

# Who Moved My Cheese?

Where Do I Find The Best Oracle Development Tool?

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quovera



## Change Happens

They Keep Moving The Cheese

## Anticipate Change

Get Ready For The Cheese To Move

## Monitor Change

Smell The Cheese Often  
So You Know When It Is Getting Old

## Adapt To Change Quickly

The Quicker You Let Go Of Old Cheese,  
The Sooner You Can Enjoy New Cheese

## Change

Move With The Cheese

## Enjoy Change!

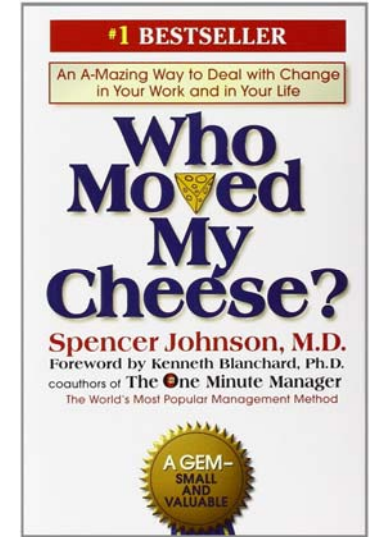
Savor The Adventure And Enjoy  
The Taste Of New Cheese!

## Be Ready To Change Quickly

## And Enjoy It Again & Again

They Keep Moving The Cheese

Handwriting  
on the Wall  
from



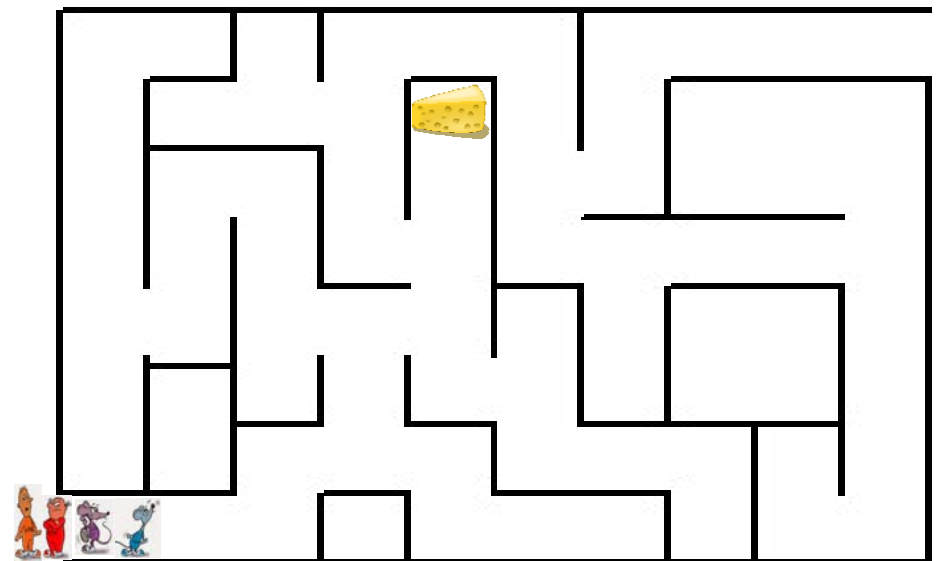
## The Characters



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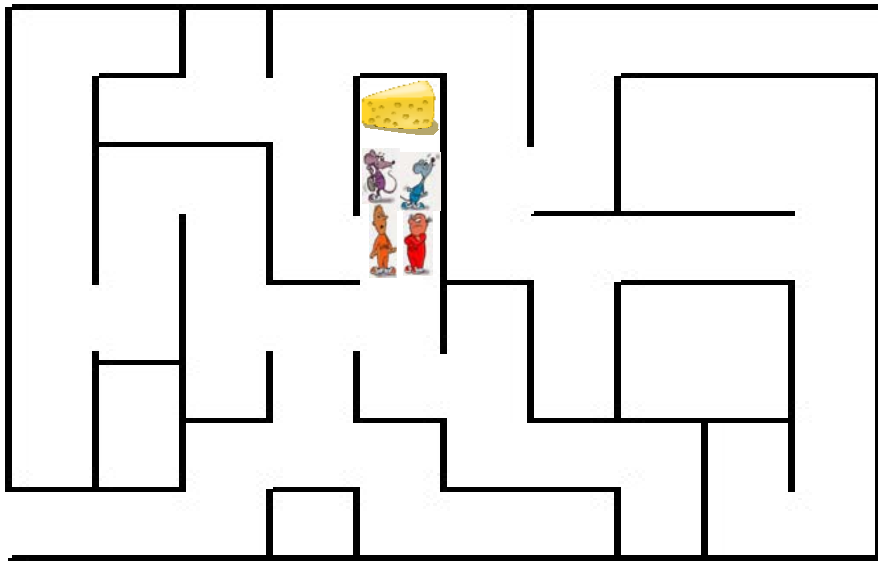
## The Maze



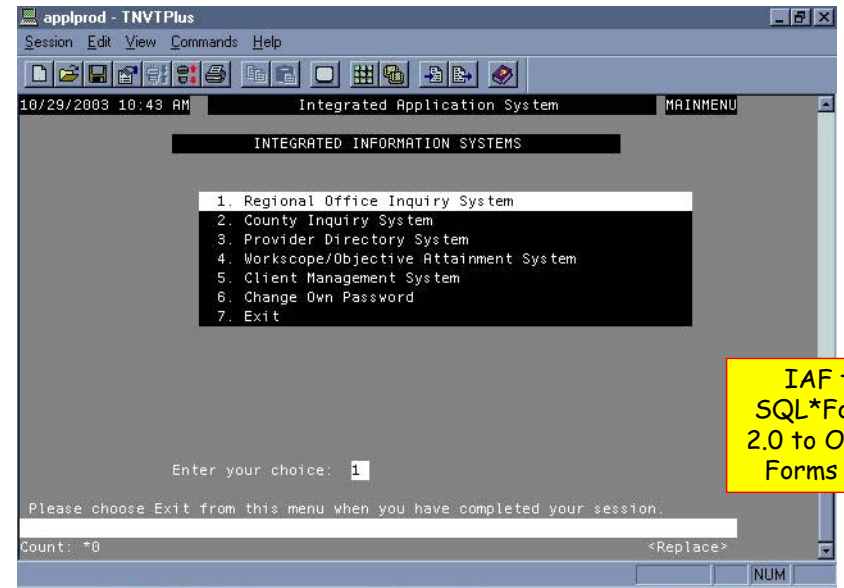
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# The Maze



