

Project Lessons Learned: JKR Practical Guide



Special Thanks

We wish to thank the following groups who have directly or indirectly contributed to the development of this JKR Project Lessons Learned Practical Guide –

- JKR Knowledge Managers*
- Central Portfolio Office staff*
- Heads of Project Office in Headquarters and JKR States*
- Members of Project Team, Design Team and Supervision Team*

Your valuable input in the series of workshops to produce this Guide is highly appreciated.

Preface

The JKR Project Lessons Learned (PLL) Practical Guide aims to provide an understanding of PLL and introduce an integrated approach of capturing project learnings, hence, establishing a uniform practice of among all project teams.

Capturing Project Lessons Learned is a key component of Knowledge Management. JKR has embarked its Knowledge Management (KM) journey since 2008 and since then, has successfully developed and implemented a number of KM initiatives to facilitate sharing of knowledge among the staff and making knowledge more easily accessible. These include a central knowledge repository, *JPedia*, an online discussion forum, *JCoP*, e-Learning, cultivating Communities of Practice, JKR Expert Directory, and the introduction of effective knowledge sharing tools and techniques.

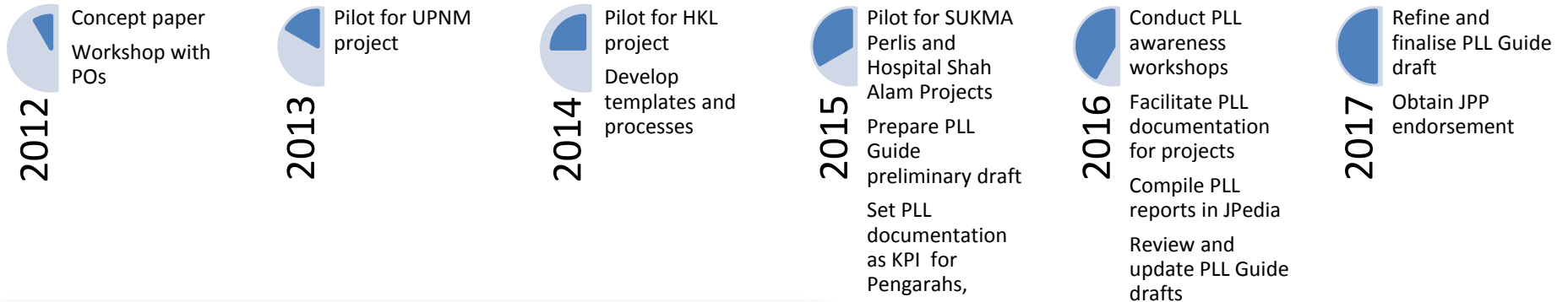
Recognising the need to reduce knowledge gaps and risks of losing experiential knowledge due to retiring baby boomers, capturing and documenting project lessons learned (PLL) has now been made a KPI of all Branch and State Directors as specified in the JKR Strategic Framework.

The rolling out of this new KM initiative is very timely as the ISO 9001:2015 standards which we will be adopting soon, has added a clause on Organisational Knowledge and requires organisations to put in place mechanisms for capturing and sharing lessons learned.

As our project management function becomes more matured, it is hoped that the lessons learned captured will be internalised and applied to help increase the success of future projects.

For further clarification or assistance, please email to -
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Background of Project Lessons Learned initiatives in JKR



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i. What are Project Lessons Learned (PLL)?

“A project lessons learned is the learning gained from the process of performing the project” –
PMI PMBOK

Capturing lessons learned is a good work practice that can help avoid recurrence of bad experience or mistakes and also promote repeat successes in future projects.

The primary aim of learning from experience is to achieve continuous improvements in project performance. Hence, the management must provide a 'safety net' or create an environment that condone blame games. Open mindedness and desire to learn need to be inculcated.

A lesson is only considered as learnt if it is accompanied by an action and lead to a positive change in personal or organisational behaviour This is the desired learning outcome.

Common excuses why Lessons Learned are not captured, or if they are captured, but not used:

- ☐ Not sure what they are
- ☐ No knowledge or lack of clear directives on who and how to capture lessons
- ☐ Lack of time and resources
- ☐ Lack of management support
- ☐ Not knowing where to store or search for lessons learned
- ☐ Fear of getting blamed or feeling ashamed if mistakes are exposed
- ☐ Fear that auditors pick up wrong doings

ii. Where can PLL be derived from?

Anyone who knows about an experience, activity, event or good work practice that is of value to others can originate a lesson learned.



