

# Oracle® Fusion Middleware

## Understanding Oracle Real-Time Integration Business Insight



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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

ORACLE®

Oracle Fusion Middleware Understanding Oracle Real-Time Integration Business Insight, 12c (12.2.1.3.0)

E97617-01

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# Preface

*Oracle Fusion Middleware Oracle Real-Time Integration Business Insight Concepts* is a document that provides details and information about the concepts of Oracle Real-Time Integration Business Insight.

For a set of Oracle Real-Time Integration Business Insight tutorials, visit <http://www.oracle.com/technetwork/middleware/insight/learnmore/insight-tutorials-2885082.html>.

## Audience

This book is intended for all users of Oracle Real-Time Integration Business Insight application. It describes basic concepts of the product and is important in understanding any of the documentation for Oracle Real-Time Integration Business Insight.

It is assumed that you have basic knowledge of the following:

- *Service Oriented Architecture (SOA)*
- *Service Bus Architecture (SB)*.

## Documentation Accessibility

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## Related Documents

For more information, see these Oracle Resources:

- *Oracle Fusion Middleware Real-Time Integration Business Insight Getting Started Guide*
- *Oracle Fusion Middleware Oracle Real-Time Integration Business Insight User's Guide*
- *Oracle Fusion Middleware Oracle Real-Time Integration Business Insight Administrator's Guide*.

## Conventions

The following text conventions are used in this document:

Convention	Meaning
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

# 1

## Overview

Oracle Real-Time Integration Business Insight is an application designed for business users. The application provides a business-friendly experience, allowing users to model, collect, and monitor business-level metrics using web-based dashboards, and reports. There is no need to modify already-deployed integrations and applications.

The application works with existing Oracle middleware products such as SOA (Service Oriented Architecture) and Oracle Service Bus.

The features and capabilities of Oracle Real-Time Integration Business Insight at a high-level are:

- Provides a web-based feature to allow business users to:
  - Model business concepts
  - Map models to implementation
  - Monitor business progress through dashboards
- Provides efficient workflow and runtime
  - Zero development effort
  - Minimal impact to runtime
- Provides advanced analytics
- Bundles reporting capabilities.

# 2

## Models

A model provides a grammar for describing the aspects of an application that are key for tracking business performance and mapping those concepts to existing software application implementation. In general, models of a high-level application are defined through an iterative collaboration between a business user and an architect.

The business user generally describes the high-level concepts associated with an integration application, whereas the architect refines those concepts and maps them to an application implementation. Once the model is defined and mapped, the system starts collecting metrics associated with instances of the business model. The metrics are used to render dashboards and reports.

Any model includes:

- Basic metadata. For more information, see [Model Metadata](#).
- Milestones and associated indicators. For more information, see [Indicators](#).
- Unique Instance Identifier. For more information, see [Unique Instance Identifier](#).

## Model Metadata

The model metadata is unique for each model in the application.

The metadata of a model constitutes the following:

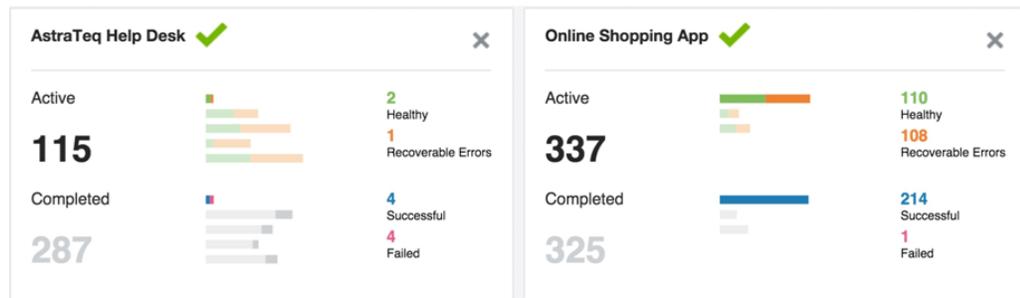
- Model name
- Model description
- Natural language business model specific singular and plural terms for instances; for example, “order” and “orders”
- Icon representing the model
- [Milestones](#)
- [Indicators](#).

