Statement of Work

*Provision of an Enterprise Service Bus (ESB) and
an Application Programming Interface (API) Manager or
a Software Solution that embodies the purpose and functionality of
ESB and API Manager and related services for
Application Data Integration*

Contents

Acronyms

The following acronyms shall apply throughout the Statement of Work (SoW) unless defined otherwise hereinafter:

AD – Active Directory;

AIPS – Agency-wide Information System for Programme Support;

API – Application Programming Interface;

EBS – Oracle E-Business Suite;

ESB – Enterprise Service Bus;

ETL – Extract, Transform and Load;

HA – High Availability;

IAEA – International Atomic Energy Agency;

IIS – Microsoft Internet Information Services;

iPaaS – Integration Platform as a Service;

ISG – Integrated Service Gateway (component of Oracle ERP – IAEA AIPS);

IT – Information Technology;

LAMP – Linux, Apache, MySQL, PHP/Perl/Python;

LDAP – Lightweight Directory Access Protocol;

MTIT – Division of Information Technology of the IAEA;

NFR – Non-Functional Requirements;

PHP – PHP Programming Language;

REST – Representational State Transfer;

SaaS – Software as a Service;

SoW – Statement of Work;

SQL – Structured Query Language;

TLS – Transport Layer Security; and

UNICC – United Nations International Computing Centre.

1. Scope

The SoW describes the requirements for two software components (further referred to as the 'Software Solution'):

1. An Enterprise Service Bus (ESB); and
2. An Application Programming Interface (API) Manager.

The IAEA will only accept proposals from bidders for both software components or a Software Solution that embodies the purpose and the functionality of the ESB and API Manager, as described in Section 5, to be deployed as part of the to-be application data integration architecture of the IAEA and related professional consultancy services (e.g., training, configuration, testing, deployment, maintenance and support), including services for the implementation of the Pilot Project as described in Section 6 below.

2. Background

The Enterprise Resource Planning (ERP) system of the IAEA, called the Agency-wide Information System for Programme Support (AIPS), is based on Oracle products (E-Business Suite and Hyperion) and is currently hosted in Geneva, Switzerland at the UN International Computing Centre (UNICC). The remainder of the IAEA's application landscape is based mainly on Microsoft technologies (Windows Server, IIS Server, SQL Server, SharePoint, .NET and Microsoft Office applications). These are mostly hosted at the IAEA Headquarters located in Vienna, Austria, and increasingly in the cloud, primarily on Microsoft Azure. A limited number of Linux, Apache, MySQL, and PHP (LAMP) systems exist.

Active Directory is used to authenticate users of the IAEA internal network, whereas CA Identity Manager is currently used for external users. The current application data integration approach is based on database views, SQL Server linked servers, as well as SQL Server jobs for ETL tasks and SQL Server database replication.

An analysis performed by the IAEA established that the current application data integration architecture is structurally complex, has data governance issues and it is difficult to maintain.

To address the above-mentioned issues, the IAEA has developed a new application data integration architecture, the to-be architecture attached in Annex 1 of this SoW (see page no. 10). The Software Solution described herein is part of the to-be architecture.

3. Applicable Documents

The following documents shall be applicable for the work to the extent specified hereinafter:

1. Annex 1 – Illustrates the to-be application data integration architecture at the IAEA and highlights the architectural components to be procured, the ESB and the API Manager;
2. Annex 2 – Detailed requirements specifications for the ESB and
3. Annex 3 – Detailed requirements specifications for the API Manager.

4. Contractor and Contractor's Personnel Requirements

The Contractor's core team personnel working on this engagement shall have:

1. A minimum of ten (10) years of experience in medium to large-scale application data integration architecture, design and implementation;
2. Very good knowledge of application data integration best practices;
3. A minimum of ten (10) years of experience using technologies/tools implementing traditional and/or new integration patterns (e.g. messaging, microservices, orchestration, etc.);
4. A minimum of five (5) years of experience in the data integration of applications based on the proposed Software Solution;
5. A minimum of five (5) years of experience in the data integration of applications both hosted on premises and on cloud;
6. Experience in the integration of the proposed Software Solution with Oracle EBS (AIPS);
7. Fluency in English (oral and written); and
8. Strong facilitation, communication and presentation skills.

5. Solution Requirements

The current IAEA IT landscape consists of source and consumer applications. The API Manager and ESB will form the API driven integration platform where source systems such as AIPS (as well as other applications) will be the service providers for most of the services, while other applications are going to be the consumers of the services. In certain scenarios when using the ISG, AIPS (through the ISG) will publish the services directly into the API Manager. For other scenarios which will require data transformation and/or mediation, custom services will be created and deployed at the ESB layer first and then exposed through the API Manager. Therefore, all services will be deployed to the API Manager gateway and exposed to consumers via the API Manager Developer Portal. All the services will be exposed as REST APIs by the API Manager. The developers of consumer application will be able to view published APIs and related documentation via the API catalogue. Currently most of the consumer

applications are .NET and SharePoint based applications and hosted on-premise and on the cloud. These consumer applications would need to consume APIs published through the API Manager.

