Project Initiation Process: Part Two

Dan Epstein

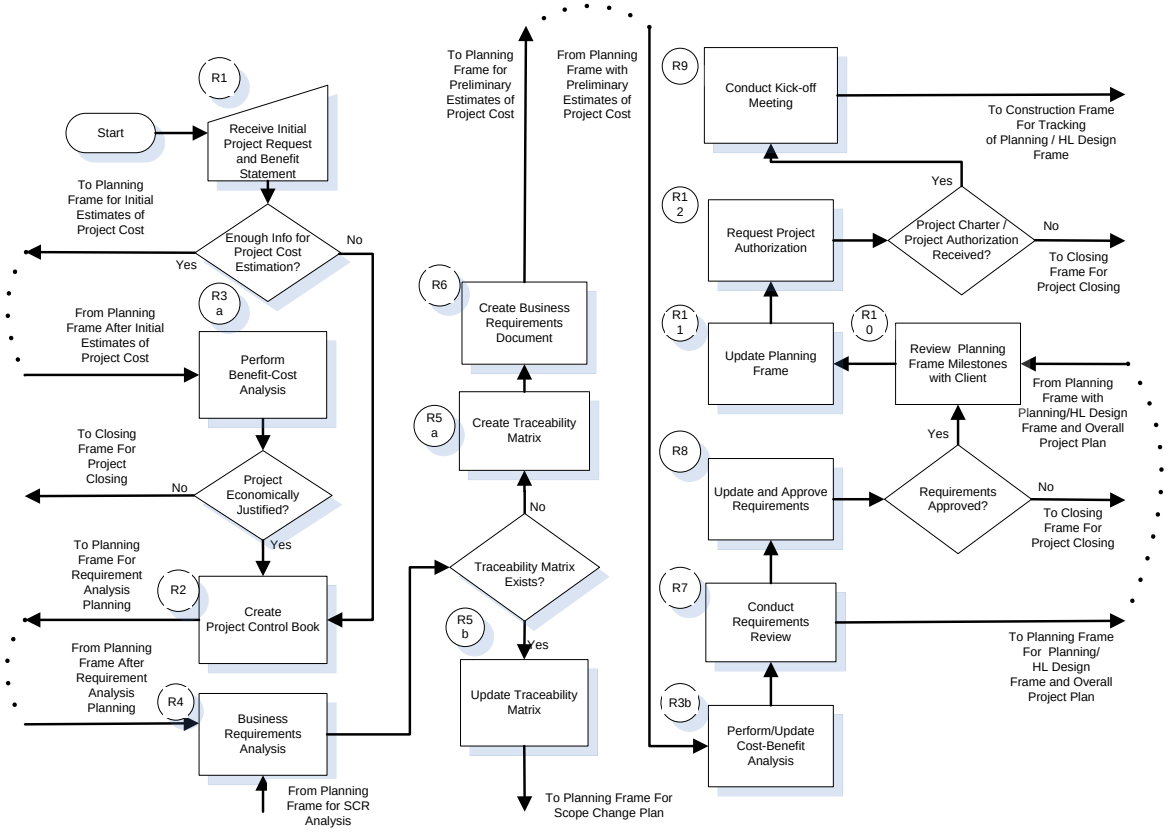
2.0 Requirements Gathering, Analysis and Traceability

For part 1 of this article please visit: http://pmworldjournal.net/article/project-initiation-process/

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 article to not venture into processes outside of 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.*

If you followed part 1 of the article, by now we have completed the cost-benefit analysis in the process R3a, as shown on the initiation process flow diagram below.

If the cost-benefit analysis confirms that the project is economically justified, several steps must be taken to create tools necessary to support project execution. One of those tools is a tool for storage of all project documentation. The tool is called a project control book or PCB. The golden rule for the project documentation is that if anything during the project life cycle is not documented, it is the same as if it does not exist or never happened. Phone conversations, verbal agreements and promises do not substitute for documentation, since management or clients will never remember their undocumented requests or their consent to do something. Methods of creating the project control book for documenting all project events are described in the following paragraph.