## Model Summary Cards

Business owners often want to see a quick overview of the performance of their business. Consoles support this, but require users to open each console individually and inspect the status of the milestone dashboards. Model summary cards provide an easy way for business owners to see important business metrics at a glance, for multiple models, and all on the Insight home page.

You can add a maximum of six models to the **Home** page. See *Model Summary Cards* in *Oracle Fusion Middleware Oracle Real-Time Integration Business Insight User's Guide* for more information.

Figure 2-1 Model Summary Cards



## Milestones

Milestones represent a key abstraction in an integration application model. They are points in an integration application that represent business progress and map to at least one point in the application implementation.

Generally, a business user defines the milestones iteratively and creates the milestones with appropriate metadata. The architect then refines the milestones by mapping them to appropriate points in the application implementation.

## Characteristics of Milestones

Characteristics of a milestone include:

- **Atomicity:** A milestone has no entry/exit point. A milestone is considered to be passed, but you are never in a milestone. A milestone has zero duration and is passed atomically. However, it is important to consider the duration it takes to reach from one milestone to another.
- **No enforced ordering:** Milestones can be passed in any order and repeatedly. There is no predefined order for the milestones. However, the system does maintain the *natural ordering* in which the milestones were defined in the model. For example, *Order Received* generally happens before *Order Complete*. The system lists milestones in this natural order in the context of selection and reporting.
- **Semantic Types:** Milestones may have one or more semantic classifications that describe the milestone's role in an application's execution. See also, [Types of Milestones](#).
- **Implementation Mapping:** Milestones are mapped to points in an application implementation that indicate that the milestone has been passed.
- **Indicators:** Milestones can have indicators associated with them that are extracted when the milestone is passed. These indicators represent the state of the instance when the milestone is passed, and have a variety of different semantic options.

For more information, see [Indicators](#).

## Types of Milestones

Milestones are of the following types:

- **Initial:** An instance is assumed to be valid by Insight when a milestone of type "Initial" is passed. This concept is key to filtering out instances that may already be in flight when Insight starts monitoring a runtime engine. An instance which has most recently passed an initial milestone is considered "active."
- **Terminal:** Represents an expected end to the instance associated with the business model. For example, a milestone representing the completion of an order, "Order Complete" might be modeled as a terminal milestone. Insight does not enforce instance cessation after a terminal milestone, and further milestones may be passed. An Insight instance is considered "complete" when the last milestone passed was a terminal milestone.
- **Error:** Represents a milestone that reflects some business error condition being encountered in the execution of the application. The application implementation may account for and recover from errors, and thus error milestones are not necessarily also terminal. An instance which has most recently passed an error milestone is considered "error."
- **Terminal Error:** Represents an error milestone, which also represents the expected end of the application processing. An instance which reaches a Terminal Error milestone is considered to be "failed."
- **Standard:** A milestone that is neither terminal nor error is called a standard milestone. An instance, which has most recently passed a standard milestone is considered "active."

Every model must pass through at least an **Initial** and a **Terminal** milestone.

## Unique Instance Identifier

Every Insight model must have exactly one identifier defined. The identifier guarantees uniqueness among all integration instances. Furthermore, once an identifier value has been extracted for an instance, a different value cannot be extracted (i.e., you cannot change the value of the identifier for an instance).

## Indicators

Indicators are key pieces of raw business data that are extracted as Insight observes the execution of application instances. Indicators allow business users to gain insight into the proper functioning of the application, and also allow comparisons between application instances.

Indicators have the following metadata:

- **Name**
- **Natural language description**
- Use as **filter** criteria — determines whether this indicator can be used as part of the filter criteria in the console (for example, filtering dashboards.)
- Associated **Milestone** — milestone in which the indicator is extracted
- **Implementation Mapping(s)** — Indicators use their associated milestone's mapping. This allows Insight to extract the indicator values at the appropriate point in the implementation. Indicators can be **Dimensions** or **Measures**. They are

collected each time the associated milestone is passed updating the extracted values while **Identifiers** are collected only once and do not change.

