ICT Standards

ICT Planning and Analysis

Document number: ISMF-ICT/3.05
Version: 1.20
1 Document control
1.1 List of Abbreviations

<table>
<thead>
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>DFD</td>
<td>Data Flow Diagram</td>
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<tr>
<td>ERD</td>
<td>Entity Relationship Diagram</td>
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<td>ICT</td>
<td>Information and Telecommunication Technology</td>
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<td>LDM</td>
<td>Logical Data Model</td>
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<td>PLC</td>
<td>Project Life Cycle</td>
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</table>

1.2 Purpose of this Document

This document constitutes Deliverable 3.05 “ICT Planning and Analysis” of Phase 1 – Development of Reference Documents, Sub-Phase 1.2 – Elaboration of Technical Standards (TS).

The scope of the document is to provide templates and guidelines about:

- Requirements Specifications
- Detailed Analysis
- Detailed Design

Each one of the templates above is provided in two distinct forms:

- As an all-purpose template; this should be further elaborated to cover specific needs
- As a template specific to Software Development / Integrated system implementation project (respectively named Requirements Specification, System Analysis, System Design)

The proposed templates should be followed by the contractors and be part of their deliverables. This fact must be specified in both the Tender and Contract Documents.
2 Introduction

2.1 Overview

According to the Project Life Cycle presented in deliverable 3.02 “Introductory Document”, this document covers the following deliverables of PLC:

- Requirements Specifications
- Detailed Analysis
- Detailed Design

Each one of the above documents (in the general format as well as in the specific one) will be presented as Annex of the current document.

2.2 Audience

The primary audience consists of the Organization’s staff which is involved in the follow-up of an ICT project Analysis and Design (i.e. Business champion, Project Manager and Acceptance committee, if any).

The secondary audience consists of contractor’s staff (Project Managers, Business and Software Analysts etc), who must follow the above templates in order to provide the requirements specification and the Analysis and Design deliverables, as indicated in their Tender and Contract Documents.

2.3 In scope – Out of Scope

It is in scope of the deliverable to provide clear templates and guidelines covering the areas mentioned above.

It is out of scope of the deliverable to provide a methodology to perform the Requirements and Analysis, as well as the Design.
3 Templates

3.1 Requirements Specification (general)

3.1.1 Purpose
The purpose of this document is to define the contents of the deliverable(s) expected to be delivered at the due date of every project implementation involving the preparation of acquirers / user requirements.

3.1.2 Audience
This document is directed at those people who are responsible for producing Requirements Specification Deliverables for the implementation of ICT for the Syrian Public Sector.

All contractors engaged to perform requirements specifications are instructed to follow and conform to the standards outlined in this document. This fact must be specified in the tender and contract documents.

3.2 Requirements Specification (Software development)
The same specifications apply as for section 3.1 above, further detailed for software development / integrated system implementation projects.

3.3 Detailed Analysis (general)

3.3.1 Purpose
The purpose of this document is to define the contents of the deliverable(s) expected to be delivered at the due date of every contract execution involving the Analysis of ICT project's.

3.3.2 Audience
This document is directed at those people who are responsible for producing Analysis Deliverables for ICT projects with the Syrian Public Sector.

All contractors engaged to perform Analysis are instructed to follow and conform to the standards outlined in this document. This fact must be specified in the tender and contract documents.

3.4 System Analysis (Software development)
The same specifications apply as for section 3.3 above, further detailed for software development / integrated system implementation projects.

3.5 Detailed Design (general)
The purpose of this document is to define the contents of the deliverable(s) expected to be delivered at the completion of every contract involving the design of an ICT project outcome.

3.5.1 Audience
This document is directed at those people who are responsible for producing Design Deliverables for ICT projects in the Syrian Public Sector

All contractors engaged to perform detailed design are instructed to follow and conform to the standards outlined in this document. This fact must be specified in the tender and contract documents.

3.6 System Design (Software development)

The same specifications apply as for section 3.5 above, further detailed for software development / integrated system implementation projects.
4 ANNEXES

The following templates have been attached:

ANNEX I: Requirements Specifications (general)
ANNEX II: Requirements Specifications (Software development)
ANNEX III: Detailed Analysis (general)
ANNEX IV: System Analysis (Software development)
ANNEX V: Detailed Design (general)
ANNEX VI: System Design (Software development)
ANNEX I

Requirements Specifications (general)
Requirements Specifications

Project: [Project Name]
Project Number: [Project #]

Author: 
Creation date: 
Last updated: 
Document number: 
Version: 

Approvals:

Organization
Project sponsor      Signature      Date
[Name]
[Title*]

(Optional others)  Signature      Date
[Name]
[Title*]

Contractor
Project sponsor      Signature      Date
[Name]
[Title*]

(Optional others)  Signature      Date
[Name]
[Title*]
1 Document control

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2 **Introduction**

The Introduction section describes what the document contains and how it is organized.

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<td>The contents should usually follow the template of the current document (&quot;Requirements Specifications&quot;). In case which extra contents are added or some of the template’s contents are eliminated, document the reasons.</td>
</tr>
</tbody>
</table>

2.1 **Purpose and Audience**

Define the purpose of the Requirements Specifications document and identify the intended audience(s).

<table>
<thead>
<tr>
<th>Guideline 2.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>This document must be reviewed and approved as appropriately. In any case it serves as documentation for the justifications of the analysis and design choices (see documents “xxxx Analysis” and “xxxx Design”).</td>
</tr>
</tbody>
</table>

2.2 **References**

List any documents referenced to create this Requirements Specifications document.

<table>
<thead>
<tr>
<th>Guideline 2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related documents usually include Feasibility and other related studies, Project Plan, legislative framework etc.</td>
</tr>
</tbody>
</table>
3 System Overview

The System Overview section:
- Discusses the background of the project
- Describes the system’s scope and objectives.

Guideline 3
The scope and the background of the system are presented in the Master Plan, from which they can be copied. Indicate and document the changes, if any.

Describe the expected result within the business case, including strategic issues in which the project is involved or which it specifically addresses. This section must provide a clear context for the project, for a person who may not necessarily know anything about it.

3.1 Project Context

Describe the context and origin of the project.

Guideline 3.1
The description is done by defining whether the system is:
- A follow-on member of a project family
- A replacement for existing systems, or
- A new self-contained project.

If a follow-on member of a project family, describe the context and special characteristics of the other projects, as well as the relations with them (at high level).

If a replacement for existing system, describe the development platform of the existing system, as well as possible data migration needs (at high level).

3.2 General Constraints

Identify any business or system constraints that will impact the manner in which the project is to be specified, designed, implemented, or tested (if applicable).

Guideline 3.2
These are usually deviations from the procedures and methods described in the ICT-Standards documents. They must have been clearly stated in the Tender and Contract Documents. If not, they must be documented.

3.3 Measures of Success

Identify the measures of success for this project or system development. These can then be used to assess the degree of success of the project/system when completed.

Guideline 3.3
These indicators must be defined during the Feasibility Study and refined as appropriate during the requirements specification period.
3.4 Assumptions and Dependencies

List any assumptions that have been made during the initiation of the project. In addition, list any dependencies that may impact its success or the desired result.

<table>
<thead>
<tr>
<th>Guideline 3.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assumptions may include adaptations of the legal framework, the expected level of user skills, etc</td>
</tr>
<tr>
<td>Dependencies may include the completion of other projects or tasks of other projects, whose output is necessary for the implementation of system in question.</td>
</tr>
<tr>
<td>&lt;You can copy from the Master Plan document the Assumptions and Dependencies section. Indicate and document any related change&gt;.</td>
</tr>
</tbody>
</table>
## 4 Business Requirements

### 4.1 Business Context

Provide a graphic and textual definition of the overall context of the Organization.

