1. **BACKGROUND AND HISTORY OF THE JAMAICA CONSTABULARY FORCE (JCF)**

The Jamaica Constabulary Force (JCF) is the country's principal police force and was established in 1867. Its creation was a response to the need for an organized and professional security force to maintain order and public safety in Jamaica following the disbandment of the local militia.

Since its founding, the JCF has evolved significantly, adopting new strategies and technologies to meet the challenges of modern criminality. With a focus on citizen protection and law enforcement, the institution has integrated community initiatives and technological modernization to improve operational effectiveness.

* 1. **INVESTMENT JUSTIFICATION**
     1. **CURRENT SITUATION**

Below are some of the challenges the institution is facing:

* + - 1. Inefficiency in the Allocation of Human Resources

The JCF has thousands of officers deployed in different regions of the country. Without a centralized digital system, the allocation of shifts, reassignments and emergency coverage is uncoordinated, generating inefficiencies and work overload in certain units.

* + - 1. Lack of Transparency in the Planning and Recording of Activities

Attendance and assignment records are often handled manually, which makes auditing, traceability and accountability difficult. This also affects performance evaluation and control of absences and permits.

* + - 1. Limitations in the Response to Emergencies and Critical Operations

The lack of real-time data integration prevents commanders and supervisors from making quick decisions in crisis situations, which affects operational response capacity.

* + - 1. Lack of Integration with Other Technological Platforms

Currently, the systems used in the JCF are not interconnected, which prevents the generation of unified reports and hinders interoperability with other security and justice agencies.

* + 1. **BENEFITS AND EXPECTED RESULTS**
       1. Optimization in Planning and Resource Allocation

The Workforce Management system will allow:

* Automating shift assignment and efficiently redistributing staff.
* Adapting the distribution of officers according to demand and high-risk areas.
* Improving the management of absences, vacations and staff rotations.
  + - 1. Greater Transparency and Accountability
* Digitized and auditable record of all operational activities.
* Reduction of irregularities in the management of service time.
* Facilitates the evaluation of performance and the identification of areas for improvement.
  + - 1. Streamlining Emergency Response
* Real-time monitoring of the location and availability of staff.
* Ability to quickly reallocate resources based on emergencies.
* Integration with dispatch and geolocation systems.
  + - 1. Integration with Other Technology Platforms
* Synchronization with justice and public security databases.
* Possibility of integration with police intelligence systems.
* Improved inter-institutional communication for crime management and public security.
  + - 1. Improved Information Security
* Reduced dependence on manual and paper records.
* Protection of confidential information with encryption technologies.
* Accessibility controlled according to the roles and authorizations of each user.

1. **PURPOSE OF THE TENDER**
   1. **GENERAL OBJECTIVE**

The objective of this tender process is the development of a customized Workforce Management solution for the Jamaica Constabulary Force (JCF), designed to modernize, automate and optimize the administration of human resources and the operational management of the institution. The solution must have a web application and a mobile application that allow efficient management of police personnel, ensuring optimal shift allocation, real-time availability, traceability of activities and improved response capacity to emergencies.

In addition, the system must provide advanced tools for shift planning, attendance control, geolocation of personnel on duty, biometric validation for secure authentication and integration with existing databases and security systems. The platform must ensure information security, comply with international regulations and offer an intuitive user experience to facilitate its adoption by the JCF's operational and administrative staff.

Some general features that the solution should include:

* Microservices-based architecture, allowing scalability and modular maintenance.
* Intuitive and responsive interface, accessible from mobile devices and computers.
* Shift and assignment manager, with real-time notification.
* Integration with geolocation systems for monitoring personnel on duty.
* Reporting and analytics module, with interactive control panels.
* Compliance with security regulations (ISO 27001, GDPR) with multi-factor authentication.
* Ability to integrate with police databases and public safety systems.
* Support for biometric validation, including facial recognition and fingerprints for secure staff authentication.

For more details, see the technical specifications.

