

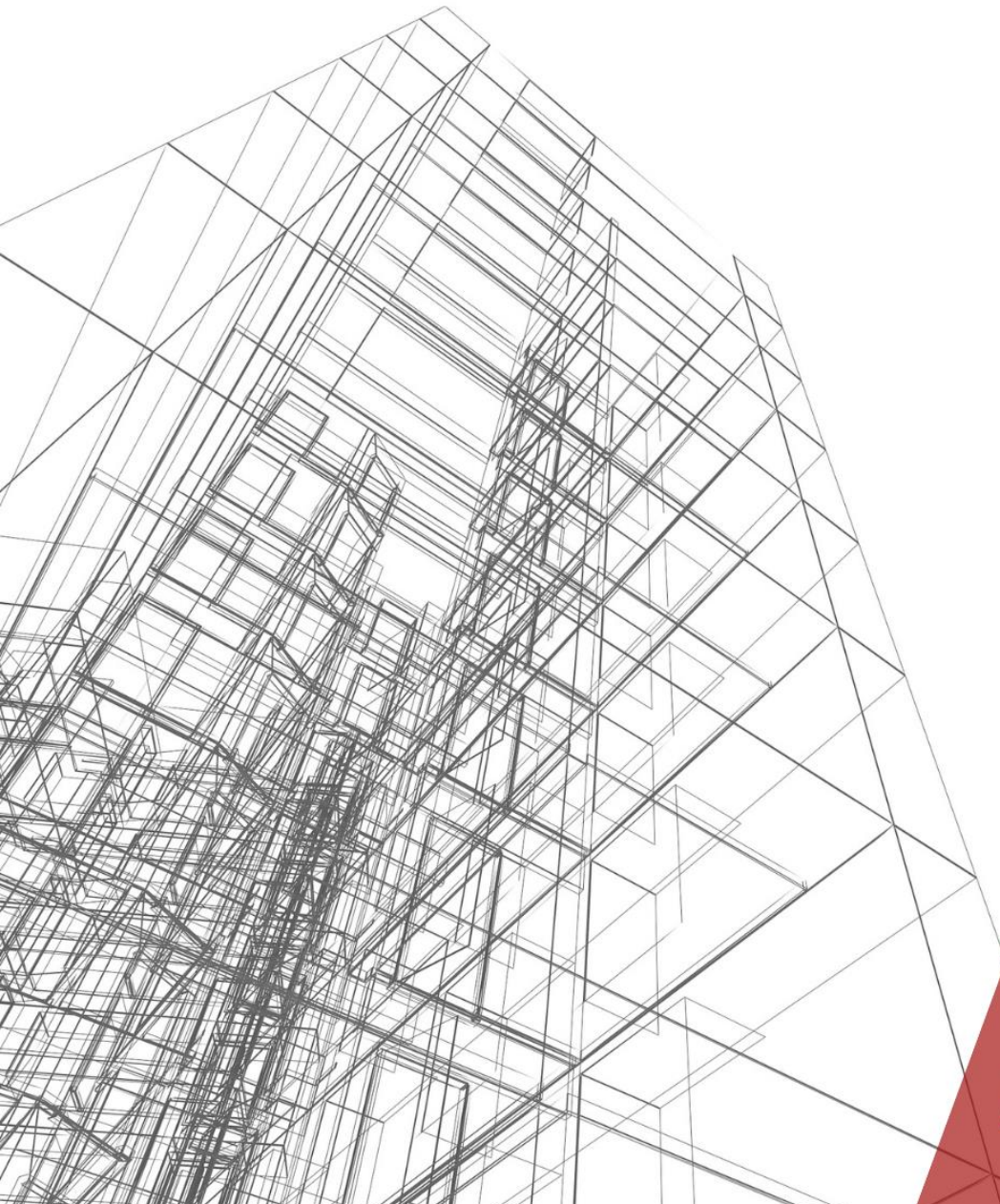


**IQ:BA**

Certified Foundation Level Business Analyst  
by **A4Q**

# CERTIFIED FOUNDATION LEVEL BUSINESS ANALYST SYLLABUS

**An A4Q Certification**



**A4Q** Alliance for  
Qualification

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## Revision History

<b>Version</b>	<b>Date</b>	<b>Remarks</b>
1.0	07.06.2011	First version of the Certified Foundation Level Business Analyst Syllabus
1.1	14.02.2013	Updated first version of the Certified Foundation Level Business Analyst Syllabus
2.0	01.10.2015	Updated version of the Certified Foundation Level Business Analyst Syllabus
3.0	01.01.2018	New version of the Certified Foundation Level Business Analyst Syllabus including content and structure modification

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## Introduction to this Syllabus

### **Purpose of this Document**

This syllabus defines the foundation level (Foundation Level) of the program to become an IQBBA Certified Business Analyst (CFLBA).

The syllabus serves as a foundation for training providers who are seeking accreditation. All areas of this syllabus must be incorporated in the training documents. The syllabus should, however, also serve as the guideline for preparing for certification. All the areas listed here are relevant for the examination.

### **Examination**

The examination to become a Certified Business Analyst is based on this syllabus. All sections of this syllabus are subject to examination. The examination questions are not necessarily confined to an individual section. A single question may refer to information in several sections.

The format of the examination is Multiple Choice with a single correct option (one correct answer out of four options).

Examinations can be taken after having attended accredited courses, or in an open examination without a previous course. You will find detailed information regarding examination on the A4Q Website ([www.alliance4qualification.info/](http://www.alliance4qualification.info/)) or directly at the websites of the official examination bodies iSQI ([www.isqi.org](http://www.isqi.org)) & GASQ ([www.gasq.org](http://www.gasq.org)).

### **Accreditation**

Providers of an IQBBA Certified Business Analyst course must be accredited. IQBBA accreditation is granted after an expert panel reviews the training provider's documentation. An accredited course is one that is determined to conform to the syllabus. When an accredited course is given, an official Certified Business Analyst examination (CFLBA exam) may be administered. An exam may also be administered by an independent certification institute (according to ISO 17024 rules).

### **Internationality**

This syllabus was developed by a group of international experts.

The content of this syllabus can therefore be seen as an international standard. The syllabus makes it possible to train and conduct examinations internationally at the same level.

### **Knowledge (K) Levels**

The syllabus has been divided into three different Knowledge (K) levels. This division enables the candidate to recognize the "knowledge level" that is required for each topic.

The three K-levels used in the current syllabus are:

- K1 - remember, recognize, recall
- K2 - understand, explain, give reasons, compare, classify, summarize
- K3 - apply in a specific context

### Level of Detail

The level of detail in this syllabus allows internationally consistent teaching and examination. In order to achieve this goal, the syllabus consists of the following items:

- General instructional objectives that describe the intention of the Foundation Level certification.
- A list of information to teach that includes a description and references to additional sources if required.
- Learning objectives for each knowledge area that describe the cognitive learning outcome, and the mind-set to be achieved.
- A list of terms that students must be able to recall and understand.
- A description of the key concepts to teach that includes sources such as accepted literature or standards.

The syllabus content is not a description of the entire knowledge area of Business Analysis; it does reflect the level of detail to be covered in Foundation Level training courses.

### Organization of this Syllabus

The syllabus contains five major chapters. The top-level heading of each chapter shows the highest level of the learning objectives that is covered within the chapter, and specifies the minimum time to be spent for training in the chapter.



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# 1. Fundamentals of Business Analysis (K2)

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## Timing

100 minutes

## Terms

Business Analysis, Business Analyst, Business Requirement, Requirement, Solution, Solution Requirement

## Learning Objectives

The following objectives identify what you will be able to do after the completion of each module.

### 1.1 Terms and Definitions (K2)

- LO-1.1.1 Know the key concepts of Business Analysis (K1)
- LO-1.1.2 Know the role of Business Analysis in organization, program and project (K1)
- LO-1.1.3 Understand objectives of Business Analysis in the different phases of product life cycle (K2)
- LO-1.1.4 Know main knowledge areas in Business Analysis (K1)

### 1.2 Role of a Business Analyst (K2)

- LO-1.2.1 Explain the role and responsibilities of a Business Analyst in terms of an organization and a project (K2)
- LO-1.2.2 Understand how the Business Analyst interfaces with other roles within an organization and program/project's stakeholders (K2)

### 1.3 Overview on the Business Analysis Activities (K1)

- LO-1.3.1 Know the main activities of Business Analysis (K1)

### 1.4 Competencies (K2)

- LO-1.4.1 Summarize the main competencies of a Business Analyst (K2)
- LO-1.4.2 Understand the meaning of soft skills in the profession of Business Analysis (K2)



## 1.1 Terms and Definitions (K2)

LO-1.1.1	Know the key concepts of Business Analysis (K1)
LO-1.1.2	Know the role of Business Analysis in organization, program and project (K1)
LO-1.1.3	Understand objectives of Business Analysis in the different phases of product life cycle (K2)
LO-1.1.4	Know main knowledge areas in Business Analysis (K1)

BABOK Guide 2.0 defined Business Analysis as the set of tasks, knowledge, tools and techniques required to identify business needs and determine solutions to business problems [BABOK]. The latest version of BABOK Guide, 3.0, updates the definition to highlight the aspect of value: “Business Analysis is the practice of enabling change in an enterprise by defining needs and recommending solutions that deliver value to stakeholders. Business Analysis enables an enterprise to articulate needs and the rationale for change, and to design and describe solutions that can deliver value”.

Specific activities of Business Analysis are collected within knowledge areas (KA). IQBBA proposes the following KAs:

- Strategy definition
- Management of Business Analysis process
- Requirements Engineering in Business Analysis
- Solution evaluation and optimization

These KAs are supported by specific methods, tools and techniques and require specific skills and competencies.

The activities of the Business Analyst may vary depending on his role and scope of responsibility. A Business Analyst working at the organization level is typically responsible for collecting insights and business needs and/or opportunities from the business environment (customers, competitors, organization’s assets) and proposing new, often innovative, business solutions. A Business Analyst working at the program/project level will instead be in charge of delivering the agreed business solution – in this context the role can be compared to Product Owner in Agile.

Sample solutions for delivering value may include:

- Changes to the organization culture or structure
- Improvements to the business process
- Development of business products or services
- Development of solutions (also software) supporting business activities

Solutions are built based on requirements. A requirement can be defined as documented representation of a need of specific stakeholders or organization, bringing a value to the business [BABOK][IEEE 610].

Requirements are the foundation of solution scope and design. Requirements are typically classified into categories to allow better management. BABOK Guide proposes the following classification, representing the abstraction levels for requirements:

- Business requirements
- Stakeholder’s requirements
- Transition requirements
- Solution requirements
  - Functional requirements
  - Non-functional requirements

IQBBA extends the above classification to add information supporting solution design and requirements management:

- Business constraints
- Solution constraints
- Business assumptions
- Technical assumptions

When working with different levels of abstraction of requirements, it is important to maintain traceability supporting scope management, coverage analysis and change impact analysis.

### 1.2 Role of a Business Analyst (K2)

LO-1.2.1	Explain the role and responsibilities of a Business Analyst in terms of an organization and a project (K2)
LO-1.2.2	Understand how Business Analyst interfaces with other roles within an organization and program/project's stakeholders (K2)

The Business Analyst (BA) is a person responsible for identifying business needs of stakeholders and for determining solutions to business problems with the aim of introducing change which adds value to the business. As mentioned in BABOK Guide, the Business Analyst is someone who “helps organization change”.

