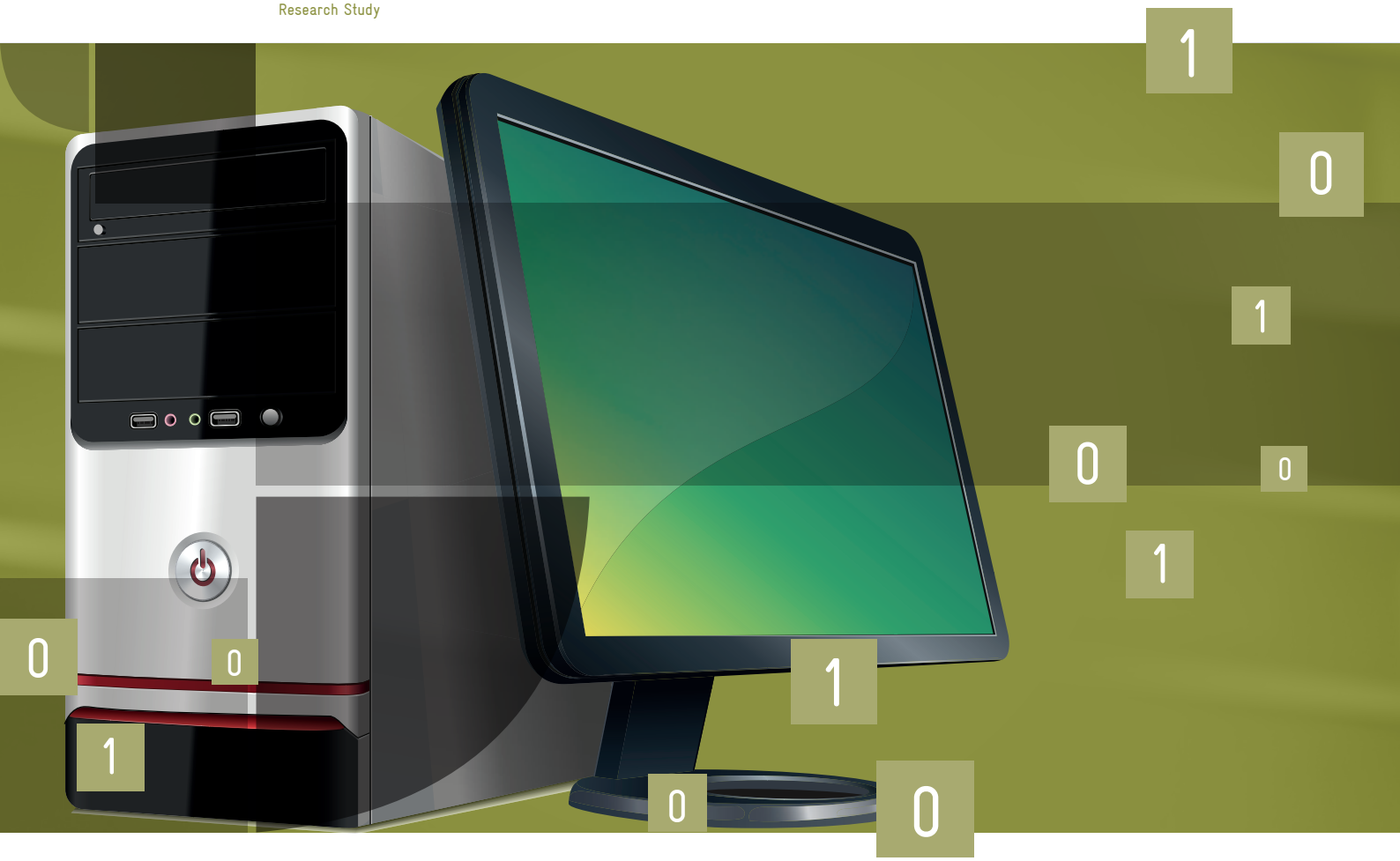
Research Study



# Study of Prevalent Information and Communication Technologies (ICTs) Culture

## Local Government, Elections and Rural Development Department
## Government of Khyber Pakhtunkhwa


german cooperation
DEUTSCHE ZUSAMMENARBEIT

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# Contents

## Acronyms

| | |
|---|---|
| **BLOGS** | Web Log |
| **B2G** | Business to Government |
| **C2G** | Citizen to Government |
| **DA** | Development Authority |
| **DD** | Deputy Director |
| **EA** | Enterprise Architecture |
| **ERP** | Enterprise Resource Planning |
| **ETO** | Electronic Transaction Ordinance |
| **FAQs** | Frequently Asked Questions |
| **GIZ** | Deutsche Gesellschaft für Internationale Zusammenarbeit |
| **GPRS** | General Packet Radio Service |
| **G2G** | Government to Government |
| **HTTP** | Hypertext Transfer Protocol |
| **ICTs** | Information and Communication Technologies |
| **IT** | Information Technology |
| **ITIL** | Information Technology Infrastructure Library |
| **ISMS** | Information Security Management System |
| **KPK** | Khyber Pakhtunkhwa |
| **LGE&RDD** | Local Government, Elections and Rural Development Department |
| **MS** | Microsoft |
| **M&E** | Monitoring and Evaluation |
| **NADRA** | National Database and Registration Authority |
| **NTC** | National Telecommunication Corporation |
| **PC** | Personal Computer |
| **PIFRA** | Project to Improve Financial Reporting and Auditing |
| **PHP** | Hypertext Preprocessor |
| **RSS** | Rich Site Summary |
| **SSL** | Secure Sockets Layer |
| **TB** | Terabyte |
| **TMA** | Tehsil Municipal Administration (Now Municipal Committee-MC) |
| **TMO** | Tehsil Municipal Officer (Now Chief Municipal Officers-CMO) |
| **TOGAF** | The Open Group Architectural Framework |
| **UC** | Union Council |
| **UPS** | Uninterruptible Power Supply |
| **USF** | Universal Service Fund |
| **WIKIS** | What I Know Is |
| **WWW** | World Wide Web |

## Background

Under Output 5 "developing strategies for imparting knowledge and experience on the New Local Government Act and on progress in implementing the Malakand Strategy and Post-Crisis Needs Assessment (PCNA)", the Administrative Reform Component (ARC) of *Support to Good Governance in Pakistan Programme* is supporting the Local Government, Elections and Rural Development Department (LGE&RDD) in strengthening its internal and external communication systems through a variety of means. One of the measures identified under GIZ's technical cooperation is the development of a resourceful and dynamic web site which will reinforce and enhance the LGE&RDD's external information sharing and communication exchange with a multitude of its stakeholders.

With the awareness levels of the common people on the rise, citizens now demand more access to government information. In the digital age of today, the best answer to this need is the utilisation of information and communication technologies (ICTs) to provide them with easy access to information resources as well as to reach out to the masses with targeted messages. At present, the LGE&RDD has a dedicated web link on the official web portal of the Government of Khyber Pakhtunkhwa (http://www.khyberpakhunkhwa.gov.pk). However, much more is desired of the Department's virtual presence.

On several occasions, during GIZ's bilateral exchanges with the representatives of LGE&RDD's IT Cell, it has been identified as an avenue for the Administrative Reform Component to support the LGE&RDD in harnessing the potential of world-wide-web for information dissemination. Consequently, during the November 2011 "joint planning workshop", it was agreed that GIZ's efforts during 2012 and beyond will converge upon the development of a multi-dimensional web site for the LGE&RDD which can further supplement its roles and responsibilities.

After joint consultations with the IT Cell of the LGE&RDD, it was agreed to undertake a research study of the "prevalent ICTs culture" which will pave the way towards the realisation of the department's prominent online presence. The key objective of this undertaking was to extract facts and stats which could contribute towards formulating a strategy to improve the internal and external communications of the LGE&RDD by means of ICTs.

The present study carried out by Mr. Usman Ghani (ICTs Consultant) includes and covers the following areas:

i. Evaluation of available ICTs infrastructure in LGE&RDD at the provincial, district and tehsil levels

ii. Analysis of attitudes and behaviours of LGE&RDD officers and officials towards the role and importance of ICTs in their business operations efficiency

iii. Assessment of technical and operational capacities of the officers and officials of LGE&RDD in using ICTs tools and systems

iv. Identification of organisational needs and priorities of LGE&RDD in the context of integration of ICTs in routine office procedures

v. Classification of threats and bottlenecks which have the potential to curtail shift towards office automation and integration of ICTs

vi. Formulation of strategy which explicitly addresses communication and information sharing needs of the LGE&RDD via online web presence

## Study Methodology

A structured methodology has been used for the research study and report formulation. The methodology is based upon a range of tools and methods for primary and secondary data collection, including:

i. Review of relevant documents

ii. Desk studies

iii. Participatory approaches that involve information providers through;

a. Telephone interviews

b. One-on-one interviews

c. Focus group discussions

d. Survey questionnaires

e. Cyber assessment

During the course of study, a structured collation, review and analysis of appropriate data and documentation was carried out in order to evaluate existing infrastructure, available resources and requirements for the future.

