

**ORACLE BUSINESS INTELLIGENCE SUITE  
INVOKING BPEL PROCESS FROM INTERACTIVE DASHBOARDS  
TECHNICAL OVERVIEW**

*An Oracle White Paper  
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## Introduction

Oracle Business Intelligence Enterprise Edition (Oracle BI EE) supports a range of powerful features to enable users to take direct action from the insight they receive in their dashboards, reports and alerts. This document describes how to invoke and interact with business processes defined as BPEL workflows deployed in the Oracle Business Process Manager from within Oracle BI EE.

This document assumes that the reader is familiar with Oracle Business Intelligence Enterprise Edition and Oracle SOA Suite. Refer to the documentation for these products for further information. The Oracle BI EE documentation is available on Oracle Technology Network (OTN) at:

[http://www.oracle.com/technology/documentation/bi\\_ee.html](http://www.oracle.com/technology/documentation/bi_ee.html)

The Oracle SOA Suite documentation is available at:

<http://www.oracle.com/technology/tech/soa/index.html>

## Pre-requisites

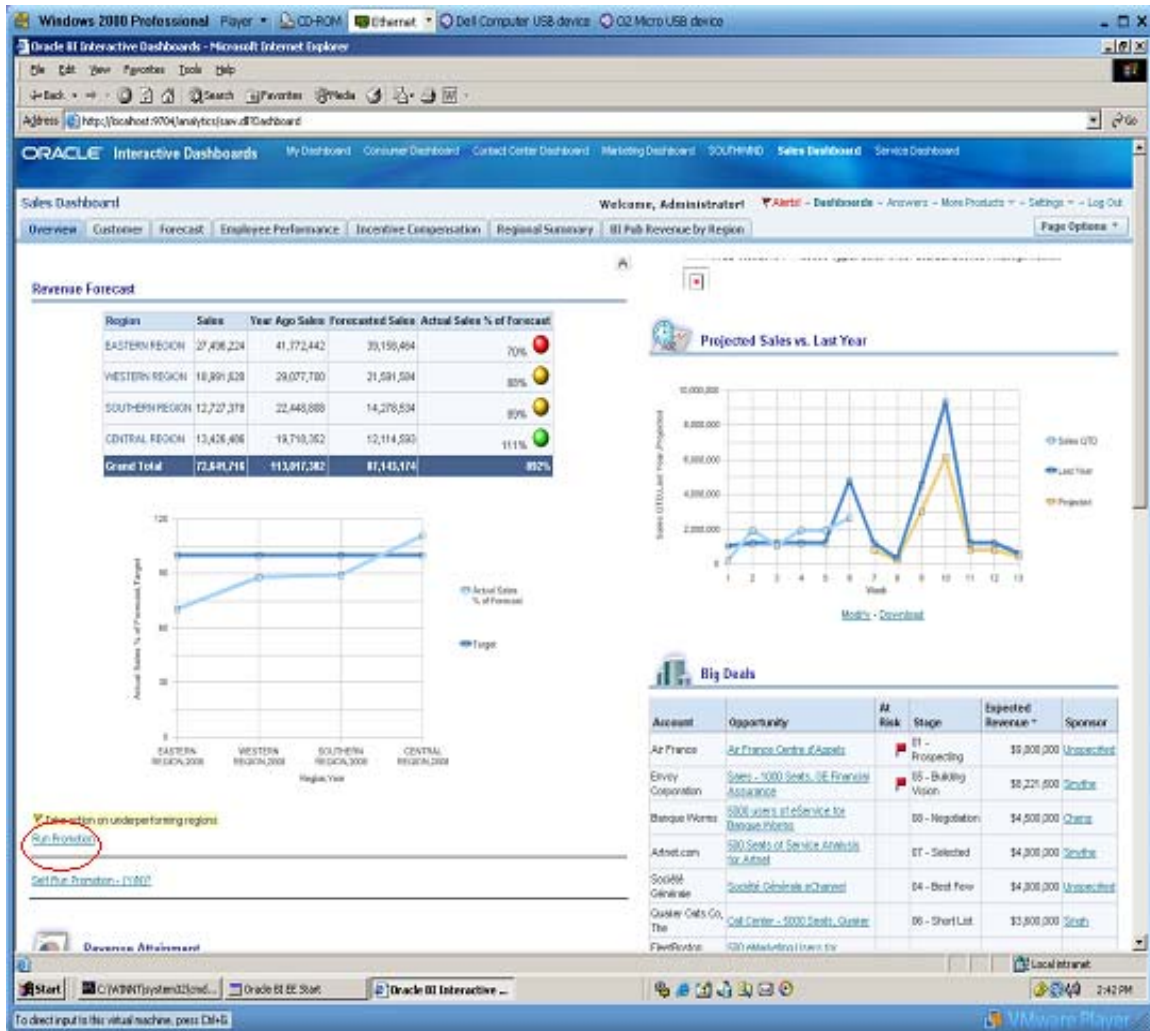
To invoke a BPEL process from Oracle BI EE, install Oracle BI EE 10.1.3.2 and Oracle SOA Suite 10.1.3 or later. The software can be downloaded from <http://edelivery.oracle.com/>. After installation, Oracle BI Server and Oracle BI Presentation Services should be configured so that Oracle BI Dashboards show data from databases.

## Invoking BPEL Processes From Oracle Business Intelligence Interactive Dashboards

From Oracle BI EE Interactive Dashboards, BPEL processes can be invoked through the following mechanisms:

- Guided Navigation Link
- Action Link
- HTML Link or Image

For example, the screenshot below shows a section of an Oracle BI EE Dashboard

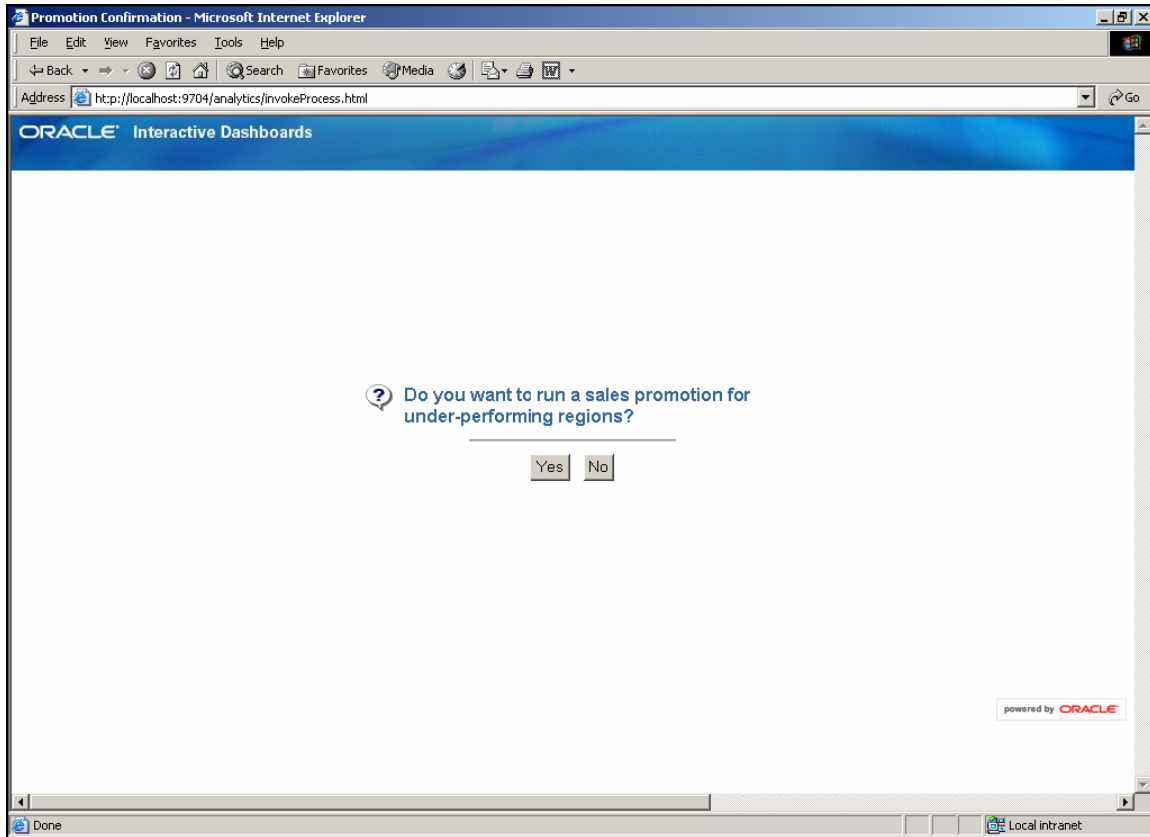


This interactive dashboard displays a set of key performance indicators that may be used by a sales executive to monitor given areas of business performance. In the above figure, the “Revenue Forecast” request shows a poor sales performance in the Eastern Region. Traditionally, addressing the issue of poor sales would have required a user to jump out of the context of the Business Intelligence application and to initiate some form of action – picking up the phone, writing an email, or using another business application to launch a marketing campaign etc.

The ability to invoke business processes from Oracle Business Intelligence Dashboards allows users to take action directly from the Dashboard. A sales promotion campaign, for example, may be initiated from the Oracle Business Intelligence Dashboard to rectify the revenue issue for all regions where product revenue is below target revenue.

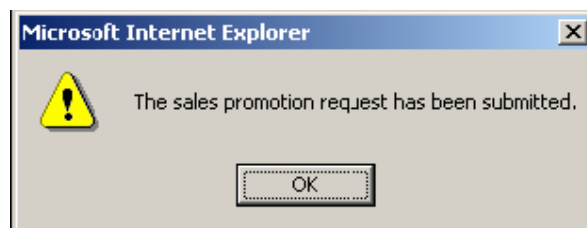
In the screenshot shown above, the “Run Promotion” Guided Navigation link (marked in Red) has been configured so that when a user clicks on the link, a business process is initiated that orchestrates the workflow of a sales promotion campaign directly from Oracle BI EE.

When a user clicks the guided navigation link “Run Promotion”, the user sees the following confirmation screen:



When the user clicks on the “Yes” button, the BPEL process is invoked and the confirmation window shown below is displayed. The user is then automatically returned to the Oracle BI Dashboard.

Clicking the “No” button returns the user back to the Oracle BI Dashboard without invoking the BPEL request.



## Configuring Oracle BI Intelligence Dashboards to Invoke BPEL Processes

This section describes how to configure Oracle BI Interactive Dashboards to invoke a BPEL process from the following Dashboard components:

Guided Navigation Link  
Action Link  
HTML Link or Image

The desired BPEL process may be invoked directly from the Oracle BI EE Dashboard components by specifying the URL endpoint of the BPEL process or by linking to an HTML page, which is coded to invoke the BPEL process. For the examples provided in this document, the code that invokes the BPEL process is contained in an HTML document that Oracle BI EE is able to access.

For either case, invoking the BPEL process directly from Oracle BI EE Dashboard or invoking BPEL process from within HTML document accessed within Dashboard, it requires to determine the end point of a BPEL process.

**NOTE:** This document assumes that the BPEL process that is to be invoked from Oracle Business Intelligence has been created and is functional. A tutorial that explains how to create and deploy BPEL processes is available on OTN at:

<http://www.oracle.com/technology/tech/soa/index.html>

### **Determining the Endpoint of a BPEL Process**

Determine the URL endpoint of the BPEL process which is coded in the invoke process within HTML code, deployed within the Oracle Business Process Manager:

1. Log in to the BPEL console.
2. From the list of Deployed Processes on the Dashboard tab as shown below, select the business process that is to be invoked from Oracle Business Intelligence.

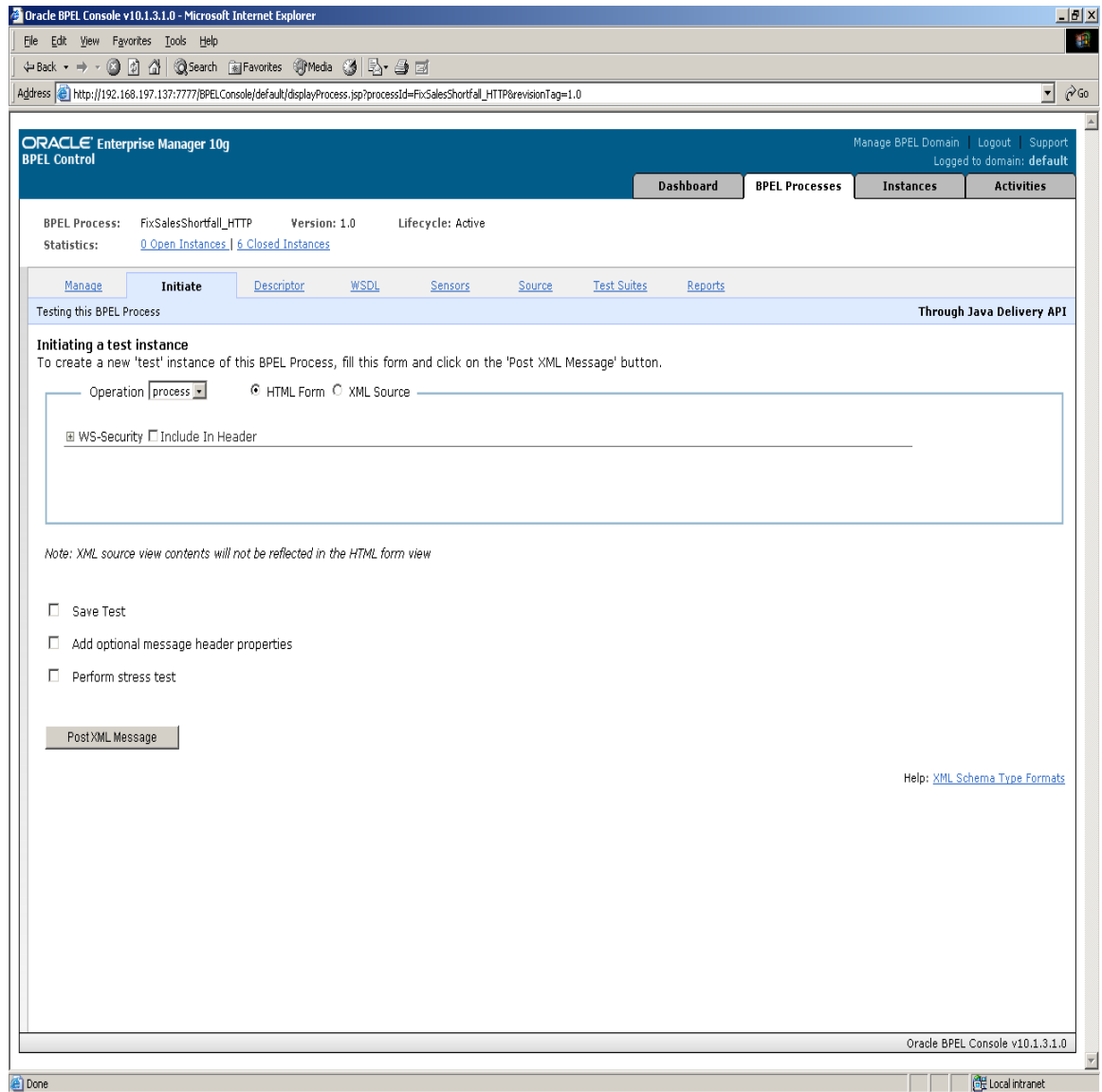
Deployed BPEL Processes		In-Flight BPEL Process Instances	
Name	Instance	BPEL Process	Last Modified
BPELProcess2			
FixSalesShortfall_HTTP			
RegionPromotionPrice			
SalesPromotionService			
SampleAnalyticsProcess			
TaskActionHandler			
TaskManager			

