

e-Government Services Plan

A deliverable of the USAID funded EGRC2 Project elaborated by the e-Government Consultancy and Advisory Services Department of the e-Government Directorate

Kabul, April 3 2016 [Public Draft]

Executive summary

The e–Government Services Plan is one of the deliverables of the EGRC2¹ project. Its goal is to help the MCIT² deploy a selection of e-Government citizen centric services that will help MCIT to bring transparency, effectiveness, efficiency and equitable access to the selected public services. E-government services in this plan are:

- Aligned with Afghanistan's e-Government strategy
- Fitting the goals of the EGRC II project
- Relevant for all stakeholders
 - o Citizens
 - o Partner ministries and governmental entities
 - The Ministry of Communication and Information Technology

The approach to be build this plan was participatory, involving most stakeholders or stakeholder's representatives. It builds on success stories and best practices from abroad but mainly, it is grounded on outcomes of previous e-Government related projects and on contributions from Government officials of the Islamic Republic of Afghanistan. The first section (introduction) section adds detail to the description of the goals of this project and sets its context. The second section (approach) provides further insight on the processed leading to the current plan. Section three (outcomes) provides a detailed overview of proposed services. Section four (deployment) sets the temporal landscape for the delivery of the proposed e-Government services and provides a budget grounded on estimated efforts. Finally, the fifth section provides some closing remarks and moreover in the appendix of this plan details regarding the services overall context, functionalities, requirements, expected impact, risk assessment, system architecture, user interface, work plan, team and budget is provided.

¹ The EGRC2 project aims to create capacity within Ministry of Communications and IT to provide timely, high quality advice, training, consulting and other services in the area of e-Government and cyber security to various ministries, departments and agencies of the Government of Afghanistan and donor supported development projects in order to facilitate and optimize application of information and communication technology in the public sector of Afghanistan and to catalyze e-government transformation in the country. ² Ministry of Communications and Information Technology

Abbreviation	Description
EGRC	e-Government Resource Center
MCIT	Ministry of Communications and Information Technology
MolA	Ministry of Interior Affairs
MoF	Ministry of Finance
MoCl	Ministry of Commerce and Industries
ΜοΕ	Ministry of Education
MolC	Ministry of Information and Culture
MAIL	Ministry of Agriculture, Irrigation and Livestock
MoHE	Ministry of Higher Education
MoPH	Ministry of Public Health
MoLSAMD	Ministry of Labor, Social Affairs, Martyrs & Disabled
MoHIA	Ministry of Hajj and Islamic Affairs
IARCSC	Independent Administrative Reform & Civil Service Commission
IDLG	Independent Directorate of Local Governance
SMS	Short messages service
IVR	Interactive voice response
SUS	System Usability Scale
CMS	content management system
WCAG	Web Content Accessibility Guidelines
W3C	World Wide Web Consortium
IP	Internet Protocol
IT	Information Technology
e-GCASD	e-Government Consultancy and Advisory Services Department
EGRC (C)	EGRC's Coordinator
EGRC (CBTU)	EGRC's Capacity Building and Training Unit
e-GC	e-Government Directorate
ANDC	Afghanistan National Data Center
PM	per Month

Acronyms & Glossary

Table of contents

Exe	cutive summary2
Tab	le of contents4
1 1. 1.	Introduction5.1Main stakeholders.2Outreach.5
2	Approach5
3 3 3 3 3 3 3 3 4 4 4 4	Outcomes61Selected services62Target audiences73Legal framework and ownership84Hosting and delivery95Usability and accessibility96Risk assessment107Expected impact12Deployment131Infrastructure132Work plan143Teams and budget14
5	Closing remarks
Арр	endixes
Α	e-Jobs
в	e-Procurement25
С	e-Voice
D	e-Library
Ε	e-Prescription
F	e-Vaccination
G	e-Payment
н	e-Birth75
I .	e-Marketplace
J	E-Hajj92
К	e-Government services assessment 100

1 Introduction

The herein present e-Government Services Plan proposes the deployment of 10 services over a period or three years and it is a deliverable of the EGRC II project.

The plan describes, in detail, the 10 services that EGRC will help ministries and other government agencies to provide to citizens and businesses. The plan includes:

- An overall work plan that reflects the prioritization of the deployment of each e-Government Service; and
- Detailed descriptions of services to be developed, including detailed work plans and budgets.

1.1 Main stakeholders

Apart from the MCIT the major stakeholders are:

- Ministry of Interior Affairs (MoIA)
- Ministry of Finance (MoF)
- Ministry of Commerce and Industries (MoCI)
- Ministry of Education (MoE)
- Ministry of Information and Culture (MoIC)
- Ministry of Agriculture, Irrigation and Livestock (MAIL)
- Ministry of Higher Education (MoHE)
- Ministry of Public Health (MoPH)
- Ministry of Labor, Social Affairs, Martyrs & Disabled (MoLSAMD)
- Ministry of Hajj and Islamic Affairs (MoHIA)
- Independent Administrative Reform & Civil Service Commission (IARCSC)
- Independent Directorate of Local Governance (IDLG)

1.2 Outreach

Outreach was considered in terms of geographic distribution and gender equity. Although detailed provisions regarding these issues are individually described for each of the proposed e-Government Services, the general approach includes:

- A wide range of delivery channels (Web, both desktop and mobile, SMS and IVR interfaces, combined with email, SMS and IVR notifications); and
- Kiosks as public access points, to be deployed in a wide and gender equity aware choice of locations.

Usability and accessibility requirements, together with service dissemination activities are also contemplated in the detailed work plans provided for each e-Government Service.

2 Approach

Designing this plan followed an inclusive and participatory approach, involving most stakeholders or stakeholder's representatives.

The current plan builds on success stories and best practices from abroad but mainly on outcomes of previous e-Government related projects and on contributions from the Government Officials such as:

- H. E. the Minister for Communications an Information Technology;
- The Deputy Minister for Information Technology;
- The e-Government Director; and
- The Information Technology and Innovation Director.

Further, workshops and meetings were held with:

• The EGRC staff and the Chief Information Officers

• Those responsible for projects and activities related to information technology in government ministries and agencies addressed by the proposed services

These were organized to seek input from the widest possible range of interested parties, so that that the design and prioritization of the envisioned e-Government services could address most of the expectation of most of the stakeholders. A final draft of the plan was discussed with representatives of all stakeholders on 3, April, 2016.

The selection and initial design of the proposed e-Government services was informed by this process and not determined had-hoc. In short:

- The initial list contained suggestions resulting from the Afghanistan e-Government Strategy and from successful e-Government initiatives around the world. Then
- The initial set of candidates was shortlisted based on an initial capacity, technical and legal feasibility assessment, and prioritized according to the EGRC II project goals, and
- Finally, ten services were selected after negotiations with the relevant stakeholders.

3 Outcomes

This section introduces the services addressed by this plan and further provides a summary of related issues, such as the services' legal framework and ownership, hosting and delivery details, and usability and accessibility issues. An overview of consideration regarding risk assessment is also provided together with highlights about impact assessment.

3.1 Selected services

As a result of the process described in the previous section, ten e-government services were identified and described. These are:

- e-Jobs A unified channel to select and apply for government employment opportunities.
- e-Procurement A single point of access to all public procurement information
- e-Voice A service that enables citizens to report, read about, or discuss problems with local and central government entities.
- e-Library The purpose of this service is to put the collections managed the National Library of Afghanistan and other libraries affiliated with the MoIC, MoE and MoHE on the fingertips of citizens.
- e-Prescription This is a service that enabling paperless, accurate, and hassle free prescriptions.
- e-Vaccination A service that helps citizens to keep their inoculations on track.
- e-Payment The purpose of this service is to allow legal entities (individuals or organizations) to conveniently pay national or local government fees and taxes.
- e-Birth The main purpose of this service is to allow for official registration and certification of the birth of citizens of the Islamic Republic of Afghanistan.
- e-Marketplace This service aims at stimulating agriculture and related economic activities.
- E-Hajj A service to allow citizens to register and apply for Hajj pilgrimage online, through SMS³ or IVR⁴.

³ Short messages service

⁴ Interactive voice response

These are all citizen centred services and all address, in some way or another, the priorities set by the Government and the goals of EGRC II. Thorough descriptions each service are provided in appendixes A to J.

	Public Health e- Services	Education e-Services	Agriculture e- services	Business/comerce e- services	e-Service Promotion and Marketing	Increased transparency	Anual budgets, budget exection reports	Increased access	Gender equity	m-Government	Tele-centers	Streamlined services	Effeciency
e-Jobs					Х	Х		Х	Х	Х	Х	Х	Х
e-Procurement				Х		Х	Х	Х	Х	Х		Х	Х
e-Voice					Х	Х		Х	Х	Х	Х	Х	Х
e-Library		Х						Х	Х	Х	Х		
e-Prescription	Х					Х		Х	Х	Х		Х	Х
e-Vaccination	Х					Х		Х	Х	Х	Х	Х	Х
e-Payment				Х	Х	Х		Х	Х	Х	Х	Х	Х
e-Birth	Х					Х		Х	Х	Х	Х	Х	Х
e-Marketplace			Х			Х		Х	Х	Х	Х	Х	Х
e-Hajj					Х	Х		Х	Х	Х	Х	Х	Х

Table 1 - Government priorities and EGRC II goals (in grey) addressed in each case

3.2 Target audiences

Citizens are the target audience, nonetheless, the following table clarifies which main and secondary audiences are targeted by the e-government services proposed herein.

_	Main target audience	Other target audiences
e-Jobs	citizens seeking opportunities to serve in the	ministries and other unities of the government,
	government	willing to use this tool
e-Procurement	are private sector operators seeking opportunities to	ministries and other unities of the government, using
	provide goods or deliver services to the government	this tool to announce both calls for tender, and their
		outcomes
e-Voice	citizens willing to engage with both government and	national and local level institutions willing to use this
	community thus contributing to a thriving civil	tool to engage with those they serve
	society, vital to our common welfare	
e-Library	students, teachers, lecturers, scholars, librarians and	
	curators	
e-Prescription	are citizens in general but mainly health care	
	providers and pharmacists	
e-Vaccination	general, health care providers and authorized third	e-Vaccination service administrators
	parties using vaccination records legal purposes	
e-Payment	legal entities (individuals or organizations) paying	
	national or local government fees or taxes and	
	national or local government units collecting fees or	
	taxes	
e-Birth	citizens registering births or requesting birth	e-Birth operators
	certificates, and authorized third parties using birth	
	registration data for legal purposes	
e-Marketplace	suppliers (farmers) and their potential customers	e-Marketplace operators
	which can be other farmers, families and businesses	
e-Hajj	citizens who want to go for the Hajj pilgrimage and	e-Hajj operators
	wish to apply for the same online	

Table 2 - Target audiences per service

3.3 Legal framework and ownership

Legal aspects framing each service are quite diverse. The table bellow provides a general overview while details can be read on appendixes A to J.



Table 3 - Legal aspects framing each service

Further, sometimes the ownership or the management privileges of the envisioned egovernment services are shared. The table below presents this distinguishing ownership [X] and management privileges [m].

	MCIT	MIA	MF	MCI	ME	MIC	MAIL	MHE	МРН	csc	IDLG	MHIA	MLSAMD	Others
e-Jobs	Х	m	m	m	m	m	m	m	m	m	m	m	m	m
e-Procurement	Х	m	m	m	m	m	m	m	m	m	m	m	m	m
e-Voice	Х													m
e-Library					m	Х		m						
e-Prescription									Х					
e-Vaccination									Х					
e-Payment	m	m	Х	m	m	m	m	m	m			m	m	m
e-Birth		Х							Х					
e-Marketplace							Х							
e-Hajj												Х		

Table 4 - Service ownership and management privilege

In general, enabling databases follow the same pattern. The exception being the user authentication and authorization databases, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs.

3.4 Hosting and delivery

As for hosting, all services will be hosted by the Afghanistan National Data Centre. Although all services will be available over the web (both desktop and mobile), only some will provide a combination of the following: email notifications; SMS notifications, SMS and IVR interface with limited functionality. The table bellow clearly identifies the delivery channels to be used by each service.



Table 5 - Delivery channel per service

One highlight is the choice of kiosk frontends. These are especially relevant to mitigate lower than ideal indicators of internet access by individuals and small businesses. Kiosks also play an important role when considering gender and geographic distribution of the potential audience.

3.5 Usability and accessibility

The usability of the e-government services would be expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

• Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

3.6 Risk assessment

Risk was assessed in all cases. Barriers to deployment and adoption were identified and mitigation actions were proposed and included in the work plan of each service. The following tables provide an overview of both barriers and mitigation measures.

	Barriers to deployment and adoption	Mitigation strategies
e-Jobs	The most probable barrier to deployment is:	To address the potential barriers to deployment_
	 Resistance to adopt a common and auditable 	 Co-design sessions with all (or major) stakeholders
	recruitment platform by ministries and other	 On-Job training of human-resource personnel
	government units	To address the potential barriers to adoption:
	The most probable barriers to adoption are:	 Deployment of e-Jobs kiosks
	 Inexistent or inadequate personal IT infrastructure 	Nationwide dissemination of the e-Jobs service
	 Low levels of digital literacy in citizens 	 Nationwide training of e-Jobs users by e-Jobs
	 Lack of trust in the e-Jobs service 	champions
e-Procurement	The most probable barriers to deployment are:	To address the potential barriers to deployment:
	 Resistance to adopt a common and auditable 	• Co-design sessions with all (or major) stakeholders
	procurement notification platform by ministries and	On-Job training of procurement management
	other government units	personnel
	The most probable barriers to adoption are:	To address the potential barriers to adoption:
	Low levels of digital literacy	Nationwide dissemination of the e-Procurement
	Lack of trust in the e-Procurement service	service
		• On-location training of e-Procurement users, upon
		request
e-Voice	The most probable barriers to deployment are:	To address the notential barriers to deployment:
	Resistance to adopt a problem discussion platform	• Co-design sessions with major stakeholders at
	by national and local government institutions	narticinating institutions
	I ack of IT infrastructure in participating institutions	• Assessment and ungrade of the IT infrastructure of
	• Low levels of digital literacy in participating	narticinating institutions
	institutions	Recruitment and on-job training of e-Voice
	Unavailability of e-Voice service operators	operators
	The most probable barriers to adoption are:	To address the potential barriers to adoption:
	Inexistent or inadequate personal IT infrastructure	• Assessment and ungrade of the IT infrastructure of
	• Low levels of digital literacy in citizens	local communities (namely in terms of internet
	Lack of trust in the e-Voice service	access and e-Voice kiosks)
		Nationwide dissemination of the e-Voice service
		• On-location training of e-Voice users by e-Voice
		champions
e-Library	The two most probable barriers to deployment are:	To address the potential barriers to deployment:
c 10.01 y	Impoverished or inexistent IT infrastructure in	• Assessment and upgrade of the IT infrastructure of
	nartner libraries	nartner libraries (namely in terms of internet access
	• Low levels of digital literacy in librarians and	and online workstations)
	curators	• On-iob training of librarians and curators
	The three most probable barriers to adoption are:	To address the potential barriers to adoption:
	 Inexistent or inadequate personal IT infrastructure 	• Assessment and upgrade of the IT infrastructure of
	 Impoverished or inexistent IT infrastructure in 	partner institutions (namely in terms of internet
	beneficiary institutions	access and e-Library kiosks)
	 Low levels of digital literacy in citizens 	• On-location training of students, teachers.
	с ,	lecturers and scholars by e-Library champions
e-Prescription	The most probable barriers to deployment are:	To address the potential barriers to deployment:
	 Lack of IT infrastructure in participating health care 	 Co-design sessions with health care providers and
	facilities and pharmacies	pharmacists
	 Unavailability of e-Prescription operators 	 Assessment and upgrade of the IT infrastructure of
	 Resistance to adopt a common and auditable 	participating health care facilities and pharmacies
	prescription management platform by health care	 Recruitment and on-job training of e-Prescription
	providers and pharmacists	operators
	 Low levels of digital literacy in health care 	 On-location training of health care providers and
	providers and pharmacists	pharmacists
	The most probable barriers to adoption are:	To address the potential barriers to adoption:
	 Lack of trust in the e-Prescription service 	 Nationwide dissemination of the e-Prescription
	Lack of digital literacy in health care providers and	service
	pharmacists	. On-job training of health care providers