# Oracle Tools: The Good Old Days



IAF to SQL\*Forms 2.0 to Oracle Forms 12c

# Oracle Tools: Today

## Legacy Tools

Oracle PL/SQL Web Toolkit

Oracle Forms

## Post-Legacy Tools

APEX

ADF

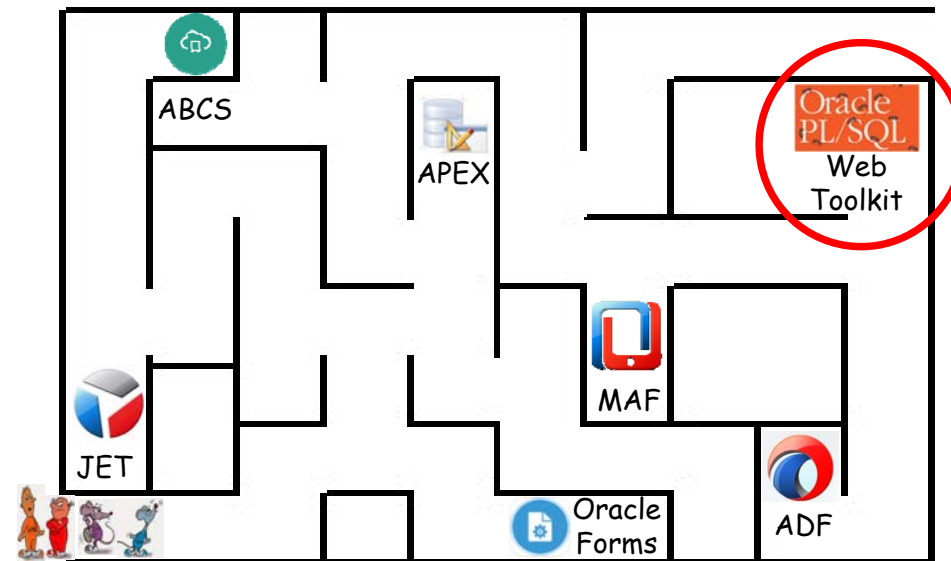
MAF

## Cutting-edge Tools

JET

ABCS

# Agenda - Look for the Cheese



# PL/SQL Web Toolkit

12cR2

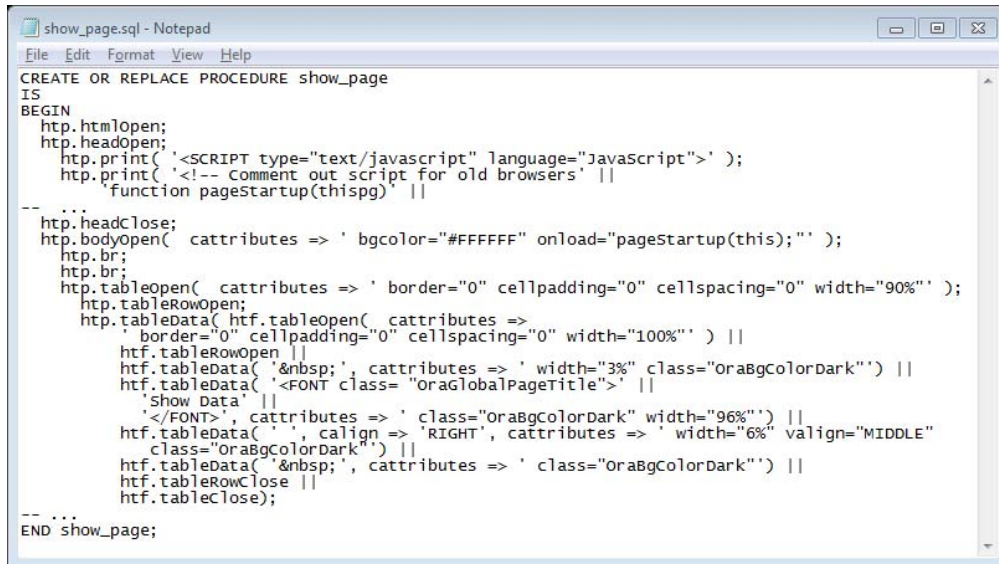
- PL/SQL database packages HTP, HTF
  - E.g., `http.body()`
  - Renders HTML: “<body>”
- A URL invokes a PL/SQL procedure containing calls to HTP and HTF
  - The server’s `mod_plsql` plugin
    - Only for Apache servers like OAS
    - WLS calls Oracle HTTP Server (OHS), which contains `mod_plsql`

[docs.oracle.com/database/121/ADFNS/adfnsweb.htm#ADFNS015](https://docs.oracle.com/database/121/ADFNS/adfnsweb.htm#ADFNS015)

# PL/SQL Web Toolkit Features

- Essentially HTML coding
  - You can create wrapper packages to make construction easier
- No special tool (Notepad, vi)
- Issuing SQL is super easy
- The program runs in the database
- Very powerful if you know HTML well
- Fine if you are satisfied with HTML’s capabilities

# PL/SQL Web Toolkit – Development Experience



```
show_page.sql - Notepad
File Edit Format View Help
CREATE OR REPLACE PROCEDURE show_page
IS
BEGIN
  http.htmlOpen;
  http.headOpen;
  http.print( '<SCRIPT type="text/javascript" language="JavaScript">' );
  http.print( '<!-- comment out script for old browsers' ||
    'function pageStartup(thispg)' ||
    '....
  http.headClose;
  http.bodyOpen( attributes => ' bgcolor="#FFFFFF" onload="pageStartup(this);" );
  http.br;
  http.br;
  http.tableOpen( attributes => ' border="0" cellpadding="0" cellspacing="0" width="90%" );
  http.tableRowOpen;
  http.tableData( htf.tableOpen( attributes =>
    ' border="0" cellpadding="0" cellspacing="0" width="100%" ) ||
    htf.tableRowOpen ||
    htf.tableData( '&nbsp;', attributes => ' width="3%" class="oraBgcolorDark"' ) ||
    htf.tableData( '<FONT class="oraglobalPageTitle">' ||
      'Show Data' ||
      '</FONT>', attributes => ' class="oraBgcolorDark" width="96%"' ) ||
    htf.tableData( ' ', calign => 'RIGHT', attributes => ' width="6%" valign="MIDDLE"
      class="oraBgcolorDark"' ) ||
    htf.tableData( '&nbsp;', attributes => ' class="oraBgcolorDark"' ) ||
    htf.tableRowClose ||
    htf.tableClose);
  ....
END show_page;
```

