

Spiritual Care Visual Data Analytics for Patient Healing

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Abstract: Data Analytics is a complicated subject, historically only tackled by well-trained and experienced experts. However as more and more data is being generated and technology is also changing at a very fast rate organizations are looking for data analysts to derive the trends and patterns required for taking decisions for the benefit of organization. For the same purpose we are using a business intelligence tool QLIKVIEW as a front end for displaying the DASHBOARDS. We are getting data from SQL SERVER 2008 through stored procedure. The job for the stored procedure is scheduled on the daily basis and is fetched to the QLIKVIEW MANAGEMENT CONSOLE. This job runs every day on fixed time, it takes around 2-3 minutes to fetch data from database. The dashboard is stored on management console site of the hospital whose link is sent to the clients so that they can directly access the dashboards and do their analysis on daily basis. The result expected is quick response, upto date information, correct information, userfriendly navigation and ability to convert the result to MsExcel.

Keywords: QLIKVIEW, SQL SERVER 2008, DASHBOARDS, QLIKVIEW MANAGEMENT CONSOLE.

I. Introduction

In many environments, the processing and data storage demands of advanced analytics applications have limited their adoption - but those barriers are beginning to fall. The growing availability of data platforms and data analytics tools has enabled environments in which predictive and prescriptive analytics applications can scale to handle massive data volumes originating from a wide variety of sources .

The hospital for whom we have developed the dashboards aims at giving holistic health care, which is more than just physical health care. Since most of the health issues faced today are due to a faulty life style, analytics can be used to provide information on ways a certain patient can modify his or her lifestyle. The dashboards we are producing through Qlikview tool is actually to analyse the problems of patients which are beyond medical check-ups i.e. managing a good life style, living a healthy Vedic life, getting out of bad habits and depressions, which is not so easy.

These dashboards give various information like the patient age, what kind of recreation they are interested in, what are the problems they are facing like some addictions, depressions etc., where they live, what is the count of same problems faced by the people in a particular area, patient address, patient contact, patient age. All this helps this hospital to take some initiatives in helping the people by organizing the events for their problem solving and assigning those spiritual counsellors who can guide them properly. It also benefits this hospital to organize programs having major votes or likings and also selecting speakers based on which age group people are looking for that program. This Project also helps the Hospital getting the data automatically updated and seeing the reports in Qlickview, instead of the tedious manual updates. Through the dashboards and data visualizations one can detect Efficiency of employees working in the hospital, Details with respect to any specific patient and employee, Upcoming problems and their solutions, Unfocused areas that needs the focus of Hospital, Areas that are over focused and are not that important for growth of Hospital. Etc.

II. Qlikview

QlikView is a Business Intelligence (BI) data discovery product for creating guided analytics applications and dashboards tailor-made for business challenges. Users are able to uncover data insights and relationships across various sources with QlikView's Associative Data Indexing Engine.

This tool exposes data that is not found with query-based tools. QlikView also offers guided exploration and discovery and collaborative analytics for sharing insights. Additionally, the program allows users to build and deploy analytic apps without requiring professional development skills, helping drive faster response to changing business requirements, shorter time to value, and more insight across an

organization. Here our aim is to provide a learning path to all those people who are new to QlikView. This path will help you to learn QlikView in a structured approach. If you already have some background, or don't need all the components, feel free to adapt your own paths and let us know how have you made the changes in the path.

III. Sql Server 2008

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network .Microsoft markets at least a dozen different editions of Microsoft SQL Server, aimed at different audiences and for workloads ranging from small single-machine applications to large Internet-facing applications with many concurrent users.Data storage is a database, which is a collection of tables with typed columns. SQL Server supports different data types, including primary types such as Integer, Float, Decimal, Char (including character strings), varchar (variable length character strings), binary (for unstructured blobs of data), Text (for textual data) among others.

SQL Server buffers pages in RAM to minimize disk I/O. Any 8 KB page can be buffered in-memory, and the set of all pages currently buffered is called the buffer cache. The amount of memory available to SQL Server decides how many pages will be cached in memory. The buffer cache is managed by the Buffer Manager. Either reading from or writing to any page copies it to the buffer cache. Subsequent reads or writes are redirected to the in-memory copy, rather than the on-disc version. The page is updated on the disc by the Buffer Manager only if the in-memory cache has not been referenced for some time. While writing pages back to disc, asynchronous I/O is used whereby the I/O operation is done in a background thread so that other operations do not have to wait for the I/O operation to complete. Each page is written along with its checksum when it is written. When reading the page back, its checksum is computed again and matched with the stored version to ensure the page has not been damaged or tampered with in the meantime

