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Oracle Business Intelligence 11g Masterclass

Actionable Intelligence and the Oracle BI EE 11g Action Framework

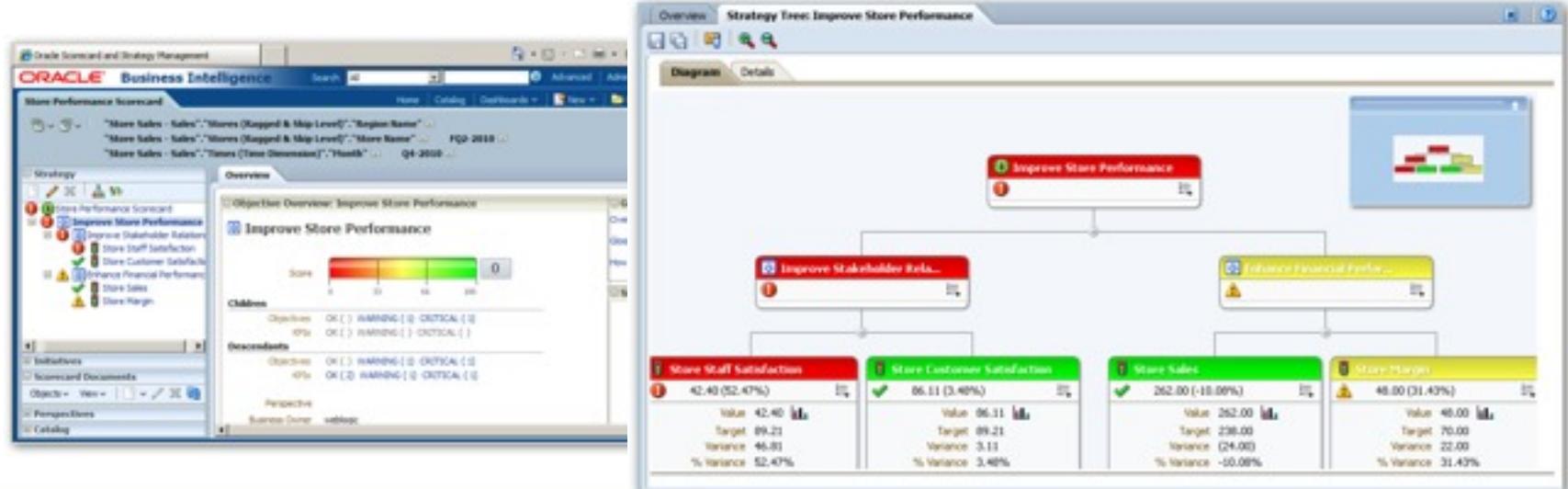
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Agenda

- The case for actionable intelligence
- The OBIEE 11g Action Framework
- Action Types
- Navigation Actions
- Associating Actions with Columns
- Conditional Actions
- Invocation Actions
- Registering Invocations
- Security and Passing Credentials
- Actions and KPIs, Scorecards and Dashboards

Insight into Action : The Value of Actionable Business Intelligence

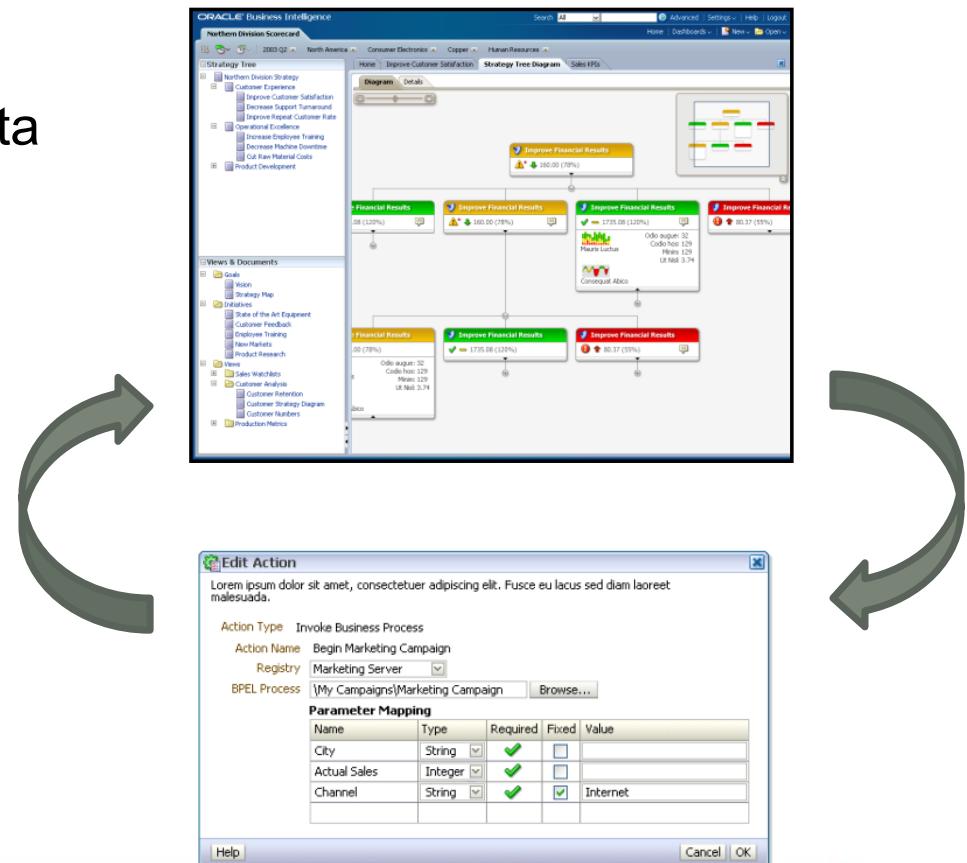
- Business Intelligence used to understand performance of business processes.
- Business Intelligence can help drill into and understand cause of issues and identify opportunities.
- But....
 - ▶ When issue is identified, what action do I take?
 - ▶ And how should I take it?



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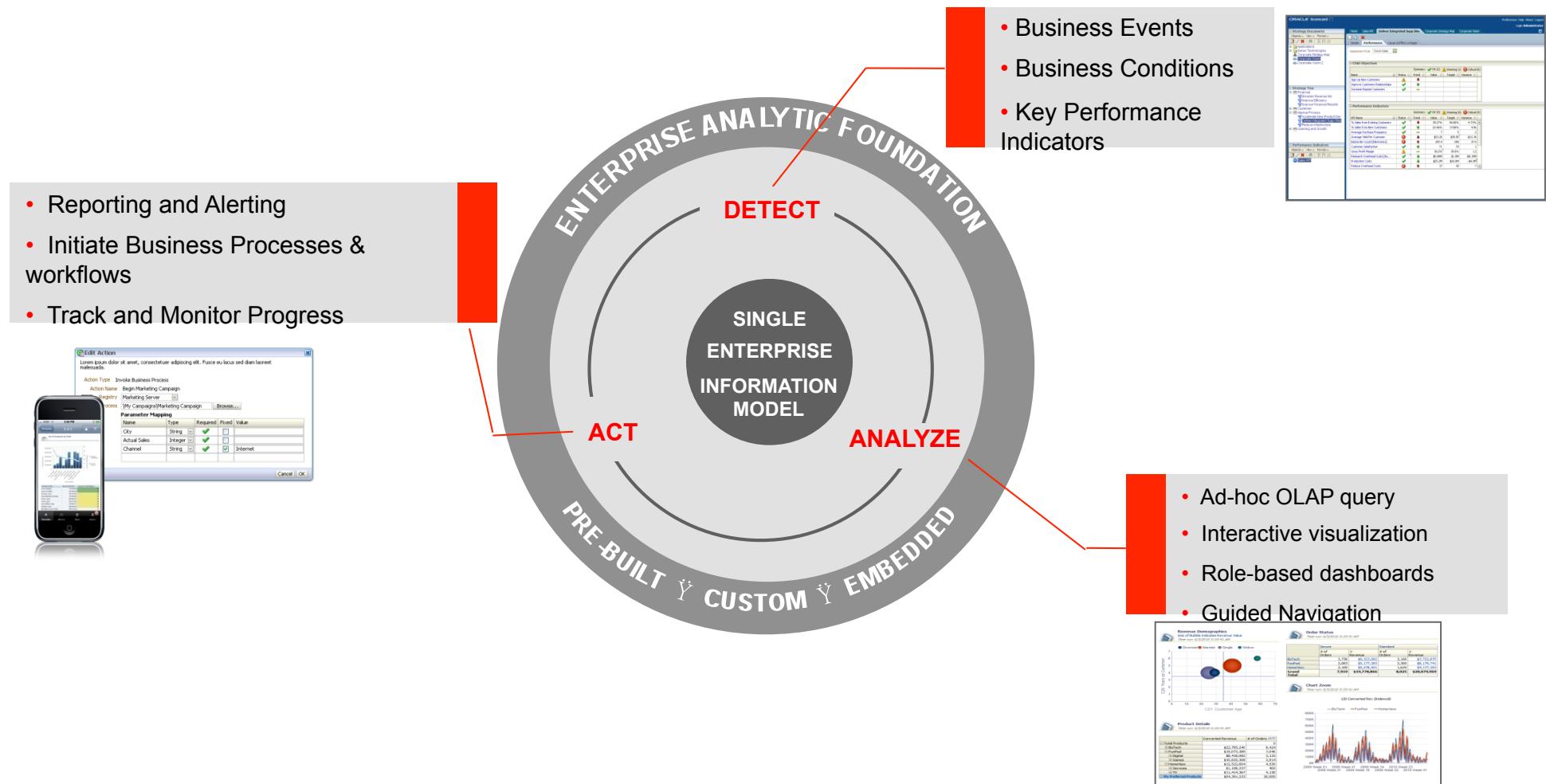
Design Principles for Actionable Intelligence

- Understand what action to take when specific business conditions occur
- Enable business users to directly take action in context
- Drive actions from business intelligence data
- Secure actions so that only appropriate users can take given actions



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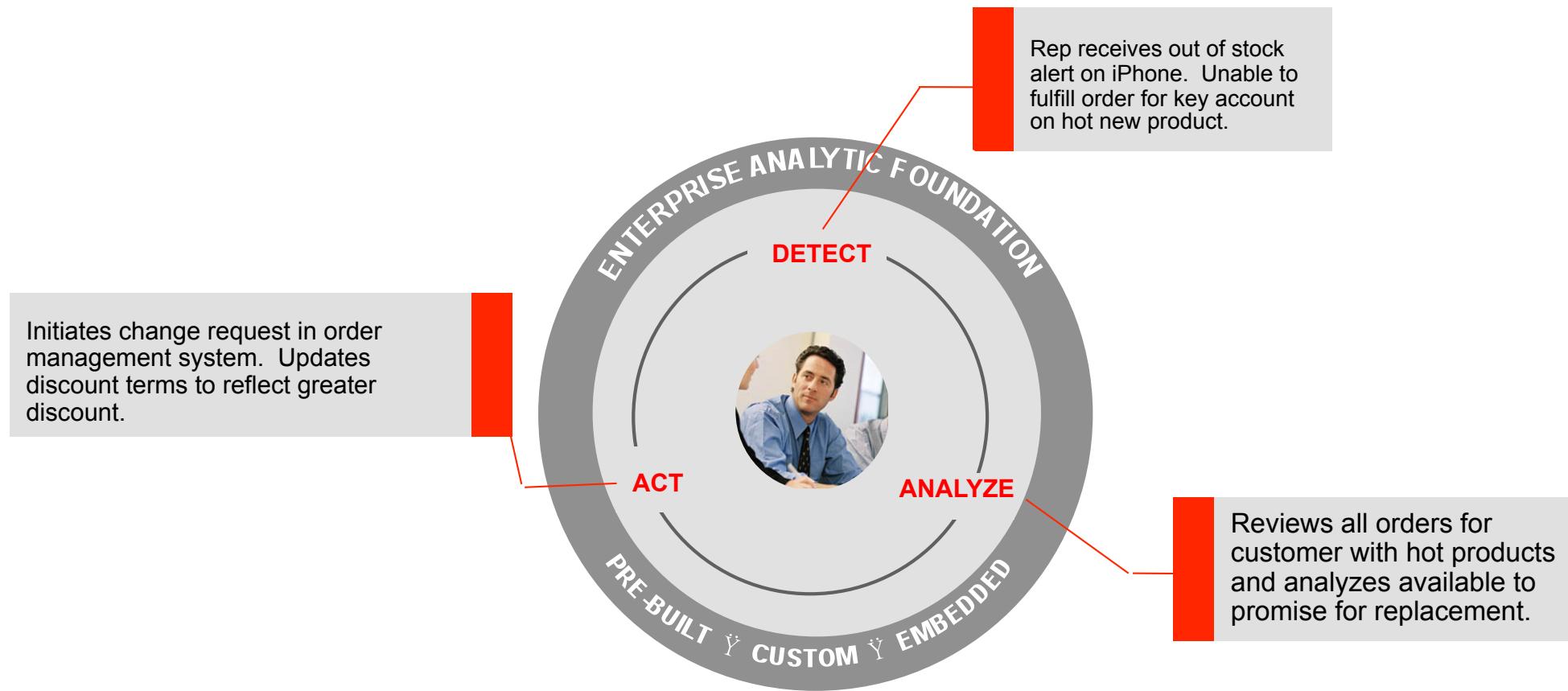
OBIEE 11g Product Concept - “Closed Loop Analytics”



