

A PRACTICAL APPROACH TO PROJECT POST-MORTEMs

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ABSTRACT

The only thing worse than a mistake, is a repeated one. There is obviously a need to benefit from hindsight by learning from experience, but the systems in place are mostly informal, unstructured and therefore ineffective. This paper presents motivation for regular and formal project post-mortems where lessons learned are documented and put into practice immediately.

A substantial number of projects end with less than optimal results. The benefits of such projects can be maximised if lessons can be learned from these situations. The central theme of the ISO 9001 (2000 revision) is that there should be continued improvement in business practices. This cannot take place if the lessons learned are not incorporated into the way that the organisation runs projects. A project post-mortem process provides a feedback mechanism to aid continuous improvement on both current and future projects. It imparts a tool that all project managers should be implementing, as the usefulness of the documented lessons obtained from the process is unaltered by the final status of the project.

The major recommendation of this paper is that project post-mortems don't have to be "post-project" post-mortems! Organisations should rather conduct "mini-mortems" at regular intervals or upon completion of major milestones as this approach provides the opportunity to apply what has been learned as the project progresses.

1 INTRODUCTION

In theory, projects have two possible extreme outcomes: success or failure. Both of these concepts are relative to the viewpoint of the project stakeholders (clients, end-users, team members, etc) who probably have different criteria for measuring success. In reality, all projects will have a blend of success and failure factors when a large number of factors are considered.

Success, it can be argued, can be directly attributable to the frequency of errors. As such, an organisation that repeats its mistakes is invariably less competitive than an organisation that does not. Likewise it is cost-ineffective to go through the process of neglecting successful practices. To their cost, organisations frequently misapply their successes, repeat their mistakes and re-invent the wheel [1]. Project participants often just move on from project to project, each with their own private assessment of the causes of success and failure, without discovering the real learning that is available to the organisation and themselves. If this is all we do, then both our successes and failures become our losses. This presents the challenge: how can organisations learn from their experiences – without tears?

In project-based organisations, and because people learn best by experience, one of the most beneficial activities that can be conducted is a meeting where lessons learned are identified and developed so that they can be carried forward to future projects. Typically these meetings are called project post-mortems. The fundamental requirement of a post-mortem is a process to aid continuous improvement by reviewing project activities from a strategic viewpoint that will allow effective feedback for learning from past experience.

This paper is organised into three sections: the first explains the characteristics, success factors, benefits and pitfalls of project post-mortems; the second describes a practical process of undertaking a project post-mortem: and the third presents an example of the documentation of a lesson summary, which is an outcome of the project post-mortem.

2 LEARNING FROM THE PAST

A brief case history [2] will illustrate the benefits of learning from what has been done before:

Boeing had serious problems and difficulties with the launch of both the 737 and 747 aircraft. The company set up “Project Homework” to compare the development processes of the 737 and 747 with those of the 707 and 727, two of the company’s most profitable aircraft at that point in time. The project team created a set of “lessons learned” for use on future aircraft. It took three years and produced hundreds of recommendations and an inch thick Guide Book. Several members of the team were transferred to the 757 and 767 start-ups. The new projects produced the most successful error free launch in Boeing’s history.

Although this very large-scale post-mortem is not what is expected to be the norm, the basic principle is the same: a systematic procedure should be followed that will allow effective feedback for learning. Unfortunately, it is a fact of life that people like to do things their own way and are reluctant to acknowledge that it is advisable to obtain objective advice drawn from previous projects of a similar type [3]. This is where a planned project post-mortem comes into its own with its capability of creating value from past experience.

The post-mortem should be a candid discussion of what happened – what worked well and what did not. What should we do differently on the next project? For example, if a project was delivered late, why was it late? How do we avoid being late next time? Post-mortems attempt to get at this sort of information and so are often not popular activities, as you ask people to expose vulnerabilities. Post-mortems should be applied to the complete range of activities and stages in a project. A checklist of the possible project aspects that should be reviewed is presented in Table 1 below.

