Final Report

The Framework of
e-Governance Roadmap

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The Framework of e-Governance Roadmap

The use of ICT brings about the possibility to *reform governance*, making it more efficient, transparent, accountable and effective. The end result is *good governance* with increased quality and speed of services at lesser cost. Many countries are still in their early stages of e-Governance.

While a successful e-Government initiative means optimization in the operations and service delivery of the government, a failure in the initiative can waste a lot of money, time and effort. Hence an extremely careful e-Governance planning is important, first to design small projects that are SMART (simple, measurable, accountable, realistic and time-related), and then to be able to eventually *scale and integrate* all such projects so that the interaction with the government can be done through one virtual counter 24 hours a day, 7 days a week, throughout the year.

This report proposes an *informal preliminary framework* for architecting e-Governance in Nepal, and is intended to formulate outline for a formal "E-government Roadmap" and guidelines for "Detailed Master Plan and Its Phase-wise Implementation". This report is a result of *volunteered initiative* of IT Professional Forum with partial funding from National Information Technology Center, Ministry of Science and Technology.
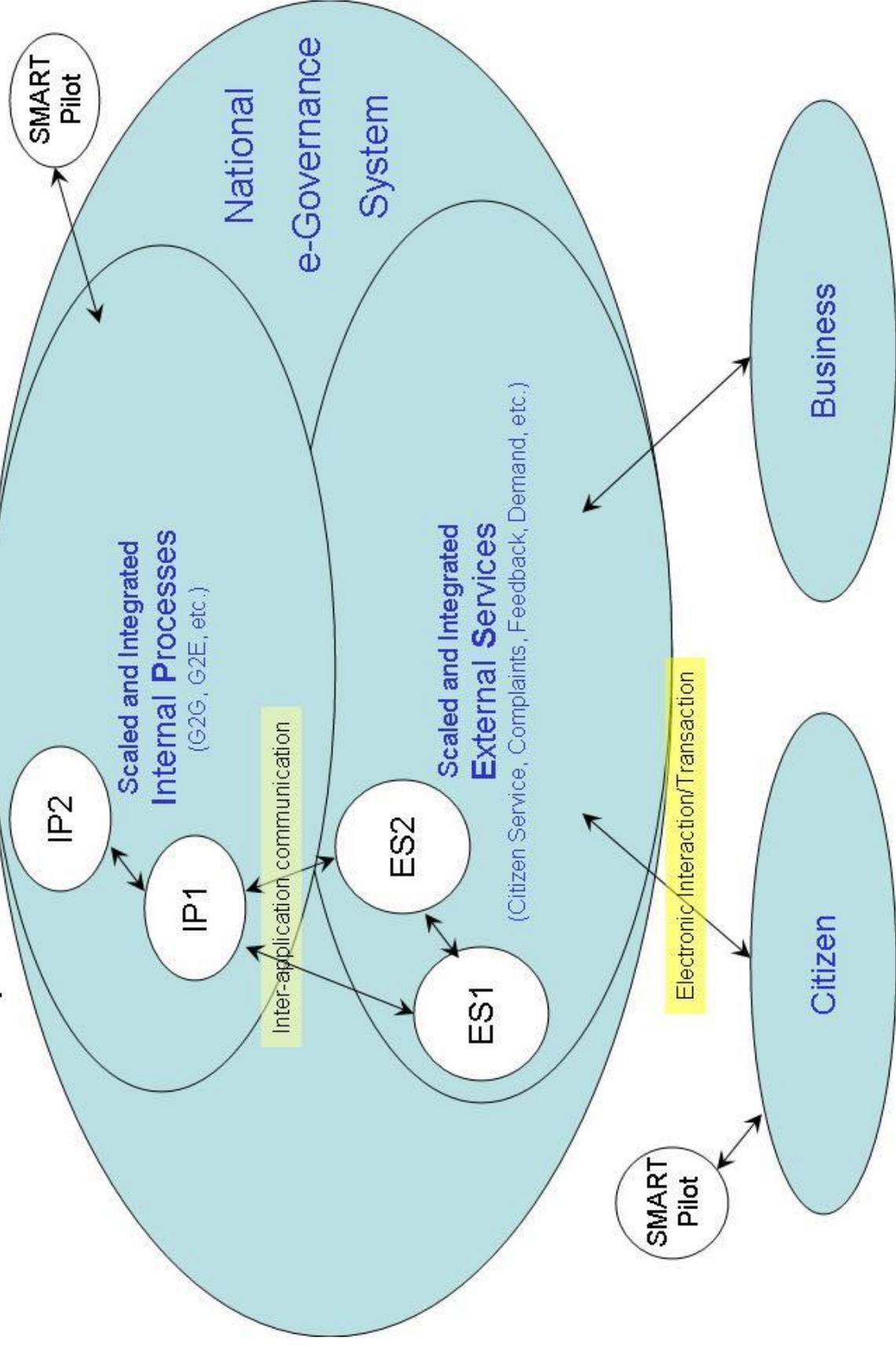
E-Governance

E-Governance is considered as the application of *electronic means* in the interaction between government and citizens (G2C) and government and businesses (G2B), as well as in internal government operations (G2G) to simplify and improve democratic, government and business aspects of governance. Through successful e-Governance, the interaction with the government, namely, the exchange of information, communication and delivery of government services, can be done without having to wait in queues at government offices.

E-Governance should be initiated at the lowest government level such as departmental or local government institutions as pilot projects, and gradually moved to upper levels like zonal, regional and central government institutions. Starting small is a *success factor* for e-Governance in its all branches: Administration, Civil Services, Parliament and Judiciary Functions.