# Agenda – Look for the Cheese



# Oracle Forms

12cR2

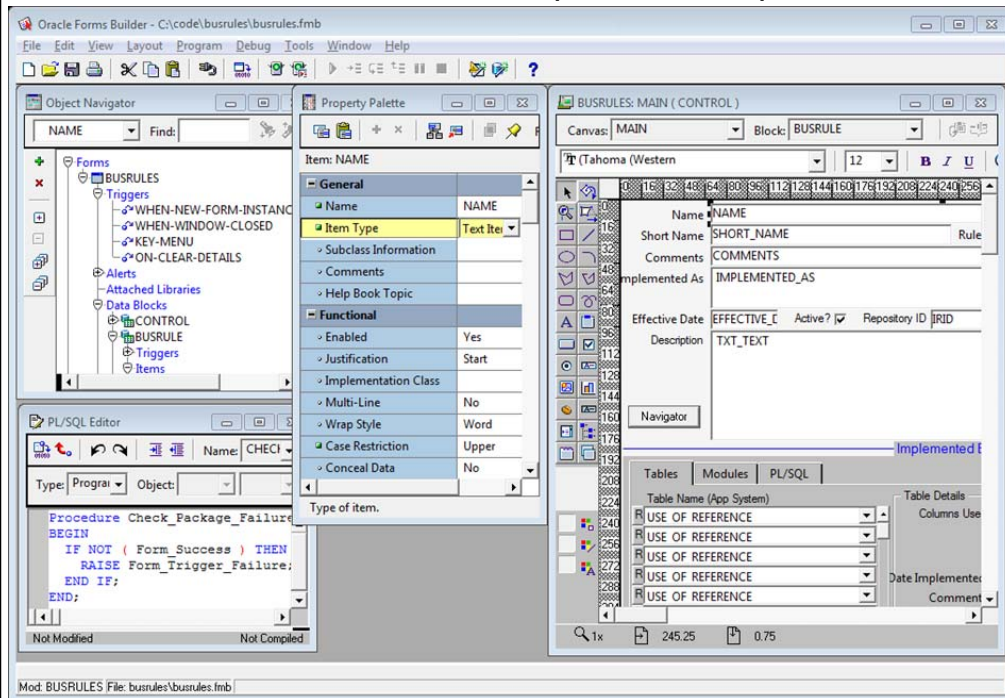
- Part of Oracle Developer (Fusion Middleware)
  - Packaged with Oracle Reports
    - BI Publisher is an alternate reporting tool
- Declarative programming
- Server runs Forms Runtime servlet
- Forms Runtime runs a compiled code file (.FMX)
- Form displays as a Java applet in the browser
- No HTML!

[www.oracle.com/technetwork/developer-tools/forms](http://www.oracle.com/technetwork/developer-tools/forms)

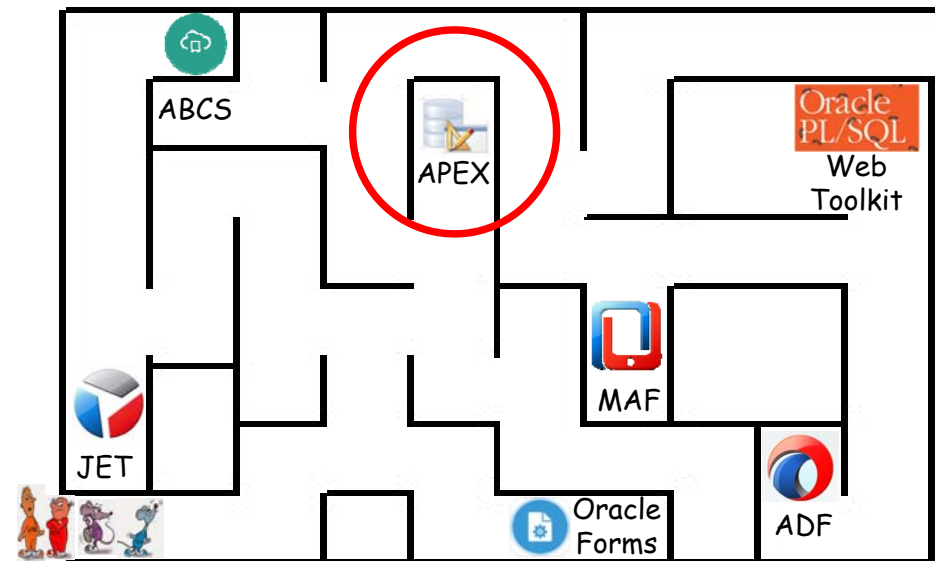
# Oracle Forms Features

- Scripting language inside the tool is PL/SQL
- Otherwise declarative
- Can call Java plugins
- Integrated with browser
- Still part of Enterprise Business Suite (EBS, Oracle Applications)
- De-emphasized these days because of its proprietary nature

# Oracle Forms – Development Experience



# Agenda – Look for the Cheese



# Application Express (APEX)

5.0.1

- Free tool distributed with the database
  - Installed by default with 11g and 12c
- Implemented in PL/SQL
- Runs in the browser
- Generates PL/SQL
- A layer on top of the PL/SQL Web Toolkit

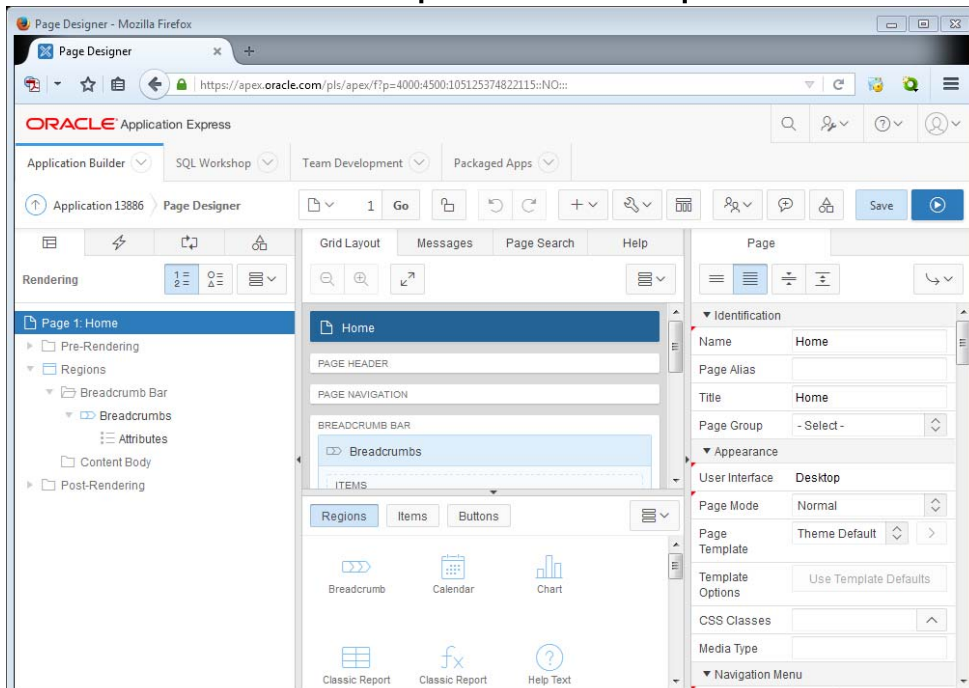
[www.oracle.com/technetwork/developer-tools/apex](http://www.oracle.com/technetwork/developer-tools/apex)

