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Applies To:

SAP NetWeaver, SAP Enterprise Portal (SAP EP), Knowledge Management & Collaboration, SAP Business Information Warehouse (SAP BW), SAP Exchange Infrastructure (SAP XI), SAP Web Application Server (SAP Web AS), SAP Master Data Management, SAP xApps

Summary

This series follows ORGA, a fictional multinational retail conglomerate, as they lay the groundwork for a service-oriented architecture by leveraging the SAP NetWeaver platform and creating a roadmap for the future with Enterprise Services Architecture. Part II describes how ORGA can leverage the SAP NetWeaver technology platform to exploit the world of web services.

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Executive Summary

Our clients often pose the question, “How do we move forward with our planned SAP NetWeaver initiative?” The answer, we feel, is not as simple and straight-forward as typically stated by those who are keener on winning a new deal than putting together the pieces of the jigsaw puzzle for the customer. By the same token, the answer is not so hopelessly complex that it can only be deciphered by a rocket-scientist.

The other statement we regularly hear is “This is a very advanced concept. We are still grappling with our standards regularization, upgrades, and the problems with our RICE (Reports, Interfaces, Conversions, and Extensions) objects. It’ll take time getting there. We are a cautious organization; we are not necessarily enthralled by the latest and greatest technology”

In the first article, we discussed four fictitious organizations ORGA, ORGB, ORGC, and ORGD. Specifically, we examined how SAP NetWeaver can bring about change by extending the rings of the supply chain to create an extended demand chain, and thus a comprehensive collaborative platform.

In this article, we shall examine an approach by ORGA (the star of our storyboard) that leverages the SAP NetWeaver platform to enter the world of web services by planning with Enterprise Services Architecture (ESA).

SAP NetWeaver

First, SAP NetWeaver is a platform, not a basket of products. From a business solution perspective, the SI (System Integrator) takes a structured approach with the customer. The end objective is to deliver a solution, keeping in mind the big picture. Organizations tend to fall prey to marketing packaged with fancy presentations by product vendors and system integrators. And customers are equally at fault for trying to wheedle out the best deal in terms of cost, which in turn forces the product vendors and system Integrators to succumb in order to beat the competition and win the account.

It’s a vicious cycle that plagues all major IT initiatives in any organization. SAP NetWeaver is no exception. With the freshness of the technology and everybody wanting a piece of the pie, the very philosophy of a solution approach tends to take a back-seat. The SAP NetWeaver Program becomes an SAP® Enterprise Portal (SAP EP) project, or a Web Dynpro project, or an SAP® Exchange Infrastructure (SAP XI) project. The macro view is lost.

ESA

Second, ESA is not a new concept. The technology bundling as in the SAP NetWeaver stack is not new. But SAP has done a fabulous job by bringing in the various existing technologies in the market, bundling all of them together, and arranging them neatly in the standard refrigerator SAP NetWeaver stack diagram. The biggest advantage is that SAP is aligning itself with the key standards organizations to ensure commitment in this space.

The purpose of this document is to bring forth some facts and basics that cannot be ignored by all the entities in question to lay the foundation for a successful SAP NetWeaver platform migration spread over a few years for the customer and highlights the key business processes that provide a starting point to implement Enterprise Services Architecture. This can be best understood by a close-to-life storyboard.

Business Advantages

Third, the advantages of SAP NetWeaver can be best addressed from a business perspective, despite the fact that SAP NetWeaver is predominantly a technology bundle. Pure-play web service vendors, technology sweat-shops on app-servers, or generic portal solution specialists can really make a mess in this

arena. It becomes necessary to try to understand what SAP NetWeaver can do for you in the real world – from a solution perspective - and evaluate various perspectives. The perspective of “Have done WebLogic - can do SAP WAS, have done SeeBeyond - can do SAP XI, have done Plumtree - can do SAP EP” spells disaster for any SAP customer contemplating the way forward with SAP NetWeaver.

SAP NetWeaver is a logical metamorphosis from the SAP Business Suite. And thus has to be addressed from a business perspective.

The Story Board - ORGA Business Background

The end objective of the pilot for the web applications portal is to create a global pilot portal that will enable key transactions from sales, human resources, and plant maintenance, along with a hybrid solution with content from ORGA.com and a partial migration of ORGA Intranet.com for the North American SAP instance, without retiring any of the applications that potentially affect business. It will later be rolled out to Latin America, Asia-Pacific, and EMEA to be finally syndicated under one single portal for ORGA by facilitating the phasing out of third-party applications on different platforms and consolidating key business processes onto SAP.

Along with Knowledge Management and Collaboration functionality, ORGA is looking at deploying key business functionality through SAP Enterprise Portal (SAP EP) as a strategic initiative to consolidate and streamline business processes at a global level. With SAP R/3 as the backbone, the key objective of this strategic initiative is to set the ball rolling towards unifying business processes and the consolidation of all IT services using a global delivery model ultimately using web services and enterprise services. This global pilot in turn needs to be furthered by a POC that looks at replacing SeeBeyond as the existing middleware solution place today at ORGA.

The Players

The four fictitious organizations involved in this pilot are:

1. **ORGA:** Headquartered in San Diego, CA. The primary business model is to aggregate demand from large retail stores across the US and Europe, and to try sourcing out for finished goods from the South Asian Market, or else have demand fulfilled by ORGC. ORGA has three warehouses – two based in the US (Arlington, VA and Dallas, TX).
2. **ORGB:** A large retail organization based out of Richmond, VA. The business model works to aggregate demand from all three distribution centers (which cater to a host of store and online stores) across the US and Europe. These three distribution centers are located in Bakersfield, CA., Gaithersburg, VA., and Peterborough, United Kingdom.
3. **ORGC:** Based out of China, ORG C is a pure manufacturing organization that takes in aggregated demand from ORGA and fills demand based on a demand schedule sent every two weeks by ORGA. ORGB also owns assembly lines in ORGD.
4. **ORGD:** Based out of Tijuana, Mexico, the business model is to cater to large manufacturers and accept sub-contracting jobs that are more labor-intensive and require less skill to execute. Manufacturing in Mexico provides ORGD with a major cost advantage with labor costs.