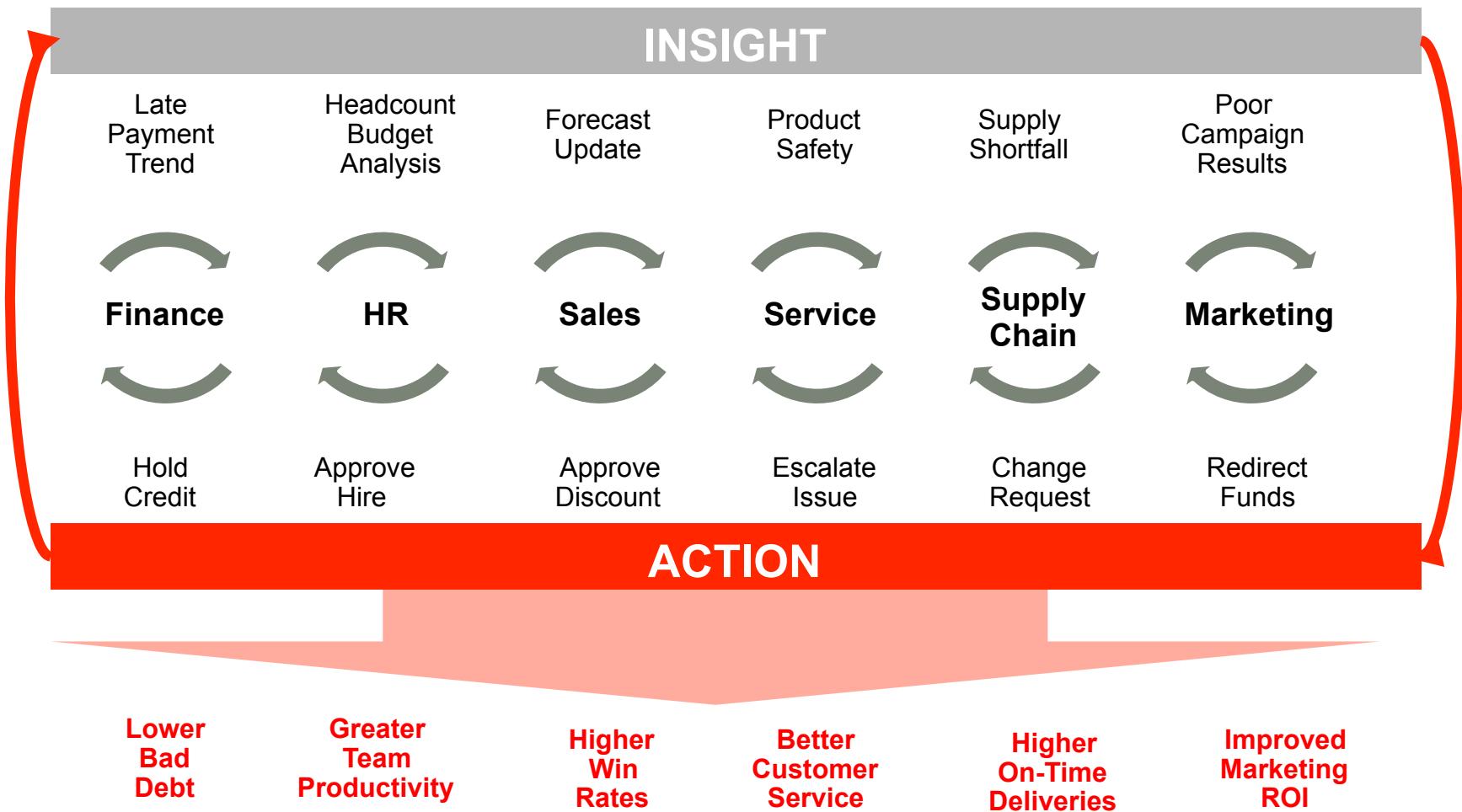
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Closed Loop Analytics Example

- Sales rep for Consumer Electronics Manufacturer

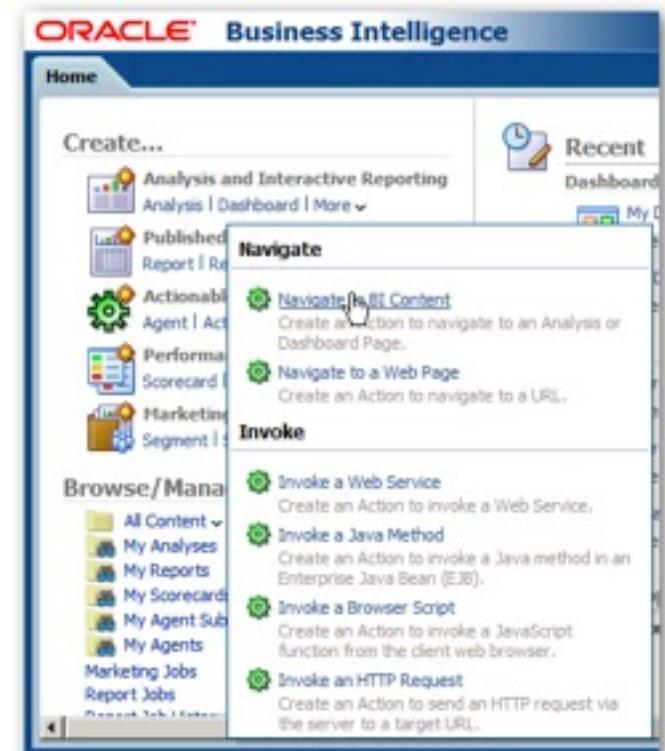


Linking Insights to Action Shortens the Decision Cycle Time



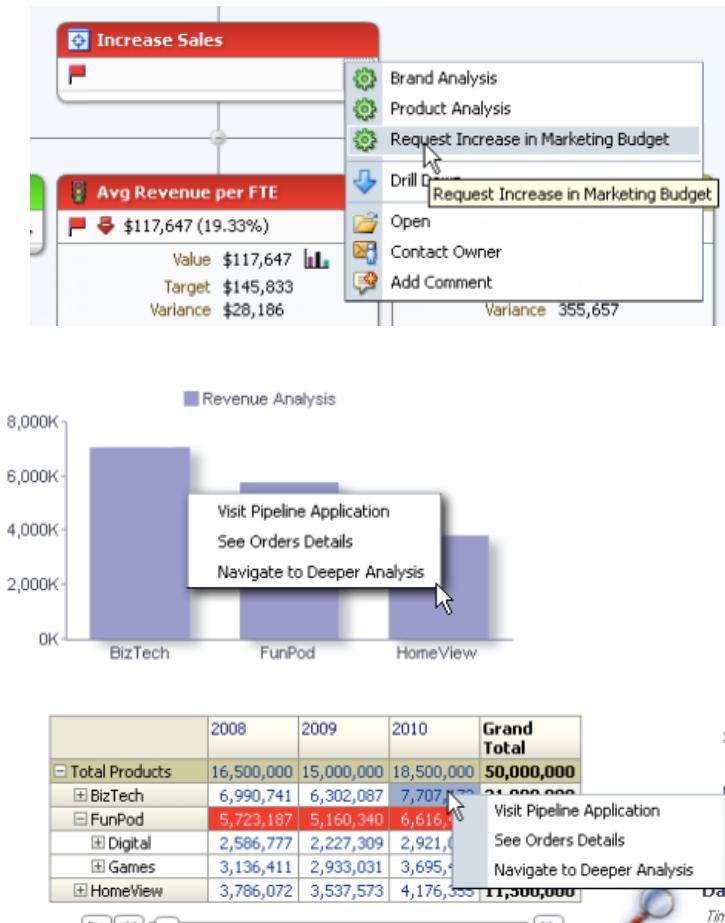
The OBIEE 11gR1 Action Framework

- Actions can be defined in the web catalog
- Actions can either :
 - ▶ Navigate to an analysis, dashboard or web page
 - ▶ Invoke a web service, Java method, workflow or other process
- Actions are linked to presentation columns
- Can be made conditional based on analysis data
- Secured like any other webcat object
- Are the logical progression on from request navigations in OBIEE 10g



Consistent, Metadata-Driven Framework

- Actions consistently available for
 - ▶ Adhoc Queries
 - ▶ Charts
 - ▶ Dashboards
 - ▶ Agents (iBots)
 - ▶ Scorecard and KPIs
 - ▶ Spatial and Visualizations
 - ▶ Alerts and Delivered Content
 - ▶ Email, PDF reports

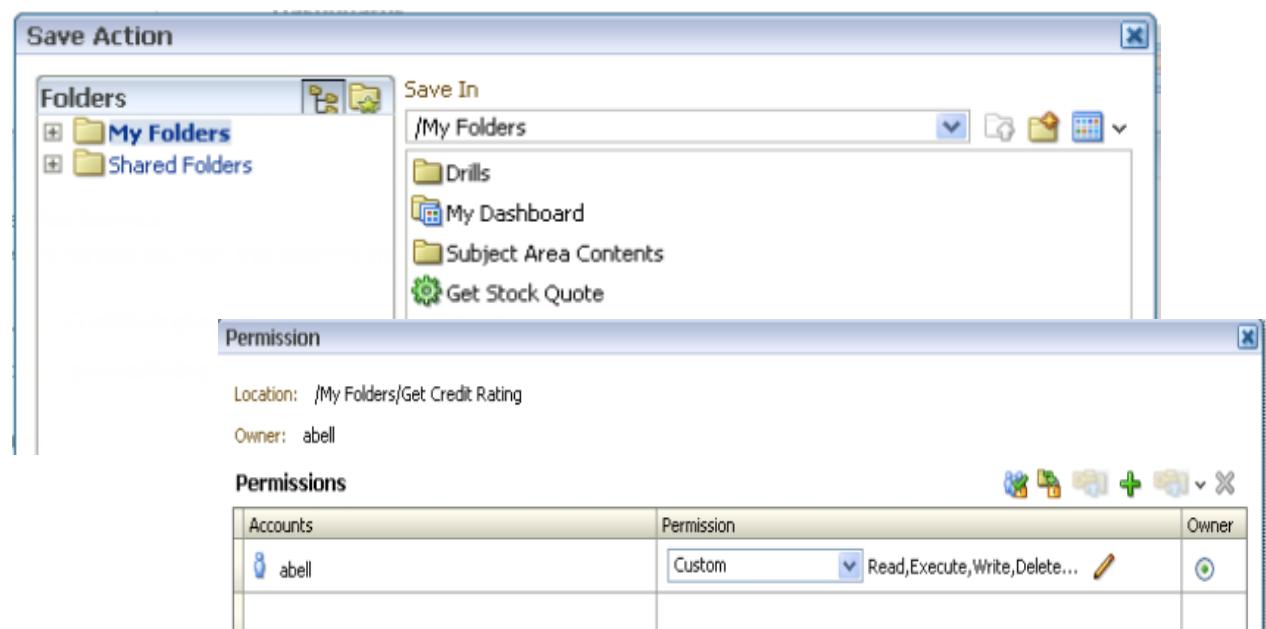


The figure consists of three separate screenshots demonstrating the consistency of actions across different business applications:

- Top Screenshot (Scorecard/KPI View):** Shows a KPI card for "Avg Revenue per FTE" with a value of \$117,647 (19.33% variance from target). A context menu is open over the card, listing actions: Brand Analysis, Product Analysis, Request Increase in Marketing Budget, Drill Down, Open, Contact Owner, Add Comment, and Variance 355,657.
- Middle Screenshot (Bar Chart View):** Shows a bar chart comparing revenue for BizTech, FunPod, and HomeView. A context menu is open over the "BizTech" bar, listing actions: Visit Pipeline Application, See Orders Details, and Navigate to Deeper Analysis.
- Bottom Screenshot (Table View):** Shows a table of product sales data for 2008, 2009, and 2010. A context menu is open over the "Grand Total" cell for 2010, listing actions: Visit Pipeline Application, See Orders Details, and Navigate to Deeper Analysis.

Actions and Security

- As first class metadata, Actions are secured in the BI Catalog by role.
- Actions also securely propagate identity to web services, and Java programs.

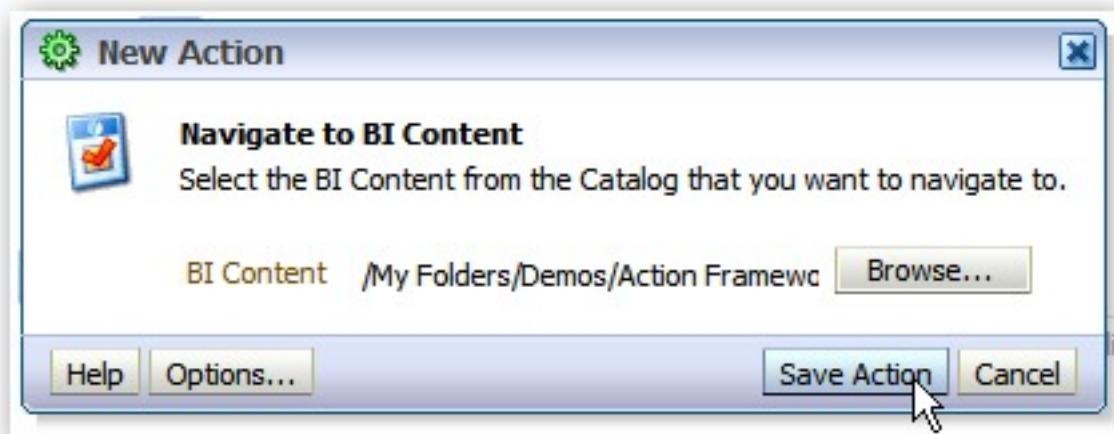


Opportunities for Actions Integration

- Business Performance Optimization
 - Aligning management with operations, closing the loop
 - Encoding best practices for action
 - Extending pervasive delivery by providing actionable insight
- Integration Framework
 - Extend BI to integrate business processes, services and applications
 - Extend BI user interface to incorporate custom UI and interactions
- Collaborative Integration
 - Use Actions to initiate collaboration and human workflows

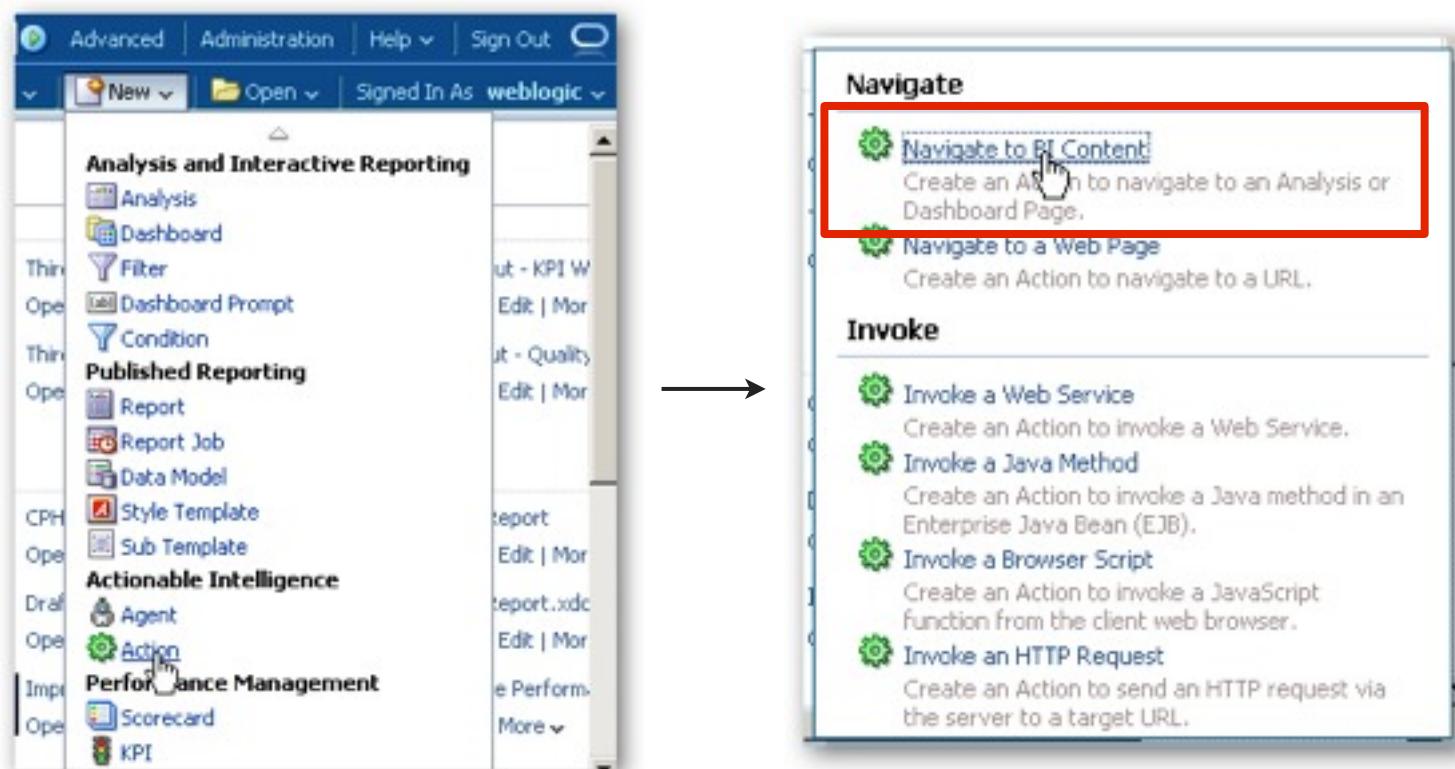
Navigation Actions

- Navigation Actions are links through to other analyses, dashboards and web content
- Navigation to OBIEE content will pass across COLUMN=VALUE for the column that you clicked on
- Navigation to web content can map columns from the clicked-on row to parameters used by the web page
- Used in combination with an Action Link that actually ties the action to a column