For more information, see [Dimensions](#), [Measures](#), and [Unique Instance Identifier](#).

- **Extraction Criteria** — uses XPath functions to define how values are extracted from message payloads of simple types and XML types. Non-XML types like Javascript variables and others are not supported.

## Measures

Measures identify values, which allow the state of the integration application to be quantified. A single measure can change over the lifecycle of an instance. For example, a typical order application might define measures for *Total Order Value* or *Item Count*.

## Dimensions

Dimensions provide a type of grouping and categorization of instances, allowing for *slicing and dicing* of aggregate integration measures. For example, a typical order application might define dimensions for *Geographic Region*, *Sales Channel*, or *Product Category*.

# Model Lifecycle and Activation

A newly created model is in *Draft* state until the model is *activated*. Only activated models collect metrics. While a model is being activated, it is temporarily in the state of *Activation in Progress*. If activation is unsuccessful, the state is updated to *Activation Failed*. If the activation is successful, the state changes to *Activated*. A model can be deactivated as a result of a change to the underlying implementation, or a user can deactivate it – in either case the model is in *Deactivated* state with additional information available on hover.

To make changes to an active model, a new *Draft* is created, which can be activated after the changes have been completed.

## Model Lifecycle States

Any model passes through the following lifecycle states:

- **Draft**: In this state, changes can be made to the model and no metrics are collected. A draft model supports an **Export** action using which you can export a model and import it into the application.
- **In Progress**: A model is in this state when activation has been initiated
- **Activated**: When a model is in this state, metrics are now being collected, changes are not possible. An activated model supports an **Export** action using which you can export a model and import it into the application.
- **Failed**: A model falls into this state when it encounters issues during activation
- **Deactivated**: A model moves into this state when a change occurs in the underlying implementation or you deactivate it specifically.

- **System Deactivated:** when the underlying integration application becomes deactivated/undeployed due to systemic errors such as composite getting deactivated due to loss of connectivity and retries exceeding threshold.
- **User Deactivated** if you specifically deactivate the model.

## Model Lifecycle Actions

You can execute the following actions on a model, depending on the current state of the model:

- **Activate:** Activates a draft model. The model definition must be 100% complete to activate it. A draft can be activated to replace the existing active model.
- **Deactivate:** Deactivates an activated model.
- **Delete:** Deletes an activated model. This action is permanent and cannot be reversed.
- **Create Draft:** Creates a draft of an active model. You can edit the draft without affecting the active model.
- **Discard:** Discards a draft model. This action is permanent and cannot be reversed. Note that this action is applicable only to a draft model.

## Impact of Reactivation of Model After Changes in Model Metadata

If you change the metadata of an activated model and try to activate it again, the existing metrics of the model are impacted.

The following table illustrates the impact on the existing metrics of the model being reactivated.

**Table 2-1 Impact on Existing Metrics**

S. No.	Model Metadata Area	Operation	Details	Impact on existing metrics collected
1	Business Model	Business Model Name Change	Model name changed in the application UI	The model name is changed across the application and there is no impact on the existing metrics.
2	Milestone mapping	Milestone added	A new milestone gets added	New instances created after activation will start collecting data for the new milestone. Existing metrics will remain unaffected.

Table 2-1 (Cont.) Impact on Existing Metrics

S. No.	Model Metadata Area	Operation	Details	Impact on existing metrics collected
3	Milestone mapping	Milestone deleted	A milestone gets removed	Existing metrics collected for the deleted milestone will be lost. Existing instances will depict that the milestone was never reached.  You will also be notified with a warning message about such changes upon re-activation of the model.
4	Milestone mapping	Milestone type modified	Milestone type is modified. The type can be any of the following: <ul style="list-style-type: none"> <li>Initial</li> <li>Terminal</li> <li>Error</li> <li>Error Terminal</li> <li>Standard</li> </ul>	The existing metrics may become confusing as the milestone type is being changed. Suppose a milestone which was terminal is changed to Standard. The milestone details page for existing instances will not show any terminal milestone.  You will also be notified with a warning message about such changes.
5	Milestone mapping	Milestone name modified	The milestone name is modified	No impact on existing metrics. All consoles will show the changed name.
6	Milestone mapping	Milestone implementation mapping changed	The milestone implementation mapping locator is changed	No impact on existing metrics. New instances will collect data in accordance to new implementation mapping.
7	Indicator mapping	Indicator added	A new indicator has been added	No impact on existing metrics. New instances will start collecting metrics for new indicator upon re-activation of the model.
8	Indicator mapping	Indicator deleted	The existing indicator is deleted	The existing metrics collected for the deleted indicator will be lost .  On activating the model with a deleted indicator , you will be presented with a list of consoles where the indicator is being used . You must remove such consoles or remove the usage of the indicator from those consoles to proceed with the activation.