Furthermore, in order to collect quantitative and qualitative data, a detailed and thorough questionnaire was designed (attached at Annex 2), which took technological, social, psychological, economic, pedagogical and cultural determinants as the basis for compilation of the questionnaire. This questionnaire was used along with one-on-one interviews and focus group discussions to gather relevant data, develop understanding of their IT skills and to study ICTs governance risk assessment.

The following locations were included, as a sample, for the above mentioned exercises.

| LGE&RDD Head Office – Peshawar (IT Cell) | |
|---|---|
| City District Government Peshawar | Mr. Sahibzada Muhammad Tariq, DD Development |
| TMA - Peshawar Town II | Mr. Saleem Khan, TMO / Administrator |
| UC – Wadpaga | Mr. Muhammad Ameen, Secretary |
| UC – Chamkani | Mr. Ashfaq Khan, Secretary |
| Mardan Development Authority | Mr. Nasir Khan, Deputy Director (P) |
| TMA – Mardan | Mr. Tanveer Ahmad Khan, TMO / Administrator |
| UC – Bukt Ganj | Mr. Naeem Jilani, Secretary |
| UC – Muhabatabad | Mr. Muhammad Siraj, Secretary |
| TMA – Ghazi | Mr. Sajjad Haider, TMO / Administrator |
| UC – Ghazi | Mr. Jan Alam, Secretary |
| UC – Kotehra | Mr. Muhammad Nisar, Secretary |
| TMA – Kabal | Mr. Irfan Khan, TMO |
| TMA – Barikot | Mr. Fazle Rabi, TMO |
| TMA – Khwazakhela | Mian Shafiq-ur-Rehman, TMO |

Finally a cyber assessment of the LGE&RDD web site was conducted leading to a detailed gap analysis, which was carried out to measure the existing IT capabilities against the international IT governance models and frameworks, such as The Open Group Architectural Framework (TOGAF), IT Infrastructure Library (ITIL) and Information Security Management Framework (ISO27001).

## E-Governance and Importance of Web Portals

The application of information and communication technologies for improving governance by enhancing government's role in service delivery, public administration and promotion of participatory democracy has been gaining momentum in many parts of the world.

Pakistan is a developing nation and with increased commercialisation, there is marked increase in its *e-service platform* to all classes of citizens. According to World Bank data, more than 30 million people have access to internet in Pakistan. Also with the initiatives taken by the Federal Government as well as the Provincial Governments in the domain of e-Governance, the e-service platform has become an active access point for a large number of the citizens. Consequently, the Provincial Government of Khyber Pakhtunkhwa has also made notable efforts in using this e-Governance platform to inform its citizens about the government and its services.

In local governments across the world, providing services and information to citizens via the internet is the most common form of e-Governance. While some local government web sites offer a range of information and services, most of them generally begin by posting general information. They, then expand to offer search capability on the site, and then move toward interaction - exchanging information - as they develop more technology infrastructure and skills.

Information which the local governments most commonly post on their web sites includes descriptions of key government departments and officials, contact information, economic development data, a calendar of events, meeting minutes, the local government laws, public safety information, special announcements, tourism information, polling locations and local historical information. Some sites offer dynamic querying which allows citizens to enter in key words to search through board meeting agendas and minutes, park and recreation reservation calendars and real property tax information.

Some local government web sites offer the ability to print forms, such as permit and license applications, that citizens can fill out and mail or bring to the concerned government offices. More elaborate sites offer interactive forms that can be filled out and submitted online.

Examining the e-Governance development process in greater detail reveals that there are five levels of functionality across the various forms of e-Governance services. Numerous studies and reports classify e-Governance services based on the level of technological development of the web site and its functions. The levels of e-Governance development classified along five levels are Emerging, Enhanced, Interactive, Transactional and Connected and according to report by United Nations (2008), Pakistan falls under Interactive and Transactional categories. A brief information about the five classification levels is described as under;

### i. Level 1: Emerging Stage

In this phase, governments develop web sites to post information about different government agencies. Visitors to the web site can access information, view official documents, download forms and contact government officials through e-mail. The content is static and predominantly allows the government to have a place on the web.

### ii. Level 2: Enhanced Stage

During this phase, the e-Governance strategy focuses on implementing channels for individuals to communicate with government officials, search for information and public services.

### iii. Level 3: Interactive Stage

Governments begin to use a web portal to deliver a wide variety of services and content. Typically, a web portal serves as the gateway to the e-Governance services and contains links to the different branches of government (read: LGE&RDD and its sub-departments). The web visitor is able to access important information and offer features to download forms and retrieve data from sub-departmental databases that once required in-person visits to the government offices.

### iv. Level 4: Transactional Stage

This is where e-Governance strategies focus on features that allow individuals to perform such transactions electronically as making payments, filling out and submitting applications, or renewing licenses. ICTs infrastructure developments in this phase enable government agencies to begin to implement cross-agency and shared services, provided there are governance and management mechanisms in place to coordinate this type of effort.

### v. Level 5: Connected Stage

This level features a government with ministries operating through a fully-integrated ICTs infrastructure. With this infrastructure, government processes are seamless. Data can be shared horizontally with other ministries or vertically between different levels of government or between external constituents. This phase includes integration across government agencies, between central, regional and local governments, and across sectors. This would not only enable citizen participation through feedback, but would also allow for transactions between citizens to government (C2G), businesses to government (B2G) and government to government (G2G). Tools such as customer relationship management software are used to enhance the user experience for citizens. Recently, governments have made efforts to diversify access points by creating mobile phone applications and services. Governments are integrating web 2.0 features such as blogs, wikis and RSS feeds at this stage to enhance information sharing and collaboration as a way to support greater citizen participation in government decisions.

**Present ICTs Landscape of Local Government, Elections and Rural Development Department**

It is important to note here that during the study of the existing capacity and infrastructure at LGE&RDD and its sub-department offices, it was found out that not much elaborate ICTs infrastructure and related e-Governance procedures are in place. This was also highlighted during the analysis after the detailed surveys, one-on-one interviews and focus group discussions. Therefore, the ensuing report highlights and focuses more on the proposed model of e-Governance using the online presence of the LGE&RDD and based upon international experiences and ICTs standards.

## i. LGE&RDD ICTs Readiness

### a. Account of available ICTs infrastructure in LGE&RDD

After a detailed study and feedback from LGE&RDD officers and officials, it was evident that the level of IT enablement is satisfactory, if not above average.

The IT Cell of LGE&RDD is housed in a make-do office, without the facility of backup power. There are only a few PCs which are mainly used for end-user work, and no server environment (online or offline) is present to host any applications or database. There is no local area network in place even inside the IT Cell. Internet service is only available to one of the PCs, which is under the use of Assistant Director IT.

Another observation was made at the UC level, where no computer was present at any of the UC offices visited (please refer to the table already illustrated). It was, however, learnt that about 700 PCs are to be provided to the UC offices under a province-wide government birth registration initiative. These PCs are already procured and are waiting to be delivered to the relevant offices. These will help in starting off the ICTs enablement of these offices as well as the entry of birth records, the application for which will also be used on these PCs.

At all the TMAs, adequate number of PCs were present, while at some locations, such as, in District Malakand, local area networks were also present, which is a good sign since it will allow for a quicker enablement of these offices for ICTs applications.

At the visited City District Government Office in Peshawar, the computers were present along with internet facility at a single PC, but no networking was available. Although the computer is used for basic letter composing and excel spreadsheet creation, no other networked use is made from the PC.

With regards to the official web site of the LGE&RDD, it is being hosted and managed by the Provincial IT Department. Although the content is provided by the LGE&RDD IT Cell, the technical control of the web site lies with the web manager of the Provincial Government's IT Department.

Most importantly, and as mentioned above, there is no official email for the LGE&RDD officers and officials, which will be a big hindrance in the e-Governance enablement of the LGE&RDD and its components at the lower tiers.

**Various IT Projects undertaken by LGE&RDD**

**M&E System**

The M&E system under development, which although is a good swipe at the monitoring and evaluation of projects, is based upon a simple excel sheet which is used to gather and correlate performance data from various offices. This programme, although very elementary, is geared towards establishment of basic ICTs culture in the area of monitoring and evaluation.

**PIFRA**

As per the information gathered, access to PIFRA system is read-only for the purposes of financial reporting of LGE&RDD budgets. Furthermore, the availability of this system is only limited to the Head

Office of LGE&RDD and no input access is available to enter data into this system at the LGE&RDD level.