The Business Analyst often acts as a bridge between business stakeholders and the solution delivery team, identifying, negotiating and achieving a consensus between the needs of the various representative individuals and groups.

As one of the main work products of BA are business needs and business requirements, Business Analysts play an important role in the success of both organization-level programs and in specific change or development works.

Problems with requirements can cause change or development works to fail. In most cases these problems are caused by poor or incorrectly conducted Business Analysis (especially Requirements Engineering, a part of the Business Analysis knowledge area).

Common pitfalls in Business Analysis include but are not restricted to:

- Unclear business objectives of the initiative
- Missing business requirements, often the result of lack of stakeholders analysis
- Instability of the requirements (frequent and uncontrolled changes in requirements)
- Poor translation of the business needs to requirements (incomplete, inconsistent, or not measurable requirements)
- Communication problems and knowledge barriers

The above issues may result in problems later, during solution proposal scope definition, solution realization planning, implementation and testing. Unclear business requirements, or a low quality business design of the solution can lead to confusion and to questions regarding the intended business solution. If no actions are taken to correct this state, the risk of the failure increases.

The impact of improper Business Analysis on change or development works is already known, but still very often neglected.

The major reasons for neglecting Business Analysis are time pressure, focus on fast results without proper analysis of needs, opportunities, and risk and understanding of Business Analysis processes as a cost, not an added value.

Possible consequences of neglecting Business Analysis include the following:

- Some business processes within an organization are not known or understood, which may lead to problems with defining the right business problems and thereby the business requirements
- Business processes and artifacts are not covered by requirements or are described incompletely.
- All key stakeholders are not identified.
- Business goals or needs are not identified causing the designed solution to fail to meet the organization's needs and not achieve the business goals.

Mature organizations normally have defined a generic approach to Business Analysis. This approach covers definition of activities together with their goals, the tools and techniques supporting specific tasks, and the roles and responsibilities of people involved in BA's works and products. It is important

to remember that different environments and approaches to management or solution development and/or maintenance may require specific approaches to Business Analysis. Therefore, the Business Analyst must work together with stakeholders to determine which tasks and techniques defined in the general Business Analysis process are appropriate for the specific situation.

## 1.3 Overview on the Business Analysis Activities (K1)

LO-1.3.1 Know the main activities of Business Analysis (K1)

Business Analysis covers the following major activities:

- Strategy definition
  - Internal analysis
  - External analysis
  - Business need definition
  - Gap analysis
  - Solution proposal (including feasibility analysis)
  - Solution delivery or maintenance program/project initiation
- Management of Business Analysis processes
  - Business Analysis process definition (for organization, program, project or other form of change development or implementation works etc.)
  - Communication planning
  - Work products management
  - Tools and techniques selection
- Requirements Engineering in Business Analysis
  - Requirement Management
    - Requirements communication
    - Requirements tracing
    - Requirements configuration and change management
    - Requirements quality assurance
  - Requirements Development
    - Requirements elicitation including stakeholders and/or product requirements development
    - Requirements analysis and specification
    - Solution modeling
    - Requirements validation and verification
- Solution evaluation and optimization
  - Assessing the solution options (proposals)
  - Evaluating performance of the solution
  - Solution/business process optimization

These activities produce different work products (artifacts). Some of them, such as use cases, requirements and design documents, describe the function, logic, or design of solution, while others are concerned with the delivery process itself, such as, business cases, plans and risk assessments. It is necessary to ensure that all key artifacts are under version control and correctly traced to their origin.

Some of Business Analysis work products include:

- Business goals
- Business needs
- Business requirements
- Risks
- Stakeholders
- Limitations and assumptions
- Business process definition

A more complete list of work products can be found in 0 3.4 Products (K2).

## 1.4 Competencies (K2)

LO-1.4.1	Summarize the main competencies of a Business Analyst (K2)
LO-1.4.2	Understand the meaning of soft skills in the profession of Business Analysis (K2)

The main goal of a Business Analyst is to provide business solutions which add value to the business. To be able to provide a business solution that provides a measurable benefit to the organization, the Business Analyst must have knowledge of the business domain. Understanding the business, its rules, processes, risks and context are necessary conditions for effective and valuable Business Analysis.

Domain knowledge is not a replacement for Business Analysis methods. Both domain knowledge and methods knowledge are needed to be a good Business Analyst. Related to domain knowledge, the Business Analyst must also understand the domain environment.

The Business Analyst needs the following competencies to effectively understand and work within the defined environment:

- Analytical thinking and problem - solving skills
- Behavioral characteristics
- Business knowledge
- Basic technical knowledge
- Interaction skills
- Communication skills
- Negotiation skills and diplomacy
- Some level of managerial skills
- Creativity

Communication skills are particularly important for the success of Business Analyst. Typically, they include:

- Ability to communicate with all levels of management
- Ability to communicate with stakeholders of various knowledge levels
- Precision in articulating ideas and thoughts
- Ability to relate with line workers
- Good technical writing skills
- Strong communication skills in all forms (verbal, non-verbal, written.)

In addition, the Business Analyst should be an effective facilitator to enable groups to work cooperatively and effectively [Bens]. In the context of Business Analysis, facilitation requires the following skills:

- Leading
- Solving issues
- Building team and community
- Empowering people
- Resolving conflicts
- Transforming (introducing change)
- Evoking wise democracy
- Building personal effectiveness

Effective Business Analysts use facilitation to support working with a group of stakeholders to elicit, document, analyze, verify and achieve consensus on requirements.

A good facilitator demonstrates the following competencies:

- Connects with the group quickly
- Communicates and listens well
- Processes ideas from people
- Shows a natural interest
- Negotiates between parties
- Understands group dynamics and empowers the group
- Focuses on the business not on personal solutions
- Helps the group to listen and draw logical conclusions

Some of the tools used in facilitation include:

- Gap analysis
- Flipcharts
- Checklists
- Multi-voting
- Root cause analysis
- Brainstorming
- Focus group framework

Many Business Analysts lack formal training and experience as facilitators, and sometimes have difficulty running a facilitation session. For Business Analysis, facilitation techniques focus on the skills necessary to elicit and analyze business needs, requirements and stakeholders' expectations. Knowing what to ask, how to ask, and how to help the stakeholders discover their requirements, are all critical skills for the Business Analyst role.

Within the Business Analyst role, there can be a defined career paths that reflects the progress of developing skills and competencies. Some sample classifications include:

Based on the specialization profile:

- Generalist practitioner
- Specialist practitioner [IIBA Competency].

Based on the level of proficiency:

- Junior BA
- Intermediate BA
- Senior BA

Based on the scope of responsibilities:

- Enterprise BA
- Program BA
- Project BA

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## 2. Strategy Definition (K3)

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### Timing

150 minutes

### Terms

Business Case, Business Goal, Business Need, Business Process, Cost-Benefit Analysis, Feasibility Study, Gap Analysis, Innovation, Market Research, Mission, Process Owner, SMART, Solution Approach, Solution Proposal, Solution Scope, Stakeholder, SWOT, Vision

### Learning Objectives

The objectives identify what you will be able to do after the completion of each module.

#### 2.1 Internal Analysis (K3)

- LO-2.1.1 Understand how Vision, Mission and Business Goals are connected and influence Business Analysis activities (K2)
- LO-2.1.2 Know the basic principles of building proper Business Goals (K1)
- LO-2.1.3 Know the concept of Business Process and Process Owner (K1)
- LO-2.1.4 Explain with examples the reasons and application of identification of Business Processes (K2)
- LO-2.1.5 Model a simple Business Process using basic elements of BPMN notation (K3)
- LO-2.1.6 Know the concept, meaning and methods for identification of Business Needs (K1)
- LO-2.1.7 Know the concept of gap analysis and its impact on Business Analysis works (K1)

#### 2.2 External Analysis (K2)

- LO-2.2.1 Explain the role of innovation as a tool for achieving competitive advantage (K2)
- LO-2.2.2 Know the concept of market research and analysis and their role in Business Analysis (K1)
- LO-2.2.3 Know methods for user needs identification (K1)

#### 2.3 Stakeholders Identification (K2)

- LO-2.3.1 Understand the concept of stakeholders, their types and impact on Business Analysis activities and work products (K2)
- LO-2.3.2 Know methods for stakeholder's identification (K1)

#### 2.4 Solution Proposal & Analysis (K2)

- LO-2.4.1 Know the concept and meaning of a solution proposal, Business Case and solution approach (K1)

LO-2.4.2 Explain the basic principles of building a proper Business Case (K2)

LO-2.4.3 Know the concept and meaning of feasibility study (K1)

## 2.5 Project Initiation (K1)

LO-2.5.1 Know the concept of project initiation and project scope (K1)

## Introduction

Strategy definition is a set of activities and tasks aimed at establishing a way to reach a specific future state of an organization. Specific activities of strategy analysis include, but are not limited to:

- Analysis of the current situation of the organization
- Establishing business needs on the basis of external and internal influences, including stakeholders expectations and demands
- Analysis of the vision, mission and goals and establishing means to attain the stated objectives
- Defining the strategy for change

## 2.1 Internal Analysis (K3)

### 2.1.1 Vision, Mission and Business Goals (K2)

LO-2.1.1 Understand how Vision, Mission and Business Goals are connected and influence Business Analysis activities (K2)

LO-2.1.2 Know the basic principles of building proper Business Goals (K1)

The Vision is an overall image of what the organization wants to be or become in the long-term. It defines the future state of an organization [BMM].

The Mission defines the ongoing operational activities of the organization which will allow the Vision to become a reality.

The Mission is planned and realized by a strategy, which can be understood as the approach to achieve Business Goals considering given environment and business context.

Business Goals amplify vision – they define what must be satisfied to attain the vision.

Setting Business Goals is important for the following four reasons:

- The organization needs to have a vision of what it wants to accomplish. This is facilitated by having clearly stated goals, along with establishing time periods in which they need to be achieved.
- It keeps a clear picture of what the organization is trying to do with the business, and helps focus motivation.
- It allows the organization to understand and maintain a commitment to the business' main objectives.
- It provides a metric against which to measure the organization's progress.

SMART is a system and a tool that is used to establish goals and define their quality objectives. SMART requires that all goals have the following characteristics:

- S – Specific
- M – Measurable
- A – Attainable
- R – Relevant
- T – Timely



It is important to note that the ability of achieving Business Goals may be influenced by risks and limitations. Therefore, establishing goals and objectives is typically includes also risk management activities [ISO 31000].

All the mentioned elements influence Business Analysis activities as they define future state and high level direction for the organization.

### 2.1.2 Business Process Analysis (K3)

LO-2.1.3	Know the concept of Business Process and Process Owner (K1)
LO-2.1.4	Explain with examples the reasons and application of identification of Business Processes (K2)
LO-2.1.5	Model a simple Business Process using basic elements of BPMN notation (K3)

A business process is a set of activities aimed at producing a specific output for a particular customer or market. A business process focuses on how the work is done within an organization, the way of organizing work, activities, relationships and the dependencies between them. A process can be considered as the ordering of work activities across time and place, with a beginning, an end, and clearly defined inputs and outputs [Sparx]. A business process must have the following characteristics [Sparx]:

- Has a goal
- Has specific inputs
- Has specific outputs
- Uses resources
- Has a number of activities that are performed in some order
- Affects at least one organizational unit
- Creates value for the customer (both internal and external)

Each process should have a Process Owner defined. According to ITIL, the Process Owner is the person responsible for ensuring that a process is fit for purpose. The Process Owner's responsibilities include sponsorship, design, and continual improvement of the process and its metrics.

