Digital Policy Office

PRACTICE GUIDE
FOR
SCOPING & PLANNING OF LARGE-SCALE IT SYSTEM DEVELOPMENT PROJECTS
APPENDIX B

SAMPLE STORY AND PRACTICE SAMPLE

[G63b]

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Amendment History				
Change Number	**Revision Description**	**Section Affected**	**Rev. Number**	**Date**
1	Removed the reference link of "Capability Assessment" in section 5	Removed the URL	1.1	July 2020
2	Update Documents for the Establishment of Digital Policy Office (DPO)	Cover page, Section 12 (a)	1.2	July 2024

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1 OVERVIEW

The samples below are fictional, drawn up for the illustration of the practices recommended in the Guide. To ease B/Ds' digestion of the concepts, the samples will be based on the same sample story. The samples in the story will follow the order of the processes as documented in the Guide. Reference will be made to the corresponding sections in the Guide.

2 STORY BACKGROUND

The table below states the sample story background:

Table 1 - Sample Story Background

Information	Description
Business Owner	(a) *Department A*
Project Background	(a) *Department A is going to develop a new system, including new web portal and mobile front-ends; and* (b) *Department A is one of the first few departments to implement and deploy the new system.*
Timeframe	(a) *Management expects the project to complete implementation in 18 months.*
Project Owner	(a) *Mr. P. Owner*
Stakeholders	(a) *Licencing Team of Department A* (b) *Record Team of Department A* (c) *Other B/Ds involved in the licencing process of Department A*

3 ASSESSING PROJECT COMPLEXITY

Mr. P. Owner starts gathering his thoughts on the project early during the Initiate phase. It is uncertain if the project will be a major project at the moment, but with the information on hand, Mr. P. Owner assesses complexity of the project using the ***Chapter of the Guide – 2.2 Assess Project Complexity***. The following assessment areas have been identified, which requires the Project Team's attention in the subsequent processes.

Table 2 - Assessment Area

Assessment Area	Description
1. Technology Risk	(a) *The new technology has been introduced in this project.* (b) *Insufficient proven cases for Project Planner to make reference to.*
2. Delivery timeframe	(a) *Management has given a deadline of 18 months. With consideration of testing, deployment, and any necessary promotional activities, not all requirements may be able to complete prior to the deadline.*
3. User population	(a) *On top of stakeholders within the Government, roll-out of the new e-Licencing system will have an impact on the public applying for licence. This is a huge user population, and this is a complexity that needs to be addressed.*
4. Next Steps	(a) *Mr. P. Owner, or the Project Planner, needs to keep in mind these identified areas of complexity, and address them in the processes.*

4 USING ENTERPRISE ARCHITECTURE DOMAINS TO ELICIT AND ASSESS REQUIREMENTS

(a) Mr. P. Owner assigns Mr. PM as the Internal PM for the project. Mr. PM will be responsible for scoping and planning of the project, serving as the Project Planner. Mr. PM will be conducting consultation sessions with identified stakeholders, and gather required information accordingly. Mr. PM will need to prepare the right questions in order to gather meaningful information. Alongside the ***Appendix A – 5 Stakeholders Questions Set***, Mr. PM also incorporates Enterprise Architecture domains into high-level requirements elicitation (***Reference Chapter of the Guide – 2.4.2 Elicit High-Level Requirements***). The EA domains can help Mr. PM to assess the current state of the Department A's environment, and identify any requirement not being discovered through consultation. Below are extractions of the current state, leveraging the Enterprise Architecture domains and other domains for consideration.

Table 3 - Enterprise Architecture Domains to Guide Requirements Elicitation

Domains	Sample Topic Areas
Business	(a) *The licence application process will be streamlined and paper records shall be eliminated; and* (b) *Online licence application shall replace the existing hard copy application process.*
Application	(a) *Licence Issuance application will be affected and needs to be integrated;* (b) *Electronic Record Management System (ERMS), and Licence related systems from other B/Ds will be affected; and* (c) *Integration with the ERMS, and interfacing with the systems of other B/Ds is required.*
Data	(a) *A new data model comes with the e-Licencing system, and customisation is required to accommodate Department A's unique business operation; and* (b) *Data conversion and migration is required for historical application data.*
Technology	(a) *Current infrastructure is sufficient to support upcoming requirements.*
Security	(a) *Security over e-Services needs to be addressed.*