ORGA is in the process of creating a comprehensive collaborative roadmap in tune with its global focus and its alignment with SAP NetWeaver as part of the organizational roadmap. We will now use the SAP NetWeaver framework to convert ORGA's business roadmap into a reality.

For this, ORGA decides to move towards ESA to fall in line with SAP AG's plan by 2007.

The Storyboard - As-Is Business and IT Landscape Background

ORGA is a fictitious organization in the CPG/retail front established way back in 1996. ORGA is in the business of catering to large retail chains around the US and Europe for manufacturing merchandize items. These items include cameras, DVD players, and TVs. ORGA uses Siebel for CRM Sales and Marketing, SAP R/3 4.6C for Order Management and Inventory (for direct goods), and Ariba Spend Management Suite (Buyer 8.x/ACSN/Sourcing 3.x) for indirect goods procurement.

ORGA also uses SAP® Business Information Warehouse (SAP BW) 3.0B for all reporting purposes and has plans to open up limited information to its customers, contractors, and sub-contractors. I2/APO is also being used for SNP and DP and ORGA is looking at CPFR solution to improve its supply-chain efficiency. ORGA's business model is to primarily aggregate demand from its customers and have goods manufactured through their contractor, ORGC (which uses Oracle 11i as their ERP). ORGA also resorts to sourcing demand for cameras from suppliers in Taiwan and uses the services of a third-party solution provider like WWRE. ORGC accepts demand forecast from ORGA on a fortnightly basis and manufactures the same.

Depending on the capacity planning requirements and cost/product efficiency, ORGA sub-contracts certain basis components such as casing and accessories to a subcontractor based in Mexico (for closer proximity to US and tax benefits) and ships them directly to ORGA's warehouses based in the US and Europe, which takes care of the basis assembly and stocking. ORGA also uses Ariba spend management for all indirect material that it procures from its suppliers like Boise Cascade through punch-out, and leverages the Commerce Services Network to reach all its EDI and low-end suppliers by fax.

ORGB uses PeopleSoft 8.4 SCM and Financials along with HRMS8.8. The Procurement function, demand aggregation is done using PeopleSoft and all Purchase Orders are dispatched to ORGA for manufacture.

ORGA also uses SeeBeyond, Microsoft BizTalk, Vitria, and Webmethods (as various pilots) to build various complex interfaces within the organization. Owing to four different products, ORGA realizes the need for a single vendor to lower TCO and lower licensing costs.

ORGA is also a customer of IBM WebSphere and iPlanet and is using the Application/Web servers provided by these vendors to develop and host various intranet and Internet portals across the board. Cost is the major business driver for ORGA to look for a unified platform for all web development activities and to be less dependant on a host of local vendors providing skills around these areas. ORGA wishes to leverage its current IT workforce, which comprises largely ABAP, .NET and JAVA skills to reduce manpower cost and reduce costs further by driving the repetitive and new development activities.

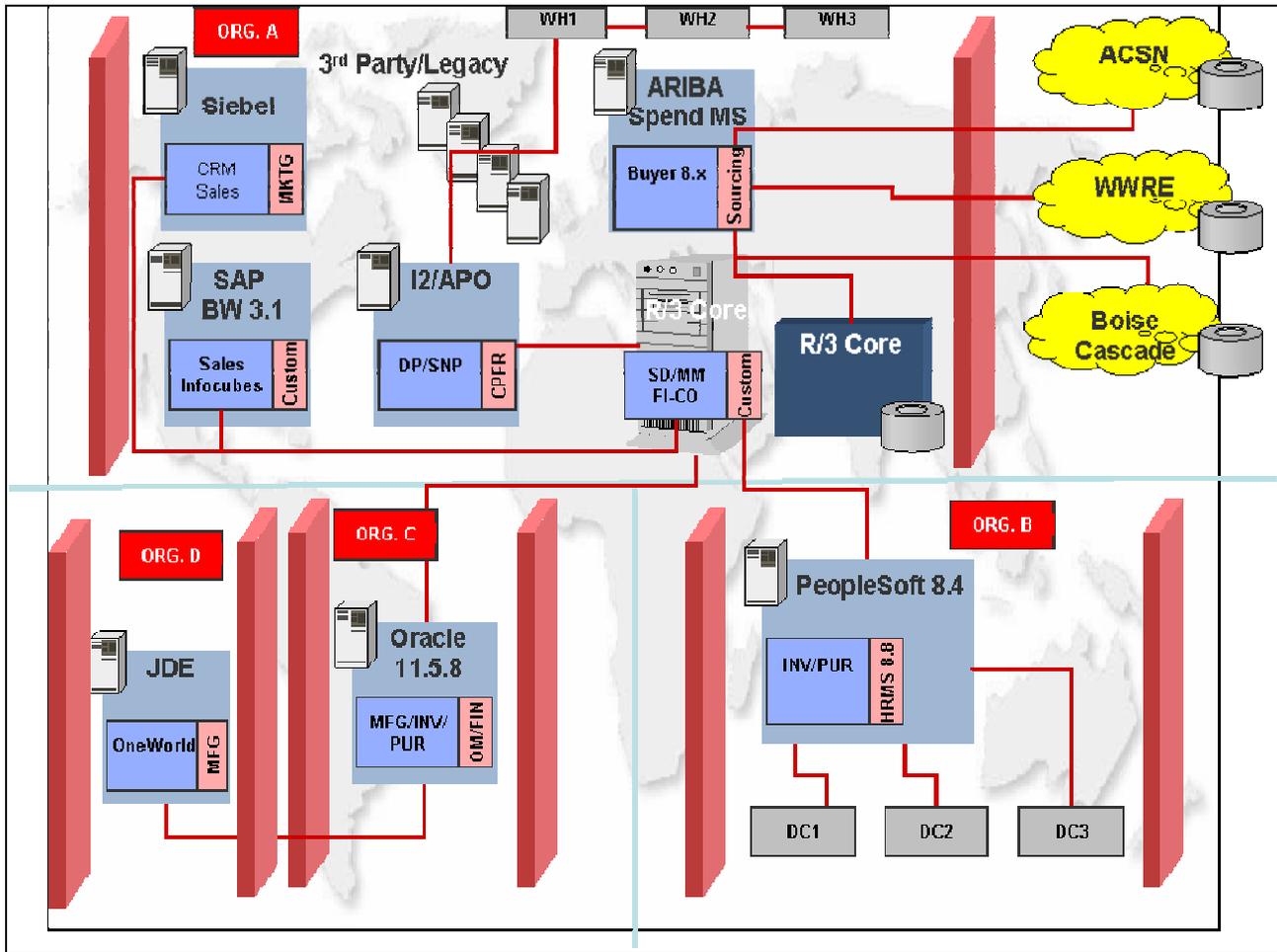
Some legacy applications within ORGA will never be termed "sunset" applications owing to their usefulness and political sensitivity. However, it is evident that some functions need to be exposed as globally useable functions. These business functions need to be more loosely coupled and reused extensively within a private network of operations.

