Considerations When Choosing a Requirements Management Tool

By John Parker, CEO of Enfocus Solutions Inc.

Why Word and Excel do not Work For Requirements

Many organizations use Word and Excel to define requirements. This is a bad practice has that has caused many project failures or has placed many projects at risk for the reasons enumerated below. Requirements development is an iterative and incremental process that involves elicitation, analysis, development, elaboration, and refinement, all of which need to be performed in a collaborative and transparent environment.

When selecting and using tools, it is important that the tool supports the underlying process – this includes requirements development and management. If the tools do not adequately support the process, then workarounds are needed to make the process work or quality suffers. We, business analysts, should understand this, as we see this regularly in our work. Unfortunately, many of project managers and analysts are blind when it comes to their usual processes for requirements development and management, a classic example of being too immersed to see the forest because of the trees.

Microsoft Word and Excel were designed to produce documents and spreadsheets, not to support the data intensive nature of requirements definition and management. Good requirements are often supported with linked documentation of business rules, visualizations, dependencies to other requirements, use cases, and the like. Further, it is difficult to track the evolution of requirements and their relationships using a word processor or spreadsheet.

As I continue to emphasize, good requirements are produced collaboratively; business analysts and developers need to be able to capture, evaluate and review comments on a requirement-by-requirement basis as well as allow key stakeholders to submit innovations and improvements. This is difficult to do using a word processor focused on creating documents, not on managing individual requirements.

In today's agile environment, analysts need to mange backlogs and not be distracted by creating overly large requirements documents. With a backlog, we can add new requirements when discovered, and prioritize new requirements within the backlog of existing requirements. As requirements are transferred to development, analysts need to be able to remove the items from the backlog.

Good Requirements Require More than Just a Tool

Many people think they can buy a shrink-wrapped off the shelf requirements management tool and their problems will be solved. Writing good requirements does not equate to buying a good tool. For example, a tool will not help address issues such as these:

- How should requirements be organized?
- What level of detail do I need in requirements?
- How should I prioritize requirements?
- How do I know if defined requirements are complete?
- What does a good requirement look like?

Writing good requirements requires skilled business analysts that know how to draft clear, accurate, valuable, complete and prioritized requirements? Enfocus Requirements Suite™ (**http://EnfocusSolutions.com**) is a comprehensive resource that consists of an automated tool, collaboration capabilities, extensive research and training materials, examples, and an entire community for business analysts to use in learning how to perform business analysis and requirements management activities. The solution, which comes supported by advisors, addresses:

1. Business analysis skills
2. Process
3. Techniques and methods
4. Tool
5. Collaboration
6. Domain knowledge

These six items are the keys for developing excellent requirements and performing outstanding business analysis. Unless your organization has a business analysis maturity Level of 4 or 5, you should ensure that your solution addresses all 6 of these key ingredients.

Requirements is a Collaborative Process

In the past, the standard practice for developing requirements was to assemble a large requirements document that often exceeded several hundred pages or more in length. You know the story. Stakeholders were given these gigantic documents and asked to have their review comments back within a week. The stakeholders were completely overwhelmed and the comments received were non-existent or incomplete. A few cosmetic changes were made to the documents and the projects went forward with little further participation by users.

A much better way to develop requirements is to ask stakeholders to conduct a continuous review of the requirements as they are being developed. In this way, the business analyst receives valuable input shortly after the requirements are developed and has time to make corrections. Stakeholders see only the requirements that pertain to their function and are able to review the requirements as they are developed or refined. Stakeholders can also determine which business rules apply and map these to the requirements. Developing requirements in a collaborative manner greatly improves the completeness and accuracy of the final requirements.

Collaborative requirements development also reduces waste. The Standish Chaos Report shares some interesting statistics pertaining to the effectiveness of this approach. The Chaos Report examines thousands of projects, big and small, around the world in various business domains. One of the more interesting facts from this Report is that 45% of functionality ultimately developed is never used and a further 19% is rarely used. This represents significant waste and results in higher complexity as well as higher development and maintenance costs.

Evaluating requirements one by one as they are being developed provides the opportunity to eliminate unnecessary functionality. This benefit is simply not achievable with large requirements documents that strive to define 100% of all requirements before development begins. Enfocus Requirements Suite™ from Enfocus Solutions Inc. provides the StakeholderPortal™ which allows stakeholders to record their needs, enter business rules, review and comment on requirements, gain transparency to the project, and receive notification when the requirements they are interested in are modified for any reason. I can't stress enough that it is critically important that any requirements management tool that you select has strong and powerful collaboration capabilities.