Project Initiation / Requirements Process Flow Diagram

2.1 Create Project Control Book

Project Control Book or PCB is a tool for storage of all project documentation. The tool is set up right after the cost-benefit analysis is complete and extensively used throughout the entire project lifecycle. The layout and contents of the Project Control Book are defined here, as well as methods of classification and documentation of all project related events in a way which allows efficient and straightforward access to the stored PCB information.

The overall guidance for the PCB content is to store absolutely everything related to a project, because even one small omission may cause misunderstanding and lead to serious project consequences. This info may be entered into a database for later retrieval to duplicate successful methods and to avoid repeating mistakes in the future projects.

The following is one example of overall PCB content:

- Project standards, practices and methods
- Agreements and Contracts
- Project deliverables and milestones
- Project delivery team members information
- Plans
- Project Schedule
- Communications Management Plan

- Project Risk Plan
- Quality Assurance Plan
- Configuration Management Plan
- Project Training Plan
- Staffing Plan
- Other plans as created
- Meeting minutes
- Project status reports
- Project scope changes
- Risk assessments
- Project estimates
- Project issues and issue tracking
- Project financials and tracking information
- Project Metrics
- Approvals
- Project tools
- Quality assurance reports
- Contents of emails
- Contents of verbal communications
- Other project documentation
- For requirements, there should be documented, as minimum:
  - Initial Project Request and Benefit Statement
  - Cost Benefits Analysis
  - Initial Project Estimates
  - Requirements plans and schedule
  - Meeting minutes with clients to define Project Requirements Document (BRD)
  - Issues encountered
  - Approved BRD
  - Traceability Matrix
  - Project Charter
  - Scope Change Requests
  - Project Status Reports
  - Requirements Quality Assurance Reports

In the steps which follow the project initiation, there will be more documentation to file in the PCB. With the large amount of information it will be increasingly difficult to find the required document without having structured electronic document storage. Of course, it would be more efficient to store this info in a database, but we will leave it to software developers.

The PCB should be easily accessible in a secure shared location, so that all key project stakeholders can see project documentation. However, there may be some documents that have restricted access. For example, clients should not normally see minutes from the internal project team meetings and sometimes the detailed project schedule to avoid client's micromanagement of technical tasks, which is not their job to understand and other reasons described in the book. Team members are not supposed to see other members' information etc. When the folder structures or documents are created, access authority must be thoughtfully established. Your enterprise's Security Administrator can set the access rights to

folders or documents.

There is absolutely no justification for not including any project event or document in the PCB. Even the project issues brought up in casual conversation with clients should be documented in the PCB.

There are off-the-shelf document management packages available, which may be used to help implement the PCB, but the simplest way to build the PCB is using the MS Windows file structure. The top level folder is "Project Name " with further breakdown by project phases, by months etc. Within the Requirements folder there will be other folders, such as the Traceability Matrix, Project Plans etc. The Project Plans folder will have subfolders such as Project Schedule, Communication Plan, Quality Assurance plan, Risk Management Plan, Staffing Plan etc. It is recommended to have the date as the first part of the document name within the indicated here structure, such as "2015-01-12 Team Status Meeting" or "2015-02-03 Risk Assessment" in order to have all documents in each folder sorted by date. This PCB structure allows easy access and easy retrieval of documents.

The entire PCB structure does not have to be built right at the beginning of the project. It will be elaborated as the project progresses.

2.2 Requirements Planning General Outlines

After the Project Control Book is created, the next step is the requirements planning. The planning group of processes is out of scope, but it is covered in the book in great details. Planning ensures that the project requirements process proceeds according to the schedule and has a predictable cost. The requirements process tracking (plan versus actuals), status check and reporting are described in the construction section of the book. Although many elements of the requirements generic plan is discussed in the project planning process in the book, some specifics for the requirements planning are included here.

