Stalag Luft III

Project lessons from the Great Escape

by Mark Kozak-Holland

Part 3.2: project risk management

Most people are very familiar with the movie *The Great Escape* but may not be familiar with it as a project executed in the spring of 1944. Part 3.1 looked at the project from a modern perspective, and through the eyes of the project management knowledge areas of the PMI's PMBOK, specifically risk management. It looked at how to identify risk, and what can be done when the risks are too high to make a project more palatable. This article draws lessons in risk analysis, risk response planning, and risk monitoring and control.

Risk analysis can be both qualitative and quantitative. The former (qualitatively) assesses and combines their probability of occurrence and impact. The latter (quantitatively) numerically analyzes the effect on overall project objectives of identified risks.

Qualitative risk analysis

With this risk analysis, two questions need to be answered:

- What is the probability of the event occurring?
- If the event occurs, what will be its impact?

The first risk was that the escape plot should be discovered:

- The greatest risk was with the tunnel itself. With a deep tunnel the greatest liability and, most likely part to be discovered, is the trap door. The probability was very high as it was the 'top prize' the ferrets were looking for. The impact of its detection would be catastrophic. With only one entrance, it was critical to make sure the trap door to the tunnel entrance was concealed to the closest of scrutiny.
- Nosy ferrets were also a very high risk, as they had unrestricted access, could wander anywhere, and uncover something. They could lie in wait hiding and listening to conversations. With many factories in operation the probability of discovery was high. The impact of this was that all escape-related work had to be closely guarded and POWs had to be alerted to the ferrets' presence.
- A slightly lesser risk was ineffectively hiding traces of the tunnel, particularly the sand. The probability of discovery was very high as sand was so hard to conceal. The impact of discovering sand was that the ferrets would be alerted to tunnelling activity. This would increase the ferocity of the searches but it would not reveal the tunnel's exact whereabouts.
- The probability of discovering sand was high because there was such a massive volume that had to be dug, hauled to the entrance, extracted out of the shaft and transported to a hiding place. A long tunnel (330 feet/100 metres) would generate close to 100 cubic metres of sand.

The second risk lay in the danger associated with tunnel engineering:

- The probability of collapse was high; cave-ins were common. The impact of collapsing tunnels was extremely dangerous to the men inside it.
- The probability of bad air was very high and increased with the growth of the tunnel. The impact of bad air saturated in carbon dioxide could seriously injure or even kill.

Quantitative risk analysis

This calculates the cost of impact for each risk, in priority order of risks. So, if the risk were to happen, what is the estimated cost in terms of effort, materials, equipment and tools through direct and indirect costs (to other tasks)?

For the first risk – escape plot discovery:

- The cost of trap or tunnel discovery was almost always catastrophic in that typically the project was over. The costs were extremely high in terms of effort put in, thousands of man-hours, and quantity of shoring materials. Once a tunnel was detected, none of these would be recovered; everything would be lost.
- The cost of not containing nosy ferrets could be measured in the loss of output of clandestine activities measured in effort put in, hundreds of man-hours, and the materials for the activity. For example, discovery of one factory would have a significant impact on the project.
- The cost of tunnel sand discovery was very serious as it would increase the intensity of searches for the tunnel and hence put the project at risk. It is likely the ferrets would not cease looking for the tunnel.

For the second risk – dangers with tunnel engineering:

- The cost of collapsing tunnels was disastrous and could be measured in terms of lost lives and abandonment of the tunnel. The tunnels were long (330 feet/100 metres) and very deep (30 feet/9 metres). One cubic metre weighs approximately one ton, so there would be a significant weight above the tunnel.
- The cost of bad air, saturated in carbon dioxide, could also be measured in terms of serious injury or loss of lives.

Risk response planning

The approach is to reduce the likelihood or impact of the event by taking risk response strategies.

For example:

1. *Transfer the risk* – to another organization, individual, or entity.
2. *Avoid the risk* – eliminate conditions for the risk to exist, or drop the task.
3. *Mitigate the risk* – minimize the probability of a risk's occurrence or its impact.
4. *Accept the risk* – take no pre-emptive action to resolve it, except contingency plans.

Each department was responsible for managing the risks associated with its activities by employing risk management strategies. These were discussed with Bushell in daily meetings.

For the first risk – escape plot discovery – the following strategies were employed:

- A major risk was discovery of the trap doors and, by paying great attention to their concealment, this risk was mitigated. Weeks were spent in designing these trap doors in such a way that they blended into the surroundings of the room.

