

SRS Development Procedure : The Roles and Responsibility of Key IT Personnel in Requirement Engineering Process

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Abstract—This paper explains the roles of key IT Personnel during the development of the Software Requirement Specification (SRS) in the Malaysian Public Sector. We determine the flow of the SRS procedure through the interview process to nine of IT Manager in Malaysian Public Sector. They explain their experience during requirement gathering in IT Project. Our purpose is to standardize their roles and responsibility as a guideline during our software project development. We diagram their experience to be easier understood by IT Personnel. The process flow contents of activity which blends with RE process. We have done the refining using Delphi Technique to the IT Expert in Malaysian Public Sector. We hope that the team will produce the structured SRS for as their guideline for complete the software project development.

Index Terms—Requirement engineering process, software requirement specification, SRS development procedure, software project success factor.

I. INTRODUCTION

Transformation the business process as system application is a major task in the Malaysian Public Sector. We have to make the business more reliable, easy to access, and meet the business and stakeholder need. After kick off meeting, the teams will be informed of their roles and responsibilities. But sometimes it happened without detailed explanation. The team knows their roles and responsibility by memo or email. Then, they follow the instruction without understanding the connection with the other teams. Here, were depicted the development process of the SRS development base on their experienced. Experience one of systematic mapping process for SRS[1], [2]. The four key IT Personnel are Project Director, Project Manager, Team Leader and Team Member. The relation among them is the SRS. Project Director gave the

direction to Project Manager to initiate the requirement gathering. Project Manager instructs the Leader and distributes the task. Team Leader asks the Team Member to elicit the requirement. Fig. 1 describes the detail of their role. SRS development flow created from investigation of IT Manager experience during their requirement gathering. The SRS development flow structured using the identified RE process [3]. There are Management Process, Elicitation Process, Analysis and Negotiation Process, Verification and Validation Process, and Documentation Process.

This paper is organized as follows. Section II, Related Work; Section III, Research Method; Section IV, SRS Development Procedure; Section V, The Role and Responsibility of Key IT Personnel; and Section VI, Conclusion.

II. RELATED WORK

The Requirements Engineering Good Practice Guide (REGPG-1999) was the first public-domain software process improvement (SPI) model that explicitly focused on the incremental, systematic improvement of Requirements Engineering (RE) processes. It describes 66 RE good practices organized according to a number of RE process areas, an assessment method and a three-level improvement model. However, the REGPG offers only a limited and general set of process improvement guidelines. Moreover it lacks sufficient guidance for selecting a realistic set of practical RE improvement actions to meet specific business goals with available resources. [4].

We have proposed the RE Best Practices Framework that consist of the needs of Public Sector [5]. The purpose is to develop the RE Best Practices (REBsP) for SRS in Malaysian Public sector. The REBsP had blended with the RE Process [3], RE Capabiity and RE Standards. This REBsP was made up with software project success factor (SPSF) and RE Critical Issues [6]. The RE Best Practices Framework is a flexible and pragmatic RE Best Practices Framework suggested by our team as it specifically focuses on the identified issues.

III. RESEARCH METHOD

We have done the investigation of problem areas. The purpose is to define the software project approval process and SRS acceptance approval for a software project. This is a Step 1 in our Requirement Engineering Best Practice Guideline (REBsPG) research framework [7]. The data collection

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methods are semi-structured interviews with IT Personnel within domain expert. A semi-structured interview is where the interviewer prepares a list of general questions and topics, and open to discussing questions for getting the appropriate suggestion and solution [8].

The criteria of domain expert are the IT Officer that had experience with development of software projects and categories in Grade F48 and above. The issues focus to what's really the problem that their faces during the requirement process, how they found the solution to solve the problem, and the common practices that they have done during the system development. Beside that another factor that contributes to the problem is the total of IT Manager position, type of the project, budget, and rules and regulation.

These groups of personnel are IT Manager and have experience in leading the ICT project. The respondent selected by their experience and from different agency or organization. We divide the interview into two parts, Demographic Profile (Part 1) and Investigate the preparation of RE (Part 2). The interview will guide by a set of questionnaire. The purpose of the interview is to investigate the current RE practices during the preparation of SRS for a software project. The objectives of the questionnaire are: 1. Workflow for SRS; 2. Roles of decision maker, development team and vendor; 3. Identify who will responsibility in monitoring the requirement specification; and 4. The implementation of need analysis in proofing the needs of implementation of software projects. The technique during the interview included recorded, face to face interview and interview through telephone. We gather the IT Manager experience using mapping process.