ORGA has a host of J2EE applications running and wishes to port them onto a single platform and leverage a composite application made of all these applications.

ORGA now sees the need to use a single, unified, open platform that is scalable across the organization and help ORGA reduce TCO.

The following diagram depicts the architecture of ORGA and the way information flows across geographies over WAN to conduct business as usual.

As is Information Processing Including ORGA, ORGB, ORGC, and ORGD



Key Decision-Drivers for ORGA

- Leverage processing profitability
- Growth will not sacrifice quality or reliability
- Growth will not significantly increase costs
- Differentiate from competitors
- Take advantage of new technologies
- Seek creative sources of supplies
- Flexible and scalable

- Customer demands and market needs will drive business model
- Assets and Markets should be aligned to a ORGA's strategic intent
- Optimization of margin crosses functions and geographies
- Leverage current market position to sustain competitive advantage and enter new markets
- Leverage other business units
- SAP is the strategic solution partner

Technical Introduction

The heterogeneous nature of any system landscape makes it practically impossible for an enterprise to implement all the necessary functions of a business process using one single application vendor or one technology. Web services simplify this process. They enable you to combine functions in a single process, even if they are implemented across multiple applications. Interoperability is the key.

Web services are self-contained, modularized, executable entities that can be published, searched, or accessed across networks. They are identified by URLs.

At the highest level, web services are application-to-application communication over the Internet, built with a view to facilitate Enterprise Application Integration (EAI) or B2B integration - not replacing it. (Although it's been a classic topic for debate in various pubs and coffee shops across the world – Can web services replace EAI?)

Let us try to draw a crude analogy of this technology to the express industry. Just think about the way you, as ORGA, would send a purchase order to a supplier manually using FEDEX. FEDEX is the carrier that, in our situation, is HTTP. The FEDEX Flyer is your SOAP envelope. The Purchase Order Document inside the flyer, which is the payload, is your XML document. The Airway bill that describes the details of the shipment is your SOAP header. Since you can use only a FEDEX flyer to use the FEDEX network, and not a DHL flyer to send a document via FEDEX, it's a binding. It's the same binding you provide a SOAP message for communication over HTTP. The hub and spoke infrastructure of FEDEX is similar to the messaging system of XI 3.0 or any EAI application. And the purchase order acknowledgement sent back from your Supplier by FEDEX is your SOAP Response just as the purchase order you sent over to him was the SOAP request.

And if you go to Fedex.com and do an online track and trace of the shipment based on your AWB, you can track the status of your PO. And this is an RPC that you execute in the FedEx systems. From an enterprise standpoint, you can expose the key functionality of your applications, legacy or otherwise, via web services in such a way that you can cover entire process chains to encompass multiple applications and make them execute sound business logic that has a huge potential of reducing coding cost by bringing in a level of abstraction to the code logic and adding intelligence to your coding efforts.

In short, web services with intelligence built into them form your Service Oriented Architecture (SOA) or your Enterprise Services Architecture.

Let's take a quick look at the core web services standards.

Core Web Services Standards

SOAP

Once upon a time this acronym used to mean something, but now it is a specification that defines the grammar for sending and receiving XML messages. SOAP messages can be document-based or RPC-based. The payload of a document message is any XML document that needs to be moved from one computer to another. An RPC is a method call that is executed on the web service; it can happen over the Internet or extranet.

XML

XML is more of a meta-language specialized for Web documents that is used to create rules for other markup languages. The tags in XML define the data contained in the tagged elements. SOAP, WSDL, and XML Schema are all XML-based languages.

HTTP

The workhorse of the Web, this standard was developed to transfer documents from a web browser to a web server. This mature protocol has been around before the advent of web services and in this context is used to transfer SOAP messages and WSDL documents from one machine to another. SOAP messages can also use other transport mechanisms like FTP, JMS, or SMTP; however, the world is tilted in favor of HTTP for web services. It may also be Jabber in the future. Some people also refer to HTTP as the “Cockroach of the Internet” owing to its capabilities of allowing “HTTP Tunneling”, which could expose port 80 to security risks. It remains to be seen what could be the transport mechanism of the future.

WSDL

WSDL is a specification that tells you how to describe a piece of software in terms of the method calls it responds to. These methods are described in an abstract way that is agnostic of the language that the web service has been written on, or what operating system it will run on. It also includes concrete information on the connection parameters for the web service. If the web service can be accessed over SMTP, FTP, and HTTP, you will find three entries in the WSDL file - one for each service.

