

## **Terms of Reference**

### **Consulting firm for design, develop, deploy and maintenance of e-Local Government Solution 2.0 (eLG 2.0) ICTA/GOSL/CON/QCBS/2021/07**

#### **1. Background**

- 1.1. Information and Communication Technology Agency (ICTA) in collaboration with the State Ministry of Provincial Councils & Local Government Affairs (SMPCLGA) conceptualized, designed and developed the e-Local Government (eLG 1.0) solution which is implemented in 3 pilot sites, currently it is being rolled out in 35 other sites.
- 1.2. The existing eLG solution is functional for more than 6 years. However currently due to the technology upgrade requirements, ICTA and SMPCLGA decided to re-develop the solution. For this purpose, ICTA aims to select a Consultancy Firm which can design, develop, deploy and maintain the eLG 2.0 system successfully.
- 1.3. As part of the Business Process Reengineering (BPR) initiative undertaken for eLocal Government initiative the activities carried out by the Local Authorities, were segregated in to five processes and were streamlined in to sections A,B,C, D & E. Process A consists of services which are considered as Regular revenue collection (eg Assessment, Trade Tax, Mix Income, etc.). Process B is associated with the provision of licenses and certificates based on application submitted by the citizen ( e.g Issuing of building permit, certificate of conformity etc.. Processes C, D and E consist the activities which are mainly related to the management of regular services provided by the Local Authority encouraging citizen participation in providing feedback and updating of GIS based land information.
- 1.4. The pilot project implementation is planned in three local government authorities covering all three types of Local Authorities (Municipal Council, Urban Council, Pradeshiya Sabha). This phase of the project is to complete the pilot project and based on the results the system would be replicated to other local authorities on demand basis.

#### **2. Introduction to Local Government**

##### **2.1. Sub National Government – Provincial Councils**

2.1.1. Making the year 1987 a key millstone in the democratic decentralization process of Sri Lankan governance history, the 13<sup>th</sup> amendment to the Constitution has been passed by the Parliament to create a second level of governance namely the Provincial Councils (9 provincial Councils). Within the same Constitutional provisions, it has identified that the Local Government as one of the subjects comes under the ‘administration and supervision’ of Provincial Councils. The Constitution also providing statutory safeguards to Local authorities, specified that “it will be open to the provincial Councils to confer additional powers on Local Authorities but not to take away their powers”(Section 4.3 of the List 1 of the 9th Schedule of 13th Amendment of the Constitution). But it is hardly visible any conferring of additional powers or functions by Provincial Councils though there are serious recommendations for expanding the scope of the Local Authorities, made by various quarters including the Commission for inquires on Local Government Reforms in 1999 which has been accepted by the Parliament as the Sectional paper No. 1 of 1999.

## **2.2. Devolution and Decentralization**

2.2.1. Devolution and decentralization of powers and functions are commonly accepted features to successful good governance within a democratic government. Sri Lanka being a country predominantly practicing good democratic governance was excepted local structures of self-government as its mode of local government. Through this principle, the Local Government in Sri Lanka contributed greatly to the basic comfort and the well-being of communities as well as achieving the National Development goals of the country.

2.2.2. The present system of local government was introduced by the British colonial government since nineteenth century. At the beginning, the purpose at these local government institutions was limited by their scope and activities only to fulfil the day today affairs of their communities, such as primary health care, maintenance of thoroughfare, development and preservation of local environment and provision of common amenities for the local citizens through the process of democratic governance. As a principal it also was expected to

address these basic needs of community by minimizing the cost while maximizing the services using the fullest participation and contribution of the people. Aiming to fulfil this overall objective and purposes, it had been created four types of LAA, namely municipal councils, urban councils, town councils and village councils. However after a long period of evolution and changes of the system, at present there are three types of Local Government Authorities (LAs) been established namely Municipal Councils (MCs) under the Municipal Councils ordinance No 16 of 1947, Urban Councils (UCs) under the Urban Councils Ordinance No. 39/61 of 1939 and Pradeshiya Sabhas (PSs) under the Pradeshiya Sabhas Act no 14/15 of 1987. Generally, MCs have been constituted for cities and large towns, UCs for less urbanized areas and PSs for rural areas. The total number of 341 Local Authorities is constituted under the three categories as follows;

- Municipal Councils - 24
- Urban Councils - 41
- Pradeshiya Sabhas - 276

2.2.3. LAs being autonomous institutions which are governed by democratically appointed councils, and they are elected for the term of office for four years. The Number of councilors and their functions are varying from one council to another, according to geographical, demographical, and socio-economic factors of the area. In Pradeshiya Sabhas and Urban Councils, the head of the Local Authority is designated as the ‘Chairman’ while in Municipal council it is the ‘Mayor’.

### **3. Basic Responsibilities of Local Authorities**

3.1. As far as the functions are concerned, Local Authorities are expected to provide basic services for the comfort, convenience and well-being of the Community of their area of jurisdiction. Under this, the Local Authorities are expected to provide mainly four types of services to the Community. Those are;

- 3.1.1. Public Utility Services
- 3.1.2. Primary Healthcare
- 3.1.3. Public Thoroughfare
- 3.1.4. Community Development

3.2. For the aspiration of the expectations of the people, LAs have to play a major role in above functional areas with an effective participatory management including strategic planning, implementation and monitoring systems.

3.3. All the above local government organizations carry out highly critical functions to support the day-to-day life of the community by providing basic amenities and other services to the citizenry residing in their areas. Those functions are basically include:

3.3.1. Public Thoroughfare

- 3.3.1.1. Maintenance and repairs
- 3.3.1.2. Buildings along thoroughfare
- 3.3.1.3. Action against the damages to thoroughfare
- 3.3.1.4. Utilization of thoroughfare for special purposes etc.

3.3.2. Public Health;

- 3.3.2.1. Act as the public health authority
- 3.3.2.2. Management of solid waste
- 3.3.2.3. Maintain a proper drainage system
- 3.3.2.4. Rationalization of latrines accommodations
- 3.3.2.5. Provision of conservancy and scavenging services
- 3.3.2.6. Prevention of insanitary buildings
- 3.3.2.7. Prevention of nuisances etc.

3.3.3. Public Utilities;

- 3.3.3.1. Water supply
- 3.3.3.2. Markets and fairs
- 3.3.3.3. Play grounds and children parks etc.

3.3.4. Community development;

- 3.3.4.1. Pre-schools
- 3.3.4.2. Libraries
- 3.3.4.3. Livelihood development etc.
- 3.3.4.4. Preservation and development of environment

3.3.5. Revenue Management;

- 3.3.5.1. Rates, taxes and Assessment of properties etc.

#### 4. Key Problems

4.1. The following are the key problems identified from the Problem Analysis to resolve via introducing a replicable ICT based system in the Local Government Authorities.

- 4.1.1. Lack of effective data management system
- 4.1.2. Lack of public confidence in Local Government
- 4.1.3. Obsolete systems and inefficient Resource and revenue management
- 4.1.4. Lack of accountability and responsiveness in service delivery

## 5. eLG 2.0 Development Objective

5.1. eLG project envisages developing and implementing an ICT based solution which can be deployed at all LAs to meet their generic requirements such as:

- 5.1.1. Increasing the efficiency and effectiveness in governance
- 5.1.2. Assure citizen friendly delivery of services by Improving social accountability and transparency
- 5.1.3. Enhance social inclusiveness and access to opportunities
- 5.1.4. Strengthen the revenue base of the LAs
- 5.1.5. Improved management in socio-economic development orientations

## 6. Processes of e-Local Government 2.0 (eLG 2.0) to be considered for this assignment

6.1. The below re-engineered processes need to be considered for this assignment. The brief explanation is given as below to give an overall understanding of these processes.

### **6.1.1. A: Collection of Regular Revenue Receivable to the LAs.**

6.1.1.1. This process covers the below activities of the LAs:

- 6.1.1.1.1. Collection of Assessment Tax
- 6.1.1.1.2. Collection of Monthly Rentals
- 6.1.1.1.3. Collection of Lease Rentals
- 6.1.1.1.4. Collection of any other regular income / Mix Income

### **6.1.2. B: Issuing of Certificate/Licenses.**

6.1.2.1. This process covers the below activities of the LAs:

- 6.1.2.1.1. Issue building approvals
- 6.1.2.1.2. Issue of various certificates (street line, non-vesting, etc)
- 6.1.2.1.3. Issue of licenses (Business, Trade, Environment, etc)

### **6.1.3. E: Capture and Update of LAND and BUILDING information in Graphical form**

6.1.3.1. This process will include the below activities:

- 6.1.3.1.1. Provision to capture the initial information relating to land and services

- 6.1.3.1.2. Provision to Update the system based on information received from other processes
- 6.1.3.1.3. Provision to Update the GIS System based on Citizen Feedback or 3rd party systems
- 6.1.3.1.4. Provision to Share information with Citizens through the GIS interface.

6.2. Further, the consultant is required to build the interfaces between all processes.

The successful consultant would be given the interface definitions.

## 7. Scope of Work

- 7.1. The selected consultant needs to research and find out the solutions which are already available to map out the requirements specified in eLG Government Process Re-engineering (GPR), System Study documents, and System Requirement Definition for eLG which is to be given once the proposal is accepted. The proposed solution should be illustrated using Wire-Frames and submit with the proposed detailed project plan.
- 7.2. The selected consultant shall verify the requirements specified in the GPR with the stakeholders of the eLG system and produce the Detailed System Requirement Specification (DSRS) together with Hi-Fidelity prototypes.
- 7.3. On completing the above, a Detailed Software Technical Design (DSTD), including the proposed solution architecture document, should be submitted. Accordingly, the consultant shall prepare detailed design and solution architectures such as server architecture, network architecture, database architecture, security architecture, deployment architecture.
- 7.4. If any COTS components are proposed as a part of the proposed design, the consultant must clearly indicate the resultant commercial impact both for initial delivery and during subsequent operations in the bid submission. Further, a cost-benefit analysis should be provided to ICTA. Also the consultant should facilitate/setup ICTA to have a tri-party agreement with Original Equipment Manufacturer (OEM) for all COTs licenses.
- 7.5. The selected consultant shall base the customization/development of the eLG 2.0 system on the GPR performed at the LA.
- 7.6. The selected consultant shall adopt an iterative approach (Agile) where the users are given a chance to see the system and give comments at the end of each iteration. The relevant milestones should be appropriately defined by the consultant.
- 7.7. The implementation shall span across the following stages of software development lifecycle

- 7.7.1. Requirement verification
  - 7.7.2. Development and customization
  - 7.7.3. Set-up of development, staging and production environment including required tools
  - 7.7.4. Unit Testing, System Testing, Integration Testing, Performance Testing
  - 7.7.5. UAT
  - 7.7.6. Release management
  - 7.7.7. Continuous build (Continuous Integration, Continuous Deployment)
  - 7.7.8. Deploy
  - 7.7.9. Enhancement and augmentation
  - 7.7.10. Technical Support, Troubleshooting, Identification and Resolution
  - 7.7.11. Change and version control
  - 7.7.12. Patch management
  - 7.7.13. L1, L2 and L3 support for all applications
- 7.8. The selected consultant shall make sure that all processes of the eLG 2.0 could be plug and playable separately as independent modules. The client organization could decide what are the modules they would be using from the package independently.
- 7.9. The selected consultant shall design/develop the relevant re-engineered forms, which have been completed by the LAs. This activity could go in multiple iterations until the sign-off is given by the stakeholders.
- 7.10. The consultant shall comply with the independent software quality assurance (SQA) process, which will be carried by a team designated by ICTA.
- 7.11. Adopt a proper application release procedure to release the applications to the environments during the deployment in the staging/ production environments at the Lanka Government Cloud (LGC).
- 7.12. An issue log shall be maintained by the consultant for the errors and bugs identified in the solution as well as any changes implemented in the solution. Issue log shall be submitted to the ICTA monthly.
- 7.13. The consultant should obtain approval from the committee appointed by ICTA for all the deliverables.