In the final setup, three (3) different environments of the Software Solution will be created, as listed below:

1. Production Environment with High Availability (HA) configured (HA-Prod)

2. Development Environment (Dev)

3. Test Environment (Test)

For sizing calculation purposes, for the production environment, a volume of 1 Million transactions/API Calls per 24 hours with a low to moderate level of transformation per message shall be assumed.

For the Dev and Test environments, the minimum billable unit/metric possible of the proposed solution shall be assumed.

The detailed requirements specifications are provided in the Annexes 2 and 3.

5.1 Enterprise Service Bus (ESB)

The ESB will be a transformation and mediation layer. AIPS is one of the main sources of data and will provide most of the data as services. As the data models are going to be of disparate nature at the source side and consumer side, there are going to be transformation requirements which would demand transformation of data from source format to consumer format and vice versa. All these data transformations, data enrichments, protocol translations, content/rules-based routings will be done at the ESB layer using ESB capabilities.

The ESB shall provide the following key capabilities:

1. Service Design and Development;
2. Service Deployment and Testing;
3. Service Security;
4. Messaging Infrastructure;
5. Transformation and Enrichment of Messages;
6. Routing;
7. Service Orchestration;
8. Service Monitoring;
9. Service Governance; and
10. Scalability, Resilience, and High Availability (SaaS or iPaaS solution).

The detailed list of requirements specifications is provided in Annex 2.

5.2 API Manager

The API Manager component will consolidate data access through a common set of enterprise level APIs and ensure that the right security controls have been defined and enforced through APIs. It will ensure that updated data is available to the consumers on a need basis and proper security controls are in place. This will also provide an opportunity to reduce data latency from 1-2 days to hours or minutes depending upon the data availability at source systems. This will help in bringing in the culture of reusability of services and getting away from point to point connectivity across the organisation.

The API Manager shall provide the following key capabilities:

1. API Manager Subscription Model (Deployment, Upgrade, Support etc.);
2. API Manager Life cycle (Management Portal, Developer Portal, API catalogue, Transformation, Monitor etc.);
3. API Manager Governance (Plan, Security Policy, Access, Monetisation, Version, Analytics etc.);
4. API Manager Security (TLS, AD-Integration, Certificates and Key Management, LDAP, authentication method etc.); and
5. API Manager NFR (High Availability, Performance, Scalability, Resilience, 3rd Patty Integration, Logging etc.).

The detailed list of requirements specifications is provided in Annex 3.

6. Pilot Integration Project and Related Services

The IAEA will run a limited scope Pilot Integration Project with the selected Software Solution. There will be only one (1) consumer application with limited number of use cases in the scope of this phase, to be integrated through the proposed Software Solution. It is expected to last for approximately three (3) months. The overall scope for the Pilot Integration Project has been defined. Certain implementation details will be finalized and agreed with the Contractor. As part of this phase, the Contractor shall provide the following goods and services, but not limited to:

1. Temporary license/subscription, **at no cost**, of the Software Solution proposed to be installed and parametrized as part of the Pilot Integration Project (the creation of one (1) Test Environment of the Software Solution is required in this phase);
2. Installation, parametrization and configuration (including communication with AIPS and other data sources), as required, of the proposed Software Solution at the IAEA Headquarters/UNICC or in the Cloud for SaaS or iPaaS software solutions;
3. Three (3) days training on the installation, configuration, operation and maintenance of the Software Solution to the relevant IAEA staff during or immediately after the installation. The training shall take place at the IAEA Headquarters in Vienna, Austria or remotely; and

4. Professional consultancy and implementation services as requested by the IAEA.

7. Organization of Consultancy and Implementation Services

The IAEA will request the initiation of consultancy and implementation services as described in Section 6 through the issuance of purchase orders. The Contractor shall not perform any services not requested by the IAEA and defined in purchase orders.

Each request for services will contain further definitions and specification of the exact nature of the services, the work to be completed and the deadline for its completion. The scope of each request is to be mutually defined and agreed with the Contractor.

Upon agreement of the scope of the request, the Contractor shall provide an estimate of the resources needed, together with unit prices established in the Agreement, to complete the work specified in the request, for the IAEA's approval. The Contractor may commence the performance of the services only upon issue of a purchase order by the IAEA.

The services may be performed on-site or off-site depending on the nature of the requirements. Arrangements are to be mutually agreed in advance and detailed in the estimate provided by the Contractor.

Upon implementation of a purchase order, the Contractor shall submit to the IAEA the deliverable as stated in such purchase order. The deliverable shall be in accordance with the requirements of the Agreement and the applicable purchase order and their acceptance by the IAEA shall be subject to the satisfactory completion thereof. Acceptance by the IAEA of the deliverable shall be the basis for invoicing and payment under the relevant purchase order.

8. Delivery and Acceptance

Based on the results of the Pilot Integration Project and subject to the Contractor's performance during that phase, the IAEA may exercise the option, to purchase the Software Solution.