UDDI

It's a specification for distributed web based registries of web services. UDDI registries can be private, semi-private or private as needed. UDDI was originally the brainchild of Ariba, Microsoft, SAP, Intel and IBM, when people were talking about a universal common registry way back. It's governed by OASIS.

SOA and ESA

SOA (Service Oriented Architecture) provides the theoretical model for all web services. It's a simple model that contains three entities - Service Requestor, Service provider, Service Registry. The service requestor is an application that requests a service from another application, but doesn't know where to look for it, so it goes to the Service registry and does a “Find”. The Service Registry provides the application and does a “Publish” to the Service Provider, who in turn does the “Bind” and sends the service to the requestor.

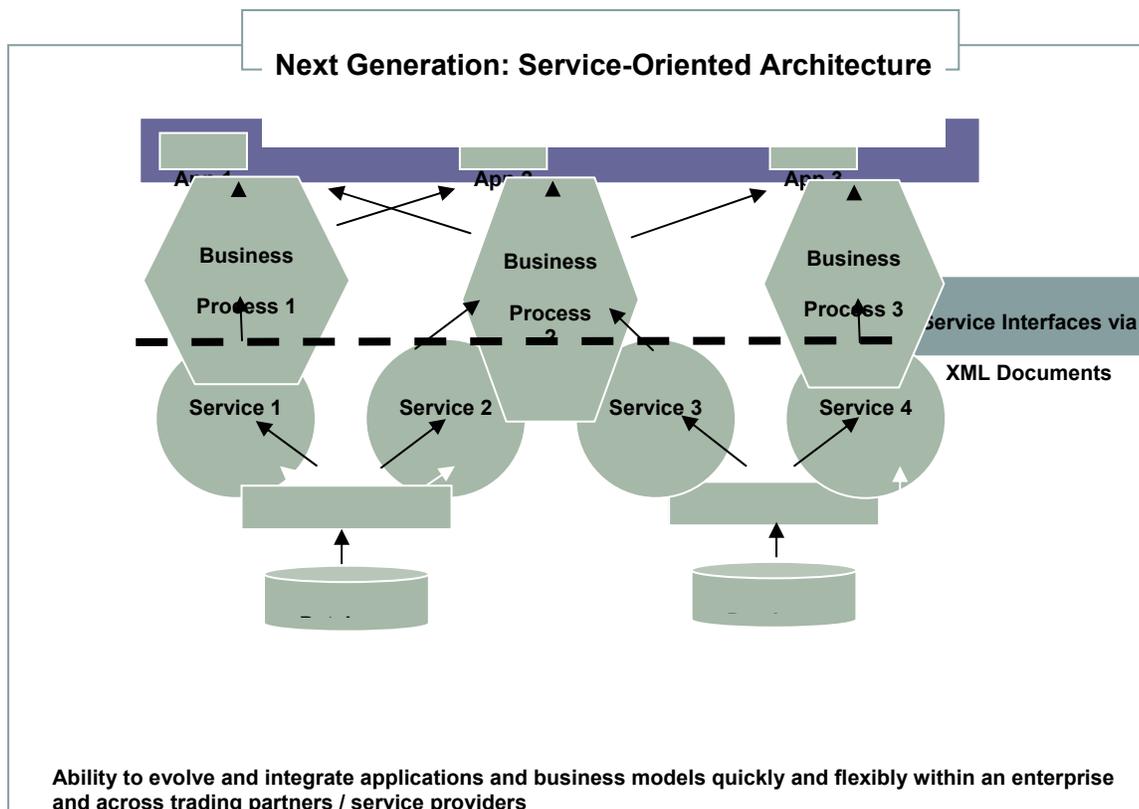
The fundamental premise of Enterprise Services Architecture is the abstraction of business activities or events, modeled as enterprise services, from the actual functionality of enterprise applications. Aggregating web services into business-level enterprise services provides more meaningful building blocks for the task of automating enterprise-scale business scenarios.

Enterprise services allow IT organizations to efficiently develop composite applications, defined as applications that compose functionality and information from existing systems to support new business processes or scenarios. All enterprise services communicate using web services standards, can be described in a central repository, and are created and managed by tools provided by SAP NetWeaver.

To-Be Business and the Way Forward with CAF

ORGA, an organization that is not purely an SAP shop, but that wants to slowly retire all legacy applications in favor of SAP. ORGA is faced with two choices:

- **Scenario 1:** Move all legacy applications to SAP R/3 and use Web Dynpro applications to expose key functionalities as small-group applications, led by guided procedures.
- **Scenario 2:** Retain existing infrastructure and use web services to expose key functionalities across divisions and weave together composite applications, lying down guided procedures.



The loose coupling of applications being rendered by the SAP NetWeaver platform for ORGA to drive key business processes.

ORGA decides to leverage SAP NetWeaver. Based on the SAP NetWeaver integration and application platform, the SAP Composite Application Framework (CAF) provides ORGA an environment for the design and use of composite applications that also includes SAP xApps. As CAF is based on the Enterprise Services Architecture and comprises an abstraction layer for services and processes as well as design tools, ORGA decides to create a business blueprint that will enable it to create composite applications.

