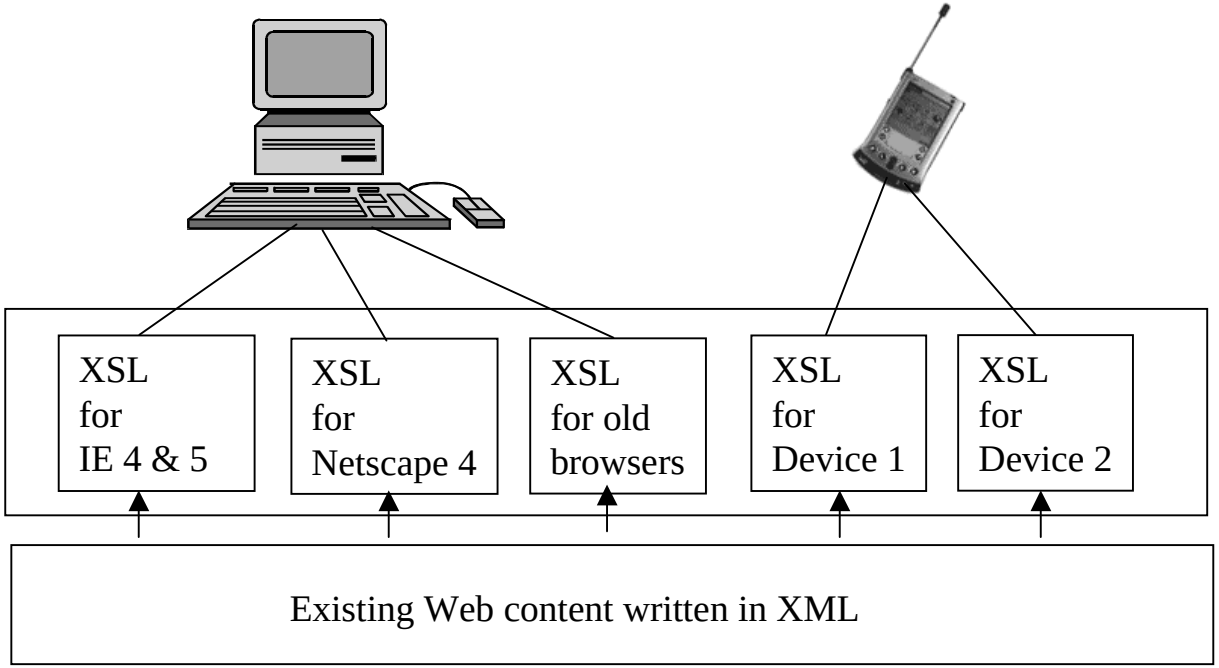
- Recap of WAP solution to wireless delivery
- Getting the data to a WAP device
- Introducing WML
- Structure of WML documents
- WML: Meta information
- WML: Basic text, tables and presentation
- WML: Timers

WAP solution to wireless delivery



- WAP separates Web server from different wireless services by a WAP Gateway. WAP forum defines binary variations of web protocols, such as WSP

WAP solution to wireless delivery



Web Server transforms XML for different clients

- To avoid rewriting our Web content to suit mobile devices, we'll use XSL Transformation to convert existing XML into Wireless Markup Language, which will work on WAP enabled-devices
- We'll do this in Assignment 3, using a Nokia simulator

Getting the data to a WAP device

- WAP uses a variant of HTTP protocol, called Wireless Session Protocol to transfer compressed data in binary
- Eg the WML document

```
<wml>
 <card id="abc" ordered="true">
  <p>
      <do type="accept">
         <go href="http://xyz.org/s"/>
      </do>
        X:  $(X) <br/>
        Y:  $(&#x59;) <br/>
        Enter name: <input type="text" name="N"/>
   </p>
 </card>
</wml>
```

is translated by the gateway into something like

```
02 08 6A 04 'X' 00 'Y' 00 7F E7 55 03 'a'  'b'  'c' 00 33 01 60 E8 38 01 AB 4B 03 'x'  'y'  'z'  00 88 03
's' 00 01 01 03 ' '  'X'  ':'  ' ' 00 82 00 26 03 ' '  'Y' ':'  ' '  00 82 02 26 03  ' '  'E'  'n'  't'  'e'  'r'  ' '  'n'
'a'  'm'  ':'  ' ' 00 AF 48 21 03 'N' 00 01 01 01
```