	Barriers to deployment and adoption	Mitigation strategies
e-Vaccination	The most probable barriers to deployment are:	To address the potential barriers to deployment:
	Lack of IT infrastructure in participating health care	 Assessment and upgrade of the IT infrastructure of auticidation in a statistical sector for the infrastructure of
	facilities	participating health care facilities
	Onavailability of e-vaccination operators	Recruitment and on-job training of e-vaccination
	• Low levels of digital interacy in health care	• On job training of boalth care providers
	The most probable barrier to adoption is:	On-job training of relatin care providers On-job training of selected third party
	Inexistent or inadequate personal IT infrastructure	To address the potential barriers to adoption:
	• Inexistent or inadequate IT infrastructure in third	• Assessment and upgrade of the IT infrastructure of
	party beneficiaries	local communities (namely in terms of internet
	 Low levels of digital literacy in citizens 	access and e-Vaccination kiosks)
	 Low levels of digital literacy by third party 	 Assessment and upgrade of the IT infrastructure of
	beneficiaries	third-party beneficiaries
	 Lack of trust in the e-Vaccination service 	• On-location training of e-Vaccination users by e-
		Vaccination champions
		Nationwide dissemination of the e-vaccination
o Dourmont	The most probable barriers to deployment are:	Service
e-Payment	Resistance to cooperate by existing electronic	• Co-design sessions with major stakeholders
	payment operators	including electronic payment operators and selected
	 Resistance to adoption of a cashless payment 	national and local government units
	system by national and local government institutions	 Assessment and upgrade of the IT infrastructure of
	Lack of IT infrastructure in participating institutions	participating national and local government units
	 Low levels of digital literacy in participating 	 On-job training of e-Payment users from national
	institutions	and local government units
	 Unavailability of e-Payment service operators 	 Recruitment and on-job training of e-Payment
	The most probable barriers to adoption are:	operators
	Inexistent or inadequate personal II infrastructure	To address the potential barriers to adoption:
	Low levels of digital literacy in citizens	Assessment and upgrade of the filling structure of local communities (namely in terms of internet
	general, and on e-Payment in particular	access and e-Payment kiosks)
		 Nationwide dissemination of the e-Payment service
		 On-location training of e-Payment users by e-
		Payment champions
e-Birth	The most probable barriers to deployment are:	To address the potential barriers to deployment:
	Lack of IT infrastructure in participating maternities	Assessment and upgrade of the IT infrastructure of
	Inavailability of e-Birth service operators	offices
	Low levels of digital literacy in health care	Recruitment and on-job training of e-Birth service
	providers	operators
	• Low levels of digital literacy by employees of birth	 On-job training of members of participating
	registration offices	maternities and birth registration offices
	The most probable barriers to adoption are:	 On-job training of selected third parties
	Inexistent or inadequate personal IT infrastructure	To address the potential barriers to adoptions:
	Inexistent or inadequate II intrastructure in third party boneficiaries	 Assessment and upgrade of the II infrastructure of local communities (namely in forms of internet)
	• Low levels of digital literacy in citizens	access and e-Birth kiosks)
	• Low levels of digital literacy by third party	 Assessment and upgrade of the IT infrastructure of
	beneficiaries	third-party beneficiaries
	 Lack of trust in the e-Birth service 	 On-location training of e-Birth users by e-Birth
		champions
		Nationwide dissemination of the e-Vaccination
o Markatalaco	The most probable barrier to deployment is	Service
e-iviarketplace	Ine most probable parrier to deployment is:	Bocruitmont and on job training of a Marketalace
	The most probable barriers to adoption are:	Necruitment and on-job training of e-Marketplace operators
	Inexistent or inadeguate personal IT infrastructure	To address the potential barriers to adoption:
	Low levels of digital literacy	• Assessment and upgrade of the IT infrastructure of
	Lack of trust in the e-Marketplace service	rural communities (namely in terms of internet
	 Lack of a reliable delivery options 	access and e-Marketplace kiosks)
		• On-location training of e-Marketplace users by e-
		Marketplace champions
		I ransport service providers should also be
		encouraged to engage as e-Marketplace suppliers.

	Barriers to deployment and adoption	Mitigation strategies
e-Hajj	The most probable barriers to deployment are:	To address the potential barriers to deployment:
	 Resistance to adopt a common and auditable 	 Co-design sessions with major stakeholders
	platform by Hajj application mediators	 Assessment and upgrade of the IT infrastructure of
	 Low levels of digital literacy by Hajj mediators 	participating Hajj service points
	 Unavailability of e-Hajj service operators 	• Recruitment and on-job training of e-Hajj operators
	The most probable barriers to adoption are:	To address the potential barriers to adoptions:
	 Inexistent or inadequate personal IT infrastructure 	 Assessment and upgrade of the IT infrastructure in
	 Low levels of digital literacy in citizens 	urban and rural communities (namely in terms of
	 Lack of trust in the e-Hajj service 	internet access and e-Hajj access points)
		 Nationwide dissemination of the e-Hajj service
		 On-location training of e-Hajj users by e-Hajj
		champions

Table 6 - Barriers to deployment and adoption, together with related mitigation measures, service by service

3.7 Expected impact

Impact is assessed through internal and external success indicators. The following tables presents all success indicators, service by service. For details on how each indicators is measured, please refer to appendixes A to J.

Data for each indicator can be collected automatically. Gender distribution and geographic distribution are the indicators consistent across all services.

	Internal success indicators	External success indicators
e-Jobs	 Ratio of e-Jobs adoption 	 Frequency of use by undifferentiated and
	 Ratio of e-Jobs usage 	differentiated users
	 e-Jobs penetration 	 Gender distribution of users
		 Geographic distribution of undifferentiated and
		differentiated users
e-Procurement	• E-Procurement penetration levels	 Frequency of use by undifferentiated and
	 e-Procurement usage ratio 	differentiated users
		 Gender distribution of users
		 Geographic distribution of undifferentiated and
		differentiated users
e-Voice	 Ratio of e-Voice adoption 	 Frequency of use by undifferentiated and
	• E-Voice coverage	differentiated users
		 Gender distribution of users
		 Geographic distribution of undifferentiated and
		differentiated users
e-Library	 Ratio of e-Library service adoption 	 Frequency of use by undifferentiated and
	 Ratio of e-Library service adoption 	differentiated users
	 Ratio of digitized document records 	 Gender distribution of users
	 Rate of digitization of document records 	 Geographic distribution of undifferentiated and
		differentiated users
		 Ratio and density of personal collections
e-Prescription	 e-Prescription penetration levels in health care 	 Frequency of use by health care providers
	providers	 Frequency of use by pharmacists
	 e-Prescription penetration levels in pharmacies 	 e-Prescription usage ratio
		 Gender distribution of users
		 Geographic distribution of e-Prescription users
e-Vaccination	 e-Vaccination service penetration levels in health 	 Frequency of use by individuals
	care facilities providing vaccination services	 Frequency of use by health care providers
		 Frequency of use by third parties
		Gender distribution of e-vaccination service users
		 Geographic distribution of e-Vaccination users
e-Payment	 e-Payment penetration levels 	Ratio of e-Payment adoption
	 Rate of e-Payment service adoption 	• Frequency of use
		Gender distribution of users
		Geographic distribution of users
e-Birth	 e-Birth penetration levels 	Frequency of use by individuals
		 Frequency of use by third parties
		Gender distribution of e-Birth service users
		 Geographic distribution of e-Birth service users

	Internal success indicators	External success indicators
e-Marketplace	 E-Marketplace penetration levels 	 Frequency of use by undifferentiated and
		differentiated users
		 Gender distribution of users
		 Geographic distribution of undifferentiated and
		differentiated users
e-Hajj	 e-Hajj penetration levels 	 Ratio of e-Hajj adoption
		 Gender distribution of users
		 Geographic distribution of undifferentiated and
		differentiated users

Table 7 – Internal and external success indicators, service by service

4 Deployment

The deployment of the 10 services described above will take place over a period of 3 years and this has been prioritized according to potential outreach, perceived relevance and technical complexity. After initial considerations about the recommended infrastructure, the following sections present the overall work plan, an overview of the teams handling each service and a summary of the budget, including a reflection about the necessary skills.

4.1 Infrastructure

Before moving on to the work plan, it should be noticed that all services proposed will benefit from:

- Adequate hosting in Afghanistan's National Data Center;
- The availability of a single sign on service, provided by the MCIT, eventually based on e-Taskera⁵; and
- The timely deployment e-Government Access Points, otherwise referred to as kiosks in a wide range of locations, to ensure gender and geographic equity in e-Government service access.

⁵ Afghanistan's electronic national identification card

4.2 Work plan

The following table represents the current understanding of the service deployment timeline. Detailed activity breakdowns for each service are available in appendixes A to J.



Table 8 - e-government services deployment work plan

4.3 Teams and budget

The table bellow depict team composition and budget for each case. Detailed work and budget breakdown can be found in Appendixes A to J.



Table 9 - Teams and budget per service

This budget does not include maintenance and exploitation costs, neither does it include infrastructuring costs such as costs with hardware, internet access and human resources required to manage and run services by third parties.

4.3.1 Knowledge and skills

In order to successfully handle the proposed schedule, the EGRC team should be knowledgeable and skilled in:

- Systems analysis and design
- Front-end and back-end development
- System integration
- Software quality assurance

• User studies

5 Closing remarks

The proposed plan is ambitious but grounded on solid rationale and duly assessment of MCIT capacity to lead such a process. Nonetheless, it's a solid step towards our digital nation with potentially deep influence on citizens' life. It touches basic rights, education and culture, health and economy, without aiming to high, but just enough to make a difference.

Appendixes

•

•

The following appendixes provide a detailed description of each of the e-government services mentioned in the main document. All descriptions follow the structure bellow and are self-contained, so that each can be used independently to kick start the development cycle leading to the deployment of each service.

- Introduction
 - **Overall context**
 - \circ Ownership
 - o Purpose
 - \circ Goals
 - o Target audience
 - Usage stories
 - Personas
 - Scenarios
 - \circ Legal framework
- Functionalities
 - $\circ \quad \text{Front-end functionalities}$
 - Back-end functionalities
 - Requirements
 - Hosting
 - o Owner databases
 - \circ Third party databases
 - o Delivery channels
 - \circ Usability
 - Accessibility
- Expected impact
 - o Internal success indicators
 - o External success indicators
- Risk assessment
 - \circ Barriers to deployment
 - \circ Barriers to adoption
 - Mitigation strategies
- System architecture
- User Interface
- Work plan
- Team and budget

It should be highlighted that all personas and scenarios are fictional.

A e-Jobs

A.1 Introduction

At present, each ministry of the Islamic republic of Afghanistan has its own dedicated webpage which they use to advertise different job vacancies as and when they have them. All government ministries and agencies are also using the same content management system (CMS), share the same database which is owned by the Ministry of Communications and Information technology (MCIT). Hence, the main challenge now is to from the unified database with multiple front ends or from different fragmented interfaces to a single job portal where people can view vacancies filtered according to different ministries and even put in an application which would be sent online. So, the main goal of e-Jobs service is to have a single point access for job seekers where they can view all the vacancies of different ministries of the Islamic Republic of Afghanistan, opening and closing dates of these vacancies and apply for these vacancies online.

Not only would having such a service be beneficial for ministries as they can all post vacancies online using the same webpage but it is also beneficial for potential job seekers who do not have to go to each ministry's individual web page to see what kind of job vacancies exist and can apply online for these vacancies. There are several examples of job portals being used across the globe. Some examples along with their screenshots are as follows:



Figure 1 - Online job portals from Estonia⁶ and India⁷

There are many more examples of such online job platforms which can act as a single access point for job seekers to browse through vacancies from different levels of government and being able to apply online. The figures above depicts the national Estonian platform for people interested in working in Estonia and an initiative by the current government in India through which they publish all job opportunities from the private sector as well as vacancies within different levels of government using this platform. The screenshot accurately depicts this with the title being "All job opportunities, one platform".

⁶ http://www.workinestonia.com/latest-offers/

⁷ http://www.ncs.gov.in/Pages/default.aspx

A.2 Overall context

A.2.1 Purpose

The main purpose of the job portal is to allow job seekers to be aware of the opportunities, and to allow them to apply for selected offers, using a common and streamlined online service and procedure.

From the employers' perspective, this recruitment tool allows seamless management of job offers, applicants, application processes and notifications of results.

A.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services.

From the EGRC II project perspective, the addressed goals are:

- Increased transparency
- Increased access
- Gender equity
- m-Government
- Telecenters
- Streamlined services
- Efficiency

A.2.3 Target audience

The primary audience of e-Jobs are citizens seeking opportunities to serve in the Government of the Islamic Republic of Afghanistan.

As secondary users, we have ministries and other unities of the government, willing to use this recruitment tool.

A.2.4 Usage scenario

A.2.4.1 Persona

Sekandar is 37 years old, recently lost his job. He used to work in a farm as a poultry specialist in the local breeder farm. Since he is the sole person responsible for financially supporting his family, he is sad and filled with anxiety with several questions such as how and where can he apply for jobs, how soon he can get a job and how soon he can start supporting his family financially. He knows how to use a computer since they have an old machine at home, he also has a slow dial up internet connection, and Sekandar knows how to access internet and search for information. When he was exploring potential job opportunities, he find it difficult to find the webpages of different government units which may have adversities jobs in which his skills are required, somehow after a long search he came across the webpage of the Ministry of Agriculture, Irrigation & Livestock (MAIL) and MAIL had advertised that they have vacancies for people with experience in poultry farming as poultry specialists. Sekandar went through the job description and thought to himself that he fulfils all the requirements for the position. Sekandar did apply for the currently advertised position but he is sad that he was not able to find and search for other webpages which may have advertised relevant positions and wishes that there was an online application system where all structural units of the government can advertise their vacancies in one place and people can easily search for jobs because the aforementioned system which is separately managed by every ministry is quite difficult and not time efficient and easy to use.

A.2.4.2 User Story

While Sekandar was at home one day, his neighbour, who knew that Sekandar is actively applying for jobs visited him and once asked him for webpages which may advertise relevant positions. His neighbor then told him that the government has recently launched an e-Jobs online platform which all the different ministries would use to advertise their vacancies in one place. He told Sekandar that the thinking behind this is to have a common and streamlined service and procedure for applying for jobs. Sekandar was apprehensive at first but then he checked out the webpage of the e-Jobs platform. He was happy to see a few things such as the opportunity to apply online, upload his application documents, browse through different job offers by different ministries, view publishing and closing dates of job vacancies and finally the fact that he can sign up for updates regarding his application and also regarding publication of new job offers. Sekandar was pleased to see other government units have advertised positions which he could apply thus he was able to expand his job search and applied for jobs. Immediately he got an acknowledgement on his phone through a message and also through an e-mail that his application has been received and is currently under processing. A week back, he heard back from MAIL and he has an interview for the position in the nearby town. Sekandar is full of gratitude for his friend who told him about this service. Sekandar will surely let other people know about this new initiative by the government.

A.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Recruitment legislation and procedures
- Data privacy legislation
- Dispute resolution legislation

A.2.6 Ownership

e-Jobs, the government employment opportunity portal, will be owned by the Ministry of Communications and Information technology (MCIT) but managed by all participant ministries and government units.

A.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all citizens, and back-end functionalities, available only to those managing the recruitment process in participating ministries and units.

A.3.1 Front-end functionalities

This set of functionalities allows citizens to:

- Create, retrieve, update and delete extended personal profiles that can also include digitized versions of documents supporting qualification claims, such as diplomas, certificates and recommendation letters
- Browse available offers
- Search available offers
- Create, retrieve, update, submit, withdraw and delete applications for selected offers
- Create, retrieve, update and delete claims
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to:

- o The publication of specific job offers
- The status and result of submitted applications
- o The status and results of submitted claims

A.3.2 Back-end functionalities

This set of functionalities allows those managing the recruitment process to:

- Create, retrieve, update and delete job offers
- Accept, process and conclude applications
- Accept, process and conclude claims
- Generate reports

A.4 Requirements

A.4.1 Hosting

The e-Jobs service will be hosted by the Afghanistan National Data Centre.

A.4.2 Owner databases

The MCIT will own the core databases. These include:

- User privileges and extended profile database
- Job offers database
- Applications database
- Claims database

A.4.3 Third party databases

Third party databases are:

• User authentication and authorization database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs

A.4.4 Delivery channels

The job portal will be available through the web (both desktop and mobile) with complementary E-mail and SMS⁸ notifications.

Additionally, the service will be available through e-Jobs access kiosks, deployed in selected locations, in urban and rural areas.

A.4.5 Usability

The usability of the job portal would be expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

• Satisfaction

The standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction) will assess satisfaction. The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

⁸ Short messages service

A.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the job portal is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Jobs service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Jobs service.