The development of this solution responds to the need to improve the operational efficiency of the JCF, optimizing the deployment of resources, minimizing the administrative burden and ensuring the availability of critical information in real time for strategic decision-making. The implementation of the system will allow for greater transparency, traceability and accuracy in personnel administration, thus contributing to more effective management of public safety in Jamaica.

* 1. **PROJECT SCOPE**

This project involves the development, implementation and deployment of a comprehensive Workforce Management technology solution for the Jamaica Constabulary Force (JCF). The solution will include both a web application and a mobile application, aimed at efficient management of police personnel, optimization of operations and improvement in strategic decision making.

* + 1. Key Functionalities

The system must include, at a minimum, the following functionalities:

* + - 1. Personnel Management and Resource Allocation
* Creation and administration of user profiles (Administrators, Supervisors, Officers).
* Registration and control of shifts, roles and permits.
* Management of absences, permits and licenses.
* Dynamic assignment of tasks and patrols based on demand and risk areas.
  + - 1. Monitoring and Geolocation
* Real-time tracking of personnel on duty using GPS.
* Automated alerts in case of deviations or emergencies.
* Integration with dispatch systems for efficient resource allocation.
  + - 1. Identity Validation and Security
* Implementation of biometric authentication (fingerprint, facial recognition) for access to the system.
* Use of multi-factor authentication (MFA) for administrative profiles.
* Encryption and access auditing to ensure information security.
  + - 1. Data Analysis and Reporting
* Report generation on performance, attendance and resource allocation.
* Interactive dashboards with key performance indicators (KPIs).
* Predictive analysis for optimizing staff deployment.
  + - 1. Communication and Notifications
* Internal messaging system for communication between supervisors and officers.
* Push notifications and real-time alerts on changes in assignments and emergencies.
  + 1. Source Code

As part of the project deliverables, the supplier shall provide the complete source code of the developed solution, including all technical documentation, scripts, configurations and any other components necessary for its maintenance and evolution. Furthermore, all intellectual property rights, including but not limited to copyrights, patents and trademarks related to the Workforce Management system, shall be the exclusive property of the Jamaica Constabulary Force (JCF).

The supplier may not claim ownership rights over the developed software or use the source code, algorithms or any component of the system in whole or in part for other projects without the express written authorization of the JCF. In addition, it shall be guaranteed that the system will not include restrictive third-party licenses that may limit its use, modification or distribution by the JCF.

* + 1. Implementation and Deployment

The implementation and deployment process of the solution will be carried out in structured phases, ensuring an effective transition and minimising disruptions to the operations of the Jamaica Constabulary Force (JCF).

The vendor will be responsible for executing a detailed implementation plan, ensuring that the solution meets the functional, operational and security requirements, as well as defined quality standards.

The implementation and deployment process will be divided into the following phases:

Phase 1: Analysis and Requirements Gathering

* Meetings with the JCF teams to define the specific requirements.
* Analysis of current processes and preparation of a needs map.
* Identification of external systems with which integration will be required.
* Preparation and approval of use cases and technical specifications.

Phase 2: System Design and Architecture

* Design of the system architecture based on best practices for scalability and security.
* Definition of the user interface (UI/UX) for the web and mobile applications.
* Planning of the technological infrastructure (servers, storage, databases, security, etc.).
* Presentation and validation of the design with the JCF before proceeding with development.

Phase 3: Development and Integration

* Development of the backend and frontend of the web and mobile application.
* Implementation of key modules such as shift management, geolocation, biometric validation and notifications.
* Integration with existing JCF systems (police databases, security platforms, etc.).
* Implementation of security measures such as data encryption, multifactor authentication and access auditing.
* Development of APIs for future integrations with other systems.

Phase 4: Testing and Validation

* Functional testing to validate that each module meets the defined requirements.
* Performance and scalability testing to ensure stability under high user load.
* Security testing to identify and mitigate vulnerabilities in the system.
* Integration testing to verify correct communication with external systems.
* User testing (UAT - User Acceptance Testing) with JCF personnel to ensure that the platform meets its operational needs.

