

# Position Tool

## Technical Specifications

**GEN energija d.o.o.**

Version 1

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# Table of Content

<b>1</b>	<b>Introduction.....</b>	<b>6</b>
1.1	Overview .....	6
1.2	Company .....	6
1.3	Objectives .....	7
1.4	Scope .....	7
<b>2</b>	<b>Content Information.....</b>	<b>8</b>
2.1	Module A: Trading Process.....	8
2.2	Module B: Trades Life Cycle .....	8
2.3	Module C: Contract Management.....	10
2.4	Module D: Position Portfolio Management .....	10
2.5	Module E: Data Management.....	11
2.6	Module F: Scheduling Process .....	12
2.7	Module G: Settlement and Clearing Process .....	12
2.8	Module H: Risk Management .....	13
2.9	Module I: Reporting Process .....	13
<b>3</b>	<b>Supporting Information.....</b>	<b>14</b>
3.1	Technical Requirements .....	14
3.1.1	Technical Solution.....	14
3.1.2	Business Continuity .....	15
3.1.3	Communication .....	15
3.1.4	Interface Catalogue .....	15
3.1.5	Hardware.....	15
3.1.6	Software .....	15
3.1.7	Conceptual Architecture.....	16
3.1.8	Conceptual data flow model.....	18
3.2	Quality Assurance (QA) and Quality Control (QC) requirements .....	18
3.2.1	Objectives.....	18
3.2.2	Quality Assurance Strategy .....	18
3.2.3	Quality Control Measures.....	19
3.2.4	Quality Objectives.....	20
3.2.5	Roles and Responsibilities.....	20
3.2.6	Vendor Requirements .....	20
3.2.7	Monitoring and Reporting.....	20
3.3	Legislation, Standards and Guidelines .....	21
3.3.1	EU Market Legislation on Commodities .....	21
3.3.2	Slovenian Legislation on Commodities.....	21

3.3.3	Trading Agreements and Risk Management.....	21
3.3.4	Commodity Trading Specific Regulations .....	21
3.3.5	Standards for Energy Market Communications.....	21
3.3.6	Data Protection and Privacy .....	21
3.3.7	Financial Regulations.....	22
3.3.8	Cybersecurity and Network Information Systems.....	22
3.3.9	Technical Standards for Software and Integration.....	22
3.3.10	Sustainability and Environmental Compliance .....	23
3.3.11	ISO 9001:2015 Quality Management Systems.....	23
3.4	Project Timeline.....	23
3.5	Project Implementation .....	24
3.5.1	Implementation Approach.....	24
3.5.2	Phase A.....	25
3.5.3	Phase B.....	26
3.5.4	Roles .....	30
3.6	Support and Maintenance.....	31
3.7	Training and knowledge transfer .....	32
3.8	Risk Management.....	32
3.9	Project Control and Reporting.....	32
3.9.1	Introduction .....	32
3.9.2	Monthly Status Reports.....	32
3.9.3	Regular Project Status Meetings.....	32
3.9.4	Compliance and Quality Assurance .....	33
3.10	Material Delivery Requirements .....	34
3.11	Project Organizational Contact .....	34

## Abbreviations

Label	Description
ACER	The European Union Agency for the Cooperation of Energy Regulators
AMQP	Advanced Message Queuing Protocol
API	Application programming interface
App	Application
BG	Balancing Group
BIS	Bid Invitation Specifications
BSP	BSP Southpool Energy Exchanges
CBTC	Cross-Border Transmission Capacity
CEGH	Central European Gas Hub AG
CEO	Chief Executive Officer
CET	Central European Time
CF	Cashflow
CM	Contract Management
CSV	file extension Comma Separated Values
DOCX	file extension is a Microsoft Word Office Open XML
DST	Daylight Saving Time
ECCO SP	ENTSO-E Communication and Connectivity Service Platform
EFET	European Federation of Energy Traders
EIC	Energy Identification Codes
ELES	system operator of the transmission network in the Republic of Slovenia
ENDEX	ENDEX European Energy Derivatives Exchange N.V.
ENTSO-E	European Network of Transmission System Operators of Electricity
ERP	Enterprise Resource Planning
EU	European Union
FTE	Full-Time Equivalent
GEN	GEN energija d.o.o.
GEN-I	GEN-I, trgovanje in prodaja električne energije, d.o.o.
GO	Guarantees of Origin
GRAD	Business Software   Grad d. d.
GUI	Graphical User Interface
HESS	Hidroelektrarne na Spodnji Savi d.o.o.
HUPX	HUPX Ltd. is the operator of the organised Hungarian spot power market
ICE	Intercontinental Exchange
IT	Information Technology
JSON	file extension JavaScript Object Notation
KYC	Know Your Customer
LFC	Long Form Contract
LOV	List of Values
MW	Megawatts
MWh	Megawatt hours
NDA	Non-Disclosure Agreements
NEK	Nuklearna elektrarna Krško d.o.o.
OMP	Organized Market Place
OTC	Over The Counter or Non-Organised Market Place
P&L	Profit and Loss
PDF	file extension Portable Document Format

PID	Project Initiation Document
PMO	Project Management Office
POC	Proof of Concept
PPA	Power Purchase Agreement
PX	Physical Delivery
PXE	Power Exchange Central Europe, a. s.
QA	Quality Assurance
RECS	Renewable Energy Certificate(s)
REMIT	Regulation on wholesale Energy Market Integrity and Transparency
RRM	REMIT Registered Reporting Mechanisms
SEL	Savske elektrarne Ljubljana d.o.o.
SOA	Service-Oriented Architecture
SQL	Structured Query Language
TEB	Termoelektrarna Brestanica d. o. o.
TS	Technical Specifications
TSO	Transmission System Operator
UAT	User Acceptance Test
UI	User Interface
UML	Unified Modelling Language
UMM	REMIT Urgent Market Message
UTC	Universal Time Coordinated
VAT	Value Added Tax
XLSX	file extension is a Microsoft Excel Open Office XML Spreadsheet
XML	file extension Extensible Markup Language
XSD	file extension XML Schema Definition
ZJN-3	Slovenian Public Procurement Act

# 1 Introduction

## 1.1 Overview

The **technical specifications** (below TS) cover the **position tool solution**, i.e. the basic software tool to help manage the electricity portfolio. These TS are divided into three distinct chapters. These chapters are described below, and vendors should read each chapter to ensure sufficiency and accuracy of responses:

- **Chapter 1 – Introduction** – The chapter contains basic information and a brief company overview.
- **Chapter 2 – Content Information** – The chapter defines the scope of the project and detailed technical and functional specifications.
- **Chapter 3 – Supporting Information** – The chapter provides additional information including requirements, timeline and more.

The solution should include **management of open and closed wholesale purchasing and sales agreements** for **electric power, ancillary services, and related products**.

The solution must include management of **bilateral deals** (trades) and **deals** (trades) concluded on the **Slovenian physical OMP** that are managed by the Slovenian TSO (ELES) and should consider open delivery and all standard trading products for closed delivery at ELES delivery points for different load types.

It does **not have to include** the solution for cross-border transmission capacity (**CBTC**) trades for now.

## 1.2 Company

**GEN energija d.o.o.** (below **GEN**) is the parent company in the group and is a state-owned company. In addition to the parent company **GEN Group** includes power production companies spread across the Slovenian territory:

- Nuklearna elektrarna Krško (**NEK**).
- Savske elektrarne Ljubljana (**SEL**).
- Hidroelektrarne na Spodnji Savi (**HESS**).
- Termoelektrarna Brestanica (**TEB**).

GEN Group is present in the wider European area as well, with the affiliated company GEN-I and its electricity trading and sales companies abroad. The company GEN-I provides GEN with **indirect access to the market**. The mission shared by all the GEN Group companies is to provide a reliable, safe, and competitive electricity supply to various consumer profiles. We generate electricity from sustainable, low-carbon electricity sources:

- nuclear power,
- hydropower, and
- solar power.

We effectively trade electricity. We rely on our knowledge, professional approach, and creative energy. We boast an effective array of functions for effective risk management associated with electricity purchases, trading, and sales. Thanks to a guaranteed provision of power and electricity, we give the group's production resources access to a reliable and steady income, while the parent company sees to the optimization of sales of power and electricity all the way to consumers. Consumers receive a quality service in the form of a comprehensive supply of electricity and get access to optimized purchase channels.

Investments in the maintenance and optimization of existing, as well as the development of new production facilities, is another important strategic focus of the GEN Group. This is the only way we can provide enough electricity to help reduce Slovenia's reliance imports. Co-investing in various new energy projects presents both a challenge and an opportunity for the GEN Group companies.

We are the leading regional implementer of the transition to a self-sufficient and low-carbon electric power grid based on nuclear energy and renewable resources. Through a value-added chain that covers the full spectrum from production to supply, we ensure a reliable, competitive, and customer-oriented supply of energy and energy services. Therefore, we will become the region's leading producer and supplier of competitively priced low-carbon energy, excelling internationally.

### 1.3 Objectives

The key objectives of the project are listed below:

- The **objective** of the project is **easy and real-time portfolio position management**.
- The **objective** of the project is to **unify, formalize and harmonize trade records**.
- The **objective** of the project is **to simplify and speed up the processing of trading data and reports**.

### 1.4 Scope

The scope of this project will cover all associated activities from an initial scoping phase through to a hypercare period following the go live of the solution. The project will deliver a solution that includes a defined set of functionalities to trade, a defined list of trade types and a defined list of interfaces that fit within a detailed system architecture.

## 2 Content Information

In this chapter, the functionalities of the position tool are defined in more detail. Functionalities are divided into 3 levels of requests according to the client's requirements:

- **Must Have Functionalities,**
- **Should Have Functionalities,**
- **Could Have Functionalities.**

To facilitate the understanding of the functionalities, the client has prepared **Use Cases** (in the document *PositionTool\_UseCases.xlsx*) that will enable the vendors to demonstrate their solution at the previously announced workshops. Modules are linked to specific use cases that will test the functionalities specified in each module.

