

CASE-STUDY

TRILOGY AND INTEGRATED ENTERPRISE SOFTWARE

Amir Ansari
Software Engineer
CTB Solutions
Puchong, Selangor, Malaysia

Abstract: Technology is playing an important role in our lives every day, when we wake up in the morning and take the newspaper in our hand or switch on the television we see that some technologies are coming in our lives in coming days which can make easier life style and this is the daily routine as we are living technology world where is impossible word does not exist in the dictionary and managements are also ready to invest money on it but sometimes it failed due to lack of resources or management skills or sometimes we learnt when a big incident happened due to old technologies afterward we realize the failure of the projects and try to modify it. The below are two more important projects which are started and managements spend a lot of money on it but it was unsuccessful due to different reasons.

1. Trilogy Program which objective was to reform the bureau's outdated Information technology (IT) infrastructure in September 2000 and it is done by Federal Bureau of Investigation (FBI).

2. Integrated Enterprise Software was launched by the Nike which objective was to manage the market for its footwear and can make it flexible and it is also called i2 Technologies.

Key Terms: Federal Bureau of Investigation (FBI), Trilogy, Nike, Integrated Enterprise Software etc.

1. Introduction

1. The Federal Bureau of Investigation (FBI) is a government agency which is located in the United States of America and deals with the many crimes in the nation. For example, terrorist attacks, civil rights, public corruption etc. It comes under the jurisdiction of the U.S. Department of Justice. The Bureau of Investigation (BOI) was the first name of the FBI which is established in 1908 and later its name changed to Federal Bureau of Investigation (FBI) in 1935. FBI does not use high technology for its work so many times its work criticized by the experts. In September 2000, the FBI announced the “**Trilogy**” program which objective was to reform the bureau's outdated Information technology (IT) infrastructure but it's failed due to insufficient resources and managements skills. There were three different aims to complete this project (Anon., 2016):

- 1) Purchasing modern desktop computer for all FBI offices
- 2) Developing secure high-performance WAN and LAN network
- 3) Modernizing the FBI suite of investigation software applications.

2. Nike is a company which manufactures high quality of athletic shoes for a variety of sports including baseball, athletics, golf, tennis, volleyball and wrestling and also manufactures fitness equipment, apparels and accessory products. It was founded in 1957 by Philip Knight (Knight). In 1970, all the products were manufactured in his own factory and operated by its business partner to single place around the world. In Nike there were always some problem happened related to manage everything because the products were available around the world and also demand was too high which was difficult to manage from a single place. In 1975, Nike announce a new future program which could manage the market for its footwear and can make it flexible so they introduced “Integrated Enterprise Software” which is also called i2 Technologies. There were different stages of this project which are: ARP (Enterprise Resource Planning), Customer relationship management (CRM) and Supply chain management (SCM) etc. The project described in four different phases but it was also a failed project due to lack of resources and managements.

2. Literature Review

CASE STUDY (1) – Trilogy (FBI) PROJECT FAILURE

1.0 Interim Review

The September 11, 2001 attacked created a huge pressure on the FBI that agency did not have such a technology which could trace the crimes before it's happened. Justice Department's inspector general explain that FBI always face some technologies' problem so he asked to replace the old technologies to new one and FBI introduced “trilogy” project which aim to stop terrorism and combat other serious crimes and phases of the project is below

I. First Phase: In September 2000, the FBI announced the “Trilogy” program which they expected the time period will be 4 years and total estimated cost will almost \$500M. The purpose of this project was to modernize the bureau's outdated Information technology (IT) infrastructure (Anon., 2016).

II. Second Phase: FBI signed an agreement with Science Applications International Corporation (SAIC) over a three-year period in June 2011 to develop an investigation software application for the trilogy. Agreement was based on different conditions.

- A. Software should provide the information from the FBI database there should not be any dependent agents' prior knowledge of its location and also agent can search FBI database using a single query.
- B. The web-enable the existing investigation facilities should provide.
- C. There should be some restriction to access the files from both internal as well external database in the software.

III. Third Phase: According to the Director of Federal Bureau of Investigation (FBI) (Mueller, 2005) stated, in the beginning when he personally saw the presentation of the Virtual Case File (VCF), it was very impressive and also it was able to fulfill all our requirements. However, SAIC delivered the product to the FBI in 2003, at initial review by the experts, they identified around 400 major defects in the product.