**Birth Registration Initiative**
This project is initiated with the co-ordination of NADRA and is intended to be established at each of the union council offices to initiate the process of birth registration. The software will be developed and hosted by NADRA and one PC at each UC will be brought online to access the interface of this application. Among other benefits, all the UC offices will be connected to the internet, which will facilitate not only access to this application but also could be used to access any other future applications developed by LGE&RDD.

**b. Behavioural and attitudinal analysis of LGE&RDD officers and officials with respect to introduction of modern ICTs in their routine work**

The surveys and meetings with the LGE&RDD officials highlighted the fact that most of the LGE&RDD officers were not only very keyed up regarding the idea of introduction of ICTs in their routine work but many of them had some genuine ideas in order to achieve those aspects of e-Governance.

Through an analysis of the present workflows and methods for managing business activities of the LGE&RDD, it was highlighted that most of the workflows slightly make use of the ICTs infrastructure. The most common ICTs related gap was in the area of "communication" (between the Government Departments as well as between the LGE&RDD and the public). Almost all the respondents highlighted the fact that they use telephone, normal mail and inter-office couriers (Qasid) to carry out the communications function of their day-to-day jobs. Some, however, highlighted the fact that they use personal email for communication, but due to lack of local-area-networks, only one person in the office has the ability to do so. Furthermore, and more importantly, it was highlighted by everyone that they do not have an official email due to which all the official communication has to be sent via *paper based methods*.

Another area of improvement (although slightly out of scope of this study at present) is the lack of availability and usage of paper based forms. All the surveyed TMAs highlighted that fact that they do not use any standardised forms for applying for services or to file complaints. Most of the C2G communication is either via an application on a plain paper or via telephone. The e-Governance enablement would call for standardised forms for various functions to be whether filled on printed paper or via online application forms. This would greatly enhance the service delivery as well as internal accountability, since this data can be routed electronically and can be further used for performance analysis.

It was very intriguing to observe that most of the officers of LGE&RDD had further requirements for deeper integration of ICTs into their routine work. Majority of the requirements were for the use of proper accounting software for Finance Section related functions, as well as standardised architectural software for Engineering Section (many of the TMAs are using AutoCAD for this purpose, but it is not standardised, nor is anyone properly trained in using such software). Most of the efforts to learn and operate such a software were found to be on a personal level.

One major finding in this regard was that no structured decision making method is in place for selection and procurement of the ICTs infrastructure. More importantly, there is no *IT Enterprise Architecture* in place within the LGE&RDD, which should chalk out the present and future visions, requirements and strategies for IT enablement and decision making.

**c. Capacity assessment (IT skills study) of the officers and officials of LGE&RDD in using ICTs tools and systems**

The ICTs capacity of the officials of the LGE&RDD (including those of the DAs, TMAs and UCs) varies throughout the Department. According to the study, most of the officers use the existing IT systems for writing letters and emails (through personal emails), for finance and accounting functions and for

engineering and taxation purposes as well. The applications most widely used for these functions were MS Word, MS Excel and free webmail service such as, Gmail, Yahoo and Hotmail. This goes to show that the officers have a functional grasp of the IT systems and the relevant softwares.

It was further observed that the MS Excel software was widely used (in the form of customised spreadsheets) for gathering data as well as for financial reporting. Although, there are a few standardised templates used for budgeting purposes, most of the users had customised the spreadsheets for their individual purposes and functions such as, for keeping record of human resources, for calculating salaries and a multitude of other functions.

The study also highlighted the desire by several LGE&RDD officers wanting to host separate web interfaces for their individual TMAs, which would highlight several individual features of their constituencies to promote an informed citizenry, such as community news and information about programmes and projects, economic opportunities, local festivals and activities, news and most importantly contact information of local office bearers. This goes on to show the keenness and capability of officers in using the ICTs to promote their local government services in addition to the ones mandated by the LGE&RDD.

In all, the IT skills possessed by the officers of LGE&RDD match those of professionals working in private sector organisations.

Despite the individually attained knowledge and creative ways of using the ICTs, during the study, a strong need was shown by the officers of LGE&RDD for continual education and training on the use of ICTs to perform their routine functions and also a strong need was shown for a more organised way of integrating the ICTs into their sphere of work.

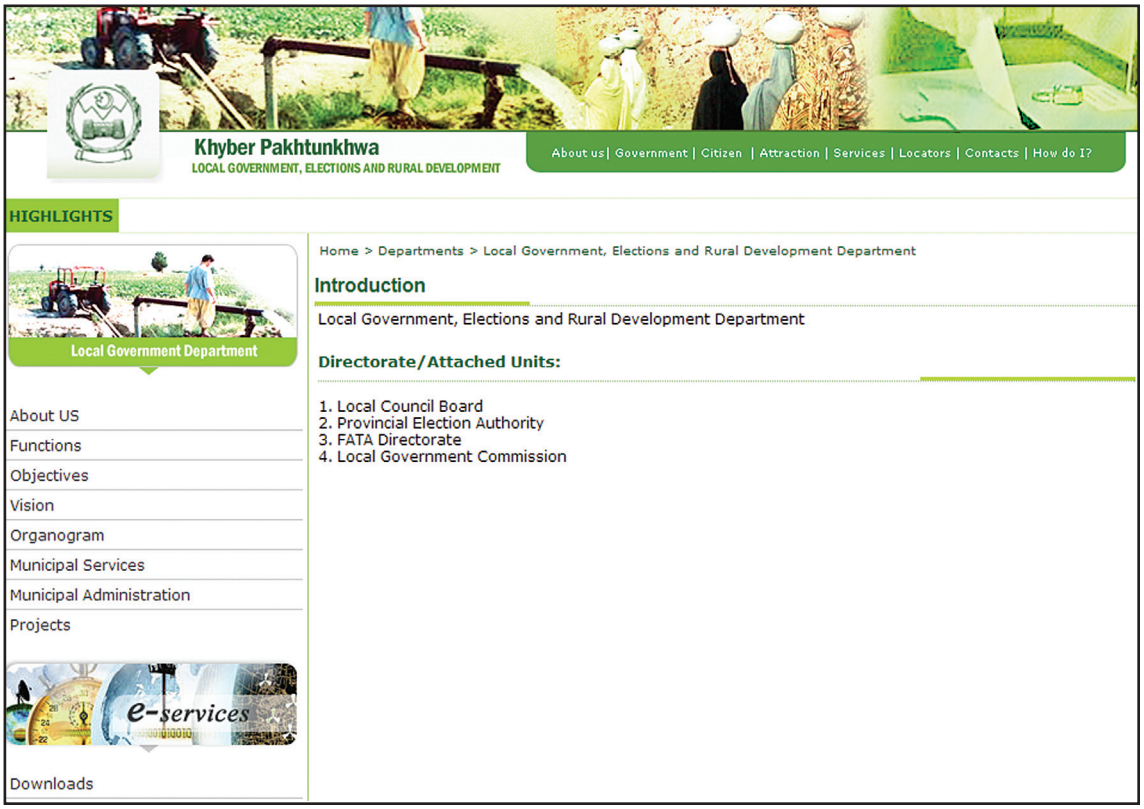
Another area of importance is of the Information Security with regards to the ICTs infrastructure. It was observed during the study, that no formal method is in place to ensure the security of the public data residing on the ICTs infrastructure. The IT users are using some basic controls for safeguarding the data (such as setting up passwords on the PCs and installing antivirus), but these safeguards are simply not enough to guard against the breach of confidentiality, integrity and availability (3 pillars of information security) of the data that transcends the ICTs infrastructure in use at the LGE&RDD.

**d. Analysis of potential threats and barriers to progress in the context of integration of ICTs in day-to-day work processes and procedures of LGE&RDD**
This is covered under the section "Risk Management" on page 26.

**e. Prioritising the needs of LGE&RDD associated with the use of ICTs and developing an action-plan to demonstrate how the web site will address those needs**
This is also covered in great detail in the section "To-Be Model: Establishment of effective e-Governance framework" on page 12.

### ii. Analysis of Existing LGE&RDD Web Site

A detailed analysis was conducted for the existing web site at; http://www.khyberpakhtunkhwa.gov.pk/Departments/LocalGovernment/index.php. Although it is a commendable initative of the Government of Khyber Paktunkhwa to introduce a separate web site for LGE&RDD on its portal, but there needs much to be accomplished based upon the experiences and standards of the web portals around the world.




The prevalence of typical information - those pertaining to the social, cultural, and political characteristics of the tourist attractions and related cities was apparent in the provincial web site, but this information was lacking in the LGE&RDD's web site. The names of officials were not complete and the vision/mission statements were lacking as well. The very important aspect of the local government functions was also not mentioned. From ICTs point of view, a very important finding was the absence of official email addresses of the officials, which was mainly due to the reason that no official emailing system exists at all. This gap is very notable and will be one of the key recommendations of this study.

