

Pre-Mortems

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Abstract

Post-Mortem or Retrospective Meetings can be too little, too late. These kinds of exercises are sometimes too focused on the project in question. That level of specificity makes it difficult to generalize the output enough to apply it to the next batch of work. As a result, many lessons learned are filed away and never implemented. Even when a team intends to use what their new-found knowledge, it becomes extra work that is eventually abandoned. Instead of Post-Mortem or Retrospective Meetings, your ability to predict failures can be increased up to 30% by holding a Pre-Mortem.

Pre-Mortems are meetings that happen before the project, iteration or sprint has ended. A Pre-Mortem meeting creates a safe environment where the sole purpose is to predict failure. Instead of a gripe session, the Pre-Mortem is structured so that attendees are asked for a few areas where they think issues will occur. Then everyone is asked if there is one thing they can do to stop the problem from happening. The list of action items is generated from each person's "one thing that they can do."

Using the Pre-Mortem strategy you can stop these failures from occurring.

Biography

Julie Green has been a QA Engineer for 10 years and has experience using Agile and Waterfall methodologies. Julie was the Scrum Master in an Agile environment for a team that worked in web development. In addition to web projects she has also performed testing in API integration, middleware, and mobile apps.

After providing consulting services as a subcontractor to Cover Oregon Julie decided that there had to be a better way of communicating potential failures. She heard about the idea of Pre-Mortems on the Freakonomics Radio Podcast episode titled "Failure Is Your Friend." This idea was presented to her QA team at Con-way Enterprises Inc. with a positive response.

Julie reached out to the inventor of the Pre-Mortem idea, Gary Klein, who put her in contact with others using the technique. In her discussions with other groups using Pre-Mortems she has documented their suggestions. Julie has presented the idea of Pre-Mortems at the Software Quality Assurance User Group (SQAUG). Two groups have reached out to try the Pre-Mortem technique.

Julie lives with her husband, son and the cutest dog ever, Floyd, in Forest Grove, Oregon. Julie is currently looking for groups willing to try a Pre-Mortem discussion. She can be contacted at julie.a.green@gmail.com.

1 Introduction

If you've ever had a Post-Mortem or Retrospective meeting you know that it can be an awkward and/or combative event. We air our dirty laundry from the previous project and put on our armor to ready our defenses. Before starting, we mentally rehearse the major issues we encountered during the project and pre-prepare our responses.

Whether or not the project was a disaster this meeting just seems like extra work or a family therapy session. The facilitator needs a Ph.D. in Psychology in order to help everyone process their feelings. After the meeting we may come up with a list of changes we want to make next time. How many of these are worked on? Lessons learned from the past can't always be applied to the future. When we think back on that project we just accept it for what it was.

Why do projects turn out badly? Isn't there a way for us to stop the failure before it happens?

The following ideas came from the Freakonomics Radio Podcast episode called, "Failure Is Your Friend." The episode describes a method of reducing the incident of failure by 30% by holding a Pre-Mortem meeting.

2 Go Fever

Go Fever is a term coined by NASA. It means insisting on moving forward despite being told that there is a potential failure. When you are striving towards quality, like many of us do every day, you are constantly warning or informing your teams and managers about potential failure. Most of the warnings given are risk assessed. At the very end, with our stomach in knots, a decision is made. It is either a "Go" or a "No Go".

How many of us worked with colleagues who did not listen when we made warnings, opened defects, and generally disapproved of the quality we were sending to our customers? I've never encountered anyone in a Quality Assurance or Quality Control field that didn't have a run-in with Go Fever. In my case I would have manager after manager insist that the urgent defect wasn't urgent. I seemed to always test right up to the last minute still finding defects. So many times the date that the project was due was more important than the quality of the project itself.

2.1 Examples of Go Fever

2.1.1 Apollo 1 Spacecraft

When NASA coined the phrase "Go Fever" it was after a life and death situation turned to death. On January 27, 1967 the Apollo 1 space mission team conducted a test. A flash fire occurred during that test in the command module. Lt. Col. Virgil I. Grissom, Lt. Col. Edward H. White, and Roger B. Chaffee died in the fire.

