TDWI Requirements Gathering

Correct and Complete Requirements for BI and Analytics Systems

Transforming Data With Intelligence™

Previews of TDWI course books offer an opportunity to see the quality of our material and help you to select the courses that best fit your needs. The previews cannot be printed.

TDWI strives to provide course books that are content-rich and that serve as useful reference documents after a class has ended.

This preview shows selected pages that are representative of the entire course book; pages are not consecutive. The page numbers shown at the bottom of each page indicate their actual position in the course book. All table-of-contents pages are included to illustrate all of the topics covered by the course.

COURSE OBJECTIVES

You will learn:

- ***How to connect requirements to business impact and value***
- ***The distinction between business, functional, and technical requirements***
- ***Where and how requirements fit into various projects and development lifecycles***
- ***Ten techniques for requirements gathering and when to use each***
- ***How to apply the techniques for BI and analytics requirements***
- ***Why requirements management is essential and how it is performed***
- ***How to ensure completeness using a checklist of 57 kinds of requirements***

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Module 1

Requirements, Projects, and Lifecycles

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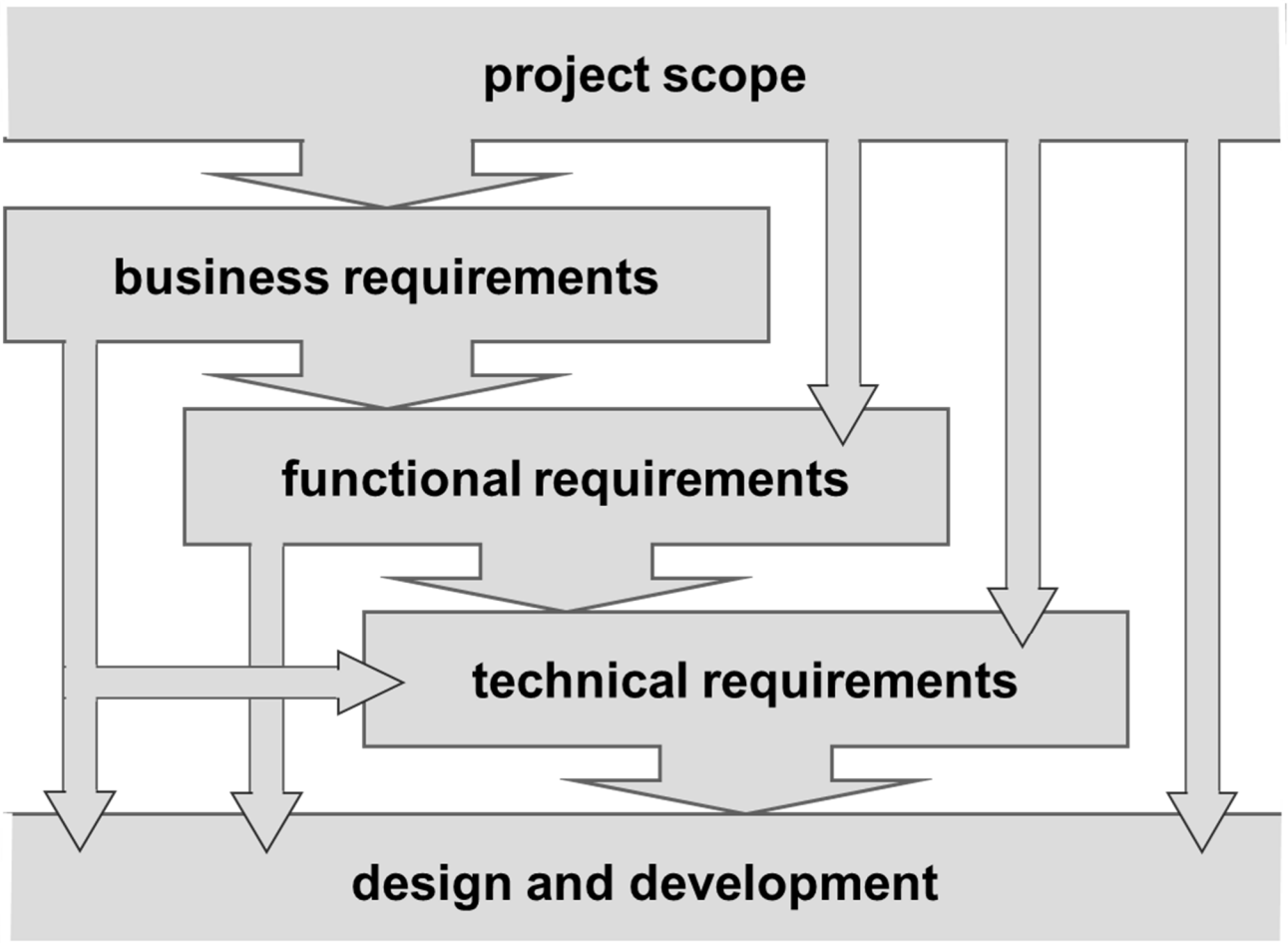
Kinds of Requirements

A Multi-Level View of Requirements



Kinds of Requirements

A Multi-Level View of Requirements

THE CHALLENGE OF GATHERING REQUIREMENTS

Requirements are the essential first step for every BI and analytics program and project. In fact, they are the foundation for successful programs and projects of many kinds—both technical and nontechnical.

