Annexure 7: Role Descriptions of Professional Staff

1. Staffing and Team Composition (CVs)

#	Key Expert (ToR Section 4.3)
1	Project Manager
2	Technical Lead
3	DevOps / Security Engineer
4	Business Analyst (Technical Writer)
5	Software Developer
6	QA Engineer
7	UI/UX Designer
8	Database Engineer/Designer

Each CV is scored as: academic qualification 20%; general experience 20%; experience on similar projects in the role 50%; relevant certifications 10%. Where several persons fill a role, the role score is the average of their CV scores.

2. Role Descriptions of Professional Staff

The responsibilities below form part of the Vendor's obligations (ToR Section 4.1). Minimum numbers, years and qualifications per Lot are set in ToR Section 4.3. All roles in ToR Section 4.3 are Key Experts. A separate person shall fill each minimum position. Where ToR Section 4.1 and this Part differ, ToR Section 4.1 prevails (ToR Section 3.3).

2.1. Project Manager (Key; minimum 1 per Lot)

The Project Manager shall be responsible for the overall planning, coordination, execution, monitoring, control, and successful delivery of the project within the approved scope, schedule, budget, quality standards, and contractual obligations. The Project Manager shall serve as the primary point of contact between the PA, stakeholders, and the Vendor, ensuring effective governance, communication, risk management, and successful project outcomes throughout the Software Development Life Cycle (SDLC).

The Project Manager shall possess strong expertise in managing large-scale enterprise software development projects using Agile and hybrid project management methodologies, ensuring timely delivery while maintaining quality, security, and stakeholder satisfaction.

Key Responsibilities:

- Provide overall project leadership and management throughout the project lifecycle.
- Develop, maintain, and execute a comprehensive Project Management Plan covering scope, schedule, cost, quality, risk, communication, procurement, resource management, and stakeholder engagement.
- Maintain an integrated project schedule with clearly defined milestones, deliverables, dependencies (including cross-Lot dependencies under ToR Section 3.5), and critical paths, consistent with the approved Milestone Plan.
- Ensure delivery complies with the agreed Statement of Work (SoW), Terms of Reference (ToR), technical specifications, contractual obligations, and applicable government policies and standards.
- Manage project scope and ensure that all change requests follow the approved Change Management process in ToR Section 13 and Annexure 4, with proper impact assessment, documentation, and approval.
- Notify the PA in writing, within five (5) working days, of any actual or expected delay caused by the PA, another Lot, a GA system, a national platform or GovCloud readiness (ToR Section 3.5).
- Coordinate the multidisciplinary project teams, including Developers, Business Analysts, QA Engineers, UI/UX Designers, Database Engineers, DevOps / Security Engineers and other specialists.
- Ensure that the project adopts an Agile delivery framework that enables iterative development, sprint-based delivery, continuous stakeholder collaboration and adaptive planning.
- Apply Agile Project Management practices, including sprint planning, backlog prioritization, daily stand-ups, sprint reviews, retrospectives, and release planning, while ensuring alignment with overall project governance.

- Monitor project progress using appropriate project management tools and Key Performance Indicators (KPIs) in Annexure 3, taking corrective actions where necessary to ensure successful delivery.
- Identify, assess, monitor, and mitigate project risks, issues, assumptions, and dependencies throughout the project lifecycle.
- Facilitate effective communication and coordination among the PA, stakeholders, technical teams, vendors of other Lots, and third-party suppliers.
- Organise and chair the Lot's internal project meetings and sprint reviews, and prepare for and attend the PSC, TRB and Project Working Group meetings (ToR Section 7.3, as a non-voting member), ensuring that decisions and action items are documented and tracked.
- Be based in Thimphu for at least 60% of the implementation period (ToR Section 4.3).
- Ensure that all project documentation, including project plans, schedules, risk registers, issue logs, meeting minutes, progress reports, and project closure reports, remains accurate, complete, and up to date.
- Monitor project quality and ensure that deliverables meet functional, technical, security, usability, and performance requirements before acceptance.
- Coordinate User Acceptance Testing (UAT), production deployment, Go-Live activities, Hypercare and project transition to operations.
- Ensure effective knowledge transfer, documentation handover, and capacity-building activities are completed before project closure.
- Prepare and submit weekly, monthly, milestone, and executive project status reports as specified in Annexure 3, highlighting progress, overall project risks, issues, payment and invoicing status, resource status, and mitigation plans.

