



ITIL, Business Analysis and the Enterprise Requirements Hierarchy

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Introduction

This whitepaper characterizes the relationship between the Business Analyst¹ and an IT Service Management based IT organization. It also suggests a generalized model of requirements and how best practices, such as the IT Infrastructure Library (ITIL), contribute to meeting enterprise-level requirements. These requirements are based on key concepts from IT Service Management, Business Analysis and software development. Within this paper, that model is referred to as the *enterprise requirements hierarchy* (ERH).

The paper concludes with the following:

1. The *ERH* is *the* axis of alignment between the business and IT—even more generally, between all teams, business units, functions and partners in the enterprise. (The paper does not discount the value of alignment along other dimensions such as strategy, architecture, policy, organizational structure and process.)
2. The primary responsibility for requirements management belongs to the Business Analyst, as defined by the International Institute of Business Analysis (IIBA) and its best practice text, the *Business Analysis Body of Knowledge* (BABoK). While Subject Matter Experts (SMEs) understand the *language* of requirements in their particular domains, the Business Analysts understand and own the *process* through which those requirements are translated from business strategy to successful solutions.
3. The *ERH* is a framework within which other practices, such as change management, risk management, project estimation and, of course, IT Service Management, can be clearly related to enterprise goals.

This paper is structured in four parts:

- I. Background on ITIL and Business Analysis
- II. The Enterprise Requirements Hierarchy
- III. ITIL and Business Analysis
- IV. Conclusions and Recommendations

I. Background on ITIL and Business Analysis

IT Service Management and ITIL in 450 words

Since the audience for this whitepaper includes people who may have little or no exposure to IT Service Management (ITSM) and ITIL, a brief description here is necessary.

From a tactical and operational point of view, IT organizations spend much of their time with the following activities:

- a) Recovering from failures (“incidents”) that interrupt the users’ work
- b) Modifying or replacing IT components to improve their reliability or functionality by eliminating issues (“problems” and “errors”) associated with those components
- c) Carrying out additions, modifications or removals (“changes”) to IT components in order to introduce new or improved functionality to the users

In general, the number of incidents, problems, errors and changes to be addressed by IT exceeds IT’s capacity, so IT needs a way to determine how to best use its resources to make sure that the issues it *does* tackle will yield the most business benefit. The only way that IT can accomplish that prioritization is with guidance from its customers and users. But, that discussion cannot be carried out effectively in

¹ Also known as requirements engineer, requirements manager, requirements analyst, systems analyst, business systems analyst, analyst and a host of other names—all associated with the responsibility of understanding stakeholder requirements and guiding their translation into solutions for implementation.

technical language. Therefore, IT must express what it does in terms of its customers' and users' language.

This is where ITSM comes in. An ITSM approach to IT management facilitates tighter IT/customer alignment by providing IT and its customers with the ability to:

1. Define IT's deliverables in terms of *IT Services*, expressed in the customers' and users' language
2. Define how those IT Services will be delivered to the users, in terms of functionality, availability, capacity, security, support, disaster recovery, change management and other dimensions of managing the service
3. Understand the business impact when an IT Service fails
4. Prioritize IT's activities based on that impact

Another way of stating the above is that an ITSM-based IT organization seeks to understand the customer's IT Service requirements, agree with the customer on the delivery of that service to meet those requirements, and operate and evolve the service in a way that continues to meet those requirements.

So, you may ask, if that is ITSM, what is ITIL? Put simply, ITIL is the body of knowledge representing how organizations are dealing with the challenges of managing IT, based on extensive research and actual practice across all types of IT organizations. ITIL presents a formal structure through which an organization can learn how other organizations around the world are dealing with those challenges. While ITSM answers the "What do we want to do as an IT organization?" question, ITIL is one way (currently a very popular way) of addressing "How are we going to do it?"²

For the purpose of meeting this paper's goal, the above description will suffice and was hopefully not too painful for the ITSM initiate (or, for that matter, for the ITSM experienced).

Business Analysis in 210 words

It is also worth establishing a working definition of Business Analysis. From A Guide to the *Business Analysis Body of Knowledge* Release 1.6, we see that:

Business Analysis is the set of tasks, knowledge and techniques required to identify business needs and determine solutions to business problems. Solutions often include a systems development component, but may also consist of process improvement or organizational change.

The primary activities carried out by the Business Analyst are:

- Enterprise Analysis
- Requirements Management and Planning
- Requirements Elicitation
- Requirements Analysis and Documentation
- Requirements Communication
- Solution Assessment and Validation

The heart of the BA's job is the management of requirements, where a suitable definition of *requirement* (again, from the BABoK) is:

² It is interesting to note that in the ITILv3 book *Service Design*, the word "requirements" appears 773 times, the phrase "business requirements" appears 84 times, and 10 pages are devoted to the subject of requirements engineering (admittedly a solid 10 pages of guidance). The BABoK devotes nearly 300 pages to requirements management and business analysis. In other words, ITIL is not the definitive reference for requirements management best practices, but successful ITIL initiatives must start with high quality requirements.

1. A condition or capability needed by a stakeholder to solve a problem or achieve an objective.
2. A condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification or other formally imposed document.
3. A documented representation of a condition or capability as in 1 or 2.

It is worth noting that the above definition does not set a context (i.e., business requirement, IT requirement, legal requirement...etc.), but is focused on the elicitation, articulation and satisfaction of a stakeholder's need.

