

Lessons Learned

Identifying the Learning

Lessons Learned should be routinely gathered during the course of the project, as issues are identified and resolved, during process audits and at other convenient times. More formal Lessons Learned Reviews should be carried out as part of a planned project review process¹, at the end of each formal phase of the project and when a 'lesson' becomes obvious² (which usually 'hurts'). The 'historical data' accumulated through the lesson's learned process need to be validated, processed and included in the organisations 'corporate knowledge base' ready for use.

A *lesson* is learned when people reflect on something that has happened to them personally. They record this experience and if the organisation's knowledge management processes are effective the experience is made available for others to learn from. The process of initially writing *lessons* is based on recording what actually occurred and what can be learned from that experience³. This is a very different process to developing 'best practices', methodologies and guidelines, etc⁴.

Any learning should be rapidly utilised both within the project being reviewed and in other related projects. Setting up a Lessons Learned log during the project start-up will help to establish this process as a core part of the project management methodology being used. Encouraging its use and regularly reviewing the log as part of the risk management process will help make it more meaningful and relevant to the work of the team. The ongoing capture of lessons 'as you go' will also make it a lot easier to incorporate the key Lessons Learned in your end of project report

The danger of waiting until the end of a project to identify, capture and analyse lessons is that most project team members will already be focussed on the next project, project momentum will have slowed down and as a result, only a fraction of the lessons that could be valuable to future projects are recorded and passed on.

The project manager cannot conduct formal lessons learned reviews on his/her project – the reviewer needs to be an independent peer of the PM (possibly part of the PMO function). The PMs role is to provide input to the review, or reviews. However, projects cannot be completed until the all of the required deliverables are finalised⁵. If 'lessons learned' are a requirement, the project manager is responsible for ensuring the process is conducted effectively⁶.

Writing a Lessons Learned

Writing a good lessons learned statement requires a well structured statement. The recommended structure for a Lessons Learned statement uses the three sentence format

1. Start with an action verb, state what actions need to be taken

¹ For more on **project reviews** see: http://www.mosaicprojects.com.au/WhitePapers/WP1080_Project_Reviews.pdf

² For more on **root cause analysis** see: http://www.mosaicprojects.com.au/WhitePapers/WP1085_Root_Cause_Analysis.pdf

³ Lessons learned is always personal and reflective; what has happened to other people at other times and in other places does not really have any effect on the experience being recorded as a lesson - even if the lesson is 'we should have looked at the lessons learned file before we stuffed it up...' (or: 'if all else fails read the instructions'.)

⁴ The best 'best practices', methodologies and guidelines are based on accumulated experience (ie, lessons learned). See *Managing Knowledge* below.

⁵ For more on **deliverables** see WP1042: www.mosaicprojects.com.au/WhitePapers/WP1042_Outputs_Outcomes_Benefits.pdf

⁶ For more on **running effective meetings** see: www.mosaicprojects.com.au/WhitePapers/WP1075_Meetings.pdf



2. State what the general problem is that the actions address
3. State what consequences were experienced or avoided.

Example of a good lessons learned statement:

“Perform pre-operational checks on rental lift equipment to ensure that all safety-related controls are operational. Rental equipment has been often found to have multiple non-operational controls after it has been delivered for use. This has resulted in at least one near-miss at XX, in which a lift boom tipped over partially due to control system failures.”

Examples of weak lessons learned statements include:

- “You should always follow procedures, because if you don’t, you’ll run into problems.”
- “Don’t open an energised electrical cabinet.”
- “Always [do the right thing].”
- “Never [do the wrong thing].”

To manage the lessons learned in a database, some meta-data should be added including various key-words for selecting and sorting, the source of the ‘lesson’ (project, date, etc) and the author and reviewer.

PIRs

A ‘Post Implementation Review’ (PIR) will generate lessons learned but is a different process that occurs after the project has finished. The focus of the PIR should be on measuring the realisation of the benefits the project was created to enable. The key question being: “*Was the overall process successful?*”

PIRs should encompass the complete flow from recognising a need, defining the project, doing the project and then how effectively the business used the project’s deliverables to create the intended value⁷.

Project lessons learned are focused on ‘*doing projects right*’. The PIR should focus on the organisation ‘*doing the right projects*’.

Gathering the Knowledge⁸

Short focused meetings can be a valuable way to gather ‘lessons’:

1. Define the key stakeholders and information ‘holders’ - invite them to attend.
2. Use a standard reporting process to gather the raw data; each person should answer the following four questions (and their answers recorded):
 - a. What was expected to happen?
 - b. What really happened?
 - c. What were the differences?
 - d. What can we learn?
3. Before the meeting closes, the group classifies each lesson into an appropriate element (or topic) within the structure used in the knowledge management system - this allows further processing and retrieval.

