

Project Initiation Process: Part Three

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3.0 Document Requirements and Obtain Project Authorization

Note: *This article is based on the book *Project Workflow Management: A Business Process Approach* by Dan Epstein and Rich Maltzman, published by J Ross Publishing in 2014. The book describes PM Workflow® framework, the step-by-step workflow guiding approach using project management methods, practical techniques, examples, tools, templates, checklists and tips, teaching readers the detailed and necessary knowledge required to manage project "hands-on" from scratch, instructing what to do, when to do and how to do it up to delivering the completed and tested product or service to your client. While PM Workflow® is the continuous multi-threaded process, where all PM processes are integrated together, this article will attempt to describe the initiation set of processes as a stand alone group of processes that can be used independently outside of PM Workflow® framework. It will be difficult in this articles of not venturing into processes outside of the project initiation, such as planning, quality, risk, communications and other project management processes, so they will be just mentioned. For more information, please visit www.pm-workflow.com.*

For part 1 and part 2 of this article please visit:

Part 1: <http://pmworldjournal.net/article/project-initiation-process/>

Part 2: <http://pmworldjournal.net/article/project-initiation-process-part-two/>

In part 1 of the article we discussed the following:

1. New project request and the benefit statement, which provide the delivery team with a general idea about the project and the expected benefits from the project.
2. Calculation and the sample of the cost-benefit analysis to establish whether benefits from the project justify expenses.
3. Project Control book, a tool for keeping all project documentation in one place.

The part 2 of the article advised on:

1. Business Requirements Analysis —The article guides you to obtain detailed project requirements and to analyze them.
2. Traceability Matrix —The requirements traceability matrix is a tool for documenting, updating and tracking all requirements and changes to the project scope throughout the life of the project. The template for the traceability matrix was provided.

The initiation process flow diagram was presented in the Part 2 of the article. Please refer to it in order to follow descriptions below.

Once the new Traceability Matrix, described in Part 2 of this article, created and all requirements documented, the Business Requirement Document (BRD) will be created.

3.1 Create Business Requirements Document (R6)

BRD is a document which, when signed off by the Requirements Manager, which is a role assigned by project manager, and clients' management, represents a baseline for requirements. The project authorization is based on those requirements. The Business Requirements Document (BRD) never changes, because it is a baseline set of requirements, used to obtain client's approval for the project and funding.

The traceability matrix is a dynamic document. It reflects the current status of requirements; therefore, it changes during the course of the project. It contains, along with the baseline requirements, the history of all changes to requirements during the project life cycle. Based on the contents of the Traceability Matrix, the first client deliverable document can be produced in the process Business Requirements Document (R6), which provides details of all business requirements.

The Business Requirements Document (BRD) must have the following sections, at minimum:

1. Glossary
2. Project scope
3. Overall business description
4. Project estimated cost to clients
5. Cost-Benefit Analysis
6. Requirements gathering methods
7. Requirements section
8. Major assumptions and constraints
9. Description of the Scope Change Management Process
10. Risk Assessment
11. Evidence of approval

Usually, clients are not provided with project cost estimates. Rather they are given the project estimated price, which is based on project cost estimates. This includes costs related to risk assessment plus profit margin and other costs defined by the book. The Project Manager usually provides the estimated project costs to the cost analyst or to the management and receives from them the price. The price must indicate the method used to produce estimates and their accuracy.

BRD must provide the following information for each requirement:

1. Requirement ID
2. Requirement Description - Description of the delivered functionality with details and specifics
3. Rationale for the requirement - The reason that the requirement exists and what it is expected to achieve, as well as its priority. If some requirements cannot be implemented due to lack of time or budget, priority will be used to identify requirements for cancellation or deferral.
4. Requirement type - Functional, non-functional or business-level requirement
5. Requirement priority - Must have, should have and nice to have
6. Completion Criteria - Description of the process to confirm that the requirement is met

Major assumptions and constraints must indicate your understanding of work environment. There must be a statement saying that if the assumption is not true, a new project estimate must be made, which may modify the project cost, duration or both. Also, we advise that you think of assumptions as a source of project risk. Any of them may escalate to a risk at any time. For example, you may assume that the exchange rate between two key countries in your project's scope is stable and in fact there may be a vast change in those exchange rates at any given time.