PRODUCTS	
Design	Technical by type
Documentation	Specifications, Contract, Tender, Bills of Quantities, etc
Reports	Templates, checklists, etc
PROJECT MANAGEMENT PROCESSES	
Integration	Plan development, plan execution, integrated change control
Scope	Initiation, scope planning, scope definition, scope verification, scope change control
Time	Activity definition, activity sequencing, activity duration estimating, schedule development, schedule control
Cost	Resource planning, cost estimating, cost budgeting, cost control
Quality	Quality planning, quality assurance, quality control
Human resource	Organisational planning, staff acquisition, team development
Communications	Communications planning, information distribution, performance reporting, administrative closure
Risk	Risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, risk monitoring & control
Procurement	Procurement planning, solicitation planning, solicitation, source selection, contract administration, contract closeout
INVESTMENTS	
Equipment	Photocopier, plan printer, camera, video, etc
Procedures	Quality System, templates, etc
Office space	Furniture, layout, facilities, etc
Outsourcing	Archiving, travel, stationery, etc
IT hard- & software	Computers, networks, printers, software, web, etc

TABLE 1: Checklist of Project Aspects

Project post-mortems rarely go as far as they could or should in capturing lessons and leveraging the learning for the benefit of the whole organisation. The process should facilitate team learning by systematically identifying, discussing, discovering and evaluating the factors that influenced the outcome.

2.1 Post-mortem characteristics

The post-mortem is not about: checking compliance with procedures, criticising decision makers, re-assessment of the deliverables in minute detail, listing errors in the original assumptions, dwelling in the past or allocating blame. The post mortem should be about: strengthening existing procedures, improving the way decisions are taken, probing reasons for deviation from plan, identifying risks faced by projects of a similar type, creating value in future such projects and promoting accountability.

Above all, the post-mortem has to do with providing a tool to help project managers execute projects efficiently. It provides a structured method of documenting lessons so that the learning can be applied to future activities and projects.

2.2 Success Factors

Organisations that have spent resources on the installation and implementation of project post-mortems obviously want to be assured that the system is cost-beneficial. From the limited literature published, and from discussions with project managers, the range of factors that are central to achieving the desired objectives and benefits of such a process, are as follows:

- Aim to learn from the process rather than allocating blame
- Objectivity and a broad outlook from the team members
- Emphasis on discussing issues with staff that were closely involved rather than spending excessive time reviewing paperwork
- Ensuring that all points of view are taken into account.
- Setting in place procedures that ensure that lessons learned are heeded in future cases
- The support of top management for the project post-mortem process
- Development of a corporate culture that encourages the desire to learn from experience
- The acceptance that one can learn from success as well as failure
- Appreciation that every project is different, and thus requires a fresh analysis of the project
- The team members should aim at identifying impartial, objective lessons from the project
- Identified symptoms must be pursued in depth to determine the underlying cause
- Install effective feedback procedures

2.3 The Benefits

A study by Baird *et al* [4] has been adapted to highlight four significant improvements that should result from undertaking a formal project post-mortem:

2.3.1 Structured purposeful dialogue

When a structured process of learning is used, you are guided through a review of intent, what happened, lessons learned and then action. Following the proper steps ensures that the discussion progresses in a focused manner. The team discussion is guided by the structured process towards a clear and valuable end.

2.3.2 Breaking hierarchical barriers

By respecting multiple perspectives, learning from action promotes an environment in which what is said is more important than who said it. Everyone's input is valued. While no formal process can guarantee this mindset, a structured approach will promote it. The hierarchical barriers are further broken down, as the appointed leader rather becomes the facilitator. His role is not to provide

answers or to decide on content, but to promote a successful, creative discussion that leads to learning worthwhile lessons.

2.3.3 Reflection on actions

The skill of reflecting on one's actions may be the most important skill for any project team. Through reflection, we come to understand ourselves better, as well as others and our business. From this understanding comes an opportunity for continuous improvement. Those that are able and willing to be taught, find that experience and corrective action are continuous teachers. The post-mortem promotes reflection by offering a formal process through which to practice it. Widespread use of post-mortems will encourage us to reflect and learn as a matter of course.

2.3.4 Recorded lessons

Documenting lessons has a number of important benefits. Firstly, the act of writing down the analysis of both lessons and action plans prompts us to clarify our thinking, condense our words and remove ambiguity from our conclusions. Secondly, recording lessons helps us retain them. They endure as a reference, and are not easily forgotten. Lessons that are lost are typically those that are not written down. Finally, recorded lessons are easier to share with others. People across the organisation can benefit from what one team has done. The rate of organisational improvement will be accelerated if learning is shared in this way.

2.4 The Pitfalls

By extrapolating from related literature, three potential explanations have been identified that may explain why expected benefits might not be achieved. All of these amount to the improper use of the post-mortem:

2.4.1 One-man show

The post-mortem should not be viewed as vehicle for lecturing the team about what the project manager sees as the problems. The project manager should not force his own perspective and agenda and make a presentation; rather he should engage everyone who has been involved in the project.

2.4.2 Incorrect motive

The post-mortem must not be inappropriately used to control and punish certain team members whose performance is not meeting expectations. (There are other appropriate mechanisms for dealing with performance appraisal.) Such misuse of the post-mortem will create a negative view and create fear of being blamed for doing something that others could have learned from.