<table>
<thead>
<tr>
<th>Guideline 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;You can refer to the “ICT-Business Function Analysis” Document for the description of the Context Diagram&gt;.</td>
</tr>
</tbody>
</table>

### 4.2 Business Process Model

Produce a high-level business process model. Include only functions/processes related to the project. No attempt should be made to distinguish between manual and automated processes of the system/business or to define how automation will be achieved.

<table>
<thead>
<tr>
<th>Guideline 4.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;You can refer to the “ICT-Business Function Analysis” Document for a description of Business Process and Use Case modelling&gt;.</td>
</tr>
<tr>
<td>Tools that can be used (indicatively) include Cross Functional diagrams, DFD diagrams and use cases. Remain at high level, since further decomposition will be done at the functional specifications section.</td>
</tr>
</tbody>
</table>

### 4.3 Business Drivers/Issues

Define the critical business factors that are to be addressed or satisfied by this system. Consider any business issues that may impact or impede the success of the system.

### 4.4 Input & Output Requirements

<table>
<thead>
<tr>
<th>Guideline 4.4</th>
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<tbody>
<tr>
<td>This section is an optional one, since it is not relevant to all cases of Specifications Requirements (e.g. services, hardware procurement/installation etc). Eliminate it if not relevant.</td>
</tr>
</tbody>
</table>

Give a high-level definition of the source, medium and type of inputs to the system as well as the expected outputs in the form of electronic and/or hardcopy formats. Associate expected volumes.
5 Other High Level information

Guideline 5

This section is an optional one. It can be eliminated if there is no other high level information to be included.

Examples of possible contents include (if appropriate):
- Domain – class diagrams
- Definition of main system entities and their relations and attributes etc

Change the section’s title and add subsections as appropriate.
6 Requirements

<table>
<thead>
<tr>
<th>Guideline 6</th>
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<tbody>
<tr>
<td>Requirements are distinguished in two parts:</td>
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<tr>
<td>☐ Requirements on the content, which describe what is wanted.</td>
</tr>
<tr>
<td>☐ Requirements on the context, which describe how to carry out the requirements on the content (in terms of time constraints, spatial constraints, performance, security, usability etc, whatever is applicable).</td>
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</tbody>
</table>

6.1 Requirements on the Content

Specify each individual requirement on the content that must be supported by the project.

<table>
<thead>
<tr>
<th>Guideline 6.1</th>
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</thead>
<tbody>
<tr>
<td>Requirements on the Content must be in accordance with the ones described in the Tender and Contract Documents, unless mutually agreed and documented. Use the relevant requirements presented in the Tender or Contract Document as a guide during the Requirements gathering phase.</td>
</tr>
</tbody>
</table>

Some examples of requirements on the content are as follows:

- In case of software and/or integrated systems, Requirements on the content are the description of the functional requirements which include the business logic
- In case of training provision, Requirements on the content include the number of users and the detailed topics to be taught.
- In case of service provision, Requirements on the content include a detailed description of the services.

Change the subsections headers and/or add subsections as appropriate.

6.2 Requirements on the context

Specify each individual requirement on the context that must be provided by the system.

<table>
<thead>
<tr>
<th>Guideline 6.2</th>
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<tbody>
<tr>
<td>The requirements on the context are typically constraints on the requirements on the content – that is, not what the project will provide, but how it will provide it (how quickly, how efficiently, how easily from the user’s perspective, etc.). In other words, Requirements on the context describe qualitative aspects of the project.</td>
</tr>
</tbody>
</table>

Requirements on the context must also be in accordance with the ones described in the Tender and Contract Documents, unless mutually agreed and documented. Requirements on the context to be considered may include:

- In case of software, hardware and/or integrated system implementation (Non-functional Requirements):
  - Security Requirements,
  - Performance Requirements
  - Availability Requirements
  - Scalability Requirements etc
- In case of training services provision:
  - Duration of the courses
  - Number of students per class
### Guideline 6.2

- Number of teaching hours per day etc
- In case of maintenance and support services provision:
  - Working hours
  - Response time
  - Acceptable system downtime etc

Change the subsections headers and/or add subsections as appropriate.

### 6.3 Other Requirements

**Guideline 6.3**

This section is an optional one. It can be eliminated if there is no other category of requirements to be described.

Examples of possible contents include (if appropriate):
- Machine interface requirements
- User Interface requirements etc

Change the section’s title and add subsections as appropriate.
7 Miscellaneous

Provide any additional information or documents that might be useful during the Requirements Specification activity.
8 Project Issues

<table>
<thead>
<tr>
<th>Guideline 8</th>
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<tr>
<td>The contents of this section reflect the related sections in the Master Plan. Document and justify any deviation from the Master Plan.</td>
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</table>

8.1 Projected Development Effort

Provide a high-level description and estimate of subsequent project development efforts. This estimate includes the estimated effort required to complete the following phases:

- Design
- Build (if applicable)
- Test (if applicable), and
- Implementation.

These estimates are based upon the requirements as specified in this document.

8.2 Proposed Project Schedule

Documents the high-level project schedule, which is based upon the effort described in the previous section.
9 **Annexes**

<table>
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<th><strong>Guideline 9</strong></th>
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<tbody>
<tr>
<td>This section is an optional one. It can be eliminated if there are no annexes to the Requirements Specification document.</td>
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<tr>
<td>Annexes usually include detailed specifications and descriptions which are not in everybody’s interest. Be sure to include references to the annexes in the main body of the document</td>
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<tr>
<td>Change the section’s title and/or add subsections as appropriate.</td>
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ANNEX II

Requirements Specifications

(Software development)
Requirements Specifications

Project: [Project Name]

Project Number: [Project #]

Author:
Creation date:
Last updated:
Document number:
Version:

Approvals:

Organization
Project sponsor [Name] [Title*] Signature Date
(Optional others) [Name] [Title*] Signature Date

Contractor
Project sponsor [Name] [Title*] Signature Date
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The System Overview section:
- Discusses the background of the project
- Describes the system’s scope and objectives.

Guideline 3
The scope and the background of the system are presented in the Master Plan, from which they can be copied. Indicate and document the changes, if any.

Describe the resulting software within the business case, including strategic issues in which the system is involved or which it specifically addresses. This section must provide a clear context for the system, for a person who may not necessarily know anything about this system.

3.1 Project Context

Describe the context and origin of the system.

Guideline 3.1
The description is done by defining whether the system is:
- A follow-on member of a system family
- A replacement for existing systems, or
- A new self-contained system.

If a follow-on member of a system family, describe the context and development platform of the existing systems, as well as the interactions with them (at high level).

If a replacement for existing system, describe the development platform of the existing system, as well as possible data migration needs (at high level).

3.2 General Constraints

Identify any business or system constraints that will impact the manner in which the system is to be specified, designed, implemented, or tested.

Guideline 3.2
These are usually deviations from the procedures and methods described in the ICT-Standards documents. They must have been clearly stated in the Tender and Contract Documents. If not, they must be documented.

3.3 Measures of Success

Identify the measures of success for this project or system development. These can then be used to assess the degree of success of the project/system when completed.

Guideline 3.3
These indicators must be defined during the Feasibility Study and refined as appropriate during the requirements specification period.
### 3.4 Assumptions and Dependencies

List any assumptions that have been made during the initiation of the project. In addition, list any dependencies that may impact its success or the desired result.

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*<You can copy from the Master Plan document the Assumptions and Dependencies section. Indicate and document any related change>*.
4 Business Requirements

4.1 System Context
Provide a graphic and textual definition of the overall context of this system.

Guideline 4.1
<You can refer to the “ICT-Business Function Analysis” Document for the description of the System Context Diagram>.

4.2 Business Process Model
Produce a high-level business process model. No attempt should be made to distinguish between manual and automated processes of the system/business or to define how automation will be achieved.

Guideline 4.2
<You can refer to the “ICT-Business Function Analysis” Document for a description of Business Process and Use Case modelling>.
Tools that can be used (indicatively) include Cross Functional diagrams, DFD diagrams and use cases. Remain at high level, since further decomposition will be done at the functional specifications section.