We have done the refining for the Fig. 1. using Delphi Technique. The step showed in the REBsPG research framework as Step 4. The Delphi technique was developed by the RAND Corporation in the 1950's. A three phase process was used—that is, three rounds of questionnaires were used. Respondents or participants were identified by a nominating process as having some expertise in virtual teams [9]. About 10 from 20 senior IT managers are invited to review the REBsPG. Nine of them are interested to share their experience.

IV. SRS DEVELOPMENT PROCEDURE

The task of software project execution is undertaken by the IT Department. Usually, the head of IT Department will be a Project Director. The kickoff meeting is the first for software project execution. This event is organized by the IT Department. The kickoff meeting is launched by the management of the organization. Project Director will brief software project implementation plan such as the objectives of the software project, the scope of the project, the expected outcome of the project, and the expectation of the stakeholders. A plan to develop the software project structure such the project team, identify the developers, determine the facilitation of stakeholders, the project managers who will manage the whole implementation, the owners of the project, the business process involved, project champions and project director who will lead and support the software project is

presented. The personnel that identified are developers, stakeholders, managers, team leaders, project managers, project director, project champion and top management [10].

The IT Department is responsible to provide IT services to their client in the organisation. The function of the IT Department is to enhance the services of an organisation through the use of ICT Technology. The difficulty to implement their task or job shows the areas for improvement that can be simplified through the use of systems applications. The use of system application will be beneficial to management whereby the access to reports and statistics are much easier. The time period of the decision making process is also shortened. The head of IT Department will be responsible for the implementation of software projects.

The project team will prepare the SRS as a requirement for the software project of system application. The involvement of the various parties such as stakeholders and consultants contributes to the successful development of the SRS. The stakeholders will list their needs and the developers will elicit the needs. Information about a workflow procedure takes from business processes. Information about the capability of the infrastructure will be taken from the current or existing technology. In addition, the developer will check the needs with the stakeholder through the negotiation process. After that, the team leader will analyst and compile the requirement. The decision should refer to the limits of business rules. The team leader will suggest the solutions

We depicted the SRS development flow as Fig. 1. The SRS Development Flow easy to understand using workflow process. The way to read Fig. 1 is from left to right. The purpose is to make it synchronize with the Letter of Circular No. 1 of 2009: Guidelines for Applying an Approval of ICT Technical Project Agencies.

The role of project director is planning, execute and monitor the software project implementation process. The requirement gathering process start after Project Director passes the technical specification to the Project Manager. Project manager and team who are appointed will prepare a plan for requirement gathering. The concept paper or proposal that is accepted will be the responsibility of the project team in the organization. Project manager distributes the task to the Team Leaders. Team Leader will give direction to Team Members in elicitation the requirement.

Team members will elicit the requirement. Team members responsible for the ICT infrastructure study the capability of the current ICT infrastructure. Then they will align the requirement proposed with the capability of the current infrastructure. If stakeholder agreed with the selected requirement, team members will forward back to the Team Leader. If the stakeholder did not agree with the requirement, team members will doing the negotiation process with the stakeholder. Then Team Member will aligned back the requirement proposed with the capability of ICT infrastructure. The same process repeated for the business process and business rules.

Team Leader analyses and compile the receive requirement given by the Team Member. Team Leader aligns the requirement either for the Business Rules or Business Process; or the capability of ICT infrastructure. If either one the condition was fulfilled, the Team Leader will forward the

requirement to the Project Manager. If not, Team Leader gave direction to the Team Member, to repeat the elicitation process.

Project Manager will merge the requirement as SRS. Project Manager aligns the requirement either for the

Business Rules or Business Process; or the capability of ICT infrastructure. If either one of the condition was fulfilled, the Project Manager will forward the requirement to Project Director. If not, Project Manager gave direction to the Team Leader, to repeat the elicitation process.