A.5 Expected impact

A.5.1 Internal success indicators

Internal success indicators include:

- Ratio of e-Jobs adoption (measured by the number of ministries and other government units that have joined this initiative over the overall number of possible ministries and government units)
- Ratio of e-Jobs usage (measured by the number of job opportunities announced in e-Jobs over the overall number of opened positions)
- e-Jobs penetration (measured by number of users who have signed up and applied for jobs using the portal over the overall number of applicants and applications)

A.5.2 External success indicators

The external success indicators include:

- Frequency of use by undifferentiated and differentiated users (measured by browse and search activities of not authenticated and authenticated users; and also by the number of applications submitted and notification requests managed by authenticated users)
- Geographic distribution of undifferentiated and differentiated users (assessed by IP address⁹ location of not authenticated users and by IP address and user volunteered geographical information of authenticated users)
- Gender distribution of users (assessed by user volunteered information)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

A.6 Risk assessment

A.6.1 Barriers to deployment

The most probable barrier to deployment is:

• Resistance to adopt a common and auditable recruitment platform by ministries and other government units

A.6.2 Barriers to adoption

The most probable barriers to adoption are:

- Inexistent or inadequate personal IT infrastructure
- Low levels of digital literacy in citizens

⁹ Internet protocol

• Lack of trust in the e-Jobs service

A.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Co-design sessions with all (or major) stakeholders
- On-Job training of human-resource personnel

To address the potential barriers to adoption, this project includes activities such as:

- Deployment of e-Jobs kiosks in eligible public premises
- Nationwide dissemination of the e-Jobs service
- Nationwide training of e-Jobs users by e-Jobs champions

A.7 System architecture

The following diagram depicts the architecture of the e-Jobs service highlighting the following components:

- Back-end (those managing the recruitment process in participating ministries and units) and front-end (citizens in general) interfaces;
- Core services; and
- Connections with external gateways for user authentication and SMS notifications.





A.8 User Interface

The following wireframe depicts how an e-Jobs service should look like. The wireframe has functionalities such as pictures (appearing as sliders) which act as an advertisement for new jobs being shown, special tabs for job seekers and employers, dedicated career centre for advice related to career. Towards the bottom of the page, we have different images with different headings. Finally, we have testimonials (appearing as sliders) from e-Job users.

Logo			Search Search
Log in: Username	Password	Log in	ID CARD
Home Job seeker Err	ployer Career Center Local al	erts Help	
			News
	Pictures		<news 1=""></news>
How to use e-Job	s service?		<news 2=""></news>
Step 1 Outline here	Step 2 Outline here	Step 3 Outline here	<ters 3=""></ters>
	Job applications >		Testimonials
Important announ Announcement 1 Announcement 2 Announcement 3	Icements Usefu CV & Cover How to appl Job applicat	I links letter y for Jobs tion guidelines	Appearing here as a slider
Featured Jobs	Register as a new user	Careers advice	"other"

Figure 3 - Possible e-Jobs landing page

A.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the service:

- Task A Refinement of the requirements of the service (including co-design sessions with major stakeholders)
- Task B Selection and customization of an open source applicant tracking system
- Task C System integration
- Task D System testing
- Task E User acceptance testing
- Task F Deployment (including the deployment of e-Jobs kiosks in eligible public premises)
- Task G Nationwide dissemination of the e-Jobs service
- Task H Nationwide training of e-Jobs users by e-Jobs champions

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
А																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		

Table 10 - Work plan

A.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- e-GC e-Government Directorate
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	e-GD	ANDC	Total
	(e-GCASD)	(C)	(CBTU)			
А	0.5 PM					0.5 PM
В	0.5 PM			2 PM		2.5 PM
С	0.5 PM				1 PM	1.5 PM
D	0.25 PM				0.25 PM	0.5 PM
E	0.5 PM					0.5 PM
F	0.5 PM				1 PM	1.5 PM
G		0.5 PM				0.5 PM
Н			1 PM			1 PM
Total	2.75	0.5 PM	1 PM	2 PM	2.25 PM	8.5 PM

Table 11 - Team and budget

Assuming an average cost of 1500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 12750 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

B e-Procurement

B.1 Introduction

The government of Islamic republic of Afghanistan is composed of numerous ministries. Currently each ministry has its own individual web service to invite bids from potential bidders or tenderers. If a potential supplier who wants to provide goods and services and would like to apply for a particular tender, then there is no centralized portal or a single point of access and she/he must go through different websites of the ministries and then apply. Moreover, at present, there is significant paperwork involved in the process and when a person applies for a tender, he/she needs to be sure that the file that he is submitted would be the file which would be evaluated. There can often be situations wherein no feedback is given regarding the application process and no way for an individual to go through past and present tender calls.

The main objective of an e-Procurement service is to act as a one stop shop for public procurement through which suppliers or potential tenderers can view recent and past calls and also get feedback in the form of notifications through short message services (SMS) and e-Mail. To summarize, a public procurement portal would allow different ministries participating in the initiative to put out contract opportunities and the suppliers of goods, work and services can apply for these tenders online and also register on the service website to receive regular e-mail or SMS alerts of public sector opportunities.

There are a few governments worldwide, which have public procurement portals. A few examples of this service are:



Figure 4 - Examples from India¹⁰ and Estonia¹¹

These are examples of different public procurement services being implemented in India and Estonia. Both the services allow to search for past and present procurement notices and allow suppliers to make an application for these procurement notices. Moreover, both these platforms are dedicated portals which all ministries of the respective governments use to advertise their procurement notices. This centralisation allows both the governments to keep a close track on what notices are being issues by their respective ministries.

¹⁰ https://eprocure.gov.in/cppp/

¹¹ https://riigihanked.riik.ee/lr1/web/guest/index

B.2 Overall context

B.2.1 Purpose

The e-Procurement service provides a single point of access to all public procurement information.

The main purpose of the procurement portal is to allow potential suppliers to be aware of current and past calls, their status and outcomes.

From the government's perspective, this procurement tool allows seamless tracking of open and closed calls for tender.

B.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services for businesses.

From the EGRC II project perspective, the addressed goals are:

- Increased transparency
- Annual budgets and budget execution reports (partially)
- Increased access
- Gender equity
- m-Government
- Streamlined services
- Efficiency

B.2.3 Target audience

The primary audience of the e-Procurement service are private sector operators seeking opportunities to provide goods or deliver services to the Government of the Islamic Republic of Afghanistan.

As secondary users, we have ministries and other unities of the government, using this tool to announce both (1) calls for tender, and (2) their outcomes.

B.2.4 Usage scenarios

B.2.4.1 Persona

Saeed is 37 years old. He works in a government office which is responsible for the handling all applications that reach their office for providing goods and services. He finds managing such humungous amounts of paper work very stressful and mentally taxing. He also receives complains from these potential suppliers about the whereabouts of their application and their application status. To his surprise, sometimes he has not received an application and yet the suppliers insist that they have submitted one. Not only is it chaotic but the suppliers do not find this system transparent and sometimes feel that their application documents are not being evaluated or are falling in wrong hands. Saeed has a colleague who works in a different government office who also tells him that their office is also equally frustrated by the amount of complains they receive and the entire paper documentation process is error prone and very time consuming. They both wonder if it is possible to have a system in place through which all ministries could issue their procurement notices and suppliers could apply for them using this system in a way with less paper work, transparent, and fast.

B.2.4.2 User Story

One day when Saeed came to office, he heard that from the next week, the government is rolling out a public procurement portal through which all ministries can advertise their procurement notices and suppliers wishing to offer goods and services can use this single access portal to bid. From the following week, Saeed observed that the entire application process for a procurement is online and all documents would be submitted online and the

process has become transparent. There are no more complaints of missing documents, and the system will allow the suppliers to set up notifications for various stages of the application process. For example, the suppliers could be notified either through a short text message or through an e-mail about new calls for tenders being released and through this notifications, they could also know the status and result of their applications for these open calls. Saeed is very happy about this new roll out and thinks that having a single access point for public procurement of all public organizations is a move in the right direction.

B.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Procurement legislation and procedures
- Data privacy legislation
- Dispute resolution legislation

B.2.6 Ownership

e-Procurement, the government's online procurement service will be owned by MCIT but managed by all participant ministries and government units.

B.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all, and back-end functionalities, available only to those managing the procurement process in participating ministries and units.

B.3.1 Front-end functionalities

This set of functionalities allows everyone to:

- Create, retrieve, update and delete organizational profiles
- Browse current and past calls
- Search current and past calls
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to:
 - The publication of specific calls for tender
 - o The status and result of specific calls for tender
- Generate reports

B.3.2 Back-end functionalities (are support functionalities)

This set of functionalities allows those managing the procurement process to:

- Create, retrieve, update (namely their status and results) and delete calls for tender
- Generate reports

B.4 Requirements

B.4.1 Hosting

The e-Procurement service will be hosted by the Afghanistan National Data Centre.

B.4.2 Owner databases

The MCIT will own the core databases. These include:

- User privileges and organizational profiles database
- Calls for tender's database
- Notifications database

B.4.3 Third party databases

Third party databases are:

• User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs

B.4.4 Delivery channels

The procurement portal will be available through the web (both desktop and mobile) with complementary e-mail and SMS¹² notifications.

B.4.5 Usability

The usability of the public procurement service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

B.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the public procurement portal is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-procurement service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-procurement service.

B.5 Expected impact

B.5.1 Internal success indicators

Internal success indicators include:

- E-Procurement penetration levels (measured by the number of ministries and other government units that have joined this initiative over the overall number of possible ministries and government units)
- e-Procurement usage ratio (measured by the number of calls announced in e-Procurement over the overall number of calls opened)

¹² Short messages service

B.5.2 External success indicators

The external success indicators include:

- Frequency of use by undifferentiated and differentiated users (measured by browse and search activities of not authenticated and authenticated users; and also by the number of notification requests managed by authenticated users)
- Gender distribution of users (assessed by user volunteered information)
- Geographic distribution of undifferentiated and differentiated users (assessed by IP address¹³ location of not authenticated users and by IP address and user volunteered geographical information of authenticated users)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

B.6 Risk assessment

B.6.1 Barriers to deployment

The most probable barriers to deployment are:

• Resistance to adopt a common and auditable procurement notification platform by ministries and other government units

B.6.2 Barriers to adoption

The most probable barriers to adoption are:

- Low levels of digital literacy
- Lack of trust in the e-Procurement service

B.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Co-design sessions with all (or major) stakeholders
- On-Job training of procurement management personnel

To address the potential barriers to adoption, this project includes activities such as:

- Nationwide dissemination of the e-Procurement service
- On-location training of e-Procurement users, upon request

B.7 System architecture

The following diagram depicts the architecture of the e-Procurement service highlighting the following components:

- Back-end (those managing the procurement process in participating ministries and units) and front-end (citizens and/or organizations in general) interfaces;
- Core services; and
- Connections with external gateways for user authentication and SMS notifications.

¹³ Internet protocol



Figure 5 - e-Procurement system architecture

B.8 User Interface

The following wireframe depicts how an e-Procurement environment would look like. It has several functionalities such as information on how to use the e-procurement environment, tender application button, options to view the ongoing tenders, legislations regarding tender and other important information. It also has a dedicated statistics column which would shed light on the number of tender applications received, the number accepted and rejected and the number of applications currently under process. This number would be managed by the e-Procurement operators. Finally, we have testimonials which would be sent across by the potential users of the system which would appear as sliders on the bottom right.

Logo			Search Search
Log in: Usemame	Password	Log in	ID CARD
Home Ongoing Tenders	Information for supp	oliers Local alerts Help	
How to use e-Procuremen	t service?		Statistics
Step 1 Outline here	Step 2 Outline here	Step 3 Outline here	<statistic 1=""></statistic>
Tender app	lication >		<statistic 2=""></statistic>
Important announcements Announcement 1 Announcement 2	Legislation	links splication form	<statistic 3=""></statistic>
Announcement 3	Tender appli	cattion guidelines	
			Testimonials
			Appearing here as a slider

Figure 6 - Possible e-Procurement landing page

B.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the service:

- Task A Refinement of the requirements of the service (including co-design sessions with major stakeholders)
- Task B Customization of the existing content management service

- Task C System integration
- Task D System testing
- Task E User acceptance testing
- Task F Deployment
- Task G Nationwide dissemination of the e-Procurement service
- Task H On-location training of e-Procurement users, upon request

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
А																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		

Table 12 - Work plan

B.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- e-GC e-Government Directorate
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	e-GD	ANDC	Total
	(e-GCASD)	(C)	(CBTU)			
А	0.5 PM					0.5 PM
В	0.5 PM			2 PM		2.5 PM
С	0.25 PM				0.25 PM	0.5 PM
D	0.25 PM				0.25 PM	0.5 PM
E	0.5 PM					0.5 PM
F	0.25 PM				0.25 PM	0.5 PM
G		0.5 PM				0.5 PM
Н			1 PM			1 PM
Total	2.25	0.5 PM	1 PM	2 PM	0.75 PM	6.5 PM

Table 13 – Team and budget

Assuming an average cost of 1500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 9750 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

C e-Voice

C.1 Introduction

One of the main responsibilities of the government is to manage and take care of its citizens, engage them in a proactive dialogue regarding changes that might be needed in the governance and to consider their feedback regarding services offered by them. Ineffective, complex and sometimes traditional governance processes presents a fundamental obstacle to success. It is a common thought that crosses the mind of an individual citizen that when he/she complains to the government or gives feedback regarding a certain issue, the resolution of the problem would be ineffective and often how the issue was resolved or the feedback was considered is not very transparent. People who are just trying to go about their daily business that are inconvenienced by issues within their local area should be able to report them efficiently and effectively without getting tied up in the kind of bureaucracy that has historically characterised public services. One of the ways to achieve transparency and increase the outreach of the government is to use web to engage people and help them interact with the government.

It is imagined at this stage that using an e-Voice portal, considering the confidentiality and privacy of the user, would help facilitate government efforts to engage and connect with fellow citizens, on national and social issues that they value the most. Not only would the e-Voice service help gather and gauge public ground sentiments, it will also promote active citizenry through citizen participation and involvement. To make the citizens feel belonged, cared for and to give them a feeling that the government would actively take up their issues and strive their best to solve whatever problems they might have is one of the main purposes of this service.

There are already services implemented by governments around the world which are based on the same principle as the e-Voice service. Some of these services along with the screenshots of their landing page are as follows:



Figure 7 - Fig 1: Examples from India¹⁴, United Kingdom¹⁵, Australia¹⁶ and Switzerland¹⁷

These are examples of different platforms used in different countries which the citizens use to report different problems in their neighbourhoods such as broken streetlamps, vandalised benches, graffiti etc. Some are built on FixMyStreet¹⁸ which is developed and managed by mySociety ¹⁹. This platform is being used in a lot of different countries across five continents ²⁰.

The same platform could be used as a pilot initially in the municipality of Kabul and based on the results and the participation, it can be deployed in other provinces.

C.2 Overall context

C.2.1 Purpose

The main purpose of the e-Voice service is to enable citizens to report, view, or discuss problems. At the same time, this service:

- Empowers people and builds their capacity as citizens, and
- Increases the outreach of the government to citizens through digital means

²⁰ http://fixmystreet.org/sites/

¹⁴ http://203.129.224.98:8085/PotholeBMC/jsf/security/LoginForm.jsf

¹⁵ https://www.fixmystreet.com/

¹⁶ http://www.fixmystreet.org.au/

¹⁷ https://www.zueriwieneu.ch/

¹⁸ http://fixmystreet.org/

¹⁹ https://www.mysociety.org/

C.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services, while also promoting e-Government. From the EGRC II project perspective, the addressed goals are:

- Increased transparency
- Increased access
- Gender equity
- m-Government
- Streamlined services
- Efficiency

C.2.3 Target audience

The primary audience of the e-Voice service are citizens willing to engage with both government and community thus contributing to a thriving civil society, vital to our common welfare.

As secondary users, national and local level institutions willing to use this tool to engage with those they serve.

C.2.4 Usage scenario

C.2.4.1 Background

Salma is a housewife. When she walks with the children to the school, she has observed two things en-route. The first is that the walls on the side of the road are full of vulgar graffiti and secondly, the route is loaded with a lot of rubbish which attracts insects, mosquitoes and flies. Not only is this hazardous to health, Salma observed that her kids wanted to know what the meaning of the Graffiti on the wall is. Obviously, she is hesitant to tell the meanings of the graffiti to her kids as she does not want them to know about the abusive language that is being used in that graffiti. Salma does not know who to approach and complain about both of these issues and it is getting a nuisance for her to walk on this path every day to drop her kids to the school, as there is no other path. Salma hopes someone can tell her how to raise a complaint about this issue to the local municipality, who to contact and how to draft her complaint.

C.2.4.2 User story

One day while Salma was at home during the afternoon, her friend paid her a visit at home. When they were having their discussion, Salma told her friend her frustrations and to her surprise, her friend informed her about the e-Voice service and how her husband used this service to get the potholes near the main market fixed. Since Salma had internet access on her cellphone, her friend showed her how to use this service and Salma immediately raised a request for the graffiti to be dealt with and the rubbish laden streets to be cleaned. She received both an e-mail notification and a notification through a text message on her mobile phone stating that her complain was registered. Nearly two weeks later, at night, Salma got another notification that her complains have been addressed and both the issues have been taken care of. The next morning when Salma took her kids to the school, she saw that the walls had been painted and the graffiti was no longer visible and the rubbish had been removed from the streets. Salma cannot believe how efficient this system is and even in a small city such as hers, government is proactive and is willing to help and listen to their citizens. Salma is overwhelmed by this gesture from the government and this new initiative in the form of an e-Voice service. She will surely spread the word about the service to her friends and family now.

