

JOB AND TASK DESCRIPTION

Job Title: Software Architect - QA Analyst

Directorate: Economic Development, Trade and Investment

Grade: H

Reports To: Adviser and Head - Debt Management Unit through the Adviser & Team Leader (IT Systems)

General Information

The Debt Management Unit (DMU) implements the debt management programme of the Secretariat, which provides its member countries with an integrated package of assistance in debt management covering policy advisory support, capacity building through training, and provision of debt management systems. Policy advisory support includes improving institutional and legal arrangements for debt management, developing and implementing debt management strategies, and market development.

Through provision of the world-leading Commonwealth Secretariat Debt Recording and Management System (Commonwealth Meridian), the Secretariat enables client countries to effectively manage their debt at central and state government levels, targeting back, middle, and front office functions. Commonwealth Meridian is currently deployed in over 40 countries.

Commonwealth Meridian is built using ASP.NET MVC 4, with Entity Framework for data access from both SQL Server and Oracle backends. The UI is developed with KendoUI for jQuery. The Secretariat uses Azure DevOps for deployments and agile project management. Test automation is written in NUnit using Selenium WebDriver. The application also includes REST APIs, Swagger, and extensive use of design patterns for domain logic – it is a web-based application managed through the Azure DevOps framework.

DMU is led by an Adviser and Head, and comprises Debt Management Advisers, Economist Analysts, an Adviser & Team Leader (IT Systems), a Business Analyst, Systems Development Officers, Programmers, a Test Analyst, and Programme Assistants.

Job Summary

Reporting to the Adviser & Team Leader (IT Systems) of DMU and working as part of the team led by the Adviser & Team Leader (IT Systems), and in coordination with business analysts, economists, debt specialists, and IT professionals, the Software Architect - QA Analyst is responsible for designing, implementing, and continuously improving quality assurance strategies, testing processes, methodologies, and automation frameworks to identify and address any issues or defects in Commonwealth Meridian. The post holder may also be required to provide technical support to clients and participate in capacity building activities.

Task Description

The main duties of the Software Architect - QA Analyst are as follows:

- Perform API testing using Postman, RestAssured, or similar tools to validate integrations.
- Design and implement test automation frameworks for UI, API, and performance testing.
- Manage the complete test cycle of software development from requirements testing to user acceptance and release testing.
- Plan testing at different stages within the development cycle, including formulation of testing objectives and quality criteria, development of testing strategy and recommending testing approach; ensure cohesive integration of test and development activities.
- Recommend functional and non-functional testing standards and implement these within the software test cycle.
- Advise on appropriate training on testing for team members in view of developing a testing culture within DMU.
- Design and develop test cases in consultation with DMU's debt advisers, Business Analyst, and Systems Development Officers, and based on software requirements specifications (SRS) and software design description (SDD).
- Participate in peer review of software development cycle deliverables (e.g. SRS, SDD, etc.); monitor unit testing and preliminary integration testing by programmers.
- Carry out regular integration testing and system testing of software against different versions of both Oracle and MS SQL Server databases and different versions of Windows operating system; organise and conduct user acceptance and release testing of the software.
- Design, develop, and execute reusable and maintainable automated scripts using available tools.
- Create and maintain effective test databases in consultation with DMU's debt advisers, Business Analyst, and Systems Development Officers.
- Prepare and submit reports on work progress on a regular basis.
- Participate, as part of the DMU IT team, in system and release testing of software modules for conformance with user specifications, performance, security, and other quality attributes; logging all defects in DMU's incident tracking system.
- Document all quality assurance and testing tasks at a technical level using available tools.
- Design and implement test strategies for AI/LLM-powered features of Commonwealth Meridian, including validation of prompt outputs, API response integrity, and retrieval-augmented generation (RAG) pipelines.
- Support the validation and quality assurance of bespoke policy models developed by DMU, including econometric and data science models used for debt sustainability analysis, cash flow forecasting, risk modelling, and scenario simulation; design test cases that verify model logic, parameter sensitivity, and output integrity against defined policy specifications.

In the context of improving and automating DMU software testing activities, the Software Architect - QA Analyst would be expected to make recommendations on acquisition of appropriate testing tools.

With a view to maintaining a good level of support, the Software Architect - QA Analyst, whenever requested by the Adviser and Team Leader (IT Systems), would also attend to user support queries and participate in the prioritisation, diagnosis, and resolution of support issues.

The Software Architect - QA Analyst may be required to deliver training in their area of competency.

Perform any other duties as may be required from time to time.

Person Specification

Education

Essential

A Master's and/or Bachelor's degree in Computer Science or a related software testing discipline acceptable to the Secretariat, with a major component relevant to computing.

Desirable

A postgraduate qualification or professional certification in software testing, quality assurance, or test automation (e.g., ISTQB Advanced Level or equivalent).

Experience

Essential

A minimum of five years' software testing experience, including:

- Developing software automation scripts using .NET, NUnit, and Selenium WebDriver.
- Quality assurance experience in a structured test environment.
- Proficiency in software testing techniques, testing tools, incident/defect tracking systems, and other test-support tools.
- Proficiency in black box and white box testing techniques.
- Strong hands-on working knowledge of SQL and experience with Oracle and MS SQL databases.
- Testing experience of web-based systems.
- Experience in test strategy and quality assurance for AI/LLM-integrated features, including validation of model outputs, API response integrity, and prompt reliability.
- Familiarity with Azure DevOps for test management, CI/CD pipeline integration, and agile testing workflows.
- Working knowledge of data science and statistical/econometric methods sufficient to design and execute meaningful test cases for quantitative policy models, including regression analysis, time-series modelling, and simulation outputs.

