Terms of Reference
Individual Consultant for Management of Core Components of Middleware Infrastructure
ICTA/ GOSL/CON/IC/2019/N01

1. Introduction

1.1. The middleware infrastructure was established by ICTA in order to facilitate the following digital government solutions, consist of several key applications. This include among others, the Lanka Gate, GOV.LK country portal, API Manager, Lanka Government Payment Service and Government SMS solution.

1.2. The above infrastructure facilitates successful operation of a number of key e-Government systems and online services established for government organizations by ICTA.

1.3. Though the above infrastructure was implemented through development projects, it is managed by the ICTA technical team throughout the period.

1.4. In addition to the above, the vehicle revenue license application is one of the key cross-government solutions, which is completely managed by the ICTA technical team.

1.5. Management of the middleware infrastructure and on-time support and maintenance is essential for the successful operation facilitating related e-Government systems and online services where the majority of the above services are now being maintained by the ICTA internal support team.

1.6. Since, much work has already assigned to ICTA support team and to make sure a proper management of the middleware infrastructure, ICTA has decided to outsource an individual consultant to manage these components with support and maintenance. The procurement process has been initiated to select a suitable individual consultant and ICTA is planning to handover the services to the selected party by August 2019.

2. Objective(s) of the Assignment

2.1. Considering the need of proper management of the middleware infrastructure, ICTA decided to obtain the service from an external individual consultant (Technical Expert) to resolve operational issues, complete documentation, carryout enhancements and integrations and transfer the required knowledge when the need arise in identified systems.

2.2. The duration of the assignment is 6 months and the estimated billable effort for the contract during the 6 month period in 330 person hours in total.

3. Scope of Services, Tasks (Components) to be carried out and Expected Deliverables

3.1. Get a clear understanding about the middleware infrastructure and below mentioned components as described in Annex 2 attached.

- Lanka Gate
- GOV.LK country portal
- Lanka Government Payment Service
- Government SMS solution
- e-Revenue License Application
- API Manager

3.2. Review and understand the existing overall architecture and deployment.

3.3. Review and understand business/ technical documents of the relevant components identified for this assignment to determine the overall functional and technical scope of the system.

3.4. Maintain and troubleshoot the above mentioned applications and services frontend citizen application (independent web applications) which is hosted in Lanka Government Cloud (LGC) to be offered through the country portal.

3.5. Maintain and troubleshoot all relevant backend applications, other utilities and respective web services hosted in LGC, which enable department users to perform routine operational and admin tasks.

3.6. The consultant is required to attend the issues, identify new requirements/ enhancements and resolve/ implement them in timely manner.

3.7. Maintain all issues in the Issue tracking system maintained by ICTA.

3.8. Maintain source code in the SVN maintained by ICTA.

3.9. Consultant prior to undertaking the new requirements/ enhancements, both ICTA and the consultant will agree on the high-level time schedule and the effort estimate.

3.10. Work closely with ICTA to ensure to manage and provide support and maintenance to the above mentioned components.

3.11. The consultant should submit a report (Task sheet – Annex 1) monthly with the tasks carried out and the effort in hours. The payment will be made as per the agreed hourly rate upon submitting the monthly invoice.

3.12. Consultant is expected to work 330 person hours during the 6 months period.

3.13. Formulate related documentation, which include technical documents and management reports. And all the documents should be uploaded to the DMS maintained by ICTA.

3.14. At the end of the contract period, the consultant should give a proper knowledge transfer to the team that will nominated by ICTA.

3.15. Provide feedback, communicate effectively in technical terms and on a business level through the contract.

3.16. Adhere to all reporting requirements in accordance with ICTA project management processes.

3.17. Work collaboratively with the Project Managers of respective systems, the Support Team and staff from other key program areas, to deliver the project output efficiently.