Example of assumptions and constraints:

- The client and the required business representatives will be available for all scheduled weekly project meetings for not less than 1 hour each
- All questions presented by the Project Manager will be answered by the client in writing within three business days
- The third party supplier will provide the equipment, as listed in the Statement of Work, no later than September 1, 2014
- “*Developing organization name*” will hire the Swahili language specialist no later than December 1, 2014

The completed BRD, even it is not signed off yet, provides details about the project, which allow you to do the improved project estimates. The project flow goes back to Planning for the improved project estimates, and then returns to the Cost Benefit Analysis (R3b) step, unless it was already done at step R3a. If step R3a was done earlier, the Cost Benefit Analysis will be updated before executing the Review Requirements (R7) step.

Having done so, the process flow enters the process Conduct Requirements Review (R7). Process R7 has many commonalities with the quality management review described in the book, but it is much simpler, with only one type of review instead of several types of quality reviews for other project areas. Therefore it makes sense to have a separate process R7.

3.2 Review Requirements

During execution of the process Conduct Requirements Review (R7), when it is close to completion, the process flow is directed back to the planning group of processes again, this time to produce a detailed plan of the planning activities, based on the gathered requirements. A less detailed plan for the rest of the project is also produced.

During the period after the business requirements document is complete but before requirements approval, the plan may change. However, it still provides a good picture of the planning costs and schedule. Corrections will be made later, if necessary, in the process Update Planning/HL Design Plan (R11).

3.2.1 Requirements Self-Assessment Checklists

Before the formal review, PM must complete a self-assessment checklist. The checklist consists of two parts:

1. Checklist #1 is related to the entire Business Requirements process. There will be one checklist #1 for review.

2. Checklist #2 is related to one single business requirement and there will be as many checklists #2 as there are business requirements.

Both checklists have questions, which must be answered YES or NO. If the answer is YES, there must be a documented proof of the answer, such as meeting records, memos, documents, emails, the completed and documented elements of the project plan, a quality review report and protocols documented in PCB. If the answer is NO, then there is a gap, which must be closed before the formal review. Both checklists, when presented for review, must have all questions answered YES. The documented proof must exist that the answers are indeed YES. If the proof does not exist, the answer must be recorded as NO.

Checklist # 1

Project Requirements Review		
	Project Name: _____ Date of Review: _____	
	Question	Yes/No
1	Are PM and delivery team members understand and comply with all relevant to the project company policies and procedures?	
2	Are PM and delivery team members understand the project scope?	
3	Is there formal BRD and does it include requirements from all clients and stakeholders that participate in this project?	
4	Have all clients and the related business representatives participated in requirements gathering sessions?	
5	Is there the documented Requirements plan package, which has been reviewed with the delivery team members?	
6	Is the weekly project tracking being performed to determine the actual cost and schedule vs. planned ones?	
7	Does the team for analyzing requirements and documenting them have sufficient experience in that business area?	
8	Was the sufficient funding provided for the Requirements activities?	
9	Are the delivery team members and RM trained in methods used to perform their requirements analysis activities?	
10	Are the activities for analyzing the gathered requirements being reviewed with the Delivery and Business management on a periodic basis?	
11	Are the activities for analyzing the gathered requirements reviewed with PM on both a periodic and event-driven basis?	
12	Has the Risk Assessment been performed?	

In addition to checklist #1, a separate checklist #2 must be filled in for each requirement. All questions here must be answered YES to ensure that the requirement is necessary, concise, construction-free, attainable, complete, consistent, unambiguous, verifiable, and traceable.