The requirements planning process includes the following:

1. Analysis of all requirements
2. Identification of all deliverables
3. Documentation of the requirements team structure
4. Documentation of assumptions, dependencies and constraints
5. Analysis and documentation of the user environment factors, like physical work environment, technology used, users' levels of computer literacy, level of business expertise and training needs and their impact on requirements
6. Development of the risk management plan in accordance with the risk management process described in the book; the risk management plan will include, along with the planning of standard risk assessments and risk handling, the following:
    a. Development of a plan to minimize the risk of management or client's pressure to limit analysis and start development as soon as possible
    b. Development of a plan to minimize the risk of neglecting nonfunctional requirements, like usability, training, etc. (this is relevant mostly in projects for developing machinery and software)

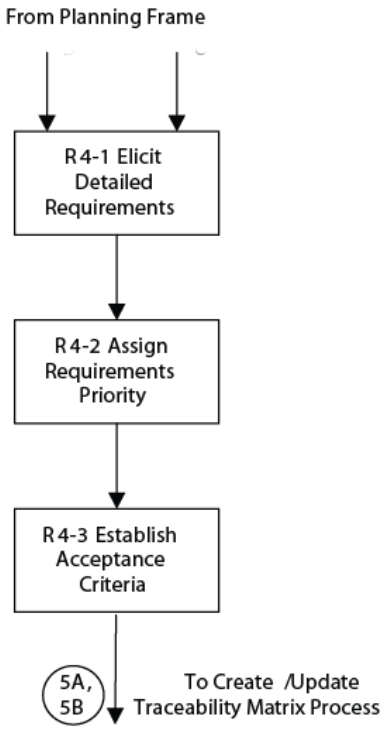
   c. Development of a plan to minimize the risk of technical specialists' bias toward a specific product, service or process
7. Development of a communication plan, which identifies stakeholders, reporting, distribution, etc.
8. Development of a preliminary work breakdown structure (a list of planning tasks and dependencies between tasks)
9. Estimation of effort required to complete each task. Estimating process is described in the book and in my article http://pmworldjournal.net/article/project-estimating-process/
10. Identification of the resources required to complete requirements and the requirements-related planning tasks and assigning resource to every task
11. Development of a quality assurance plan, as described in the book.
12. Calculation of the cost of and producing the schedule for the requirements process
13. All plans and the schedule combined into one requirements plan package
14. Getting to know clients, business users and project sponsors

The requirements manager's role has responsibility for planning activities. The project manager should include this plan as a component of the overall project plan. The requirements plan must make visible all activities and scope of the planned work, which would allow for correctly predicting time and cost of the requirements management activities. When the requirements plan is completed, the business requirements analysis process can start.

2.3 Business Requirements Analysis (BRA)

The purpose of the Business Requirements Analysis process is to elicit detailed requirements from clients and business users, as well as to control the flow of customer requirements through the life cycle of the project to ensure understanding of, and agreement to, the scope of the project between the delivery team and client.

BRA Process Flow Diagram and methods to elicit detailed requirements from clients are described below.



Requirements Analysis Process Flow Diagram

After the cost-benefit analysis confirms that the project is beneficial to the business, requirements, as gathered, must be documented. The required manager documents them in sufficient detail to ensure their unambiguous understanding. A unique identifier is assigned, which consists of three parts separated by dashes:

- A Project Identifier, assigned to the project when the project is initiated. This can be in a format chosen as appropriate for your particular enterprise.

- A Requirement Identifier, consisting of three digits, which identify the requirement number from 001 through 999, usually sequential within the project.

- A Revision Identifier, consisting of two digits identifying the requirement revision number. At the time when the requirement is approved and baselined, those two digits are always 00. Each subsequent approved change request will increment this number by one.

- Examples of a unique identifier: CLI00253-001-02, RET00229-011-00. This identifier will be used throughout the life of the project to ensure that all project scope changes are identified. Documentation concerning each requirement includes its unique identifier, a description of the functionality to be provided for the functional requirement, the rationale for the requirement that states why the requirement exists (from a business perspective), priority, and impact analysis of the requirement on business, the other requirements and existing products.

The requirements will be initially documented in accordance with the established requirement template below. Once the requirements analysis is complete, they all will become a part of the business requirements document described below. Additionally, a traceability matrix will be used to document and manage requirements in order to assist in traceability of all changes and the project scope. The requirements document and traceability matrix must be stored in the PCB.

2.3.1 Requirements Template

The Requirements Template is shown in the table below. Explanation of requirements group and priority is provided in the BRA Process section.