E-Governance can be broadly categorized into external *services* and internal *processes*. Therefore, fulfilling the public's needs and expectations on the front-office side by simplifying their interaction with various online services is the *external strategy* of e-Governance, while facilitating an efficient, transparent, accountable and effective process for performing government administration activities with increased speed at lesser cost is the *internal strategy*.
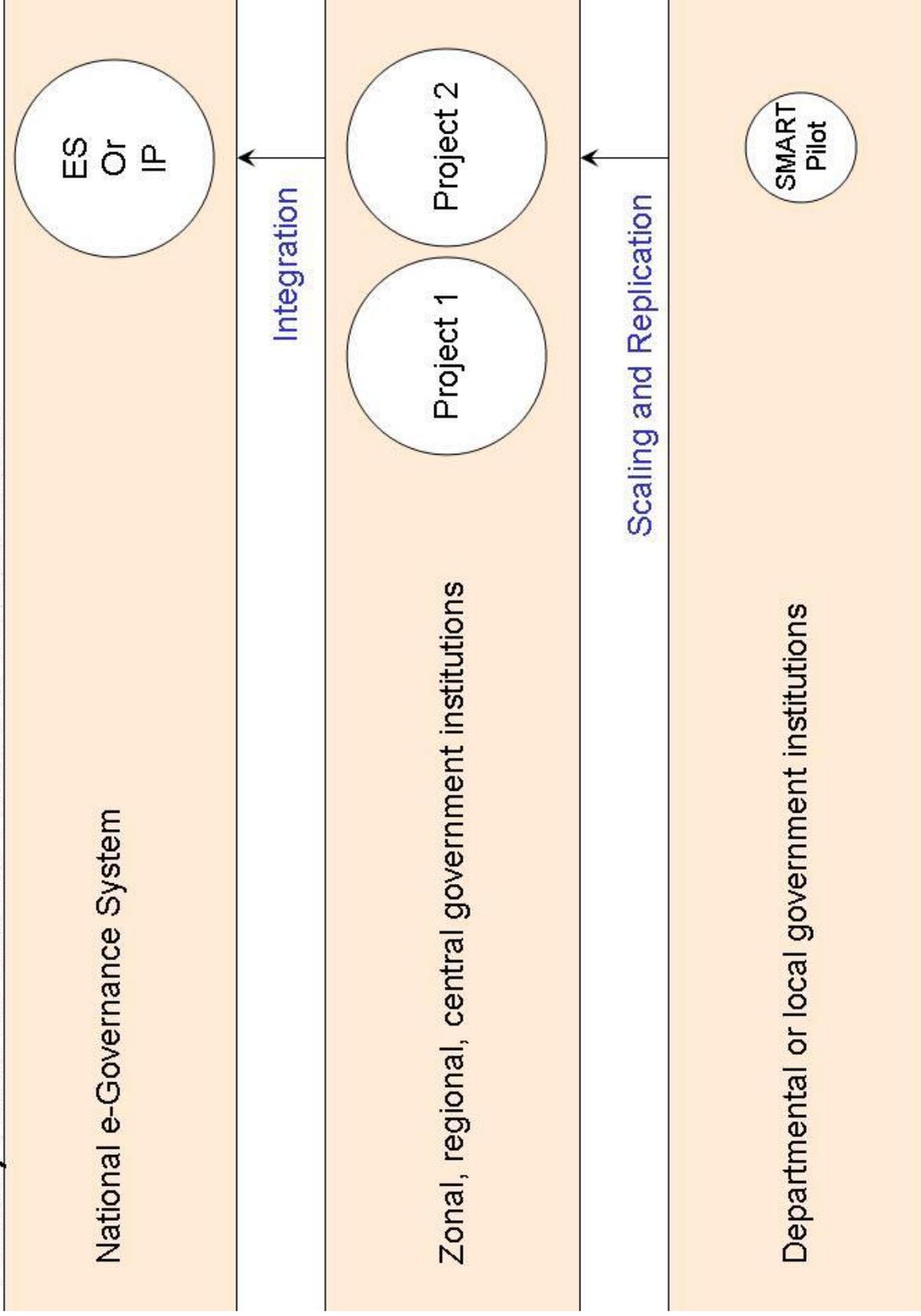
Besides regular government operations and services, e-Governance can also be useful in ensuring active citizen participation in political and development processes, by electronically informing, consulting and involving them in these activities.

E-Governance Components

National
e-Governance
System

SMART
Pilot

Scaled and Integrated
Internal Processes
(G2G, G2E, etc.)

IP2

IP1

Inter-application communication

Scaled and Integrated
External Services
(Citizen Service, Complaints, Feedback, Demand, etc.)

ES2

ES1

Electronic Interaction/Transaction

Business

Citizen

SMART
Pilot

SMART = Simple, Measurable, Accountable, Realistic and Time-related

Maturity Model for Internal Process or External Service

National e-Governance System

ES
Or
IP

Integration

Zonal, regional, central government institutions

Project 1

Project 2

Scaling and Replication

Departmental or local government institutions

SMART
Pilot

Formulation of Vision, Mission, Objectives and Strategy

The vision would be built around having good governance through knowledge based society.

The mission would be to develop efficient, transparent, accountable, and effective government.

The objectives would be to improve governance for citizen services, resource management, and corruption control through optimum use of ICT.

The following would be the strategy in-line with IT Policy and Integrated Action Plan of the government:

- Broad Strategy:

    1. Create awareness for
        a. Requirements and benefits of good governance
        b. Demonstrations of ICT online and offline usages
            i. Universal access to information
            ii. Utilization of information for poverty alleviation & economic development of citizen, community
            iii. Utilization of technology for efficiency & effectiveness
    2. Setting up the e-governance standards & interface
    3. Government process re-engineering
    4. Top down implementation
        a. Implementation of list of ideas with central planning
    5. Bottom up implementation
        a. Community mobilization for e-governance requirement setting
        b. Implementation of demand based e-governance system
    6. Developing mechanism for maintenance & support systems
        a. Local level support as much as practicable
    7. Continual monitoring and evaluation
    8. Strategy for areas where social and physical infrastructure (electricity/communication/literacy) is lacking

- Specific Strategy

  1. Develop relevant content for business, industries and citizen (government, non-government, donors, senior citizen, disadvantaged/deprived group, women and children, etc.)

