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INSTANT AGILITY IN ORACLE FUSION MIDDLEWARE THROUGH DESIGN TIME @ RUN TIME

Oracle Open World 2011



IT DELIVERS ACCORDING TO BUSINESS SPECIFICATIONS

The Outside World
(Consumers, Partners, Customers, Government)



Emails, Alerts,
Reports

Web Site

Web
Application

Mobile
Application

Web
Service



Emails, Alerts,
Reports



Enterprise Portal

Mobile
App

Web
Service



Dashboard

Process
Coordinator &
Todo List



Task UI



Enterprise



WHAT HAPPENS RIGHT AFTER DEPLOYMENT?



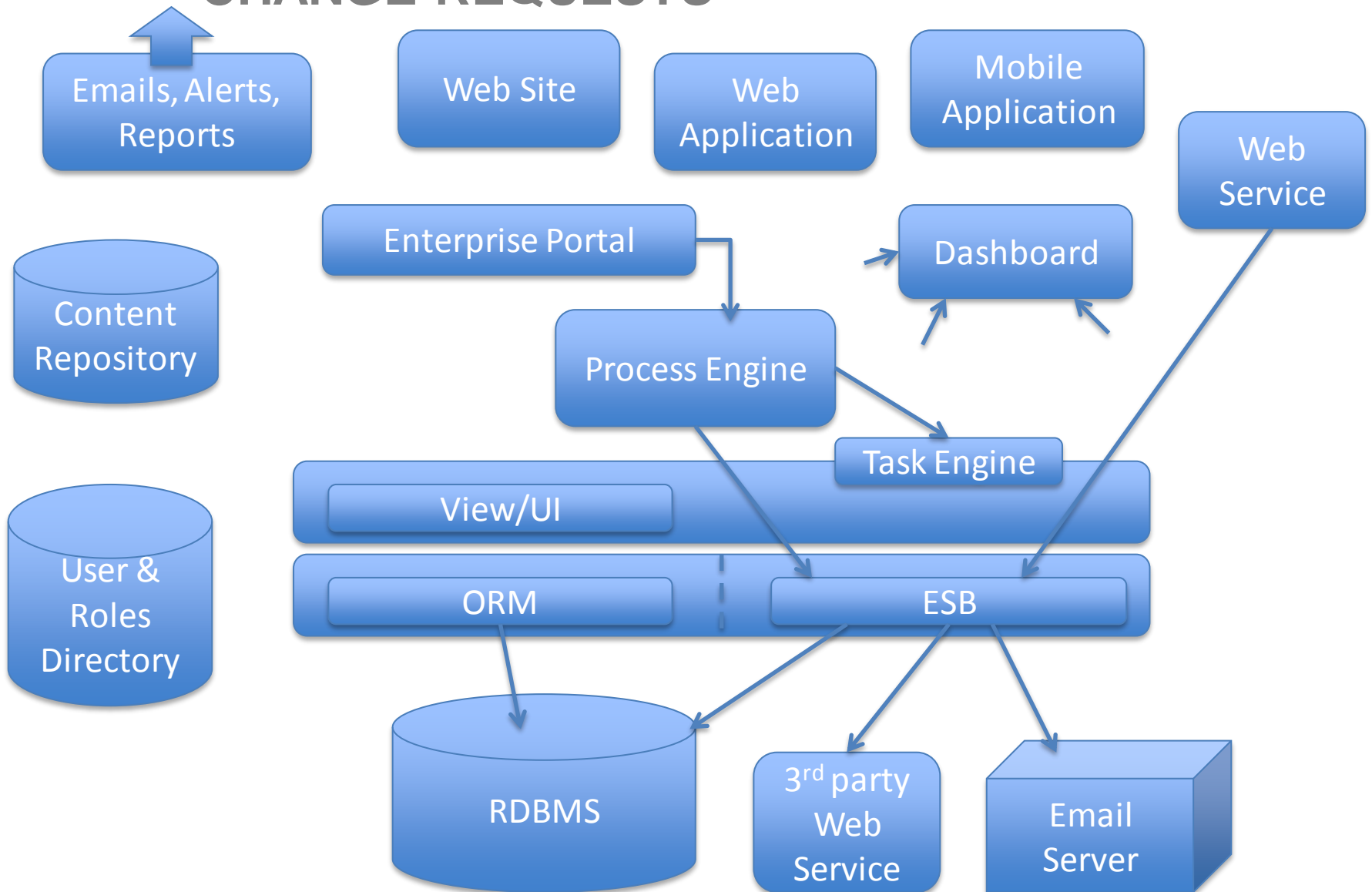


WHAT HAPPENS RIGHT AFTER DEPLOYMENT?

- **‘Sorry, this is not what we meant’**
- **‘Well, this was right when we asked for it – but that is no longer the case. Things have changed.’**
- **‘This is right for some user groups – but not as it turns out for all’**
- **‘Hi – we are from marketing and we want to launch a campaign to respond to our biggest competitor and we need immediate changes’**
- **‘It is perfect! Exactly what is needed for the current business situation.’ ‘Well, the situation has slightly evolved. We need to adapt – asap please.’ (repeat many times)**