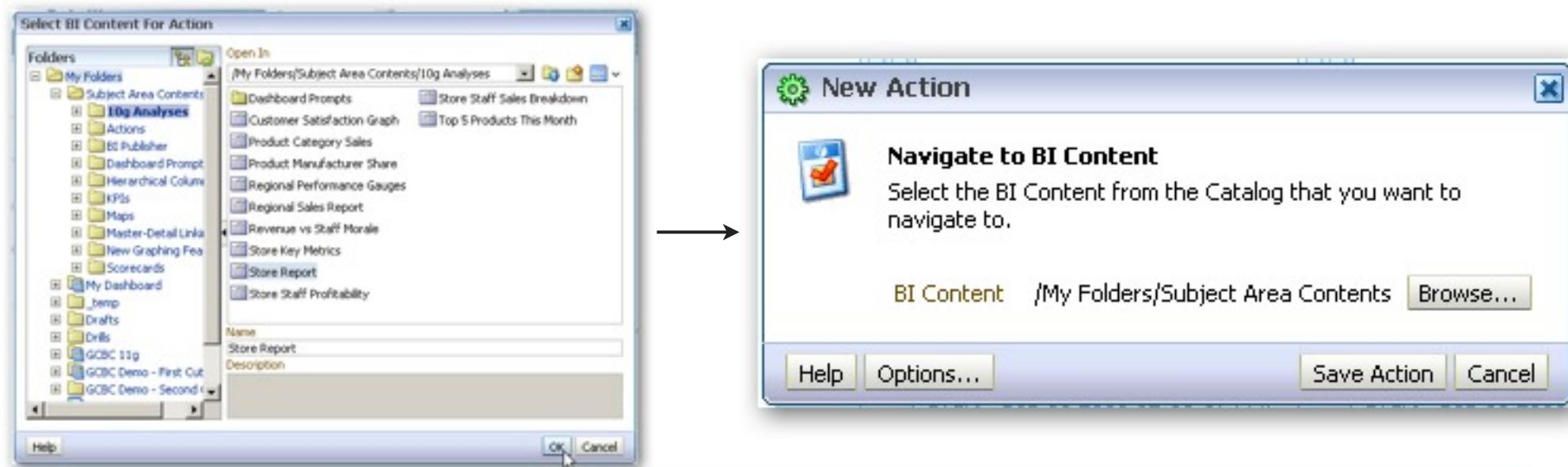
Navigate to BI Content Action Step 1 : Create and Select Action

- Select **New > Action** from common header menu
- Select **Navigate to BI Content** from the Action Framework : **Navigate** menu



Navigate to BI Content Action Step 2 : Select BI Content

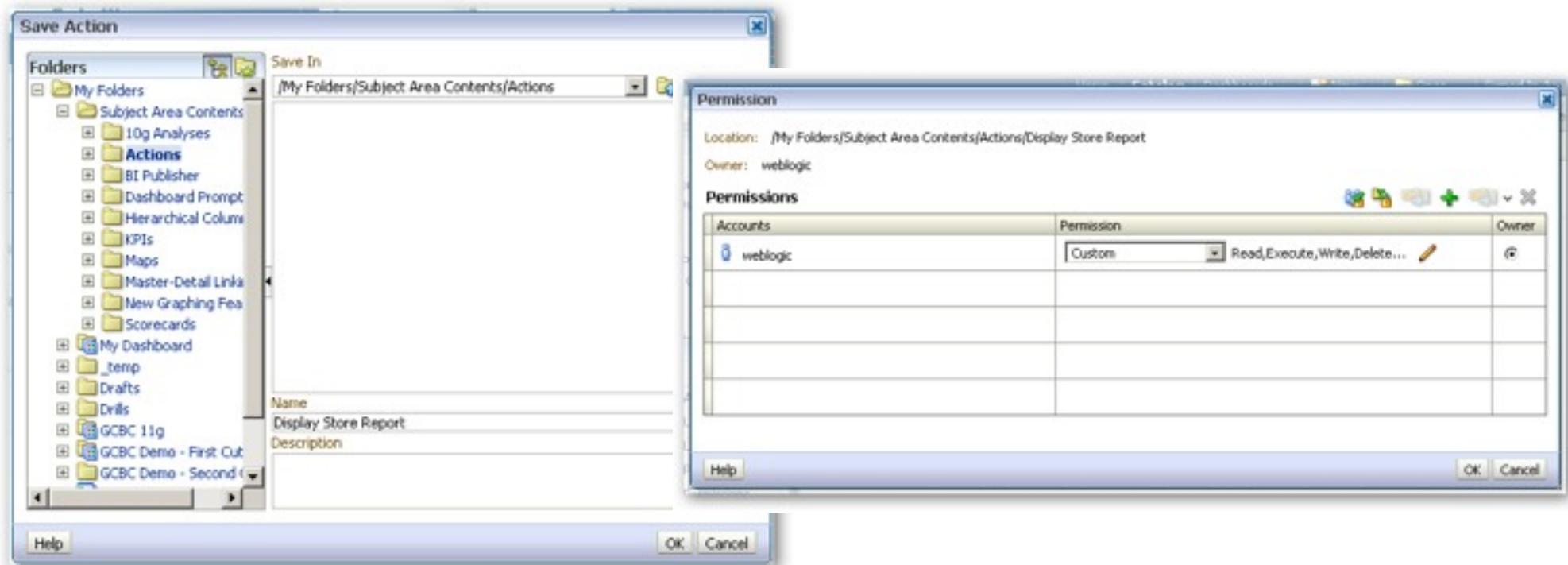
- Select BI Content to navigate to from webcat
- Optionally set action label, confirmation dialog etc
- No parameter mapping - handled automatically by Answers
 - COLUMN = VALUE passed from calling analysis
 - Is Prompted filter used on target BI content



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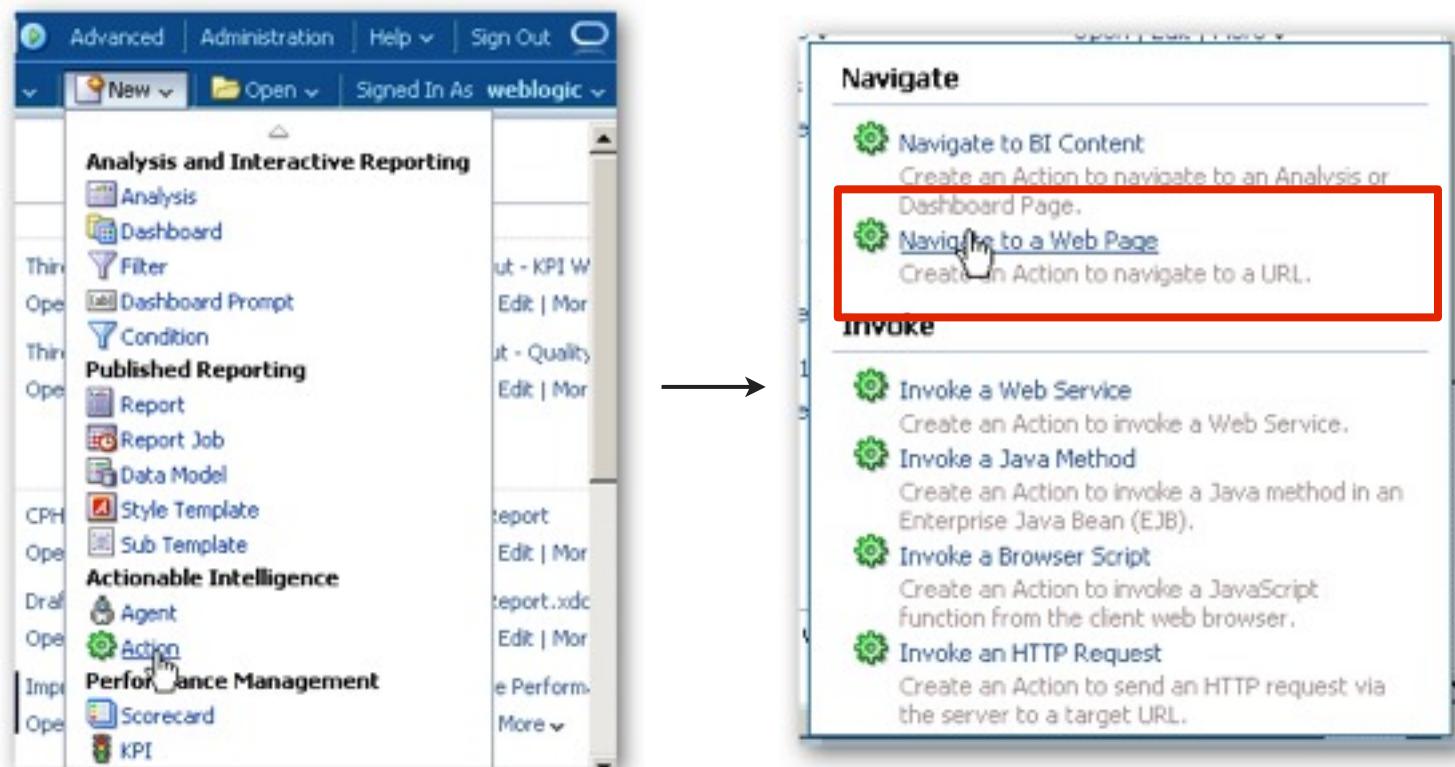
Navigate to BI Content Action Step 3 : Save to Web Catalog

- Action is saved to the web catalog alongside analyses, dashboards etc
- Right-click and select **Permissions** to change permissions for action



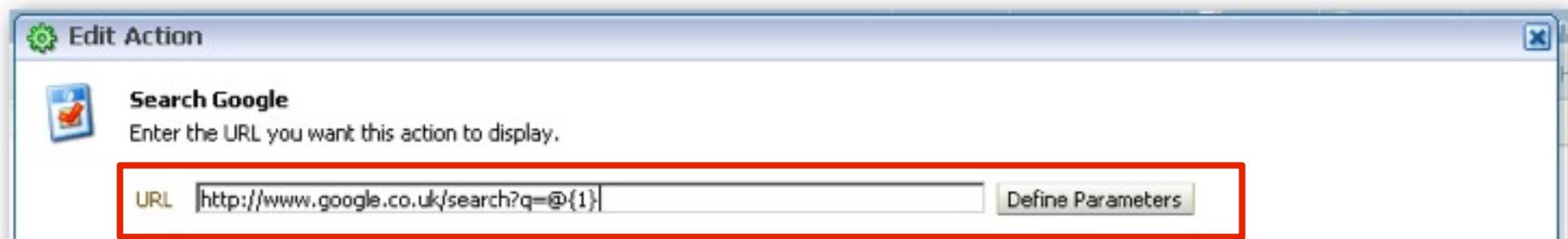
Navigate to a Web Page Action Step 1 : Create and Select Action

- Navigate actions can also be to web pages
- Select **New > Action**, then select **Navigate to a Web Page** from menu



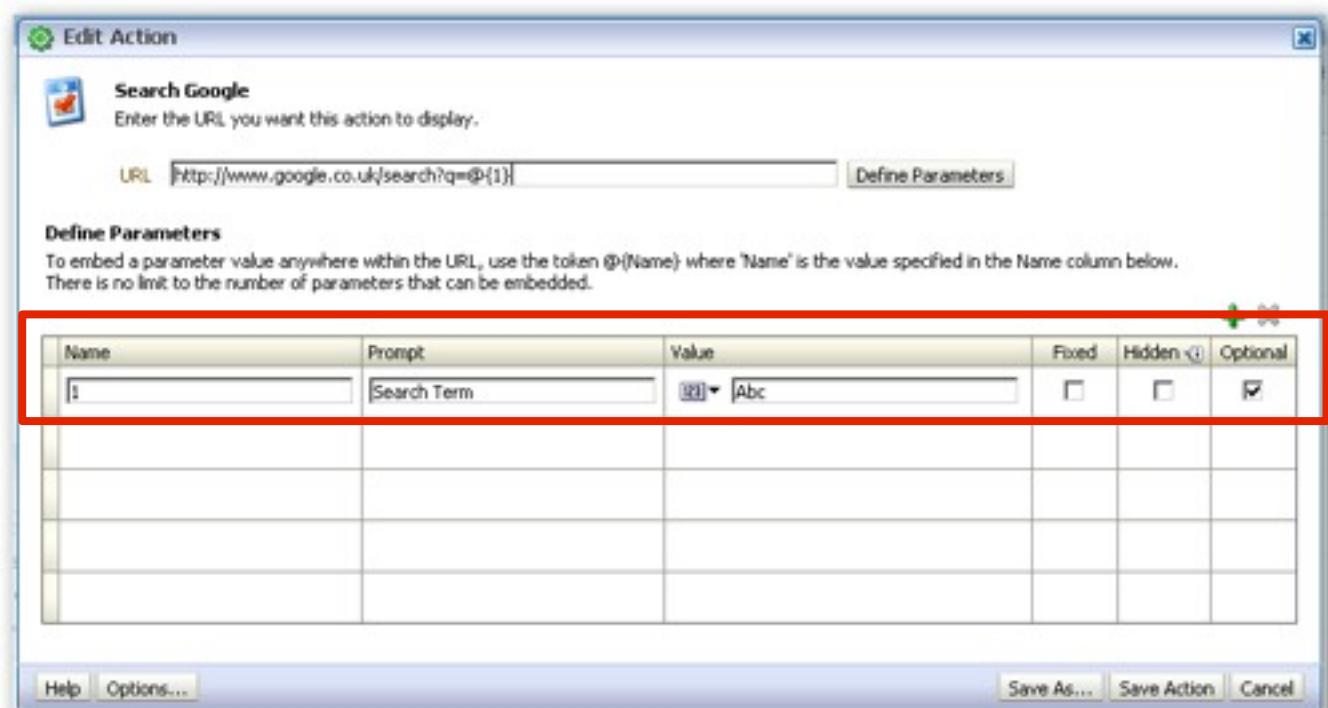
Navigate to a Web Page Action Step 2 : Enter URL