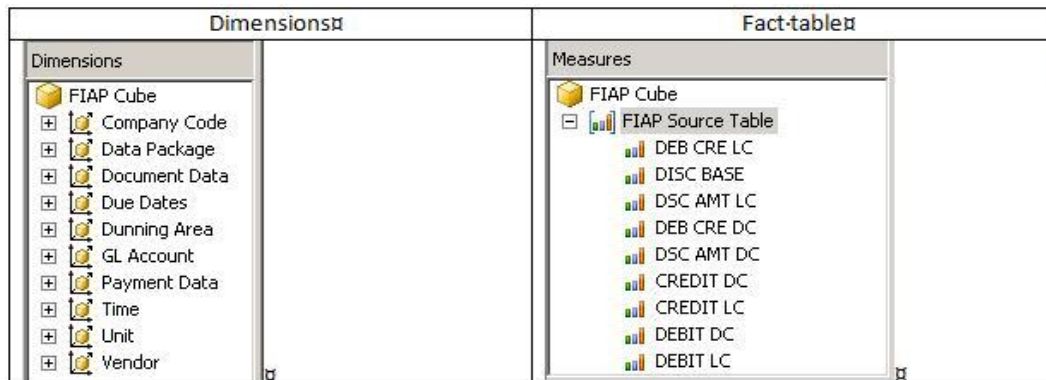


FIG 3: Structure of Sql Table

IV. Literature Survey

SR.NO	Name of project	Presented by	Research gap
1)	HEALTH CARE ANALYTICS WITH HADOOP BIG DATA PROCESSING	V.Kavitha and S.Kannudurai (Assistant professor)	This paper tries to solve big data analytics problem using hadoop in which it makes use of fuzzy c-means clustering algorithm. But this system may suffer from unoptimized resource allocation due to poor performance. Also the time to reload the entire data on daily basis in hadoop is difficult and time consuming task. To overcome this Qlikview tool is being used in our project which has a great performance also loading of data is faster compared to hadoop using c-means clustering algorithm.
2)	HEALTHCARE DATA ANALYSIS USING DYNAMIC SLOT ALLOCATION IN HADOOP	AditiBansal, AnkitaDeshpande, PriyankaGhare, SeemaDhikale and BalajiBodkhe	This paper also makes use of hadoop for big data analytics but instead of c-means clustering this paper makes use of dynamic slot allocation .Thus this paper overcomes the problem of unoptimized resource allocation as it does not have a poor performance. The framework used in this paper optimizes the resource allocation. But this paper still could not overcome the problem of loading the data on a daily basis at a faster rate. So loading of data is time consuming using this technique.

V. Problem Definition

Data is the lifeblood of the health care business, giving insight to an organization's current status and thus helping actuaries and other analysts make informed decisions and projections on a daily basis. Analysing a large amount of data as per our requirements is very complex process. However, there are useful strategies and tools to make large amount of data easier to interpret and work with. One such tool that we are using is Qlikview which is a popular and well known BI analytical tool for creating dynamic dashboards.

This project explores the field of Business Intelligence with the board aim of designing dashboards capable of providing multidimensional view of patient details and thus helping the Spiritual section staff of Hospital to take some actions. In this project we are creating a website which allows helps hospital staff to access the dynamic dashboards which gets scheduled and updated daily, so that they can evaluate and analyse each and every aspect of the hospital data and take decision based on data accordingly.