**Table 2-1 (Cont.) Impact on Existing Metrics**

S. No.	Model Metadata Area	Operation	Details	Impact on existing metrics collected
9	Indicator mapping	Indicator Extraction criteria is modified	Indicator extraction criteria is modified which results in data type of the indicator to be changed	The existing metrics collected for the indicator will be lost.  On activating the model with a deleted indicator, you will be presented with a list of consoles where the indicator is being used. You must remove such consoles or remove the usage of the indicator from those consoles to proceed with the activation.
10	Indicator mapping	Indicator Name is modified	The indicator name is modified	No impact on existing metrics. The new indicator name will continue to show for existing and new instances.

## Effect of SOA/Service Bus Transactions

The capture of milestones and business indicators are intricately related to the transaction semantics in the SOA composite or the Service Bus on which the Insight model is based. Insight captures milestones only when they have reached/passed, which means only when the SOA/Service Bus transaction was committed. However, if a milestone is configured as an error milestone, it is captured even when the transaction is rolled back, because in this case the user is explicitly looking for error.

The following table summarizes various scenarios:

**Table 2-2 Transaction Behavior**

Type of Milestone	On Rollback
Initial	Milestone is NOT captured
Standard	Milestone is NOT captured
Error	Milestone is captured
Terminal	Milestone is NOT captured
Terminal and Error	Milestone is captured

# 3

## User Personas

Oracle Real-Time Integration Business Insight has a variety of user personas. Each user has a defined set of roles and the areas of the application the user can access varies based on the permissions attached to the user role.

The following user personas are available:

**Table 3-1 User Personas and their Descriptions**

User Role	Description
<i>InsightBusinessUser</i>	User who has the knowledge of the business use case and creates milestones and indicators using business language , irrespective of the implementation.
<i>InsightIntegrationArchitect</i>	User who has an understanding of the implementation of the application and defines mapping of the milestones to the appropriate location in the implementation and the extraction of indicators.
<i>InsightExecutive</i>	User who has the knowledge of how the business works and who wants to gain insight into business performance. This user has access to the dashboards; permissions to create, view, and edit dashboards and reports.
<i>InsightAdmin</i>	User who acts as a super user. This user has all the privileges of an <i>InsightModelCreator</i> user and has access to all the models created. The administrator manages the Insight application and creates connections to the implementation to enable mapping of the models.
<i>InsightModelCreator</i>	User who has the privilege to create models. This user is the owner of the model.
<i>InsightConnectionCreator</i>	User who has privileges for creating connections.

# 4

## Insight Console

A console associated with a model gives a business owner visibility into the details of business performance. The default console shows detailed metrics collected for the model of the business application, focusing on the milestones.

The business owner can gain meaningful insight into business performance once the model is activated. You can also create your own dashboards based on the indicators defined in the model. This allows business owners to track metrics specific to their business.

### Understanding Dashboards

The main console shows information about the milestone performance of an integration application. For example, once the model of the application has been created and activated, business owners can identify bottlenecks in the application and track key metrics immediately and in real time.

The default dashboards are also known as *Milestone Dashboards* as they show only milestone information. These dashboards display the progress of the execution of various instances of the business model. To see the values of indicators, users can create custom dashboards, or use the Instance List and Instance Details features.

The status area is a collapsible section of the **Dashboards** page that always displays the last time the model changed to/from active/inactive state. This area also displays the search tool. You can see the model's icon, model description, and the descriptions for Single and Multiple Instances (that were defined while creating the model).

