

## Root Cause

Once the main problem, missed milestone or metric has been identified, review what went wrong and how. The problem identified may just be the symptom or symptoms of an underlying cause

What action has been taken so far?

What has been done by whom and when in the initial stage of the investigation into the failing project?

This needs to be understood because early action without research or careful thought may have made the issue worse.

Has someone recorded what they have done and recorded the impact of what they have done?

Typical questions to be asked at this stage are:

- Were there any previously unidentified unknowns that surprised us?
- Design Changes
- Testing Problems

## Other influencing Factors

- Were all of the project tasks accurately identified at the beginning of the project?
- How does current knowledge compare with the original task list / work breakdown?
- Was there any part of the original plan missing any key activity?
- Was there enough knowledge available at the time to be able plan correctly?
- Were all risks identified and adequately assessed?
- Was there an initial Risk Assessment performed?
- Did any of the risks become issues?
- Did any of these issues de-rail the project?

## Stages of a Project – Assess for Performance

- Specification
- Design
- Build
- Test / Qualify
- Completion
- Operation

Each of these stages has a specific number of steps to be completed by project in a particular sequence in order to achieve a milestone.

These tasks will have dependencies and/or constraints based on other tasks and resources completion and availability.

- How did the project perform in these two areas?
- Did the Project Manager appear to be overwhelmed?
- Was the Project Manager under obvious pressure?

Always keep these three questions in mind during the investigation:

- How do you know there is a problem?
- How did the problem first manifest itself?
- Is the problem still visible or repeatable?

Remember we can only begin to truly rescue and revive the project once the true nature of the problem or problems has been defined and understood.

For each problem or each subset of problems define a template based on the area above, an example of this is :

The design documents were not approved by the required deadline.

The software build could not commence resulting in a delay in the new system going live.

Then we must ask the question - "Why were the design documents not approved on time?"

**Answer:**

The business requirements were not clearly defined in time to allow the design documents to be completed.

Then we must ask the question - "Why were the business requirements defined on time?"

**Answer:**

The allocated resources were not given enough time to define the business requirements.

Then we must ask - "why were the allocated resources not given enough time to define the business requirements?"

There were operational issues that were given priority.

Now we are getting somewhere.

We could ask why priority was given to operational issues but there is no point, In all my years in industry - keeping the business going will always take priority over projects.

So now we know that this particular missed milestone was a direct result of site resources being diverted to focus on an operational issue. Although this issue is unavoidable, good communication could have managed the situation.

**This is where project governance and stakeholder management come in.**

We also need to look at the list of assumptions outlined at the beginning of a project. An assumption may read as follows:

The design documents will be approved by April 25th assuming that the site resources have provided the project team with the business requirements by March 25th. The site team need to allocate 80% of their time during the months of February and March in order to achieve the deadline.

So if the project manager and project team is engaged with the site team (customer), regular updates and communication will allow the project manager to know when the site team are not being given adequate time to assemble the business requirements. This is the point when the project manager needs to start flagging a risk in achieving a deadline.

Once the project manager sees the potential to miss a deadline, register it on the risk log and communicate it clearly and often.

So in this particular example the design documents could only be completed once the user requirements were provided. This is an assumption.

Many deliverables and milestones on a project have inter-dependencies and pre-requisites. If any of the pre-requisites are not in place, the milestone will be missed and this will have a knock on effect on the schedule. If the project team and project manager are not flagging these issues at the time when they occur they can quickly snowball into a major delay.

So with all of the above information in mind. You now need to put this into practice in order to get to the root cause of the problem.

Let's look at another example so that we can illustrate how to you can apply this in a live scenario. This example is taken from a real project. This is an actual scenario that

myself and my team were called in to help with some years ago but the pattern has been repeated.

This was a large software project in a manufacturing operation that consisted of business systems connected to manufacturing systems and automated equipment.

1. The initial phone call from the client described a situation where they had experienced huge delays, budget was overspending, team were demoralized, They could not seem to get the software into a state of operation where they could commence the operational testing required to prepare for commercial operation. The project manager had been fired because the schedule was months late from the original intentions.

2. With this type of project, once the design is complete, the software and equipment undergo testing at the supplier (Factory Acceptance Testing) before being delivered to the site. Once the software and equipment arrives on site they are hooked up to the site systems and preparation for operational testing commences.