Checklist # 2

	Project Name: _____ Requirement ID: _____	
	Requirement Description: _____	
	Question	Y / N
1	Is the requirement detailed and adequate enough to develop an estimate and clear enough to the business on what will be delivered?	
2	Is the stated requirement technically achievable?	
3	Is the stated requirement complete and no further clarification required?	
4	Is the stated requirement verified that there are no negative impact on other requirements and systems?	
5	Is the stated requirement unique and does not duplicate other requirements?	
6	Is the same terminology used for same elements as in all other requirements?	
7	Does the stated requirement have one and only one interpretation?	
8	Is the language clear enough not to leave a doubt about the intended descriptive or numeric value?	
9	Does the stated requirement uses the commonly used non-technical terminology and avoids technical terminology?	
10	Does the stated requirement use standard words or phrases such as “shall” and “will” and avoids ambiguous words, like user-friendly, flexible, fault tolerant, state of the art, simple, efficient, easy, Minimum / Maximum without precise quantification?	
11	Can the stated requirement be verified by inspection, analysis, demonstration or test?	
12	Is the stated requirement assigned a unique identifier in order to follow the life of a requirement throughout the life of a project?	
13	Does the stated requirement have only the essential capability, only the essential physical characteristic, only the essential quality and nothing beyond the essential?	
14	Is the stated requirement is clear, easy to understand and states only what must be done?	
15	Does the stated requirement document WHAT is required, not HOW the requirement should be met?	
16	Is the requirement traceable?	

Having the detailed requirements outlined in BRD, the preliminary cost estimates will be performed, which are more accurate than the ballpark (initial) estimates. The preliminary cost estimates are a part of the overall estimating process, which is described in great details in the book, but is out of scope for this article. This yields the question: why bother doing initial estimates earlier in the project (see Part 1 of this article), if the preliminary estimates are now made with better accuracy anyway? The answer is cost savings! When the initial estimates are done earlier and it is established that the project is not justified, there would be no need

for expensive requirements analysis, planning and scheduling.

The next step is to update the Cost Benefit Analysis. If the project cost is still economically viable, the process Conduct Requirement Review (R7) is executed. This process, which is described below, has many commonalities with the Quality Assurance Review described in the book, but it is much simpler, having only one type of review instead of 13 types of a standard quality reviews.

3.3 Conduct Requirements Review (R7)

The Conduct Requirements Review process consists of the following elementary processes:

1. Identify Review Team (R7-1)
2. Schedule Review and Invite Participants (R7-2)
3. Send Materials to Participants (R7-3)
4. Conduct Review and Take Notes (R7-4)
5. Update Materials (R7-5)

The purpose of the Review Requirements process is to review the documented requirements with the lead client and business users to ensure that these requirements are complete and ready for use in project planning and for formal approval. Requirements are reviewed to ensure that they are *necessary, concise, design-free, attainable, complete, verifiable and traceable*.

When the requirements review is close to completion, a further level of project planning is initiated, based on the gathered requirements, this time to produce a detailed plan for the project planning and high level design activities. A less detailed plan for the rest of the project is also produced.

3.3.1 Identify Review Team (R7-1)

The review team should include the requirements manager (the role responsible for producing requirements documents), Quality Assurance analyst, project manager, relevant delivery team members, lead client and the leading members of the affected business groups. The objectives of the review are to identify incomplete and missing requirements and verify that the allocated requirements are documented clearly and properly, feasible to implement and test. All requirements will be reviewed with the team, the identified deficiencies corrected, and the requirements document will be updated. Once all the review team members are identified, they should be listed in the Requirements Review Board example in the table below:

#	Name	Role	Area of Expertise	Phone	email
1	J. Smith	Client Lead	Overall Business	Ext. 2700	
2	A. Perry	Business Expert	Req. SA00234, SA00238	Ext. 2012	
3	N. Owen	Technical Specialist	Database Design	Ext. 1812	
4	F. Norris	Project Manager	Project Management	Ext. 1948	
5	----- --	-----	-----	----- -	

It is useful to enter names of business experts for each requirement in order to get answers quickly and efficiently, and to be able to quickly address any question which comes up at any time during the course of the project. Make sure the lead client provides consent for accessing business experts directly.