Gathering requirements for BI systems is more difficult than for operational systems. Without the specifics of business transactions, scheduled reports, and prescribed business rules, it is difficult to know where to start and how to proceed.

The skill set for the BI requirements analyst includes techniques to identify requirements, tools to manage requirements, and checklists to ensure completeness.

Simply knowing where to begin is a challenge. The scope of BI is broad, the possibilities almost endless, and the differences between systems not always fully understood. Starting in the right place, then following a logical progression from business to technical requirements is an important part of requirements gathering.

GETTING STARTED

Getting the clearly defined scope for a program or project is an essential starting place to gather, define, and document requirements. A good scope document expresses very high-level requirements in terms of business capabilities, services, or products that are needed.

FROM BUSINESS TO TECHNICAL

Specifying requirements at three levels—business, functional, and technical—provides a logical progression from *what the business needs* to *what a system does.* Every requirements gathering process should begin with business requirements, then define functional requirements, and finally technical requirements. Functional requirements are driven from business requirements, and technical requirements from both business and functional requirements.

Project Types

Three Dimensions

Project Example	New vs. Enhancement		Analytics vs. BI		Business Solution vs. Technology	
	New	Enhance	Analytics	BI	Solution	Tech
Implement Data Catalog	✓		✓	✓		✓
Implement Self-Service Data Prep Tool	✓		✓	✓		✓
Practice Performance Scorecard	✓			✓	✓	
Employee Churn Predictive Model	✓		✓		✓	
Upgrade Pipeline Software for Streaming Data		✓	✓	✓		✓
Migrate Data Warehouse to Cloud		✓				
Refactor HR Data Mart		✓				
Retrain Fraud Model		✓	✓		✓	
Simulate Market Demand	✓		✓		✓	
Reduce Latency in Commission Data Mart		✓		✓	✓	
Produce Financial Report Package	✓			✓	✓	
Recalculate Allocated Overhead KPIs		✓		✓	✓	

Project Types

Three Dimensions

WHAT TYPE OF PROJECT?

When considering the requirements for a new project, first determine what type of project it will be and the overall scope. The chart on the facing page contains some examples of projects and categorizes them along three dimensions.

NEW OR ENHANCEMENT

Project development will face different challenges when building a new system from scratch versus improving (or overhauling) an existing system. Neither path is inherently simpler.

ANALYTICS OR BI

Will the project fall under the umbrella of analytics or business intelligence? In this context, business intelligence includes reports, dashboards, data marts, and similar products, while analytics includes statistical models, simulations, applications of machine learning, etc. Neither term has a universally accepted definition. Some teams might use one of these terms to cover both concepts, and others make a distinction between them.

TECHNOLOGY OR BUSINESS

Will the final product be a business solution, such as an OLAP cube for HR or a real-time dashboard for the finance department? Or will it be a piece of technology, such as a data catalog or a set of self-service analytics tools?

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Module 2

Kinds of BI and Analytics Requirements

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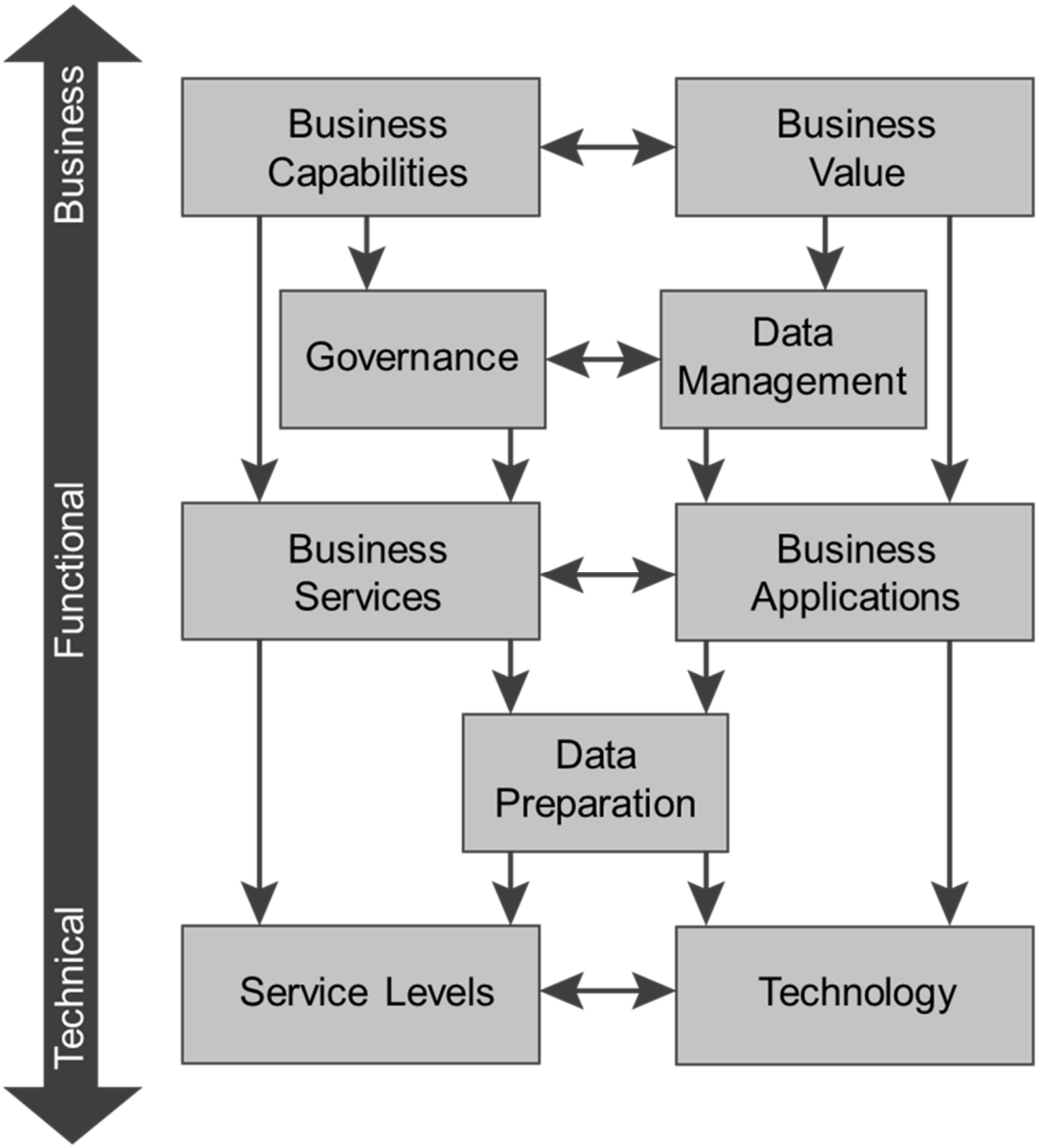
The Scope of Requirements