  2. Re-engineer inefficient and redundant processes

  3. Motivate existing employee with ICT Empowerment

  4. Enhanced inter-departmental collaboration

  5. Enable informed decision making and coordinate development activities

  6. Build stronger financial management and reporting mechanism

  7. Provide online information access to public in local languages

  8. Establish automated/online/transparent administrative processes.

  9. Initiate e-Learning, Education

  10. Create public awareness on roles and responsibilities of govt. and citizen

The Framework

Institutional Setup

- Steering Committee to ensure political and bureaucratic commitment for timely execution
- Execution Team similar to Comptroller General office
- Implementation and support through Information Officers/CIOs

Infrastructure

- Communications
- Electricity / Alternate Energy
- Delivery Channels
- Payment Gateway

Standards

- Open architecture for Inter-application Communication
- Inter/Intra Sector Data Interchange (finance and banking, health, legal, etc.)
- User Interface and Accessibility Compliance
- Technology – barcode, smart card, biometric (finger print, etc.) RFID, local language computing, etc, and compatibility/translation between them.
- Re-usable Objects
- Categorized Data Dictionary for Keywords (For Search Engine)
- (Also Refer Standardization Report submitted to NITC)

Human Resource and Awareness

- Education and Training for operation and maintenance
- Awareness campaign for internal and external use
- Integration of e-Governance as curriculum in National Education System

Legislative Framework

- Electronic Transaction and Digital Signature
- E-Procurement
- Privacy and Data Protection
- Regulatory Authority
- Amendments Required in Existing Acts

Applications

- Process Re-engineering and Mechanism

  Redefining inefficient and redundant procedures; One ID Everywhere (citizenship, passport, driving license, property ownership, taxes, education, registrations, certificates); Digital Map of places, streets, households; Central comments, suggestions and grievance handling unit

- Knowledge Dissemination

  On-line laws, regulations, Government Portals, Environmental data and Health Information, etc.

- Interaction

  Email for Public Officials, Online comments on proposed laws, On-line forums on national and public issues

- Service Delivery

  Procurement, Filing of Government Documents, Online Processing and Permits, Tax Payments, Health, Tourism, etc.
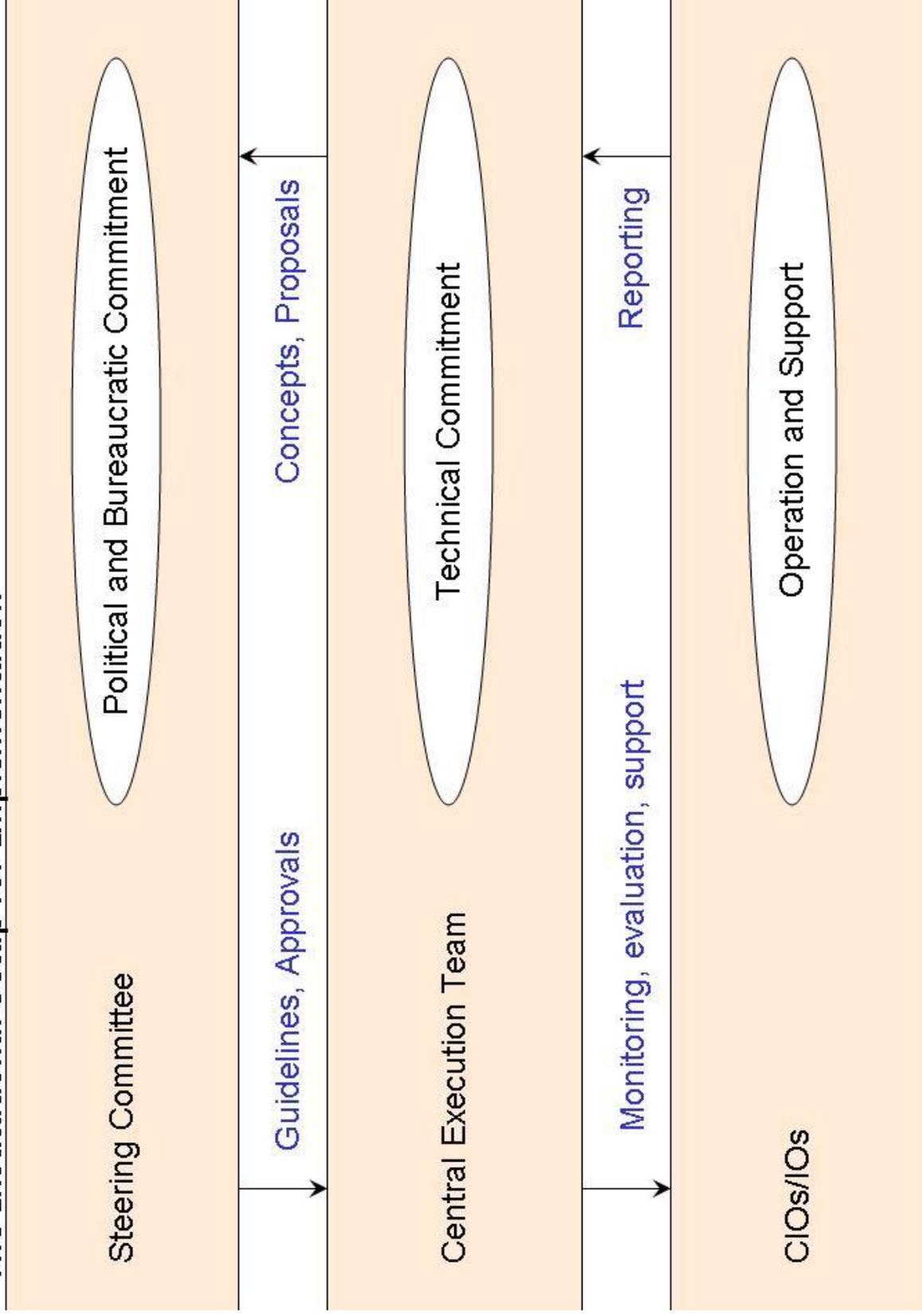
Security to Ensure Trustworthy Computing