- Type in URL for web page to navigate to
- Use {@1}, {@2} etc placeholders for web page parameters
 - ▶ For example : <http://www.google.co.uk/search?q=@{1}>
 - ▶ Format is @**{name}**, where **name** is the parameter name
- Actual parameters will be defined in the next step



Navigate to a Web Page Action Step 3 : Define Parameters

- Create parameters as required by the web site
 - Action Links stage will connect these to columns later on
 - Make sure parameter names match up to placeholders in URL



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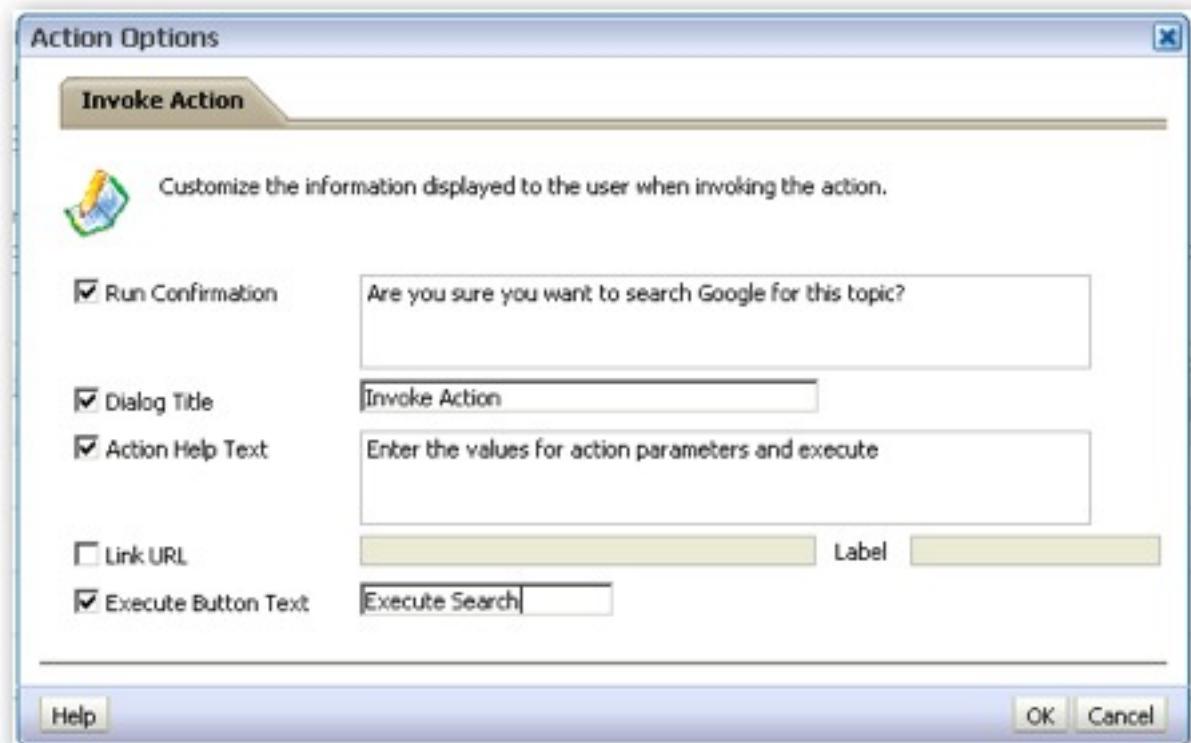
Web Page Parameter Options

- **Name** : arbitrary name for the parameter, must match placeholders in URL
- **Prompt** : used if
- **Value** : only relevant if Fixed = True
- **Fixed** : determines whether user can set value
- **Hidden** : used for parameters that need to be set, but hidden from user
- **Optional** : to specify whether parameter is optional or mandatory

Name	Prompt	Value	Fixed	Hidden	Optional
1	Search Term	123 ▾ Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

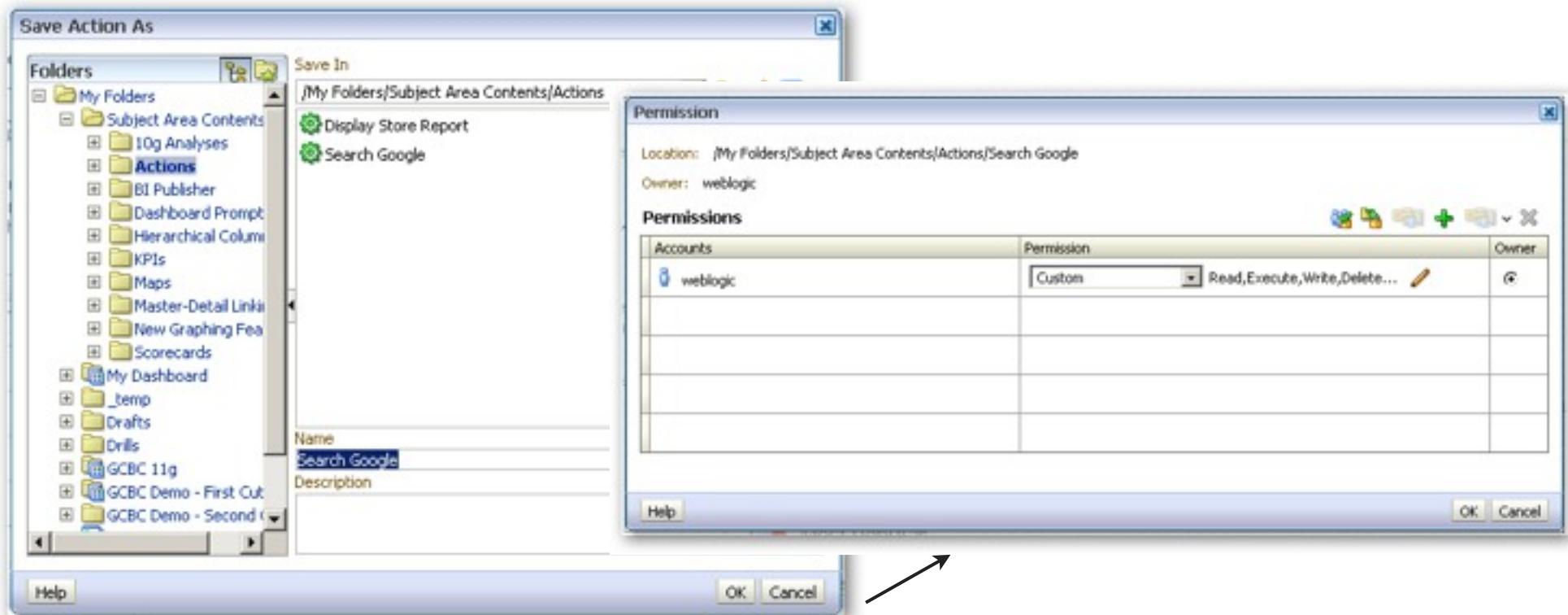
Navigate to a Web Page Action Step 4 : Select Action Options

- Also available for BI Content Navigation options, but less relevant
- Allows developer to request an Invoke Action dialog box
- Specify dialog options
 - Run Confirmation text
 - Dialog title
 - Action Help text
 - Link URL and label
 - text for Execute button
- Dialog is optional, used for when user needs to confirm action execution



Navigate to a Web Page Action Step 5 : Save to Web Catalog

- Action is saved to the web catalog alongside analyses, dashboards etc
- Right-click and select **Permissions** to change permissions for action



Action Links

- Actions are connected to BI objects through Action Links
- Action links can be added to the following content
 - ▶ Analyses (columns)
 - ▶ Dashboard pages
 - ▶ Scorecard objectives
 - ▶ Scorecard initiatives
 - ▶ KPIs
- Action links can be made conditional, based on values in the column
- Most common use case is to add to columns in an analysis



The screenshot shows a 'Store Summary' report from Oracle Business Intelligence. A context menu is open over the second row of a table. The table has columns: Region Name, Amount, Target, and Performance to Target. The rows show data for Central SF, North CA, North SE, Other US, South CA, and West SE. The context menu items are:

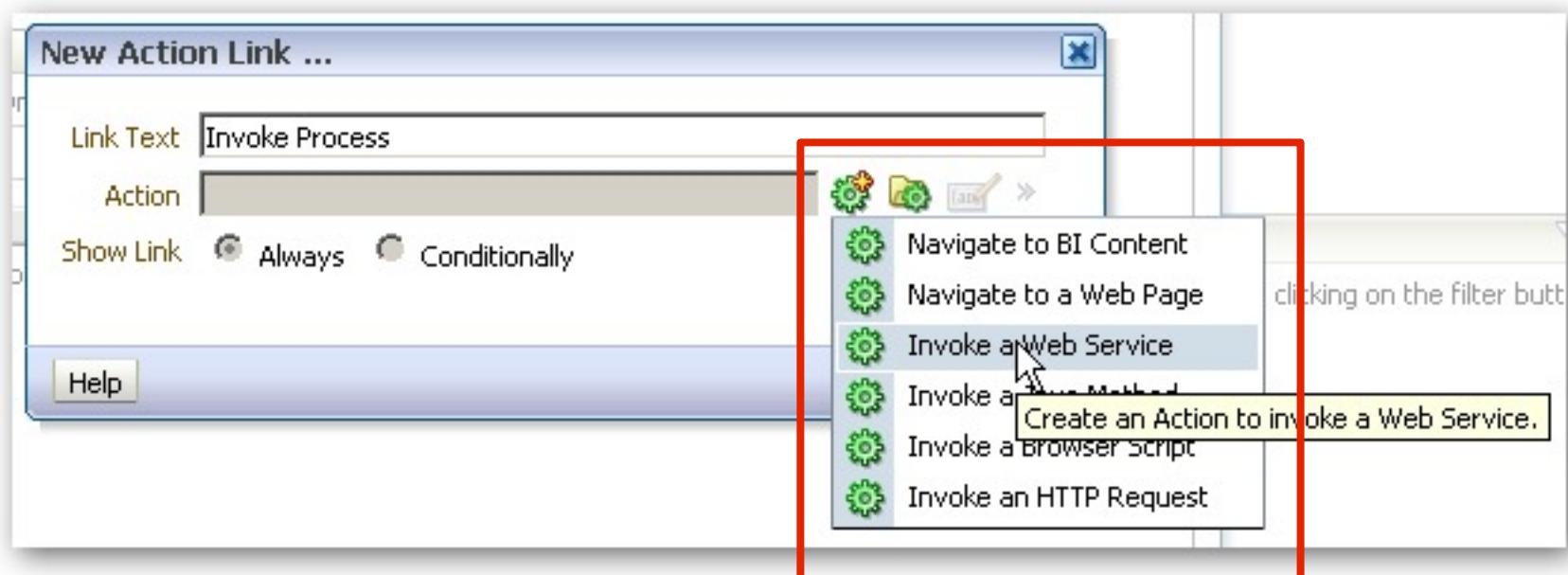
- Region Name: Navigate to Store Performance Breakdown
- Amount: Navigate to Company Website
- Target: Navigate to Store Scorecard
- Performance to Target: Request Meeting at HQ with Regional Manager

At the bottom of the table, there are buttons: Edit, Refresh, Print, Export, Add to Favorites, and Copy.

Region Name	Amount	Target	Performance to Target
Central SF	81.00	71.00	114.08
North CA	30.00	22.00	93.75
North SE			107.83
Other US			112.50
South CA			110.00
West SE			106.90

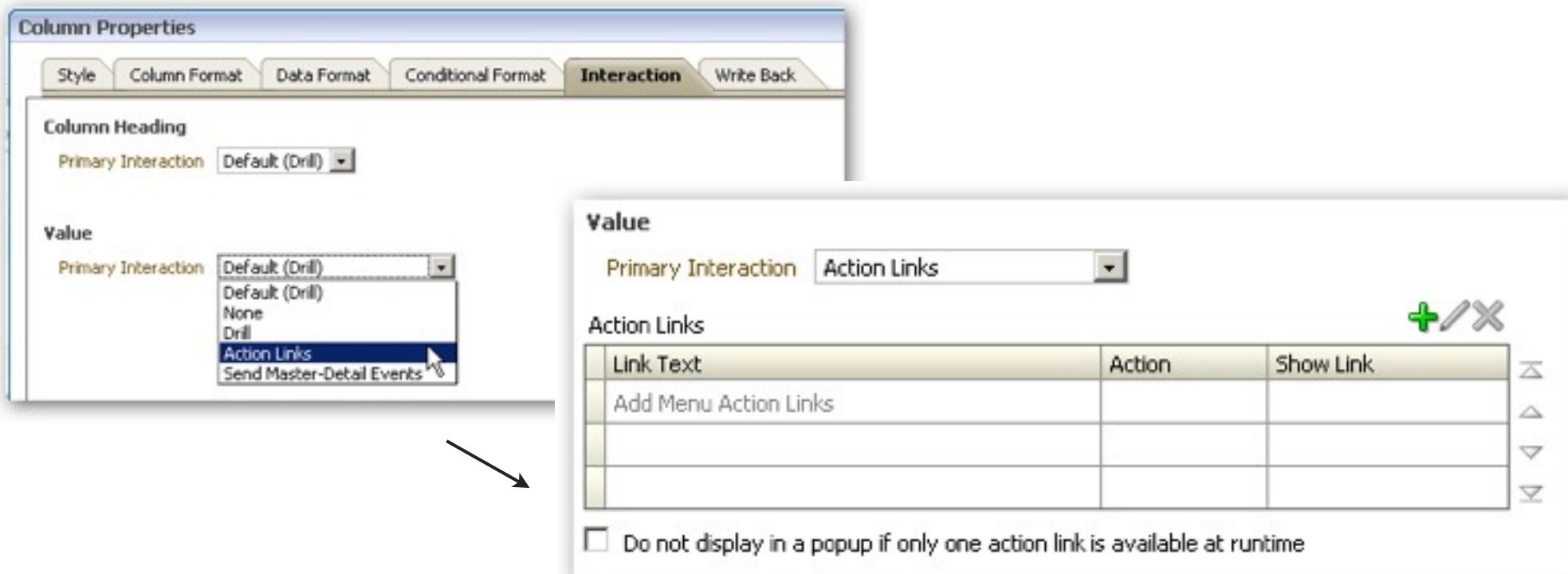
Named Actions and Inline Actions

- Actions can also be Named Actions (as detailed in previous slides) or Inline Actions
 - **Named actions** are created and saved in the web catalog
 - **Inline Actions** are defined at point of use, and are stored in the object definition



Creating Action Links for Analysis Step 1 : Configure Interaction

- Actions are associated via Action Links with an Analysis through the Criteria
- Select **Column Properties > Interaction** from the **Criteria** tab
- Change **Column Interaction** or **Value Interaction** to **Action Links**



The screenshot illustrates the configuration of Action Links for a column. On the left, the 'Column Properties' dialog is open, specifically the 'Interaction' tab. Under 'Value', the 'Primary Interaction' dropdown is set to 'Default (Drill)'. A dropdown menu is open, showing options: 'Default (Drill)', 'Action Links', and 'Send Master-Detail Events'. The 'Action Links' option is highlighted with a mouse cursor. An arrow points from this dropdown to the 'Value' configuration on the right.