An Overview



The Scope of Requirements

An Overview

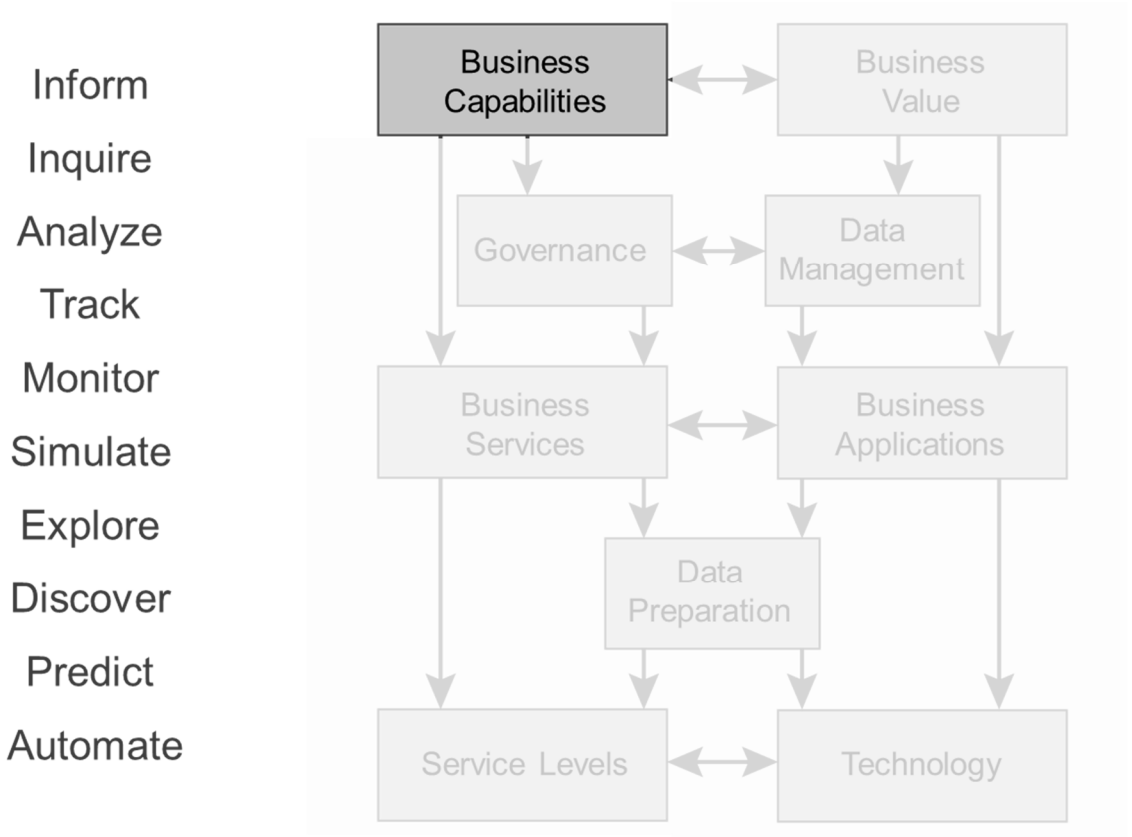
BI AND ANALYTICS SPECIFIC REQUIREMENTS

The requirements categories of business, functional, and technical are generic. They apply to requirements for information and software systems of many kinds. When working specifically with business intelligence and analytics you should further classify requirements into a structure that helps you ensure that both the requirements gathering process and the resulting set of requirements are complete.