II. The Enterprise Requirements Hierarchy

IT Services and business outcomes

ITSM and ITIL are about efficiently and effectively leveraging IT to achieve desired business outcomes. Let's explore the IT Service–Business Outcome relationship in more detail by example: The use of a Learning Management System (LMS) to deliver product technical training and certification preparation exercises to a brick-and-mortar retail sales force.³ The requirements for the LMS as an IT Service will include elements such as:

- Functionality for various roles (learner, people manager, curriculum manager, etc.)
- Languages supported
- Peak user capacity
- Availability
- Response time
- Hours of operation
- Support process

Furthermore, the IT organization will need to map the LMS solution onto the IT infrastructure and determine the requirements of each of the underlying components in terms of capacity, availability, reliability, maintainability and other IT-related component characteristics. In other words, the IT Service requirements must be decomposed into IT infrastructure component requirements, support staff requirements...etc. (Figure 1).

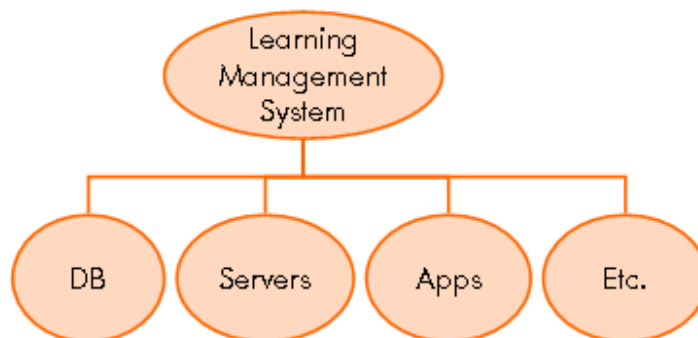


Figure 1: An IT Service and its IT components

³ This example is selected based on no other reason than the author's design and implementation experience with such solutions.

Decomposition of requirements plays a prominent role in software development, and we are now going to generalize that notion to make the connection between the IT Service and business outcomes.

In fact, we are going to start with one specific business outcome, consistent with the example we will continue to work with of an LMS implementation in a commercial enterprise.⁴ The business outcome we will look at is arguably the primary business outcome in the commercial sector: To make money now and in the future (TMMNAITF). That outcome is in fact a *requirement* of a going concern in the commercial sector. The author asserts that in addition to the definition of requirement stated earlier, another useful working definition (that is in fact implied in the earlier ones) is “a commitment to a specific outcome.” That is, once a business unit leader, or an IT manager, or a corporate attorney, or for that matter any person in, or partner related to, the enterprise makes a commitment with his or her stakeholders to achieve a specific outcome, that outcome becomes a *requirement*. The stakeholders, after all, are depending on it.

Back to our example, if there is a direct connection between TMMNAITF and our LMS IT Service, we could depict it as follows:

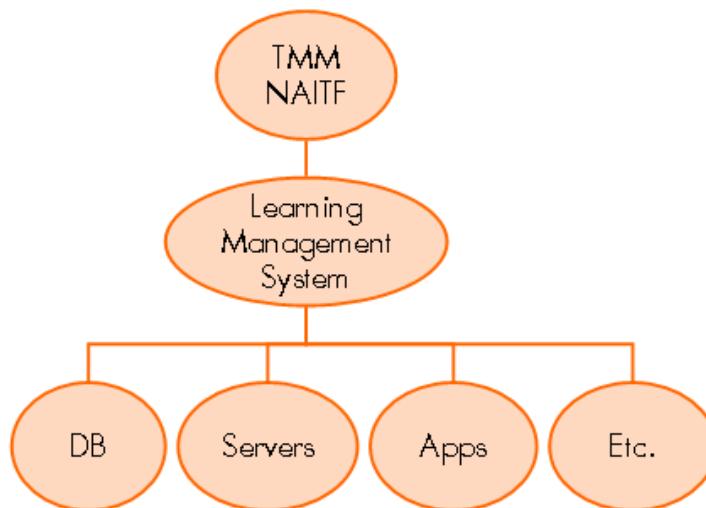


Figure 2: Linking the IT Service to the goal

Senior management may be unlikely to make a direct leap from TMMNAITF to an LMS. What they do instead is decompose the requirement TMMNAITF into more specific requirements, such as:

- Increasing market share for specific products and/or services
- Reducing operational costs to drive up margin
- Entering into new markets through R&D initiatives
- Increasing repeat business through customer loyalty campaigns

⁴ It is recognized that the concepts discussed here are also applicable to going concerns in other spaces, such as non-profits, non-governmental organizations and public sector agencies.