3. Our first steps were to start with the basic questions as described above:

Me: How do you know there is a problem?

*Client: There is a problem because we cannot get the software and equipment ready for testing, there are numerous problems.*

Me: Describe the problems?

*Client: Technical Issues - the software systems are not functioning as required.*

*Client: Project Issues - We can't plan the next stage of the project due to the technical issues.*

Me: Looking at the technical issues alone, are the operational software issues clearly described? In other words – what are you measuring success or failure against?

*Client: Yes - these are basic functions that are standard features of the software and equipment. This is a no brainer*

Me: Were these functions clearly described in the user requirements documentation?

*Client: Yes*

Me: Were these functions included into the design documentation?

*Client: Yes*

Me: Did the design review verify that these requirements were built into the design?

*Client: Yes - well some of them were verified - others were assumed. Due to time pressures coming from the corporate leadership team we didn't allocate enough time to complete the design review.*

Me: Was the software and equipment fully tested at the supplier's premises before being delivered?

*Client: Yes - there were a number of tests performed and some functionality verified. There was a list of issues maintained and many of these were addressed as the supplier site before being dispatched to our site.*

Me: Were all of the issues verified as resolved before the software and equipment was delivered to your site?

*Client: Yes but there some issues that we were unable to close. So actually no - all issues were not resolved. The supplier ensured that we signed a disclaimer to accept delivery with these issues before delivery.*

Me: Why?

*Client: We were under severe pressure to complete the factory acceptance testing and get the software and equipment delivered to site.*

Me: So did the management that were putting your team under pressure to get the software and equipment delivered to site made fully aware of the open issues and the potential impact to the schedule of not resolving these issues before delivery to site?

*Client: Yes, there was a verbal discussion that communicated the status before delivery to site.*

Me: Was this risk added to the project risk log and adequately assessed for potential impact to the project?

*Client: No, it was just verbally discussed.*

From the initial conversations alarm bells started ringing.

1. There were known issues with the software and equipment before delivery to site.
2. The issues were not logged on any official documentation and therefore there was no official acknowledgement of these issues. They just existed on a snag list.
3. The supplier insisted that a disclaimer was signed by the client accepting the existence of these issues.

Our next course of action was to look at one of the individual issues and assess if it could be resolved easily and traced back to source. The one particular issue we reviewed was identified as not working correctly at the supplier factory. We reviewed the issue in a dedicated investigation, assessed the problem with the correct SMEs and corrected the problem. The functionality was subsequently proven as operational.

We then systematically tackled each issue until they were all resolved to completion. They were resolved because we had a focused structured team and we were following a clear process for troubleshooting. We received support from the equipment supplier and together all issues were resolved.

We could not understand how all of these issues were being perceived as impossible to resolve. Once we spoke to the site based team it was clear that the removal of the project manager left a void in management for the project team on site. There was no structured approach to troubleshooting and testing, hence the issues were being prolonged.

So practically all of the issues being experienced could be traced back to the decision made to have the software and equipment delivered to site with a number of substantial technical issues. These issues led to a number of delays, the project manager was removed and this compounded the problem because there was no local management and co-ordination of the troubleshooting efforts to resolve these problems.

So now that we were satisfied that we had identified the root cause we needed to put the problem statement together. The report that we presented to the site leadership was direct and to the point.

The example above is used to illustrate the process of relating symptoms to root cause - so the **symptoms** were a delayed schedule and overrunning costs, the **root cause** was that the issues were not addressed at the factory or supplier premises.

On a large complex project, every decision and action will have a resulting outcome either direct or indirect, positive or negative. For this reason, it is imperative that all project team members are clear on their own role, other roles and the overall project plan. This may sound like a simple assumption but I never ceases to disappoint when we work with different project teams and we see these huge gaps in the knowledge of project team members.

By following the process of questioning and investigation described above you should now be in a position to call out the root causes or causes. If not walk through the process again with this new found knowledge and see what transpires. If you are still struggling to put your finger on the root cause, e-mail us for support

on [projects@systeme.ie](mailto:projects@systeme.ie) describing the issue, some background information and the steps that you have followed already. We would be happy to help.