This module presents one such structure that categorizes requirements into nine major groups and itemizes 57 distinct kinds of requirements.

Classifying Requirements

Business Capability Requirements



Classifying Requirements

Business Capability Requirements

KINDS OF CAPABILITIES

Requirements for business capabilities express the essence of why BI and analytics are important to the business. They describe things that the business will be able to do following the successful implementation of the project.

Types of capabilities include:

- **Inform:** provide scheduled and on-demand reports
- **Inquire:** allow users to run queries
- **Analyze:** apply statistical techniques to data
- **Track:** examine metrics over time
- **Monitor:** view current status and real-time data
- **Simulate:** forecast future performance
- **Explore and discover:** find the answers to new questions
- **Predict:** analyze how today's actions will affect tomorrow
- **Automate:** automate repeated decisions, create alerts

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Module 3

Project Requirements Gathering

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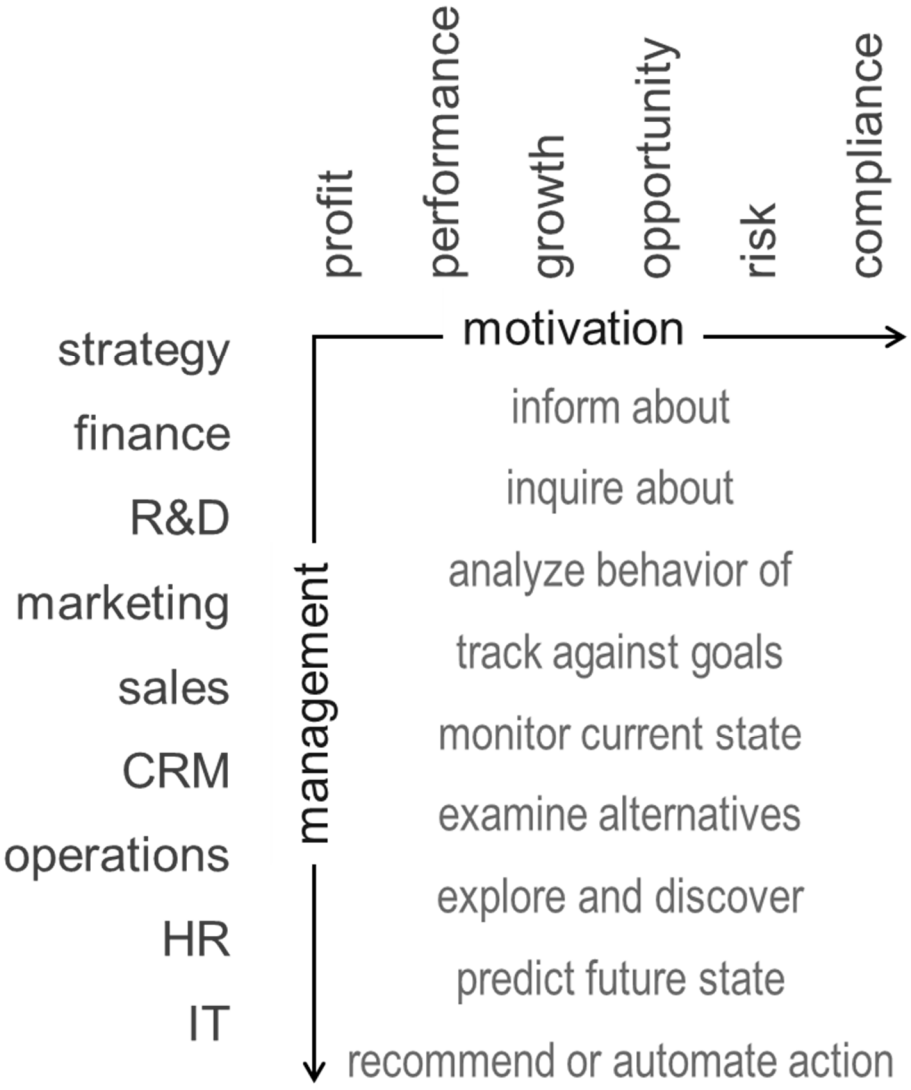
Requirements Challenges

Setting the Scope



Requirements Challenges

Setting the Scope

PURPOSE AND BOUNDARIES

Determining scope is an essential first step for gathering requirements for BI and analytics projects. Without a well-defined purpose and clear boundaries, requirements are especially elusive.

A variation on the business perspective framework described earlier in the course (page 2-4) is useful for defining scope. In this variation, we'll work with only two dimensions—management and motivation. You can adapt this framework to any scale by considering the subjects, functions, stakeholders, and goals for your specific project. For any combination of management function and motivation, identify the business capabilities that are needed.

The facing page illustrates a list of general business capabilities that gives you a place to start. For scoping purposes, don't be concerned with how to inform, inquire, analyze, track, etc. Simply recognize the requirement for the capability to do so.