C.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Data privacy legislation
- Dispute resolution legislation

C.2.6 Ownership

The e-Voice service is owned by Ministry of Communications and Information Technology (MCIT) and independently managed by each participating institution. In this service description, we foresee that this service is piloted by the municipality of Kabul.

C.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all and back-end functionalities, available those handling the reported problems and ongoing discussions.

C.3.1 Front-end functionalities

C.3.1.1 For all

This set of functionalities allows everyone to:

- Create, retrieve, update and delete personal profiles
- Create, retrieve, update, discuss and delete complains²¹
- Browse personal and other recent and past complains
- Search personal and other recent and past complains
- Audit third party access to complains
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to:
 - Status of complains
 - Discussions of complains
 - o Submissions of complains
- Generate reports

C.3.2 Back-end functionalities

This set of functionalities allows those who handle complains and subsequent discussions, in participating institutions, to:

- Create, retrieve, update and delete complain categories
- Accept, process, discuss and conclude complains
- Generate reports

C.4 Requirements

C.4.1 Hosting

The e-Voice service will be hosted by the Afghanistan National Data Centre.

C.4.2 Owner databases

The MCIT will own the core databases. These include:

- User privileges and profile database
- Reports database
- Discussions database
- Notifications database

²¹ A complain is a documented report of a problem

However, institution specific instances of the reports and discussions databases are managed by each participating institution

C.4.3 Third party databases

Third party databases are:

• User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs

C.4.4 Delivery channels

The e-Voice service will be available through the web (both desktop and mobile) with complementary E-mail and SMS²² notifications, together with SMS and IVR²³ interfaces with limited functionality.

Additionally, the service would also be available through Kiosks strategically placed in legitimate public areas.

C.4.5 Usability

The usability of the e-Voice service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

• Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

C.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Voice service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Voice service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Voice service.

²² Short messages service

²³ Interactive voice response
C.5 Expected impact

C.5.1 Internal success indicators

Internal success indicators include:

- Ratio of e-Voice adoption (measured by the number of national and local government institutions joining this initiative over the overall number of possible institutions units)
- E-Voice coverage (expressed by the geographic distribution of participating institutions)

C.5.2 External success indicators

The external success indicators include:

- Frequency of use by undifferentiated and differentiated users (measured by browse and search activities of not authenticated and authenticated users; and also by the number of complains submitted, discussions started or pursued, and notification requests managed by authenticated users)
- Gender distribution of users (assessed by user volunteered information)
- Geographic distribution of undifferentiated and differentiated users (assessed by IP address²⁴ location of not authenticated users and by IP address and user volunteered geographical information of authenticated users)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

C.6 Risk assessment

C.6.1 Barriers to deployment

The most probable barriers to deployment are:

- Resistance to adopt a problem discussion platform by national and local government institutions
- Lack of IT infrastructure in participating institutions
- Low levels of digital literacy in participating institutions
- Unavailability of e-Voice service operators

C.6.2 Barriers to adoption

The most probable barriers to adoption are:

- Inexistent or inadequate personal IT infrastructure
- Low levels of digital literacy in citizens
- Lack of trust in the e-Voice service

C.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Co-design sessions with major stakeholders at participating institutions
- Assessment and upgrade of the IT infrastructure of participating institutions
- Recruitment and on-job training of e-Voice operators

To address the potential barriers to adoption, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure of local communities (namely in terms of internet access and e-Voice kiosks)
- Nationwide dissemination of the e-Voice service
- On-location training of e-Voice users by e-Voice champions

²⁴ Internet protocol

C.7 System architecture

The following diagram depicts the architecture of the e-Voice service highlighting the following components:

- Back-end (allows those who handle complains and subsequent discussions, in participating institutions) and front-end (citizens in general);
- Core services; and
- Connections with external gateways for user authentication, SMS notifications, and SMS and IVR interfaces.



Figure 8 - e-Voice system architecture

C.8 User Interface

The following wireframe depicts how the landing page of the e-Voice service would like with a login screen where the user is able to login through a user name and password and the national ID card. Moreover, the wireframe also depicts other functionalities such as being able to see all reports not only made by the individual citizen as himself but also by other citizens. There is also an option to subscribe to local alerts. Finally, one can also see user testimonials and feedback.

Logo			Search Search
Log in: Useman	ne Password	Log in	ID CARD
Report a problem	Your reports All reports	Local alerts Help	
Where is the Enter a nearby street an How to report	a problem?	ssues or make a new report	co Statistics
Step 1	Step 2	Step 3	<statistic 1=""></statistic>
]		<statistic 2=""> fixed in past month</statistic>
image 1	Problem 1: description of the prob	lem	<statistic 3=""> updates on reports</statistic>
image 3	Problem 3: description of the prot	blem	Testimonials
image 4	Problem 4: description of the prob	lem	Appearing here as a slider

Figure 9 - Possible e-Voice landing page

C.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the service:

- Task A Refinement of the requirements of the service (which would include codesign sessions with major stakeholders)
- Task B Selection and customization of an open source solution for the e-Voice service
- Task C System integration
- Task D System testing
- Task E User acceptance testing
- Task F Deployment (in the municipality of Kabul, as a pilot)
- Task G– Nationwide dissemination of the e-Voice service
- Task H Assessment and upgrade of the IT infrastructure of participating ministries and government units
- Task I Assessment and upgrade of the IT infrastructure of participating communities
- Task J Recruitment and on-job training of e-Voice operators
- Task K On-location training of e-Voice users by e-Voice champions

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Α																		
В																		
С																		
D																		
E																		
F																		

G									
Н									
I									
J									
K									

Table 14 - Work plan

C.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	ANDC	Total
	(e-GCASD)	(C)	(CBTU)		
А	0.5 PM				0.5 PM
В	1 PM				1 PM
С	0.25 PM			1 PM	1.25 PM
D	0.25 PM			0.25 PM	0.5 PM
E	0.5 PM				0.5 PM
F	1 PM			0.5 PM	1.5 PM
G		0.5 PM			0.5 PM
Н	0.25 PM				0.25 PM
I	0.25 PM				0.25 PM
J	0.5 PM		0.5 PM		1 PM
К			1 PM		1 PM
Total	4.5	0.5 PM	1.5 PM	1.75 PM	8.25 PM

Table 15 - Team and budget

Assuming an average cost of 1500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 12372 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

D e-Library

D.1 Introduction

Digital libraries offer significant and unparalleled improvement and value addition over conventional library services. Putting this into the current context, the Islamic republic of Afghanistan has a rich culture and diversity. The national public library within the country is home to several old, fragile and deteriorating documents of high scholarly value. The conditions of such documents is deteriorating as pointed and implementing a digital library would help conserve and preserve such immensely valuable documents. Digital libraries also enrich the university teaching and learning environment by making large amount of content easily accessible. Not just this, other advantages of an implementation of a digital library service include electronic storage of information which can be accessed by multiple users from multiple locations and a digital library guarantees continuous availability of document. Moreover, in a hugely populous country such as Afghanistan, implementing digital library would benefit collaboration between educational and public sector institutions as entire records of different libraries across the country would be made available through a single environment thereby promoting higher information access to even people living in the rural areas.



Figure 10 - Examples from ACM²⁵ and Cambridge²⁶

Both the above figures depict digital libraries. Figure 1 depicts an ACM digital library which is headquartered in New York and is the world's largest repository on literature related to computing. The second figure depicts the digital library of the University of Cambridge which contains digital versions of some of the oldest texts in the world such as Isaac Newton's notebook, which dates back to 1664.

D.2 Overall context

D.2.1 Purpose

In a nutshell, the purpose of the e-Library service is to put the collections managed the National Library of Afghanistan and other libraries affiliated with the MoIC, MoE and MoHE on the fingertips of citizens.

Within the scope of this plan, the e-Library will:

• Expedite the systematic development of procedures to collect, store, and organize, information in digital form; and

²⁵ https://dl.acm.org/

²⁶ http://cudl.lib.cam.ac.uk/

• Allow its audience to search and browse the collection of the participating libraries, facilitating document identification, location, management and use.

D.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services for Education.

From the EGRC II project perspective, the addressed goals are:

- Increased access
- Gender equity
- m-Government
- Telecenters

D.2.3 Target audience

The primary audience are, on one hand, students, teachers, lecturers and scholars, and on the other hand, librarians and curators.

D.2.4 Usage scenarios

D.2.4.1 Persona

Nooria is 21 years old and is a student at a university in Kabul. She goes to library whenever possible to study. She is studying ancient literature in which she is supposed to read texts dating 400-500 years back and then explain those readings. While the library where she goes to has access to different texts which might be needed for her course, but they are in a very bad condition and are very fragile. Moreover, some texts are also hard to read and they are precious and not allowed to be touched. Nooria has spoken about this issues to the library curator but he says that they cannot do much for such old books. He realizes the importance of preserving such books but unfortunately cannot do something about it. Nooria is a bit disappointed as she would like to read from those texts. Adding to her woes, she has been told that certain books which she needs are in the library of the neighbouring city which is a two-hour bus ride away. Contacting that library hasn't worked out so far and Nooria is unsure if she should go to the town to get those books and there is no guarantee that they actually have those books or even if they have, there is no guarantee that these books would still be there. Nooria wishes that there was an online system capable of simplifying the whole process.

D.2.4.2 User Story

One day when Nooria came to the library and sat down to study, the library curator came up to her and informed Nooria about a recent initiative of the government called digital library by ways and means of which a lot of the paper content in the library would be digitized and old books such as the ones she is interested would also be made available online once the project completes and she would not have to worry about writing in the books being illegible and further to this, she can also access content of participating libraries, search for availability of books in those partner institutions, put a hold on a book and then go and collect it. Nooria got to read a few old texts in digitized and the crispness and clarity of the text amazes her. Nooria is very happy and cannot wait till the entire project gets completed.

She will surely spread the word about the service among family and friends.

D.2.5 Legal framework

From a legal and regulatory perspective, these are the issues to be considered:

• Data privacy legislation

D.2.6 Ownership

The e-Library service will be owned by the Ministry of Information and Culture (MoIC) and provided by the MIC in consortium with the Ministry of Education (MoE) and the Ministry of Higher Education (MoHE).

D.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all, and back-end functionalities, available only to librarians and curators.

D.3.1 Front-end functionalities

This set of functionalities allows everyone to:

- Browse collections and locate documents
- Search collections and locate documents
- Create, retrieve, update and delete personal collections
- Create, retrieve, update and delete personal document requests (with optional post office delivery and return services)

D.3.2 Back-end functionalities

This set of functionalities allows librarians and curators to:

- Create, retrieve, update and delete document records and content
- Create, retrieve, update and delete collections
- Create, retrieve, update and delete document requests (with optional post office delivery and return services)

D.4 Requirements

D.4.1 Hosting

The e-Library service will be hosted by the Afghanistan National Data Centre.

D.4.2 Owner databases

MIC will own the core databases. These include:

- User privileges database
- Document records database
- Document collections database
- Document requests database

D.4.3 Third party databases

Third party databases are:

- User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs
- Selected repositories of open education resources (optional)

D.4.4 Delivery channels

The e-Library service will be available through the web (both desktop and mobile) and mobile android applications with complementary, SMS²⁷ and IVR²⁸ interfaces with limited functionality.

Additionally, the service will be available through e-Library access kiosks, deployed in selected schools and universities.

²⁷ Short messages service

²⁸ Interactive voice response

D.4.5 Usability

The usability of the e-Library service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as follows:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

• Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

D.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Library service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Library service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Library service.

D.5 Expected impact

D.5.1 Internal success indicators

Internal success indicators include:

- Ratio of e-Library service adoption (measured by the number of libraries that formally joined the initiative as content providers)
- Ratio of e-Library service adoption (measured by the number of institutions that formally joined the initiative as content consumers)
- Ratio of digitised document records (expressed as the ratio between the number of digital document records and the number of paper based records)
- Rate of digitisation of document records (expressed as the ratio of digitised documents over time)

The success thresholds will be negotiated with each participating institution.

D.5.2 External success indicators

The external success indicators include:

 Frequency of use by undifferentiated and differentiated users (measured by browse, search and document request activities of not authenticated and authenticated users)

- Gender distribution of users (assessed by user volunteered information)
- Geographic distribution of undifferentiated and differentiated users (assessed by IP address²⁹ location of not authenticated users and by IP address and user volunteered geographical information of authenticated users)
- Ratio and density of personal collections (measured by the ratio of personal collections of the number of registered users, and by central tendency and dispersion measures of the number of document records per personal collection of authenticated users)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

D.6 Risk assessment

D.6.1 Barriers to deployment

The two most probable barriers to deployment are:

- Impoverished or inexistent IT³⁰ infrastructure in partner libraries
- Low levels of digital literacy in librarians and curators

D.6.2 Barriers to adoption

The three most probable barriers to adoption are:

- Inexistent or inadequate personal IT infrastructure
- Impoverished or inexistent IT infrastructure in beneficiary institutions
- Low levels of digital literacy in citizens

D.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure of partner libraries (namely in terms of internet access and online workstations)
- On-job training of librarians and curators

To address the potential barriers to adoption, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure of partner institutions (namely in terms of internet access and e-Library kiosks)
- On-location training of students, teachers, lecturers and scholars by e-Library champions

D.7 System architecture

The following diagram depicts the architecture of the e-Library service highlighting the following components:

- Back-end (librarians and curators) and front-end (citizens in general, but mainly students, teachers, lecturers and scholars) interfaces;
- Core services;
- Connections with external gateways for user authentication, payments (optional), and SMS and IVR interfaces; and
- Connections with selected repositories of open educational resources;

²⁹ Internet protocol

³⁰ Information technologies



Figure 11 - e-Library system architecture

D.8 User Interface

The following wireframe depicts how an e-Library service would look like. It has basic functionalities such as being able to browse for book through the entire database of the library. Further to this, there are instructions on how to use the e-Library service. There is also a section of testimonials from users about this service.

Logo			Search	1 Searc
.og in: Usemame	Password	Log in	ID CARD	
iome Brow	se My Library Loc	al alerts Help		
				News
	Pictures			<news 1=""></news>
				<news 2=""></news>
Search the lil	brary collections	n for		<news 3=""></news>
			GO	Testimonials
How to use e-Lib	orary service?			
Step 1	Step 2	Step 3		Appearing here as a slider

Figure 12 - Possible e-Library landing page

D.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the service:

- Task A Refinement of the requirements of the service
- Task B Selection and customization of an open source solution for digital libraries
- Task C System testing
- Task D User acceptance testing
- Task E Deployment
- Task F Assessment and upgrade of the IT infrastructure of partner libraries

- Task G Assessment and upgrade of the IT infrastructure of partner institutions
- Task H On-job training of librarians and curators
- Task I On-location training of students, teachers, lecturers and scholars by e-Library champions

The following chart depicts the charts timewise, in monthly units.

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Α																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		

Table 16 - Work plan

D.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- e-GC e-Government Directorate
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	e-GD	ANDC	Total
	(e-GCASD)	(C)	(CBTU)			
Α	0.5 PM					0.5 PM
В	1 PM			1 PM		2 PM
С	0.5 PM				1 PM	1.5 PM
D	0.5 PM					0,5 PM
E	0.5 PM				0.5 PM	1 PM
F	0.25 PM					0.25 PM
G	0.25 PM					0.25 PM
Н			1 PM			1 PM
I			1 PM			1 PM
Total	3.5 PM		2 PM	1 PM	1.5 PM	8 PM

Table 17 - Team and budget

Assuming an average cost of 1500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 12000 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

E e-Prescription

E.1 Introduction

Illegible handwriting of doctors has been an issue which has been addressed and even made joke of for years. It is hard not just for the individuals to make out what the doctor is writing when the handwriting is illegible but when pharmacists would actually give out medicines, there is a higher probability that they would make a mistake and a wrong medicine can have adverse effects on the health of an individual. The e-Prescription service offers the opportunity to reduce these medication errors which result from pharmacists misreading prescriptions, dispensing an incorrect dose, or even prescribing the wrong drug. When a doctor issues an e-Prescription, all that she or he would do is go online and fill a form which would be populated with the list of all drugs that doctors are allowed to issue in the Islamic republic of Afghanistan available nationally. When a patient goes to the pharmacy, all that he or she would need to do is present a government issued ID card so that the pharmacist would retrieve the drugs prescribed. Also, by using this service, it would be easy for an individual citizen to log into his or her account and check whatever prescriptions the doctor has issued. On similar lines, doctors would be able to see whatever medicines they have prescribed as well.