Identification of current business processes performed within the organization allows the Business Analyst to understand the organization's goals and to determine the activities and the flow required to achieve future planned business and strategic goals. This identification helps establish all the activities and roles that are necessary for the execution of the activities that produce the desired results. Identification of business processes helps uncover gaps and ineffective parts of the process, which may then be improved via process optimization. If business processes are not established and understood, then measuring and controlling them may be very difficult due to the organization's level of maturity. In addition, there are likely to be significant problems with the definition of the business goals and needs.

Business processes may be modeled using a technique such as BPMN (Business Process Modeling Notation). This technique provides a view into the various processes performed within an organization. It helps the reader to understand the organization's processes and supports effective requirements analysis and modeling to ensure the proposed solution meets the needs of the current business processes.

### 2.1.3 The Concept of Business Need (K1)

LO-2.1.6	Know the concept, meaning and methods for identification of Business Needs (K1)
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Business Need describes the business problem or opportunity which the Business Analyst must understand and analyze in order to recommend solutions that meet specific business goals and expectations of key stakeholders.

Typically, Business Needs address new market or technical opportunity, collected feedback from user/customer, including complaints, or business stakeholders insights.

Approaches to establish Business Needs include the following [BABOK]:

- Top down analysis of Business Goals leading to identification of Business Needs required to achieve a goal
- Bottom up analysis of the current („AS-IS“) state of organization, department, business process or business function, or already deployed solution (eg. software supporting operations) leading to identification of Business Needs required to create value

Business Needs may also result from expectations, wishes or requirements of stakeholders (eg. a need for providing information allowing management smart decision-making) and/or from external sources like market demand or competition.

### 2.1.4 Gap Analysis (K1)

LO-2.1.7 Know the concept of gap analysis and its impact on Business Analysis works (K1)

Gap analysis aims to understand the difference between the current state of an organization and the desired state. Therefore, it facilitates the introduction of change – results of gap analysis allow an understanding of the work to be done in order to bring the organization to the desired state that is defined by mission and goals.

The starting point for gap analysis is establishing the current state of organization, including understanding the business, vision, mission and goals, business processes, business, technology and cultural conditions determining operations of the organization.

The next step is analyzing current capabilities (AS-IS) and evaluating them against the desired Business Goals and Needs. The result of evaluation will determine if the organization currently has the capability to satisfy the defined Business Needs. If the current capabilities do not meet the stated goals, changes must be identified and introduced to the organization (business, technology, people etc.) to move it to the future state.

All the assumptions done during the gap analysis should be properly documented as they may impact the solution approach or delivery scope.

An important element of gap analysis is identification of risks related to the proposed change. A Risk Management process is necessary to ensure all important risks, especially business risks, are considered when planning the desired future state of the organization.

SWOT analysis can be used to support gap analysis.

## 2.2 External Analysis (K2)

### 2.2.1 Market Research and Analysis (K2)

LO-2.2.1 Explain the role of innovation as a tool for achieving competitive advantage (K2)

LO-2.2.2 Know the concept of market research and analysis and their role in Business Analysis (K1)

Today it is more and more difficult for an organization to achieve a competitive advantage over its competitors. Traditional products and services do not ensure that an organization will achieve success in the market. Often, more is needed to convince customers that the products or services delivered by a given organization are better than others.

Innovation is one of the tools that helps the organization achieve a competitive advantage.

Innovation is the process of looking at something in a different way, or coming up with a different or novel approach to solving an existing or perceived problem. This process requires people to change the way they make decisions; to do things differently and make choices outside of their norm. One of the most world-wide recognized definition of innovation, says: *“innovation is the process that turns an idea into value for the customer and results in sustainable profit for the enterprise”* [Carlson, Wilmot].

The Business Analyst, the person familiar with all the business processes within the organization and who knows the best of all outcomes and products of the processes, can be the right person to

introduce innovation. Based on feedback from customers, market research, analysis of competitors and personal observations, the Business Analyst, together with the support of other teams, is able to identify the following items:

- Areas that require enhancements
- Potential new products that can be delivered by the existing processes
- Changes that will increase customer satisfaction and potential profits

One of most effective means for achieving competitive advantage is market analysis and research. Business Analysts should be familiar with these and should be able to use them in planning new products or improvements in organization process or production.

Market Research is a structured activity with the purpose of gathering information about markets or customers. Market Research is a very important component of a business strategy (being a part of a Business Analyst's areas of interest). According to ICC/ESOMAR International Code on Market and Social Research, Market Research provides a systematic way to gather and interpret information about individuals or organizations, using statistical analytical methods and techniques. This information supports making decisions about the future course of the organization [ICC/ESOMAR].

Market Research is considered the key factor to gain advantage over competitors. It provides important information to identify and analyze the market's needs, the market size and the competition. Market Research clarifies what people (not only the customers of a given organization) need and how they act. Some of the instruments for Market Research are questionnaires and focus group discussion surveys. Once that research is completed, the results, such as discovered trends, may be used to determine the future course of the Business Strategy.

Common techniques for Market Research:

- Qualitative and quantitative research
- Mail questionnaires
- Telephone or personal interview surveys
- Observation
- Using technical solutions for collecting data (eg. Google Analytics)

Market Analysis is a structured and documented investigation of a market helping to determine if there is a need or audience for a product or service. It is a great help when new products or an expansion of the business is planned.

The goal of a Market Analysis is to determine the attractiveness of a market, both now and in the future. In this way the organization may discover and understand evolving opportunities and trends and match them with the organization's strengths and weaknesses.

Market Analysis can be used to:

- Prepare to enter a new market (expansion)
- Determine if there is a market for new products or services, and evaluate the chance for the success of introducing a new product or service, or introducing changes (innovations) into existing ones
- Plan to start a new business
- Obtain market information that will assist in the sale of the product or service

There are several dimensions of a Market Analysis; each may be used for different purposes (e.g., evaluating market profitability or determining market trends).

### 2.2.2 User Needs Identification (K1)

LO-2.2.3 Know methods for user needs identification (K1)

One of the main tasks of a Business Analyst is to provide a business design of a solution that will satisfy the customer's needs and expectations. To be able to do so, the Business Analyst must know these needs. This includes not only those articulated directly, but also the hidden expectations of which the customer may not be aware. The role of a Business Analyst is to work with the end users to identify and explore their requirements and provide support for formulating their various needs. For

example, working with the end users may help to identify usability requirements that were not determined in the initial requirements collecting phase.

Common techniques for user research are:

- Collecting user/customer feedback
- Qualitative and/or quantitative research
- Personas – targeting users
- Interviews
- Observation of user behavior, including User Journey
- Surveys
- Other techniques used for Market Research

### 2.3 Stakeholder Identification (K2)

LO-2.3.1 Understand the concept of stakeholders, their types and impact on Business Analysis activities and work products (K2)

LO-2.3.2 Know methods for stakeholder's identification (K1)

A stakeholder is any person or organization actively involved in the change or development works, or those whose interests may be affected as a result of the works execution or completion. Stakeholders may also influence the initiative's objectives and outcomes. Stakeholders come from the business organization, solution delivery organization/team and from external parties (eg. business context).

Stakeholders can be identified using the following techniques:

- Investigating the business domain
- Identifying owners of the business processes
- Analyzing the structure of the customer's organization
- Exploring the target market of the customer's organization
- Analyzing relationships with external organizations (suppliers, etc.)

Different stakeholders may have different needs and expectations regarding the planned solution. It is very important to identify all key stakeholders and their needs, and to find a common understanding of the purpose of a solution in order to avoid the situation where the final product may meet the requirements of only a selected group of stakeholders. It is also important to ensure that the features to be implemented will not conflict with requirements of other stakeholders. For example, a product designed only for a knowledgeable customer base may not be satisfactory for all end users since end users may have different needs, such as an intuitive user interface, an extended help system or special accessibility needs.

The process of identifying key stakeholders and collecting their requirements and expectations is one of the key activities in the Strategy Definition, as it determines the initial scope and requirements for the solution. However, this activity is often skipped or performed only partially, usually leading to problems as the solution delivery work progresses.

The main problems with identifying stakeholders include:

- A lack of understanding of the real operators of the business processes in the organization
- Unclear definition of responsibilities within the customer's organization
- Excluding stakeholders who are not clearly and directly related to the process (e.g., the end users)
- Incomplete analysis resulting in missing processes and activities, as well as misidentification or omission of important stakeholders

### 2.4 Solution Proposal & Analysis (K2)

LO-2.4.1 Know the concept and meaning of a solution proposal, Business Case and solution approach (K1)

LO-2.4.2 Explain the basic principles of building a proper Business Case (K2)

LO-2.4.3 Know the concept and meaning of feasibility study (K1)

There are many ways of delivering value and introducing change to meet specific Business Needs. The approach to be taken to deliver/implement the capabilities required to move the organization to the desired future state is called the solution approach.

Sample solution approaches include the following:

- Change of business processes (process improvement effort)
- Change of resource allocation/usage
- Introduction of organizational changes
- Purchase of a commercially available solution from a supplier
- Developing a custom solution
- Using the current solutions available within the organization
- Outsourcing (of business functions etc.)

The solution proposal can be defined as an idea or concept which meets specific Business Need(s). Usually there is more than one solution proposal (option) addressing the same Business Need – therefore the options need to be evaluated before making the final decision about solution realization.

A Feasibility Study allows different solution alternatives to be analyzed and compared to understand how each option addresses the Business Need as well as how the business value will be delivered.

In some cases, it is necessary to evaluate the benefits, costs and risks related with a specific solution delivery initiative before the initiative starts.

A Business Case provides the reasoning and justification for the initiative in terms of the value added to the business as a result of the initiative outcomes, in comparison to the cost of implementing the proposed solution.

A properly built Business Case allows the organization to:

- Understand and apply a way of thinking that allows decision makers to analyze the value, risk and priority of an initiative proposal.
- Justify the value of the proposals to the organization and to reject any proposals that do not have proven and measurable value.
- Decide if the initiative proposal is of value to the business and is achievable in comparison to alternative proposals.
- Track and measure the progress and achievements of the Business Case.
- Ensure that initiatives with inter-dependencies are undertaken in the proper order.

Usually, a Business Case is presented in the form of a structured document but it may be expressed as a short argument or presentation. For example, consider the case in which a software upgrade might improve system usability; the Business Case here is that better usability would improve customer satisfaction, require less task processing time, or reduce training costs.

A Business Case may cover the following topics:

- Information about the opportunity (market trends, competitors)
- Qualitative and quantitative benefits
- Estimates of cost
- Profit expectations
- Follow-on opportunities
- Cash flow consequences of the action, over time, and the methods used for quantifying benefits and costs
- The impact of the proposed initiative on the business operations or business process
- The impact of the proposed initiative on the technology infrastructure
- Constraints associated with the proposed change or development works
- Risks related with the proposed change or development works
- Alignment with priorities established by the business

## 2.5 Project Initiation (K1)

LO-2.5.1 Know the concept of project initiation and project scope (K1)

Project initiation activities covers all tasks required to start up a development or maintenance initiative. These tasks typically include:

- Defining delivery/service scope
- Establishing solution delivery and management team
- Selecting or establishing approach to conduct and control change or development activities
- Defining strategies and procedures for risk, configuration, quality and communication management

Initiation activities are often documented in a form of Project Initiation Documentation (PID) which represent the plan of approach in project management [PRINCE2]. PID typically consists of a set of other documents, including:

- Business Case
- Project plan
- Risk register (risk log)
- Communication plan
- Quality plan

Business documentation, provided as output from Strategy Analysis activities, serves as important input to the development of the PID and summarizes the delivery scope and key business expectations and conditions. An important element of change or development project initiation is identification of risks and preparing a mitigation plan [ISO 31000].