4. *Qualification Requirements for the consultant (and any other requirements which will be used for evaluating the consultant)*

4.1. The consultant should possess over 7 years of industry experience with least 5 years of experience functioning as a Senior Technical Position in software development industry.

4.2. Experience in implementing medium to large scale software projects based on Java language.

4.3. Experience and technical proficiency in MySQL in databases

4.4. Experience in implementing project in Cloud Computing environments

4.5. Experience in payment gateway and SMS gateway integration

4.6. Experience in Java, WSO2 ESB, Struts, Hibernate, Spring MVC and WSO2 Governance Registry

4.7. Experience in Government projects

4.8. Bachelor's degree in information technology, computer science or possess an equivalent qualification

5. *Deliverables and Payment Schedule*

5.1. Consultancy is required to submit the following list of deliverables

Deliverables	Timelines	Payment Method
Successful acceptance of the following 1. Task Sheet (with Spent Hours)	Monthly during contract period	Hourly rate as agreed in the contract.

6. *Services and Facilities Provided by ICTA*

6.1. Proper knowledge required for the assignment.

6.2. Access to relevant staging environment and production environment.

6.3. Access to ICTA Issue Tracking System.

6.4. Functional and Technical documents of above mentioned components

6.5. Business rules and business logics related to the above mentioned components

7. *Review Committees and Review Procedures*

7.1.   All deliverables will be reviewed by the ICTA technology team.

CONSULTANT TASK SHEET

Project Name :

Contract No. :

Applicable Month : Eg: Auguest - 2019

Billable Effort : [ ] Person-Hours   Remaining [ ] Person-Hours

#	Date	Component Name	Task Description (Brief)	Hours Spent
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

[ANNEX 2]

OVERALL DETAILS OF CORE COMPONENETS AT ICTA

(a) Introduction to Lanka Gate

As an important component of the e-Sri Lanka initiative, it is envisioned that practically all the eServices and electronic information in Sri Lanka will be delivered via a comprehensive integration platform. This wide collection software infrastructure and systems which is envisioned to be the gateway for electronic information and electronic interactions in Sri Lanka, is generally referred to as the 'Lanka Gate' initiative.

Many eServices will be generated as a result of various projects done at the ICT Agency, such as the Population Registry project, the ePensions project and the Samurdhi Services project. In addition, many other eServices could be generated by government, public and private sector organizations as well as by community groups. Lanka Gate would include a comprehensive collection of infrastructural mechanisms to easily 'plug-in' an eService or to 'compose' a set of eServices in order to generate an composite eService, such that these eServices would be readily and easily available to other applications and portals that comprise Lanka Gate. For this purpose, it is envisioned that the projects within Lanka Gate would be designed to leverage Web 2.0 concepts, open standards and a Service Oriented Architecture (SOA), enabling dynamic, customizable, collaborative and compose-able services via multiple delivery channels.

Thus the collection of software systems that comprise Lanka Gate would collectively provide an *enabling infrastructure for rapid integration and delivery of eServices*, leveraging loosely-coupled architectural principles to encourage the creation of innovative applications, solutions, and business models, communication models, pricing models and service mash-ups by various stakeholders across the country.