Trading at GEN company refers to the sale and production portfolio optimization (this process is called production portfolio management). Due to the holding organizational structure and the ownership of several production units, we naturally have a long position on the market, but for portfolio optimization purposes, we carry out both sales and purchases.

### 2.1 Module A: Trading Process

Trading means a series of processes that take place between buyers and sellers in market relations. Between supply and demand, it is a series of market activities that aim to lead to an exchange process and indirectly to profit for the provider. The basic goal of sales is to make a profit with every transaction. In trading, however, there is a broader concept, as the basic long-term goal is to repeat transactions in the long term.

A trading process represents activities/tasks that are recorded with tickets. These tickets can follow automated or manual processes. Tickets are an entity that represents traders' activities/tasks and aggregates offers and trades. This means that a ticket is a collection of activities from:

- auction/tender specifications
- strategies/algorithmic trading/bots
- trade documentation (notifications, confirmations, etc.)
- bid/ask offers

Trading processes that are fully automated represent trading robots (bots). A trading bot is a smart computer program that automatically executes buys and sells on the stock market. These bots use algorithms to analyse market data in real time, identify patterns and trends, and make decisions based on that data.

The client executes several different trading processes, which are demonstrated in more detail in use case 1. The most complex is the auction process. The traditional auction process involves a succession of increasing bids or offers by potential buyers until the highest (and final) bid is accepted by the auctioneer (who is usually an agent of the seller). GEN company conducts its own auctions based on standardized rules written in the auction specifications.

➞ for more demonstrations see **Use Case 1**

Could Have Functionalities
<ul style="list-style-type: none"> <li>• Support for auctions and tender processes (ticketing, error handling and lifecycle).</li> <li>• Support for bot trading: <ul style="list-style-type: none"> <li>– Suggested trades based on open positions (physical) and price prediction.</li> <li>– Automatic position closing based on predefined routes.</li> </ul> </li> </ul>

### 2.2 Module B: Trades Life Cycle

The solution should include full life-cycle trade management system. Trade means a strict record of approved bid/ask offers.



The solution should include the processing of trade transactions in such a way as to generate appropriate time series, equipping them with capacities, quantities, prices, and amounts. It enables refreshing prices and amounts based on indexed formulas.

➔ for more demonstrations see **Use Case 2**

#### Must Have Functionalities

- Support for capturing (trades capture), editing, and searching through trades by specific attributes in a user-friendly way.
- Support for multiple trade statuses that occur over a trade's life cycle, including transaction phase.
- Support for open and closed physical delivery trades.
- Support for daylight saving time (DST) – use of local time in masks and curves.
- Support for bilateral trading on non-organized markets (OTC).
- Support for standard (year/annual, quarter, month, week, day, day ahead and intraday) and custom durations.
- Support for standard load types (base, peak, off-peak, block hours).
- Support for creating and using custom load types (shapes, definition includes non-working days and support for holiday calendars).
- Support for curves and time-series.
- Support for different time-series granularity (at least hourly and 15 minutes).
- Support for fixed price.
- Support for indexed price (exchange or market price with offset).
- Ability to create and automatically calculate price equations.
- Support for price TS (already defined for volume).
- Support for standardized trade attributes:
  - Partner (with details)
  - Direction: Buy/Sell
  - Traders on both sides (for confirmations with contact details: fax, e-mail)
  - Trade date
  - Delivery period (e.g., long, short, day ahead and Intraday, time zone and start of day).
  - Involved parties' identification codes (EIC for "Out party", "In party")
  - Status: (e.g., Approved, Cancelled, ...)

#### Should Have Functionalities

- Support for multiple statuses including ticket, product, offer and the transaction phases of trades.
- Support for flexible trades (minimum and maximum limitation on daily, monthly or quarterly basis).
- Ability to include different commodities: electricity and GOs with possible extension in the future.
- Support for different trading products (options, swaps, ...).
- Support for subsidiaries (inside business group).
- Support for several balancing group code (BG EIC) for a single subsidiary.
- Support for separate reporting, each BG EIC separately.
- Support for trading on organized markets with predefined instruments with physical delivery (PX).
- Support for automated trade updates if contract volume has been subject to change.
- Support for generating trade transactions time series, equipping them with capacities, quantities, prices, and amounts.
- Support for automated trade price updates if used trade curve changes (e.g., market price changed).
- Support for multi-level Portfolio structure (e.g., books and folders/activity, categories/strategies).

#### Could Have Functionalities

- Support for predefined trade attributes (e.g., periods (create and use))
- Support for custom trade attributes:
  - User friendly attribute management defined by administrator,

- Support for data types: String, Boolean, Integer, Date, Double, float and list of values (LOV),
- Ability to filter and use custom attributes in reporting (e.g., confirmations, position calculations),
- Holiday calendar impact on used load type.

## 2.3 Module C: Contract Management

The solution provides a contract management tool. Contract management (CM) is a process where a deal is concluded when the contracting parties confirm the commodity transaction with a confirmation. From the latter, it follows that the system automatically generates transactions based on transaction data and confirmations. The generation of commodity contracts is tied to a specific key or condition that determines whether there is an umbrella or any other standard contract in place and generates the commodity contract accordingly.

➞ for more demonstrations see **Use Case 3**

### Must Have Functionalities

- Support for connecting trades with relevant contracts.
- Support for payment information defined in the contract.

### Should Have Functionalities

- Support for master agreements management (like EFET, PPA, RECS, LFC etc.) to propagate transaction parameters (payment terms).
- Support for custom master agreements.
- Fees
  - Ability to specify several different fees for each trade.
  - Support for absolute and relative values.
  - Template matrix support (price list).
- Support for attributes:
  - Fees (several per contract)
  - Legal details
  - Payment terms (flexible)
- Confirmations:
  - Support for trade-based documents with customizable content.
  - Support for eSignature

### Could Have Functionalities

- Support for know your customer (KYC) process.
- Support for financial insurance of contracts.
- Support for document system.

## 2.4 Module D: Position Portfolio Management

The solution should provide a user interface for easy management of individual positions from the selected portfolio. It should be possible to display the hierarchy of the portfolio structure, drill down into the data, display quantities, capacity equivalents, and simulate the corresponding profits and losses. The solution should also enable the monitoring of the closed positions and their effect in comparison with a predefined company plan.

➞ for more demonstrations see **Use Case 4**

#### Must Have Functionalities

- Support for reviewing positions based on portfolio structure.
- Support for displaying the hierarchy of the portfolio structure, drilling down into the data.
- Support for calculation of P&L for each element of the portfolio structure.

#### Should Have Functionalities

- Support for simulating corresponding P&L according to the portfolio structure.
- Support for limit orders.
- Support for calculating cash flows.
- Support for end of day batches (MtM).

#### Could Have Functionalities

- Support for limit orders within the trade books of the portfolio structure.
- Support for managing open positions, closing strategies and scenarios within the trade books of the portfolio structure.
- Support for management of hedges and optimization positions within the trade books of the portfolio structure.
- Support for monitoring portfolio position evolution.
- Business Support Logic
  - Support for price forecast (arbitrage free forecast (quote based); forecast based on limited set of data).

## 2.5 Module E: Data Management

Data management is the practice of collecting, organizing, protecting, and storing data so it can be analysed for business decisions.

➞ for more demonstrations see **Use Case 5**

#### Should Have Functionalities

- Support for connection to BSP Southpool Exchange.
- Curves
  - Ability to create, edit and search for curves.
  - Visual value representation.
  - Filtering by commodity and time zone adjustment option.
  - Basic curves operation (+, -, only positive values).
- Support for automatic daily curves import (file system) (e.g., price curves with trade update).
- Support for TS import and export in UTC and local times in different time zones (including DST).

#### Could Have Functionalities

- Daily auctions support (bids, upload).
- Automatic import of market prices (realization).
- Support for connection to other European energy exchanges (PXE, HUPX, CEGH, ICE, ENDEX ...).

- This solution should also have the option of including operational forecasts of takeover and delivery for measuring points, which belong to the GEN balancing group.

## 2.6 Module F: Scheduling Process

Scheduling is the process of arranging, controlling and optimizing work and workloads in a production process or manufacturing process. Scheduling is used to allocate plant and machinery resources, plan human resources, plan production processes and purchase materials. **Scheduling in the power market** refers to the process of planning and coordinating the generation, transmission, and consumption of electricity to ensure that supply meets demand in a reliable, efficient, and economically optimal manner over a specific time period (typically day-ahead or real-time)

➞ for more demonstrations see **Use Case 6**

### Must Have Functionalities

- Support for calculation and preparation of schedules data.

### Should Have Functionalities

- Schedules
  - Support for ENTSO-E nomination standards for generating schedules.
  - Ability to distinguish between internal and external schedules.
  - Support for schedule and NTS versions (increment) according to ENTSO-E standards.
  - Reset of cancelled activity (0 values) – history based.
  - Intraday change (new time-series).

## 2.7 Module G: Settlement and Clearing Process

When processing transactions, the user is provided with all billing or clearing data that is necessary to generate the accompanying electricity balance sheet and calculate cash flows (CF), which are the basis for issuing and checking incoming invoices.

Clearing refers to all activities from the moment a transaction is confirmed to its settlement. This process turns the promise of payment (such as a check or electronic payment request) into the actual transfer of money from one account to the other. Clearing houses were established to facilitate such transactions between banks. Clearing is a set of processes that include invoicing and settlement as well as securing transactions. The key concepts of clearing are balance, profit, and loss (below P&L).

➞ for more demonstrations see **Use Case 7**

### Must Have Functionalities

- Billing Plan: Ability to export all relevant data for invoicing (external system).

### Should Have Functionalities

- Payment Terms
  - Support for prepayment, during delivery and post payment.
  - Support for billing schedules: monthly, once, daily, weekly, twice a month, etc.
  - Support for payment terms (absolute and relative in days and working days).
  - Support for adjusting issue and pay date based on calendar (before, after).