Real Traceability is External not Internal

Many requirements management solutions state that they have traceability. Be careful when you read this. Every package provides for internal traceability, that is, mapping of requirements to use cases or test cases. This is simple, since all these artifacts are maintained in the requirements management tools and the traceability is simply of relationships between data objects within the tool. However, the real value of traceability is the ability to trace requirements to external artifacts such as design documents, training manuals, program code, RFPs, and delivered software, among other things. The need and amount of tracing will vary from project to project. It is important to be sure that when you select a requirements management tool it supports external traceability.

Requirements are best Defined in Layers

It is best to define requirements in layers. For example, it is best to start with a set of features. The set of features is then used to gather functional and non-functional requirements to be satisfied by the planned solutions. Additional elaboration and details are added to the functional requirements as needed. It should be noted that different individuals might perform documentation of each of these layers. For example, the skills to define a set of features for back office solutions are certainly different than the skills needed to create a UI mockup for a functional requirement. If your requirements management tool does not enable you to define requirements in layers, then you will most likely have a difficult time matching the skills and competencies of your analysts with the needs of the project. This can result in delays, failed projects, or at a minimum misuse of valuable resources. The table below delineates some of the optional layers included in Enfocus Requirements Suite™:

REQUIREMENT LAYER	PURPOSE	KEY PARTICIPANTS
Business Objectives	Desired metrics the business seeks to meet in order to solve the problem.	• Project Sponsor • Project Manager • Executive Team • Business Architect
Features	A collection of functionality needed to meet business objectives.	• Project Sponsor • Project Manager • Business SMEs • Technical SMEs • Business Architect
Scenarios	Short stories describing user activities and problems.	• Users • Business SMEs • Business Analyst
Business Rules	A business rule is a statement that defines or constrains some aspect of the business.	• Business Analysts • Business SMEs • Technical SMEs
Functional Requirements	Describes a certain component of the functionality needed to deliver the feature.	• Business Analysts • Business SMEs • Technical SMEs
Requirements Elaboration	Additional details and visualizations added to the requirement to improve comprehension. This would include such things as data attributes, UI mockups, search criteria, etc.	• Jr. Business Analysts • Technical SMEs • UI Experts • DBAs

Five Types of Requirements

IIBA's BABOK defines fives types of requirements:

1. Business requirements
2. Stakeholder requirements
3. Solution requirements—functional
4. Solution requirements—non-functional
5. Transition requirements

Each of these requirements types has a specific purpose. Business requirements link the project to clear business objectives. Stakeholder requirements document what is needed for the solution to enhance activities (processes) performed by stakeholders. Functional requirements describe the behavior and information that the solution will manage. They describe capabilities that the system will be able to perform in terms of behaviors or operations—specific information technology application actions or responses. Non-functional requirements capture conditions that do not directly relate to the behavior or functionality of the solution, but rather describe environmental conditions under which the solution must remain effective or qualities that the systems must have. They are also known as quality or supplementary requirements. These can include requirements related to capacity, speed, security, availability and the information architecture and presentation of the user interface. Transition requirements describe capabilities that the solution must have in order to facilitate transition from the current state of the enterprise to a desired future state, but that will not be needed once that transition is complete. They are differentiated from other requirements types because they are always temporary in nature and because they cannot be developed until both an existing and new solution are defined.

Unfortunately, the vast majority of organizations start projects by defining solution requirements, and they fail to fully define business, stakeholder, or transition requirements. Distinctly capturing all five types of requirements is critical for delivering maximum business value. If you have a requirements management tool or are considering a tool that does not have the capacity to capture and document all five types of requirements, you should look elsewhere. Not properly addressing all five types of requirements can place your projects at risk.

Do you need a Requirements Engineering Tool or a Business Analysis Tool?

Requirements engineering and business analysis are not the same. Understanding the differences is key for successful IT projects. Requirements engineering, although helpful, is certainly not the key for success on business IT projects. Let's explore the differences.

Requirements Engineering

Requirements engineering is a systems and software engineering process which covers all of the activities involved in discovering, documenting and maintaining a set of requirements for a computer-based system. The first use of the term 'requirements engineering' was probably in 1979 in a TRW technical report, but the term did not come into general use until the 1990s with the publication of an IEEE Computer Society tutorial and the establishment of a conference series on requirements engineering. Requirements Engineering is often rigid and engineering focused, as it originated from the IEEE world. The focus is clearly on developing engineering specifications for a product rather than on delivering business value in an environment that must address people, processes, and technology. With the rapid adoption of agile development practices, some industry observers question whether requirements engineering is still relevant as it is a process for software engineering, which is what agile mostly replaced.