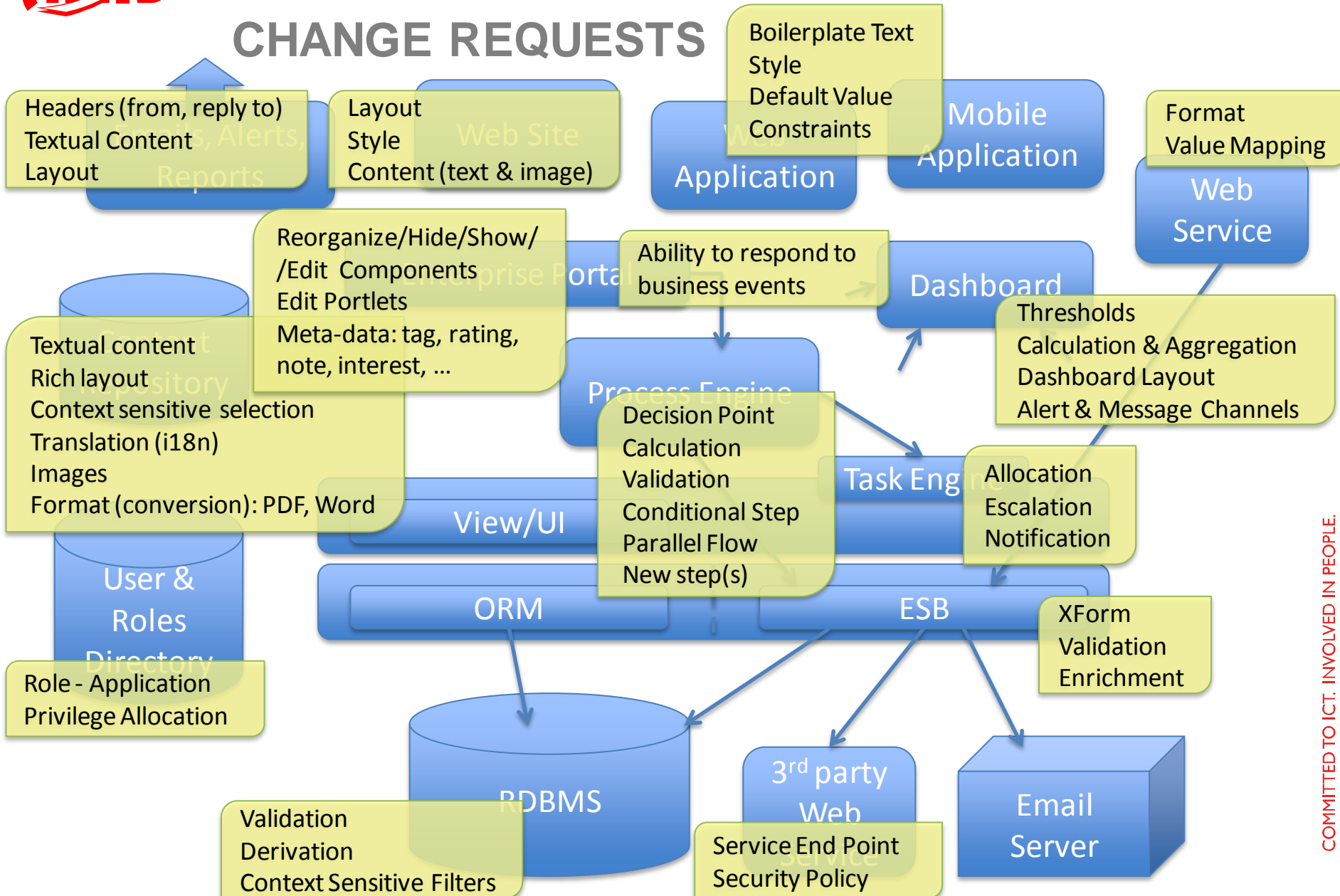


APPLICATION ARCHITECTURE AND ALL CHANGE REQUESTS



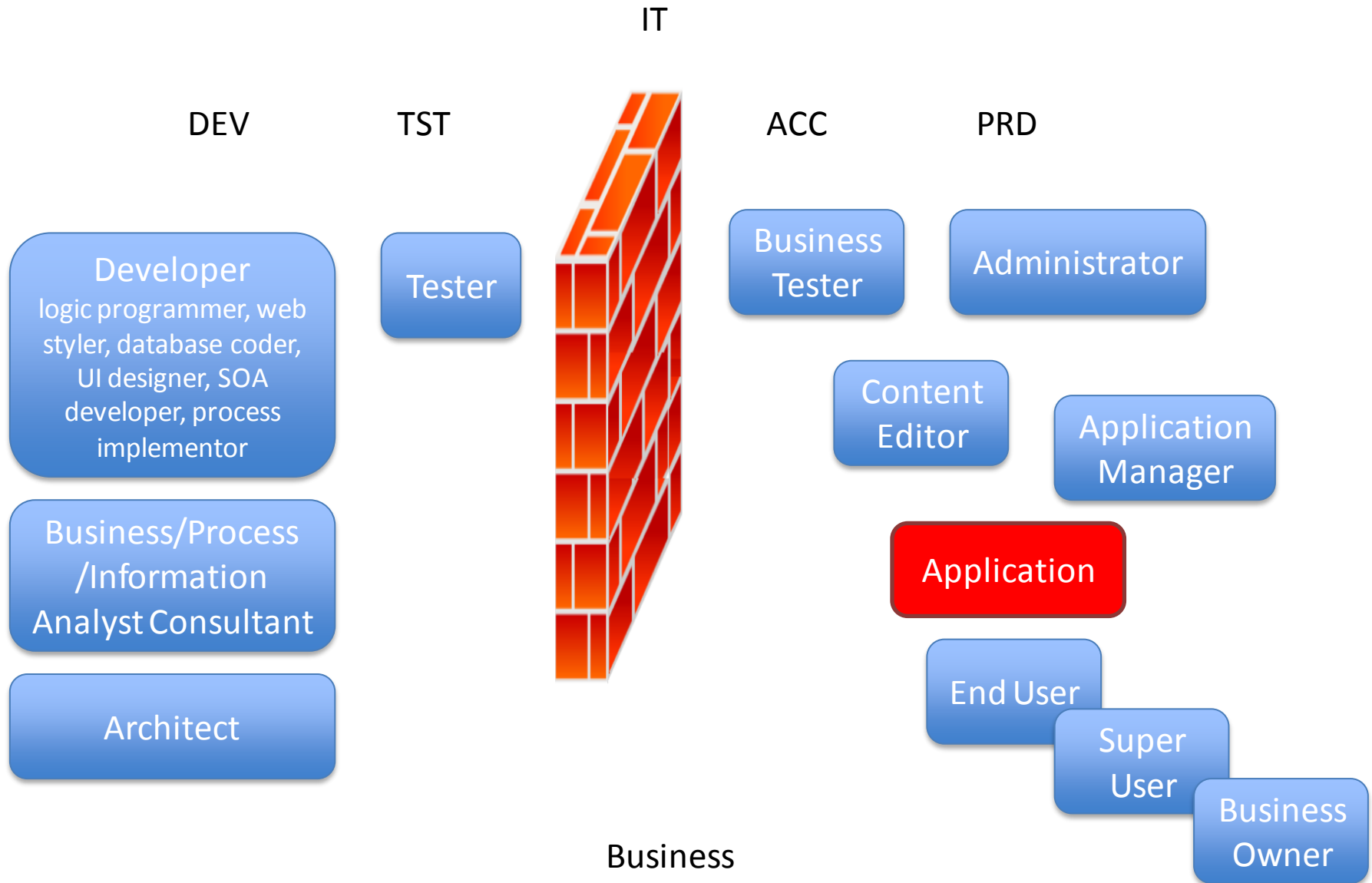


APPLICATION ARCHITECTURE AND ALL CHANGE REQUESTS



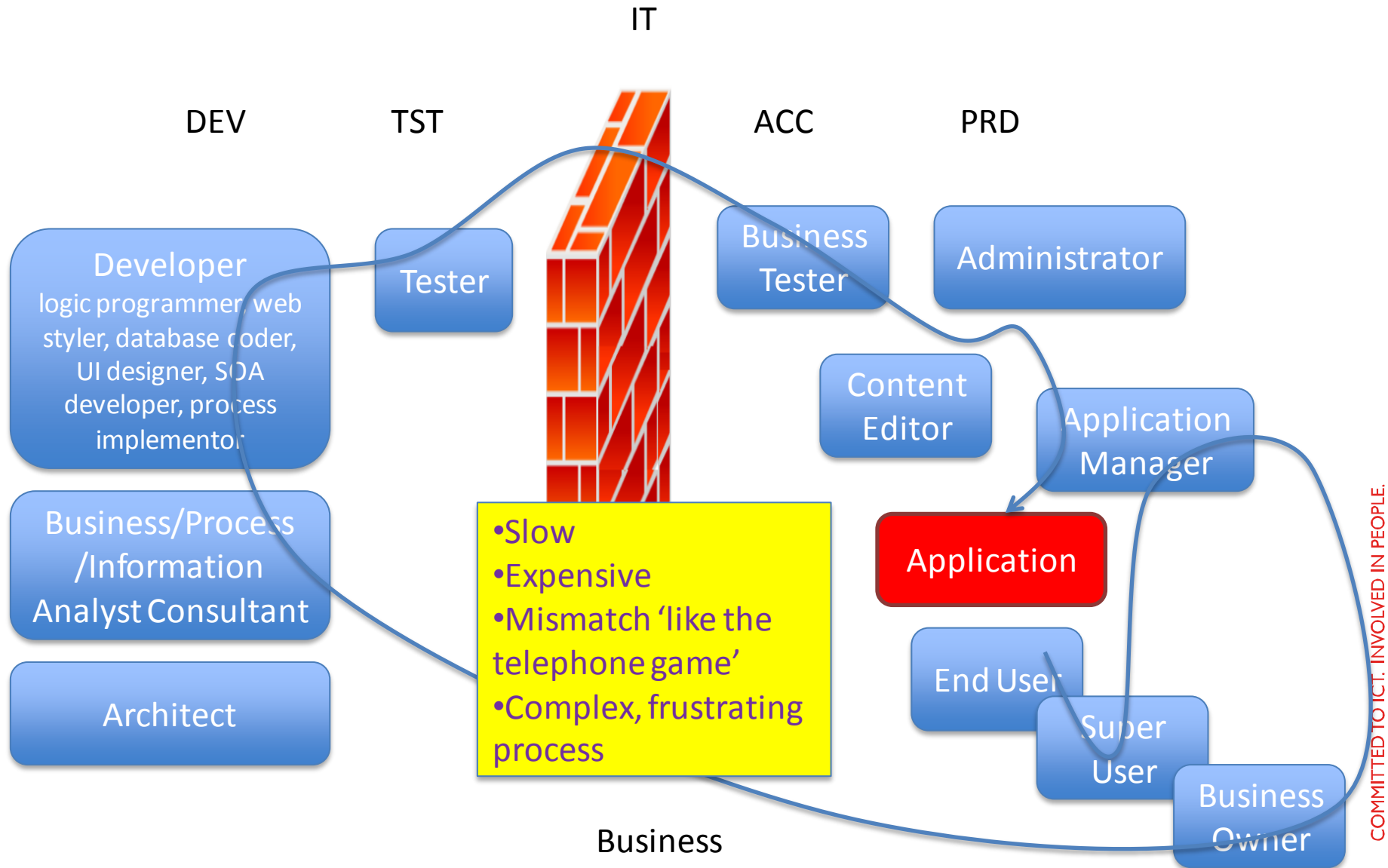


ORGANIZATION & ENVIRONMENT

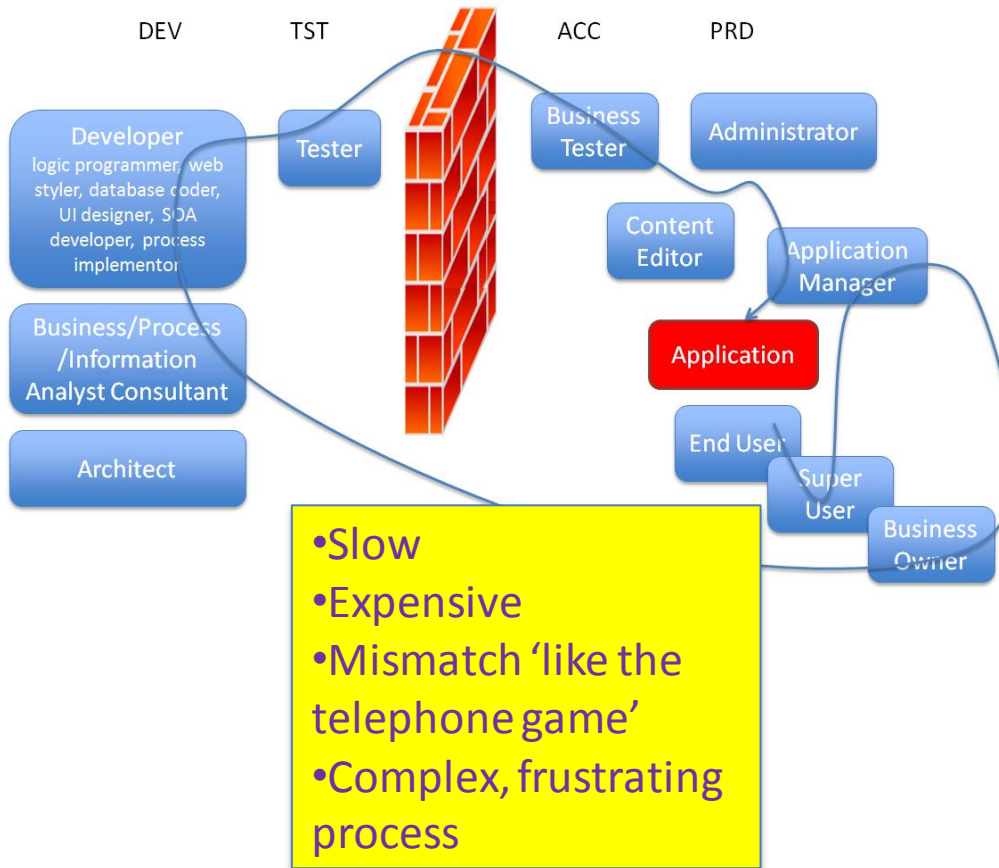


- ***Adapt*** to changing business requirements
 - Rapid
 - Efficient (cost wise)
 - Low risk
 - GWYRN: Get what you *really* need





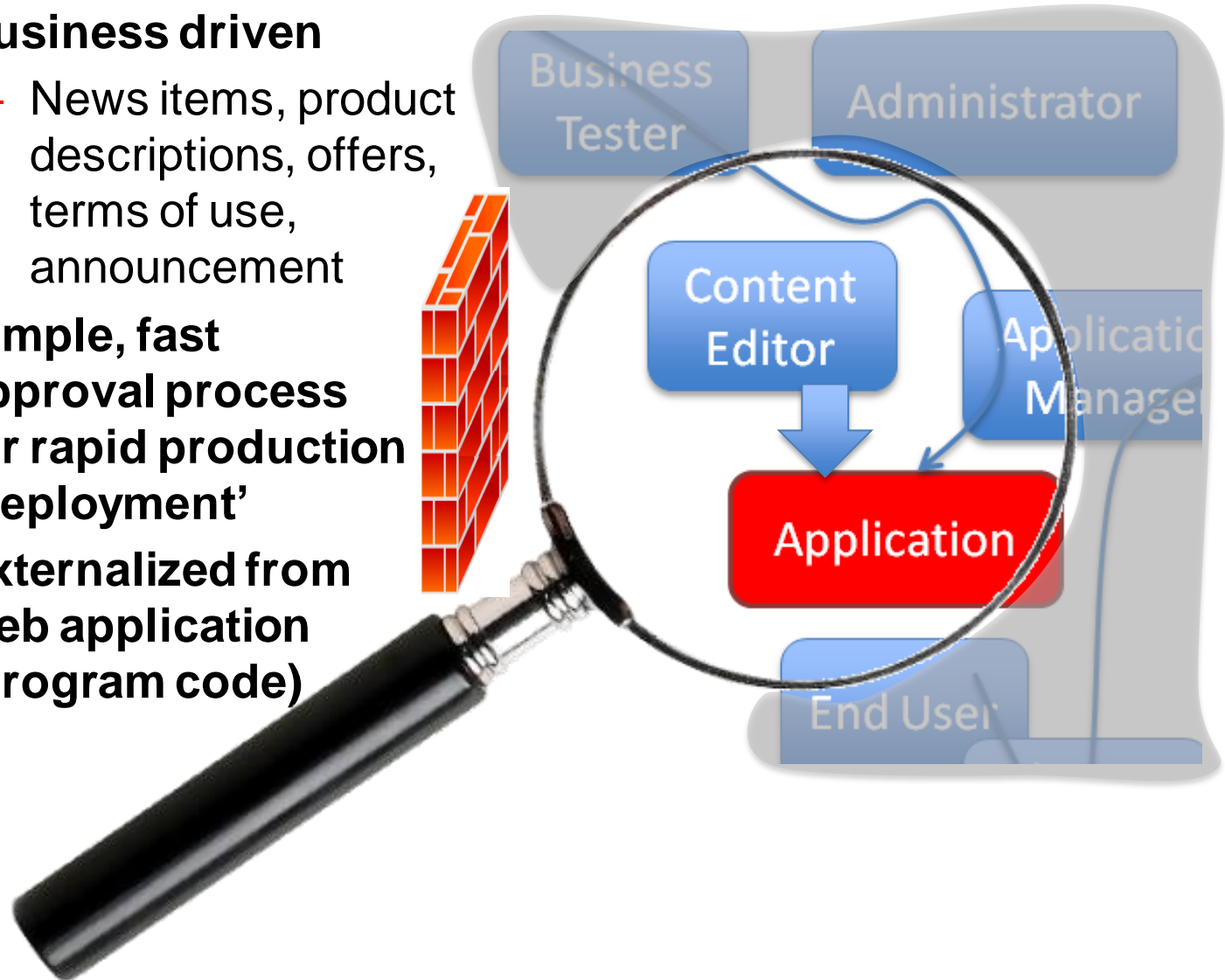
WHAT IS VS WHAT SHOULD BE



?

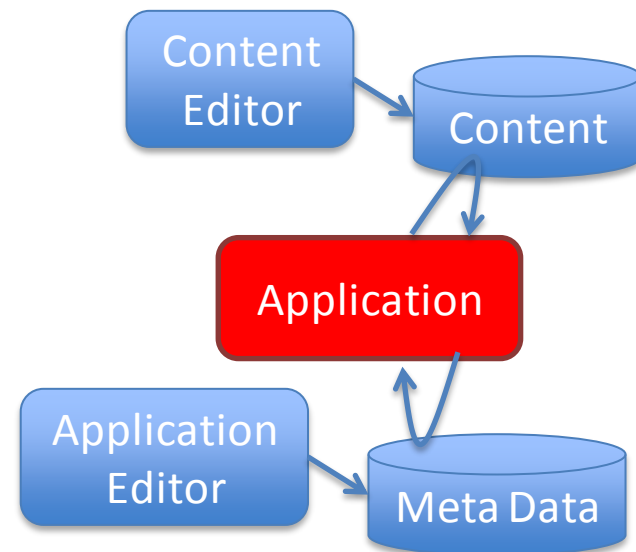
AGILE CONTENT MANAGEMENT

- **Business driven**
 - News items, product descriptions, offers, terms of use, announcement
- **Simple, fast approval process for rapid production 'deployment'**
- **Externalized from web application (program code)**



THE ESSENCE OF THE SOLUTION TO THIS TRADITIONAL PROBLEM

- **All aspects of applications, processes, services that may require run time change**
 - should be meta-data driven
 - defined outside of program code
 - “externalize changeable aspects outside of applications, just like content is externalized”





THE ESSENCE OF THE SOLUTION TO THIS TRADITIONAL PROBLEM

- **Applications, UI components, services, processes and other elements need to acquire or have injected the meta data that governs part of their behavior**
- **Run time infrastructure is required**
 - to support change of meta-data – WYSIWYG style -
 - And to absorb/apply meta-data changes at run time without restarting application components
- **Ideally: cater for multiple, co-existing, context sensitive sets of meta-data changes**
- **A ‘run time application editor’ role should be introduced**

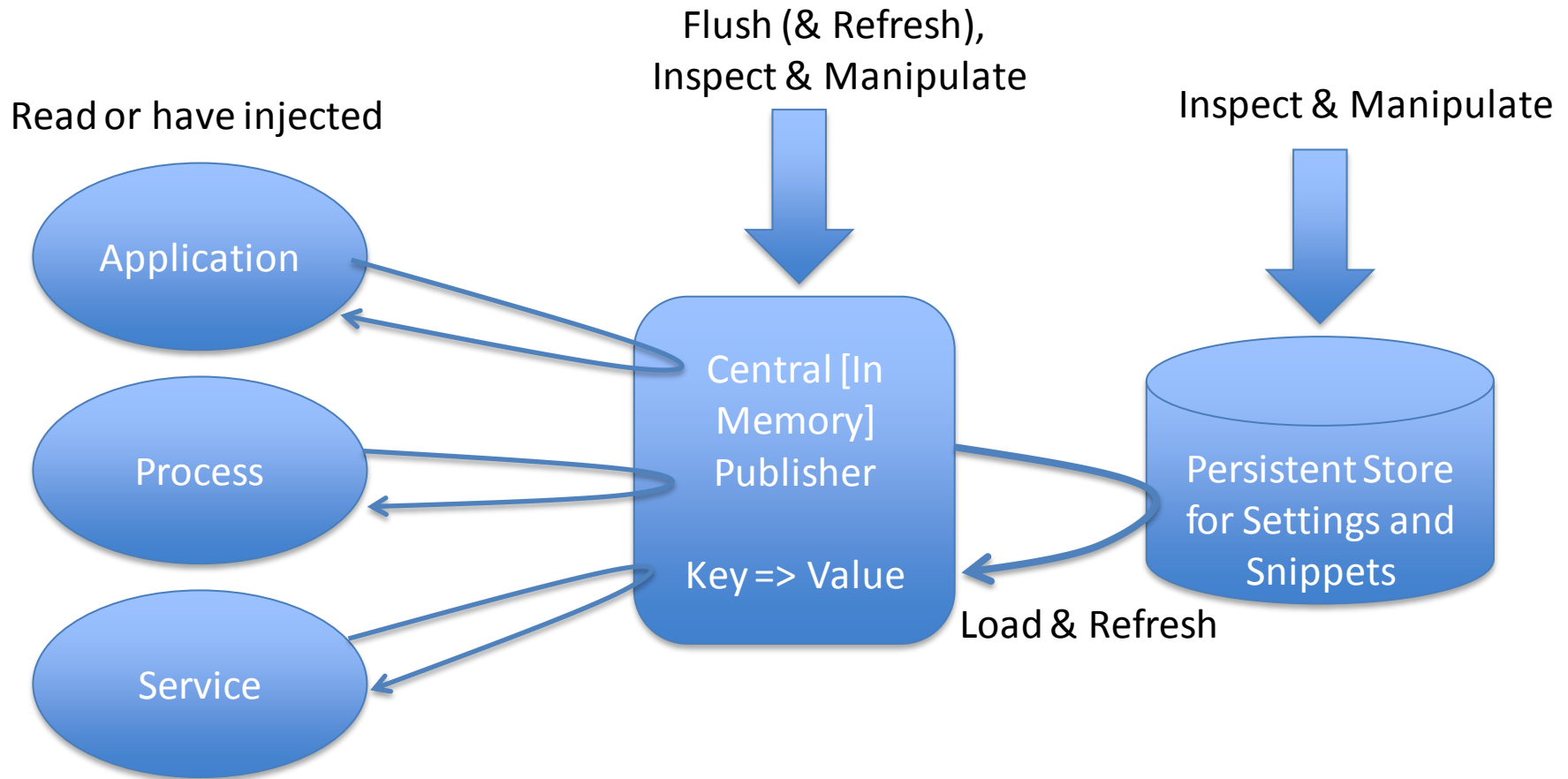


CUSTOM IMPLEMENTATION OF (FUNCTIONAL) DESIGN TIME @ RUN TIME

- **Externalize meta-data with normal, non FMW means**
- **Centralize parameters in MBeans that can be manipulated with JMX from outside JVM**
- **Resource Bundles (multi-dimensional) based on database table, cached but dynamically refreshable**
- **User preferences to drive behavior of UI**
- **JSF PhaseListener to post-process UI component tree based on meta data**
- **Custom JSF components that dynamically create UI components – driven by meta data**
- **Servlet filter to manipulate CSS resources based on current context and meta data settings**
- **Singleton BPEL process to expose (and manipulate) parameters for use in other BPEL processes**
- **Set up event infrastructure and publish relevant business events wherever they originate**



CENTRALIZE CONSTANTS, PARAMETERS, FRAGMENTS, CALCULATIONS, ..



