

# Project Tracking System

“A Lotus Domino based Project Management and Tracking System for a large enterprise with offices across the globe “

JVs and Branches:  
India, United Kingdom,  
Australia, Bahrain,  
Japan, Singapore

## Introduction

This document describes the Project Tracking System. This system has been created for satisfying resource planning and client communication needs of one of the largest certification company.

Its services include 30 business fields divided into 5 business areas. The organization has more than 7500 employees and operates in more than 300 different locations across the world.

### Business Challenges:

1. The old system uses SAP to maintain the data related to the projects handled by the company. The project tracking system was not integrated with SAP. The data that is needed by the project tracking system had to be manually entered into the project tracking system. To ease the transfer of data from the SAP system to the project tracking system the migration has to be automated to save time and reduce errors.
2. In the old system the personal details of an engineer and skill matrix were maintained separately using Excel sheets. When selecting the members for a team in the project tracking system the appropriate engineer had to be selected by scanning through the Excel sheets manually. To improve the efficiency of selecting the members with relevant competency the skills of individual engineers have to be stored in an easily searchable form. The process of updating the skill matrix also has to be improved to reduce errors.
3. Keeping track of the availability of an engineer has to be integrated with the project tracking system so that the resources are utilized in the best possible manner. The availability of the resource has to be decided based on the tasks assigned to the resource from current/other projects as well as the personal appointments of the resource.
4. The system should provide facility to manage the equipment available for the different locations where the projects are carried out. Equipment can belong to a lab, or they can belong to a business field of the customer or they can be external equipment. The system has to provide functionality through which the details such as calibration, the personals that are trained to use the equipment and the status of equipments can be captured and managed.

5. The system attempts to make the certification process paperless. All the documents required for the processing of a particular project have to be categorized and stored in a secure location. Facility has to be provided to version the documents and store templates of various frequently used formats.
6. Reporting is one of the key necessities of any enterprise system. The reporting solution has to display a variety of reports and allows the user to generate different kinds of statistical reports from the System. Provision should be made to save different criteria for generating statistical reports and rename the saved criteria.
7. The project tracking system should enable communication between the various team members and with the client from within the application. The system must provide facility to store the contact information of the various individuals involved in the system. Also provision should be made to add minutes of meetings, send emails and faxes and keep track of the communications made from the system.
8. The system should enable the clients of the customer to view and comment on the status of their project(s). This has to be a web application that can be integrated with the other web applications of the customer. So that there can be a single point access to all the clients of the customer.

### Technology Challenges

1. The integration of the project tracking system with a legacy system, which is implemented using SAP. The data available in SAP has to be migrated into the project tracking system. The migration has to happen on a scheduled basis. In addition to scheduled migration the users of the system should be able to initiate the migration requesting the import of selected order number range/ Date range. The integration should be done in such a way that the performance of the system should not be hampered.
2. One of the most important features in the system is the scheduler, which allows the users of the system to check the availability of an engineer and assign tasks to the person. The availability of a user should be checked taking into account the personal appoints created in the mail database. Once a task is created or updated in the project tracking system, a corresponding entry should be made in the mail database of the ser. The complexity of the logic involved in the scheduler and the GUI requirements of the features makes difficult to implement in lotus notes.
3. Document management has to be provided as a user friendly as well as a fail proof system. Which calls for use of an off the shelf product. The product should be configured to meet the requirement of the project tracking system and should integrate with the system seamlessly.
4. The activities of customer span across many locations. The communication infrastructure may not be consistent between all the locations. This makes it difficult for choice of one single location to act as a server. In addition to this the distributed nature of the system calls for a distributed architecture where the data of all the locations have to be consistent with each other.
5. The web application that provides an interface to the clients of customer view the information, post comments and upload documents has to be integrated with the other web applications of Customer. This requires iTrack (The web module to access the project Tracking System from Internet) to be a J2EE application that runs on Web-Sphere and Oracle. Since the data regarding the projects is stored and worked upon in a lotus notes database, there is need for a migration procedure that can port the data from lotus notes database to oracle database.