Recently Completed BPEL Process Instances (Work...)			
⚠	120064 : Instance #120064 of SampleAnalyticsProcess	SampleAnalyticsProcess (v. 1.0)	4/5/07 11:26:14 AM
✓	120061 : Instance #120061 of FixSalesShortfall_HTTP	FixSalesShortfall_HTTP (v. 1.0)	3/22/07 1:35:15 PM
✓	120063 : Instance #120063 of SalesPromotionService	SalesPromotionService (v. 1.0)	3/22/07 1:35:14 PM
✓	120062 : Instance #120062 of RegionPromotionPrice	RegionPromotionPrice (v. 1.0)	3/22/07 1:35:08 PM
✓	120058 : Instance #120058 of FixSalesShortfall_HTTP	FixSalesShortfall_HTTP (v. 1.0)	3/16/07 12:19:58 PM

In the examples described in this document, a BPEL business process named “FixSalesShortfall\_HTTP” is used which is shown under the ‘Deployed BPEL Processes’ section on the left.

Select or click the desired business process. This will take you to the Initiate tab for the business process as seen in the screenshot below:



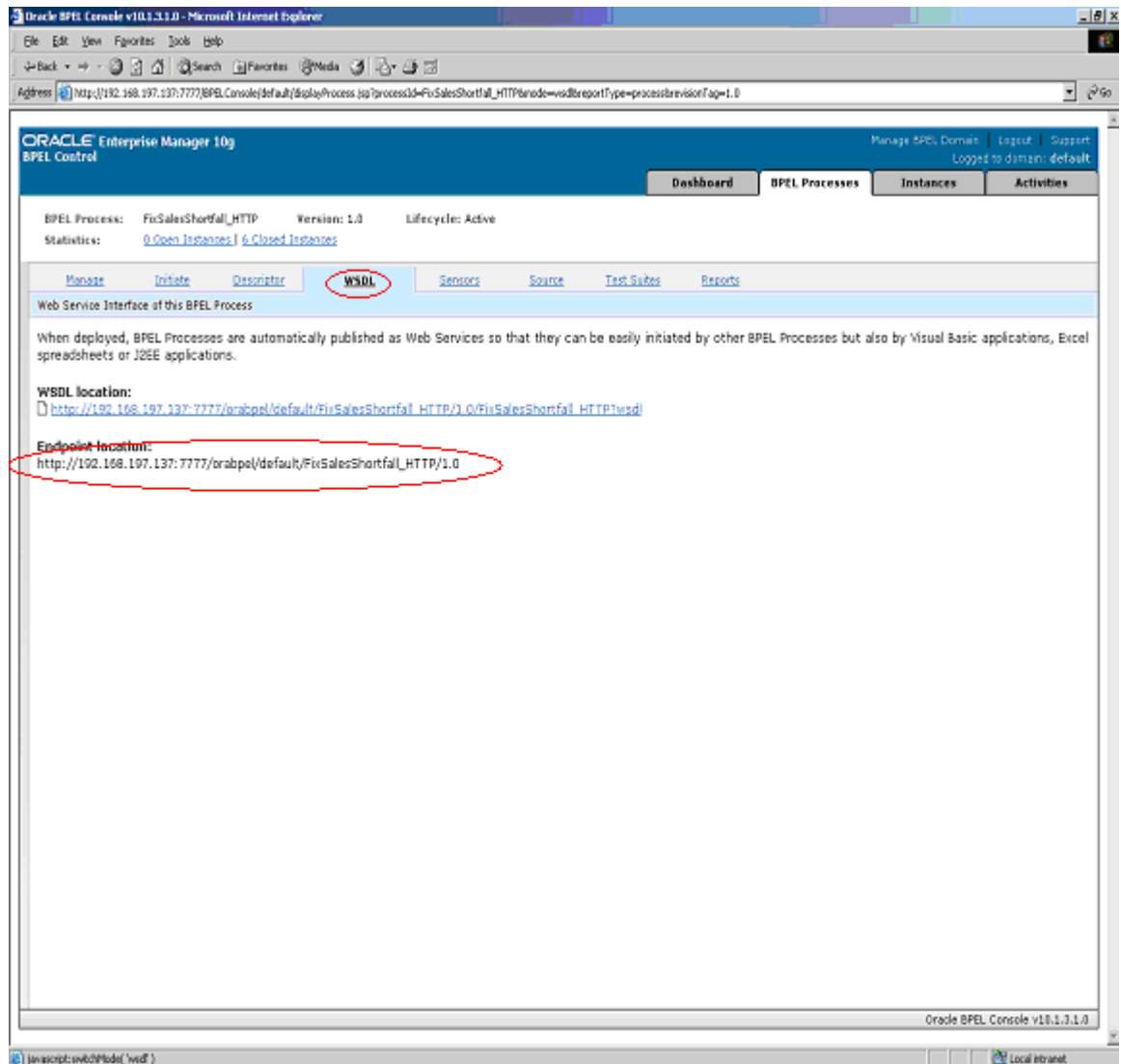
Navigate to the WSDL sub-tab. The screenshot below shows the WSDL location and the Endpoint location.

Note the Endpoint location for your business process.

As seen from the screenshot below, the Endpoint location of the FixSalesShortfall\_HTTP example business process used in this document is:

`http://192.168.197.137:7777/orabpel/default/FixSalesShortfall_HTTP/1.0`

As per your environment, 192.168.197.137:7777 will change to show the IP address and port number where BPEL is located and running.