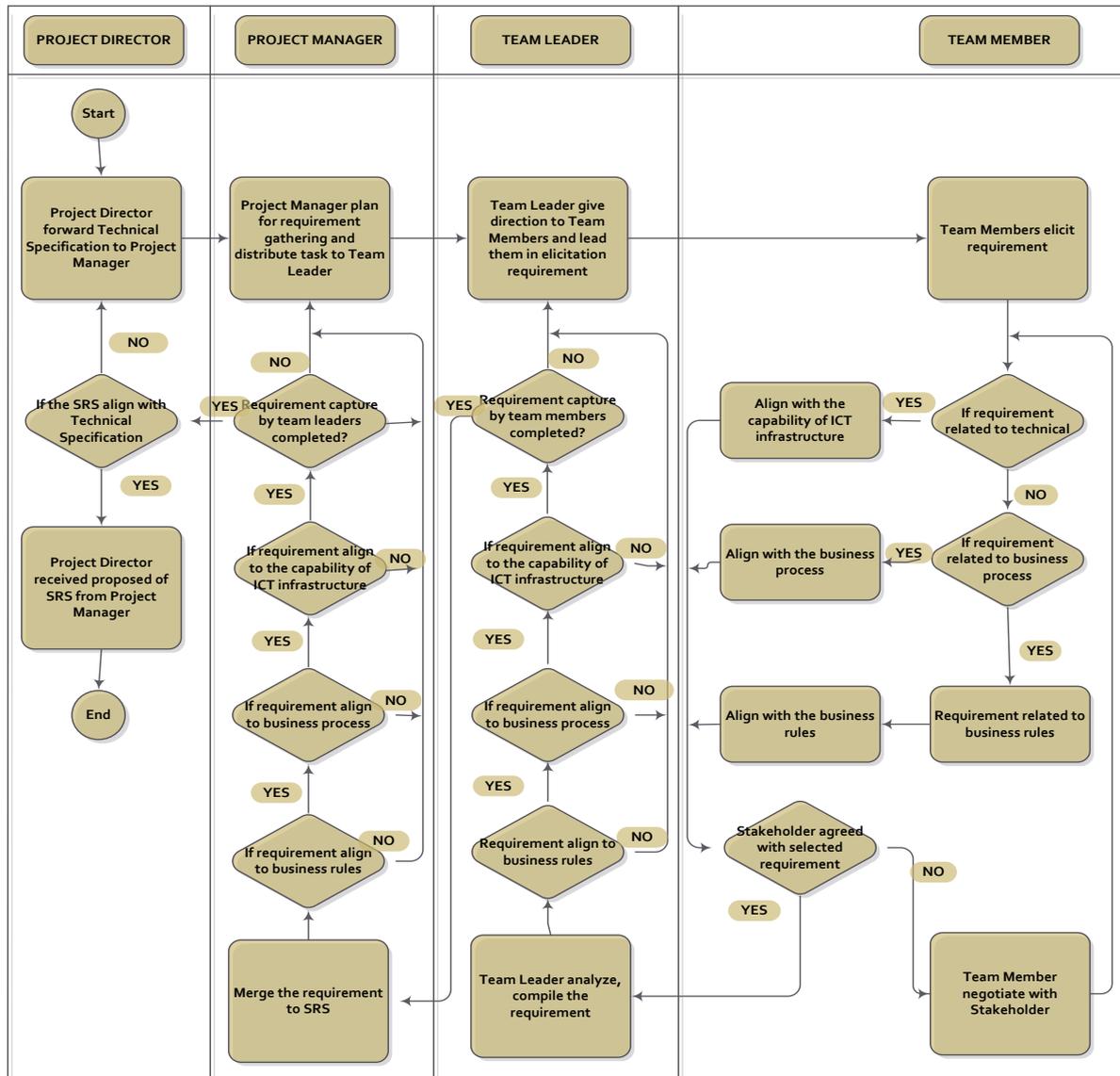


Fig. 1. SRS development procedure

The project managers will make decisions. The consultants will advise based on their expertise and experiences. The project team will refer to the Malaysian Public Sector ICTSP as a baseline, the business requirement as its requirements and supported by the ICT infrastructure. The purpose is to make sure that the visions of the software project are aligned with the Public Sector ICT vision. Software development organizations realize the importance of using best practices is to improve software development practices [10]. The project teams can also get advice from the group of experts especially the expert group of systems development from MAMPU. Complete SRS will be back to Project Director.

V. THE ROLE AND RESPONSIBILITY OF KEY IT PERSONNEL

The government of Malaysia has recognized ICT as an important enabling tool to support economic growth, as well

as enhancement of the quality of service in the administration [11]. Therefore, they have to determine the role and responsibility of Key IT Personnel. Project Director who has the full authority in making decision. Project Manager will implement the decision, and managed the software project. They are assisted by Team Leader and Team Member. The following discussion base on Table I.

A. Project Director

Project Director is the person who responsible with the whole of software project planning and implementation. Usually, the Project Director for the ICT project hold by IT Personnel. But in some cases, the position of Project Director gave to the business owner. The purpose is to get the commitment from the business owner. Other reason is he can verify and validation base on their knowledge according to the business process. The project Director will start the project by initiating the project and monitor the movement of

the software project implementation. He received the proposed SRS from project Manager. Then he aligns with the technical specification. In order to give approval to the proposed SRS he discusses with the stakeholder. In certain condition he invited external consultant to make the decision more appropriate and practical in the scope of the project.