Project Identifier:			**Project Name:**			
Project Manager:			**Client:**		**Date:**	
Req. #	**Req. Unique Identifier**	**Req. Group**	**Functionality or Explanation**	**Rationale for Requirement**	**Priority**	**Impact Analysis Results**
		□ Functional □ Non-funct. □ Bus. level			□ Must have □ Should have □ Nice to have	
		□ Functional □ Non-funct. □ Bus. level			□ Must have □ Should have □ Nice to have	
		□ Functional □ Non-funct. □ Bus. level			□ Must have □ Should have □ Nice to have	

2.3.2 BRA Process

The BRA process starts when the requirements Planning is complete, having the Business Requirements Analysis planned. The BRA process is decomposed into three processes:

1. Elicit Detailed Requirements
2. Assign Requirements Priority
3. Establish Acceptance Criteria

2.3.2.1 Elicit Detailed Requirements

Requirement Gathering Techniques

Requirement is a condition, functionality or capability of a product or service needed by a user to solve a business problem. It must be related to the needs of the business, rather than to technology constraints. If the business says that the new system must use an Oracle database, they provide technology constraints, rather than business requirement. Even though this may be taken into consideration, if this makes sense from the technical point, the Business Requirement document should not include it as business requirement. Requirements answer the following questions regarding states of the business, and applicability to the project: Who? What? Where? When? How much? Requirements must not state how the problem should be solved in terms of technology.

There are a variety of techniques available for requirement gathering. The most common are:

- Interviews.
- Use of formal methodologies.
- Joint Application Design (JAD) sessions for certain types of projects.
- Brainstorming.
- Research and study of the existing solutions.
- Surveys and questionnaires.
- Observation of users' work.
- Prototyping (for the electronics, machinery and software projects).

Interviews

There are specific interviewing methods which allow determining the current, and desired business processes, as well as helping to decompose large business functions into smaller elements. When the project is an implementation of the enterprise business strategy, the interviewing process must start with the senior level executives to obtain their point of view on the required business strategies, continuing interviews with business users at the lower management level and finally with those who are most familiar with different elements of the business throughout the enterprise.

The purpose of interviews is to gather as much detailed business information as possible, especially from those closest to the work. Based on interviews, main business functions may be identified and decomposed into smaller processes, usually building process decomposition and process flow diagrams. Each element of decomposition must be verified by customers from different business areas.

Each business process should be decomposed to the level of the elementary process, which is a process that cannot be decomposed any further without losing business meaning. Thus, the business process Print Invoice may be decomposed into Print Header, Print Line, Send End-of-Line, Send Carriage Return etc, but neither of those processes have any business meaning. That means, the Print Invoice process is an elementary process and decomposition must be stopped there.

UML methodology

The popular modeling methodology for the object oriented software development projects is the Unified Modeling Language (UML) and tools based on UML, such as IBM Rational Unified Process (RUP) tool and others. The use of UML based tools requires special training.

Joint Application Design (JAD)

JAD is a methodology that involves business participation in two or three day workshops together with delivery team members. JAD may be useful if a large number of stakeholders are present with many areas of interest and sometimes competing requirements. The JAD session must follow the formal JAD process and the JAD structure in its entirety. Otherwise, it will not achieve its objectives. The JAD moderator role, which guides the workshop sessions to be an effective tool, requires special training.

Brainstorming

Brainstorming sessions are used to generate, combine and further develop good ideas, rather than propose solutions. Facilitating brainstorming session requires skills and experience to encourage participants in generating ideas, to avoid one person's domination, to extract the best, most creative ideas, and at the same time to prevent participants from lengthy, non-productive discussion.

In the requirements management brainstorming session, participants should share their vision of each presented requirement and expand it. Once the session is documented, it is necessary for the PM to send session minutes to participants and request their confirmation that minutes – and more importantly, the ideas - were recorded correctly.

Research and study of the existing solutions

Research of the published documentation in the company and on the Internet may provide insight to requirements and functionality of similar systems. This may help your team to avoid reinventing the wheel.

Observation of client's work

Observation of the clients' work will help to understand the current business working environment, and to understand the commensurate requirements in context.