2.2. Technical Lead (Key; minimum 1 per Lot)

The Technical Lead shall provide overall technical leadership and ensure the successful technical delivery of the project. The Technical Lead shall be responsible for defining the technical vision, guiding the solution architecture, ensuring compliance with enterprise standards, and overseeing the implementation of a secure, scalable, resilient, and maintainable solution throughout the

Software Development Life Cycle (SDLC) in alignment with the Secure Software Development Framework (SSDF) and Government Enterprise Architecture Framework (GEA-F).

The Technical Lead shall have demonstrated expertise in software architecture, cloud-native application design, modular and microservices architecture, DevSecOps practices, and enterprise integration, including proven experience designing stateless applications and distributed systems for containerised deployment on Kubernetes or an equivalent platform.

Key Responsibilities:

- Provide overall technical leadership, architectural direction, and technical governance throughout the project lifecycle.
- Define and oversee the overall solution architecture, ensuring alignment with the Secure Software Development Framework (SSDF), Government Enterprise Architecture Framework (GEA-F), enterprise standards, and the project's technical objectives.
- Review and validate technical designs, architectural decisions, development approaches, technology selections, and implementation strategies.
- Ensure that solution components and services are loosely coupled, independently deployable, reusable, and maintainable to support future scalability and extensibility.
- Guide the development team in designing and implementing stateless application services, with state held in managed data stores, that support horizontal scaling, high availability, fault tolerance, container orchestration, and cloud-native deployment.
- Ensure applications are designed for deployment within containerized environments using modern DevOps and CI/CD practices, with consideration for resilience, observability, and automated deployment, and for later migration to GovCloud.
- Ensure compliance with enterprise architecture principles, cybersecurity requirements, interoperability standards, API standards, coding standards, and industry best practices.
- Provide technical guidance on application integration, microservices communication, API management, messaging, and event-driven architecture where applicable.
- Own the Lot's Interface Specifications and represent the Lot on interface matters at the TRB (ToR Section 3.5); ensure no approved interface is changed without TRB approval.

- Review technical deliverables, conduct architecture and code quality assessments, and recommend improvements to ensure maintainability, performance, reliability, and security.
- Support technical problem-solving, identify technical risks, and implement appropriate mitigation strategies throughout the project implementation.
- Mentor and provide technical guidance to the project team, ensuring adherence to established development standards and engineering best practices.
- Coordinate with the PA, project teams, the technical leads of other Lots, infrastructure teams, the DevOps / Security Engineer, and other technical resources to ensure successful project execution and delivery.
- Be based in Thimphu for at least 60% of the implementation period and attend all PSC and TRB meetings (ToR Section 4.3).
- Support knowledge transfer activities and ensure technical documentation, architecture artifacts, and implementation documents remain accurate and up to date throughout the project.
- Produce and maintain the Software Bill of Materials (SBOM) and Cryptographic Bill of Materials (CBOM) required under the SSDF, in coordination with the DevOps / Security Engineer (ToR Section 4.1).

2.3. Software Developers (Key; minimum 4 per Lot)

The Software Developers shall be responsible for designing, developing, integrating, testing, deploying, and maintaining software components required under the project scope. The proposed resources shall possess proven experience in developing stateless, modular, scalable, and cloud-native applications based on modern software engineering principles and industry best practices. They shall ensure that all software components are secure, maintainable, reusable, and aligned with the approved solution architecture, SDLC processes, and Government Enterprise Architecture Framework (GEA-F).

Key Responsibilities:

- Analyze business and technical requirements and translate them into functional, maintainable, and high-quality software components.

- Design and develop stateless applications and modular services that support scalability, resiliency, portability, and cloud-native deployment architectures.
- Develop, configure, customize, and integrate applications, APIs, and services in accordance with approved technical specifications and architectural standards.
- Implement required functionalities while adhering to secure coding practices, coding standards, quality assurance guidelines, and software development best practices.
- Perform unit testing, debugging, troubleshooting, code reviews, and performance optimization to ensure software reliability and quality, achieving at least 80% unit test coverage (ToR Section 5.3).
- Support system integration testing, user acceptance testing, defect resolution, and deployment activities throughout the SDLC.
- Prepare and maintain comprehensive technical documentation, including source code documentation, API documentation, configuration guides, deployment procedures, and technical implementation manuals.
- Participate in version control, code branching, continuous integration, and continuous deployment (CI/CD) activities in collaboration with the DevOps / Security Engineer. All source code shall be committed, from the first day of development, to the Git repository owned and hosted by the PA; no parallel private repository shall be used for deliverable code.
- Collaborate closely with the Technical Lead, DevOps / Security Engineer, Business Analyst, QA personnel, and project stakeholders to ensure the successful delivery of project objectives.