- Support for interest rate.
- Support for calculation initial margin (IM) and variation margin (VM).

#### Could Have Functionalities

- Support for financial enterprise resource planning (ERP).

## 2.8 Module H: Risk Management

Risk management is the process of identifying, assessing and addressing any financial, legal, strategic and security risks to an organization. Business risks stem from many sources, including financial uncertainty, legal liabilities, technology use, strategic management errors, accidents and natural disasters. The solution should highlight key trading risks.

➞ for more demonstrations see **Use Case 8**

#### Should Have Functionalities

- Market Risks:
  - Initial open positions based on filters (market, tariff, and granularity) in graphical and tabular form.
  - Market value calculation by using market price and offset price (import and export fees, spreads).
  - Alternative market value (another reference price, offset not needed).
  - Value at risk report (end of day batches).
  - Currency risk.
- Credit Risks:
  - Support for market collaterals (issued and received, validity period, amount).
  - Overview of actual exposure.
  - Support for market specifics and partner relationships.
- Operational Risks:
  - Support for alerts for mandatory tasks (contract changes, nominations, other business processes).
  - Support for mandatory reporting (regulators, customs, invoices).
  - Support for partner exposure limits (based on actual exposure).

## 2.9 Module I: Reporting Process

The solution should enable the production of manually generated reports, which can be reviewed and generated beforehand. It should enable the generation of reports in the form of technical formats (CSV, JSON, XLSX, XML, etc.) and content formats (DOCX and PDF). It should also enable automatic generation of periodic reports, where the conditions, generation times and storage location can be defined by a set of rules.

➞ for more demonstrations see **Use Case 9**

#### Should Have Functionalities

- REMIT Reports: Support for creating standard REMIT XML reports Table 1 and Table 2
- Daily changes report (end of day batch):
  - List of entered or changed trades for a selected date or date range.
  - Ability to filter out daily changeable trades or less important changes.
  - Support for snapshot reports with differences.
- Fees reports:

- Ability to calculate trade specific brokerage and clearing fees and support for non-contract-based fees reports.

#### Could Have Functionalities

- Ability to create regulatory reports.
- Support for business intelligence reporting with drill down option.

## 3 Supporting Information

### 3.1 Technical Requirements

Technical requirements are the technical issues that should be considered to successfully complete a project. These can include aspects such as performance, reliability, and availability. In software projects, technical requirements typically refer to how the software is built.

➞ for more demonstrations see **Use Case 10** and **Use Case 11**

#### 3.1.1 Technical Solution

Within this section the vendor is to describe in detail how their proposed solution can meet non-functional requirements outlined in Chapter 2. Vendor are reminded that GEN has no preference at this stage between a hosted or in house solution.

In support of this the vendor will provide a detailed list of components, technologies, and integration capabilities across the solution architecture. This should include, but is not limited to:

- **Technical Architecture** – the vendor will provide a detailed logical overview of the components, systems, and technologies for the proposed solution. This should document which components are new, updated or to be re-used, and any dependencies between the components. Responses should also document which components are standard, configurable, customised, or sourced and/or licensed through a third party. Where a third-party component is licensed separately this should be made clear in the commercial response in bid.
- **Functional Architecture** – the vendor will provide details of which business capabilities are implemented by each component across the proposed technical architecture. In addition, a clear overview of which logical entities will be mastered and used across each component, evidence of application logic reuse and adherence to general service-oriented architecture (SOA) principles should be provided.
- **Information Architecture** – the vendor will provide an overview of information flows between components and systems given in the technical architecture, interface formats and protocols, the importing of existing application data and the logical data model.
- **Environment Architecture** – the vendor will provide mappings of the Technical (logical) architecture to the physical architecture, an overview of physical technologies, products, and platforms to be used, and a detailed overview of how the vendor proposes to meet key non-functional requirements. In addition, a description of the user interface (UI), application logic and database computational load separation in relation to performance and system recovery capabilities should be included.
- **Security Architecture** – the vendor will provide an approach to authentication and authorisation, data and event audit trails, including monitoring and logging available in the proposed system. In addition, it will describe how the proposed solution prevents unauthorised changes to data e.g., controls, referential integrity, encryption, and logic that prevents malicious data being received from either systems or user interfaces. The vendor defines in detail how user roles with different accesses and rights are set up and defined in the system administration.
- **Deployment and Configuration Management Approach** – vendor is to detail how many environments will be required, how environments will be managed and specifically how configuration will be managed between environments. This

should include how configuration will be deployed between environments, if a 'Golden' environment principle will be used and if there will be replication between environments.

### 3.1.2 Business Continuity

GEN requirement is that it has **on-premises databases** (priority Microsoft SQL Server) not cloud database. If the database is in the cloud, it should be consistently synchronized with the on-premises database and all the highest standards regarding cybersecurity should be ensured.

While GEN does not hold a preference for a hosted solution where the vendor intends to host the services on sites other than GEN operated premises but does in such cases require a 'Business Continuity Plan', which should include an uninterrupted business agreement that would be put into action in the event of a disaster or disruption of the service at the premises from which the service is being provided. Details should include at least:

- location of recovery site,
- initial, interim, and long-term recovery periods,
- value and insurance coverage in the event of a disaster.

### 3.1.3 Communication

The vendor should define how the solution communicates internally and externally, and should support at least the following standard communication protocols:

- mail sending (with encryption and signing),
- application programming interface (API),
- advanced message queuing protocol (AMQP) protocol.

### 3.1.4 Interface Catalogue

Vendor should indicate the interface solution, for example if there is already an out of the box solution, or if configuration is required and state if error handling is available. Furthermore, vendor should provide context to the assessment of the interface and advise if there are any known challenges to the interface described.

### 3.1.5 Hardware

- The vendor is to detail all the hardware components recommended to run the proposed solution.
- The vendor is to list the assumptions made with regards to the hardware necessary to support their proposed solution.
- The vendor is to describe in detail the network architecture preferred, topology, traffic volumes, and capacity requirements.
- The vendor is to identify, if applicable, any outsourced software and hardware required to implement the proposed solution<sup>1</sup>.

### 3.1.6 Software

The vendor is to provide a comprehensive list of all the modules listed Chapter 2 of the bid that are necessary to run on the hardware platform recommended in the previous schedule.

The vendor is to classify the modules to be supplied into the following categories:

- **Standard** (those that do not require change),
- **Configured** (those that require modification to meet the requirement),
- **Developed** (those that need to be developed to meet the requirement, including but not limited to additional functionality, interfaces, reports),
- **Third party** (those licensed from a third party).

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<sup>1</sup> e.g., software licences to operate e.g., SQL server licence.

The vendor is to state if any of the configured or developed modules would compromise GEN's ability to take advantage of future software upgrades.

The vendor is to detail which of these modifications would require GEN to reincorporate them into future software releases and whether GEN would need the vendor's support to achieve this.

The vendor shall list all management tools or like be used.

The vendor is to list the assumptions made with regards to the software necessary to support their proposed solution.

The vendor should confirm that the software proposed can be installed using automated installation procedures which do not require high skill levels.

Installation and configuration of server and user applications or of tools is subsequently coordinated by the relevant professional services on GEN's side and the vendor. The vendor also hands over standard installation packages and configurations, which are kept together with the application installation packages in GEN's repository.

The vendor should ensure the existence of application programming interface (API) to bypass application masks (same functionality).

The vendor should provide coding flexibility. Code openness - mutual cooperation and "in-house" libraries development.

The vendor should enable user friendly migration due to round the clock activities - new version in production and downtime.

The vendor should define how it will be archiving historical data.

These TS assume that GEN hardware is used to deploy the solution, with application virtualization servers, using Microsoft's Hyper-V virtualization technology.

To deploy a potential server, the vendor should define the technical properties of the server, the use of central technology such as Docker (Docker is a set of platforms as a service product that uses virtualization at the operating system level to deliver software in packages called containers. The purpose of Docker is to ensure the continuous workflows on the central platform.). The platform should be Windows or in agreement with GEN another platform. The installation is carried out at GEN together with the IT department.

### 3.1.7 Conceptual Architecture

The conceptual architecture for GEN is detailed in Figure 1 with implementation borders of the TS marked with a red line.