4.3 Business Drivers/Issues
Define the critical business factors that are to be addressed or satisfied by this system. Consider any business issues that may impact or impede the success of the system.

4.4 Input & Output Requirements
Give a high-level definition of the source, medium and type of inputs to the system as well as the expected outputs in the form of electronic and/or hardcopy formats. Associate expected volumes (low, normal and peaks).
5 Domain Model

The Domain Model section includes Class Diagrams and Class Specifications. A Domain Model includes both graphical (diagrammatic) and written (textual) descriptions of objects within the problem domain or the software application. Domain Models also describe how the classes are structurally related to one another.

<table>
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<tr>
<td>This section is an optional one. It can be eliminated if the chosen development, methodology and tools aren’t relevant with the notions of domains and classes</td>
</tr>
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</table>

5.1 Class Diagrams

Class Diagrams use classes and associations to describe the static structure of a system.

Classes represent abstractions of objects with common characteristics, and may be definitions of software classes rather than real-world concepts. In other words, they can model domain concepts or software classes.

Associations represent the structural relationships between classes.

5.2 Class Specifications

Class Specifications, or Definitions, define and describe each class in a textual manner.
6 Requirements

Guideline 6
Requirements are distinguished in two parts:
- Functional requirements, which describe what the system does
- Non-functional requirements, which describe how the system performs the functional requirements (in terms of performance, security, usability etc).

6.1 Functional Requirements
Specify each individual functional requirement that must be supported by the system for each process.

Guideline 6.1
Functional Requirements must be in accordance with the ones described in the Tender and Contract Documents, unless mutually agreed and documented. Use the relevant functional requirements presented in the Tender or Contract Document as a guide during the Requirements gathering phase.

Use the following presentation methodology for the description of the functional requirements:
- Proceed with the decomposition of the business processes at the appropriate level.
- Dedicate a session for each business process.
- Provide a graphical presentation of the process (e.g. Data Flow Diagram). Provide in textual form the business logic and other related functional requirements.
- Describe inputs at high-level and outputs in detail.

<You can also refer to the document “ICT-Software Applications” for a discussion about the functional requirements of the most commonly used software>

6.2 Non-Functional Requirements
Specify each individual non-functional requirement that must be supported by the system.

Guideline 6.2
The non-functional requirements for a system are typically constraints on the functional requirements – that is, not what the system does, but how it does it (how quickly, how efficiently, how easily from the user’s perspective, etc.). In other words Non-Functional Requirements describe qualitative perspectives of the system. Other non-functional requirements may be required characteristics that are not part of the system’s functionality, e.g., conformance with legal requirements, scalability, interoperability, etc.

Non-Functional Requirements must also be in accordance with the ones described in the Tender and Contract Documents, unless mutually agreed and documented. Non-functional requirements to be considered include:
### Guideline 6.2

**System Requirements**
Provide a broad but shallow description of the technologies, if known, that will compose the anticipated system environment. The intent is not to restrict the developer’s options, but rather to avert implementation-dependency issues at delivery time. System requirements include:

- applicable system standards
- required operating systems
- required commercial software
- hardware or platform requirements
- performance requirements, and
- any environmental requirements.

**Usability Requirements**
Describe the expectations in regards to how easy the system will be to use. This includes considerations such as the educational level, experience and technical expertise of the target user community.

**Availability Requirements**
Describe the desired availability of the system and its components

<You can refer to the Annex I: Non-functional Requirements” for a more detail presentation of related issues>.

**Performance Requirements**
Describe the requirements for system performance, in terms of speed.

<You can refer to the Annex I: Non-functional Requirements” for a more detail presentation of related issues>.

**Security Requirements**
Specify the factors that would protect the software from accidental or malicious access, use, modification, destruction or disclosure.
Database security requirements should also be specified in this section.

<Refer to the “Security Standards” document for a discussion about the security issues>.

**Legal Requirements**
Define any legal requirements that the system must uphold, explain whether the system falls under the jurisdiction of any law.
This includes intellectual property rights and any standards with which the system must comply.

**Data Retention Period**
It specifies for how long data will be maintained in the system.

<You can refer to the Annex I: Non-functional Requirements” for a more detail presentation of related issues>
Guideline 6.2

Scalability Requirements
Define any requirements relating to scalability (e.g. The whole system must be scalable to support 3x more users, transactions beyond the requested values with constant response time when adding hardware).

6.3 Interface Requirements

Machine Interfaces
Describe any interfaces to other machines, computers or devices.

External System Interfaces
Describe any interfaces to other systems, products or networks.

Human Interfaces (Screen Images)
Describe human interfaces to the system, using screen images and associated text.

Guideline 6.3C
This section:
- provides an overview of the User Interface, describing the general functionality of the system from the user’s perspective
- includes screen shots that help describe or show the users perspective, and
- includes a discussion about screen objects and actions associated with those objects.

Interface Design Rules
Provide any specific design rules that relate to the system.

GUI Reusable Components
This section lists which standard GUI components are to be used in this system. In addition, this section should list any new reusable components.
7 Miscellaneous

Provide any additional information or documents that might be useful during the Project Life Cycle.
8 Project Issues

Guideline 8

The contents of this section reflect the related sections in the Master Plan. Document and justify any derivation from the Master Plan.

8.1 Projected Development Effort

Provide a high-level description and estimate of subsequent project development efforts. This estimate includes the estimated effort required to complete the following phases:

- Design
- Build
- Test, and
- Implementation.

These estimates are based upon the requirements as specified in this document.

8.2 Proposed Project Schedule

Documents the high-level project schedule, which is based upon the effort described in the previous section.
9 ANNEX I: NON-FUNCTIONAL REQUIREMENTS

9.1 System Availability

First of all, it is important to rate the system, in terms of required availability. This must be done during the Feasibility Study elaboration and confirmed at the Requirements Specification Phase.

<table>
<thead>
<tr>
<th>Category</th>
<th>Answer</th>
<th>Impact of an outage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical - Online / Network elements required for phone-call, SMS,</td>
<td>[ ]</td>
<td>Critical</td>
</tr>
<tr>
<td>WAP, GPRS (IN, MSC, MMSC, ....)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAS-(Value Added Service) used interactively by citizens</td>
<td>[ ]</td>
<td>High</td>
</tr>
<tr>
<td>Other system used interactive by citizens (IVR, Web server, .....</td>
<td>[ ]</td>
<td>High</td>
</tr>
<tr>
<td>System used by Employees (mainly call centre) during phone-calls with</td>
<td>[ ]</td>
<td>High</td>
</tr>
<tr>
<td>citizens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Support System (“Back Office”)</td>
<td>[ ]</td>
<td>Medium</td>
</tr>
<tr>
<td>Reporting Systems</td>
<td>[ ]</td>
<td>Low</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>[ ]</td>
<td>………</td>
</tr>
</tbody>
</table>

Describe the Maximum acceptable Duration of unplanned outage

<table>
<thead>
<tr>
<th>Production System</th>
<th>Test System</th>
<th>Development System</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
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</tr>
</tbody>
</table>

**Rationale:** This classification is required for the decision if we can operate on single server or if we must purchase more expensive, highly available clustered solution (and software supporting clustered environment).

Note: The associated increased costs are not just a one-time investment; each amount spent for the initial investment will increase yearly recurring maintenance costs by a significant percentage.

Notice also that the answers in the 2nd table have significant impact on the (monthly recurring) costs for maintenance contracts for hardware and software. If the maximum acceptable duration of an unplanned outage is lower then the “guaranteed time to fix” in the service contract, than a much more expensive “Highly Available (HA)” hardware- and software architecture is required.