- 7.14. The consultant should implement all nonfunctional requirements (security, governance including role-based security, user lifecycle management, and complete audit-trails, etc....) mentioned in Annex - A.
- 7.15. The consultant should study existing integrations with external organizations and carry out any enhancements needed for the proposed solution in order to provide a more comprehensive service which will be reviewed by ICTA.
- 7.16. The consultant should propose the most suitable solution to securely expose data and integrate.
- 7.17. The consultant shall complete the total assignment in 7 months with the implementation in pilot sites.
- 7.18. The consultant shall make sure that the developed/customized solution is a portable, open-standard based solution to all the LAs with very low redeployment cost and TCO (Total cost of ownership). The Intellectual property rights of the software shall be with the ICTA.
- 7.19. The system should be platform-independent and interoperable.
- 7.20. The client shall have the ownership rights to client-specific components arising from the requirements specified in the System Requirements Specification. The Client may consider shared ownership rights to such components provided there is a cost-benefit to the Client or its designated entity (end-user) at the discretion of the Client.
- 7.21. The client or its designated entity (end-user) should have the right to access, modify, further develop, enhance and distribute the system at no cost to the client or its designated entity (end-user).
- 7.22. The evaluation and the selection of the successful Bidder will be based on the Quality and the Total Cost of Ownership to the Client or its designated entity (end-user).
- 7.23. The consultant shall package the product into deployable components regardless of the operating platform. Scripts shall be created as deployable units.
- 7.24. The consultant shall be supported by installation and deployment procedures documentation. Further the production test routines, deployment checklists, and trouble-shooting guides to enable the client to handle the 1st level of support and deployment in the production environment.
- 7.25. The consultant shall provide guidelines to backup and restore the database in greater detail.
- 7.26. The consultant shall have separate identical environments for Development, Quality Assurance (QA), and Production Environment. The deployment

procedure shall be continuously tested during the migrations of the software from the inception of the development phase itself. Production Environment would be set up by the Purchaser based on the Hardware Requirements of the solution.

- 7.27. The consultant shall define the hardware requirements of the proposed solution 4 months before the software deployment.
- 7.28. The consultant shall follow an incremental and iterative development approach.
- 7.29. The system deployment shall be at 3 Pilot Sites.
- 7.30. The consultant shall maintain the system for a period of 3 years (1-year on-site support & following 2 years product-level support for the implemented Local Authorities.
- 7.31. The consultant shall comply with all the Business/Technical Requirements specified in the following sections.
- 7.32. The proposed solution should be compatible with the latest technological components and best practices
- 7.33. The consultant should follow the proper coding standard and maintain project source code in the ICTA GIT system and upload all the relevant documents to the ICTA Document Management
- 7.34. The proposed solution should integrate with multiple payment gateways and bank wallets proposed by the ICTA to facilitate online payments.
- 7.35. The consultant is compelled to use FOSS applications in all possible scenarios.
- 7.36. If any commercial version of the software needs to be used in the proposed solution, the consultant needs to inform ICTA in advance with proper justification of the requirement. The consultant is expected to estimate the number of licenses required and all the licenses/subscriptions purchased should be under ICTA.
- 7.37. The consultant should understand and ensure the existing data volume and data complexity and provide a data migration strategy accordingly. Moreover, the data transformation strategy should follow the proper industry standards and proper control mechanisms in transforming these data to the new solution.
- 7.38. The consultant should carry out end-to-end security assessments prior to the solution launch and fix any issues found. Further, ICTA will conduct security assessments periodically, and the consultant should fix any vulnerability issues identified during assessments. (Prior to solution launch and during support and maintenance period).

- 7.39. The consultant should derive the UAT test cases in collaboration with ICTA.
- 7.40. The consultant shall undertake benchmark exercise before Go-live. Validate the application and infrastructure performance benchmarks and undertake enhancement/augmentation, if required.
- 7.41. Obtain User Acceptance for the implemented solution collaboratively with the committee appointed by ICTA.
- 7.42. The consultant should provide support and maintenance services from the date of launch to the agreed time period.
- 7.43. The consultant should develop a proper alerting mechanism to monitor system performance issues, exceptions, and system downtimes. Moreover, the proposed alerting mechanism should send an alert via SMS to designated offices by ICTA.
- 7.44. During the support and maintenance period, the consultant should attend to any issue reported and carryout configuration changes (if required) and apply relevant security patches to ensure the security of the solution and apply updates and tuning of performance, etc.
- 7.45. The consultant should accommodate change requests (CR) after obtaining approval from the Change Control Board and as per the CR rate agreed in the contract.
- 7.46. The consultant should provide proper application training and knowledge transfer for all designated offices by ICTA regarding technical aspects.
- 7.47. The consultant who engages with the assignment should sign a Non-Disclosure Agreement (NDA) where applicable.
- 7.48. The intellectual property rights of the solution and all artifacts in accordance with the conditions of the contract.
- 7.49. The consultant should collaboratively work with the project stakeholders (i.e. ICTA's team, departments, etc) designated or proposed by ICTA.
- 7.50. The consultant should provide support and maintenance services from the date of launch to the agreed time period. Moreover, the consultant should adhere to the Service Level Agreement (SLA), during the support and maintenance (S&M) phase.
- 7.51. The consultant should implement an SLA Management and Monitoring solution, configure the SLAs in the tool and enable automated monitoring and reporting of adherence to Service Levels. Manual intervention in computation of service levels should be avoided and all monitoring and measurement

should be automated. The consultant is expected to identify and implement RPOs and RTOs for all components.

#### 7.52. Documentation and Training

7.52.1. The consultant should provide video based bilingual (Sinhala and Tamil) user training videos of the system being implemented with a user manual.

7.52.2. The consultant should provide adequate training for the users of envisaged solution.

7.52.3. The system administrators of eLG 2.0 system should also be trained in relation to the Local Authority Account Administration activities such as creating users, assigning user rights and back up procedures.

7.53. The consultant should provide documentations mentioned in the deliverables.

7.54.

#### 8. Architecture Principles

8.1. This section describes the architecture for implementing the various components that makes up the systems, managing and supporting the operations of the Local Government Authorities (LAs) of Sri Lanka.

8.2. Consultant shall develop the application based on the micro-services architecture and make use of open-source technologies and open standards unless otherwise there is a very good reason to do so.

#### 8.3. Assumptions

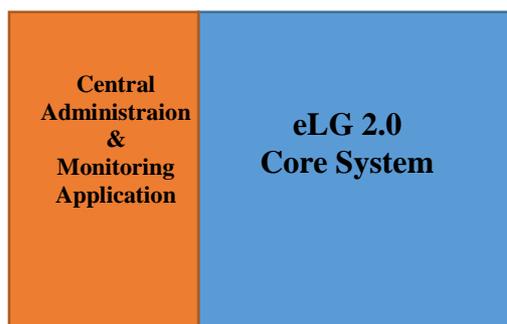
8.3.1. Functions performed and services offered by a LA are generally independent from central government operations and functions. Thus, the system in scope for the current implementation for LAs will have almost no dependencies or interactions with systems under the central government. However, the provisions should be made available to consume/expose web services in the future.

8.3.2. The system will be deployed in a Lanka Government Cloud (LGC) infrastructure managed by ICTA where the consultant is given a dedicated tenant to deploy the solution. The consultant will have end-to-end responsibility to provision, deploy, and maintain all VMs required for this solution.

8.3.3. There should be an application which provides a consolidated view of all LAs to the relevant authorities (Central Monitoring Centre) and that system also will be deployed within the same infrastructure. However, those systems to system communications should follow a micro-services approach such that it can seamlessly operate in a virtualized environment.

- 8.3.4. Central Administration & Monitoring Application (CAMA) would be able to query any information across any LA, however all updates are only possible from the LA that “owns” that information.
- 8.3.5. Central Monitoring Application - Main Application (Super Level) for the Central Government’s Local Government Ministry with Administration and Monitoring Facilities (All 341 LA’s belong to 9 Provinces and 25 Districts including Provincial Level and District Level Administration and Monitoring facility will be managed from here.)
- 8.3.6. Each LA on the system will be connected Lanka Government Network 2 (LGN 2) through one of the below mechanisms with redundancy.
- 8.3.7. Leased line connectivity to LGN obtained by the LA or it should work effectively in any 2Mbps internet connection.
- 8.3.8. A LA should be able to use the application effectively using any popular modern browser with support for the latest version (such as Firefox, Chrome, MS Edge, Safari) independent of the Operating System they are using.
- 8.3.9. Information which required to access by the Ministry and the Provincial Government should be available in the CAMA. There will be situations where officials in those organizations requiring read access to information over multiple LAs.
- 8.3.10. All application user accounts should be integrated to an Identity platform/directory server which is prescribed by ICTA.
- 8.3.11. This solution architecture should be extensible, highly available and fault tolerant using a cloud agnostic orchestration layer like Kubenetes.
- 8.3.12. The solution should adhere to engineering standards and guideline prescribed by ICTA.
- 8.3.13. Mobile application should run on both Android and iOS devices and the solution should be preferably build using technology like Flutter.
- 8.3.14. This solution should have an API layer for extensibility of functions and third party integrations.

#### 8.4. Basic Structure



*Figure 1.0*

## 9. eLG 2.0 Core System

- 9.1. This must be a horizontally scalable application. Though the current scope includes only three to five LAs, a subsequent phase will cover over 341 LAs which will increase the workload significantly. Therefore, the eLG 2.0 Core System must be able to cope up to 300+ concurrent sites connecting and 3000+ concurrent users.
- 9.2. The main features are listed below as a summary. However, the consultant is expected to deliver complete functionality based on the approved Detailed Software Requirement Specification Document (DSRS) and the Re-Engineered Processes.
- 9.3. Applications and Modules Required;
  - 9.3.1. Central Administration & Monitoring Application
  - 9.3.2. Local Authority Application
  - 9.3.3. Local Authority Mobile Application
  - 9.3.4. Citizen's Portal
  - 9.3.5. Citizens Mobile Application
  - 9.3.6. Department of Valuation (DOV) Module
  - 9.3.7. Third Party Data Interchange Module
  - 9.3.8. An Open-Source Web-Based Bug & Issue Tracking Tool
- 9.4. Central Administration & Monitoring Application (CAMA)
  - 9.4.1. This is the main administration module to be used with the eLG 2.0 Core System. This Application will be used by the eLG Central Administration & Monitoring Unit of the Central Government's Ministry of Provincial Councils and Local Government.
  - 9.4.2. Key Functions of the CAMA
    - 9.4.2.1. Create LA's using predefined templates of MC's, UC's and PS's
    - 9.4.2.2. Customize the templates or Activate/Deactivate the functionalities according to the different process requirements
    - 9.4.2.3. Map LAs to the respective Province and District
    - 9.4.2.4. Create & Manage Dashboards for each level of administration
    - 9.4.2.5. Create & Manage User-Roles
    - 9.4.2.6. Monitor System Performance, Security, and Issues
- 9.5. Local Authority Application
  - 9.5.1. This is the Key Application which is going to be used by each Local Authority. Once the CAMA creates the respective logical LA tenant in the eLG 2.0 Core System, the following functionalities should be available (not limited to) for the Local Authority.
    - 9.5.1.1. Process A Related Functionalities

- 9.5.1.2. Process B Related Functionalities
- 9.5.1.3. Process E Related Functionalities
- 9.5.1.4. Final Accounts
- 9.5.1.5. Create Users, Including User-Role mapping, Verification and the Approval Process
- 9.5.1.6. Daily Backup Solution
- 9.5.1.7. Comprehensive Standard and Ad-Hoc Report Module

## 9.6. Local Authority Mobile Application

9.6.1. The officers who go onsite inspections need to carry all information related to the site inspection. A single inspection tour may involve multiple sites. Therefore, the Mobile application must be able to hold information up to 250 properties. The following functionalities should be available (not limited to) in the LA Mobile Application with properly designed user-friendly and simple user interfaces.

