AVITAS DATA ANALYSIS AND REPORTING PLATFORM

Sreeram V

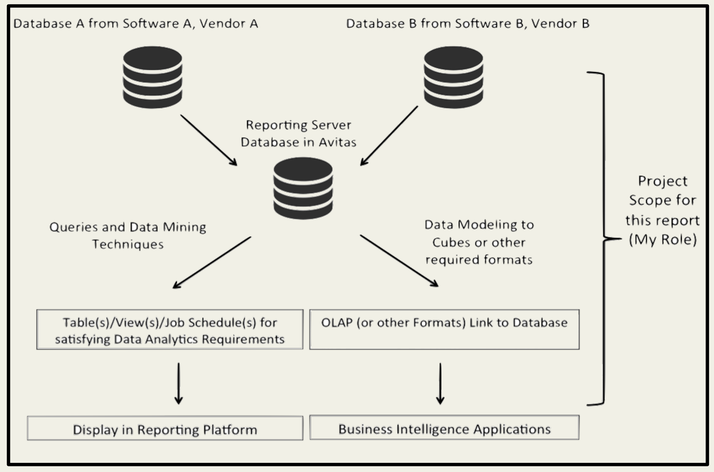
Advisor: Divya Lohani, Asst. Professor

Dept. of Computer Science and Engineering, School of Engineering

Introduction

HCL Healthcare is the newest business venture of HCL Corporation, the parent company of HCL Technologies Ltd and HCL Infosystems. HCL Avitas, in affiliation with Johns Hopkins Medicine International, is the healthcare delivery arm of HCL Healthcare. Starting with the country's first nationwide-networked multispecialty clinics, HCL Avitas aims to provide the whole continuum of care for chronic and acute diseases.

Since its inception, Avitas has generated huge amounts of data, critical to the understanding and improvement of quality of services provided and also for accelerating the growth of the company. Thus, there is a need for a Management Information System (MIS) equipped with the required Business Intelligence (BI). The two main applications being used by Avitas for record management are products outsourced from two other companies. The much-needed data for analysis are in different formats on different servers. The project involves building a reporting server within Avitas, which gets real time updates of the required data from all the external servers, and then a BI over the data collected. The first step involves data cleaning, data integrity checks and database modeling and the next involves using the right set of tools and techniques to create a system that enables its end user to play with the data in every possible way. This stack when connected with a web based front end (not a part of this report) would enable the organization to visualize the vast data seamlessly and in real time to support decision making.



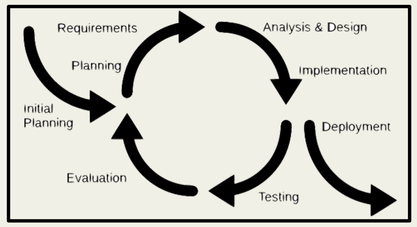
Project Requirements

1. Reporting Server
2. Data Analytics in Dashboard for following Modules
    1. Operational Analysis
    2. Quality Dashboard
    3. Marketing Analysis
    4. Management Dashboard
    5. Feedback Data
    6. Doctor Schedule
    7. Sales Dashboard
    8. Care-Coordination Dashboard
    9. Customer Relations Module Mailer
3. Automated Emails or SMS for Reporting/Alert Functionalities
4. Create OLAP of other formats from Data for Analytics
5. Text Mining and Pattern Analysis
6. Data Storage Functionality for some applications