<https://apex.oracle.com/en/>

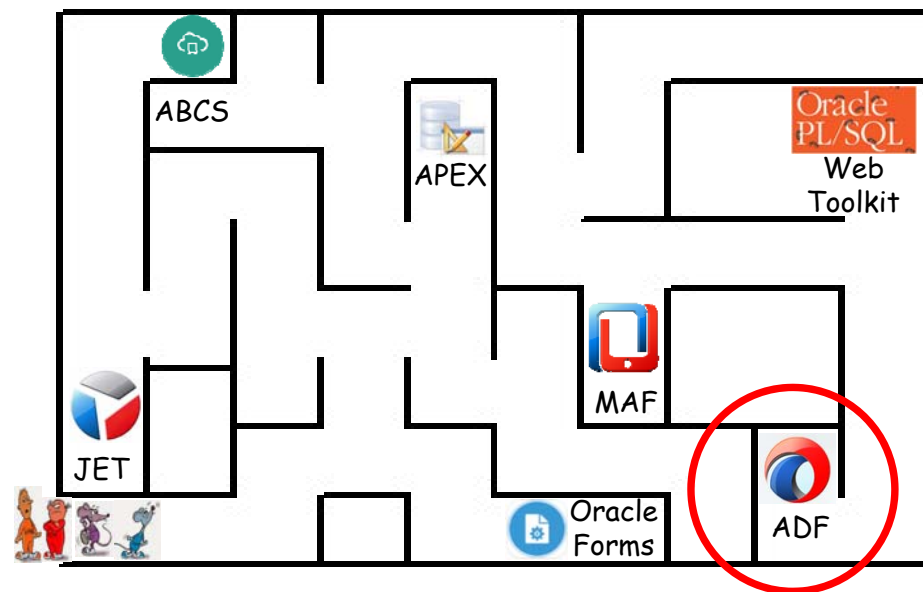
# APEX Features

- Declarative programming
  - Similar to Oracle Forms
- Vital user community
  - Lots of “traditional” Oracle shops use it
- Highly evolved
  - Used for Oracle Cloud Services
- Supports mobile devices
- Issuing SQL is a *non-issue*

# APEX Development Experience



# Agenda - Look for the Cheese



# Application Development Framework

12cR2

- Oracle's main Java-based development tool
  - Also, XML, Groovy, but less HTML
- Positioned for enterprise-level applications
- Supports any Java framework
- Includes frameworks
  - ADF Model, ADF Faces (View), ADF Controller, ADF Business Components
  - Very highly evolved
- Used to build Oracle Cloud (f.k.a., "Fusion") applications

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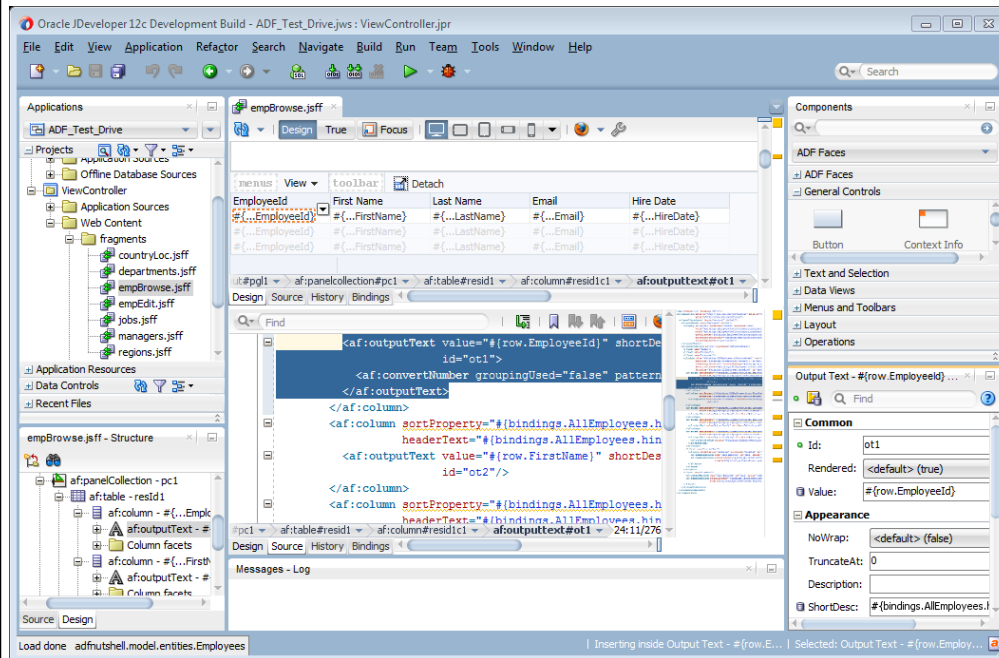
# ADF Features

- Wizards and layout editors
  - Very "Forms-like" (development time, runtime)
  - Developed for Oracle's internal Forms developers
- ADF is a meta-framework
  - Development environment that encompasses many other frameworks
  - Similar development "gestures" for any choice of frameworks
- The basis for Oracle Support website, Enterprise Manager, SOA Suite, WebCenter

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# ADF Development Experience



# ADF Variations: Oracle Enterprise Pack for Eclipse

12.2.1.1

- OEPE
  - Plug-in for Eclipse
  - Adds the ability to develop JEE code
- Supports work in Eclipse for:
  - ADF, MAF, WebLogic, Spring, Coherence, OR mapping, web services, REST, Maven, cloud services

[www.oracle.com/technetwork/developer-tools/eclipse/](http://www.oracle.com/technetwork/developer-tools/eclipse/)



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# ADF Variations: ADF Essentials

- Plug-in to JDeveloper or Eclipse
  - With OEPE
- Technologies included:
  - ADF Faces
  - ADF Controller
  - ADF Model
  - ADF Business Components
- Main feature: “Free” ADF runtime
  - On Glassfish (free app server)
  - Other app servers