- 9.6.1.1. Download information by selecting outstanding payments
- 9.6.1.2. Download information by selecting properties/sites to be visited based on priority
- 9.6.1.3. Upload information collected during the site visit to the system.
- 9.6.1.4. Must have a method to obtain and associate digital photographs to a specific property/site (unless this feature is provided at the main system)
- 9.6.1.5. Must have a method to obtain and associate geographical information to a specific property/location (unless this feature is provided at the main system)
- 9.6.1.6. Process A
  - 9.6.1.6.1. Capturing of collection information on the field
  - 9.6.1.6.2. Setting off against the dues
  - 9.6.1.6.3. Print a detailed receipt (using a mobile printer)
  - 9.6.1.6.4. Validation of information
  - 9.6.1.6.5. Modification of information
- 9.6.1.7. Process B
  - 9.6.1.7.1. Select properties to be visited based on requirement (eg. building inspection, complaint etc)
  - 9.6.1.7.2. Capture required information
  - 9.6.1.7.3. Gather information of new properties
  - 9.6.1.7.4. Gather information on modifications to the existing properties
  - 9.6.1.7.5. Conduct investigation
- 9.6.1.8. When there is no connectivity available, the information captured by the visiting officer should be stored in the Mobile application and get synced automatically once the device gets the connectivity.

## 9.7. Accounting Module

- 9.7.1. This module should facilitate LA's to track their all revenues and Expenses to the system through their respective votes. The following functionalities should be available (not limited to) in the Accounting Module
  - 9.7.1.1. Define vote codes for all the revenues and expenses
  - 9.7.1.2. User-Interface to enter revenues for the relevant revenue vote codes with facilities include descriptions and other required information
  - 9.7.1.3. User-Interface to enter expenses for the relevant expense vote codes with facilities include descriptions and other required information
  - 9.7.1.4. Preparation of vouchers, final accounts, budgets etc.
  - 9.7.1.5. All relevant bank reconciliation activities.
  
- 9.8. Citizens Portal / Citizen Mobile Application
  - 9.8.1. Citizen portal can be named as one of the major application of the eLG 2.0 as this will facilitate citizens to make their tax & other payments to their relevant LA's. This is intended for the citizens to interact with their respective LA.
  - 9.8.2. This module must be very user friendly application with wizard-like interface to perform all activities. Clear and simple guidance must be provided. There should be a common mobile application also where the citizens to interact with their respective LA.
  - 9.8.3. The application should be able to connect all the payment channels (CASA, FINTECH, KIOSK, etc.) through a common API.
  - 9.8.4. By developing the citizens facing application as part of the Central Administration and Monitoring Application, these applications are available to the citizen on 24/7/365 basis. It is more cost effective than every LA exposing citizen facing application individually.
    - 9.8.4.1. Application must be available on all three languages and the citizen's language preference must be persisted within the system.
    - 9.8.4.2. Interface to create and manage user account (account creation, password verification, password reset, account deletion etc)
    - 9.8.4.3. Wizard-like interface to add Properties to be managed. This should require authentication information from the Assessment Notice. When submitting property related applications, this validated Property information can be used.
    - 9.8.4.4. Wizard-like interface to select applications
    - 9.8.4.5. Wizard-like interface to fill and submit an application (in Sinhala, English or Tamil)
    - 9.8.4.6. Wizard-like interface to fill and submit an appeal (in Sinhala, English or Tamil)
    - 9.8.4.7. Interface to download an application as a PDF
    - 9.8.4.8. Interface to track the status of an application or a complaint
    - 9.8.4.9. Interface to view specific property related information
    - 9.8.4.10. Interface to make a payment via Lanka Gate payment gateway
    - 9.8.4.11. Interface to view the Regular Service schedules (eg. Garbage collection schedule) and service provision details (eg. Whether garbage has been

collected at displayed collection points). This must be displayed on a map via the GIS server.

- 9.8.4.12. Interface to view other public information (eg. declared Street Lines). Much of this public information need to be displayed on a map via the GIS server.

#### 9.9. Department of Valuation (DOV) Module

- 9.9.1. Interface to receive Mass Valuations
- 9.9.2. Interface to submit RA/RB type applications to DoV (and receive results) via web services.

#### 9.10. Third Party Data Interchange Module

- 9.10.1. Interface to receive geographical information from data providers (eg road networks from the Road Development Authority, Household Information through Grama Niladari Systems, Department of Registrar of Persons). Each provider will have different formats and therefore, the application need to have a facility to translate received data.
- 9.10.2. Standard web-services to release data to authenticated external systems. Exact information to be shared must be elicited during requirement validation stage.
- 9.10.3. Interface to upload Zoning information to the GIS server

### 10. Business/Technical Requirements of eLG 2.0 system

#### 10.1. Application Interfaces

- 10.1.1. This section sets out the guidelines for the different types of interfaces and their features to be developed for the system. Individual interfaces are not discussed.
- 10.1.2. The System is required to facilitate all its activities via User Roles, Sites and Services orchestrated via a work-flow manager. The Services available to each User Role and Site must be configurable within the System.
- 10.1.3. The solution must have a task-oriented and work-flow based interface.

#### 10.2. Workflow based operations

- 10.2.1. A workflow is activated when an initiating event occurs. The workflow would guide a user in auctioning an event. It would define the requirements to initiate a workflow. Once initiated, the processing should be controlled as to the sequence of activities, and the officers who execute it.
- 10.2.2. Some key terms and concepts of workflow based operations are:
  - 10.2.2.1. Task: Work performed to effect a single change. A workflow would consist of several tasks. In workflow construction, the task definition is a template for action. The task must be associated with an actual event in order to carry out the action.
  - 10.2.2.2. Activated Task: When an action is required, and a task is associated with a specific item which must be actioned, the task is instantiated and a single instance of the task is created. It is the instance of a task (ie-

Activated Task) which can be executed. (Note: This is not a standard workflow term, and has been adopted for clarity).

10.2.2.3. Work Item: A workflow-item moving through a work process. A work item would be associated with a single instance of a workflow, and Activated Tasks within the workflow.

10.2.2.3.1. Eg. A workflow can be defined for receiving a request for a building permit. The workflow will consist of several tasks such as Capture Application, Make Payment etc.

10.2.2.3.2. When a new request for a building permit is made, a new instance of the relevant workflow is created. The workflow instance is only to capture the building application and attach the relevant documents to it. The new building application is the work item to be processed. The workflow instance would contain an Activated Task for the Capture Application task which would action only one work item, ie- this new building application. A building permit request relating to another property would have its' own instance of the workflow, and a set of Activated Tasks which relate exclusively to the property being valued.

### 10.3. Guided operations

10.3.1. The solution must support operational workflows to guide users when actioning an event. On logging into the system, users must be presented with a list of Activated tasks requiring their attention. These should be grouped by the type of work, and within each group, sorted in descending order of priority/urgency. Within a given priority/urgency level, the Activated Tasks must be sorted in first-in-first-out basis. The list would contain only Activated tasks relevant to that user, and his/her role. It should be possible to initiate the system function related to a task, directly from this list. (eg. click an item to view it or go to the relevant data entry screen)

10.3.2. Activated Tasks would be assigned according to a pre-defined workflow. Assignments must be within the security framework set out in the requirements.

10.3.3. Alerts and reminders generated by the system for the logged in user should also be shown. Alerts and reminders are generated according to escalation rules. Warnings can be generated for exceptions. It should be possible to access details of the related work item, directly from the list. A facility to set personal (ad hoc) reminders on a specific work item is desirable.

10.3.4. When a task is completed, the user should be taken to the next task for that work item, or the next Activated Task which requires attention.

### 10.4. Workflow Navigation

10.4.1. It should be possible to navigate easily through the workflow.

- 10.4.2. For a single event or related work-item, – view history, action due, print related documents. It is desirable to project and view the future tasks in the workflow against a time line.
- 10.4.3. For any task within a workflow – view all Activated tasks and related Work items which are in progress, or overdue.
- 10.4.4. Bulk operations: View/action several work items. Select the items from a filtered list eg. confirm several items, print documents for several items etc.
- 10.4.5. Filter items by progress on the workflow.
  - 10.4.5.1. Items at a particular point, (i.e. – activated tasks carrying the same status)
  - 10.4.5.2. Outstanding/ late items
  - 10.4.5.3. Items assigned to a specific person/role/group
- 10.4.6. Link functions to workflow tasks and action. Where possible, automatically complete the linked function.
- 10.4.7. When the Activated task is flagged as completed, the status of the work item should also be updated, without further user interaction.
- 10.4.8. Standard views should be provided. E.g. “My Workspace”, summary of work for unit/domain/organization. The expected features are as follows:
  - 10.4.8.1. It should be possible to filter the list and sort it by any of the displayed columns.
  - 10.4.8.2. It should be possible to ‘drill down’ incrementally, and view details.
  - 10.4.8.3. Facilities to customise the view by adding and re-arranging columns
  - 10.4.8.4. The ability to save changes to the view and to create personal views is desirable.
  - 10.4.8.5. Changes to common views should be an administrative function restricted to authorized administrators only.
- 10.5. Non-workflow functions
  - 10.5.1. These are support and administrative functions which will be used when required, and not as part of the workflow. These should be accessible via a menu (or tool bar) in an easy-to use manner.
  - 10.5.2. The consultant needs to get prior approval on finalizing this requirement from the stakeholders.
- 10.6. User Interfaces
  - 10.6.1. Language
    - 10.6.1.1. Language requirements may defer according to the type of content. Types of content: envisaged are -
    - 10.6.1.2. Static: Menu items, form labels, forms names, messages, help text, tool tips
    - 10.6.1.3. Data: System data, Application data
    - 10.6.1.4. Reports: Letters, operational reports, MIS reports and other system outputs
    - 10.6.1.5. Other: Public information (static, dynamic or semi-static)

- 10.6.1.6. The solution must be multi-language, supporting Sinhala, Tamil and English. Users must be able to specify their language preference, which would be used to interact with the user interface by default. It should be possible to indicate preferences at form and global levels. Primary and secondary preferences are desirable. If information is not available in the primary language, it will be presented in the secondary (or available) language. Multiple language capability is defined as follows, depending on the type of content:
- 10.6.1.6.1. Static content: must be available in all 3 languages. It should be possible to switch to a different language at any time, without changing the stored preference.
  - 10.6.1.6.2. Application Data: It should be possible to enter information in all three languages in all forms. This would enable users to enter data in the source language, minimising transliteration ambiguities, whilst having the form displayed in the language most familiar to them. Therefore, on viewing or actioning an item, a screen may contain static content in one language, and data in other one or two languages. Key data must be entered in English as well. eg. Name, Address.
  - 10.6.1.6.3. System Data: Information such as descriptions must be available in all three languages. System generated codes would use English characters and numbers. However, external reference numbers may be assigned in Sinhala and Tamil as well, depending on common usage.
  - 10.6.1.6.4. Reports and other system outputs: These must be produced in the recipient's language of choice. In order to support this, the data must be available in the required language. Otherwise, the general content of the document would be in the language of choice, and the data, in English, or available language.
  - 10.6.1.6.5. Public information: Forms, instructions and other public documents must be available in all 3 languages.
  - 10.6.1.7. The user must be able to switch among available languages using keyboard shortcuts (eg ALT+Left SHIFT). This would facilitate data capture in multiple languages.
  - 10.6.1.8. It would be necessary to enter translations or transliteration of key information. A built-in transliteration facility is highly desirable.
  - 10.6.1.9. The engine developed by the ICTA must be utilized for transliteration.
  - 10.6.1.10. A dual language view is required to facilitate translation. The primary language of entry must be known for all business data. This is assumed to be the source language, and the most correct. Integration with a translation engine would be desirable.
  - 10.6.1.11. Any data – whether its translated or transliterated – must be modifiable by the user (before saving or proceeding to the next screen).

This is to allow correction of any mistakes of translation/transliteration engines.

10.6.1.12. Language sensitive screen / menu shortcuts are highly desirable.

#### 10.6.2. Search facilities

10.6.2.1. It should be possible to search for information in any language (wherever data is available in the given language). A search would return results according to the security and accessibility of data to a particular user. Wild card search should be supported.

