Understanding Requirements

Introduction

The purpose of requirements definition is to establish a common understanding of the requirements for a system between the customers and the project team. This involves clarifying the problem and business case associated with the project, and the specification of the full functional and technical requirements to be met to solve the associated business problems.

Requirements analysis seeks and documents the business problems to be solved by the project based upon the collection of concerns, issues, needs, and requests from all project stakeholders throughout the organization. There are generally two goals:

- Defining the *business* problem to be solved and the rationale that determines the importance and value of the solution to the business.
- Describing *what* needs to happen in order to solve the defined problem; and the criteria that should be used to determine if the project reaches successful implementation.

Types of Requirements?

- **Business Requirements**

  Things The System Must *Do.*
  e.g. cut cost, generate sales, increase satisfaction, improve share.

  Generally presents *best-case* scenario.

- **Implementation Requirements**

  Things The System Must *Be.*
  e.g. cost-effective, easy-to-use, stable, available, maintainable.

  Generally presents *worst-case* scenario.

- **Constraint Requirements**

  Realities of life for the project and team.
  e.g. deadlines, schedules, resources.

  Generally forces *real-world* scenario.

Categories of Requirements

- Management & Organizational Requirements
- Application & System Requirements
- Information & Data Requirements
- Human Factors & Training Requirements
- Regulatory & Financial Requirements
- Technology Implementation Requirements

Typical Requirements Issues

- Alignment with Enterprise
- Authorization Rule Definition
- Needs for Integrity & Control
- Establishment of Tolerances
- Failure Impact & Reconstruction
- Access & Service-Level Desires
- Cost-Effectiveness Considerations
- Policy & Regulatory Conformance

Failure to properly identify and manage requirements is the single most consistent cause of project failure, regardless of project size and organization.

Commonly Inadequate Requirements

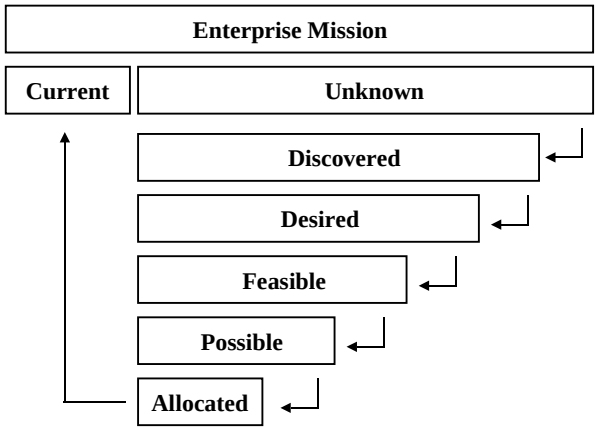
- System mission and objectives
- Operating rules
- Performance criteria
- Ambient environment information
- Rationale for temporal process triggers
- Volumetric and frequency quantification
- Security and control
- Contingency and disaster factors

Typical Defect Causes

- Technological - Definition of the problem, Feasibility of the solution, Availability of features and tools, etc.
- Organizational - Division of workload, Communication, Resources, etc.
- Historical - History of the project, Special situations, External politics, etc.
- Group Dynamics - Willingness to cooperate, Distribution of roles, Experience, Capability, etc.

Requirements Filtering

Every project must pass its requirements through a series of filters, implementing only those that pass all of the organization's tests. Many projects fail to succeed precisely because they don't have a capability for *not* implementing a requirement once it has been identified. If the only requirements that get written down are those that will be implemented, then the project will repeatedly reinvent the wheel; raising and rejecting the same additional requirements over-and-over while lacking the organizational memory to recall the characteristics and reasons for such decisions. After implementation, some of that reasoning will turn out to have been wrong, and the team will scramble to quickly implement poorly understood and misdiagnosed change.



At any given time, the enterprise's mission is supported by a large universe of requirements, each of which has been filtered into one of the following categories of requirements:

- **Current Requirements** - Requirements that have been properly identified and implemented by some prior project. These represent the current capability of the enterprise.
- **Unknown Requirements** - Requirements that need to be met under the current mission, but that are unknown or hidden from the organization. Requirements analysis seeks to discover these requirements.
- **Discovered Requirements** - Requirements that have been discovered but that have not yet undergone the scrutiny of management and organizational review. These represent the options available to the organization, and many may even conflict with each other. Requirements analysis seeks to sort these out and determine which from among the many options the organization actually desires.
- **Desired Requirements** - Known requirements that the organization has determined a desire to see implemented. Selecting to desire some requirements necessarily precludes desiring requirements that represent other conflicting possibilities. Requirements analysis seeks to assure that desired requirements are feasible; otherwise further consideration must be given to less-desired options.
- **Feasible Requirements** - Desired requirements that have been determined to be technically feasible, meaning that they can be implemented using existing known technologies, tools, and methods.
- **Possible Requirements** - Feasible requirements that have been determined to be organizationally possible; meaning that they satisfy enough political, budgetary, and resource concerns to be allocated to a project.
- **Allocated Requirements** - Requirements that have been allocated to a project for implementation.

In the absence of these filters many requirements remain *unknown* because they aren't written down unless they are being *allocated*, or *discovered* requirements jump directly to *allocated* requirements even though they might not be *desired*, *feasible*, nor *possible*.

Requirements Summary

- Requirements define the scope, characteristics, and priorities of the problem space and impose constraints upon the solution space.
- The impact of poor requirements analysis and definition is unknown and unknowable.
- Rigorous methods exist for removing ambiguity, ensuring consistency, and achieving completeness.
- No project succeeds without a successful (eventual) completion of requirements.

Requirements Fallacy

Requirements analysis is primarily for the purpose of transferring knowledge from the customer to the producer.

W r o n g !

Requirements are an *emergent* property of the interaction of information systems specialists and business users.

Neither party *knows* the requirements prior to the project interaction during which they emerge.

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