- Authentication
- Access Policy and Privileges
- Archive, store, backup, disaster recovery

Risk Management

- Risk Analysis
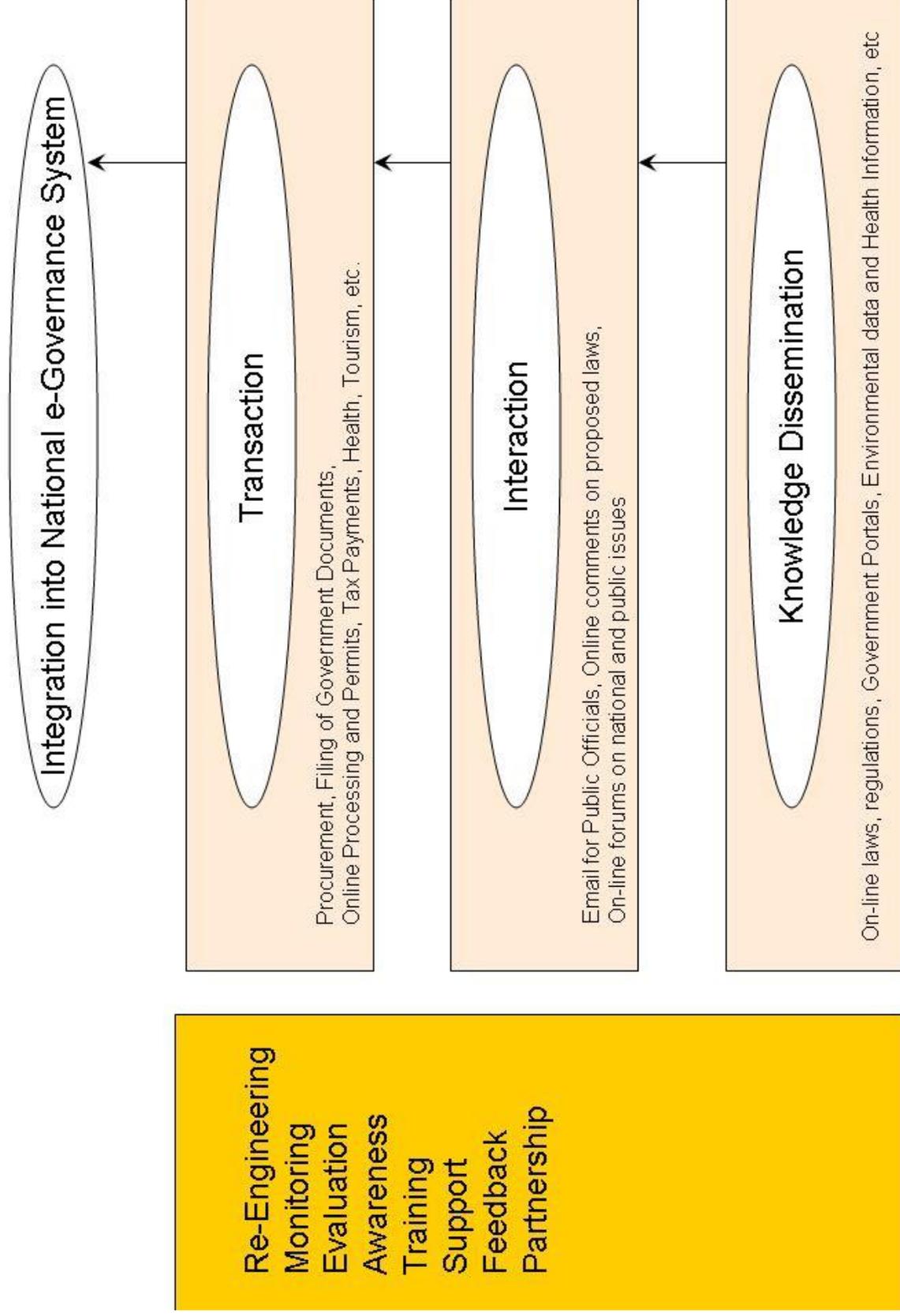- Contingency Plan
- Fall back Plan

The Institutional Setup for Implementation

Steering Committee — Political and Bureaucratic Commitment

Central Execution Team — Technical Commitment

CIOs/IOs — Operation and Support

Concepts, Proposals

Guidelines, Approvals

Reporting

Monitoring, evaluation, support

Implementation Guidelines

a. *Study* sectors that are already computerized -> compatibility issues and duplication.

b. Start with *web-presence* or the delivery of relevant online information in selected areas to the public (G2C and G2B). Because information is publicly available and processes are described, its first step towards transparency and improved service. Regulations, geographical, demographic and economic data, performance indicators, personnel information, audited accounts, reports etc. are the common candidates for this phase. The copyright and ownership issues are to be resolved at the beginning of this phase and the responsibilities for developing content and translating it in local language are to be clearly defined.

c. Depending upon public demand, internal efficiency and cost saving aspects, gradually move toward *interacting*. Threaded e-mail communications, downloading application forms and other documents, exchange of data between government organizations are enabled in this phase. Now the processes are more efficient and effective as the government intake process is partially online. However, finalization of the transaction, e.g., paying a fee, signing the document is not yet online. A clear boundary must be defined in the use of local language at this stage, as it could give rise to newer complications in communicating, processing and record keeping.