BI and Analytics Products

Business Capabilities

Business Capability	Product
Inform about …	Scheduled reports Ad hoc reports
Inquire about …	Managed query Ad hoc query
Analyze behavior of …	OLAP
Track … against goals	Scorecards
Monitor current state of …	Dashboards
Examine alternatives for …	Simulation Models
Simulate behavior of …	Forecasting Models
Explore patterns and trends of …	Diagnostic Models
Discover hidden insights of …	Discovery Models
Predict future state of …	Predictive Models
Recommend next best action ... Automate repeated decisions ...	Prescriptive Models

BI and Analytics Products

Business Capabilities

WHAT TO BUILD

Business requirements should lead you to understand the kinds of things that you'll build to deliver capabilities—the BI and analytics products to be produced. It is unlikely that you can define functional requirements without first describing the products that will perform those functions.

The table on the facing page illustrates common mapping of business capabilities to products. Choosing the right product depends on understanding who will use the product and for what purpose.

RELATIONSHIPS AMONG PRODUCTS

It is likely that a project will need to produce more than one product. Sometimes this means several products of the same type, such as many different scorecards. Many products of different kinds are also likely to occur—a combination of dashboards and models which feed into the dashboards, for example.

When working with multiple products, be sure to consider how the various products are related. Some of the most common relationships among BI products include:

- A cascading hierarchy of dashboards
- A cascading hierarchy of scorecards
- Drill-down from dashboards to scorecards
- Drill-down from scorecards to OLAP
- Drill-across from OLAP to OLAP

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Module 4

Requirements Gathering Techniques

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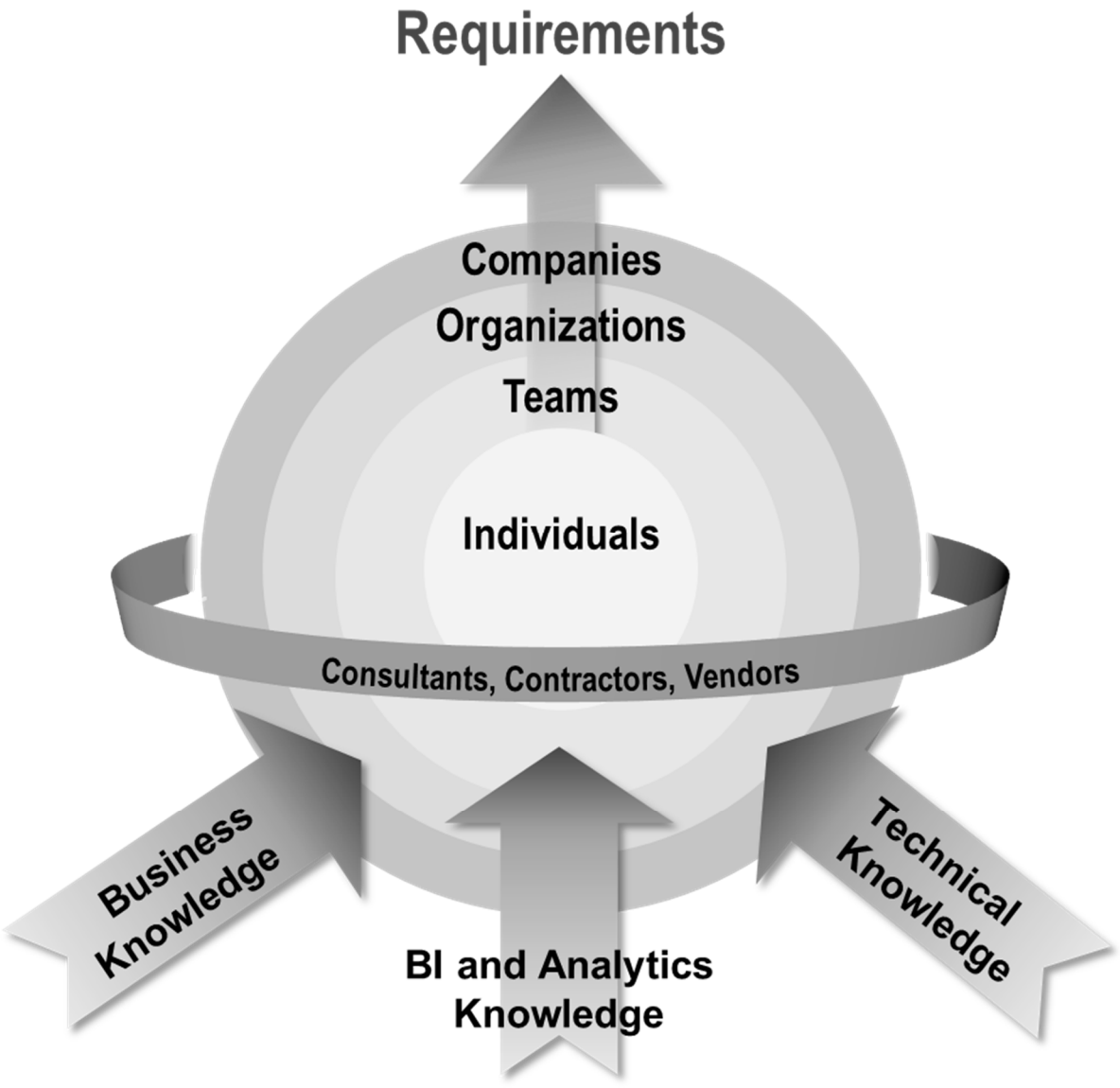
Requirements as a Human Process