(b) Other Considerations

Domains	Sample Topic Areas
Business	(a) *Vision – Management: to adopt the new Government-wide e-Licencing system for Department A's licencing operation, fully supporting existing functions, and new requirements as required by divisions/teams.* (b) *Strategy – The following are the high-level requirements elicited through consulting stakeholders:* *i) Application submission through e-Service (from applicants);* *ii) Indicate application status (to applicants);* *iii) Application receiving;* *iv) Application processing;* *v) Information sharing with other B/Ds;* *vi) Application approval/rejection;* *vii) Notifications;* *viii) Licence issuance;* *ix) Application archiving;* *x) Audit trails; and* *xi) Mobile application.*
Organisational	(a) *Different requirements between Department A and related B/Ds have been identified.*

5 SAMPLE BUSINESS CAPABILITY MAPPING

(a) After consolidating the requirements elicited through consultation sessions, Mr. PM will need to assess if there should be any other necessary requirements to be included in-scope. Mr. PM leverages the EA concept and uses one of the recommended tools (***Reference Chapter of the Guide – 2.4.2 Elicit High-Level Requirements***), a business capability mapping of Department A, to help him hierarchically decompose the services of the department, and view the business in terms of capabilities to identify any area under impact of the discussed requirements.

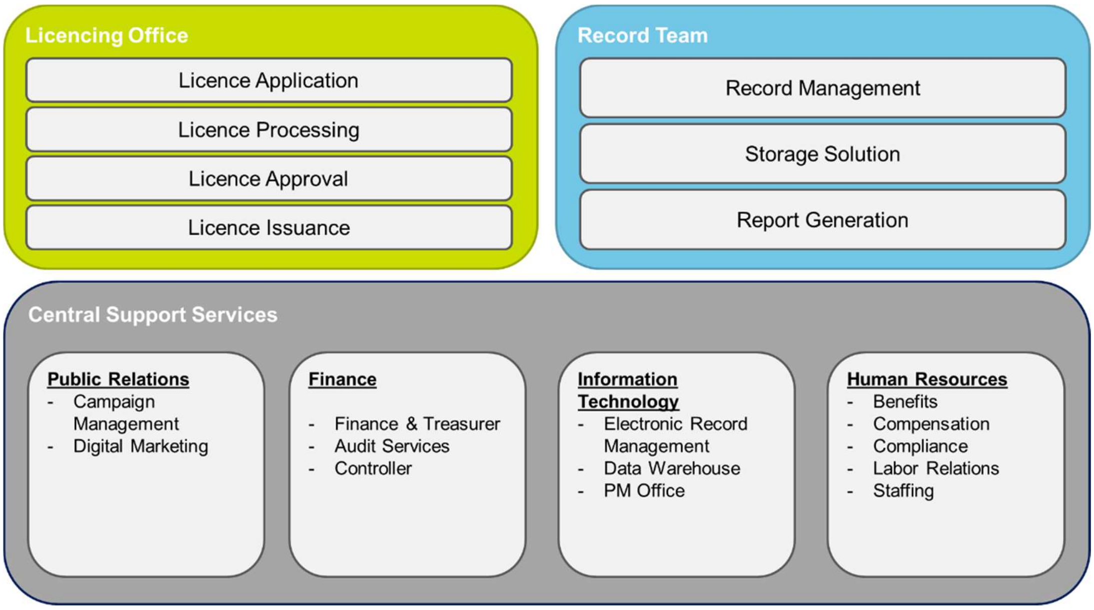

Figure 1 - Sample Business Capability Mapping

(b) For example, a new requirement regarding "receiving application and electronic documents through the online application form" will have impact on:

(i) Licencing Office: Licence Application and Licence Processing capabilities;

(ii) Record Team: Record Management capability;

(iii) Information Technology: Electronic Record Management capability; and

(iv) Finance: Finance & Treasurer capability.

(c) The business capability map helps Mr. PM identify item (iii) and (iv), which were not discussed explicitly during consultation. Mr. PM will need to define the requirement on aligning with the existing Electronic Record Management system, and the requirement on receiving payment for the licence application.