The intention is that this architectural blueprint will guide the various software engineering projects that would eventually be integrated into Lanka Gate. Since Lanka Gate will always be in a state of flux with the continuous addition of eServices from new projects, removal of old eServices as well as the generation of new applications, portals or composite eServices via services mash-ups or services composition, it is hoped that this overall architectural blueprint would continue to 'live' as a vision of what the end result should embody. Furthermore, it is expected that the launch of the Lanka Gate initiative will be coupled with the roll-out of a strong SOA Governance Model.
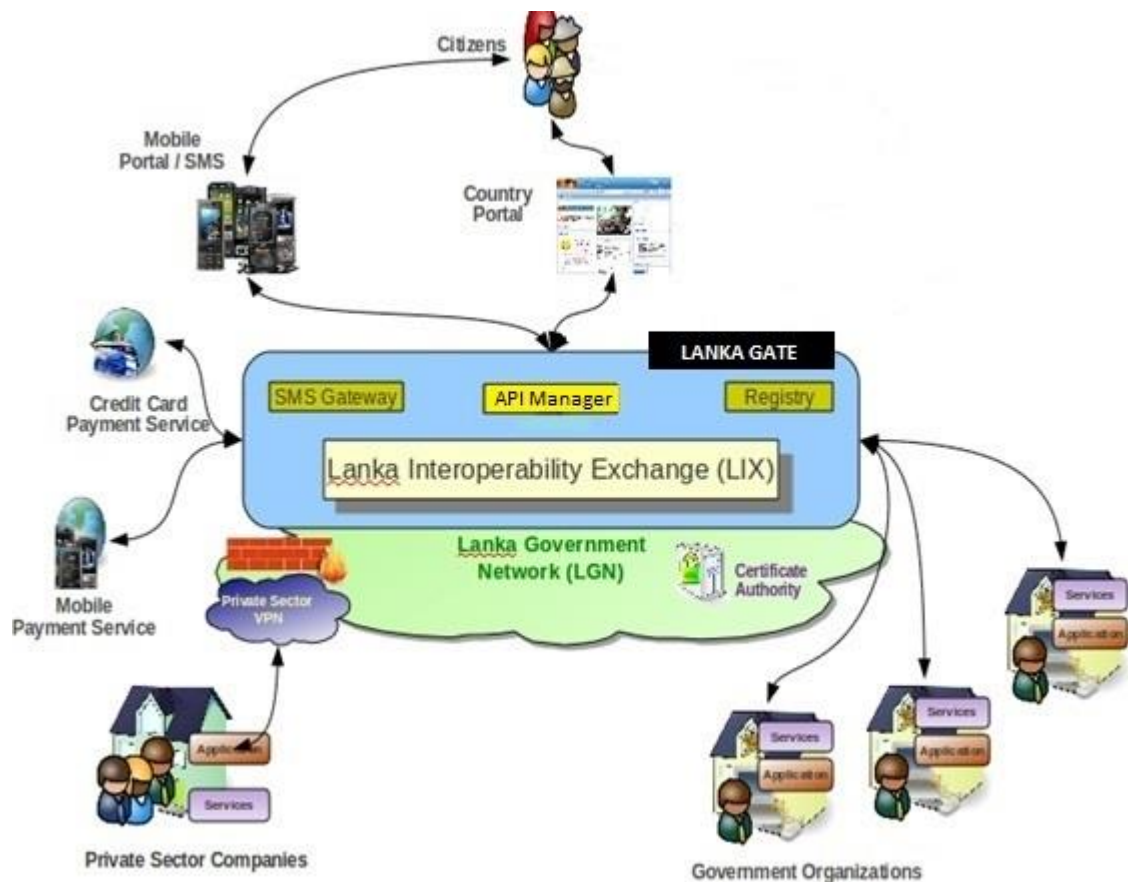
(b) Lanka Gate: The Core Components

Figure 1 – The Conceptual Architecture

The conceptual design shown above in Figure 1 illustrates the loosely-coupled and flexibility of the Lanka Gate infrastructure. It is composed of following core components.

1. Lanka Interoperability Exchange Project (LIX)

The Lanka Interoperability Exchange (LIX) delivers all the interconnectivity and discovery capabilities that services implemented by the various projects need, by facilitating message routing, transport management, transaction management, mediation, transformation, policy enforcement and service discovery. As an example, considering the eGovernment domain, the LIX would provide the fundamental capabilities necessary for government-wide services to efficiently achieve the vision of re-engineering government in Sri Lanka. Likewise, considering the eCommerce domain, the LIX would enable businesses to create revenue-

generating models that would be able to innovatively utilize the infrastructural interconnection capabilities of the LIX to consume the eServices.