IV. Fourth Phase: In a document which were filed by the SAIC mentioned that there was some correction needed in software so project team decided to remove all the deficiencies and will deliver full functionality product with some extra cost 56 million dollars and it will take more than one year but it was unacceptable for the FBI.

V. Fifth Phase: In June 2004, according to a report which is published by the Director of Federal Bureau of Investigation (FBI) (Mueller, 2005) explained that "FBI had taken a decision to adopt a new –track plan for the VCF". The aim of this project reused some portions of the product which are already developed by the SAIC in trilogy project.

VI. Sixth Phase: A report published by the (Dan Eggen, 2006) said that, SAIC completed the project in 2005 with some additional functionality but when the development team delivered the system again to FBI and it was also incomplete and unusable according to the demand of the project. Finally, in April 2005 the project was officially abandoned while still in development stage and cost the federal government nearly \$170 million (Anon., 2016)

1.1 Why the case study was chosen

The researcher preferred this case study because it shows that how it is difficult information technology implementation in the public sector and it can be clearly seen from the trilogy project of the FBI which was unable to implement computerized system in the agency. There were also other reasons to choose this case study because it really illustrates a combination many issues happened during the implementation of the project.

1.2 Management and Quality Issues (Negative Issues)

There were many reasons of this failed *trilogy* project at the different points. The SAIC management and technical team got the many chances to cut the amount of this developing project and save the time but SAIC took many chances to make a good quality of software but did not get any positive result. This was one of the big failed projects in the public sector after spending huge amount and time on it. Everyone started blaming on each other for this failed project. Researcher concluded some issues which are the most influence factor this failed project: -

1.2.1 Incomplete set of Requirements: The first and essential aspect of every project is requirements gathering from the customers for a good software and the final output also depends on it. In the public sector, it was the seen that all those agency or organization which are working for nation security does not provide the complete and accurate information to the contractor for the project implementation and it starts with the incomplete set of requirements and this the reason that output does not fulfill customer's demands. The **trilogy** project of FBI also faced same problem because contractor did not gather accurate and current information about the agency and started the implementation, it also seen that from the beginning the requirements were not fixed, it was changing dynamically and after 9/11 (agency mission switched from criminal to intelligence focus) which created a stress between the FBI and its primary contractor. The requirements were added to the system in the continuous manner even as it was falling behind schedule. Robert S. Mueller said in February 2003, when FBI signed a contract with the SAIC contractor team in June 2001 we did not have the complete set of defined Virtual Case File (VCF) requirements.

1.2.2 Lack of management: Management is an important issue which generally happen during the development of the project without any proper planning or oversight some problem which occurred in the project. In a report which was published by the (Dan Eggen, 2006) stated that a team was formed which incorporated top scientist, engineers from the best universities and technology companies which was independent body and the aim was to find out some reason of this failed project, It was a review team which is affiliated with the National Academy of Sciences and concluded that from the beginning this case-management software was poor and this problem happened due to lack of planning and also told that the current system cannot handle copy of their cases during the investigation for references because there was no section available for the bookmarking and histories which could help the agents navigate through millions of files.

1.2.3 Lack of Skills: A software also affected from the skills that if the employees do not have proper skills to develop a project then customers cannot get a good quality of the software these skills can be any form. For example, which algorithm is best for this project, a smaller number of lines of code and get better result etc. The NRC team which is nominated for the evaluation the newly system said that there are many agencies or organizations which do not hire the top talented skill manager because they do not want to give good salary to the employees. NRC team concluded that in the beginning of the program, there were very a smaller number of expertise present in the FBI which could provide the sophisticated information about the system and FBI also excluded the defining and identifying its essential operational processes (Dan Eggen, 2006).

1.2.4 Ignorance of Errors: Today's programmer became habit to ignore the errors which occurred during the developing a system and try to eliminate these errors using different ways and sometime they can get success but when whole system deploys it does not fulfill the requirements. The FBI claimed that in the beginning of the project SAIC found some errors but it is ignored by them so the output was not the full functionality software.