The functions and services provided by the LGE&RDD and its other components are also elaborated on two separate pages, but no details are given about which sections of LGE&RDD handle each of these functions.

Additionally, a feedback form is also included in the web site, but it merges the feedback to the web site and complaints on a single page, which needs to be separated and a clear process should be defined as to how and to whom will the complaints be routed.

In conclusion, much of the critical information needed to promote an informed citizenry, such as news and detailed information about programmes and projects as well as transparency promoting content such as the annual budget and bid / job announcements are not present on the web site. Furthermore, efficiency-enhancing content such as procedures for obtaining documents, permits, and licenses, as well as any downloadable forms could not be found, although a placeholder is present on the web site.

In all, the web site is a good starting point to establish a stronger web presence for the LGE&RDD, but a lot more needs to be done in terms of administrative as well as technical improvements in making it more impactful. The following sections highlight these proposed improvements and reforms.

**Establishment of Effective e-Governance Framework**

In developing a framework to measure the extent of e-Governance implementation, the first step is to operationalise the e-Governance concept in terms of its functions as a strategy for reinventing government and improving the governance process. This must be deemed important as the extent of e-Governance implementation would be measured against the fulfillment of these functions.

Challenges and issues that need to be addressed to meet the goal of effective e-governance are;

**Business challenges**

- Information sharing
- Lack of real-time visibility of approval workflows for better transparency
- Lengthy processes for legal framework to support e-governance
- Insufficient telecommunication infrastructure to support e-governance
- Unaffordable internet services for private sector and citizens
- Limited ICTs human capacity to support e-governance

**Technical challenges**

- No service centricity, data duplication and redundancy
- Ability to search and retrieve the information in a seamless manner from anywhere at any time
- Integrating separate business applications into common workflow
- Information security enforcement
- Lack of integration between systems within and across departments leading to manual overhead, lower productivity and loss of potential revenue
- Leakages and losses
- E-forms
- Government paper-based forms remain the primary data gathering interface. They are manually intensive and expensive to process
- Government officials ability to handle large volume of forms and respond to requests in timely manner
- Managing IT complexity and changing requirements
- Change management
- Bandwidth constraints

In carrying out the above functions, the LGE&RDD is proposed to embark upon a two phase approach, as the present level of ITs enablement (and consequently e-Governance implementation) is at Level 1 and 2 (Emerging and Enhanced) where the ICTs culture is in its infancy, there is a lack of electronic communication infrastructure and all the present ICTs applications are developed in silos (i.e. in disconnect from each other application / development effort). The proposed enhancement phases are detailed below;

### i. Phase 1

Implementation of Phase 1 of the proposed ICTs enhancement includes the implementation and enhancement of basic ICTs infrastructure that is required as a foundation for further advanced phases.

**a. Enhancement of web site and implementation of official e-mail**

As per the TORs of the study, this element was the core focus. The study was geared towards analysis of the ICTs infrastructure and readiness of the officials of LGE&RDD in order to propose the design and implementation requirements for the web portal of LGE&RDD. Therefore, very detailed

recommendations are included in a separate section "Development and Implementation of LGE&RDD Web Portal" on page 16.

**b. Capacity development of IT Cell of LGE&RDD**

During the study, through in-depth communication with the IT Cell and through technical observations, it was evident that the IT Cell (which acts as the technical core of the ICTs enablement efforts at the LGE&RDD) lacks earnestly in the area of technical capacity and readiness due to the absence of basic elements of ICTs enablement infrastructure. This observation is also recorded in section "Present ICTs Landscape of LGE&RDD" on page 08.

The following recommendations are made for the enhancement of the IT Cell of LGE&RDD;

**Human resource and training requirements**

It is recommended that two IT Administrators should be placed in the IT Cell of LGE&RDD. Respective trainings to the existing and new staff should be provided in the areas of e-Governance, IT management, IT architecture development and information security management. The trainings should also include administrative trainings for the hardware and software that will come under their administrative purview.

Furthermore, three technical personnel (one each as Network / Systems Administrator, Programmer and Business Analyst) should be employed in the IT Cell of LGE&RDD. The technical personnel should be provided with trainings in their respective areas of expertise, in order to keep them in-tune with the latest technologies as well as on the systems and softwares that they will be working on.

**Technical requirements**

There should be at least the following ICTs infrastructure in the IT Cell of LGE&RDD.

a. At least one PC (the latest version) for each person in the IT Cell. The PCs should be equipped with Windows and licensed MS Office applications as well as antivirus software.
b. A local area network connecting all the PCs.
c. A WiFi router to connect any wireless laptops / mobile devices.
d. A networked high volume laser printer as well as a scanner and color inkjet printer.
e. Internet connectivity shared throughout the LAN and protected with a purpose built firewall.
f. A file server with at least two TB internal storage for storage / sharing of files and internal communication. This server should have its rack and should be placed preferably in a separate small server room.
g. A dedicated UPS (at least 5 KvA) with a runtime of at least two hours for all the PCs, Server and Printer, etc. The wiring for the IT equipment should be separate from the rest of the electrical outlets for fans and ACs.
h. A separate seating cubicle or area for each user in the IT Cell.
i. A conference area with conference table and chairs for meetings.
j. The IT Cell should be housed in a more physically secure area (without wooden board walls or doors).

**c. Development of e-Governance Enterprise Architecture for LGE&RDD**

Enterprise Architecture (EA) has been identified as the most appropriate decision making and management framework for enabling government and agencies to collaboratively provide seamless services and maximally leverage existing investments.

Enterprise Architecture is a management engineering discipline that presents a holistic and comprehensive view of the enterprise including strategic planning, organisation, relationships, business processes, information and operations.

The following table outlines the various stages of e-Governance with respect to the IT Enterprise Architecture maturity stages. It highlights that as an organisation moves up the ladder of e-Governance implementation, it should be employing more structured approaches to optimisation and standardisation of the ICTs infrastructure related business functions, policies and procedures.

| E-Governance Stage | E-Governance Enterprise Architecture Maturity Stage | | | | Explanation |
|---|---|---|---|---|---|
| | Application Silos | Standardised Technology | Optimised Data and Applications | Business Modularity | |
| Emerging | - | | | | Basic web sites highlighting elementary information about the government. |
| Enhanced | - | | | | Departments still operate in their silos and almost don't need any architecture. |
| Interactive | - | - | | | Simple two-way communication needs at a basic level and few common technology standards exist, but still largely within their silos. |
| Transactional | | - | - | | Complete online transactions needs moderate level of cross-agency collaboration and sharing at the technology level. |
| Connected | | | - | - | Government appears and operates as ONE, high degree of integration needs common and shared business functions and outcomes. |

It is highly recommended that an IT Enterprise Architecture Committee should be formed including two officers of the IT Cell as well as two to three senior decision-makers of the LGE&RDD. The technical inputs can be sought from external consultant(s) who have previous experience of developing and implementing IT Enterprise Architecture in government (public) sector organisation(s).

**c. Information security awareness trainings**

As an initial step towards implementation of a more structured information security programme, the LGE&RDD should provide for information security awareness trainings, especially for the IT Cell and to other relevant officials, who will be involved in handling the content of the LGE&RDD's web portal.

### ii. Phase 2

**a. Development and implementation of common ERP applications**

Based upon the recommendations of the ICTs Enterprise Architecture Committee, new ERP applications (such as Finance, Accounting, Human Resource, Taxation, Project Management, Internal File Management, Engineering, etc.) can be envisioned and deployed by hiring competent and experienced ERP systems developers and implementation organisations.

**b. Development and implementation of ISMS (Information Security Management System)**

Since LGE&RDD will (after the deployment of ERP applications) be handling a large amount of public as well as confidential data, it is recommended that an ISMS should be put in place, which should include information security policies and procedures, continual information security awareness sessions, system hardening and penetration testing of ICTs infrastructure and other related exercises based upon ISO27001 standard of information security.

**c. Electronic transaction enablement of web portal and services**

At the later stages of e-Governance enablement, the LGE&RDD should look into implementing electronic transactional capabilities such as digital signatures, digital certificates, online transactions, etc. into the web portal as well as into the ERP applications. The Electronic Transaction Ordinance 2002 of Government of Pakistan lays out the standards and formats acceptable for enablement of such services.