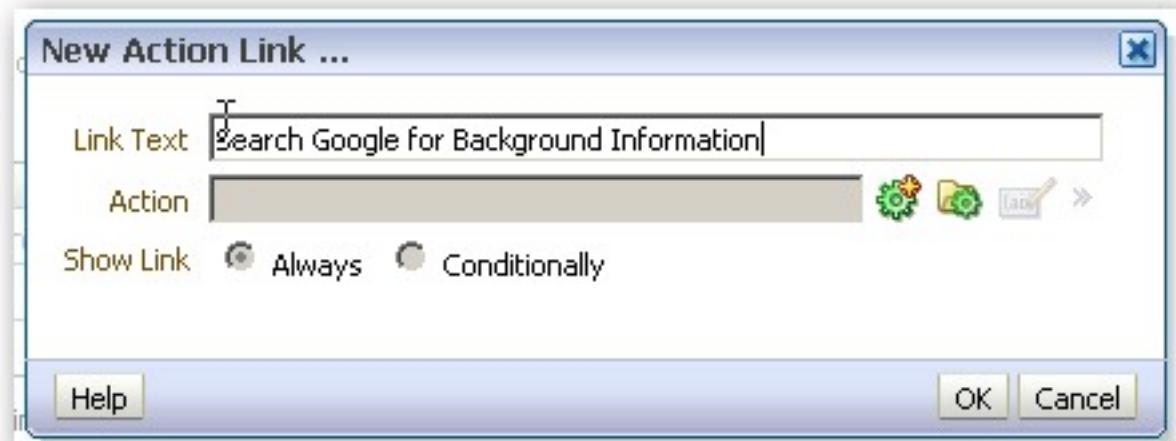
Value

Link Text	Action	Show Link
Add Menu Action Links		

Do not display in a popup if only one action link is available at runtime

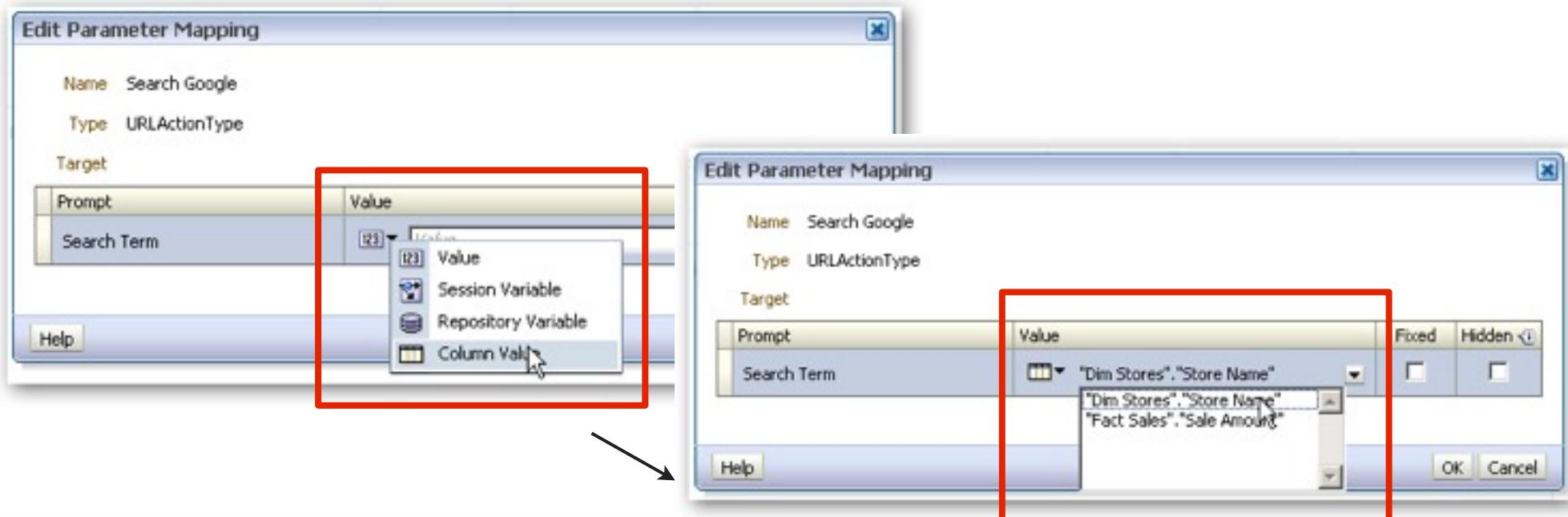
Creating Action Links for Analysis Step 2 : Add Action Link

- Press Add Action Link button to add new action link
- Name the action link (this will be displayed in the contextual menu)
- Select **Create New Action** to create an inline action, or **Select Existing Action** to choose an existing named action



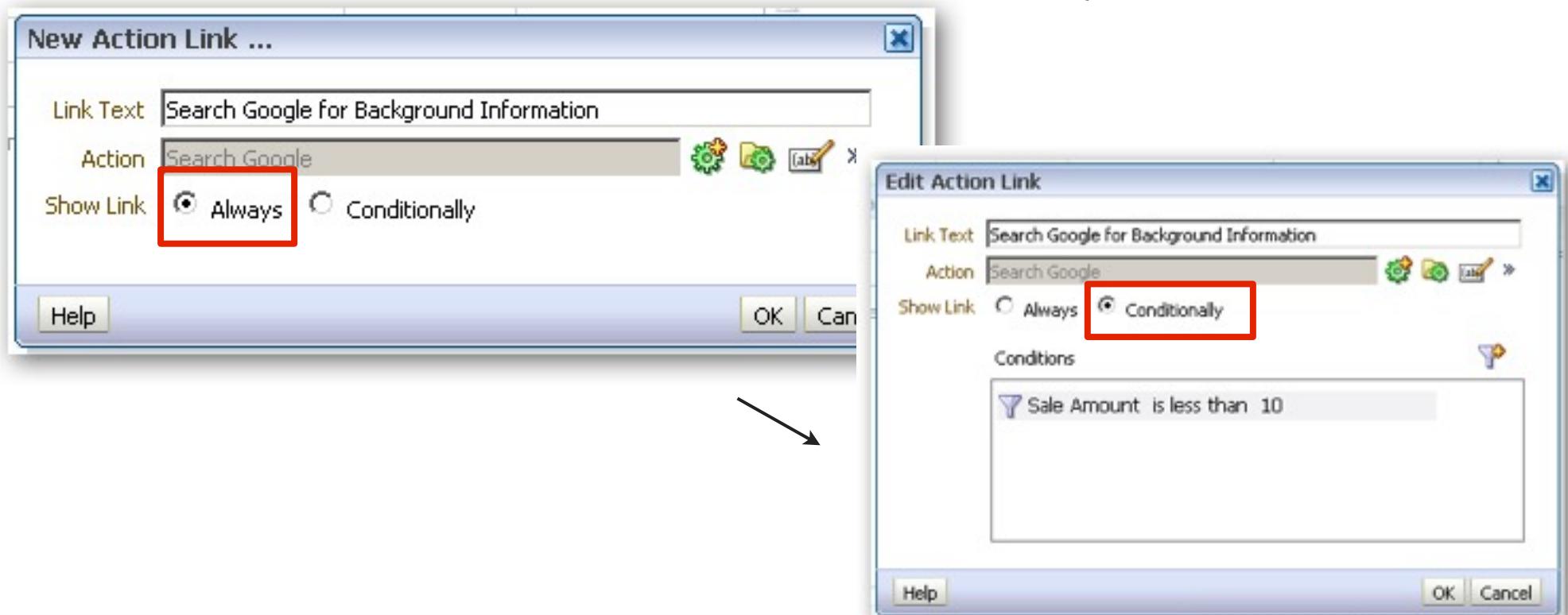
Creating Action Links for Analysis Step 3 : Map Parameters

- Once action has been selected, its parameters can be mapped to analysis data
- To map to a column in the analysis row, select **Column Value as Value**
- Then select column name from analysis to map to the parameter
- Specify whether parameter is **Hidden**, or value is **Fixed**



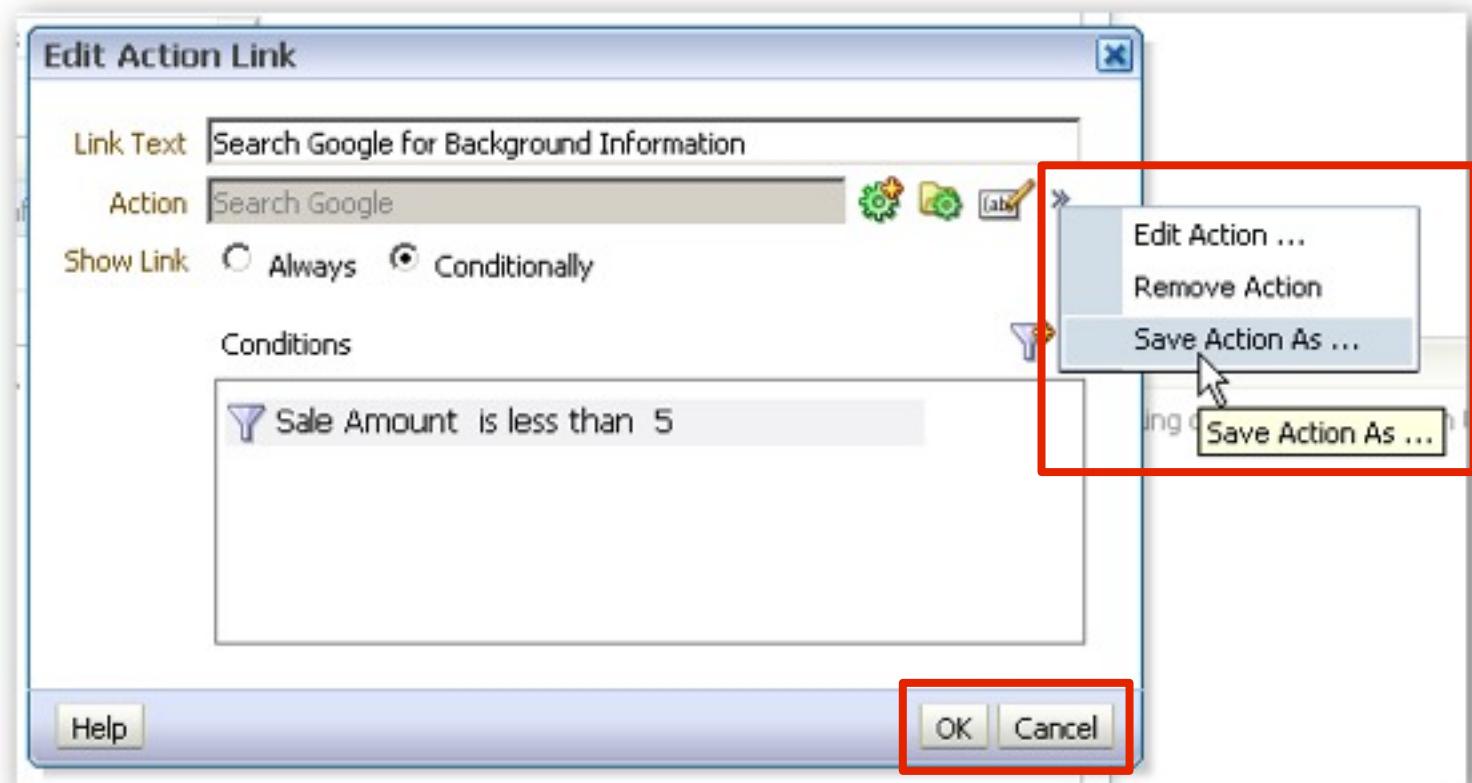
Creating Action Links for Analysis Step 4 : Specify Conditionality

- Specify whether action link is displayed **Always**, or **Conditionally**
- Conditional display will bring up a filter prompt to define condition based on analysis criteria



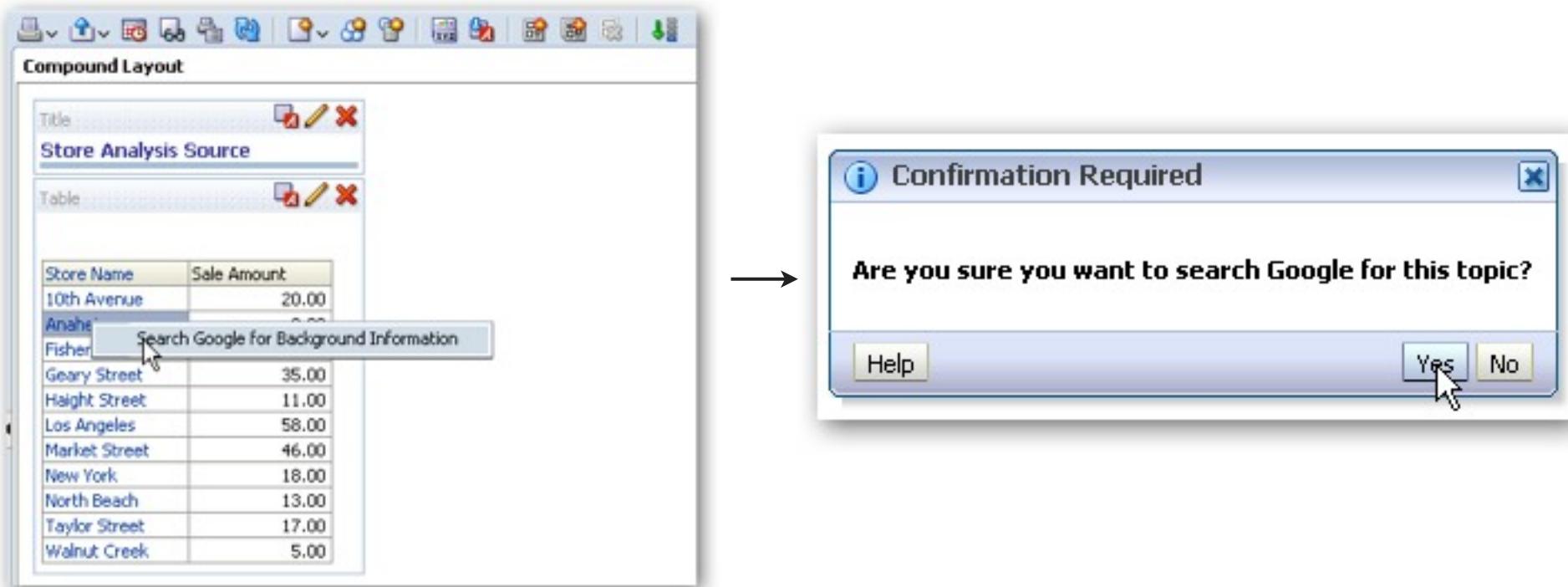
Creating Action Links for Analysis Step 5 : Save Action Link