The top of our requirements hierarchy would look more like this:

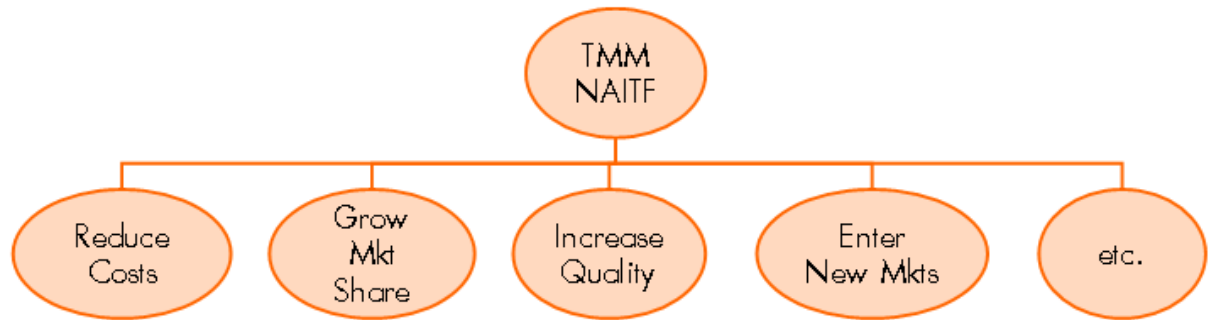


Figure 3: A likely senior management view

Our LMS IT Service is still not a direct result of decomposing any of the above requirements.

Let's fill in the gap like this:

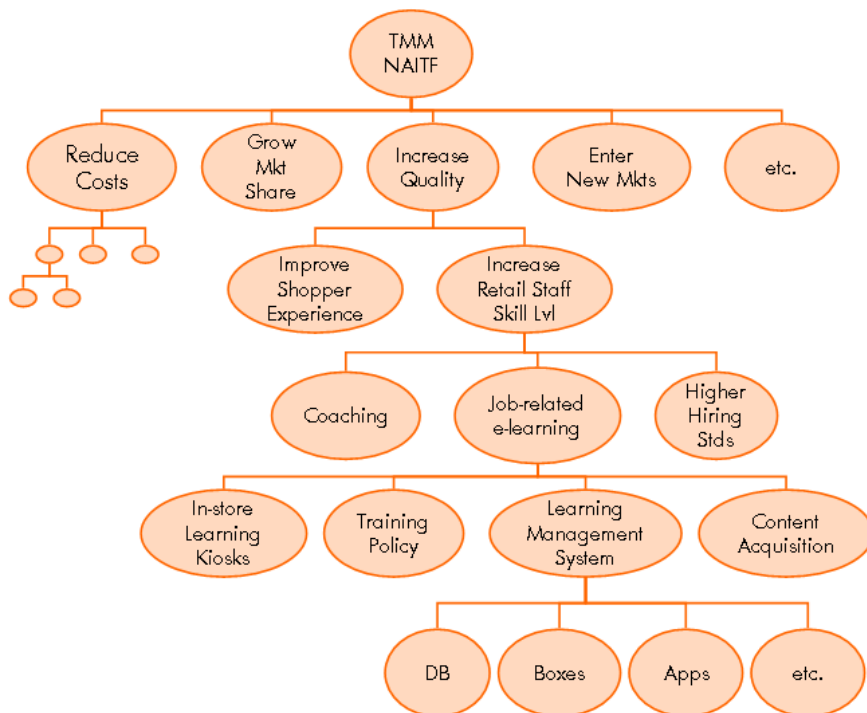


Figure 4: A Useful Context for the IT Service

In other words:

One of the ways to meet our TMMNAITF requirement is to increase product/service quality, which can be accomplished by:

- Increasing the overall skill level of the retail staff
- Providing job-related e-learning
- Establishing an LMS as an IT Service
- Using the appropriate IT components and support

Each node represents a requirement or set of requirements and should be subjected to further decomposition until a concrete solution is defined.

For the sake of discussion, let's refer to the above as the enterprise requirements hierarchy (ERH) for our LMS-based business solution.

Enterprise Requirements Hierarchies and language domains

As indicated earlier, requirements decomposition is a commonly used approach within the software development lifecycle, particularly with respect to functional decomposition beginning with the user's view of the application (e.g., using use cases). Taking a closer look at the "Apps" node will reveal a dynamic that we will want to apply to the overall ERH.