3.3.2 Schedule Review and Invite Participants (R7-2)

The review must be scheduled at least seven days in advance, with the conference room booked for the face-to-face review or a teleconference scheduled. The meeting invitations and agendas will be sent to all participants. If any participant declines invitation, he/she must ensure that a qualified representative is assigned to attend the review. The manager of that participant and the lead client must be immediately notified. If the requirement manager, the client lead, or business experts from critical areas are unable to attend, the review must be rescheduled.

3.3.3 Send Materials to Participants (R7-3)

All documents for the review must be sent to participants by the electronic or regular mail and received by participants at least one week in advance. Materials include the BRD, completed checklists and other relevant documentation.

3.3.4 Conduct Review / Take Notes (R7-4)

The quality of requirements cannot be compromised under any circumstances. If the quality of requirements is compromised, the quality of the entire project (and of course, its deliverable) will be compromised as well. Quality is conformance to documented and approved requirements and specifications and, therefore, it is not the same as “Excellence” or “Perfection”. Quality is not a part of any project constraint, unlike cost, time and resources; it can never be reduced regardless of circumstances. If the project duration, budget or resources are not realistic to deliver all business requirements, then some requirements should be dropped or changed to reflect the new situation as mutually agreed upon with the business.

Still, all deliverables must be produced with the quality required by the business. For example, if the cost of delivering 100% of banking data within 600 milliseconds without loss is too high, the requirement cannot be compromised to deliver only 80% of data within 600 milliseconds, losing the rest of it. Instead, a new standard must be negotiated with the business to increase the delivery time to 1 or 2 seconds, which is a totally legitimate agreed level of quality. Exceeding the documented business requirements is sometimes called “gold plating” and is neither desirable nor acceptable, because this will increase the cost of the project over the amount that the client has agreed to pay. This may have negative consequences for the project and the PM. Also, introducing new business features without a proper change request produces scope creep, an always-undesirable element in all projects. Scope creep is discussed in more details in the book.

Requirement Manager (RM) will present the BRD and checklists to the review team. All questions in checklists must have already been reviewed by the PM and marked “Yes”. During the review session, the Checklist # 1 walkthrough will be performed once, then the RM will read each requirement one-by-one and verify it with the Checklist # 2 walkthrough, followed by the BRD walkthrough.

When all required modifications and fixes are identified, the Project Manager must obtain consent from the review team by sending the modified requirements to all review team members. This ensures that the review notes are correctly recorded and only required modifications and fixes are made. The review activity should be documented in the PCB, including the date and attendees, the agenda, the results of the review and the required modifications.

3.3.5 Update Materials (R7-5)

The RM must perform all of the required modifications in the BRD and send them to the PM, Quality Assurance (QA) analyst and the lead client. If the QA analyst and the lead client are satisfied with these changes, and no additional issues are found, they notify the project manager that the requirements are accepted on that level. In this case, the Approve Requirements (R8) process is initiated. At the same time, the detailed planning of the next set of activities must be initiated to have this completed before the end of the requirements activities. The next project activities are the detailed planning of the Planning/HL Design, as well as the overall planning of the rest of the project. The timing is important, because directly after completion of requirements, the existing resources must be utilized immediately by starting the implementation and tracking of the HL Design. The planning of the H/L Design is completed at the same time when the Requirements were completed. In addition, the overall project plan to the end of project is finished too. The plan cannot be too detailed, because at that point only the completed requirements are available, which is not enough to plan and execute a project. However, having that plan allows doing the preliminary estimates of the project cost and schedule, which is required to obtain project authorization from the sponsor beyond the requirements activities.

If updates are not accepted, a new review is scheduled and the entire process is repeated. If updates are not accepted after two attempts, a new issue is triggered and the process flow is directed back to the planning for the issue resolution plan. The issue must be resolved in accordance with the Issue Management process described in the book. When the issue is resolved, the flow returns from the project construction, where it was tracked, and the process is repeated.

Once the requirements review is complete, the new business requirements document will go for approval in the process Approve Requirements (R8). The approval will ensure that the analysis is complete and that the business requirements, which are supplied by the business, are presented correctly in the business requirements document, which is signed off on by both the delivery and business management and is also documented in the project control book.