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## 3. Management of Business Analysis Process (K3)

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### Timing

320 minutes

### Terms

Agile, Communication Plan, Maturity Model, RACI

### Learning Objectives

The objectives identify what you will be able to do following the completion of each module.

#### 3.1 Introduction

No Learning Objectives

#### 3.2 Approaches to Business Analysis (K3)

- LO-3.2.1 Know the different approach to development and maintenance (K1)
- LO-3.2.2 Understand the difference between Business Analysis in Agile and non-Agile environments (K2)
- LO-3.2.3 Select proper methods, techniques and approaches to Business Analysis in specific context (K3)
- LO-3.2.4 Know examples of interdisciplinary knowledge and skills supporting Business Analysis activities (K1)

#### 3.3 Communication (K3)

- LO-3.3.1 Explain why communication is an important part of Business Analysis activities and know factors influencing communication (K2)
- LO-3.3.2 Know the concept and application of a communication plan (K1)
- LO-3.3.3 Use available information to plan a communication plan (K3)
- LO-3.3.4 Know the different roles involved in Business Analysis activities and their responsibilities (K1)

#### 3.4 Products (K2)

- LO-3.4.1 Understand the role of a requirement and other key Business Analysis deliverables for an organization and a program/project (K2)
- LO-3.4.2 Know typical Business Analysis products (K1)

#### 3.5 Tools and Techniques (K3)

- LO-3.5.1 Know different types of tools supporting Business Analysis activities and their application (K1)



- LO-3.5.2 Know different types of techniques supporting Business Analysis activities and their application (K1)
- LO-3.5.3 Understand the purpose and application of techniques supporting different BA activities (K2)
- LO-3.5.4 Know the purpose and application of modeling notations for Business Analysis (BPMN) (K1)

### 3.1 Introduction

The purpose of this chapter is to explain main elements of planning and managing Business Analysis processes in a given context. Planning should consider the following factors:

- Development/maintenance method or culture of organization (traditional vs Agile)
- Necessity for interdisciplinary approach
- Communication requirements and participants
- Definition of products of Business Analysis works
- Organizational assets like tools and techniques

In addition, planning the Business Analysis approach should also include the planning approach to Requirements Engineering (see: 4 Requirements Engineering in Business Analysis (K3)).

### 3.2 Approaches to Business Analysis (K3)

Establishing an approach to Business Analysis may be supported by maturity models and competency models. These models can help to determine activities, methods and skills necessary to meet specific objectives in a given context. [IIBA Competency]

Many maturity models are based on the concept of maturity levels, representing different structural levels of the Business Analysis process. These models often use other models like CMMI to map Business Analysis processes, activities, tasks and methods into specific levels of maturity.

Sample maturity model [Haas]:

- Level 1 BA Awareness: Business Analysis Value is Acknowledged
- Level 2 BA Framework: Business Requirements are Managed
- Level 3 Business Alignment: New Business Solutions Meet Business Need; Strategy is Executed
- Level 4 Business Technology Optimization: Technology is Used as a Competitive Advantage

The generic model for Business Analysis used in a given organization should be adjusted to the current context. In many cases it is necessary to consider consequences resulting from different approaches to development or maintenance efforts.

#### 3.2.1 Traditional vs Agile Environments (K3)

- LO-3.2.1 Know the different approach to development and maintenance (K1)
- LO-3.2.2 Understand the difference between Business Analysis in Agile and non-Agile environment (K2)
- LO-3.2.3 Select proper methods, techniques and approach to Business Analysis in specific context (K3)

There are two main approaches to solution development and maintenance – traditional and Agile. Traditional methods (like Waterfall, V-Model, Rational Unified Process) are characterized by upfront planning – requirements are collected and documented to the fullest extent, architecture of the solution is designed, then the implementation starts. The main assumption of the traditional approach is that there is a clear picture of the product before implementation works start.

Agile is based on the concept of incremental and iterative development with minimal planning. Agile recognizes the fact that business context and requirements may change and provides special

practices to support these changes. The main ideas behind Agile are: „just in time“, adaptability, customer involvement during all development/maintenance, and frequent communication.

Currently many organizations and teams are transforming from a traditional to an Agile approach. This impacts not only processes, but also role definitions. In a traditional approach a Business Analyst was responsible for elicitation of needs and requirements, upfront planning and proposing solution options. Communication with delivery team was rather limited to necessary interactions.

In Agile, this way of working changes; the Business Analyst should follow the principle of „fit-for-purpose“ or „just enough.“ Stakeholders should be empowered to articulate their needs and assist the delivery team on a daily basis. An important consequence of an Agile transformation is rejecting formalities like collecting and confirming all requirements before starting development or creating detailed requirements documents. In Agile, the Business Analyst will work with the customers, stakeholders and the development team in order to create high-level requirements list. The requirements will be detailed and implemented in priority order – they will be refined only when it is a time for developers to start working on them.

In many organizations, the main challenge in an Agile transformation is not the process change, but the mindset change.

Adapting Business Analysis to Agile environments require some changes in the process and work organization. However, the main tasks and responsibilities of Business Analysts remain the same:

- Providing expert knowledge in the business and/or product
- Defining the business goals, business context, risks and potential impacts of the solution on the organization and stakeholders
- Defining change, which is understood as the gap between AS IS and TO BE
- Supporting communication between business stakeholders and delivery team

Possible solutions for Business Analysis in Agile environments are:

- Business Analyst as a Product Owner, responsible for definition and realization of the product
- Business Analyst supporting the Product Owner in more technical tasks, when the Product Owner provides only business knowledge
- Business Analyst competencies in the development team, when the team supports the Product Owner with transforming high-level requirements into specific development tasks

In Agile, some specific tools and techniques will be used. Examples are: Backlog, user story, story mapping, Kanban.

### 3.2.2 Interdisciplinary Approach (K1)

LO-3.2.4

Know examples of interdisciplinary knowledge and skills supporting Business Analysis activities (K1)

Effective Business Analysis requires adopting knowledge and skills from other disciplines. Such disciplines may be [IIBA Competency] [BABOK] [Brown]:

- UX and usability
- Service design
- Design thinking
- Innovation
- Digital design

In addition, the following concepts may support effective Business Analysis:

- Multidisciplinary Teams
- Enlightened Trial and Error
- Lean startup

### 3.3 Communication (K3)

LO-3.3.1	Explain why communication is an important part of Business Analysis activities and know factors influencing communication (K2)
LO-3.3.2	Know the concept and application of communication plan (K1)
LO-3.3.3	Use available information to plan communication plan (K3)
LO-3.3.4	Know the different roles involved in Business Analysis activities and their responsibilities (K1)

The main purpose of planning Business Analysis communication is to define how to receive, distribute, access, update and escalate information to and from the stakeholders, as well as how to organize the schedule and structure of the communication within a change or development program/project.

Sample stakeholders involved in Business Analysis works are:

- Customer
- End user
- Solution Architect
- Marketing specialist
- Implementation expert
- Business domain expert
- Quality Assurance expert

Business Analysis activities and deliverables can be communicated in both formal and informal ways. Common methods of communication include:

- Documentation
- Workshops
- Presentations
- Reviews

Any communication activity should take into consideration the focus of the communication (e.g., needs, information, and consequences). Having this information, the Business Analyst can decide what the appropriate delivery method is, the appropriate audience, and how to present the information. For each communication, the Business Analyst must decide the most effective form of communication for both the topic and the stakeholder.

There are many different factors which should be considered when planning Business Analysis communication. These factors include:

- Type of initiative or business problem addressed by communication
- Stakeholder's requirements
- Required level of communication formality
- Communication frequency
- Geographical location
- Culture

Different types of initiatives require varying amounts of documentation, and often have diverse processes and different deliverables. Communication formality varies between initiatives, phases and stakeholders. Communication tends to be more formal when the initiative is large, is considered to be critical or strategic, is dependent on legislation, sector standards, or agreements, or if the business domain is complex. Some stakeholders may require formal communication regardless of other conditions. Communication frequency may vary among stakeholders for every form of communication. Geographic disparity can also be a factor that limits communication options, especially when stakeholders live in different time zones.

The communication plan explaining rules of communication with the key stakeholders should cover the following information:

- Subject of communication (work product, task etc.)

- Stakeholders involved (audience)
- Frequency of communication
- Medium of communication
- Person responsible for communication

The communication plan is often supported by a RACI matrix – a responsibility assignment matrix – allowing the definition of responsibilities of the different roles involved in completing tasks or deliverables for a given initiative.

### 3.4 Products (K2)

LO-3.4.1	Understand the role of a requirement and other key Business Analysis deliverables for an organization and a program/project (K2)
LO-3.4.2	Know typical Business Analysis products (K1)

The typical work products of Business Analysis activities are:

- Strategy definition
  - Stakeholders
  - Business processes
  - Gaps
  - Market research results
  - Business needs
  - Business requirements
  - Solution options
  - Business risks
  - Opportunities
  - Business constraints
  - Business case
- Management of the Business Analysis process
  - Business Analysis approach
  - Communication plan
  - Business Analysis assets (templates, etc.)
  - Quality gates for requirements and/or solution design
- Requirements Engineering in Business Analysis
  - Stakeholders requirements
  - Solution/product requirements
  - Solution constraints
  - Solution design options
  - RTM (Requirements Traceability Matrix)
  - Requirements configuration
- Solution evaluation and optimization
  - Solution performance assessment
  - Improvement plan

These deliverables support the understanding of the vision and mission of the organization, as well as the goals and desired future state together with factors influencing the ability to achieve this future state.

One of the most important Business Analysis deliverables are requirements, especially business and stakeholder requirements. From the organizational point of view, business requirements express the major needs required to achieve the stated mission and goals (see: 2.1.1 Vision, Mission and Business Goals (K2)). From a project/program perspective, requirements define the scope of delivery and facilitate planning.

## 3.5 Tools and Techniques (K2)

### 3.5.1 Tools (K2)

LO-3.5.1 Know different types of tools supporting Business Analysis activities and their application (K1)

Tools supporting Business Analysis activities:

- Problem analysis and solving tools
- Modeling tools
- Documentation tools
- Communication and team collaboration tools
- Knowledge base tools
- Creativity tools

### 3.5.2 Techniques (K2)

LO-3.5.2 Know different types of techniques supporting Business Analysis activities and their application (K1)

LO-3.5.3 Understand the purpose and application of techniques supporting different BA activities (K2)

Types of techniques supporting Business Analysis activities:

- Documentation techniques
- Communication and team collaboration techniques
- (Stakeholder) collaboration techniques
- Problem analysis techniques
- Problem modeling techniques
- Information elicitation techniques

Specific techniques are:

- SWOT
- MoSCoW
- Interview
- Survey
- Workshops
- SMART
- 5 Why
- Gap analysis
- Process modeling
- Ishikawa diagram

Some Business Analysis works use also tools, techniques and notations used for Requirements Engineering (see: 3.5 Tools and Techniques (K2))

### 3.5.3 Notations (K2)

LO-3.5.4 Know the purpose and application of modeling notations for Business Analysis BPMN (K1)

BPMN (Business Process Modeling Notation) is a standard language for expressing business procedures, workflows and communication between business participants. BPMN uses graphical notation to facilitate communication between stakeholders and provides a means to model and understand the business and its participants. Elements of the notation are quite intuitive; however they also are able to represent complex process semantics.

