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REQUEST FOR INFORMATION (RFI)

This notice is placed by UNGSC. The accuracy, reliability and completeness of the contents of furnished information is the responsibility of UNGSC. You are therefore requested to direct all queries regarding this RFI to UNGSC using the fax number or e-mail address provided below.

Title of the RFI:
Request for Information: Advanced IoT Platform for UN Infrastructure Optimization and Sustainability

Date of this RFI: 29 July 2024 **Closing Date for Receipt of RFI:** 30 September 2024

RFI Number: RFIUNGSC22906

Beneficiary Country/Territory: Global

Commodity/Service category: End User Technology & Applications

Address RFI response by fax or e-mail to the Attention of: Chief Procurement Officer, Ungsc

Fax Number: n/a

E-mail Address: unlb-procurement@un.org

UNSPSC Code:
43230000 - Software

DESCRIPTION OF REQUIREMENTS

1. Background:
The Internet of Things (IoT) has transformed global operations across various sectors, including critical infrastructure management. Organizations like the United Nations (UN) leverage IoT to monitor and optimize resources such as power and water. By deploying sensors on infrastructure assets, IoT enables real-time data collection on energy consumption, flow rates, and operational efficiency. This data is transmitted to centralized systems or cloud platforms for analysis using advanced analytics and machine learning algorithms.
This data-driven approach empowers decision-makers to make informed choices swiftly. For instance, IoT facilitates predictive maintenance by identifying early signs of equipment failure, allowing for proactive repairs that reduce downtime and extend the lifespan of assets.
IoT also aids resource optimization. In water management, sensors monitor reservoir levels and distribution networks, enabling efficient water usage, timely leak detection, and equitable distribution across communities.
Furthermore, IoT is crucial for environmental sustainability efforts by monitoring factors such as air quality and noise levels, helping assess the impact of infrastructure on the environment and implementing measures to minimize harm.

In energy management, IoT supports smart grids that monitor electricity demand, manage renewable energy sources, and optimize energy distribution, enhancing overall energy efficiency and reliability.
During emergencies, IoT provides critical real-time data on infrastructure conditions, aiding disaster response and resilience efforts. This capability helps prioritize response actions, allocate resources effectively, and mitigate disaster impacts on communities.
IoT empowers organizations like the UN to monitor infrastructure comprehensively, optimize resource utilization, and enhance overall resilience and sustainability. These capabilities are essential for achieving sustainable development goals and improving the global quality of life.

Existing IoT System Overview
The current IoT platform leverages the AVEVA OSISoft PI System. It integrates various industrial IoT devices and sensors, facilitating real-time data monitoring and collection.
The current system supports multiple protocols (e.g., OPC, Modbus, MQTT) and ensures data security through encryption and compliance with industry standards.

Key System Features:
- Data Acquisition: Integration with diverse IoT devices and sensors.
- Data Storage and Management: High-performance time-series database and contextualized data organization.
- Data Processing and Analysis: Real-time data analysis and event-triggered notifications.
- Data Access and Visualization: Secure access through PI Web API and visualization tools like PI Vision.
- Integration and Interoperability: Seamless integration with ERP, MES, SCADA systems, and support for cloud and edge computing.
- Security and Compliance: Comprehensive data security features and high availability configurations.

System Architecture and High Availability
Our infrastructure ensures high availability through failover clustering and high-availability groups. Key components include Interface Servers, PI Web API Servers, Application Servers, AF Servers, Analysis and Notifications Servers, and SQL Servers.

Licensing Model Overview
The current licensing model is component-based, tag-based, and server-based, with annual maintenance fees for ongoing support and updates. Key aspects include:
- Component-Based Licensing: Separate licenses for each system component.
- Tag-Based Licensing: Licenses based on the number of data points.
- Server-Based Licensing: Licenses for each PI Server and high availability setups.
- Interface Licensing: Licenses for each data source interface.
- Client Tools Licensing: Licenses for tools like PI ProcessBook and PI Vision.
- Maintenance and Support: Annual fees for support and software updates.