2.4. DevOps / Security Engineer (Key; minimum 1 per Lot)

The DevOps / Security Engineer shall be responsible for establishing, automating, and managing the Development, QA, Staging, and Production environments required for the successful implementation, deployment, and operation of the solution. The resource shall ensure that deployment and operational activities are automated to the maximum extent practicable, minimizing manual intervention and ensuring consistent, reliable, secure, and repeatable deployments. The DevOps / Security Engineer shall implement modern DevOps practices,

Infrastructure as Code (IaC), CI/CD, automated testing, automated configuration, and continuous delivery in support of the project's cloud-native and modular architecture objectives.

Key Responsibilities:

- Design, implement, configure, and maintain CI/CD pipelines to automate application build, testing, security scanning, packaging, release, and deployment processes across all project environments.
- Automate application deployment and environment provisioning to minimize manual intervention and ensure consistent, repeatable, and reliable deployments across Development, QA, Staging, and Production environments.
- Manage application deployment, environment configuration, release management, version control, and operational support through automated and controlled processes, with manual intervention limited to activities that require explicit approval, security controls, or exception handling.
- Deploy, configure, and manage applications based on a modular architecture, ensuring independent deployment, scalability, maintainability, and integration of individual services or modules.
- Support the deployment and operation of stateless applications and cloud-native workloads.
- Manage container registries, deployment artifacts, secrets, configuration management, and environment-specific configurations using secure and automated mechanisms.
- Integrate SAST, DAST, and Software Composition Analysis (SCA) into the pipeline and configure build failure thresholds as agreed with the Technical Lead.
- Implement automated testing, validation, health checks, rollback, and release processes to improve deployment quality and reduce the risk of deployment failures.
- Implement comprehensive monitoring, logging, alerting, and observability integration with the national Observability platform to ensure system health, reliability, availability, and proactive incident detection.
- Support troubleshooting, root cause analysis, performance tuning, backup, disaster recovery, and system maintenance activities, with automation applied to routine and repeatable operational tasks wherever practicable.

- Plan and execute the Migration to GovCloud using Infrastructure as Code, with data reconciliation and rollback (ToR Section 5.1).
- Ensure deployment and operational processes comply with security policies, governance requirements, operational standards, and infrastructure best practices.
- Establish appropriate deployment approval, access control, audit trails, and change management mechanisms for Production deployments while maintaining automated delivery workflows.
- Collaborate closely with software developers, technical specialists, infrastructure teams, and business stakeholders to improve deployment efficiency, release quality, automation coverage, and operational stability.
- Continuously identify opportunities to replace manual and repetitive deployment or operational activities with automation and improve the efficiency, reliability, and consistency of the DevOps processes.
- Maintain deployment documentation, operational runbooks, automation scripts, CI/CD configurations, and technical procedures to support ongoing operations, maintenance, and knowledge transfer, including the Source Code Build Guide (ToR Section 16.1.2).

2.5. Business Analyst (Technical Writer) (Key; minimum 1 per Lot)

The Business Analyst shall be responsible for business analysis, requirements management, stakeholder engagement, documentation governance, and ensuring that all project documentation remains accurate, complete, version-controlled, and up to date throughout the entire Software Development Life Cycle (SDLC). The Business Analyst shall serve as the primary custodian of all project documentation and the RTM and shall ensure that business requirements are fully understood, documented, validated, and translated into implementable functional and technical specifications.

Key Responsibilities:

- Thoroughly review and understand the approved Business Requirements Document (BRD), technical specifications, and related project documentation, and proactively propose practical, scalable, and cost-effective solutions that align with business objectives and industry best practices.