9.2 Retention Period for Data

Information Systems will execute archiving or purging, but the retention period must be specified by the Business champion.
This information is required
- for sizing of the system (if we must keep 3 or 6 or 24 months history of data online we must not only purchase bigger server / storage for application, but also upgrade our backup system (infrastructure costs!), and daily backup will run longer. Also reports will run longer on bigger size of data.
- for requesting development or budgeting of purging- or if required - archiving-programs (which will cost a certain amount of money to be considered in the project budget and man days to be considered in project time plan.)

Describe the retention period for every major entity kept by the system. Estimate the related volumes.

9.3 Performance Requirements
Performance requirements must be specified either for interactive user interface or for batch processes and reporting.

9.3.1 Interactive User Interface (GUI)
An example of performance requirements adapted to the specific application of Citizen Service Centres is provided in the table below:

<table>
<thead>
<tr>
<th>Action</th>
<th>Expected value</th>
<th>Acceptance threshold during stress test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search citizen by code (without any Wildcard)</td>
<td>&lt;=1sec</td>
<td>3sec</td>
</tr>
<tr>
<td>Search citizen by Last Name, min. 5 Characters before wildcard</td>
<td>&lt;=3sec</td>
<td>10sec</td>
</tr>
<tr>
<td>The response time for the most-used screens must be below one second.</td>
<td>&lt;=1sec</td>
<td>3sec</td>
</tr>
<tr>
<td>Please provide a list of those interactive screens, where the response time (with real amount of at least 1-year data and under full user load) can be more than one second and provide the numbers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the following scenario e.g.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Existing customer comes into a CSC and demands for a particular service.”</td>
<td>&lt;=3 min</td>
<td>&lt;=5 min</td>
</tr>
<tr>
<td>“Citizen calls CSC and wants to know if and when his last demand has been serviced.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Citizen with pending demand for service calls CSC and informs about his changed address.”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.3.2 Batch Processing
Examples of performance required for batch processing include:
- Number of certificates processed per hour,
- Number of prepaid-subscribers pre-activated per hour...
9.3.3 Reporting

Performance requirement for critical reports is the time required for it to be produced (i.e. report runtime).
ANNEX III

Detailed Analysis (general)
Analysis

Project: [Project Name]

Project Number: [Project #]

Author:
Creation date:
Last updated:
Document number:
Version:

Approvals:

Customer
Project sponsor
[Name]
[Title*]
Signature Date

(Optional others)
[Name]
[Title*]
Signature Date

Contractor
Project sponsor
[Name]
[Title*]
Signature Date

(Optional others)
[Name]
[Title*]
Signature Date
# Document control

## 1.1 Change record

<table>
<thead>
<tr>
<th>Date</th>
<th>Author</th>
<th>Version</th>
<th>Change Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

## 1.2 Review

This document has been sent to the following for their review and comment:

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>
1.3 Contents

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   1.3 Contents iii
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   2.2 References 4
3 Overview 5
   3.1 Project Overview 5
   3.2 General Constraints 5
4 Project-specific chapters 6
5 Miscellaneous 7
6 Next Phase 8
   6.1 Detailed Workplan 8
   6.2 Resourcing 8
   6.3 Time Scale 8
   6.4 Costs 8
7 Annexes 9
2 Introduction

The Introduction section describes what the document contains and how it is organized.

<table>
<thead>
<tr>
<th>Guideline 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>The contents must usually follow the template of the current document (&quot;xxxx Analysis&quot;). In case which extra contents are added or some of the template’s contents are eliminated, document the reasons.</td>
</tr>
</tbody>
</table>

The Analysis activity in general describes the way in which the requirements gathered and presented in “Requirements Specifications” document will be addressed. *You may refer to the “Requirements Specification” document for further information*. 

The purpose of any project is to cover the gap between the “AS IS” (i.e. current) and the “TO BE” (i.e. desired) situation. If the “AS IS” situation (e.g. existing systems, current skill level, current organization culture etc) is not yet described in sufficient detail in another PLC document (e.g. Master Plan, Feasibility study), a related section must be dedicated in the current document.

2.1 Purpose and Audience

Define the purpose of the “xxxx Analysis” document and identify the intended audience(s).

<table>
<thead>
<tr>
<th>Guideline 2.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>This document must be reviewed and approved as appropriately. In any case it serves as documentation for the justifications of design choices (see document &quot;xxxx Design&quot;).</td>
</tr>
</tbody>
</table>

2.2 References

List any documents referenced to create this “xxxx Analysis” document.

<table>
<thead>
<tr>
<th>Guideline 2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related documents must include “Requirements Specifications” document</td>
</tr>
</tbody>
</table>
3 Overview

3.1 Project Overview

The Project Overview section:
- Discusses the background of the project
- Describes the project’s scope and objectives.

<table>
<thead>
<tr>
<th>Guideline 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-state the scope of this project and the deliverables being produced in order for this document to be read in the correct context.</td>
</tr>
<tr>
<td>&lt;The scope and the background of the project are probably presented in the “Master Plan” and “Requirements Specification” documents, from which they can be copied. Indicate and document the changes, if any&gt;.</td>
</tr>
<tr>
<td>Describe the expected results within the business case, including strategic issues in which the project is involved or which it specifically addresses. This section must provide a clear context for the project, for a person who may not necessarily know anything about it.</td>
</tr>
<tr>
<td>Identify the key elements of the project.</td>
</tr>
<tr>
<td>Explain what is in scope and what isn’t.</td>
</tr>
<tr>
<td>Describe relevant benefits, objectives and goals as precisely as possible.</td>
</tr>
</tbody>
</table>

3.2 General Constraints

Record the constraints that this project will have to consider or be aware of, during subsequent phases of the Project Life Cycle and while in operation.

<table>
<thead>
<tr>
<th>Guideline 3.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>These are usually deviations from the procedures and methods described in the ICT-Standards documents. They must have been clearly stated in the Tender and Contract Documents. If not, they must be documented.</td>
</tr>
<tr>
<td>&lt;Copy this section from “Requirements Specification” document. Indicate and document the changes, if any&gt;</td>
</tr>
</tbody>
</table>
## Project-specific chapters

<table>
<thead>
<tr>
<th>Guideline 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicate a section or subsection in describing each of the analysis views which are pertinent to the specific project. Examples:</td>
</tr>
<tr>
<td>- In case of software/integrated systems development, the following sections should be included:</td>
</tr>
<tr>
<td>- Logical Data Model</td>
</tr>
<tr>
<td>- Access/security requirements</td>
</tr>
<tr>
<td>- Business Function Model etc</td>
</tr>
<tr>
<td>- In case of a training project, include the training needs assessment etc</td>
</tr>
</tbody>
</table>

Change the section’s title and/or add subsections as appropriate
### 5 Miscellaneous

<table>
<thead>
<tr>
<th>Guideline 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>This section is an optional one. It may be omitted if no further documentation is needed</td>
</tr>
<tr>
<td>Describe any other issues, estimations etc. which do not fit in previous sections.</td>
</tr>
</tbody>
</table>
6 **Next Phase**

Produce details relating to the next phase of the project - usually the xxxx Design.

<table>
<thead>
<tr>
<th>Guideline 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>The contents of this section reflect the related sections in the Master Plan. Document and justify any derivation from the Master Plan.</td>
</tr>
</tbody>
</table>

Where there is an agreement that the contractor/entity performing the Analysis Phase will be proceeding with the Design Phase, these details need to be very specific and accurate. These next phase estimates and plans will then form part of the contract.

If there is no agreement that the contractor/entity performing the Analysis Phase will be proceeding with the Design Phase, these details may be more general and high level. The level of detail in these cases can be varied according to the requirements of the Project Sponsor and Business Analyst.

6.1 **Detailed Workplan**

Provide a detailed workplan for the next phase identifying all major deliverables and associated tasks.

6.2 **Resourcing**

Identify the resources and their roles to be used for the next phase. This resourcing is to identify and quantify both customer and contractor (if any) resources to be assigned to the next phase of the Project to assist with planning and estimating.