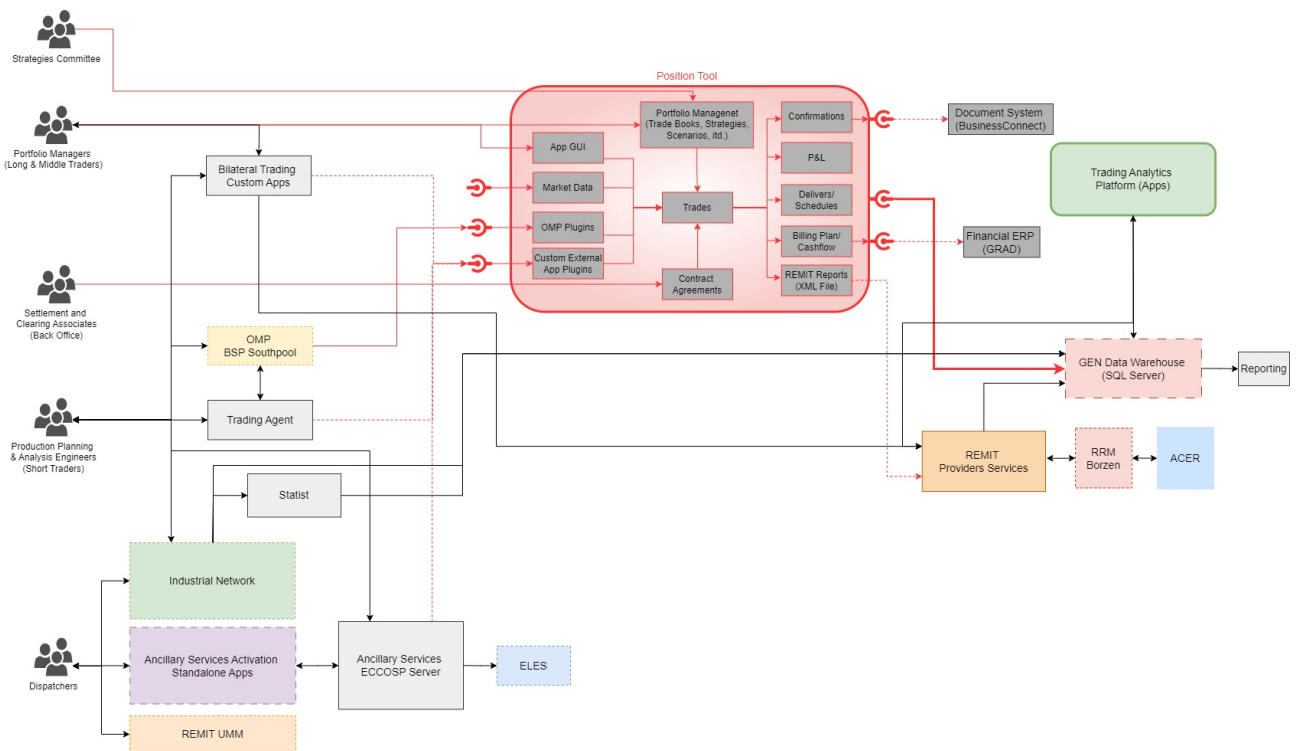


Figure 1

### 3.1.8 Conceptual data flow model

Figure 2 shows trade data flow diagram with inputs and outputs for each process included.

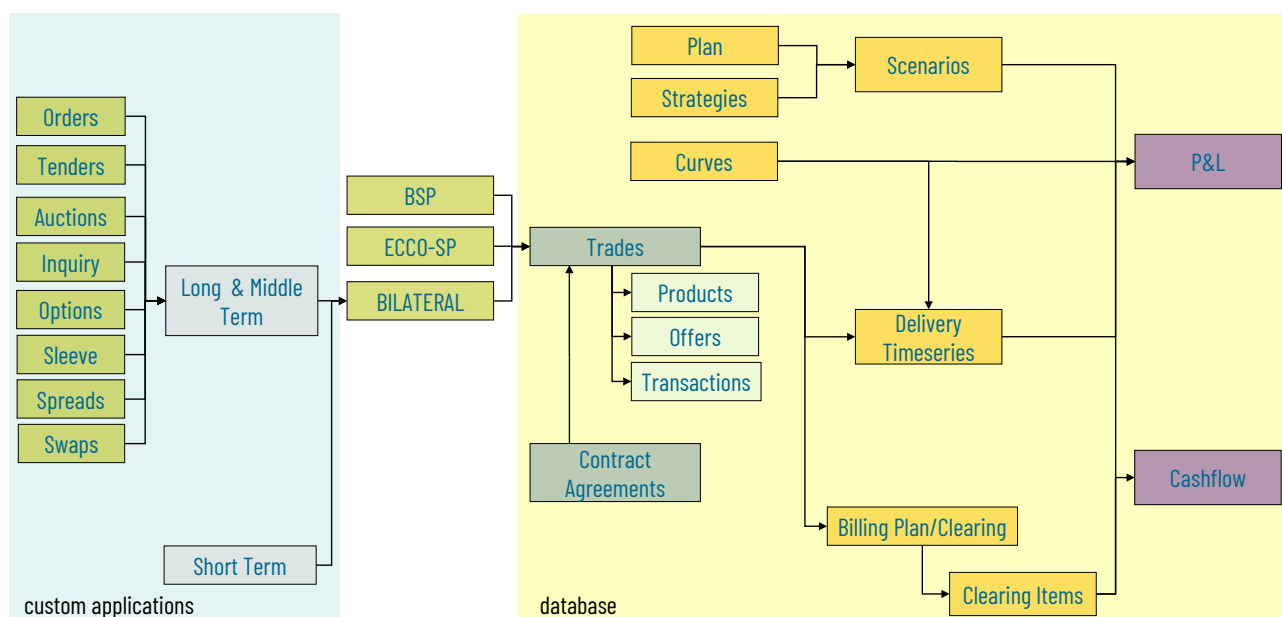


Figure 2

## 3.2 Quality Assurance (QA) and Quality Control (QC) requirements

Quality Assurance (QA) and Quality Control (QC) shall be integral components of project management to ensure the highest standards of quality for the solution. This chapter outlines the overarching strategies, objectives, and specific requirements that vendor should meet, ensuring that the products and services provided align with our organizational standards and ISO 9001:2015 requirements.

This chapter establishes the framework for QA/QC in the procurement and implementation of the solution. By adhering to these guidelines, we ensure that the tool is reliable, meets user requirements, and supports GEN strategic objectives. Compliance with this Chapter is not only expected but required for the successful completion of the project and further operation.

### 3.2.1 Objectives

**Overall Objective** is to implement effective QA/QC measures that guarantee the solution meets or exceeds the technical specifications, functional requirements, and quality expectations.

**Vendor is expected** to demonstrate compliance with set QA/QC criteria, which include adherence to *Chapter 2 Content Information*.

### 3.2.2 Quality Assurance Strategy

#### 3.2.2.1 Documentation and Standards

Vendor should provide comprehensive documentation for all components and processes. Documentation should be traceable, updated, and maintained according to ISO 9001:2015 standard.

#### 3.2.2.2 Vendor Audits

**Initial Self-Assessment:** Before formal engagement, vendor is required to conduct a self-assessment of their QA/QC practices according to the guidelines provided in this chapter. This initial assessment shall be documented and submitted for review, detailing their processes and compliance with *Chapter 3.3 Legislation, Standards and Guidelines*.

Given the modular architecture of the Position Tool, this compliance assessment could adopt a graded approach, which tailors the scrutiny and detail of the compliance checks to the nature and complexity of each specific module within the tool. This graded approach ensures that compliance efforts are proportionally allocated, focusing more on areas with higher risks or stricter

regulatory demands, thereby optimizing resource use while maintaining high standards of compliance and quality across all components of the Position Tool.

**Customer Audits:** Following the initial self-assessment, periodic audits will be conducted by GEN audit team to ensure ongoing compliance with QA standards. While traditional facility access might not be applicable for software vendors, access should be granted to relevant documentation, development processes, and product testing data. Vendor is expected to fully cooperate during these audits by providing all necessary information and access to their systems for verification of the work done.

**Continuous Monitoring:** Our approach includes continuous monitoring of the vendor's processes and outputs through reviews and assessments within periodic project status meetings. This will ensure not only the initial compliance but also the maintenance of quality standards throughout the project lifecycle.

### 3.2.3 Quality Control Measures

#### 3.2.3.1 Vendor Documentation and Review of Deliverables

**Vendor Documentation Review:** Vendor should ensure that all deliverables, especially those related to Modules (A-I) as detailed in *Chapter 2 Content Information*, are accompanied by comprehensive documentation. This documentation should be reviewed for completeness, accuracy, and adherence to the predefined specifications and ISO 9001:2015 quality standard.

##### Required Checklists:

- documentation for each module's functionalities (Must Have, Should Have, Could Have)
- traceability records showing development history and change management,
- Clear evidence of compliance with legislative and regulatory requirements specified in *chapter 3.3 Legislation, Standards and Guidelines*.

#### 3.2.3.2 Vendor Process and Development Monitoring

**Vendor Continuous Process Monitoring:** Vendor should maintain rigorous monitoring protocols across all phases of module development, from initial design through to final testing, ensuring alignment with the detailed functionalities specified for each module (A-I).

##### Required Checklists:

- adherence to functional and technical specifications for each module,
- regular status updates and milestone reviews against project timelines,
- issue tracking and resolution logs.

#### 3.2.3.3 Vendor Validation and Verification Testing

**Vendor Integration Testing:** Before final integration, each module (A-I) should be tested to verify that it functions correctly within the system architecture. Vendors should document and verify each module's interaction with others according to system specifications.

##### Required Checklists:

- integration test results for trades life cycle, contract management, position management, trade processing support, and reporting solutions,
- compatibility checks with existing system interfaces,
- performance benchmarks achieved as per the specifications.

**Vendor Final Product Testing:** Comprehensive system testing should be conducted to ensure that the integrated system (Modules A-I) meets all functional, technical, and user requirements detailed in *Chapter 2 Content Information*.

##### Required Checklists:

- system-wide performance and security testing results,
- user acceptance testing documentation and results,
- final compliance verification with technical and business requirements.

#### 3.2.3.4 Vendor Continuous Quality Improvement

**Vendor Feedback Mechanisms:** Vendors should utilize feedback from all testing phases to continuously improve processes and product quality. This includes gathering feedback from QA/QC activities and integrating changes into the development lifecycle.

**Required Checklists:**

- feedback incorporation from previous module deliveries,
- continuous improvement logs based on QA/QC feedback,
- updates to quality management practices based on lessons learned.

#### 3.2.3.5 Customer Oversight and Audits

**Customer Review and Audit:** Regular reviews and audits will be conducted by the GEN audit team to ensure that all modules and the final integrated system comply with the technical specifications and quality standards outlined in the solution Technical Specifications.

**Required Checklists:**

- verification of corrective actions from previous audits,
- assessment of vendor's compliance with continuous improvement requirements.

#### 3.2.3.6 Continuous Monitoring and Verification by Customer

The customer will engage in ongoing verification of the vendor's adherence to the project's quality standards through structured assessments and project status meetings.

**Required Checklists:**

- ongoing verification of development progress and issue resolution,
- continuous alignment checks against project quality objectives.

### 3.2.4 Quality Objectives

**Performance Metrics:** Vendor shall establish and maintain specific, measurable, achievable, relevant, and time-bound (SMART) quality objectives.

**Target Achievement:** Vendor shall achieve a defect rate of less than 0.5% in final product inspections and a customer satisfaction level above 95%.