10.6.2.2. Name search:

10.6.2.2.1. When searching text such as names, street or place names etc., the following levels of matching are highly desirable.

10.6.2.2.1.1. Match the search text as given, in the given language

10.6.2.2.1.2. Match the text phonetically, using sound algorithms.

10.6.2.2.1.3. Transliterate the text into the other languages, and search for potential matches.

10.6.2.3. Item Search:

10.6.2.3.1. Simple search facilities based on key attributes should be provided for all major entities as well as workflow tasks.

10.6.2.3.2. Advanced search facilities should be provided, where the user can build up a query consisting of several criteria based on any attribute. Name search concepts must be applied to name-like attributes.

10.6.2.3.3. It would be desirable if additional scope settings could be provided such as –

10.6.2.3.3.1. Include cancelled items y/n (default No)

10.6.2.3.3.2. Search history - closed, inactive items (default No)

10.6.2.3.3.3. Search all languages (default No)

10.6.2.3.4. It should be possible to save a set of search criteria for future use. Saved searches would available only to the creator. A facility to export or share a saved search with other users at a public or group level is desirable.

10.6.2.4. Results:

10.6.2.4.1. Search result sets should support easy navigation to view item details and related information. It should be possible to select several items, and action them together. The ability to customise the results view is highly desirable – eg- specify columns to be included, sort order etc. It should be possible to search within a result set, to narrow the results gradually.

#### 10.6.3. Generic features

10.6.3.1. The system must provide a consistent look and feel throughout the entire user interface. ‘Look and feel’ includes, but is not limited to - appearance, layout, placement, activation, response, exception handling,

structure and keyboard shortcuts. The most important features required are as follows:

- 10.6.3.1.1. Lists – should be sortable by all columns, and should support selection and action.
- 10.6.3.1.2. Drop Downs – must be available for selection where applicable. Drop Downs must be navigable via mouse as well as arrow keys and also support quick location based on matching characters (from the beginning) entered via keyboard.
- 10.6.3.1.3. Dates – can be entered via keyboard or selected via a calendar control. The default format must be set to yyyy-mm-dd (eg. 1974-apr-27) to avoid month and day confusions. If entered via the keyboard, the day of the month can be entered but the month should be selectable via a drop-down. The year can also be entered. However, the entire date must be validated with end of month and leap years being considered.
- 10.6.3.1.4. Grid selection – should support multiple row selections, and selections must be ‘remembered’ when paging. Grids must be sortable by any combination of columns. As a suggestion, the following method can be used. A drop-down containing the items <blank>, 1, 2 ... N where N = number of columns, is added to each of the column heading. The default selection is <blank>. A ‘Sort’ button appears near the grid. Suppose, the user wants to sort, first by column 6 and then by column 4. Then s/he has to select 1 from the drop-down in column 6, select 2 from the drop-down in column 4 and click the ‘Sort’ button.
- 10.6.3.1.5. Warnings – Warn prior to executing destructive, non-reversible steps, and on exiting without saving changes.
- 10.6.3.1.6. Personalizing – Personalizing of settings for language, notifications, start-up screen (home page), colour scheme etc.

#### 10.6.4. Data Capture

- 10.6.4.1. The format of form-related data capture screens must match the source forms. It should be possible to fill the form off-line, on a template (eg on a spreadsheet), and load the data into the on-line form. When completing a form on-line, if information is already available from a previous application, allow the user to load the existing information to the new form and modify it, to reduce keying in.

#### 10.6.5. Ad hoc Reporting

- 10.6.5.1. Users should be able to create and print reports. Information to be printed may be identified and viewed via a search facility, or extracted from statistical data. It should be possible to specify a title for the reports and header information such as date scope etc., and obtain the

report at a summary or detail level. It should be possible to save and re-use a report definition, similar to the search criteria.

- 10.6.5.2. It would be desirable to be able to design and format the lay out, specify groupings and request totals / sub-totals on selected columns. If any new reports are required, there must be a method to introduce the report template, data queries and report name into the system without any source changes to the application. The set of data available (both rows and columns) must be as per the effective rights of the user.

## 10.7. Software interfaces

10.7.1. This section describes the interfaces with other applications and systems.

### 10.7.2. Document editor

- 10.7.2.1. It should be possible to define frequently used documents as templates with placeholders for data items which would be filled in at the time of printing. Industry standard 3rd party packages may be used. The system should be able to interface with the document editor to populate and complete a document with appropriate data. The system should also be able to extract data from such templates to support off-line data capture

### 10.7.3. Messaging

- 10.7.3.1. The system should be able to create email messages and despatch them through the email facilities available. It is assumed that all connected nodes would use an industry standard email service and protocol (POP/SMTP or IMAP). This may require special email accounts to be created for the system. The SMS alerts should be sent via GovSMS to the internal and external stakeholders (i.e. citizens)<sup>[DH1]</sup>

- 10.7.3.2. The system should be able to action emails where the subject and format would conform to a given specification. Eg. Extract an attachment from an authenticated email, store it in a temporary location and send an alert or create/assign a related activated-task to an officer who would process this further. Where requested, the receipt of the email should be acknowledged automatically. An automatically generated reference number (or a tracking number) is desirable.

- 10.7.3.3. The system would also need to transmit files and EDM directly, without going through email, but this would depend on the technology available at various locations. Detection and recovery in case of interruption, corruption or failure in transmission is required. Messages should be authenticated prior to processing. It is mandatory that all EDM is encrypted and authenticated, preferably using public-private key mechanism.

### 10.7.4. National level services

- 10.7.4.1. The ICTA has set up a national framework for e-governance applications. This is described in the National Enterprise Architecture

(NEA) specification and is based on the use of web services for interaction between systems.

- 10.7.4.2. The system should utilise web services to obtain or verify data from third-party systems (eg. Requests for valuations from DoV), wherever possible. The system should also make available web services to provide information to other government agencies. The NEA and web services which would be available to and from the system are to be defined in consultation with the ICTA.

## 10.8. Other interfaces

- 10.8.1. The system requires interfaces to any other systems or devices which may be linked to the system.

- 10.8.2. Special Equipment could be

- 10.8.2.1. Mobile Device- transfer of data for site inspections.

- 10.8.2.2. Digital Camera – transfer of digital photographs from a digital camera.

- 10.8.2.3. Document scanners – to be used to capture electronic images of documents.

- 10.8.2.4. GPS device - to transfer geo-coordinates from the GPS device.

- 10.8.2.5. Mobile printer - to print receipts when collecting Assessment Tax by the Tax Collectors. This is an optional equipment.

- 10.8.3. Background jobs

- 10.8.3.1. It must be possible to set up services to be executed at specific times or at regular intervals (ie cron jobs). Facilities to start, suspend, stop, restart and handle exceptions must be provided. It should be possible to monitor the jobs in progress and also to view the history to verify and tune operations. Some of the required background jobs are –

- Printing

- Alerts

- EDM processing

## 11. Core Functional Requirements

- 11.1. Core Process A – COLLECTION OF REGULAR REVENUE RECEIVABLE TO THE LA

- 11.1.1. This core process is to ensure all regular collections are captured and followed up on a regular manner and monies collected and receipt issued and monies accounted.

- 11.1.2. Boundary of the process is from the point of identifying a Regular Due until those dues are collected and providing whatever information required supporting the collection of the dues, to taking action against those defaulting

payment and to modifying the amounts due to providing information required by the Accounts Division.

- 11.1.3. The basis and rate used in calculating the regular revenue (on assessed properties) must be globally configurable. Historical values must be maintained as well. Basis is defined as to which base valuation is used – Rental Value or Capital Value. Rate is defined as to the percentage of the Basis which will be the revenue charged by the LA. This may differ for each type of revenue.
- 11.1.4. Process A must ensure the following:
  - 11.1.4.1. All notices of regular income are received by the public by 1st January.
  - 11.1.4.2. Provide information on the monies payable to the citizens immediately upon request – when visiting LA or through internet.
  - 11.1.4.3. Provide multiple modes of payment.
  - 11.1.4.4. Action against defaulters is initiated within defined time frames.
  - 11.1.4.5. Information in the database is 100% complete, current and accurate.
- 11.1.5. There are four identified sub-processes within Process A.
  - 11.1.5.1. Capture information related to regular revenue receivable (ie identify the sources of regular revenue and setup the system to initiate collection process)
  - 11.1.5.2. Giving notice to the citizens (or businesses) on amounts payable
  - 11.1.5.3. Collection of monies and updating the system
  - 11.1.5.4. Modifications to the regular revenue amounts
- 11.1.6. Process A1 - Capturing information related to Regular Revenue Receivable to LAs
  - 11.1.6.1. This process identifies the sources of regular revenue and setup the system to initiate the collection of the dues.
  - 11.1.6.2. Identified sources are as follows:
    - i. Assessed properties (assessment tax)
    - ii. Income from renewing licenses
    - iii. Other regular collections (rent etc)
    - iv. Other regular taxes
  - 11.1.6.3. In capturing the assessed properties, the system needs to maintain a unique identification for each property. The Assessment Number may be repeated. In addition, the system needs to maintain the “pedigree” of each property as well. A new property may be created by a sub-division of an existing property, by amalgamating adjoining properties etc. Therefore, the system must maintain the child-properties and parent properties respectively, along with the dates of the activity and the type of activity (sub-division, amalgamation etc).
  - 11.1.6.4. Use Cases of Process A1

Use Case ID	Use Case Name	Use Case Description
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A1 Capturing information related to Regular Revenue Receivable to the LA		
A1.a	Capture manual asset registers	Capture details of currently assessed properties in to the Assessment Tax Database, from the manual registers
A1.b	Capture electronic asset registers	Capture details of currently assessed properties in to the Assessment Tax Database, from existing systems
A1.c	Update assessment tax database with RA type changes	Capture assignment of a new assessment number by way of sub-divisions and amalgamations of properties
A1.d	Update assessment tax database with RB type changes	Capture valuation of properties after the Certificate of Conformity is issued.
A1.e	Update assessment tax database with Mass Valuations	Capture valuation of properties after a Mass Rating Valuation is done by the DoV
A1.f	Capture other regular collections (existing)	Capture other regular revenues such as rentals and leases which are already in effect
A1.g	Capture other regular collections (new)	Capture other regular revenues such as rentals and leases which are created after the system is introduced
A1.h	Capture regular collections from Licenses (Existing)	Capture regular revenues from renewable licenses and certificates that are already issued
A1.i	Capture regular collections from licenses (new)	Capture regular revenues from renewable licenses and certificates that are issued after the system is introduced

A1.j	Capture Other Regular Tax Collections (Existing)	Capture other existing regular taxes that do not fall into any of the earlier categories.
A1.k	Capture Other Regular Tax Collections (New)	Capture new types of other regular taxes that do not fall into any of the earlier categories.

#### 11.1.7. Process A2 - Giving notice to the individual on the amounts payable to the LAA

- 11.1.7.1. The objective of this process is to ensure the Citizens are issued with the relevant notice of their assessment at the beginning of a Payment Cycle and also sending reminders to those who have not paid at the end of each payment cycle and taking action where necessary to collect the dues.
- 11.1.7.2. Once the sources of revenues are identified and stored on the system through Process A1, the notices and reminders are produced via this process. In addition, any detaining of properties (due to non-payment) and legal action is also handled through this process.
- 11.1.7.3. Use Cases of Process A2

A2 Giving notice to the individual on the amounts payable to the LA		
A2.a	Provide notice on Assessment Tax	Provide the citizen with the 'K' Form, which shows the Assessment Tax payable for the given period
A2.b	Follow-up on Non-Payment of Assessment Tax	To handle the sending of reminders & Red Notices and for taking legal/detaining action to recover the monies dues
A2.c	Possessing of Movable Property	Obtaining approval for vesting the property, issuing the relevant notices, vesting the property and recovering the monies due
A2.d	Provide notice on Other Regular Income	To send reminders and take action on non-payment of Other Regular Income such as rentals and leases

A2.e	Provide notice on Renewal of Licenses	To send reminders to the owners of licenses/certificates that were not renewed prior to their expiry dates.
A2.f	Initiate legal action	The process to follow when the LA has opted to proceed with Legal Action against those in default of Assessment Taxes to the LA

#### 11.1.8. Process A3 – Collections of monies and updating of the system

11.1.8.1. The objective of this process is to facilitate the collection of the monies due from regular revenue and issue a receipt and update the database, including providing information for the Accounts System.

