

REQUIREMENTS: THE KEY TO CHOOSING A BEST FIT PROJECT MANAGEMENT LIFE CYCLE

By

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This article defines a robust requirements management life cycle (RMLC) that easily adapts to any type of project.

The purpose of this article is to bring some clarity to how the Requirements Management Life Cycle (RMLC) integrates within a Project Management Life Cycle (PMLC) and how understanding that integration can improve the likelihood of delivering successful projects that contribute the expected business value on which the project was initially justified.

The structure of this article is simple. First we get a bird's eye view of the RMLC and then a description of the project landscape. This gives us a foundation to discuss how the RMLC and the various PMLCs integrate and interact. The integration and interaction of the RMLC and PMLC present challenges to the PM and the BA.

REQUIREMENTS MANAGEMENT LIFE CYCLE (RMLC)

The RMLC is shown in Figure 1. It is robust in that it can be adapted to fit any type of project. This RMLC has not previously appeared in the literature. The International Institute of Business Analysis (IIBA) has a detailed discussion of Requirements Elicitation in their Business Analysis Body of Knowledge (International Institute of Business Analysis, 2009. *A Guide to the IIBA Business Analysis Body of Knowledge (BABOK Guide), Version 2.0*. Marietta, GA: International Institute of Business Analysis. ISBN 978-0-9811292-1-1) but the concept of a life cycle that fits any project is not presented. Similarly the Project Management Institute (PMI) only gives a cursory presentation of requirements gathering in their Project Management Body of Knowledge (Project Management Institute, 2008. *A Guide to the Project Management Body of Knowledge (PMBOK Guide), Fourth Edition*. Newtown Square, PA: Project Management Institute. ISBN: 978-1-933890-51-7) without any reference to type of project.