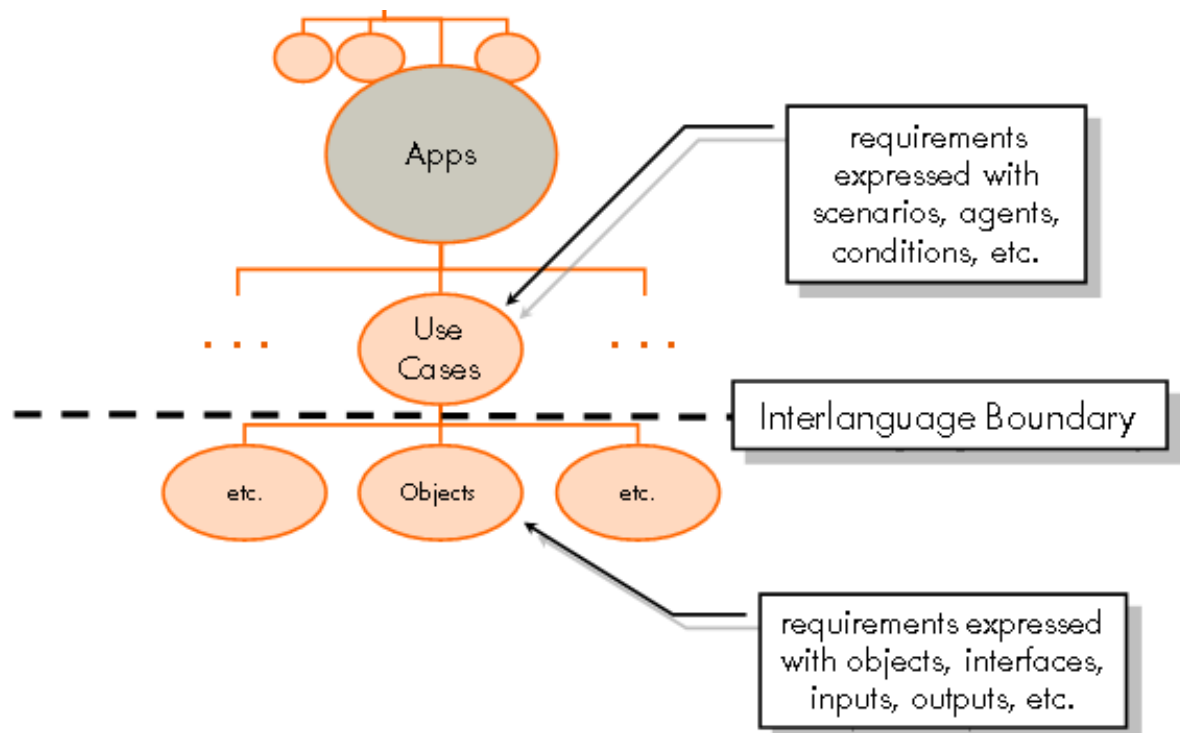


Figure 5: An example of a language domain boundary

Within the software development space, use cases have emerged as a best practice for capturing user requirements using language the users understand. The software engineering team then translates those requirements (the “what the application should do”) into technical specifications (the “how the application will do it”) describing the application’s functionality. Frequently, a language boundary is crossed in that translation. (Even within the strictly technical domain, sublanguage domains exist: UML, data modeling, data flow diagrams, sequence diagrams, SQL, etc.)

This notion of the interlanguage boundary is of crucial importance to the requirements’ stakeholders and their relationship with the SMEs building the solution components to meet those requirements. Any best practice for a specific domain must address not only the language within that domain required to master and manage its components, but also the mapping of that domain’s language into the language(s) of the requirements’ stakeholder(s).

We have always thought of technical people as specializing in technologies (“working in silos”); taking the view that they specialize in language domains (“lingos”, “jargons”) is also accurate—and that view greatly enriches our ability to see requirements management as being a matter of language as much as anything else.

Here are some examples of requirements domains from our LMS ERH.