## Creating the HTML Document that Invokes the BPEL Process

For the examples contained in this document, the code that invokes the BPEL process is contained in an HTML document that Oracle BI EE is able to access. Refer to the steps below to create the HTML document, which invokes BPEL process by using the end point of it. The sample code is provided in the Appendix. You may modify this code based on your requirements.

Create an HTML document, named for example, invokeProcess.html. Use the sample code provided in the Appendix as a reference.

InvokeProcess.html contains a javascript method “invoke” that is called when the user clicks on the OK button. In invoke() method, set the url variable to URL end point of the BPEL process to be invoked, which is determined in the previous section. For example

```
function invoke() {  
    var url = "http://192.168.197.137:7777/orabpel/default/FixSalesShortfall_HTTP/1.0"
```

```
var img = document.getElementById("image");
img.src = url;
alert("The sales promotion request has been submitted.");
window.location = document.referrer;
}
```

Where `http://192.168.197.137:7777/orabpel/default/FixSalesShortfall_HTTP/1.0` is the endpoint of the “FixSalesShortFall\_HTTP” business process, noted in Step 5 in the section titled “Determining the Endpoint of a BPEL Process” above.

Save the `invokeProcess.html` file to the following location:

`\OracleBI\oc4j_bi\j2ee\home\applications\analytics\analytics.`

During installation of OBI EE, installer asks for the install directory and data directory. “OracleBI” is the directory where OBI EE install files are installed. ‘OracleBI’ might be different for your environment (depending on the directory you chose during the install).

Note the URL to this html file:

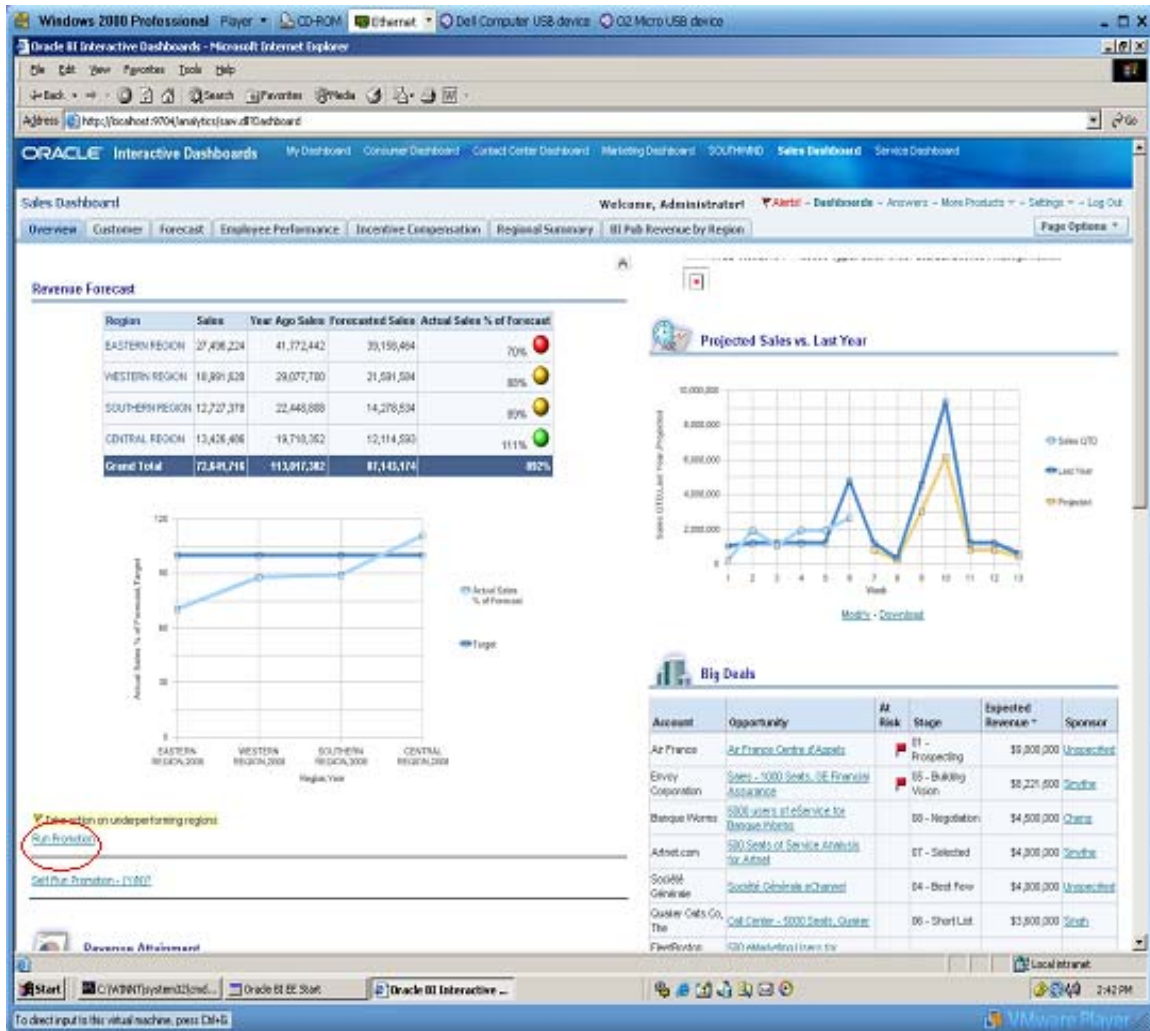
`./analytics/invokeProcess.html`

The sections below describe the configuration required to invoke a business process from the following Dashboard components:

Guided Navigation Link  
Action Link  
HTML Link or Image

### **Invoking a BPEL Process From a Guided Navigation Link**

An Oracle BI Intelligence Dashboard is shown in the figure below.



The “Run Promotion” guided navigation link, seen on the bottom left in the above figure, appears only if there are any regions with underperforming sales. The “Run Promotion” guided navigation link has been configured so that when a user clicks on the link, a business process is invoked that orchestrates the workflow of a sales promotion campaign.

The steps below configure a Guided Navigation Link to invoke a business process:

Log in to Oracle BI EE as Administrator and navigate to the desired Dashboard.

Click on “Page Options” and select “Edit Dashboard”.