- Work closely with the Technical Lead, Software Developers, DevOps / Security Engineer, QA team, and other stakeholders to ensure that business requirements are accurately interpreted and successfully translated into system functionalities and technical implementations.
- Prepare, maintain, and continuously update all project documentation, including both technical and non-technical documents, throughout the project lifecycle to ensure they accurately reflect the current state of the project.
- Ensure that all project documents remain complete, consistent, version-controlled, and synchronized with development progress, approved change requests, stakeholder decisions, implementation updates, testing outcomes, and production releases.
- Produce and maintain project artefacts, including but not limited to updates to the BRD agreed through change control, Functional Requirements Specifications (FRS), Use Cases, User Stories, Process Flows, Wireframes (where applicable), Requirements Traceability Matrix (RTM), meeting minutes, user manuals, release notes, training materials, Standard Operating Procedures (SOPs), and other project-related documentation.
- Maintain complete requirement traceability by ensuring that every business requirement is mapped to functional requirements, system design, development tasks, test cases, deployment activities, and final deliverables.
- Coordinate with technical teams to capture architecture decisions, API specifications, integration details, system configurations, implementation changes, deployment information, operational procedures, and testing results for documentation purposes.
- Review developed functionalities against the approved BRD and functional specifications to verify that implemented features satisfy business requirements and acceptance criteria.
- Support requirement clarification throughout development, testing, deployment, and post-implementation phases by resolving business-related queries and coordinating with stakeholders.
- Facilitate stakeholder meetings, requirement validation workshops, demonstrations, User Acceptance Testing (UAT), and documentation review sessions to obtain timely feedback and approvals.

- Manage document versioning, change control, review cycles, and approval processes to ensure proper governance and auditability of all project artefacts, and keep the Lot's Change Request Register current (Annexure 4).
- Identify requirement gaps, inconsistencies, ambiguities, dependencies, and potential risks, and recommend appropriate mitigation measures to ensure successful project delivery.
- Ensure that all project documentation complies with organizational standards, documentation templates, governance policies, and applicable regulatory requirements (ToR Section 16.3).
- Provide ongoing support during project implementation by ensuring documentation remains current and accurately reflects the deployed solution and operational processes.

2.6. Quality Assurance (QA) Engineer (Key; minimum 1 per Lot)

The Quality Assurance (QA) Engineer shall be responsible for planning, coordinating, and executing comprehensive quality assurance activities throughout the Software Development Life Cycle (SDLC) to ensure that all GovStack Building Blocks and integrated solutions meet the required functional, technical, security, performance, and quality standards before deployment.
The QA Engineer shall possess strong experience in manual and automated software testing, enterprise application testing, API testing, performance testing, and quality assurance processes within Agile software development environments.

Key Responsibilities:

- Develop and implement the overall Quality Assurance (QA) strategy, test plan, and testing schedule for the project.
- Prepare comprehensive test cases, test scenarios, test scripts, test data, and traceability matrices based on the approved Business Requirements Documents (BRDs), Functional Requirement Specifications (FRS), and Technical Specifications.
- Prepare the demonstration test cases and submit them to the PA for approval at least ten (10) working days before each TRB demonstration (ToR Section 5.2).
- Perform Functional Testing to verify that all system functionalities operate according to the approved business requirements.

- Coordinate and validate Unit Testing conducted by developers and verify the quality of unit test coverage.
- Perform Integration Testing to validate interoperability and data exchange between all GovStack Building Blocks, APIs, external systems, and third-party integrations, using mock services for other Lots until they are available (ToR Section 3.5).
- Perform System Testing to verify the complete integrated solution in accordance with the approved functional and technical requirements.
- Support and coordinate User Acceptance Testing (UAT) with business users and stakeholders, ensuring defects are addressed prior to production deployment.
- Design, develop, maintain, and execute Automated Test Scripts for regression, API, functional, and end-to-end testing to improve testing efficiency and quality.
- Conduct Performance Testing, including Load Testing, to ensure the solution performs reliably under expected and peak workloads defined in Annexure 2.
- Perform API testing to validate request/response accuracy, authentication, authorization, error handling, and service interoperability.
- Perform accessibility testing against WCAG 2.1 Level AA for all user-facing interfaces.
- Validate application security controls in collaboration with the DevOps / Security Engineer, including authentication, authorization, session management, and input validation.
- Verify that all Critical and High severity defects (Annexure 3, Section 1.7) have been resolved before recommending the system for deployment, and that remaining defects are documented with an agreed resolution plan.
- Produce and maintain all testing documentation, including test plans, test cases, execution reports, defect reports, test summary reports, automation reports, and quality metrics.
- Collaborate closely with Business Analysts, Developers, the DevOps / Security Engineer, and stakeholders to ensure quality objectives are achieved throughout the project lifecycle.

2.7. UI/UX Designer (Key; minimum 1 per Lot)

The UI/UX Designer shall be responsible for designing intuitive, accessible, visually consistent, and user-centric digital interfaces for all GovStack Building Blocks, dashboards, and related

applications of the Lot. The resource shall ensure that all user interfaces comply with the approved Unified Design System (UDS), Government branding standards, accessibility requirements, and internationally recognized UI/UX best practices to deliver a consistent user experience across all digital services.