### 3.2.5 Roles and Responsibilities

**Quality Manager:** Oversees all QA/QC activities, ensures compliance with ISO standards, and reports directly to project management.

**GEN Audit Team:** Responsible for executing QA/QC processes, conducting audits, and ensuring corrective actions are implemented effectively.

### 3.2.6 Vendor Requirements

**Compliance:** The vendor shall demonstrate compliance with *Chapter 3.4 Legislation, Standards and Guidelines* adhering to all specified QA/QC requirements by utilizing the graded approach as outlined in Chapter 3.2.2.2.

**Continuous Improvement:** Vendor shall engage in continuous improvement activities that enhance product quality and reduce inefficiencies.

### 3.2.7 Monitoring and Reporting

**Regular Updates:** Vendor shall provide regular reports, within project status meetings, on QA/QC activities, audit results, and compliance with quality objectives.

**Issue Resolution:** Vendor shall implement a structured process for addressing quality issues, including root cause analysis and corrective actions.

### 3.3 Legislation, Standards and Guidelines

#### 3.3.1 EU Market Legislation on Commodities

**Electricity market design** is a key part of the EU electricity market legislation package; [Electricity market design \(europa.eu\)](#)

#### 3.3.2 Slovenian Legislation on Commodities

Key Slovenian legislation is published by the Energy Agency; [Legislation - Agencija za energijo \(agen-rs.si\)](#).

#### 3.3.3 Trading Agreements and Risk Management

##### 3.3.3.1 EFET Master Agreement

The European Federation of Energy Traders (EFET) is an association of European energy traders on the wholesale electricity and gas markets. EFET was established in 1999 as a response to the liberalization of electricity and gas markets in the European Union. EFET advocates policies and regulatory measures that enable the free development of electricity and gas trade, while promoting good risk management practices and responsible corporate governance. In its role as a standards-setting body, EFET aims to provide standard solutions for common aspects of wholesale energy transactions, such as contracting and data exchange. The solution should follow EFET good contracting and data sharing practices.

#### 3.3.4 Commodity Trading Specific Regulations

##### 3.3.4.1 REMIT (Regulation on Energy Market Integrity and Transparency)

Regulation (EU) No 1227/2011 is designed to enhance the integrity and transparency of wholesale energy markets. REMIT specifically targets the prevention of market abuse, including insider trading and market manipulation. It imposes strict reporting and transparency requirements on participants in energy markets, which are crucial for systems of these solutions. These systems should ensure that all transactions and trading data are recorded, monitored, and reported in compliance with REMIT to facilitate market surveillance by regulators. The regulation also mandates the registration of market participants with the national regulatory authority and the disclosure of detailed transaction information to promote market transparency; [Regulation - 1227/2011 - EN - REMIT - EUR-Lex \(europa.eu\)](#).

#### 3.3.5 Standards for Energy Market Communications

##### 3.3.5.1 Standard IEC 62325 Framework for Energy Market Communications

This part of the IEC 62325 standard specifies a UML package for market information publication business processes and associated context document models, composite models, and XML schemas for use in European electricity markets, [EDI Library \(entsoe.eu\)](#).

##### 3.3.5.2 ENTSO-E Transparency Regulation

Mandates the publication of data by Transmission System Operators (TSOs) and other market participants to facilitate transparency in wholesale energy markets; [Electricity market design \(europa.eu\)](#).

#### 3.3.6 Data Protection and Privacy

##### 3.3.6.1 General Data Protection Regulation (GDPR)

Regulation (EU) 2016/679 is crucial for systems of these solutions handling personal data, outlining obligations for data protection and user privacy. GDPR provides a comprehensive set of guidelines on data protection across the EU, focusing on protecting natural persons with regard to the processing of personal data and on the free movement of such data, [EUR-Lex - 02016R0679-20160504 - EN - EUR-Lex \(europa.eu\)](#).

##### 3.3.6.2 Zakon o varstvu osebnih podatkov (ZVOP-2)

Slovenia's Personal Data Protection Act complements GDPR by enforcing local data protection requirements. ZVOP-2 applies specifically to the processing of personal data within the Slovenian jurisdiction, emphasizing the protection of personal data,

setting out the obligations of data processors and controllers, and delineating the rights of individuals. It mandates organizations to implement appropriate technical and organizational measures to secure personal data and outlines specific obligations for data breach notifications, appointment of data protection officers, and more stringent penalties for non-compliance, [Zakon o varstvu osebnih podatkov \(ZVOP-2\) \(PIRS\)](#).

### 3.3.7 Financial Regulations

#### 3.3.7.1 *Markets in Financial Instruments Directive (MiFID II)*

Directive 2014/65/EU plays a crucial role in the regulation of financial markets across the European Union, focusing on increasing transparency and improving regulatory oversight of financial markets. MiFID II is particularly relevant to systems of these solutions that deal with financial instruments and derivatives trading. It imposes stringent requirements on transparency, reporting, and conduct to ensure fair and efficient markets. For systems of these solutions, this means ensuring all transactions are recorded and reported accurately, providing clear transactional data to both participants and regulators, and maintaining high standards of market integrity; [Directive - 2014/65 - EN - mifid ii - EUR-Lex \(europa.eu\)](#).

#### 3.3.7.2 *The European Market Infrastructure Regulation (EMIR)*

Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories Text with EEA relevance. Derivatives play an important role in the economy, but they also bring certain risks. We saw this clearly during the 2008 financial crisis, when significant weaknesses in the OTC derivatives markets became evident. In 2012 the EU adopted the [European market infrastructure regulation \(EMIR\)](#). The aim was to: increase transparency in the OTC derivatives markets, mitigate credit risk and reduce operational risk.

#### 3.3.7.3 *Zakon o trgu finančnih instrumentov (ZTFI)*

This act transposes MiFID II into Slovenian national law, outlining specific obligations for market participants and financial institutions operating within Slovenia. These obligations include conducting business with integrity and transparency, maintaining appropriate records of all trading activities, and ensuring effective governance to safeguard the interests of clients and the integrity of the market; [Zakon o trgu finančnih instrumentov \(ZTFI\) \(PIRS\)](#).

### 3.3.8 Cybersecurity and Network Information Systems

#### 3.3.8.1 *Network Information Security Directive (NIS Directive)*

Directive (EU) 2022/2555 is pertinent to systems of these solutions which are critical infrastructures, this directive mandates security and notification requirements for network and information systems; [EUR-Lex - 02022L2555-20221227 - EN - EUR-Lex \(europa.eu\)](#).

### 3.3.9 Technical Standards for Software and Integration

#### 3.3.9.1 *ISO/IEC 27001:2022*

This updated version of the international standard specifies requirements for establishing, implementing, maintaining, and continually improving an information security management system (ISMS). It is particularly relevant for systems of these solutions due to the sensitive nature of the data they handle, including financial transactions, trading data, and personal information. The standard provides a systematic approach to managing and protecting company and customer information through risk management processes, ensuring that security practices are both comprehensive and continually enhanced as technology and risk landscapes evolve.

#### 3.3.9.2 *ISO 20022:2013*

This standard facilitates electronic data interchange between financial institutions. Comprising eight parts, ISO 20022 provides a framework for creating financial messaging standards. It includes a robust metadata repository that contains detailed descriptions of messages and business processes relevant to financial transactions. The standard ensures consistency across various financial communications by standardizing message formats, which enhances the efficiency, accuracy, and reliability of data exchanges between entities involved in financial services.

### 3.3.10 Sustainability and Environmental Compliance

#### 3.3.10.1 EU Taxonomy Regulation

Regulation (EU) 2020/852 is a key component of the EU's framework to facilitate sustainable investment. It classifies economic activities according to their environmental sustainability, providing clear criteria for whether an investment can be considered environmentally sustainable. For systems of these solutions, this means ensuring that all energy trading activities comply with specific criteria that align with green energy and sustainability goals. Systems of these solutions should be capable of tracking and reporting on transactions to demonstrate compliance with these sustainability criteria, which can include the source of energy, its production methods, and the environmental impact of trading activities; [Regulation - 2020/852 - EN - taxonomy regulation - EUR-Lex \(europa.eu\)](#).

#### 3.3.10.2 ESRS Standards (European Sustainability Reporting Standards)

Regulation (EU) 2023/2772, ANNEX I ESRS are becoming increasingly relevant for systems of these solutions as they provide detailed guidelines for sustainability reporting, which aligns with the broader goals of environmental compliance and corporate sustainability responsibility. ESRS standards require companies to disclose their impacts on the environment, including energy consumption, emissions, and more comprehensive details of ecological impacts. For systems of these solutions, this means incorporating capabilities to collect, analyze, and report environmental data as part of their transaction and operational reporting processes. This helps energy trading companies to not only comply with regulatory requirements but also to participate actively in the transition to a low-carbon economy; [Delegated regulation - EU - 2023/2772 - EN - EUR-Lex \(europa.eu\)](#).

### 3.3.11 ISO 9001:2015 Quality Management Systems

For Implementation in systems of these solutions, ISO 9001:2015 should be integrated, as approach described in chapter 3.2, into the development, deployment, and maintenance of the systems of these solutions to ensure high standards of quality management. This includes the establishment of a systematic approach to managing and documenting all processes in systems of these solutions development and operations, continuous monitoring and evaluation of these processes, and ensuring that they meet the needs and requirements of stakeholders. Systems of these solutions should include features that support compliance with ISO 9001 standard, such as audit trails, process documentation, quality checks, and continuous improvement methodologies.

## 3.4 Project Timeline

Figure 3 details, at a high level, the timeline. This is an indicative plan and is subject to change at the discretion of GEN and should be used for informational purposes only.