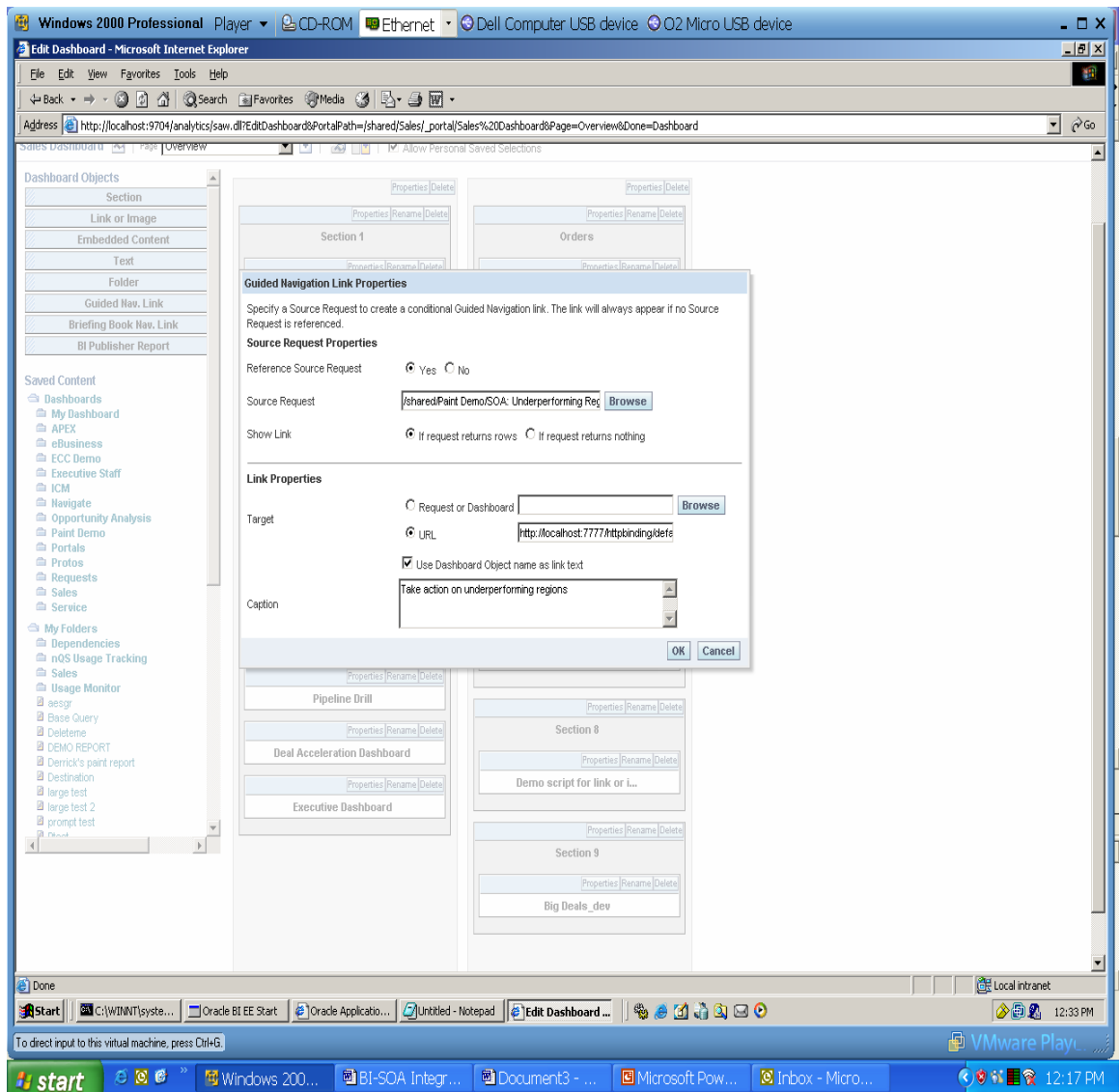
Select the “Guided Nav. Link” button from the list of Dashboard objects to create a Guided Navigation Link. Rename it with ‘Run Promotion’.

Click on the “Property” button to enter property values as shown:

Specify a Source Request to create a conditional Guided Navigation link. In the above example, “SOA: Underperforming Regions” is the source request. The “Run Promotion” link has been configured to appear if the source request returns data.

In the Link Properties section, for the Target property, select the URL radio button. In the text field, enter the URL to an HTML page that will be used to invoke the business process – in this case the invokeProcess.html file. For example:

`./analytics/invokeProcess.html`



Recall that the `invokeProcess.html` file contains code that calls the desired business process – in this case `FixSalesShortfall_HTTP` as explained in previous sections.

## Invoking a BPEL Process From an Action Link

An Action Link in a report request in an Oracle BI Dashboard can be configured to invoke a business process.

Consider the report named “Big Deals” appearing at the right in the figure below.

Oracle BI Interactive Dashboards - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media Print

Address http://localhost:9704/analytics/jsw/dlt/Dashboard

**Pipeline**

% of Quota Total Pipeline: \$361,158,974

Table

Sales Stage	Opp Revenue	Exp Revenue Target	% of Revenue Quota
01 - Prospecting	\$70,682,812	\$423,300,000	16.7%
02 - Potential Lead	\$58,680,065	\$141,100,000	42.3%
03 - Qualification	\$41,210,287	\$98,770,000	41.7%
04 - Opportunity	\$55,062,807	\$70,550,000	78.1%
05 - Building Vision	\$51,802,836	\$46,963,000	111.5%
06 - Short List	\$36,684,589	\$28,220,000	130.0%
07 - Selected	\$25,342,864	\$21,165,000	119.7%
08 - Negotiation	\$20,602,915	\$11,288,000	182.5%

Download

Projected Sales are going to be below last year sales. Research possible deals to accelerate.

[Deal Acceleration Dashboard](#)

[Executive Dashboard](#)

**Big Deals**

Account	Opportunity Name	At Risk	Stage	Expected Revenue *	Sponsor
Air France	<a href="#">Air France Centre d'Appeals</a>	01 - Prospecting	01 - Prospecting	\$9,000,000	<a href="#">Request Sponsor</a>
Envoy Corporation	<a href="#">Sales - 1000 Seats, OF Financial Assurance</a>	05 - Building Vision	05 - Building Vision	\$8,221,600	<a href="#">Sponsor</a>
Benque Viorne	<a href="#">500 Users of eService for Benque Viorne</a>	08 - Negotiation	08 - Negotiation	\$4,500,000	<a href="#">Client</a>
Artinet.com	<a href="#">500 Seats of Service Analysis for Artinet</a>	07 - Selected	07 - Selected	\$4,000,000	<a href="#">Sponsor</a>
Société Générale	<a href="#">Société Générale eChannel</a>	04 - Best Few	04 - Best Few	\$4,000,000	<a href="#">Request Sponsor</a>
Quaker Oats Co, The	<a href="#">Call Center - 5000 Seats, Quaker</a>	06 - Short List	06 - Short List	\$3,600,000	<a href="#">Sponsor</a>
FleetBoston Financial	<a href="#">500 eMarketing Users for FleetBoston</a>	06 - Short List	06 - Short List	\$3,500,000	<a href="#">Sponsor</a>
GEHE Group	<a href="#">500 Seats of Siebel eChannel for GEHE</a>	06 - Short List	06 - Short List	\$3,500,000	<a href="#">Client</a>
Coltek Company	<a href="#">Siebel Sales - 2000 Seats, Kellogg Co</a>	02 - Qualification	02 - Qualification	\$3,012,500	<a href="#">Sponsor</a>
Digital River, Inc.	<a href="#">500 Seats of Marketing for Digital River</a>	05 - Building Vision	05 - Building Vision	\$2,500,000	<a href="#">Sponsor</a>
FleetBoston Financial	<a href="#">500 Seats of Siebel Service Analysis for FleetBoston</a>	05 - Building Vision	05 - Building Vision	\$2,500,000	<a href="#">Client</a>
FleetBoston Financial	<a href="#">500 Seats of Siebel Service for FleetBoston</a>	05 - Building Vision	05 - Building Vision	\$2,500,000	<a href="#">Client</a>

Modify - Refresh

powered by ORACLE

Local intranet

Data in the “Sponsor” column is shown as an Action Link. By clicking data in that column, a business process can be invoked. This data either invokes a business process to get executive sponsor (if the value is “Request Sponsor”) or invokes a business process to request a Sponsor visit.