See also:

- [Milestone Dashboards](#)
- [Custom Dashboards](#)
- [External Dashboards](#).

### Milestone Dashboards

After a model is defined and activated, Insight begins to collect metrics on running instances immediately. Within a few moments, the business user can begin to evaluate the state of the integration application using the *Milestone Dashboards*. These dashboards are provided by default along with the application. The *Milestone Dashboards* show details on the number of times that milestones have been passed within the filter criteria specified.

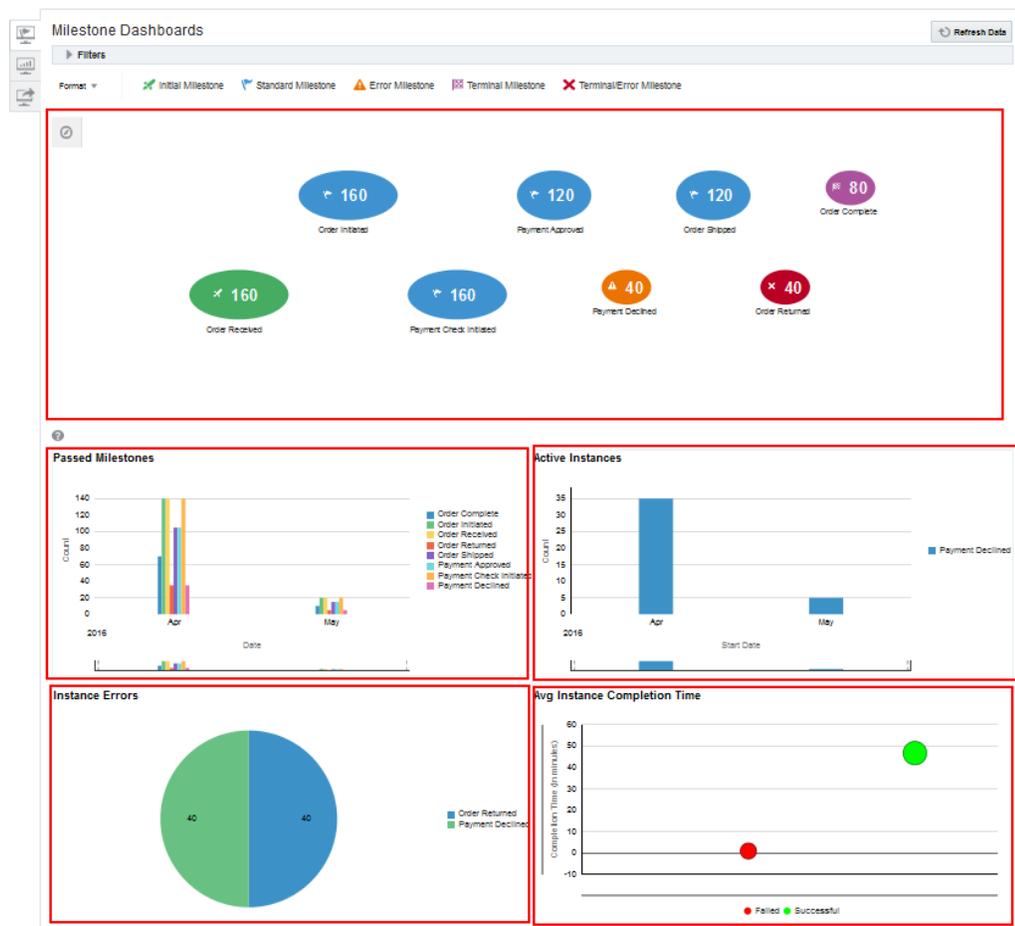
Oracle Real-Time Integration Business Insight provides the following milestone dashboards:

- **Milestone Summary Dashboard** displays the time a milestone takes to move to the next milestone and from previous milestone to the current milestone. The default view of this dashboard is diagrammatic view.