2.4.3 No implementation

If the post-mortem is done correctly and conclusions are not implemented, then the team members will start to reject the idea as a waste of time. The lessons need to be applied so that the positive learning experience can produce results indicated by associated improvements.

The benefits of projects that have less than optimal results can be maximised if lessons are learned from the situations. The important thing is to learn how to apply the lessons learned to projects. A lesson is not learned until behaviour changes. The next section aims to describe a practical method of undertaking a post-mortem.

3 A PRACTICAL APPROACH

The way to make post-mortems a regular part of your organisation's culture is to do them right. An active programme to learn from project experiences is key to improving corporate productivity. For any organisation to learn, it has to take a step back and ask what a given team did right and wrong. Then the team must find a way to implement the necessary changes.

3.1 The participants

Participants should include all the project team members, regardless of their roles and optionally, the client, customers, users and other stakeholders.

Team members have responsibilities that go beyond compliance; they should be going about the task of considering what those responsibilities are and how to go about living them out. Team members should not be relegated to being the recipients of the thinking of others, but should be the originators and discussants of such ideas [5]. Team members should be full participants in the dialogue about the responsibilities they assume.

The leader's job is to promote a focused, sincere, stimulating and safe exchange among the members of the team so that genuine learning can take place. The job is not to have the answers, but to facilitate a good discussion. Only get facts from the team members, as the aim is to remain objective.

Because the post-mortem is about discovering the cause and effect relationships involved and about planning effective responses, it is important that participants take care to understand each other. They must feel comfortable that each has grasped what the others have said rather than talking past each other. You must actively seek further understanding of another's position. It requires searching, paraphrasing positions and looking for advice: 'Can you give an example of what you mean?', 'How do you think that this caused the problem?', 'So you are saying that...?'

3.2 Timing

Project post-mortems don't have to be "post-project" post-mortems! Rather conduct a "mini-mortem" at regular intervals or upon completion of major milestones and put lessons learned into practice immediately.

You do not have to wait until the project is dead before trying to figure out what could have been improved. The objective is to learn as you perform; in other words, to understand why interim objectives have not been met, what could be learned, and how those lessons could be put back into the operation process. This is important as you still have part of the project in which to apply what you think you have learned. Deciding to change at the end of the project is too late to influence the current work.

3.3 The Process

The post-mortem involves in-depth reviews of the project to identify strengths and weaknesses in the project management processes – insights that may be used with confidence for the benefit of subsequent tasks and projects. The object is to provide a workable method of arresting the costly cycle of unlearned successes, repeated mistakes and re-discovering solutions. The focus is on how to improve performance of the project. It should be a way of becoming more production orientated, not a way to do more analyses. The following generic process is suggested:

3.3.1 Gather Input

The post mortem should be undertaken on an individual basis first [6]. The individual review will allow quieter, more analytical people the opportunity to develop their responses to the questions without being interrupted by the more extrovert, vocal types who might otherwise dominate the meeting. It also allows each member time to create more thoughtful responses. Submit individual suggestions before the meeting to avoid judgement on comments being passed before all feedback has been received. Different team members have different experiences and viewpoints: some might have a positive view on an item that others do not. You might learn something from both viewpoints... Summarise the data (which will make the input somewhat anonymous) and distribute before the meeting.

3.3.2 Discuss

The discussion must identify the observed problem (include example and context), the perceived impact, the apparent solution, the desired outcome and the proposed action. The purpose is to arrive at a shared understanding of not only what happened in a given situation, but also why it happened and what should be done differently next time. Shared understanding requires that we not only know what others have concluded, but why. Others must be able to see how we got from our observations to what we concluded.

3.3.3 Document

The lessons must be recorded in a format that facilitates future referencing. It is important to leverage what you have learned by distributing the document to other project teams and throughout the organisation. This will integrate the process of learning into the organisation. Compile a clear action list that has come out of the lessons learned.

3.3.4 Act

Lessons are of no use unless they are applied. Because the focus is on implementing solutions, and especially action(s) that can be applied quickly to accelerate the progress, it is important to think of actions in three time frames (short-term, mid-term and long-term). Considering all three time-horizons helps a team avoid the trap of implementing only things that will take a long time to produce benefits. Short-term actions are those that can be taken quickly and will have an immediate benefit: eg making a phone call, stopping an activity, making an expenditure. Mid-term actions are those that affect systems, practices and the organisation e.g. hiring people with new skills, implementing a new procedure, long term actions are those related to the organisation strategies, goals, policies and values e.g. redefining a strategic intent, promoting better listening skills.