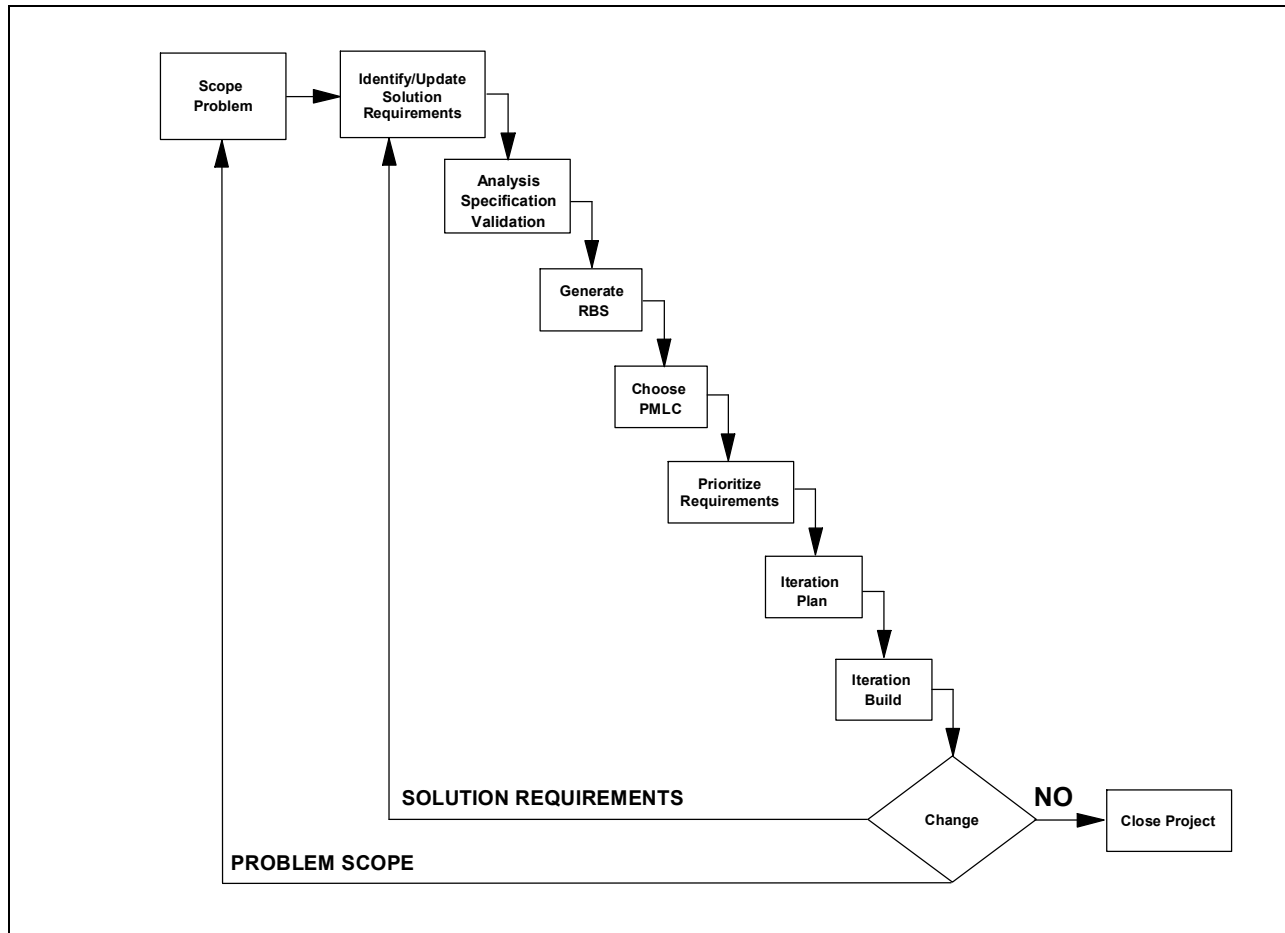


Figure 1: The Requirements Management Life Cycle (RMLC)

Scope the Problem

The first place where the project can get derailed is where the project manager (PM) or business analyst (BA) assumes that what the client wants is what the client needs. If you don't know where you are, you won't recognize when you have a solution description and you won't know what requirements to gather? So the RMLC begins by defining the problem. I'm hesitant to accept the client's statement of what they want (requirements from their perspective). Instead I want to find out what their real needs are and that can only come from defining the problem. Too often the client formulates their wants by envisioning the problem and what they think it will take to solve it. So from their perspective the problem is not formally stated but only implied through their statement of wants. The better approach is to define the problem and from that envision the solution and then what is needed to deliver the solution (these are the real requirements).

I have used a face-to-face session between the PM, the client and a BA if available for the project. I call the session a Conditions of Satisfaction (COS). It is designed to establish a language for communicating with the client and to elicit the true needs of the client. For a detailed discussion of the COS see my book (*Effective Project*

Management: Traditional, Agile, Extreme, 5th Edition, New York, NY: John Wiley & Sons Publishers, 2009).

Identify Solution Requirements

Most thought leaders in project management and business analysis would agree that it is not possible to collect complete requirements during the scoping phase of a project. You can always tell which projects assumed they had collected complete requirements by looking at the frequency of scope change requests. The more numerous the requests, the more likely requirements were incomplete at the initial stages of the project. Either no one knew or no one would admit that that was the case. Too bad because they could have saved a lot of cost and time and produced an acceptable solution instead of the cobbled solution they did produce. All of the simple projects have been done and we are left with projects that are filled with complexity and uncertainty. None of these projects can generate complete requirements at the outset. So don't assume you can and you will be on safer ground and in a better position to choose a best fit PMLC with confidence.

