

# APPLICATION OF BUSINESS INTELLIGENCE TECHNIQUES TO ANALYZE IT PROJECT MANAGEMENT DATA

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**Abstract-** In today's world web is the need of hour. Most of the crucial transactions and tasks are being done online in the form of web applications. Testing these web applications is an important task. Testing a web application manually is tedious, so there is a need to go for automation testing. In automation testing there is utilization of a product device to run repeatable tests against the application to be tried. There are various focal points of automation testing. There are various open source and business devices accessible for test mechanization. Selenium is one of the broadly utilized open source device for test computerization. Test automation enhances the effectiveness of programming testing procedures. Test automation gives quick criticism to engineers. It additionally discovers the imperfections when one may miss in the manual testing. In test automation we can perform boundless emphases for testing the same example of code ceaselessly commonly. The application of this tool can be seen in the automation of monthly allowance calculation of the employees of an organisation. Manually this tasks usually takes more than a week's span but the use of Selenium IDE can reduce it upto a few hours.

**Keywords** - Selenium , automation, business intelligence, automation , data mining.

## 1.INTRODUCTION

The theoretical framework of this work focuses on Project Management Institute (PMI) methodology and Capability Maturity Model Integration (CMMI) process quality. Many studies have been done trying to overcome what are the main weakness of the software industry, looking for factors that determine success / failure of projects, but few use the enormous amount of stored documents to generate data that can be analyzed using Business Intelligence techniques. It is well known the so-called Cobb paradox, "We know why projects fail, we know how to prevent failures, so why do they still fail?" Therefore the aim of this project focuses on creating a framework to answer that question. The methodology is based on the

development of a conceptual framework. it comprising the following steps

- 1)determination of requirements
- 2)definition of the data sources
- 3)design and implementation of Data Mart cubes

## 2. THEORETICAL FRAMEWORK

This section describes the set of best practices most widely accepted for project management. These recommendations are proposed by PMI and CMMI.

### 2.1. Project Management Institute (PMI)

Project Management Institute (<http://www.pmi.org/>) is the world's leading not-for-profit professional membership association for the project, program and portfolio management. It connects every country in the world through global advocacy collaboration, education and research. PMI advances careers, improves organizational success and further matures the profession of project management through its globally recognized standards, certifications, resources, tools, academic research, publications, professional development courses, and networking opportunities.

Develops and maintains, among other standards, an compendium of knowledge, theories and most accepted project management practices. The main roles performed in business intelligence are as follows:

- Project Leader
- Analyst

- Programmer
- Business Consultant
- Documentation
- Operators installers
- Technical support

The Project Manager's mission is precisely to articulate all these different visions that have been calculated by the processes to flow in the same direction concluding in a successful project.

To succeed in a project, the project manager must:

- 1) Select the appropriate process for a complete successful business enterprise with the help of automation
- 2) Clearly define the approach to identify and meet the project requirements and use it.
- 3) Meet the requirements according to the expectations and needs of stakeholders in the project.

The following diagram helps in understanding the PMI model's goals and objectives

The problems that contribute to the failure of projects can be seen in the classic image of (<http://www.alfonsovillar.com/wp-content/uploads/2011/11/projects.jpg>) that can be seen in Fig-ure 2. The image graphically shows the different views of the different stakeholders involved in the projects:



One of the fundamental processes in the project cycle is the closing. The purpose of this process is to provide a fixed point in which it can be:

- confirm the acceptance of the project results;

- verify that the objectives set at the beginning of the project, and included in the project scope have been achieved;
- recognize that the project has nothing more to contribute.