Desirable

- Experience in scripting unit-level test cases using C# in the Microsoft Visual Studio environment.
- Experience working with financial applications (e.g., banking, investment, debt management).
- Understanding of how AI and machine learning can be applied to public debt management quality assurance functions, including testing of automated report generation, scenario simulation outputs, and AI-assisted data validation.
- Knowledge of debt management.
- Familiarity with AI-driven testing tools and their integration into continuous integration (CI) and continuous deployment (CD) pipelines, including considerations around model interpretability, data privacy, and auditability in a sovereign debt context.
- Awareness of multilateral and international frameworks governing responsible AI use in public financial management, such as those issued by the IMF, World Bank, or relevant Commonwealth guidelines.
- Practical experience using data science or statistical tools (e.g., Python, R, Stata, or MATLAB/Octave) in a quality assurance or model validation context, including testing bespoke econometric or financial models developed to support public debt management policy.
- Familiarity with econometric and quantitative modelling techniques, such as debt sustainability analysis (DSA) frameworks, cash flow forecasting models, and risk scenario simulations, to enable rigorous validation of DMU's bespoke policy model outputs against theoretical and empirical benchmarks.

Competencies

Respect for Diversity

Works effectively with people from all backgrounds.

Treats all people with dignity and respect; actively fosters an inclusive working environment within the team.

Treats men and women equally.

Shows respect and understanding of diverse points of view and demonstrates this understanding in daily work and decision-making.

Examines own biases and behaviours to avoid stereotypical responses and does not discriminate against any individual or group.

Acts to change systems and processes when biases are identified, within own sphere of influence.

Working with Others

Promotes teamwork and removes barriers to effective collaboration.

Provides advice and guidance to others sensitively and where appropriate.

Establishes ownership for relevant activities from the outset.

Develops a wide network, including senior-level contacts, to facilitate activities and further own knowledge.

Manages expectations of member states and other stakeholders, ensuring alignment between what is requested and what the Commonwealth Secretariat can deliver.

Demonstrates an ability to negotiate with and influence senior colleagues and contacts.

Proactively liaises with other divisions, partners, and third parties.

Communicates complex technical concepts clearly to non-technical stakeholders, including debt management advisers, economists, and government counterparts.

Developing and Applying Professional Expertise

Applies specialist knowledge to achieve desired results.

Proactively identifies ways to develop specialist knowledge, including emerging technologies relevant to public financial management systems.

Presents credible to both internal and external contacts.

Summarises and presents technical information in a manner that others can understand.

Acts as a technical adviser to others to facilitate achievement of desired outcomes.

Uses specialist knowledge to bring an alternative perspective to a situation.

Liaises with stakeholders to facilitate implementation of recommendations.

Uses experience and advanced technical expertise to support others, including in-country debt management teams and Commonwealth Meridian users.

Accountability

Takes ownership of assigned tasks and honours deadlines.

Ensures timely delivery of outputs within defined cost and quality standards.

Takes responsibility for own shortcomings and ensures compliance with relevant organisational and technical standards.

Maintains transparent and accurate records of development activities, defects, and resolutions in line with DMU's quality assurance processes.

Decision Making

Considers the relevant justifications for a particular course of action.

Takes context into consideration when making decisions.

Makes effective decisions when acting on behalf of a senior colleague, seeking advice where appropriate.

Bases actions and approaches on the root cause of an issue, rather than the symptoms.

Applies evidence-based and data-driven reasoning when evaluating technical options, architectural choices, or system changes affecting Commonwealth Meridian.

Leadership & Development

Mentors colleagues effectively, for example by setting development goals and providing on-the-job coaching and constructive guidance.

Provides constructive feedback to team members and colleagues with confidence and sensitivity.

Actively seeks feedback on own performance and acts to modify behaviours where necessary.

Inspires others through personal enthusiasm and commitment to continuous improvement.

Champions knowledge-sharing across the DMU IT team, including disseminating learnings from AI integration, software architecture decisions, and system enhancement initiatives.

Digital Innovation & AI Literacy

Demonstrates awareness of current and emerging AI technologies and their practical applications in enterprise and government software environments.

Applies understanding of AI/LLM integration (including prompt design, API orchestration, and retrieval-augmented generation) to enhance the functionality and user experience of Commonwealth Meridian.

Understands the relevance and potential of AI-driven tools for public debt management functions, including debt sustainability analysis, cash flow forecasting, risk modelling, and automated report generation.

Promotes responsible and ethical AI use, including attention to model transparency, auditability, data privacy, and bias mitigation in government financial systems.

Keeps abreast of international guidance on AI in public financial management (e.g., IMF, World Bank, Commonwealth frameworks) and translates this knowledge into practical software design considerations.

Supports colleagues and member country counterparts in building confidence and capability with AI-enhanced features of Commonwealth Meridian.

Demonstrates sufficient grounding in data science and econometric modelling principles to contribute meaningfully to the quality assurance of bespoke policy models, including the ability to interrogate model assumptions, validate input-output relationships, and identify anomalies in quantitative outputs relevant to sovereign debt management.

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