BPMN notation is based on a flowcharting technique and is dedicated to support modeling and communication for both technical users and business users.

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## 4. Requirements Engineering in Business Analysis (K3)

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### Timing

550 minutes

### Terms

Assumption, Baseline, CCB (Change/Configuration Control Board), Change Management, Change Request, Configuration Item, Configuration Management, Conflict, Conflict Management, Constraint, Elicitation, Information Architecture, Quality Assurance, Requirements Development, Requirements Document, Requirements Engineering, Requirements Management, Requirements Modeling, Traceability

### Learning Objectives

The objectives identify what you will be able to do following the completion of each module.

#### 4.1 Introduction (K1)

- LO-4.1.1 Know the main activities, products and methods used in requirements development (K1)

#### 4.2. Requirements Development (K3)

- LO-4.2.1 Understand the purpose, activities, methods, and results of elicitation (K2)
- LO-4.2.2 Understand the concept of needs and business requirements in elicitation and solution planning (K2)
- LO-4.2.3 Use different techniques for elicitation and communicate elicitation results (interview, workshops, questionnaire, user story, use case, persona) (K3)
- LO-4.2.4 Understand the purpose, activities, methods and results of requirements analysis (K2)
- LO-4.2.5 Know the concept of prioritization and understand its application in terms of solution design and development (K2)
- LO-4.2.6 Understand the concept of assumptions and limitations and their impact on solution scope and design (K2)
- LO-4.2.7 Understand the purpose, methods and application of solution modeling (K2)
- LO-4.2.8 Know the different views of requirements/solution modeling (K1)
- LO-4.2.9 Use UML activity, use case, state machine diagrams and BPMN diagrams to structure and express Business Analysis work products (K3)
- LO-4.2.10 Understand the concepts of conflict, conflict management and conflict resolution in terms of requirements analysis and negotiation (K2)
- LO-4.2.11 Know the purpose of documentation that supports the development of requirements, and the standard contents of a requirements document (K1)

- LO-4.2.12 Use standard templates to specify requirements and other types of information (user story, use case, requirement template) (K3)
- LO-4.2.13 Know the concept of validation and verification in terms of Business Analysis work products (K1)
- LO-4.2.14 Understand the concept, purpose and methods for evaluating the value provided by the solution (K2)

### 4.3 Requirements Management (K3)

- LO-4.3.1 Know the purpose, activities, methods and results of requirements management (K1)
- LO-4.3.2 Plan information architecture for specific context (K3)
- LO-4.3.3 Understand the concept, purpose and methods of establishing information architecture (K2)
- LO-4.3.4 Know elements of effective requirements management: traceability, RTM, information management, communication (K1)
- LO-4.3.5 Know the concept, purpose and methods for requirements approval (K1)
- LO-4.3.6 Use traceability to manage relationships between different artifacts (K3)
- LO-4.3.7 Know elements of effective requirements configuration management: version and change management (K1)
- LO-4.3.8 Understand the concept of requirements scope (K2)
- LO-4.3.9 Know methods for Quality Assurance in Business Analysis (K1)
- LO-4.3.10 Understand the meaning of QA in building the right approach to Business Analysis (K2)

### 4.4 Tools and Techniques (K2)

- LO-4.4.1 Know different types of tools supporting Requirements Engineering activities and their application (K1)
- LO-4.4.2 Know different types of techniques supporting Requirements Engineering activities and their application (K1)
- LO-4.4.3 Understand the purpose and application of techniques supporting different Requirements Engineering activities (K2)
- LO-4.4.4 Know the purpose and application of formal modeling notations (UML) (K1)
- LO-4.4.5 Understand the application of the following diagrams: UML activity, use case, state machine, class diagram (K2)



## 4.1 Introduction (K1)

LO-4.1.1 Know main activities, products and methods used in requirements development (K1)

The purpose of Requirements Development (RD) is to elicit, analyze, and establish business and solution requirements [CMMI]. Requirements Development includes activities aiming to:

- Elicit requirements with the aim to clarify the scope and collect all required features and qualities of solution
- Analyze and validate requirements to confirm the understanding of stakeholders on the content and scope of delivery
- Model requirements and solutions to create solution options
- Specify requirements in a defined form
- Validate and verify requirements and other Business Analysis and Requirements Engineering work products

## 4.2 Requirements Development (K3)

### 4.2.1 Elicitation (K3)

LO-4.2.1 Understand the purpose, activities, methods and results of elicitation (K2)

LO-4.2.2 Understand the concept of needs and business requirements in elicitation and solution planning (K2)

LO-4.2.3 Use different techniques for elicitation and communicate elicitation results (interview, workshops, questionnaire, user story, use case, persona) (K3)

Business Requirements Elicitation is defined as a set of approaches, techniques, activities, and tasks used to capture the business requirements of a planned solution from the stakeholders and other available sources.

Business Requirements Elicitation has several purposes, including:

- Establishing capabilities required to meet the stated Business Need
- Identifying the desired capabilities of the planned solution
- Establishing the final scope and business design of the solution
- Identifying limitations and risks impacting ability of meeting business requirements

Typical sources of requirements include the following:

- Stakeholders
- Business context
- Business documents
- Business policies
- Standards and regulatory statutes
- Previous architectural design decisions
- Systems/solutions in use
- Technology
- Legacy products or product components

These sources can influence the chosen technique for Requirements Elicitation. Requirements Elicitation is not only collecting stakeholders' needs by asking questions – very often the information collected has to be interpreted, analyzed, modeled and validated before a complete set of requirements for a solution can be established. The elicitation techniques and tools to be used are sometimes driven by the choice of the modeling diagrams or the general analysis approach. Many modeling techniques imply the use of a particular kind of elicitation technique as well.

The following techniques are used during Requirements Elicitation:

- Questionnaires
- Interviews
- Persona and user story

- Use case
- User scenarios
- Self-recording
- Consultancy (elicitation driven by representative of end user, SME etc.)
- Analysis of existing business documents
- Brainstorming
- Field observation
- Apprenticing
- Workshops with stakeholders

Requirements Elicitation should apply to all levels of requirements.

When eliciting requirements, it is important to ask not only about functions, but about quality attributes as well. Non-functional requirements (NFR) describe the quality attributes of the solution and have a great impact on the overall perception of the solution quality. In addition, collected information should be properly classified. A common technique for requirements prioritization is MoSCoW.

Elicitation results – requirements – should be properly documented to allow further tracking and Requirements Analysis. It is important to remember that common language has some limitations and disadvantages. This may cause the description of the requirements to be unclear and ambiguous. Therefore, proper standards and templates should be used wherever possible. In addition to standards and templates, vocabularies are an important tool to facilitate communication between different stakeholders and to introduce some control over the natural language's ambiguity.

#### 4.2.2 Analysis and Modeling (K3)

LO-4.2.4	Understand the purpose, activities, methods and results of requirements analysis (K2)
LO-4.2.5	Know the concept of prioritization and understand its application in terms of solution design and development (K2)
LO-4.2.6	Understand the concept of assumptions and limitations and their impact on solution scope and design (K2)
LO-4.2.7	Understand the purpose, methods and application of solution modeling (K2)
LO-4.2.8	Know the different views of requirements/solution modeling (K1)
LO-4.2.9	Use UML activity, use case, state machine diagrams and BPMN diagrams to structure and express Business Analysis work products) (K3)
LO-4.2.10	Understand the concept of conflict, conflict management and conflict resolution in terms of requirements analysis and negotiation (K2)

Analysis is done to detail and structure collected information so that a solution design can be defined. During analysis, additional information impacting the solution, such as constraints and assumptions, may be identified.

Constraints are specific types of requirements that explicitly and intentionally act to restrict any system or process [TGilb]. Defining constraints allows the stakeholders to be aware that options they would normally think could be considered are not viable.

Assumptions are unproven conditions that are believed to be true, but have not yet been confirmed. It is important to define assumptions as they may have a negative effect and might impair the ability to achieve the proposed solution [TGilb].

Assumptions and constraints identify aspects of the problem domain that can limit or impact the design of the solution, but are not functional requirements. In some cases, assumptions become constraints of the solution.

During Requirements Analysis, conflicts may be discovered. Conflict is when two or more values, perspectives or opinions are contradictory in nature which yet to be aligned or agreed on. Some of common conflicts in Requirements Engineering include:

- Business requirements and their ability to be implemented

- Stakeholders having contradictory requirements
- The proposed solution for requirements' implementation may be contradictory

Conflict Management is a process which details a variety of methods by which people handle and resolve conflicts. One of the most popular models of Conflict Management suggests the following techniques to deal with a conflict:

- Collaborating: win/win
- Compromising: win some/lose some
- Accommodating: lose/win
- Competing: win/lose
- Avoiding: no winners/no losers

A typical Conflict Management process includes the following activities:

- Conflict identification
- Conflict analysis
- Conflict resolution

Some techniques supporting conflict resolution include:

- Interviews with involved stakeholders, listening and understanding the nature of conflict
- Root cause analysis (RCA)
- Group meeting
- Analyzing needs and priorities (based on results of stakeholders' analysis)
- Involving external parties

It is recommended to that key information related with conflicts, their sources, methods for resolution and results be documented. This information may help in further process improvement.

Analysis often includes modeling activities.

Modeling is a way of expressing real objects by representing parts or the whole of the proposed solutions. Models may contain textual elements, matrices and diagrams, and are used to reflect the relationships and dependencies between the requirements that fulfill the identified business needs. In case of large and complex solutions, modeling is helpful in expressing the overall structure of the solution. In addition, presenting complex requirements and relationships in the form of a model, especially some graphical form such as diagrams, helps ensure the solution is understood by other stakeholders. Models are often easier to read and comprehend than written text.

Solution Modeling can use several types of models, but in general three basic levels of models exist:

- Conceptual model – also known as a domain model, represents concepts (entities) and relationships between them. The aim of conceptual modeling is clarifying and expressing the meaning of terms and concepts used by domain experts to address the business problem and establishing the correct relationships between the different concepts.
- Requirements model – which describes the problem area and is usually designed at the early stages. This model primarily supports Requirements Analysis and effort estimation, and it provides a basis for the solution model.
- Solution model – describes the solution area from different points of views and determines the shape of implementation of the functional and non-functional requirements. The business solution model provides a basis for the solution design.

Different model perspectives may be used for the above levels depending on the point of view to be presented via the specific model. Common perspectives applicable to modeling the problem or solution domain include the following:

- User view (e.g., modeled from use cases)
- Logical view (e.g., modeled from functional requirements)
- Process view (e.g., modeled from communication, interaction models or non-functional requirements specifying the effectiveness of the business processes)
- Implementation view (e.g., usually modeled from the components of the solution)
- Installation view (e.g., modeled from integration models and solution architecture)

Different levels of modeling and different views of the solution can be described by different diagrams. To get a full picture of the solution, usually a combination of different views is used. This results in using different diagrams describing the solution model from specific perspectives.