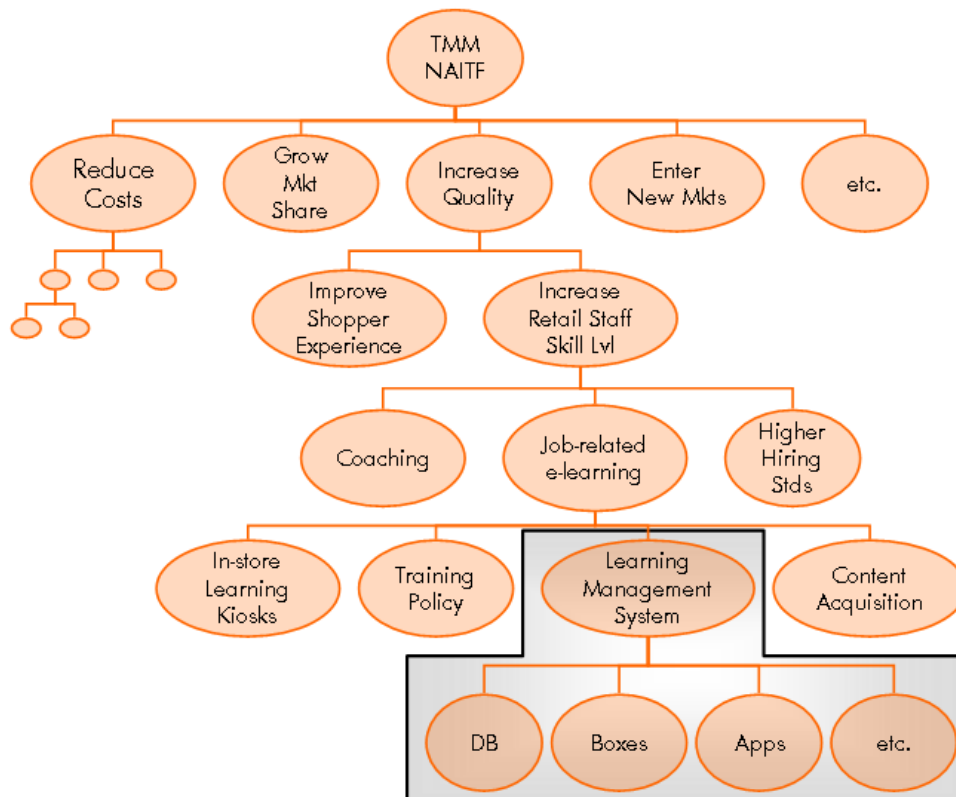


Figure 6: IT Service Management requirements domain

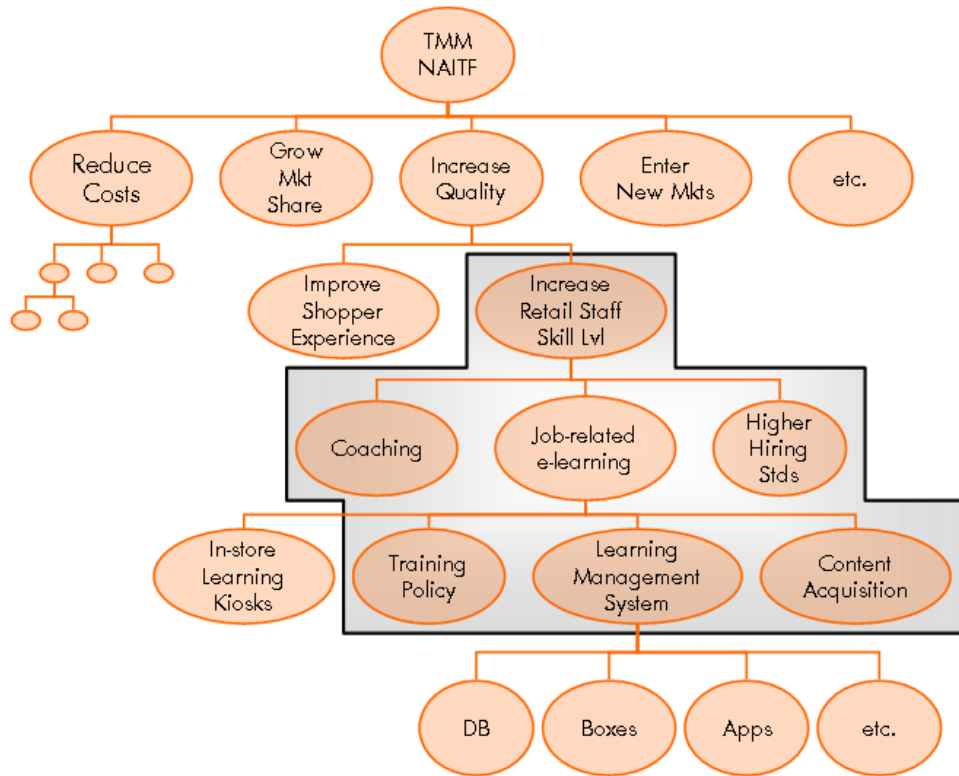


Figure 7: Workforce management requirements domain

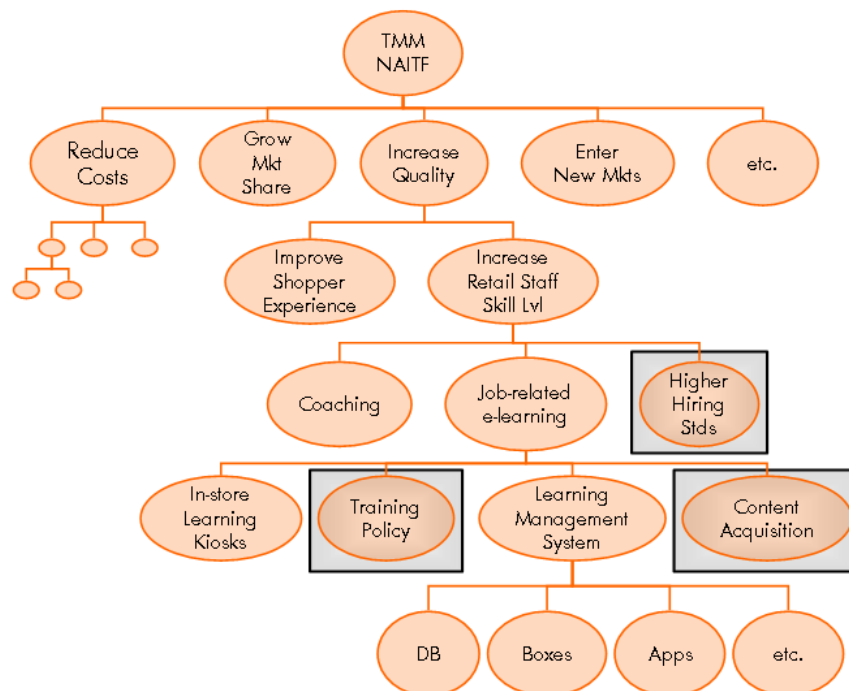


Figure 8: Legal requirements domain

A fully articulated decomposition would involve additional requirements domains and subdomains, including, but not limited to, facilities management, instructional design, marketing and purchasing.

Enterprise Requirements Hierarchies: The key to “Business/IT Alignment”?

The ERH directly suggests several things about the language we use around Business/IT Alignment, business benefits, business needs, business outcomes, value to the business and so forth:

1. *The ERH is the axis of alignment.* Much literature can be found regarding aligning IT and the business in terms of strategy, architecture, process, policy, organizational structure and other dimensions of the enterprise. But alignment of, for example, business architecture and IT architecture does not necessarily satisfy the requirement TMMNAITF. Alignment along the ERH, however, is *by its very nature* meant to satisfy that requirement, and the extent of that alignment is directly related to the rigor in:
 - a. Expressing requirements in each domain
 - b. Ensuring a complete and traceable mapping of requirements between domains, based in part on effective decomposition and translation
2. Business processes, business architectures, IT architectures, organizational structure, policies and all other aspects of an enterprise exist for one purpose: to satisfy requirements at some level.
3. The ERH model also applies to non-IT-based solutions, because:
 - a. Such non-IT solutions may span multiple requirements domains.
 - b. The magnitude of the costs, risks and benefits of some non-IT solutions may rival those of IT-based solutions.
 - c. Similar challenges exist in translating requirements from one domain to another.
 - d. The ERH concept can be applied to non-IT solutions as well as IT-based solutions.
 - e. The phrase “Business/IT Alignment” is only one aspect of the overall alignment an enterprise needs for optimal alignment with TMMNAITF.
4. Where requirements management is practiced as a core activity (for example, software development), the rigor of the requirements language is already recognized as a critical success factor.

