Monitoring Software Project Health Using Visual Analysis

Padmakar G. Selokar[1], Bharathi Shetty[2]

[1]Department of Information Technology, Walchand College of Engineering, Sangli (MH), India

[2]Assistant Professor, Department of IT, Walchand College of Engineering, Sangli (MH), India

Abstract─*Analysis of Software Project Health for Strategic Decision Making in Software Project Management used for monitoring Health of Software Projects in Software companies. These monitoring helps to improve business performance in order to increase revenue of the software companies. Traditional methods showed that these monitoring would be done individually by the specific Project Manager and results into poor decisions due to lack of richer and slicker user interface. To overcome these limitations and to improve business performance, we need to make the effective strategic decisions from existing business data. For this, we need a methodology that outputs some analytical results which helps to take business decisions such as Task assignments, Project estimation, Resource performance evaluation, Product releases, etc. To help to take these strategic decisions, this paper presentsa concept for the integration of three tools: testing tool, Product defect management system and business analytic tools. In which, Testing tool having some database, and a Product Defect Management System, which track issues on failed test cases from testing tool and a Business Intelligence tool which takes data externally from testing tool database and shows different analysis visually in terms of bar charts, pie charts, line charts, etc., which gives us a better statistics to analyze software project health.*

Keywords: Software project health, Business intelligence tools, Testing tools, Product defect management system.

1. Introduction

In the period of globalization, new organizations drove organizations to be all around on the planet to react for the new needs of increasing new markets and implement its presence in procured ones keeping in mind the end goal to stay in living in extreme competitions that don't perceive nations limits. Business Intelligence (*BI*), allows a corporation's management executives to use data on customer purchasing patterns, demographics, and demand trends to make effective strategic decisions to help the company plan its business, lower its inventory levels, and maximize profitability.

The significance of business intelligence software is the mining of data from data warehouse to analyze and to generate report of various requirements that present in the accumulated data. Business analytics tools provide interactive visualization to help data analysts easily explore the huge and unstructured information.Software Project Management represents a structured approach for preparing and using information to drive software health monitoring and it is instrumental in turning historical project raw data into helpful information that can be used to monitor project health.To design various use cases to analyze historical project health data that helps to take strategic decisions about risks, project estimation, resource performance evaluation, planning future product releases.

Currently Business Process Management products usetesting tools to manage tests and reports. It uses some database as backend. Testing tools which are a third party tool produces simple reports which are used by management team to take important decisions related to product release to customer. The primary requirement is to build and implement use cases which will make Project Health checkup easy. For example one of the identified use case is to find and give

alert to users for the tests in testing tool which are in failed state but, the related defect in product defect management system, which tracks issues for failed test cases is in closed state, Compare testing tool metrics data between two product releases, find out total number of tests executed by a resource in a time period.The goal of this paper is to present a concept to build a solution which will make project health analysis efficient and give capabilities to project management to do task assignments, project estimation, and resource performance evaluation and make release decisions effectively and accurately.

2. Literature Survey

Ping-Tsai Chung; Chung, S.H. suggests two contextual investigations on data integration and data mining. The principal case is for the traditional data analytics utilizing relational database methods, for example, for collecting and extractinginformation from an organization's siteOracle database and Cognos BI tool. The another case is for data analytics for multimedia technology, utilizing Mongo database and an open source business analytics tool i.e. Pentaho BI tool for collecting and extracting multimedia information introduced in an organization's site. They analyzed both cases in parts of Data Integration, Meta-information, Query Performance and Data Analytics. At long last, displayed test results for utilizing the above data mining procedures and tools to better understand of every client group and create redid programs [1].

Nittaya Kerdprasop, Phaichayon Kongchai and Kittisak Kerdprasop proposed logic based implementation and execution testing results of the constraint-based pattern mining. This system proposed BI framework to predict client stir in the telecom business [2]. For veryhuge amount of data stored in the data warehouse, essentially investigate data and learning through the visualize tool is unrealistic.

Paper ID: SUB156429

724

They in this way propose to put more restrictions in the data extracting engine of the business intelligence programming. They outline the system of the proposed BI framework to predict client beat in the telecom business. The logic-based execution and performance testing consequences of the constraint-based pattern mining are likewise delineated in this paper.

[3] Managing the upstream of data is a standout amongst the most critical errands of the data frameworks these days, particularly when they are official data from state organizations. Getting data from all state areas is an exceptionally complicated task, committed to the State Statistical Office (SSO). This errand can't work without utilizing exceptionally refined Business Intelligence (BI) instrument for Data warehousing and data perception. The target of this paper is to expound the study on usage of business analytics tools for intricate statistical calculations in the SSO. This concept has been implemented in statistical analysis system (SAS) programming modules, modern statistical programming for information extricating, purifying, transforming and loading in Data Warehouse (DW).