⁷ For more on the ‘value chain’ and **benefits realisation** see: http://www.mosaicprojects.com.au/WhitePapers/WP1023_Benefits_and_Value.pdf

⁸ Knowledge is defined as a fluid mix of framed experiences. Values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded in not only documents and repositories, but also in organisational routines, practices, processes and norms. (*Working Knowledge: How organizations manage what they know*, Harvard Business School Press. 1998)



4. After the meeting, relevant ‘topic experts’ need to validate the lesson and if there are ‘new insights’, either use the information to augment an existing ‘lesson’ in the knowledge management system, write up a new lesson, and/or enhance the organisations SOPs⁹.
5. Publish the updated information.

Managing the Knowledge

The challenge with lessons learned is making the information gathered easily and quickly available to the people who need it¹⁰. The organisation needs to develop a clear understanding of the *customer* (or *customers*) for the lessons. This will influence the objectives of the lessons learned program, the development of any templates or tools, and the necessary process and impact measures. The needs of the current team are likely to be different from the needs of future teams and managers.

Making the system user-friendly and effective for both recording lessons and retrieving lessons is critical. If the lesson is not properly indexed or the index does not reflect the context the organisation is working within, retrieving information is difficult. Some valuable ideas on developing an effective Lessons Learned KM system have been published by the American Productivity & Quality Centre (APQC). Their key recommendations (with additions) are:

1. **Determine the Strategic Objectives.** When an organization designs a lessons learned process, there are two primary strategic paths that the organization can pursue. An organization must define how lessons will be used to determine the best approach. Ideally, an organization enable both options, recognising that each requires different processes, people, and investments:
 - a. Focusing on supporting current process or project teams with ‘lessons learned’ built into the project or process methodology. This requires staged gathering of lessons during the course of the project with feedback loops to make the information immediately available to the team.
 - b. Focusing on creating a mechanism by which lessons are made available to future projects or users. To be effective the lessons in this role the lessons need to be indexed, categorised and stored in a usable retrieval system.
 - c. Support the DIKW approach to maximising benefits¹¹.
2. **Align the Lessons Learned Approach with Process Excellence.** The value of a ‘Lessons Learned’ system is enhanced significantly if the enterprise has a widely deployed and mature process or project excellence methodology¹². The organisation needs to have process improvement¹³ built in to the overall system so when projects identify important lessons, the organisation can adapt its processes to prevent recurring problems and lock in recurrent opportunities.
3. **Create Governance Processes and Clearly Defined Roles.** Governance is a critical success factor for an effective lessons learned program, it provides a well-defined structure for oversight and execution of a common approach, enabling an organization to optimally coordinate resources and manage lessons learned activities. All stakeholders should know who has accountability for the process and what roles

⁹ For more on **SOPs** see:

http://www.mosaicprojects.com.au/WhitePapers/WP1086_Standard_Operating_Procedures.pdf

¹⁰ A very public set of lessons learned have been published by the London Olympics. To access the full set of published documents see: <http://learninglegacy.london2012.com/>

¹¹ **DIKW** (Akoff 1989) = Data, Information, Knowledge, Wisdom. The KM system should make information easily available by assessing and processing data into useful, relevant information. The governance system and culture of the organisation should focus on encouraging employees to access the information to enhance their knowledge and use that knowledge to make ‘wise’ decision.

¹² For more on **OPM3 and process maturity** see: <http://www.mosaicprojects.com.au/OPM3.html>

¹³ For more on **process improvement** see: http://www.mosaicprojects.com.au/WhitePapers/WP1046_Process_Improvement.pdf



are responsible for supporting and/or executing the various process components. Ideally, this will be the responsibility of a single entity, possibly a PMO¹⁴.

4. **Design an effective process.** Make sure all stages of the knowledge management process are defined and resourced:
 - a. **Knowledge creation.** Collection, combination, validation and editing/refinement (discussed above).
 - b. **Knowledge administration.** Storage, organisation, indexing, referencing, retrieval.
 - c. **Knowledge dissemination.** Making sure the people that need the information know where to find it and how to access it easily.
 - d. **Knowledge utilisation.** Ensure the information is in a format that can easily be used or applied; eg, incorporated into standard operating procedures (SOP)¹⁵.
5. **Encourage Participation.** Organizations should provide process training, set clear expectations, and help employees recognise the opportunities to be gained from making effective use of lessons learned.
6. **Review and Publish Lessons in a Timely Manner.** Processes are required for publishing new, interesting lessons quickly; but without compromising review and validation procedures.
7. **Integrate the Lessons Learned into Core Processes.** Any effective lessons learned process relies on well-defined, well-managed, and properly resourced lessons capture events. By integrating the lessons learned approach into project planning, initiation, execution, monitoring, and closeout procedures, the organisation ensures that key experiences are captured. When the capture and reuse of lessons are viewed as critical components of the work, employees are much more inclined to turn to lessons learned for guidance.
8. **Leverage Facilitators at Key Points.** Most successful lessons learned processes focus on human interaction. Trained moderators¹⁶ who are experts at extracting and distilling lessons help draw out what went well, what went wrong, and how problems might have been averted; this helps the current team learn by reflection and ensures the lessons are captured properly for future use. The expert should also groom and edit the 'lessons' so the description is consistent, concise, meaningful and accurate. This allows the information to be used effectively and avoids 'wrong lessons' being learned by the organisation.
9. **Make Captured Lessons Easily Accessible.** Lessons should be readily available to employees interested in discovering how previous experiences may inform their efforts. This requires a well-designed content management strategy enabled by a technology portal, and potentially multiple modes of access. To achieve this there needs to be an well designed Knowledge Management system with effective indexing, searching and cross referencing so system users can quickly find relevant lessons. The KM system also needs to have a process to de-duplicate and amalgamate lessons where the same learning has been identified on several projects (but all projects contributing to the lesson still need to be indexed).
10. **Measure Progress and Impact.** Factors to consider when designing a measurement program for lessons learned include source vs. recipient measures, process vs. impact measures, and individual vs. organizational reuse. Performance and impact measures are crucial; the right combination of measures helps track progress and demonstrates the value of the lessons learned process to: project team members, business leaders and executives. Knowing the extent to which lessons learned are being integrated into daily work can encourage participation and spur process improvement.