From the above, then, one could conclude that while phrases such as business benefit, business value and desired business outcome are important, as they evoke the proper framework in which options can be assessed and decisions made, in general, something is a business value, a business benefit or a desired business outcome, if it meets an underlying requirement. And currently, vocabularies rooted in articulating and satisfying requirements offer a promising approach to tighter alignment throughout the enterprise, including but not limited to IT.

And now we can circle back specifically to ITIL:

- ITIL is the basis for the *language of requirements* in the IT domain.
- ITIL specifically and directly addresses the interlanguage boundary through the definition of processes, roles and responsibilities that aim to ensure that stakeholder requirements, and the IT Services that satisfy them, are expressed in the stakeholders' language.
- ITIL also directly addresses IT's intra-organization processes, roles and responsibilities for managing those IT Services through their lifecycle.

In other words, ITIL *is* requirements management for IT. And that is the essence of the relationship between ITIL and Business Analysis.

III. Business Analysis and ITIL

ITIL was introduced in the 1980s and has undergone two significant revisions: ITIL Version 2 in 1999, and now ITIL Version 3 in May 2007. The most significant changes from ITILv2 to ITILv3 are:

- a) The introduction of the service lifecycle, the phases of which are named Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement
- b) A significantly increased emphasis on business strategy and, of particular interest to the Business Analyst, the necessity of designing, building, operating and continually improving IT Services to meet business requirements.⁵

The introduction in ITIL v3 of the IT Service lifecycle of strategy, design, transition, operation, and continual improvement lends itself to a natural and compelling articulation of the ITIL/BA relationship, as illustrated in Figure 9:

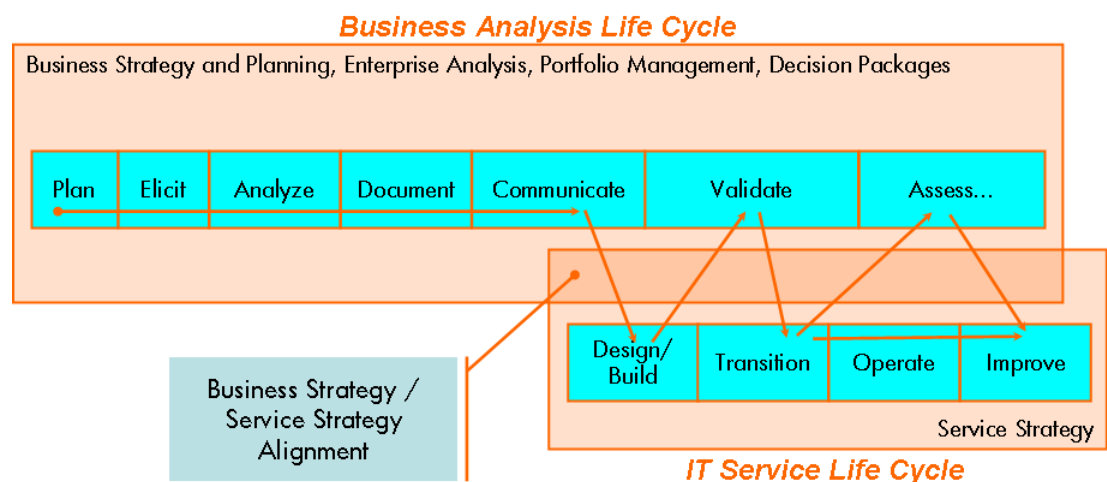


Figure 9: Synthesizing the Business Analysis and IT Service lifecycles

⁵In all fairness to ITILv2, practitioners always recognized the need for such business/IT alignment, but ITILv2 did not explicitly and thoroughly address, to the extent in ITILv3, the subjects of business strategy, architecture, development of services to meet specific markets, and managing IT to meet business requirements.

While this synthesis of the two lifecycles is complete in the sense of directly relating IT Services to business stakeholder requirements, what is needed is a more practical, or practicable, view of the touchpoints shown. This whitepaper's objective is to put forth a compelling argument for formalizing and vigorously pursuing Business Analysis excellence specifically to accelerate and magnify the return on investment (ROI) of ITIL in your organization.

To that end, what follows is an identification of some of the more vital touchpoints between the two lifecycles; an exhaustive treatment will no doubt manifest itself in various ways as the IT industry embraces and assimilates Business Analysis best practices into its IT Service lifecycle practices.

Key touchpoints

If we are going to focus on a few key touchpoints, we ought to consider one of today's most prominent Business/IT pain points, which is the all too frequent implementation of software that fails to meet business requirements. By characterizing the general causes of those failures, we can look for touchpoints whose rigorous implementation can address those causes.

In general, solutions fail to meet requirements because of some combination of the following conditions:

- a) Poor understanding of the business need or problem
- b) Poorly stated requirements (some combination of incomplete, vague, inconsistent...etc.)
- c) Inadequately explored solution options
- d) Misalignment between requirements and project scope
- e) Poor project planning/execution
- f) Poor change management

Each of the above is clearly related to an output of a key activity within the requirements lifecycle or IT Service lifecycle. The reader should take it as a given that there are fundamental underlying competencies and activities, such as communication and interpersonal skills, which have a direct impact on the solution and the degree to which it satisfies current requirements. Those competencies and activities are generally relevant to all of the touchpoints treated here, so they are not treated explicitly.