Learning from incidents

- After Action reviews
- After an event/post mortem
- Post Implementation review



Knowledge sharing activities

- Individual experience
- Observation



External Reviews

- Audits

Examples of Sources of PLL

- ✓ Gerbang Nilai Review reports
- ✓ Risk Management Reviews
- ✓ Value Management (VA, VE, VR) reports
- ✓ Non compliance reports
- ✓ Audit reports (project audits, road safety audits, internal quality audits, external audits, etc)
- ✓ Energy Efficiency Reports
- ✓ Corrective Action Reports
- ✓ Environment, Safety and Health Reports
- ✓ Tender documentation Reviews
- ✓ Project Planning Reviews
- ✓ Minutes of meeting (technical meeting, coordination meetings, site meetings, VO and Claims Committee meetings)

**“A man who never made a mistake, never made anything”
- Mark Twain**



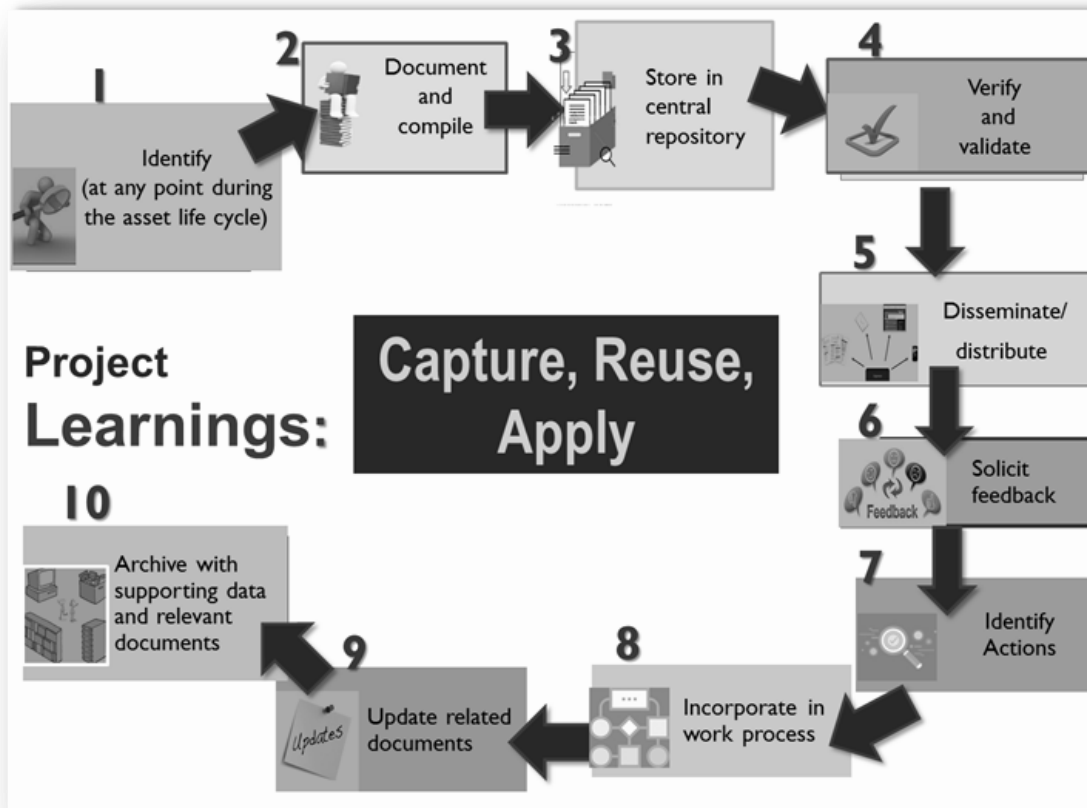
Rules when making a mistake:

- Admit it
- Learn from it
- Never do it again

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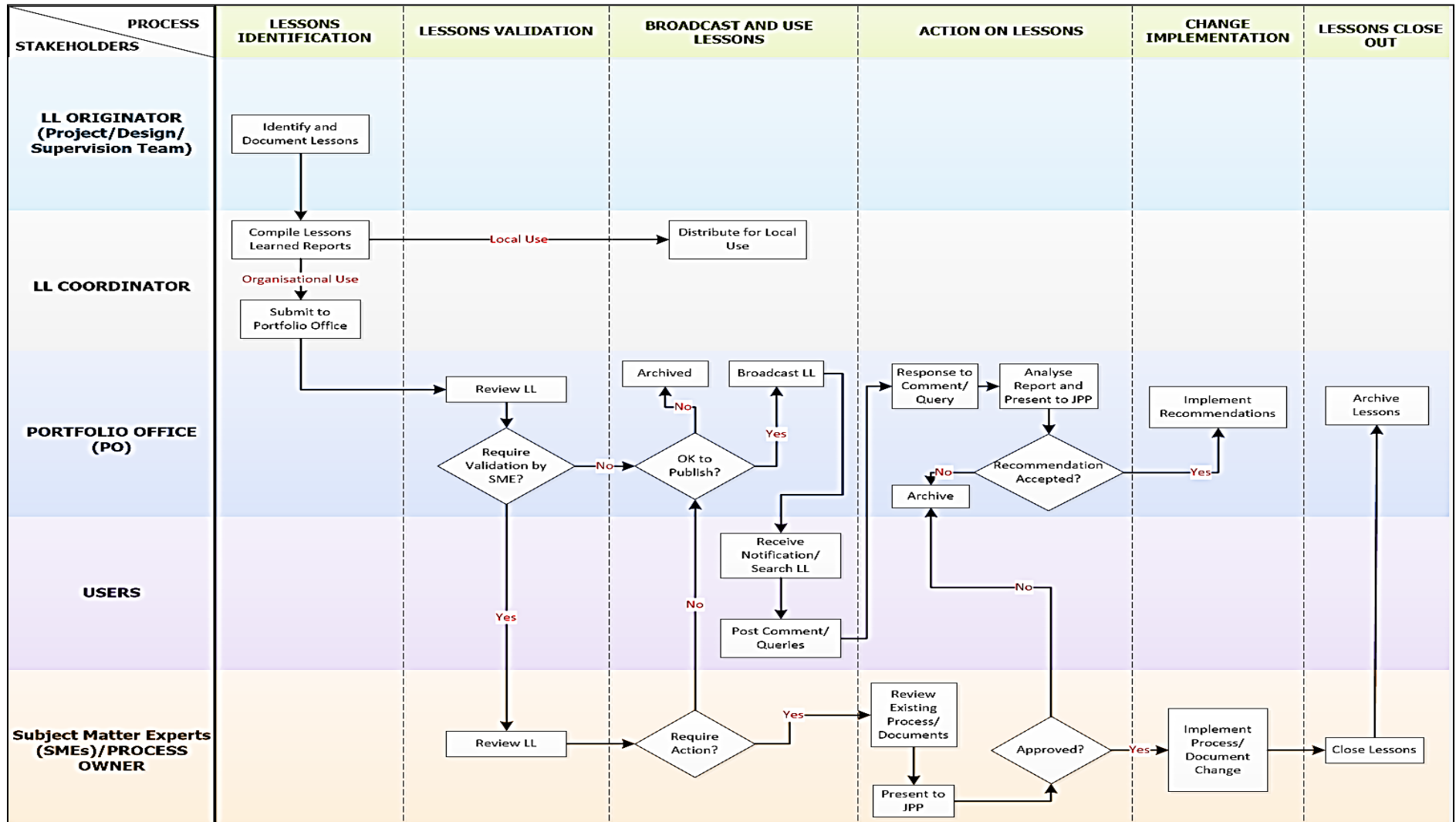
i. What are PLL Activities?

“ A Lesson Learned process implements a strategy to collect, verify, store, disseminate, and reuse lessons to continually support an organization’s goals ”



1. Lessons should be identified at any point of the asset/project life cycle, or at the end of a project phase or milestone and not wait until the end of the project. Capture lessons learned together as a team.
2. Lessons learned must be reused and applied by others and not just sit in the repository.
3. Before lessons learned are disseminated, they need to be verified and validated to ensure that they are real lessons and not one person’s opinion.
4. To ensure lessons are applied across the department, they must be incorporated in work processes by updating related procedures or reviewing existing processes.
5. After changes in process or document are implemented, the lessons are considered closed and should be purged out from the repository. However, they should be archived for future reference.

ii. The PLL Process Map



JPP: JK Pemandu Pengurusan (Management Steering Committee)

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i. Who are involved and what are their responsibilities?



Project Team

- Identify and capture PLL



Project Office at Branches and State Offices

- Facilitate and coordinate preparation of PLL



Portfolio Office (CPAB)

- Verify with SME
- Approve PLL
- Upload PLL to JPedia
- Analyse PLL
- Escalate critical issues to top management for decision if necessary



SME

- Verify PLL
- Review existing procedures/processes and recommend improvements if necessary
- Refer to process owners for decision