¹⁴ For more on **PMOs** see: http://www.mosaicprojects.com.au/WhitePapers/WP1034_PMOs.pdf

¹⁵ For more on **SOPs** see:
http://www.mosaicprojects.com.au/WhitePapers/WP1086_Standard_Operating_Procedures.pdf

¹⁶ For more on **facilitation** see: http://www.mosaicprojects.com.au/WhitePapers/WP1067_Facilitation.pdf



Learn from your mistakes - the NASA journey¹⁷

Through failure, and the willingness to accept hard truths and learn from them, NASA has evolved into the mature organization it is today. The Challenger, Mars Missions and Columbia disasters brought NASA to the realisation that a rigorous and sustained commitment to excellence ensures excellence.

- **After Challenger**, assumptions focused completely on individual development. These assumptions would prove inadequate.
- **After the Mars failures**, NASA realized that projects and programs happen in teams. They had talented people, but they were trained and prepared to work as individuals. As a result, they were unable to work effectively in teams.
- **After Columbia**, NASA realized it had to take a knowledge management approach to ensure success with projects and teams.

Dr. Ed Hoffman NASA's Chief Knowledge Officer takes responsibility for knowledge policy and the integration of knowledge services. The agency CKO developed a set of knowledge services strategic imperatives:

- **In terms of people**, sustain and expand the use of the agency's intellectual capital across NASA's enterprises and generations through better networks, alliances, and communities of practice.
- **In terms of people**, increase collaboration across organizational barriers through promotion of a culture of openness.
- **In terms of systems**, support the technical workforce in executing NASA's missions efficiently and effectively through lessons learned, mishap reports, and promulgation of best practices.
- **In terms of systems**, create a marketplace for knowledge that identifies the value of information and aligns practitioner and organizational imperatives through accessible information and user-friendly services.

To implement the strategy, the following six knowledge service categories were defined for the Knowledge Map:

1. **Case Studies and Publications** consist of analyses that reveal knowledge from people and missions, and the factors contributing to mission success.
2. **Face-to-Face Knowledge Services** consist of activities involving the physical presence of participants in the same geographical location and the capture and dissemination of knowledge that contributes to mission success.
3. **Online Tools** consist of a diverse set of Web-enabled, activity-specific, synchronous and asynchronous capabilities that result in knowledge that can be applied towards mission success.
4. **Knowledge Networks** consist of communities that share common knowledge capabilities and requirements, and through interaction produce valuable knowledge for mission success.
5. **Lessons Learned and Knowledge Processes** consist of databases and associated activities specifically geared toward capture, storage, and retrieval of knowledge for mission success.
6. **Search / Tag / Taxonomy Tools** consist of information and telecommunications technology and application development that result in improved capabilities for navigation, organization, and search enhancement of knowledge to apply towards mission success.

Within this knowledge management system, the power of stories¹⁸ in capturing and sharing lessons learned across an organisation is paramount.

¹⁷ For more on the NASA story see: <http://www.pmi.org/Knowledge-Center/Articles/NASA.aspx>

¹⁸ For more on **story telling** see: http://www.mosaicprojects.com.au/WhitePapers/WP1090_Effective_Explanations.pdf



Use STEALTH

Gathering 'lessons learned' should be formalised. STEALTH is a Lessons Learned process adapted from the U.S. Air Force:

- S:** Set time/location/preparation phase. Fighter pilots hold a formal debriefing 45 minutes after they are back on the ground.
- T:** Tone. Keep the tone nameless and rankless to facilitate open communication. Lead by example.
- E:** Execution versus objectives. Ask "Was the objective clear, measurable and achievable? Did it support our picture of the future?" After reconstructing the sequence of events, ask, "Did we accomplish the mission objective?"
- A:** Analyse execution. First, review data to find execution errors and successes. Next, determine the cause of each error and success. And, finally, identify the root cause for each error and success.
- L:** Lessons learned. Look for patterns. Determine the prominent or recurring root cause that bridges several errors or successes.
- T:** Transfer lessons learned. Spreading the lessons learned by errors and successes helps to accelerate experience and improve future execution.
- H:** High note. End with a positive summation of all that was learned. A formalized process for debriefing people after an experience can help any leader create the best practices that build a better organization.

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