The UI/UX Designer shall possess strong expertise in user experience research, user interface design, interaction design, information architecture, design systems, responsive web design, and mobile-first design principles.

Key Responsibilities:

- Lead the end-to-end UI/UX design process throughout the Software Development Life Cycle (SDLC).
- Design user-friendly, intuitive, and visually consistent interfaces for all of the Lot's Building Blocks, including, as applicable, SSO sign-in and fallback screens, UCS and FDBKB citizen and agency screens, ITAR, PSR and MDMB administration screens, and dashboards.
- Ensure all user interfaces strictly comply with the approved Unified Design System (UDS), which the PA shall provide, including design components, typography, colour palette, icons, spacing, layouts, branding, and interaction patterns.
- Develop and maintain reusable UI components, templates, and design assets to ensure consistency across all applications.
- Conduct user research, stakeholder consultations, user journey mapping, persona development, and usability analysis to understand user needs and improve the overall user experience.
- Produce information architecture, user flows, wireframes, mock-ups, interactive prototypes, and high-fidelity interface designs before development.
- Ensure responsive and adaptive designs that provide a consistent experience across desktop, tablet, and mobile devices, and support Dzongkha content where required by the BRD.
- Apply internationally recognized usability principles, including simplicity, consistency, clarity, error prevention, and user-centred design methodologies.

- Ensure compliance with international accessibility standards, including WCAG 2.1 Level AA, to support users with diverse accessibility needs.
- Collaborate closely with Business Analysts, Developers, QA Engineers, and stakeholders to ensure that approved designs are accurately implemented.
- Conduct usability testing and analyse user feedback to identify usability issues and continuously improve the user experience.
- Review implemented interfaces to ensure compliance with approved UI designs, UDS guidelines, and usability standards before production deployment.
- Prepare and maintain UI/UX documentation, design specifications, component libraries, style guides, user flows, and design assets throughout the project lifecycle.
- Support continuous improvement of the Government Unified Design System by recommending enhancements based on user feedback and evolving best practices.

2.8. Database Engineer/Designer (Key; minimum 1 per Lot)

The Database Engineer/Designer shall be responsible for the design, implementation, administration, optimization, security, availability, and maintenance of all project databases. The resource shall ensure that the database architecture is scalable, secure, highly available, and optimized to support the performance, reliability, and future growth of the GovStack Building Blocks and related enterprise applications.

The Database Engineer/Designer shall possess strong expertise in enterprise database architecture, data modelling, database performance tuning, high availability, disaster recovery, and cloud-native database technologies.

Key Responsibilities:

- Design, develop, and maintain efficient, scalable, and normalized database schemas based on approved business and technical requirements.
- Develop conceptual, logical, and physical data models to ensure data consistency, integrity, maintainability, and scalability.
- Design relational database structures, relationships, constraints, indexes, views, stored procedures, functions, and database objects following industry best practices.

- Optimize queries, stored procedures, and database operations to achieve high performance and efficient resource utilization.
- Design and implement indexing strategies, query optimization, partitioning, and database tuning to improve application performance.
- Establish and enforce database standards, naming conventions, coding standards, and data governance policies.
- Ensure database normalization while balancing performance requirements through appropriate denormalization where necessary.
- Design and implement high availability, failover, replication, backup, and disaster recovery strategies to ensure business continuity.
- Monitor database health, storage utilization, performance metrics, and capacity planning, and proactively resolve database-related issues.
- Implement robust database security controls, including authentication, authorization, encryption, auditing, and role-based access control (RBAC).
- Ensure compliance with data privacy, cybersecurity, and government data management policies, including ToR Section 10.1, data residency in Bhutan, and anonymisation of any data copied to non-production environments.
- Support application developers in database design, query optimization, transaction management, and troubleshooting.
- Develop and maintain database migration scripts, schema versioning, and deployment processes integrated with CI/CD pipelines, including data migration and reconciliation for the Migration to GovCloud.
- Perform database performance analysis, workload monitoring, and capacity forecasting to support future growth.
- Prepare and maintain comprehensive database documentation, including data models, schema designs, ER diagrams, database standards, backup procedures, recovery plans, and operational manuals.
- Collaborate with the Technical Lead, Developers, the DevOps / Security Engineer, QA Engineers , and infrastructure teams to ensure reliable and efficient database operations throughout the project lifecycle.