**Tender Document**

**For**

**Correspondence System and Digital Procurement Platform Project**

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# Introduction

**Project Background and Description**

The Office Automation (OA) platform is strategically designed to align with our company's overarching Digital Transformation Master Plan. This initiative is fundamental in our efforts to streamline and enhance the efficiency of our internal operations. By integrating core business processes into one unified system, the platform not only simplifies workflows but also improves the responsiveness and agility of our organizational structure. This consolidation is expected to lead to faster decision-making processes and more streamlined management practices.

The platform leverages a modular architecture and low-code development capabilities, which are essential for accommodating future growth and rapid technological changes. The modular design ensures that new functionalities can be added without disruptions, while the low-code environment empowers our non-technical staff to contribute to application development. These features collectively reduce the reliance on extensive IT resources, accelerate the deployment of new solutions, and enable quicker adaptations to meet demands and requirements.

The implementation of the OA platform is a pivotal step towards achieving the goals set out in our digital transformation agenda.

**Correspondence Management System Background**

CEM aims to leverage intelligent technologies and best industrial practices to streamline the business process for correspondence documents. The new system features should exhibit high performance, seamless integration with external/internal systems, enable monitoring, timely notifications, and mobile efficiency. It should provide functionalities such as document registration, tracking, intelligent searching, workflow optimization, addressing current challenges, and supporting the company's growth and digital transformation initiatives.

The current Document Management System (DMS) is an in-house .Net application. It was designed to handle the circulation of both internal and external documents. This system primarily focuses on document registration, tracking, and offers limited search capabilities for inbound and outbound communications, including Paper Letters (normal/confidential), Email, and Fax. The system comprises two user interfaces: a PC Client and a Web Client. Most of digital copies of the documents are stored in OpenText (Content Server ver.24.2), which also serves as an archiving server. The other digital copies are stored in network drive and handled by user manually.

**Procurement Module Background**

The Procurement Module is a core component of the Office Automation System, designed to modernize and optimize procurement processes as part of the organization's Digital Transformation Plan. This module focuses on enhancing workflows for supplier management and procurement & tendering, ensuring streamlined, efficient, and transparent operations. By integrating advanced automation and user-friendly interfaces, the Procurement Module aims to reduce manual inefficiencies, foster stronger supplier relationships, and improve overall operational agility.

It focuses on two key areas: **Supplier Management** and **Procurement & Tendering**. The Supplier Management Module streamlines supplier registration, maintains a comprehensive supplier database, and evaluates supplier performance using metrics such as quality and delivery time. It also strengthens collaboration through automated communication channels and feedback mechanisms, fostering long-term, productive relationships with suppliers.

The Procurement & Tendering Module automates tender workflows, from creation to submission and evaluation, reducing manual errors and delays while ensuring transparency. It features an integrated supplier portal that allows suppliers to manage profiles, upload documents, and submit bids securely. Additionally, it offers tools for tracking bid submissions and maintaining historical records. Together, these features improve efficiency, foster accountability, and align with the strategic goals of enhancing procurement agility and transparency through digital innovation.

# Eligibility and Qualification Criteria

To be eligible for consideration, the following criteria must be met:

1. The OA (Office Automation) product must have a proven market presence of over 10 years.
2. The OA product should have a successful deployment track record in Macau, or Hong Kong, or Mainland China.
3. If the OA product is using Java, it must be built on Java OpenJDK.
4. The OA product must be supported by a comprehensive product lifecycle management, including version updates, to ensure ongoing improvement and compatibility with evolving technology standards.
5. Products that are purely custom-developed using low-code platforms without a documented product lifecycle and version management will not be accepted.

Tenderers who fail to meet the above criteria may not be considered for further evaluation.

# Scope of Project

The project will be executed in 2 phases, with each phase building upon the previous to ensure a comprehensive, turnkey setup of the Office Automation platform. To facilitate all the tasks needed for this initiative, on-site activities including stakeholder interviews, system installations and configurations, system implementation, integration development and knowledge transfer sessions should be conducted by tenderers.

**Part 1: High-Level Overview of Work Items:**

This section provides a summary of the primary phases and key work items involved in the project.