People and Requirements Gathering



Requirements as a Human Process

People and Requirements Gathering

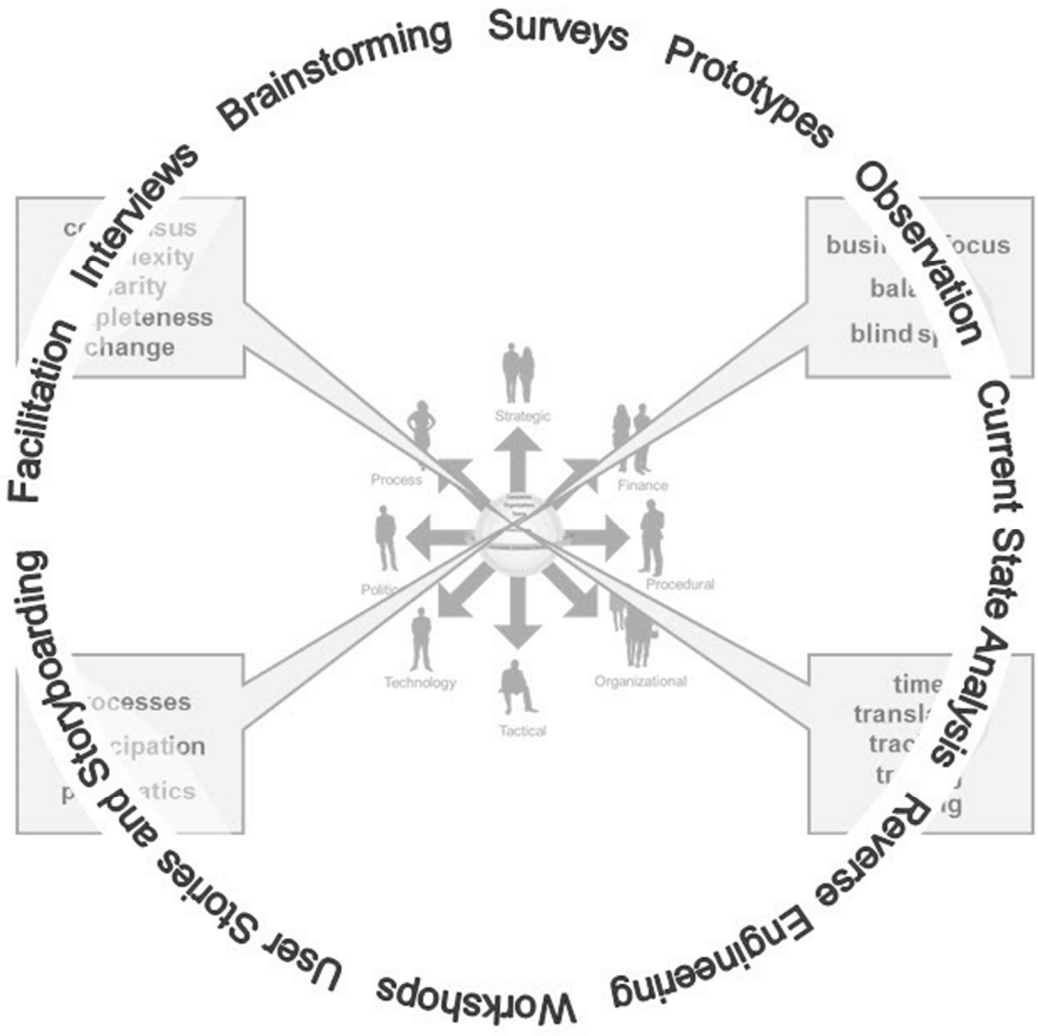
INDIVIDUALS AND GROUPS

Requirements definition is a process performed by people. Thus getting the right requirements depends on working with the right people with the right knowledge and skill. It also depends on managing the processes such that those people can be productive—matching requirements elicitation techniques to the nature and needs of participants and using people in the right roles.

The challenges of requirements gathering are many—complexity, uncertainty, need for innovation, need for speed, existing system influence, number of stakeholders, stakeholder participation, conflict, politics, geographic and logistic challenges, and more. Meeting the challenges begins by paying attention to human factors.

Ten Techniques

An Overview



Ten Techniques

An Overview

HOW TO FIND REQUIREMENTS

The facing page cites ten techniques that can be used to elicit or discover requirements. A typical requirements gathering effort uses more than one of these techniques, but it is unlikely that one project will use all of them.

Each technique is described in greater depth in the following pages. Examples of why, how, and when to use each technique will help you match techniques to the characteristics of your project.