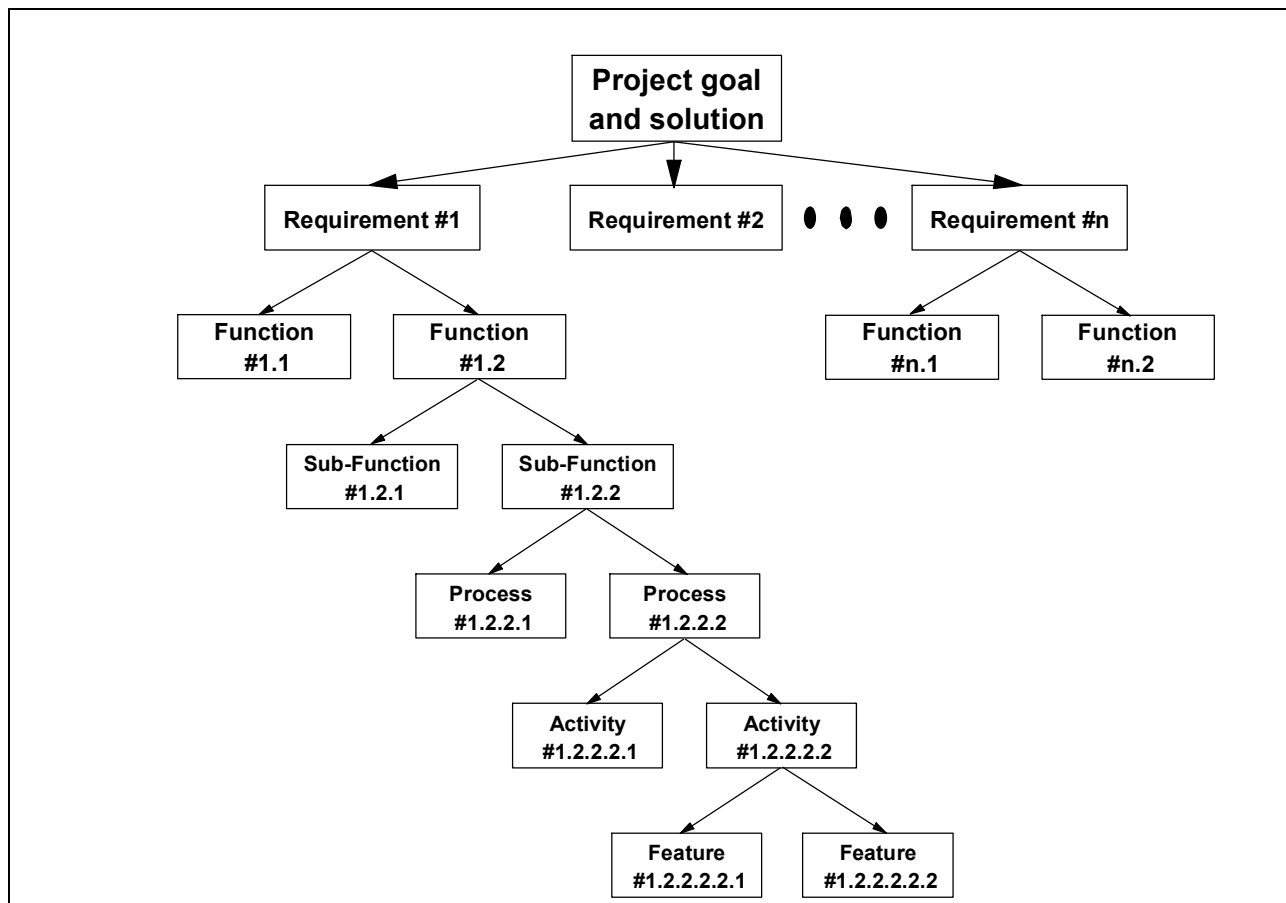


Figure 2: RBS Template Decomposition Structure

Analysis, Specification & Validation

These three activities are done exactly as is stated in the IIBA BABOK. The discussion of these three activities is outside the scope of this article. The deliverable is a completely documented list of requirements. Any good book on eliciting business requirements will suffice.

Generate RBS

Imbedded in the requirements specification document is more detailed information to help you decide on the best fit PMLC for the project. That information will lead to a subjective conclusion on the part of the BA and PM that reflects the degree to which they consider the requirements to be complete.

For several years I have used a hierarchical requirements breakdown structure (RBS) shown here in Figure 2. It is easily constructed from the requirements specification document. In fact it is usually developed as part of the process of identifying requirements and coincides with analysis, specification and validation. Clients have responded to the RBS because it keeps requirements in a format comfortable to them and it meets my requirement for being an intuitive graphic presentation. As an alternative some clients prefer an indented outline format. That contains exactly the same information as the RBS. It's all a matter of taste. Not all requirements will need the detail of a five level description. So the RBS is adaptable to each situation. Also, it does not have to have a symmetric layout. You are not entering a piece of art. You are describing a solution to a problem.

So with all of the above taken into consideration here are the requirements that must be met to deliver a solution. The entire Requirements Breakdown Structure (RBS) architecture is shown in Figure 2. The level of decomposition needed to describe each requirement is usually different for each requirement. Some requirements are very simply stated and don't require much decomposition to be fully understood. Others are quite complex and require considerable decomposition to be clearly defined. The RBS is not an exercise in symmetry. It is an exercise to describe a solution. As much as is known about each requirement can be displayed using up to 5 levels of decomposition as shown in Figure 2.