1.2.5 Hour Based-Contract: Robert S. Mueller said that the contract between FBI and contractor was hours based which was difficult to manage because there is no fixed time of the completion of these types of the contract and when a problem occurred during the project contractor demand more money and time to fix all the bugs so it was the reason that trilogy project took much time.

1.3 Case Study in the Light of NAO Papers

Every project has two aspect success or failure in term of delivering ICT projects. According to the (Commons, 2011) that UK released a report where it was mentioned that how the IT is ineffective for the government because there were many project which run late, did not perform well or failed in last 20 year and this report is known as “a world leader in ineffective IT schemes for government”. There are many issues which happened with the trilogy project of FBI project can be seen under NOA paper and can get more information about the failure and what the different experts think about it.

1.3.1 Lack of Information: There are many government organizations which do not want to share their valuable information to the contractor for the IT implementation of a project because of some security reason. According to (Commons, 2011) a NAO report titled “Government and IT-a recipe for rip-offs” said that if the Government really wants IT implementation so it is necessary that Government should provide the accurate and latest information about the agency. This NOA report issue matched with the trilogy project where the contractor was also unable to gain full information about the agency and the output was not performing according to the demand. In an NAO report, Sir Phillip Green’s review recognized that poor quality of the data is the reason behind the Government failed project and Socitm said that, he recommend that Government should investigate to identify reliable and comparable cost benchmarks, and collect accurate information from departments in order to compare with those benchmarks (Commons, 2011).

1.3.2 Lack of Transparency: Some author explained that when one organization signed the contract with the contractor team so it is very difficult to cancel the contract at the middle position so organizations have to wait until the project completion. Some researcher said that the Government should seek to disaggregate its large contracts to reduce both their scope and length also should take the responsibility to review all the work from the beginning stage of the project implementation and also discuss with the project manager (Commons, 2011). In the trilogy project, at the beginning there were many errors which are ignored by contractor and later it was claimed by the FBI director so government paid extra money to fix the problem. Government should publish a full contract which is signed by the contractor how it runs its IT to making data and also enable effective benchmarking and also gives the chance to external experts that they can suggest different and more economical and effective ways of running its systems (Commons, 2011)

1.3.3 Lack of Skills and leadership: According to the (Commons, 2011), that he got many complains about Government IT that there were many employees who are working here lack of skills like manage procurement, understand new opportunities or for an innovative approach. The same issue raised in trilogy which is concluded by the NRC team and explain that Public sector does not hire many good skills employees in comparison to the private sector. NAO report mentioned that many IT contract government body’s whole ICT service, meaning that civil service staff, knowledge, skills, networks and infrastructure have been transferred to a supplier (Commons, 2011).

CASE STUDY (2) – Integrated Enterprise Software(Nike)

2.0 Interim Review

The project described in four different phases to complete the Integrated Enterprise Software project.

I. First Phase: In 1975, Nike announced a new future program which could manage the market for its footwear and under this project Nike’s retailer place orders with the company six month before the required delivery data and it was expected that more than 90 percent orders will be delivered within a given time as well as price will be also fixed which was mentioned before the orders and these orders forwarded to manufacturing company of the Nike (Anon., 2016).

II. Second Phase: In March 1999, Nike decided the implementation of the first part of the chain strategy which was the software development for the company where company could match its supply with demand by mapping out manufacturing specific products. Nike spent six years on this project as well as the cost was \$500 million.

III. Third Phase: In the year 2004, the project was almost completed (80%) and company explained many benefits of this project which was clearly showing that its centralized planning, production and delivery process were right for the single instance strategy after successfully this approach many companies started to implement ERP(enterprise resource planning)software (Anon., 2016).

IV. Fourth Phase: in February 28, 2011, Company has generated profits of \$97.4 million, around \$48 million below its earlier forecast for the third quarter which is announced by the Nike Corporation and company said that the failure in the supply chain software installation by i2 Technologies which was the big reason of the revenue shortfall and it is also affected company’s reputation (Anon., 2016).

2.1 Why the case study was chosen

This case study illustrates a real example of IT integration with the ongoing business existing system and what the difficulties comes. Researcher chosen this case study to learn these issues which originated in this case study and can apply it in the future to reduce the issues which comes.