Users

- Give feedback
- Send queries



Process Owners

- Decide whether existing documents need to be revised

ii. Detailed Roles and Responsibilities

Pengarah	<ul style="list-style-type: none"> <input type="checkbox"/> Identifies projects <input type="checkbox"/> Initiates PLL
Project team (including Design/ Supervision Team)	<ul style="list-style-type: none"> <input type="checkbox"/> Identify and compile PLL using the following techniques: <input type="checkbox"/> Capture and document PLL
PLL Coordinator (Project Office at Branches and States)	<ul style="list-style-type: none"> <input type="checkbox"/> Facilitates PLL workshops/meetings <input type="checkbox"/> Coordinates the development of PLL <input type="checkbox"/> Follow up on actions to derive and develop PLL <input type="checkbox"/> Submits PLL Reports to PO
ECKM Office	<ul style="list-style-type: none"> <input type="checkbox"/> Develop PLL processes, governance, guidelines, templates <input type="checkbox"/> Conduct training and facilitation of PLL <input type="checkbox"/> Assist uploading of PLL documents to repository <input type="checkbox"/> Reports on PLL KPI achievement
Portfolio Office (PO)	<ul style="list-style-type: none"> <input type="checkbox"/> Review and approve PLL to be shared and published <input type="checkbox"/> Coordinate with the appropriate SMEs for reviewing and validating PLL <input type="checkbox"/> Reports to the JK Pemandu Pengurusan (JPP) on issues that need attention/decision <input type="checkbox"/> Monitor the application/usage of PLL <input type="checkbox"/> Analyse PLL and recommend appropriate actions
Subject Matter Experts (SMEs)/Process Owners	<ul style="list-style-type: none"> <input type="checkbox"/> Review PLL to ensure its validity, accuracy and currency as and when needed <input type="checkbox"/> Recommend incorporation of PLL into appropriate activities, best practices, improvement initiatives, etc. <input type="checkbox"/> Recommend updates to related documents and obtain approval from Process Owners
Users	<ul style="list-style-type: none"> <input type="checkbox"/> Use PLL <input type="checkbox"/> Post Comments/Queries

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ii. 10 Golden Rules of collecting PLL

1. Be clear of the scope and purpose of lessons learned reviews beforehand
2. Include all members of the project team and the key stakeholders in the lessons learned exercise
3. Appoint a facilitator who is not closely connected to the project
4. Conduct the lessons learned review session in a comfortable setting
5. Set and agree on ground rules and timelines
6. Act responsibly. Never blame others or feel blamed
7. Trust each other and respect others' opinion
8. Focus on behaviors or tactics that were successful or problematic, rather than on people
9. Avoid biasness towards negative or positive comments
10. Write lessons learned in a manner that promotes their use as best practices.

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i. Approach of “Learning Before, During and After” to identify Lessons

1. Learn Before



PEER ASSIST

Peer Assist brings together a group of colleagues to elicit feedback on a problem, project, or activity, and draw lessons from the participants' knowledge and experience to support 'learning before doing' process

The graphic shows two silhouettes of people facing each other, connected by lines to icons representing a magnifying glass, a bar chart, an envelope, and a speech bubble.

2. Learn During




AFTER ACTION REVIEW

After Action Review is a structured review or de-brief process for analysing what happened, why it happened and how it can be done better, by the participants and those responsible for the project or event.

The graphic shows a silhouette of a person in a trench coat and hat, looking down at a series of footprints on the ground.

3. Learn After



POST IMPLEMENTATION REVIEW

Post Implementation Review evaluates whether the project's objectives were met, how the project was run and to learn lessons for the future to ensure the greatest possible benefit is derived from similar projects.

The graphic shows a central lightbulb surrounded by several interlocking gears.

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ii. Learning Before – Peer Assist

1. Peer Assist involves two teams- the host team i.e the project team, who need the knowledge and the visiting team, who have recent experience from similar projects and practical knowledge to share.
2. The host team presents the background of their project, the current status, their plans, risks and issues that they face.
3. The visitors talk through recent relevant experience to the host team, explaining their experience relating to the issues.
4. Through dialogues involving specialists, the visiting team gains a better understanding of the issues in the project. The host team questions the visitors about their experience and learning, and any insights they can bring to the project.
5. A formal conclusion and feedback session at the end of the Peer Assist summarises the outcome of the analysis, and present the results from the visiting team. The host team presents what they have learned from the visitors and what they are going to do about the issues.



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iii. Learning During - After Action Review

1. Participants are grouped according to the following project phases: Inception and Planning, Design, Procurement, Construction, Handing Over
2. Each group are asked to identify key events/incidences that have occurred during that project phase and provide the following input
 - ✓ What was supposed to happen?
 - ✓ What actually happened? Why did it happen?
 - ✓ What are the consequences?
 - ✓ What are the key lessons?
3. Participants then are asked to move from group to group to provide input based on their perspectives (sample 1)
4. The input gathered are cross checked with relevant documents and other sources
5. The participants go back to their own group and propose improvements or changes based on the lessons captured (see sample 2)



Sample 1: After Action Review of Procurement phase

What actually happened?	The criteria should be maintained to ensure only tenders that meet the requirement are awarded the contract.
What is supposed to happened?	Evaluation criteria for the tender was reviewed when all the tenders could not fully comply with the requirements of the project.
What are the consequences?	<ul style="list-style-type: none">▪ Selected contractor not sufficiently competent;▪ Delays in project completion; and▪ Rework and increased cost.
What are the key lessons?	<ol style="list-style-type: none">1. Recall tender if none of the contractors meet the technical requirements stipulated.2. Be stricter in terms of meeting technical criteria for future projects.