3.4 Approve Requirements (R8)

By the time this process starts, the lead client and the business should have agreed that the BRD is complete. At this point the formal sign-off process will be kicked off. This activity consists of the following processes:

1. Requirement Manager sign off, followed by Project Manager sign off (R8-1)
2. Obtain Lead Client sign off (R8-2)
3. Obtain Delivery Manager sign off (R8-3)

4. Obtain Senior Business Manager sign off (R8-4)

The Requirements Manager, Project Manager, lead client, delivery manager and senior business managers must sign off on the reviewed requirements in that particular order. It is not possible to have all those approvals take place simultaneously, because the Project Manager relies on the Requirement Manager's signature for approval, even though the Project Manager must carefully read the BRD before sign off. The lead client also must read the BRD, but he/she does not necessarily look for the same details as the Project Manager. The delivery manager and the senior business manager may browse through the BRD, but they rarely read it thoroughly. They both rely on the Project Manager and the lead client respectively.

By signing off the BRD, the approvers confirm the following:

- The Requirements Manager and Project Manager confirm that requirements are *complete, necessary, concise, design free, attainable, verifiable and traceable*.
- The Lead Client confirms that requirements are in compliance with the business intentions.
- The Delivery Manager confirms that the requirements are completely understood by the Delivery Team, feasible and ready for implementation.
- The Senior Business Manager confirms that business requirements are aligned with the corporate business goals and corporate strategy.

Since the BRD approval process is sequential, it may take some time to collect all signatures. It is usually done in the scheduled face-to-face meeting or electronically via circulation of the BRD.

After the Requirements Manager and Project Manager sign the BRD, it will be forwarded to the next person in the chain with request to approve within three to five days and an offer to answer all questions which may have arisen. It cannot be any less than three days, because everybody should have reasonable time to read the BRD. On the other hand, if there is no sign off deadline, the BRD may never get signed off. In the afternoon before the due date, the Project Manager calls the person currently holding the BRD and asks about his/her availability for a brief meeting on the following day to receive the signed-off BRD. If the sign-off is electronic, a reminder should alert them of a sign-off deadline the next day. This usually helps to get the job done. Still, the sign off process may take two weeks or longer. This time must be used to work on tasks started during the Review Requirements R7 process.

Those tasks include:

- Develop project plans for the next coming planning activities and the preliminary project plan for the rest of the project. Those activities will take place at the same time as executing R7 and R8 processes in order to utilize resources and the waiting time for the BRD sign-off. Processes involved in building project plans are described in detail the book.
- Get the resource managers' commitments for the follow up planning resources.
- Make appointments with resource managers and present them with resource requests.

The above tasks are required for presentation to the lead client for review and getting his/her

recommendation to the senior business manager and the sponsor to authorize the project.

The BRD constitutes the requirements baseline. Scope changes are tracked and managed throughout the life of the project using the formal scope change request, described in the book. The Requirements Traceability Matrix must be updated when changing any of the requirements. The scope change request must identify other requirements, other project elements or deliverables that may be affected by a change. The scope change process is established in the planning group of processes.

Upon completion of this process, the control point question (Requirements Approved?) is asked. If the BRD is not approved, the issue most probably is not the BRD itself, but other issues which manifest themselves in the BRD. For example, the reason may be the lack of funds, or the changing needs of the corporation. In this case, the project will be terminated. If the business wants to renew the project with a different scope, they must submit a new Project Request and Benefit Statement.

When planning is complete, the process flow returns back to the requirements processes in order to review plans, costs and schedule with the client in the process Review Planning Milestones with Client (R10).

3.5 Review Planning/HL Design Milestones with Client (R10)

The Planning/HL Design plan and the overall project plan now return to the requirements group of processes. The plan, among other documents, contains the schedule for the planning activities with the information about the cost and duration of the planning processes. Some of this information must be shared with the client. While the client does not have to know, for example, what it takes to run the Quality Assurance reviews or the duration of the Statement of Work development, they definitely must be shown the project milestones, such as the project package completion date or the Statement of Work review date with the business. It is necessary to present a milestone for each approved requirement, along with milestones of other business related activities, but not necessarily the procedural or technical activities.