Figure 13 - Examples from Russia³¹, Estonia³² and United Kingdom³³

³¹ http://emias.info/

³² http://www.e-tervis.ee/index.php/en/

³³ http://www.lloydspharmacy.com/en/info/electronic-prescriptions

E.2 Overall context

E.2.1 Purpose

The main purpose of the e-Prescription service is to enable transparent, accurate, error free and hassle free prescriptions.

The service also contributes to improved health care services as:

- Prescription records are readily available to physicians when and where needed
- Prescription patterns can be monitored and relevant trends can be identified

E.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services addressing public health issues.

From the EGRC II project perspective, the addressed goals are:

- Increased transparency
- Gender equity
- m-Government
- Streamlined services
- Efficiency

E.2.3 Target audience

Although the primary audience of the e-Prescription service are citizens in general, the main users of the system with be health care providers and pharmacists.

E.2.4 Usage scenario

E.2.4.1 Persona

Ayub works as a construction worker in a small village. The nearby hospital from his village is in a town that is an hour bus ride away and the frequency of the buses to that destination is not that high. Often, the buses are also not on time. Ayub has asthma and sees his physician every three to six month but his medications often come due for annual renewal before his upcoming appointments. Because of this disparity, Ayub often skips his refills and has to go without some of his medications for several days, sometimes he lost the prescription and skips to visit his physician for another prescription as it is far from his home town. Ayub wishes his medication procurement schedule could be simplified and consolidated as it is physically and mentally taxing for him. Ayub's physician feels the same way as he could not determine whether the medication were taken regularly and was effective, and whether the dose was right before signing off on the next round of pills. The physician feels the out-of-sync schedule that they currently have is a time-wasting hassle, inefficient, unsafe, inaccurate, inconvenient and pointless.

E.2.4.2 User story

Ayub's physician came across a newsletter in this hospital that the government has recently launched an e-Prescription service and as a matter of fact their hospital has currently started using it. Since then Ayub has only visited him once for a regular check-up and all his renewals were done using this e-Prescription service. All that Ayub needed to do was call his physician and inform him that its time when his renewals are due. The physician would then prescribe him the same dosage of medicine through the e-Prescription system and Ayub did not need any paper prescription with him when we went to the pharmacy. All that he did at the pharmacy also was presenting his national ID card. The pharmacist entered his ID card number and saw the medicines which were prescribed and Ayub got his medicines. Ayub feels relaxed both mentally and physically. He would sure spread the word about this service to his friends and family who are unaware that such a service exists. He gets updates as a text message on his phone that he has been prescribed some dosages.

E.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Data privacy legislation
- Prescription related procedures

E.2.6 Ownership

The e-Prescription service will be owned exclusively by the Ministry of Public Health (MPH).

E.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all, to health care providers and to pharmacists. Back-end functionalities are available to those administering the e-Prescription service.

E.3.1 Front-end functionalities

E.3.1.1 For all

This set of functionalities allows everyone to:

- Retrieve personal profiles
- Browse through personal prescription records and retrieving information such as prescribed dosage, frequency and duration of use
- Audit third party access to personal prescription records
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to:
 - Prescription expiration
 - o Prescription availability
 - $\circ \quad \text{Prescription renovation}$
- Create, retrieve, update and delete claims
- Generate reports

E.3.1.2 For health care providers

This set of functionalities allows authorized health care providers to:

- Create, retrieve, update and delete prescriptions
- Retrieve prescription records
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to, prescription renovation
- Create, retrieve, update and delete claims
- Generate reports

E.3.1.3 For pharmacists

This set of functionalities allows authorized pharmacists to:

- Retrieve and process prescriptions, fully or partially
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to, prescription availability
- Create, retrieve, update and delete claims
- Generate reports

E.3.2 Back-end functionalities

This set of functionalities allow e-Prescription operators to:

- Retrieve and update personal profiles, namely to grant health care provider or pharmacist privileges
- Create, retrieve, update and delete medicine categories
- Create, retrieve, update and delete medicine descriptions
- Accept, process and conclude claims
- Generate reports

E.4 Requirements

E.4.1 Hosting

The e-Prescription service will be hosted by the Afghanistan National Data Centre.

E.4.2 Owner databases

The MPH will own the core databases. These include:

- User privileges and profile database
- Medicine database
- Prescriptions database
- Notifications database
- Claims database

E.4.3 Third party databases

Third party databases are:

- User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs
- External medicine databases will be used to partially populate the local medicine database

E.4.4 Delivery channels

The e-Prescription service will be available through the web (both desktop and mobile) with complementary e-mail and SMS³⁴ notifications, together with SMS and IVR³⁵ interfaces with limited functionality.

Additionally, the service will be available through kiosks, deployed in selected locations, in urban and rural areas.

E.4.5 Usability

The usability of the e-Prescription service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage

³⁴ Short messages service

³⁵ Interactive voice response

satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

E.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Prescription service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Prescription service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Prescription service.

E.5 Expected impact

E.5.1 Internal success indicators

Internal success indicators include:

- e-Prescription penetration levels in health care providers (measure by the ratio between the number of registered health care providers and their total number)
- e-Prescription penetration levels in pharmacies (measure by the ratio between the number of registered pharmacies and their total number)

E.5.2 External success indicators

The external success indicators include:

- Frequency of use by health care providers (measured by the number of e-Prescriptions issued over time)
- Frequency of use by pharmacists (measured by the number of e-Prescriptions served over time)
- e-Prescription usage ratio (measured by the number of prescription issues and/or served in e-Procurement over the overall number of prescriptions issues and/or served)
- Gender distribution of users (asses by user volunteered information)
- Geographic distribution of e-Prescription users (health care providers, pharmacists and citizens in general)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

E.6 Risk assessment

E.6.1 Barriers to deployment

The most probable barriers to deployment are:

- Lack of IT infrastructure in participating health care facilities and pharmacies
- Unavailability of e-Prescription operators
- Resistance to adopt a common and auditable prescription management platform by health care providers and pharmacists
- Low levels of digital literacy in health care providers and pharmacists

E.6.2 Barriers to adoption

The most probable barriers to adoption are:

• Lack of trust in the e-Prescription service

E.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Co-design sessions with health care providers and pharmacists
- Assessment and upgrade of the IT infrastructure of participating health care facilities and pharmacies
- Recruitment and on-job training of e-Prescription operators
- On-location training of health care providers and pharmacists

To address the potential barriers to adoption, this project includes activities such as:

• Nationwide dissemination of the e-Prescription service

E.7 System architecture

The following diagram depicts the architecture of the e-Prescription service highlighting the following components:

- Back-end (e-Prescription operators) and front-end (health care providers, pharmacists and citizens in general);
- Core services; and
- Connections with external gateways for user authentication, SMS notifications, and SMS and IVR interfaces.



Figure 14 - e-Prescription system architecture

E.8 User Interface

The following wireframe depicts how a simple e-Prescription service would look like. The service should have separate tabs for information for doctors and pharmacists and for patients and the wireframe depicts this. Further, there is a lot more information on the e-Prescription service's landing page such as news, testimonials appearing as sliders, important announcements, space for related documents and finally a space for images (any

image that would be pertinent to the service such as examples of doctors, pharmacists or patients who used the service and their feedback on this service, how they felt using it etc.



Figure 15 - Possible e-Prescription landing page

E.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the service:

- Task A Refinement of the requirements of the service (including co-design sessions with health care providers and pharmacists)
- Task B System design
- Task C System development
- Task D System integration
- Task E System testing
- Task F User acceptance testing
- Task G Deployment
- Task H Nationwide dissemination of the e- Prescription service
- Task I Assessment and upgrade of the IT infrastructure of participating health care facilities and pharmacies
- Task J Recruitment and on-job training of e-Prescription operators
- Task K On-location training of health care providers and pharmacists

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Α																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		
I																		
J																		

К																		

Table 18 - Work plan

E.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	ANDC	Total
	(e-GCASD)	(C)	(CBTU)		
Α	2 PM				2 PM
В	2 PM				2 PM
С	8 PM				8 PM
D	1 PM			1 PM	2 PM
E	1 PM			1 PM	2 PM
F	2 PM				2 PM
G	1 PM			1 PM	2 PM
Н		1 PM			1 PM
I	1 PM				1 PM
J	1 PM		1 PM		2 PM
К			1 PM		1 PM
Total	19 PM	1 PM	2 PM	3 PM	25 PM

Table 19 - Team and budget

Assuming an average cost of 2500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 62500 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

F e-Vaccination

F.1 Introduction

Vaccines are supposed to be administered at a particular time and follow a highly structured recommended schedule. When a vaccine schedule is adhered to, it generates optimal immune response which basically means the vaccine would be very effective. Just as one would sometimes forget to buy milk from a grocery store, it is not surprising that people miss out on their vaccine schedules. Moreover, the immunization coverage in Afghanistan is low ³⁶. Hence, apart from acting as a reminder service, increasing the outreach of such a service to rural areas is the need of the hour. Also, from a health provider's context, it is simply not possible for them to remind all the patients that they attend to since this is a daunting and a near impossible task. The world health organization (WHO) further state that nearly one in five children across the world miss out on their vaccines every year³⁷. Therefore, an e-Vaccination service would act as a mediator between the health care providers and individual citizens in that the e-vaccination service would send periodic reminder in the form of e-mails or text messages for people to keep up with their inoculation schedules.







Figure 16 - Examples from Saudi Arabia³⁸, India³⁹ and Canada⁴⁰

- ³⁶ http://www.emro.who.int/afg/programmes/epi.html
- ³⁷ http://www.who.int/features/2014/immunization-app/en/
- ³⁸ http://www.moh.gov.sa/en/eServices/Pages/Vaccination.aspx
- ³⁹ http://immunizeindia.org/
- ⁴⁰ http://www.immunizebc.ca/reminders

F.2 Overall context

F.2.1 Purpose

The main purpose of the e-Vaccination service is to enable citizens to keep their inoculations on track.

The service contributes to improved health care:

- Notifying individuals about their vaccination obligations and appointments
- Making vaccination records readily available to individuals and health care providers

F.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services addressing public health issues.

From the EGRC II project perspective, the addressed goals are:

- Increased transparency
- Increased access
- Gender equity
- m-Government
- Telecenters
- Streamlined services
- Efficiency

F.2.3 Target audience

The primary audience of the e-Vaccination service are citizens in general, health care providers and authorised third parties using vaccination records legal purposes. e-Vaccination service administrators constitute the secondary audience.

F.2.4 Usage scenarios

F.2.4.1 Citizens

F.2.4.1.1 Personas

Asad and Arifa meant to take Sulaiman, their youngest child, for his second dose of the combined measles/mumps/rubella vaccine, but somehow it just slipped their minds. Asad works full time and Arifa is a housewife but busy with household activities and taking care of their other two children. Since there was so much to juggle in their home and professional lives that it was all too easy for that crucial second dose to fall off the 'to do' list. However, their memories were jogged in a less than pleasant way, when they visited relatives in the nearby village and heard the news of a measles outbreak in that area. Asad and Arifa wish that there would be way so that things become easy and there could be a reminder service by the health care providers or the government to individual citizens.

F.2.4.1.2 User story

Whilst Arifa was staying home one day, she was reading the local newspaper and she saw an advertisement which was from the government that they had recently launched an evaccination service which allows people with computers to sign up for the service and people would be sent timely reminders about their inoculation plans. A second option for people without an access to computer or internet is that they can go to kiosks which would be placed in health care facilities and they can sign up for this service with the help of people working in these kiosks and they would be sent reminders in the form of text messages on their mobile phones when their vaccine opportunities are near. Arifa was very happy to hear this and the very next day, she went with Asad to the nearby health care facility that had a kiosk installed and took help from the people trained in using this system and subscribed for this service. They are going home with a peace of mind that they would never miss any more vaccination dates either for themselves or for their kids. Not just this, they will spread the word about this new initiative by the government to friends and family.

F.2.4.2 Health care providers

F.2.4.2.1 Persona

Raheema is 36 years old works as a nurse in a hospital in her province. One of her main roles is to administer vaccines to individuals who come to her. There is a great deal of paperwork involved in the whole process. When people come to her, they ask her several questions such as "when was our last vaccine?", "do we need any more additional vaccines?", and "After how long should we come back again for the next dose of our vaccine"? People with kids come to her as well to inquire more about their children's immunization schedule. She wants to help them all but in the hospital where she works, there are only two nurses including her and managing this whole process is highly stressing for her. She has to be fast in dealing with people who come to her, there are queues every day and handling all immunization schedules is not just a sensitive matter but sometimes error prone and she does not want to make any mistakes. Raheema wishes that there was a smooth way to handle all such paperwork and also remind people about their vaccination schedules without the need for them to come to the hospital and inquire about these.

F.2.4.2.2 User Story

The Ministry of public health (MPH) has recently decided to use an online system for managing immunization schedules which would include sending reminders to people when their vaccination opportunities are near. Also, if someone has a computer they can access this service from the comfort of their home free of charge. They can download their inoculation plans with complete details of past and future vaccinations taken. Raheema is excited by this prospect she goes back home stress free when compared to before as her mind was always preoccupied. The entire process has become smooth and hassle free and Raheema can send notifications about upcoming vaccination opportunities and appointments to individual citizens through different means such as through a short text message (SMS) or e-mail.

F.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Data privacy legislation
- Inoculation and vaccination legislation and procedures

F.2.6 Ownership

The e-Vaccination service will be owned exclusively by the Ministry of Public Health (MPH).

F.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all, to health care providers and to third parties. Back-end functionalities are available to those administering the e-Vaccination service.

F.3.1 Front-end functionalities

F.3.1.1 For all

This set of functionalities allows everyone to:

- Create, retrieve, update and delete personal profiles
- Retrieve personal inoculation plans
- Retrieve and print authenticated personal vaccination records
- Audit third party access to personal vaccination records

- Create, retrieve, update, and delete notification requests about events such as, but not limited to:
 - Upcoming vaccination opportunity
 - Upcoming vaccination appointments

F.3.1.2 For health care providers

This set of functionalities allows authorized health care providers to:

- Retrieve and update inoculation plans
- Create, retrieve, update and delete vaccination records
- Generate reports

F.3.1.3 For third parties

This set of functionalities allow authorised third parties to:

- Retrieve vaccination records
- Authenticate printed personal vaccination records

F.3.2 Back-end functionalities

This set of functionalities allow e-Vaccination operators to:

- Retrieve and update personal profiles, namely to grant privileges to health care providers and third parties
- Create, retrieve, update and delete inoculation plans
- Create, retrieve, update and delete vaccine descriptions
- Generate reports

F.4 Requirements

F.4.1 Hosting

The e-Vaccination service will be hosted by the Afghanistan National Data Centre.

F.4.2 Owner databases

The MoPH will own the core databases. These include:

- User privileges and profile database
- Vaccines database
- Inoculation plans database
- Vaccination records database
- Notifications database

F.4.3 Third party databases

Third party databases are:

• User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs

F.4.4 Delivery channels

The e-Vaccination service will be available through the web (both desktop and mobile) with complementary e-mail and SMS⁴¹ notifications, together with SMS and IVR⁴² interfaces with limited functionality.

Additionally, the service would also be available through Kiosks strategically placed in health care facilities and other eligible public areas.

⁴¹ Short messages service

⁴² Interactive voice response

F.4.5 Usability

The usability of the e-Vaccination service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

F.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Vaccination service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Vaccination service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Vaccination service.

F.5 Expected impact

F.5.1 Internal success indicators

Internal success indicators include:

• e-Vaccination service penetration levels in health care facilities providing vaccination services (measure by the ratio between the number of registered health care facilities providing vaccination services and their total number)

F.5.2 External success indicators

External success indicators include:

- Frequency of use by individuals (measured by the number of inoculation plans retrieved, the number of vaccination records retrieved and number of notifications requested)
- Frequency of use by health care providers (measured by the number of vaccination records created)
- Frequency of use by third parties (measured by the number of vaccination records authenticated or retrieved)
- Gender distribution of e-vaccination service users (individuals)

• Geographic distribution of e-Vaccination users (individuals, health care providers, and third parties)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

F.6 Risk assessment

F.6.1 Barriers to deployment

The most probable barriers to deployment are:

- Lack of IT infrastructure in participating health care facilities
- Unavailability of e-Vaccination operators
- Low levels of digital literacy in health care providers

F.6.2 Barriers to adoption

The most probable barrier to adoption is:

- Inexistent or inadequate personal IT infrastructure
- Inexistent or inadequate IT infrastructure in third party beneficiaries
- Low levels of digital literacy in citizens
- Low levels of digital literacy by third party beneficiaries
- Lack of trust in the e-Vaccination service

F.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Assessment and upgrade of the IT infrastructure of participating health care facilities
- Recruitment and on-job training of e-Vaccination operators
- On-job training of health care providers
- On-job training of selected third party

To address the potential barriers to adoption, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure of local communities (namely in terms of internet access and e-Vaccination kiosks)
- Assessment and upgrade of the IT infrastructure of third-party beneficiaries
- On-location training of e-Vaccination users by e-Vaccination champions
- Nationwide dissemination of the e-Vaccination service

F.7 System architecture

The following diagram depicts the architecture of the e-Vaccination service highlighting the following components:

- Back-end (e-Vaccination operators) and front-end (individuals, health care providers, third parties);
- Core services; and
- Connections with external gateways for user authentication, SMS notifications, and SMS and IVR interfaces.