6.3 **Time Scale**

Define the expected start date, elapsed time and anticipated completion date for major deliverables of the next phase, as a minimum. Preferably this information will be supplied for most tasks within the next phase.

6.4 **Costs**

<table>
<thead>
<tr>
<th>Guideline 8.4</th>
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<tbody>
<tr>
<td>This section may be omitted if there is an agreement that the contractor performing the Analysis Phase will be proceeding with the Design Phase and no other (i.e. incidental) costs are foreseen for the Design phase.</td>
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</table>

Define the costs of the next phase of the project. It is preferred that the scope be defined to such a degree so as to enable the estimates to be fixed priced.
Annexes

<table>
<thead>
<tr>
<th>Guideline 7</th>
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<tbody>
<tr>
<td>This section is an optional one. It can be eliminated if there are no annexes to the “xxxx Analysis” document.</td>
</tr>
<tr>
<td>Annexes usually include detailed specifications and descriptions which are not in everybody’s interest. Be sure to include references to the annexes in the main body of the document.</td>
</tr>
<tr>
<td>Change the section’s title and/or add subsections as appropriate.</td>
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</tbody>
</table>
ANNEX IV

System Analysis

(Software Development)
System Analysis

Project: [Project Name]

Project Number: [Project #]

Author:
Creation date:
Last updated:
Document number:
Version:

Approvals:

Customer
Project sponsor [Name] [Title*]
Signature Date

(Optional others) [Name] [Title*]
Signature Date

Contractor
Project sponsor [Name] [Title*]
Signature Date

(Optional others) [Name] [Title*]
Signature Date
1 Document control

1.1 Change record

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1.3 Contents

1 Document control  
1.1 Change record  
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2 Introduction  
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2.2 References  

3 Overview  
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3.2 General Constraints  

4 Data Requirements  
4.1 Logical Data Model  
4.2 Data Rules & Validation  
4.3 Conversion/Load Requirements  
4.4 Spatial Requirements  

5 Access/Security Requirements  
5.1 User Classes  
5.2 User Security Matrixes  
5.3 Application Availability  
5.4 Disaster Recovery Requirements  
5.5 Cascade Delete Requirements  

6 The Business Function Model  

7 Miscellaneous  
7.1 Audit Checks  
7.2 Archive/Purge Requirements  
7.3 Warehousing Requirements  
7.4 Technical Environment Overview  

8 Next Phase  
8.1 Detailed Workplan  
8.2 Resourcing  
8.3 Time Scale  
8.4 Costs  

9 Annexes
2 Introduction

The Introduction section describes what the document contains and how it is organized.

Guideline 2

The contents must usually follow the template of the referred document ("System Analysis"). In case which extra contents are added or some of the template’s contents are eliminated, document the reasons.

2.1 Purpose and Audience

Define the purpose of the System Analysis document and identify the intended audience(s).

Guideline 2.1

This document must be reviewed and approved as appropriately. In any case it serves as documentation for the justifications of design choices (see document "System Design").

2.2 References

List any documents referenced to create this Requirements Specifications document.

Guideline 2.2

Related documents must include the “Requirements Specifications” document
3 Overview

3.1 System Overview

The System Overview section:
- discusses the background of the project
- Describes the system’s scope and objectives.

Guideline 3

Re-state the scope of this system and the deliverable being produced in order for this document to be read in the correct context.

<The scope and the background of the system are presented in the “Master Plan” and “Requirements Specification” documents, from which they can be copied. Indicate and document the changes, if any>.

Describe the resulting software within the business case, including strategic issues in which the system is involved or which it specifically addresses. This section must provide a clear context for the system, for a person who may not necessarily know anything about this system.

Identify the software products to be produced by name.

Explain what the proposed software will and will not do.

Describe relevant benefits, objectives and goals as precisely as possible.

3.2 General Constraints

Record the constraints that this system will have to consider or be aware of, during subsequent phases of the Project Life Cycle and while in production.

Guideline 3.2

These are usually deviations from the procedures and methods described in the ICT-Standards documents. They must have been clearly stated in the Tender and Contract Documents. If not, they must be documented.

<Copy this section from “Requirements Specification” document. Indicate and document the changes, if any>
4 Data Requirements

4.1 Logical Data Model

Produce a logical data model that defines all the data entities to be addressed by the system showing the relationships between them. Include a brief description in this section, while the detailed description will be placed in the appropriate annexes.

<table>
<thead>
<tr>
<th>Guideline 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important to notice that in case the software elements consist of packages (i.e. off-the-self software), the Logical Data Model cannot usually be provided nor it has a useful meaning. In this case, in the place of the LDM, the contractor should provide:</td>
</tr>
<tr>
<td>- Views (SQL scripts etc) and other information on data, to help the Organization produce its own views and reports</td>
</tr>
<tr>
<td>- The preliminary list of software parameters.</td>
</tr>
<tr>
<td>The Entity Relationship Diagram (ERD) showing all of the application entities and relationships must be provided. In many cases it is effective to have several ERDs. One to show the complete model and others that only display a specific business area.</td>
</tr>
<tr>
<td>&lt;Refer to Data Modelling Documentation for a brief description of the Logical Data Model and Entity – Relationship Diagrams&gt;.</td>
</tr>
</tbody>
</table>

4.2 Data Rules & Validation

Define the rules that are to control the data in the system.

4.3 Conversion/Load Requirements

Address the requirements for converting data from an existing system or the bulk data capture and/or loading of initial data and code tables.

4.4 Spatial Requirements

Outline and define spatial requirements associated with this system.
5 Access/Security Requirements

5.1 User Classes
Define and name the different user classes to be associated with the system.

5.2 User Security Matrixes

<table>
<thead>
<tr>
<th>Guideline 5.2</th>
</tr>
</thead>
</table>
| **User/Function Security Matrix:**  
Define the relationship between each user class and the functions as described in the functional hierarchy. Use other (e.g. descriptive or application provided) representation if development tool does not support function modelling |
| **User/Data Security Matrix:**  
Define any special user access security that relates to entities within the data. Use the provided tool (if any) in case of of-the-self software. |

5.3 Application Availability
Describe the requirements for the system to be available for use once in full production.

5.4 Disaster Recovery Requirements
Define specific and critical requirements for disaster planning that need to be considered during the detailed technical design stage of the system.

5.5 Cascade Delete Requirements
Define requirements for cascade delete and the conditions that will be necessary for this processing to occur. Define the timing considerations as they apply to this system.
6 The Business Function Model

Define the deliverables of the business function model.

<table>
<thead>
<tr>
<th>Guideline 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical deliverables will include Function Hierarchy Diagram(s), Function Description Report(s), and Process Model Diagram(s). Include a brief description of the above subjects in this section. Put Diagrams and details in the Annexes.</td>
</tr>
<tr>
<td>Define the relationships (triggers) between the functions and the business processes that drive or initiate the function(s)</td>
</tr>
<tr>
<td>&lt;Refer to &quot;ICT – Business Function Analysis&quot; Documentation for a brief description of the Business Function Model&gt;</td>
</tr>
</tbody>
</table>
7 Miscellaneous

7.1 Audit Checks
Address the system’s requirements for audit checks, numeric and/or process controls.

7.2 Archive/Purge Requirements
Define the database archiving and purging requirements. Identify the conditions and circumstances that will determine when and if data is to be archived or purged.

7.3 Warehousing Requirements
This section will define the warehousing requirements at a high level with more detailed requirements defined to a greater extent as a separate pass through the application development life-cycle, specifically for the warehousing of data from this system.