Not every level is required. The number of levels of decomposition of a requirement is dictated by the requirement itself. I can envision a requirement whose only decomposition is at the feature level.

Requirement - There are four different types of requirements: functional, non-functional, global, and product/project constraints.

Function - specifies what the product or service must do or a property it must have in order to do what it must do

Sub-function - a necessary and sufficient decomposition of a major function into the several smaller scoped functions that together cover all requirements of the function

Process - one or more physical processes that describe what must take place in order for the function or sub-function to be completed

Activity - one or more physical steps that must occur in order for the process to be completed

Feature - a physical characteristic of the activity

The hierarchical decomposition works well on a whiteboard but not in printed format. For that I prefer an indented outline format. The same information can be displayed in both formats. I have found the format in Figure 2 to be particularly effective for group presentation on large whiteboards. Using that format the entire RBS will always be visible and clear.

You might have concluded that the RBS is related to the work breakdown structure (WBS) and you would be correct. The RBS is the beginning of a deliverables-based WBS. The RBS states what must be done while the WBS, through further decomposition of the RBS, states how the deliverables will be built.

Uncertainty at the requirements level has more impact on your choice of PMLC model than does uncertainty at the functionality level, which has more impact than uncertainty at the feature level. Assessing the completeness of the RBS will always be a subjective assessment. Based on that assessment a PMLC model is chosen.

The BA should facilitate requirements elicitation, analysis, specification, validation and management throughout the entire PMLC model and participate with the PM in choosing the PMLC Model for the project. No matter how diligent you are you cannot know what you don't know and you probably don't know that there are parts of the RBS that you don't know. These will become clear as the project progresses and the solution comes into clearer focus. I have always benefited from assuming an incomplete RBS even if I can't point to the places where it is incomplete. That will come with executing the project iterations.

Choose PMLC

The RBS is the input to choosing the best fit PMLC. The degree to which the RBS is deemed complete is a guide to choosing that best fit PMLC.

Prioritize Requirements

This is a business decision and should be facilitated by the BA and/or the client in collaboration with the PM. The BA can take the lead in establishing the order of requirements implementation based on business value or some other variable of importance to the business unit they represent. The PM can take the lead in packaging

the prioritized list into iterations consistent with the dependency relations between requirements and the short durations of each iteration (usually 2-4 weeks).

Iteration Plan

For projects that use a linear project management approach there is only one iteration to plan and the RBS accommodates that. For any other type of project there will be several iterations each one leveraging what was learned about the solution from all previous iterations. That learning may translate into updating the solution requirements with new functionality or features (agile projects). Or that learning might result in changing the scope of the problem (extreme projects).

Iteration Build

Here is where the work of the project is done. The iteration build operates off the iteration plan. During the build activities change requests may be accepted and implemented depending on the type of project. For projects having one iteration the requirements change requests are processed and integrated as appropriate. For projects having several iterations the requirements change requests are held pending the end of the iteration. At that point each open request is evaluated and prioritized with respect to all other open requests. That provides the input to planning the next iteration.

Change

Change management is a critical phase of the RMLC. For some PMLCs change can happen within an iteration. For other PMLCs change can only happen after the iteration is complete and the client, BA and PM reflect on what has been done and the RMLC is repeated.

There are two types of change. The just completed iteration may have shed new light on the incomplete solution and new functionality will have been discovered. This will be incorporated into the solution requirements in preparation for the next iteration. The other type of change is more dramatic and will cause the scope of the problem to change. How to effectively manage the change process is the focus of this report. The process is very different depending on the type of project. For traditional projects the change management process is usually very formal. For agile and extreme projects one could argue that there is no formal change process at least as we know it.

Close Project

If there are no further changes and all requirements have been met and accepted by the client, the solution is now completely defined and the project can begin the formal activities in the closing phase. Those activities include installation and post-implementation audits.

Putting It All Together

Building an effective interface between the project, client, BA, PM and PMLC Model is complex. There are several decisions to be made and in the final analysis many will be subjective and rest on incomplete information. In this article I have tried to establish a model that integrates all of these factors and helps you make the best decision the situation affords.