## Technology Used

- Lotus Notes and Domino R6 as the underlying platform
- Lotus Domino.doc 3.2 for document management System
- Lotus Enterprise Integrator (LEI 6.0) for SAP connectivity
- Websphere 4.0 as an application server for the web based part
- Oracle 8i as the database for the web based part.

## Our Solution

Our solution to the above-mentioned challenges is a distributed Lotus Notes application that consists of lotus notes application server at every location in the given country. One notes server is designated for the migration requirements of the system like SAP and iTrack. This server acts as a gateway for the system to interact with the other systems like SAP and iTrack. Once the latest information is available in the gateway it is replicated to the other application servers to which all the employees of Customers are connected.

1. The integration of lotus notes and the legacy SAP application is done using RFCs. RFCs allow the data from SAP to be converted to lotus notes documents. This is achieved by scheduling the migration activity to happen once a day. In the meantime if the user wishes to import the changes done to a particular project the migration procedure can be initiated by supplying the date range or the project number range as input to the RFCs. The RFCs in turn pickup only the modified/new data into the lotus notes database.
2. The skill matrix and the competency information of an engineer are stored in a configuration database in the form of an NSF file. This allows engineers to be searched easily based on the business field and the area of expertise. This data can be used in the application where team is selected for a project. Based on the business field of the project the list of matching engineers is automatically populated in a text list from which the desired engineer can be selected as a member of a project.
3. For keeping track of the availability of a particular engineer on a given day the scheduler is used. The scheduler allows creation of the different kinds of tasks for a particular engineer. Once a task is created or modified a java agent is triggered which picks up the changed/new documents and creates a corresponding entry in the mail database of the user. This is done by, fetching the names of the team members and looking up the global address book for information regarding the location of the mail database. Once the mail database is obtained a calendar entry is made using the details found in the task document. To make scheduling user-friendlier a java applet is used which provides a GUI representation of the schedule of all the members of the project team. This Applet provides certain advanced features like dragging and dropping tasks and stretching using the mouse.

4. The information about the equipments and calibration are maintained in a separate notes database. Which will enable the project tracking system to select the equipments users needs for execution of a particular project.
5. To provide an effective solution to the document management needs of the system Domino.Doc is used. Domino.Doc is an off the shelf solution for managing documents. Since Domino.Doc is also a notes database it can be included in the system without much difficulty. In the project tracking system the documents are organized in the form of folders. Each folder corresponds to a particular type of document. From the folders the documents can either be sent to the client or to the web application.
6. The reporting requirements are met by using bookmarks on the templates using which the details to be furnished in the reports are formatted properly and an understandable manner. The Communication module allows the users of the system to maintain the communication made to in connection to a particular project.
7. Since the Web interface has to be provided using a J2ee application. The data has to be migrated to and from an oracle database. The oracle database is chosen over the notes database for storing the data required for iTrack to improve the performance though it involves complicated migration routines. To enable an easy migration another database called iTrack.nsf is maintained which will server as a buffer for all the data that has to be migrated. Once information is changed or created in project the tracking system, only the information that needs to be shown to a customer is pushed to the iTrack.nsf. From iTrack.nsf the data is migrated using a java program that uses IIOP and HTTP to access the data stored in iTrack.nsf and Domino.Doc database and transfers the new/modified data and documents.

### Benefits to the Customer:

One of the biggest benefits to the customer is all the different activities that they were performing using various smaller tools are replaced by one integrated application that takes care of all the following activities. This integrated system is capable of running using the current infrastructure of the client with some minor up gradation.

- The final application is a user-friendlier system that enables the users to satisfy all their needs using a single application.
- Though the system is distributed in nature it is transparent to the end-user this is made possible by regular replication of the databases of the project tracking system.
- The new project tracking system provides a highly mature document management system that takes care of managing the documents including versioning.
- Various complicated tasks like scheduling, communication, equipment management and report generation are made simple for the user by means effective GUI
- The web interface provided by iTrack integrates well with both the project tracking system and the existing web applications of Customer