

Oracle Forms and SOA: The Whys and Hows for your business

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A fuller discussion of the benefits of SOA are documented elsewhere and so are not revisited in depth in this paper. See: Bringing SOA Value Patterns to Life for an over view and more general discussion of SOA.

<http://www.oracle.com/technologies/soa/soa-value-patterns.pdf>

EXECUTIVE OVERVIEW

Businesses are looking to Service Oriented Architecture (SOA) as a way of realigning their IT delivery with their business needs. The reasons are well documented: complex business processes, the need to respond to changes in these processes and integration to name only a few.

For green field sites, adoption is much more straightforward; a blank canvas and a palette of new ideas and best practices. However, the reality is that many customers have hundreds of man-years invested in a range of, often older, technologies. The reality for many is that a more gradual adoption of SOA, from a platform of “legacy stability” is much more realistic.

This paper seeks to identify a range of representative scenarios and to suggest options, backed up by customer case studies, for consideration for those customers with a strategic objective of adopting an architecture based on services but with a historic investment in Oracle Forms.

BENEFITS OF SOA

The benefits of adopting a SOA approach are well document and this paper does not seek to repeat these discussions, but as a brief summary they include:

- Reduced Integration Expense – being based on standards and exhibiting a loosely coupled nature, the ability to integrate disparate systems is greatly eased.
- Reuse of Resources – services can be shared, reused and orchestrated as required.
- Increased Agility – Business agility is facilitated through business focused services, which can be easily orchestrated and controlled through mechanisms such as rules engines.
- Reduced Business Risk – resulting from the above points including reduced organizational complexity and the ability to modernize at a pace dictated by the business.

SOA Benefits for Oracle Forms

So, the benefits of SOA are recognized, but how can these apply to existing Oracle Forms applications. Before looking at how SOA benefits can be recognized from an Oracle Forms perspective, it is worth identifying what characterizes a Forms application.

A History of Building Oracle Forms Applications

Oracle Forms has its history firmly tied to the Oracle database. Originally developed as a tool to build application to access data in the Oracle database, it has grown into a tool whose applications are at the cornerstone of many businesses, including Oracle's own E-Business Suite. These applications exhibit a common theme to how they are developed.

Tied to the Table

The core of an Oracle Forms application is the manipulation and presentation of data from Oracle database tables. An Oracle Forms application essentially puts CRUD operations (create, read, update and delete) on top of the database tables. It is what Oracle Forms was built for and what it does best. In having this focus, it has also forced a particular way of developing, and a particular style of application: the schema drives the application. This means each form tends to be data manipulation focused, not focused on business service. Also, the implementation of an Oracle Forms application is such that there is no clear separation of code to implement the business rules, and the code to drive the user interface (UI).

Adopting a SOA approach with Oracle Forms

With a history and investment in Oracle Forms, what are the specific advantages in adopting a SOA approach? Consider the following examples.

Extending to new technologies

Your company runs a successful business selling products. Customers contact your call center and place orders for a product. The call center staff enter details in an Oracle Forms application and the orders are then dispatched to the customer. For this style of business, an Oracle Forms application meets the requirements. However, your company is seeking to gain an advantage by offering to sell its products through the Internet. You have looked at opening up your Forms application to the Internet but this is regarded as “too heavy” for the ad hoc/self-service style of “on-line shopping” you are looking to achieve.

In this example, technologies like the Enterprise Java platform (JEE) and UI technologies like HTML are much better suited for delivery of this kind of service.

So, you decide to build an additional facet to your application that is developed in Java for deployment on the Internet; and in doing so, you want to adopt a more SOA approach to this development. What is your approach?

For more technical details on calling services from Forms and refactoring Forms code, see the following paper:

<http://www.oracle.com/technology/products/forms/pdf/10gR2/forms-soa-wp.pdf>

Tools such as Oracle Jdeveloper 10g and Oracle Application Development Framework (ADF) provide the means to build new services in a productive and declarative way already familiar to Forms developers.