Figure 17 - e-Vaccination system architecture

F.8 User Interface

The following wireframe depicts how an e-vaccination service would look like. It has simple functionalities such as a tab for understanding immunity and immunization process. There is a separate tab which people can use to educate themselves about different diseases and the vaccinations. There is an option called all reports wherein people can view all their reports from, a dedicated help section and a button for downloading inoculation plans. The news related to new vaccinations and any other news pertinent to the service would appear on the right hand side. Finally, we have testimonials which would appear as sliders.

Logo			Search
Log in: Username	Password	Log in	ID CARD
Facts on immunity Diseases & Vaccinatio	ns All reports	Local alerts Help	
How to use e-vaccination serv	vice ?		News
Step 1 Step Outline here Outline	o 2 e here	Step 3 Outline here	<news1></news1>
Download your innocul	ation plan >		<news2></news2>
Important announcements Announcement 1 Announcement 2 Announcement 3	Related Announcemen How to manag Service guideli	I documents t 1 e your account nes	diens3>
			Testimonials
			Appearing here as a slider

Figure 18 - Possible e-Vaccination landing page

F.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the service:

• Task A – Refinement of the requirements of the service

- Task B System design
- Task C System development
- Task D System integration
- Task E System testing
- Task F User acceptance testing
- Task G Deployment
- Task H Nationwide dissemination of the e-Vaccination service
- Task I Assessment and upgrade of the IT infrastructure of participating health care facilities
- Task J Assessment and upgrade of the IT infrastructure of local communities
- Task K Assessment and upgrade of the IT infrastructure of third-party beneficiaries' facilities
- Task L Recruitment and on-job training of e-Vaccination operators
- Task M On-job training of health care providers
- Task N On-location training of e-Vaccination users by e-Vaccination champions
- Task O On-job training of third party beneficiaries

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Α																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		
I																		
J																		
К																		
L																		
М																		
Ν																		
0																		

Table 20 - Work plan

F.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	ANDC	Total
	(e-GCASD)	(C)	(CBTU)		
А	2 PM				2 PM
В	4 PM				4 PM
С	12 PM				12 PM
D	2 PM			2 PM	4 PM
E	2 PM			2 PM	4 PM
F	2 PM				2 PM
G	2 PM			2 PM	4 PM
Н		1 PM			1 PM
I	1 PM				1 PM
J	1 PM				1 PM
K	1 PM				1 PM
L	1 PM		1 PM		2 PM
Μ			4 PM		4 PM
Ν			4 PM		4 PM
0			2 PM		2 PM
Total	30 PM	1 PM	11 PM	6 PM	48 PM

Table 21 - Team and budget

Assuming an average cost of 2500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 120000 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

G e-Payment

G.1 Introduction

The vision behind an e-Payment service is that all state payments can be completed using a unified system. It is meant to be a system that would make it easy for individual citizens to pay all their bills such as electricity, water etc. using just a single service. An example of how the e-Payment service would be an individual citizen who wishes to pay his electricity bills enters the payment reference number which would be generated by the electricity company. Following this, he enters the entity reference number (entity in this case would be the electricity company which would have a reference number assigned to them by the responsible ministry within the Islamic republic of Afghanistan and finally he/she would enter the payment value and then selects a payment option from the ones available (this has been further elaborated upon during discussion on front end functionalities). The payment system would then check the funds in the citizen's bank account and if the necessary funds are available, then the system would automatically make the withdrawal and the person making the payment would receive an instant notification either through a short text message or e-mail (depending on their subscription choices) that the money has been withdrawn from his/her account. The merchant would then receive the money depending on how the banking system is set up for transferring funds. In most cases, this does not take more than 2-3 working days. Thus, to summarize, allowing customers to pay for their goods and services using a single online platform is what an e-Payment service environment is aimed at.

Página Inicial - Multiban × +	- 🗆 X	▲ M-PESA - Mobile Mone × +	
ightarrow O $ $ $rightarrow$ multibanco.pt	··· Q N = ★ []	← → ♡ safaricom.co.ke/personal/m	pesa 🛄 🕁 🛛 🚍
MULTIBANCO MEINET MEIWAY	Comerce Onine Segures		ABOUT US INVESTOR RELATIONS
	Q	Calls & SMS My Internet M-PESA Get More Smart	Tools Archive
		Personal > M-PESA	
	E ALLER T	Get Started with M-PESA	Do More with M-PESA
	(alby invite	How to register for M-PESA	Kenya Runs On M-PESA
	2	M-PESA Rates	M-Shwari
		Checking your M-PESA Balance	M-Shwari Lock Savings Account
		Deposit Cash to your Account	Bank to M-PESA and M-PESA to Bank
UIN = CARTÓRS PESDOOS OU		Send money	KC8 M-PESA Account
-351 217 916 780		Withdraw Cash	Safaricom M-Ledger
20		Changing your M-PESA PIN	My1963 Card
		M-PESA Tips	M-PESA Chama Account
OPERAC	ÕFS	Hakkisha	M-PESA API
OI LIVIÇ	020	M-PESA Agents	M-PESA Statements on Email
LEVANTAMENTOS CONSULTAS PARAMENTOS	COMPANS TRANSFERENCIAS	Agent Location pdfs	

Figure 19 - Examples from Portugal⁴³ and Kenya⁴⁴

G.2 Overall context

G.2.1 Purpose

To put it simply, the main purpose of an e-Payment service is to allow legal entities (individuals or organizations) to pay national or local government fees and taxes. The e-Payment service provides access to an open range of secure and reliable payment systems using a single and convenient service point.

G.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen and business centred e–Government services.

⁴³ http://www.safaricom.co.ke/personal/m-pesa

⁴⁴ https://www.multibanco.pt/

From the EGRC 2 project perspective, the addressed goals are:

- Increased transparency
- Increased access
- Gender equity
- m-Government
- Telecenters
- Streamlined services
- Efficiency

G.2.3 Target audience

The primary audience of the e-Payment service is dual:

- On one hand we have legal entities (individuals or organizations) paying national or local government fees or taxes; and
- On the other hand, we have national or local government units collecting fees or taxes.

As secondary users, we have the e-Payment service operators.

G.2.4 Usage scenarios

G.2.4.1 Persona

Tawfiq is a hardworking man who works in the local electricity store which is open from 7:30 AM-4:30 PM. Apart from working in the store, he also works as an on-call handyman and goes to people's homes to resolve any issues with regards to electricity such as faulty circuits etc. He has received his electricity bill this week which is due by the end of the week and he would receive his water bills next week. Every month, he is very stressed with the entire process as going to make payment about both of these to the bank takes a lot of time because there is a huge queue. He wishes that either the cycle of the bills is somehow in sync or there can be a payment system through which he can pay both the bills.

G.2.4.2 User story

While visiting a family home for doing some electrical repairs, Tawfig was having a casual conversation with the house owners and he explained his situation to them. They immediately told Tawfiq about a new service launched by the government known as e-Payment service which acts as a single access point for payment of various services including water and bill. They further explained to him that he can also pay taxes using this service. Tawfiq does not know how to use an online payment service so they told him that there is an e-Payment kiosk not far from their house where the e-Payment service champions (people trained in using and teaching citizens about the e-Payment service environment) would help him set up an account and show him how to make his payments. All that he would need to do would bring his bills which have the reference numbers on it and his ID proof so that the service champions could verify his authenticity when setting up his account. The same evening, Tawfiq went to the kiosk with all the required documents. The e-Payment service champions helped him with the entire process and showed him how he can use the e-Payment service environment at the kiosk all by himself when he comes for his next payment. Tawfiq is highly impressed by this whole process and is now relaxed as he can pay for all the bills by just visiting the kiosk which is very close to where he worksIn the future, Tawfig intends to buy a second hand computer so he can do all these transactions online. He has also already started telling about this service to his friends and family and explained to his wife how the service works so in the future, she can also visit the kiosk and make payments in his absence.

G.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Fees and taxes legislation
- Data privacy legislation
- Dispute resolution legislation
- Electronic payment legislation

G.2.6 Ownership

The e-Payment service is owned by the Ministry of Finance (MF) but managed by all participating ministries and government units.

G.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to those paying fees and taxes, or those collecting them; and back-end functionalities, available to e-Payment operators.

G.3.1 Front-end functionalities

G.3.1.1 For paying individuals and organizations

This set of functionalities allows legal entities (individuals or organizations) to:

- Create, retrieve, update and delete extended personal profiles that can also include digitised versions of documents such as passport and other required documents
- Create, retrieve, update and delete requests to act on behalf of organizations
- Add, retrieve, update, activate, suspend and delete payment options such as:
 - My money and e-Tohfa (Afghan wireless)
 - o M-Paisa (Roshan Telecom)
 - mHavala (Etisalat Telecom)
 - o Master Card
 - o Visa
- Browse and search for:
 - Payments due
 - Payments completed
 - Refunds requested
 - o Refunds completed
- Create, retrieve, update, confirm, and delete transactions such as:
 - o Payment orders
 - Refund requests
- Retrieve and print authenticated receipts
- Create, retrieve, update and delete claims
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to:
 - The status of payment orders
 - o The status of requested refunds
 - o The status and result of submitted claims
- Generate reports

G.3.1.2 For national or local government units

This set of functionalities allows national or local government units to:

• Browse and search for:

- o Payments due
- Payments completed
- Refunds requested
- Refunds completed
- Create, retrieve, update, confirm, and delete transactions such as:
 - o Payment requests
 - o Refund orders
- Authenticate printed receipts
- Create, retrieve, update and delete claims
- Generate reports

G.3.2 Back-end functionalities

This set of functionalities allows e-Payment operators to:

- Retrieve and update personal profiles, namely to:
 - Grant, deny or revoke privileges to those requesting to act on behalf of organizations
 - Grant, deny or revoke privileges to those nominated to act on behalf of national or local government units
- Accept, process and conclude claims
- Generate reports

G.4 Requirements

G.4.1 Hosting

The e-Payment service will be hosted by the Afghanistan National Data Centre.

G.4.2 Owner databases

MCIT will share ownership of core databases with the institutions warding the participating national and local government units. These include:

- User privileges and extended profile database
- Entities database (for data related to organizations as well as to national and local government units)
- Payment options database
- Transactions database
- Notifications database
- Claims database

G.4.3 Third party databases

Third party databases are:

• User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs

G.4.4 Delivery channels

The e-Payment service will be available through the web (both desktop and mobile) with complementary e-mail and SMS⁴⁵ notifications, together with SMS and IVR⁴⁶ interfaces with limited functionality.

Additionally, the service will be available through e-Payment kiosks, deployed in selected locations, in urban and rural areas.

⁴⁵ Short messages service

⁴⁶ Interactive Voice response

G.4.5 Usability

The usability of the e-Payment service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

• Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

G.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Payment service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Payment service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Payment service.

G.5 Expected impact

G.5.1 Internal success indicators

Internal success indicators include:

- e-Payment penetration levels (measured by number of eligible national and local government units using this service to process collect fees and taxes over the total number eligible national and local government units)
- Rate of e-Payment service adoption (measured by number of eligible national and local government units using this service to process collect fees and taxes, over time)

G.5.2 External success indicators

The external success indicators include:

- Ratio of e-Payment adoption (measured by the number of fees and taxes transacted through e-Payment over the total number fee and tax transactions)
- Frequency of use (measured by the number of fees, taxes and refunds transacted through e-Payment, together with the number of receipts retrieved, printed and authenticated)
- Gender distribution of users (asses by user volunteered information)

• Geographic distribution of users (assessed by IP address⁴⁷ location or user volunteered geographical information of authenticated users)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

G.6 Risk assessment

G.6.1 Barriers to deployment

The most probable barriers to deployment are:

- Resistance to cooperate by existing electronic payment operators
- Resistance to adoption of a cashless payment system by national and local government institutions
- Lack of IT infrastructure in participating institutions
- Low levels of digital literacy in participating institutions
- Unavailability of e-Payment service operators

G.6.2 Barriers to adoption

The most probable barriers to adoption are:

- Inexistent or inadequate personal IT infrastructure
- Low levels of digital literacy in citizens
- Lack of trust in the electronic payment services in general, and on e-Payment in particular

G.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Co-design sessions with major stakeholders, including electronic payment operators and selected national and local government units
- Assessment and upgrade of the IT infrastructure of participating national and local government units
- On-job training of e-Payment users from national and local government units
- Recruitment and on-job training of e-Payment operators

To address the potential barriers to adoption, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure of local communities (namely in terms of internet access and e-Payment kiosks)
- Nationwide dissemination of the e-Payment service
- On-location training of e-Payment users by e-Payment champions

G.7 System architecture

The following diagram depicts the architecture of the e-Payment service highlighting the following components:

- Back-end (e-Payment operators) and front-end (individuals and organizations, and national or local government units);
- Core services;
- Interfaces with participating electronic payment operators; and
- Connections with external gateways for user authentication, e-mail and SMS notifications, and SMS and IVR interfaces.

⁴⁷ Internet protocol



Figure 20 - e-Payment system architecture

G.8 User Interface

The following diagram represents how a user interface of an e-Payment service would look like. It has all relevant functionalities such as loading money, help and support regarding the service, steps on how to use the service have also been outlined. The most important feature of the service is entering the payment details with an option for entity and payment references along with payment value. There is also an option detailing how to make claims (complains) and get refunds in case there are some issues with the transaction. Finally, we have user testimonials appearing as sliders on the bottom right hand corner of the user interface.

Logo		
Log in: Username	Password Log in	ID CARD
Services Load money Support Abo	ut e-Payment Local alerts Help	
How to use e-Payments se	rvice?	News
Step 1	Step 2 Step 3	
Outline here C	Outline here Outline here	<news 1=""></news>
	Payment details	<news 2=""></news>
Picture	Payment reference Payment value	GO <news 3=""></news>
		Testimonials
mportant announcements	Useful links	
Innouncement 1	e-Payment user guide	Appearing here as a slider
Announcement 2		
Announcement 3	Rules & Regulations	

Figure 21 - Possible e-Payment landing page

G.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the e-Payment service:

• Task A – Refinement of the requirements of the service (including co-design sessions with internal and external stakeholders)
- Task B System specification
- Task C System development
- Task D System integration
- Task E System testing
- Task F User acceptance testing
- Task G Deployment
- Task H Assessment and upgrade of the IT infrastructure of participating national and local government units
- Task I Assessment and upgrade of the IT infrastructure of local communities
- Task J On-job training of e-Payment users from national and local government units
- Task K Recruitment and on-job training of e-Payment operators
- Task L On-location training of e-Payment users by e-Payment champions
- Task M Nationwide dissemination of the e-Payment service

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Α																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		
I																		
J																		
К																		
L																		
М																		

Table 22 - Work plan

G.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	ANDC	Total
	(e-GCASD)	(C)	(CBTU)		
Α	6 PM				6 PM
В	6 PM				6 PM

C	12 PM				12 PM
D	3 PM			3 PM	6 PM
E	2 PM			2 PM	4 PM
F	2 PM				2 PM
G	2 PM			2 PM	4 PM
Н	1 PM				1 PM
I	1 PM				1 PM
J			3 PM		3 PM
К	1 PM		3 PM		4 PM
L			3 PM		3 PM
М		4 PM			4 PM
Total	36 PM	4 PM	9 PM	7 PM	56 PM

Table 23 - Team and budget

Assuming an average cost of 2500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 140000 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

H e-Birth

H.1 Introduction

The United Nations Children's Emergency Fund (UNICEF) which is a humanitarian organization working for child welfare in developing countries ⁴⁸ puts forth that the basic right of every child is an identity and they strongly advocate registration of every child at birth. UNICEF further goes on to state that benefits of a birth registration are many such as school and university admission, marriage recognition and issue of passports among other miscellaneous advantages ⁴⁹. Moreover, a birth registration through conventional means wherein a nurse or a hospital administrator has to register a child's birth through a pen and paper and then issue a birth certificate is a process which is cumbersome, time consuming and error prone. Globally, there are an estimated 220 million children under five across the world whose birth is not recorded⁵⁰. No birth certificate means no identity which means no access to basic services such as education and health care. Hence, to make birth registration error free and give basic access rights to children living in rural areas, implementation of an electronic birth system is proposed.

e-Birth registration system is a mechanism through which births are registered via a secure Internet connection. It is designed to allow a hospital birth registrar to electronically enter and register a birth record, and capture and store any required signatures. This would also eliminate the need for hospitals to forward original hard copy birth records to health departments. Also, the e-Birth service would complement other e-services which are EGRC II project such as e-Vaccination and e-Prescription.