11.1.8.2. In collecting the monies due, there are several channels that may be used

- Cashier counter at the LA
- Tax Collectors
- Banks
- Lanka Gate portal

11.1.8.3. Use Cases of Process A3

A3 Collection of Monies and Updating of the System		
A3.a	Collect money from citizens visiting the LA	To collect money when the citizens visit the LA in order to pay the monies due
A3.b	Register and manage Tax Collectors	Register and manage Tax Collectors who would visit areas of the LA and collect any monies due
A3.c	Collection of money by TC	The process which the TC follows when s/he is visiting an area for the collection of dues.
A3.d	Collection of money through Lanka Gate	System must provide a feature for the citizens to pay on-line via various payment channels.
A3.e	Collection of money through banks	Citizens are able to pay their dues to the LA via selected banks. This process handles the fund reconciliation between the bank and the LA

A3.f	Collect ad-hoc revenue	To facilitate collecting of non-standard revenues through the system
A3.g	Update Accounts	To provide a summary of daily collections to the Accounts Division analyzed by account to be booked for the day

#### 11.1.9. Process A4 - Modifications to the Regular Revenue amounts Receivable

- 11.1.9.1. This process handles all the appeals made by the citizens with regard to regular revenue collections. For instance, if a citizen complains of high assessment tax, that is handled by this process. However, these appeals are accepted under specific conditions. These conditions will be specified in the relevant Use Case. The system must be able to parameterise these conditions for each LA.
- 11.1.9.2. In addition, this process covers the cancellation of licenses/certificates as well.
- 11.1.9.3. User Cases of Process A4

A4 Modifications to the Regular Revenue amounts Receivable		
A4.a	Receive appeal against assessment	Triggered when a citizen lodges an appeal against the assessment of his/her property
A4.b	Receive appeals against unreasonable assessment	Manages appeals made against the assessment on grounds of being unreasonable
A4.c	Appeal to revise/suspend assessment due to Other Reasons	Manages requests for revision or a suspension of assessment due to any reason other than unreasonable assessment
A4.d	Appeal to revise other revenue due	Manages requests for revision or a suspension of other regular revenues
A4.e	Request for cancellation of License/Certificate	Manages requests for cancellation of certificates/licenses already issued

A4.f	Cancel agreement	Triggered when an agreement (Eg. Shop lease) is to be cancelled due to expiry or other reasons
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## 11.2. Core Process B– ISSUING OF LICENSES AND CERTIFICATES

- 11.2.1. This core process handles the issuing of a certificate (eg Street-line certificate, non-vesting certificate) or a license (business permit, environmental permit etc) to citizens and local businesses. In addition, the registration of officers certifying documents submitted to the LA (eg surveyors, architects) is handled via this process.
- 11.2.2. When a citizen submits an application, it is evaluated and a temporary license/certificate is issued if possible. If more information needed (by way of documents or site visits), necessary actions are taken to obtain the required information and then a temporary license is issued. The final certificate/license is issued subsequently. The citizen is provided a further option to submit any modifications to the certificate (due to changes in the citizen’s requirements or due to rejection of the original application).
- 11.2.3. At all critical points where the application changes status, the GIS database needs to be updated. Please refer to the relevant Activity diagrams for details.
- 11.2.4. When setting up types of licenses and certificates, the following must be considered.
- 11.2.4.1. Facility must be available to create unlimited number of types of licenses and certificates.
  - 11.2.4.2. Option must be there to issue one-time licenses/certificates and ones that are valid for a specified period.
  - 11.2.4.3. Automatic reminders on renewal of such renewable licenses/certificates must be generated.
  - 11.2.4.4. Option must be there to add regular inspection to each instance of the license/certificate. These regular inspections (eg monthly, quarterly, annually) must be incorporated into a centralized (per LA) site-visit plan
  - 11.2.4.5. Facility must be there to set up grace period for renewals, maximum allowable arrears and late interest. The consultant is expected to validate and obtain a complete listing of parameters to be maintained for each type of license/certificate.

### 11.2.5. Process B1 - Completion and Receipt of Applications

- 11.2.5.1. This process ensures that all applications received in relation to Core Process B are received in proper order and as per the rules set by the LA.
- 11.2.5.2. Facility must be provided to submit the application on-line via a web interface. A user ID and a password must be created for the application. If the user already has such an account, the same can be used. Consultant is expected to develop a standard user account module in order to implement this.

11.2.5.3. The original documents submitted by the applicant must be stored in a secure location in the LA office (head office, branch office or satellite office). From time to time, the documents must be moved to the head office for archival.

11.2.5.4. User Cases of Process B1

B1 Completion and Receipt of applications		
B1.a	Receive Application	To receive and validate the completeness of the applications received.
B1.b	Make payments	To receive payment for services offered via cash, cheque or credit card
B1.c	End-of-day process	To balance the cash book and hand over the funds to Officer Responsible for Maintaining Accounts
B1.d	Process returned cheques	Manage returned cheques and suspend any work related to the payment
B1.e	Scan documents	Scan all documents related to an application related to a certificate or a license
B1.f	Registration of OR-CDL	Register an Officer Responsible for Certifying Documents submitted to the LA (Eg surveyors, architects)
B1.g	Re-Registration of OR-CDL	Renew the registration of a OR-CDL
B1.h	Update personal information (OR-CDL)	Update personal information changes to a OR-CDL profile by the OR-CDL
B1.i	Process Inaccurate Documents	To handle any documents submitted by the OR-CDL which do not comply with the standards set by the LA.

11.2.6. Process B2 – Evaluate applications

11.2.6.1. After accepting a validated application from the citizen, the application is evaluated with the objective of issuing a temporary license/certificate. If the certificate/license cannot be issued right-away, further required actions are taken in order to issue one. If a certificate/license cannot be issued at all, the applicant is informed of the rejection. The applicant may submit amendments to the application for reconsideration.

11.2.6.2. Use Cases of Process B2

B2 Evaluating Applications		
B2.a	Evaluate applications	To superimpose the information received from the applicant onto the GIS System on the LA and ensure it conforms to the rules specified by the LA.
B2.b	Inspect site	Site visit to inspect the location
B2.c	Evaluate Applications Pending Temporary Approval	Evaluating applications after obtaining additional information
B2.d	Receive additional documents	Obtain additional documentation from the citizen in order to process the application.
B2.e	Finalize temp license/certificate	Prepare application for submission to the committee
B2.f	Finalize application	Obtain committee decision on the application (approval or rejection)

### 11.2.7. Process B3 – Amendments to the applications

11.2.7.1. In case the application is rejected (in B2), the applicant has to options in modifying the application

- Appeal against the rejection
- Re-submit the application with new (and corrected) information. In this instance, the application is considered as a new application. However, the system must maintain a reference to the original application as well.

11.2.7.2. Use Cases of Process B3

B3 Amendments to the Application		
B3.a	Modify the Application	Where the citizen studies the response received from the LA and plans the next course of action
B3.b	Appeal against rejection	To process the ‘Application Rejection Appeal’ form submitted by the citizen, in order to initiate the appeal process

B3.c	Return documents	To process the 'Request to Release the Original Documents' form submitted by the citizen in order to return the original documents submitted back to him/her.
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#### 11.2.8. Process B4 – Issue of License/Certificate

- 11.2.8.1. This is the process for issuing the real license/certificate, which replaces the temporary license/certificate already issued. OR-ILC (Officer Responsible for Issue of License/Certificate) is permitted to print the final certificate only if the related information in Process A is updated and confirmed. This is a mandatory requirement in order to maintain consistency of information between the two modules.
- 11.2.8.2. In addition, the same process handles the informing of temporary license/certificate rejection notice and appeal rejection notice. The applicant is asked to return the temporary license (if any)
- 11.2.8.3. Use Cases of Process B4

B4 Issuing of Licence/ Certificate		
B4.a	Issue final certificate/license	Issuing of the final certificate in place of the temporary one
B4.b	Issue temp license/certificate rejection notice	To issue the committee decision to not issue a final certificate/license to the citizen and cancelling the temporary one already issued
B4.c	Issue appeal rejection notice	To issue the committee decision to reject the appeal made by the citizen, against the rejection of the application.

## 12. Reports

- 12.1. The consultant shall provide the below mentioned reports of each process. However this is not a complete list and the consultant is required to validate these during the Requirement Validation phase.

#### 12.1.1. Process A Standard Reports

#	Report Name	Report Description
1	List of captured Assessed properties	This is used to verify the captured data against the manual Assessment Registers

2	Assessment Notice	This provides details of the Assessment Tax payable for the following cycle. A section of the Assessment Notice should also include the details of arrears and the penalties applicable for each default payment. This must be available for bulk printing (at the beginning of the year) as well as individual printing (after a sub-division etc).
3	Mass Rate Valuation exception report	<p>This is a report generated after uploading Mass Rate Valuations received from the Department of Valuation. The report must contain the following.</p> <ol style="list-style-type: none"> <li>a. Any unauthorized building that have been constructed during the period. (e.g., A property classified as Land Only is now classified as Land &amp; Building or changes in floor area).</li> <li>b. Differences in Ownership between the existing database and the new information received as well as changes in address of the owner and NIC Number of the Owner.</li> <li>c. Changes in the usage of the Property (e.g., a Residential property being used for Business purposes, etc.).</li> <li>d. Changes in Assessment Numbers between the existing database and the new information received.</li> </ol>
4	Notice of Other Tax Payable	After setting up a new Other Regular Tax, the system needs to print this report for each instance. This will be generated based on the Rules applicable for assessment defined by the LAA
5	Unpaid Assessment List (and Instructions to TC)	A report containing the amounts due for the current year, arrears (if any) and penalties (if any) for each assessment number is to be printed in TC order. Note: If the Assessment Notice was returned, this should also be indicated on the list
6	Reminder Letters	Reminders are generated based on the oldest payment in default and sent to the citizen.

