Extensibility of Oracle BI Applications

The Value of Oracle’s BI Analytic Applications with Non-ERP Sources

A White Paper by Guident

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Introduction

A critical success factor for successful adaptation of Business Intelligence (BI) in organizations is proven results in a relatively short period of time. To maintain executive buy-in and funding it is often required for BI projects to show results in 90-120 days. For solutions with Oracle E-Business Suite, PeopleSoft or Siebel CRM the choice of using Oracle BI applications is a simple one due to the high degree of match to the data from the source systems. These solutions enable rapid return on investment providing comprehensive BI solutions based on best practices in a much quicker timeframe than what could be delivered through custom development. However, can efficiencies also be achieved when the source system is not closely aligned with the BI application? This paper will introduce the Oracle BI Analytic Applications and discuss the benefits of these pre-built analytics applications for projects that are not sourced from the ERP applications. In this paper, we will also follow an example project that used Public Sector Case Analytics without a Siebel ERP source to reduce time to market in delivery of a data warehouse (DW) and BI solution.

Oracle’s Pre-Built Analytic Applications

Oracle’s BI Analytic Applications provide a quick means to implementing a data warehouse and BI solution from an ERP source system, such as Oracle E-Business Suite, PeopleSoft, Siebel and JD Edwards. The analytic applications provide the Extraction, Transformation and Loading (ETL) logic using Informatica to populate a best practices data warehouse (called the Business Analytics Warehouse or BAW). A key benefit of this approach is the introduction and implementation of conformed dimensions across the many star schemas provided with the Business Analytics Warehouse. This provides a common set of reference information for analysis across subject areas.

The analytic applications also provide metadata, reports, dashboards and alerts based on industry best practices utilizing the OBIEE suite. The components provided are shown below in Figure 1.
The cost of these BI applications is offset by the ability to quickly stand up a fully functioning BI solution, often in a 60-90 day timeframe. The effort to design and develop a custom BI application is greatly reduced as a usable application is provided out of the box. Of course, as with ERP applications, the out of the box application must be extended and configured to fit the needs of each individual business. Some of the analytic application modules require less customization than others. The most difficult tasks in a custom development effort are developing a sound data warehouse data model that is scalable for the entire enterprise and integrating the data to populate that data model. The analytic applications provide this “out of the box” for users of the previously mentioned ERP applications. They provide the BAW and ETL code specific to the ERP applications supported (e.g. E-Business Suite, Siebel, PeopleSoft, JD Edwards). The analytic applications are developed in a manner that makes them easily extensible to fill gaps between specific requirements and out of the box functionality. This is particularly useful for bringing in supplemental data beyond what is provided from the out of the box application. However, these flexible mechanisms can also be utilized to implement the Analytic Applications completely with custom, non-ERP data sources enabling the benefits provided by standardized data modeling, standardized ETL code to load the data model, and a best practices presentation layer for analytics.
Efficiencies Gained in ETL Development and Design

The BI applications not only provide out of the box dashboards and reports but also a data model with pre-built facts, dimensions, and hierarchies, and all the ETL to load the data model from various sources including Oracle ERP, Peoplesoft, and Siebel. The ETL is built following best practices from the Ralph Kimball approach to dimensional data warehousing. The basic concept of staging similar data from various data sources and then loading target facts and dimension is something that can be easily applied to most data sets.

First, let’s examine the extract and transform components of ETL. Using Informatica, Oracle packages mappings called source dependent extracts (SDE) that extract data from the data source, transforms it and stages the data in data warehouse staging tables. Also provided for each target table is a Universal Adapter mapping that sources data from a flat file and stages the data into the same staging tables as the prebuilt SDE mappings. These mappings provide a basis for projects without an ERP source. We have found that these universal adapter mappings need to be modified extensively for custom sources, but provide a good foundation for loading the staging tables from a non-ERP source.