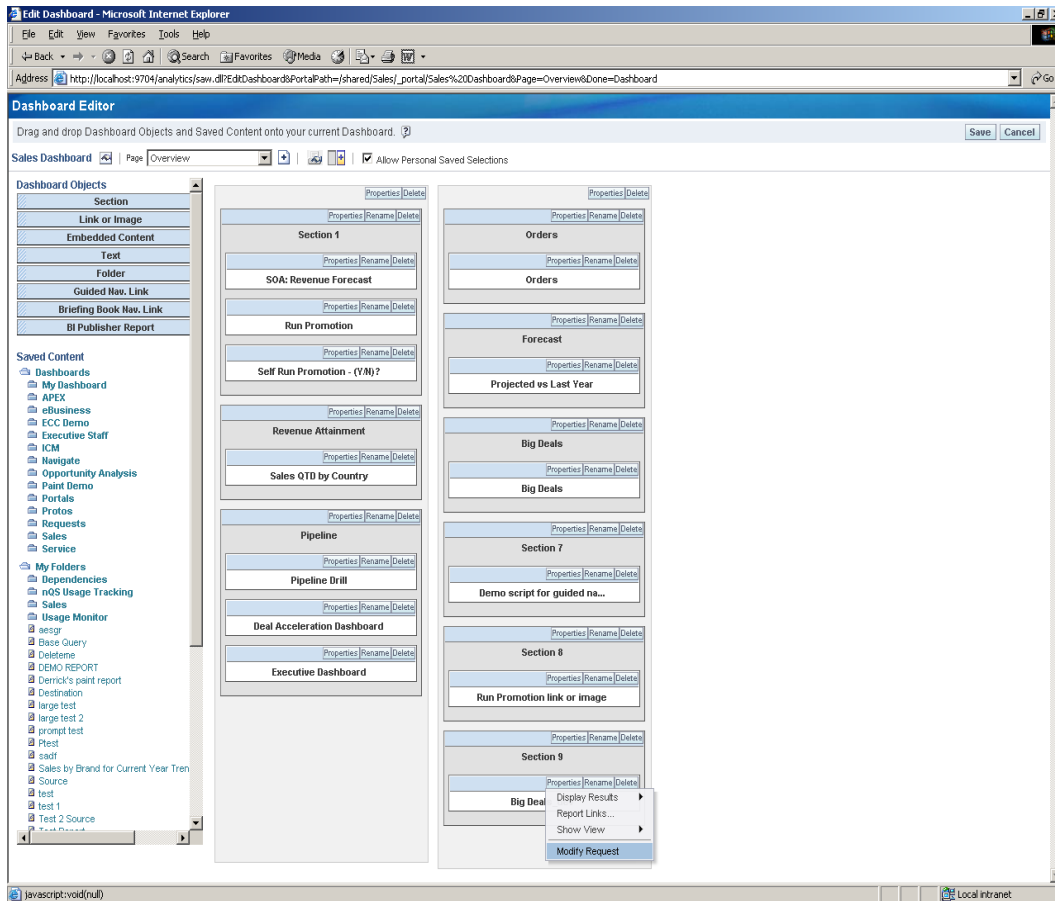
To invoke a business process from an Action Link on column, the following configuration needs to be performed:

Log in to Oracle BI EE as Administrator and navigate to the desired Dashboard.

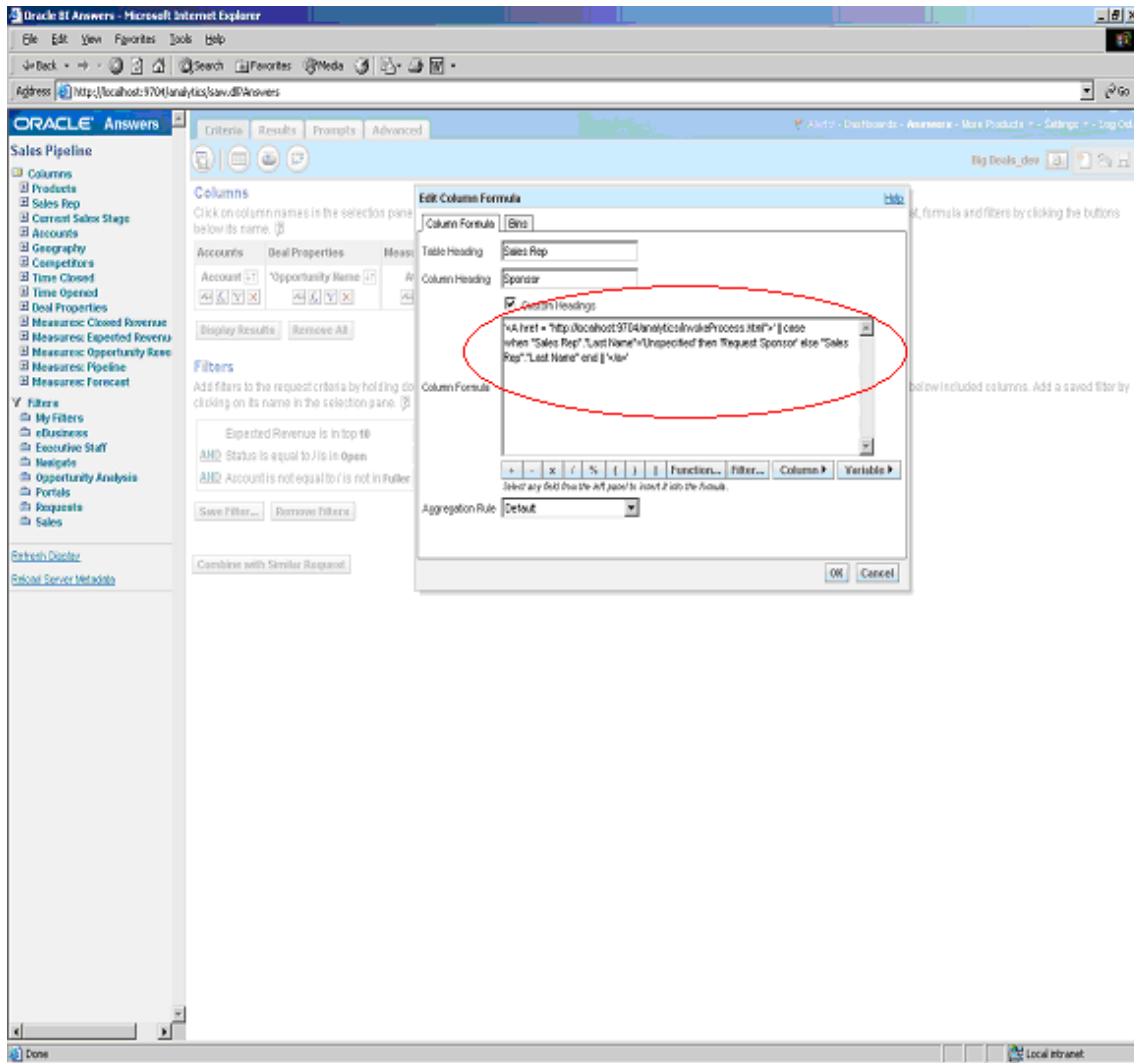
Click on “Page Options” and select “Edit Dashboard”.