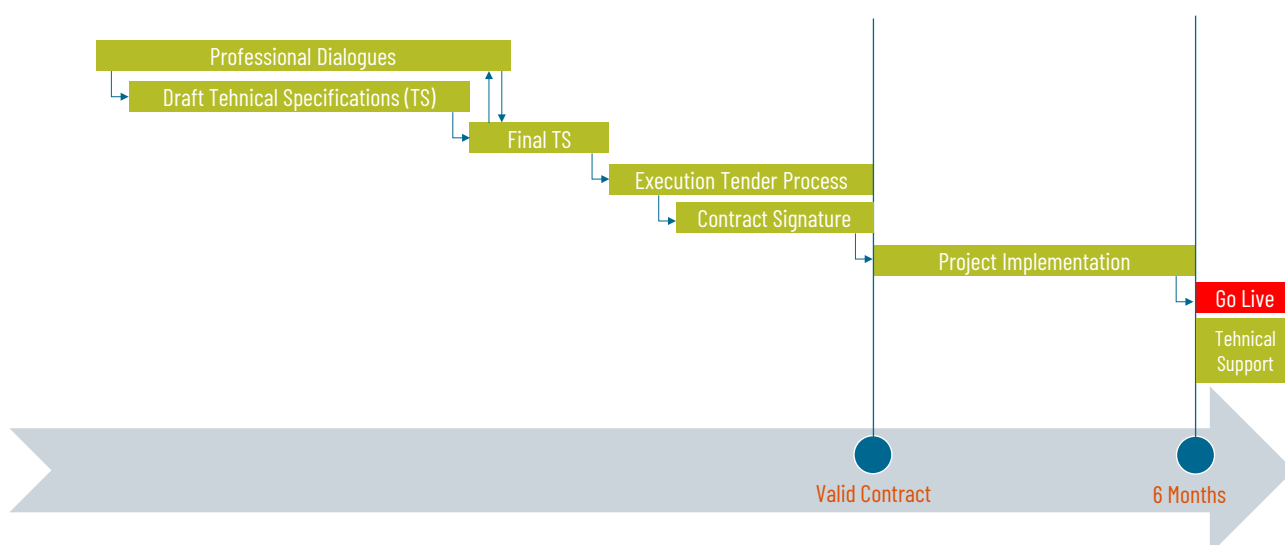


Figure 3

### 3.5 Project Implementation

The Project Manager from GEN is obliged to provide general control and coordination for all work, communication, planning and necessary support to the vendor. This also includes the provision of documentation and other available GEN references. If necessary, the vendor shall provide a list of documentation in writing or other references that they will need when creating the solution.

The delivery of the project will follow the standard approaches below:

- **Phase (A) - Implementation of the Out of the Box Solution**
- **Phase (B) - Implementation of Development and Upgrades** will follow the standard 'V-model'. The V-model is a graphical representation of a system's development lifecycle. It is used to produce rigorous development lifecycle models and project management models.
- **Phase (C) - Support and Maintenance**

Vendor is to ensure delivery of the project will follow the standard approach as detailed in 3.5.1. The 'Implementation' as referred to in this document includes all steps from Phase A to Phase C. Vendor is advised to assume support for this entire period when planning the 'Implementation'.

The vendor is to describe the overall organisational structure and procedures to be used to ensure effective and professional management of the proposed implementation of the solution. Vendor is also to describe the manpower and facilities required from GEN to fulfil its obligations.

The implementation of the solution involves several distinct phases, each requiring rigorous adherence to our QA/QC requirements as detailed in Chapter 3.2 and subsequently 3.3. This ensures that every step of the project meets the highest quality standards and complies with all relevant regulations and guidelines.

#### 3.5.1 Implementation Approach

We have assumed that the delivery of the full end-to-end solution will be phased. At a high level this will be a Phase A, B and C.

GEN is proposing a step-by-step implementation approach as detailed below:

	Entry Criteria	Exit Criteria
<b>Phase A</b>	<ul style="list-style-type: none"> <li>• Vendor package selected and licence agreed.</li> <li>• Vendor resources secured for phase A.</li> <li>• Other resources (GEN and any required third party) secured for phase A.</li> </ul>	<ul style="list-style-type: none"> <li>• Conceptual design for delivery of requirements.</li> <li>• Technical solution design – hardware/infrastructure, integration approach.</li> <li>• Detailed definition of project governance, implementation plan, resource needs, and costs.</li> <li>• Project Initiation Document (PID) signed.</li> <li>• Successful go-live of solution.</li> </ul>
<b>Phase B</b>	<ul style="list-style-type: none"> <li>• Conceptual design for delivery of requirements.</li> <li>• Vendor resources secured for phase B.</li> <li>• Other resources (GEN and third party) secured for phase B.</li> </ul>	<ul style="list-style-type: none"> <li>• Successful go-live developed, upgrades of components and of other components outside the solution package required for end-to-end solution being operational.</li> <li>• Knowledge transfer to GEN team complete.</li> </ul>



	Entry Criteria	Exit Criteria
		<ul style="list-style-type: none"> <li>Immediate post-implementation business readiness activities complete (including any post-implementation training needs).</li> </ul>
<b>Phase C</b>	<ul style="list-style-type: none"> <li>Go-live of solution.</li> </ul>	<ul style="list-style-type: none"> <li>Successful up to date Support and Maintenance.</li> </ul>

### 3.5.2 Phase A

The objective of Implementation of the Out of the Box Solution phase is to deliver the solution (configuration) and implementation of the solution (vendor package, data migration routines and any legacy systems changes) together with the associated business change elements.

The activities will be split between the vendor and GEN (who may choose to be supported by an external party in this project). The division of roles between the parties is envisaged to be as depicted in the below table:

	GEN Responsibility	Vendor Responsibility
<b>Business Sponsorship</b>	<ul style="list-style-type: none"> <li>Full ownership of project,</li> <li>Attendance at project steering committees</li> </ul>	Not applicable
<b>Overall Project and Stakeholder Management</b>	<ul style="list-style-type: none"> <li>Overall project delivery ownership,</li> <li>Attendance at project steering committee,</li> <li>Attendance at project management meetings,</li> <li>Project Management Officer (PMO) function,</li> </ul>	<ul style="list-style-type: none"> <li>Point support to GEN as required,</li> <li>Vendor project management (manage own resources and link back into vendor organisation for resources, code releases etc),</li> <li>Attendance at project steering committee,</li> <li>Attendance at project management meetings.</li> </ul>
<b>Business User Input</b>	Full ownership	Not applicable
<b>Architecture</b>	<ul style="list-style-type: none"> <li>Business/functional architecture,</li> <li>Solution/technical architecture of the overall solution, integration, and legacy solutions,</li> <li>Attendance at project management meetings.</li> </ul>	<ul style="list-style-type: none"> <li>Solution/technical architecture of the package,</li> <li>Attendance at project management meetings.</li> </ul>
<b>Data Migration</b>	<ul style="list-style-type: none"> <li>Define business scope of data migration,</li> <li>Define migration reconciliation approach,</li> <li>Define the overall migration approach,</li> <li>Build the legacy elements and any data transformation required,</li> <li>Prepare and execute the data migration tests/dry runs and manage the project and business reconciliations,</li> </ul>	<ul style="list-style-type: none"> <li>Support definition of data migration scope and approach from a package perspective,</li> <li>Design/build/test the package elements of the data migration,</li> <li>Support the execution of data migration tests, dry runs and live execution and reconciliations.</li> </ul>

	GEN Responsibility	Vendor Responsibility
	<ul style="list-style-type: none"> <li>Perform the live data migration.</li> </ul>	
<b>Technical Infrastructure</b>	<ul style="list-style-type: none"> <li><b>Hosted in GEN environments</b>, overall accountable for technical infrastructure design and environment management.</li> </ul>	<ul style="list-style-type: none"> <li><b>Hosted in GEN environments:</b> <ul style="list-style-type: none"> <li>Significant input in the technical infrastructure design,</li> <li>Initial installs onto the environments and knowledge transfer onto environment management team,</li> </ul> </li> <li>On-going defect resolution and support for new releases in line with support and licence agreement.</li> </ul>
<b>Business and Operational Readiness</b>	<ul style="list-style-type: none"> <li>Define the business impact assessment,</li> <li>Implement all identified business changes,</li> <li>Manage project communications.</li> </ul>	<ul style="list-style-type: none"> <li>Point support as required,</li> <li>Support knowledge transfer activities.</li> </ul>
<b>Training</b>	<ul style="list-style-type: none"> <li>Training needs assessment,</li> <li>Define and deliver process-based training incorporating systems elements in the package (delivered by the vendor) and legacy systems (delivered by GEN) as needed.</li> </ul>	Provide training on package specifics within the context of wider process-based training.
<b>Cutover and Parallel Run</b>	Full ownership including: <ul style="list-style-type: none"> <li>Define go/no go criteria,</li> <li>Define parallel run approach,</li> <li>Prepare and execute dry runs,</li> <li>Prepare and execute cutover and parallel run.</li> </ul>	Support as required to ensure that this is executed smoothly.

### 3.5.2.1 QA/QC Requirements

**Planning:** Initial project planning should incorporate QA/QC objectives and criteria from Chapter 3.2, ensuring that all project goals are aligned with quality standards.

**Documentation Verification:** Rigorous checks will be performed to verify that all documentation meets the quality requirements set forth in Chapter 3.2. This includes reviewing project plans, requirements documents, and design specifications for completeness, accuracy, and adherence to quality standards.

### 3.5.3 Phase B

The objective of the implementation of development and upgrades phase is Scoping and Proof of Concept (POC) phase to mobilise the project team, develop the conceptual design and perform a more detailed gap analysis to compare the detailed implementation requirements to the selected solution.