* **Phase 1 – Requirements Preparation, Fundamental Platform Setup**

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| --- | --- |
| **Work Item** | **Description of Work** |
| P1-01 | Technical & Business Requirements Preparation and Solutions for overall project   * Phase 1: Execution for P1-03 modules in parallel * Phase 2: Execution for P2-02 module |
| P1-02 | Installation and Configuration of OA Platform |
| P1-03 | Module Implementation/Integration, focus on below modules in parallel:   * Corresponding Management Module   + Technical Requirements refers a separate document: “TS Appendix A - Corresponding Management Module Requirement”. * Supplier Management Module   + Technical Requirements refers a separate document: “TS Appendix B - Procurement Modules Requirement”. |
| P1-04 | Including Hands-on operational support for each below area via classroom sessions:   1. Fundamental Workflow Management Development 2. Fundamental Low-Code management Development 3. Platform/Module Administration and Maintenance 4. Business User operational enablement for implemented modules. |

**Optional item in Phase 1**: Separate cost breakdown is required to provided in the tender proposal.

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| **Work Item** | **Description of Work** |
| P1-04-OPT1 | Professional Change request: Total 100 Man-day services for Low Code Development and System Integrations Revamp. |
| P1-04-OPT2 | Reengineering for replacement of Employee Portal and Reporting tool |

* **Phase 2 – Advanced Module Implementation**

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| **Work Item** | **Description of Work** |
| P2-01 | Technical & Business Requirements Preparation and Solutions for P2-02 |
| P2-02 | Module Implementation/Integration, focus on below module:   * Procurement & Tendering Management Module   + Technical Requirements refers a separate document: “TS Appendix B - Procurement Modules Requirement” |

**Part 2: Detailed Requirements**

This section elaborates on each work item listed in Part 1, providing detailed requirements to ensure clarity and comprehensive understanding for implementation and integration.

P1-01: Technical & Business Requirements Preparation and Solutions for overall project

Conduct on-site activities to facilitate requirements preparation tasks, including but not limited to:

|  |  |
| --- | --- |
| **Item** | **Description of Requirements** |
| P1-01-01 | Kick-Off Meeting: Provide a kick-off meeting, to share the project plan/schedule/activities to CEM project team. |
| P1-01-02 | Technical and Business Requirements: Conduct in-depth requirement reengineering with involved departments. |
| P1-01-03 | Documentation and Reporting: Document meeting minutes for each interview and meeting. Provide executive summary presentations to the steering committee at various milestones. Documenting all processes and unmet needs/requirements. |
| P1-01-04 | Processes reengineering by taking advantage of OA platform best practices to design To-be processes. |
| P1-01-05 | To provide implementation solution of data migration, data conversion, and/or extra facilities for system data, etc. |

P1-02: Installation and Configuration of OA Platform

This section outlines the specific requirements for the installation and configuration of the Office Automation (OA) platform, detailing the capabilities and technical specifications needed to ensure a robust, scalable, and efficient system.

OA Platform Requirements: The following are the preferred standard out-of-box features required for the OA platform. Tenderers offering additional standard features will be considered more favorably:

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| **Item** | **Description of Requirements** |
| P1-02-01 | User and Organization Management: Provide comprehensive management features and synchronize with our company active directory to capture the latest information. |
| P1-02-02 | Workflow Management: The OA platform should offer comprehensive workflow management capabilities, designed to effectively create, manage, and optimize business processes across all platform modules. Key functionalities should include:   * Individual or multiple approval processes to ensure governance and compliance. * Notifications for reminders or alerts to keep team members informed of task assignments, deadlines, and updates. * Task reassignment and transfer capabilities to maintain process continuity in response to staff changes or absences. * Robust administration functions for real-time monitoring and auditing of workflows. |
| P1-02-03 | Low-Code Development: The OA platform should provide a comprehensive low-code development environment that enables application creation, editing, updating, and publishing. It should support role and organization-based authorization, including data and feature permissions, and offer a visual storage model design interface.   * Version Management: The platform should provide capabilities for managing application versions, allowing for effective control over different stages of application lifecycle. * Business Process Modeling: The development platform should have capabilities to construct business processes with defined rules for transitions and exit events, accommodating complex conditional workflows and allow users to quickly build applications through drag-and-drop configuration of forms, and business triggers. * Integration with Third-Party Data: It should support integration with third-party data sources, enabling data to be shared back to business systems, verse-vice. * Advanced Development Support: The platform should offer a deep development mode allowing developers to edit code online, modify components, and expand functionalities. * Database management: The platform should include comprehensive database management tools that allow for; Table structure design; Efficient handling of large datasets; Performance optimization features such as indexing, query optimization, and connection pooling; Security features including encryption, backup, and restore capabilities. * Comprehensive database management tools including table structure design, performance optimization features (indexing, query optimization, connection pooling), and security features (encryption, backup, and restore capabilities). |
| P1-02-04 | Document Management: Offer extensive capabilities for document handling, including creation, online editing, secure storage, easy retrieval, smart searching, effective version control, and seamless sharing solutions to enhance collaboration and compliance. |
| P1-02-05 | Reporting and Dashboard: The platform should allow users to dynamically create and customize reports and dashboards. It must include:   * Features for selecting, filtering, and sorting data based on various criteria. * Drag-and-drop interfaces for report design, incorporating charts, graphs, and tables. * Robust data visualization capabilities, including a variety of chart types (bar, line, pie, heat maps, etc.) and interactive dashboards for deeper data analysis. |
| P1-02-06 | Collaboration: Incorporate robust integrated communication tools, such as instant messaging, platform inbox, notification or forums, to foster a collaborative work environment and enhance productivity. |
| P1-02-07 | Mobility: Ensure full mobile access to the OA platform, allowing users to perform business functions/workflows from smart phone (supporting with Android/iOS/Harmony OS), enhancing flexibility and increasing productivity for users.  Require having capability integration with the CEM’s WeCOM platform, which acts as CEM's centralized mobile portal. WeCOM will serve as the primary entrance point, utilizing CEM's single sign-on (SSO) mechanism, currently based on OAuth2, to redirect users to the OA platform's mobile function page or workflow page. Additionally, the OA platform should be able to utilize WeCOM APIs to trigger necessary notifications, facilitating the implementation requirements of business modules in this project. |
| P1-02-08 | Module Flexible Expansion: Ensure the platform can be easily customized and expanded with additional modules or functionalities as business needs evolve, without disruptions to ongoing operations. |
| P1-02-09 | Integration Capabilities: Able to provide flexible integration solution, including but not limited as below:   * API Support: Provide robust API support for creating RESTful APIs and other integration protocols to connect seamlessly with external systems and data sources. * Data Exchange Formats: Enable support for multiple data exchange formats or approach, including flat file, API’s JSON, API’s XML, and direct JDBC database connections to ensure compatibility and flexibility in data handling. |
| P1-02-10 | Administration Platform/Console: Equip with a comprehensive management console for platform administration and user management, including user and permissions delegation. |
| P1-02-11 | User Experience and Accessibility: Able to provide below features, including but not limited:   * UI/UX Interface Design: Deliver a user-friendly interface and high configurability to meet diverse user preferences. * Localization: Support multiple languages (Traditional Chinese, English) to cater to a multilingual user base, enhancing the platform's usability in diverse geographic regions. |
| P1-02-12 | External Access: The system must support external user account management, enabling the handling of account authentication and permission control. |
| P1-02-13 | Operational logs should be provided with timestamp. |

Technical Architecture

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| **Item** | **Description of Requirements** |
| P1-02-14 | Architectural Flexibility: Support various deployment solutions including on-premises, private cloud, and hybrid environments to provide flexibility and scalability. |
| P1-02-15 | High Availability and Redundancy: Design and Implement a redundancy architecture to ensure no single point of failure and minimize downtime, essential for critical business operations. |
| P1-02-16 | Multiple Nodes Instance: Enable scalability through a distributed architecture that allows for adding more nodes as organizational growth with business needs and increased system processing demands. |
| P1-02-17 | Environment Separation: Clearly define and separate environments for Development, Testing, Production, and Disaster Recovery to manage application lifecycle effectively and ensure business continuity. |
| P1-02-18 | System Backup: Design and implement comprehensive backup solutions to safeguard data and ensure recoverability in any scenario. |

Deployment Requirements

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| **Work Item** | **Description of Work** |
| P1-02-19 | Automated Deployment: Utilize advanced tools for automated deployment, including configuration management and continuous integration/continuous deployment (CI/CD) pipelines, to enhance efficiency and reduce human error. |

Security Mechanism

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| **Work Item** | **Description of Work** |
| P1-02-20 | User Authentication, Authorization, Audit: Implement comprehensive and customizable user authentication, authorization, audit protocols to monitor and secure access based on predefined roles and privileges, including but not limited as below:   * RBAC (Role-Based Access Control) / ABAC (Attribute-Based Access Control) * Audit lifecycle including monitoring and reporting |
| P1-02-21 | Single Sign-On (SSO): Implement SSO with Windows AD/LDAP integration to simplify user access across all system platform and modules. |
| P1-02-22 | Data Protection: Capabilities to encrypt and securely data in transit and rest. |
| P1-02-23 | Cyber Security Compliance: Ensure the platform complies with Macau Cybersecurity Laws, to maintain legal and regulatory compliance. (System level: high) Please refer to Appendix I – Cyber Security Compliance. |
| P1-02-24 | External Access: Mechanisms such as two-factor authentication (2FA) must be implemented. |

Performance Specifications

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| **Work Item** | **Description of Work** |
| P1-02-25 | System Response Times: Guarantee that the system provides acceptable response times (under 3 seconds) for all user interactions to maintain operational efficiency. If system response time is over 3 seconds, a progress bar must be shown to display the current progress. |
| P1-02-26 | Load Handling: Equip the platform to handle system loads and transaction volumes smoothly, ensuring scalability and reliability during peak periods, including but not limited as below:   * Stress test for system capability under pressure, ensure system live and work in normal between peak and base test indicator. * Mechanism for overload handling |