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Module 5

Requirements Management Techniques

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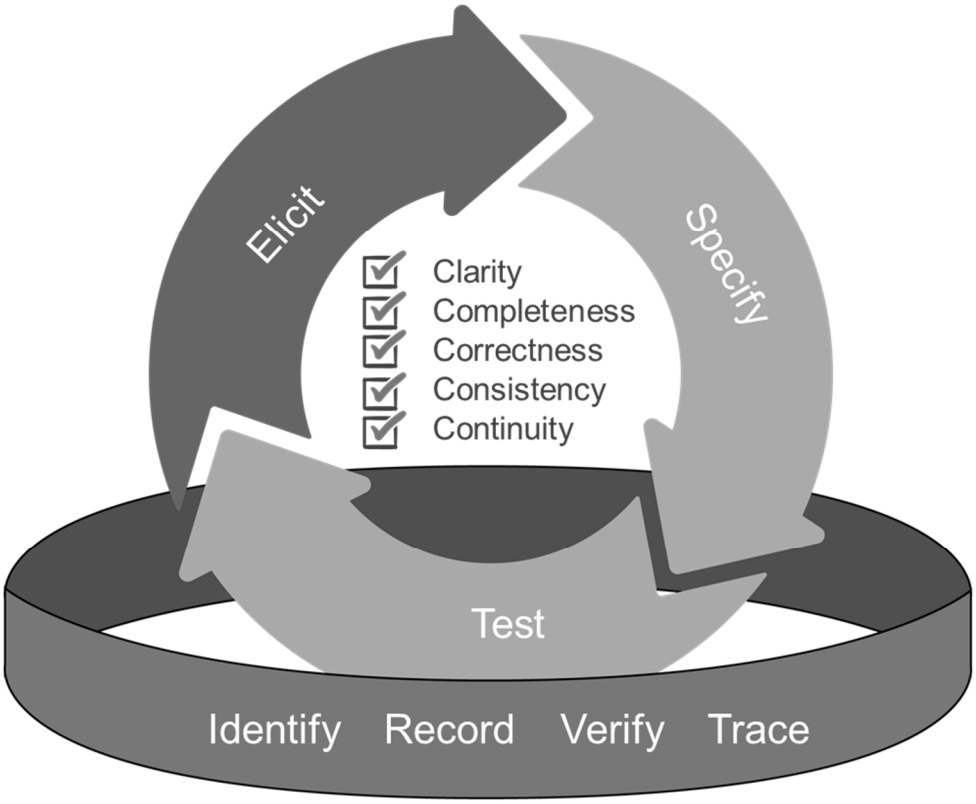
Requirements as a Systems Process

The "Why" and "What" of Requirements Management



Requirements as a Systems Process

The "Why" and "What" of Requirements Management

THE FULL SET OF REQUIREMENTS

The process of gathering requirements can be fraught with problems unless it's supported by a requirements management process. The goal of requirements management is to ensure that the set of requirements collectively satisfies all of the needs for a system. Eliciting and specifying individual requirements is different from looking across the entire set of requirements to achieve clarity, completeness, correctness, consistency, and continuity—and to readily adapt to inevitable change.

ELEMENTS OF REQUIREMENTS MANAGEMENT

A comprehensive requirements management process addresses each of the following items:

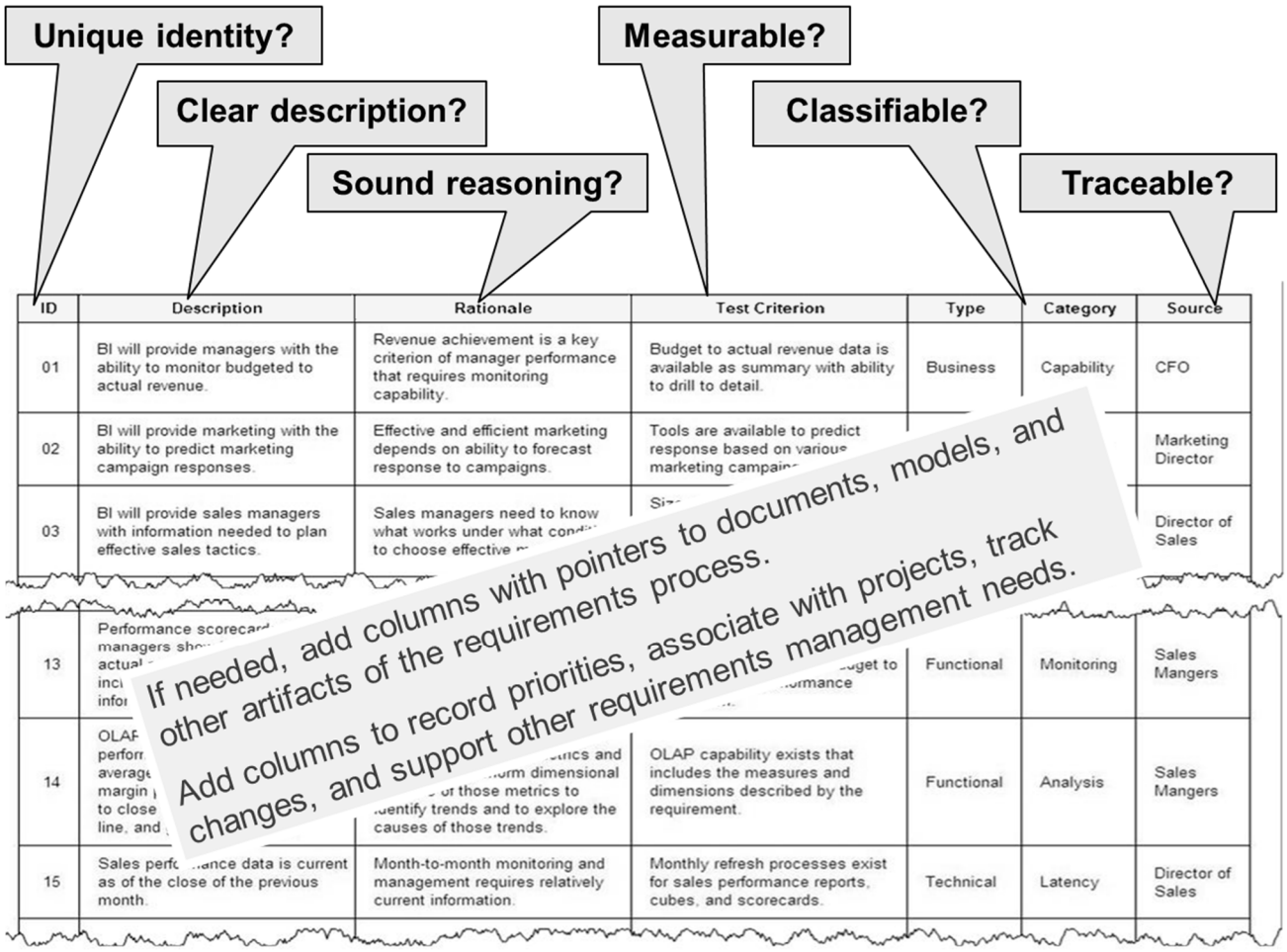
- **Identification:** Every requirement has a unique identifier in the form of a code, number, or short name.
- **Recording:** Every requirement is consistently described using a standard or template, and there is an index of all requirements.
- **Tracing:** Each requirement is traceable to its source. The path from business to functional to technical requirements can be followed.
- **Change:** Every change to a requirement is recorded from the time that the requirement is elicited to the time that it is implemented.
- **Classification:** Each requirement is classified as business, functional, or technical.
- **Connection:** Each requirement points to any related documents, models, or other artifacts of the requirements gathering process.
- **Verification:** The state of each requirement is known as it relates to testing criteria such as clarity, ambiguity, necessity, and feasibility.
- **Priority:** It is sometimes necessary to prioritize requirements as a method of managing project time and scope.