Phase 5: Training and Knowledge Transfer

* In-person and/or virtual training aimed at key users, administrators and JCF technical staff (train the trainers).
* Delivery of user manuals, administration guides and technical documentation of the system.
* Simulation of operational scenarios to validate the usability and adoption of the system.
* Question and answer sessions with JCF staff to resolve doubts about the use of the platform.

Phase 6: Deployment and Putting into Production

* Installation and final configuration of the system in the production environment.
* Intensive monitoring in the first few days to detect possible incidents.
* Last-minute adjustments and optimizations based on initial feedback from users.
* Confirmation of operational stability before final delivery of the system.
  + 1. Support and Maintenance

After deployment, the provider must offer a period of continuous support and monitoring to ensure the stability of the system and address any eventuality.

This support will include:

* Incident response and error resolution during the first months of operation.
* Minor updates and functional adjustments according to the needs of the JCF.
* Technical assistance for integration with new systems if required.
* Support in the adoption process to ensure that users can use the platform efficiently.
  + 1. JCF Responsibilities

The Jamaica Constabulary Force (JCF) will play a key role in the successful implementation of the system. Its responsibilities include:

1. Personnel and Resource Allocation

* Appointment of a task force to act as a point of contact with the vendor.
* Assignment of key personnel to validate requirements and participate in testing.
* Provision of physical and technological resources necessary for testing and deployment.

1. Facilitation of Access to Information and Systems

* Provision of documentation and access to current systems with which the new system will be integrated.
* Validation of security standards and internal policies for system integration.

1. Participation in Testing and Validation

* Conducting functional and operational testing to assess system performance.
* Approval of deliverables at each phase before proceeding to the next.

1. Training and Adoption of the System

* Ensure the assignment of key users and their availability to the project
* Participation in training sessions to ensure the correct use of the system.
* Defining internal adoption strategies to ensure that operational and administrative staff use the platform efficiently.

1. Monitoring Contract Compliance

* Validating that the supplier complies with the terms and conditions agreed upon in the tender.
* Reviewing progress reports and monitoring compliance with service levels (SLA).
  + 1. Bidder Responsibilities

The bidder must ensure that the implementation is carried out within the established timeframes and complies with the following aspects:

* Application of good practices in software development and computer security.
* Guarantee that the system is easily scalable and adaptable to future needs.
* Minimize operational impacts during the transition to the new system.
* Ensure that the platform is intuitive and accessible, facilitating adoption by JCF staff.
* Offer quality guarantees on the operation of the developed software.

* + 1. Project Duration

**Workforce Management System Project Plan (8 Months)**

**Project Phases and Timeline**

| **Phase** | **Duration** | **Key Activities** | **Milestones** |
| --- | --- | --- | --- |
| **Phase 1: Requirements Gathering** | 4 weeks | Initial meetings, needs analysis, stakeholder interviews, system requirements definition, documentation. | Approval of requirement document |
| **Phase 2: System Design** | 8 weeks | System architecture, UI/UX design, infrastructure planning, API and integration strategy. | Design validation with JCF |
| **Phase 3: Development & Integration** | 18 weeks | Frontend & backend development, module implementation (shift management, geolocation, notifications). | MVP ready for internal testing |
| **Phase 4: Testing & Validation** | 4 weeks | Functional, security, performance, and UAT testing. | UAT approval by JCF |
| **Phase 5: Training** | 2 weeks | Train-the-trainer sessions, documentation handover, user manuals, operational scenario simulations. | Training completion certificate |
| **Phase 6: Deployment & Production** | 4 weeks | Production environment setup, final configuration, intensive monitoring, and go-live readiness check. | System live and operational |

**Sprint-Based Timeline (Agile Approach)**

| **Sprint** | **Duration** | **Phase/Task** | **Deliverable** |
| --- | --- | --- | --- |
| Sprint 1-2 | 4 weeks | Requirements gathering & documentation | Approved requirement specification |
| Sprint 3-6 | 8 weeks | System design and UX/UX creation | Design mockups, architecture docs |
| Sprint 7-14 | 18 weeks | Development of key system modules | Working prototypes for key features |
| Sprint 15 | 2 weeks | Integration with existing systems | API connections verified |
| Sprint 16 | 4 weeks | Final testing, deployment, and go-live | Fully operational WFM system |