The benefits of using requirements modeling are:

- Models are perceived as a simplified expression of real processes and allow the Business Analyst and other stakeholders to focus on the important aspects and areas of the solution
- Models describe a complex solution in the clearest and most unambiguous way
- Models are more readable than written text
- Models present the whole solution and its context in a single diagram and therefore help to look at the problem from the overall perspective

Common techniques of modeling requirements and solutions include:

- Using UML notation to express requirements as use case diagrams, activity diagrams, state machine diagrams, etc.
- Using BPMN notation to express business processes
- Using SysML requirements diagrams to express requirements and relationships between them
- Using prototyping as a technique of GUI modeling and/or creating prototypes of solution concepts

During modeling activities, especially when modeling data content and structure, practices derived from Information Architecture are often applied (see: 4.3.2 Information Architecture (K3)).

### 4.2.3 Specification (K3)

LO-4.2.11	Know the purpose of documentation that supports the development of requirements, and the standard contents of a requirements document (K1)
LO-4.2.12	Use standard templates to specify requirements and other types of information (user story, use case, requirement template) (K3)

Requirements Specification describes the problem area of interest (a business solution proposal for a given business problem, need or objective, etc.) and contains at least the following information:

- Business requirements together with their acceptance criteria
- Limitations and assumptions

In the specification, requirements are described in a structured way and are modeled separately. The specification serves to track and manage the individual requirements. An approved requirements specification serves as a formal agreement on the solution scope and capabilities, and provides input information for the other members of the solution delivery or maintenance team.

Depending on the abstraction level, requirements can be described with more or less or detail. In some development models, business requirements can be written in the form of high-level use cases (for example, Rational Unified Process), or user stories (Agile approaches).

In general, the typical structure of a business requirement statement should cover the following aspects:

- The user – who would need and/or use this requirement?
- The result – what is the result the stakeholders are looking for?
- The object – what is the object the requirement addresses?
- The qualifier – what is the qualifier that is measurable?

Another type of a specification is a User Story. User Stories are often used with Agile development methodologies. User Stories are a quick way of handling customer/user requirements. The intention of the User Story is to be able to respond faster and with less overhead to rapidly changing real-world requirements.

A User Story describes the functionality that will be valuable to the customer. It is composed of three aspects [Cohn]:

- A written description of the story used for planning and as a reminder (usually in a form of a statement “As a [end user role], I want [the desire] so that [the rationale]”)
- Conversations about the story that serve to flesh out the details of the story
- Tests that convey and document details and are used to determine when a story is complete

User Stories are often used together with Personas (i.e., archetype characters) representing a specific type of end user role.

When documenting particular requirements, the Business Analyst should follow common standards and guidelines [ISO/IEC/IEEE 29148].

Important guidelines for the creation of the requirements document include the following:

- Each requirement must be unambiguous, precise, and understandable
- Superfluous information should be avoided
- Templates should be used as an aid
- Models and diagrams should be used to make the specification document clear and more understandable for readers
- Formal graphical notation should be used as a method for presenting complex requirements, dependencies, and relationships

When creating a requirements document, the Business Analyst should remember that requirements specifications must be complete, consistent, modifiable, and traceable [Wieggers].

A requirements specification does not have to be a formal “specification” document. For example, it could be a sprint backlog or a set of requirements maintained in a requirements management tool.

### 4.2.4 Verification & Validation (K2)

LO-4.2.13 Know the concept of validation and verification in terms of Business Analysis work products (K1)

LO-4.2.14 Understand the concept, purpose and methods for evaluating of value provided by the solution (K2)

As the requirements are the basis for solution design and development, any error or missing requirement will propagate to the other development processes in the initiative.

Defects resulting from low quality requirements are more expensive to fix in later phases of development than other types of defects. In addition, the later defects are detected, the higher the cost to fix them. Therefore, the use of verification (“are we producing the product correctly”) and validation (“are we producing the right product”) of the requirements are critical activities.

Requirements validation and verification should be done continuously during the development of the solution to ensure that the product being developed meets the quality criteria and will satisfy the stakeholders’ needs. The best practice is to plan and perform validation and verification of requirements from the early phases of solution development – ideally starting with requirements elicitation.

Common techniques for validation and verification include different types of reviews and/or prototyping or presentations of the proposed solutions or requirements to the stakeholders with the goal of receiving feedback. Validation and verification activities should also include ensuring that the requirements and/or requirements/solution specifications conform to company standards (templates) and are documented and then tested against the quality criteria.

Typical quality criteria for requirements are:

- Completeness
- Consistency
- Correctness
- Abstraction (not determining the solution)
- Feasibility

- Measurability
- Necessity
- Traceability (to source)
- Unambiguity

It is also important to validate the models developed during the requirements analysis and specification activities. As requirements are the basis for solution development and testing, their quality is crucial for the success of the change or development. As they help define the appropriate levels and coverage of testing, clear, complete, consistent and testable requirements reduce the risk of product (or even more importantly, project) failure. It is therefore recommended to involve testers in reviews of requirements, as they can significantly help improve the quality of the requirements and requirements and/or solution specifications by identifying weak points and possible defects. Testability of requirements is supported by acceptance criteria. Acceptance criteria describe criteria that must be met to approve the solution and should be agreed on by stakeholders before starting solution realization. Every high-level requirement must have at least one acceptance criterion and each of the criterion must be measurable by a realistic and agreed upon means. Such criteria often create the basis for the quality plan and acceptance testing.

## 4.3 Requirements Management (K3)

### 4.3.1 Introduction (K1)

LO-4.3.1 Know the purpose, activities, methods and results of requirements management (K1)

The purpose of Requirements Management (REQM) is to manage requirements of the change or development project's products and product components and to ensure alignment between those requirements and the project's plans and work products [CMMI].

Requirements Management includes activities with the aim to:

- Define and maintain information architecture
- Effectively understand and communicate requirements
- Maintain traceability
- Manage configuration of requirements and other Business Analysis work products
- Ensure quality of requirements and other Business Analysis work products

### 4.3.2 Information Architecture (K3)

LO-4.3.2 Plan information architecture for specific context (K3)

LO-4.3.3 Understand the concept, purpose and methods of establishing information architecture (K2)

Information architecture (IA) is a set of practices whose goals are to organize, arrange and label content (information) in an effective and understandable way. It facilitates people and organizations to consider their structures and language thoughtfully [IA Institute].

This discipline is often considered as part of designing the structure of information on web pages [Web Style Guide], however its main principles should be applied to build a structure of Business Analysis information (deliverables and work products) as well.

The main components of IA are [Rosenfeld, Morville]:

- Organization schemes and structures – method of categorization and structuring information
- Labeling systems – method of representing information
- Navigation systems – specification of how to browse and move through information
- Search systems – methods allowing to search for information

Creating a useful architecture of information requires understanding the following elements:

- Business context (Business Goals, stakeholders, culture, organization maturity)
- Technical context (available technology, resources)



- Content (information to be communicated, documentation types, and existing structure of information)
- Rules (information ownership and governance policies, standards to be applied)
- Users (audience, tasks and needs of audience, their experiences and special requirements)

In the context of Business Analysis and Requirements Management, IA can be applied to understand and structure information collected in a way that would be accessible and understandable for all key stakeholders and users of this information. Sample applications of IA include:

- Defining appropriate levels of information (i.e., strategy analysis, business requirements, solution requirements, design options)
- Defining relevant deliverables for specific activities
- Defining required content and structure for analysis deliverables and work product (i.e., templates, available methods of representing information)
- Establishing communication methods for accessing, browsing and navigation through information

### 4.3.3 Requirements Communication (K1)

LO-4.3.4	Know elements of effective requirements management: traceability, RTM, information management, communication (K1)
LO-4.3.5	Know the concept, purpose and methods for requirements approval (K1)

Requirements Communication includes activities for expressing the output of the requirements engineering works to the stakeholders. Communication of requirements is an ongoing and iterative activity, including presenting, communicating, verifying, and obtaining approval of the requirements from the initiative stakeholders. Communicating requirements is one of the major tasks of the Business Analyst as his/her responsibility is to not only identify and document the business and stakeholders' requirements, but also to bring the stakeholders to a common understanding of the requirements and resulting solution. Clear and effective communication is essential, as the stakeholders may have different knowledge levels and represent different domains. The role of a Business Analyst is to communicate requirements in such a way that allows all stakeholders to gain the same understanding of a particular requirement. To ensure this, the Business Analyst must consider what communication approach is appropriate in a given situation.

Typical activities of requirements communication include:

- Preparing the requirements communication plan
- Determining the most appropriate communication methods and tools
- Determining the most appropriate format of requirements and other communication work products
- Establishing methods for resolving requirements conflicts
- Distributing and collecting information
- Conducting requirements presentations in order to collect feedback and ensure understanding
- Performing reviews of requirements and other communication work products
- Obtaining requirements approvals (Sign-off)

Requirements should be agreed to and accepted by all key stakeholders involved in solution realization. It is extremely important to ensure that all requirements are approved since the formal agreement provides a starting point for a further detailed solution specification, designing the architecture, and other aspects of the planned solution.

### 4.3.4 Traceability (K3)

LO-4.3.6	Use traceability to manage relationships between different artefacts (K3)
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Traceability is the association existing between artifacts on different abstraction levels. In the context of Business Analysis, traceability can exist between high level Business Needs, and business requirements, then between business requirements and solution requirements etc.



Tracing allows proper management of artifacts, especially in the area of managing evolution, changes and coverage analysis. Traceability between requirements, and other solution delivery artifacts (such as design elements to test cases), allows the Business Analyst to ensure all requirements have been fulfilled.

Traceability affects the organization in the following areas:

- Scope management
- Impact analysis
- Coverage analysis
- Use of the requirement

Traceability is often supported by tools used to manage requirements or managed via RTM (Requirements Traceability Matrix).

### 4.3.5 Configuration Management (K2)

LO-4.3.7 Know elements of effective requirements configuration management: version, change management (K1)

To ensure proper requirements management, a Configuration Management process must be implemented. In many cases business requirements are not stable, and the subsequent changes may affect other artifacts. The Business Analyst must manage changes in the requirements, and ensure that all affected items have been properly adjusted. The approach for resolving such issues must also be included in the Business Analysis process planning.

The purpose of Configuration Management is to establish and maintain the integrity of the products (components, data, and documentation) and the system artifacts, throughout the development and product life cycle. Configuration Management makes use of technical and administrative tools and techniques.

Configuration Management takes place for the following reasons:

- Identify and document the functional and physical characteristics of a configuration item (which define the version of the configuration item)
- Control changes to those characteristics
- Record and report change processing and implementation status
- Verify compliance with specified requirements [IEEE 610]

Complete process of Configuration Management includes the following activities [IEEE 1042]:

1. Configuration Identification - the purpose of Configuration Identification is to determine the attributes that describe every aspect of a configuration item. These attributes are recorded in the configuration documentation and baselined.
2. Configuration Change Control - Configuration Change Control is a set of processes and approval stages that are required to change a configuration item's attributes, and to establish a new baseline for the changed item.
3. Configuration Status Accounting - Configuration Status Accounting is the ability to record and report on the configuration baselines that are associated with each configuration item at any moment of time.
4. Configuration Audits - there are two types of Configuration Audits:
  - Functional Configuration Audits which ensure that functional and performance attributes of a configuration item are achieved
  - Physical Configuration Audits which ensure that a configuration item is installed in accordance with the requirements of its detailed design documentation

Business Analysis activities produces many work products, and typically all of them must be identified as configuration items, baselined and controlled. Sample Configuration Items for Business Analysis include:

- Single requirements (business requirements, solution requirements)
- Business Needs
- Requirements specifications and other documents

- Business models

In the context of Business Analysis, Configuration Management ensures that all work products (outcomes) of Business Analysis are identified, version controlled, tracked for changes, related to each other, and related to other items (e.g., development artifacts) so that traceability can be maintained throughout the realization or maintenance process.