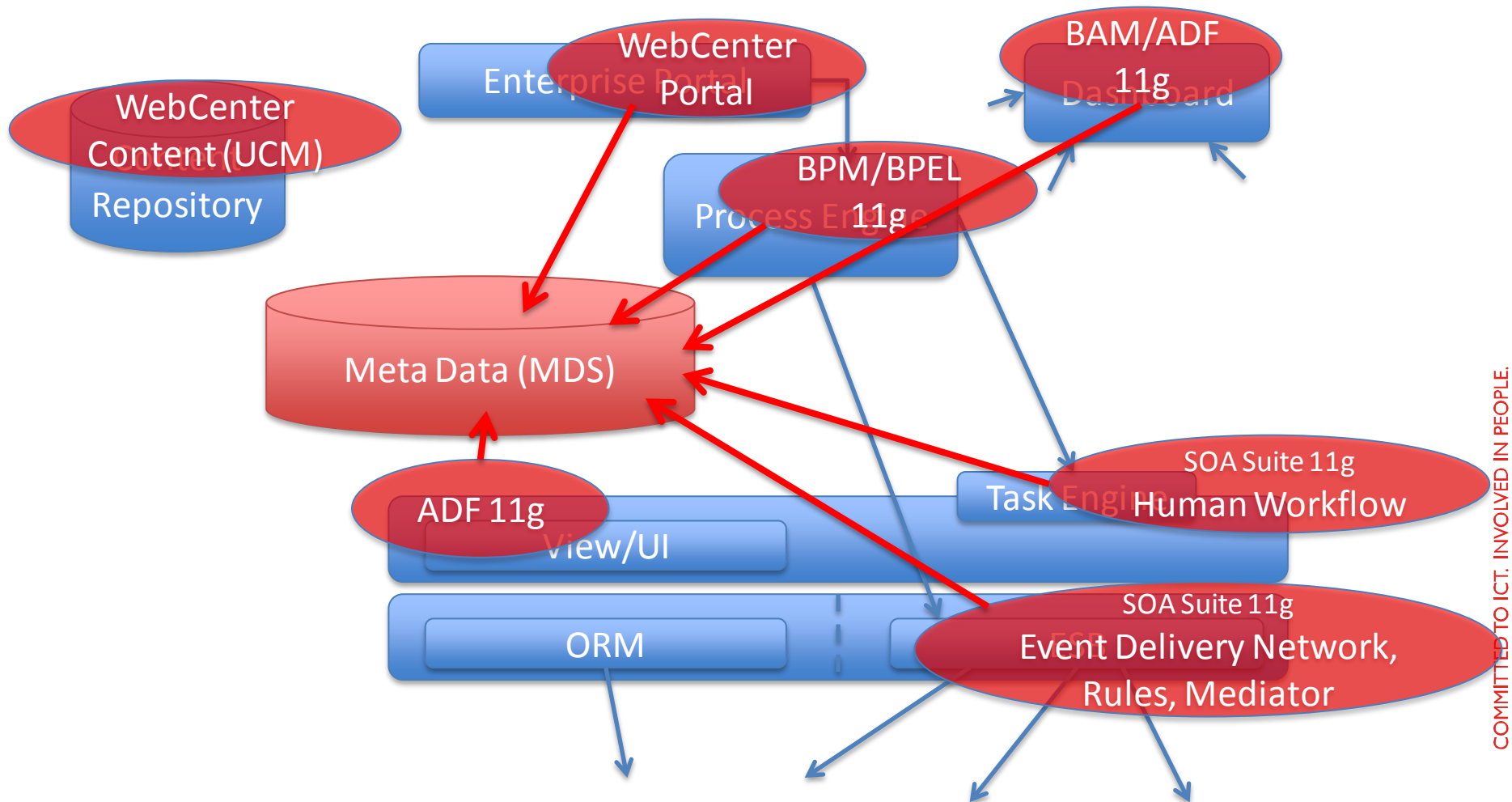


CHALLENGES

- **Define process for making, testing, deploying and distributing run time changes**
- **Have changes applied in staging or sandbox – test and approve before go-live**
- **Deploy changes with(out) impacting running sessions and process instances**
- **Train staff to apply run time changes**
- **Enforce authorization on run time editing**
- **Have changes survive Application Upgrade**
- **Feed changes back to developers and ‘regular’ application life cycle**
- **WYSIWYG tooling for making run-time changes**
- **Prepare application components for run-time editing**

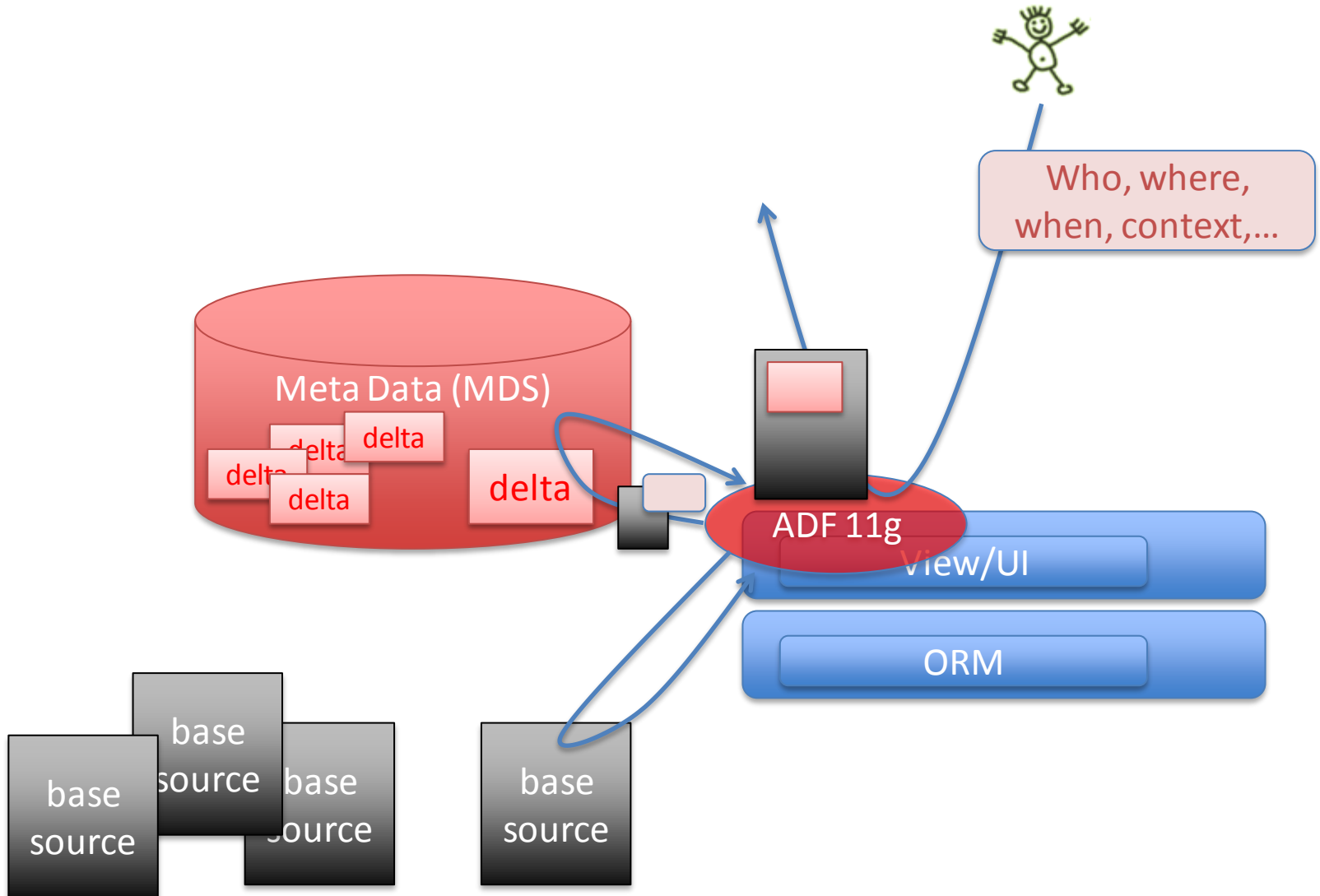


RUN TIME META DATA IN ORACLE FUSION MIDDLEWARE



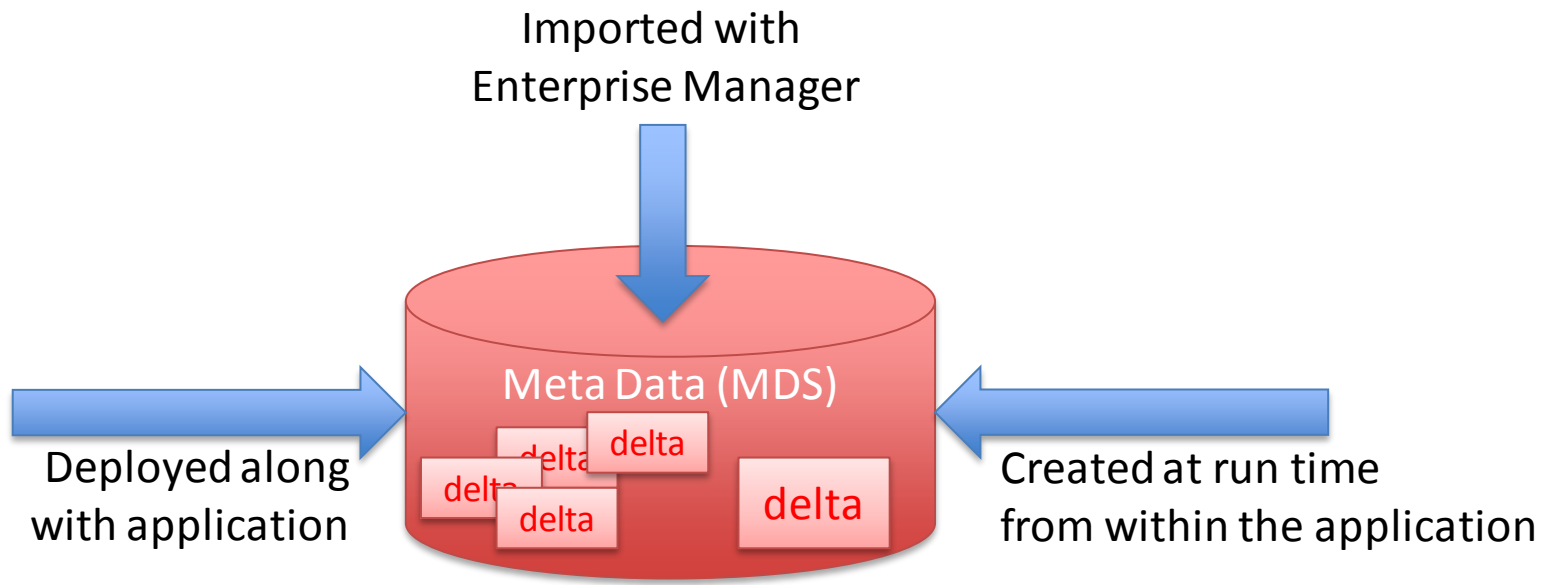


CONTEXT SENSITIVE SOURCE CUSTOMIZATION AT RUN TIME





MDS CUSTOMIZATION MANAGEMENT



- **Built-in infrastructure to record and persist configuration of UI components by the user**
 - Persistence for the duration of the session (in memory) or cross-sessions (as a delta in MDS)
- **Example of built-in change persistence**
 - Column configuration in tables (hide/show, reorder, resize, sort)
 - Expand/collapse of panel boxes, accordion panels and panel headers
 - Expand/collapse state and divider position in panel splitter
- **Change persistence has to be explicitly enabled in the ADF application – at the desired level**
 - When enabled: it is entirely declarative and transparent to developer and user

EXPLICIT PROGRAMMATIC ADF CHANGE PERSISTENCE

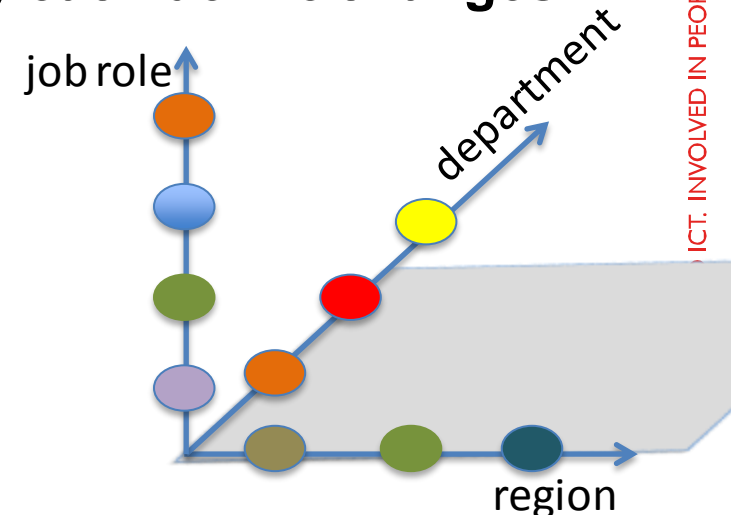
- **In addition to declarative, implicit change persistence, ADF applications can do explicit change persistence**
- **The application at run time can use the ChangeManager object to persist changes**
 - Those changes are stored in the session or MDS
- **When a new view is constructed, changes are applied by the ChangeManager – prior to rendering**
 - From MDS and session
 - Both implicit and explicit changes (no distinction made)
 - (Ordered by customization layer)
- **Example:**
 - User determines the order of navigation tabs
 - Application saves the new order to ChangeManager
 - The change is stored in session or MDS
 - Next time when the page is accessed, the change is retrieved (from session or MDS) and applied to page

- **Customize**
 - One (new) size fits all
 - Multiple sizes to fit all
 - Personal(s)ize to fit individual



CUSTOMIZATION LAYERS

- **Customizations may be required for various, unrelated reasons – that may apply at the same time**
 - Additional fields because of a more senior role
 - Fewer fields because non applicability in a certain region
 - Fields with different constraints, default values and display characteristics because of departmental rules
- **ADF can work with many customization layers – unrelated dimensions that may each define changes**
- **For each layer, the current value is determined and the customization in that layer for that value is applied**
- **The order of layers is crucial!**





FUSION APPLICATIONS

11 CUSTOMIZATION LAYERS

- Fusion Applications leverages Customization to fine-tune *one size fits no one* base product
- 11 customization layers are used to tune along different dimensions
- Also at run time

Tip layer	Name	Value
<input type="radio"/>	Global	Global (GLOBAL)
<input type="radio"/>	Product Family	ATF (ATF)
<input type="radio"/>	Product	Application Install (AD)
<input type="radio"/>	Industry	Accommodation and Food Services (72)
<input type="radio"/>	Country	Afghanistan (AF)
<input type="radio"/>	Custom	<No Value>
<input type="radio"/>	Site	Site (SITE)
<input type="radio"/>	Enterprise	X (X)

ORACLE Fusion Applications

Home Navigator Recent Items Favorites

Employee View Employees x

Actions View Detail

Empno	Ename
1,111	Test1111
4,141	
2,121	
3,131	
1,199	Test1099
1,198	Test1098
1,198	Test1098
9,991	Test9991
7,369	SMITH

Customize Employees Screens

Select the layer you want to edit and the desired customization context by also selecting values for layers above it. The selected edit layer will inherit customizations from layers above to render screens as the targeted user group would see them.

Edit Layer ☐ Custom ☒ Site ☐ Enterprise ☐ Industry In Country ☐ Organization

Project Acme Inc

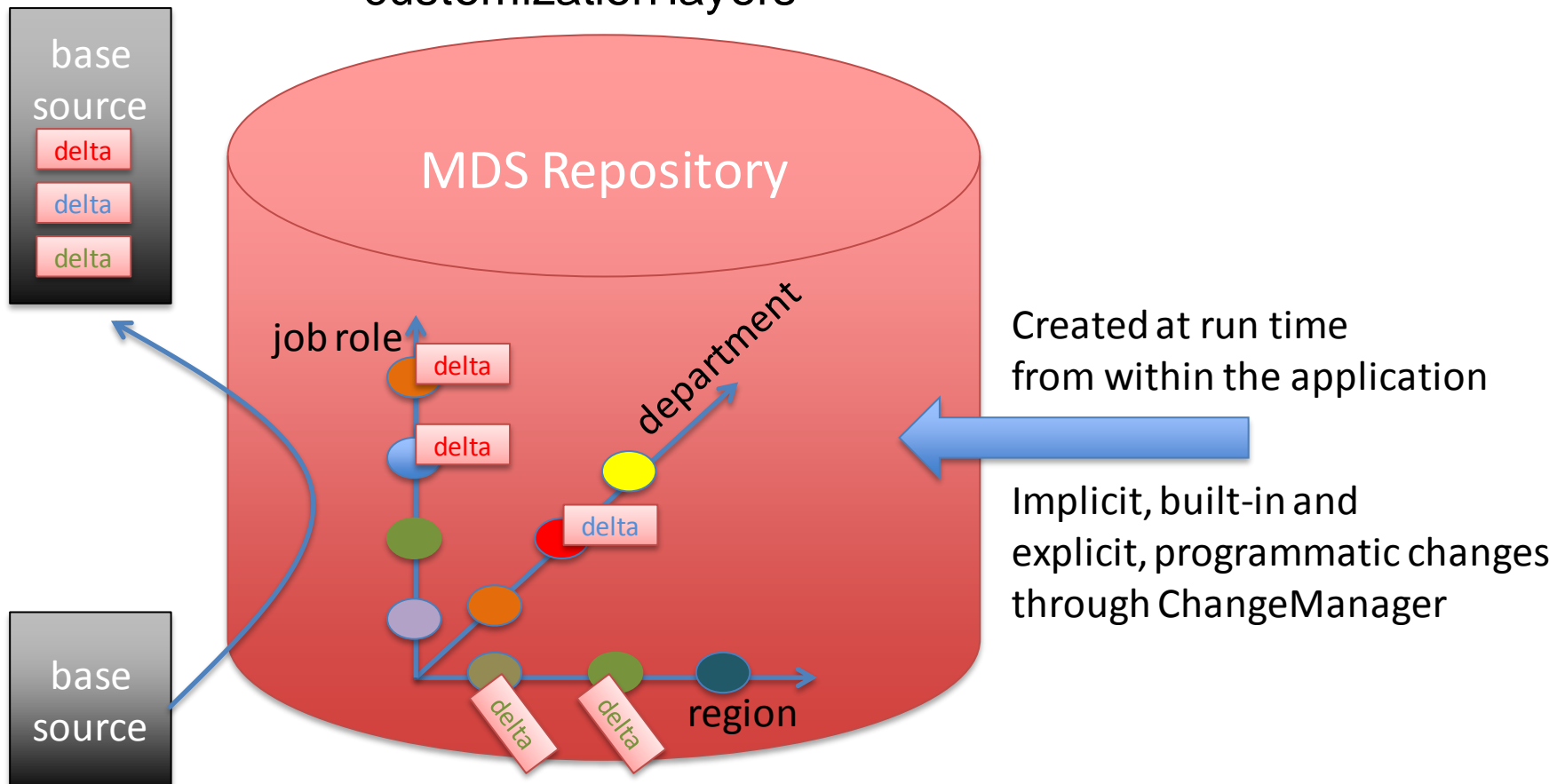
Advanced

Select layers you want to hide when you do not want to see inherited customizations from higher layers.