As in other reviews, the list of participants must be determined and the related documentation must be sent to business in advance, along with invitations. The review is conducted as a walk-through reviewing milestones, the schedule and the budget for the planning activities, along with the preliminary budget and schedule through the end of the project. Notes should be taken. Any proposed changes will be reviewed with the delivery team members and the senior delivery manager in order to determine whether they are necessary and feasible to implement.

The general recommendation is not to show the client the detailed project schedule to avoid clients' attempts to micromanage the project or request reporting the completion of every scheduled task, which they may not even understand. If you admit them into this level of project detail, they may interfere with the project management processes; they may even ask to remove some quality or risk management related tasks in order to save their costs. The second reason is that you cannot show the client some of the project tasks, like internal project reviews and meetings or tasks needed to contain some negative elements related to the client in the project risk assessment. If the client is aware of those meetings, you cannot stop them from sending their representative. Instead of the detailed project schedule, provide the

client with the milestones important to them, like client review dates, completion dates of client deliverables and the project completion milestones. However, since the client pays for the project, they may demand a complete schedule. In this case the work breakdown schedule should not directly show those confidential tasks or those which simply are not necessary for the client to see.

During the time after the business requirements document is complete, but before requirements approval, the plan may change and corrections will be made later, if necessary, in the process Update Planning/HL Design Plan (R11). Many plans are produced during the planning, which take significant effort, time and cost. The plan and resource allocation must be available for project estimating, as well as the risk analysis, quality management planning and other elements of the project planning. While the complete plan is mostly a guide to the delivery team, some elements, like major milestones and the price will, of course, be presented to the client. As the result of the review, some changes may be introduced into the plan in the process Update Planning Activities Plan (R11).

3.6 Update Planning Activities Plan (R11)

As the result of the review, some changes may be introduced to plans during their review and approval. Therefore, it is necessary to update plans and milestones and send changes to the review participants. Consent must be received before asking for the project authorization by the project sponsor.

At this point it is assumed that the business agreed with the scope of the project, its cost and schedule and the formal project approval request is forwarded to the project sponsor in the process Request Project Authorization (R12).

3.7 Request Project Authorization (R12)

During execution of this process, the project manager requests the Project Sponsor or the lead client to arrange the issuing of the project charter, which is based on the client's input and budget consideration and obtain commitment to continue scheduled tasks before the kick-off meeting. The project manager should receive the project charter from the project sponsor or senior business manager. This is usually a short and high-level document which authorizes the project manager to continue the project execution beyond the requirements activities. A project charter does not describe project details, but rather provides reference to the signed off BRD. Some clients request that the project charter is produced by PM. Since the project charter is an authorization to do the project, this would be a conflict of interest to a project manager.

If the project charter is not provided by the client's management after several attempts to request it, the answer to the control point question (Project Charter / Project Authorization Received?) is NO and the process flow, after notifying all project stakeholders, is directed to the project closing process for project termination. The project must not continue due to the exceptional risk involved, including the threat of not having proper authority to obtain resources for the project. Otherwise, if the answer is YES, the kick-off meeting (R9) will take place with the participation of clients, the client management, the delivery team and delivery managers.

3.8 Conduct Kick-Off Meeting (R9)

The kick-off meeting is the first activity of the approved project execution, beginning with the project planning. The kick-off meeting should be scheduled for at least two hours. This meeting provides the opportunity to get the delivery team members and their business counterparts together, introducing and celebrating the new project, and most importantly, gaining buy-in from participants and contributors. Usually, by the time the kick-off meeting occurs, not all project team members are assigned. However, by then the major players should have been identified and invited to attend.

Send the invitation with the agenda for a meeting at least two weeks in advance. It is customary to have some refreshments (food and drinks) ordered for a kick-off meeting, as it is actually a social event of sorts. In the first part of the meeting, the project manager should introduce everybody (or have them introduce themselves) and their roles. One idea is to also have each person provide the number of years of experience that they have with similar projects. The PM logs these numbers and then tells the team that they can rely on (for example) the century and a half of experience in the room. The PM will then briefly describe the project goals and major deliverables. It is also necessary to describe the expected communications with the delivery team and client, such as status reports, and types and frequency of different progress meetings. In the second part of the meeting the participants are encouraged to get to know each other and enjoy the food. Depending on the situation, an ice-breaker exercise can be facilitated by the PM.