Product Maintenance Specifications

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| **Work Item** | **Description of Work** |
| P1-02-27 | Service Level Agreement requirements:  Tenderers are required to propose the Service Level Agreement (SLA) in the tender submission, outlining details such as business hours and response levels. The final decision will be based on the agreements reached. |

P1-03: Module Implementation/Integration

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| **Work Item** | **Description of Work** |
| P1-03-01 | Corresponding Management Module   * Technical Requirements refers a separate document: “TS Appendix A – Correspondence Management Module Requirement”. |
| P1-03-02 | Procurement Modules   * Technical Requirements refers a separate document: “TS Appendix B – Procurement Modules Requirement” |

P1-04-OPT2: Reengineering for replacement of Employee Portal and Reporting tool

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| **Work Item** | **Description of Work** |
| P1-04-OPT2-01 | Requirements   * Conduct on-site activities to facilitate replacement and migration tasks (Required to complete in 2025) * Processes reengineering by taking advantage of OA Platform to design To-be processes (SharePoint 2016 & SSRS in SharePoint Integrated mode) * Propose the implementation solutions and tools for To-be processes * Propose the data migration solutions |
| P1-04-OPT2-02 | Deliverables   * Provision of reengineering functionalities and features (As-is vs. To-be comparison) * Provision of a new Employee Portal layout design * Provision of To-be implementation solutions * Provision of Data migration solutions * List out the required module(s) and tool(s) if necessary |

# Deliverables

In addition to fulfilling and achieving the scope of the project outlined in Section 2. The project team is responsible for a range of deliverables across the project. These deliverables are organized into several key areas:

**All delivery documentations should be provided in English with editable format.**

System Installation/Configuration/Development:

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| Item | Description of Deliverables |
| D01 | Project Schedule and Activities: Provide a detailed description of the project's major tasks and milestones, along with the overall schedule covering all phases of the project from start to completion. |
| D02 | Installation and Configuration Specifications: Provide detailed documentation of the system architecture, setup and configurations performed, including any initial issues encountered with their resolutions. This should contain screenshots and step-by-step descriptions to aid in future setups or troubleshooting. |

Project Management Area:

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| Item | Description of Deliverables |
| D03 | Weekly & Monthly Report: Deliver regular updates detailing the project's progress, risks, issues, and mitigations, including performance metrics and a dashboard summary for a quick overview of the project's status. |
| D04 | Presentation to management: Prepare a comprehensive presentation summarizing the project progress, outcomes, issues and mitigations plan. This should be suitable for executive review, highlighting key achievements and areas for improvement. |
| D05 | Cut-over Plan and management: A detailed plan describing the steps for transitioning from the old system to the new OA platform. This should include timelines, rollback procedures, and responsibilities assigned to each team member. |

Documentation Area:

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| Item | Description of Deliverables |
| D06 | To-Be Processes/Integration: Detailed descriptions and comprehensive workflow diagrams covering functional, non-functional, interface, correspondence, reports, authorization, and technical aspects. The workflow diagrams should be provided in Visio file format, with identical content in text format in an Excel file for others. |
| D07 | Corresponding Business and Technical Requirements: Documentation should be organized by function (business vs. technical), detailing the requirements met, the responsible department, and the owner. This should be laid out systematically in an Excel file for clarity and reference. |
| D08 | SIT and UAT Testing: Conduct SIT (System Integration Test) by vendor and assist to prepare and support UAT (User Acceptance Test). |
| D09 | Knowledge transfer materials: Documentations for end-users and system administrators to ensure they are well-versed with the new system. Comprehensive guidelines and manuals for end-users, system administrators and developers, including step-by-step instructions and FAQs. These materials should be provided in word or excel for easy distribution and editable formats for future updates. |

# Qualification Requirements and Responsible of Project Team

Due to the different types of knowledge involved in this exercise, we expect that the workforce should be constituted of different domain experts. The project team must possess the following qualifications as a minimum:

* Project Manager Qualifications:
  + Requirements: At least 3 years of proven project management experience is required. Candidates with more than 5 years of experience will be evaluated more favorably. Experience in power utilities within Macau, Hong Kong, and mainland China will be considered an advanced evaluation criterion.
  + Responsibilities: Oversee the entire project lifecycle to ensure successful delivery within time and budget constraints. Coordinate between different team members and stakeholders to ensure effective communication and resolution of issues. Monitor project progress and make adjustments as necessary to ensure the successful completion of the project.
* Technical Team Qualifications:
  + OA Platform and Module Expertise:
    - Requirements: Expertise in the specific Office Automation platform being implemented is essential. Team members should be familiar with the platform’s architecture, core functionalities, module integration, customization capabilities, and maintenance requirements.
    - Responsibilities: Lead the setup and customization of the OA platform according to project specifications and business consultant advises. Ensure the platform's stability, scalability, and performance throughout its deployment. Provide technical support and knowledge transfer to user groups within the organization.
  + Business Consultant:
    - Requirements: The team should include consultants who are well-versed in the business modules relevant to this project, such as Correspondence Management, Supplier Management, and Procurement & Tendering Management. Their insights will be invaluable in aligning the OA platform's capabilities with the business processes.
    - Responsibilities: Analyze and align the OA platform’s capabilities with the organization’s business processes. Advise on best practices for module utilization like Correspondence, Supplier, and Procurement & Tendering Management. Facilitate change management and assist in the adaptation of new processes.
  + Data Migration Expertise:
    - Requirements: Members should have demonstrable experience in data migration tasks, particularly in migrating data from legacy systems to new OA platform, ensuring data integrity and continuity.
    - Responsibilities: Design and execute a comprehensive data migration strategy from legacy systems to the OA platform. Ensure data integrity and minimize downtime during migration. Validate post-migration data and troubleshoot any issues arising from the migration.
  + Integration Expertise:
    - Requirements: The technical team must understand diverse integration design approaches, including but not limited to RESTful APIs, direct database data exchanges, and WeCOM API integrations. The responsibilities of these experts will encompass proposing and designing all integration strategies for the project, developing and documenting integration processes, implementing and testing solutions.
    - Responsibilities: Design and propose comprehensive integration strategies for the OA platform with CEM IT infrastructure. Develop and document integration processes, implementing and testing all integrations. Maintain and optimize integrations to ensure seamless functionality and efficiency.
  + SAP-ERP Expertise:
    - Requirements: Team members must have a thorough understanding of the SAP-ERP system, especially the procurement module. Their expertise will be critical in reviewing and guiding the implementation of procurement-related modules in the OA platform, ensuring that the new system aligns well with existing SAP functionalities and business processes.
    - Responsibilities: Design, Review and guide the integration of SAP-ERP procurement modules within the OA platform. Ensure compatibility and functional alignment between the SAP systems and the new OA platform. Provide expert insights on SAP functionalities that can enhance the platform’s effectiveness.
  + SAP Development Expertise:
    - Requirements: Proficiency in SAP development is required, particularly in aspects related to system integration. This includes experience with SAP RFC, DB link, and other relevant SAP integration technologies, which are essential for creating a robust and efficient integration architecture.
    - Responsibilities: Develop and maintain SAP integration points for the OA platform. Utilize SAP development tools to enhance platform capabilities and integration. Ensure robust, secure, and efficient operation of integrations between SAP and the OA platform.
* Language Proficiency:
  + Multilingual Capabilities: Project team members should be proficient in both Chinese and English, with strong reading and writing skills in both languages to facilitate clear communication and documentation. Fluency in Cantonese will also be regarded as an advanced qualification during the evaluation process.

The qualification evaluation will be based on the expertise and capabilities of the project team directly involved in this bidding project and participating in the implementation phase.

The tenderer should clearly illustrate in the proposal the resources expected from CEM and their respective roles in the project for CEM to schedule the necessary manpower during project phases. Any tasks/responsibilities not explicitly mentioned in the tender proposal that require CEM's resources will be assumed by the final awarded contractor by default.

P.S. The submitted project team members will be considered as direct participants in this project. Any changes to the project team's resources should be mutually agreed upon by both CEM and the contracting company. It is imperative that the contracting company provides a replacement member with qualifications equivalent to those of the original resource.

# Tender Presentation

The tenderer should make their best effort to present a tender that contains all the necessary information deemed necessary for CEM to make a selection. Despite this, the following checklist of items should be used as a reference to present the proposal:

1. Provide detailed information of company profile and background information about the company's history, financial stability, compliance records, and legal standing. This is essential to demonstrate the tenderer's capability and resources to successfully execute and sustain project requirements.
2. The tenderer must provide a clear presentation on the product’s lifecycle management processes, emphasizing version updates and ongoing support. This presentation should detail how the product’s lifecycle ensures compliance with evolving technology standards.
3. It is compulsory for the tenderer to meet the essential requirements specified in the following sections of this Technical Specification.