A comprehensive investigation found many lethal designs with the Apollo 1 spacecraft. Someone was in a hurry. NASA had two years before they were scheduled to land on the moon in 1970 yet the paced was forced so that they would leave two years early.

2.1.2 Shuttle Challenger Disaster

Go Fever was evident again after the Challenger Space Shuttle disaster in 1986. Allan McDonald, engineer for contractor Morton Thiokol explains in his book Truth, Lies, and O-Rings: Inside the Space Shuttle Challenger Disaster," that he was concerned about the freezing temperatures in Florida the day of the Challenger launch. He knew that there wasn't enough testing at this temperature.

Before the launch there was a teleconference where McDonald recommended a delay. He was challenged at every recommendation of a delay. He aired on the side of safety. When challenged, McDonald was asked to prove that the launch would fail. He could not do that because he did not have data from a test at a low temperature to support his claim.

McDonald refused to sign off for the launch. Instead his boss signed off. Like all of us who work in quality, McDonald was not happy. He expressed this to his boss.

After the tragedy Physicist Richard Feynman reviewed the case and pointed out that the O-Rings when tested at low temperatures failed to perform. Since NASA had a history of success between Apollo 1 and the Challenger there was a sense of arrogance leading up to the Challenger disaster. Arrogance that lead to the Go Fever of NASA officials.

2.1.3 Cover Oregon

In providing consulting services as a sub-contractor on the Independent Verification and Validation Team (IV&V) for Cover Oregon I kept hearing the message, "We have to go live on October 1st." Our team was required by the Federal Government to make sure tests were carried out the way they were specified by the Quality Assurance team at Cover Oregon. Each state had an IV&V contractor. We were required to be a contractor, or independent party of some kind.

I didn't hear about Go Fever until after the work I had done on the IV&V team. Right away I thought of the message "We have to go live on October 1st." Really? If individual's privacy was at stake, or if you couldn't even log in the Cover Oregon web site had to go live? And now we know it didn't go live on October 1st. They was nothing safe enough to put into production. I knew in September that this was a no go, and I said so. But this was not a message you could state. This was \$200,000,000 plus in Go Fever.

2.2 Courage – the antidote to Go Fever

Courage is the way to stop Go Fever. This is a hard thing to do for most. When we speak up we can seem like we are not a team player. Most bosses want their teams to be optimistic about the outcome of the project. Instead of calling it like it is we have to say things differently in order to still be part of the team.

Momentum of the project can keep it going on its trajectory to disaster. The politics of our offices make it seem impossible to stop. We are told that this is how the culture of our company works. The egos in our leadership and teams can silence those who are looking out for our quality.

There is a way to boost our courage and make it safe to talk about potential failure.

3 Pre-Mortems

Pre-Mortems are a meeting, a strategy, where the team imagines that a project has failed. Holding a Pre-Mortem reduces the overconfidence of the bosses and team. During this meeting the whole point is to talk about failure so everyone is a team player. Calling out potential failures is safe during the Pre-Mortem.

3.1 Gary Klein Ph.D.

Imagining potential failure is called Prospective Hindsight. Dr. Gary Klein Ph.D. found that when Prospective Hindsight is used it increases your ability to identify future outcomes by 30%. Dr. Klein, who is a cognitive psychologist, practices experimental psychology. He and his team use the Pre-Mortem strategy on their own projects to predict how their outcomes can fail. Dr. Klein has written several books including "Seeing What Other's Don't" which discuss ways to increase our insight and encourage failing.

3.2 Sterling Wiggins – Aptima.com

Being extremely curious about Pre-Mortems, I reached out to Dr. Klein for more resources. He put me in touch with Sterling Wiggins from Aptima.com. Sterling works on flight simulation software that is used by the United States Air Force. Sterling uses Pre-Mortems with his projects.

Sterling explained his success with Pre-Mortems and is working on a book about it. He has consulted with nurses who use the Pre-Mortem strategy with patients before surgery. In these life and death situations a Pre-Mortem proves itself by providing better patient outcomes.

3.3 Dave Thomas – Forest Fire Containment

Dr. Klein also put me in touch with Dave Thomas. Dave works on projects to contain forest fires. His work is also life and death. Dave performs Pre-Mortems with his team, sometimes in the helicopter on the way to the fire. Dave knows the Pre-Mortem stops preventable mistakes by forcing everyone to think about them beforehand.