In more detail Scoping Phase will include:

- Conceptual design:**
  - high level end to end solution definition including book structure and trade flows between books,

- planned functional scope footprint of the solution and how functions that are not part of scope will be handled,
- definition of key data flows and integration points,
- high level approach for data migration,
- high level organisation and process impacts.
- **Requirements Definition** – A detailed list of requirements including functional and non-functional requirements.
- **Requirements Analysis** – Given the detailed list of requirements, vendor is to evaluate which requirements will be met by the vendor's packaged solution. In broad terms, this will define how the package will meet the requirements (e.g., which module). The requirements will be sub-divided into:
  - Which requirements have been met 'out of the box' or with simple configuration.
  - Requirements that require some vendor configuration (e.g., scripting, report writing or other locally performed complex configuration/coding). Where this is the case an estimate of the complexity shall be presented.
  - Requirements that will require centrally delivered customisation or code change to the core product (this will be minimised). A quote will be provided for the cost of these changes.
  - Which requirements will be met by other solutions outside of the vendor's solution.
- **Solution Gap Analysis and associated Gap Catalogue** – A detailed list will cover all areas of the delivery that will require custom configuration, scripting, or core code changes.
- **Itemised Build List** – Complete estimates (cost, resource types and man day effort) to meet all core requirements for Interface Catalogue as well as additionally covering all items within the Gap Catalogue.
- **Interface Build Estimates** – both cost and time (for the vendor responsible side of the interface)
- **Vendor Project Delivery Plan** – Plan for the delivery phase covering Detailed Design, Build, Unit Test, System Test (estimates of effort and time to support execution as well as time to resolve defects), User Acceptance Test (estimates of effort and time to support), and Hypercare.
- **Technical solution design** – definition of hardware infrastructure requirements and technical integration approach with detailed input from relevant vendor resources.

The activities will be split between the vendor and GEN (who may choose to be supported by an external party in this project). The division of roles between the parties is envisaged to be as depicted in the below table:

	GEN Responsibility	Vendor Responsibility
<b>Conceptual Design</b>	<ul style="list-style-type: none"> <li>• Lead the process and the interaction with the business.</li> <li>• Provide detailed requirements list.</li> <li>• Agreement and prioritisation of extensions and workarounds to meet requirements where gaps are identified.</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed requirements catalogue.</li> <li>• Solution Gap analysis and associated Gap Catalogue covering all areas of the delivery that require custom configuration, scripting, or core code changes.</li> <li>• Itemised build list with estimates (cost, resource types and man day effort) to meet all core requirements for the associated Interface Catalogue as well as additionally covering all items within the Gap Catalogue.</li> <li>• Interface build estimates both cost and time (for the vendor responsible side of the interface)</li> <li>• Vendor Project Delivery Plan for the delivery phase covering Detailed Design, Build, Unit Test, System Test (estimates of effort and time to support execution as well as time to resolve defects), User</li> </ul>

	GEN Responsibility	Vendor Responsibility
		Acceptance Test (estimates of effort and time to support), and Hypercare
<b>Proof of Concept</b>	<ul style="list-style-type: none"> <li>Provide technical support for conceptual design.</li> <li>Define and detail performance test cases and relevant metrics for both End-to-End and Interface scenarios.</li> </ul>	<ul style="list-style-type: none"> <li>Quantified performance test of proposed conceptual solution.</li> </ul>
<b>Business Sponsorship</b>	<ul style="list-style-type: none"> <li>Full ownership of project</li> <li>Attendance at project steering committees</li> </ul>	Not applicable
<b>Overall Project and Stakeholder Management</b>	<ul style="list-style-type: none"> <li>Overall project delivery ownership</li> <li>Attendance at project steering committee</li> <li>Attendance at project management meetings</li> <li>Project Management Officer (PMO) function</li> </ul>	<ul style="list-style-type: none"> <li>Point support to GEN as required.</li> <li>Vendor project management (manage own resources and link back into vendor organisation for resources, code releases etc)</li> <li>Attendance at project steering committee.</li> <li>Attendance at project management meetings.</li> </ul>
<b>Business User Input</b>	Full ownership.	Not applicable.
<b>Architecture</b>	<ul style="list-style-type: none"> <li>Business/functional architecture.</li> <li>Solution/technical architecture of the overall solution, integration, and legacy solutions.</li> <li>Attendance at project management meetings.</li> </ul>	<ul style="list-style-type: none"> <li>Solution/technical architecture of the package.</li> <li>Attendance at project management meetings.</li> </ul>
<b>Business Analysis / Design</b>	<ul style="list-style-type: none"> <li>Lead the process and the interaction with the business.</li> <li>Define the business process flow, and other high level business components.</li> <li>Document the functional (logical) designs.</li> <li>Review and agree the technical designs.</li> </ul>	<ul style="list-style-type: none"> <li>Support business meetings with insight into product and how it can support the business requirements (propose alternate solutions)</li> <li>Review and agree the functional designs.</li> <li>Lead and document the technical (physical) designs.</li> </ul>
<b>Solution Build / Configuration and Unit Test</b>	Full ownership of all elements outside of the core package.	Full ownership of all elements related to the core package.
<b>System Test and Integration Test</b>	<ul style="list-style-type: none"> <li>Prepare and execute (end-to-end) systems test and integration test.</li> <li>Defect fixing (non-package)</li> </ul>	<ul style="list-style-type: none"> <li>Prepare and execute initial tests as required.</li> <li>Support system testing and integration testing (review scope, defect fixing, etc)</li> </ul>
<b>User Acceptance Test</b>	<ul style="list-style-type: none"> <li>Prepare and execute UAT.</li> <li>Defect fixing (non-package)</li> </ul>	<ul style="list-style-type: none"> <li>Support UAT (review scope, defect fixing, etc)</li> </ul>

	GEN Responsibility	Vendor Responsibility
<b>Data Migration</b>	<ul style="list-style-type: none"> <li>Define business scope of data migration.</li> <li>Define migration reconciliation approach.</li> <li>Define the overall migration approach.</li> <li>Build the legacy elements and any data transformation required.</li> <li>Prepare and execute the data migration tests/dry runs and manage the project and business reconciliations.</li> <li>Perform the live data migration</li> </ul>	<ul style="list-style-type: none"> <li>Support definition of data migration scope and approach from a package perspective</li> <li>Design/build/test the package elements of the data migration.</li> <li>Support the execution of data migration tests, dry runs and live execution and reconciliations</li> </ul>
<b>Technical Infrastructure</b>	<ul style="list-style-type: none"> <li><b>Hosted in GEN environments</b>, overall accountable for technical infrastructure design and environment management.</li> </ul>	<ul style="list-style-type: none"> <li><b>Hosted in GEN environments:</b> <ul style="list-style-type: none"> <li>Significant input in the technical infrastructure design</li> <li>Initial installs onto the environments and knowledge transfer into environment management team</li> </ul> </li> <li>On-going defect resolution and support for new releases in line with support and licence agreement</li> </ul>
<b>Business and Operational Readiness</b>	<ul style="list-style-type: none"> <li>Define the business impact assessment.</li> <li>Implement all identified business changes.</li> <li>Manage project communications.</li> </ul>	<ul style="list-style-type: none"> <li>Point support as required.</li> <li>Support knowledge transfer activities.</li> </ul>
<b>Training</b>	<ul style="list-style-type: none"> <li>Training needs assessment.</li> <li>Define and deliver process-based training incorporating systems elements on the package (delivered by the vendor) and legacy systems (delivered by GEN) as needed.</li> </ul>	Provide training on package specifics within the context of wider process-based training.
<b>Cutover and Parallel Run</b>	Full ownership including: <ul style="list-style-type: none"> <li>Define go/no go criteria.</li> <li>Define parallel run approach.</li> <li>Prepare and execute dry runs.</li> <li>Prepare and execute cutover and parallel run.</li> </ul>	Support as required to ensure that this is executed smoothly.
<b>Hypercare Period (elevated post cutover support and transition to business as usual)</b>	Full ownership	Support hypercare period.

### 3.5.3.1 Input: Integration of Market Data

The first step is for the vendor to present their standard plugins for importing market data. GEN and the vendor decide together what is appropriate to integrate with the POC method. Another way is for GEN to present its sources of market data, for which, together with the vendor, they determine the method of integration using the POC method. GEN can adapt internal data to the vendor's format such as SQL script, XML or CSV.

### 3.5.3.2 Input: Integration of OMP Plugins

GEN provides OMP plugins and detailed technology together with the vendor to determine the way of integration through the POC method.

### 3.5.3.3 Input: Integration of Custom External App Plugins

Vendor prepares the XML or XSD format, which is the standard for data entry. Vendor, together with GEN, determines the location where the files are stored.

### 3.5.3.4 Output: Integration of Confirmation

Vendor presents the integration options of the confirmation solution. GEN presents document system integration options with PDF and XML format. GEN and the vendor agree on a plan of integration with the option of including third partners.

### 3.5.3.5 Output: Integration of Financial ERP

GEN presents the billing order, which is the basis for liquidation and issuing invoices. GEN and the vendor agree on a plan of integration with the option of including third partners.

### 3.5.3.6 Output: Integration of REMIT Reporting

Vendor presents the out of box functionality of REMIT reporting. GEN presents the internal process of processing REMIT reports. Vendor, together with GEN, determines the location where the files are stored and agree on a plan of integration tasks.

### 3.5.3.7 Output: Integration of Data Warehouse

GEN needs key data in the data warehouse for analytical processing of the portfolio. For this purpose, GEN and the vendor review the data model of the solution and determine which data need to be delivered to the data warehouse. Vendor, together with GEN, determines the location where the data are stored and agree on a plan of integration tasks.

### 3.5.3.8 QA/QC Requirements

**Implementation:** During the implementation phase, continuous QA checks are performed to ensure that the development and configuration of the solution adhere to the predefined QA/QC criteria. This involves regular inspections and reviews to detect any discrepancies early and implement corrective actions swiftly as specified within Chapter 3.2 .

**Issuing Instructions:** Detailed instructions for configuration and setup shall be provided, developed in compliance with the QA/QC guidelines. These instructions shall guide the proper installation and configuration of the solution, ensuring operational integrity and compliance.

## 3.5.4 Roles

The phases of the project will require a different level of resources and roles. These are further detailed in this section and should be considered by vendor for planning and estimation purposes as well as providing relevant CVs and credentials as part of the TS response.