Configuration Management procedures and infrastructure (tools) should be defined and documented on both the organizational, and initiative level.

Change Management can be considered as a sub-discipline of Configuration Management, and supports managing changes of the requirements in an effective way.

Changes can result from:

- New or changing business requirements (resulting from new regulations, changes within the business domain, new capabilities requested by stakeholders, etc.)
- Solution improvement efforts
- Business process improvement initiatives
- A defect found in the code, documentation or requirements
- External changes (regulatory, legal, etc.)

The Change Management process typically includes the following elements:

- Identifying a need for a change
- Requesting modification (raising a Change Request)
- Analyzing the change request (including impact analysis)
- Evaluating and estimating the change
- Planning the change realization
- Realization of the change
- Reviewing and closing the Change Request

When the need for a change appears, there should be a Change Request raised by the stakeholder requesting given modification. Important elements of a change request are a unique identifier, the author, the deadline (if applicable), an indication whether the change is required or optional, the change type, and an abstract or description of the proposed change.

### 4.3.6 Solution Scope Management (K2)

LO-4.3.8 Understand the concept of requirements scope (K2)

The solution scope, defined in Business Case and Project Initiation Documentation, serves as a basis for managing requirements during the realization or maintenance effort. The requirements determining the solution scope should support the Business Goals and Needs.

Typical activities of scope management include the following activities [BABOK]:

- Selecting the requirements determining the solution scope
- Establishing the requirements baseline
- Creating a structure for traceability
- Identifying interfaces with external solutions, processes and other areas of the realization/maintenance work
- In case of change of Business Need – identifying changes in the scope (requirements)
- Maintaining scope approval by the stakeholders

Agile approaches typically do not require formal configuration and change management procedures for requirements and related work products. Priorities of realization and the scope of solution to be implemented during a specific iteration are established at the beginning of each iteration. Normally no change is allowed during an iteration. In case of need for change, a new requirement is added to the requirements list (eg. Product Backlog).

### 4.3.7 Quality Assurance (K2)

LO-4.3.9 Know methods for Quality Assurance in Business Analysis (K1)

LO-4.3.10 Understand the meaning of QA in building right approach to Business Analysis (K2)

When defining the Requirements Management process, it is also necessary to define necessary Quality Assurance (QA) activities to ensure that the different Requirements Engineering processes and their products are of good quality.

Quality Assurance is defined as “all the planned and systematic activities implemented within the quality system, and demonstrated as needed, to provide adequate confidence that an entity will fulfill requirements for quality” [ISO 9000]. This definition implies that the actions taken are “planned and systematic” and they “provide adequate confidence” that the desired level of quality will be achieved. These actions include operational techniques and activities used to fulfill the requirements for quality.

To achieve the required level of quality, Quality Control is needed as well. The main goal of Quality Control is to steer and control the quality of products or services through use of operative methods so that they meet specified standards. The operative methods involved in Requirement Engineering include Project Management, Risk Management, Change Management, Verification and Validation, reviews, and Configuration Management and Tracing of Requirements.

In the context of Requirements Engineering, Quality Control may also focus on verifying whether the produced requirements documentation meets relevant quality criteria.

In order to ensure the required level of quality, verification and validation should be planned and executed from the beginning of the initiative.

Quality Assurance and Quality Control of requirements and related work products may be supported by the following means:

- Standards and templates
- Traceability to manage scope
- Different types of reviews
- Prototyping to evaluate alternative solution design options
- Evaluation of requirements/specification quality criteria, especially testability

## 4.4 Tools and Techniques (K2)

### 4.4.1 Tools (K2)

LO-4.4.1 Know different types of tools supporting Requirements Engineering activities and their application (K1)

Tools supporting Requirements Engineering activities can be classified as follows:

- Requirements management tools
- Requirements and solution modeling tools
- Solution prototyping tools

Many tools facilitate more than one activity, for example modeling tools can offer a requirements repository with configuration and change management facilities supporting different modeling notations, documentation generation, and statistics.

### 4.4.2 Techniques (K2)

LO-4.4.2 Know different types of techniques supporting Requirements Engineering activities and their application (K1)

LO-4.4.3 Understand the purpose and application of techniques supporting different Requirements Engineering activities (K2)

Types of techniques supporting Requirement Engineering activities include:

- Documentation techniques
- Information elicitation techniques
- Communication and team collaboration techniques
- Solution modeling and design techniques

Specific techniques are:

- Brainstorming
- Prototyping
- 5 Why
- Decomposition
- Persona
- User story
- Story mapping
- Use case
- User scenario
- Survey
- Workshops

### 4.4.3 Notations (K2)

LO-4.4.4 Know the purpose and application of formal modeling notations (UML) (K1)

LO-4.4.5 Understand the application of the following diagrams: UML activity, use case, state machine, class diagram (K2)

One common method of solution modeling is UML (Unified Modeling Language). UML is a unified notation for the analysis and design of systems. The notation provides several types of diagrams to describe different views of the solution. These diagrams are divided into behavior and structure diagrams, where behavior diagrams depict behavioral features of a system or business process, and structure diagrams depict the structural elements composing a system or function.

To model more complex solutions, especially in System Engineering, another unified modeling notation can be used – SysML (System Modeling Language). SysML allows for modeling a wide range of systems which include hardware, software, information, processes, personnel and facilities.

SysML reuses seven of UML's diagrams and provides two new diagrams: a requirement diagram which captures functional, performance and interface requirements and a parametric diagram to define performance and quantitative constraints.

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## 5. Solution Evaluation and Optimization (K3)

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### Timing

100 minutes

### Terms

Evaluation, Optimization

### Learning Objectives

The objectives identify what you will be able to do following the completion of each module.

#### 5.1 Evaluation (K3)

- LO-5.1.1 Know the purpose, activities, methods and results of solution evaluation (K1)
- LO-5.1.2 Understand the purpose of evaluating the solution based on the solution proposal (K2)
- LO-5.1.3 Understand the concept, meaning and methods for evaluating solution performance once it is in place (K2)
- LO-5.1.4 Perform solution evaluation using specified evaluation criteria (K3)

#### 5.2 Optimization (K1)

- LO-5.2.1 Know the purpose, activities, methods and results of solution optimization (K1)

## 5.1 Evaluation (K3)

LO-5.1.1	Know the purpose, activities, methods and results of solution evaluation (K1)
LO-5.1.2	Understand the purpose of evaluating the solution based on the solution proposal (K2)
LO-5.1.3	Understand the concept, meaning and methods for evaluating solution performance once it is in place (K2)
LO-5.1.4	Perform solution evaluation using specified evaluation criteria (K3)

Solution Evaluation covers a set of activities that are performed in order to ensure that the capabilities provided by the solution proposal facilitate the stated Business Need(s), and satisfy business, stakeholder and solution requirements.

Solution Evaluation is typically based on agreed requirements. During evaluation, the solution proposal is examined against compliance with the requirements and the Business Case. It is necessary to consider both business and technical assumptions and constraints as well, as they may determine the choice of solution. Solution Evaluation may result in discovering additional capabilities that had not been previously considered.

Common methods for Solution Evaluation:

- Reviews and inspection (often based on Requirements Traceability Matrix (RTM) and/or requirements specifications documents)
- Demonstrating the solution proposal (prototype) to the stakeholders with the aim of explaining and confirming the appropriateness of implementing requirements
- Collecting stakeholders feedback regarding the solution proposal(s)

Solution evaluation often includes an organizational readiness assessment, including:

- Cultural assessment
- Operational assessment
- Technical assessment
- Business impact assessment

In the case of evaluating a released (operating) solution, the main focus is on checking if the solution successfully satisfies the Business Needs and Goals described in the Business Case (as defined during Strategy Analysis). In case of defects, weaknesses or new capabilities, the Business Analyst should determine the most appropriate response to the identified problems and opportunities for solution or process improvement.

Common methods for evaluating a released solution includes:

- Reviews against defined KPI, or acceptance and evaluation criteria
- Reviews against requirements stated in the Business Case
- Root cause analysis (for problem analysis)
- Usability evaluation

## 5.2 Optimization (K1)

LO-5.2.1 Know the purpose, activities, methods and results of solution optimization (K1)

Optimization aims to introduce controlled change into the current solution or process in order to add value. Optimization may reduce the cost of operation, improve quality, allow alignment with other solutions etc.

Supporting optimization efforts is one of the tasks of a Business Analyst. The Business Analyst analyzes solutions and business processes used within an organization in order to discover ineffective elements and areas for improvement. With this knowledge, the Business Analyst is able to refine the solution and improve it adding more value.

Common approaches to optimization include:

- Manual re-design of the solution or processes on the basis of experience and domain knowledge
- Re-design of the solution or processes based on Solution Evaluation activities
- Introducing means for optimizing performance of solutions or business processes in the organization (e.g., SAP, ERP, CRM software)
- BPR (Business Process Reengineering)

Process Improvement is a set of actions taken by a Process Owner to identify, analyze and improve existing processes within an organization to meet new goals and objectives. Optimization of business processes can be supported by methods like Business Process Improvement (BPI). BPI is a systematic approach to optimize an organization's processes to achieve more efficient results and significantly change the performance of an organization [Harrington].

BPI is conducted in three steps [Harrington]:

1. Define the organization's strategic goals and purposes together with the existing structure and processes (define the "AS-IS")
2. Determine the organization's customers or stakeholders, identify what outcomes would add value to the organization's objectives and determine what would be the best way to align its processes to achieve those outcomes (define the "TO-BE")
3. Re-organize the business processes to realize the goals and meet the new objectives, using the tools available within the BPI methodology

Optimization efforts can be also supported by following specific methodologies or strategies:

- ISO 9000 or other standards aiming to improve performance of an organization
- Capability Maturity Model Integration/Capability Maturity Model (CMMI/CMM)
- Benchmarking
- Total Quality Management (TQM)
- Six Sigma

Typical results of optimization works are suggestions for improvements, new requirements and/or modifications to existing requirements or solutions.



