

A STUDY ON CREATING A CULTURE OF CONTINUOUS IMPROVEMENT IN PROJECTS USING PLUS-DELTA (+/) EVALUATION

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ABSTRACT

One of the common and acceptable factors in the area of software engineering research is to invent a new process model or methodology. But the studies of the failure and challenging projects [1][2][3][4][5][6][7][8][9][10][11] show that the problem is not inadequate models and there is no need for new such models or improved models at the moment, but we need some useful frameworks for structuring our thinking and practices for software development activities and project management. Apart from that we need a majority of practitioners to consistently and effectively apply the practices during development and delivery of the software product.

The objective of this research paper is to develop an improvement model that will assist to bring improvement in future project or current process performance by learning or understanding from existing ones.

KEYWORDS

Network Protocols, Wireless Network, Mobile Network, Virus, Worms & Trojans

1. INTRODUCTION

Gerald Weinberg said, “When the thinking changes, the organization changes, and vice versa”. By following an “Action Research “ or “Participatory Action Research” which is a recognized form of experimental research that focuses on the effects of the researcher's direct actions of practice within a participatory community with the goal of improving the performance quality of the community or an area of concern, we conducted a series of interviews with software employees at various levels to understand how different project stakeholders perceive the quality of software engineering processes. “Action research or participatory action research – is a research initiated to solve an immediate problem or a reflective process of progressive problem solving led by individuals working with others in teams or as part of a "community of practice" to improve the way they address issues and solve problems” [12]. Most of the problems arise in the projects include:

- Resistance to change or adapt to the situation
- The misguided conception that software development is linked to process discipline, and
- Lack of personal commitment to continually improve in performing project related activities

We then selected Plus/Delta which is a simple, formative evaluation process that is quick, easy to use, and provides ideas for improvements [13].

2. PLUS/DELTA (+/) EVALUATION

Plus/Delta (+/) evaluation quality tool is a scientific approach that provides a method for continuous improvement by continuously seeking ways to provide the highest quality services. The purpose of any process is to make us better. This could be achieved by finding things that are doing good, that are not doing good, or the things that we could do better/improve. This evaluation quality tool provides a method for continuous improvement for a team.

3. THE ROADMAP OF OUR ACTION RESEARCH PROJECT

We examined the reasons as to why software projects go out of control in terms of budget, schedule or effort through the discussions with few project managers to understand their organizations' engineering and management practices, we generated a focused list of the critical areas for improvement i.e. the things that can be improved /changed () so that project management may be more effective. The discussions were mainly oriented towards two fundamental research questions:

- a. What are the most common project mistakes to avoid and how to avoid them? and
- b. How these common mistakes or mitigating their risks will keep your projects on track and successful?

In most of the unsuccessful projects the following factors are identified as the root causes:

- Inadequate knowledge and awareness of project life cycle best practices
- Resistance to change or adapt to the situation
- The misguided conception that software development is linked to process discipline, and
- Lack of personal commitment to continually improve in performing project related activities

4. EXPERIMENTAL RESULTS

Every project manager would say that it is his/her constant endeavor to ensure the highest quality in every aspect of IT services that are delivered.

On one side we have:

- (a) A great deal of shared learning and wisdom available on the process front like adhering to comprehensive quality management system
- (b) Quality assurance processes
- (c) Leveraging project experiences
- (d) Learning to bring about predictability in processes and continuity & sustainability in quality.

On the other side, still there are concerns about software quality that are increasing especially in IT organizations and there have been several studies (including the statistics from (IT cortex,

Standish, Forrester research, Gartner etc) into software project failure that have attributed failure to one or more areas of project management like:

- (a) Poor deliverables
- (b) Schedule slippages
- (c) Cost overruns, etc.

These are the attributes of the failure projects and may be result of process inefficiencies.

4.1 Justification of selecting Action Research and Plus/Delta as a right tools for research

An Action research or participatory action research is a research initiated to solve an immediate problem or a reflective process of progressive problem solving led by individuals working with others in teams or as part of a "community of practice" to improve the way they address issues and solve problems and Plus/Delta means monitoring things we are doing / analyzing and implementing the things we could do better.

When applied five why’s analysis to identify the root cause(s) of the failure of the projects, some people complained that the organization’s processes and procedures were too large and difficult to use and this is one of the main root causes for the failure of the project. Before we get into understanding and implementing industry best practices, we applied the above two mentioned techniques (Action Research and Plus/Delta) to understand common problems associated with the organizations’ processes. The Table 1 shows the description of the problems (outcome of the Five “Why’s” analysis ([14][15]), reasons for the problem and Solution expected (Outcomes of Plus/Delta analysis).