The real gain in efficiency is found in the methodology of the Source Independent Loads (SIL) mappings. These mappings combine the data from the separate sources via the staging tables and load them into Dimensions and Facts within the Business Analytics Warehouse. They establish the joins, and handle insert update logic. If the project is using an out of the box dimension then no work is needed. The design of the mappings is reusable and repeatable for customized targets whether it is for a customized mapping or a completely new star schema.

The DAC Saves Time and Money

Oracle provides a tool called the Data Warehouse Administration Console (DAC) with the analytic applications to help manage the ETL. The DAC component of the BI Application is one of the biggest gains for implementing a quick win BI project. A challenge for most ETL teams to accomplish correctly
is the establishment of the proper workflow in executing an ETL run. No matter the level of integration with the Application most OBIEE projects with an ETL component will benefit by using the DAC. The benefits of the metadata capture of the target and source schema, ETL, and business purpose make documentation of the ETL process simple. The tool allows for any level of customization alongside the out of the box components.

With the DAC, a developer can import all aspects of the target schema including indexes, and describes the purpose of each table and mapping imported. That information is analyzed by the DAC in the subject area builder and automatically generates an execution plan that properly loads the data mart. The features and prebuilt tasks and groups makes this tool an invaluable starting point for a quick win project.

**Reuse versus Customization**

The biggest challenge in achieving value from BI applications from a non-ERP source is to understand when to create completely custom components. In analyzing your sources it is inevitable that the application does not have a fact or dimension or an aggregate that fits the non-ERP source data. There are three choices in how a data source or a portion of a data source is integrated into an Oracle BI Application:

- The source matches very closely to the out of the box facts and dimensions and with the addition of some columns or a new dimension the source can fully use the Application. This option affords the project the use of the ETL, the RPD, and the front end components. This will of course be the fastest way to deploy but only if the source matches the intended source of the star.

- Choosing to repurpose facts and or dimensions because the concepts are similar. The upside to this strategy is that by simply copying the out of the box ETL as a custom mapping, the concepts introduced in the fact or dimensions are preserved. The downside is that most likely the front end

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**Tips for Utilizing the DAC**

- Use the DAC as designed
- Capture Table and Index metadata in the DAC
- Create a Custom Container

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**Level of Customization**

- **Source Matches out of the box → Low**
- **Source is similar to out of the box → Medium to High**
- **Source is completely custom → High to Complete Customization**
will not be appropriate, and possibly it may make more sense to recreate the RPD. For instance if the conclusion is made that an activity is just a detail for a service request, the joins to other components like opportunity or claim maybe not be applicable and need to be removed. A decision early in the design or gap analysis process needs to be made in choosing this option or

- Creating a completely custom star. For data that is completely outside the scope of the application or does not fit appropriately with the out of the box stars, this is probably the right choice. The efficiencies gained here are at the ETL and DAC level. Using the out of the box RPD and front is impossible.

HAZMAT Intelligence Portal Case Study

The HAZMAT Intelligence Portal (HIP) project for the US Department of Transportation (DOT) utilized OBIEE and the public sector case analytics application to achieve the goal of integrating 27 data sources in 6 months for 9 distinct end user communities. The data that was integrated did have some commonalities to the facts and dimensions available in the applications purchased (Public Sector Case Management Analytics and Services Analytics). The client had purchased the application prior to understanding the full requirements of the HIP project, so decisions on design were made based on the functionality of the application. Early on it was discovered that while the concepts were similar, the business names and metrics were different than the pre-packaged solution. In that the goal of the project was quick delivery and efficient integration of the sources, it was decided that the out of the box reports and dashboards were not fully applicable to this project. The scope of the gap analysis was focused instead on the ETL and data model. The benefits of this pre-designed data model with conformed dimensions along with ETL code to transform and load data from staging tables was determined to be enough to follow this approach.

