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System Component Tree (Level 2)

< S y s t e m   n a m e >

Approvals

Role	Name	Date Reviewed	Approval
			☐
			☐
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TABLE OF CONTENTS

Executive Summary

Guide: It is strongly recommended to create a presentation of the executive summary. The items below can provide input.

1. Goals

Guide: Synopsis of system goals, based on section "1.0 Overview – Highlights" below.

2. Application

Guide: Synopsis of the application, based on section "2.0 Overall Architecture – Highlights" below.

3. Technology and Infrastructure

Guide: Synopsis of system technology and infrastructure, based on section "3.0 Architecture – Overview and Highlights") below.

4. Implementation

Guide: Synopsis of the system's implementation, based on section "4.0 Overview – Highlights") below.

5. Cost and Resources

Guide: Synopsis of the system's costs, including anticipated maintenance, based on section "5.0 Executive Summary of Costs — Highlights" below.

0. Administration

Guide: This section (section 0) describes the planning and management of this project phase resulting in the creation of this document

0.0 Overview

Guide: A short description of this phase of the project

0.1 Parties involved

Guide: List the main task owner and other parties involved, such as: QA, technical support (infrastructure), data security, consultants in other matters, etc.

0.2 Work Plan

Guide: A task list containing task, deliverable, owner, and due date may be sufficient. For complex cases, a Gantt chart may be required.

0.3 Tools and Work Procedures

Guide: Tools and procedures for the current phase

0.4 Configuration Management and Change Control

Guide: This is an example table that can be used to record and track changes to this and accompanying documents

Date	Version/Base	Section No.	Description of Change	Approval

0.5 Approvals

Guide: This is an example table that can be used to record the approvals for this document

Date	Name/Title	Representing (stakeholder unit)	Comments	Signature

1. Goals

Guide: This section defines the goals in the broad sense of the word. Clear and feasible goals are needed to justify any development effort. The sections below contain information that in MethodA's view should to be defined to clearly understand and represent the project goals.

1.0   Overview – Highlights

Guide: Goal highlights that would also appear in the Executive Summary

1.1   Client / Subject Expert

Guide: This section refers only to the client subject matter expert and user teams

1.2   Goals & Objectives

Guide: When we discuss goals, we refer to longer term and more general targets. Objectives on the other hand are shorter term measurable.

1.3   Problems

Guide: Include the current problems that the system should solve as well as problems that the system may cause.

1.4   Organizational/Business Context

Guide: Describe how the system will impact the organization's overall business strategy.

1.5   Annual Work Plan

Guide: Describe how the system fits into the organization's annual work plan.

1.6   Feasibility and Cost/Benefit

Guide: Include project as well as business feasibility, taking into consideration the risks.

1.7   Time Frame

Guide: Define the main deadlines and milestones at the "goal" level. (The place for the workplan and lower-level dates is section 4, Implementation).

1.98 Open Issues & Alternatives

Guide: List the open issues from sections 1.1–1.7 that must be resolved in order to successfully complete the project.

1. Goals

1.99 Future Goals

Guide: List the points from sections 1.1- 1.7 that apply to future versions/releases.

2. Application

Guide: This section contains within it a checklist of topics that describe an application from various points of reference.

2.0 Architecture – Highlights

Guide: A brief explanation and/or a high level architectural diagram of the application

2.1 Main Attributes

Guide: This section deals with the current state, the type of system, the constraints, and glossary.

2.2 Users & interfacing systems

Guide: Users can be either internal or external to the organization.

Interfacing systems can also be either internal or external.

2.3 Internal Subsystems

Guide: This section is of central importance, particularly when the project may be subdivided into subprojects, delivery units, or work by parallel teams. The system analyst may already need to provide a preliminary view of this section in the early stages of Analysis

2.4 User Experience

Guide: Include human engineering guidelines, and the structure and layout of every screen in the system, broken down by screen type. Add a screen hierarchy site map.

2.5 Processes

Guide:

Sections 2.3, 2.5, and 2.6, taken together, describe the procedural (algorithmic) aspect of the system at various levels of decomposition (i.e. the system's dynamic model). The balance between them is important.

Section 2.3 presents the highest level of system decomposition (subsystems), and section 2.6 presents the lowest level (the system's most basic operations). Section 2.5 therefore encompasses all the intermediate levels: processes and sub-processes.

Section 2.5 should include sections for all the processes and sub-processes. Each should contain a textual description and a chart/diagram such as: DFD.

2. Application

2.6   Transactions

Guide: See the remarks at the beginning and end of section 2.5. A transaction is usually a further decomposition of a process. In some systems, the level of detail and decomposition in section 2.5 may make a lengthy section 2.6, or even any section 2.6 at all, unnecessary.