Table 1: Table showing the outcomes of the attitudinal surveys (28 people of software industry in various roles)

Problem (Result of Five “Why’s” Analysis)	Reason	Solution expected
	(Outcome of Plus/Delta Analysis)	
1. Process was not followed very well. 2. Project Members' feedback was that they did not like to follow / understand the process	Must go through the collection of various documents: policies, standards, processes, and procedures.	Diagrams with short and usable processes and procedures.
	There is no diagrammatic depiction in these books	Define all process documentation as simply as possible, but no simpler and expect some processes to be complex.
	Though few flowcharts were followed, chunking principle was not followed	Consider beginner, intermediate, and expert users of the process.
	Few processes are not documented or not having clarity in a given situation to follow.	The processes must be tailored to each business unit or vertical, each type and each project.
	Few managers get stuck in positions and they are the only ones who know the processes, and often the processes are not documented.	

4.2 Challenges Ahead for the solution to the problems defined in the case study

- (a) Defining short and usable processes and procedures is challenging.
- (b) To identify many best practices that can be used to help improve process documentation (Collection of best practices, all wrapped for defining processes).

So, in order to solve the above problems and overcome the challenges mentioned above we decided to apply 8D analysis [16] which is considered as right tool to solve internal and external problems providing a corrective action. The following table Table 2 suggests the practical solutions for the other root causes of the failure of the project derived from our research study (Action Research).

Table 2: Practical Solutions for the other Software Development Challenges (Deltas -)

Delta ()	Explanation
Understand and negotiate project trade-offs, and track progress:	As the user’s expectations and the project parameters (improve quality, reduce costs meet a particular deadline, or control the scope creep) change periodically over the course of the project, it is extremely important that the customer and the project manager come to an understanding about the assumptions and expectations of the project. The project must be reviewed time to time in order to make the project successful. But in reality many projects are mismanaged through shortcuts in the development process, poor management of expectations, premature estimates, cost overruns, schedule slippages, or poor resource management. To identify the alternatives for adjusting the project and appreciate the dynamics of changing project parameters the project managers have to use a tool called Management Expectation Matrix [17]. Management Expectation Matrix will help to communicate and discuss with the client what is driving the project at that moment and ensure you stick to this throughout the project. This also helps to keep “the driver” in mind especially during project management reviews.
Determine Risks and Plan to Mitigate	There is a need to appoint a person exclusively to address a proactive risk management, ability to identify or mitigate risks and focus on risks for large projects and conduct risk assessment by carrying out a full risk analysis. The regular review of risks will ensure the projects that they are managing them, rather than them managing the projects.

<p>Keep Focused on the Goals and Problems</p>	<p>A clear project management monitoring and reviewing process along with senior managers, customers, and core people in the project should use a planned vs. Actual details. It allows the entire team to monitor how the projects are progressing with respect to task, time and money. The same must be linked with the milestone reviews by quality representatives, project management reviews and internal audits to ensure whether the project is still delivering the original project benefits. If not, It is required to consider re-scoping or if appropriate abandoning the project rather than wasting valuable time, money, and resources working on something that is not working.</p>
<p>The project start-up meeting is a significant event in the life of a project</p>	<p>Project start-up meeting is a very short phase of the project management cycle and but a significant event in the life of a project to be conducted at the very beginning of the project. It should be considered as the most important meeting of the entire project because it allows the Project Manager to set customer expectations. It will be important for the Project Manager to manage these expectations throughout the project and the meeting should focus to avoid conflicts and reconfirm the potential concerns during the RFP stage. The potential conflicts that might arise out of limited understanding of the project and its operating environment could be avoided to the maximum extent by providing the information to the customer and other project stakeholders.</p>
<p>Focusing the organization on the critical issues, planning the improvement and effecting change</p>	<p>Project Managers may use 5 why problem solving tool [14][15] to find the fundamental root causes of a given problem and determine corrective actions for those key root causes. To maintain customer satisfaction and solve internal and external problems completing a corrective action for a customer, proceed with the 8D analysis [16]. Customers with problems are often even grateful that the company dealt with these problems in such an efficient manner.</p>

Of course, many organizations use metrics to focus towards real improvement. In some cases, improvements are evident and measured using quantitative metrics, but however, in many situations, the improvements could not be measured quantitatively. Continuous improvement requires analysis of current practices and identify ways to do them better, faster and cost effective by considering what went well (plus) or what could be changed (delta). So the Plus/Delta (+ / Δ) is

treated as a scientific process, that should be used to ensure the final product developed is according to the user's specifications.

5. CONCLUSION

The "Plus-Delta" is especially effective for initiatives such as improving workplace organization and streamlining processes, which may be difficult to quantify using traditional techniques. Plus/Delta (+/) evaluation is a powerful process improvement methodology that helps to visualize and mitigate those risks most likely to cause our project to fail.

"Progress will accelerate if you perform the improvement activities and create the momentum and driving force for change. Progress will decelerate if you do nothing to raise confidence in the change." - Kim Caputo

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