- Press **OK** to save action link
- Optionally, use **Save Action As** to create a new Named Action



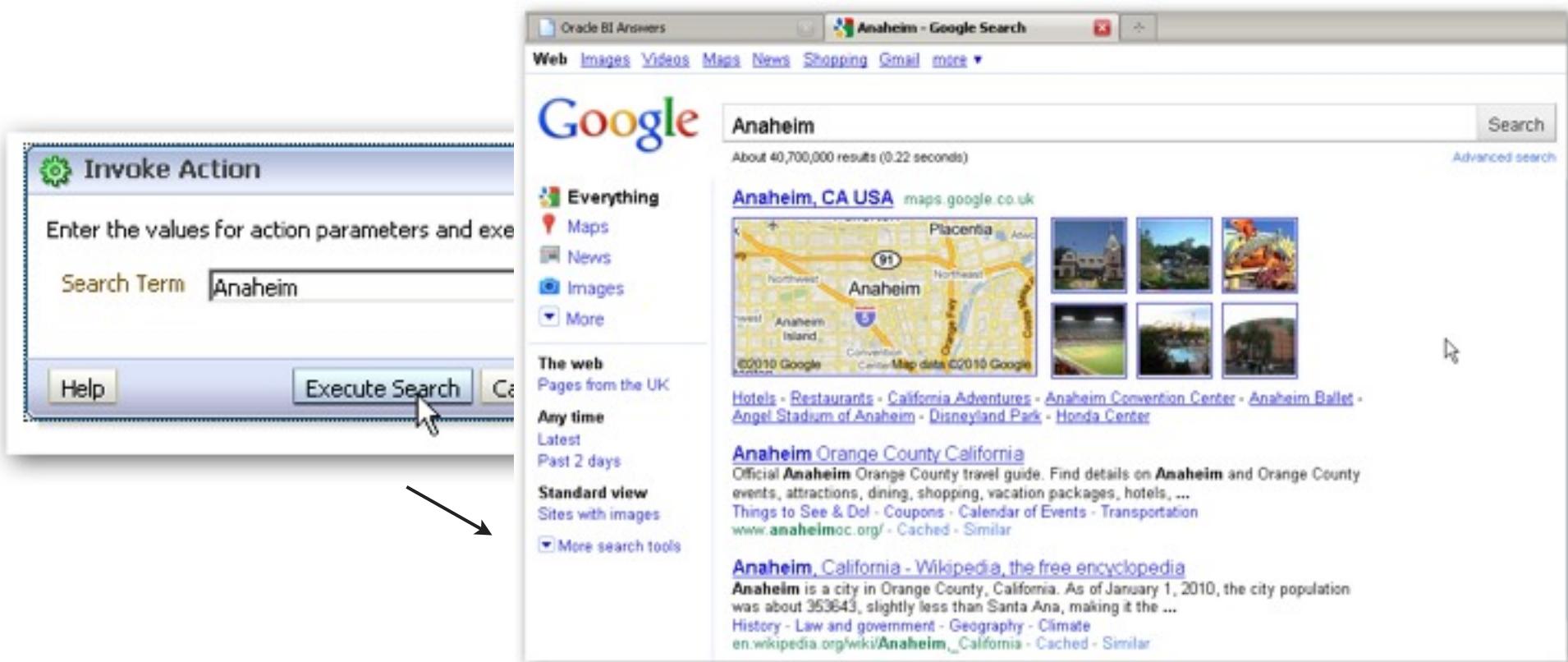
Creating Action Links for Analysis Step 6 : Test Action Link

- Switch to Results tab in Answers to test action link
- In the example below, action link is only displayed when Sale Amount < 10



Creating Action Links for Analysis Step 7 : Review Results

- Check that action URL and parameter syntax actually returns correct results



The screenshot illustrates the process of creating action links for analysis. On the left, a modal window titled "Invoke Action" is open, prompting the user to "Enter the values for action parameters and exe". A "Search Term" input field contains "Anaheim". An "Execute Search" button is highlighted with a mouse cursor. A large arrow points from this button to the right side of the screen, where a web browser window displays the search results for "Anaheim" on Google. The browser title bar shows "Oracle BI Answers" and "Anaheim - Google Search". The search results page includes a map of Anaheim, CA USA, several thumbnail images of local landmarks, and a list of related links such as Hotels, Restaurants, California Adventures, Anaheim Convention Center, Anaheim Ballet, Angel Stadium of Anaheim, Disneyland Park, and Honda Center.



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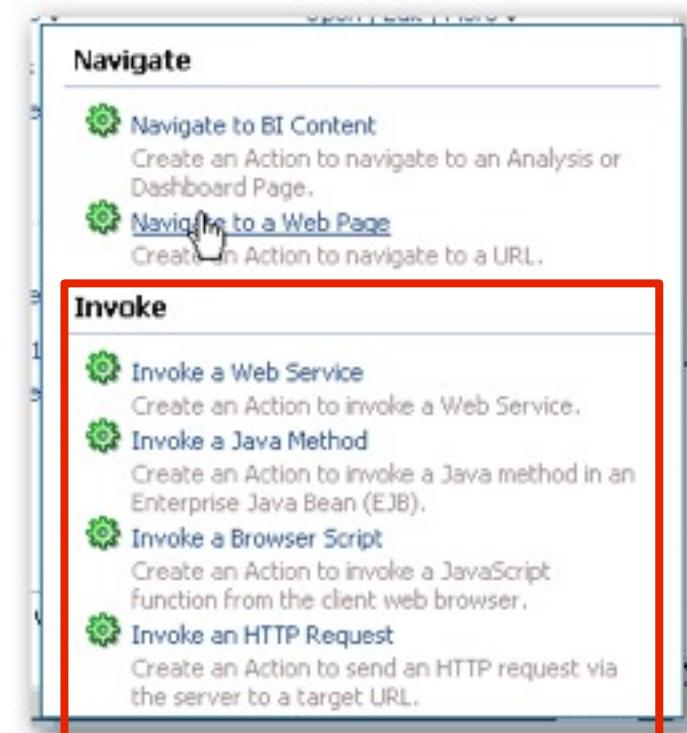
Hands-On Labs

Lab 4-1 : Simple (Navigation) Action Links

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Invocation Actions

- As well as navigate to content, actions can also invoke processes
 - ▶ Invoke a web service or SOA service (BPEL etc)
 - ▶ Invoke a java method in an EJB
 - ▶ Invoke a Javascript browser script (to interact with ADF application etc)
 - ▶ Invoke Javascript or VBscript server-side script
 - ▶ Invoke HTTP request (for system with URL APIs)
 - ▶ Invoke Agent (for chaining Agents)
 - ▶ Invoke Java jobs (for backward compatibility)



Action Framework Configuration Tasks

- Some Action Types are automatically available in OBIEE after install
 - Navigate to BI Content, Navigate to Web page, Invoke HTTP Request, Invoke a Browser Script (default actions)
- Others require post-install configuration
 - Invoke a Web Service, Invoke Server Script, Invoke Java Method etc
- For those that require configuration, several tasks may need to be performed
 1. Obtain registry details for services (WSIL and WSDL files etc)
 2. Figure out how security works for the services
 3. Edit **ActionFrameworkConfig.xml**
 4. Set up credentials, and keystore for storing them, using WLS and EM

Configuration Required/Possible for Action Types

Action Type	Requires Config Entry?	Supports Registries?	Additional Credentials Req?	Policy Enabled?
Navigate to BI Content	No	No	No	No
Navigate to Web Page	No	No	No	No
Navigate to EPM Content	Yes (Registry)	Yes (Mandatory)	Yes	No
Navigate to EBS	Yes	No	No (EBS integration)	No
Invoke a Web Service	No	Yes (Optional)	No (Optional)	Yes
Invoke a Java Method (EJB)	Yes (Registry)	Yes (Mandatory)	Yes	No
Invoke a Browser Script	No	No	No	No
Invoke an HTTP Request	No	No	No	No
Invoke Server Script	No	No	No	No
Invoke Agent	No	No	No	No
Java Job	No	No	No	No

ActionFrameworkConfig.xml

- Main configuration file for the Action Framework
- Contains several entries that determine the behavior of the Action Framework
 - ▶ Registry settings that point to external service registries (WSIL etc)
 - ▶ Gateway accounts and proxies used for authenticating against services
 - ▶ Oracle WSM client policy file pointers, and details on policy elements + descs (for web service actions)
 - ▶ Account settings that are used to specify credential keys and credential mappings used to provide authenticated access to services
- Oracle docs provide example templates + SampleApp file can be adapted

Typical Registry Entries in ActionFrameworkConfig.xml

```
<registry>
  <id>reg1</id>
  <name>Sample Web Services</name>
  <content-type>webservices</content-type>
  <provider-class>oracle.bi.action.registry.wsil.WSILRegistry</provider-class>
  <description></description>
  <location>
    <path>http://localhost:9704/ActionSamples/inspection.wsil</path>
  </location>
  <service-access>
    <path>/Sample Web Services/Rating Service</path>
    <policy>SAMLPolicy</policy>
    <propagateIdentity>true</propagateIdentity>
  </service-access>
  <service-access>
    <path>/Sample Web Services/Customer Rating Service</path>
    <account>PayrollUser</account>
    <policy>userNamePolicy</policy>
    <propagateIdentity>false</propagateIdentity>
  </service-access>
</registry>
```

Typical Registry Entries in ActionFrameworkConfig.xml

```

<registry>
  <id>reg1</id>
  <name>Sample Web Services</name> ←
  <content-type>webservices</content-type>
  <provider-class>oracle.bi.action.registry.wsil.WSILRegistry</provider-class>
  <description></description>
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    <path>/Sample Web Services/Customer Rating Service</path>
    <account>PayrollUser</account>
    <policy>userNamePolicy</policy>
    <propagateIdentity>false</propagateIdentity>
  </service-access>
</registry>

```

Name as displayed
in “Select Web Service
Operation” dialog

Typical Registry Entries in ActionFrameworkConfig.xml

```

<registry>
  <id>reg1</id>
  <name>Sample Web Services</name> ←
  <content-type>webservices</content-type>
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  <description></description>

  <location> ←
    <path>http://localhost:9704/ActionSamples/inspection.wsil</path>
  </location>

  <service-access>
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  </service-access>
  <service-access>
    <path>/Sample Web Services/Customer Rating Service</path>
    <account>PayrollUser</account>
    <policy>userNamePolicy</policy>
    <propagateIdentity>false</propagateIdentity>
  </service-access>
</registry>

```

Name as displayed
in “Select Web Service
Operation” dialog

Location of the WSIL
file describing
WS methods available

Typical Registry Entries in ActionFrameworkConfig.xml

```

<registry>
  <id>reg1</id>
  <name>Sample Web Services</name>
  <content-type>webservices</content-type>
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    <account>PayrollUser</account>
    <policy>userNamePolicy</policy>
    <propagateIdentity>false</propagateIdentity>
  </service-access>
</registry>

```

Name as displayed in “Select Web Service Operation” dialog

Location of the WSIL file describing WS methods available

Specifies the authentication required to access the registry and, where specified, sub-paths within that registry

Action Framework Security

- Actions are secured through three means
 1. **Credentials** : Security-related attributes stored in WebLogic that are used by services exposed by registry entries to authenticate and authorize users and system requests.
 2. **Privileges** : Control the rights users have to access three action framework-related functions:
 - Create Navigate Actions
 - Create Invoke Actions
 - Save Actions containing embedded HTML
 3. **Permissions** : Ability to read, write, delete and execute actions

Adding and Maintaining Credentials

- Secured access to web service actions are through credentials
- Securely stored access tokens managed through WLS/EM
- Replaces credentials passed in plain text in URLs, and other insecure methods
- Requirement for credentials is determined by <Account></Account> entries in ActionFrameworkConfig.xml registry entries
- Requires three elements for each secured service:
 1. A Credential Map
 2. A Credential Key
 3. A Key Store
- Can be set up manually using Enterprise Manager, or through scripting

Typical Account Entries in ActionFrameworkConfig.xml

```
<account>
  <name>SecureTest</name>
  <description>Test Secure Account</description>
  <adminonly>false</adminonly>

  <credentialkey>SecureTest</credentialkey>

  <credentialmap>oracle.bi.actions</credentialmap>

</account>
```

Typical Account Entries in ActionFrameworkConfig.xml

```
<account>
  <name>SecureTest</name>
  <description>Test Secure Account</description>
  <adminonly>false</adminonly>

  <credentialkey>SecureTest</credentialkey> Credential Key

  <credentialmap>oracle.bi.actions</credentialmap>

</account>
```