Select the desired request. Click on the “Properties” button.

Select “Modify Request”.



1. In Column formula box we can define a formula to determine what the content of each cell is. In this case we can define a formula to show a link to invoke business process to get an executive sponsor, or to display the sponsors name. Select the “Edit Formula” button for the “Sponsor” column in the request from which you want to invoke business process.
2. In the Column Formula box, enter code as shown below:



'<A href = './analytics/invokeSponsorProcess.html'>' | | case when "Sales Rep"."Last Name"="Unspecified" then "Request Sponsor" else "Sales Rep"."Last Name" end | | '</a>' where the invokeSponsorProcess.html calls the appropriate BPEL process. Set <A href> tag to the URL which points to your custom html file.

The invokeSponsorProcess.html file contains code that calls the desired business process. That business process requests a Sponsor visit.

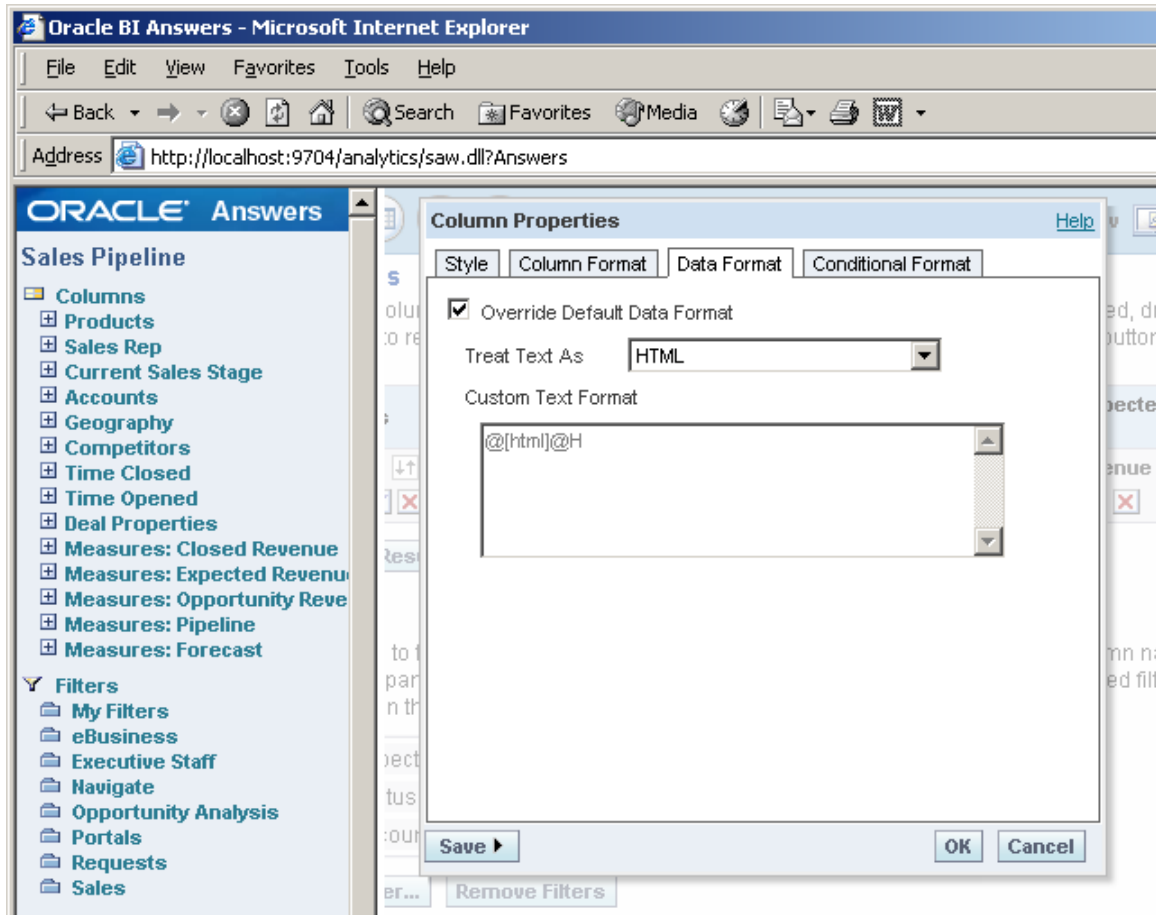
**NOTE:** For the above code to work, you must set the HardenXSS parameter to false in the instanceconfig.xml file for Oracle Business Intelligence Presentation Services as follows:

```
<ServerInstance>
<HardenXSS>>false</HardenXSS>
</ServerInstance>
```

The instanceconfig.xml located in the \OracleBIData\web\config folder.

During installation of OBI EE, installer asks for the install directory and data directory. “OracleBIData” is the directory where OBI EE Data files are installed. ‘OracleBIData’ might be different for your environment (depending on the directory you chose during the install).

Click on the Column Properties button. In the Column Properties dialog box, select the Data Format tab. Set “Treat Text As” HTML. Check the “Override Default Data Format” check box.



### Invoking a BPEL Process From an HTML Link or Image

A business process can be invoked by clicking on an HTML link or an image. Consider the Oracle Business Intelligence Dashboard shown in figure below. The HTML hyperlink “Run Promotion” is seen at the top of the right of the screen.

Oracle BI Interactive Dashboards - Microsoft Internet Explorer

Address: http://localhost:9704/analysis/tavw:BI/Cashboard

Download - Add to Desktop Dock

Demo script for guided navigation  
Demo script for guided navigation

**Run Promotion**

**Pipeline**

% of Quota

Total Pipeline: \$361,153,574

Sales Stage	Opp Revenue	Exp Revenue Target	% of Revenue Quota
01 - Prospecting	\$70,662,612	\$423,300,000	16.7%
02 - Potential Lead	\$99,660,066	\$141,100,000	42.3%
03 - Qualification	\$41,210,267	\$89,770,000	41.7%
04 - Opportunity	\$95,092,667	\$70,550,000	78.1%
05 - Building Vision	\$51,902,338	\$45,583,000	111.5%
06 - Short List	\$36,694,589	\$29,220,000	130.0%
07 - Selected	\$25,342,064	\$21,165,000	119.7%
08 - Negotiation	\$30,602,915	\$11,288,000	182.5%


Download

Projected Sales are going to be below last year sales. Research possible deals to accelerate.  
Deal Acceleration Dashboard

Executive Dashboard

**Big Deals**

Account	Opportunity Name	At Risk	Stage	Expected Revenue *	Sponsor
Air France	Air France Centre of Assets	01 - Prospecting	01 - Prospecting	\$5,000,000	Request Approval
Emvivi Corporation	Sales - 1000 Seats, GE Financial Assurance	05 - Building Vision	05 - Building Vision	\$8,221,500	Review
Bankque Yloma	5000 Users of eService for Quebec Yloma	08 - Negotiation	08 - Negotiation	\$4,500,000	Check
Artinet.com	500 Seats of Service Analysis for Artinet	07 - Selected	07 - Selected	\$4,000,000	Review
Société Générale	Société Générale eChannel	04 - Best Few	04 - Best Few	\$4,000,000	Request Approval
Quaker Oats Co, The	Call Center - 5000 Seats, Quaker	06 - Short List	06 - Short List	\$3,600,000	Check
FleetBoston Financial	500 Marketing Users for FleetBoston	06 - Short List	06 - Short List	\$3,600,000	Review
	500 Seats of Select eChannel			\$3,600,000	

Clicking “Run Promotion” link or image  (marked in above screenshot) can enable the user to initiate a business process that orchestrates the workflow of a marketing campaign directly from the Oracle BI EE product.