2. Objective:
We seek information regarding the potential migration or renewal of the platform (software and licenses) for our existing IIoT system based on the AVEVA OSISoft PI System. This system is critical to our operations, providing data collection, storage, analysis, and visualization capabilities across multiple industrial sites.
We aim to maintain and enhance system performance, security, and efficiency with the possibility of exploring new licensing models.We seek information to identify potential and leading vendors with the technical and financial capacity to deliver the solution that offers high-end, enterprise-level IIoT solutions, including software and licenses, to propose a new platform or renew our current system to meet our requirements. The solution must be secure and scalable, adhere to industry and security standards, be vendor-agnostic, and support on-premises deployment with the flexibility to scale.
This RFI aims to gather information to assess the feasibility, scope, cost estimate, timeframe, and resources

required for implementing such technologies. The collected information will be used to determine the best approach for the UN.

Following this RFI, the UN anticipates conducting an online demonstration and possibly issuing a Request for Proposal (RFP) to meet the operational requirements of the UNGSC and both Peacekeeping and Political missions worldwide.

The outcome of this RFI will assist the UN in evaluating options for an IoT platform capable of acquisition, processing, visualization, analysis, contextualization, security, and integration.

3. Use of Information:
- Vendors must cover all costs associated with preparing a response to this RFI.
- The information requested will be used solely by the UN for internal planning purposes, kept strictly confidential, and accessed only by authorized personnel.
- Responses to this RFI will not be used to pre-qualify vendors.
- The information provided will not be contractually binding on the vendor.

4. RFI Response Delivery:
This RFI aims to gather information on the latest technology and identify potential solutions available on the market which can ensure additional UN benefits.
Please email your response to unlb-procurement@un.org. Additional material can be delivered to:
Attn: Chief Procurement Officer
UNGSC Procurement
Piazza Del Vento, 1
Brindisi 72100, ITALY
Marked: RFI for IoT Platform Solutions

5. Basic UN Requirements for IoT Solution (platform) capabilities:
5.1 Device Management:
- Facilitate manual and automated tasks for creating, provisioning, configuring, troubleshooting, and securely managing fleets of IoT devices and gateways remotely, either in bulk or individually.
- Support creating and reusing asset templates to ensure consistent asset modeling.
- Allow template inheritance and overrides for customization.

5.2 Integration:
- Integrate with IoT devices (e.g., communications modules and controllers), IoT gateways, historians, and OT systems (hardware, software, and industrial apps).
- Provide APIs for integrating with other enterprise systems (Esri, Power BI, SQL) and applications, addressing data, process, enterprise application, and IoT ecosystem integration requirements across on-premises implementations for end-to-end IoT solutions.
- Support RESTful services for data access and manipulation.
- Offer SDKs for programmatic access.

5.3 Data Management:
- Enable real-time data processing.
- Facilitate historical data management.
- Incorporate advanced data compression techniques.
- Aggregate data from multiple sources.
- Ingest data from IoT endpoint and edge devices.

5.4 Analytics:
- Integrate with advanced analytics and machine learning tools.
- Utilize both historical and real-time data for predictive analytics.
- Process data streams, including device, enterprise, and contextual data, to provide insights into asset states by monitoring use, providing indicators, tracking patterns, and optimizing asset use.

- Support techniques such as rule engines, event stream processing, data visualization, and machine learning.

5.5 Application Enablement and Management:

- Capture and analyze event-based data.
- Define and track events, including start and end times, durations, and associated data.
- Support the addition of static and dynamic attributes to assets.
- Provide mechanisms for performing calculations on attribute data.
- Support formula-based calculations and data roll-ups.
- Allow remote control through writing capabilities.
- Enable sending commands to remote assets.
- Manage events and alerts based on customized analysis.

5.6 Security:

- Support role-based access control to ensure data security.
- Provide detailed permission settings for different user roles and assets.
- Integrate with Azure Active Directory (AD) and Azure Guest accounts.
- Support versioning of asset configurations and templates.
- Provide audit trails for tracking changes and ensuring compliance.
- Ensure an on-premises solution for data security and compliance.
- Guarantee privacy and the security of data across the IIoT solution.