[4] SAS Data Integration Server gives a comprehensive solution to handle the difficulties of distributed and quickly expanding information volumes, inconsistently characterized data across different IT frameworks and the exclusive standards of data consumers who rely on upon data to be correct, complete and accessible when they require it. SAS Data Integration Server does this in a timely, cost-effective manner, ensures credibility and consistency, and gives organizations the capacity to efficiently manage data integration projects, expanding general profitability and decreasing the aggregate cost of ownership.

[5] Building a steady profile of a substance from multiple data sources over time obliges time-particular learning to be advanced as new facts are incorporated. Such facts may have multiple dimensions of time connected with them, for example, when they were genuine, and when the reality was made known not genuine. Those dimensions may be uncertain, for instance, showing that the truth of the matter is valid from a certain point in time forward unless or until conflicting data is made accessible. As upgrades may be integrated in any request in the connection of data integration and information trade, it is important to straighten out the present or historical understanding of elements as new information is coordinated. The issue of how one ought to re-modify information as new data source is integrated is regularly application-specific. In this paper, we have delineated a some of the difficulties connected with data integration and information trade across time, and we laid out a dream and some examination directions for the next generation data integration and information trade framework, where we accept that both time and information ought to be set on equivalent balance.

[6] This paper exhibits the essential idea of data analysis utilized on a solid application issue. The principle issue field is to examine authentic information, got from financial explanations of expansive measure of organizations all over Slovak Republic. To complete these examinations, OLAP strategies were utilized. Practical analyses were performed

in chosen open-source solutions for Business Intelligence (BI); they are: Vanilla and SpagoBI. By the utilization of these provisions, there is a probability of distinguishing critical examples and organizations patterns, by method for their future heading and other practical perspectives. The curiosity of the subject introduced lies later on probability to utilize this sort of BI investigations as a part of decision dependable systemconvenient for an early cautioning framework or to prevent liquidationas a system of necessary actions.

[7] Business intelligence frameworks join functionaldata with analytical tools to present intricate and combative data to organizers and decision makers. The goal is to enhance the convenience and nature of inputs to the decision procedure. Business Intelligence is utilized to comprehend the capacities accessible in the companies; the position of the art, patterns, and future directions in the businesses, the advancements, and the administrative environment in which the firm contends; and the activities of contenders and the implications of these activities. This paper builds up a BI system and distinguishes potential research areas. The BI structure highlights the significance of semi-structured data to support educated activity by decision makers. Moreover this paper investigated a framework for BI data types and data sources to guide research, where data types are structured vs. semi-structured and data sources are internal vs. external.

3. Methodology

3.1. System Design
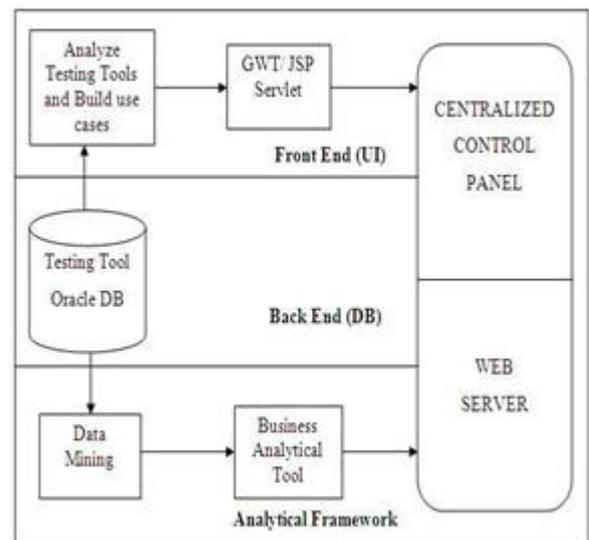
Figure 1: Process Flow Diagram of Proposed System

Above system design shows thatwe propose a system to identify and build use cases and also implement those use cases by fetching data from Oracle DB to get data in Business Analytics Tool to analyze the data from Testing Tool.Further, the proposed method also design interactive UI using web technologies exists, contains various panels depends on use cases defined and finally, integrate Analyzed control information and Business Analytics reports on Centralized Control Panelby mining the useful data from testing database feed it into business analytics tool and host

the entire analysis on any web server like Tomcat, GWT, etc.