4 APPLICATION OF THE PROCESS

To clarify the process above, a few typical examples have been compiled to illustrate the way that the lessons learned should be presented. As described in Section 2.3.4 above, the information is in a format that can be clearly understood by all; even parties that were not part of the project.

Item No	Project Aspect	Time frame
01	Investment: IT hardware	Mid-Term
Observed Symptom A team of draughtsman working on the same project require copies of each other's drawings to minimise redrawing of common details.		
Perceived Impact Uncontrolled, duplicate drawings increasing the probability of amending the wrong drawing		
Apparent Solution Have a single location where drawings are stored that is accessible to all draughtsmen.		
Desired Outcome Cause it to be unnecessary to have copies of drawings on separate computers		
Proposed Action Install a network and data-server		

Item No	Project Aspect	Time frame
02	Process: Procurement	Short-Term
Observed Symptom One project with two contracts. Certain activities required to be complete before the other contractor can have access to that area.		
Perceived Impact Contractors blame each other for programme delays – with a cumulative project delay.		
Apparent Solution Include a contract clause to take over the parts of the work that are complete, including penalties if interim dates are missed.		
Desired Outcome Penalties will accrue to the defaulting contractor without removing the subsequent contractors programme-maintaining responsibility		
Proposed Action Modify the contract documentation checklists to highlight the possible problems.		

Item No	Project Aspect	Time frame
03	Product: Technical	Long-Term
Observed Symptom Difficult tie-in detail between labyrinth spillway and the abutments as such a large spillway of this type had never been built before.		
Perceived Impact Unacceptable structural design delays to accommodate the joint.		
Apparent Solution The tie-in to should be assisted by water pressure.		
Desired Outcome The incorrect precedent set by this spillway should be brought to designer's attention.		
Proposed Action Write a journal paper to highlight the problem		

Item No	Project Aspect	Time frame
04	Process: Time	Short-Term
Observed Symptom Insignificant drawings are undertaken before priority drawings so that draughtsmen are not idle.		
Perceived Impact Missing design deadlines on critical drawings		
Apparent Solution Designers should not get sidetracked trying to keep draughtsmen busy		
Desired Outcome Design engineers must be allowed to concentrate on their core job of designing		
Proposed Action Draughtsmen can “sit & twiddle their thumbs” until priority work is ready for drawing.		

Item No	Project Aspect	Time frame
05	Process: Scope	Short-Term
Observed Symptom Scope of works changed, but the direct costs are not tracked		
Perceived Impact Difficult to backup Variation Order costs		
Apparent Solution Allocate separate task numbers to each VO		
Desired Outcome Details of effect of scope changes can be provided to the Client		
Proposed Action Modify the scope change control procedure to require new tasks to be created for changes.		

TABLE 2: Example of “Lessons Learned Summary”

5 CONCLUSION

Project post-mortems provide organisations with a cost-effective opportunity for improvement by focusing on one of the most valuable sources of insight and added knowledge – their own experience. These meetings provide constructive input to the project as well as the firm as a whole. Therefore post-mortems are beneficial whether or not team members will work together on the next project or not.

Formalising the process will enhance the benefits of a project post-mortem. A clear structure promotes better dialogue and constructive criticism and will guide an effective learning process all the way to action. Once individuals realise that there is a positive atmosphere to learning – with no punishment for providing the lessons – then the organisation will incorporate hard-won lessons into every-day activities.

The project post-mortem is a useful tool for integrating learning into the performance process, which has a dual purpose of achieving rapid results while building the capability to achieve better results in the future. This process can assist organisations and project managers to continuously improve by utilising the benefits of hindsight.

6 REFERENCES

- [1] Kransdorff, A. *The role of the post-project analysis*, The Learning Organisation, Volume 3, Number 1, 1996, pp11-15.
- [2] Hodgen, DB. *Post project review process*, lecture notes, 2000
- [3] Gadella, J, Jones, J. *Post completion review*, Management Accounting: Magazine for Chartered Management Accountants, Sept 96, Vol 74, Issue 8, pp38-39
- [4] Baird, L, Holland, P, Deacon, S. *Learning from Action: Imbedding more learning into the performance fast enough to make a difference*. Organisational Dynamics, Spring 99, pp19-32
- [5] Dixon, NM. *The responsibilities of members in an organisation that is learning*. The Learning Organisation, Volume 5, Number 4, 1998, pp161-167
- [6] Greer, M. *Project post-mortem review questions*, web site:
www.michaelgreer.com/postmortem.htm

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