VI. Proposed Work

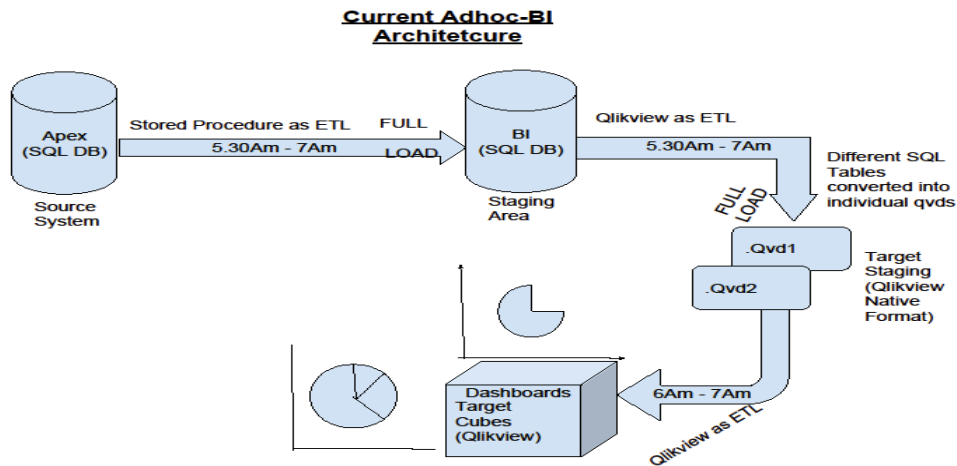
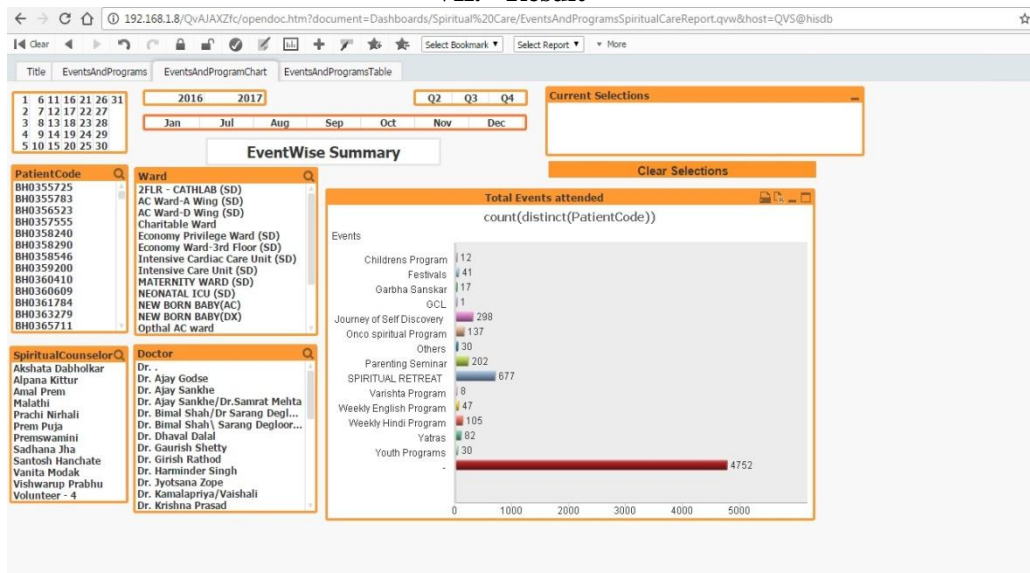


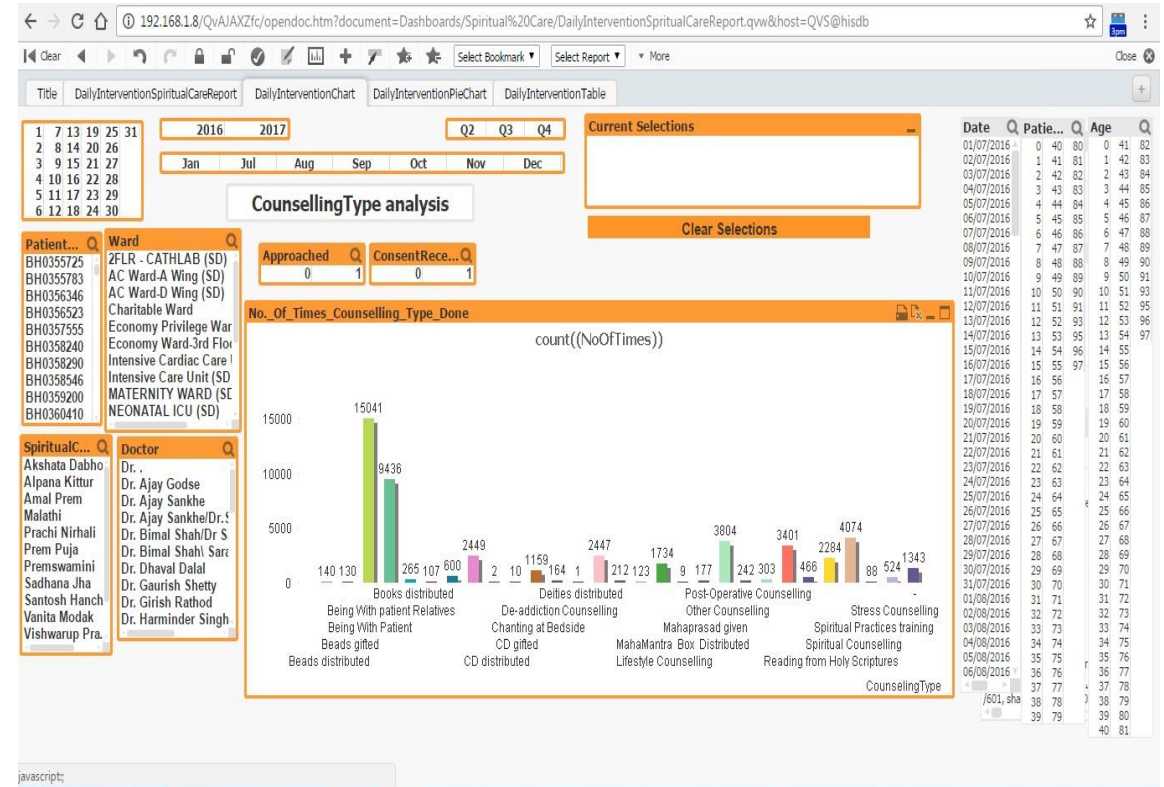
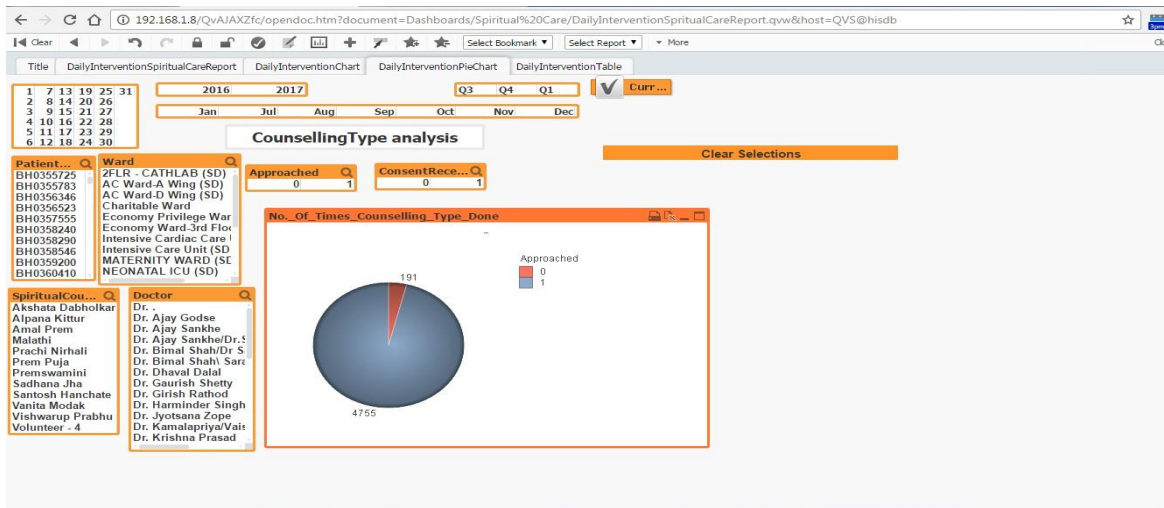
FIG 1: BI Architecture