d. While some departments or services may be in their initial phase, more important ones can be upgraded to *complete transaction*. Early candidates for this phase are citizenship, passport, etc. for the citizen, visa for foreigners and registration and renewal of licenses, filing of income tax and other taxes, e-procurement, etc. for businesses. Digital signature act must have been practically implemented at this stage, and new laws and legislations, if required, must be created for enabling legally certified paperless transactions.

e. Gradually *integrate* all information systems so that all services are available from one virtual counter. At this stage, a lot of internal issues have to be addressed because the processes and responsibilities within the government institution may change and different departments may have to work together.

f. Plan and comparisons to be presented and discussed with panel of experts

g. Off the shelf or custom developed packages developed in Nepal are to be used as far as practicable. The government institutions should not move into developing applications themselves.

h. How will we overcome resistance from within the government?

i. How will we know if we are failing?

j. What should our relationship be with the private sector?

k. Keep in mind that the non – IT – skilled government officials and illiterate villagers should be able to use the system

l. How to mobilize community for requirement setting and identifying demand-based areas for bottom up implementation?

Implementation Guidelines

Integration into National e-Governance System

Transaction

Procurement, Filing of Government Documents, Online Processing and Permits, Tax Payments, Health, Tourism, etc.

Interaction

Email for Public Officials, Online comments on proposed laws, On-line forums on national and public issues

Knowledge Dissemination

On-line laws, regulations, Government Portals, Environmental data and Health Information, etc

Re-Engineering
Monitoring
Evaluation
Awareness
Training
Support
Feedback
Partnership

Action Plan

1) Master Plan Development Award Procedure

    i)   Brainstorming for RFP with stakeholders and users

    ii)   Finalize RFP in consultation with organizations having previous experience of e-governance project implementation

    iii) Call for proposals

    iv) Evaluate proposal

2) Master Plan Activities

    i)   Formulating Vision, Mission, Objectives, Strategy

    ii)   Defining and Elaborating Framework

    iii) Detailing the Implementation Guidelines

    iv) Preparation of Task List

    v)   Prioritizing, Phasing and Time Schedule

3) Implementation of Applications

    i)   Analysis, Design, Development

    ii)   Migration, Change Management and Integration Plan

    iii) Training and Deployment

    iv) Promotion, Monitoring and Evaluation

    v)   Operation and Support Management

    vi) Scaling, Replicating

4) Integration with National e-Governance System

List of Ideas

Two Activities to Reduce Digital Divide

- IT awareness for rural population: Fear of technology, ignorance of its benefits, affordability and worth of their effort is keeping the rural mass away from ICT. They need to be educated and empowered first. The language comes only next. We should mobilize our ICT students to educate people in rural areas - as a compulsory part of their studies.

- ICT for rural population: Give tax subsidies and incentives if private sector wants to do anything that will directly benefit the rural population – many new ideas for poverty alleviation and minimizing digital divide will automatically come and will be implemented too.

Two Activities to Increase Revenue from Export

- Allow companies to be registered for purely export purpose. Levy company tax on total exported value/remittance received in foreign currency – controlled through company ID. Export should be tax exempted and more incentives need to be provided for the companies who would come inside the network of revenue information system. Revenue should be increased from indirect taxations such as income tax of the employees, VAT etc as the declaration of actual accounts by companies will be facilitated by incentives provided to companies to declare their actual account.

- Build "Government Certified One-stop Portal" for selling Nepalese handicraft and other products on-line, including tourism services, accepting payment directly from credit-card worldwide. Thus all on-line exports are transparent, and the sales tax can be directly collected through the portal operator itself.

Single ID System

- Each resident should have single unique identification to be used in all activities of life, e.g., citizenship, passport, driving license, property ownership, taxes, education, registrations, certificates, etc.

Single Point of Contact

- Whether it be lodging a complaint, requesting for service of public interest, downloading a form or finding a phone number and contact person to call, all interaction should be accessible through one point.

Community Information System

- Digital map of every street, household, and information on local residents, professionals, shops, services, facilities etc. Before going on-line with this information, data protection law should be in place, so that utilization of private information is restricted, and unintended parties cannot access it.

Reducing Poverty and Isolation through Knowledge Dissemination

- Multimedia Information Centers (offline or online) at VDC levels to disseminate economic, technical, social and political information. Incentives/subsidies can be provided to the private sector to run their Multimedia Information Centers at their own.

Health Service Network

- Information on Health workers and professionals, medicine, risks and alternatives, Hospitals and health posts, situational precautions, etc.
- Use of Tele-medicine to improve quality of health services in rural sectors

Utilizing Off-hour bandwidth for Synchronization and Offsite Backup

- Nighttime Internet links, and satellite link, including satellite TV bandwidth can be utilized for this purpose.

E-Postoffice

- Rural postoffices providing e-mail door-to-door services to send & receive letters in the community.

Web-based Lost and Found Service

- Where people can report what they have lost or found. Sometimes what is lost if of high value to the person who loses it, but of no value to the one who finds it. The person who finds it should be able to report it with minimum efforts.

E-Education

- Concept of open university being implemented using ICT (offline & online)
- Computer education in high schools made mandatory gradually
- Schools operating as community centers for the dissemination of ICT applications

Eye on Emerging Technologies

- Mobile phones and PDAs can be used in lot other ways than they are being used right now. Existing technology can be modified or customized or new technologies could be devised to be used effectively in rural areas. For this purpose and also for the possibilities of innovation in other areas, the use of emerging technology should be deregulated and facilitated at least for research purpose.