12.2.1.0

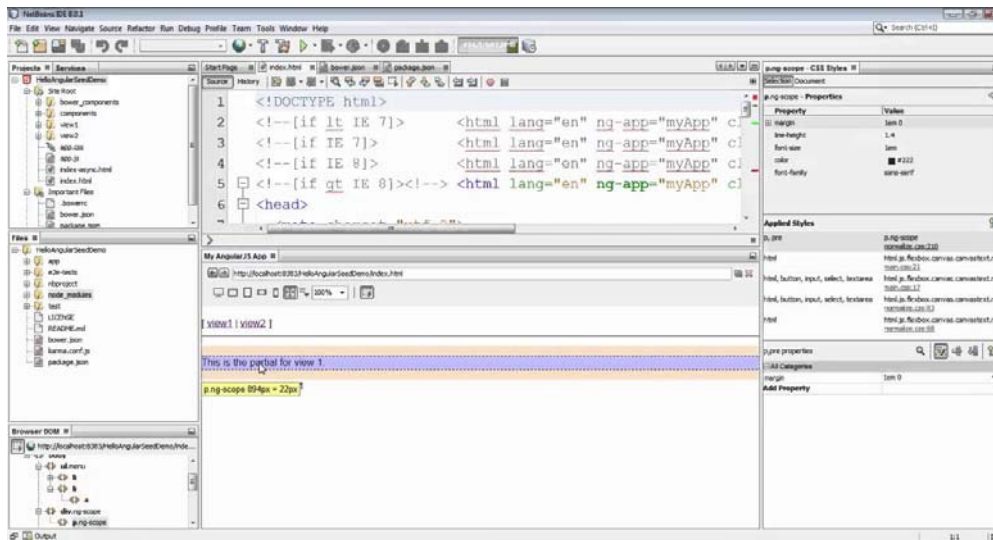
[www.oracle.com/technetwork/developer-tools/adf/overview/adfessentials-1719844.html](http://www.oracle.com/technetwork/developer-tools/adf/overview/adfessentials-1719844.html)

# Bonus Tool: NetBeans

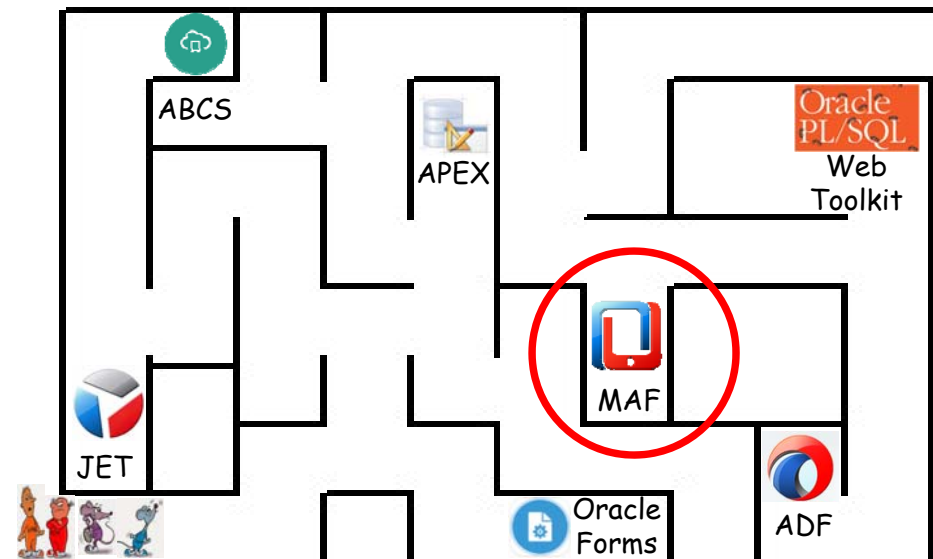
8.1

- Another Oracle Java development environment
- For Java code
- Not for ADF
- Super-active user community
  - [netbeans.org](http://netbeans.org)
- Development environment parallels JDeveloper in richness

# NetBeans Development Experience



# Agenda - Look for the Cheese



# Mobile Application Framework

2.2.0

- MAF: formerly “ADF Mobile”
- Plug-in to JDeveloper
- ADF development environment
  - Declarative programming
  - Java, HTML5, CSS, and JavaScript
- Produces mobile applications that can be run in iOS and Android (!)

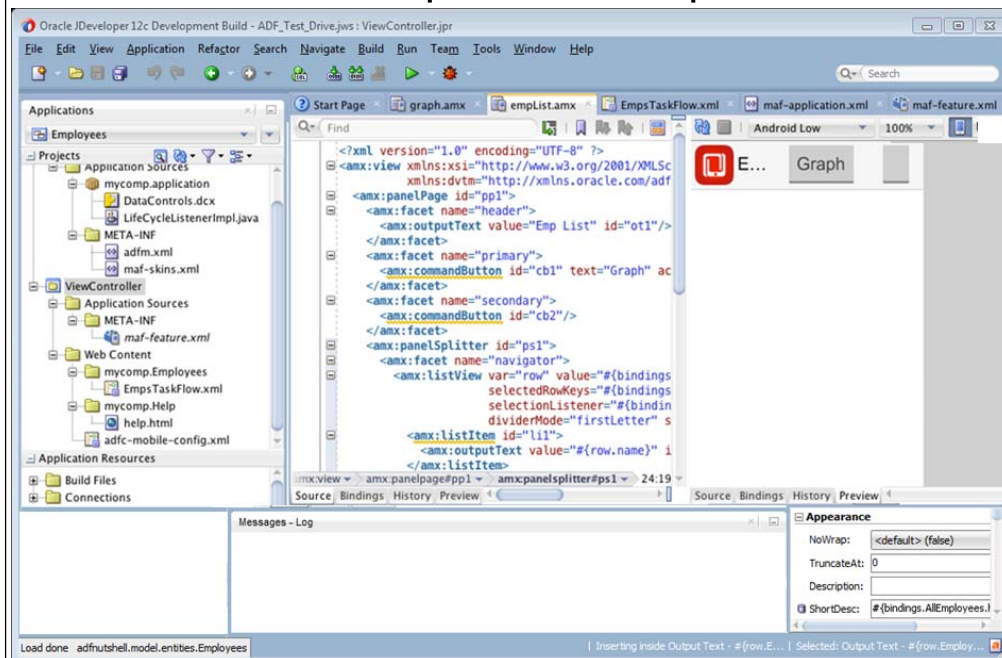
<http://www.oracle.com/technetwork/developer-tools/maf/>