Surveys and questionnaires

Surveys of existing business practices and questionnaires on this subject will help to understand the current environment. Surveys and questionnaires can be developed when requirements are understood well in order to confirm compatibility of existing business practices with new requirements. The vast majority of business users will fiercely resist changes to their existing business practices, because it is simply human nature to resist change. Changes should therefore have the strong backing of both senior business users and clients. Consequences of not taking this advice will be business complaints to management and even requests to replace the project manager.

Prototyping

This method is used for software, electronics and mechanical design projects. There are several levels of prototyping, from drawings on paper to developing functional prototypes. The Agile methodology for software development may be used for functional prototypes. When building application screens, business users may propose layouts and screens, but the final screen layout should come from usability experts or from the experienced technical personnel.

Requirements Criteria

In order to succeed in using various requirements gathering methods and tools, the

requirements manager must be trained in this area. All requirements must satisfy the following criteria:

Necessary
- ✓ The requirement is essential for the product to perform its function.
- ✓ If the requirement is removed, the product will not be able to function as required.

Concise
- ✓ There is one requirement per requirement statement.
- ✓ The requirement clearly states what must be done.
- ✓ The requirement avoids nonessential information.
- ✓ The requirement is easy to understand.

Construction/Design Free
- ✓ The requirement states what is required, not how to implement it.
- ✓ The requirement is easy to understand.

Achievable
- ✓ The requirement is technically feasible to implement as confirmed by subject matter experts.

Complete
- ✓ The requirement is complete and no clarifications are needed.

Consistent
- ✓ The requirement does not cancel or undermine other requirements.
- ✓ The requirement is consistent with terminology throughout the business requirements document.
- ✓ The requirement is stated only once in the business requirements document.

Unambiguous
- ✓ The requirement should have a single accurate interpretation without ambiguity by all project stakeholders.
- ✓ The requirement should not use technical terminology or buzzwords and must be understood by clients with no technical knowledge.
- ✓ The requirement must avoid using ambiguous words, such as efficient, user friendly, easy, fast response time, etc., without quantification.

Verifiable—The implemented requirement, which will be translated into a deliverable, must be verifiable by (in order of verification accuracy) inspection, analysis, demonstration and test of the deliverable:
- ✓ *Inspection* is a visual verification of the specified criteria and parameters. Often this method alone is not sufficient.
- ✓ *Analysis* is the comparison of parameters against pass/fail criteria.
- ✓ *Demonstration* is the activity which proves to a client that the product of the project conforms to requirements.
- ✓ *Test* is physical measurements in the real or a simulated production work environment.

Traceable—Each requirement that conforms to all the above conditions has a unique identifier in order to trace all changes to it throughout the project life cycle.

A requirement is the intent to have a specific deliverable. Every requirement must point to a real-life specific deliverable, which must be unique, must exist in the real world and must be measurable:

Unique—There is no other deliverable which results from other requirements that is identical to this deliverable.

Exists in the real world—You can actually see and interact with the deliverable. You also should be able to determine whether the deliverable is compliant with the requirement.

Measurable—Its characteristics can be measured. If, for example, the requirement says a device must operate in a temperature range of 0 to 95°F, the actual deliverable must be subjected to the above range of temperatures to confirm that it conforms to the requirement.

Examples of requirements:

1. Produce a weekly financial report
2. Develop an independent suspension for a vehicle
3. Produce a Business Requirements Document (BRD)

The corresponding deliverables for the above requirements are:

1. The actual weekly report (electronic or on paper)
2. Mechanical assembly, which is a part of a vehicle
3. BRD document

Requirements must be technology independent. However, selecting requirements gathering methodology is specific to tools and technology used. Tool selection depends on the technology used. For example, if the project deliverable is the web enabled software application, there is a good chance that the tool used will support the Unified Modeling Language, like RUP. RUP has specific sets of the requirements gathering and documenting techniques, such as Use Case, Interaction Diagrams and others. If the project deliverable is intended to be a software mainframe application, mechanical design or a workflow, RUP is not suitable.