A project ends or is terminated when:

- 1) its objectives are achieved
- 2) its objectives can not be achieved in time and with the projected cost
- 3) or when it disappears the need for the project

## 2.Selenium automation tool

Web testing is an important factor for program testing that focuses on web applications. Complete testing of an electronic application is essential with a specific end goal to recognize and adjust the blunders, before it is uncovered to the general population. There are various web application execution devices available. We utilize them to test the web applications and web related interfaces. Regardless of testing web applications, we can test web servers, sites and other web interfaces by making utilization of automation web testing. All these available techniques have their pros and cons and hence there is a need to find the best possible technique amongst all these to reduce the efforts required, minimize the time required and provide maximum efficiency to the task performed. Selenium data integration tool thus provides all the above features to enable automatic software testing.

Improvement on Selenium is continuing at an fuming speed, and new elements are included day by day. The Selenium designers are greatly open to every one of the inquiries tended to the selenium-clients and selenium-level mailing records. Selenium computerizes programs. It is intended for mechanizing web applications for testing purposes, yet is surely not restricted to simply that. Exhausting electronic organization odd jobs can likewise be computerized too. Selenium has the backing of a portion of the biggest program merchants who have taken strides to make Selenium a local piece of their program.

### 2.1.Manual Testing:

This is the most traditional way of web based application testing. The web applications are tested step by step and sequentially. This process should be

continuously monitored and checked for the possible errors. Manual testing requires comparatively more time. The test cases should be error free and should be able to identify possible bugs in the web applications. The main drawback of this type of testing method is that for the repetitive test cases, the same test has to be implemented again and again. This is a very time consuming and a tedious process. Repetitive testing is an integral part of regression testing and hence it cannot be avoided. But it can be simplified with the use of proper automated testing

2.2. Automated Testing:

Automated testing tools are capable of executing tests, reporting outcomes and comparing results with earlier tests. Test carried out with these tools can be run repeated at any time of the day. The method or process being used to implement automation is called test automation framework. Unlike manual testing method automated testing is an efficient way of web application testing. It has a proper interface for writing the test cases, interconnection with different web drivers as well as a vast language support for writing the test cases.

3. Capability Maturity Model Integration (CMMI)

CMMI is a proven approach to performance management with decades of results showing that it works. Organizations that have been using CMMI have predicted less cost, efficient quality in business and schedule which serves as a huge advantage for its competitors.

CMMI is built [Tech., 2013] with the practices and objectives seen in thousands of o. Such practices can be surely used for the evaluation of self performance and improving the business skills.

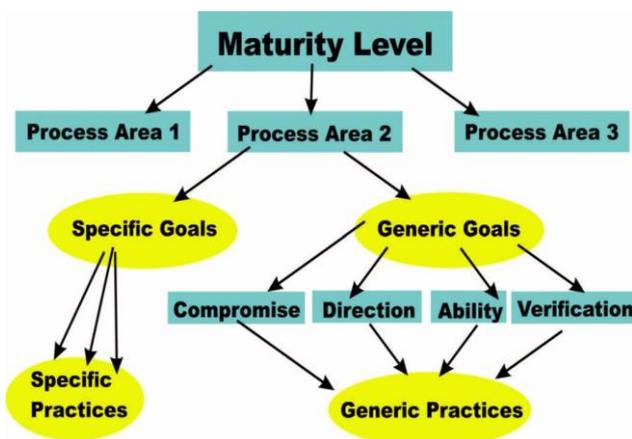


Figure2: CMMI framework

The most important company dimensions are people, procedures and methods, tools and equipment. They are responsible for gathering all the dimensions to

attain the business goals These will allow them to align the way they work, improve the processes used in different organizations. The focus on processes helps build a platform for continuous improvement. In today’s market there are maturity models, standards, methodologies and guidelines that can help an organization improve the way they do their business. However, most existing improving approaches focus on a specific part.