To achieve this functionality, perform the following configuration:

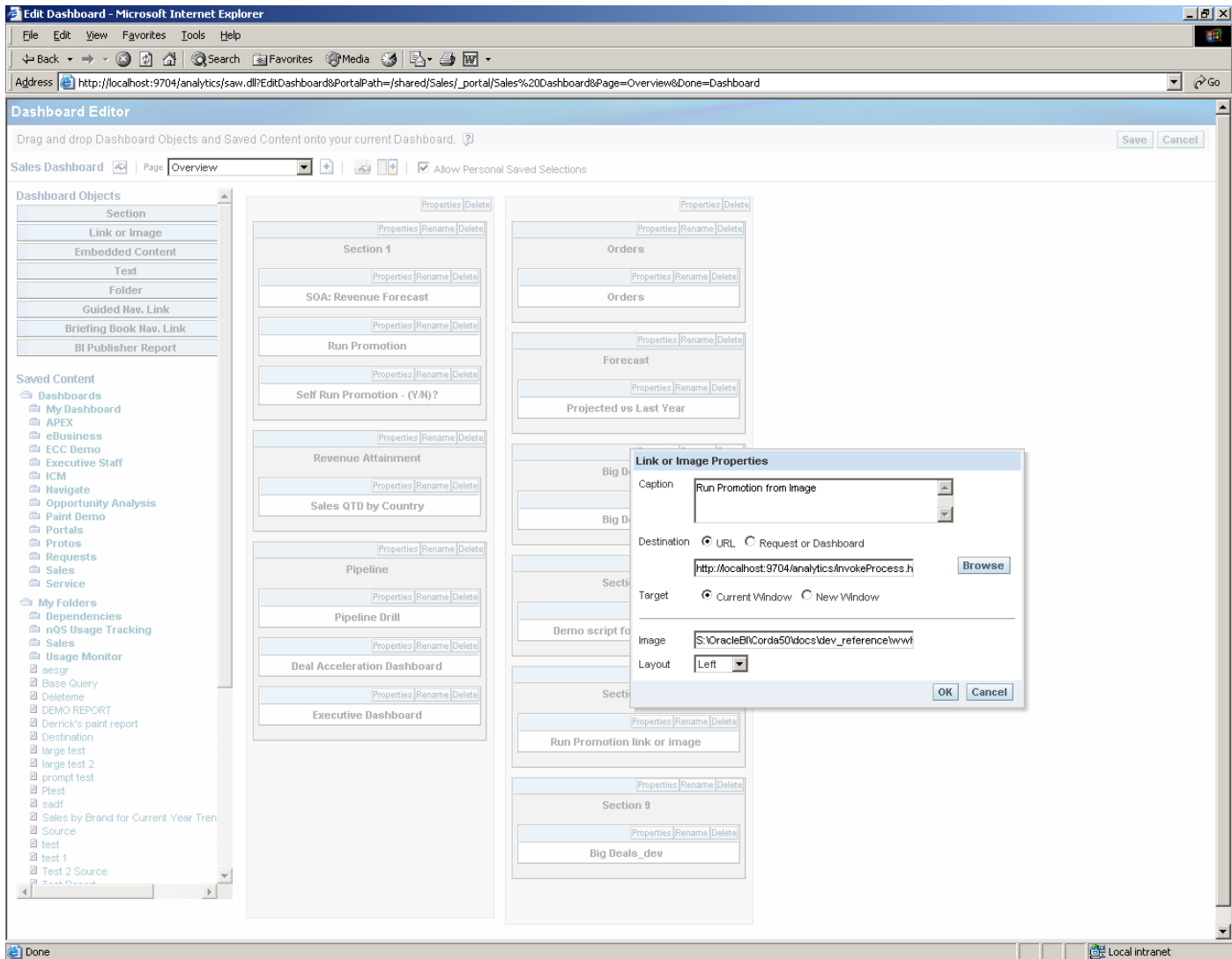
Log in to Oracle BI EE as Administrator and navigate to the desired Dashboard.

Click on “Page Options” and select “Edit Dashboard”.

Click on the “Link or Image” button from the list of Dashboard objects.

Drag the “Link or Image” object to the required location in the right panel.

Click on the Rename button to rename the “Link or Image” object. The link and/or image will be displayed on the screen.



1. Set the following Link or Image object properties:

- a. Set Caption to the string that should appear as “Run Promotion from Image” the link.
- b. For Destination, select the URL radio button.

Enter the URL for the invokeProcess.html file in the text field:

<http://192.168.197.137:9704/analytics/invokeSponsorProcess.html>

Where 192.168.197.137:9704 will be replaced by URL of the machine in your environment that hosts the web server for Oracle Business Intelligence.

- c. Default for Target is Current Window
- d. Optionally, enter the image file location.

Recall that the `invokeProcess.html` file contains code that calls the desired business process – in this case `FixSalesShortfall_HTTP` as explained in previous sections.

## Conclusion

This document described the configuration required to invoke a BPEL process from Oracle BI EE, specifically from Guided Navigation links, Action links and HTML links and images. This functionality empowers business intelligence users to take action from insight in dashboard pages. A user does not need to leave the Oracle BI application to take action. BPEL can take complex decisions, use human workflow or call back into Oracle BI and SOA. The integration of SOA within Oracle BI EE allows Interactive Dashboards to be developed that makes business insight directly actionable by business intelligence users.

## Appendix

The following is sample code included in the `InvokeProcess.html`. The main purpose of the html code is to invoke the BPEL process. The `invoke()` method in the code below calls the example business process called “`FixSalesShortfall_HTTP`”.

```
<HTML>
<HEAD>
<TITLE>Promotion Confirmation</TITLE>
<STYLE type="text/css">
  BODY { margin: 0;
        padding: 0;
        font-family: arial, sans-serif;
        font-size: 12pt;
        color: #336699 }

  .bold { font-weight: bold }
</STYLE>
<SCRIPT type="text/javascript">
function invoke() {
  var url = "http://192.168.197.137:7777/orabpel/default/FixSalesShortfall_HTTP/1.0
“
  var img = document.getElementById("image");

  img.src = url;

  alert("The sales promotion request has been submitted.");

  window.location = document.referrer;
}

function cancel() {
  window.location = document.referrer;
}
</SCRIPT>
</HEAD>
<BODY marginheight="0"
  topmargin="0"
  vspace="0"
  marginwidth="0"
  leftmargin="0"
```

