AMADORI DOWNSTREAM TRACEABILITY FOR FROZEN PACKAGED FOOD

Up until now enterprises have been supported by SOA (Service Oriented Architectures) approaches. Actually, SOAs make the IT system integration layers provide more scalable platforms. Nevertheless, in order to achieve flexibility and responsiveness, perceived as essential issues by today's companies, the use of a SOA itself is not sufficient: a new Business Process Management (BPM) methodology is needed.

The Amadori's traceability project aims at giving consumers the opportunity to track each product lot throughout the whole distribution chain. This project implements a different approach by adopting the Oracle BPM methodology used in developing the Oracle AIA (Application Integration Architecture) framework to analyse its real advantages and disadvantages, starting from the basic principles of BPM and reviewing it in a more business oriented way. Through this BPM enhanced approach, it is possible to deal with the integration architecture design in a more functional way, instead of restricting the orchestration layer to the data model.

SCENARIO

Founded by the Amadori brothers, the Amadori Group is one of the main European companies for aviculture (chicken and turkey) production and marketing. Production plants are located all over Italy in Cesena, Teramo, Brescia and Siena and are all ISO 9001 certified.

The control carried out during the whole production phase guarantees high quality standards level. From the company's founding, in the thirties, the Amadori Group distinguished itself for the continuous research for product quality throughout a production control carried out in every phase, from breeding to packaging.

Because of the delicate subject and the normal lack of confidence in food products, Amadori wants an innovative tracking system that aims to give consumers the opportunity of knowing the origin as well as every transformation phase that a specified productive lot has passed through. Amadori chose Reply to provide the company with an innovative traceability system. At first, the system will track only frozen packaged lots, but it might be extended to allow the tracking of every kind of product.

TRACEABILITY PROJECT

Traceability in the food market is not only a matter of seriousness, but above all a matter of security. Nowadays, giving consumers the chance to trace alimentary products means gaining their trust and thus winning over competitors.

The Amadori's traceability project aims at giving consumers the opportunity to follow each product lot throughout the whole distribution chain. For this purpose data, which stay in the information systems supporting the operations, have to be integrated.

There are two different kinds of traceability: Downstream and Upstream. The first objective is to supply customers with the ability to know the different phases through which a specified product has passed, starting from the storage to the distribution and finally the shop. Traceability should be the same at every step and converge in a complete view of the final product. Upstream traceability, instead, consists of tracking all the resources needed to prepare a single product lot.

Amadori's first project for traceability focuses on the Downstream. Traceability in the Upstream area will be addressed in a second phase of the project.

THE CLIENT'S SYSTEMS

At the present moment Amadori owns different systems, each for a specific purpose:

- Click Reply™ v1 – a complete suite for the warehouse management (@logistics Reply proprietary suite), taking care of the warehouses of Cesena and Santa Sofia

- SYSCOM – a third party application that manages the distribution both in the main warehouses and in the periphery
- JDEdwards – an ERP system

A further system is going to be added: Click Reply™ v4, which is already made of a component for traceability.

THE REQUIREMENTS OF THE CLIENT

Amadori Group gave some very precise requirements:

- The resulting application which at first will allow traceability only for frozen packages, has to be designed for further possible extensions and so adaptable to all the other Amadori's products.
- The impact on the already existing systems has to be minimized, requiring only superficial changes.

SOLUTION

For the design phase, the Oracle BPA Suite is used. As far as the realisation of the SOA is concerned, some Oracle SOA Suite components are implemented.

The most innovative issue in this particular integration system is the *method*. Starting from a big picture of the system, Amadori business processes need to be modeled according to some essential aspects:

- Involved systems – for every single activity the players involved should be indicated
- Business concepts – the concepts of the orchestration should be identified and modeled
- Control flow – the underlying information flow should be identified in specific business processes

BPM APPROACH – AIA METHODOLOGY

AIA (Application Integration Architecture) starts from the basic principles of BPM (Business Process Management), reviewing it in a more business oriented way. Through this enhanced approach, it is possible to face the integration architecture design in a more functional way, instead of restricting the orchestration layer to the data model. The processes are based on a conceptual model of the enterprise, enabling a more business oriented implementation as a result.