Hidden Layers ☐ Custom ☐ Site

OK Cancel

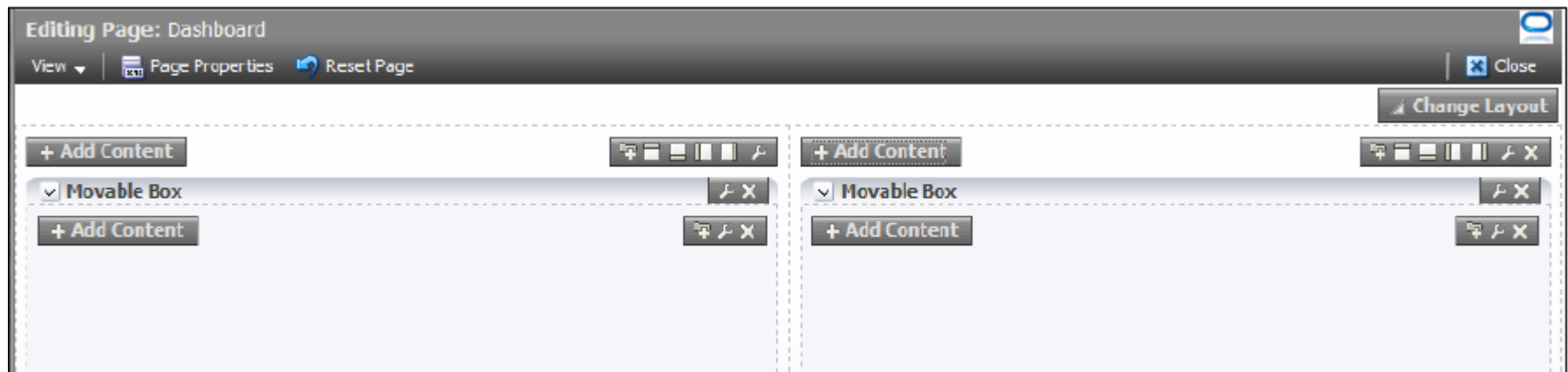
- **Changes per artifact (page, task flow, template, ...)**
 - associated with predefined and dynamically derived customization layers



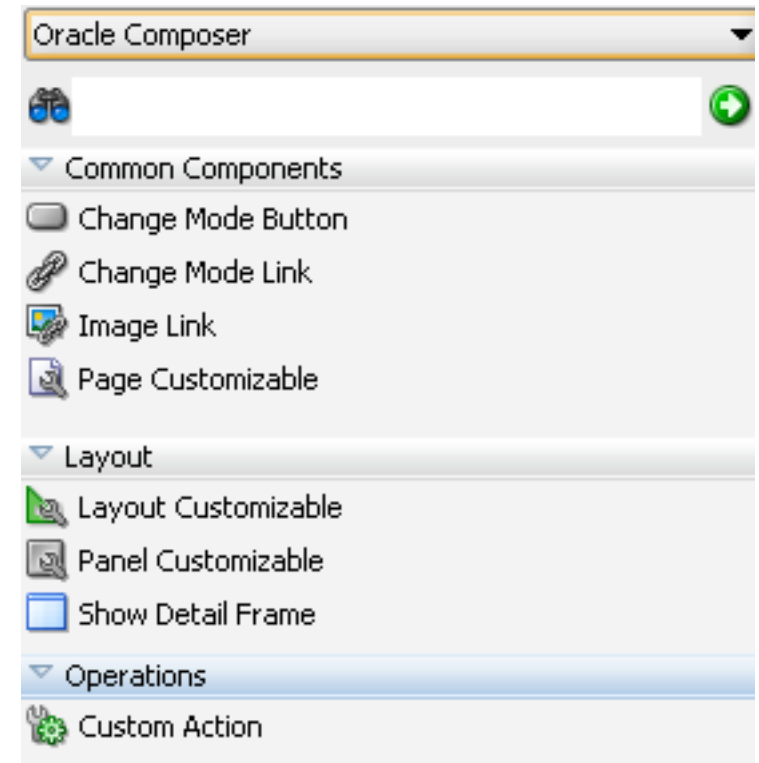


WEBCENTER COMPOSER

- **ADF Change Persistence has declarative support for only a limited set of UI characteristics**
- **For other ‘customizable’ aspects a lot of run time infrastructure needs to be developed**
- **Enter: WebCenter Composer**
 - Pre-built, fully integrated
Run Time WYSIWYG Customization Editor
 - Turn on Edit Mode for page at run time – start making changes that are persisted in MDS



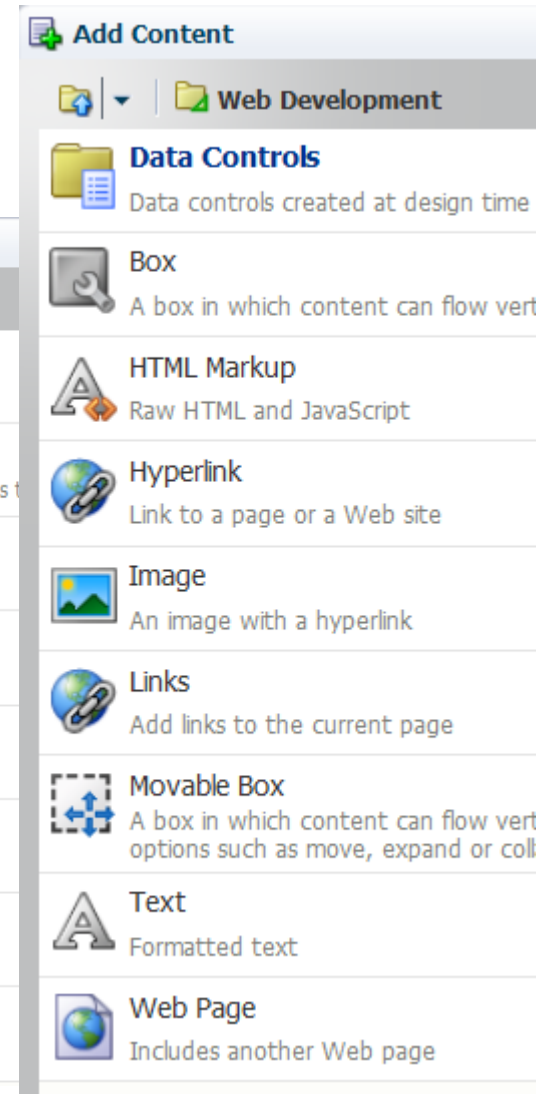
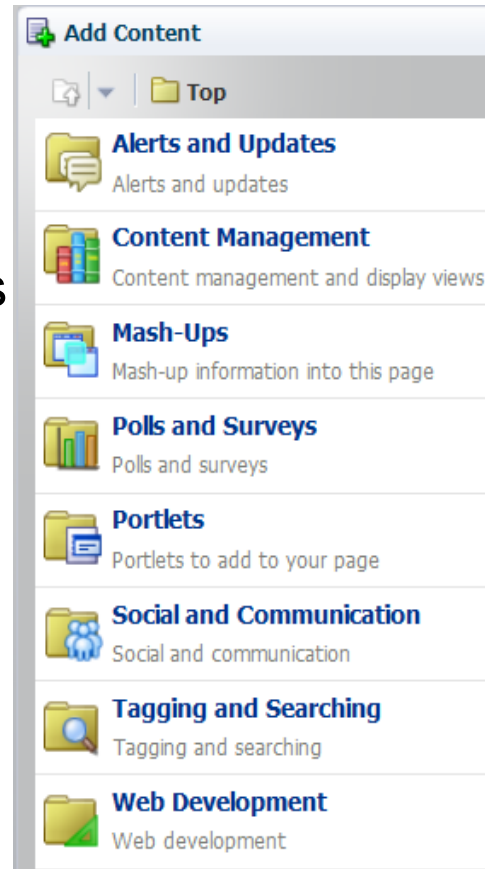
- **Pages created at design time can be made (partially) editable by including customizable components**
- **These components are used to turn on edit mode**
 - Only for authorized users
- **In edit mode:**
 - Customizable area can be rearranged
 - Components can be reconfigured (properties modified)
 - Components can be added
 - Page (Area) Layout can be changed
 - Resource Strings can be customized





WEBCENTER COMPOSER – RUN TIME RESOURCE CATALOG

- **Resource Catalog contains components that can be added to pages at run time**
 - Standard UI widgets (box, image, rich text)
 - Portlets from Portlet Providers
 - Custom Task Flows
 - WebCenter Services
 - Content Presenter
 - Custom Components





WEBCENTER COMPOSER RUN TIME APPLICATION EDITING

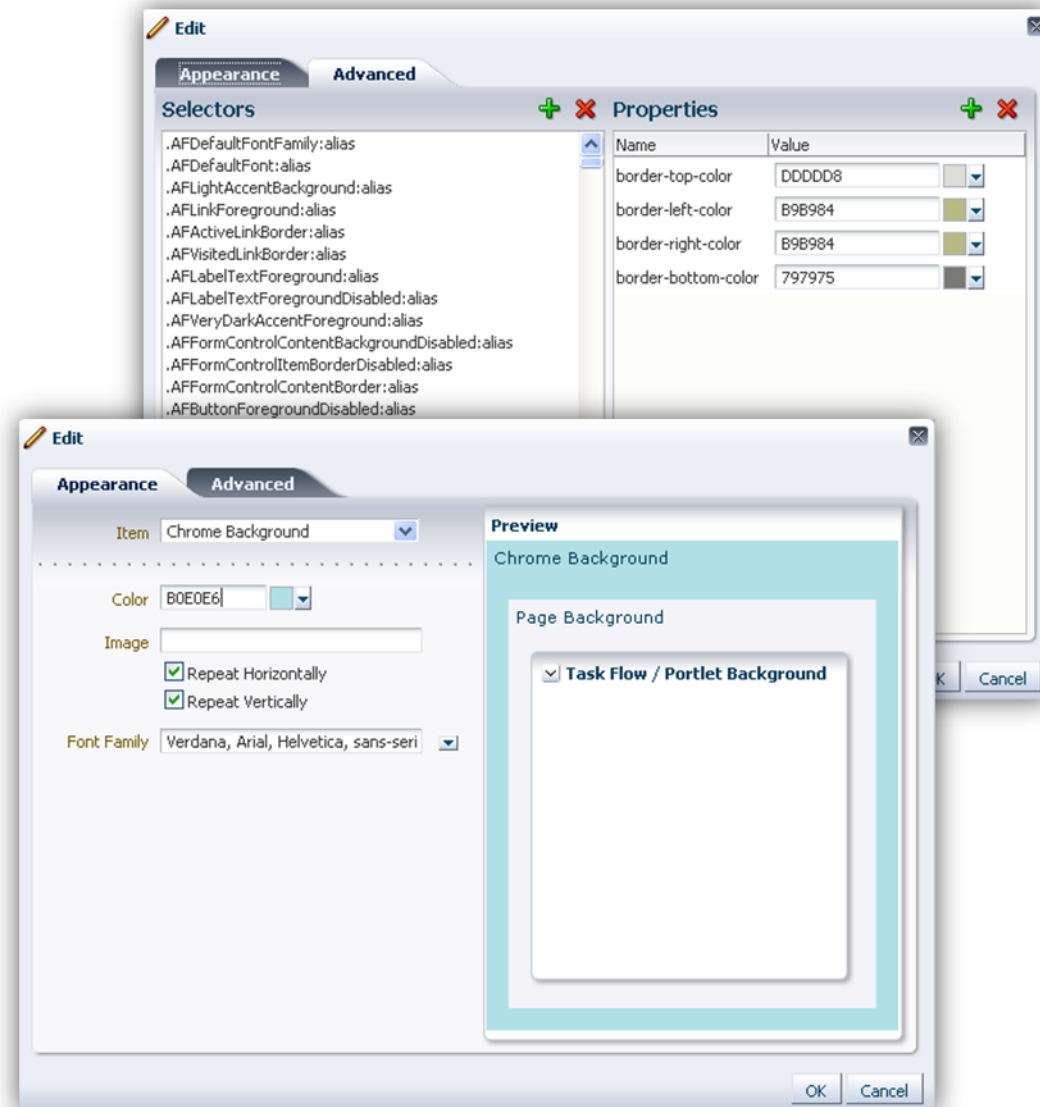
- **WebCenter Composer provides run time support for**
 - Page creation, hide/show, removal
 - Page Access management
 - Navigation & Menu editing
 - Skin and Page Style & Template administration
 - Wire Portlets & Task Flows – parameters & events

The screenshot displays the Oracle WebCenter Portal Administration Console. The top navigation bar includes 'Resources', 'Services', 'Security', and 'Configuration'. The left sidebar contains sections for 'Structure' (Pages, Page Templates, Navigations, Resource Catalogs), 'Look and Layout' (Skins, Page Styles, Content Presenter, Mashup Styles), and 'Mashups' (Data Controls, Task Flows). The main content area shows the 'All Pages' table with columns: Name, Sub Pages, Reorder, Show Page, Access, Created By, Last Modified, and Actions. The 'Home' page is listed with a 'Create' sub-page and a 'Show Page' icon. A context menu is open for the 'Home' page, listing actions: Edit Page, Copy Page, Rename Page, Set Access, Delete Page, Move Page, and About This Page.