# MAF Features

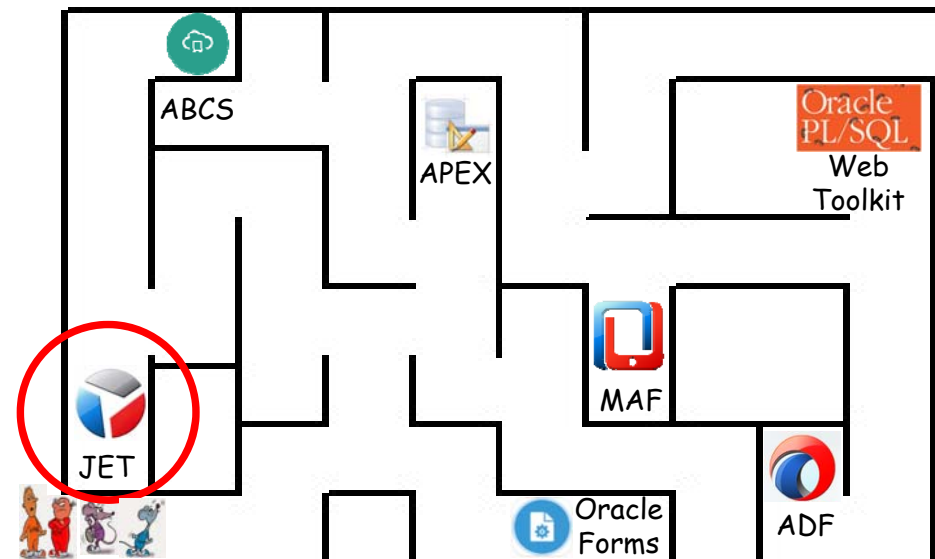
- Also available for Eclipse
- Offline database - SQLite
- Leverages mobile device features
  - Camera, GPS, contacts, accelerometer
- Use current development skills
- Two flavors of development
  - Java-based: declarative, components
  - HTML-based: programmatic, HTML5



# MAF Development Experience



# Agenda - Look for the Cheese





# Iowa Polls - the Real Results

5. Rubio

4. Carson

3. Trump

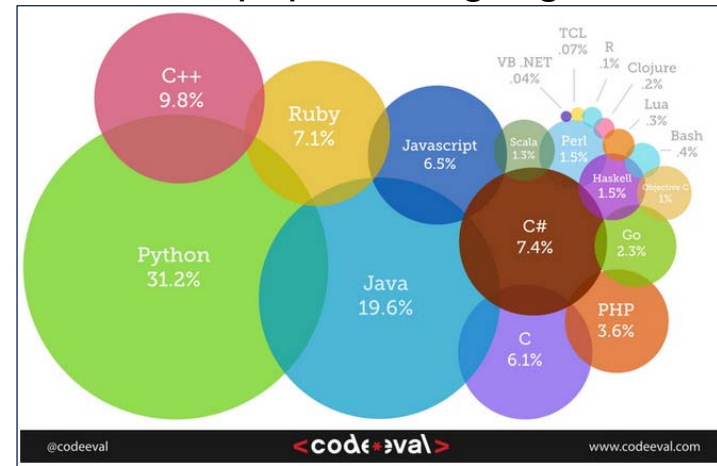
2. Cruz

1. JavaScript



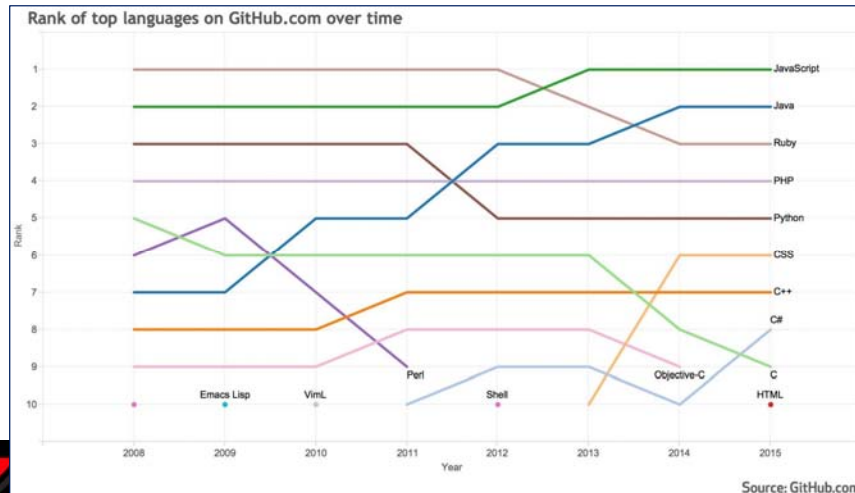
# CodeEval Fact

- JavaScript usage has grown 25% in the past year (blog.codeeval.com/)
- Fourth most popular language in 2015



# GitHub Fact

- #1 on GitHub for the past 3 years
  - github.com/blog/2047-language-trends-on-github



# Tiobe Software Fact

- Dec 2015 – JavaScript is “the programming language of the year”
  - www.tiobe.com/index.php/content/paperinfo/tpci/

Dec 2015	Dec 2014	Change	Programming Language	Ratings	Change
1	2	▲	Java	20.973%	+6.01%
2	1	▼	C	16.460%	-1.13%
3	4	▲	C++	5.943%	-0.16%
4	8	▲▲	Python	4.429%	+2.14%
5	5	→	C#	4.114%	-0.21%
6	6	→	PHP	2.792%	+0.05%
7	9	▲	Visual Basic .NET	2.390%	+0.16%
8	7	▼	JavaScript	2.363%	-0.07%
9	10	▲	Perl	2.209%	+0.38%
10	18	▲▲	Ruby	2.061%	+1.08%
11	32	▲▲	Assembly language	1.926%	+1.40%
12	11	▼	Visual Basic	1.654%	-0.15%
13	16	▲	Delphi/Object Pascal	1.639%	+0.52%

# JavaScript Extension Toolkit

- JET
- Pure JavaScript coding
  - Secondary: HTML5, CSS, SASS **Syntactically Awesome Style Sheets**
- Need to understand:
  - Knockout.js, jQuery, CSS3, RequireJS (AMD)
- IDE is Notepad or vi
- Used and refined internally at Oracle for 2-3 years

[www.oracle.com/webfolder/technetwork/jet/index.html](http://www.oracle.com/webfolder/technetwork/jet/index.html)