In this project as shown in above diagram the data is being fetched to the qlikview through main database of hospital i.e. Apex SQL database but this data fetching goes through various phases as follows

We are using stored procedure as an ETL and are fetching the data from Apex Database to an intermediate database BI SQL DB. Then to fetch this data from BI to qlikview we have scheduled the job that gets executed daily at 5.30 Am automatically generating Qvd from QvdMaker. These Qvds get refreshed daily at 6.00 Am by the qlikview management console. And thus the end result we get is a standard dynamic dashboard which helps the spiritual care department to make analysis and take decisions based on data

VII. Result





VIII. Conclusion

This project has helped the hospital to analyze the data and take respective decisions on that basis. Dashboards developed follow the same format and style as that of other already developed dashboards of Hospital. Dashboards are uploaded on live server and its link is provided to the Hospital Staff working on that domain. Facts and Dimension Tables are properly linked and there is no confusion in their respective orders. Dashboards show the actual result in the form of pie charts and histograms. Dashboards get updated on daily bases according to the set time and timestamp shows change in the updating time.

IX. Future Scope

With analytics of the patient data the Hospital can bring in a great change in the lifestyle of people leading to more healthy and peaceful lifestyle. Thus helping people in understanding the fundamentals of living life free from mental problems and ultimately showing path towards the ultimate goal.

This will also help the Hospital in introducing newer methods of helping the patients based on feedbacks and help develop a great bonding between the patient and hospital rather than the money based

service oriented relation. Collectively, clinical data analytics can move the healthcare industry from a subjective, case by case approach to an objective, quantified approach that enables spiritual counsellors to make better informed decisions. Needless to say, the detailed insight through clinical data breakdown not only drives business by improving clinical outcomes but also affects higher patient satisfaction and improved care. Hospitals and caregivers have already begun investing in clinical data to provide better, well rounded care to their patients. As these hospitals improve healthcare raising patient satisfaction, the industry will gather enough momentum to make a huge push for inculcating clinical data analytics in their base strategy.

We are looking forward to the Phase II of our project which includes changing the ETL process of the architecture. Currently used ETL process is stored procedure which leads to a full load and hence we are changing it from full load to Incremental load (day wise load) using SSIS. Also we are looking forward to create a java website in Phase III which displays all the dashboards that are required by the hospital staff for analysis purpose.

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