<http://otn.oracle.com/formsdesignerj2ee>

Factoring out and reusing services

The most obvious first step is to look at your Forms application and identify what “services” it provides. For example, your business may have a service for submitting orders. As well as controlling the reading and writing of relevant information, the services also implements business rules, for example, a rule that the total of all invoiced, but not yet paid, orders cannot exceed \$500. This is a business service (lets call it *OutstandingOrderTotals*) that should be applied regardless if the order is placed on the Internet or through your call center. In which case, you may consider refactoring this code into a reusable service. You may consider moving the code into the database since both the Forms and JEE applications share the same database.

Business-to-Business Integration

Having ensured you have cornered the Internet market, you then find that your competitor has recruited a reseller in a foreign country to sell their products there. You now want to allow your own partners to sell your products through their local channels. But they have their own systems and your business demands that you still apply your own business rules about outstanding orders not exceeding \$500.

Because you have already identified this service, you may want to consider moving it to a position in your architecture that can be utilized by 3rd party systems. For example, by publishing your *OutstandingOrderTotals* as Web service you make it available to your partner in a reusable, standards-based and loosely coupled manner.

Composite and Orchestrated

You have now identified that having opened up the business to the Internet and a partner reseller in a different country, the business needs to have tighter controls on checking the credit status of your customers.

Consuming Services

Your company’s credit facility is managed through your bank, and the bank provides a service to credit check each customer: returning either a status of *red*, *amber* or *green*. With this approach you gain the benefits of 3rd parties providing loosely coupled business service, which you can consume. You may decide to call this service directly from your Forms and your JEE application.

Green would show someone with a strong credit rating. Amber would show someone who as no negative credit rating. Red would indicate a customer with no credit history and possible a “high risk”

Assuming a tool such as BPEL would be used to orchestrate these services, the entry point for a BPEL process is a described by a URI and as such, can be viewed in a similar manner to a Web service and so can be easily consumed from Oracle Forms, J2EE or even .Net applications

Orchestrated Services

However, the business has decided that it should combine this credit check with the rule that outstanding orders must be less than \$500. In which case you can orchestrate these services such that if the status is *red* then the order is not allowed and must be routed to your customer service department for a courtesy call. If the status is *amber* the order is routed through *OutstandingOrderTotals*. And if the status is *green* the order can be placed and is not routed through *OutstandingOrderTotals*.

Thus, you have combined two separate business services to create a new composite service as dictated by your business.

Business Monitoring

Another key benefit of a service view of your application is that each of these business services can be monitored. As your business processes execute, key business indicators can be monitored allowing real time visibility of the health of the business.

Business Agility

The fact you can monitor business services implies you would want to react to the feedback. Consider the fact that you now see that over 50% of your orders are being rejected because when routed through *OutstandingOrderTotals* they would take a customer's total of outstanding orders to over \$500. This may lead you to two conclusions: either you are not receiving payment quickly enough, such that order totals are outstanding for longer. Or you may conclude that as a result of new product line resulting in people buying more, and the introduction of some higher priced items, that the \$500 limit should be relaxed.

With the SOA approach, your business services can be routed based on rules from a rules engine. Meaning that the business can fine tune and iteratively change the rules until they reach the optimum level, without any serious impact to the IT in having to change, test and redeploy the application.

In an Oracle Forms application, this would typically mean changes to code within your Form, possibly with an impact over a number of different Forms. That impact is not completely understood and so you would have to ensure regressions tests were passed before deploying the update

CASE STUDIES

While the cases above are generalization, they are based on real world experiences of customers and represent typical business and technical scenarios. Each of the following case studies pertain to business with an investment in Oracle Forms, who are looking towards SOA and documents the business drivers and the technical solutions.

Migros Switzerland

Migros is the biggest retailer in Switzerland, with a broad portfolio of businesses including banking, energy, travel agency, books and education.

Because of the widespread and disparate nature of both data and business lines, Migros IT Services made a decision to adopt a SOA approach to encapsulate data access as services for the various organizations within the group.

Common Data Access Interface

Given their investment in existing applications and PL/SQL, their approach was to wrap PL/SQL packages for data access as Web services. They then made those Web services accessible to potential internal partners, as well as for the centralized Oracle Forms application used for data administration.

