Why Should You Stay?

In this session you'll learn:
- What dynamic content is, and why it's useful
- What ColdFusion (CF) is, and why it's powerful
- How to build dynamic WAP applications with CF
- Solving Typical Problems Coding WAP in CF

Audience:
- WAP developers new to CF
- Experienced CF developers looking at WAP

What Will We Cover, Specifically?

Preaching the good news:
- What is a dynamically generated WAP application?
- What makes them so great?
- Introduction to ColdFusion, a stellar tool for building them

Preaching to the choir:
- Serving WAP content via ColdFusion
- Studio features for creating WAP applications
- Tricks and traps
**What is a Dynamically Generated WAP Application?**

Content generated on the fly
- Perhaps generated from a database
- Or based on user input
  - Creating 2-way WAP applications

Requires a web application server
- Such as ColdFusion, ASP, Perl, Java, etc.

**What Makes Them So Great?**

Dynamic Sites--Sign of a mature site:
- Site content generated from databases
- Query as well as update of databases
- Content customized to visitor
- Securing of site sections and features
- Generation of e-mail to clients, site mgrs
- Integrating content from other applications or even other sites
- Scheduled content (push, notifications)

**About ColdFusion**

Leading cross-platform web application server
- Runs on Windows, UNIX (including Linux)
- Runs with nearly all web servers (including Apache)

Recognized for:
- Security, scalability, integration, ease of use

Inexpensive:
- Ranging from just $1,295-5,000 US, single server
- Free version with some limitations of functionality
**CF’s Ease of Use**

A Quick WML Example

```wml
<card>
  <CFQUERY NAME='GetDepts' DATASOURCE='Test'>
    Select DeptName from Depts
  </CFQUERY>
  <p>Depts Found:<br/>
  </p>
  <CFOUTPUT QUERY='GetDepts'>
    #DeptName#
  </CFOUTPUT>
</card>
```

**CF’s Flexibility**

Many operating systems and web servers supported

Databases supported:
- Any ODBC (Access, FoxPro, etc.)
- SQL Server, Sybase, Oracle, Informix, DB2

Integration:
- COM/DCOM, CORBA, EJB, etc.

**CF’s Scalability**

Can handle substantial loads:
- Integrated load balancing
- Clustering
- Failover

High performance architecture
- Multi-threaded service, template caching, etc.
- State management
Serving WAP Content via ColdFusion

- CF-generated pages are .cfm files rather than .wml files
- Must set MIME type for the page:
  `<CFCONTENT TYPE="text/vnd.wap.wml">`
- This tells the WML browser to expect WML
  - tag not normally needed in HTML pages
- This is where things get different for experienced CF developers

Complete Skeletal CF/WML File

```xml
<CFCONTENT TYPE="text/vnd.wap.wml"><?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//PHONE.COM//DTD WML 1.1//EN" "http://www.phone.com/11d/wml11.dtd">
<wml>
  <card>
  </card>
</wml>
```

- Note `<?xml>` tag on first line
- Is placed next to `CFCONTENT`
  - Prevents extra carriage return before `<?xml>`
- Note Phone.com DTD: could use WAPForum's

Where to Go From Here?

Learn CF and learn WML:
- Place any valid WML on page
  - WML is different from HTML, do need to learn it
- Use any ColdFusion tags to create WML code
  - Can generate WML from database, or based on data gathered from other objects, applications, or sites
- Perform actions in support of WML processing
  - Can search/store data in databases, generate e-mail, pass data to other objects, applications, or sites
Some CF Examples

- Form processing
- Form-driven query processing
- Dynamic select list

Form Processing Example

- Goal:
  - Create mechanism for user to enter text input
  - Process that input on the server
    - For now, simply display result to user
  - Will soon do more with the input
    - As well as change process to limit user data entry via typing

Form Processing Code - Part 1

```xml
<CFCONTENT TYPE="text/vnd.wap.wml">
<CFINCLUDE source="wml_form.cfm"></CFINCLUDE>
</CFCONTENT>
```
Form Processing Code - Part 2

<wml>
<card>
<p>The stock symbol selected was: #form.symbol#</p>
</card>
</wml>

wml_action.cfm

Potential Problems with Forms

- Some phone/gateway combinations will not send form field values sent via "method=post"
  - Not really a ColdFusion issue
- Form will submit, but action page will have no form fields to process

Solving Form Submission Problems

- Simple solution is to change method to "get"
  - Form fields then passed as CGI query string
- For ColdFusion, value of variable changes from "form.variablename" to "url.variablename"
- Change previous code to:
  - <CFOUTPUT>#{url.symbol#}</CFOUTPUT>
Query Processing Example

Goal:
- Extend example to use user input to lookup stock symbol in server-side database

Notes:
- Will change to using method="get"
- Also changed from using POSTFIELD to using QUERY String to pass variables
- Will drop tags at start and end of code
  - CFCONTENT, wml, card
  - Can presume it's always there

Query Processing Code – Part 1

```<do type="accept">
  <go href="getholdings_action.cfm?symbol=$(symbol)" method="get"></go>
</do>
```

Enter stock symbol:
```<input name="symbol" format="4A"/>```

Getholdings_form.cfm

Query Processing Example

- Action page will perform the search
- Sample "Portfolios" Database Schema
  - ClientHoldings Table to track stock holdings
    - HoldingsId – primary key, auto generated
    - ClientId – foreign key, related to Clients table
    - Symbol – stock symbol owned
    - NumShares – number of shares purchased
    - PurchaseDate – Date purchased
    - PurchasePrice – Price at which shares were purchased
    - Related Clients table with client details
- Search page presumes session variable named "clientid", tracking current user
Query Processing Code – Part 2a