Poor understanding of the business need or problem

The activity of eliciting business requirements falls squarely within the scope of Business Analysis, whether or not the ultimately selected solution includes an IT component. As such, this is outside the scope of the IT organization *from a formal best practices definition point of view*. It is up to the Business Analysis practice within an enterprise to establish the discipline and governance to drive continuous improvement in BA activities.

Having said that, the Business Analyst involved in solutions containing IT components would do well to visit the *ITIL v3 Service Design* book, section 5.1, which contains 10 pages of high-quality guidance on what it refers to as Requirements Engineering. (The union of the BABOK and that 10-page section is greater than the intersection.)

Poorly stated requirements

Ideally, Business Requirements Documents (BRDs) are written in language clearly understood by the key stakeholders (those who have a direct need for the requirements to be met). More specifically, BRDs should not include “solution language,” though they frequently do because of the tendency of IT-experienced BAs and stakeholders to think ahead about design while exploring and documenting requirements.

Documented requirements need to be verified by those who may be key leaders or contributors in solution definition:

- They will ultimately need to answer the question: Do we have enough information in the requirements to build a solution consistent with the stated business case?
- Typically they will have learned significant lessons, some more painful than others, resulting from working with poorly stated requirements. Those lessons enhance the ability of these contributors to identify BRD shortcomings.
- They can provide valuable inputs to the BA in building the business cases for the various possible solutions.

From an ITIL point of view, this contribution toward BRD verification can be realized through the formation of a core team as illustrated here.

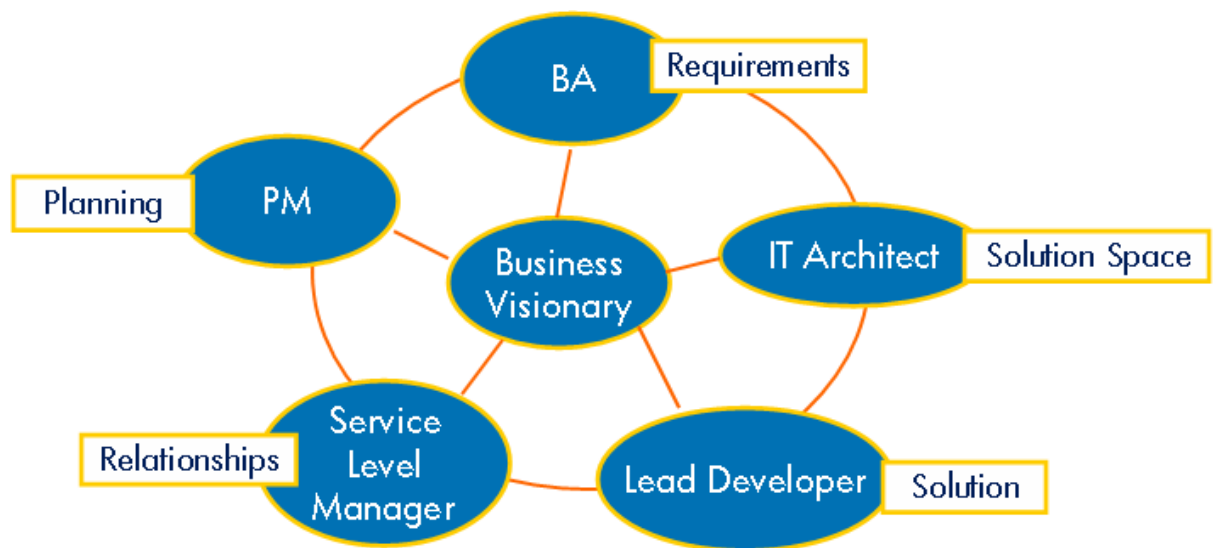


Figure 10: The requirements core team

Each of the members of this core team brings a unique perspective to the BRD. The suggestion here is to engage this core team simultaneously (not necessarily 100 percent effort for each role), such that a comprehensive view of the problem/need is accumulated and shared amongst them. The team members are the key drivers behind all subsequent activities and commitments in the design, build, test, release and operate/manage phases of the target IT Service’s lifecycle.

Inadequately explored solution options

Service Level Managers and IT architects are rich sources of insights into, and ideas about, what works well, where IT's weaknesses are, and how to leverage existing services and infrastructure elements to characterize possible solutions to a requirement. Indeed, the very nature of the Service Level Manager's and IT architect's jobs is to be well connected to others within and even beyond the enterprise; their extended professional network is fertile ground for ideas and guidance on how to most effectively leverage IT to meet requirements.

Requirements/scope misalignment

The IT Service portion of the BRD will become the basis for establishing the project, transition and operational aspects of the intended solution. Recalling that the BRD is in the stakeholder's language, significant rigor is required to translate the IT portion of that BRD into IT language (for example, use case scenarios into object designs) and to translate it back to "business language" to achieve a useful level of traceability and validation.

The translation of the BRD into IT language is a vital contribution to the project scoping exercise. Lack of BA involvement in that scoping activity can result in a misalignment between scope and requirements.