<table>
<thead>
<tr>
<th>Guideline 7.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The data warehousing is to be treated as a separate “system” in parallel to the main business system. All phases of the life-cycle (Definition; Analysis; Design; Build; and Implementation) will be followed for data warehousing in more detail. There are separate and different requirements for data, processing and reporting associated with the data warehouse.</td>
</tr>
</tbody>
</table>

7.4 Technical Environment Overview
Identify the technical environment that will be required to ensure that the system is successful. Specify the system’s requirements for workstations, printers, networks (LAN/WAN), operating systems, database(s) and software packages/tools and specific versions.
8 Next Phase

Produce details relating to the next phase of the project - usually the System Design.

<table>
<thead>
<tr>
<th>Guideline 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>The contents of this section reflect the related sections in the Master Plan. Document and justify any derivation from the Master Plan.</td>
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</tbody>
</table>

Where there is an agreement that the contractor performing the Analysis Phase will be proceeding with the Design Phase, these details need to be very specific and accurate. These next phase estimates and plans will then form part of the contract.

If there is no agreement that the contractor performing the Analysis Phase will be proceeding with the Design Phase, these details may be more general and high level. The level of detail in these cases can be varied according to the requirements of the Project Sponsor and Business Analyst.

8.1 Detailed Workplan

Provide a detailed workplan for the next phase identifying all major deliverables and associated tasks.

8.2 Resourcing

Identify the resources and their roles to be used for the next phase. This resourcing is to identify and quantify both customer and contract resources to be assigned to the next phase of the Project to assist with planning and estimating.

8.3 Time Scale

Define the expected start date, elapsed time and anticipated completion date for major deliverables of the next phase, as a minimum. Preferably this information will be supplied for most tasks within the next phase.

8.4 Costs

<table>
<thead>
<tr>
<th>Guideline 8.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>This section may be omitted if there is an agreement that the contractor performing the Analysis Phase will be proceeding with the Design Phase and no other (i.e. incidental) costs are foreseen for the Design phase.</td>
</tr>
</tbody>
</table>

Define the costs of the next phase of the project. It is preferred that the scope be defined to such a degree so as to enable the estimates to be fixed priced.
9 Annexes

The typical annexes to be included in the System Analysis deliverable are:

**Annex A:** Logical Entity Relationship Diagram (ERD)
**Annex B:** Entities and their Descriptions
**Annex C:** Attributes and their Descriptions

<table>
<thead>
<tr>
<th>Guideline 9.ABC</th>
</tr>
</thead>
<tbody>
<tr>
<td>The above Annexes should be replaced by others, describing the views and software parameters if the software elements consist of off-the-self software.</td>
</tr>
<tr>
<td>&lt;Refer to “ICT – Data Modelling” Documentation for a brief description of Entities and Entity – Relationship Diagrams&gt;</td>
</tr>
</tbody>
</table>

**Annex D:** Function Hierarchy Diagram

<table>
<thead>
<tr>
<th>Guideline 9.D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function Hierarchy Diagram(s):</strong></td>
</tr>
<tr>
<td>The business should be represented on as few diagrams as possible that will meet the objective of clear communication. If the entire function model can be shown on a single page without becoming either illegible or too complex, then only one page should be used.</td>
</tr>
<tr>
<td><strong>Function Descriptions:</strong></td>
</tr>
<tr>
<td>A function definition report should be generated to correspond to each function hierarchy diagram. If no properties have been captured for higher level functions, then the report should include only elementary business functions presented in alphabetic order by function label.</td>
</tr>
<tr>
<td>&lt;Refer to “ICT – Business Function Analysis” Documentation for a brief description of the Business Function Model&gt;.</td>
</tr>
</tbody>
</table>

**Annex E:** Process Model Diagram

<table>
<thead>
<tr>
<th>Guideline 9.E</th>
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</thead>
<tbody>
<tr>
<td><strong>Provide a detail Process Model using DFDs or Cross-functional flowcharts.</strong></td>
</tr>
<tr>
<td>&lt;Refer to “ICT – Business Function Analysis” Documentation for a brief description about the Process Models&gt;.</td>
</tr>
</tbody>
</table>
Guideline 9.E

In case that the development tool supports Function Modelling and Process Modelling, then:
A process model diagram should be created in each of the following cases:
- for each function one level above the elementary function level; and
- Where more than one system process is used to implement the elementary function level,
  one process model diagram should be created for each elementary business function.
In the former case, the diagram will include a number of elementary business functions, and
the business event(s) and outcome(s) associated with each. The diagram should be given the
same name as the higher level function on which it is based.
In the latter case, each diagram will show all of the system processes used to implement the
elementary business function being depicted, the system trigger(s) used to implement the
business event(s), the outcome(s) of the elementary business function, and the flow lines that
indicate the processing order.

In case that the development tool supports Function Modelling then:
Refine the appropriate Process Model Diagram designed during the elaboration of the
Requirements Specification Analysis, depicting the hierarchy and decomposition of the
processes in a sufficient level of detail.

Annex H: Detailed Workplan (MS-Project)
ANNEX V

Detailed Design (general)
xxx Design

Project: [Project Name]

Project Number: [Project #]

Author:
Creation date:
Last updated:
Document number:
Version:

Approvals:

Customer
Project sponsor
[Name]
[Title*]
Signature
Date

(Optional others)
[Name]
[Title*]
Signature
Date

Contractor
Project sponsor
[Name]
[Title*]
Signature
Date

(Optional others)
[Name]
[Title*]
Signature
Date
1 Document control

1.1 Change record

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1.2 Review

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1 Document control
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   3.7 Methodology
4 Project-Specific Chapters
5 Next Phase
   5.1 Detailed Workplan
   5.2 Resourcing
   5.3 Time Scale
   5.4 Costs
6 Annexes
2 Introduction

The Introduction section describes what the document contains and how it is organized.

Guideline 2
The contents must usually follow the template of the current document (“xxxx Design”). In case which extra contents are added or some of the template’s contents are eliminated, document the reasons.

2.1 Purpose and Audience

Define the purpose of the “xxxx Design” document and identify the intended audience(s).

Guideline 2.1
Provide:
☐ An outline of the purpose of the xxxx Design document;
☐ The role this document will play in the overall Project Life Cycle.

This document must be reviewed and approved by both the Contracting Authority and the Contractor (where applicable) as appropriately. In any case it serves as documentation for the next phases (Build / Implementation).

2.2 References

List any documents referenced to create this xxxx Design document.

Guideline 2.2
Related documents include at least “Requirements Specification” and “xxxx Analysis” documents.
3 Overview

3.1 Project Overview

Provide an overview of the project. If applicable, support this overview with appropriate diagrams depicting the context of the project, its major components and how they relate to each other and to external stakeholders.

Guideline 3.1

Some examples include:

- In case of software / integrated system implementation:
  Depict the “Runtime Platform Model”. It is usually captured as a network node diagram that shows nodes, storage, the interconnections required between the nodes, and the allocation of the software elements between the nodes.

- In case of a study:
  Describe the main areas of the study and how they interfere with other areas and with the stakeholders.

- In case of a training project:
  Describe the knowledge areas of the training and the characteristics of the trainees.

3.2 Project Objectives

Define the major business objectives that this project is to address and meet.

Guideline 3.2

<Copy the System Objectives from the relevant section of the Feasibility Study or the Master Plan as appropriate. Indicate, justify and document any changes.>

3.3 Confirmation of Scope

Re-state the scope of this project and the deliverables being produced in the design activity in order for this document to be read in the correct context. Use diagrams wherever possible to illustrate the scope.

Guideline 3.3

<The scope and the background of the system are presented in the "Master Plan", “Requirements Specification” and “xxx Analysis” documents, from which they can be copied. Indicate and document the changes, if any>

If a portion of the project is being designed separately, identify the part or parts of the overall project that are being addressed in this design document.

Identify out of scope items as required.

List any assumptions governing the work to be conducted in this phase.

3.4 Project Constraints
Record all constraints that this project will have to consider or be aware of during subsequent phases of the Project Life Cycle and while in operation.

**Guideline 3.4**

These are usually deviations from the procedures and methods described in the ICT-Standards documents. They must have been clearly stated in the Tender and Contract Documents. If not, they must be justified and documented.