- **Passed Milestones** dashboard displays bar view of the count of milestones passed for a given date grouped by the start of each day.
- **Active Instances** dashboard displays stacked bar view of the count of currently active instances by the date they were started and grouped by the start of each day.
- **Instance Errors** dashboard displays pie view of the count of instances where the final milestone was defined to be an *Error* milestone.
- **Avg Instance Completion Time** dashboard displays bubble view of the completed and failed instances.

The following figure illustrates the various milestone dashboards.

**Figure 4-1 Various Milestone Dashboards**



For more information, see Milestone Dashboards in *Oracle Fusion Middleware Oracle Real-Time Integration Business Insight User's Guide*.

## Custom Dashboards

On the Consoles page, when you click the **Custom Dashboards** icon (this icon is located to the left edge of the screen and is below the **Milestone Dashboards** icon),

you navigate to the **Custom Dashboards** page. You can create visualizations (charts) for viewing more specific data not seen in the default console page. This data is largely about the values of various indicators configured for the business model.

Unlike the default dashboards, custom dashboards are specific to each business model. You can view the existing custom dashboards, create new ones and/or delete existing ones. All changes made are permanent. There is no Undo or Save button available. For more information, see [Chart Types](#).

Irrespective of the user who logs in to the application, the same dashboards that existed after the last create/delete operation are visible on the **Custom Dashboards** page of the **Console** for the same model.

## Chart Types

The following chart types are available for the custom dashboards:

- *Pie Chart* — a circular chart in which each sector represents a variable.
- *Bar Chart* — a 2 dimensional chart in which the length or height of the bar represents each variable.
- *Bubble Chart* — a 3 dimensional chart in which each variable is represented as a disk and each disk has the three coordinates.
- *Area Chart* — a 2 dimensional chart which is based on a Line chart. The area between the axes and line represents each variable.

You can choose any of these chart types for a custom dashboard. Based on the chart type you choose, the parameters vary.

## External Dashboards

External Dashboards are the dashboards that have been created externally in the Oracle Business Activity Monitoring Composer. Insight provides an option to add the external dashboards to Insight and view them.

For more details about external dashboards, see the External Dashboards section in the *Oracle Real-Time Integration Business Insight User's Guide*.

## Instances

Instances represent the activity of their associated model. A single instance is one unique occurrence of the defined model. An instance always begins when one of the model's initial milestones is passed and always ends when one of the model's terminal or terminal error milestones is passed. This activity is more commonly described using the Model-specific singular and plural instance names defined within the Model metadata, e.g. "order" and "orders".

An application instance can exist in the following states, under the following conditions:

- **Active**: an instance is said to be in this state when it has passed either an initial or a standard milestone most recently
- **Error**: an instance is said to be in this state when it has passed an error milestone most recently

- **Completed:** an instance is said to be in this state when it has passed a terminal most recently
- **Failed:** an instance is said to be in this state when it has passed a terminal error milestone most recently.

## Instance List

The list shows the information including the start date, the end date, the last milestone passed, and the values of various indicators, collected by Insight and associated with that instance. The Instance List provides you with the ability to search for one instance by the unique identifier. Users with appropriate role privileges can inspect lists of instances that match search criteria from the Instance List page. From this list, you can drill down into instances and inspect detailed metadata.

For more information, see Instance List in *Oracle Fusion Middleware Oracle Real-Time Integration Business Insight User's Guide*.

### Filtering instances

When considering trends in aggregate metrics, or when trying to find specific sets of instances, it is often important to restrict instances to those that match specific criteria. Insight supports a sophisticated set of filter criteria in several different contexts that allow business owners to focus on the business data that matters most to them. Filter criteria can be specified in the following contexts:

- Milestone Dashboards (Consoles)
- Instance List
- Custom Dashboards

For milestone dashboards, only milestone-related filter criteria can be specified, including instance start date, end date, duration, passed milestones, and so on

For the Instance List and Custom Dashboards, business users can also specify criteria based on indicators that have been marked as *filterable*.