2.7   Modules

Guide:

This section is first used in the Design and Build phase. Its exact structure depends largely on the choice of development and maintenance tools, including configuration-management and version-control tools. The suggested structure is a basis for adaptation, by project management, to the relevant development environment and methodology. The section's introduction (replacing this text) should explain the chosen structure. In all cases, decomposition into modules will maintain the connection either with transactions (section 2.6) or — when section 2.6 is not necessary —directly with processes (section 2.5).

This section may be written with either a centralized or a distributed approach.

- *The centralized approach documents all system modules here, including modules that implement screens and interfaces.*

- *The distributed approach uses this section, in direct continuation from sections 2.5 and 2.6, for modules that implement processes and transactions. But modules that implement screens and interfaces are documented in their own context (sections 2.4 and 2.22).*

2.8   Control Procedures

Guide: This section is for system control procedures (also known, depending on the specific operating system, as scripts, operating system commands, etc.). The documentation here, as in section 2.7, should be based on references to the relevant libraries.

This section provides a static description of the procedure library. Like section 2.7, it is used especially in and after the Design and Build phase. How to run the procedures is covered in sections 2.4 (User Interface) and 4.4 (System Operation).

2.9   Common/ Shared Objects (Subroutines)

Guide: List the local global, external as well as internal routines/objects. For each, include a brief description and library reference.

2. Application

2.10 Coding Tables

Guide: This section refers to "central tables" that contain code numbers and parameters intended for system parameterization.

Private ("local") coding tables that belong exclusively to the system and are modified during operation are treated as files and should be covered in section 2.11.

2.11 Data Modeling (Logical Files)

Guide: Include high level diagrams such as DSD, ERD, or Class Diagram. For each entity, include a detailed description of the logical file.

2.12 Database (Physical Files)

Guide: Include high level diagrams such as DSD, or Storage Diagram. For each entity, include a detailed description.

2.13 Data Items

Guide:

Data items (fields) are found in screens, reports, data files, and internal and external interfaces. Data items exist at four different levels: private (module), local (system), global (organizational) and external (sectoral, inter-organizational). This section deals with the last three levels; it does not address the private data items that are used by a specific module and are not found in any interface, incoming message, or outgoing message.

Rely on standard definitions as much as possible at all three levels — local (between modules within the system but not outside the system), global (between systems within the organization but not outside the organization); and external (between organizations).

2.15 Reports (and Queries)

Guide: Include a list of all reports and queries as well as detailed structure information for each

2.16 Input (Forms)

Guide:

This section is unnecessary in most current IT systems. "Forms" are now system screens and belong in subsection 2.4.2. Nevertheless, this section may be used for one of the following reasons:

- *The forms reside outside the system, i.e., they are filled in manually and then, at a later stage, entered into the system.*

2. Application

- *It is essential to present all system inputs together (like the reports, above).*

If the decision is made to use this section, then it should resemble section 2.15 (Reports) in level of detail.

2.19 Information Security & Privacy

Guide: This section covers the exposure to risks and the security measures to be taken.

2.20 Cross-references

Guide: Below are examples of cross-references to include in this section.

- *Users / Subsystems*

- *Users / Processes*

- *Processes / Logical files*

- *Logical files / Physical files*

- *Files / Data items*

- *Subsystems / Interfaces*

- *Other relevant cross-references*

2.21 Workload, Performance, and Capacity

Guide:

Specify system workload, performance and capacity. Typical parameters to include:

- *File size and volume*

- *Volatility of data*

- *Number of workstations and users*

   1. *Aggregate*

   2. *Concurrent*

   3. *Identified (users), unidentified (surfers)*

- *System Throughput:*

   - *Transaction rate and response time*

   - *Batch processing (Jobs)*

   - *Turnaround times*

   - *Number of messages (per time unit)*

- *Network workload and performance*

2. Application

- *Other metrics*

2.22 Interfaces & Links

Guide: Provide a list of all interfaces. For each, add a level-3 entry with details.

2.23 Special Requirements

Guide:

The above Application sections may not cover all requirements and system features. This section is for the rest, such as —

- *Flexibility / Resilience: Tolerance for the addition of changes and for expansion*
- *Portability: Cross-platform data and code transferability*
- *Languages: Local language support (multilingualism)*
- *Other requirements*

2.98 Open Issues and Alternatives

Guide:

This section contains the main open Application issues that must be resolved for the current version or delivery.

2.99 Future Requirements

Guide: Any important information from sections 2.1–2.23 that should be implemented in future versions.