Introducing WML

- WML is a subset of XHTML elements, support for state and variables, events and validation of user input
- Small language suited to small, low-res screens, limited user inputs, narrow band network connection, limited memory and computer power
- Version 1.1 of WML stable. New versions coming.
- Won't usually be writing WML, but converting from XML
- Like other Web resources, WML documents are requested using URLs
- Difficult to type long URLs into handheld device, so WAP browsing needs other methods (simpler menus)

Structure of WML documents

- WML documents use a *deck-of-cards metaphor*
- A WML document consists of a deck of one or more cards
- The deck is delivered as one HTML page, but each card is typically accessed on the handheld separately
- Cards are not like HTML frames

```
<!DOCTYPE wml PUBLIC "-//WAPFORM//DTD WML 1.1//EN" "http://www.wapforum.org/wm1.xml">
<wml>
  <head>
    . . .
  </head>
  <template>
    . . .
  </template>
  <card>
    . . .
  </card>

  <card>
    . . .
  </card>
</wml>
```

document prologue needed for WAP gateway validation

optional, allows for meta information

optional, allows for information shared by all cards

at least one card needed

Structure of WML documents

- <card> is the most important WAP element - holds text and input control specifying each page's content
- Each card is identified by *id attribute*, which is recognised as the *fragment identifier*
- To allow for different sized screens, form fields are used

```
<card id="author" title="Author search" newcontext="true">
 <p mode="nowrap">
  <fieldset>
   First name:
   <input name="fname" type="text" title="Enter name" />
  </fieldset>
  <fieldset>
   Last name:
   <input name="lname" type="text" title="Enter name" />
  </fieldset>
  <anchor> Done
      <go method="post" href="search">
        <postfield name="fname" value="$fname" />
        <postfield name="lname" value="$fname" />
      </go>
  </anchor>
 </p>
</card>
```

displayed at the top of the screen

id attribute marks card as accessable by fragment symbol #author

} fields may display on 1 or 2 screens

WML: Meta information

- WAP browsers are free to ignore info in <meta> tags
- not used for refreshing pages (<timer> is used instead)
- <meta> attribute forua="false", WAP gateway may remove the enclosed information (="true", won't remove it)
- The term "user agent" (ua) means the handheld software
- <meta> element with name and content attributes used for proprietary functions.
- <access> element can be used to restrict access to pages (default, all can access; otherwise, specified domain and path must match those of the *referring URL*)

WML: Basic text, tables, presentation

Element	Attributes
Links	
<a>	id
	class
	xml: lang
	href
	title
Tables	
<table>	id
	class
	xml: lang
	title
	align
	columns
<tr>	id
	class
<td>	id
	class
Phrasal	
	id
	class
	id
	class

Element	Attributes
Text structure	
<a>	id
	class
	xml: lang
	align
	mode
 	id
	class
Presentation	
<b>	id
	class
<u>	id
	class
<I>	id
	class
<big>	id
	class
<small>	id
	class

WML: Useful tips for navigation

- Use the <a> and
 elements to create a list of choices
- If > 9 choices, use a "More" link to continue on a new screen
- Each card should have a way back to previous card, or to some well-known way point.
- Provide user with quick links back to known way points
- Use short names on links; avoid too many spaces

WML: Timers

- Timers can be used to help navigate between cards
- <timer> will generate an **`ontimer`** event after a specified interval of time

```
<timer name="V"  value="100"
```

Delay specified here in tenths of a second…

… unless this variable is named and supplies a value

- Timers can be used to for commercial splash screens
- Displaying a brief help screen if nothing has happened for a while
- Walking the user through a sequence of cards. Eg next page in a long news story will come up without user pressing anything "hands-free" browsing

References

Anderson, et.al. *Professional XML*. Wrox Press, 2000. Chapter 14.

And see

WAP Forum at http://www.wapforum.org