Project Director roles and responsibilities in Management Process are initiating and closing the project. He ensures that the proposed SRS align with the technical specification and meet the stakeholder need. It's happened in Verification and Validation Process. He makes the decision, give endorsement and approval for the important discussion and meeting. The discussion will noted and documented. The activity done in Documentation Process.

B. Project Manager

The project manager makes a plan, execute the plan and monitor the software project implementation process. The main skill needed for Project Manager is manage the software project implementation. Project manager and team who is appointed will prepare a plan for requirement gathering. He will distribute the task to the Team Leaders and receive the compilation of agreed requirement from the Team Leader. He merges the requirement as a set of proposed SRS. And align with the technical specification requirement. After getting the agreeing from the project team, the propose SRS will pass back to Project Director. If the Project Director has not agreed with the proposed SRS, he will give back to Project Leader for the negotiation process and make the correction. Another task of the Project Manager is to manage changes has been requested from the stakeholder.

The project manager roles and responsibility in Management Process are planning, executing and monitoring the progress project. He has to instruct the team for Elicitation Process. Any changes or request of the requirement must obtain advice from him. The changes of requirement should endorse by him. The discussion happens during Analysis and Negotiation Process. Besides that, he has to make the right decision for proposed requirement. He has to ensure the propose requirement meets the technical requirement, organization and business needs. It happened in Verification and Validation Process. The decisions, endorsement and approval should be documented. The complete requirement documentation. It occurred in Documentation Process.

C. Team Leader

The Team Leader should have technical skills that required by the project. Their experience will help the team in gathering the right requirement. He will give direction to the Team Members to start the elicitation process. The requirement that receives from stakeholder will be analysis, assisted by the team member. They compile the requirement given by the team member. Then they align with the technical requirement. If they did not agree with the proposed requirement, they give back to the team member to elicit. If agreed, they passed the propose requirement to the Project Manager.

The role and responsibilities of the Team Leader in Management Process is to make a decision for the appropriate requirement for the requirement gathering process. Their

roles and responsibilities not much different from the Project Manager. The team leader focuses only on one subject. They also have to go through the Elicitation Process, Analysis and Negotiation Process, Verification and Validation Process similar like as the roles and responsibility of team members. The team leader has to manage the documentation process only on their part.

D. Team Member

Team members will elicit the requirement. The role of team member done by the developer. They listed the needs given by stakeholder. They have done the analysis to ensure the proposed requirement appropriate with other component such as the ICT infrastructure. They select the appropriate need as requirement. After that, they present to the stakeholder. They explain and negotiate with them if the proposed requirement not agreed by them. They discuss and negotiate with the stakeholder continues until both of the parties agrees. After that, they submit the accepted requirement to the team leader. The team member should have a skill and knowledge in identifying the right requirement for the stakeholder. Even though the team member is not the person who will make decisions, they have to prepare themselves with the negotiation skill. The team member roles and responsibilities more in Elicitation Process and Analysis and Negotiation Process. Thus an activity to collect significant information for planning accurate requirements that is desired by stakeholders [12]. They also have to verify either the requirement proposed align with the technical specification. The activity includes in Verification and Validation Process. The special task team member is the have knowledge and skill of writing or diagram the requirement documentation. The complete of SRS come out of their creative idea.

TABLE I: THE ROLES AND RESPONSIBILITY OF KEY IT PERSONNEL

IT PERSONNEL	ROLES AND RESPONSIBILITY	RE PROCESS
Project Director	Monitoring, Alignment, Approval, Decision	Management
	Initiation	Elicitation
	Endorsement the requirement changes	Analysis & Negotiation
	Ensuring meet the organization needs	Verification & Validation
	Decision, Endorsement, Approval	Documentation
Project Manager	Planning, Executing, Monitoring, Decision	Management
	Distributing, Instruction	Elicitation
	Agreeing, Negotiation, Advised	Analysis & Negotiation
	Ensuring meet the project needs	Verification & Validation
Team Leader	Endorsement , Compilation	Documentation
	Direction, Decision	Management
	Compiling	Elicitation
	Analysis , Comparison, Decision	Analysis & Negotiation
Team Member	Alignment with the technical specification	Verification & Validation
	Managing	Documentation
	Decision	Management
	List the needs	Elicitation
Team Member	Analysis	Analysis & Negotiation
	Alignment with the technical specification	Verification & Validation
	Diagram the requirement	Documentation

VI. CONCLUSION

As conclusion, we hope the SRS Development Procedure will help the four key IT Personnel understand their roles and responsibility. The need of understanding their roles will make the software project implementation meet the organization need, stakeholder need, and ended as planning. For the future, we plan to detail the flow with the best practices and RE techniques. The SRS flow also can be extended to identify the required people for requirement gathering.

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