2.2 Management and Quality Issues (Negative Issue)

There are many issues occurred from the both side Organization and contractor because both did some mistakes and did not follow necessary condition for the project implementation. The project did not fulfill all the requirements which was needed by the Nike so now they started to blame with each other that who is responsible for this failed project.

2.2.1 Lack of ERP (enterprise resource planning) teamwork and composition: According to (AHAMD ALDAMMAS, 2011) that team was not familiar with business process as well as they did not study properly about the manufacturing company and supplier.

2.2.2 Large and Unusually Challenging Installation: According to the i2 spokeswoman said the company’s software modules account for only about 10% of a \$400 million enterprise resource planning (ERP) project that’s ongoing at Nike and she also added that installation was very large because it was trying to combine all the manufacturing companies and supplier in a single system (Songini, 2016) and according to the (Koch, 2016), Nike put an statement that i2 demand-planning software were tactical and therefore fixable and also it was too slow

which might be one reason of this failed project. In one statement i2 spokeswomen said that that Nike did not apply the same patience as he did in the first part of its supply chain strategy. In the beginning of 1999, Nike wanted to deploy i2 as part of its SAP ERP project on that time it was still using its legacy system (Koch, 2016) and due to a large system's dealing with the wide range of the products which sizes were multitude also a problem in mapping supply and later i2 agreed that they used different business rules and stored data in different formats which was creating a problem to integrate.

2.2.3 Ignorance of the industry-standard template: A report which is publish in ComputerWeekly.com by (Martin, 2016) , the i2 company claimed on the Nike refused to allow the industry standard template so it was difficult to adapt everything.

2.3 Case Study in the Light of NAO Papers

The above case study of the NIKE can be seen under the NOA paper and what the experts says about these types of the issues when it occurred.

2.3.1 Large Systems Integrators:

The NOA's landscape review stated that "A contract between HMRC and Capgemini covers a 13 years period and was originally values at £2.8 billion." It was too complex project which was also difficult to manage (Commons, 2011) and the same problem occurred with the i2 project which took many years as well as wasted money to combine every supplier to the manufacturing companies and provide the facilities to the supplier and deliver order in a fast manner but this project became complex.

2.3.2 Lack of Integrating IT:

According to the (Commons, 2011) said that it is very common problem which occurred in small or large systems integrators because tight coupling did not allow to integrate the system but loose coupling gives the chance of coupling . The integration of the many different countries' supplier which were already working in individual system of the business to integrate with one single company which became complex. The assessment of costs and benefits is opaque and it commits too much power and money to a single supplier (Commons, 2011).

3. Research Design and Methodology

The researcher has discussed two failed case studies and what are the reasons behind it and how can it make a successful project using number of steps..

3.1 Recommendations for Trilogy (FBI) case study

I. Fixed Requirements – Researcher said that before the implementation of a project it is necessary to collect all requirements very carefully which are the basic demand of the agency and it should take some time for analysis. The agency should see the progress of its work carefully and also concerned with the contractor for this improvement if needed because it was a big mistake for the trilogy project which is also accepted by FBI director that requirements were not fixed and after a good amount of investigation researcher concluded that feasibility is needed in various points because product was not feasible certain points.

- **Technical Feasibility:** It is very important for this project in advance that all the equipment and tools are available which is needed by the project must be available.
- **Operational Feasibility:** Before the implementation of this project it is also necessary to analyze that how this software can help to the company.

II. Project Management: For the systematic development of a project some software engineering paradigm is selected by the software engineer before the beginning of the project. Researcher recommended that contractor team should make a better planning before the implementation and try to reduce the contract size, time and fix the bugs which come in the project. Researcher also recommended that do not sign a contract which is hour based because this type of contact time is not fixed because contractor will take more time to deliver the project because they want to take more money from the company.

III. Technical Skill: FBI should hire some expertise for a big project who can understand technical parts of the FBI's works and can deliver accurate information to the contractor in the IT implementation in the agency.