```cfc
<CFQUERY DATASOURCE="Portfolios" NAME="GetHoldings">
SELECT * FROM ClientHoldings
WHERE ClientId=#session.clientid#
AND Symbol='#url.symbol#'
</CFQUERY>
<CFIF getholdings.recordcount IS 0>
<CFOUTPUT>
<p>You have no holdings for #url.symbol#</p>
</CFOUTPUT>
</CFIF>
</CFQUERY><CFOUTPUT>
</CFOUTPUT>

Query Processing Code – Part 2b

```cfc
<CFIF getholdings.recordcount IS 0>
<CFOUTPUT>
<p>You have no holdings for #url.symbol#</p>
</CFOUTPUT>
</CFIF>
</CFOUTPUT>
```

Dynamic Select List Example

- Goal:
  - Extend example to present user's current Stock Holdings symbols
    - Much easier for user than typing data
  - Will perform query of database and use results to build form's Select control
Dynamic Select List Code

```coldfusion
<CFQUERY datasource="portfolios" name="getstocks">
  SELECT distinct symbol FROM clientholdings
  WHERE ClientId=#session.clientid#
</CFQUERY>

<CFIF getstocks.recordcount IS 0>
  <p>You have no stocks to view</p>
</CFELSE>
  <do type="accept">
    <go href="getholdings_action.cfm?symbol=$(symbol)"
      method="get"></go>
  </do>
  <p>
    Choose one of your stocks to view:
    <select name="symbol">
      <CFOUTPUT query="getstocks">
        <option value="#symbol#">#symbol#</option>
      </CFOUTPUT>
    </select>
  </p>
</CFIF>

Getholdings_list_form.cfm
```

Dynamic Select List Example

- Goal:
  - Extend example to present user’s current Stock Holdings symbols
    - Much easier for user than typing data
  - Will perform query of database and use results to build form’s Select control

Other Useful CF Features

- Database Updates, via SQL INSERT/UPDATE
- CFMAIL
- CFSCEDULE
- CFSEARCH
- Session, Client, Application, and Server variables
- Query caching

- Can learn more about these in CF manuals
- Or any of several books on the subject
**Studio/HomeSite Features for Creating WAP Applications**

CF Studio is the IDE for CF developers
- HomeSite HTML editor shares most features

Both are advanced Text Editors
- Offer many useful features for web developers

As of 4.5, both now support WML coding
- Creating new WAP templates
- Creating/editing WML tags
- Documentation of WML tags

**A Quick Tour of Studio/HomeSite**

- Creating a WML page
- Adding WML tags
  - Tag insight, validation
  - Tag chooser
- Editing WML tags
  - Tag editors
- Getting help
  - F1, help within tag editors

**Some CF/WML Traps**

- CFCONTENT problems
  - Can be turned off by administrator
  - Not supported in CF Express
- Studio/HomeSite support
  - Based on Phone.com WML
  - Option may enter tags in upper case
- CF's HTML heritage
  - CF error messages and debugging output are both in HTML format
  - Can alleviate problems with properly configured application.cfm file
An Ounce of Prevention

- Application.cfm is a special file run before every other .cfm file
  - It can turn on features to solve some "HTML heritage" problems
- Place it in the same directory as WML code
  - Preferably a WML-only directory

Sample Application.cfm

```cfm
<CFSETTING ENABLECFOUTPUTONLY="Yes">
<CFERROR type="exception" template="wml_error.cfm">
<CFSETTING SHOWDEBUGOUTPUT="no">
<CFSETTING ENABLECFOUTPUTONLY="no">
```

Sample wml_error.cfm - Part 1

```cfm
<?xml version="1.0"?><!DOCTYPE wml PUBLIC "-//wapforum/DTD WML 1.1//EN" "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
<card>
<p><b>An error has occurred in this application. Please share this diagnostic information with the system administrator</b></p>
<p>Error Text:<b>
</b></p>
<p>Date/Time:<b> </b></p>
<br/>
</card>
```

Charles Arehart
Sample Error.cfm - Part 2

```cftml
<!--- continued from previous page --->
</p><b>Error Template:</b>
<p>
<CFIF CFERROR.Template IS
  """>(unavailable)<CFELSE>#CFERROR.Template#</CFIF></p>
<p><b>Referrer:</b>
<p>
<CFIF CFERROR.httpreferer IS
  """>(unavailable)<CFELSE>#CFERROR.httpreferer#</CFIF></p>
<p><b>Query String:</b>
<p>
<CFIF CFERROR.querystring IS
  """>(unavailable)<CFELSE>#CFERROR.querystring#</CFIF></p>
<p><b>Browser:</b>
<p>
<CFIF CFERROR.browser IS
  """>(unavailable)<CFELSE>#CFERROR.browser#</CFIF></p>
</CFOUTPUT>
</card>
</wml>
```

Some CF Tricks

- Circumventing CFCONTENT restriction
- Browser detection
- Other items:
  - Converting semicolon-delimited "multiple SELECT values"
  - Escaping # and $
- Covered in detail in Professional WAP book, chapter on CF/WML programming

Other CF/WML Resources

- Some sites:
  - www.wapseek.co.uk/wap_cfm
  - www.systemmanage.com/wml/
  - www.allaire.com/developer/TechnologyReference/wap.cfm
- CF-WAP mailing list:
  - Sign up at www.houseoffusion.com
Dynamically generated WML is a powerful tool
ColdFusion is especially well-suited
Taking your sites to this next step will add tremendous value

Charlie Arehart
Chief Technology Officer
SystemManage
carehart@systemanage.com
Web: www.systemanage.com