Sample 2: Recommendation of change in procedure based on project lessons learned

Key lessons learned	Review of retendering procedure
Issues	<p>It appears that the retendering process was done in a haphazard and hurried manner without proper supervision and oversight. Consequently, many associated problems were faced, such as:</p> <ul style="list-style-type: none"> ▪ Relevant drawings and documents not passed over to the project team that over the project; ▪ Room data information details was not available; ▪ List of Non Compliance Requests (NCR) that were not closed was not available; ▪ There was insufficient time for review of the project requirements before retendering; and ▪ The scope of work to be done was not well documented in the terminated project file.
Proposed Change	<p>In the light of the problems that surfaced during the retendering of the project, it is proposed that the procedure for retendering be reviewed and where possible changed so that retendering process may be undertaken in a more coordinated and structured manner in future.</p>

Present process



Proposed process



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iv. Learning After - Post Implementation Review

Method 1: Analysis of key issues

1. Break up into groups according to their discipline or roles in the project
2. Each group is given a **Lessons Learned Questionnaire** listing important aspects of the project. They are asked to rate each item on a scale of -5 to +5, based on the given description. This is to establish the overall perception of the project team members on key aspects of the project.
3. The scores given to each item from all the groups are totaled up. Items with highest and lowest scores are key aspects having high positive and negative impact on the project respectively.
4. Select top 3 aspects with highest scores and 3 aspects with lowest scores,
5. Each group discuss on one or two aspects, analyse the root causes and their effects
6. Present suggestions on options that are available to resolve the related issues.

Scale	Description
-5	Disastrous
-4	Horrible
-3	Very Poor
-2	Quite Poor
-1	Can do with slight improvement
1	Reasonably Good
2	Good
3	Very Good
4	Excellent
5	Reasonably Good

Sample: Lessons Learned Questionnaire

Rate each of the statements below on a scale of -1 to -5, denoting a weakness and from +1 to +5 denoting a strength in the area being assessed based on the statements provided. - 1 to -5 denoting weakness in an increasing scale and +1 to +5 denoting strengths in an increasing scale

No	Statement	-5	-4	-3	-2	-1	+1	+2	+3	+4	+5
1	Overall Planning of the Project / <i>Perancangan Projek Secara Keseluruhan</i>										
2	Overall Monitoring of the Project / <i>Pemantauan Projek Secara Keseluruhan</i>										
3	Overall Execution of the Project / <i>Perlaksanaan Projek Secara Keseluruhan</i>										
4	Information sharing among Project Team Members/ <i>Perkongsian Matlumat (dalam)</i>										
5	Information sharing with external stakeholders/ <i>Perkongsian Matlumat (luar)</i>										
6	Cooperation of the Main Contractors / <i>Kerjasama dengan Kontraktor</i>										
7	Support from Top Management / <i>Sokongan dari Pengurusan Atasan</i>										
8	Decision Making/ <i>Membuat Keputusan</i>										
9	Handling Changes / <i>Pengurusan Perubahan</i>										
10	Project Team Motivation/ <i>Motivasi Ahli Projek</i>										