Figure 3b.1: Tunnel trap door concealed under the stove. Courtesy of the US Air Force Academy Library's Special Collections

- Ferrets were a continuous risk that the team had no option but to accept. However, the risk could be mitigated through a system of tracking, and an early warning system. Also Bushell kept a list of ferrets that were deemed dangerous to the project. In reality, Bushell accepted the risk here as part of the project.
- Ferrets expected tunnelling to be going on. As a contingency to mitigate the risk of a tunnel being discovered, multiple tunnels were built in parallel in an effort to have a fallback in case one was found.
- By putting many resources into cover-up activities like diversion and sand dispersal, risk was mitigated in concealing traces of the tunnel.
- Another mitigation strategy was reading enemy intent and taking proactive actions.
- Some wire escape jobs, accomplished by breaking through the wire, were encouraged so as to leave the impression that escape attempts were still being carried out. It would look strange if all escape attempts suddenly stopped for a period. Whether the escape was made or not was inconsequential as the main escape was protected. In effect, the risk was being transferred elsewhere to the other escape.

For the second risk – dangers with tunnel engineering – the following strategies were employed:

- The tunnel department had a number of miners and mining engineers, experts in their field, like Wally Floody, and their expertise helped mitigate the risk.
- To mitigate the risk of tunnel collapse, pains were taken to ensure that the tunnels were level. Any movement in an uneven tunnel could catch the supports or shoring and cause a collapse.
- A ventilation system was installed to bring air right up to the tunnel face, and mitigate the risk of suffocation. This was a complex requirement as the tunnel was long (330 feet/100 metres).

Risk monitoring and control

The escape committee assessed the project risks frequently, especially during the construction phase, and modified the project plans accordingly. For example, this was done by:

- Continually monitoring what ferrets were thinking through contacts with friendly ferrets and reading between the lines. The Intelligence Branch gave Bushell early warning.
- Devising a system to ensure that tunnels ended up where planned, pointing in the right direction and built at a level depth and right length. Continuous daily measurements helped achieve this.
- Continual and careful scrutiny of the tunnel, by tunnel engineering for signs of danger, and potential tunnel collapse.

The objective was to:

- assess the probability and impacts of risk,
- close risks where appropriate,
- determine new risks since last meeting.

This was a long, complex project fraught with risks and, as the project progressed, new risks had to be continually considered, as grouped in the table below.

Conclusion

For Bushell and the escape committeee, qualitative and quantitative risk analysis became a daily routine, along with risk response planning, and the monitoring and controlling of risk. In today's world this level of risk management may seem too much, but without a demonstrable risk plan, it may be hard to convince a PMO about the viability of a project.

So, what lessons can be taken from this to make your project more palatable? Work with the PMO to:

- Demonstrate that risk management will be practised through each project stage.
- Play out scenarios that recognize overall areas of risk, and then identify specific risks.
- Complete qualitative risk analysis first, as it is simpler and easier to do so.
- Collect metrics that quantify the risks in terms of calculating the cost of impact of each risk, in priority order.
- Plan risk responses that are realistic where some are simply accepted.

Mark Kozak-Holland's latest book in the Lessons-From-History series is titled 'Project Lessons from the Great Escape (Luft III)' http://www.mmpubs.com/books-LFH.html. It draws parallels from this event in World War II to today's business challenges. Mark is a senior business architect with HP Services and regularly writes and speaks on the subject of emerging technologies and lessons that can be learned from historical projects. He can be contacted via his website at www.lessons-from-history.com or via email to mark.kozak-holl@sympatico.ca. For more information on the Great Escape Memorial Foundation see www.thegreatescapememorialproject.com.

Risk Identification	Probability	Impact	Mitigation
Escaping through the tunnel without incident	90%	Many escapers passing through the tunnel could disturb it and cause collapse	Passing escapers throughput had to be carefully controlled
Getting away from the camp unnoticed	70%	Being identified as a PoW, capture, leading to overall alert .	Disguises, clothing, identification passes and plausible roles had to be scrutinized for any flaws (Quality Control)
Travelling distances unchallenged	40%	Travelling long distances (min. 300 miles)	Using forged passes, having money available, and being able to talk out of a situation
Surviving in the open	60%	Hypothermia or even death	Access to food, water, shelter, and heat