Typical Account Entries in ActionFrameworkConfig.xml

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<account>
  <name>SecureTest</name>
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  <credentialkey>SecureTest</credentialkey>
  <credentialmap>oracle.bi.actions</credentialmap>
</account>
```

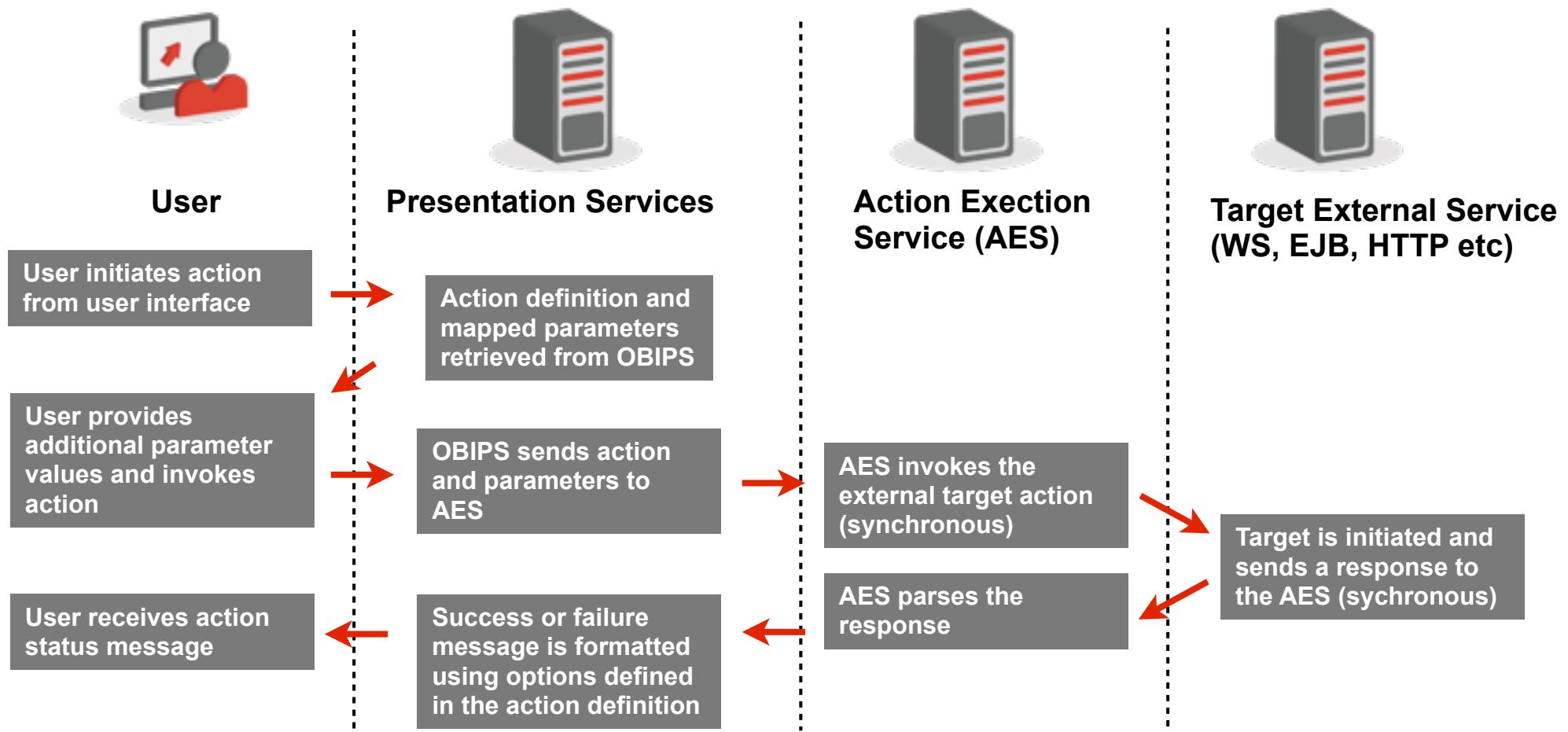
Credential Key

Credential Map

Credential Maps, Credential Keys and Keystores

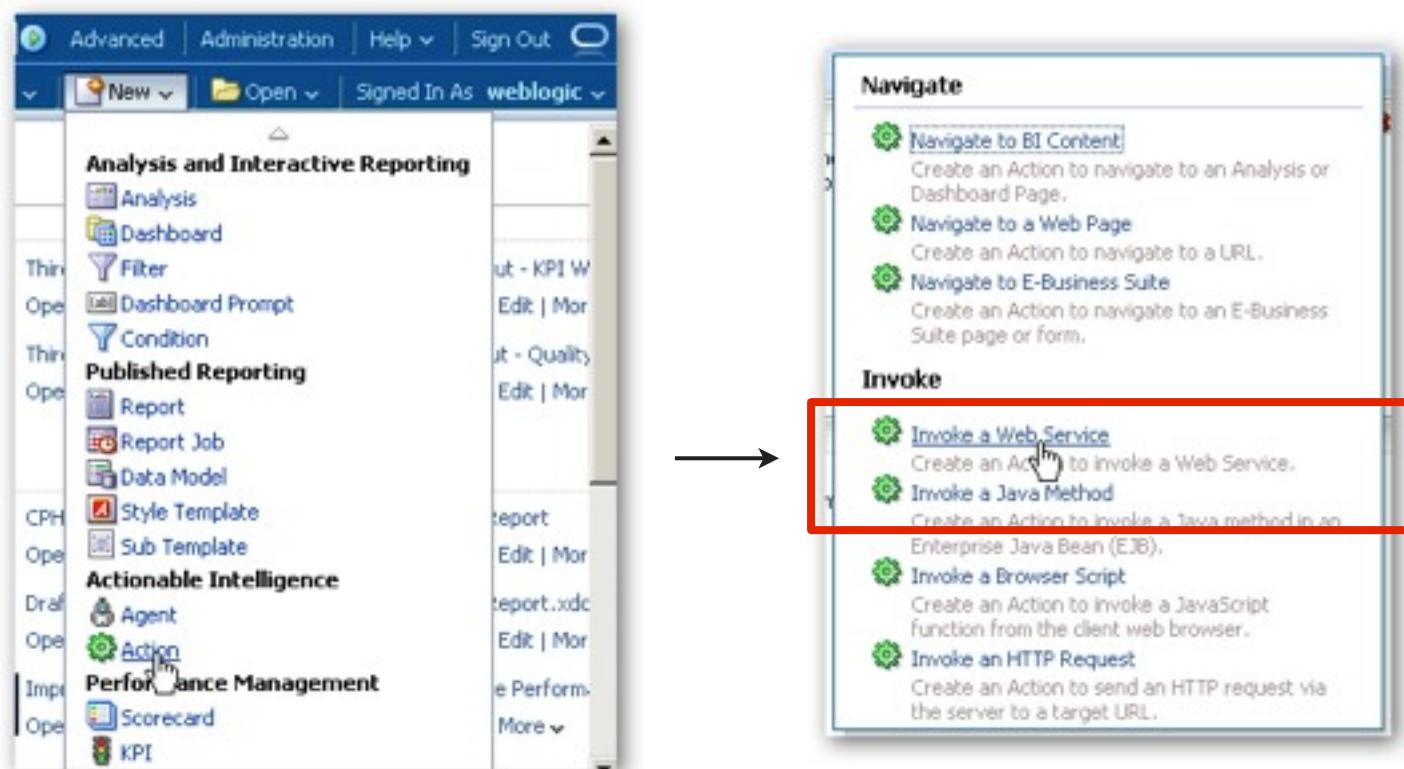
- Credential Keys are used for looking up entries in Oracle Credential Store Framework
- Credential Maps are where Credential Keys is Oracle CSF
- Signed container that stores credentials for Oracle CSF
 - ▶ For development, can use self-signed keystore
 - ▶ For production, should obtain certificate to externally sign keystore

Invoking a Web Service : Process Flow



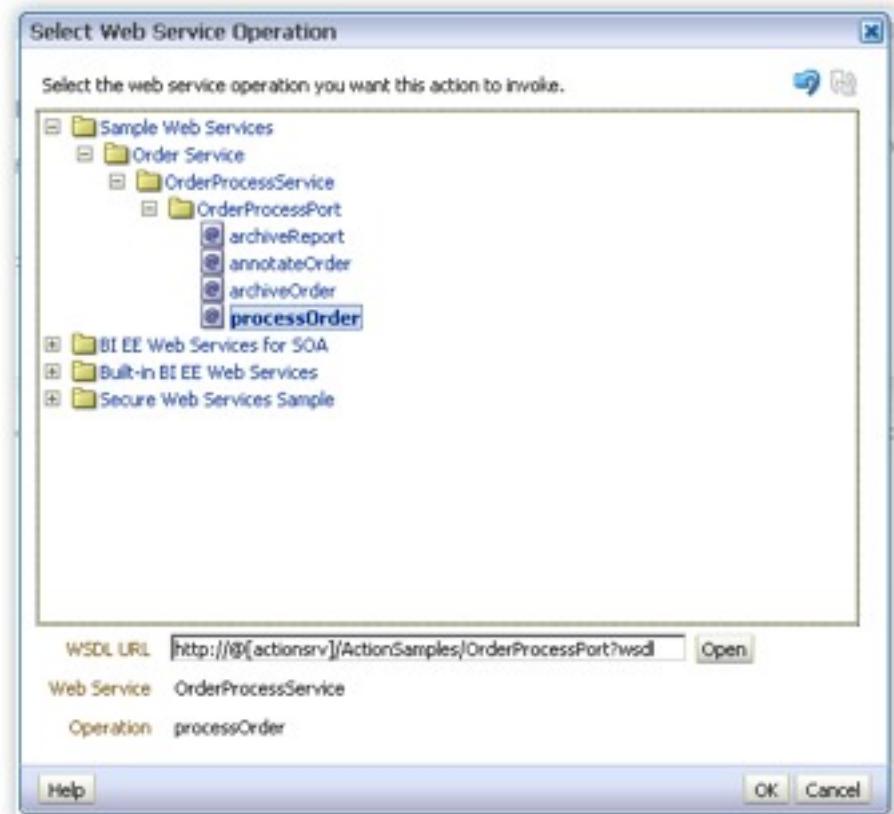
Creating Web Service Invoke Action Step 1 : Create Action

- Select **New > Action**, then select **Invoke Web Service** from menu
- Previous steps to register web service methods will need to have been completed



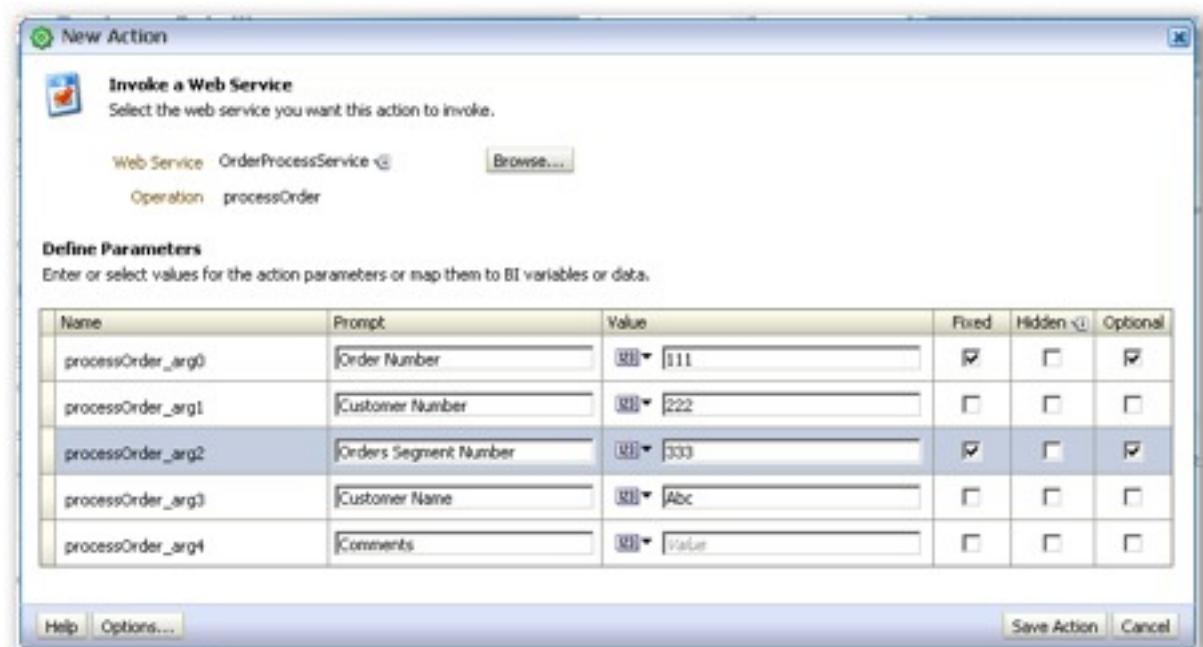
Creating Web Service Invoke Action Step 2 : Select Method

- Select web service and method from **Select Web Service Operation** dialog
- List of services determined by
`<registry></registry>` entries in
`ActionFrameworkConfig.xml` file



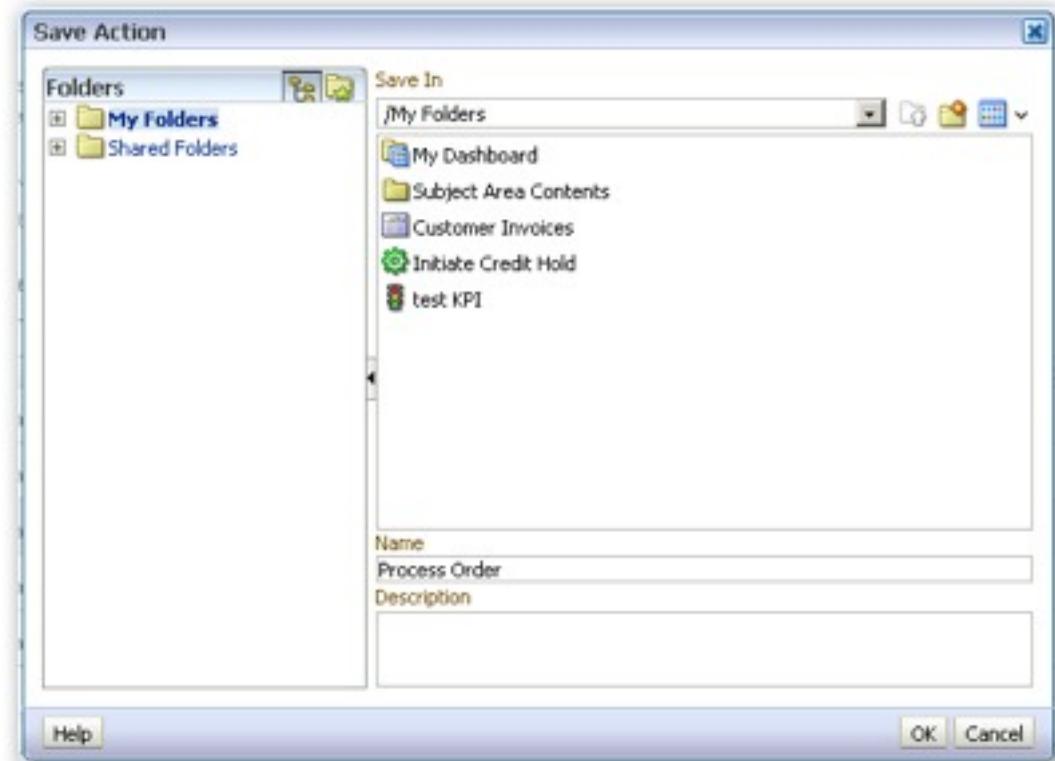
Creating Web Service Invoke Action Step 3 : Map Parameters

- Web Service will typically come with parameters
 - May be mandatory or optional, hidden, or user-modifiable
- These can be given initial mapping values at action creation stage
 - Useful when hidden and mapped to variables, constants



Creating Web Service Invoke Action Step 4 : Save Action

- Save action to the web catalog just like navigation actions
- Action can later be secured through permissions (read, write, delete, execute)



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Using a Web Service Invocation Action Step 1 : Select Column

- WS Actions are associated with columns in the same way as navigation actions
- Select **Column Properties** > **Interaction** from the **Criteria** tab
- Change **Column Interaction** or **Value Interaction** to **Action Links**



The screenshot shows two panels of the 'Column Properties' dialog. The left panel is for 'Column Heading' and the right panel is for 'Value'. Both panels have a 'Primary Interaction' dropdown.

Column Heading Panel:
 Primary Interaction: Default (Drill) (selected)

Value Panel:
 Primary Interaction: Action Links (selected)
 Action Links table:

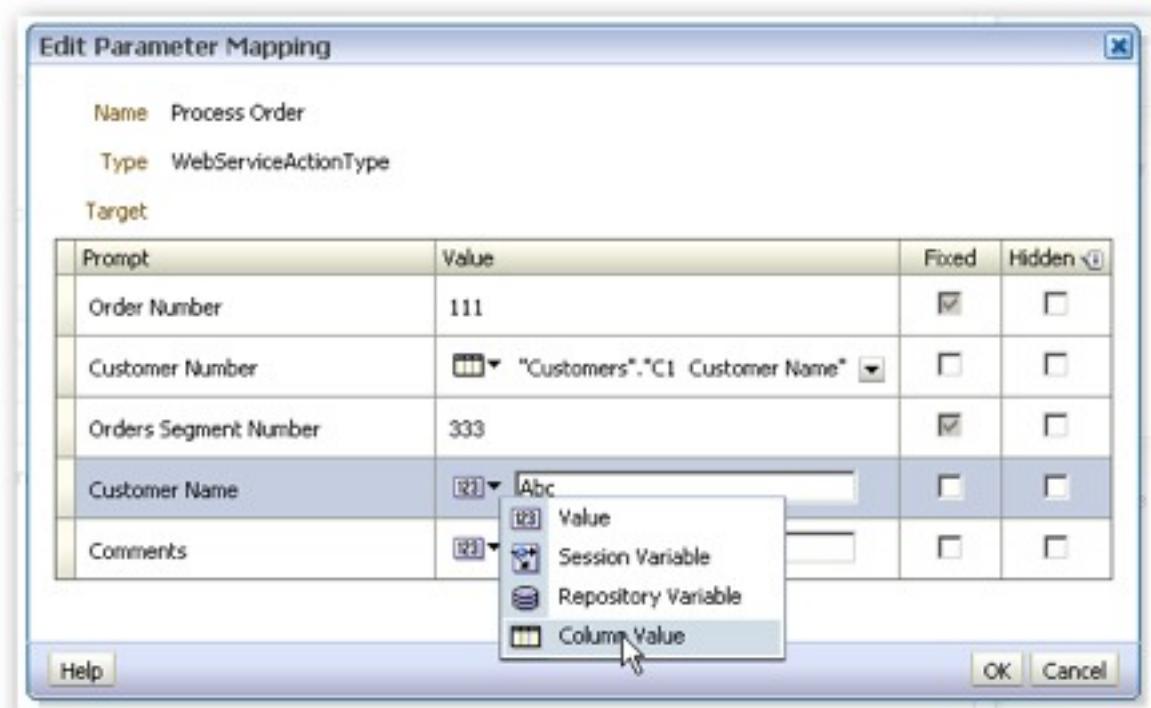
Link Text	Action	Show Link
Add Menu Action Links		

At the bottom of the Value panel is a checkbox: Do not display in a popup if only one action link is available at runtime.