		Annexure AA2.2 lists the types of Reminders and their relevant formats
7	Registered Mail List	a list of items to be mailed under Registered Post as per Post Office requirement
8	List of Undelivered Letters with Arrears	A report listing the letters (Reminders) returned due to non-delivery
9	Red Notice	This is to be generated for citizens who have been sent three reminders and yet the outstanding tax amount is greater than the minimum allowable outstanding limit
10	TC Arrears Report	a listing of properties with payments in arrears
11	Warrant Issue Report	This report is generated for properties which require Detaining Action.
12	Warrant	The letter informing the citizen that detaining action is being taken due to non-payment of Assessment Tax
13	DO Warrant Report	Warrant Report
14	Listing of the Properties to be Detained	Properties to be detained
15	Listing of Monies Collected at Point of Detaining	A listing of monies collected by the DO at the time of detaining
16	Detained Property Listing	A report generated by OR-SA after accepting the detained properties into the store
17	Receipt	Standard receipt issued after receiving money by the OR-MA, from auctioning detained property
18	Reminder of Non-Payment of Other Regular Income	A report generated periodically by the OR-ORI, for each defaulter. This must be generated only for the payments which have passed the grace period. It must contain an additional period before the agreement is cancelled
19	Notice of Cancellation of Agreement	A report which is generate if the relevant Other Regular Income payment is overdue and the money is not received within the period specified in the Reminder
20	Council Approval for Cancellation of Agreement List	A list of agreements to be cancelled that is generated one week before the Council Meeting by the OR-CM.
21	Cancellation of Agreement	The letter of cancellation of agreement issued to the party to the agreement. This letter must allow a period to effect the payment

22	Cancellation of Agreement Status report	This is a status report submitted to the Council Meeting, containing the current status of the action plan for cancelling agreements
23	Reminder for Renewing License/Certificate	This letter must be printed for each of the licenses/certificates that are due for renewal within the following month.
24	Notice of Cancellation of License	This letter is generated if the license/certificate is not renewed within the period specified in the reminder above
25	Cancellation of Licenses/Certificates report	A report submitted to the Council Meeting on a monthly basis, giving the status of the action taken with regard to each license/certificate marked for cancellation
26	Notice of Legal Action	A letter generated for each property, which has been marked for Legal Action due to defaulting in paying Assessment Tax
27	Statement for Legal Action	A report generated as required for legal proceedings
28	Listing of Court Cases for Today	A list of court cases that are being heard for a given date
29	Collection due by Court Order Statement	Collections
30	<Need to be validated by the consultant>	Other necessary documents to inform the court that the LAs will be proceeding with the necessary action to vest the property in the name of the LAs and to recover the monies. The exact requirement must be validated by the consultant
31	Payment Instruction	A slip containing the details of payment (payment reference number, amounts due etc)
32	Receipt	Receipt issued after receiving monies from the citizen. All details regarding the payment made must be displayed. Facility to capture and print a remark must also be present
33	LAs Tax Collector Agreement	A document generated from a template with necessary text customized. This will be generated at the time registering a Tax Collector
34	LAs Tax Collector Identity Card	This requirement must be validated during the requirement validation stage as to the exact method
35	TC Visit Schedule	A schedule showing the Wards to be visited by the TC and the frequency (eg. Daily, weekly etc)

36	Statement of Dues to LAs	Generated per TC showing the overdue payments that are to be collected as of a given date.
37	Receipt issued by TC	a receipt generated and printed via the Mobile Device indicating the amount received and other details
38	Summary of the Monies Collected by TC	A report generated (per TC) on synchronizing the PDA with the LA System, after completing a visit
39	Confirmation of information updated on the System@LAA	A report generated (per TC) on synchronizing the PDA with the LA System, after completing a visit. This contains information verified by the TC during the visit as well as the commission applicable to each TC
40	Commission due to TC	A monthly report showing the commission due to each TC
41	Monies Due through Lanka Gate	A report generated on a regular basis, categorized by credit card payment and mobile payments (by each provider)
42	Summary of Daily Collections	A daily report showing the monies collected during a specific day for each vote (sub-account). This report should indicate the summary for the different types of collections separately as well as a total
43	Summary of Amounts Debited to Accounts	A daily report indicating all the monies that have been debited to the various accounts (e.g., warrant costs, legal costs, assessment taxes falling due, other costs, etc. – which have to be accounted on an accrual basis). The report should indicate a summary of all the debits in a manner that it could be taken into the accounts conveniently
44	<Need to be validated by the consultant>	Monthly Statements on Income and accruals as required by the Accounts Division
45	<Need to be validated by the consultant>	The LA System should generate daily, weekly, monthly and annual management reports related to collections, arrears and defaults as may be specified by the LA
46	Appeal Acknowledgement	An acknowledgement printed for appeals that satisfy the validation rules
47	Unreasonable Assessment Appeal Report	A summary of appeals received against unreasonable assessment for a given Assessment year

48	Interview Letter to Owner	Letter generated from a template to request the citizen who lodged the appeal to appear for the interview. The venue, date and time must be stated in this letter.
49	Confirmation of Valuation Letter	Letter generated from a template to inform the citizen who lodged the appeal, indicating the revised valuation
50	Appeal against Paying Assessment Tax	This is a printed output of the captured appeal against paying Assessment Tax.
51	Appeal lodgement confirmation	generate a document indicating the Reference Number of the Appeal, which is handed over to the Citizen, after lodging the appeal into the system
52	Appeal against Paying Assessment Tax Acknowledgement	
53	Outstanding Documents to Process Appeal	A listing of additional/outstanding documents to be submitted by the citizen in order to process the appeal against paying Assessment Tax
54	Council Appraisal for Assessment Tax Appeal	A council paper for each appeal against paying Assessment Tax. It should indicate the current outstanding amounts against the specific assessment.
55	Accounting Entries	A list generated after the council decision is given. This is used to update the accounting system
56	Appeal Finalization Letter	Letter sent to the citizen informing of the final decision about the appeal made
57	Appeal against Paying Other Revenue Due to the LAs Acknowledgement	Acknowledgement printed after receiving an appeal against paying Other Revenue Due
58	Outstanding Documents to Process Appeal	Similar to above report number 53. However, this applies to Appeal against Paying Other Revenue Due to the LAs
59	Council Appraisal for Other Revenue Due to the LAs Appeal	Similar to above report number 54. However, this applies to Appeal against Paying Other Revenue Due to the LAs
60	Accounting Entries	A list generated after the council decision is given regarding Appeal against Paying Other Revenue Due to the LAs. This is used to update the accounting system

61	Appeal Finalization Letter	Letter sent to the citizen informing of the final decision about the Appeal against Paying Other Revenue Due to the LAs
62	Notice of Expiration for Contract	A notice generated from a template for agreements that have not been renewed one month before its expiry

### 12.1.2. Process A Stretch Goal Reports

#	Stretch Goal	Report Description
1	To ensure all notice of regular income are received by the public by 1st January	For each Assessment year, a list of Notices Regular Income, which have NOT been received by the property owner/tenant by 1 <sup>st</sup> of January. There must be a summary (at the end of the report) showing the properties as a percentage of the total number of properties for the group/filter. The report must be grouped/filtered by type of notice (eg Assessment Notice, Rental Agreement etc). Optionally, the report must be further grouped/filtered by Ward.
2	To provide information on the monies payable to the citizens immediately upon request – when visiting LAs or through internet	A report of the properties which are WITHOUT their Regular Income (eg Assessment Tax) position up-to-date. There must be a summary (at the end of the report) showing the properties as a percentage of the total number of properties for the group/filter. The report must be grouped/filtered by type of Regular Income (eg Assessment Notice, Rental Agreement etc). Optionally, the report must be further grouped/filtered by Ward.
3	Provide multiple modes of payment	A summary report of summary of revenue received by all modes of payment for a given period. The report must be grouped/filtered by type of Regular Income
4	Ensure action against defaulters is initiated within defined time frames	A report of default payments which have exceeded the grace period and for which no action has been taken within a defined time frame. (Note: both the grace period and deadline for recovery action is to be specified at the time when the Regular Income is defined

5	Information in the database is 100% complete, current and accurate	<p>1. A list of properties where information is</p> <ul style="list-style-type: none"> <li>a. Missing</li> <li>b. Not verified for a specified period (say 1 year)</li> </ul> <p>There must be a summary (at the end of the report) showing the properties as a percentage of the total number of properties for the group/filter. The report must be grouped/filtered by Ward</p>
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### 12.1.3. Process B Standard Reports

#	Report Name	Report Description
1	Application form	This must be generated after the citizen specifying his/her need. The application may contain a request for one or more certificates/licenses. The generated application must be sent to the citizen as a PDF
2	Validation Report	a list of issues with the application, identified using validation rules
3	Application Acknowledgement	An acknowledgement slip generated after validating the application
4	Documents Accepted Note	A listing generated by the system as confirmation of receiving supporting documents (Eg survey plan) from the citizen
5	Payment Instruction	A notice specifying the payment details with regard to processing the application(s). it is necessary to print a bar-code on this to identify the related application.
6	Receipt	Generated after payment is received from the citizen. This must contain all payment related details, balance payable (if any) and the application reference.
7	Detailed Daily Collection Report	A report listing details of all the monies collected for the day
8	Summary of Daily Collections Report	A summary of above report. This report must indicate the specific account numbers or votes to which the monies have to be credited
9	Listing of Cheques not yet Banked	This is a listing sent to the bank along with the cheques to be deposited on the specified day.
10	Daily Collection for Accounts Report	This will be used to update the accounts of the LAs. This report should also include monies received through the banks as well as Credit Card Payments paid through the Lanka Government Payment Gateway (LGPS).

11	Returned Cheque Notice	Notice generated from a template informing the citizen that the cheque submitted for payment has returned. All information on the Payment Instruction (item 5) must be available on this so that this can be used as a future Payment Instruction.
12	Daily Receipts through Credit Cards	This is a listing of Daily Receipts through Credit Card (similar to the cash collection reports) and Statements for Dues from Credit Card Companies.
13	Notice of Registration	Notice generated from a template if the OR-CDL satisfies the requirements. The notice may differ for each type of OR-CDL.
14	Notice of Withdrawal of Registration	This is generated from a template, if the OR-CDL wishes to cancel the registration. The format must be finalized during requirement validation.
15	Re-Registration Reminder Notice	This is generated for OR-CDL registrations which will expire within the following month. In addition, the same details must be sent to the OR-CDL via email
16	Application Temporary Approval Notice	Notice generated from a template if the application is given temporary approval. Any conditions to be satisfied must also be printed in this notice.
17	Application Approval Rejection Notice	Notice generated from a template if the application cannot be given temporary approval. A list of documents being returned must also be included
18	Additional Documents Required Letter	A letter sent to citizen requesting additional documents in order to process the application.
19	Document Acknowledgement	Slip generated acknowledging the receipt of additional documents. This is signed and handed over to the citizen
20	Committee Recommendation Report	A report generated for each application, which includes site visit observations and temporary approval information. Formats may differ for each type of application. This is submitted to the weekly committee meeting in order to finalize the application.
21	Appeal Acknowledgement	A slip acknowledging that the appeal against rejection of an application has been lodged into the system.
22	Committee Meeting Report for Appeals	A report for each appeal generated through the System and submitted to the relevant committee meeting
23	Listing of Accepted Documents	A listing generated when the citizen requests to return the submitted supporting documents. Application reference number must be used to extract this list. In addition, the data must be searchable using the NIC number and Name of citizen.

24	Document Returned Note	A listing of documents that were actually returned to the citizen on request.
25	Final Certificate/License	This is the finalized certificate/license issued after finalization of the application. All templates are listed in the annexure.
26	Temporary License/Certificate Rejection Notice	This is to revoke the temporary license/certificate issued to the citizen. Must be generated using the application reference number or by the certificate/license number or by the assessment number. All templates are listed in the annexure.
27	Appeal Rejection Notice	This notice generated if the committee decides to reject an appeal against the rejection of an application. All templates are listed in the annexure.

#### 12.1.4. Process B Stretch Goal Reports

#	Stretch Goal	Report Description
1	Ability to apply for multiple transactions in single application	-
2	To receive applications and give immediate conditional approval for construction	A report on applications for which immediate conditional approval has been given. This report must be grouped/filtered by type of application and filtered for a specified period. The number of such applications must be shown as a percentage of total applications approved
3	Issue of final license within 7 days	A report on the number of final licenses issued within 7 days of application. Further, it should show a summary of processing time taken (eg less than 7 days, between 8 and 14, between 15 and 21 etc)

### 13. Common Services (Support Functions) Requirements

- 13.1. This section defines a set of common services which are not directly business related. For example, work-flow management and document scanning is almost totally removed from the business such that, they are logically located in the lower layers of the architecture.
- 13.2. The successful consultant would be given the details of the definition of these functions.