This project was a big success in integrating data from many sources and providing a 360-degree view of information on the transportation of hazardous materials across the various modes of transportation – rail, air, truck, pipeline. The HIP provided DOT with the ability to better assess risk and better utilize scarce resources for managing Hazmat transportation. This project has now integrated data from more than 40 sources and includes more than 15 dashboards and over 50 specific reports. This has resulted in
several awards from Government agencies and an Honorable Mention for the Oracle Titan Award for BI for Guident. The below diagram depicts the overall Architecture for the HIP environment.

**Efficiencies Gained with Analytic Applications**

The HIP project decided to approach the project knowing that the applications are a reusable framework that can be applied to any data set. In analyzing the data sources we found that the best application of the BI Applications was to use create custom stars and modified out of the box stars. With this choice we were able to reuse tables and mappings provided. The creation of the organization, person, product, geography, list of values, and date dimensions enabled speedy creation of these conforming dimensions. The hierarchies and dimensions pre built in the RPD allowed for a relatively short turn around on the
actual development of the RPD. The DAC drove the execution of the ETL and allowed for easy system
testing of a complex ETL process. By following the methodology of the applications and customizing in
a manor that will allow for upgrades, the HIP project successfully used components of the applications
to accelerate the initial phase of the project. The components around incidents, cases, service requests,
and activities were all utilized at some level.

**Issues from Utilizing Analytic Applications**

While significant efficiencies were found at the data
model, workflow, and ETL level, issues arose from
such a robust RPD with components that were not
required or necessary for this client. Time was needed
to identify what components were unnecessary and
remove them from the RPD. The HAZMAT business
was not well represented in the case application.
Therefore, extensive customization was needed to
conform the data from the five different agencies into the pre-built star schemas. For this
implementation, due to the custom nature of the sources, no front-end components were utilized.
However, the development of the reports/dashboards is the more straightforward development when
compared to the effort of integrating the data. Once the relevant data is available in the database and
RPD, it was relatively easy to develop the necessary reports and dashboards to fit the DOT’s business.

**Summary of Pros and Cons for Analytic Applications with Non-ERP Sources**

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<th>Pros</th>
<th>Cons</th>
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<tr>
<td>- The applications deliver content that can link many custom data sources out of the box.</td>
<td>- It takes time to prune out what is not necessary in the RPD, catalog, and configuration items</td>
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<td>- The content can trigger new ideas for business users that enhance the final product delivered for their organization.</td>
<td>- Reverse engineering a process takes time that could be spent on building from scratch</td>
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<td>- The pre built mappings and the methodology to create new ones, fast tracks ETL development</td>
<td>- Some flexibility is sacrificed in developing</td>
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Ph.:703-326-0888 – Fax: 703-326-0677 || email: info@guident.com || web: www.guident.com*
• The DAC tool efficiently documents the metadata of the ETL process, and in turn produces efficient and accurate ETL workflows

• Best practices presentation layer – dashboards, reports, alerts – can be leveraged

• The business model can be utilized as intended or transformed to fit the sources

• Informatica (OEM version) comes packaged with the applications

Figure 3: Pro and Cons of using BI Applications

About Guident

Guident is a leading Information Technology services firm providing enterprise-consulting services to clients in both the Federal and Commercial sectors. Guident was founded in 1996 based on the beliefs in providing the disciplined methodologies of the "Big Four" consultancies with the flexibility and cost benefits of a smaller practice unit. Guident specializes in designing, building and implementing business intelligence solutions leveraging Oracle technologies that provide rapid, sustainable value to our clients. Guident has been providing Business Intelligence Solutions following a proprietary BI-specific methodology for more than nine years with hundreds of successful implementations. Guident has expertise across the entire lifecycle of Business Intelligence, including strategy and roadmaps; data warehouse/data marts; dashboard and scorecard solutions; packaged analytics applications; reporting and analytic solutions; and planning, budgeting and forecasting applications. Guident is an Oracle Certified Partner as well as a member of the Oracle BI/EPM Partner Advisory Council, and a board member for the Business Intelligence, Warehousing and Analytics SIG of the IOUG.

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