3. Technology and Infrastructure

This section is divided into three parts, as follows:

- *Sections 3.1–3.19 (not all numbers are in use): A description of the servers (main computers) that support the system (hardware, software, and tools), including front-end servers, application servers, web servers, back-end servers, mainframes etc.*

- *Sections 3.20–3.29 (not all numbers are in use): A description of the various client computers that can work with the system.*

- *Sections 3.30–3.32 (not all numbers are in use): A description of the communications network.*

3.0 Architecture – Highlights

Guide: Include a diagram of the system's architecture and central technological components of the system: computers, layout, and network. Support the diagram with a textual description detailing the main points of the technology in use.

3.1 Main Hardware

Guide:

Include definitions of all server hardware that supports the system, including central computers, back-end computers, etc.

- *Model*

- *Memory, including cache*

- *Auxiliary devices*

- *Modularity and upgrade possibilities*

3.2 Data Storage

Guide: Definition of the system's central data storage.

- *Online storage – hard disks (RAID)*

- *Removable storage (diskettes, tape cartridges, CD burner)*

- *Backup and transfer facilities*

- *Archival*

3. Technology and Infrastructure

3.3 Peripherals

Guide: This includes monitors, printers, plotters, etc.

3.4 Special Equipment

Guide: Any special equipment connected to the central computers such as: OCR, Scanners, Bar-code scanners, etc.

3.5 Consumables

Guide: This includes supplies such as cartridges and tapes, diskettes, CDs, paper, etc.

3.9 Passive infrastructure

Guide: Provide configuration of main and backup sites

3.10 Operating System

Guide: List the central server operating systems, by type. Supply detail such as:

- *Name and version*
- *Manufacturer and vendor (dealer)*
- *Alternative operating system*
- *Concise description (optional)*

3.11 Database Management System (DBMS)

Guide: List the database types and database management systems. Include information such as name, version, description, data management features, metadata management, etc.

3.13 Develop & Maint. Tools

Guide: List development and maintenance tools such as:

- *Editors and Publishers*
- *Graphic tools: Visual design of the system (user interface)*
- *Programming languages, including script/code generators*
- *Report and help-screen generators*
- *Preparation and management of testing*
- *Configuration-management*
- *Library and workspace management*
- *System analysis and design*

3. Technology and Infrastructure

- *Auxiliary software*

For each tool, specify name, version, manufacturer, vendor, and (in brief) essential features.

3.14 Off-the-shelf Software

Guide: List all off-the-shelf infrastructure and application software for central computers and servers (excluding: operating systems, databases, and development, operating, and production tools.)

Include also tools that the project or the organization already has.

3.15 Operation Tools

Guide: This section should describe the tools used by production operators, production managers, and system managers.

3.20 Client Computer

Guide: Define the hardware configurations for end user workstations

3.21 Client Infrastructure

Guide: Define the infrastructure software configuration for end user workstations.

3.22 Client Application

Guide: Define the application software that will run on end user workstations.

3.30 Local Area Network

Guide: Define the connection to the organization's LAN, intranet and extranet.

3.31 Wide Area Private Network

Guide: Define connectivity including:

- *Connection to the organization's WAN, including connectivity to a public network/Internet*

- *VPN*

- *Extranet*

Note: In many cases, section 3.30 is sufficient and this section is unnecessary because the organization's internal network is a LAN integrated with a WAN.

3.32 Public Network (internet)

Guide: Define public network connectivity including:

- *Connection to the public Internet*

- *Link to knowledge bases*

- *Link to other public network (international associations, consortium, etc.*

3.33 Interfacing Technologies

Guide: Any associated technology with possible implications for the system, such as:0

- *Back-end and other computers that will work closely with the system (but are not included in components 3.1–3.19)*

- *Associated operating systems and DBMS*

- *Associated networks*

3.98 Open Issues and Alternatives

Guide: Include the main open technology issues that must be resolved for the current version or delivery.

3.99 Future Technologies

Guide: Define support for future technologies, for example:

- *Hardware and central equipment*

- *Operating systems and databases*

- *Infrastructure software*

- *Multimedia*

- *Advanced browser versions*

- *Development tools*

- *Telecommunications, integration with telephony*

- *Support for advanced end-user peripheral equipment, for example: cellular devices, PDAs, etc.*

4. Implementation

4.0 Overview – Highlights

Guide: Provide a summary of the implementation methodology and work plan for development and operations.

4.1 Parties Involved

Guide: Include the names, titles, and contact information of the parties involved, such as: management, development, technical support, etc.

4.2 Work Plan

Guide: Define the work plan, including details for the development methodology and high level and detailed development plan.