- 13.2.1. Manage digital documents
  - 13.2.1.1. This section discusses a list of generic services required to manage digitized documents (eg scanned building plans, digital photographs, digital maps etc).
  - 13.2.1.2. System must be able to attach any digital content to business objects (eg applications, licenses). One business object may have zero, one or more digital documents. Each digital document must be uniquely identified. In addition, there must be provision for entering meta-data (eg. as key-value pairs) for each digital document (for example, capturing the date of issue for a NIC)
  - 13.2.1.3. The content must be stored within the system as a BLOB. However, this document discusses the management of digital content only at service level.
    - 13.2.1.4. Relevant Services:
      - 13.2.1.4.1. Scan a new document
      - 13.2.1.4.2. Retrieve a digitized document
      - 13.2.1.4.3. Remove a digitized document
      - 13.2.1.4.4. Replace a digitized document
      - 13.2.1.4.5. Upload a digitized document
      - 13.2.1.4.6. Generate digital hash for a digital document
      - 13.2.1.4.7. Verify digital hash for a digitized document
      - 13.2.1.4.8. Email a digital document
- 13.2.2. Workflow Management
  - 13.2.2.1. All functions required to process work-flow related tasks are listed in this section. It is recommended that industry standard work-flow management software is used.
  - 13.2.2.2. The consultant should select suitable work-flow management software – preferably open source. The selection of the work-flow management software is crucial as this would be orchestrating the business services as well as provides other work-flow related activities as well.
    - 13.2.2.3. Relevant Services:
      - 13.2.2.3.1. Route a work item
      - 13.2.2.3.2. Track progress on a task
      - 13.2.2.3.3. Assign a task
      - 13.2.2.3.4. Refer a task
      - 13.2.2.3.5. Escalate a task
- 13.2.3. Synchronization Functions
  - 13.2.3.1. This section shows a basic list of synchronization services required for the system. A detailed technical design must be provided by the consultant. The objective of this section is to describe the basic requirement. Actual implementation will depend on the technical

architecture adopted by the consultant as well as the equipment that are used.

13.2.3.2. Relevant Services

- 13.2.3.2.1. Export information for field visits to a mobile service
- 13.2.3.2.2. Import information from a field visit from a mobile service
- 13.2.3.2.3. Upload geo coordinates from the GPS device
- 13.2.3.2.4. Upload digital photographs from the digital camera
- 13.2.3.2.5. Synchronize the data between branch/satellite offices
- 13.2.3.2.6. Search citizen contact information on eGN
- 13.2.3.2.7. Search citizen contact information on SLUDI / National Digital ID
- 13.2.3.2.8. Receive payment from Lanka Gate

13.2.4. Printing and Tracking

13.2.4.1. This section details out the Data Output and Tracking functions.

13.2.4.2. Relevant Services (Data Output)

- 13.2.4.2.1. Printing Documents
- 13.2.4.2.2. Track Document posting/mailing/delivery
- 13.2.4.2.3. Generate and Submit EDM (Electronic Data Messaging)
- 13.2.4.2.4. Process EDM
- 13.2.4.2.5. Generate and send SMS
- 13.2.4.2.6. Receive SMS
- 13.2.4.2.7. Generate and send email
- 13.2.4.2.8. Receive email
- 13.2.4.2.9. Scan bar-code

13.2.4.3. Relevant Services (Data Access Functions)

- 13.2.4.3.1. Retrieve Record
- 13.2.4.3.2. Save Record

13.2.4.4. Relevant Services (Operational Data Access Control)

- 13.2.4.4.1. Grant Ownership
- 13.2.4.4.2. Take Ownership
- 13.2.4.4.3. Offline updates
- 13.2.4.4.4. Request updated information
- 13.2.4.4.5. Respond to request for information
- 13.2.4.4.6. Apply an update to information
- 13.2.4.4.7. Identify active DB location for a data item
- 13.2.4.4.8. Request Ownership

13.2.5. Alerting Functions

13.2.5.1. Alerting services should be activated as background or scheduled jobs, and be executed regularly in order to identify events requiring alerts. If a specific alerting service is re-run or executed at frequent intervals, it should avoid generating repeated alerts for the same event. The frequency for repeating alerts (if required), should be specified in the alert event specification.

13.2.5.2. An alert may be a general rule-based Reminder, Warning or an Escalation. These alerts can be based on workflow execution and task-related conditions, or based on the status of a Data Item, and related conditions. An event or error detected by another service can trigger a

Notification alert. The following should also be identified for each alert-event.

- 13.2.5.2.1. Method of reminder – It could be via email, or an alert when logging into the system etc. Personal preferences should also be considered when determining the method.
- 13.2.5.2.2. Reminder / Escalation threshold: This must defined for each event
- 13.2.5.2.3. Frequency for repeating alerts: Last Alert sent should be “remembered”, to support this feature.
- 13.2.5.2.4. Recipient: This could depend on the specific Activated-task, the generic Task or the related Work-item and/or Data-item. Where the recipient is not associated directly with the task or item, it may need to be determined based on Security and Access settings.
- 13.2.5.2.5. Method of identifying alert event: eg. Preliminary data collection for a given property is not completed by the estimated date of completion. In such a case, a warning is generated (say) a day before the estimated date of completion and an alert is generated after the estimated date of completion.
- 13.2.5.3. Alerts generated should be logged.
- 13.2.5.4. If there are multiple alerts for the same user, they should be grouped into one alert, for each type of alert. (Reminders, Warnings, Escalations and Notifications). Duplicate alerts should be avoided. Duplicates may occur when alert thresholds coincide, or when the same event triggers different types of alerts.
- 13.2.5.5. Relevant Services:
  - 13.2.5.5.1. Warning on delayed tasks or workflows
  - 13.2.5.5.2. Escalation of tasks and workflows
  - 13.2.5.5.3. Escalation on non-action items
  - 13.2.5.5.4. Event notifications

### **13.2.6. Document Templates**

- 13.2.6.1. Templates can be created through any industry standard word processor. Optionally, a third-party report template generator may be used.
- 13.2.6.2. The templates must be lodged within the System. These can be uploaded and stored in the DB, or may be stored externally as files, and made available to the system on request. The system must contain a list of the approved templates, with a title, and description. It is necessary for the MLG to update the list of templates, and also link them to various functions in order to restrict their use, or guide users when producing documents.
- 13.2.6.3. The system should also be able to open the template, using the appropriate software, in order to generate a new document.
- 13.2.6.4. Relevant Services:
  - 13.2.6.4.1. Managing Document Templates
  - 13.2.6.4.2. View/List templates
  - 13.2.6.4.3. Generate documents using templates

### 13.2.7. Reference Information

- 13.2.7.1. Reference data must be coded and maintained. Reference items should not be deleted once used.
- 13.2.7.2. However, facilities for modification must be available, to make corrections if necessary.
- 13.2.7.3. Descriptions and other information must be entered in all 3 languages. Where codes are alphanumeric, the primary code will be English. Where the alpha characters are meaningful, it may be necessary to provide translations for the codes as well. However, translated codes would be information only. Though the translated codes must be unique, they will not be the primary identifying code used by the system

### 13.2.8. Information Dissemination

- 13.2.8.1. Information and statistics regarding the valuations must be available to all relevant users.
  - 13.2.8.1.1. Public information:
  - 13.2.8.1.2. General inquiries on procedures, application forms, complaints & grievances, relevant legislation etc.
  - 13.2.8.1.3. Status of applications submitted
  - 13.2.8.1.4. Forms: Download or print relevant forms, along with instructions.
  - 13.2.8.1.5. Contact information relating to valuation inquiries
  - 13.2.8.1.6. List of registered Surveyors, architects etc in the region
  - 13.2.8.1.7. Statistics (if applicable)
- 13.2.8.2. This information is expected to be made available via the LA web site, and content or services may be required from the System.
- 13.2.8.3. The suggested methods of exposing information are as follows:
  - 13.2.8.3.1. As a Portlet via the Citizens' Portal
  - 13.2.8.3.2. Directly from LA web site as interactive content (graphical or textual)
  - 13.2.8.3.3. As static content (static web pages or downloadable content)
- 13.2.8.4. Kindly note that the above list is not an exhaustive one. Consultant may suggest further methods for the Public to obtain information from the LA.
- 13.2.8.5. The consultant is required to develop the web-services required to provide such public access. Any such web-services must strictly adhere to SOA principles as well as NEA and LIFe standards defined by the ICTA.
- 13.2.8.6. Public interfaces used to provide this information must be user friendly, interactive and intuitive. Searching for information must use interactive and intuitive.

13.2.9. Generate Statistics  
 13.2.9.1. Statistical information is required to monitor operations, performance and load. The format and analysis may change over time. The following types of statistics should be included.

- 13.2.9.1.1. Usage: hits, analysed by types of users (roles), location, and type of information retrieved.
- 13.2.9.1.2. Workflow: Number of Activated workflows during a given period, average action time. This may be analysed by task or domain.
- 13.2.9.1.3. Operations: Analysis by type of transactions, value (if applicable), volume
- 13.2.9.1.4. The MLG or ICTA may require more statistics and the consultant needs to validate this before proceeding.

13.2.9.2. Statistics should be generated and stored in a form which facilitates quick retrieval of regular reports, without requiring retrieval and analysis of all data each time. It should also be possible to re-compute the statistics for a specific period, if the monitoring indicators are changed, or new indicators are introduced. The regular generation of statistics would need to be a scheduled process. It should be possible to extract statistical data for further analysis to support publication of the annual statistics report and other ad hoc reports.

- 13.2.10. MIS Reporting
- 13.2.10.1. Reports are required by the management in order to monitor, and to make operational and strategic decisions. The format and analysis may change over time, and it should be possible to create new reports.
  - 13.2.10.2. Incorporating a user friendly reporting tool is highly recommended.
  - 13.2.10.3. Consultant must keep provision for providing MIS reports based on the requirement of the LA.

**Format to be used to specify the technical solution/approach to the Business/Technical Requirements given in Section 10.**

**NOTE: All the requirements in Section 10 should have the required details given in the below format separately.**

For e.g.

Section No/ Req. No.	Business/ Technical Requirement (heading/sub heading only is sufficient):
Consultants' technical solution/approach devised for the requirement with reasons:	

14. Service Oriented Approach principles

14.1. The consultant must comply with the following SOA principles which ICTA would be following during the life cycle of the project.

14.1.1. Services have well-defined interfaces and policies

14.1.2. Services represent the business domain (ability to model the domain)

14.1.3. Services have a modular design (impact on swap ability and reusability)

14.1.4. Services are loosely coupled

14.1.5. Overall services identification and categorization, provisioning and delivery, monitoring and tracking

15. Review Committees and Review Procedures:

15.1. The Consultant will be required to work closely with the ICTA Technology Team. The Consultant's work will be continuously reviewed by the ICTA Technology Team through the continuous build automation and metric analysis system. Consultant shall maintain all source code in a repository designated by ICTA in order to carry out the continuous build automation process and the metric analysis.

15.2. In addition, all versions of the documents prepared by the Consultant will be reviewed by the designated SQA consultant.

15.3. All documents and Deliverables shall be maintained in a document repository designated by ICTA.

15.4. All the source code should be maintained in the ICTA source code repository (GIT).

1.

16. Services and Facilities Provided by ICTA:

16.1. Sufficient document repository and source repository storage space

16.2. Web-based access to the ICTA source code repository

16.3. The GPR study documents and detail system study specifications would be provided to the selected consultant.

17. Deliverables

17.1. The following are the proposed high level deliverables expected from this consultancy assignment. The details would be shared with the potential consultants for this procurement. [DH2]

17.2. Acceptance Criteria would be decided by ICTA in line with the indexes and would be communicated to the successful consultant during the execution of the project based on the framework developed by ICTA.