<Copy this section from the “xxxx Analysis” document. Indicate and document the changes, if any>

### 3.5 Quality Assurance

Describe the activities being performed to ensure a quality product or service is delivered to the Organization.

### 3.6 Documentation

Provide a list of the documentation produced to date as well as other related material.

### 3.7 Methodology

Describe the techniques to be used in the design phase.
4 Project-Specific Chapters

<table>
<thead>
<tr>
<th>Guideline 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicate a section or subsection in describing each of the design views which are pertinent to the specific project. Examples:</td>
</tr>
<tr>
<td>- In case of software/integrated systems development, the following sections should be included:</td>
</tr>
<tr>
<td>- Application Design</td>
</tr>
<tr>
<td>- System Design etc</td>
</tr>
<tr>
<td>- In case of a training project, include the training plan etc</td>
</tr>
<tr>
<td>- In case of a study, include an analytic description of the contents of the deliverables and their interference.</td>
</tr>
<tr>
<td>Change the section’s title and/or add subsections as appropriate</td>
</tr>
</tbody>
</table>
5 Next Phase

Produce details relating to the next phases of the project (Build).

5.1 Detailed Workplan

Provide a detailed workplan for the next phase identifying all major deliverables and associated tasks (e.g. MS Project). The plan should be in sufficient detail to clearly convey the scope of work that will be performed.

5.2 Resourcing

Identify the resources and the roles needed for the next phase. This should also include customer resources, a description of their roles, and the estimates by resource of the time they will be required to expend in this phase.

5.3 Time Scale

Define the expected start date, elapsed time and anticipated completion date for major deliverables of the next phase, as a minimum. Preferably this information will be supplied for most tasks within the next phase.

5.4 Costs

<table>
<thead>
<tr>
<th>Guideline 5.4</th>
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<tbody>
<tr>
<td>This section is an optional one. It may be omitted if no changes to project's budget are allowed.</td>
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</table>

Define the costs of the next phase of the project. This can be time and material or fixed price depending on the nature of the project and the degree to which the scope is well defined. It is preferred that the scope and requirements be defined to such a degree so as to enable the estimates for the next phase to be fix priced.
6 Annexes

<table>
<thead>
<tr>
<th>Guideline 6</th>
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<tbody>
<tr>
<td>This section is an optional one. It can be eliminated if there are no annexes to the “xxxx Design” document.</td>
</tr>
<tr>
<td>Annexes usually include detailed specifications and descriptions which are not in everybody’s interest. Be sure to include references to the annexes in the main body of the document</td>
</tr>
<tr>
<td>Change the section’s title and/or add subsections as appropriate.</td>
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ANNEX VI

System Design

(Software development)
# System Design

**Project:** [Project Name]

**Project Number:** [Project #]

<table>
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**Approvals:**

**Customer**

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**Contractor**

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The Introduction section describes what the document contains and how it is organized.

<table>
<thead>
<tr>
<th>Guideline 2</th>
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<tbody>
<tr>
<td>The contents must usually follow the template of the referred document (&quot;System Design&quot;). In case which extra contents are added or some of the template’s contents are eliminated, document the reasons.</td>
</tr>
</tbody>
</table>

2.1 **Purpose and Audience**

Define the purpose of the “System Design” document and identify the intended audience(s).

<table>
<thead>
<tr>
<th>Guideline 2.1</th>
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</thead>
<tbody>
<tr>
<td>Provide:</td>
</tr>
<tr>
<td>☐ An outline of the purpose of the System Design document;</td>
</tr>
<tr>
<td>☐ The role this document will play in the overall development of the system.</td>
</tr>
</tbody>
</table>

This document must be reviewed and approved by both the Contracting Authority and the Contractor (where applicable) as appropriately. In any case it serves as documentation for the system build phase.

2.2 **References**

List any documents referenced to create this System Design document.

<table>
<thead>
<tr>
<th>Guideline 2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related documents include at least &quot;Requirements Specification&quot; and &quot;System Analysis&quot; documents.</td>
</tr>
</tbody>
</table>
3 Overview

3.1 System Overview

Provide an overview of the intended system. Support this overview with appropriate diagrams depicting the context of the system, its major components and how they relate to each other and to external stakeholders.

Guideline 3.1

This is usually referred as “Runtime Platform Model”. It is usually captured as a network node diagram that shows nodes, storage, the interconnections required between the nodes, and the allocation of the software elements between the nodes.

Common notations used for capturing the runtime platform model include the use of UML, traditional boxes-and-lines diagrams and textual notations.

For reasons of simplicity, the runtime platform model does not typically illustrate the network in any detail. If the underlying network is complex, it is usually described in a separate (but related) network model.

3.2 System Objectives

Define the major business objectives that this system is to address and meet.

Guideline 3.2

<Copy the System Objectives from the relevant section of the Feasibility Study or the Master Plan. Indicate, justify and document any changes.>

3.3 Confirmation of Scope

Re-state the scope of this system and the deliverables being produced in the design phase in order for this document to be read in the correct context. Use diagrams wherever possible to illustrate the scope.

Guideline 3.3

<The scope and the background of the system are presented in the “Master Plan”, “Requirements Specification” and “System Analysis” documents, from which they can be copied. Indicate and document the changes, if any>

If a portion of the system is being designed separately, identify the part or parts of the overall system that are being addressed in this design document.

Identify out of scope items as required

List any assumptions governing the work to be conducted in this phase

3.4 System Constraints

Record all constraints that this system will have to consider or be aware of during subsequent phases of the Project Life Cycle and while in production.
### Guideline 3.4
These are usually deviations from the procedures and methods described in the ICT-Standards documents. They must have been clearly stated in the Tender and Contract Documents. If not, they must be justified and documented.

*Copy this section from the “System Analysis” document. Indicate and document the changes, if any>*

### 3.5 Quality Assurance
Describe the activities being performed to insure a quality product or service is delivered to the Organization.

### Guideline 3.5
*This section refers to the QA procedures for the specific document (“System Design”)*

### 3.6 Documentation
Provide a list of the documentation produced to date as well as other related material.

### 3.7 Methodology
Describe the techniques to be used in the design phase.
4 Application Design

4.1 Module Definitions

Define the modules that will comprise the system and deliver the functionality described in the analysis phase of the project. A module may be either a screen or a report or a set of procedures that implement system functionality.

Guideline 4.1

The functionality captured in the module definitions should be cross-referenced to the system functions, described in the “System Analysis” document. This will provide a means of checking that the required functionality is being implemented. Any deviations from the original functional design should be clearly identified in the System Design document.

4.2 Screen Designs

Provide descriptions of the layout of each screen that will be built in the system. Describe any templates and common objects such as menus, toolbars, and settings such as colour and font that will be used to develop the screens. All non-standard designs and tools must be reviewed and approved by the customer.

Guideline 4.2

<You can refer to “ICT – Software Applications standards” for a discussion about the intended GUI properties and quality>

4.3 Menu / Screen Navigation

Provide a diagram showing the screen hierarchy in the system. Illustrate the entry and exit points in the system, as well as general navigation from module to module.

4.4 Report Layouts

Describe the reports that will be produced by the system. Include a description of the report headers and footers that will be used.

Guideline 4.4

Report description should include the following:

- the name of the report;
- a brief description of the purpose of the report;
- input and output parameters;
- the frequency of execution;
- indicate if the report is to be run as part of a batch process and if it can be run on demand;
- the tables and columns that appear on the report;
- the calculated fields that appear on the report;
- the order in which information is sorted and/or grouped;
- an estimate of the report size, including totals and page break controls; and
- a report layout or mockup.
4.5 Application Prototype (as required)

Explain the approach to prototyping that is being taken. Include the reasons for developing a prototype of the application and describe the components of the system that will be prototyped. Indicate whether or not a part or the entire prototype will be included in the final application and explain how this will be achieved. At the beginning of this phase identify if the intent is to show a proof of concept or to provide a basis for an iterative process.