**Resource Allocation and Key Roles**

* **Project Manager**: Oversee timelines, stakeholder communication.
* **Business Analyst**: Lead requirements gathering, process analysis.
* **UI/UX Designer**: Create intuitive interfaces for web & mobile apps.
* **Developers (Frontend/Backend)**: Build the system’s core functionality.
* **QA Engineers**: Conduct testing and bug fixing.
* **IT Security Specialist**: Ensure compliance with ISO 27001, GDPR.
* **Trainers**: Conduct JCF staff training sessions.

**Development Methodology**

The project will follow an **Agile (SCRUM)** methodology, structured into 16 sprints of 2 weeks each. This iterative approach ensures continuous feedback and flexibility, allowing adjustments to be made as development progresses. Key features of the methodology include:

* **Sprint Planning:** Defining goals and tasks for each sprint.
* **Daily Stand-ups:** Quick meetings to track progress and address blockers.
* **Sprint Reviews:** Demonstrating completed work to stakeholders.
* **Sprint Retrospectives:** Evaluating what worked well and what needs improvement.
* **Incremental Deliverables:** Releasing functional components progressively for early validation.

This approach ensures close collaboration with the JCF, rapid adaptation to changing requirements, and the delivery of a high-quality, fully functional Workforce Management System within the 8-month timeline.

1. **TECHNICAL SPECIFICATIONS**
   1. **BUSINESS REQUIREMENTS**
      1. SYSTEM OBJECTIVE

The Workforce Management (WFM) system aims to optimize police personnel allocation, improving operational efficiency and ensuring better resource distribution based on demand.