Appendix

E-readiness Studies on Nepal

There are a number of different organizations conducting e-readiness assessments in developing countries using a variety of tools. In its *Comparison of E-readiness Assessment Tools* (see www.bridges.org/ereadiness), bridges.org evaluated major assessment models in terms of topics covered, level of detail, methodology and results. In its report, it has been suggested that 2 surveys (by WB Group using Knowledge Assessment Methodology (KAM) and The Mosaic Group using Mosaic Methodology) and 2 case studies (One by ITU and another by USAID) have been already conducted on Nepal with relation to e-readiness.

The following is the result of the most recent Interactive KAM (28 January, 2005) results :

Table 1: Knowledge Economy Index of Nepal as compared to countries in South Asia and other countries, region and the world[1]

Country	KEI	Econ. Incentive Regime	Innovation	Education	Information Infrastructure
Developed Oceania	8.64	8.36	8.38	9.07	8.74
G7	8.35	7.85	8.68	8.21	8.64
Western Europe	8.24	8.15	8.12	8.09	8.62
Europe and Central Asia	5.38	4.09	5.46	6.73	5.25
East Asia	5.17	4.95	5.31	4.96	5.48
World	4.82	4.55	4.86	4.91	4.96
Thailand	4.76	4.49	3.68	5.89	4.96
Philippines	4.38	4.98	3.08	5.6	3.88
Middle East and North Africa	4.14	4.23	3.66	3.88	4.81
Latin America	4.1	3.87	3.3	4.5	4.73
China	3.8	2.55	4.42	3.74	4.5
Sri Lanka	3.64	5.08	3.21	3.9	2.39
Indonesia	2.75	2.66	1.96	3.54	2.86
India	2.72	2.91	3.58	2.33	2.06
Vietnam	2.65	1.94	1.82	3.98	2.85
South Asia	2.1	2.44	2.51	2.1	1.34
Africa	1.91	2.57	1.7	1.51	1.87
Pakistan	1.43	1.29	1.95	1.05	1.43
Nepal	1.42	1.97	1.57	1.6	0.53
Bangladesh	1.11	0.97	1.57	1.62	0.3

The above table depicts that Nepal is well placed as compared to Bangladesh and is comparable with Pakistan in the South Asian Region but very much lags from the World average and even in South Asian average of Knowledge Economy Index (KEI). Knowledge Economy Index (KEI) is the average of the performance scores of a country or a region in all four pillars (namely Incentive Regime, Innovation, Education and Information Communication & Technology Infrastructures) of knowledge economy.

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[1] http://info.worldbank.org/etools/kam2005/weighted/mc_chart.asp

The above table is the basic scorecard with four pillars with 12 variables of knowledge economy plus 2 variables relating to performance. Variables considered for the performance of countries/regions are annual GDP growth and human development index. Variables that have been taken for Economic Incentive and Institutional Regimes are tariff and non-tariff barriers, regulatory quality and rule of law. The adult literacy rate, secondary and tertiary enrollment rates have been used for Education and Human Resources pillar. Innovation system has been constituted from number of researchers in R&D, patent applications granted by the US Patent and Trademark Office and number of scientific & technical journal articles. Information Infrastructures have been contributed with Telephones per 1000 population, Computers per 1000 population and Internet users per 10,000 population.

Table 2: Basic Scorecard Variables's actual values for Bangladesh, India, Nepal and Pakistan[2]

Variable	Bangladesh	India	Nepal	Pakistan
GDP Growth(%)	5.20	5.80	3.70	3.80
Human Development Index	0.51	0.60	0.50	0.50
Tariff & nontariff barriers	2.00	2.00	2.00	2.00
Regulatory quality	-1.05	-0.34	-0.50	-0.77
Rule of law	-0.78	0.07	-0.50	-0.70
Researchers in R&D / million	50.77	98.85	n/a	77.64
Scientific and technical journal articles / mil pop	1.15	9.23	1.73	2.06
Patent applications granted by USPTO / mil pop.	0.01	0.33	n/a	0.01
Adult literacy rate (% age 15 & above)	41.09	61.03	44.01	47.10
Secondary enrollment	46.88	48.47	43.87	25.81
Tertiary enrollment	6.07	10.58	5.37	3.55
Telephones per 1000 people	15.60	71.00	17.80	44.10
Computers per 1000 people	3.40	7.20	3.70	4.20
Internet users per 10000 people	17.98	174.86	34.48	102.77

Both of the above tables show that Nepal and Pakistan are competitors to each other whereas India is leading in all aspects and Bangladesh is the trailing country in an average. Nepal is better in Economic Incentive Regime & Information Infrastructure than Bangladesh and is better in Economic Incentive Regime & Education than Pakistan.

Information Technologies Group, Center for International Development at Harvard University has developed an online survey found at http://cyber.law.harvard.edu/readinessguide/cgi-bin/survey.cgi?go=1. The result of the online survey based on the best estimates for Nepal with options from stage 1 to stage 4 for each category of networked readiness as defined in the survey has been found as below:

Network access measure depicts what are the availability, cost and quality of ICT networks, services and equipment?

Networked Learning gives the measure of the following queries: Does the educational system integrate ICTs into its processes to improve learning? Are there technical training programs in the community that can train and prepare an ICT workforce?


Networked society provides the answers to the following: To what extent are individuals using information and communication technologies at work and in their personal lives? Are there significant opportunities available for those with ICT skills?

Networked Economy measure tells how businesses and governments are using information and communication technologies to interact with the public and with each other?

Networked policy tells us to what extent does the policy environment promote or hinder the growth of ICT adoption.