Requirements engineering is primarily focused on building products and does not include many of the activities involved in business analysis, such as business process improvements, building a business case, or delivering business benefits. Here are some basic traits of requirements engineering.

- Solutions are engineering driven and focused on delivery of product features, not business benefits.
- Typically requirements engineering deals with large complex systems in which software is only a component (e.g., airplanes, naval vessels, hydroelectric plants, etc.).
- Two primary activities:
  - → Requirements development
  - → Requirements management
- Requirements are related to products, not processes.
- Requirements engineering addresses only functional and non-functional requirements while ignoring business, stakeholder, and transition requirements.
- Requirements engineering does not work for agile development practices, where lighter requirement practices are used (user stories) and more focus is placed on collaboration and less on rigid engineering practices.

Business Analysis

Business analysis is much broader than requirements engineering. The focus is to deliver solutions that help improve business outcomes. Software is usually one part of the solution. Business analysis also addresses people and process issues in addition to technology. Below is a list of characteristics of business analysis:

- Solutions are business driven and aligned with business needs.
- Typically used in enterprise projects where people, process, and technology issues must be addressed.
- Four primary requirement activities:
  - → Elicitation
  - → Requirements development
  - → Requirements management
  - → Requirements communication
  - → Many additional non-requirement activities
- Solutions are focused on using technology to help people perform business processes.
- Solutions are often purchased instead of built (e.g., off-the-shelf ERP Systems).
- Addressing organizational change and business process change is critical for success.
- Business analysis involves facilitating business change.
- Delivering business value and ROI are expected.

Selecting a Requirements Management Tool

Many organizations simply do not understand the differences between business analysis and requirements management tools. The vast majority of requirements management tools on the market support requirements engineering, but provide little or no support for business analysis. A requirements management tool can work well for defining and managing requirements. However, the product that is built may not deliver any business product value or may not help users perform their activities because the requirements tool only allowed for defining functional and non-functional requirements and did not allow for capturing business and stakeholder requirements.

If your goal is to deliver business outcomes and help users better perform their daily activities, then chose a business analysis tool rather than a requirements management tool. At present, we believe that Enfocus Requirement Suite™ is the only true business analysis tool on the market. If you are in a Corporate IT department and are selecting a tool for product requirements, you are probably selecting the wrong tool. IT department deliver services and do not usually develop products. If you are looking at tools and see taglines such as the ones below, be careful they you are choosing the right tool for your needs.

- Requirements Definition and Management Software
- A Better Way to Manage Requirement and Deliver the Right Products
- Software for Managing Requirements
- A Tool for Managing Product Requirements

A business analysis tool includes many other capabilities than just requirements. Below are distinguishing characteristics of business analysis tools.

- Addresses all knowledge areas in IIBA's Business Analysis Body of Knowledge:
  - → Business Analysis Planning and Monitoring
  - → Elicitation
  - → Requirements Analysis
  - → Requirements Management and Communication
  - → Enterprise Analysis
  - → Solution Assessment and Validation
- Captures all five types of requirements as defined by the IIBA (Business, Stakeholder, Functional, Non-functional, and Transition).
- Focuses more on customer collaboration over rigid engineering specifications.
- Addresses People, Processes, and Technology, not just technical specifications.
- Can trace requirements to needed business processes changes.
- Provides a stakeholder impact assessment within the tool.
- Can link requirements to IT services and components.
- Captures stakeholder needs separate from requirements, with full traceability from requirements to stakeholder needs.

- Can define the problem statement within the tool.
- Can record expected business outcomes in the form of measures or KPIs.
- Focuses on collaboration between stakeholders and developers, placing more emphasis on collaboration and less on rigid requirement documents.
- Allows all stakeholders to be engaged in the project lifecycle, not just upfront in requirements definition.
- Can define the business case within the tool.
- Allows requirements to be used for tracking and measuring benefits realization after the solution has been delivered.
- Can be used various types of projects, not just defining requirements for a product.
  - → Organizational transformation
  - → Business Intelligence
  - → Packaged Software Evaluation and Selection
  - → ERP System Upgrades
  - → Data Warehousing
  - → Business Process Improvements
  - → Mergers and acquisitions
  - → Customer Facing Web Applications
  - → Systems Maintenance