TERMS OF REFERENCE

Individual Cloud Migration Consultant for the World Bank Office in Romania, Bucharest

Background

Endorsed by the European Commission (EC) in 2021, Romania's National Recovery and Resilience Plan (NRRP) responds to the urgent need of fostering a strong recovery and making Romania future ready with €14.2 billion in grants and €14.9 billion in loans under the Recovery and Resilience Facility (RRF). The NRRP supports the digital transition with investments and reforms for the digitalization of public administration by building, among other things, a secure government cloud infrastructure. The main measures targeting the government cloud infrastructure include "Deployment of the Government Cloud Infrastructure" at €374.7 million and "Cloud development and migration" at €187.1 million.

The Ministry of Research, Innovation and Digitalization of Romania (MoRID) is, thus, engaged in an ambitious program to develop a Government Cloud Platform (GCP) and migrate selected public digital services to this cloud platform. This plan sits under the Reform 1 (Development of a unitary framework for defining the architecture of a government cloud system) of the Component 7 (Digital Transformation) of the National Recovery and Resilience Plan (NRRP) and the Investment 2 (Cloud development and migration), implemented by the Authority for the Digitalization of Romania (ADR).

Given the complexity and importance of this program, the Government has requested the World Bank's technical assistance through Reimbursable Advisory Services (RAS) for specific activities related to the deployment of the Government Cloud, to ensure that the authorities in charge follow best international practice during cloud development and the migration of public services provided by various public organizations to the cloud. Under this RAS, the objective of the Bank's support is to provide technical advice to the Government on specific activities related to the deployment of the GCP and to assist the Government in strengthening its capacity for the effective adoption of digital services and applications ultimately provided through this platform.

The RAS is divided into three main pillars:
• Pillar A aims to support in defining the strategic approach as well as establishing the policy and regulatory foundations for the deployment and implementation of the GCP;
• Pillar B focuses on providing technical advice and recommendations to, and increase the capacity of, the MoRID and ADR to enable the Government to effectively deploy and implement the GCP;
• Pillar C aims to strengthen the capacity of the Government to fully utilize the possibilities offered by the GCP and ultimately to deliver effectively and inclusively cloud-based public services.

To support migration to GCP of 30 IT&C applications/systems in accordance with NRRP milestones #156 and #157, the World Bank team will perform an in-depth analysis of up to sixty (60) selected IT&C applications/systems based on the proposed methodology and inventory of information systems used to provide digital public services, including: (a) identification of all relevant technical details for the migration process; (b) mapping of existing digital public services and functionalities; (c) assessment of suitability for cloud migration and identification of the necessary prerequisites and requirements for adapting these systems to cloud-ready or cloud-native technologies from a technological and timeline perspective; and (d) proposed measures to increase the accessibility of digital public services to vulnerable users, such as disabled and elderly

individuals or those with low digital skills. Following the in-depth analysis, ADR shall procure professional services for migration of IT&C applications/systems potentially eligible for migration.

Objectives of the Assignment

The objective of this assignment is to support the WB team with:
- Conducting a detailed technical analysis of IT&C applications/systems to be migrated to the government cloud and develop recommendation for their migration to GCP;
- Providing recommendations on potential corrective and adaptive measures for cloud migration of priority IT&C applications/systems;
- Providing recommendations on industry good practices and supporting development of guidelines on relevant key technical elements for the efficient deployment of the GCP.

Scope of Work and Key Tasks

The consultant will apply their expert knowledge and undertake a mix of desk research, interviews, and consultations with the WB team and Government stakeholders to:

- Conduct a detailed technical analysis of IT&C applications/systems to be migrated to the cloud and develop recommendation for its migration to PGC, including:
    o Analysis of current technology stack of selected information systems, shortlisted for migration which support public service delivery, including hardware infrastructure components, software components, deployment model, applied cyber security techniques etc.;
    o Analysis of the documentation related to the information system and public services supported by it;
    o Analysis of information system's data, including data model, data infrastructure, data exchange scenarios, security measures applied to data at rest and data in motion;
    o Identify information system's interdependencies with other information systems, including the protocols for intersystem communication;
    o Identify necessary security controls for cloud migration in compliance with data classification model described in the methodology;
    o Propose improvements to technical specifications templates for cloud migration;
    o Propose the cloud migration strategy for analyzed information system following the methodology;
    o Identify required resources from PGC necessary for hosting of the information system;
    o Develop the technical requirements model for system's migration to PGC according to selected cloud migration strategy, including re-factoring of information systems to comply to cloud-ready and cloud-native principles, where necessary;
    o Contribute to information system's cloud migration planning;
- Provide recommendations on potential corrective and adaptive measures for cloud migration of priority applications and systems and potential adaptation of specific systems as well as advisory inputs on MoRID's/ADR's monitoring of the implementation of the cloud migration plan.

- Provide insights on the use of advanced technologies in cloud development and migration with the purpose of:
  - collection of real-time data from systems;
  - identification of potential issues and areas for improvement; and
  - identification of relationships between different components of government IT infrastructure to detect dependencies more easily.
- Work closely with the World Bank team, the client, and other stakeholders to ensure the successful migration to the Government Cloud Platform and strengthening the capacity of the client.

Deliverables & Reporting

- In-depth technical analysis report for the selected IT&C applications/systems to be migrated to the cloud.
- Report with recommendations on potential corrective and adaptive measures for cloud migration of priority applications and systems and potential adaptation of specific systems.
- Report with recommendations on the use of advanced technologies in cloud development and migration.

Duration of the assignment and working arrangements

The duration of the engagement will be approximately 6 months with a level of effort of 50-75 days. The work will be performed in hybrid mode, combining remote work, work at the World Bank and Client offices in Bucharest, Romania, as needed.

Qualifications

- Minimum 10 years of experience in the management and implementation of IT&C infrastructures
- At least 5 years of experience implementation of enterprise-level information systems in private cloud environments.
- Minimum of 5 years of experience within public sector IT systems, with a focus on migrating/deploying the information systems in private cloud.
- Demonstrated expertise in conducting detailed technical analysis of IT&C applications/systems, including hardware and software components and deployment models.
- Strong understanding of inter-system dependencies and protocols for intersystem communication.
- Expertise in identifying necessary security controls for cloud migration, in compliance with data classification models and methodologies.
- Proven ability to propose improvements to technical specifications templates for cloud migration and to develop cloud migration strategies.
- Experience in resource planning for cloud hosting environments, including identification and planning of resources and services.
- Knowledge of public cloud providers such as AWS, Azure, or Google Cloud Platform, as well as cloud computing technologies.

- Good skills in providing insights on the use of advanced technologies in cloud development, including real-time data collection, issue identification, and dependency detection.
- Strong knowledge of industry best practices and the ability to develop guidelines on key technical elements for efficient cloud deployment.
- Strong technical coordination and consultancy skills, with a focus on stakeholder engagement and consensus-building.
- Ability to work independently and as part of a team.
- Excellent communication, teamwork, and stakeholder engagement skills.
- Excellent knowledge of Romanian, written and spoken and good knowledge of English.

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