LIX is built on top of an Enterprise Service Bus (ESB). It therefore harnesses ESB capabilities such as routing, mediation, messaging, service orchestration and management of eServices and allows the use of a wide range of open protocols and open standards such as JMS, SMTP, XMPP, CORBA, REST and SOAP to connect existing and new systems/services.

In addition to providing message transport related services, the LIX also provides service discovery capabilities and features a collection of important authentication and authorization related eServices that would facilitate business & e-government transactions which require higher levels of security.

Thus the LIX and its associated protocols create an enabling framework that provides a secure, trusted channel through which government, public and private sector organizations may communicate and transfer information amongst each other. The LIX enables organizations to offload common functions such as authentication, authorization and payment, thereby allowing them to focus on business or domain specific functions. By providing such a shared infrastructure reduces the cost of implementation, enabling organizations to rapidly innovate and implement eServices that they otherwise may not even have considered. End users benefit from this shared infrastructure as it drives consistency in the way services are delivered compressing the user adoption and learning curves.

Conceptually, the capabilities offered by LIX are aligned with the enterprise computing notion of *integration-as-a-service (IAAS)* where businesses access a single hub that interconnects all trading partners, facilitated by SOA.

2. GOV.LK

The www.gov.lk serves as a primary web interface that connects users to the eServices provided within the Lanka Gate concept. Thus the GOV.LK is a fundamental access point for citizens, non-citizens, businesses, agents and government employees to various government organizations and businesses in Sri Lanka. The GOV.LK features multiple service delivery channels to accommodate various end user realities.

The GOV.LK project is a container which provide access to eServices Web application which are self-contained front-end interfaces to either a single eService, several eServices from a specific project, or a transactional/mashup combination of eServices across several projects.

The web browser based delivery channel of the GOV.LK features a highly user-friendly, dynamic interface, providing the end-user with the capability to design their own interactive

user experience based on their particular needs and preferences. Most of the Web 2.0 capabilities available in Lanka Gate will be delivered through the web browser based delivery channel.

3. Lanka Government Payment Service (LGPS)

LGPS is a common payment service for all government services. It connects all the payment gateway service providers.

LGPS consists with main 2 components.

1. Common Payment Service
2. Payment reconcile software

The participants are as follows;

1. Merchant – Government Organization who provides the transaction service
2. LGPS – Lanka government payment service

    All the payments gateways will be connected to the Common Payment Service.

3. Payment gateways – including Internet payment gateways as well as mobile.
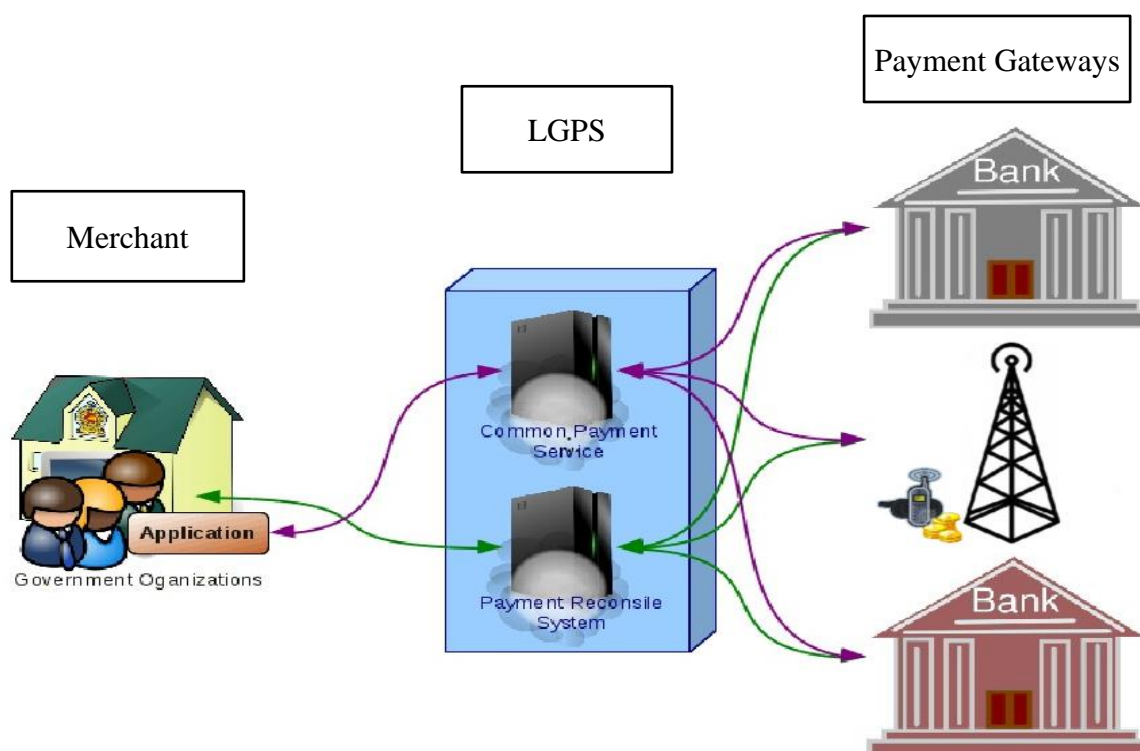
When a merchant connects with LGPS, their customers will be able to do payments using any payment gateway connects via Common Payment Service.