There are already such electronic birth registration systems being implemented across the globe and some examples of the same are provided below:

⁴⁸ http://www.unicef.org/about/

⁴⁹ http://www.unicef.org/protection/files/UNICEF_Birth_Registration_Handbook.pdf

⁵⁰ http://www.independent.co.uk/news/world/politics/220-million-children-who-dontexist-a-birth-certificate-is-a-passport-to-a-better-life-so-why-cant-8735046.html



Figure 22 - Examples from the Philippines⁵¹, Bahrain⁵² and Canada⁵³.

H.2 Overall context

H.2.1 Purpose

The main purpose of the e-Birth service is to allow for official registration and certification of the birth of citizens of the Islamic Republic of Afghanistan.

This service broadly contributes to:

- Increased access to basic rights and services such as health care, protection, education
- Improve policy and decision making support through higher quality information on all births of Afghan nationals

H.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services.

From the EGRC 2 project perspective, the addressed goals are:

- Increased transparency
- Increased access
- Gender equity
- m-Government
- Telecenters

⁵¹ https://www.ecensus.com.ph/Default.aspx

⁵² https://goo.gl/ZCF4YQ

⁵³ https://ebr.vs.gov.bc.ca/ebr_prod/

- Streamlined services
- Efficiency

H.2.3 Target audience

The primary audience of the e-Birth service are citizens registering births or requesting birth certificates, and authorised third parties using birth registration data for legal purposes. As secondary users we have e-Birth operators.

H.2.4 Usage scenarios

H.2.4.1 Persona

Sakeena is 45 years old, married and is a mother of four. Her youngest son is 3 years old. Sakeena and her husband planned a family trip to neighboring country for medical treatment but they were notified that their children must have birth certificate and ID cards (Tazkira) to get a passport. For this, Sakeena went with her husband to the local birth registrar office which is responsible for issuing a birth certificate. They had to stand in the queue for hours till their turn came, Sakeena was not able to recall the exact date of birth of his youngest son and sometimes it takes days to get a birth certificate. The whole family wishes that this process could be made easier, less time consuming and can only hope now that they get the birth certificate on time.

H.2.4.2 User story

While her husband was out for work, Sakeena was listening to the local radio in her province, a habit that she has developed over the years as it helps her keep up to date with the recent happenings from the province. She heard on the radio that the government has launched an electronic birth registration service which can be used either at home using a computer with internet access or by going to kiosks at health care facilities. She was happy to hear this news and the very same day, she went with her youngest son to the nearest health service facility where they have kiosks for this service. She told them why she needed a birth certificate and the person at the kiosk was kind enough to show her how to use the service and how to access birth records and get the certificate. She followed all the instructions, paid a minimal fee for getting a printed certificate and walked out of the health care facility feeling happy. She took the certificate to get ID card and passport. The same day when her husband came back from work, she told him how happy she is about this ebirth registration system. Both Sakeena and her husband will surely spread the word and let as many people as possible know about this service.

H.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Data privacy legislation
- Birth registration legislation
- Citizenship rights legislation

H.2.6 Ownership

The e-Birth service will be jointly owned by Ministry of Interior Affairs (MoIA) and Ministry of Public Health (MoPH).

H.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all and to authorised third parties, and back-end functionalities, available only to e-Birth operators.

H.3.1 Front-end functionalities

H.3.1.1 For all

This set of functionalities allows everyone to:

- Create, retrieve, update and delete personal profiles
- Create, retrieve, update, submit, withdraw and delete birth registration requests
- Retrieve and print authenticated personal birth certificates
- Create, retrieve, update, submit and pay orders for birth certificates
- Audit third party access to birth records
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to birth certificate deliveries
- Create, retrieve, update and delete claims

H.3.1.2 For third parties

This set of functionalities allow authorised third parties to:

- Retrieve birth records
- Authenticate printed birth certificates

H.3.1.3 Back-end functionalities

This set of functionalities allow e-Birth operators to:

- Retrieve and update personal profiles, namely to grant privileges to third parties
- Accept, process and conclude birth registration requests
- Accept, process and conclude birth certificate requests which presumes the possibility to retrieve, print and deliver authenticated personal birth certificates
- Accept, process and conclude claims
- Generate reports

H.4 Requirements

H.4.1 Hosting

The e-Birth service will be hosted by the Afghanistan National Data Centre.

H.4.2 Owner databases

The Ministry of Interior Affairs (MoIA) and the Ministry of Public Health (MoPH) jointly own the core databases. These include:

- User privileges and profile database
- Birth registrations database
- Birth certificate requests database
- Notifications database
- Claims database

H.4.3 Third party databases

Third party databases are:

- User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs
- Electronic payment databases, owned by public and private sector operators

H.4.4 Delivery channels

The e-Birth service will be available through the web (both desktop and mobile) with complementary E-mail and SMS⁵⁴ notifications, together with IVR⁵⁵ interface with limited functionality.

Additionally, the service would also be available through Kiosks strategically placed in health care facilities and other eligible public areas.

H.4.5 Usability

The usability of the e-Birth service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

H.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Birth service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Birth service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Birth service.

H.5 Expected impact

H.5.1 Internal success indicators

Internal success indicators include:

• e-Birth penetration levels (measured by the ratio between the number registered maternities and birth registration offices and the number known maternities and birth registration offices)

H.5.2 External success indicators

The external success indicators include:

⁵⁴ Short messages service

⁵⁵ Interactive voice response

- Frequency of use by individuals (measured by the number of birth registration requests, birth certificate retrieval and birth certificate requests issued over time)
- Frequency of use by third parties (measured by the number of birth certificates authenticated or retrieved)
- Gender distribution of e-Birth service users (individuals)
- Geographic distribution of e-Birth service users (individuals, and third parties)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

H.6 Risk assessment

H.6.1 Barriers to deployment

The most probable barriers to deployment are:

- Lack of IT infrastructure in participating maternities and birth registration offices
- Unavailability of e-Birth service operators
- Low levels of digital literacy in health care providers
- Low levels of digital literacy by employees of birth registration offices

H.6.2 Barriers to adoption

The most probable barriers to adoption are:

- Inexistent or inadequate personal IT infrastructure
- Inexistent or inadequate IT infrastructure in third party beneficiaries
- Low levels of digital literacy in citizens
- Low levels of digital literacy by third party beneficiaries
- Lack of trust in the e-Birth service

H.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Assessment and upgrade of the IT infrastructure of participating maternities and birth registration offices
- Recruitment and on-job training of e-Birth service operators
- On-job training of members of participating maternities and birth registration offices
- On-job training of selected third parties

To address the potential barriers to adoption, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure of local communities (namely in terms of internet access and e-Birth kiosks)
- Assessment and upgrade of the IT infrastructure of third-party beneficiaries
- On-location training of e-Birth users by e-Birth champions
- Nationwide dissemination of the e-Vaccination service

H.7 System architecture

The following diagram depicts the architecture of the e-Birth service highlighting the following components:

- Back-end (e-Birth operators) and front-end (individuals, health care providers and birth registration offices, third parties);
- Core services; and
- Connections with external gateways for user authentication, payments, SMS notifications, and SMS and IVR interfaces.



Figure 23 - e-Birth system architecture

H.8 User Interface

The following wireframe depicts how an e-Birth service should look like. It has a simple interface with basic functionalities such as steps on how to order a certificate, a button for ordering birth certificates, login options both using an ID card or a conventional user name and password. Finally, user testimonials appear as sliders at the bottom of the screen. These can also be replaced with something more meaningful, for instance quotes on why registration is important with pictures as sliders.

Logo		E	Search
Log in: Usemame	Password	Log in	ID CARD
Report a problem Your reports	All reports Loo	cal alerts Help	
How to order birth certificate	e ?		News
Step 1 St Outline here Out	ep 2 line here	Step 3 Outline here	<news1></news1>
Order a birth cer	tificate >		<news2></news2>
Important announcements Announcement 1 Announcement 2 Announcement 3	Related of Announcement 1 How to fill applica Birth registration	locuments	clews3>
			Testimonials
			Appearing here as a slider

Figure 24 - Possible e-Birth landing page

H.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the service:

- Task A Refinement of the requirements of the service
- Task B System design

- Task C System development
- Task D System integration
- Task E System testing
- Task F User acceptance testing
- Task G Deployment
- Task H Nationwide dissemination of the e-Birth service
- Task I Assessment and upgrade of the IT infrastructure of participating maternities and birth registration offices
- Task J Assessment and upgrade of the IT infrastructure of local communities
- Task K Assessment and upgrade of the IT infrastructure of third-party beneficiaries' facilities
- Task L Recruitment and on-job training of e-Birth service operators
- Task M On-job training of members of participating maternities and birth registration offices
- Task N On-location training of e-Birth users by e-Birth champions
- Task O- On-location training of selected third parties

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Α																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		
I																		
J																		
К																		
L																		
М																		
N																		
0																		

Table 24 - Work plan

H.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	ANDC	Total
	(e-GCASD)	(C)	(CBTU)		
Α	2 PM				2 PM
В	2 PM				2 PM
С	6 PM				6 PM
D	2 PM			2 PM	4 PM
E	1 PM			1 PM	2 PM
F	2 PM				2 PM
G	2 PM			2 PM	4 PM
Н		2 PM			2 PM
I	2 PM				2 PM
J	2 PM				2 PM
K	2 PM				2 PM
L	1 PM		2 PM		3 PM
М		4 PM	2 PM		6 PM
N			2 PM		2 PM
0			2 PM		2 PM
Total	24 PM	6 PM	8 PM	5 PM	43 PM

Table 25 - Team and budget

Assuming an average cost of 2500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 60000 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

I e-Marketplace

I.1 Introduction

Agriculture is the main source of livelihood and subsistence and a crucial sector for national food security and economic growth ⁵⁶. Generally, when farmers have to sell their products for which they have toiled and worked hard even the weather conditions are adverse, they do not get the required returns for their produce. Many of times the farmers sell products to middle men who charge a certain commission for the distribution of a farmers good. This commission is sometimes equivalent or even more than what the farmer would earn if there were no middle men. Through an e-Marketplace, we are giving farmers an opportunity to eliminate the need for middle men, set prices for their own produce and reach out to potential consumers using an online platform. It can be said that one of the visions of an e-Marketplace in the Islamic republic of Afghanistan is to make farm-to-neighbourhood a viable option, where fresh food is more accessible than ever before, nothing goes to waste, and we support small farmers and appreciate their hard work. The following pictures are screenshots of some successful cases of market place for farmers of three different countries.



Figure 25 - Examples from the United States of America^{57 and 58} and Germany⁵⁹

- ⁵⁶ http://nodaiweb.university.jp/desert/pdf/JALS-P78_345-348_color.pdf
- ⁵⁷ http://www.farmigo.com/
- ⁵⁸ https://www.bonativo.de/de/
- ⁵⁹ https://www.rhomarket.com/

I.2 Overall context

I.2.1 Purpose

To put it simply, the main purpose of e-Marketplace is to stimulate economy and agricultural activities.

It is imagined at this stage that an e-Marketplace would facilitate:

- Farmer empowerment; and
- Wider commercial networks between suppliers and consumers.

I.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services for Agriculture and Commerce.

From the EGRC II project perspective, the addressed goals are:

- Increased transparency
- Increased access
- Gender equity
- m-Government
- Telecenters
- Streamlined services
- Efficiency

I.2.3 Target audience

The primary audience of the e-Marketplace service are the suppliers (farmers) and their potential customers which can be other farmers, families and businesses.

As secondary users we have e-Marketplace operators – those facilitating the technical operation of the marketplace.

I.2.4 Personas and user story

I.2.5 Citizens

I.2.5.1 Background

Ramiz is 48 years old, works on a local farm and grows wheat and barley. The time for harvest is near and this is one of the most anxious times for Ramiz as he has to negotiate prices with middle men who are responsible for distribution of the harvest from farm to fork. Every year, it is the same story for Ramiz that these middle men actually give him less money for distributing his harvest and he constantly wonders if there was opportunity for him to sell his products in the right price and if there was a way that he can sell his own products himself.

I.2.5.2 User Story

Whilst Ramiz was working on his farm one day, one of his friends who also works as a farmer in the nearby neighborhood came to Ramiz and told him about a new initiative by the government for farmers called e-Marketplace. His friend recently sold a part of his harvest using this platform and said that there was no need for him to pay money to anyone if he uses this service. Ramiz was highly skeptical regarding this as he kept thinking that this is something which is not possible. His friend took him to an e-Marketplace kiosk in the village. Both he and his friend walked to the kiosk and his friend, who learnt how to use the e-Marketplace from the e-Marketplace champions (people trained to teach other people how to use the e-Marketplace) in the kiosk showed him how to use the system put up there. All that Ramiz had to do was first create an account and tell what he was selling. If a potential buyer was interested in any food product, they would buy it directly from the farmer. Next day Ramiz went again to the e-Marketplace kiosk. He logged into his account

and subscribed for SMS notifications as he does not have a computer to sign up for e-mail notifications. A few days later he got a notification on his phone that there is a buyer who has made payment to buy his produce. He immediately went to the nearest warehouse to put his fresh produce of wheat and barley from where the buyer could pick up. Ramiz is really happy with this entire chain of events and more relaxed that he does not have to go through middlemen anymore for selling his produce. He will surely spread the word about this service to fellow farmers, friends and family.

I.2.6 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Commerce legislation
- Advertisement legislation
- Dispute resolution legislation

I.2.7 Ownership

The e-Marketplace service will be owned by the Ministry of Agriculture, Irrigation and Livestock (MAIL).

I.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all, and back-end functionalities, available only to the e-Marketplace operators (those who ensure smooth running of the market place).

I.3.1 Front-end functionalities

This set of functionalities allows everyone to:

- Create, retrieve, update and delete personal profiles
- Create, retrieve, update and delete product records
- Browse product catalogues
- Search product catalogues
- Create, retrieve, update and delete orders
- Create, retrieve, update and delete claims
- Accept, process and conclude orders
- Accept, process and conclude claims
- Communicate with other e-Marketplace users
- Generate reports

I.3.2 Back-end functionalities

This set of functionalities would allow e-Marketplace operators to:

- Create, retrieve, update and delete supplier categories
- Create, retrieve, update and delete product categories
- Accept, process and conclude claims
- Generate reports

I.4 Requirements

I.4.1 Hosting

The e-Marketplace service will be hosted by the Afghanistan National Data Centre.

I.4.2 Owner databases

MAIL will own the core databases. These include:

- User privileges and profile database
- Products Database

- Orders database
- Claims database

I.4.3 Third party databases

Third party databases are:

- User authentication and authorization database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs
- Electronic payment databases, owned by public and private sector operators

I.4.4 Delivery channels

The e-Marketplace service will be available through the web (both desktop and mobile) with complementary e-mail and SMS⁶⁰ notifications and IVR⁶¹ interface with limited functionality. Additionally, the service will be available through kiosks which would be strategically placed in different villages depending on the penetration of the service in these villages.

I.4.5 Usability

The usability of the e-Marketplace service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

• Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

I.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Marketplace service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Marketplace with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Marketplace service.

⁶⁰ Short messages service

⁶¹ Interactive voice response

I.5 Expected impact

I.5.1 Internal success indicators

Internal success indicators include:

• E-Marketplace penetration levels (measure by the ratio between the number of registered e-Marketplace suppliers and the number of estimated farmers)

I.5.2 External success indicators

The external success indicators include:

- Frequency of use by undifferentiated and differentiated users (measured by browse and search activities of not authenticated and authenticated users; and also by number of orders placed, accepted, processed and concluded by authenticated users)
- Gender distribution of users (asses by user volunteered information)
- Geographic distribution of undifferentiated and differentiated users (assessed by IP address⁶² location of not authenticated users and by IP address and user volunteered geographical information of authenticated users)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

I.6 Risk assessment

I.6.1 Barriers to deployment

The most probable barrier to deployment is:

• Unavailability of e-Marketplace operators

I.6.2 Barriers to adoption

The most probable barriers to adoption are:

- Inexistent or inadequate personal IT infrastructure
- Low levels of digital literacy
- Lack of trust in the e-Marketplace service
- Lack of a reliable delivery options

I.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

• Recruitment and on-job training of e-Marketplace operators

To address the potential barriers to adoption, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure of rural communities (namely in terms of internet access and e-Marketplace kiosks)
- On-location training of e-Marketplace users by e-Marketplace champions

Transport service providers should also be encouraged to engage as e-Marketplace suppliers.

I.7 System architecture

The following diagram depicts the architecture of the e-Marketplace service highlighting the following components:

- Back-end (e-Marketplace operators) and front-end (all, but mainly product suppliers and customers) interfaces;
- Core services; and

⁶² Internet protocol

• Connections with external gateways for user authentication, payments, and SMS and IVR interfaces.