### Establishment of Effective e-Governance Framework

In developing countries, one main reason for the apparent under-utilisation of web sites is the limited, or inexistent, access to the internet in many areas, which undoubtedly impedes the potential of internet-enabled technologies as tools for growth and development. However in Pakistan, and henceforth in Khyber Pakhtunkhwa, access to the internet has improved multifold due to two main reasons. One is the increased availability of broadband through a programme run by Universal Services Fund with the aid of major services providers (which aims to provide broadband internet throughout under-developed and rural areas of Pakistan), as well as through GPRS based internet offerings of major cellular service providers. During the study, it was observed that most of the TMAs have access to broadband internet, and even in the UCs (where no computers were present), the internet was available in many localities. The second indicator is the increased use of refurbished PCs, which are available for a fraction of the cost of a new PC. Due to the wide availability of these PCs, the access to internet-based technologies has propagated across a large percentage of the population in Pakistan.

The presence of the above mentioned factors reflect a narrowing of the digital divide, which is also one of the reasons for the high appreciation for web sites and other web-enabled technologies in many parts of the country. This penetration of ICTs has led to an increase in the importance of having a web-enabled e-Governance infrastructure so public can be aware and can make maximum use of the services provided by the Government.

#### i. Administrative Support Requirements

An effective e-Governance requires strong ICTs governance. ICTs governance refers to the organisational capacity to control the formulation and implementation of ICTs strategy. The goal of good ICTs governance is to align ICTs strategy with the organisational operations. ICTs governance is implemented through the rules, policies and regulations governing ICTs planning, resource allocation, system development, training and service provision. To implement an ICTs governance plan, the LGE&RDD should assign a leadership structure, an oversight organisation and a decision-making process.

A common concern is that having a perceived low status in the LGE&RDD undermines the decision-making authority of the IT Cell. The ICTs (IT, S&T, MIS) Department in many Government Ministries is considered a support function. From this perspective, the IT Cell focuses on automating administrative tasks, serving the Department with computer support and maintaining data resources. In this capacity, the IT Officers have very little input into decisions about how ICTs will be used and lack the opportunity to share how ICTs can create new opportunities to support various initiatives.

Henceforth, in order to enhance implementation of e-Governance through LGE&RDD's web site, it is proposed that the ownership of the web site (and subsequently the responsibility of its correctness and currency of its content) should be assigned to the head of the IT Cell in the LGE&RDD (presently Deputy Director IT), who in turn should be assigned a full-time team to manage and operate the e-Governance programme. A special steering committee should be formed and assigned the task of monitoring and promoting the e-Governance programme as well as to make policy decisions regarding the programme.

In order to align the operations and content of the web site with those of the international best practices, a federated approach that combines both centralised and decentralised authority structures should be used. In this model the sub-departmental (TMA/DA) web sites should have their own web-presence. The content creation of these web sites should be the responsibility of the respective sub-department, which can be tasked (through their respective IT staff - if present) to update the content on their respective sub-portal(s). This information before being published online should be checked and authorised by the IT Cell of LGE&RDD. All the individual sub-departmental web sites should have a link on the main web portal of the LGE&RDD web site, so the end user should have an easy time finding the relevant information and interacting with the relevant constituency. If, however, the sub-department does not have the requisite

human resource with IT capabilities, then the content should be sent by the office to the LGE&RDD IT Cell, which should be able to verify and update the information on their behalf.

The LGE&RDD should also establish routines to support learning about e-Governance among the IT staff (or other responsible personnel at the sub-department) for the effective implementation of this model. Furthermore, trainings should be conducted by the web portal developer to the relevant officers. In this regard, the train-the-trainer approach should also be considered to train some of the officers at the IT Cell of LGE&RDD, who will in turn coach and mentor any new employees to improve the sustainability of this project.

### ii. ICTs Infrastructure Requirements

ICTs form the core of e-Governance and hence the infrastructure requirements should also be planned and implemented keeping in view this aspect.

One major observation during the study was the lack of any ICTs Enterprise Architecture (EA), which is necessary for conformity, expandability and longevity of the present and future visions, requirements and strategies for IT enablement and decision making. The EA is a blue print (based upon international best practices) of the present and planned ICTs implementations. It is just like the blue print of a building, without which the builder cannot properly build or make any future expansion decisions.

Keeping this limitation in view, and also in order to implement a web based e-Governance platform in a cost effective manner, following is the list of ICTs infrastructure that is required for the present exercise;

**For a client accessing the services, the following is usually required on the client side;**

- A personal computer or even a handheld device with a standard browser application (such as Internet Explorer, Google Chrome, Mozilla Firefox, etc.)
- An internet connection
- A printer (if the user plans on printing any form for later submission to the offices of local governments)
- An email account in order to communicate with government officers and officials

**For the LGE&RDD web site, the following infrastructure and human resource components will be required;**

- A web hosting server, on which the web portal software will be installed
- Based upon the present requirements, it is recommended that LGE&RDD should host their web application server with a hosting service provider (such as NTC) in order to avail their high availability capabilities in hosting the web services
- There is also an option to host the web application on a service provider's server(s)
- Furthermore, the web portal development and implementation vendor should be instructed to use open-source web portal software / technology (such as Joomla or Liferay) in order to make the experience more uniform for the end users and the content updation more standardised for the content creators. The vendor should also be instructed to provide training and develop manuals for easier update of the content
- Most importantly, the LGE&RDD IT Cell should coordinate closely with the vendor in developing procedures for web portal content management
- An email server is the second most important equipment for the IT enablement of LGE&RDD. Again, the implementation vendor should be asked to use open-source software (such as sendmail or iredmail) for this purpose
- The email services can also be outsourced to an external service provider (such as NTC), but since they usually charge by the user, it will be more cost effective to host it on LGE&RDD's own server, that can be placed at service provider's premises for high availability purposes

- Registration of a domain name (such as lgkpk.gov.pk or localgovernment.com.pk) with PakNIC. A dedicated Web Administrator should be assigned to the above mentioned equipment for their monitoring and management, as well as being the focal point of any queries regarding the web services

**For the web portal content update, the following components are usually required;**

- A personal computer or a laptop with standard browser
- An internet connection (preferably a broadband connection)
- A scanner to scan any documents or images (to be uploaded on the web site)
- A printer to print electronic documents (for filing purposes) - (optional)

Although the LGE&RDD has a current web site available online, but it is still in its infancy stage as much work needs to be done. At present, it could be considered at the Emerging Stage. The proposed design and improvements should bring it to the Interactive Stage, whereby it serves as the gateway to the e-Governance services and contains links to the different branches of LGE&RDD. The web visitor should be able to access and search important information and should be offered features to download forms and retrieve data from sub-departmental databases.

As mentioned above, the LGE&RDD portal should have separate web sites for separate cities, towns and administrations (read TMA / DA), each one having the same format for uniformity, but relevant content based upon their own individual areas. This framework would allow for the users to interact easily with their respective local governments, as well as for the local government functionaries to offer and promote their services in a more targeted manner.

Because e-Governance has a specific purpose, it also requires a particular content to meet that purpose. Thus it is assumed that specific types of information and resources are essential for the advancement of the e-Governance agenda, and that's what the local governments should achieve in implementing e-Governance against the presence of these types of information and resources on their respective web pages.

### iii. Content

Content is the major part of any portal. Informative content available on the portal is very crucial to the success of any portal. Content should neither be less nor more on the web site. It must have at least frequently needed information on it. Providing services to its citizens must be major aim of the portals specifically in the realm of local governments. Although the LGE&RDD with the help of the implementer of the web site should decide upon the final layout of the web site, the following sub-headings elaborate in detail, the overview and requirements for the future LGE&RDD web site content.

**a. Content that promotes citizens' awareness and understanding of the town /city characteristics**

This could be considered as the most basic among the different types of information that the LGE&RDD should provide to its citizens and the usual starting point in building the web site. If the goal for a more active citizenry is to be pursued, then citizens should be aware first and foremost of the most basic facts about their community such as those pertaining to its physical, social, economic and cultural characteristics.

This type of information could help promote among the citizens a sense of belonging and pride in their localities' historical, cultural and physical attributes. It would also help to draw the interest of external groups, which is beneficial to the community from a business and tourism point of view. Bringing citizens the most basic information about who makes up their government and how it works is also essential in raising their political awareness (which is considered an important pre-condition for their active participation in the political process).

This type of content can be divided into two areas, that which pertains to the city and that which relates to the city government. Regarding the first, the web sites should contain information on the town's history, physical or natural resources, tourist sites and similar attractions. Furthermore, it should contain information about infrastructure, local economy and public utilities. Community or city news and announcements which are important to keep local residents updated should also be provided on the web site.