Requirement Groups

All requirements may be broken down into three groups:

1. Functional Requirements
2, Non-Functional Requirements
3. Business Level Requirements

Functional Requirements focus on what the system does in the sense of discrete functionality of the deliverable. The following are examples of functional requirements:

- The automobile transmission must have 5 speed manual gear
- The application must present an employee personal information on the screen
- The building must have 10" brick wall

Non-Functional Requirements are usually needed to establish parameters of the product operation. They may be related to the environment, administration, maintainability, documentation, training, reliability, disaster recovery, etc. Examples of non-functional requirements may include:

- The system will operate in the temperature range between 0º F and 120º F
- The mean time between failures is 5,000 hours
- Only authorized users will be able to access their bank account information online
- In case of failure, the production line must be repaired in less than one hour
- The 3 hour long training must be provided to all users

Business Level Requirements are requirements which do not fall under the above categories, but are rather related to a temporary or permanent business strategy, tactics, or specific regulations. Examples of those requirements are:

- Government or organization regulated requirements, like SOX, taxes, etc.
- Strategic requirements, like a goal to increase revenue by 10%.
- Tactical requirements, like a temporary discounted interest rate for new credit card customers

An Example of Requirement Clarification

Let us assume that the two following business requirements in the banking area were presented by the client:

1. Checking accounts should be allowed to have an overdraft limit of up to $500.
2. Allow fast search by customer's name.

The above requirements will be analyzed and the following clarifications will be requested:

1. Are there any entitlement conditions to allow the overdraft to occur, like the presence of a savings account with sufficient funds, mortgage etc.?

2. Suppose a customer has $100 on the account and intends to withdraw $650 using an ATM. Should the customer be offered $600 instead using the screen message or is the transaction declined altogether?

3. What does "fast search" mean? Is three minutes fast enough? What does the search by name mean exactly? Must the teller enter the complete First and Last Names? Should the search be allowed only by last name? Should the bold card characters be allowed, like "Sm*" to retrieve all last names starting with letters "Sm"? Should substitution

characters be used, like in %son? Should first name be included in the search for partial names entered? Should there be additional search conditions, like birth date, address etc.?

Once requirements are clarified during interviews with clients, the qualified Delivery Team members must confirm that requirements are feasible to implement and won't cause degradation in system performance, especially when executing the search. What would be the feasible quantifiable response time for the search? After modifications, the above business requirements may read:

1. Checking accounts should be allowed to have an overdraft limit of up to $500, provided the customer has a savings account with total savings exceeding the overdraft amount. If the withdrawal amount requested by the customer exceeds funds on the account plus $500, the transaction must be declined altogether.

2. The authorized bank employee will be allowed to perform a customer search by entering the full last name in the Last Name field on the screen. In order to limit the list of retrieved customers, the bank employee may also enter one or more alpha characters (A to Z) of the first name in the First Name field and/or numeric characters and "/" in the DOB field for full date of birth in the form MM/DD/YYYY. The response time (defined as the time from the moment the Enter key is pressed to initiate the search and until results of the search are displayed on the screen) will not exceed 5 seconds.

2.3.2.2 Assign Requirements Priority

When there are multiple requirements, the requirement priority must be assigned. The customer and affected groups participate in the prioritization. This prioritization activity should be documented in PCB, including the date and attendees, the results of the prioritization, changes that occur, and approval of changes from the requirements source. There are three levels of requirements priority:

- Must have
- Should have
- Nice to have

A "must have" requirement is a requirement without which the application is not functional. A "should have" requirement is a requirement which is needed to achieve a business goal, but if not implemented, the application may temporarily function without it. A "nice to have" requirement is bells and whistles. An application may function indefinitely without it.

Prioritization is very important from a practical point of view. Regardless of how thorough an analysis is done, clients will inevitably change their minds many times later in the project and issue a multitude of scope change requests. Clients often forget that each change request costs money and the project budget may be exhausted long before the end of the project. The additional budget comes reluctantly and is usually insufficient to cover all scope changes. At this point it is very useful to start cutting down first on "nice to have" requirements and then even on some "should have" ones. In order to let clients save face, the project manager should suggest postponing the "nice to have" and even some "should have" requirements

implementation temporarily until the new budget is available. In the real world, money almost never comes later, because other budget priorities will tend to take priority over "nice to have" requirements.