Readiness Assessment Results
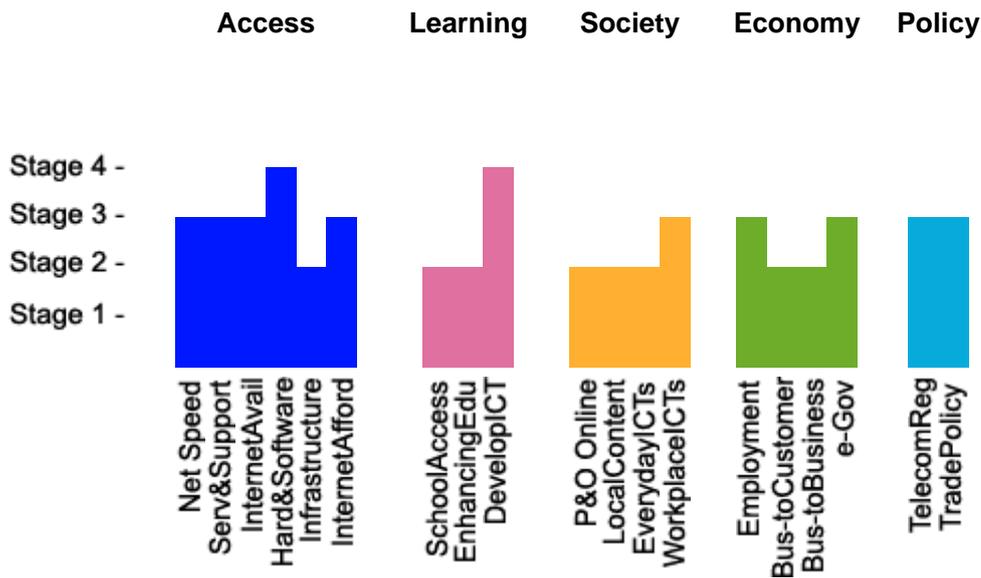
Nepal's mean level of readiness is ..7

Nepal Doorsanchar Company Limited (NDCL) has achieved the following rural service penetration levels as of 15, October 2004[3]. Percentages identified in the table refer to the percentage of VDCs with at least one PCO in the specified region.

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[3] MIS Report, Issue 1, Vol 5, Nepal Telecommunication Authority, October 2004

Table 3: Rural telecommunication service penetration level

Region	Total VDCs	VDCs Served with at least one PCO	% of VDCs Served with at least one PCO
Nepal	3,915	1,919	49%
Kathmandu Valley*	114	101	89%
Eastern Development Region	893	409	46%
Central Development Region	1199	547	46%
Western Development Region	864	417	48%
Mid-Western Development Region	575	207	36%
Far-Western Development Region	383	181	47%

* Included under Central Development Region

InfoDev's Country Gateway Nepal's initiative had also done an e-readiness assessment of Nepal and the report draws the following conclusions[4]:

- Telephone density is well developed in the development sectors
- Computers and Internet form the basis of communication and work in most offices
- Online local content is inadequate
- Slow Internet connections and limited bandwidth form the major barriers of the growth of Internet in the organizations
- Increasing awareness has led to the increment of usage of ICT for work applications

In June, 2004 Hitech Valley iNet had conducted a survey for e-readiness assessment of Nepal for the **UNDP Project NEP/02/008 – "Information & Communications Technologies (ICTs) for Development"**. An attempt has been made to draw comparative framework of analysis of e-readiness for the districts in Nepal. The idea was to prepare a framework for assessing e-readiness among districts so as to form the basis for optimum targeting of resources for bridging digital divide and harnessing ICTs for development and guiding policy directions in these areas. Eight districts were selected for e-readiness assessment, namely Morang, Sunsari, Kathmandu, Lalitpur, Bhaktapur, Kaski, Parbat and Kanchanpur.

The following are some information for comparative tables in different regions and districts under consideration by the survey and described in the report:

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[4] E-readiness Assessment Report, The Nepal Gateway Project, January 2004

Table 4: Access to basic services[5]

Districts	Total population	Electricity as lighting source	Total telephone subscribers
Morang	843220	35.56	17723
Sunsari	625633	42.37	15133
Kathmandu	1081845	96.94	164990
Lalitpur	337785	87.28	38145
Bhaktapur	225461	97.38	11734
Kaski	380527	68.14	18110
Parbat	157826	25.33	528
Kanchanpur	377899	37.56	3958

"The following table depicts the results of e-readiness assessment survey indicated by Overall Composite Index (OCI). The table shows Kathmandu with the highest OCI as compared to other districts."

Table 5: OCI indicating e-Readiness indices for districts[6]

District	NU	EF	OCI (NRI)
Kathmandu	3.746	3.560	1
Lalitpur	2.553	3.061	0.623
Bhaktapur	2.413	2.575	0.483
Parbat	1	1.816	0
Sunsari	1.126	1.784	0.021
Kaski	2.033	1.730	0.211
Mahendranagar	1.047	1.865	0.021
Morang	0.877	1.974	0.008

NU = Network Use Index
EF = Enabling Factors Index
OCI= Overall Composite Index
NRI= Network Readiness Index

One of the key components of Network Readiness Index, Network Use is composed of five indicators namely, % of pc w/internet connection, internet users/host, estimated internet users per 100 inhabitants, cellular subscribers per 100 inhabitants and public internet access (expressed in terms of cyber cafes/internet kiosks as well as tele-centers per 1000 inhabitants).

The Enabling Factor (EF) component indices seek to assess readiness based upon 4 sub-indices: Network Access (NA), Network Policy (NP), Network Society (NS) and Network Economy (NE).

The Network Access (NA) sub-index has been further divided into 2 micro-indices namely a) information infrastructure and b) hardware and software support. The

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[5] Mapping Nepal Census Indicators 2001 and trends, CBS/HMGN/ICIMOD
[6] E-readiness Assessment of Nepal, for UNDP's ICT for Development Project, Hitechvalley iNet, June, 2004

Network Policy (NP) sub-index has been classified into a) ICT Policy and b) Business and Economic Environment. The Network Society (NS) has been further divided into a) Networked Learning b) ICT Opportunity and c) Social Capital. The Network Economy (NE) has been classified as a) E-commerce b) E-governance and c) General Infrastructure.