The envisaged implementation roles (note that these roles are not necessarily 1 Full-Time Equivalent (FTE) per line item, they may be >1 FTE, <1 FTE and/or more than one role combined at one point or over time as the project progresses) are outlined below:

GEN Roles: Business	GEN Roles: Project	Vendor Roles
<ul style="list-style-type: none"> <li>Business Sponsor (s)</li> </ul>	<ul style="list-style-type: none"> <li>Project Manager</li> </ul>	<ul style="list-style-type: none"> <li>Vendor Project Manager</li> </ul>

GEN Roles: Business	GEN Roles: Project	Vendor Roles
<ul style="list-style-type: none"> <li>• Business Super User(s)</li> <li>• Business Operational User(s)</li> </ul>	<ul style="list-style-type: none"> <li>• Project Administrator</li> <li>• Business Analyst(s)</li> <li>• Business Support(s)</li> <li>• Business / Functional Architect</li> <li>• IT Manager</li> <li>• IT Engineer</li> <li>• QA Manager</li> <li>• Risk Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Business Product Specialist(s) (to cover the relevant breadth of the product from a functional perspective)</li> <li>• Technical Configuration Specialist(s) (to cover the relevant breadth of the product from a configuration perspective)</li> <li>• Technical Development Specialist(s) (to cover the relevant breadth of the product from a development perspective)</li> </ul>

#### 3.5.4.1 Team Recommendations

**Vendor Responsibilities:** The vendor shall recommend a team structure that optimally supports the implementation of the project. This should include roles and responsibilities focused on ensuring quality control and project management efficacy.

**Customer Responsibilities:** Recommendations for the GEN team composition should also be provided, emphasizing roles critical to project oversight, QA/QC adherence, and effective communication with the vendor.

**Collaborative Efforts:** Both sides are encouraged to work collaboratively, ensuring open communication channels and regular updates to facilitate a seamless implementation process. This collaborative effort should be designed to uphold the stringent quality standards established in the project's outset.

## 3.6 Support and Maintenance

The vendor is should specify and detail the warranty period and the services included in the warranty period.

The vendor is to specify the maintenance and support period of their proposed system with the understanding that GEN would be under no obligation to contract the service for that period.

The vendor is to describe their standard maintenance programmes, including cover period, response and fix times, services, escalation procedures, provision of new releases and versions, etc. Standard support and maintenance requirements are further detailed in the Contract.

The vendor is to confirm their ability to provide the following level of service on the proposed solution for unplanned outages:

- Monthly up-time: 29 days 23 hours 55 minutes 40 seconds
- Monthly downtime: 4 minutes 20 seconds
- Percentage up-time: 99.99%
- Annual downtime 52 minutes

The vendor shall describe their software and hardware release strategy for providing system enhancements and problem fixes.

The vendor is to confirm that when providing any maintenance service, loss of service will not result in loss of data and that it shall be possible to back up the system without loss of data.

**Maintenance:** Detailed maintenance procedures shall be outlined, specifying how ongoing support and updates should be managed to maintain compliance with QA/QC standards. This includes regular system audits, performance reviews, and the timely application of updates and patches.

**Documentation:** Maintenance documentation shall be provided, detailing procedures for routine checks, troubleshooting common issues, and addressing potential security risks in line with quality control standards.

### 3.7 Training and knowledge transfer

Vendor should transfer user knowledge about the solution itself to the business operational users by organizing practical workshops and preparing instructions where users work directly on the solution.

Vendor should transfer administration knowledge of the solution itself to the business super users by organizing practical workshops and preparing instructions where the users work directly on the solution.

Vendor should prepare a workshop based on GEN case and prepare a presentation for business sponsors and GEN CEO.

Vendor should organize a workshop and prepare instructions for configuration of the solution.

### 3.8 Risk Management

A risk is a situation that can occur and, if realized, threatens one or more project solutions. In this sense, it is necessary to identify as many possible technical and business risks as possible as part of planning and to define procedures for their resolution or mitigating the effect on achieving the objectives of the project.

### 3.9 Project Control and Reporting

#### 3.9.1 Introduction

This section outlines the mechanisms and standards for project control and reporting that will ensure the project meets its objectives, timelines, and quality standards. Effective project control involves regular monitoring, reporting, and managing of the project's progress, risks, and changes.

#### 3.9.2 Monthly Status Reports

**Frequency and Timing:** Vendor is required to submit Intermediate Reports on a monthly basis, due within the first five business days of each month.

**Content of Reports:** Each Intermediate Report should provide a comprehensive overview of the project, detailing progress against the plan, identification and status of issues, risks, and change requests.

**Project Overview and Progress:** Summary of the project's current state compared to planned milestones and deliverables. This includes completion percentages, upcoming tasks, and a retrospective on the past month's activities.

**Issues Management:** Detailed description of new and ongoing issues encountered during the reporting period. This should include the impact of these issues on the project, the strategies employed to address them, and their current statuses.

**Risk Management:** Update on any open risks, including any new risks identified during the period. The report should describe the mitigation actions taken and their effectiveness, along with any adjustments to the risk management strategy.

**Change Management:** Overview of change requests initiated, processed, or closed within the reporting period. This section should detail the nature of each change, its impact on the project, and the status of implementation.

**Action Plan:** Outline of the action items for the next period, including priorities and assigned responsibilities.

#### 3.9.3 Regular Project Status Meetings

##### 3.9.3.1 Meeting Schedule and Frequency

**Monthly Reporting Meetings:** Project status meetings will be held on monthly basis to ensure consistent and timely discussions on project's progress, issues, and necessary adjustments. At the beginning of each month, a dedicated meeting will focus on discussing the Intermediate Report submitted by the vendor. This meeting will serve as a platform for comprehensive review and strategic planning based on the monthly reports.



### 3.9.3.2 Meeting Objectives

**Review of Monthly Reports:** The primary objective of the monthly reporting meetings is to thoroughly assess the Intermediate Report, which includes project overview and progress, issue resolution, risk management updates, and change request statuses.

**Progress Tracking:** Evaluate the project's advancement towards its milestones and deliverables, discussing deviations from the project plan and identifying corrective actions.

**Issue and Risk Management:** Address any critical issues or risks reported in the Intermediate Report, discussing mitigation strategies and updates on previously identified risks.

**Change Management:** Review and decide on any new change requests and assess the impact of approved changes on the project's scope, budget, and timeline.

### 3.9.3.3 Meeting Participants

Participants will include key stakeholders from the GEN Project Team and the vendor's project team, ensuring that all relevant parties are present to contribute to discussions and decisions.

### 3.9.3.4 Agenda

- **Introduction and Objectives Overview:** Quick recap of the meeting's goals and overview of the agenda.
- **Detailed Report Review:** Segment-by-segment discussion of the Intermediate Report, addressing each key area (progress, issues, risks, changes).
- **Action Item Review:** Follow-up on action items from the previous status meetings and updates on their completion status.
- **Open Floor for Discussions:** Allow time for any participant to bring up emergent issues or concerns not previously covered.
- **Closing Remarks:** Summarize the outcomes of the meeting and outline the next steps.

### 3.9.3.5 Emergency Meetings

**Provision for Emergency Meetings:** In addition to regular scheduled meetings, the project framework will include provisions for calling emergency meetings if critical issues arise that demand immediate attention. These meetings can be initiated by either the GEN Project Team or the vendor if there are significant risks, unexpected challenges, or external factors impacting the project that require urgent discussion and resolution.

**Notification Procedure:** Vendor establishes a protocol for notifying all relevant participants of the need for an emergency meeting, including the method of notification, minimum notice period (where feasible), and the agenda to be addressed.

### 3.9.3.6 Documentation, record keeping and follow-up

**Meeting Minutes:** All discussions and decisions made during the regular and emergency meetings will be documented in meeting minutes, which will be circulated to all participants within 48 hours post-meeting.

**Action Plan Updates:** The meeting minutes will include a detailed action plan, assigning responsibilities and deadlines for tasks agreed upon during the meetings.

**Document Control:** All reports and records generated as part of the project control processes should be maintained in accordance with ISO 9001:2015 standards for document management.

**Accessibility:** Documentation should be readily accessible to authorized project team members and stakeholders to ensure transparency and facilitate effective decision-making.

## 3.9.4 Compliance and Quality Assurance

**Alignment with Standards:** All project control processes and reports should adhere to the established project management requirements and comply with relevant regulations and guidelines as stipulated within Chapters 3.2 and 3.3.

**Quality Checks:** Regular audits and reviews of the project control practices will be conducted to ensure ongoing compliance and to identify areas for improvement as specified within as Chapters 3.2 and 3.3.

### 3.10 Material Delivery Requirements

The vendor will submit all documentation in digital form, including software code based on the scope of work specified in chapter 2, to the appropriate **repository**. The handover of the documentation shall be recorded in the handover record, which also completes the implementation part of the bid.

Regardless of other provisions regarding the protection of intellectual property rights and knowledge, for the module of integration interfaces between information systems of the solution in the local information systems that will include it, the vendor will, without additional payments, provide a machine-readable copy of the source code and as agreed with the client. A storage so-called **repository** where this code will be easily and simply accessible. They will be able to easily use the specified code to ensure the interoperability of all stakeholders who will be involved in the information system solutions. The exact rules and technical method of integration and use of the code will be determined by the GEN in cooperation with the vendor within the framework of the storage. The vendor will take care of regular updating of the code.

Documents are recommended to be written in an editor with the following properties:

- Editor: Microsoft Office or Open Office
- Paper size: A4
- Margins: top, bottom, left, right - 2.5 cm
- Font: Calibri.
- Text size: text 10 pt, chapter headings 14 pt bold, subtitles 12 pt bold
- The text should be written in Slovenian or English.

### 3.11 Project Organizational Contact

The vendor can obtain and coordinate all technical-content, time-planning, and other information with the Project Manager. All commercial matters will be resolved with the persons responsible for the commercial part of the contract, who will be determined when the contract is signed.