Based on the results of the deployment of the Software Solution and subject to its satisfactory functioning, the IAEA may exercise the option to place annual orders for maintenance and support for a period of up to five (5) years.

9. Deliverable Data Items

The Contractor shall provide a complete set of installation, operation and administrative manuals of the Software Solution in the English language, in

electronic and/or paper format where appropriate. All documentation, operation and servicing manuals and technical drawings in the English language in electronic and/or paper format where appropriate.

The Contractor shall provide specifications listing the hardware, storage, network, software and other requirements for the proposed Software Solution (e.g. infrastructure sizing information) and include any existing limitations thereof.

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Annex 1 – IAEA Application Data Integration to-be Architecture
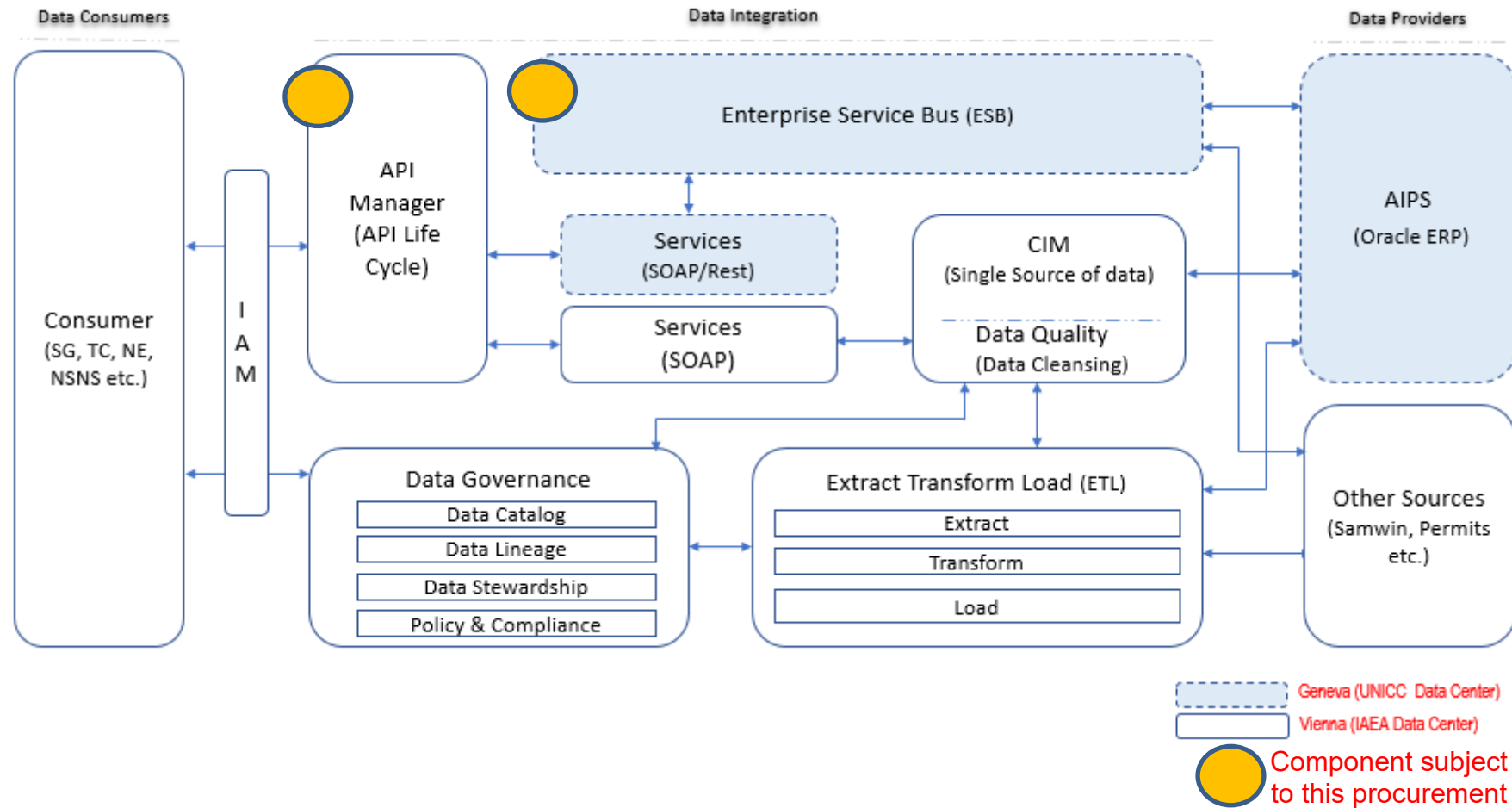
Annex 2 – Detailed requirements specifications for the ESB

Please see document '09. SoW Annex 2 - ESB Specifications (Compliance Matrix)' which is provided separately.

Annex 3 – Detailed requirements specifications for the API Manager

Please see document '10. SoW Annex 3 - API Manager Specifications (Compliance Matrix)' which is provided separately.