Key Areas

Market research enables ORGA to decide on the following key areas:

- **Mindshare:** ORGA can gather documents, images, and analytic information for participants from within the enterprise, who represent different core company functions, to foster new ideas and develop new products. NPI becomes a choice of application for business enabling IT within ORGA.
- **Tracking Compliance:** ORGA wishes to define its complex processes and track compliance with process management and workflow to ensure policies are followed, and sends alerts when exceptions arise, predominantly for dealing with key business partners like ORGB, ORGC and ORGD.
- **Corporate Performance Management:** ORGA's goal is to create CAF-based applications to establish and communicate corporate goals with managers and employees and facilitate performance benchmarking and monitoring, evaluation, and goal achievement through ubiquitous but secure self-service.
- **Value Chain Management:** ORGA needs to detect and adjust to changing market conditions that impact supply-chain visibility, customer loyalty, or corporate objectives by monitoring transaction results against plans. All necessary information is available within various applications in ORGA; only tying it together remains. And CAF seems to reflect the move of choice.
- **Mission Critical Projects:** ORGA views the CAF from SAP NetWeaver to enable complex, dynamically changing processes such as product launches, corporate budgeting, etc., which must include a wide range of structured and unstructured information such as schedules, budgets, team discussion threads, documents, images, audio, and video across its many different departments. Some call for direct interaction with ORGA's business partners across the Internet.
- **Adaptive Enterprise:** The industry goes through mergers and acquisitions. ORGA needs to ease integration of diverse planning processes and operations, without forcing wholesale replacement of the systems in place. Across the SAP shop that ORGA is for mergers with Microsoft and IBM shops. With SAP and Microsoft having agreed upon certain norms, it makes life easier for ORGA to look at SAP for the functionality, and Microsoft for a pretty face.

The abstraction layer that CAF provides helps ORGA decouple systems from the world of Entity Services and services of composite applications. This ensures the exchangeability of the underlying applications as seen in the diagram above. In addition to reusable objects and services from existing applications, it is easy to define new ones. Finally, the abstraction layer allows for any service and entity of the composite application to be able to communicate with each other.

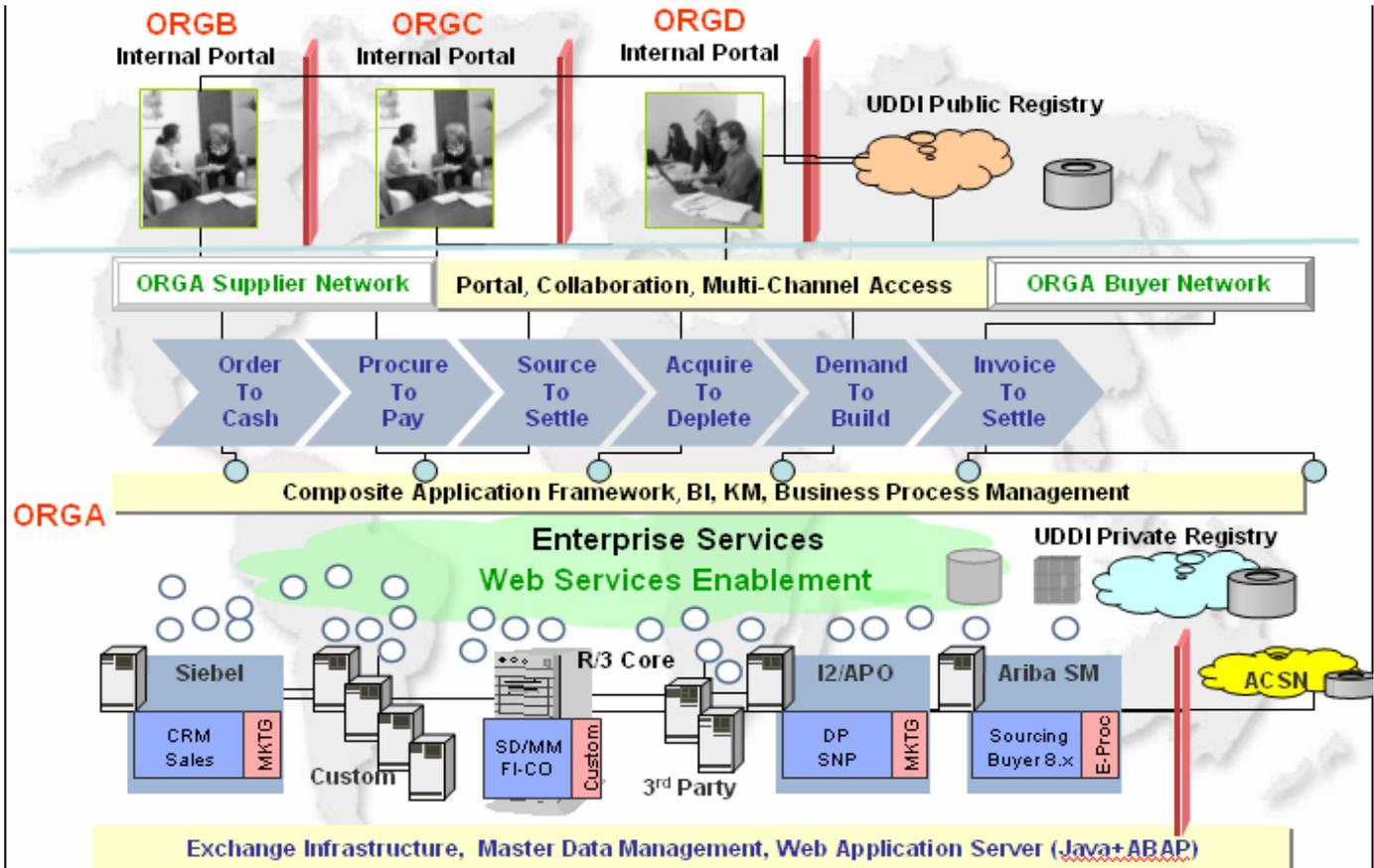
First Steps

As an initial step towards a committed movement towards lowering TCO, ORGA decides on the following procedures as the baseline for its SAP NetWeaver initiative:

- Migrate as many applications and local processes into SAP R/3 as standard business processes as possible.
- Not do away with key, “non-sunset” legacy applications, which are worth their weight in gold. Instead, leverage them as enterprise services and bring them together in SAP xApps.
- SAP Enterprise Portal and SAP® Web Application Server: Use SAP EP as the front-end to expose key transactions from existing SAP R/3 applications using ITS.
- Develop and expose customized transactions as Web Dynpro applications via SAP EP with the application logic written in ABAP (RFC/BAPI) to leverage existing resource pool.
- Look for alternate ways to leverage certain customizations on SAP R/3 to create SAP xApps and take it to the market by using CAF.
- Use SAP® Business Intelligence (SAP BI) Broadcasting for all key information purposes through SAP EP.
- Creating and using SAP XI adapters to communicate with SAP R/3 and legacy applications.
- Creating composite applications using CAF.
- Creating SAP xApps and avoiding the coding approach.
- Creating an adaptive computing Infrastructure.
- Migration of other vendors (Plumtree/Sharepoint) to SAP NetWeaver (though Sharepoint, calling SAP EP iViews based on SAP R/3 functionality as a layer on top of SAP EP).
- SAP XI interfaces with Marketplace/RNIF/SOAP/HTTP adapters for communication between non-SAP systems.
- Pure play porting of Java applications on SAP Web AS (J2EE standalone).
- Web services creation and consumption of interfacing SAP R/3 applications.
- .NET applications being interfaced with SAP R/3 applications using NCo Connectors.
- ORGA’s legacy systems are written in VB and C# and VC++; ORGA wishes to continue using a Microsoft-driven IDE (Visual Studio .Net to build web services).
- ORGB is Borland-driven, and wishes to continue with the same to expose its applications.
- ORGC wishes to create web services on an Apache AXIS with SOAP engine running on its Tomcat server.
- ORGD is driven by BEA WebLogic.

And this is where ORGA wishes to take its SAP NetWeaver initiatives to the real world, depicted in the diagram as follows.

TO-BE INFORMATION PROCESSING INCLUDING ORGA, ORGB, ORGC and ORGD



SAP BW and SAP BI Broadcasting in ORGA

ORGA uses SAP BW primarily to generate the process for the following key headers of information from their SAP systems:

- Demand Forecast for outsourcing
- Supply Outlook from business partners
- Retailer customers POs and their value
- The relevant business partners and their delivery time
- Customer collections survey (payment period, credit memo, payment)

At this juncture SAP BW is not integrated for pulling data from external data sources within ORGA. This is part of the future roadmap. The focus is on SAP solutions only.

Demand Forecast and Supply Outlook parameters are triggered through SAP Enterprise Portal based on the user profiles and groups. Users in ORGA use SAP BI Information Broadcasting for BEx Web applications, BEx queries, and BEx Analyzer workbooks per business needs. Alerts from SAP BW on SAP EP using SAP BI Broadcasting are critical for the ORGA business users.

ORGA is in the process of using information broadcasting with SAP BW to broadcast and schedule reports as needed. SAP EP serves as the single point of entry for the end user to access the complete business intelligence information portfolio.

The information is distributed through SAP Enterprise Portal 6.0 on SAP Web AS 6.40 and delivered by e-mail. This information is now shared and disseminated to support the decision-making processes within ORGA at various levels of business. ORGA is in the process of testing SAP BI Information Broadcasting to leverage Knowledge Management features such as subscription, feedback, discussion, collaboration, rating, and enterprise search.

ORGA is in the process of bringing in BEx Web applications as iViews directly in SAP Enterprise Portal 6.0 on SAP Web AS 6.40 by using the BEx Web Application Designer or the BEx Query Designer, as this is now possible with SAP BW 3.5. It is no longer necessary to migrate or import iView files explicitly.

SAP Enterprise Portal/KM & Collaboration in ORGA

ORGA has implemented SAP EP from a migration perspective from its existing portal based on the Microsoft Sharepoint server. Though the intent is to retain its existing Sharepoint-based portal, ORGA is doing a trial run of the same functionality through SAP EP. The future direction will be decided based on the functionality and the usability of SAP Enterprise Portal vis-à-vis Sharepoint. At present, the thought process is to expose iViews from SAP EP as iViews in Sharepoint.

The Knowledge Management platform makes it possible for ORGA to provide access to documents and multimedia objects that are stored in an organization's distributed document repositories. Collaboration now enables virtual teams of ORGA to work together in synchronous and asynchronous ways, directly within SAP Enterprise Portal. This is the collaborative platform that will be extended across the Internet to ORGB, ORGC, and ORGD.

ORGA works to centralize the key document repositories. ORGA is in the process of exploring repository managers that come along with SAP EP, the objective being to expose the KM platform to the documents in all connected repositories, given that the respective repository manager allows it. ORGA now uses Content Management, which supports the entire lifecycle of documents, including the authoring, storage, management, and display of documents. It also manages the connection between document repositories and the portal and provides collaborative functions such as feedback, rating, subscription, etc. The searching and classification (TREX), which processes search queries on free-text or attributes and provides automatic classification in taxonomies and text mining, is being used for ORGA KM, and the same is being extended to BI.

Not all iViews and business packages are standard in ORGA. Points of Contact (POCs) are on interactive forms based on Adobe software.

This way, we lay the ground for a unified way to bring together SAP and non-SAP solutions, third-party applications, legacy systems, databases, unstructured documents, internal and external web content, and collaboration tools. For ORGA to effectively share the knowledge, content, documents, and applications with a common look and feel, they must secure single sign-on and an easy user interface. Corporate communities, news and events, and mission critical applications will be web accessible for ORGA's businesses along with ORGA.com, paving the way for the Enterprise Services Architecture model.

SAP Exchange Infrastructure in ORGA

ORGA has taken a conscious decision of not having SAP XI being looked at as a replacement middleware application, owing to the high investments on other middleware technologies and the existing relationship with IBM and Microsoft.

SAP XI Strategy

The strategy with SAP XI is simple:

1. In the long run, for all applications interfacing with SAP applications, use SAP XI.
2. For all other B2Bi/EAI interfaces, use existing middleware – BizTalk/SeeBeyond/ MQ Series (ORGA being an IBM and Microsoft shop).
3. Leverage ESA & web services for all middleware technologies.
4. Initially, SAP XI will be used for integration with other non-SAP applications as well from a POC perspective.