Name	Sub Pages	Reorder	Show Page	Access	Created By	Last Modified	Actions
Home	Create					09/18/11 09:30 PM	



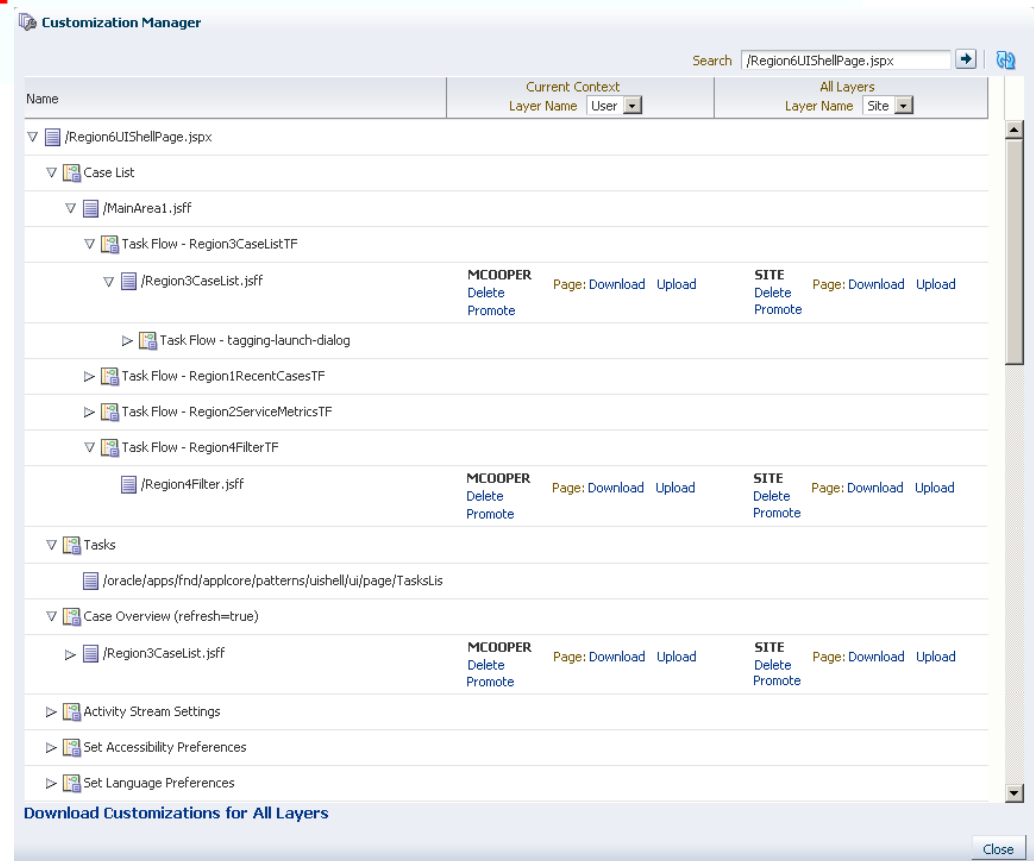
WEBCENTER RUN TIME SKIN EDITING



- Customization Manager for run time administration of page, task flow and fragment customizations



- Support for
 - Download
 - Upload
 - Promote
 - Remove





ORACLE BUSINESS MASHUP - RUN TIME APPLICATION EDITING WITH A VENGEANCE

- **DT@RT tools empowering Business Users to quickly create Enterprise Mashups / visualizations connecting data in ADF pages**
 - Runtime Create Data Controls
 - Runtime Create / Build Reusable Mashups / Task flows using Data Controls
 - Use them in pages and wire

SQL Web Service WSDL Method OWSM Security

* WSDL URL

Http Basic Authentication Details

Username

Password

Connect

Service Details

Services Methods View XML

Back Next

* Name

Description

Create New Task Flow

* Name

Description

Mashup Style

Blank Stretch Parameter Form

OK Cancel

Data Presenter Configuration

Data Summary Ready Data Source Type: SQL Select Content

Template Summary Ready Template: Chart - Pie Select Template

Preview Status Ready Data selected Template selected Preview

Define Chart

Template Chart

Type Pie

Sub Type Pie

Width 100px

Height 200px

Set size automatically

Legend Bottom

3D effect

Animate chart

Choose Data

Group [None]

Series Department

Action Hyperlink

Value Salary

http://people.us.oracle.com/person?id=#empno##

Move to Custom Template

Save Cancel



ZERO CODING PAGE CREATED AT RUN TIME USING WEBCENTER COMPOSER

- **Create Data Control**
 - Using SQL query against JDBC Data Source
 - Or based on SOAP WebService
- **Set Data Control to *show***
- **Create new page**
- **Edit newly created page**
- **Add Data Control**
- **Configure Data Visualization for Data Control (table, graph)**

EmployeesOverview

Your Company

Tag Line for Your Company

Home

Function	Salary	Employee name
CLERK	1100	ADAMS
SALESMAN	1600	ALLEN
MANAGER	2850	BLAKE
MANAGER	2450	CLARK
CLERK	950	JAMES
SALESMAN	1250	MARTIN
SALESMAN	1250	WARD

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- **Content can be integrated in in ADF applications**
 - Using custom mechanisms
 - Using WebCenter Content Services on top of an Content Repository (such as UCM)
 - Using OWCM tags selecting from UCM – and providing edit-content-in-place capabilities inside the web page
- **Content can be changed (at run time)**
 - Change content item - no change in application
 - (dynamically) select different content
- **Note: content is wide range**
 - From image and downloadable PDF to prompt and block headers

INTEGRATING UCM CONTENT ITEMS USING OWCM TAGS



Go Koala

```

<wcm:url type="resource" url="XPVLOCAL16200000031" var="url"/>
<wcm:metadata contentID="XPVLOCAL16200000031" var="metadata"/>
<af:panelBox text="#{requestScope.metadata.resultSets.DOC_INFO.rows[0].dDocTitle} from Content Server"
  id="pb1">
  <f:facet name="toolbar">
    <af:goLink destination="//{requestScope.url}" text="Go Koala" id="cl1"/>
  </f:facet>
  <af:image source="//{requestScope.url}" shortDesc="#{requestScope.metadata.resultSets.DOC_INFO.rows[0].dDocTitle}"
    inlineStyle="width:300.0px;"/>
</af:panelBox>

```

- Image in UCM Content Server – embedded in web page
- Placeholder Tag can be added to provide a spot for dynamic content to be added to the page:

```

<af:panelBox id="pb3" text="News Flash" >
  <wcm:placeholder actions="EPRISUTMN" name="News of the day"/>
</af:panelBox>

```

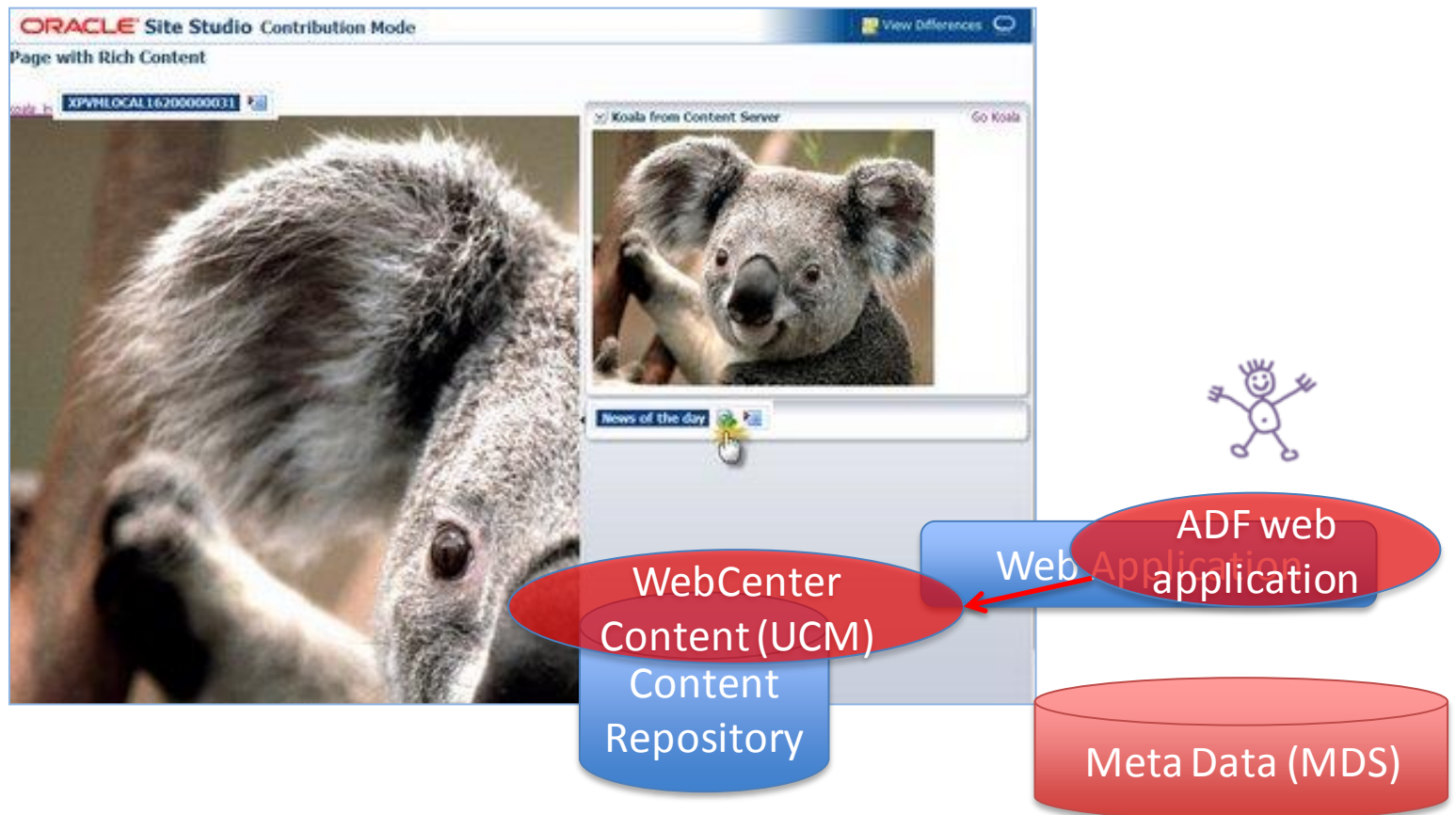


News Flash



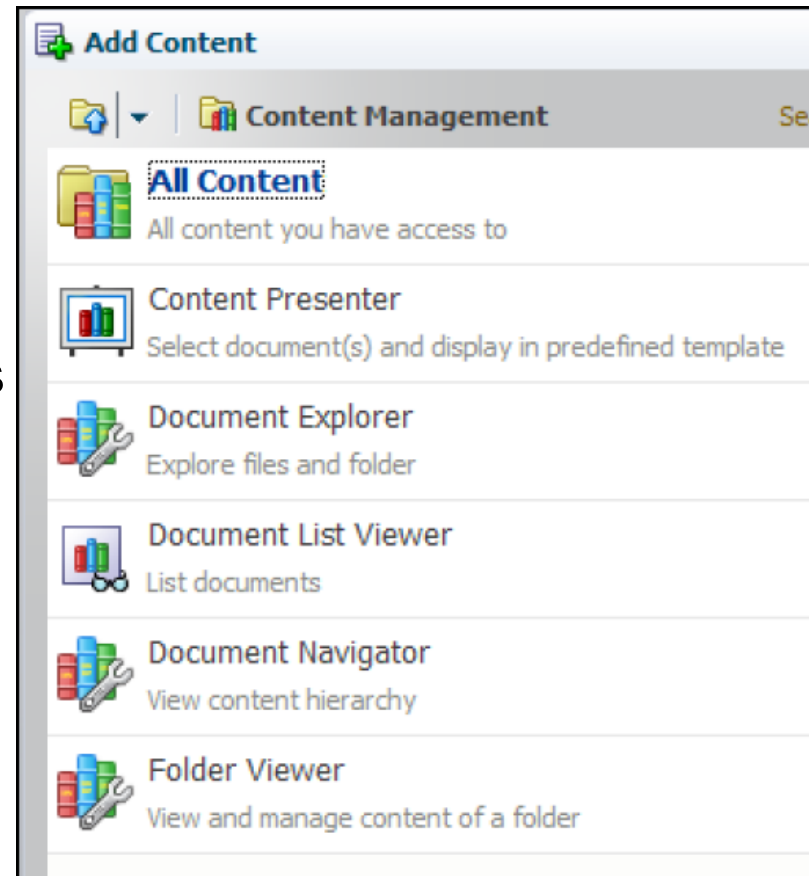
INTEGRATING UCM CONTENT USING OWCM TAGS

- **CTRL+F5 brings page in Content Contributor mode – allowing all Content Items to be edited**
 - Any changes are recorded in the Content Server



INTEGRATING CONTENT USING WEBCENTER CONTENT SERVICES

- **When a connection with a Content Repository has been configured**
 - Content Server (UCM), Oracle Portal, File System
- **WC Content components can added to a page**
 - At design time
 - or run time (composer)
- **to present content items**
 - In various display styles
 - Using static content item selection or dynamically evaluated content query





RUN TIME ADDING CONTENT TO WEB APPLICATION

ORACLE WebCenter Portal® Administration Console

Welcome weblogic | Back to Portal | Logout

Resources Services Security Configuration

Structure

- Pages
 - Page Templates
 - Navigations
 - Resource Catalogs
- Look and Layout
 - Skins
 - Page Styles
 - Content Presenter
 - Mashup Styles
- Mashups
 - Data Controls
 - Task Flows

All Pages

Create Page Set Default Access

Search

Name	Sub Pages	Reorder	Show Page	Access	Created By	Last Modified	Actions
Home	Create					09/18/11 09:30 PM	<ul style="list-style-type: none">Edit PageCopy PageRename PageSet Access

Editing Page: Home

View Page Properties

+ Add Content

Add Content

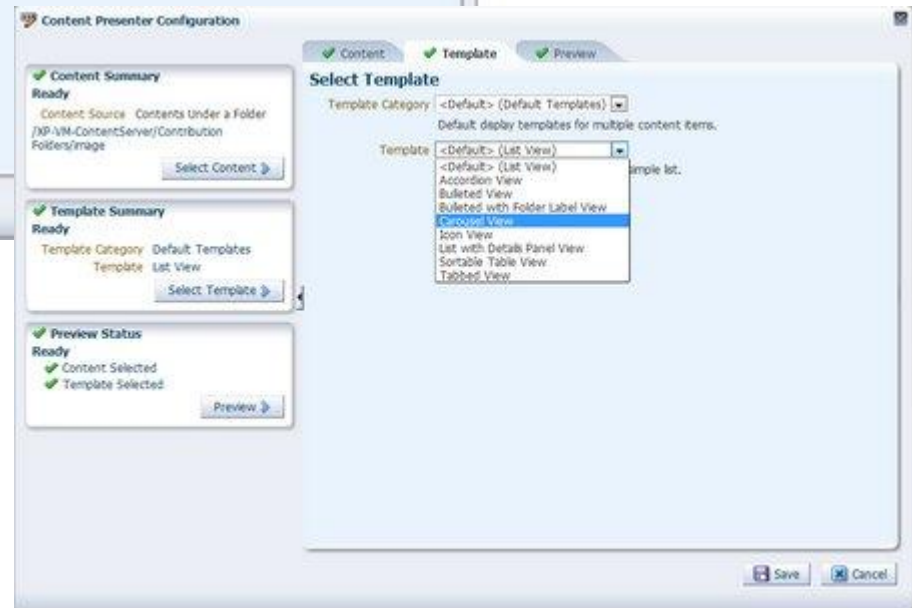
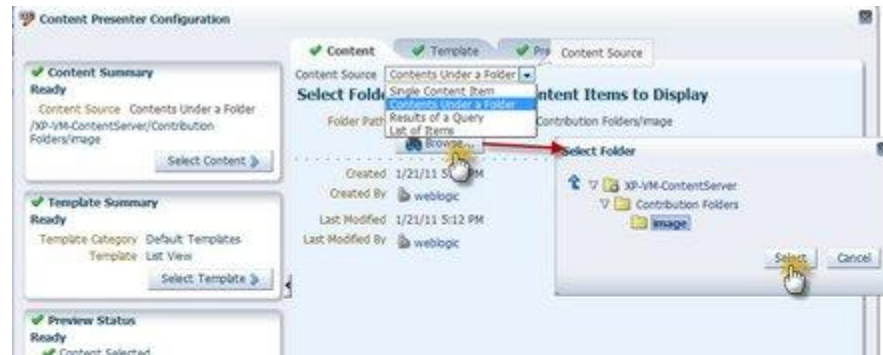
Content Management