IV. System Design: It is an actual system design format of every project for a good quality of the software

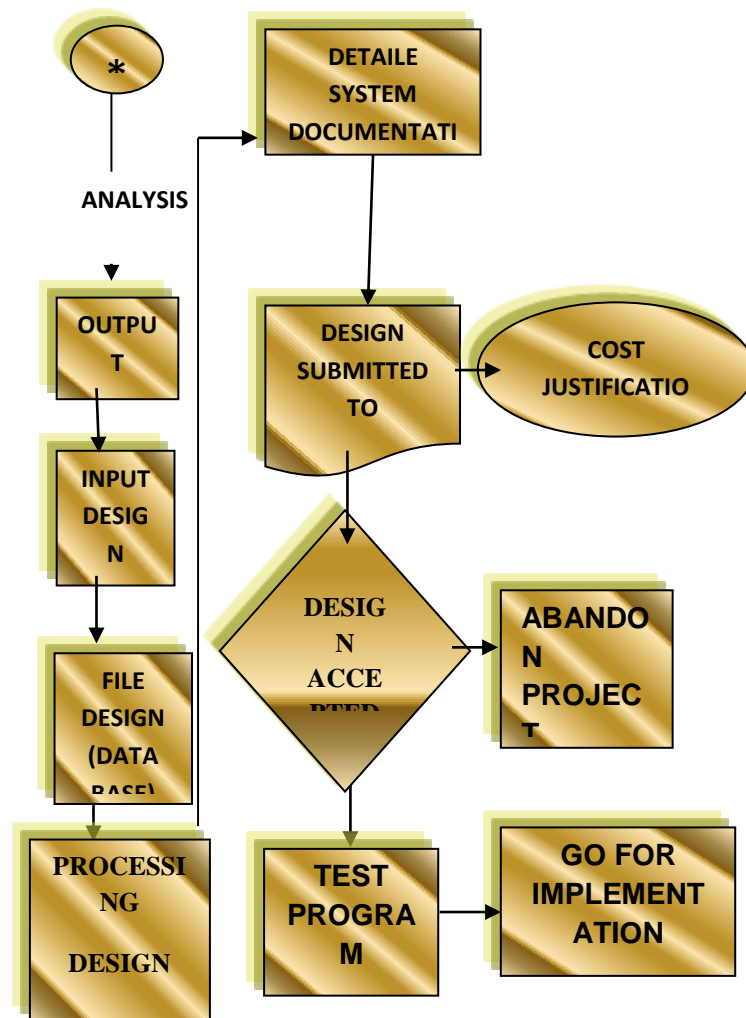


Figure 1: Belong to system design

3.2 Recommendations for Integrated Enterprise Software(Nike) case study

Resercher will give some suggestion about this case study which was completed almost 80% but failed due to integration of IT and some other issues also.

I. System Analysis: For a good quality of a project it is necessary that first system should be analyzed before the implimenting IT integration in the existence system and they should observe that both system are ready to integaret with each other because there are very less chance it. The system analysis can be at any form which are:

- **Accuracy:** Data should be always accurate and consistent form and wrong data should not accept by the project because so use data validation.
- **Timeliness:** When supplier give order for a particular product result should come quickly and there should not complex calculation present during the order.
- **Proper format:** There should be a proper format of the input and output.
- **Economy:** The data should produce at the least cost.

II. User Friendly Software: Resercher said that do not sign a big size of contract for a software development because there are vety few chances of its success and try to develop such a software which should be user friendly. Resercher also recommended that use such algorithm which allow the sending data easily.

III. Business Analyst: The business analyst plays an important role in a company's success because he knows everything about the business and can help in the IT implementation in an Organization to provide the full requirements of the company to the IT team. So, in the case of the Nike, different business analysts who are working in different branches of the Nike Company provide all the accurate information to contractor that how the business is going one and what the organization wants.

IV. Consistent Data: Inconsistent data always create some problem when data comes from the system to the database because it is very hard to manage so the software performance become slow which same incident happened with Nike project because its product size was not fixed and data was coming in different format and there were no services available in the software to manage inconsistent data. The researcher recommended allow to the only consistent data or change the algorithm of the system which can accept different type of data format.

4. Results and Discussion

There are many ways can avoid the failure of the projects but the most important is that analysis of the projects and which way will be good and what are the steps will be required to complete the life cycle of the project as well as how much time it will take. The above steps have discussed about the failure of the project and how can make it success.

5. Conclusion

To sum up, the projects can be failed at any moments so testing is more important before handover to the clients. The client has also responsibility to observe the project's team work and do analysis that it is full filling the requirements before to the completion of the project.

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