4.3 Next Phase

Guide: This section should detail the activities that are to be done "immediately," during the next quarter. It should include:

- *Main objective/deliverable – content*
- *Action team (recommended)*
- *Work plan: Task list*

4.4 Production & Operation

Guide:

Note the difference between this section and the System Operation Manual. In early development phases (Inception and Analysis), this section (4.4) contains system operation requirements. The requirements are gradually transferred to the System Operation Manual and this section evolves into a reference to that manual. The System Operation Manual is the full and binding documentation of system operation. (In many systems the System Operation Manual is a "live" electronic document integrated with the system monitoring / production tool.)

The system operation requirements (and later the System Operation Manual) will include these topics among others:

- *System operation: organization/individuals and responsibilities*
- *Support and supervision: organization/individuals and responsibilities for technical support, client, computer-center management*
- *Times of operation (shifts)*
- *Resources*

4. Implementation

- *System startup/shutdown*

- *Taking the system off line for preventive maintenance, reorganization, etc.*

- *Error control*

- *Backup and restoration*

- *Emergency and underequipped operation*

- *Security and safety*

4.5   Documentation

Guide: This section is nothing but an index and references. Its purpose is to briefly summarize the status of the system documentation and project library and to serve as a quick reference to their locations.

Document Title	SCT component	Documentation Reference	Status

4.6   Service and Maintenance

Guide: This section covers topics such as: help desk, application maintenance, infrastructure & technology maintenance, ongoing implementation, ongoing costs, etc.

4.7   Deployment

Guide: This section covers efforts that support system deployment, such as: internal and external target audience management, migrations and conversions, organization and methods, users guides, etc.

4.8   Robustness and Reliability

Guide: This section covers test planning, and availability and survivability.

4.9   Configurations & Installations

Guide: Section 3 (Technology) provides a generic rather than a quantitative definition of the required technology and infrastructure and can adequately cover relatively simple cases. It is this section, 4.9, that provides a "bill of materials" for precise configurations at the various sites where the system is to be installed. But in relatively simple cases, section 3 may suffice and section 4.9 may be unnecessary. And in all cases, workstations (client PC's) are to be covered in components 3.20–3.22, not here.

4. Implementation

4.98 Open Issues & Alternatives

Guide: A compilation of the major open Implementation issues that must be resolved before the current version or delivery.

4.99 Future Plans

Guide: Any important information from components 4.1–4.9 that entails further implementation in future versions.

5. Cost – Resources

5.0 Executive Summary of Costs — Highlights

Guide: A concise presentation, at management level, of the system's cost on the basis of section 5.5.

5.1 Set-Up Cost (Development and Installation)

Guide: A summary of development and installation costs (set-up costs) for all anticipated versions and delivery units of the system.

5.2 Ongoing Costs

Guide: Ongoing costs such as operation, maintenance, and repairs, for the time frame established in section 1.7. The default time frame according to MethodA is five years.

5.3 Configuration Cost

Guide:

All the installation and deployment costs from section 5.1, and all the operating and maintenance/repair costs from section 5.2, broken down by configuration and matched to the format of section 4.9 to present cost per configuration. For each configuration, future versions should be taken into account.

Note: This component does not add to the costs in components 5.1 and 5.2; it merely extracts from them the cost by relevant system configurations, particularly for systems that are installed at different sites and/or at different times. All these costs are already included in sections 5.1 (Installation and Deployment) and 5.2 (Operation and Maintenance).

5.4 Price List

Guide: A table like this can be used to detail the prices of equipment and services:

Item	Unit price	Quantity	Total cost

5.5 Cost Summary

Guide: This section should include cost of ownership and cost scheduling

5. Cost – Resources

5.98 Open Issues & Alternatives

Guide: A compilation of the main open Cost issues that must be resolved for the current version or delivery.

5.99 Future Costs

Guide: Information concerning potential future costs that may crop up during the system's life span (after the time frame discussed in section 5.2). For earlier costs, refer to section 5.2 and in particular to 5.2.2.

Appendices

Guide: As a matter of principle MethodA does not use appendices numbered A, B, etc. Each appendix is numbered for a specific component in the system tree.

Any SCT component that needs expanding should be located in an appropriate appendix bearing its component number and name.

Below are some examples of typical appendix types.

Appendix 1.6.1: Risk Analysis and Feasibility

Appendix 1.6.2: Cost/Benefit Analysis

Appendix 2.7.1: Source Modules details

2.7.1.*X* < source module X >

Appendix 4.2: Detailed Work Plan

Appendix 5.1: Estimated Set-Up Cost

Appendix 98: Open Issues – Alternatives Analysis

Appendix 99: Future Requirements

Appendix *X.Y*