* + 1. TARGET USERS
* Administrators: Manage shifts, tasks, and permissions.
* Supervisors: Monitor personnel activity and performance.
* Officers: Receive assignments and report incidents.
  + 1. MAIN USE CASES
* Shift Management: Creation, modification, and cancellation of schedules.
* Task Assignment: Distribution of operational activities.
* Real-Time Monitoring: Geolocated tracking of personnel.
* Incident Reporting: Logging of critical events.
* Reports and Analysis: Evaluation of performance and workload.
  + 1. REGULATORY REQUIREMENTS
* Sensitive Data Protection: Compliance with GDPR, ISO 27001.
* Public Safety Regulations: Adaptation to police regulations.
* Secure Authentication: Use of OAuth 2.0 and MFA.
  1. **FUNCTIONAL REQUIREMENTS**
     1. ADMINISTRATION MODULE
* **User and Role Management**: Access and permission control.
* **Shift Configuration**: Creation and parameterization of schedules.
* **Resource Allocation**: Distribution of personnel and equipment.
* **Leave Management**: Approval of absences.
* **Operational Reports**: Attendance and performance statistics.
  + 1. SUPERVISION MODULE
* **Real-Time Monitoring**: Personnel location and status.
* **Shift Compliance Supervision**: Validation of assigned shifts.
* **Incident Management**: Logging and escalation of critical events.
* **Performance Analysis**: Evaluation of operational indicators.
* **Communication with Officers**: Messaging and real-time alerts.
  + 1. OFFICER MODULE (WEB AND MOBILE)
* **Shift and Assignment Consultation**.
* **Geolocation and Service Status**.
* **Incident Logging with Photos/Videos**.
* **Direct Communication with Supervisors**.
* **Real-Time Notifications and Alerts**.
  1. **SPECIFIC REQUIREMENTS**
     1. SHIFT SUMMARY AND PERSONEL STATUS VIEW
* Ensure staffing levels meet JCF operational needs.
* Enable automatic notifications for schedule changes.
* Improve workforce visibility for management.
* Provide mobile access for personnel to view status updates.
* Track shift start and end times based on mobile app interactions.
* Web page with a live map showing each personnel's current location, shift, and assignment details, with clickable metadata for more information.
  + 1. QUICK ACCESS TO MANAGEMENT ACTIONS
* Allow managers to access schedules remotely via web and mobile.
* Support simultaneous multi-user access.
* Provide a clear, intuitive calendar interface on both platforms.
  + 1. TEAM PERFORMANCE DASHBOARD
* Web-based dashboard for managers/administrators to monitor overall team performance.
  + Key Performance Indicators (KPIs):
  + Shift Coverage Rate: Percentage of shifts covered vs. required.
  + On-Time Shift Start Rate: Percentage of shifts started on time.
  + Overtime Hours: Total and individual overtime tracking.
  + Absenteeism Rate: Percentage of unplanned absences.
  + Task Completion Rate: Percentage of completed assignments vs. assigned.
  + Assignment Response Time: Time taken to accept and start new tasks.
  + Leave Utilization: Balance of available vs. used leave days.
* Visualizations:
  + Bar Charts: Shift coverage and absenteeism trends.
  + Line Charts: Overtime hours over time.
  + Pie Charts: Task completion distribution.
  + Heat Maps: Peak workload times and staffing shortages.
  + Geo Maps: Real-time location of personnel with assignment details.
    1. MOBILE APP USER DASHBOARD
* Personalized dashboard for personnel to track their performance and activity.
  + Key metrics displayed:
  + Upcoming Shifts: List of scheduled shifts with start/end times.
  + Current Assignments: Details of active tasks with route and location info.
  + Completed Assignments: History of finished tasks and performance stats.
  + Worked Hours: Total hours worked, including regular and overtime.
  + Leave Balance: Overview of remaining vacation and sick days.
  + Notifications & Alerts: List of pending requests, approvals, and assignment updates.
* Visualizations:
  + Progress Bar: Worked hours vs. shift requirements.
  + Pie Chart: Task completion breakdown.
  + Timeline View: Shift history and upcoming schedule.
    1. DATA EXPORT FOR HR INTEGRATION
* Capability to export working hours (regular and overtime) over a chosen period.
* Supported export formats:
  + CSV/Excel: For manual import into legacy systems.
  + JSON/XML: For API-based data exchanges.
  + PDF Reports: For easy review and archiving.
* Configurable export filters (date range, department, personnel, shift type).
* Automated scheduled exports sent to HR systems.
  + 1. PLATOON VIEW
* Enable rule configuration for different teams/departments.
* Allow remote access to personnel data via mobile app.
  + 1. CALENDAR VIEW
* Facilitate shift modification from web and mobile.
* Provide flexible views (daily, weekly, monthly).
* Maintain historical shift data for analysis.
  + 1. DAY VIEW
* Ensure shifts meet minimum staffing levels.
* Visualize staffing capacity per shift.
  + 1. MY SCHEDULE VIEW
* Allow employees to view and request leave via mobile.
* Display staffing level information to avoid conflicts.