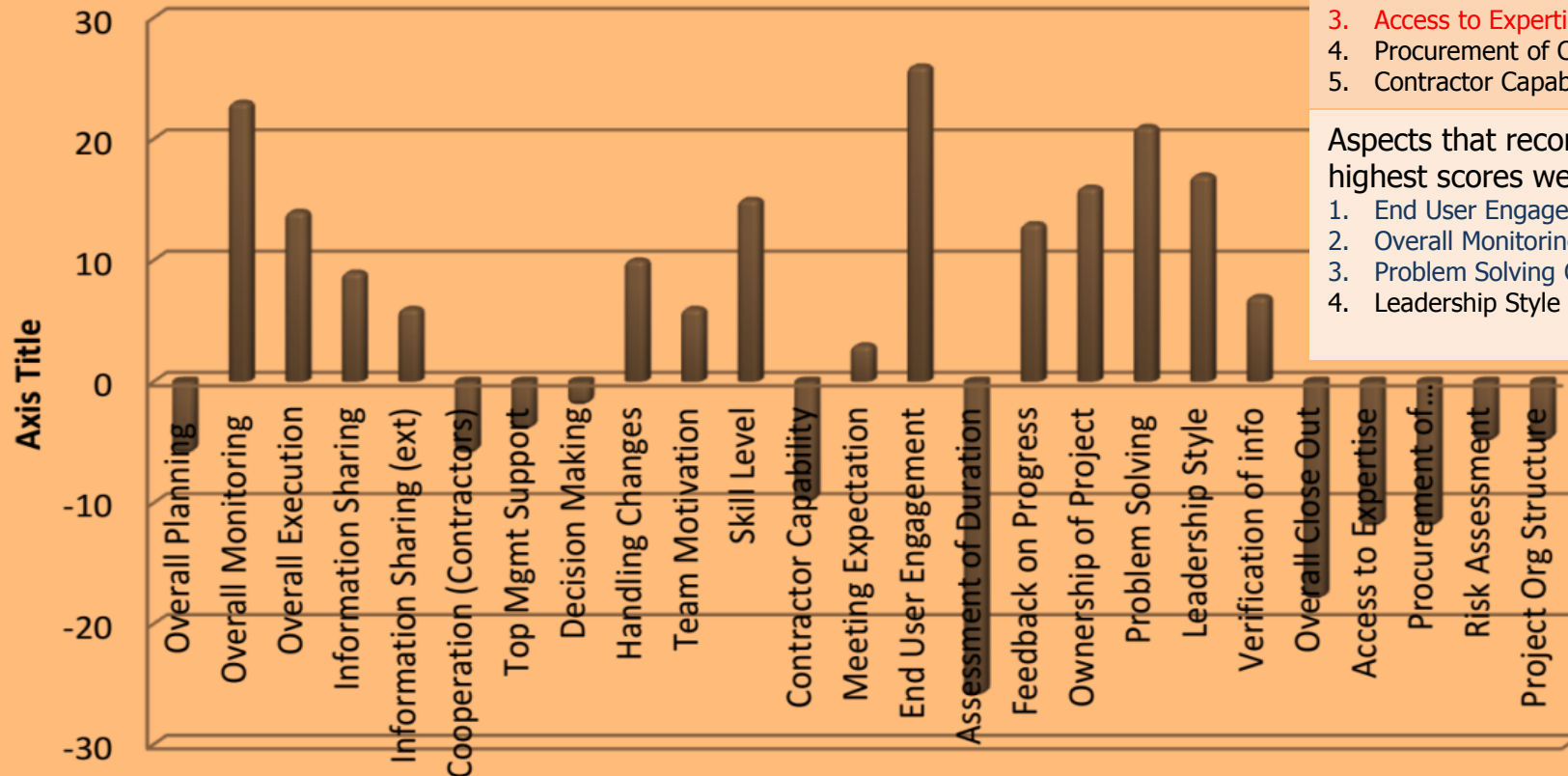
Sample: Lessons Learned Questionnaire

Rate each of the statements below on a scale of -1 to -5, denoting a weakness and from +1 to +5 denoting a strength in the area being assessed based on the statements provided. - 1 to -5 denoting weakness in an increasing scale and +1 to +5 denoting strengths in an increasing scale

No	Statement	-5	-4	-3	-2	-1	+1	+2	+3	+4	+5
11	Project Team Skill Level / <i>Kemahiran Ahli Projek</i>										
12	Contractor Capability / <i>Kebolehan Kontraktor</i>										
13	Meeting Customer Expectation / <i>Memenuhi kehendak pelanggan</i>										
14	End User Engagement <i>Penglibatan pihak pengguna</i>										
15	Assessment of Duration of Project / <i>Jangkaan masa untuk siap projek</i>										
16	Feedback regarding project progress/ <i>Maklum balas mengenai kemajuan projek</i>										
17	Ownership of project / <i>Tahap komitmen terhadap kejayaan projek</i>										
18	Problem Solving Capability / <i>Kebolehan meyelesaikan masalah</i>										
19	Project Managers Leadership Style / <i>Gaya kepimpinan oleh pengurus</i>										
20	Verification of Information Shared/ <i>Pengesahan matlumat yang dikongsi</i>										

Sample of total scores obtained from the survey

Overall Project Perception



Aspects that recorded the lowest scores were:

1. Assessment of Duration of Project (-26)
2. Overall Close Out Process (-18)
3. Access to Expertise (-12)
4. Procurement of Contractors (-12)
5. Contractor Capability (-10)