2.3.2.3 Establish Acceptance Criteria

The Acceptance Criteria for the project and each requirement must be included in the requirements document. Acceptance criteria are the relevant, specific and measurable criteria that requirements must be subjected to in order to be accepted by the client. This is not what clients would like to have seen, but rather what is agreed to earlier and documented. The acceptance criteria will be used to develop test cases for acceptance test in the Closing part of the project. For example, let's say the requirement for a certain wind power generator says it must produce a minimum 10 kW of power at winds of 2 miles/hour or stronger.

- The requirement is relevant, because producing energy is the objective of the wind generator.
- The requirement is specific, because it quantifies the energy produced (10 kW of power).
- The requirement is measurable, because there are practical methods to simulate the wind and to measure the power output when the wind power generator is manufactured.

However, if a requirement says that the wind power generator must be energy efficient, it is not specific and therefore cannot be measured. Therefore, it is impossible to determine the relevant, specific and measurable acceptance criteria for this requirement. Let us look at the following requirement for the same wind power generator:

- The wind power generator's life span must be no less than 5 years at average winds of two miles/hour and sustained temperatures up to 90ºF.

How do you measure this? You may create a simulated environment based on an engineering calculation. If engineers confirm that wind of 100 miles/hour with a temperature of 140ºF increases the wear out of the generator by 60 times, then running the wind power generator for one month will be roughly equivalent to 5 years at the nominal environment.

By the time the requirements analysis planning is complete, the Traceability Matrix is not yet available. It is now time to build this in.

2.4 Create/Update Traceability Matrix

The contents of the Traceability Matrix 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 lifecycle.

Requirements traceability is defined as the ability to describe and follow the life of a requirement throughout the entire project life cycle. Timely updates to the traceability matrix, along with adherence to the project scope change process, described in the book, will block undocumented scope changes and adhere to the approved project scope. The traceability matrix will provide the necessary documentation for project quality assurance reviews later in

the life cycle.

The traceability matrix can be created by placing the uniquely identified requirements in the matrix. This information must be captured in the project control book and tracked to accomplish traceability. The matrix is used throughout the life of the project to assist in impact analysis and implementation of project changes to all the project work products and deliverables.

When the Business Requirements Analysis process is completed the very first time, the traceability matrix does not exist yet and the process flow goes to the Create Traceability Matrix process. Here the traceability matrix is created from the business requirements documented earlier, using the traceability matrix template, which lists each uniquely identified requirement in a matrix. A reference to the corresponding change request is provided.

In the case where the Business Requirements Analysis process is conducted in order to analyze a scope change request, the process flow is directed to the Update Traceability Matrix process. As the project progresses, each new change request is updated in the matrix by adding an identifier with a new version of the requirement, date, frame and description of the change. The traceability matrix is a dynamic document, which is appended each time a project scope change request is approved. The table below is an example of a traceability matrix (the template in the book is an Excel-based document).

Project ID: *CLI00253*
Project Name: *Requirements Management Process Development*
Project Manager: *John Smith*
Requirements Manager: *Jane Smith*

Requirement Initial Identifier:	*CLI00253-001*		**Priority:**	*Must have*	**Date:**		
Requirements Description:							
New Requirement Identifier	**Change Request ID**	**Date of Change Request Approval**	**Date the change Implemented**	**Requested By**	**Lifecycle Frame**	**Requirement Type**	**Description of Change**
CLI00253-001-01							
CLI00253-001-02							
CLI00253-001-03							
Requirement Initial Identifier:	*CLI00253-002*		**Priority:**		**Date:**		

Field	Description
Requirements Initial Identifier	Enter the initial identifier assigned to a requirement
Priority	Requirement Priority (“must have”, “should have”, “nice to have”.
Requirement Description	Brief requirement description (Detailed description may be found in BRD).
New Requirement Identifier	Increment the requirement version component identifier by 1
Change Request ID	Enter the change request identifier that affects this requirement
Date of Change Request Approval	Enter a date when Change Request was approved (may also be due to a defect found)
Date Implemented	Enter a date when Change Request was completed
Requested By	Enter a name of person who submitted a change request
Life Cycle Frame	Enter the life cycle frame in which the requirement change occurs
Requirement Type	Enter three character identifier: FNC for functional requirements NFR for non-functional requirement BUS for Business Level Requirements
Description of Change	Enter brief description of a change required and provide reference/link to the Change Request.

About the Author

Dan Epstein

New York, USA

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.