ORGA Business Need

The ORGA business need is as follows:

- Option to use any other BPM tool like FlowBrix to leverage the investments made in this area with SAP Solution Manager for cross-component BPM within SAP XI 3.0.
- Open system architecture for CAF, lays the ground for future xApps.
- Supports different data formats that will be a need at ORGA.
- XML support, standards-based architecture to perform tasks such as intelligent routing.
- Allow easy and non-disruptive addition of new services and processes.
- Easy and scalable to integrate with any SAP application (MDM, MI, EP, KM, BW, etc).
- Business Process Management - Business Process Engine to monitor the Business process implemented.

Key Areas of Concern

The key areas of concern that SAP XI is being used to address are as follows:

- A business system is connected to the integration server using the IDoc adapter, which exchanges IDocs with the business system. (IDOC Adapter)
- A third-party business system is connected to the integration server using the plain HTTP adapter, which exchanges XML messages using plain HTTP with the business system. (Plain HTTP Adapter)
- A third-party (or legacy) system is connected to an integration engine using the file adapter, which exchanges text files with the third-party system. When reading a file from the third-party file system, the file adapter transforms this file into an XML message for further processing by the integration engine. (File adapter)
- A third-party or legacy system (or simply a database) is connected to an integration engine using the JDBC adapter, which accesses database content using JDBC. When reading database content, the JDBC adapter creates an XML message from this data and sends it to the integration engine for further processing. (JDBC Adapter)
- SOAP/RNIF, Java, and ABAP proxies will be piloted out shortly.
- SAP XI PCK will be used for other divisions within ORGA and the same may be piloted out for ORGB, ORGC, and ORGD.

The end objective is to standardize all application integration with SAP systems with SAP XI and non-SAP systems with Biztalk or SeeBeyond. This initiative is being looked at from a “non-replacement” mode to avoid any vendor clashes and to provide ORGA with a clear idea on the skill set of the SI community.

Direction of CAF and xAPPs in ORGA

The vision that ORGA has with SAP NetWeaver is to enable the building of business applications on top of other applications without having to write a single line of code. To a certain extent, this is an ambitious venture.

ORGA views SAP NetWeaver as platform to transform the key business processes specific to its requirements, not addressed by SAP, to be standardized across the organization. Certain procedures and norms have been laid down as guided procedures that need to be built in ORGA as bolt-on/snap-on applications. These guided procedures form the very basis for composite applications with ORGA.

SAP xApps span multiple solutions, departments, and organizations to leverage existing IT systems and ease future integration based on ESA. They also allow quick reconfiguration to accommodate new business structures, processes, and customer and partner requirements. And they deliver new collaborative capabilities across the enterprise in a role-based portal environment. ORGA is viewing this aspect of SAP NetWeaver as the endpoint for all its IT-based initiatives.

Direction of Adaptive Computing Infrastructure in ORGA

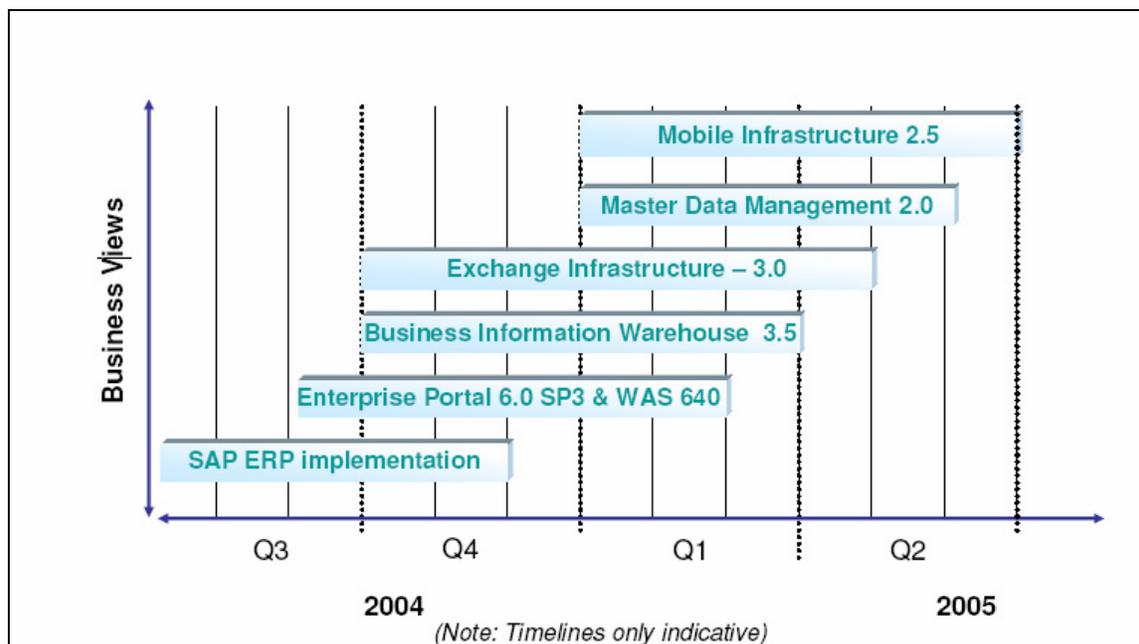
Given ORGA's current IT landscape, ORGA is now evaluating a new approach to design hardware, software, and system services following the business-driven need of permanent change and adaptability towards computing. With the transactional volume of data running into terabytes, and growing fast, there is a distinct need within ORGA for hardware resource management. ORGA is working to create a computing infrastructure that is “adaptive,” i.e. it allows the dynamic assignment of hardware resources to serve specific

application services. ORGA plans to leverage SAP NetWeaver to enable an “adaptive computing infrastructure” and ensures that business solutions based on SAP NetWeaver run at peak cost efficiency.

