marlabs
driving digital agility

Application for airline catering services streamlines operations and results in business benefits

Client

Our client is the world's leading independent provider of airline catering and provisioning services. They are committed to culinary excellence, exceptional service, and technological capability, which they provide on a daily basis globally to more than 250 airline customers.

Challenge

The client needed a highly secure, centralized Web application to act as a single platform for all their airline supply chain members to share information, collaborate, and coordinate operations. The application should be accessible to airline users, caterers, and integrate other applications designed to support the airline's supply chain. This would require a portal, which will act as a point of access to all modules where the airline and its partners come together. The portal should also manage various sets of users across the application and also manage documents.

Client's requirement included meal manager with the ability to define the menu, recipe, and presentation. Menu planners should be able to design the menu specification based on various factors, such as the flight segment, season, and regional preferences among others. The application should include electronic service scheduling, a sophisticated rule based system, to import flight schedules and assign services to a particular flight. The application should also include electronic service ordering to help manage the entire gamut of operations pertaining to loading the services on a flight on a day to day basis. Electronic service validation is needed to verify the services which are loaded. The application should therefore streamline operations and result in business benefits.

Marlabs Solution

Marlabs was responsible for providing an end-to-end solution for this project and was involved in application development life cycle activities such as requirements gathering, analysis, technical design, construction, testing, and deployment.

Marlabs solution included the following activities:

- Evaluate technologies and provide solution using the technologies Flex, J2EE, Spring, Hibernate, JMS, EJB, Jasper Reports, Oracle Database Server, JBoss Application Server and RedHat Linux
- Configure source code repositories (SVN & GIT), build management (Ant), ensure continuous integration (Hudson), and automatic deployment procedures
- Perform JBoss servers level tuning for various environments and layers
- Provide hardware sizing/requirements based on proposed load for 2011/2012 and also provide scalability matrix for future loads.

High level architecture of the system is as follows:

- Hardware load balancing is configured to route the load on to Apache Cluster
- All the static content like SWF files, images, html files, and JavaScript files are served by Apache Cluster
- All the dynamics for synchronous calls are served by the cluster of operational servers
- All the heavy duty/processing jobs are processed by the cluster of batch servers; internal communication is enabled through Java Messages and Java Message Driven Beans
- All the queue, Web services, and schedulers are processed through a cluster of integration servers, which also serve as a bridge between the operational and batch layers
- Data is managed through cluster of Oracle servers using Oracle 10g Rack

As a part of implementing the core functionalities of the project, Marlabs has also developed the following:

- Flex based paginated grid
- Flex based custom grid
- DOJO based auto suggestion
- Spring based security framework
- J2EE based framework, which is integrated into the application

Project Description

The In Flight Exchange (IFX4) is a multitenant SaaS based highly secure web application accessible to airline users, caterers and support users. The IFx4 Suite consists of applications designed to support the key activities of an airline's supply chain. It is the airline industry's first centralized, web-based communications platform for airlines and their in-flight supply chain. It offers a single platform for all supply chain members to share information, collaborate, and coordinate operations.

Modules (IFX4):

- IFX Portal: The portal is the point of access for all modules where the airline and its partners come together. It manages various sets of users across application and also manages documents.
- ESS4 or electronic service scheduling: It is a sophisticated rule based system, which helps import flight schedules for an airline and assign services to a particular flight. The assignments are based on the day of operation, origin and destination, duration of the flight, caterer and additional parameters. ESS delivers FSS or the flight service schedule, which is the basis of all the remaining applications. ESS is tightly integrated with Meal Manager to assign services, which are schedulable on a flight.
- ESO4 or electronic service order: It helps airlines and caterers manage the whole gamut of operations pertaining to loading the services on a flight on a day to day basis. ESO receives planned services from the FSS feed (ESS) and is integrated with the airline reservation systems to receive the actual passenger information and any special services required on a flight. ESO refers to Meal Manager and electronic service scheduling to get details of a meal specification on what to load.
- MM4 or meal management: It defines the service and whether it can be scheduled on a flight. Meal manager has the capability to define the menu, the recipe and also the presentation. Experienced menu planners design the menu specification based on various factors like the flight segment, season, and regional preferences among others. Design as well as the pricing requests are possible for menus planned for a flight and the airlines can decide on factors based on historic precedence, load scale, and boarding ratios. Meal manager holds the critical information pertaining to the meal design, the price as well as load scales, which will be referred to by other applications.
- ESV4 or electronic service validation will help the airline and caterer verify the services, which are loaded. The system will have the capability to auto generate invoice as well as a manual interface for the caterer to create, verify, and update the invoice quantities. Rules will be setup in the application to compare actual services loaded versus a theoretical calculation based on the load scale and boarding ratios as well as the passenger counts received from external systems. System will have automated capability to route invoices through workflow based on an invoice validated successfully or rejected.

The application will provide a seamless integration to airline as well as catering invoicing systems and accounting systems to manage the automation of validation and payment of invoices. The system will allow defining of accounting codes and taxes, and discounts applicable to an invoice.

Benefits

Business Benefits of IFX4:

- Passenger/material forecast
- Lower food cost
- Proper inventory management
- Resources planning
- Menu planning & optimization
- Elimination of over ordering
- Consistent customer service and quality
- Better turn-around
- Fuel optimization

The application went live on 25 August 2010 for European stations of Delta Airlines. The application implementation was considered a major success for both Marlabs and customer. The launch was followed by a rolling out of Delta North America stations on 8 November 2011

Technologies

- JDK 1.6, EJB 3.0 (MBD), Hibernate, Spring (MVC, IOC, AOP, Batch)
- Flex 3.0, DOJO 1.0, JSP, Blaze-DS, Custom Tags, Spring-Flex
- Jasper Reports, Quartz Scheduling, DROOLS
- ANT, CSS, Log4J
- Eclipse, Flex Builder, I-reports, GIT, SVN, ANT, Hudson, Jenkins, Neo Load, QTP, JIRA
- Jboss EAP, Apache Server 2.0, Oracle 10g/11g