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| --- | --- |
| **Section** | **Remark** |
| 2. Eligibility and Qualification Criteria | Deviations are not accepted. |
| 3. Scope of the Project  4. Deliverables  5. Qualification Requirements and Responsible of Project Team | Specify the deviations with item code if any. |

1. Methodology for approaching the entire project: The tenderer is required to provide relevant reference materials, if available, for our evaluation. These materials should include as below:
   * + Technical & User Requirements Information collection templates.
     + Software tools for project monitoring.
     + Additionally, the tenderer should present their approach that has been successfully applied in at least one utility project. However, if the approach has been gradually applied in more than three projects, it will be considered as an advanced qualification.
2. Platform DEMO and Hands-on workshop, content should refer to section “Appendix III - DEMO and Hands-on Workshop”.
3. Certification of ISO Quality Standards: The tenderer should provide evidence of relevant ISO certifications (ISO 20000, ISO 9001) or equivalent-level certification that demonstrate the contracting company's qualifications.
4. Task Breakdown and Schedule: A detailed breakdown of tasks, along with a comprehensive schedule, should be provided. This breakdown should clearly outline the activities involved in each phase of the project and the estimated resources required for successful completion. “Project Plan Details” shall be submitted in Word or Excel format as below reference sample format:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | Task / Deliverable | Man-Days | No. of Consultants/Expertise | Total Man-Days | Schedule |
| 1 | xxx | 2 | 1 | 2 | Week 1 – 2 |
| 2 | xxx | 0.5 | 2 | 1 | Week 3 |

1. Track Record and Experience: The tenderer should present at least three of their track record in the utility area, showcasing their past experience in similar-scale projects, particularly in businesses similar to CEM. Customer references should be included to validate the tenderer's capabilities. The materials presented should align with the requirements outlined in the “5. Qualification Requirements and Responsible of Project Team” section.
2. Project Team Presentation: The tenderer is expected to introduce the project manager, project team members, and submit their respective CVs. This allows CEM to assess the qualifications of the team members. The certification of the project team should also align with the requirements specified in the “5. Qualification Requirements and Responsible of Project Team” section.
3. Price breakdown and instruction for quotation:
   * Phase I & Phase II quotation:
     + Tenderers should propose a fix turnkey price for the provision of software licenses with at least one year product maintenance included, implementation cost (including integration and migration works), professional change request, and hardware cost if applicable.
     + Despite a lump sum price, the cost of each item should be broken down to as detail as possible for CEM to appreciate the overall cost calculation. Below is the recommendation price breakdown matrix for tenderers submit for CEM evaluate. For details, please refers to “Price Scheme” document.

* Tenderers should indicate the infrastructure specification for CEM to provision the infrastructure.

1. List out the OS, Database, CPU and Server manufactured by Mainland China capable by the Platform.
2. Submit “CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Services Suppliers” and “CEM Green Compliance” document.

# Project Schedule

* Phase 1
  + Expected to be completed within 8 months.
* Phase 2
  + Expected to start after OA platform established, to be completed by Nov/2026
* Defect Liability Period: 180 days post go-live support/warranty.
* It is advisable that the majority of work on-site, unless otherwise stated.

# General Description of Current System

Currently, CEM's ERP environment uses SAP ECC 6.0 with EHP7 as the latest version. The core, critical, comprehensive modules to support CEM's operations include HR, FI/CO, MM, PM, and PS. The ERP provides the full life cycle process for budget control, procurement, assets management, plant maintenance, project management, and finance and controlling requirements, meeting CEM's core business obligations. Materials Management Module is our key business process area in this project for work items, P1-03 and P2-02.

* **MM (Materials Management):** Procurement and Logistics Department is the key user department to use this module to manage the procurement and inventory management processes of an organization. Other operational departments are also involved in the business process with this module. It provides an integrated solution for managing materials, vendors, purchasing, and inventory.
  + Material Management: This feature is used for managing the materials used by the organization, including raw materials, finished goods, and spare parts.
  + Vendor Management: This feature is used for managing the vendors used by the organization, including creating and maintaining vendor master data, issuing purchase orders, and processing invoices.
  + Purchasing: This feature is used for managing the procurement process, including creating purchase requisitions, creating purchase orders, and managing the procurement cycle.
  + Inventory Management: This feature is used for managing the organization's inventory, including tracking inventory levels, managing stock movements, and performing inventory valuations.
  + Goods Receipts: This feature is used for managing the receipt of goods from vendors, including inspecting goods, recording receipts, and updating inventory levels.
  + Goods Issue: This feature is used for managing the issuance of goods to customers or for internal use, including recording goods issues, updating inventory levels, and generating reports.
  + Inventory and purchasing data analysis report.
* **CEM ESB Integration platform**:
  + The CEM ESB platform, leveraging IBM webMethods (version 10.11) as the enterprise service bus (ESB), is crucial for orchestrating integration and communication between disparate systems. To facilitate integration with SAP, CEM utilizes technologies such as SAP RFC (Remote Function Call) and DB link, which enable efficient and accurate data exchange between SAP and peripheral systems. The IBM webMethods platform plays a pivotal role in managing and streamlining the data flow between SAP and other enterprise systems, ensuring seamless, efficient, and scalable integrations. This middleware framework is enhanced by robust API technology, which allows for more flexible and dynamic interactions between systems, further improving integration capabilities and system responsiveness.
* CEM WeCOM platform:
  + WeCOM platform is an internal tool utilized by CEM to streamline organizational operations and communications. It serves as the central communication channel for inter-departmental interactions and information dissemination, enhancing organizational connectivity. Additionally, WeCOM offers employee self-services that allow employees to manage personal information, apply leaves or access HR-related documents. The platform also functions as a hub for employee news, keeping staff informed about organizational updates, policy changes, and other relevant news.