After the Kick-off meeting is complete, the process flow enters the construction and tracking group of processes for tracking of the planning process and the high level design. The tracking process is described in the book.

The process flow may also move to the project closing when it is determined that the project is not justified or when the project sponsor declines to issue the project authorization.

3.9 Requirements Management Process Metrics

Requirements Management Process Metrics are recorded while being tracked in the construction group of processes, like the process metrics of other project activities. Tracking implementation of requirements involves comparing the plan to actuals. The weekly status throughout the requirements analysis is recorded and the following metrics are gathered:

- Plan versus actual date for completion of each requirement
- Plan versus actual date for completion of all requirements
- Plan versus actual date for BRD completion
- Plan versus actual for the Kick-off meeting

As mentioned earlier, the project flow returns to the requirements group of processes for the requirements when a project scope change is initiated. Along with the comparison of the scope change plan vs. actuals, we will also obtain important information about the stability of requirements. If some of the requirements have too many changes throughout the project lifecycle, this may mean that either the requirements were not gathered properly or that the client was not sure what he or she wanted from the project. Having those statistics will help to avoid similar issues in future projects.

When managing the project scope changes throughout the project lifecycle, the following metrics are recorded:

- Plan versus actual for completion of each project scope change
- Total cost expended for all changes by project group of activities (Requirements, Planning, Construction and Closing. Each group is called a frame).
- Total effect of scope change requests on schedule by project frame
- Number of issued scope change requests by project frame
- Number of the approved scope change requests by project frame
- Number of changes to each requirement
- Total number of changes for the project

3.10 Requirements Management Completion Criteria

The requirements activities will be assumed complete when:

1. The requirements management procedure is identified and documented in PCB
2. All business requirements documented in BRD
3. BRD filed in PCB
4. Evidence of requirements review documented in PCB
5. BRD approval documented in PCB
6. Requirements Traceability Matrix documented in PCB
7. Metrics documented in PCB
8. Project Charter is received and documented in PCB
9. Kick-off meeting is conducted and the record of it is documented in PCB

Even though the BRD is signed off and the Project Charter is received, the Requirements are not assumed complete until the above evidence is in place. It is the Project Manager's and QA Analyst's responsibility to ensure that this is the case.

About the Author



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Dan Epstein combines over 25 years of experience in the project management field and the best practices area, working for several major Canadian and U.S. corporations, as well as 4 years teaching university students project management and several software engineering subjects. He received a master's degree in electrical engineering from the LITMO University in Leningrad (today St. Petersburg, Russia) in 1970, was certified as a Professional Engineer in 1983 by the Canadian Association of Professional Engineers – Ontario, and earned a master's certificate in project management from George Washington University in 2000 and the Project Management Professional (PMP®) certification from the Project Management Institute (PMI®) in 2001.

Throughout his career, Dan managed multiple complex interdependent projects and programs, traveling extensively worldwide. He possesses multi-industry business analysis, process reengineering, best practices, professional training development and technical background in a wide array of technologies. In 2004 Dan was a keynote speaker and educator at the PMI-sponsored International Project Management Symposium in Central Asia. He published several articles and gave published interviews on several occasions. In the summer of 2008 he published "Methodology for Project Managers Education" in a university journal. His book, *Project Workflow Management - The Business Process Approach*, written in cooperation with Rich Maltzman, was published in 2014 by J. Ross Publishing.

Dan first started development of the Project Management Workflow in 2003, and it was used in a project management training course. Later this early version of the methodology was used for teaching project management classes at universities in the 2003–2005 school years. Later on, working in the best practices area, the author entertained the idea of presenting project management as a single multithreaded business workflow. In 2007–2008 the idea was further refined when teaching the project management class at a university. In 2009–2011 Dan continued working full time in Project Management. Dan can be contacted at dan@pm-workflow.com.