HOW TO DOCUMENT?

Every requirement describes a necessary attribute of a system—a capability or characteristic that the system must have to provide utility and value to its users. Requirements can be captured and recorded in many ways. There is no single "best" way to record requirements. Use a method and format that works for your requirements team. Documenting requirements as specifications, models, and stories is discussed on the following pages.

Documenting Requirements

Specifications



ID	Description	Rationale	Test Criterion	Type	Category	Source
01	BI will provide managers with the ability to monitor budgeted to actual revenue.	Revenue achievement is a key criterion of manager performance that requires monitoring capability.	Budget to actual revenue data is available as summary with ability to drill to detail.	Business	Capability	CFO
02	BI will provide marketing with the ability to predict marketing campaign responses.	Effective and efficient marketing depends on ability to forecast response to campaigns.	Tools are available to predict response based on variou… marketing campai…			Marketing Director
03	BI will provide sales managers with information needed to plan effective sales tactics.	Sales managers need to know what works under what cond… to choose effective …	Si…			Director of Sales
13	Performance scorecard… managers sho… actual … inc… infor…		…uget to …rmance	Functional	Monitoring	Sales Mangers
14	OLAP … perfor… averag… margin … to close … line, and …		…tics and …orm dimensional … of those metrics to …dentify trends and to explore the causes of those trends.	OLAP capability exists that includes the measures and dimensions described by the requirement.	Functional	Analysis	Sales Mangers
15	Sales perf… …ance data is current as of the close of the previous month.	Month-to-month monitoring and management requires relatively current information.	Monthly refresh processes exist for sales performance reports, cubes, and scorecards.	Technical	Latency	Director of Sales

Documenting Requirements

Specifications

SPECIFY REQUIREMENTS

Requirements specification is the act of recording a description of each requirement. A well-specified requirement includes:

- **What:** A descriptive statement of the requirement that describes a system capability, characteristic, function, feature, or quality
- **Why:** The rationale for the requirement describing the purpose or value to be achieved
- **Who:** The source of the requirement and the stakeholders who will benefit

COLLECTING REQUIREMENTS AS DATA

It is helpful to define a standard set of data to collect for each requirement. A defined data structure allows you to accelerate requirements definition by using a template to ask the right questions, to fully define each requirement, and to achieve consistency.

EXTENDING THE DEFINITIONS

Adapt the data structure for requirements definition to meet your specific needs. Simple text statements are frequently not enough. Adding columns to describe specific attributes of requirements helps to achieve precision.

Each column that you include should have a clear purpose—to identify, describe, measure, classify, link to external documents, etc. Ideally there will be very few optional columns, with most data mandatory for all requirements. Remember to fit the template to the nature of the project. A four-month project using spiral methodology defines requirements more thoroughly than a four-week project using agile methodology.

GUIDELINES

Some guidelines for well-written requirements statements:

- Write in complete sentences, not fragments. Use simple sentences.
- Write declarative statements using words such as “is” and “will.”
    - *The budget variance report **will** drill down to detail transactions.*
    - *Budget-to-actual revenue data **is** available as summary with drill-down to detail.*
- Write in business language, avoiding technical jargon.
- Each statement should be concise and free of unnecessary words.
- Each statement should be clear and unambiguous.
- Reinforce text requirements statements with examples, diagrams, sample data, etc. whenever practical.