6 REQUIREMENTS CATALOGUE SAMPLE

Mr. PM leverages the requirements catalogue (***Reference Chapter of the Guide – 2.4.2 Elicit High-Level Requirements***) to capture the high-level requirements. The following are sample extractions:

Table 4 - Functional Requirement

Item	Description
Requirement ID	*R1*
Requirement Title	*Licence Fee Payment*
Priority	*Must*
Functional Requirement Description	*In order to provide online renewal of licence service to public, a secured channel for online payment must be set*
Frequency of Use	*100 times daily*
Acceptance Criteria	(a) *Payment can be made online* *Passing of security test*

Table 5 - Non-Functional Requirement

Item	Description
Requirement ID	*ACS001*
Category	*Audit, Control & Security*
Requirement Title	*Financial Audit Requirements*
Priority	*Must*
Non-Functional Requirement Description	*Financial Transaction* (a) *Record Creation: Append the created record into audit trail table* (b) *Record Change: Append after image record into audit trail table* (c) *Record Deletion: Append deleted record into audit trail table*

7 SAMPLE REQUIREMENT ATTRIBUTES LIST

Mr. PM needs to elicit requirement attributes of the requirements. The attributes will be used to facilitate the formation and prioritisation of sub-projects. Mr. PM can use the Requirements Attribute List to capture the attributes (***Reference Chapter of the Guide – 2.4.2 Elicit High-Level Requirements***). The following are sample extractions from ***Chapter of the Guide – 2.4.3.3 Project Decomposition Method (Example Step 1b and 2a)***:

Table 6 - Requirement Attributes List

Requirement Attributes List											
Requirement ID	**Requirement Title**	**Requirement Description**	**Business Function and Process**	**Mission Criticality**	**Urgency**	**Effort**	**Impacted Users**	**Dependency**	**Constraint**	**Benefit**	**Other Considerations**
R1	*Licence Fee Payment*	*In order to provide online renewal of licence service to public, a secured channel for online payment must be set.*	*Licencing Process - Receive Payment*	*Must Have*	*High (end of 2014)*	*High*	*All Applicants*	*N/A*	*Regulations on e-Payment; Licencing System; Payment Gateway; e-Service website*	*High*	*Concerns over payment security; High technology risk*
R3	*Online Submission of Application Documents*	*In order to provide online renewal of licence service to public, a channel for online document submission is required.*	*Licencing Process - Receive Application*	*Must Have*	*High (end of 2014)*	*High*	*All Applicants*	*R6*	*Licencing System; Record Manageme nt System, Website*	*High*	*Concerns over data security; network capacity*
R5	*e-Mail Alert for Application Confirmation*	*To notify applicant regarding successful submitted applications through e-mail*	*Licencing Process - Confirm Application*	*Should Have*	*Medium*	*Low*	*All Applicants*	*N/A*	*Licencing System; e-Mail Server*	*Medium*	*N/A*

8 SAMPLE SCOPE STATEMENT

Mr. P. Owner drafted the scope statement during the Initiate Phase (***Reference Chapter of the Guide – 2.4.1 Define Project Scoping***), and Mr. PM completes it with the high-level requirements elicited during Initiate phase:

Table 7 - Scope Statement

Baseline	Description
1. Project Description	(a) *New e-Licencing system with enhancement to replace existing system responsible for Department A's licencing operation.*
2. Project Objectives	(a) *To replace the dated system responsible for licencing, with a Government-wide new e-Licencing system, enhancements to support current and future operations, and a new e-Service for online licence application and renewal.*
3. Project Acceptance Criteria	(a) *All the existing functionalities are maintained, without affecting current service level* (b) *New enhancements are suitable for current and future business processes* (c) *New e-Service can be roll-out to public within the next years*
4. Project Requirements	(a) *Application submission through e-Service (from applicants)* (b) *Indicate application status (to applicants)* (c) *Application receiving* (d) *Application processing* (e) *Information sharing with other B/Ds* (f) …
5. Project Assumptions	(a) *No change in licencing regulations in the foreseeable duration of the project* (b) *There is a demand in e-Service for online licencing*
6. Project Constraints	(a) *Foreseeable shortage in manpower to carry out the project due to the other IT projects currently underway*
7. Project Boundaries	(a) *Integration with other third party system will not be included in scope*
8. Project Deliverables	(a) *New Licence Processing System* i) *New Integration to the Electronic Record Management System;* ii) *New e-Services platform for Licence Application; and* iii) *Interface with systems of related B/Ds.*

9 DECOMPOSING THE SAMPLE PROJECT

(a) Mr. PM needs to look at the requirement attributes to group requirements into sub-projects ***(Reference Chapter of the Guide – 2.4.3 Conduct Project Decomposition and Requirements Grouping)***. The following is a sample where Mr. PM groups the requirements by functions.