Project Execution Strategy

1. Start with baby steps:
 - a. Keep the starting point as Web Dynpro applications displayed via SAP Enterprise Portals or ITS for identified SAP transactions. Then render the same functionality through web services.
 - b. Web services for non-SAP applications getcalled from Web Dynpro applications/SAP EP as per choice
2. Test POCs with an SI Competence Center on specific projects for ORGA.
3. Meticulous project and program management.
4. Align with the big picture.
5. Move towards an adaptive computing infrastructure on SAP WAS/Linux for effective landscaping.

ORGA's SAP NETWEAVER ROADMAP



Note: These indicative timelines have already been pushed forward owing to changing business requirements in ORGA and to the “Exploration on SAP NetWeaver” phase that the user community is undergoing. And the stability cloud surrounds some areas. But the Web Dynpro applications were built on time.

Analysis

ORGA, powered by SAP NetWeaver, underwent the unique challenge to harness the power of this open integration and application platform. Numerous applications/transactions operational in SAP R/3 were analyzed to ascertain the need and merits of them becoming customized, web-enabled Web Dynpro applications running over SAP Enterprise Portal. These Web Dynpro applications are used for processing directly via browsers, via SAP EP; or, the scope is left open for converting the same into web services for a composite application as depicted in the diagram above.

With all applications/transactions under analysis belonging to Materials Management (MM) module of SAP R/3, a detailed process flow of the objects under consideration for Web Dynpro applications/web services was carried out. Further collaborating with technical consultants, the feasibility of the objects for development was evaluated and the functional specification prepared, following which the design phase for the development of these objects were initiated. Parallel projects with SAP XI 3.0 to explore the feasibility and robustness for replacement was carried out.

Design

The design phase included the conversion of the functional specification into a comprehensive technical specification. This task involved the preparation of the technical specification for Web Dynpro as well as the ABAP-BAPI/RFC, with complexities and scope of development clearly documented along the way. The RFC/BAPI stub was part of the deliverables at this stage with the detailed technical specification.

Development

This stage comprised of the development of ABAP-BAPI/RFC and Web Dynpro portion of the objects. The BAPI/RFC developed was used in the Web Dynpro applications, created as development components by making adaptive RFC calls. The Web Dynpro part of the development provided the desired UI for these applications. The application/business logic was developed as the aforementioned BAPI/RFC. Reusable Supply Functions required for various functionalities were also developed and used in the Web Dynpro applications.

Testing

Testing involved testing the business/application logic in the form of BAPI/RFC from SAP R/3. Furthermore, the Web Dynpro applications using these BAPI/RFCs were tested for all the test cases prepared while the technical specifications were detailed.

Key Solution Architecture Points

- **Common Platform** – Having the SAP Enterprise Portal (SAP EP 6.0 SP3) implemented on a SAP Web AS 6.40 J2EE install along with KM and Collaboration with TREX on a separate server provides an independent architectural central layer for all current and future development windows for ORGA’s key business processes.

- **Flexible and Scalable Approach** – This is a very flexible model that can be used to scale up with respect to business changes. For example, today the decision might be to have ORGA's www.ORGA.com J2EE-EJB/JSP applications on Weblogic as a separate J2EE application despite high maintenance. Still, SAP EP can be used as a single window to call in www.ORGA.com and proceed with business as usual. If later on the decision is to move www.ORGA.com to SAP EP, with Business Warehouse executing the current reports that one gets to access from www.ORGA.com, coupled with an SAP ERP implementation underneath, this model will support it. This holds true even if legacy applications are interfaced with SAP R/3 using SAP XI 3.0 with cross component BPM. This will be valid even if MDM is later on the choice towards Centralized Master Data management. The backbone remains SAP Web Application Server; potentially this could be the application server of choice to port existing J2EE applications onto this. This also paves the way for all the scenarios that have been listed in the previous section.
- **Standard/Common Approach** – The approach that will be used for this model can be replicated across other business units, with ORGA being the reference point showcasing the capabilities of the SAP NetWeaver platform.
- **Leverages Existing Investments** – The approach in this model will allow ORGA to leverage existing investments, e.g. www.ORGA.com, or even the current legacy applications. This opens up the framework to move towards composite applications and lays the foundation for the world of web services, which will help ORGA realize the potential benefits that SAP outlines as part of the SAP NetWeaver platform. Moreover, keeping in mind the current scenario existing at ORGA, such an approach should be executed at the earliest.
- **Potential for Cost Savings** – Future enhancements being planned with www.ORGA.com (e.g. chat rooms and collaboration) are out of the box functionality that requires no further investment. Another approach to the same could be to move such enhancements straight onto SAP EP and have the suppliers and customers log in through SAP EP and use such standard features here and work on www.ORGA.com for all other existing functionality. This entails the standard Enterprise Portal with business packages and iViews from iViewStudio.com, and lays the ground rules for a standard implementation.
- **Configure Out-of-the Box Functionality** - of Enterprise Portals for internal employees with document management, collaboration – synchronous and asynchronous, classification, and retrieving. Much of the standard functionality being planned for www.ORGA.com e.g. chat room, collaboration, KM etc.
- **A Quick-Win Approach** – This model will be relatively fast for ORGA to implement and test compared to the other options. This includes calling in the standard SAP ERP within the portal window and existing www.ORGA.com (on Weblogic) along with the features mentioned above.
- **A Move Towards the ESA Architecture** – As SAP states that web services are the foundation for all mySAP.com services, it is important for us take a step in this direction by choosing the right components from the SAP NetWeaver stack while laying the platform.

Epilogue

This article presents an approach an organization can take with SAP NetWeaver. This is only ONE perspective, one school of thought. Many more perspectives exist and we shall keep putting these forth to the SDN community. If you would like any aspect to be highlighted, or provided for in detail, please write to us.

Thank you for reading the “Creating a Comprehensive Platform with SAP NetWeaver” series. We hope you find this series useful.

About the Author



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