5.7 Edge Environment:

- Offer solutions for deploying local data collectors with local storage and visualization capabilities at remote locations.
- Enable automatic data synchronization between Edge IoT solutions and central services.

5.8 Data Acquisition Layer:

- Support a broad spectrum of IoT protocols, including but not limited to Modbus, OPC, MQTT, SNMP.
- Provide connectors to acquire data from various sources, such as sensors, Programmable Logic Controllers (PLCs), and Supervisory Control and Data Acquisition (SCADA) systems.

5.9 User Interface Visualization:

- Provide a user web interface with customizable views and layouts.
- Visualize assets, clusters of assets, premises, buildings, locations, and clusters of locations.
- Integrate heterogeneous data sources into a unified, contextualized visual platform.
- Provide unique context to real-time data, alarms, and events.
- Display profiles showing applications needed for each IOC role, facilitating scale-up.
- Highlight scenarios of work focusing on necessary systems and information.
- Integrate corporate applications such as Power BI, Esri, and SQL (read and write).
- Enhance continuous operational improvement and real-time decision support.
- Offer a quick overview of operational awareness and improved crisis response.
- Consolidate and contextualize data in a single pane of view.

5.10 Training and Capacity Building:

- Provide comprehensive training programs for system administrators and users.
- Offer capacity-building initiatives to ensure effective utilization and management of the IoT platform.
- Include initial training and ongoing educational resources to keep staff updated on best practices and system advancements.

SPECIFIC REQUIREMENTS / INFORMATION (IF ANY)

Cover Letter
Information to Include:

1. Respondent's Legal Name and Address
2. Authorized Individual's Information
   - o Name
   - o Title
   - o Telephone Number
3. Acknowledgement Statement
   - o Confirm that the respondent has read, understands, and agrees to all provisions of the RFI.

Brief Presentation of Project Proposal
Respondents are encouraged to provide a succinct summary of their approach and concept for the IoT Platform solution. The proposed platform should encompass all features outlined in this RFI, with the possibility of an online demonstration.
The presentation should include:

1. Product and Service Explanation
   - o A brief, clear, and concise overview of the product and service.
2. Design Concept and References
   - o A brief design concept and/or references to similar completed projects, including descriptions and images.
3. Potential Expansion
   - o A brief statement on the potential for expansion.
4. Additional Information
   - o Any additional information that the vendor considers useful for the UN for better understanding of the capabilities of proposed IoT Platform.

Cost Estimates
Respondents should provide an estimated cost for an IoT Platform capable of managing 10,000 devices and 60,000 monitoring parameters (real-time readings). The estimation report should detail key cost categories such as:

- Provisioning
- Installation
- Support
- Maintenance

Timelines
Respondents should provide an estimated timeline for delivering an online demonstration of the suggested solution.

NOTE

Information on tendering for the UN Procurement System is **available free of charge** at the following address: https://www.ungm.org/Public/Notice

Only the United Nations Global Marketplace (UNGM) has been authorised to collect a nominal fee from vendors that wish to receive automatically Procurement Notices or Requests for Expression Of Interest. Vendors interested in this Tender Alert Service are invited to subscribe on http://www.ungm.org

Vendors interested in participating in a potential future solicitation process should submit the Vendor Response Form of this RFI electronically (through the link available on the next page) before the closing date set forth above.