Search

- All Content
 - All content you have access to
 - Open
- Content Presenter
 - Select document(s) and display in predefined template
 - Add
- Document Explorer
 - Explore files and folder
 - Add
- Document List Viewer
 - List documents
 - Add
- Document Navigator
 - View content hierarchy
 - Add
- Folder Viewer
 - View and manage content of a folder
 - Add

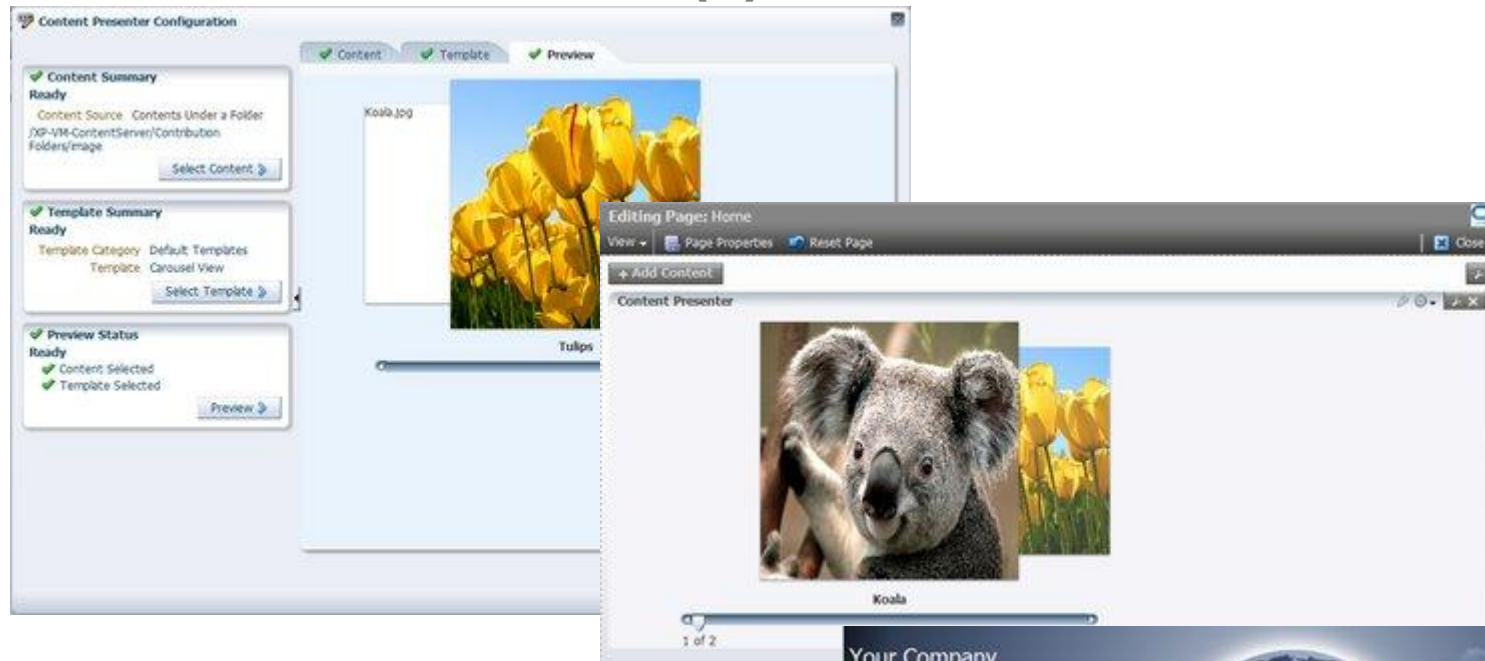


RUN TIME ADDING CONTENT TO WEB APPLICATION (2)





RUN TIME ADDING CONTENT TO WEB APPLICATION (3)



WebCenter
Content (UCM)
Content
Repository

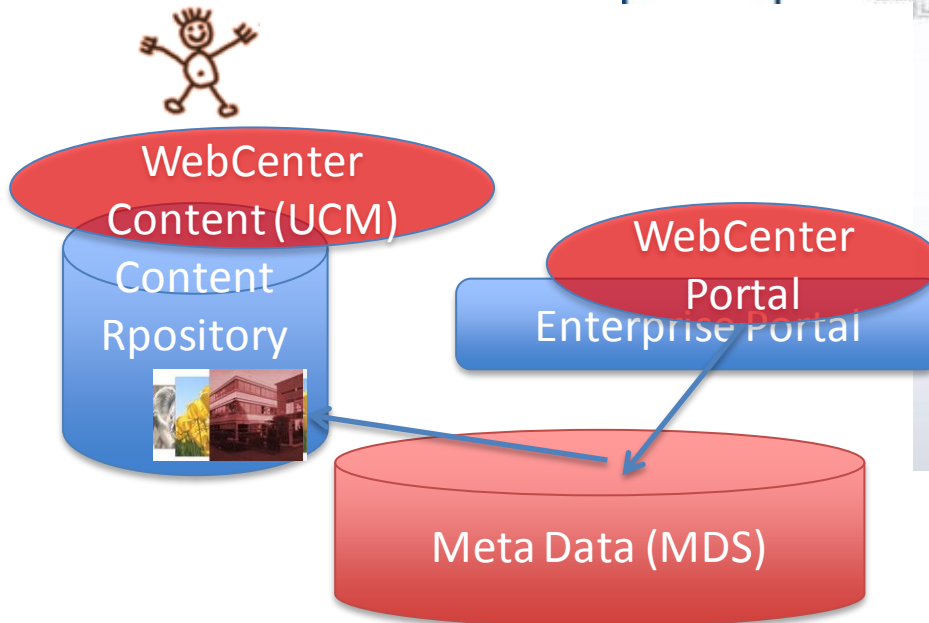
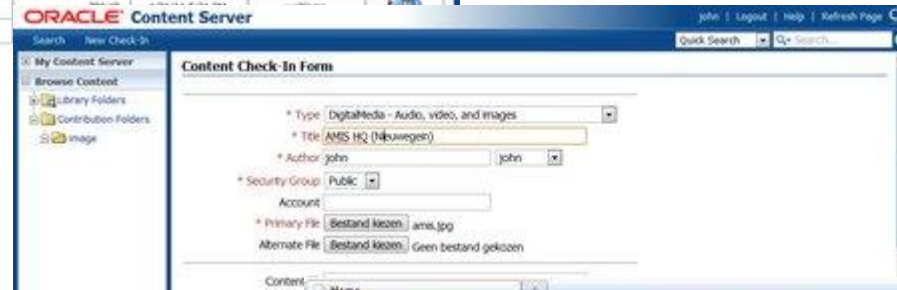
WebCenter
Portal
Enterprise Portal

Meta Data (MDS)



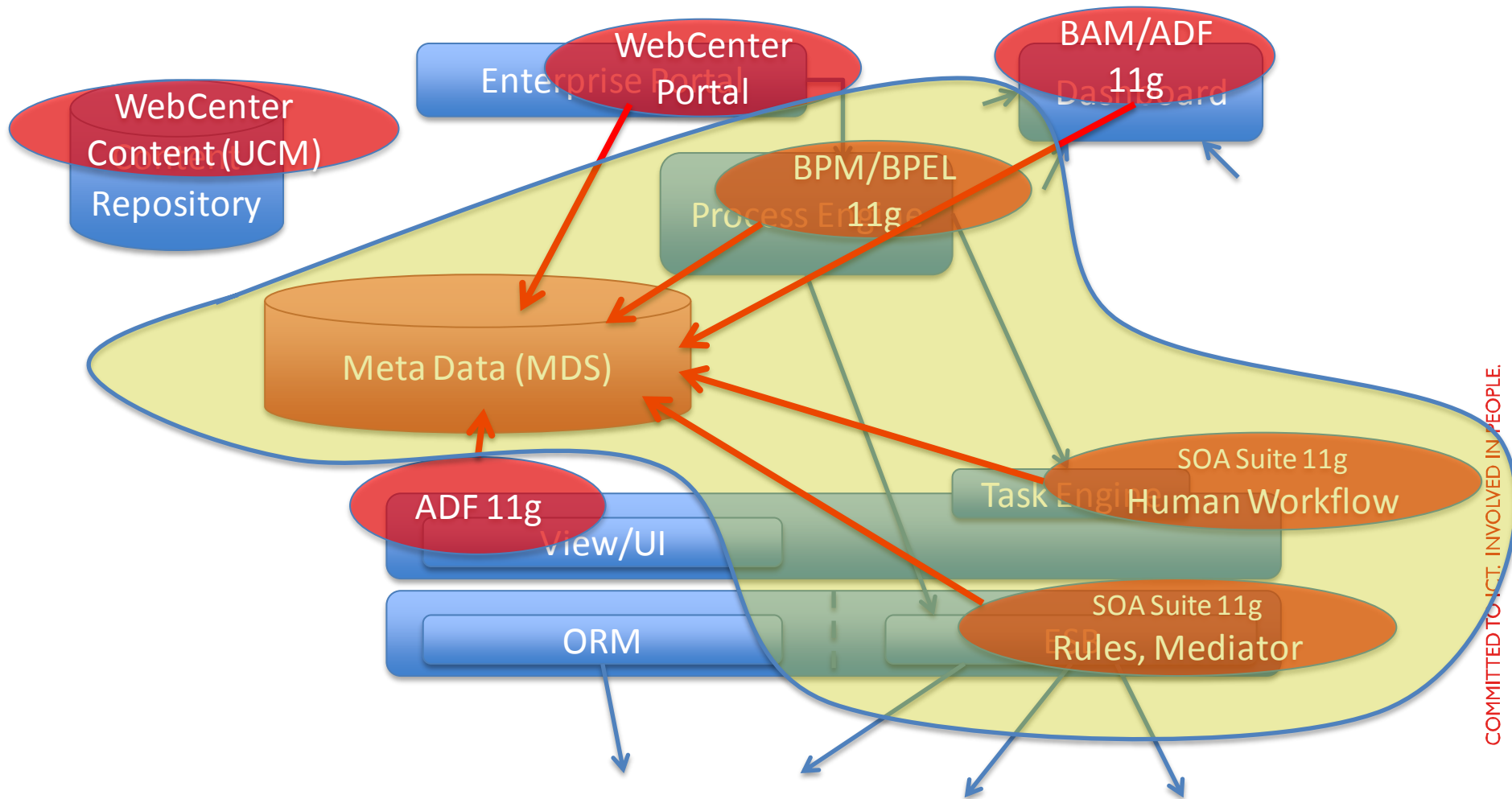


RUN TIME CONTENT EDITING – THROUGH UCM – IMPACTS WEB APPLICATION





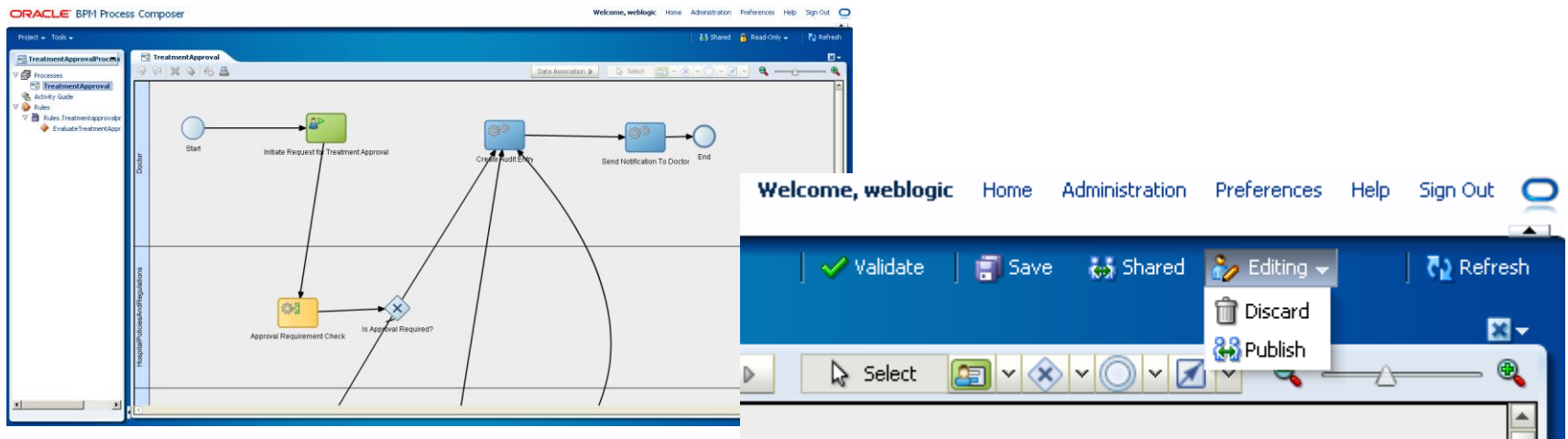
RUN TIME META DATA IN ORACLE FUSION MIDDLEWARE





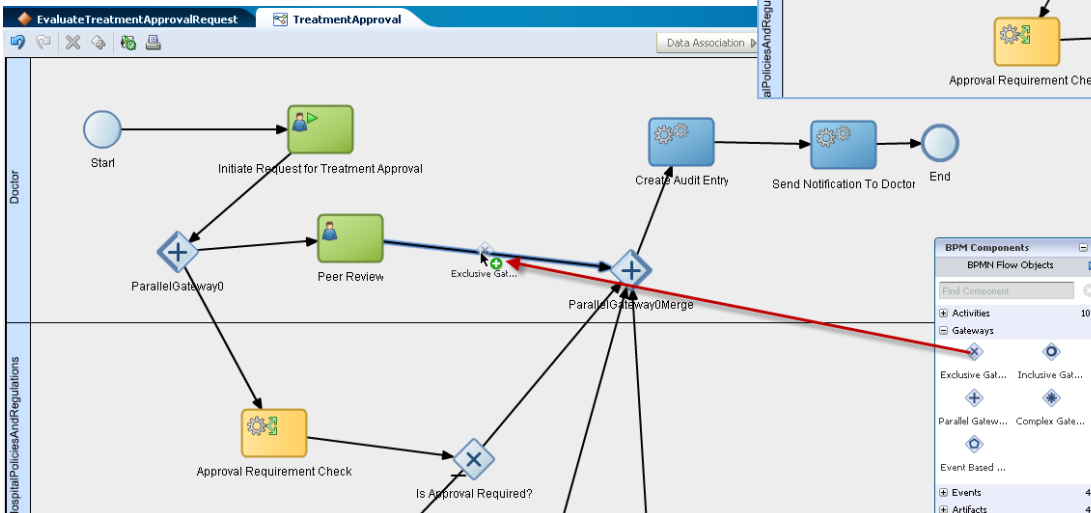
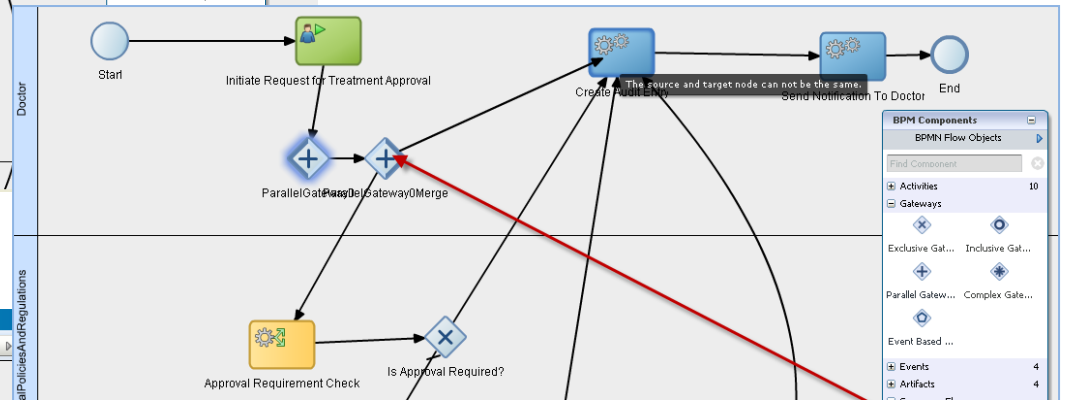
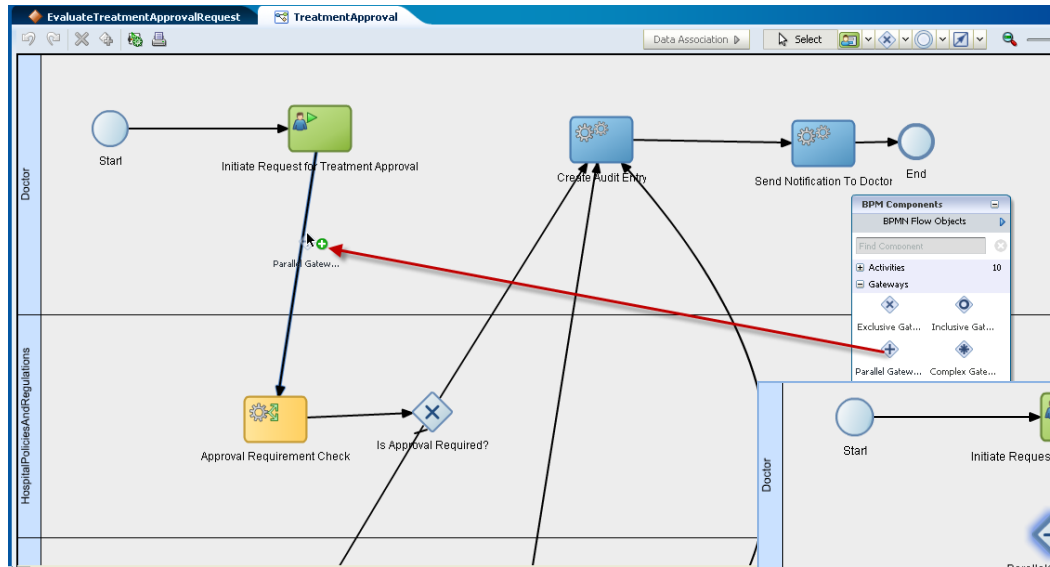
DESIGN TIME @ RUN TIME BPM PROCESS COMPOSER