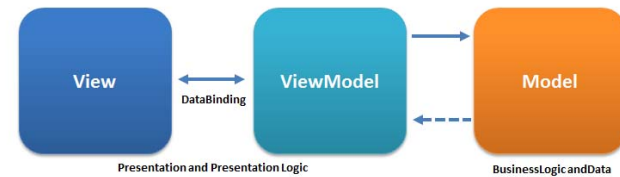
- JET vs. ADF

[https://blogs.oracle.com/jdeveloperpm/entry/oracle\\_adf\\_and\\_oracle\\_jet](https://blogs.oracle.com/jdeveloperpm/entry/oracle_adf_and_oracle_jet)



# JET Features

- Simplifies Model-View-ViewModel development
  - MVVM: also called, model-view-binder
  - Derived from MVC,
  - Uses binder (viewmodel) instead of controller
  - VM is the layer that binds data to the UI



# More JET Features

- “Modular” – that is, lots of prebuilt code samples
  - Cookbook on Oracle’s website
- Built on the Knockout.js framework
  - A JavaScript library
- Rich components, e.g. data visualization
- If upgrades in the framework or libraries occur, you are responsible for recoding
  - No automatic migration of code as in ADF

# JET Development Experience - 1

## JET Development Experience - 2

```
2 <label for="text-input">ojInputText</label>
3 <input id="text-input"
4 type="text"
5 data-bind="ojComponent: {
6
7
8 <br/><br/>
9
10
11 <span class="oj-label">Current component value: <span data-bind="text: value"></span>
12
13
14 </div>
15
```

3. Copy the JavaScript component code
4. Paste into the file's editor

JS Editor

Apply Changes

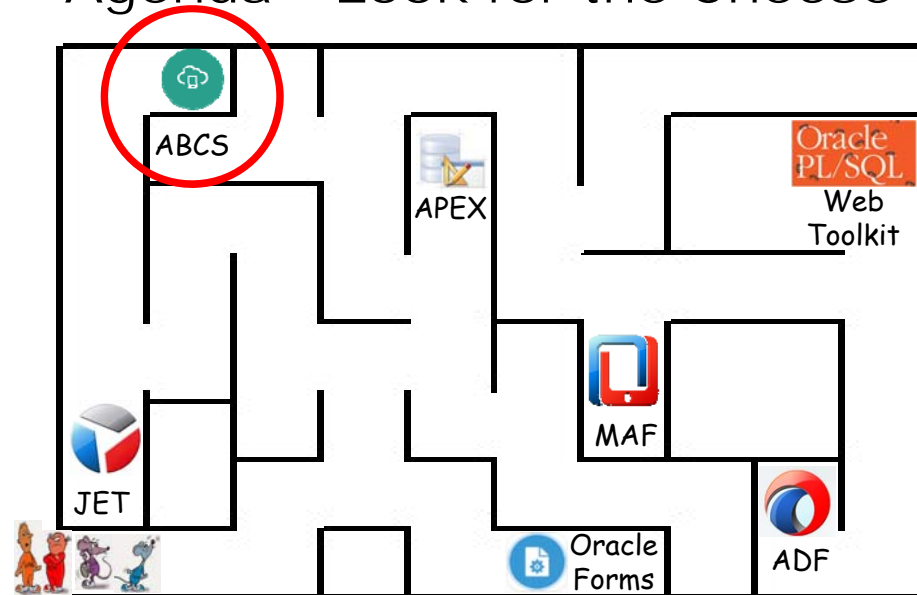
```
1 require(['ojs/ojcore', 'knockout', 'jquery', 'ojs/ojknockout', 'ojs/ojinputtext'],
2
3 function (oj, ko, $)
4 {
5
6 function SimpleModel()
7 {
8 this.value = ko.observable("Green");
9
10
11 $(document).ready(function ()
12 {
13 ko.applyBindings(new SimpleModel(), document.getElementById('div1'));
14
15
16
17 });
18
```

Label  
Form Control  
Combinations  
Help, Hints, and  
Messaging  
Form Layout

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## Agenda - Look for the Cheese



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## Application Builder Cloud Service

- ABCS – part of SaaS
  - Currently futureware – “next year”
    - Not to be confused with Fusion Middleware ABCS - **Application Business Connector Services**
  - A development tool for business users – a.k.a., “Citizen Developer”
  - Oracle blurb:

“Oracle Application Builder Cloud Service enables business users with no previous programming experience to **rapidly create** web and mobile apps, **minimizing dependence** on IT departments and **reducing infrastructure costs.**”

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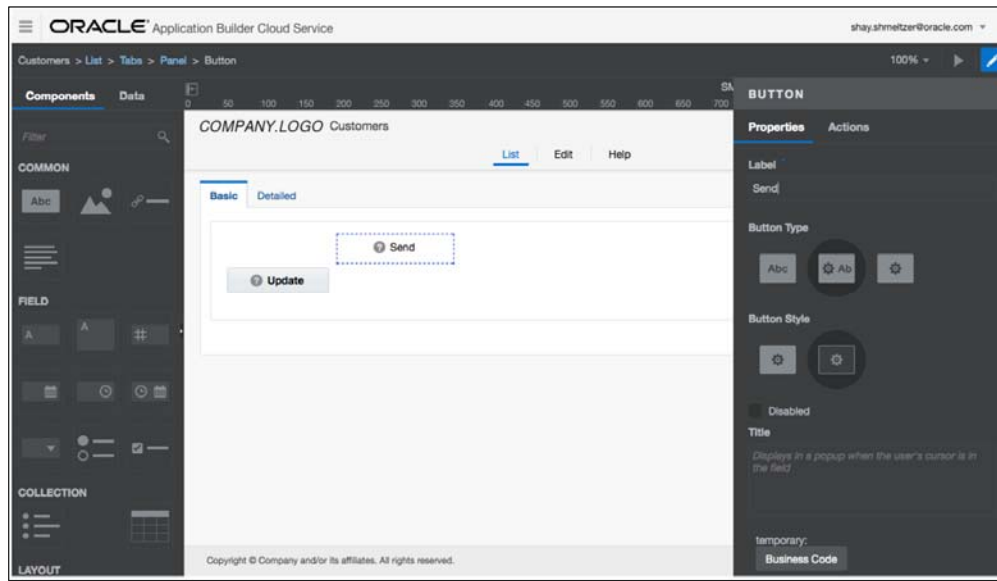
## ABCS Features

- Developed for non-programmers
  - To solve the app dev backlog
- Can be extended with JavaScript
- Data is supplied as REST services
  - **Representational State Transfer**
    - [docs.oracle.com/javaee/6/tutorial/doc/gijqy.html](https://docs.oracle.com/javaee/6/tutorial/doc/gijqy.html)
  - Prebuilt Software-as-a-Service (SaaS) services
- Development is done on a web page
  - No additional install needed
  - Then the app is published on the web page