VENDOR RESPONSE

NOTICE

- Companies can only participate in solicitations of the UN Secretariat after completing their registration (free of charge) at the United Nations Global Marketplace (www.ungm.org).
- Please verify that your company is registered under its **full legal** name on the United Nations Global Market Place (www.ungm.org) and that your application for registration as vendor has been submitted to the **UN Secretariat** in the same site, to be able to participate in any potential solicitation process as a result of this RFI.
- While companies can participate in solicitations after completion of registration at Basic Level, we strongly recommend all companies to register at least at **Level 1** under the United Nations Secretariat prior to participating in any solicitations.
- Companies are reminded of the restrictions of employment of former UN personnel that were involved in the procurement process during their last three years of service as per ST/SGB/2006/15, including (a) employing those personnel for one year after separation of service and (b) allowing those personnel to communicate with, or appear before, active UN personnel for matters related to the procurement process for two years after separation of service. Violation of the provisions of ST/SGB/2006/15 may lead to suspension of the registration of the company as a UN vendor.

PLEASE NOTE: You should submit your response to this RFI electronically at:
https://www.ungm.org/Public/Notice/241947

In case you have difficulties submitting your response electronically, please contact unlb-procurement@un.org directly for instructions.

RFI INSTRUCTIONS

1) Registering as a Vendor with the United Nations

Vendors interested in fulfilling the requirement described above must be registered at the UN Global Marketplace (www.ungm.org) with the UN Secretariat in order to be eligible to participate in any solicitation. Information on the registration process can be found at https://www.un.org/Depts/ptd/vendors.

Prerequisites for Eligibility
In order to be eligible for UN registration, you must declare that:

A. Your company (as well as any parent, subsidiary or affiliate companies) is not listed in, or associated with a company or individual listed in:

   I. the Compendium of United Nations Security Council Sanctions Lists (https://www.un.org/securitycouncil/content/un-sc-consolidated-list), or

   II. the IIC Oil for Food List website or, if listed on either, this has been disclosed to the United Nations Procurement Division in writing.

B. Your company (as well as any parent, subsidiary or affiliate companies) is not currently removed or suspended by the United Nations or any other UN organisation (including the World Bank);

C. Your company (as well as any parent, subsidiary of affiliate companies) is not under formal investigation, nor have been sanctioned within the preceding three (3) years, by any national authority of a United Nations Member State for engaging or having engaged in proscribed practices, including but not limited to: corruption, fraud, coercion, collusion, obstruction, or any other unethical practice;

D. Your company has not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against your company that could impair your company's operations in the foreseeable future;

E. Your company does not employ, or anticipate employing, any person(s) who is, or has been a UN staff member within the last year, if said UN staff member has or had prior professional dealings with the Vendor in his/her capacity as UN staff member within the last three years of service with the UN (in accordance with UN post-employment restrictions published in ST/SGB/2006/15).

F. Your company undertakes not to engage in proscribed practices (including but not limited to: corruption, fraud, coercion, collusion, obstruction, or any other unethical practice), with the UN or any other party, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the UN.

For Registered Vendors: Vendors already registered at the UN Global Marketplace with the UN Secretariat must ensure that the information and documentation (e.g. financial statements, address, contact name, etc.) provided in connection with their registration are up to date in UNGM. Please verify and ensure that your company is registered under its full legal name.

For Vendors Interested in Registration: Vendors not yet registered should apply for registration on the United Nations Global Marketplace (http://www.ungm.org); information on the registration process can be found at https://www.un.org/Depts/ptd/vendors. Vendors must complete the registration process prior to the closing date of the RFI. Vendors who have not completed the UNGM registration process with the UN Secretariat before the closing date of the RFI are not considered eligible to participate in the potential solicitation process related to the RFI. We strongly recommend all companies to register at least at Level 1 under the UN Secretariat prior to participating in any solicitations.

IMPORTANT NOTICE: Any false, incomplete or defective vendor registration may result in the rejection of the application or cancellation of an already existing registration.

2) RFI Process

Vendors interested in participating in the potential solicitation process should forward their information (as requested in the RFI) to UNGSC (UNGSC) by the closing date set forth in this RFI. *Due to the high volume of communications UNGSC is not in a position to issue confirmation of receipt of RFIs.*

Please note that no further details of the potential solicitation can be made available to the vendors prior to issuance of the solicitation documents.
This RFI is issued subject to the conditions contained in the RFI introductory page available at https://www.un.org/Depts/ptd/rfi.