**Information related to the City / Town;**

- History
- Physical resources (location, topography, climate, land area, geography, geology)
- Cultural events and showcases:
  - sites and attractions
  - festivals
- Human resources (demographic information, electorate profiling)
- Infrastructure profile (roads, bridges, communication)
- Local economy (trade and commerce, agricultural and fisheries sectors, financial institutions, exports, business establishments / industries)
- Public utilities (power supply, water supply, communications, mass media)
- Land use and / or zoning plan
  - land use map
- Community announcements or city news
- Cityhood (how it became a city / town)
- Selected socioeconomic indicators (employment rate, literacy ratio, etc.)
- Socioeconomic profile

**Information related to the City Government;**

- LGE&RDD officials
  - Names of all relevant officials
  - Profile of all relevant officials
  - Names of past and present TMOs
- Vision and mission
- Departments and offices (names of heads)
- Profile of city government projects
- Organisational structure
- Awards and recognitions received by city government or any of its members
- Accomplishment report
- Development plan, policies and strategies
- Committees and commissions along with the details of their composition

**b. Content that promotes efficiency and effectiveness in the delivery of frontline services**

The pursuit of improved effectiveness and efficiency has been one of the core objectives of the new public sector endeavors. With e-Governance, this could be achieved by providing information about frontline services such as those for securing civil registry documents, licenses and permits, or through giving the public a way by which they can apply for these services with just a click of their mouse. At the very least, local governments could post the procedures detailing the fees and requirements, the relevant offices assigned and the turnaround time. Posting forms online which clients could download would eliminate the tediousness of physically going to the offices to secure them. For the TMO / UC staff, these could help

accelerate their response to client requests.

**Application procedures for securing different permits, licenses and clearances;**

- City government services
  - Social services (education, health, social welfare, public order and safety)
  - Public educational and health facilities
  - Business-related services (e.g. securing permits)
  - Civil registry (marriage and annulment)
  - Birth and death registration
  - Fire protection
  - Sanitation (waste management)
- Engineering related services
- Permits / licenses and application procedures (business application or renewal, business name registration, franchise permit, closure of business)
- Application for engineering related permits and documents (building or excavation permit, health / sanitation, fire safety, electrical, mechanical, occupancy)

**Downloadable forms (examples);**

- Application for business permit
- Application for building permit
- Application for birth certificate

**c. Content that promotes transparency and accountability in operations and services**

By publishing information about their services and operations, programmes and projects, local government acts passed and most importantly, finances, local governments could be made more accountable to their constituents. Furthermore, promoting open-ness and transparency in the bidding process can be achieved by publishing the tenders and the evaluation processes online. Additionally, the publication of employment notices and job openings does not only serve the purpose of expanding the options available to citizens but also assisting them to improve their lives. Transparency in such kind of information can also help curb unjust practices of withholding or monopolising information by staff and officials for the benefit of their preferred candidates. One such example is the online hiring and evaluation system in place at the Electronic Government Directorate (Ministry of IT in Islamabad), which allows the prospective job applicants to apply online and check the status of their applications as well as the results of their interviews.

- Profile of programmes and projects
  - Update or status of different projects
- Bids and procurement (invitation to bid and details of required supplies, services or equipment)
- Employment opportunities
- Ordinances and resolutions
- Budget and finances
  - Financial statement (either balance sheet, income statement, statement of expenditures or statement of revenues and sources)

**d. Content that promotes citizens' awareness of policy-making process and their participation in decision-making**

The increased availability of political information using e-Governance is envisioned to improve participatory democracy. The publication of information on the local policy making process promotes accountability of officials to their electorate, thus enhancing their representative role. For the citizens, information on both the process and the outcome (resulting ordinances) may raise their appreciation of the policy-making

process, including the role of their elected officials, which may, in turn increase their participation in the selection of local leaders. Consulting citizens through online polls and surveys facilitates direct feedback that could raise the quality of decision-making and help promote partnership.

- Ordinances and resolutions
- Online surveys and polls
- Local election results

**e. Content that promotes linkages and interactions**

Communication technologies have opened up new opportunities for linkages and interactions, which reinforce the thrust for an informed and participative public and bridge information gaps and lapses that often lead to inappropriate planning and decision making. There are usually two types of communication; vertical and horizontal. Content that may enable vertical communication includes the contact information of local government officials (e-mail, phone number), feedback forms, online polls and surveys. Horizontal or lateral communication involves different actors and groups in the governance process regardless of organisational hierarchy. Content that may promote horizontal communication includes official email, discussion forum, interactive chat and most importantly links to other relevant web sites.

**Vertical communication (between local government and citizens and other groups / actors in the local governance process);**

- Telephone or fax
  - Office holders
  - Offices and departments
  - General telephone and fax numbers
  - Selected local government offices within the area
  - Names of local council office holders and contact information
- Official e-mail
  - Office holders
  - General e-mail
  - Web site administrator
- Guestbook
- Feedback form
- Webmail (for local government personnel only)

**Horizontal communication (among the different groups and actors in the governance process which does not consider hierarchy);**

- Discussion forum
- Chat
- Telephone number and address of private businesses / institutions within the city
- Hotels and inns
- Links to other web sites
  - Government of Pakistan Web Portal (www.pakistan.gov.pk)
  - Government of Khyber Pakhtunkhwa Web site (www.khyberpakhtunkhwa.gov.pk)

**f. Content that promotes linkages between government, businesses and development organisations**

E-Governance as a reform strategy for improving the governance process could also improve the relationship between government and other groups in society, particularly the business and development sectors. This focus is in recognition of two things; (1) its importance as a service provider to government's

own needs and at the same time, as a partner of government in responding to the needs of the public through outsourcing and development aid, given government's limited capacity; and (2) the sector's apparent role in economic development.

Tourism information also promotes linkages with businesses by providing a snapshot of investment potentials, which private businesses need in their own decision-making processes. Such information could also help boost the local economy by attracting local and foreign tourists.

- Tourism related information
  - Sites and attractions
  - Festivals
  - Getting to the city (location; how to get by land, air or sea)
  - City / town map
  - Names, addresses and phone numbers of hotels in the city
- Economy and business related information
  - Agriculture and fisheries sectors
  - Business establishments and industrial profiles
- Business condition and climate (competitive advantages)
- Donors / development organisations related information
  - Projects
  - Priority areas for working together

### iv. Accessibility

Even the best online service is of little benefit if it is not known to the public or if it is not accessible or cannot be used. Anyone who wants to be found on the internet must make the web site known via search engines and directory listings. From technical point of view, compatibility with the technology deployed by users and the performance of the site are also of decisive importance. Making content accessible includes making orientation in the web site as simple as possible, providing an internal search function, making relevant parts multilingual and accessible for people with disabilities, facilitating destination oriented navigation and providing help for any problems that may arise.

Furthermore, once public users have found or called up a government web site, it should be made as easy as possible for them to get their bearings on the site. They should be able to get an overview of the structure and the service quickly in order to find the required information or a specific service without the annoyance of detours.

Good navigation structures and tools help users find information easily and quickly on webpages. The accessibility can be improved by using the following tools and methods:

**a. Web site address (Universal Resource Locator) clarity**

Every online web site has an address that uniquely identifies it. The address should portray the name of the institution and should be easy to memorise in relation to what the institution does.

**b. Main menu and other links**

Links connect webpages and documents within the web site to each other and to other external web sites. Links should not be broken and should have names that correspond to the linked information.

**c. Sitemap**

A sitemap is a collection of links for all main webpages on a web site. It helps users find specific information under a certain section of the web site.

**d. Search tool**

This is a tool for searching information within a web site without browsing through webpages. It is an important tool because it facilitates fast information retrieval.

**e. Help / FAQ (Frequently Asked Questions) pages**

These pages provide useful information to users when the users need help. FAQs are based on the common queries raised by users.

**f. Multilingual facility**

Public service offerings are also aimed at people whose preference is for a language other than English. In the present context, it is Urdu and Pushto.

As the cost of maintaining the entire web site in several languages in parallel makes it practically impossible, priorities must be set. Therefore it is recommended that at least the main parts of the site be translated into common languages and then to differentiate according to target groups.

In any case, it is recommended that the pages provided in other languages be made accessible via an index. If only one part of the whole web site has been translated into the relevant language, this should be indicated at a suitable place in the table of contents.

### v. Usability and Design

A good local government web site should have a simple user interface. Design layout for webpages should be consistent so that people find it enjoyable and comfortable to access the desired information without wasting time. A good color scheme and well structured design elements make content easy to read. The following visual and communication aspects should be taken into consideration in this category:

- **Design consistency in webpages**
  Webpages of a web site should be consistent. For example, the design layout and colors should be the same for all webpages. Consistent design avoids user disorientation. User disorientation causes user frustration and loss of interest.

- **Visual design for text (font and color formatting)**
  Formatting of content such as putting page headings or important text in bold or different colors enhances content readability. It also helps separate different kinds of information such as links and normal webpage text.

- **Feedback / inquiry forms and other interactive tools**
  These are tools that support faster and efficient communication between the government and citizens and among citizens themselves.