4 When to have a Pre-Mortem

I asked Dr. Klein, Sterling Wiggins and Dave Thomas questions about Pre-Mortems. The question on top of the list was when? At what point in the project is it most valuable to have a Pre-Mortem?

Sterling was the most knowledgeable about software processes. We discussed different methodologies and agreed that with a Waterfall methodology it would be the design phase. For Agile the best time would be after the planning meeting. It also could help to have another Pre-Mortem half-way through the project.

Dave only has the criteria that they hold a Pre-Mortem before sending firefighters into a particular space.

4.1 Why not hold a Retrospective?

I've held retrospective meetings while acting as Scrum Master at ADP Dealer Services (now CDK Global). These meetings have turned nasty on me. It often seems too late because the sprint is over. Many times in a retrospective the improvement we find is too specific to the project we were working on. We don't have an opportunity to implement the improvement we thought up.

Also with a retrospective the product now is done. It is what it is. It is now exponentially harder to change.

5 Pre-Mortem Experiment

My other questions for Dr. Klein, Sterling Wiggins and Dave Thomas centered around how to conduct the Pre-Mortem. It helps to imagine a project we are all working on. We just had our planning meeting and now it's time to have the Pre-Mortem.

5.1 Pre-Mortem Meeting Agenda

The Pre-Mortem consists of 5 steps. The first 4 are:

1. Imagine the project has completed and failed.
2. Write down 1 or more reasons why it failed. (2 minutes)
3. Share your reasons for failure.
4. Compile reasons

5.2 Imagining the failure

Dr. Klein suggests everyone get into a relaxed state when activating their imagination. A state that is little dreamy but not sleeping. You may want to close your eyes and take a deep breath.

Next the facilitator imagines and discusses looking into a crystal ball or some such fictional predictor of the future. They see that the project has failed. The failure was so bad we don't want to look at each other in the hallway. We are embarrassed that we were part of this team. The failure was legendary.

5.3 Reasons the project failed

The facilitator asks everyone to write down 1 reason why the project failed. If they have more they are encouraged to do so. This activity is usually timed for 2 minutes.

5.4 Share the failure reason

Each person shares 1 failure reason. If they wrote down more than one they should share the most important or the one that they felt would mostly lead to a failure. The facilitator should make sure that their reasons are clearly understood. Only the person who's turn it is to share should be sharing, any rebuttals should be discouraged. We want to hear any failure no matter whether or not someone knows it should not cause failures.

The facilitator will compile the list of reasons. Whiteboards or large easels of paper work for this task. The data gathered needs to be captured later in a format that can be used for follow-up. Some people may mention an outlandish scenario. The "Asteroid falling from the sky" scenario should also be written down along with the others. Sterling explained that playing along with this and moving on helps the team move forward.

5.5 One thing you can do

The fifth and final action in a Pre-Mortem is a 2 minute session where everyone writes one thing they can do to stop the failure. Anyone can choose any failure item. If they don't feel they can change the item they wrote down perhaps they can help with an item someone else wrote.

The team should be encouraged to work on an item where they can make a difference.

5.6 Share the one thing you can do

As with the failures each person then shares the one thing they can do to stop the failure. This is where we find there is nothing we can do about the asteroid falling from the sky. But there are many things we can do about other issues.

The facilitator should compile this list again. This list becomes the action items for the team to work on. The team should then prioritize which items are most important. Those are the things to work on. All other items can be listed as risks.

Someone should become the owner of this list. This could be the facilitator, project manager, product owner, scrum master or team member.

At the end of the sprint or project each item should have been checked off or a plan created to deal with the issue.

6 Challenges

I have yet to convince a team to hold a Pre-Mortem. The comfort of doing what has always been done or what the Agile Consultants say is too overwhelming. There is nothing to lose except a possible half hour to one hour.

Another challenge is team cooperation. That asteroid scenario is a funny mask to cynicism. The cynic has no suggestions for change and does not reflect the entire team.

Follow-up on action items is another challenge. These items can be seen as unimportant to the Boss with Go Fever. It might be better to assign this task to the scrum master or facilitator.

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