3.2. Data Flow Diagram
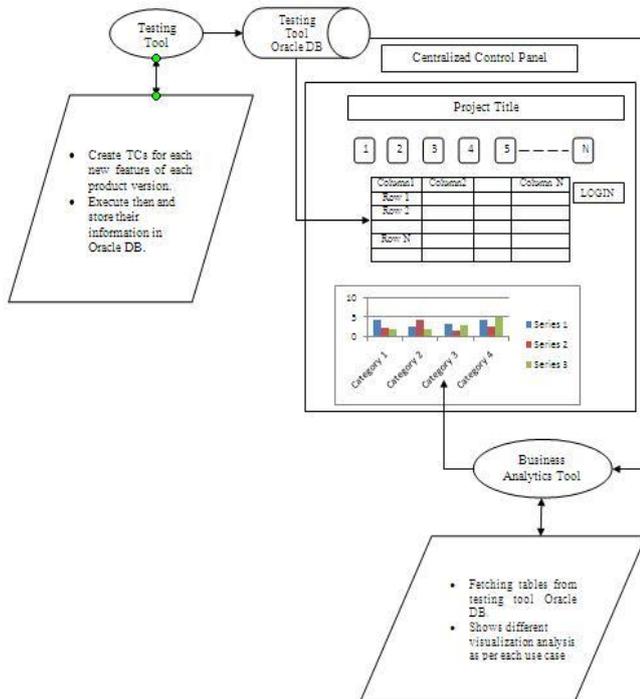
Figure 2: Block Structured Model of Proposed System.

The above figure shows the data flow of proposed system which consists of three parts that is front end which is user interface where user analyze the testing tool and build the use cases and send towards the JSP Servlet or GWT or any web technology that will suitable to bind use cases with database and display on centralized control panel.A Centralized Control Panel will be developed as front end part of the project. This will be hosted on Web Server and will be developed in GWT or JSP Servlet. This will provide all the information required by management which will help to check the health of the project(s).

Next is back end where testing tool oracle database store information about each test case that has been executed by testing tool which includes attributes like individual sessions, test case status (passed/failed), test type, test description and so on. Finally, an analytical framework where data mining process perform on testing tool oracle database to mine or extract the useful information and send towards Business analytical tool which is an analytics and business intelligence platform for analysis of data by predictive and complex statistics. After business analytical tool send information to the web server. This system gives analyzed control information, depending on different use cases entered by user. This information also can be help to predict estimates and risks which will help in planning future projects/releases. This complete data flow cycle gives us the desired output as various visual and dynamic statistics analysis on testing data using business analytics tool as a platform per use case.

4. Conclusion

Thus, the proposed paper concludes that the traditional way for generating statistics became time wasting and tedious job that to be done and also the statistics made by that system are difficult to understand for novice user. Therefore, the use of business analytics tools to make these statistics more interactive and real time byaddinganimations and features like drilling data is the best way to overcome the load on individual person. Visualization tools are made to help data analysts effortlessly investigate the integrated data. For amazingly extensive measure of data stored in the data warehouse and data marts, essentially investigate data and learning through the visualize tool is unrealistic. Again, this paper design various use cases to analyze historical project health data that helps to takestrategic decisions about risks, project estimation, resource performance evaluation, planning future product releases.In future as per the requirements of business firm, we can add various use cases in our centralized panel and analyze their statistics using interactive reports.

References

[1] Ping-Tsai Chung and Sarah H Chung. "On data integration and data mining for developing business intelligence", pages 1-6, 2013.

[2] Nittaya Kerdprasop, Phaichayon Kongchai, and Kittisak Kerdprasop, "Constraint mining in business intelligence: A case study of customer churn prediction", International Journal of Multimedia and Ubiquitous Engineering, 8(3), 2013.

[3] Savoska Snezana, Manevska Violeta, "Business Intelligence Tools for Statistical Data Analysis", Proceedings of the ITI 2010 32nd International Conference on Information Technology Interfaces, June 21-24, 2010, Cavtat, Croatia.

[4] SAS Institute Inc., "SAS Data Integration server", USA, 2009; www.sas.com/offices, [2009/2010];

[5] Mary Roth and Wang-Chiew Tan, "Data Integration and Data Exchange: It's Really About Time", 6th Biennial Conference on Innovative Data Systems Research (CIDR '13) January 6-9, 2012, Asilomar, California, USA.

[6] C. Havrilova, F. Babic, "Financial data analysis using suitable open-source Business Intelligence solutions", SAMI 2013,IEEE 11th International Symposium on Applied Machine Intelligence and Informatics,January 31 - February 2, 2013.

[7] Solomon Negash, "Business Intelligence", Communications of the Association for Information Systems, Volume 13, Article 15.

Author Profile

Padmakar Selokar has completed his B.E. in Computer Engineering and currently pursuing his M-TECH in Information Technology from Walchand College Of Engineering, Sangli (Maharashtra). His research interests include Business Intelligence and Data Integration.

Paper ID: SUB156429

726