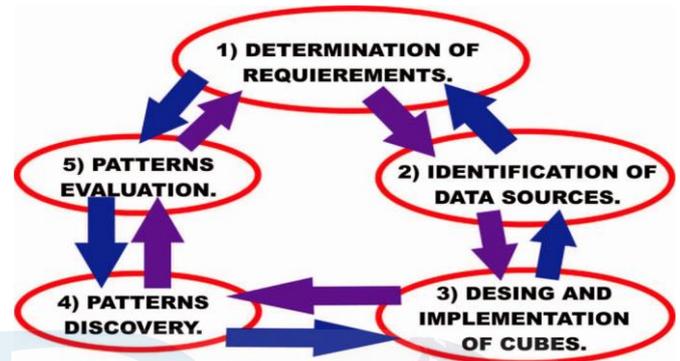


Figure3: CMMI framework

4. Business intelligence framework

Design and implementation of cubes: Data Warehouses are becoming increasingly more important in all types of organizations

Its going to focus on providing increasingly simple methods of analyzing them instead of only the emphasis on data collection. As defined by the 'father' of the Data Warehouse [Inmon, 2000], it is a data collection targeting a specific area (oriented theme: business, organization, etc.), integrated, nonvolatile, storied and variable over time, which helps decision-making in the organization in which it is used. It is a data repository that provides very different histories than the usual transactional and operational information.

It is also stored in a database designed to facilitate the analysis and efficient dissemination of data, promoting the discovery and communication of information contained in the data, especially with OLAP (On Line Analytical Processing) tools. Figure shows the structure of a data warehouse and the various levels of aggregation of the data is presented.

We believe that the methodology proposed by [Kimball and Ross, 2013] for the design and construction of a data warehouse is the most versatile. It has been in constant evolution, with continuous expanded reissues until today [Kimball and Ross, 2013]

Design and implementation of cubes: cubes (more formally hypercubes) can characterize the project information, and identify patterns in interesting lines.

Objectives to keep in mind:

- All projects involve risks
- Most projects include unmanageable risks
- Risk management is not always be (be no va) done in a good or satisfactory way.
- The Project Charter often omit risk thresholds
- Projects should exist in a balanced portfolio of risk
- Innovation is generated at failure

Pattern discovery: The discovery of patterns are made based on the data stored in the data warehouse, although the documentary information available is also analyzed and worked on the basis of transactional and operational data.

In particular, analysis focuses on three types:

- OLAP queries (*On Line Analytical Processing*)
- Data Mining techniques [Fayyad et al., 1996],
- Text Mining techniques [Tan et al., 1999], [Yu and Hsu, 2013]

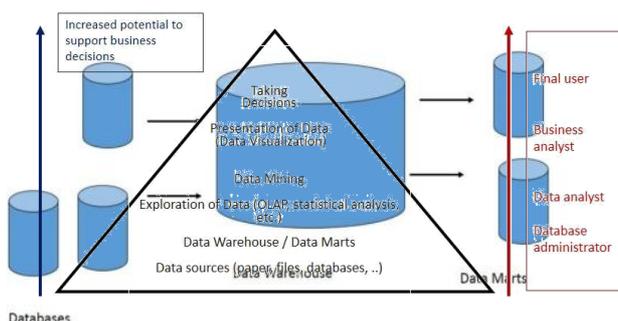
## 5. CONCLUSIONS AND FUTURE WORK

Business intelligence in the process of automation has thus helped a lot in the improvement of it sectors.

Reduction in the amount of time required for manual processing will also occur. The project manager will thus quickly get reports about the work and will thus improve in the efficiency of the project. Automation can indirectly compare the required and the actual output and help in error generation or correction if required within a short span of time.

- Importance of project manager's leadership
- Importance of timing in projects, it is not a good idea that projects milestones coincide with significant dates of the organization
- Importance of communication within the project
- Importance of events logs and proper communication of the same (of the same no se)

## Business Intelligence Databases, Data Warehouse & Data Marts



Learning from mistakes. Importance of lessons learned (learned lessons) document

- Having adequate control mechanisms (eg content and quality of the uploaded files)
- Having appropriate metrics to measure all relevant aspects considered

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