Poor project planning/execution

While there may not be much a BA can do to influence the way a project team is working, at a minimum, the BA should be constantly in communication with the project manager to monitor project status, risks and costs, and to manage stakeholders and the business case accordingly. But the BA does not have to act alone when projects go astray—the Service Level Manager and Change Manager can be valuable resources to ensure that the BA's monitoring needs are met, thereby empowering the BA to maintain the business case and, as is unfortunately necessary at times, to halt a project gone astray if the business case is no longer attractive.

Poor Change Management

There are at least three different levels in which the BA needs to drive or be involved in formal change management activities:

1. Execution of the design/build/test/release project, carried out within IT under formal Change Control
2. During service development:
 - a. Communication to the solution team of changes in business requirements
 - i. The solution team can consider appropriate adjustments to scope, schedule and budget
 - ii. The BA can assimilate those project considerations into the business case and take it back to the stakeholders for consideration
 - b. Communication to the business stakeholders of deviations from the project charter, reflected in a revised business case
3. Similarly, during service operation:
 - a. Communication to the Service Level Manager of changes in business requirement
 - b. Communication to stakeholders of present or expected conditions under which the Service is preventing realization of the intended business benefit

Requirements-driven changes would be initiated by the Business Analyst, and so the BA's overall understanding of the ITIL Change Control process is useful. The following shows the general steps in that Change Control process and identifies some of the crucial ways in which the BA can participate:

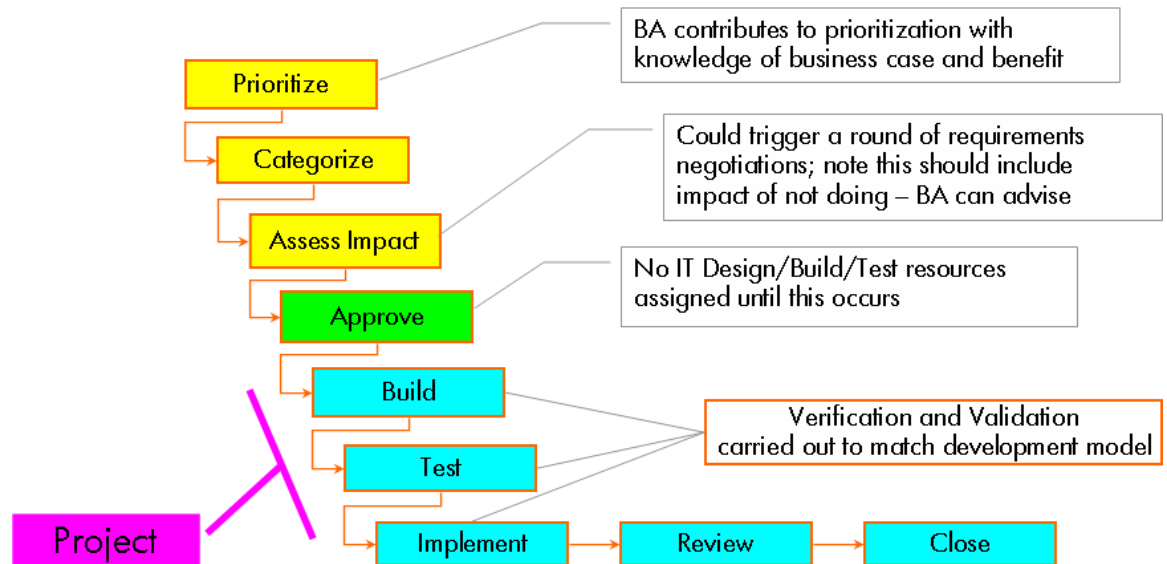


Figure 11: The BA's contribution to ITIL Change Management

Much more can be said about the importance of continuous, diligently defined and executed Change Management to deliver solutions that meet ever changing business requirements

In brief, it is this author's opinion that a BA must be vigilant about identifying and managing change, regardless of whether they are requirements-driven (inward) or IT-driven (outward).

IV. Conclusions and recommendations

There is no direct connection between business strategy and IT Services. IT Services are built to underpin business processes, which are built to meet business requirements, which are driven by business strategy. Indeed, the requirements axis and the role of the Business Analyst are prerequisite to IT's ability to define and deliver the right IT Services.

ITIL version 3 and BABOK version 2 (in draft review mode at the time of this writing) are sufficiently mature to allow organizations to establish valuable ITSM and BA practices.

Specific recommendations for establishing an effective BA practice and driving a tight BA/ITIL relationship include:

- Defining and committing to a roadmap to establish, at the enterprise level, a Business Analysis Center of Excellence (BACOE), including of course an appropriate training regimen to level-set your Business Analysts' knowledge/skill set based on the most current BA Body of Knowledge

- Sending all Business Analysts and people in related jobs (requirements engineers, systems analysts, product managers—in other words, people who are responsible for defining requirements and driving appropriate solutions) to ITIL v3 Foundation training—this will deepen their understanding of how an IT organization works toward continuously increasing Business/IT alignment
- Sending senior BAs to the emerging ITIL v3 intermediate service lifecycle courses, which are meant to present the business manager's view of an IT organization and its role in the business lifecycle

Knowing that change is constant, try to imagine an IT organization developing and delivering IT Services without constant attention to its fitness for purpose relative to requirements. If this whitepaper has rendered that image at least a bit less tenable, it has achieved its purpose.

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