The BPM methodology used in the Amadori project takes advantage of the innovative lines of the new **Oracle framework AIA**.
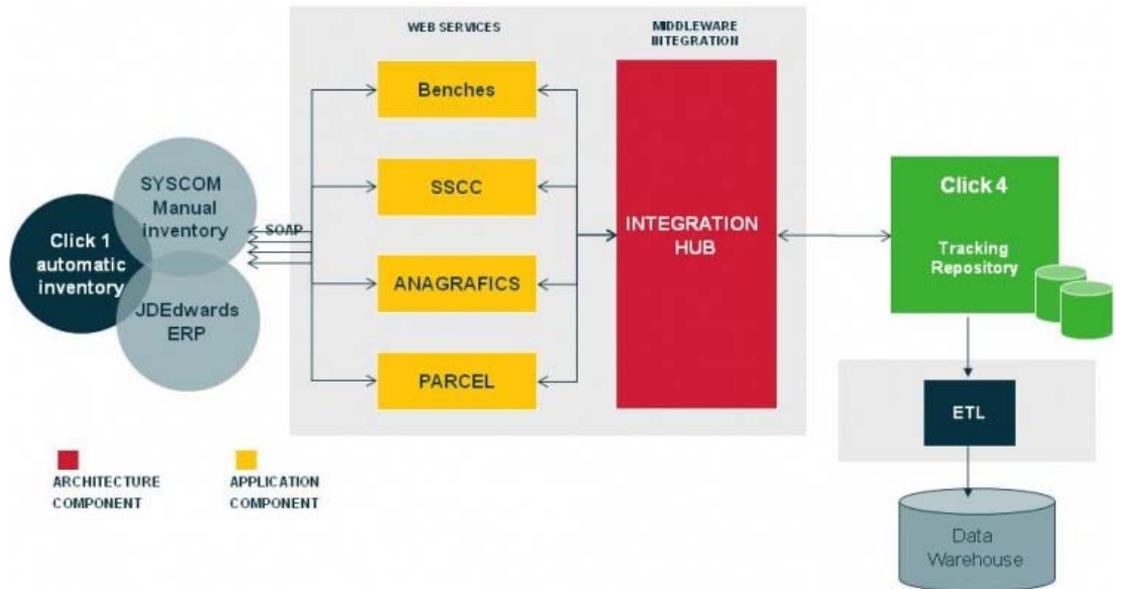
AIA can be seen as an evolution towards BPM of Oracle's widely used service oriented platform, the SOA Suite. On top of the BPEL Process Manager and the Enterprise Service Bus, which constitute the very heart of the SOA Suite, Oracle created a layer that makes AIA a complete BPM implementation framework. This layer is composed of business objects and services which are able to model functional concepts in a formal and precise way.

The design phases of the AIA methodology first of all include specific analysis of the business macro processes. Starting from a big picture of macro areas at stake, each component has to be specified first in its underlying business processes and then, for each functional flow, every activity has to be described. Currently, this is the typical BPM approach to the process design, but the next phase makes the difference as it makes this technique effective: the identification of both business objects and services.

In a classic SOA architecture, every single integration process transports a specific data, which can correspond to a Database table or to an entity bean. Instead in an AIA process, what is transmitted is a concept with a specific functional meaning. Every concept is formalized in a very strict and implementation-oriented way, expressed in XML. This means that AIA Enterprise Business Objects are simply data forms ready to be integrated; however these particular data have a functional meaning. Thus, business objects constitute a bridge between the functional and technical world, as they are business oriented and formally implemented.

A set of specific actions can be performed on every business object. The object *customer*, for instance, can be created, deleted, updated or merged with another. Each of these actions is a business service which takes care of performing the required action on the specified business object.

REPLY VALUE

Oracle Application Integration Architecture (AIA) is a recent technology initiative and can be considered the future of Application Integration in the Oracle world. AIA starts by creating an Industry Reference Model – a specification for the business processes and data objects that the integration software will support. Developers with deep industry experience can then create a Process Integration Pack – a body of integration code that abides by the specifications laid down in the Industry Reference Model.

A group of Reply people joined the AIA teamwork in Oracle's headquarters in California to work on the new methodology and on the framework. Offering its wide expertise in the integration field, the Reply team was engaged in a co-development for the order-to-cash business process between the Oracle Enterprise Business Suite and Siebel.

In May 2008 Reply capitalized on the co-development experience made at Oracle in Redwood Shores setting up an AIA demoground to give customers access to the latest Oracle technologies available.

At present Reply is the Oracle certified partner having the greatest knowledge of this very new framework that is AIA. So, starting from the AIA methodology, Reply designed the project of frozen packaged food traceability for Amadori Group.

From a technical point of view, a pure SOA is used to integrate a heterogeneous group of applications. Since the heterogeneity lays both in functionalities and in technology, the most relevant part of the project is the innovative modeling approach. Historically integration layers have always been designed tied to the characteristics of the orchestrated systems, thus very connected to their data model and technological implementation. This has, as a result, the impossibility to reuse the design model for different contexts.

By introducing the AIA design principles in the Amadori's project, what normally is related to data becomes connected to a conceptual model. The main effect is to free the functional design from the technical aspects of the underlying systems architecture, which means that this model can be mostly reused by companies in the same market sector.

Technology Reply is the company of the Reply Group specialized in ORACLE technology: besides being Oracle Advantage Partner, it has been beta site Oracle DB partner and competence center on Oracle Collaboration Suite for years.

The Technology Reply mission is to support clients during their technology innovation processes by planning, developing and managing data dissemination and knowledge systems based on Oracle Internet Platform Track.

Technology Reply, thanks to its in-depth competence and experience, boasts a team of professionals, at clients' disposal, able to work on each phase of a system development: initial assessment, requirement analysis, definition of architectural choices, drafting of functional and technology requirements, as well as development, deployment and evolution of the systems that are being created.

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