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## 6. References

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### 6.1 Books and Other Publications

[Agile Alliance] *What is agile?*, <https://www.agilealliance.org/agile101/what-is-agile/>, retrieved 01.08.2017

[Bens] Bens, Ingrid, *Facilitation at a Glance! 4th Edition*, Goal/QPC; 4th edition, 2016, ISBN-10: 1576811832

[BMM] Business Motivation Model™ (BMM™), Version 1.3, <http://www.omg.org/spec/BMM/1.3>, retrieved 01.08.2017

[BPMN] Business Process Model And Notation™ (BPMN™), Version 2.2, <http://www.omg.org/spec/BPMN/2.0/>, retrieved 01.08.2017

[Business Analyst Learnings 1] *Waterfall to Agile: The Role of BAs in Agile, Projects*, <http://businessanalystlearnings.com/blog/2013/4/21/traditional-to-agile-the-role-of-bas-in-agile-projects>, retrieved 01.08.2017

[Business Analyst Learnings 2] *Creativity, Innovation & The Business Analyst*, <http://businessanalystlearnings.com/blog/2014/9/9/creativity-innovation-the-business-analyst>, retrieved 01.08.2017

[BABOK] International Institute of Business Analysis, *A Guide to the Business Analysis Body of Knowledge*, Version 2.0 and 3.0

[BA-EXPERTS 1] *What Are Business, Stakeholder, and Solution Requirements?*, <https://www.youtube.com/watch?v=QmCU68Vnrdg>, retrieved 01.08.2017

[BA-EXPERTS 2] *What Techniques Do Business Analysts Use?*, <https://www.youtube.com/watch?v=dPB0IUrpeYA>, retrieved 01.08.2017

[BA-EXPERTS 3] *Business Analysis and System Development*, <https://www.youtube.com/watch?v=yLuvGh2RIBc&index=9&list=PL0tIOIKKqXkxkaN8JkRkshW6NYg-1YCZ>, retrieved 01.08.2017

[Brown] Brown Tim, *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*, HarperCollins, 2009, ISBN 978-0061766084

[Carlson, Wilmot] Carlson C.C., Wilmot, W.W., *Innovation: The five disciplines for creating what customers want*, New York: Crown Business, 2006, ISBN: 0307336697

[Entrepreneur] *Defining Your Business Goals*, <http://www.entrepreneur.com/article/225655>, retrieved 17.08.2016

[Hass] Hass Kathleen and Associates, Project Management and Business Analysis Maturity Assessments, <http://www.kathleenhass.com/Whitepapers-docs/BA%20and%20PM%20Assessments.pdf>, retrieved 01.08.

[Hailes] Hailes Jarett - Modern Analyst Media LLC, *The Experts' Take on Business Analysis and Agile*, <http://www.modernanalyst.com/Resources/Articles/tabid/115/ID/1302/The-Experts-Take-on-Business-Analysis-and-Agile.aspx>, retrieved 01.08.2017

[Harrington] Harrington H. James, *Business Process Improvement: The Breakthrough Strategy for Total Quality, Productivity, and Competitiveness*, 1991

[IA Institute] Information Architecture Institute <http://www.iainstitute.org/>, retrieved 01.08.2017

[ICC/ESOMAR] ICC/ESOMAR (2008), *International Code on Market and Social Research*. ICC/ESOMAR Amsterdam, the Netherlands, 4th ed. See: [http://www.esomar.org/uploads/pdf/professional-standards/ICCESOMAR\\_Code\\_English\\_.pdf](http://www.esomar.org/uploads/pdf/professional-standards/ICCESOMAR_Code_English_.pdf), retrieved 01.08.2016

[IIBA Competency] IIBA® Business Analysis Competency Model Version 3.0, 2011, [http://iiba.ru/wp-content/uploads/2013/04/IIBA\\_Competency\\_Model\\_v3\\_Final.pdf](http://iiba.ru/wp-content/uploads/2013/04/IIBA_Competency_Model_v3_Final.pdf), retrieved 01.08.2017

[IQBBA Glossary] Standard glossary of terms used in Software Engineering Version 2.0

[Masters] Masters Morgan - Modern Analyst Media LLC, *An Overview of Enterprise Analysis*, <http://www.modernanalyst.com/Resources/Articles/tabid/115/ID/1567/An-Overview-of-Enterprise-Analysis.aspx>, retrieved 01.08.2017

[Morville, Rosenfeld] Morville Peter and Rosenfeld Louis, *Information Architecture for the World Wide Web: Designing Large-Scale Web Sites*, O'Reilly Media; 3rd edition, 2006, ISBN: 0596527349

[PRINCE2] Axelos, *Managing Successful Projects with PRINCE2® 2017 Edition*, Axelos, 2017 ISBN: 9780113315338

[Rainardi] Rainardi Vincent, *Building a Datawarehouse with examples in SQL Server*, Chapter 4 Functional and Nonfunctional Requirements, Springer, 2008, ISBN: 978-1-59059-931-0, [http://link.springer.com/chapter/10.1007%2F978-1-4302-0528-9\\_4?LI=true#page-1](http://link.springer.com/chapter/10.1007%2F978-1-4302-0528-9_4?LI=true#page-1), retrieved 01.08.2017

[Sparx] *The Business Process Model*, see: [http://www.sparxsystems.com.au/downloads/whitepapers/The\\_Business\\_Process\\_Model.pdf](http://www.sparxsystems.com.au/downloads/whitepapers/The_Business_Process_Model.pdf), retrieved 01.08.2017

[TwentyEighty Strategy Execution] *Enterprise Analysis: Building a Foundation from the Top Down*, White Paper, [http://www.esi-intl.co.uk/resource\\_centre/white\\_papers/enterprise%20analysis%20-%20building%20a%20foundation%20from%20the%20top%20down.pdf](http://www.esi-intl.co.uk/resource_centre/white_papers/enterprise%20analysis%20-%20building%20a%20foundation%20from%20the%20top%20down.pdf), retrieved 27.08.2016

[TGilb] Gilb Tom, *Glossary*, <http://concepts.gilb.com/Glossary>, retrieved 01.08.2017

[UML] Unified Modeling Language™ (UML®), Version 2.5, <http://www.omg.org/spec/UML/2.5>,  
retrieved 01.08.2017

[Web Style Guide] LynchPatrick J., Horton Sarah, *Web Style Guide 3rd Edition*,  
<http://webstyleguide.com/wsg3/3-information-architecture/index.html>, retrieved 01.08.2017

[Wieggers, Beatty] Wieggers, Karl E., Beatty, Joy, *Software Requirements (3rd Edition)*, Microsoft Press;  
3 edition, 2013, ISBN-10: 0735679665

## **6.2 Standards**

[IEEE 610] IEEE 610.12-1990 IEEE Standard Glossary of Software Engineering Terminology

[ISO/IEC/IEEE 29148] ISO/IEC/IEEE 29148:2011 Systems and software engineering -- Life cycle  
processes -- Requirements engineering

[ISO 9000] ISO 9000 Quality management:

ISO 9000:2015 Quality management systems. Fundamentals and vocabulary

ISO 9001:2015 Quality management systems. Requirements

[ISO/IEC 25000] ISO/IEC 25000:2014 Systems and software engineering -- Systems and software  
Quality Requirements and Evaluation (SQuaRE) -- Guide to SQuaRE

[ISO 31000] ISO 31000 Risk Management - Principles and Guidelines on Implementation

[SWEBOK] SWEBOK - The Guide to the Software Engineering Body of Knowledge:  
<http://www.computer.org/portal/web/swebok/home>, retrieved 01.08.2017

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## 7. Appendix A – Learning Objectives/Cognitive Level of Knowledge

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The following learning objectives are defined as applying to this syllabus. Each topic in the syllabus will be examined according to the learning objective for it.

### 7.1 Cognitive Levels of Knowledge

#### Level 1: Remember (K1)

The candidate will recognize, remember and recall a term or concept.

**Keywords:** Remember, retrieve, recall, recognize, know

#### Level 2: Understand (K2)

The candidate can select the reasons or explanations for statements related to the topic, and can summarize, compare, classify, categorize and give examples for the testing concept.

**Keywords:** Summarize, generalize, abstract, classify, compare, map, contrast, exemplify, interpret, translate, represent, infer, conclude, categorize, construct models

#### Level 3: Apply (K3)

The candidate can select the correct application of a concept or technique and apply it to a given context.

**Keywords:** Implement, execute, use, follow a procedure, apply a procedure

#### Reference

(For the cognitive levels of learning objectives)

Anderson, L. W. and Krathwohl, D. R. (eds) (2001) *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*, Allyn & Bacon

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## 8. Appendix B – Rules Applied to the IQBBA

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### 8.1 Foundation Syllabus

The rules listed here were used in the development and review of this syllabus. (A “TAG” is shown after each rule as a shorthand abbreviation of the rule.)

### 8.2 General Rules

SG1. The syllabus should be understandable and absorbable by people with zero to six months (or more) experience in Business Analysis. (6-MONTH)

SG2. The syllabus should be practical rather than theoretical. (PRACTICAL)

SG3. The syllabus should be clear and unambiguous to its intended readers. (CLEAR)

SG4. The syllabus should be understandable to people from different countries, and easily translatable into different languages. (TRANSLATABLE)

SG5. The syllabus should use American English. (AMERICAN-ENGLISH)

### 8.3 Current Content

SC1. The syllabus should include recent Business Analysis concepts and should reflect current best practices in Business Analysis where this is generally agreed. The syllabus is subject to review every two to five years. (RECENT)

SC2. The syllabus should minimize time-related issues, such as current market conditions, to enable it to have a shelf life of two to five years. (SHELF-LIFE).

### 8.4 Learning Objectives

LO1. Learning objectives should distinguish between items to be recognized/remembered (cognitive level K1), items the candidate should understand conceptually (K2), and items the candidate should be able to practice/use (K3). (KNOWLEDGE-LEVEL),

LO2. The description of the content should be consistent with the learning objectives. (LO-CONSISTENT)

LO3. To illustrate the learning objectives, sample exam questions for each major section should be issued along with the syllabus. (LO-EXAM)

## **8.5 Overall Structure**

ST1. The structure of the syllabus should be clear and allow cross-referencing to and from other parts, from exam questions and from other relevant documents. (CROSS-REF)

ST2. Overlap between sections of the syllabus should be minimized. (OVERLAP)

ST3. Each section of the syllabus should have the same structure. (STRUCTURE-CONSISTENT)

ST4. The syllabus should contain version, date of issue and page number on every page. (VERSION)

ST5. The syllabus should include a guideline for the amount of time to be spent in each section (to reflect the relative importance of each topic). (TIME-SPENT)

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## **9. References**

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SR1. Sources and references will be given for concepts in the syllabus to help training providers find out more information about the topic. (REFS)

SR2. Where there are not readily identified and clear sources, more detail should be provided in the syllabus. For example, definitions are in the Glossary, so only the terms are listed in the syllabus. (NON-REF DETAIL)

### **9.1 Sources of Information**

Terms used in the syllabus are defined in Standard Glossary of Terms used in Software Engineering. A version of the Glossary is available from IQBBA.

A list of recommended books on Business Analysis is also issued in parallel with this syllabus. The main book list is part of the References section.



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## 10. Appendix C – Notice to Training Providers

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Each major subject heading in the syllabus is assigned an allocated time in minutes. The purpose of this is both to give guidance on the relative proportion of time to be allocated to each section of an accredited course, and to give an approximate minimum time for the teaching of each section. Training providers may spend more time than is indicated and candidates may spend more time again in reading and research. A course curriculum does not have to follow the same order as the syllabus.

The syllabus contains references to established standards, which should be used in the preparation of training material. Each standard used must be the version quoted in the current version of this syllabus. Other publications, templates or standards not referenced in this syllabus may also be used and referenced, but will not be examined.

The specific areas of the syllabus requiring practical exercises are as follows:

- 1. Strategy Definition
  - 1.1 Business Process Analysis
- 2. Management of Business Analysis Process
  - 2.1 Approaches to Business Analysis
  - 2.2 Communication
- 3. Requirements Engineering in Business Analysis
  - 3.1 Elicitation
  - 3.2 Analysis and Modeling
  - 3.3 Specification
  - 3.4 Information Architecture
  - 3.5 Traceability
- 4. Solution Evaluation and Optimization
  - 4.1 Evaluation