- **Browser based User Interface that exposes process models for reviewing as well as editing**
 - Interacts with BPM Studio (JDeveloper) via MDS
 - For example analysts and business users creating the abstract process model and developers implementing it
 - Can also deploy revised BPM models to the run-time
 - Similar to SOA Composer, yet targeted at analysts
- **<http://host:port/bpm/composer>**

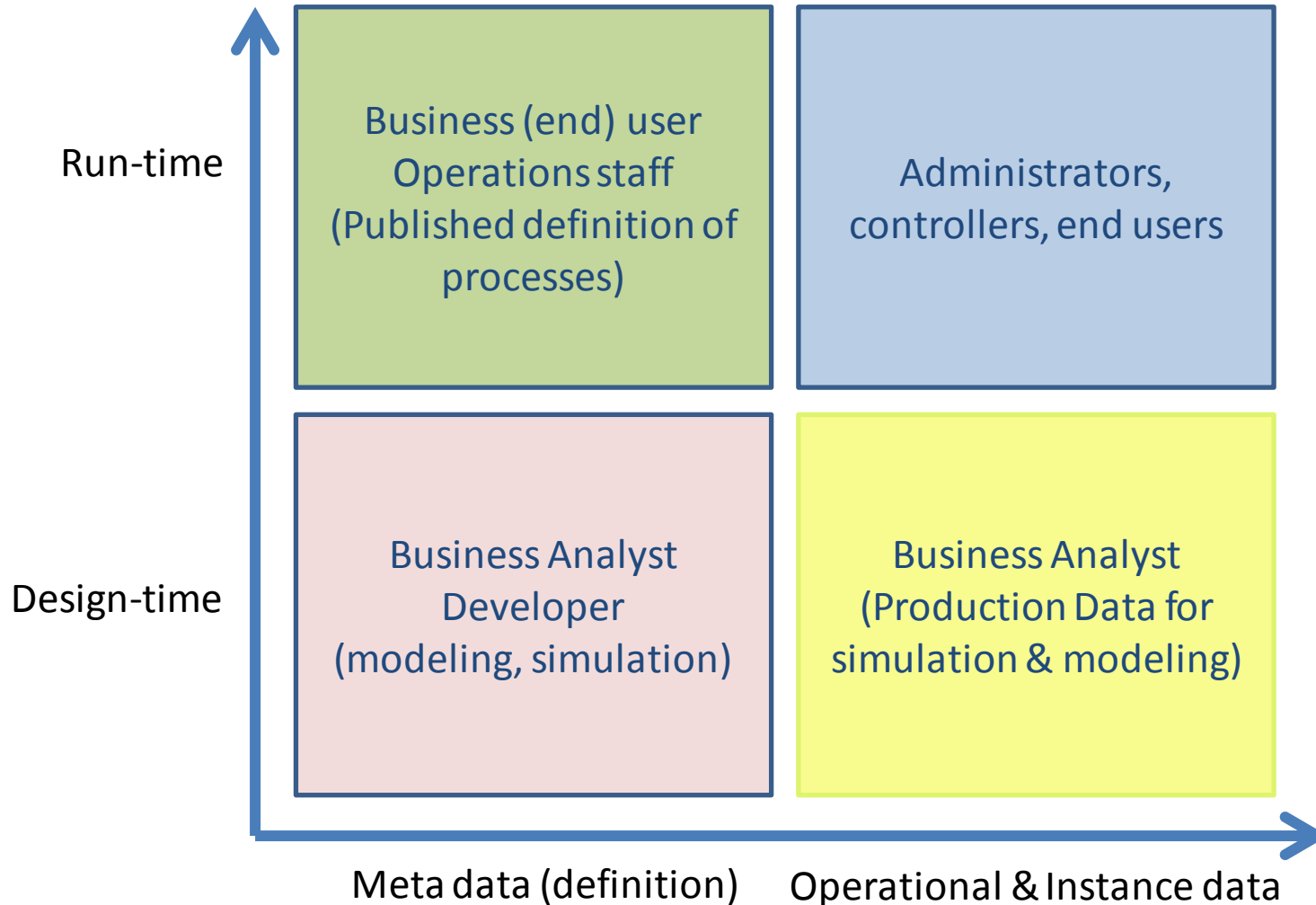




ON LINE PROCESS REVISION

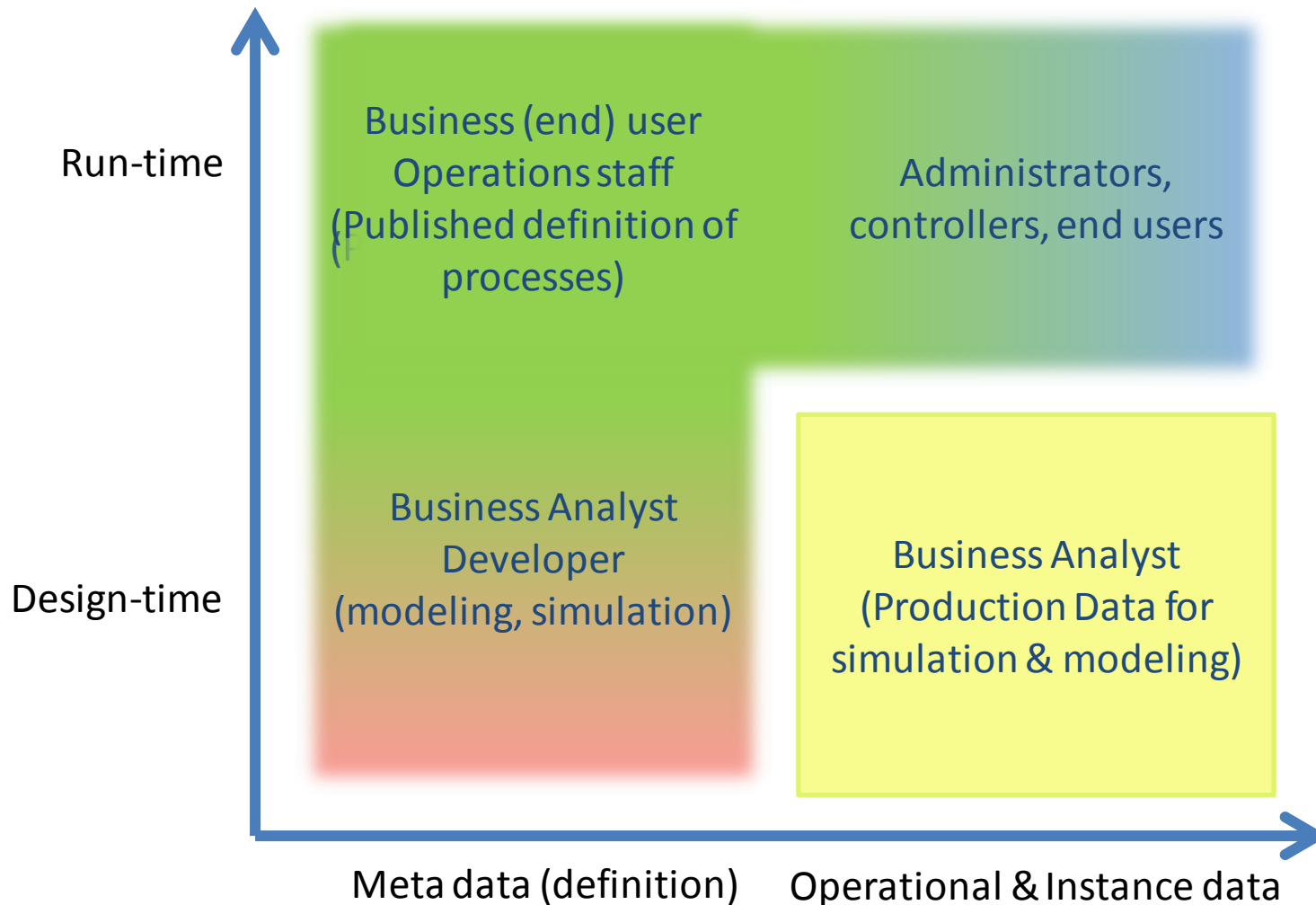


TIME, LEVEL AND STAKEHOLDERS



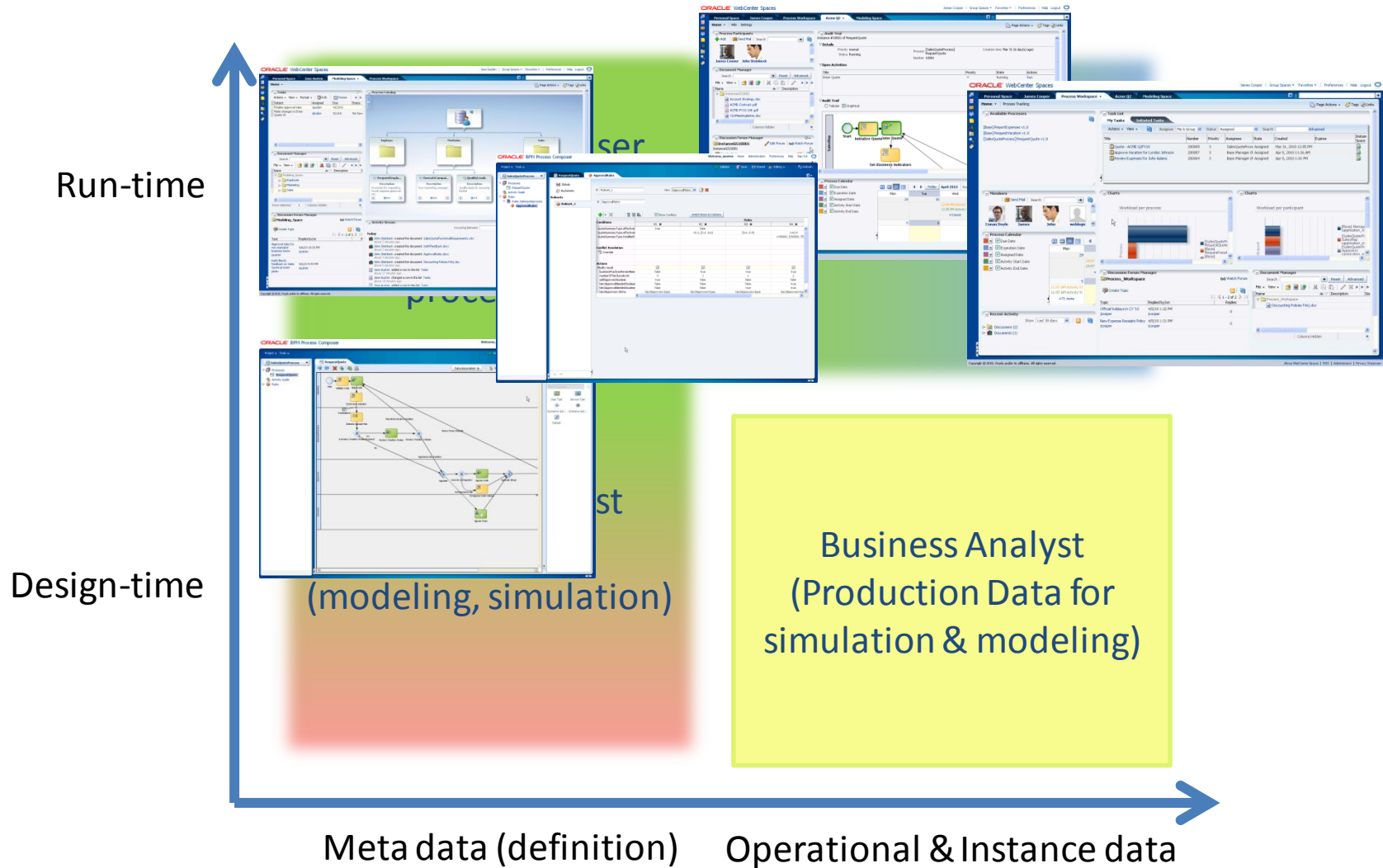


ORACLE BPM 11G BLURS THE LINES





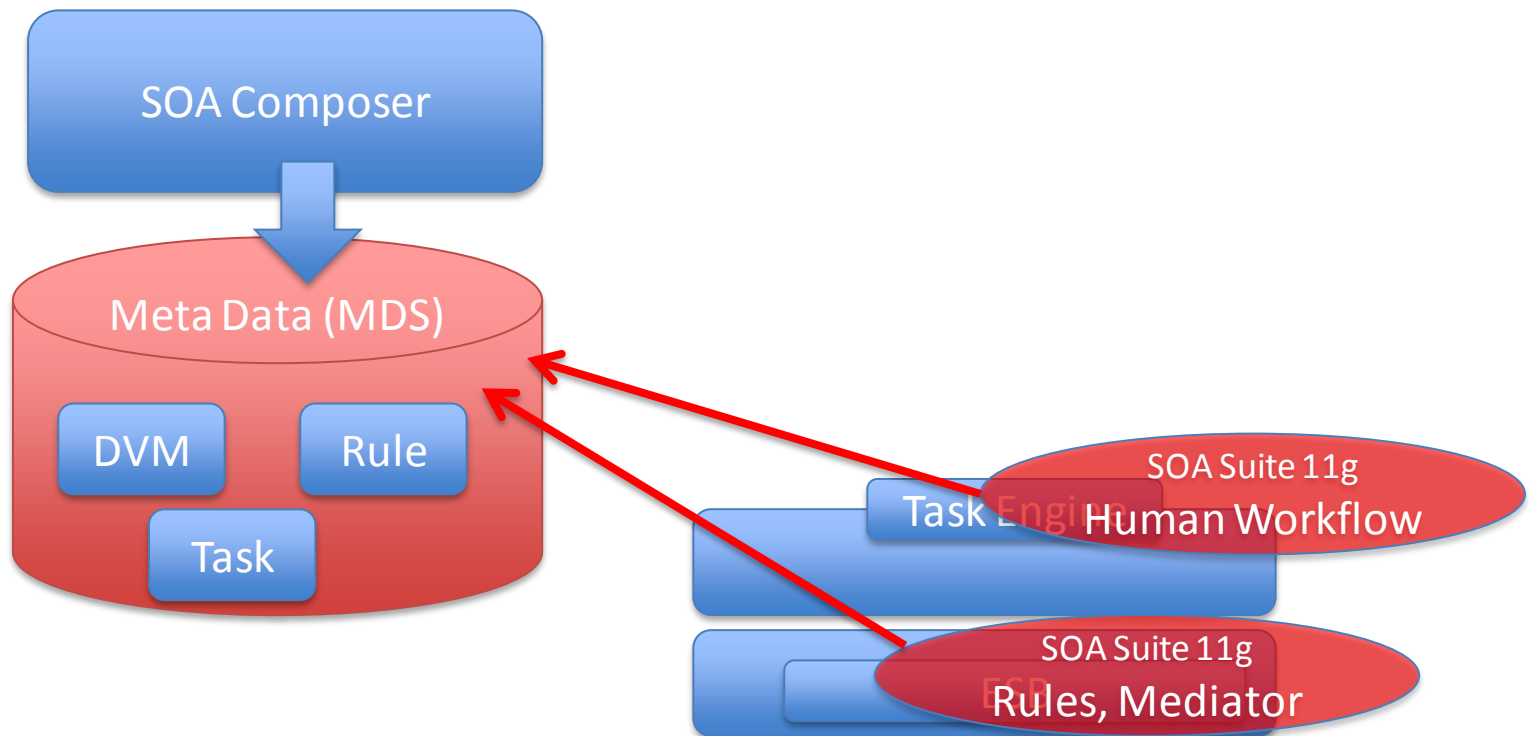
ORACLE BPM 11G BLURS THE LINES





SOA COMPOSER RUN TIME META DATA IN ORACLE FUSION MIDDLEWARE

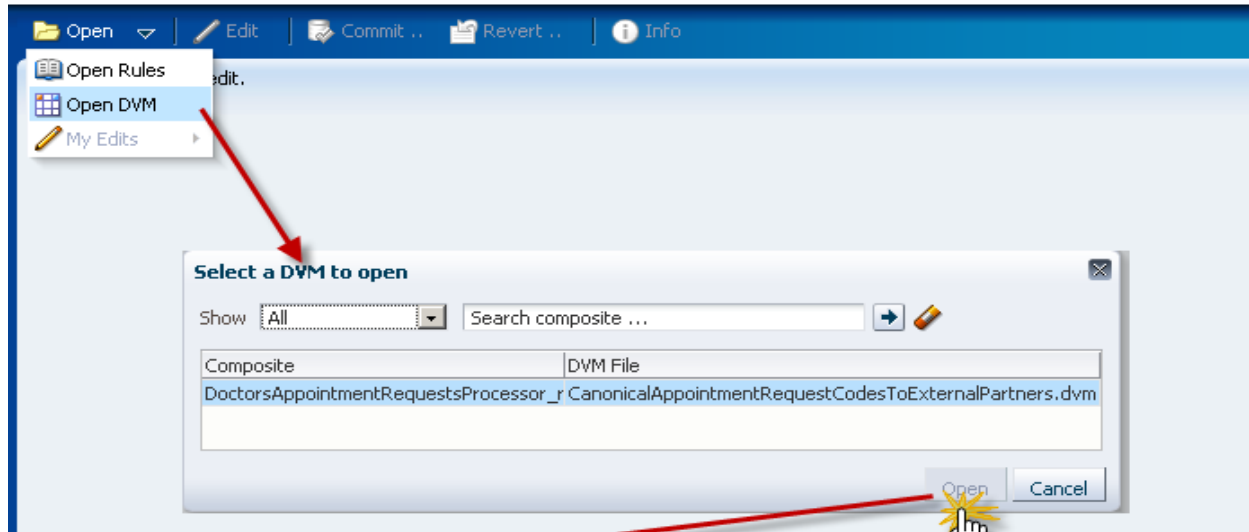
- **SOA Suite 11g stores Business Rule, Domain Value Map and Task Definition in MDS**
- **Live editing (runtime environment) through SOA Composer**



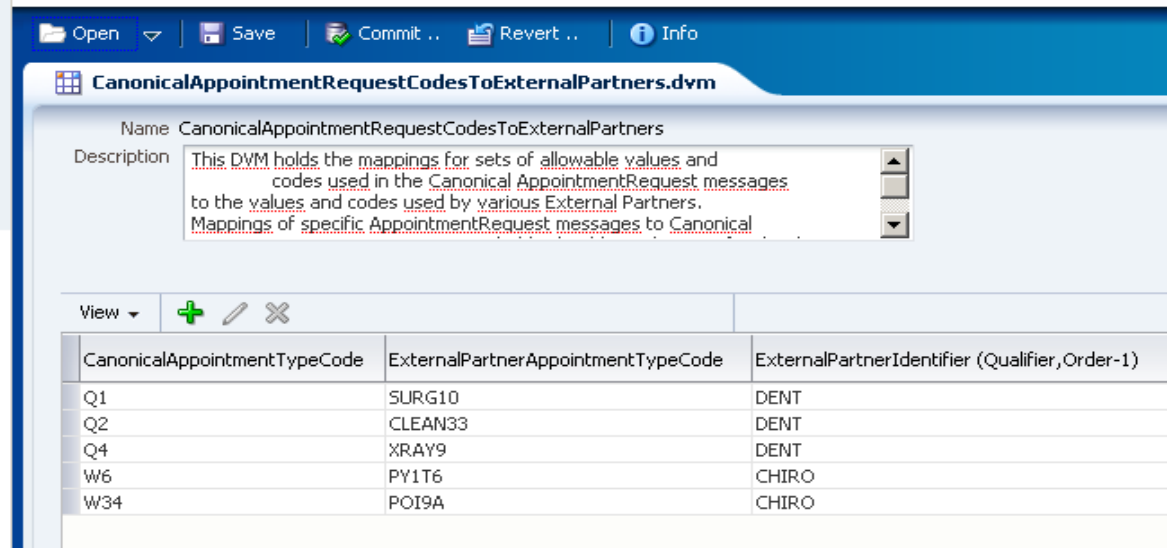


SOA COMPOSER AND DOMAIN VALUE MAP

ORACLE SOA Composer



ORACLE SOA Composer





EDITING DECISION TABLE BUSINESS RULE IN SOA COMPOSER

- The Decision Table can be reviewed and edited at run time in SOA Composer
 - Note: bucketsets can be managed too
- Note: Commit means ‘publish to live environment’

ORACLE SOA Composer

AppointmentPriorityRuling.rules

EstablishAppointmentPriority

View: PriorityDerivationTable

Effective Date: Always

PriorityDerivationTable

Switch Rows to Columns

Conditions	R1	R2	R3	R4	R5
PriorityRulingRequestType.bmi	Healthy (weightwise);Ov	Very Obese;Morbid Obes			
PriorityRulingRequestType.originalPr	Lower;Normal;Higher;Low	All	Higher	Very high (urgent!)	
PriorityRulingRequestType.state	otherwise	<input type="checkbox"/> Underweight	Home State St. Matthew:		
getAgeFromBirthdate(PriorityRulingF	Medium	<input type="checkbox"/> Healthy (weightwise)			
		<input type="checkbox"/> Overweight			
		<input type="checkbox"/> Obese			
		<input checked="" type="checkbox"/> Very Obese			
		<input checked="" type="checkbox"/> Morbid Obese			
Conflict Resolution					
Override	R5		R5	R5	
Actions					
Assert New PriorityRulingResponseT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
derivedAppointmentPriority:String	DerivedPriority.Low	DerivedPriority.High	DerivedPriority.High	DerivedPriority.High	DerivedPriority.Normal
originalPriority:Integer	PriorityRulingRequestTy	PriorityRulingRequestTy	PriorityRulingRequestTy	PriorityRulingRequestTy	PriorityRulingRequestTy

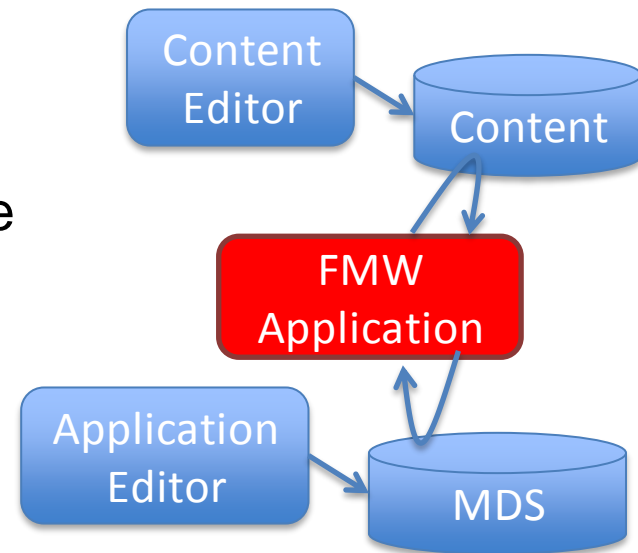


INSTRUCTIONS FOR DEVELOPER TO ENABLE DESIGN @ RUN

- **Configure ADF Customization in applications**
 - Including appropriate customization layers
- **Add Panel Customizable to page**
- **Configure Edit (Page) privilege**
- **Use Business Rules for calculations, validations, decisions**
- **Use Domain Value Maps for conversions and system parameters**
- **Leverage WebCenter Services**
- **Publish Events**
 - ADF contextual events from View
 - EDN Business Events from BPM, BPEL, ADF BC, ...
- **Externalize constants, content and dependencies**
 - to central parameter store, CMS and injection mechanisms

- **Who does run time editing? What is the new role called?**
 - Application Editor? Run-time Composer?
 - (what is an *application* in today's IT landscape?)
- **Approval process (from editing to live)**
- **Administration of MDS Repository**
- **Test procedures for live application changes**
- **Distribute customizations**
- **Have customizations survive application upgrades**
- **Feed back run time customizations to development?**