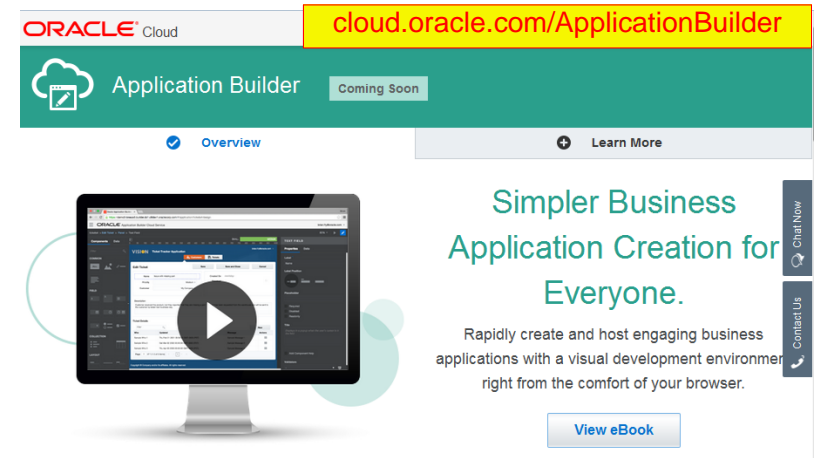
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# ABCS Development Experience



# Info on ABCS



- [https://blogs.oracle.com/hands-on-with-mobile-tech/entry/intro\\_to\\_oracle\\_mobile\\_cloud](https://blogs.oracle.com/hands-on-with-mobile-tech/entry/intro_to_oracle_mobile_cloud)
- <http://www.otechmag.com/magazine/2015/fall/application-builder-cloud-service.html>

## Bonus JavaScript Tool

- Mobile Application Accelerator (MAX)
  - For mobile device applications
  - Part of Mobile Cloud Service (MCS)
- Similar to ABCS
  - For MCS not SaaS/PaaS
  - Mobile apps only
  - Will merge with ABCS eventually
  - [www.oracle.com/us/corporate/press/2313779](http://www.oracle.com/us/corporate/press/2313779)
  - [blogs.oracle.com/hands-on-with-mobile-tech/entry/intro\\_to\\_oracle\\_mobile\\_cloud](https://blogs.oracle.com/hands-on-with-mobile-tech/entry/intro_to_oracle_mobile_cloud)


## Where Does Alta UI Fit?

- Common user experience (UX) regardless of the tool
  - Scaled down graphics – square, not round
  - BIG, bold colors
  - Present only most important elements first
  - Reduce need for navigation and data input
- Demos of the same app, Work Better
  - ADF: <http://jdevadf.oracle.com/workbetter>
  - JET: [www.oracle.com/webfolder/technet/work/jet/public\\_samples/WorkBetter/public\\_html/index.html](http://www.oracle.com/webfolder/technet/work/jet/public_samples/WorkBetter/public_html/index.html)





## You Have Questions?


- ADF or APEX?
- ADF or JET?
- ABCS?
- Which mobile development tool?
- JDeveloper or Eclipse?
- What about Forms?
- Do I really **have** to learn JavaScript?
- Who moved my cheese?


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## ADF or APEX?



- A very old question
- APEX is PL/SQL
  - Runs in the database; easy connection to the database
    - Takes runtime resource from database
      - No one is worried about that
  - Used for PaaS configuration apps
  - Development done in the browser
- ADF is Java
  - Runs on the server
  - Scales well; good for large applications
  - It is strategic – Oracle builds its apps with it
  - Rich UI features and task flows
  - Customizations are in XML – upgrade safe






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## ADF or JET?

- ADF is for Java developers
  - Declarative programming primarily
  - Less affected by upgrades
  - Runs on the server
  - Takes care of all layers
  - Oracle builds SaaS applications
- JET is for JavaScript developers
  - Program code oriented
  - You are responsible for migrating to new versions
  - Runs on the client
  - UI only although it can use REST services
  - Oracle provides it for PaaS applications


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## ABCS?

- Again, it's futureware
  - Remains to be seen
- Only for SaaS and PaaS users
- Business users could use it
  - With supervision!
- MAX is here now for MCS



## Which Mobile Dev Tool?

- MAF is the tool of choice for developers
  - ADF techniques
- MAX and ABCS are for end users
  - Web interface



## JDeveloper or Eclipse?

- In the past, there was a clear distinction
- Not so now
- ADF is supported almost fully in Eclipse
- Traditional Oracle shop will probably prefer JDev - natively declarative



## What About Forms?

- Yes, what about it?
- Still there in the Oracle apps
- Still supported, enhanced
- Traditional Oracle shop could stay with it
- Oracle Cloud/Fusion Applications shop would choose ADF instead
  - Cloud apps use ADF



## Do I Really Need to Learn JavaScript?

- If you need to develop JET, MAX, ABCS, “Yes”
- Otherwise, “Not now but probably sometime in the future”
  - JavaScript cannot be ignored for long



## Big Note

- Lots of resources for all these tools
  - YouTube videos
  - How-to's, tutorials
    - MAF online courses
    - ADF Academy
  - Forums
  - Blogs
  - Code samples
  - Libraries



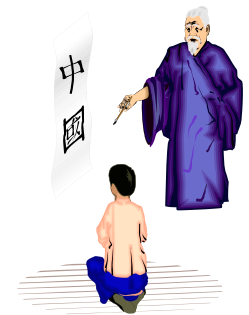
## Legal Precedent

Change is the law of life.  
And those who look only to  
the past or the present  
are certain to miss the future.

—John F. Kennedy (1917-1963)

## Summary

- Lots of development tool choices these days
  - “Traditional” work with Forms and PL/SQL
  - “New wave” work with ADF and MAF
  - “Next wave” work with JET, maybe ABCS
- Need to keep aware of change
  - The cheese may be moving
- Good News:
  - The cheese doesn't have to move any time soon



# ODTUG Kscope16

SAVE THE DATE  
CHICAGO, ILLINOIS  
**JUNE 26-30**  
[www.kscope16.com](http://www.kscope16.com)



## TRACKS

### • ADF and MAF

- Application Express
- BI and Data Warehousing
- Big Data and Advanced Analytics

- Database
- EPM Applications
- EPM Business Content
- EPM Platform



Books co-authored  
with Dr. Paul Dorsey,  
Avrom Roy-Faderman,  
& Duncan Mills



<http://www.quovera.com>

- Founded in 1995 as Millennia Vision Corp.
- More technical white papers and presentations on the web site