- **Page content sharing tools**
  These are tools that enable users to easily share the page with other social media colleagues (such as the ones on Facebook and Twitter, etc.) or obtain content of a webpage as a separate computer file (such as print, download, save, fax and email options).

- **Zoom options**
  These are tools that allow users to customise content by resizing it. These tools help users especially those who are vision-impaired read the text on webpages.

- **Audio content**
  Audio content refers to presentation of web content in form of voice. This feature is highly recommended by international usability and accessibility guidelines such as WCAG to facilitate vision-impaired users.

### vi. Information Security

IT security for web sites and e-Governance services is not just a fundamental requirement for the proper functioning of such services but also an important factor for their acceptance. The public have clear expectations of public agencies to guarantee the security of e-Governance procedures. A member of the public who in some cases has to undertake a considerable investment in technology in order to participate in e-Governance services has a right not to find himself / herself exposed to additional security risks.

The public must be able to have confidence that their confidential information will be suitably protected at every stage of the process even with highly complex IT procedures. As members of the public are unable to check security of procedures themselves, they will rely on clear, reliable information from the web site owner with the publishing of "Privacy Policy".

IT security should be regarded by the LGE&RDD as an essential element of every e-Governance service. Consequently, IT security management should be established as a permanent responsibility within the administration structure.

**a. Declarations by the web site owner about IT security**

The web site should also include a declaration by the web site owner about security issues relating to the service. This declaration should either be together with the web site's "Privacy Policy" or as a separate information page.

Furthermore, in this very area, public confidence in the value of using the online service can be cultivated by the greatest possible degree of transparency.

**b. Active content**

Active content should be avoided if possible when designing the information service. If, however, dynamic content is offered, this content should be created on the server side (e.g. by means of PHP). This must be taken into account accordingly in the secure administration of the web server.

**c. Cryptography and connection security authentication**

To facilitate confidential data transmission (such as forms containing private information or eventually any transactional data), the authenticity of the web site must also be verifiable with the help of a reliable source. If this is not successful, a potential attacker could for example pretend to be a web server and in this way eavesdrop on the communication. To cater for this type of eventuality, SSL certificate should be used by a Trusted Certificate Provider (such as VeriSign).

**d. Firewall protection and server hardening of web servers**

Without any particular protection, a major analysis of a web server can be carried out via internet or intranet connections. From the results of this analysis, conclusions can be drawn about the configuration, the available services and thus about the web server's possible weak points. They may serve as the basis for a targeted attack on the web server where such analyses are not hindered or prevented by the use of a firewall system and further strengthening of web server using server hardening techniques.

**e. Secure web server administration**

A tamper-proof administration of the web portal is an essential requirement for secure web site of LGE&RDD.

One of the most serious dangers of a web server is manipulation of the data held. The consequences of a loss of integrity by manipulation of the information service are not limited here to the loss of original data. The damage to reputation that can result from the dissemination of false information is normally much more serious. This is all the more serious, the later the manipulation is discovered.

The most basic protection against manipulation of the web server contents consists in allowing changes to data to be made only by those users who work directly on the computer's console and prohibiting remote access. In depth policies and procedures for administrative access and continuous audit activities should be carried out based upon international information security standards in order to guard against such an event.

In order to increase IT security, the International Standards Organisation (ISO) has already published ISO-27001 standard which should definitely be taken into account in the implementation of secure e-Governance services

**f. End user information security awareness training**

Implementation of all the high-end tools and techniques to safeguard the public data is of no use if the information owners and managers fail to understand the importance of the inherent risks in handling private and confidential data and the ways on how to secure this information during their day-to-day activities.

Therefore, all the officers involved in managing and maintaining this electronic data as well as the ones creating it should be provided with security awareness trainings based upon the internationally acceptable information security standards.

## Risk Management

E-Governance takes a lot of work, and there are some inherent risks involved in accomplishing the tasks involved. The following table highlights crucial risks and their mitigation strategies when planning, developing and implementing new information technology initiatives in the public sector.

| | |
|---|---|
| Risk | Lack of administrative support |
| Mitigation | Rally leadership and support |
| Mitigation Details | Leadership is imperative in a successful e-Governance project – and leaders are the people who pull the initiative together, establish it as a priority and steer it towards successful completion. Day-to-day e-Governance leadership often comes from the person with the drive and a personal appreciation for how technology can transform service delivery.<br><br>A clear outline of roles and responsibilities should be chalked out by the leadership in order for decision making to be effective and swift. |

| | |
|---|---|
| Risk | Lack of experience of e-Governance |
| Mitigation | Learn from other local governments |
| Mitigation Details | The LGE&RDD should gather information on what other local governments (throughout the world and in Pakistan) are doing electronically, what technologies are they using, and the problems they faced as they integrated it in their operations along the way. The organisation should ask their colleagues and vendors about who else is using the products that they are looking for, then seek those people out and establish information-sharing relationships. Up-front research and information gathering will help plan a technology solution that has both immediate and long-lasting payoffs. |

| | |
|---|---|
| Risk | Coming across political differences |
| Mitigation | Acknowledge political differences |
| Mitigation Details | Bridging political differences is never easy and sometimes not even possible, but acknowledging them is essential for understanding how to move forward with e-Governance.<br><br>The differences may arise before, during or after the implementation of e-Governance, but they should not be allowed to sway from the vision and mission of the LGE&RDD. |

| | |
|---|---|
| Risk | Lack of understanding about the benefits of e-Governance |
| Mitigation | Share information constantly and consistently |
| Mitigation Details | In order to create support and understanding among the staff, department heads, donor organisations, officials and constituents, a consistent sharing of information about e-Governance initiatives through ongoing project updates should be carried out. |

| | |
|---|---|
| Risk | Risk of having to re-invent the wheel |
| Mitigation | Create innovative partnerships |
| Mitigation Details | Finding new partners and establishing new ways of working with other governments, government departments and development organisations can help e-Governance initiatives prosper. In order to develop an impactful web site to further the e-Governance initiative, the LGE&RDD should look for off-the shelf and open source solutions that have been used under similar conditions throughout the world, rather than developing from scratch and getting caught up in solution development rather than solution delivery. |

| | |
|---|---|
| Risk | Potential threats of compromising personal data |
| Mitigation | Implement a proper information security programme |
| Mitigation Details | Local governments collect and store potentially sensitive personal information in many forms such as birth records, divorce proceedings and property records, etc. But with the open-ness of internet as well as the technological advancement of communications channels, this information may be compromised.<br><br>The LGE&RDD should implement an information security programme, especially for the IT Cell and also provide information security awareness trainings to the relevant officials, who will be involved in handling the content of the web portal. |

| | |
|---|---|
| Risk | Changing administration |
| Mitigation | Deal with the cyclical life of local government |
| Mitigation Details | With elections every few years, change is a way of life in local government. New executives bring in new administrations and new legislators bring in new priorities. Yet even with these continual changes, the priorities and goals for e-Governance should be focused on providing useful and expedited services to its constituents. |

| | |
|---|---|
| Risk | Lack of knowledge and understanding for maintaining the portal |
| Mitigation | Prepare for ongoing education and training |
| Mitigation Details | Changing processes and introducing information technology require an ongoing commitment to training and education. Most local governments have limited staff and if only one person knows how to use a technology, then work can't be done when he/she moves out either temporarily or permanently.<br><br>A continuous and sustainable education and capacity development programme should be in place. Along with the initial trainings to the content owners and managers, a train-the-trainer methodology should also be applied, by which a certain number of officers are also charged with the responsibility of subsequently training any new coming officers. |

## Conclusion and Recommendations

Government web sites are sometimes even touted as drivers to e-Democracy because they help boost democratic practices such as voting, deliberation or decision-making. These democratic practices are enhanced by providing opportunities for individuals and communities to interact with government as well as for the government to seek input from the community. Usable government web sites promote a bottom-up approach to democracy. This is in contrast to the top-down approach that directs political reforms to citizens but not from citizens. A bottom-up approach to democracy involves decisions based on expressions of interests of people.