Table 8 - Project Decomposition and Requirements Grouping

Focus Area	Description
1. Requirements	*The following are the requirements elicited in project scoping phase:* (a) *Application submission through e-Service (from applicants);* (b) *Indicate application status (to applicants);* (c) *Application receiving;* (d) *Application processing;* (e) *Information sharing with other B/Ds;* (f) *Application approval/rejection;* (g) *Notifications;* (h) *Licence issuance;* (i) *Application archiving;* (j) *Audit trails; and* (k) *Mobile application.*
2. How to Group the Requirements	(a) *Requirements within the same business function should be grouped together. The sub-projects can be grouped into the following:* *i) Public facing/e-Service;* *ii) Application Process: from receiving application to application approval;* *iii) Licence issuance;* *iv) Information sharing with other B/Ds;* *v) Application archiving and audit trails may be separate or grouped with the application processing sub-project; and* *vi) Mobile application.*
3. Next Steps	*(a) Reassess the decomposition if any of the sub-projects are still complex*

(b) After decomposing the projects into sub-projects by functions/processes, Mr. PM assesses the needs to refine the decomposition based on complexity assessment areas. He looks at the identified complexity assessment areas (***Reference Chapter of the Guide – 2.4.3 Conduct Project Decomposition and Requirements Grouping***):

Table 9 - Refine Project Decomposition and Requirements Grouping

Assessment Area	Description
1. Technology Risk	(a) *The technology has been new to market and lack of proven successful cases.*
2. Delivery timeframe	(a) *Management has given a deadline of 1 year, the core functionality needs to be roll-out before that, with consideration of testing, deployment, and any necessary promotional activities.* (b) *Items with low priority, such as mobile application, may be considered as a sub-project for later deployment.*
3. User population	(a) *Public users who apply for licences will be impacted. This is a huge user population. Since there are 3 types of licences Department A is responsible of, a phased deployment can be considered.* (b) *Urgency of the requirements will be an indicator, and this will refer to attributes of gathered requirements.*
4. Next Steps	(a) *Assess constraints*

(c) Since Mr. PM should follow the guiding principles in decomposing the project into appropriate sizes, Mr. PM should ensure that:

i) Rationalise the number of sub-projects as more sub-projects may create more management overhead.

ii) Lower the complexity of individual complexity areas through project decomposition.

iii) Minimise impact on users such as repeated data entry, manual workaround, etc.

iv) Consider grouping requirements with similar attributes to improve synergies.

v) Avoid introducing more risks from breaking dependencies.

vi) Target to have manageable sub-projects to improve delivery timelines and deliver business benefit earlier and reduce the risk of project failure.

10 ASSESSING CONSTRAINTS FOR THE SAMPLE PROJECT

Mr. PM has formed sub-projects that are in decent size for management. However, he still needs to ensure the way the sub-projects are formed does not violate any constraints (***Reference Chapter of the Guide – 2.4.3 Conduct Project Decomposition and Requirements Grouping***). He looks at different constraints below:

Table 10 - Assessing Constraints

Constraint Type	Description
1. Business Constraints	*(a) The workflow should be grouped into the same sub-projects because they are inter-related business processes.*
2. Technical Constraints	*(a) Several changes to the Licence Issuance System have been identified, and these changes should be grouped under the same sub-project.*
3. External Constraints	*(a) May lead to changes in systems of the affected B/Ds.*
4. Next Steps	*(a)Revisit Project Complexity and Requirement attributes again for final refinement.* (b) *Ensure there are only a manageable number of sub-projects.* (c) *Move on to prioritisation and scheduling when ready.*

11 SAMPLE SUB-PROJECTS PRIORITISATION ATTRIBUTE LIST

After the decomposition and requirements grouping activities, Mr. PM has formed the following sub-projects. He also lists the attributes of the sub-projects that can help him facilitate sub-projects prioritisation (***Reference Chapter of the Guide – 2.4.4 Prioritise Sub-Projects***):