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| Architecture of WeCOM access between public and internal |

# CEM IT Landscape and Technology Standard

**IT Infrastructure**

**Network Layer**

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| **Item** | **Description** |
| Data Network Sites | Main Office, PE, Coloane Power Station, and Substations |
| Data Network Backbone | 10Gb Fiber between sites |
| Data Network Zones | DMZ, Server Farm, Internal Network (Corporate Data Network) |
| Data Network Core Switches | H3C |
| Data Network Front-end Switches | H3C |
| Security (Firewalls between) | Network Sites, SCADA Network, Server Farm, DMZ, External Network, etc. |
| Domain Controllers | Main Office and PE Dispatch Center |
| Directory Services | Microsoft Active Directory – Windows 2016 |

**Application/System Layer**

***Note:*** *The majority of the applications and systems are running on Windows O.S. and SQL DB, unless specified in the description field. Besides over 50% of servers are now running on top of VMware and Nutanix AHV virtualization.*

|  |  |
| --- | --- |
| **Item** | **Description** |
| Servers | Standard/Default: Windows Server 2022 |
| Databases | Standard/Default: Microsoft SQL Server 2019 |
| Server Virtualization | VMware vSphere 7 Enterprise Plus /Nutanix AHV 6.5 /Zstack Cloud Enterprise 4.8 |
| Storage | SAN Storage/Nutanix HCI storage |

**Front-end Layer**

***Note:*** *Currently the majority of front-end endpoints are Window platform PC and notebook.*

|  |  |
| --- | --- |
| **Item** | **Description** |
| Endpoint OS | **Window 11 64bits** |

**Software standard**

The following software technologies are being used as CEM internal standard:

* OS: Microsoft Window (whenever feasible we will try to follow the latest version)
* Email server: Microsoft Exchange
* Database: Microsoft SQL Server
* ERP: SAP
* Integration: IBM webMethods Integration
* Collaboration platform: Microsoft SharePoint
* Development environment: Microsoft .NET, JAVA, SAP ABAP
* Data Warehouse technology: Microsoft SQL Server
* Web server: Microsoft IIS
* Backup: Commvault

# SAP Landscape and Configurations

**SAP Hardware Configuration**

The system is setup with 3 levels architecture with distinct QAS and DEV machine and a DR site with real time async mode between PRD and DR by SQL Always On.

For details, please refer to Appendix II - SAP Server Landscape.

**SAP Software Configurations**

In CEM, all SAP modules are sitting in production box. The current SAP version is ERP6.0 with EHP7.

# 

# CEM Green Compliance Requirement

CEM has commitment to the environment. All tenderers are required to comply with the requirements stated in “CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Services Suppliers”.

# Summary of Appendix

### Appendix I – Cyber Security Compliance

The system has been defined as a [Level 3 system] and the requirements for security measures for each level of network security protection need to be implemented under the terms of Annex III (Security Measures Requirements by Network Security Protection Levels) on the official website of the Macao SAR Government with requirements bound to [Level 3 system]. If certain requirements cannot be fulfilled due to objective reasons, a written explanation and the reasons for this must be provided to CEM, and assistance in integrating with the existing CEM solutions should be provided.

For requirements, please refer to:

Official website address: <https://bo.io.gov.mo/bo/ii/2020/20/avisosoficiais_cn.asp#caric>

In terms of conflict, please use Macau government’s website requirement as final.