17.3. Deliverable Schedule [DH3]

No	Deliverables	Duration
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1	Acceptance of the followings;	Commencement Date + 2 weeks
	1. Detailed Project Management Plan (Using the RUP Templates) , Wire-Frames	
	2. Requirement Verification Report (with the Requirement Clarity Index) Master Test Plan and Performance Test Plan	
2	Acceptance of the following;	Commencement Date + 6 weeks
	3. Detailed Software Technical Design (DSTD)	
	2. User Interface standard	
	4. Detailed Software Requirement Specification with Hi-Fidelity Prototypes	
	5. Data migration and integration plan 6. Release Management plan (including staging, production and support, and maintenance)	
3	Acceptance of the following	Commencement Date + 14 weeks
	2. Test cases and test scenarios of the first iteration	
	4. Deployed and working version of First iteration	
	1. QA Release Notes 2. Test cases and Test scenarios of the second iteration 3. Proper maintenance of source code in SCM	
4	Acceptance of the following;	Commencement Date + 22 weeks
	1. Deployed and working version of Second iteration	
	2. QA Release Notes	
	3. Test cases and test scenarios of the third iteration Proper maintenance of source code in SCM	
5	Acceptance of the following;	Commencement Date + 30 weeks
	1. Deployed and working version of Third iteration 2. Completion of all the 4 processes and deployed (working version) Proper maintenance of source code in SCM QA Release Notes	

6	Acceptance of the following; Completion of Training on the Integrated solution (Draft user manuals should be given to the users to the check against the functionality of the system)	Commencement Date + 34 weeks
7	* Acceptance of the following;	Commencement Date + 38 weeks
	1. Operational Acceptance Testing (OAT)	
	2. User Acceptance Testing (UAT)	
	3. Transition and Exit Management plan 4. Solutions installation guides	
8	Acceptance of the following;	Commencement Date + 40 weeks
	1. User Manuals/Admin Manuals	
	2. Deployment of integrated solution in the Production environment with the pilot sites connected	
9	Maintenance and Software Support	Operational Acceptance + 3 years

Operational acceptance shall be given after 3 months of successful operations in the production environment

## 7 Minimum Qualifications of key professional staff

The consultant shall give the team of professionals with the curriculum vitae and the team organization.

### 5.1 Development Team

	Key Professional Staff	Academic & Professional	Experience in the PROPOSED ROLE	Experience in working in SOA / web services / integration projects	Exposure SQA Process	Specific Qualifications/ Requirements
a)	Project Manager	M. BA. And Professional Certification in	8 years	6 years	6 years	Enterprise Application, Experience in

		Project Management				government related projects.
b)	Software Architect	M. Sc. or equivalent	5 years	5 years	5 years	Enterprise Application Development, Microservices, Docker based deployment, Hybrid Mobile Application Development
c)	Technical Lead	M. Sc. or equivalent	3 years	3 years	3 years	Enterprise Application Development, Microservices, Docker based deployment, Hybrid Mobile Application Development
d)	Senior Software Engineer	B. Sc. or equivalent	3 years	3 years	3 years	Enterprise Application Development, Microservices, Docker based deployment, Hybrid Mobile Application Development
e)	Senior Business Analyst	M. BA. or equivalent	5 years	3 years	3 years	Enterprise Application, Experience in government related projects.
f)	UI/UX Lead	B. Sc. or equivalent	3 years	3 years	3 years	Enterprise Application Development, Wireframing, Prototyping, Hybrid Mobile Application Development
g)	DevOps Engineer	B. Sc. or equivalent	2 years	2 years	2 years	Enterprise Application Deployment, Microservices, Docker based deployment, Continuous Integration, Continuous Deployment
h)	Quality Assurance Lead	M. Sc. or equivalent	3 years	3 years	3 years	Enterprise Application Quality Assurance, Microservices, Automated Testing
i)	Senior Quality Assurance Engineer	B. Sc. or equivalent	3 years	3 years	3 years	Enterprise Application Quality Assurance, Microservices, Automated Testing
j)	Application trainer	B. Sc. or equivalent	3 years	-	-	Enterprise Application Training, Tri-lingual

						(Sinhala, English, Tamil) proficiency
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## 5.2 Support & Maintenance Team

	Key Professional Staff	Academic	Experience in the PROPOSED ROLE	Experience in working in SOA / web services / integration	Exposure SQA Process	Specific Qualifications/ Requirements
a)	Technical Lead	B. Sc. or equivalent	3 years	3 years	3 years	Enterprise Application Maintenance
b)	Senior Software Engineer	B. Sc. or equivalent	3 years	3 years	3 years	Enterprise Application Maintenance

## **NON-FUNCTIONAL REQUIREMENTS**

### **1. SECURITY**

#### 1.1. User authentication and authorization

All applications should be able to access via ICTA's common infrastructure/application itself and independently via respective department's web site if required. Any authorization requirements should be implemented within the specific web/mobile application.

However, the solution should have the provision to integrate with the ICTA's proposed Identity Management solution in future.

An administrative application need to be developed wherever applicable.

Wherever applicable internal small applications need to be developed to capture and store relevant data.

#### 1.2. Confidentiality and Integrity

All developed web/mobile applications should ensure "confidentiality" and "integrity" whenever required by adhering to transport and message level security standards. (i.e.: HTTPS, WS-Security)

#### 1.3. Authentication

The web/mobile application should be able to verify the users.

#### 1.4. Authorization

The web/mobile application should be able to verify that allowed users have access to resources.

#### 1.5. Non-repudiation

All Web/mobile applications should ensure non-repudiation by having standard audit-trails and provisions to have WS-Security using digital signatures.

## 1.6. OWASP Guidelines

All web/mobile applications should ensure that the OWASP guidelines for security are followed when designing, developing and deploying the web/mobile application.

## 2. AUDIT FACILITIES

Wherever applicable, an audit trail of all activities must be maintained. On a service or operation being initiated, the system should log the event, creating a basic 'audit log entry'. It should not be possible for the operation to be executed without the log entry being made. The information recorded in the audit trail depends on the type of activity which takes place. Each service would be responsible for logging detailed information. The different types of operations are -

- Data Capture & Maintenance
- Creation of an entry / item
- Modification an item
- Deletion
- Control (or status change)
- Process execution
- Data synchronization
- Print (only selected item)
- Retrieval
- Monitor

Detail logging may be enabled or disabled for each type of operation, and/or for each business object. It should be possible to configure which attributes of a data item should be traced at the detail level. Tracing of some attributes may be considered mandatory, and they should not be turned off.

## 3. BACKUP AND CONTINGENCY PLANNING

The main contingencies that should be considered and the training with regards to these shall be given to the relevant staff -

- Equipment failure
- Physical / natural Disaster
- Messaging or communication facilities.
- Changes in operations and policy
- Sudden absence of key personnel

- Breach in Security

Automatic Backups daily, weekly *and* monthly should be taken. All the backup procedures and backups needs to be tested regularly for restoration.

#### 4. Performance Testing

Please find the below index as a guide to determine the benchmark values for the Application under the test.

Following performance criteria is provided as a guideline only. If the actual performance is falling below the stipulated figures, the consultant is to justify the reasons. However, the performance level must be accepted by the technical evaluation committee appointed by the client. The bandwidth is assumed at 1mbps (shared) with 1,000 concurrent users (50% load factor) in total.

Item	Performance
Screen Navigation: field-to-field	< 5 milliseconds
Screen Navigation: screen-to-screen	< 3 seconds
Screen Refresh	< 3 seconds
Screen list box, combo box	< 2 seconds
Screen grid – 25 rows, 10 columns	<3 seconds
Report preview – (all reports) – initial page view (if asynchronous)	< 40 seconds in most instances. It is understood that complicated / large volume reports may require a longer period
Simple inquiry – single table, 5 fields, 3 conditions – without screen rendering	< 4 seconds for 100,000 rows
Complex enquiry – multiple joined table (5), 10 fields, 3 conditions – without screen rendering	< 6 seconds for 100,000 rows
Server side validations / computations	< 10 milliseconds
Client side validations / computations	< 1 millisecond
Batch processing (if any) per 100 records	< 120 seconds

Login, authentication, and verification	< 3 seconds
Daily backups (@Dept.) – max duration	1 hour (on-line preferred)
Total Restore (@Dept.) – max duration	4 hours

#### 4.1 Performance Test Process Outputs

- Performance Test Scripts
- Performance Test Results

### **4. 5. USABILITY**

The web/mobile application should be extremely usable, even a greenhorn user should be able to handle the system and incorporate all the functionality of the system in a simple and user friendly interface. The web/mobile application should be internationalized and localized if needed. The web/mobile application should be responsive where it should be viewable on any computing device.

### **5. 6. INTEROPERABILITY**

The web application should be able to view in standard compatible web browsers.

### **6. 7. AVAILABILITY**

The web/mobile application should be performed as follows,

- 99.99% available unless the web/mobile application is designed with expected downtime for activities such as database upgrades and backups.
- Hence to have high availability, the web/mobile application must have low downtime and low recovery time.

### **7. 8. ROBUSTNESS**

The web/mobile application should be able to handle error conditions gracefully, without failure. This includes a tolerance of invalid data, software defects, and unexpected operating conditions.

- Failure Detection
  - Once deployed, there should be appropriate tools to discover anomalies and failures of the system

- Fault Tolerance
  - Web/mobile application developer should anticipate exceptional conditions and develop the system to cope with them. The web/mobile application must be able to use reversion to fall back to a safe mode, meaning, the application should continue its intended functions, possibly at a reduced level, rather than falling completely.

## **8. 9. MAINTAINABILITY**

The code of web/mobile application should be properly documented with appropriate comments and no complex codes (highly cohesive and loosely coupled) to do modifications such as corrections, improvements or adaption.

## **9. 10. COMPLIENCE TO STANDARDS**

The code of web/mobile application should be standardized by following web/mobile standards like W3C and ECMA – European Computer Manufactures Association, to save time, augment the extensibility of the code, increase web/mobile traffic and improve the accessibility and load time of your application.

## **10.11. REUSABILITY**

The web/mobile application should be able to use of existing assets in some form with the software product development process. Assets are products and by-products of the software development life cycle and include code, software components, test suites, design and documentation.

## **11.12. INTERNATIONALIZATION**

The web/mobile application should be able to access in Sinhalese, English and Tamil. The web/mobile application should be able to view in a usable manner in all three languages in any computing device.

## **12.13. API MANAGEMENT**

### **3.1. 13.1. API Standards and Best Practices**

API standards and best practices that *should be adhered* to the code.

## 13.2 API Documentation

- Swagger documentation should be provided.

### **3.2. 13.3. API Security**

The web/mobile application should be used appropriate API security protocol mentioned below.

- Basic API authentication
  - Basic authentication should never be used without TLS (formally known as SSL) encryption as user name and password combination can be easily decoded otherwise.
- OAuth1.0a
  - Uses cryptographic signature value that combines the token secret, nonce, and other request based information. Can be safely used without SSL.
  - Recommend for sensitive data applications
- OAuth2
  - No need to use cryptographic algorithms to create, generate and validate signatures as all the encryption handled by TLS.
  - Recommend for less sensitive data applications
- JWT (JSON Web/mobile Tokens)

## **13.14. SCALABILITY**

The web/mobile application should be both scalable and resilient. A well-designed application should be able to scale seamlessly as demand increases and decreases. It should be resilient enough to withstand the loss of one or more hardware resource.

## **14.15. LEGAL AND LICENSING**

The web/mobile application should comply the national law.

## **15.15. EXTENSIBILITY**

The web/mobile application should be designed and developed in a way that it can cater to future business needs.

## **16.16. TESTABILITY**

The web/mobile application should be designed and developed in a way that testability is high, meaning, the ease of testing a piece of code or functionality, or a provision added in software so that test plans and scripts can be systematically executed. In simple terms, the software should be tested easily with most famous 5 testing categories,

- Unit test
- Integration test
- System test
- Safety test
- Experience test

Refer Aden (2016)'s view on semantic testing for more information.

The web application should be working according to the given criteria in the latest version and 5 versions before in web browsers such as Mozilla Firefox, Google Chrome, Opera, and Apple Safari and the latest version and 2 versions before in Internet Explorer.

## **17.17. NOTES**

- Some of the non-functional requirements shall be excluded based on the project requirement with the approval of the ICTA Technology Team.
- The vendor can propose similar standards/requirements for the above-mentioned standards/requirements with the approval of the ICTA Technology Team.
- The design documents should be based on 4+1 architecture model or the template provided by ICTA.
- If APIs are available (Service Layer) 'API Documentation' should be provided as an annexure to the design document as stated in 'Section 13'.

## **BIBLIOGRAPHY**

1. The White House. *White House Web/mobile API Standards*. Washington, D.C.: git hub.com, 2015. Print.

2. Aden, S. (2016). Semantic Testing. Retrieved August 30, 2017, from <https://semantictesting.org/>