Table 11 - Sub-Project Prioritisation Attribute List

Sub-Project Prioritisation Attribute List						
Sub-Project ID	Sub-Project Title	Benefit	Complexity	Benefit vs. Complexity	Dependency	Organisational Readiness
SP001	*Public facing/e-Service*	*Medium*	*Medium*	*Medium*	*SP002, SP003*	*Medium*
SP002	*Application Process from receiving application to application approval*	*High*	*High*	*High*	*SP003, SP004*	*Medium*
SP003	*Licence issuance*	*High*	*Low*	*High*		*High*
SP004	*Information sharing with other B/Ds*	*High*	*Medium*	*High*		*N/A*
SP005	*Application archiving and audit trails*	*Medium*	*Medium*	*Medium*	*SP002*	*N/A*
SP006	*Mobile application*	*Low*	*High*	*Low*	*SP002*	*Low*

Mr. PM leverages the Requirements vs. Sub-Projects Mapping when developing the Sub-Projects Prioritisation Attribute List, so that he can gauge the level of benefit and complexity of the sub-project. An extraction of the mapping is attached below for illustration:

Table 12 - Requirement Attributes List

Requirement Attributes List												Sub-Project	
Requirement ID	**Requirement Title**	**Requirement Description**	**Business Function and Process**	**Mission Criticality**	**Urgency**	**Effort**	**Impacted Users**	**Dependency**	**Constraint**	**Benefit**	**Other Considerations**	**Sub-Project ID**	**Sub-Project Title**
R1	*Licence Fee Payment*	*In order to provide online renewal of licence service to public, a secured channel for online payment must be set.*	*Receive Payment*	*Must Have*	*High (end of 2014)*	*High*	*All Applicants*	*N/A*	*Regulations on e-Payment ; Licencing System; Payment Gateway; e-Service website*	*High*	*Concerns over payment security*	*SP001*	*Public Facing/ e-Service*
R3	*Online Submission of Application Documents*	*In order to provide online renewal of licence service to public, a channel for online document submission is required.*	*Receive Application*	*Must Have*	*High (end of 2014)*	*High*	*All Applicants*	*R6*	*Licencing System; Record Management System, Website*	*High*	*Concerns over data security; network capacity*	*SP001*	*Public Facing/ e-Service*
R5	*e-Mail Alert for Application Confirmation*	*To notify applicant regarding successful submitted applications through e-mail*	*Confirm Application*	*Should Have*	*Medium*	*Low*	*All Applicants*	*Low*	*Licencing System; e-Mail Server*	*Medium*	*N/A*	*SP002*	*Application Process*

12 SAMPLE SUB-PROJECTS AND SCHEDULING

(a) Based on his previous project experience, references to other B/Ds' practices and overseas experiences and discussion with DPO, Mr. PM derives the following durations for the sub-projects, and allocates time for procurement preliminarily. The required promotional and adoption activities are also addressed (***Reference Chapter of the Guide – 2.4.4 Prioritise Sub-Projects)***.

Table 13 - Sub-Projects and Scheduling

Sub-Project ID	Sub-Project Title	Dependencies	Duration
PR001	*Procurement for SP001*		*3 months*
PR002	*Procurement for SP002*		*3 months*
CH001	*Promotional and Change Management Activities*	*SP001, SP002*	*3 months*
SP001	*Public facing/e-Service*	*SP002, SP003, PR001*	*5 months*
SP002	*Application Process from receiving application to application approval*	*SP003, SP004, PR002*	*6 months*
SP003	*Licence issuance*		*2 months*
SP004	*Information sharing with other B/Ds*		*2 months*
SP005	*Application archiving and audit trails*	*SP002*	*2 months*
SP006	*Mobile application*	*SP002*	*3 months*

(b) Due to the 1 year deadline, Mr. PM has confirmed with Mr. P. Owner, and allows the Mobile application sub-project, which is of lower priority and has no urgency, to be implemented after the deadline. Leveraging the Sub-Project Prioritisation Attribute List, Mr. PM orders the sub-projects with considerations of benefit vs. complexity, dependencies, and organisational readiness. He then forms the project schedule using the sub-project durations (***Reference Chapter of the Guide – 2.4.5 Develop High-Level Project Schedule***):

Figure 2 - Sample Project Schedule