- **How are 'running instances' and 'on line users' impacted by new customizations?**

- **A higher degree of agility – and an application that more accurately and rapidly follows business needs**
- **Can be achieved through ‘design time at run time’:**
 - application editing in (or near) the run time environment
 - Very similar to editing of content items
- **Oracle Fusion Middleware provides an infrastructure for design time at run time**
 - MDS Repository
 - Content Server (UCM)
 - ADF Change Persistence and Customization
 - WebCenter Composer
 - SOA Composer
 - BPM Composer



- **For design time at run time to be effectively used, the applications and processes need to be prepared**
- **The actual ‘live application editing’ is a very important task – the pivotal action for instant agility**
 - Application editing requires very good understanding of the business requirements
 - Application editing is still a fairly *technical* operation that requires deep insight in application and tools
- **The process for making changes, testing, authorizing and publishing them needs to be defined**
- **The feedback loop to development needs to be established**
 - To perhaps add a more advanced implementation of the new requirement in the base product
 - To at least not interfere with the run time additions



APPLICATION SETTINGS FOR CUSTOMIZING APPLICATION BEHAVIOR

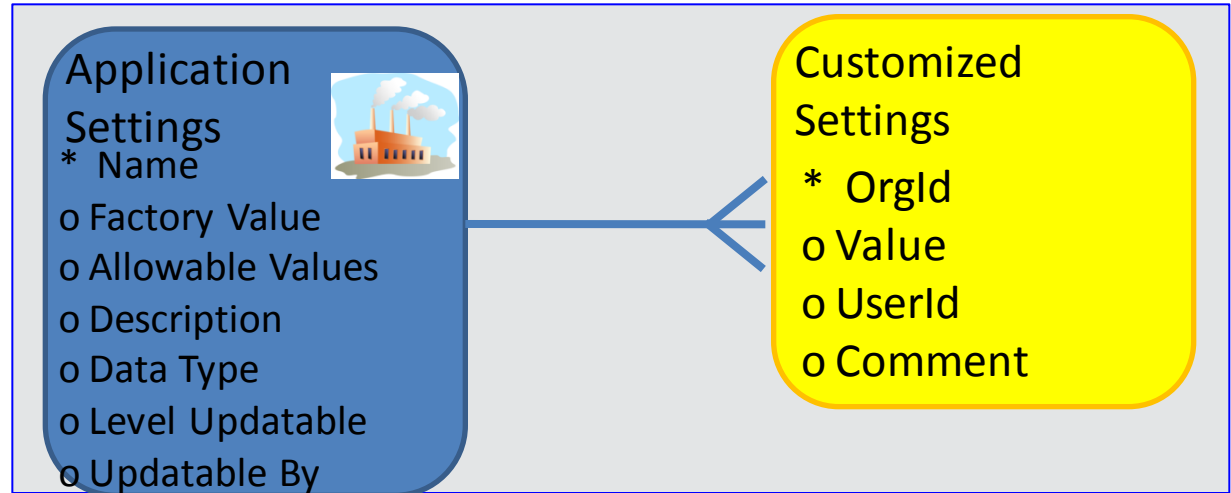

- **Some Application Behavior is developed as *dynamically configurable***
 - Through Preferences or Application Settings
 - *Display*: Locale, Format, Units for Height and Weight (converter parameters), feature on/off
 - *Business logic*: Default Values for new records, Validation parameters, Field & Button Authorization
 - *Styling*: Images, Fonts, Colors, Skins/Themes
- **Settings can be configured at Factory (default), Organization and User level**
 - At run-time through self service pages



INTEGRATING APPLICATION SETTINGS DURING DEVELOPMENT

`#user.settings['NAME']`

APPLICATION SETTINGS DATA MODEL

Date Format	dd-mm-yyyy
Use Photo	Y
Metric/ Imperial	m
...	

	mm/dd/yyyy
	dd-mm-yy
	N
	Y
	N
	i



Application Settings Management

Manage Application Settings

Name	Description	DataType	FactoryValue	OverrideLevel	Value	CustomizationDescription
VARIABLE_INCOME	Support for variable income (financial bonuses).	string	yes	Organization	no	This organization does not believe in absur
MAXIMUM_SALARY	What is the highest amount allowed for salaries?	number	999999	Organization	9000	
HIREDATE_IS_UPDATABLE	The hiredate for the employee can be changed (or not)	string	no	Organization		
DATE_FORMAT_PATTERN	What display format should be used for date values	string	MM/dd/yyyy	Individual User	yes	
HIGH_SALARIES_BACKGROUND_COLOR	Which color should be used to mark high salaries?	string	yellow	Individual User	no	
HIGH_SALARY_LIMIT	What is the threshold value for high salaries?	number	3000	Organization		

[Cancel](#)
[Save](#)


Employee Form



Employees Table



Department Form



D



Overview of Employees

Identifier	Surname	Position or Role	Manager	Start Date	Salary	Department
7369	SMITH	BOSS	7902	12/17/1981	1600	20
7499	ALLEN	SALESMAN	7698	02/20/1981	1765	30
7521	WARD	SALESMAN	7698	02/22/1981	1375	30
7566	JONES	MANAGER	7839	04/02/1981	3272.5	20
7654	MARTINA	SALESMAN	7698	09/28/1981	1375	30
7698	BLAKE	MANAGER	7839	05/01/1981	3135	30
7782	CLARK	MANAGER	7839	06/09/1981	2900	20
7788	SCOTT	ANALYST	7566	12/09/1982	3000	30
7839	KING	PRESIDENT		11/17/1981	5500	10
7844	TURNER	SALESMAN	7698	09/08/1981	1455	30