4. SMS Gateway (GovSMS)

A common interface open for mobile service providers to establish in-bound and out-bound Short Messaging Services (SMS) with Lanka Gate architecture. The mobile information and service gateway built as a part of Lanka Gate by ICTA to use the common, short telephone code "1919" should be used by all government organizations for delivery of such information and services.

If the query service in question, is also offered over SMS, the SMS gateway would be able to invoke this same web service, and respond back to the user with the results. Some eServices may allow the user to subscribe to certain events (e.g. change of status, delay of an application etc), at which point, the system should push SMS updated back to the user via the SMS gateway – if the user has specified a mobile number, and requested SMS notifications. When a new SMS is received by the SMS gateway, it will be routed to a SOAP service of the target department, and each department will then have to implement the SMS request processing logic, and optionally response where applicable. Note that unless explicitly specified, all communication through LIX would be SOAP web services calls only.

5. Service Registry

The *service registry* provides the infrastructure to define and manage meta data of the SOA in a well structured manner. Features such as, access control, version management, tagging, linking, searching, and notification, can be utilized in order to implement the "design-time SOA governance".

LIX uses this *service registry* as the configuration store as well as the policy store to read policy information associated to each of the service. This is in combination with the monitoring capability of the LIX to formulate the "runtime SOA governance".

6. API Manager

API Manager is a component that addresses full API lifecycle management, monetization, and policy enforcement. It allows extensibility and customization, and ensures freedom from lock-in. API Manager is a unique open approach to full lifecycle API development, integration and management. As part of the larger Integration Agile Platform, it is a central component used to deploy and manage API-driven ecosystems. It's hybrid integration capabilities further simplify projects that span traditional as well as microservice environments**.**

7. e-Revenue License (eRL)

The e-Revenue License (eRL) initiative is one of the key initiatives of ICTA which was launched in December, 2009 in Western Province. The eRL Solution was the first connected government service and it was also the first government transactional eService offered to the citizens. The e-RL solution consists of a centralized web enabled system used by Divisional Secretariats (DSs) to issue license, and an online service (eService) which enables citizens to renew their licenses by themselves.

There are many stakeholder organizations which are connected and provide connected service through the eRL solution, such as the Provincial Departments of Motor Traffic, Department of Motor Traffic (DMT), Insurance companies, Emission testing companies, Banks and financial organizations etc. By now ICTA has successfully rolled out eRL solution in all the divisional secretariat in the country.