**Figure 4-2 Filters**

The screenshot shows a 'Filters' panel with the following elements:

- Lifecycle**
  - order Start Date: Last 1 Day
  - order End Date: [dropdown]
  - order Duration: [dropdown]
  - Milestones: [dropdown]
  - order Status: [dropdown]
- Indicators**
  - Total order amount: [dropdown]
  - Shipping State: [dropdown]
- Buttons: Clear All, Apply

## Instance Details Page

The basic use of the instance details page is to give a chronological detailed flow of any particular instance that you wish to view.

A user looking for failed instances, or running instances or any other filtered list of instances on the Instance List may as a consequence want to delve into each of these instances to investigate the causes for the same. The last column for each instance on the Instance List contains a side arrow to drill down into the instance details page, which shows details for that particular instance in the form of time line depicting which milestones were hit and when. You can also click the Identifier.

The instance details page also shows a list of indicators grouped according to the milestone with which they are associated, and the values of these indicators.

**Figure 4-3 Navigating to Instance Details Page**

Credit Checks

▶ Filters

Customer SSN	Credit Check Start Date	Credit Check End Date	Credit Check Status	Last Milestones ▲▼	Customer Income	State	City	
311	05/25/2016 08:48:19	05/25/2016 08:49:54	Successful	RequestProcessed	45000	NY	NewYork	▶
1111	05/25/2016 03:23:07	05/25/2016 03:23:38	Successful	RequestProcessed		CA	SFO	▶
311	05/25/2016 03:23:08	05/25/2016 08:49:54	Successful	RequestProcessed	45000	NY	NewYork	▶
311	05/25/2016 08:49:18	05/25/2016 08:49:54	Successful	RequestProcessed	45000	NY	NewYork	▶
211	05/25/2016 03:23:07	05/25/2016 03:23:43	Successful	RequestProcessed	15000	CA	LA	▶

Page 1 (1-5 items) K < 1 ... >

Click any indicator as shown in the figure below, to drill down to the details.



**Subject:** Incident ID 174 [Insight Report]

A Problem has been reported by a user in the Real-Time Integration Business Insight console.

Reported Milestone:

Ticket Rejected - Terminal Milestone - 02/24/2016 01:37:09 - ServiceRequest [1.0]  
&lt; rejectionService &lt; receiveInput - [http://e5bfd4595c28:7001/em/faces/ai/soa/messageFlowLauncher?target=/Domain\\_soainfra/soainfra==weblogic\\_domain=0000L9Ng\\_uPFw0H6yvrY6G1M\\_eV0000043](http://e5bfd4595c28:7001/em/faces/ai/soa/messageFlowLauncher?target=/Domain_soainfra/soainfra==weblogic_domain=0000L9Ng_uPFw0H6yvrY6G1M_eV0000043)

The links in the above message are accessible only to appropriately privileged users.

# 5

## Data Connections

Oracle Real-Time Integration Business Insight has the ability to create models of running integrations, SOA and Service Bus, and then monitor those models in real time for business activity. To discover, model, and monitor the applications running on these Middleware services, Insight maintains metadata describing how to connect and discover deployed applications. This metadata is maintained in structures called *connections*. Connections encapsulate details such as the URL and login information of a running Middleware service (e.g. Service Bus).

To map an Insight model (create implementation mapping), appropriate connections must be defined and validated. A user with the roles *InsightConnectionCreator* or *InsightAdmin* creates connections. You can update a connection easily, but such update is permitted only if no models are presently activated on the connection. If activated models are using the connection, you must declare a new connection and use that connection for future models and drafts or, alternately, you can deactivate the active models, change the connection, and reactivate.

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## Reports

Advanced and extensible reporting capability is available with Insight. Report functionality is provided by the reporting capabilities of Oracle Business Intelligence Enterprise Edition (OBIEE), and Insight must be configured to point at a running instance of OBIEE.

The default reports include a rich set of functionality including the ability to generate details on running instances, determine instances that are stalled or in an error state, and identify milestones that are likely bottlenecks in an integration application.

You can create custom reports for the models using the Oracle Business Intelligence Reporting capabilities available as part of Oracle Business Intelligence Enterprise Edition. These reports are automatically made available for Insight for execution.

For more information about configuring reports, see *Configure Reports* in *Oracle Real-Time Integration Business Insight Administrator's Guide*.