However, because access to ICTs is still limited, these electronic tools of participation should not be used as substitutes for the more conventional methods of face-to-face communication and paper technology, especially in a setting like Pakistan where the digital divide is still not close enough. Instead, these should be used to augment existing tools and strategies for eliciting participation. The goal should be to broaden people's access to decision making by opening up more avenues by which they can participate and give them various options on how they can do it. That in itself is democracy at work. Low level of participation has also been linked to the high cost of participation in terms of time and money, a person expends to participate. ICTs could certainly lower the cost of participation and could thus enhance the level of citizen involvement.

i. The IT Cell of LGE&RDD should be enabled to handle the subsequent implementation of e-Governance initiative by deployment of a more capable ICTs infrastructure such as PCs, LAN and backup power. More details about this can be found in section "upgradation of IT Cell of LGE&RDD".

ii. In order to enhance implementation of e-Governance through LGE&RDD's web site, it is proposed that the ownership of the web site (and subsequently the responsibility of its correctness and currency of its content) should be assigned to the head of the IT Cell in the LGE&RDD, which in turn should be assigned a full time team to manage and operate the e-Governance initiative. A special steering committee should be formed and assigned the task of monitoring and promoting the e-Governance initiatives, as well as to make policy decisions regarding this initiative.

iii. While developing a web portal, a federated approach that combines both centralised and decentralised authority structures should be used. In this model the sub-departmental (TMA / DA) web sites should have their own web presence. The content creation of these web sites should be the responsibility of the respective sub-department, which can be tasked (through their respective IT staff - if present) to update the content on their respective sub-portal. This information before being published online should be checked and authorised by the IT Cell of LGE&RDD.

iv. The official email addresses and email service should be enabled to all the concerned officers and officials of LGE&RDD. Official email, not only is the cornerstone of a successful e-Governance project but also adds authenticity to official external communications.

v. ICTs Enterprise Architecture (EA), is necessary for conformity, expandability and longevity of the present and future visions, requirements and strategies for IT enablement and decision making. The EA is a blue print (based upon international best practices) of the present and planned ICTs implementations. LGE&RDD should look into developing an ICTs architecture for streamlining the future ICTs investments and decisions.

vi. The LGE&RDD should implement an information security programme, especially for the IT Cell, and also provide information security awareness trainings to the relevant officials, who will be involved in handling the content of the web portal.

vii. The LGE&RDD should also establish routines to support learning about e-Governance among the IT staff (or other responsible personnel within the sub-department) for the effective implementation of this model. Furthermore, trainings should be conducted by the web portal developer to the relevant officers. In this regard, the train-the-trainer approach should also be considered to train some of the officers at the IT Cell of LGE&RDD, who will in turn coach and mentor any new employees to improve the sustainability of this project.

viii. Electronic Transaction Ordinance establishes rules and regulations for the use of technology in authenticating and methods of official communications. In specific, a paperless environment can exist within an organisation by adhering to the rules of this ordinance. Paper based communications and normal modes of authenticating documents can be replaced by secure electronic communications and electronic signatures, but these have to be based upon the standards mentioned in the ETO.

ix. The e-Governance initiative by the LGE&RDD can make use of these technologies and methods during the design and implementation of the advanced stages of e-Governance.

## Annex 1: Estimated Phase Wise Costs of IT Enablement

| Phase I | | Quantity | Unit Cost (estimated) (Rs.) | Total Cost (estimated) (Rs.) |
|---|---|---|---|---|
| Equipment for IT Cell of Local Government, Elections and Rural Development Department | | | | |
| 1 | PC for IT Cell of LGE&RDD | 04 | 80,000 | 320,000 |
| 2 | PC for LGE&RDD Secretariat (approximate number) | 10 | 60,000 | 600,000 |
| 3 | Laptops for Senior Staff | 05 | 60,000 | 300,000 |
| 4 | LAN connectivity (cabling, etc.) for LGE&RDD Secretariat | 01 | 300,000 | 300,000 |
| 5 | WiFi access points for IT Cell of LGE&RDD | 03 | 50,000 | 150,000 |
| 6 | High volume laser printer | 03 | 40,000 | 120,000 |
| 7 | Color inkjet printer | 03 | 5,000 | 15,000 |
| 8 | Scanner | 03 | 15,000 | 45,000 |
| 9 | Cisco core switch | 01 | 150,000 | 150,000 |
| 10 | Cisco edge switch | 03 | 50,000 | 150,000 |
| 11 | Internet connectivity (for 12 months) | 12 | 2,000 | 24,000 |
| 12 | Firewall | 01 | 50,000 | 50,000 |
| 13 | File server | 01 | 450,000 | 450,000 |
| 14 | UPS (10KvA) | 03 | 320,000 | 960,000 |
| 15 | IT Cell renovation and electrification | 01 | 350,000 | 350,000 |
| 16 | LGE&RDD Secretariat networking and UPS electrification | 01 | 300,000 | 300,000 |
| Human Resources | | | | |
| 17 | Web Administrator (for 12 months) | 12 | 30,000 | 360,000 |
| 18 | Systems / Database Administrator (for 12 months) | 12 | 35,000 | 420,000 |
| 19 | Trainings for Web / Database Administration (4 personnel) | 04 | 30,000 | 120,000 |
| IT Requirements at Municipal Offices | | | | |
| 20 | PCs for accessing / updating web portals | 72 | 50,000 | 3,600,000 |
| 21 | Scanner | 72 | 3,500 | 252,000 |
| 22 | Laser printer | 72 | 14,000 | 1,008,000 |
| 23 | Internet connectivity (per year) | 72 | 1,000 | 72,000 |
| Development and Hosting of Web Portal | | | | |
| 24 | Web server | 01 | 600,000 | 600,000 |
| 25 | Email server with 4 TB storage | 01 | 800,000 | 800,000 |
| 26 | Hosting charges for 12 months | 12 | 18,000 | 216,000 |

| | | | | |
|---|---|---|---|---|
| 27 | Development of web portal (including user training for content creation and upgradation) | 01 | 1,800,000 | 1,800,000 |
| 28 | Domain name registration (per year) | 01 | 2,000 | 2,000 |
| 29 | Development of Enterprise Architecture (EA) | 01 | 1,000,000 | 1,000,000 |
| 30 | Management training on maintenance of EA | 01 | 200,000 | 200,000 |
| 31 | Information security trainings | 01 | 300,000 | 300,000 |
| | | | Estimated Total for Phase I | Rs. 15,034,000 |

| Phase II | | Quantity | Unit Cost (estimated) (Rs.) | Total Cost (estimated) (Rs.) |
|---|---|---|---|---|
| Equipment for IT Cell of Local Government, Elections and Rural Development Department | | | | |
| 32 | Development of ERP applications | 01 | 25,000,000 | 25,000,000 |
| 33 | Trainings | 01 | 1,000,000 | 1,000,000 |
| 34 | ISMS implementation | 01 | 1,000,000 | 1,000,000 |
| 35 | Additional PCs for ERP (2 for each TMA office) | 144 | 50,000 | 7,200,000 |
| 36 | (Optional) Implementation of PKI and electronic transactions | 01 | 2,000,000 | 2,000,000 |
| | | | Estimated Total for Phase II | Rs. 36,200,000 |

## Annex 2: Questionnaire for LGE&RDD Officers

**1. General Information**

1.1 LGE&RDD Office Name

1.2 Address

1.3 Contact Person's Name

1.4 Designation

1.5 Department / Section

**2. Internal Departments / Work Packages**

2.1 What services does your office provide as part of local government?

2.2 How do you communicate with other local government and government offices?

2.3 Do you advertise events / tenders / job opportunities? If yes, then through what media?

2.4 Are you running any special projects?

2.5 Is there any coordinated disaster management plan in place (in conjunction with other local government offices)?

**3. Public Services**

3.1 Are there any public services that your office provide?

3.2 What are the methods of communications between your office and the general public? (walk in / telephone / service window)

3.3 How do the general public files complaints?

3.4 What type of public information do you provide?

3.5 Is the information readily available? If yes, how?

3.6 Does your office retain any public data, if yes, which type and volume?

3.7 Are there any forms / paper requests available to public (copies of forms) and are these forms free?

3.8 Are there any helpline(s) available for the services offered by your office?

3.9 Are there any service delivery metrics retained by your office? (e.g complaints lodged vs resolved / types of most common complaints, etc.)

3.10 What other offices does your department has in the city / town? Are the addresses readily available to public?

**4. Information Technology Dependence**

4.1 Do you use a computer for your work?

4.2 What purpose do you use it for; (computer applications / official duties)? Describe in detail.

4.3 How long have you been using a computer at work?

4.4 How many other persons / departments are using computers in your office and for what purpose?

4.5 Does your office have internet connectivity? If so, who in the office are connected to it?

4.6 Do you have an official email?

4.7 What other work packages have been computerised in your office (online/offline)?

4.8 Has your office developed any in-house e-office application or is using MS Office applications for e-office purposes?

4.9 What are the services / work packages that you would prefer to be computerised or made accessible by internet (both internal and public)?

4.10 How is the IT related decision making made? Which applications are used for procurement? Is there an enterprise architecture available?

4.11 In your opinion, how should the internet /web be best used for improving services offered by your office / department?

4.12 Is there a method to safeguard public information? If yes, how do you ensure information security of public information?

4.13 Do you use internet at home? What do you commonly use the internet for?

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