因此系統已被定位為【高級系統】，各網絡安全保護等級的安全措施要求需要以澳門特別行政區政府官網的附件三（各網絡安全保護等級的安全措施要求）【高級系統】的條款來實施。如因客觀原因某些要求確實無法滿足，需向澳電提出書面解釋以及原因，並協助與現有澳電方案融合。

官網網址：[https://bo.io.gov.mo/bo/ii/2020/20/avisosoficiais\_cn.asp#caric](https://bo.io.gov.mo/bo/ii/2020/20/avisosoficiais_cn.asp" \l "caric)

### Appendix II – SAP Server Landscape

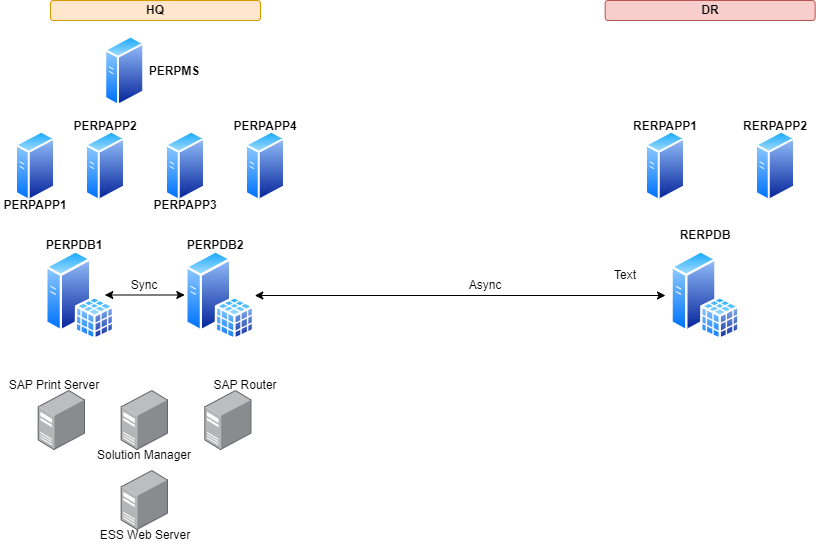
**SAP Hardware Configuration**

The system is setup with 3 levels architecture with distinct QAS and DEV machine and a DR site with real time async mode between PRD and DR by SQL Always On.

* X Development platform configure info:
  + DERPAIO:
    - Windows Server 2019 Standard
    - SQL Server 2019 Enterprise Edition (15.0.4023.6)
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
* X Testing platform configure info:
  + TERPAIO:
    - Windows Server 2019 Standard
    - SQL Server 2019 Enterprise Edition (15.0.4023.6)
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
* X Production platform configure info:
  + PERPMS:
    - Windows Server 2019 Standard
    - Role: SAP Message Server
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - VMware FT: Enabled
    - Virtual/Physical: Virtual

\* SAP Web Dispatcher Installed and Kernel version is 789 PL 118

* + PERPAPP1:
    - Windows Server 2019 Standard
    - Role: Application instance
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
  + PERPAPP2:
    - Windows Server 2019 Standard
    - Role: Application instance
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
  + PERPAPP3:
    - Windows Server 2019 Standard
    - Role: Application instance
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
  + PERPAPP4:
    - Windows Server 2019 Standard
    - Role: Application instance
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
  + PERPDB1:
    - Windows Server 2019 Standard
    - SQL Server 2019 Enterprise Edition (15.0.4023.6)
    - SQL Always on: Enabled
    - Virtual/Physical: Virtual
  + PERPDB2:
    - Windows Server 2019 Standard
    - SQL Server 2019 Enterprise Edition (15.0.4023.6)
    - SQL Always on: Enabled
    - Virtual/Physical: Virtual
  + RERPAPP1 (DR)
    - Windows Server 2019 Standard
    - Role: Application instance and Message Server
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
  + RERPAPP2 (DR)
    - Windows Server 2019 Standard
    - Role: Application instance
    - SAP Netweaver: 7.4
    - Kernel version: 753 PL 1100
    - Virtual/Physical: Virtual
  + RERPDB (DR)
    - Windows Server 2019 Standard
    - SQL Server 2019 Enterprise Edition (15.0.4023.6)
    - SQL Always on: Enabled
    - Virtual/Physical: Virtual



### Appendix III - DEMO and Hands-on Workshop

Prepare a demo session for each of the modules listed below and set up a platform to provide a one-week hands-on workshop for evaluating the functionality of each module.

1. Low-Code Development Platform
   * + Simple form development with validation and input control.
2. Workflow Development Platform
   * + Simple approval workflow development.
3. Correspondence Module
   * + Refers a separate document: “TS Appendix A – Correspondence Management Module Requirement” - Session 4: Workshop Requirement.
4. Supplier Management Module
   * + Refers a separate document: “TS Appendix B – Procurement Modules Requirement” - Session 12: Demo Presentation.
5. Procurement Management Module
   * + Refers a separate document: “TS Appendix B – Procurement Modules Requirement” - Session 12: Demo Presentation.

* **End -**