Figure 26 - e-Marketplace service architecture

I.8 User Interface

The following wireframe depicts how an e-Marketplace service environment would look like. It has functionalities such as entering the name of the nearby town, village, street or area to see if there are any farmers selling something. We have descriptions on how to use the e-Marketplace along with a dedicated help section for more information should the user get stuck in the environment for too long. There is a search bar on the top for browsing and searching product catalogues along with a shopping cart for buyers to see at the end what they would be buying and paying for. We have a news section and finally testimonials from users appearing as sliders.

Logo					7	Search		s Search
Log in: User	mame	Password		Log in		ID CARD		
Home	Buy	Farmers	Local alerts	Help				
Where car Enter a nearby street, a	a you buy? area, town or vilage to see	if there are any fam	ners seling stuff		GO		Nav	
How to use	e-Marketplace ?						News	
Step 1 Outline here	Step Outline I	2 nere	St	ep 3 ine here				<news 1=""></news>
Important an Announcement 1	nnouncements	Usef Know you Why have	ul links ar farmer fresh?					<news 2=""></news>
Announcement 3		Buying &	Selling guidelines					<news 3=""></news>
Image 1		mage 2		Image 3	1		Testim	nonials
							Appea	aring here as a slider

Figure 27 - Possible e-Marketplace landing page

I.9 Work plan

These are the main tasks to be accomplished for deploying the service:

- Task A Refinement of the requirements of the service
- Task B Selection and customization of an open source solution for peer-to-peer ecommerce
- Task C Nationwide dissemination
- Task D System integration
- Task E System testing
- Task F User acceptance testing
- Task G Deployment
- Task H Maintenance and hand-over to service owner
- Task I Assessment and upgrade of the IT infrastructure in selected rural communities
- Task J On-job training of e-Marketplace operators
- Task K On-location training of e-Marketplace users by e-Marketplace champions

The following chart depicts the charts time wise, in monthly units.

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Α																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		

J									
К									

Table 26 - Work plan

I.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- E-GD e-Government Directorate
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	e-GD	ANDC	Total
	(e-GCASD)	(C)	(CBTU)			
А	1 PM					1 PM
В	1 PM			1 PM		2 PM
С		1 PM				2 PM
D	1 PM				1 PM	2 PM
E	1 PM				1 PM	2 PM
F	2 PM					2 PM
G	2 PM					2 PM
Н	1 PM					1 PM
I	1 PM					1 PM
J			3 PM			3 PM
К			3 PM			3 PM
Total	10 PM	1 PM	6 PM	1 PM	2 PM	20 PM

Table 27 - Team and budget

Assuming an average cost of 1500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 30000 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

J E-Hajj

J.1 Introduction

Hajj is one of the most sacred and the largest gatherings of Muslims every year. Performing Hajj is a mandatory duty for every individual practicing the faith. To put this in the current context, nearly 99.7% of the population of Afghanistan follow Islam ⁶³ and many desire to go to Hajj every year. At present, the application for a Hajj is managed through conventional means using a pen and a paper. Understandably, Ministry of Hajj and Religious Affairs (MHRA) has to deal with thousands of these applications. For both the MHRA, who make decisions on Hajj applications and the individual citizens who wish to apply for Hajj, this whole process is very cumbersome. Through the e-Hajj service (as would be made clear in the sections to follow), it is imagined that this whole process would be managed electronically and citizens would be able to apply from home for Hajj and the MHRA can handle these applications electronically in a very easy and manageable way. There are already e-Hajj application systems being implemented in India and Saudi Arabia. Both these services allow registering and applying for Hajj online. Figure 1 and 2 show the

Both these services allow registering and applying for Hajj online. Figure 1 and 2 show the Hajj application platforms in India and Saudi Arabia respectively with basic functionalities of logging in or registering as a new user and then putting a Hajj application together.

O Haj Committee of India × +	-		×	- + × نظام الدح الالكنيوني 🗖	• ×
← → Ů 203.123.139.213/webapp/web15		۵		$\leftarrow \rightarrow \circlearrowright$ waytoumrah.com/prj_wtuHajj/Arb/Arb_frmLogin.aspx $\square \bigstar$ = Z	۵ ···
حج کمینان اندیا HAJ COMMITTEE OF NDA				Way TOU man star 256 - 147 - 1	
номе				شاشة دخول المستخدمين	
Read " How to Fill Form(Help)" before filling the form				Inc. Resident	
NEW USER REGISTRATION IS CLOSED REGISTERED USER SIGN IN				[standiff diges]	
User Name Password				تناميم وزارة الحج تناميم طريق المعره	
Porgan Passavo u	SUBMIT			el actuato de la functiona de la completa de la comp	
				اشتط هنا. لتمرفة حالة جاح	
IMPORTANT NOTES : For optimum performance use Latest Web browser.				المحدة الرئيسية معانية العالم الكليمين شركانها العام العال بعل ما حيوا لدين معولة (لاطري العرب 1828)	
Microsoft Internet Explorer 8.0 or higher.					
Spase mount interfor, spice search and dougle circle and rouge structure and search JavaScript must be enable.					
Bond was to or remain age Unite you submit the bacais. Best Resolution to View 1024 x 768.					

Figure 28 - Examples from India⁶⁴ and Saudi Arabia⁶⁵

J.2 Overall context

J.2.1 Purpose

The main purpose of the e-Hajj service is to allow citizens to register and apply for Hajj pilgrimage online. It is imagined that this service would:

- Reduce processing times and inefficiencies, ultimately ensuring a smooth process of handling thousands of hajj application requests
- Allow Afghan nationals to avoid the bureaucracy and the paper work involved in the application process
- Increases the outreach of the government to citizens through digital means

⁶³ https://www.cia.gov/library/publications/the-world-factbook/geos/af.html

⁶⁴ http://203.123.139.213/webapp/web15/

⁶⁵ http://www.waytoumrah.com/prj_wtuHajj/Arb/Arb_frmLogin.aspx

J.2.2 Goals

From a strategic perspective, the goal is to contribute to the development of a pool of citizen centred e–Government services.

From the EGRC II project perspective, the addressed goals are:

- Increased transparency
- Increased access
- Gender equity
- m-Government
- Telecenters
- Streamlined services
- Efficiency

J.2.3 Target audience

The primary audience of the e-Hajj service are the citizens who want to go for the Hajj pilgrimage and wish to apply for the same online.

As secondary users, we have the e-Hajj operators.

J.2.4 Usage scenario

J.2.4.1 Citizen

J.2.4.1.1 Persona

Karim is married, 45 years old and stays in a village where he has a small business. Karim and his wife have decided to go for Hajj. The main problem is that the process for hajj application is very cumbersome, involves a lot of paperwork, effort and sometimes it takes years to be able to go to Hajj and it is very difficult to track the application procedure and status, and he heard from his neighbors that for getting update information or for some procedures they had to travel to Kabul. On the other hand, employees within MHRA who have to deal with extensive paper work on a regular basis which is so difficult. Hence, the entire process is inefficient, time consuming and highly bureaucratic.

J.2.4.1.2 User story

One day in bazar, Karim heard from his friend that government has recently launched an online service which would allow citizens to apply for Hajj using the internet. He also told Karim that there is an e-Hajj service point in the nearby where he can go, seek the help of the people working in the access point and use the computer to apply for Hajj. Upon hearing about this, he went to the access point the next day, sought the help of the people working there, uploaded all documents which were needed for the Hajj application and applied for it. He was told that the status of his application would be sent to him through a text message. His application finally approved and he received the approval text message in his cell phone. He would now spread the good news about the e-Hajj application system to friends and family so that they can either go to these access points and apply for Hajj or if they know how to use internet and a computer and have access to one can do so from the comfort of their own home. Moreover, Karim is also spreading the word that he could apply for Hajj application for his wife from their own home instead of waiting in long queues with her.

J.2.4.2 e-Hajj operator

J.2.4.2.1 Persona

Dawlat is 46 years old and works as an employee of MHRA in the centre of his province. He is responsible for handling some parts of the Hajj applications. Two things frustrate him. First, is the amount of applications that are still pending and have to be dealt with and

second, the number of complains that his office receives regarding delay of the procedures and despite that, their applications never made it to MHRA. Dawlat wishes that there was a smooth way to handle and process these applications, may be online.

J.2.4.2.2 User story

The MHRA recently decided to use an online system through Hajj application. If someone has a computer they can access this service from the comfort of their home free of charge or if there is an e-Hajj kiosk at a eligible public area nearby, they can go there and apply for Hajj. Dawlat is excited by this prospect and his work life has changed drastically. The entire process has become smooth and hassle free and Dawlat can easily processes Hajj applications sitting behind his desk using a computer and notifications about the status and result of application requests and claims made by the citizens can be seen through the user and access that he has on the application.

J.2.5 Legal framework

From a legal and regulatory perspective, the following issues should be taken into consideration:

- Hajj pilgrimage application procedures
- Data privacy legislation
- Dispute resolution legislation

J.2.6 Ownership

The e-Hajj service is owned by Ministry of Hajj and Islamic Affairs.

J.3 Functionalities

In this service, functionalities are grouped in front-end functionalities, available to all and back-end functionalities, available to e-Hajj operators.

J.3.1 Front-end functionalities

This set of functionalities allows everyone to:

- Create, retrieve, update, submit, withdraw and delete Hajj application requests that can also include digitized versions of required documents
- Create, retrieve, update, and delete notification requests regarding events such as, but not limited to:
 - The status and result of submitted Hajj applications
 - The status and result of submitted claims
- Create, retrieve, update and delete claims

J.3.2 Back-end functionalities

This set of functionalities allows those who handle e-Hajj operators to:

- Accept, process and conclude applications
- Accept, process and conclude claims
- Generate reports

J.4 Requirements

J.4.1 Hosting

The e-Hajj service will be hosted by the Afghanistan National Data Centre.

J.4.2 Owner databases

The MHRA will own the core databases. These include:

- User privileges and extended profile database
- Hajj application database
- Notifications database

Claims database

J.4.3 Third party databases

Third party databases are:

• User authentication and authorisation database, part of the infrastructure enabling the National ID card, owned by the Ministry of Interior Affairs

J.4.4 Delivery channels

The e-Hajj service will be available through the web (both desktop and mobile) with complementary e-mail and SMS⁶⁶ notifications, together with IVR⁶⁷ interface with limited functionality.

Additionally, the service will be available through e-Hajj access kiosks, deployed in selected locations, in urban and rural areas.

J.4.5 Usability

The usability of the e-Hajj service is expressed through its effectiveness, efficiency and satisfaction. In this case, the usability requirements are as such:

• Effectiveness

Effectiveness will be assessed by completion rate (the ratio between the number of tasks completed successfully and the total number of tasks undertaken). The target is an overall rate of 75%.

• Efficiency

Efficiency will be assessed considering the overall relative efficiency (the ratio of the time taken by the users who successfully completed the task in relation to the total time taken by all users). The target is an overall rate of 50%.

• Satisfaction

Satisfaction will be assessed by the standardized System Usability Scale (a ten-item attitude Likert scale giving a global view of subjective assessments of usage satisfaction). The target is to achieve an acceptable solution (SUS score greater than or equal to 70 over 100).

J.4.6 Accessibility

Apart from being available in Pashtu, Dari and English, the accessibility of the e-Hajj service is expressed through the following four principles:

- Information and user interface components must be presentable to users in ways they can perceive
- User interface components and navigation must be operable
- Information and the operation of user interface must be understandable
- Content must be robust enough that it can be interpreted reliably by a wide variety of users and assistive technologies

Accessibility will be measured by the conformity of the e-Hajj service with the requirement prescribed by the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C). The target is to achieve a minimum level of conformance (WCAG 2.0 conformance level A) for all functionalities of the e-Hajj service.

J.5 Expected impact

J.5.1 Internal success indicators

Internal success indicators include:

⁶⁶ Short messages service

⁶⁷ Interactive Voice response

• e-Hajj penetration levels (measured by number of Hajj service points using this service to process Hajj applications over the total number of Hajj service points)

J.5.2 External success indicators

The external success indicators include:

- Ratio of e-Hajj adoption (measured by the number of Hajj applications managed through e-Hajj over the total number Hajj applications)
- Gender distribution of users (asses by user volunteered information)
- Geographic distribution of undifferentiated and differentiated users (assessed by IP address⁶⁸ location of not authenticated users and by IP address and user volunteered geographical information of authenticated users)

As these indicators are not predictable, no threshold is set. The results will be used merely to describe the use of the service.

J.6 Risk assessment

J.6.1 Barriers to deployment

The most probable barriers to deployment are:

- Resistance to adopt a common and auditable platform by Hajj application mediators
- Low levels of digital literacy by Hajj mediators
- Unavailability of e-Hajj service operators

J.6.2 Barriers to adoption

The most probable barriers to adoption are:

- Inexistent or inadequate personal IT infrastructure
- Low levels of digital literacy in citizens
- Lack of trust in the e-Hajj service

J.6.3 Mitigation strategies

To address the potential barriers to deployment, this project includes:

- Co-design sessions with major stakeholders
- Assessment and upgrade of the IT infrastructure of participating Hajj service points
- Recruitment and on-job training of e-Hajj operators

To address the potential barriers to adoption, this project includes activities such as:

- Assessment and upgrade of the IT infrastructure in urban and rural communities (namely in terms of internet access and e-Hajj access points)
- Nationwide dissemination of the e-Hajj service
- On-location training of e-Hajj users by e-Hajj champions

J.7 System architecture

The following diagram depicts the architecture of the e-Hajj service highlighting the following components:

- Back-end (e-Hajj operators) and front-end (citizens in general);
- Core services; and
- Connections with external gateways for user authentication, SMS notifications, and SMS and IVR interfaces.

⁶⁸ Internet protocol



Figure 29 - e-Hajj system architecture

J.8 User Interface

The following wireframe depicts how a simple E-hajj application system should look like. It is a basic sketch of elementary functionalities that this e-service should have such as having an option to login with a user name and password and also with the national ID card, important announcements and links regarding the Hajj pilgrimage and sliders for news and certain Islamic quotes.

Logo			
.og in: Usemame	Password Lo	og in ID CARD	
Home	Regulations About us Contact us	Help	
			News
	Pictures		<news 1=""></news>
			<news 2=""></news>
Important annou	ncements Related documen	ts	<news 3=""></news>
Announcement 1 Announcement 2 Announcement 3	Announcement 1 How to fill application form Hajj guidelines		Islamic Quotes
			Appearing here as a slide

Figure 30 - Possible e-Hajj landing page

J.9 Work plan

Finally, these are the main tasks to be accomplished for deploying the e-Hajj service:

- Task A Refinement of the requirements of the service (including co-design sessions with major stakeholders)
- Task B Selection and customization of an open source application management system

- Task C System integration
- Task D System testing
- Task E User acceptance testing
- Task F Deployment
- Task G Assessment and upgrade of the IT infrastructure of participating maternities and birth registration offices
- Task H Assessment and upgrade of the IT infrastructure of local communities
- Task I Nationwide dissemination of the e-Hajj service
- Task J Nationwide training of e-Jobs users by e-Hajj champions

Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
А																		
В																		
С																		
D																		
E																		
F																		
G																		
Н																		
I																		
J																		

Table 28 - Work plan

J.10 Team and budget

The team is composed of:

- EGRC (e-GCASD) EGRC's e-Government Consultancy and Advisory Services Department
- EGRC (C) EGRC's Coordinator
- EGRC (CBTU) EGRC's Capacity Building and Training Unit
- E-GD e-Government Directorate
- ANDC Afghanistan National Data Center

The work load for deploying this e-Government Service is divided as shown on the table bellow. Instead of actual values, the budget is described in terms of effort measured in Persons per Month (PM).

Tasks	EGRC	EGRC	EGRC	e-GD	ANDC	Total
	(e-GCASD)	(C)	(CBTU)			
Α	2 PM					2 PM
В	2 PM			2 PM		4 PM
С	2 PM				2 PM	4 PM
D	1 PM				1 PM	2 PM
E	2 PM					2 PM
F	2 PM				2 PM	4 PM
G	1 PM					1 PM
Н	1 PM					1 PM
		1 PM				1 PM

J			6 PM			6 PM
Total	13	1 PM	6 PM	2 PM	5 PM	27 PM

Table 29 - Team and budget

Assuming an average cost of 1500 USD per person per month, the cost of labor needed to deploy this e-Government Service is 40050 USD.

Deploying kiosks and nation-wide training will incur in additional costs but these will be supported but complementary projects.

K e-Government services assessment

As e-government services implementation is a critical job so it is necessary to assess the services for measuring the success ratio, for this purpose we require to conduct assessments from services beneficiaries and other relevant stakeholder and below illustration provides the general idea what main questions and areas should be considered and included in the assessment questionnaire.



Figure 31 - e-Service assessment model used to inform the design of the questionnaire