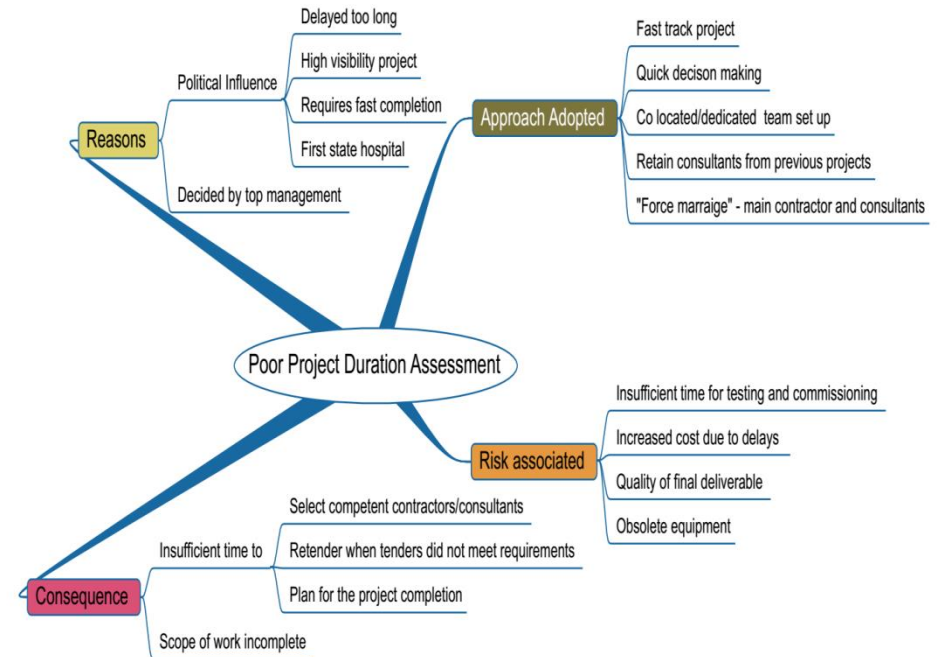
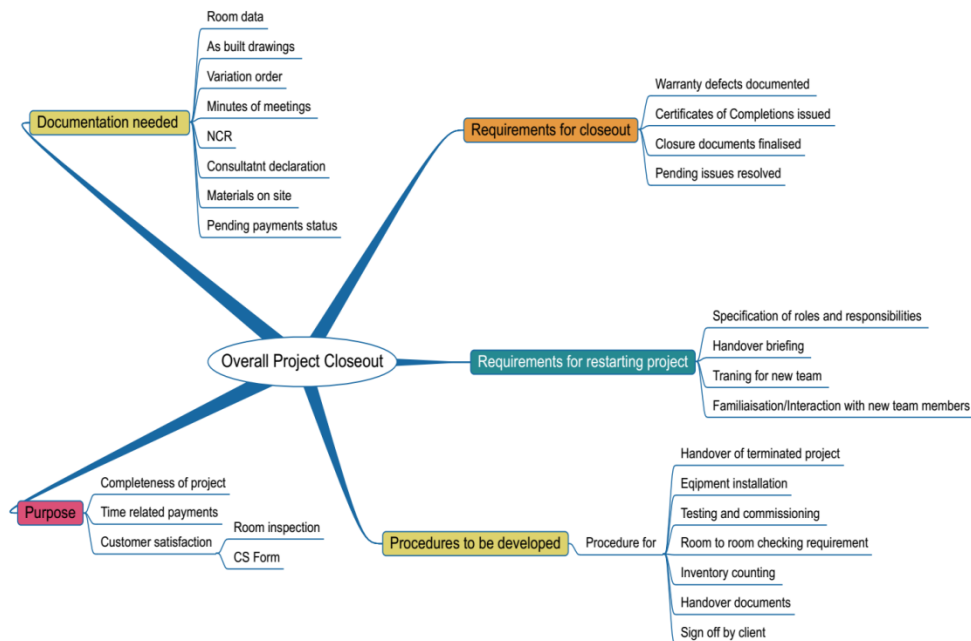
Aspects that recorded the highest scores were:

1. End User Engagement (+26)
2. Overall Monitoring (+23)
3. Problem Solving Capability (+21)
4. Leadership Style (+17)

Sample of mind map on analysis of issues

The findings of the brainstorming session were used to determine causes for:

1. Poor assessment of duration of the project; and
2. Overall closeout issues of the project



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Learning After - Post Implementation Review

Method 2: Reflective Analysis

1. Break up into two groups
2. One group to reflect on what went well and the other group reflects on what did not go well. A **Lesson Learned Checklist** as attached may be used to trigger the thinking process.
3. Each group suggests what could have been done better and what lessons can be derived
4. Select top 3 key learnings and present



Sample: Lessons Learned Checklist

No	Lessons Learned Checklist	Yes	No	Comments
1.	Project Objectives were specific, measurable, attainable, results-focused and time-bound			
2.	Purpose and Need was clearly defined			
3.	Project Management Plan was well-documented, with appropriate structure and detail			
4.	Project Schedule encompassed all aspects of the project			
5.	Tasks were defined adequately			
6.	Stakeholders (client, service providers, local authority, etc) gave appropriate input into the project planning process			
7.	Project budget was well defined			
8.	Specifications were clear and well-documented			
9.	Project scoping was adequate, understandable, and well-documented			
10.	Project baselines (Scope, Time, Cost, Quality) were well-managed			
11.	Project milestones were clearly identified for all project phases			
12.	Design changes were well-documented			
13.	Project management processes were well managed			

No	Lessons Learned Checklist	Yes	No	Comments
14.	Project progress tracked against baselines and reported accurate status			
15.	Procurement process went smoothly			
16.	The project had adequate Quality Control			
17.	Risks were identified and manageable			
18.	Project governance was effective			
19.	Project Team was properly organised and staffed			
20.	Project Team received adequate training			
21.	Project Team's experience were adequate			
22.	Project team worked effectively on project goals			
23.	Project team worked effectively with external entities (contractors, consultants, etc)			
24.	There was good communication within the Project Team			
25.	Management gave this project adequate attention			
26.	Authority and accountability were well defined			
27.	Initial cost and schedule estimates were accurate			