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<th>Guideline 4.5</th>
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<tr>
<td>It is important to note that the development of a prototyped application must follow the Project Life Cycle, and that the System Analysis document must be prepared and approved in advance of actually developing a prototype.</td>
</tr>
</tbody>
</table>

4.6 System Interfaces

Describe how the system will interface with other systems and devices such as data loggers, ftp sites, and other Organization’s systems, and identify the technology that will be used to enable interaction. Illustrate how information will flow between these systems using a context diagram. This section should include both Organization’s systems and systems that are operated by external agencies.

4.7 Error Handling

Explain how the system will process application errors and any subsequent interaction with users. Include any standards or conventions that will be used.

4.8 Help System

Describe how the system will provide on-line help to application users. This may be a combination of brief field-level, context-sensitive, hint text appearing in a system status bar, more extensive help text that appears in a separate window dialogue box or an online help document. Identify the mechanism(s) by which help text will be generated and integrated into the application.
5 **System Design**

This section defines the physical details of the design.

<table>
<thead>
<tr>
<th>Guideline 5</th>
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<tbody>
<tr>
<td>The desired functionality of both hardware and system software should have been described in the Tender Document.</td>
</tr>
<tr>
<td>The Contractor’s proposal should identify exactly the hardware offered. In any case, some changes can be made during the contract execution in both hardware and system software provision, either to replace proposed system’s that have already become obsolete, or to fit better the projects requirements according to a mutual agreement.</td>
</tr>
</tbody>
</table>

5.1 **Capacity**

Describe the anticipated volume of transactions and the storage requirements for the database. Indicate if there are any additional storage requirements for client workstations and other file and database servers. Describe the storage media and size required for backing up the application and data. Interviews with the Application Manager or end users will be needed to determine the details.

5.2 **Software**

Identify the software required to design, build and operate the system. Describe the environment in which the software must operate and, where appropriate, reference any existing applicable Organization’s standards.

<table>
<thead>
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<th>Guideline 5.2</th>
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</thead>
<tbody>
<tr>
<td>Identify in detail any interfaces to third party software.</td>
</tr>
<tr>
<td>Describe the database server environment in which the system will operate. This should include an explanation of the Organization’s current architecture and intended platform for the database. Include references to software versions as needed.</td>
</tr>
</tbody>
</table>

5.3 **Hardware**

Identify the hardware required to support the system. Where appropriate, reference any existing applicable Organization’s standards. Identify any external devices being accessed such as plotters, printers etc.

<table>
<thead>
<tr>
<th>Guideline 5.3</th>
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</thead>
<tbody>
<tr>
<td>Describe the application server environment in which the system will operate. This should include an explanation of the Customer’s current architecture and intended platform for the application. Include references to software versions as needed.</td>
</tr>
<tr>
<td>Describe the hardware components and configuration that will comprise the technical environment in which the system will operate, including model numbers if necessary.</td>
</tr>
</tbody>
</table>

5.4 **Application Software Specifications**
This section should contain the detailed technical specifications derived from the requirements analysis performed in the Analysis phase of the project. The specifications should be organized in a clear and consistent manner, and generally along functional lines. Include references to software versions as needed.

**Guideline 5.4**

Descriptions should include the following:
- the name of the function;
- a brief description of the purpose of the function;
- the tables and columns that are used by the function;
- the table and column usages (create, read, update and delete);
- the security access required to invoke the function;
- the system actions to be performed by the function;
- the system actions to be performed based on user input; and
- the system actions to be performed based on object state changes.

5.5 **Partitioning Specifications**

Describe the data partitioning scheme that will be implemented and the reasons for doing this. The types of partitioning that are available may depend on the version of the relational database that is being used.

5.6 **Application Configuration**

Describe any system-specific configuration details.

**Guideline 5.6**

In case of of-the-self software include the list of parameters to be set. If exhaustive, put them in the annexes.

5.7 **Communication**

Describe the various types of communication that will be required by the system. Where applicable, the following should be included:
- the method(s) by which users will interact with the system (e.g. dial-up, local area network, web);
- the method by which information will be gathered by the system in the case that it is obtained other than by direct user input (e.g., polling other systems to obtain data); and
- The method by which the system will distribute information (e.g., distributing data to other systems without manual intervention).

**Guideline 5.7**

The type of communications described in this section must be consistent with the network model provided in section 3.1

5.8 **Performance**
Describe the level of performance required of the system as well as any factors that may affect its operation. This section should include the following information:

- the estimated number of maximum, minimum and concurrent users and identify the location of the users;
- the acceptable response time for a typical system request and
- The level of acceptable service interruptions.

### Guideline 5.8

<table>
<thead>
<tr>
<th>As a typical system request use a frequently used system function derived from the business requirements documented in the System Analysis phase.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The response time depends on both the quality of the software and those of hardware and network.</td>
</tr>
<tr>
<td>You have to distinguish between the acceptable response time for the local users and the one for the remote ones, since the last depends heavily on the network traffic, therefore it cannot be guaranteed.</td>
</tr>
</tbody>
</table>

### 5.9 Operation & Support

Describe any system maintenance and support that is required. This may typically consist of supporting the hardware as part of the Organization’s technical infrastructure and the escalation process for resolving problems reported by users.

### Guideline 5.9

<table>
<thead>
<tr>
<th>Maintenance and support generally follow the provisions of tender and contract documents. In here they must be described in detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;You can refer to “ICT-Maintenance” document for a brief discussion about maintenance and support requirements&gt;</td>
</tr>
</tbody>
</table>

This section should also include any system-specific operations such as the scheduling and monitoring of batch jobs, such as backup and recovery.

### 5.10 Implementation

Describe the steps necessary to prepare the system for both user acceptance testing and implementation in a production environment. Define any support required from customer during the build and implementation phases.

### Guideline 5.10

| <Refer to “ICT-Acceptance procedures” document for a brief discussion about acceptance procedures> |

### 5.11 Quality Assurance

Describe the QA procedures that will be used to ensure delivery of a quality product.

### Guideline 5.11

<table>
<thead>
<tr>
<th>&lt;This section refers to the QA procedures for system delivery from the part of the contractor&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typically they include white box testing and black box testing from staff which has not been</td>
</tr>
</tbody>
</table>
Guideline 5.11
involved in system development.

<You can refer to “ICT – Software Applications” for a brief discussion about Software Quality Standards>
6 **Next Phase**

Produce details relating to the next phase of the project - System Build.

6.1 **Detailed Workplan**

Provide a detailed workplan for the next phase identifying all major deliverables and associated tasks (e.g. MS Project). The plan should be in sufficient detail to clearly convey the scope of work that will be performed.

6.2 **Resourcing**

Identify the resources and the roles needed for the next phase. This should also include customer resources, a description of their roles, and the estimates by resource of the time they will be required to expend in this phase.

6.3 **Time Scale**

Define the expected start date, elapsed time and anticipated completion date for major deliverables of the next phase, as a minimum. Preferably this information will be supplied for most tasks within the next phase.

6.4 **Costs**

Define the costs of the next phase of the project. This can be time and materials or fixed price depending on the nature of the project and the degree to which the scope is well defined.

It is preferred that the scope and requirements be defined to such a degree so as to enable the estimates for the next phase to be fix priced.
Annexes

Annex A: Tables, Indexes, Foreign Keys, Views, snapshots

<table>
<thead>
<tr>
<th>Guideline 7.A</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Oracle case tools are used, then provide the Server Model Diagram</td>
</tr>
<tr>
<td>If off-the-shelf software, then provide just views and parameters</td>
</tr>
</tbody>
</table>

Annex B: Module Definitions, Function Descriptions,
Annex C: Report Descriptions
Annex D: Time Plan (MS Project)