In March 2007 Migros went live with the Oracle Forms application that uses Web services functionality between remote and central databases. By using Web services to encapsulate data access, Migros is able to provide data access services to various applications in a platform-independent manner. This means internal partners can easily reuse the existing data access layer (Web services) from both Java and .Net development environments, with no need to develop their own data access modules.

TietoEnator

TietoEnator is one of the largest IT service providers in Europe with principal focus areas in the fields of banking and insurance, telecom and media, healthcare, energy and government. One of their core applications, Summit, is developed in Oracle Forms and is used by UK financial services providers to process mortgage accounts. Around one in four of all UK mortgages are processed using Summit.

Business Flexibility

TietoEnator have been looking towards a SOA approach to better align the business needs of their customers to TietoEnator's product management and release processes. One key factor in doing so is how they gain agility in being able to respond to future change as the product set evolves. As part of this move, they wanted to address the Summit application with a view to modernization. TietoEnator have a clear plan of how to address their SOA vision for their existing Applications. It can be summarized simply as: Protect, Extend, And Evolve.

Protect, Extend and Evolve

The first step to protecting the investment was stability. This involved upgrading to the latest versions of the stack and removing a reliance on a complex combination of older software. The second step was to extend the application. By building core business services from the existing Forms codeline, they could share those services (as Web services) across different applications. The final stage of the vision was to evolve to a standards stack where core business services were developed, consumed, managed and orchestrated in a way that gave them increased agility, modernization, increased channels, and a better alignment of business and IT.

Customer Flexibility

The impact of this on TietoEnator's customers is that the greater flexibility inherent in the product release program is such that each customer may now choose how tightly they wish to follow the product release program, taking only those elements that are of business interest and leaving those that are not. This is a great step forward in delivering real life flexibility, freedom and agility and has been welcomed by customers as a major step forward, especially compared with the old model of insisting customers remain on 'current or one previous' release.

Eurotransplant

Eurotransplant is the world's largest international organ exchange organization. They allocate all available donor organs in seven European countries, running a true 24x7 operation.

System integration

Eurotransplant has been well served by Oracle Forms for their core applications, however changes in how they have to work are encouraging Eurotransplant to move towards a more open system. Most of the data being processed by Eurotransplant is already available in national or hospital IT systems. Re-entering this data in a central system might have been acceptable in the past, but there is an ever-increasing need for electronic interfaces between Eurotransplant and participating countries and hospitals. This fits perfectly with the open standards based SOA/Web services approach.

Process driven

Using a SOA approach, and with technologies such as Oracle BPEL for orchestration, they are able to better align the business requirements with the IT delivery. Traditionally, Oracle Forms encouraged the development of data driven applications. The process of allocating available donor organs to the appropriate patients on the waiting list is a very complex and highly flexible process. This does not always fit with the data driven applications traditionally developed with Oracle Forms. The move towards services and orchestration through BPEL allows the development of process driven applications that truly support the end user in executing their business process.

Flexibility

A need for flexibility and agility is also a core objective in adopting SOA. Eurotransplant is a collaborative framework of seven European countries. This form of collaboration requires different rules and processes for each of the different countries. And with Eurotransplant accepting new countries, there is an ever-increasing need for flexibility in the IT systems. Eurotransplant feel that both

the concept of *business services* and the concept of *service orchestration* can offer this flexibility.

However, key to this strategy is the need for Eurotransplant to retain investment in their existing systems. At the core of this strategy is a belief in an evolutionary - not a revolutionary - model. Oracle Forms still remains at the core of many of their data entry needs. With all new user interfaces being built using the Oracle Jdeveloper and Oracle ADF technology, existing Oracle Forms applications now integrate with the new services and technologies.

CONCLUSION

Many businesses are looking to modernize their IT and gain business advantages with a SOA approach becoming popular for many. But the reality is that while existing systems may be regarded as “legacy”, the fact is they remain core to the business. Businesses can follow an evolution to their strategic SOA goals, where they gain new business advantages, while retaining core services. This puts the business back in control, allowing IT to evolve to suit the business and not the hype.



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