An arrow points from the 'Default (Drill)' dropdown in the Column Heading panel towards the 'Action Links' dropdown in the Value panel.

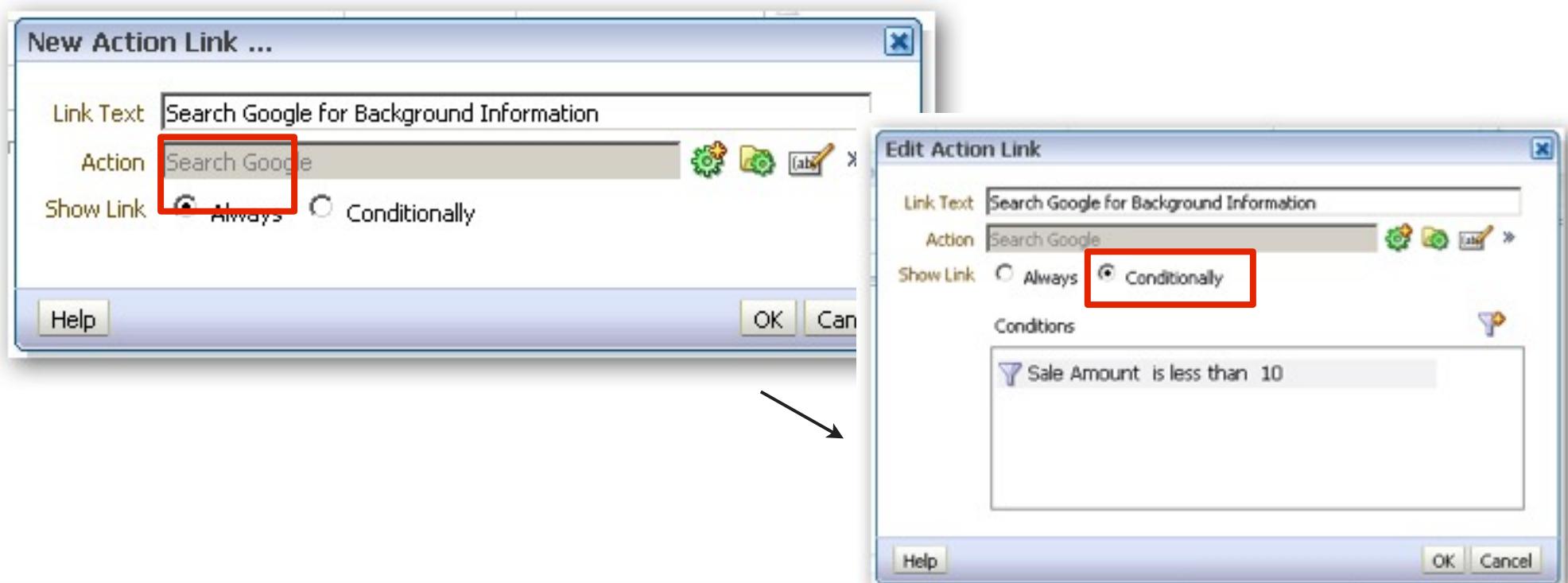
Using a Web Service Invocation Action Step 3 : Map Parameters

- Parameters for the action (web service) are then mapped to the analysis data
- Can be mapped to
 - Column values
 - Session variables
 - Repository variables
 - Value (constant)



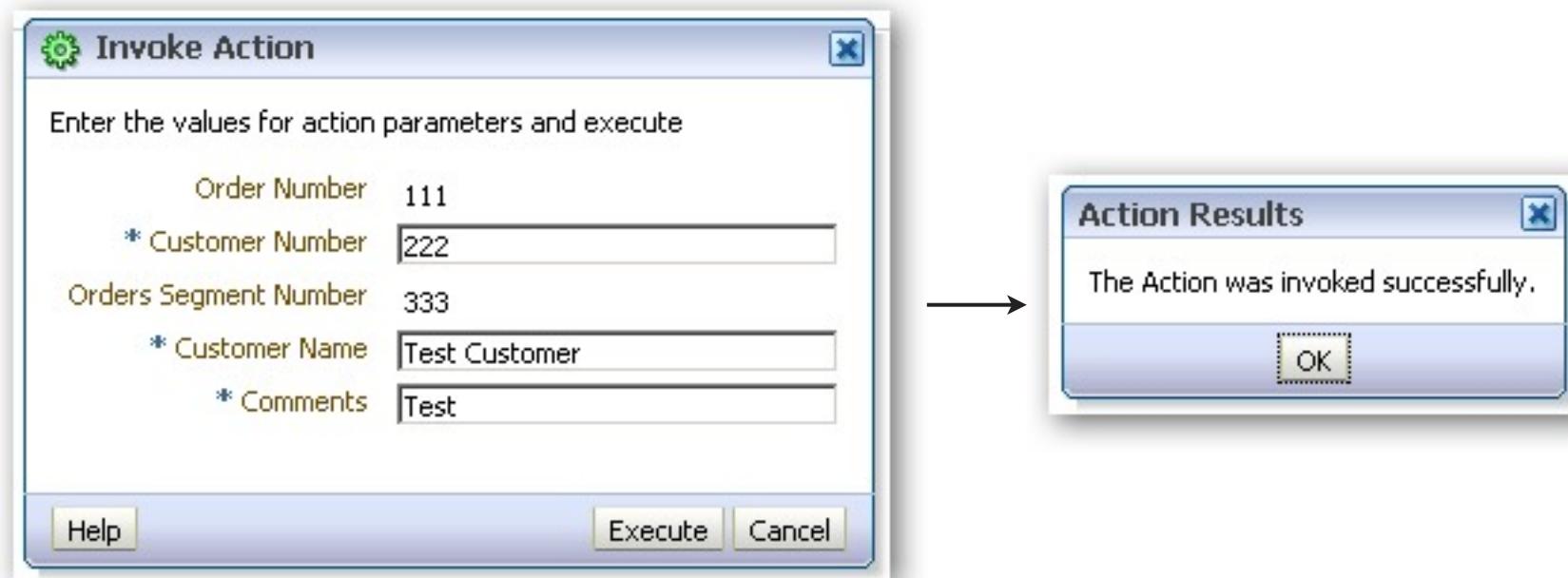
Using a Web Service Invocation Action Step 4 : Set Conditionality

- As with navigation actions, specify whether action link is displayed **Always**, or **Conditionally**
- Save the analysis as normal



Using a Web Service Invocation Action Step 5 : Test Action

- Test the action as before, check that web service is invoked properly





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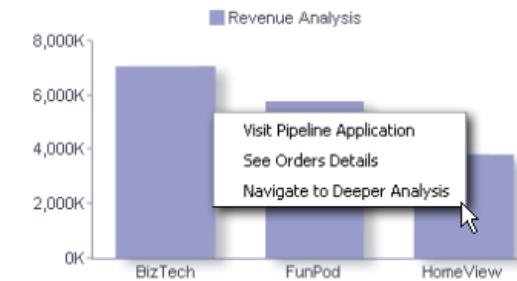
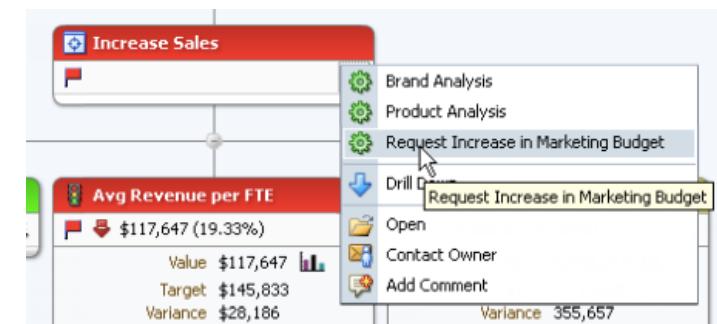
Hands-On Labs

Lab 4-2 : Advanced (Invocation) Action Links

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Other Uses of Action Links

- Action can also be used in the following scenarios
 - ▶ Action links on dashboards
 - Parameters then typically linked to variables or constants
 - ▶ on charts
 - ▶ with agents (iBots)
 - ▶ on scorecard and KPIs
 - Through linking to thresholds
 - ▶ Email, PDF reports



	2008	2009	2010	Grand Total
Total Products	16,500,000	15,000,000	18,500,000	50,000,000
BizTech	6,990,741	6,302,087	7,707,723	21,000,551
FunPod	5,723,187	5,160,340	6,616,777	17,499,204
Digital	2,586,777	2,227,309	2,921,600	7,735,686
Games	3,136,411	2,933,031	3,695,777	9,765,219
HomeView	3,786,072	3,537,573	4,176,555	11,400,000

Action Links and Menus on Dashboards

- Action links and action link menus can be added to dashboards
- Parameters can be linked to presentation and repository variables, or constants
- Provides ability to launch out to EPM and other content, passing context
- Provide menus of actions
- The equivalent to “Guided Analytics” in OBIEE 10g

4.1 Actions

Insight Into Action Customer View Inv

Actions

Dashboard Action Links

[Navigate to a Dashboard Page](#)

[Navigate to an Analysis](#)

Action Links Menu

List of Actions

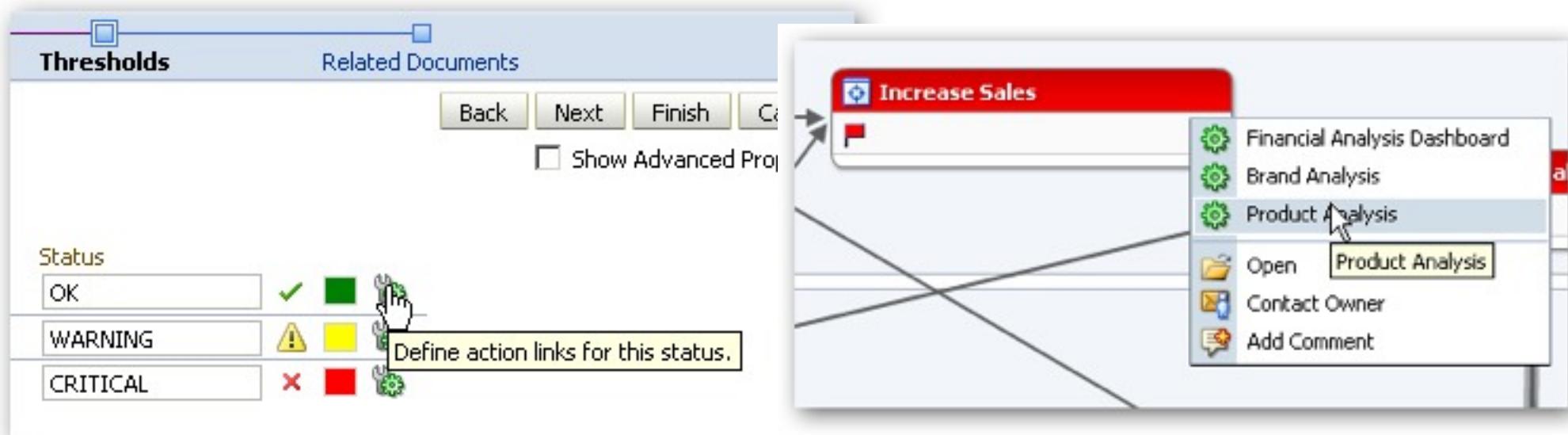
Navigate to a Dashboard Page
Action to Invoke Browser Script Example

Time run: 10/5/2010 2:44:33 PM

2010/06/22 08:47:39
User: 171,100
This is my new commentary about the page

Actions with Scorecards and Dashboards

- Actions can be linked to KPIs, based on threshold values
- Action becomes available at each step in the threshold
- Actions can also be associated with objectives in scorecards
- Take immediate action based on insights from strategy views





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Oracle Business Intelligence 11g Masterclass

Actionable Intelligence and the Oracle BI EE 11g Action Framework

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