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Sample: Lessons Learned Checklist

No	Lessons Learned Checklist	Yes	No	Comments
28.	Project was delivered within approved revised schedule			
29.	Project was delivered within revised budget			
30.	Overall project planning and execution was effective			
31.	External dependencies were understood and well-managed			
32.	Project records were well kept and maintained			
33.	Stakeholders' needs/requirements were met			
34.	Client was satisfied with the project			
35.	Project Objectives were met			

Additional comments:

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Learning After - Post Implementation Review

Method 3: Retrospect

1. Conduct a **Knowledge Café session** * to brainstorm on
 - i. factors that contribute to the success of the project
 - ii. factors that contribute to the failure of the project
2. Present suggestions on strategic improvements that can be implemented in future projects



*** Refer to the KM Tool Box in JPedia**

Sample: Success Factors

Group Discussion

A. List the project's three biggest successes.

<i>Description</i>	<i>Factors that Contributed to this Success</i>

B. List other successes that the team would like highlighted:

<i>Description</i>	<i>Factors that Contributed to this Success</i>

C. List areas of potential improvement along with *high-impact* improvement strategies:

<i>Description</i>	<i>Strategies for improvement</i>

D. Enter other comments:

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i. What do I write in the PLL report?

- A lesson identified needs to be "A recommendation, based on analysed experience, from which others can learn in order to improve their performance".

1. Document cause of issues and reasoning behind any corrective action to address issues.
2. Some of the project learnings to be captured:
 - What was learned about the project in general?
 - What was learned about project management?
 - What was learned about communication, budgeting, procurement?
 - What was learned about working with sponsors, customers?
 - What was learned about what went well, what did not go well, what needs to change?
 - How will/was this incorporated into the project?
3. Draw on both positive and negative experiences.
4. Should contain at least the following general statements:
 - Project information and contact information for additional detail
 - A clear statement of the lesson
5. A lesson needs to be specific enough that you can learn from it.
6. It needs to be actionable - people need to be able to take action. Identify action plan and persons (process owner) responsible.
7. It needs to be a recommendation, rather than an observation. For example, if the team encountered great difficulty in certain situation, explain why they encountered difficulty, and what would their recommendation be for other teams, to avoid that difficulty.
8. Include some analysis, so that specific actionable recommendation can be made.
9. Write lessons learned in a manner that promotes their use as best practices. Express them as advice or guidelines for the future
10. Avoid expressing lessons learned in a passive, past tense.

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ii. PLL Report Format

Executive Summary	Summarize the methodology, Key Issues and Key Lessons Learned
Project Background	Provide an overview or description of the project
Methodology	Steps used for capturing, analyzing, validating and communicating PLL
Key Issues	Summarize all the key issues found from data collections through Questionnaire, Interview etc.
Key Lessons Learned	List all key lessons learned captured
Primary Challenges	Summarize the challenges the team identified for the project
Conclusion and Recommendations	Conclude and provide the top recommendations Lessons Learned of the project

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i. Advice to Project Managers

“A lesson Learned is a change in personal or operational behaviour as a result of experience. If nothing changes, nothing has been learnt” – Nick Milton

1. Spend the time to find lessons learned in JPedia or other repositories, go over key learnings from past projects to determine if your project would benefit if they are applied to your project.
2. Start collecting lessons learned from the kick off meeting and continue that process throughout the project. Always ask “What is going well?” & “Where are we struggling?” “How are things going? This allows you to make corrections along the way.
3. Look for trends and continue to look for areas of improvement on your project
4. Incorporate your lessons learned into your project status meeting agenda as it can help you tremendously in driving your project and in identifying the need to do any corrections, adjustments of staff, or process changes.
5. Communicate changes in documents/ procedure/policy/structure/budget so that working practices can be changed as a result.

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10. JKR JPedia

After Action Review (AAR) – a structured review or de-brief process for analyzing what happened, why it happened, and how it can be done better by the participants and those responsible for the project or event.

Central Repository – a collection of stored data from existing database merged into one so that it may be shared, analyzed or updated throughout an organization.

External Reviews – to provide feedback to the unit about what the unit is doing effectively and to identify areas for improvement.

Governance – the processes deployed to effectively oversee, coordinate and report the planning, procurement and delivery of the project.

Historical Data – Past-periods data, used usually as a basis for forecasting the future data or trends.

Lesson learned (LL) – a good work practice or an innovative approach that is captured and shared to promote repeat application or avoid recurrence.

Project lessons learned (PLL) – the learning gained from the process of performing the project.

Project lessons learned (PLL) process – refers to an organization's efforts for managing Lessons Learned

Project Life Cycle – refers to a series of activities which are necessary to fulfill project goals or objectives. It has a beginning and an end and passes through several phases of development.