* Show shift start and end times logged through the mobile app.
  + 1. SHIFT CHANGE MANAGEMENT
* Identify and fill shift gaps.
* Centralize shift data for decision-making.
* Track overtime eligibility.
* Include shift start/end timestamps from mobile app usage.
  + 1. MINIMUM STAFFING LEVEL CONFIGURATION
* Define minimum staffing requirements.
* Show core hour coverage.
  + 1. DAY AND SHIFT NOTES
* Allow for day-specific business rules.
* Add non-consecutive shift patterns.
  + 1. CALENDAR EDITOR
* Enable real-time shift updates.
* Synchronize calendar changes for all users across web and mobile.
  + 1. UNPLANNED ABSENCES MANAGEMENT
* Alert managers to unplanned absences.
* Flag activities requiring immediate planning.
  + 1. AVAILABILITY MANAGEMENT
* Display employee availability.
* Handle leave requests seamlessly.
  + 1. TIME-OFF REQUEST
* Streamline leave approval processes.
* Show availability insights during request handling.
* Allow request submissions and approvals via mobile.
  + 1. PERMISSION NOTIFICATIONS
* Notify personnel about permission/assignment changes.
* Track leave request status via app notifications.
  + 1. PERMISSION POLICY MANAGEMENT
* Define and manage permission policies.
* Establish rules for handling leave.
  + 1. PERMISSION HISTORY
* Retain shift and leave history.
* Offer historical request access from web and mobile.
  + 1. OPEN SHIFTS VIEW
* Show unfilled shifts in real time.
* Notify managers and personnel about unexpected absences.
  + 1. OPEN SHIFT ASSIGNMENT
* Automate shift assignments.
* Indicate personnel availability.
* Allow staff to accept shifts via mobile app.
  + 1. ASSIGNMENT ROUTE & MAP
* Show assignment destinations and routes on an interactive map.
* Provide turn-by-turn navigation via the mobile app.
* Send notifications for new assignments, including destination details.
* Include an “Accept Assignment” button to confirm new tasks.
* Web-based map view displaying all personnel locations and assignments.
  1. **NON-FUNCTIONAL REQUIREMENTS**
     1. SYSTEM ARCHITECTURE
* Cloud-based or On Premise, with remote access support.
* Scalable infrastructure to handle concurrent users on web and mobile.
* Real-time synchronization for shift changes across platforms.
  + 1. AUTHENTICATION & AUTHORIZATION
* Role-based access control (RBAC).
* Single sign-on (SSO) compatibility.
* Biometric and push notifications for mobile access.
* Mobile app login using face recognition and/or ID card identification.
  + 1. WEB & MOBILE UI EXPERIENCE
* Responsive web design.
* Mobile-first design for app usability.
* Intuitive calendar and shift views with mobile optimizations.
* Visual indicators for staffing issues on all devices.
* "Start Shift" and "End Shift" buttons for mobile shift management.
* Map view with destination and route visualization.
* Web map with real-time personnel locations and metadata (shift, assignment type, status).
* “Accept Assignment” button for mobile task management.
* Dynamic charts and graphs for team performance metrics.
* Mobile dashboard with personalized charts and schedules for personnel.
  + 1. DATA MANAGEMENT
* Secure data storage for historical records.
* Efficient querying for real-time updates.
* Store shift timestamps when users start/end shifts via mobile.
* Save assignment history, including accepted/rejected tasks.
* Real-time location tracking for personnel.
* Aggregate data for KPI calculations.
* Structured data export for HR systems.
  + 1. TECHNOLOGIES
* **Microservices** with REST API.
* **Frontend Web**: React.js / Angular.
* **Mobile Application**: Flutter / React Native.
* **Backend**: Node.js + Express / Python + Django.
* **Database:** PostgreSQL (structured) + MongoDB (unstructured).
* **Infraestructure:** AWS / Google / Azure
  + 1. Security
* OAuth 2.0 and JWTfor authentication.
* AES-256 and TLS 1.3 encryption**.**
* Protection against CSRF, SQL Injection, XSS**.**
  + 1. Performance and Scalability
* Response time: < 2 seconds.
* Support for 10,000 concurrent users.
* Load balancing with NGINX / AWS ELB.
  + 1. Infrastructure and DevOps
* CI/CD with GitHub Actions / Jenkins.
* Monitoring with Elastic Stack (ELK).
* Automation of unit and integration tests.

1. **BIDDER EXPERIENCE**

**4.1 COMPANY REQUIREMENTS**

* The bidder must have more than 10 years of experience in the technology area
* The bidder must have the following ISO certifications: 9001, 20000 and 27001
* • The proponent must present at least 4 contracts for software development projects or assignment of agile development cells in the government sector in the last five (5) years
* The bidder must have at least three (3) cybersecurity services contracts in its SOC in the last three (3) years, and must attach a purchase order or contract to validate compliance.
* The bidder must have a local SOC for the provision of services. It must be equipped with the minimum required according to international standards (ISO, NIST, PCI, ITIL). The bidder must attach photos and location of said SOC, as well as a list of the services covered by it. The institution will visit said SOC to validate its compliance.