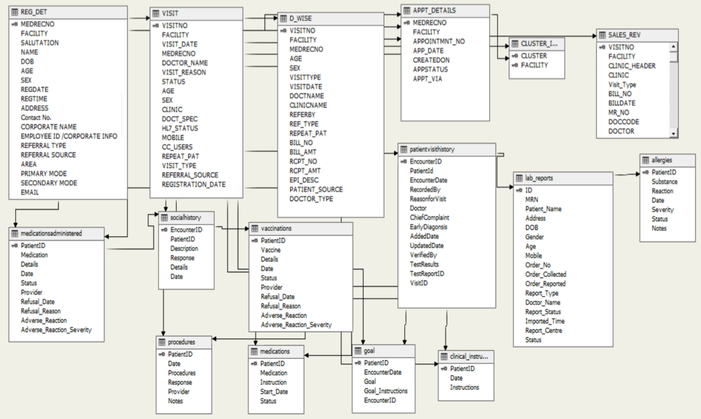
Technical Requirements for the Server

1. Microsoft SQL Server
2. Business Intelligence for Visual Studio 2012
3. Java Development Kit and a Java SE Compiler
4. Trusted IP for external Databases
5. Connectivity to Organization's Mail Server
6. Secure firewall and antimalware solutions

Software Development Process

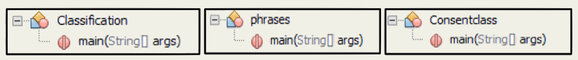


Database – 'MIS' – Schema

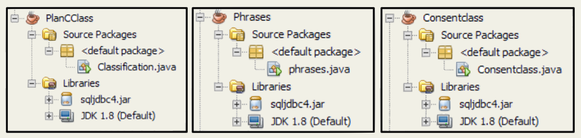


Java – Class Objects

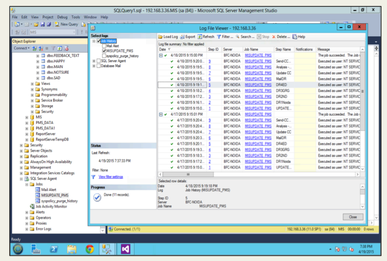
Class Objects (No dependancies)



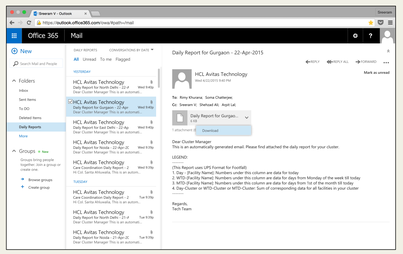
Class Files and Libraries



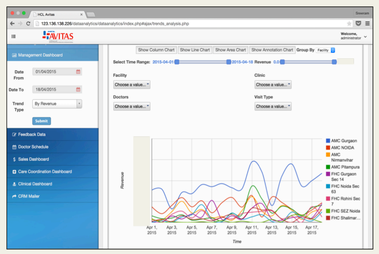
Analytics Dashboard and Backend



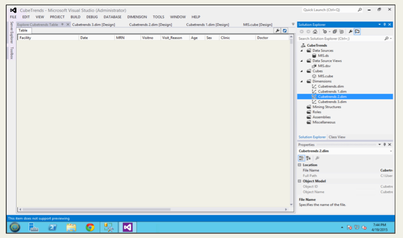
Update Job scheduled for everyday



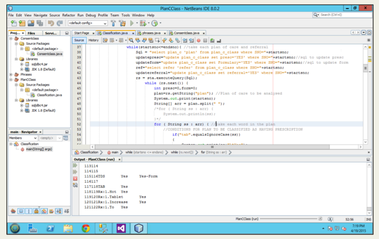
Daily Email Reports



Management Dashboard



OLAP Cube – Data Source View



Pattern Analysis and Classification of Strings – Java Code – Netbeans

Conclusion

The project was successful overall and the requirements have been satisified while complying without major changes to the scheduled timeline. The development process was smooth and the feedback from the organization and it's key players were excellent.

A deeper way of intelligence and analytics was not possible during the span of development due the constraints from the structures in the data sources. But with the reporting server built successfully, and the reporting systems and analytics, it can be said that it is just a matter of more increments on the built foundation for the organisation to achieve even powerful levels of analytics (e.g. predictions of revenue). These increments, if needed, can be done effortlessly since the codes have been written with readibility, maintainability and scalability in mind.