In the Need Assessment and Incubation Environment study to be done in Incubation Initiative Nepal (IIN) project, the following locations have been considered for the study : Biratnagar (Morang), Birgunj (Parsa), Kathmandu, Bhaktapur, Lalitpur, Pokhara (Kaski), Butwal (Rupandehi) and Nepalgung (Banke).

The following are the comparative data for the districts under study in the IIN obtained from UNDP's Human Development Report 2004.

Table 6: Some key variables and comparative results for HDI, SEI and EEI[7]

District	Adult Literacy	Mean Years of Schooling	Proportion of households with radio	Proportion of households with Telephone Service	Proportion of electrified households	Human Development Index (HDI)	Social Empowerment Index (SEI)	Economic Empowerment Index (EEI)
Nepal	48.6	2.75	52.59	3.91	31.08	0.471	0.406	0.337
Morang (Biratnagar)	52.3	3.35	49.17	4.04	35.78	0.531	0.451	0.506
Parsa (Birjung)	37.8	2.49	35.75	4.75	46.29	0.448	0.314	0.428
Kathmandu	73.5	5.94	80.28	25.08	96.81	0.652	0.710	0.629
Bhaktapur	64.0	4.41	74.34	13.57	96.41	0.595	0.614	0.499
Lalitpur	66.9	5.07	80.94	25.90	87.64	0.588	0.752	0.515
Kaski (Pokhara)	66.8	4.40	75.86	4.85	74.36	0.593	0.777	0.548
Rupandehi (Butwal)	62.2	3.01	43.84	6.33	42.57	0.546	0.438	0.440
Banke (Nepalgunj)	53.4	2.45	44.02	2.89	32.20	0.479	0.437	0.454

The above table shows Parsa is the only district which has less corresponding values than the national HDI average of 0.471 and national SEI average of 0.406.

The districts that were considered in the survey done by UNDP ICT4D project, are also there in the Need Assessment and Incubation Environment study to be done in Incubation Initiative Nepal (IIN) project. IIN has excluded Sunsari, Parbat and Mahendranagar and has included Birgunj (Parsa) in the central development region, Rupandehi in western development region and Nepalganj (Banke) in the mid-western development region. Other districts Kathmandu, Bhaktapur, Lalitpur, Morang (Biratnagar) and Kaski (Pokhara) remain in both the studies. In

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[7] Human Development Report 2004, UNDP

order to have a comparable data on e-readiness, it has been tried to extrapolate the values of OCI using regression analysis.

By the calculations, it is found that the correlation coefficient between HDI & SEI is 0.789825 and the correlation coefficient between HDI & EEI is 0.895627. This means HDI is highly correlated with SEI and EEI. HDI may be sufficient to be used as independent variable in the extrapolation of the values for NU, EF and OCI. The following is the result of the extrapolation of NU, EF and OCI of the new districts under consideration for the IIN based on the HDI of different districts and the respective values NU, EF and OCI from the ICT4D project.

Table 7: NU, EF, OCI values for new districts under consideration

Sno	District	NU	EF	OCI (NRI)	HDI
1	Morang	0.877	1.974	0.008	0.531
2	Sunsari	1.126	1.784	0.021	0.500
3	Kathmandu	3.746	3.560	1.000	0.652
3	Parsa*	0.292	1.409	-0.248	0.448
4	Lalitpur	2.553	3.061	0.623	0.588
5	Bhaktapur	2.413	2.575	0.483	0.595
6	Kaski	2.033	1.730	0.211	0.593
7	Parbat	1.000	1.816	0.000	0.504
8	Rupandehi*	1.742	2.235	0.258	0.546
9	Banke*	0.751	1.670	-0.088	0.479
10	Mahendranagar	1.047	1.865	0.021	0.463

The above table depicts that the Parsa and Banke districts are less e-ready than other districts under consideration when whole districts are being considered. However, since the focus for setting up the incubation center will be urban areas of the selected districts, all the locations considered in the IIN will be better placed.

Lessons Learnt on e-Government

The e-government is defined as the ability to provide information about services and conduct government transactions over the internet. The study is based on results of a survey of 5000 regular internet users in 12 countries in Asia Pacific, Europe and North America, as well as a quantitative assessment of the maturity of e-government services in 22 countries. Accenture a global IT and management consultancy conducted a comparative study, annually for the past five years rates the quality of service governments offer their citizens. Canada came first in all categories of e-government and the program continues to set the standard for the rest of the world. Singapore and the United States shared the second-place ranking, followed closely by Australia, Denmark, Finland and Sweden, which were tied for the fourth place. France ranked eighth, the Netherlands and the Britain tied for ninth, and Belgium, Ireland and Japan jointly held the eleventh position. The analysis firm said that in general, advances in maturity are slowing down because most countries have reached plateaus in terms of innovation, progress and impact of their services. This means that even the countries with the most advanced e-government services still have work to do to derive greater public-sector value.

Let us study the e-government situation and progress made by some of the developed countries as well as developing nations.

Canada

Over the past year, Canada's focus on self-examination and its relentless pursuit of user feedback have allowed it to continue to build what is clearly one of the world-leading customer-focused government on-line programs. There are 206 service needs that might typically be provided by the national government. The major services are assessed across a dozen sectors, including agriculture, defence, e-democracy, education, human services, immigration, justice and security.

E-government is changing

❖ E-government leaders earn savings by being able to deliver enhanced government services while making operations more cost-effective
❖ Promoting e-government is becoming a growing priority in an effort to increase usage.
❖ While some governments seek to integrate services across agencies and departments, calls 'horizontal integration', the most successful e-governments integrate local, state, federal and even international services, or 'vertical integration'
❖ Governments are beginning to offer personalized online services. By identifying and segmenting their citizens and users, governments can provide them with more relevant services and information

Singapore

The Government has already implemented e-Governance in Singapore. The services are categorized in Government to Citizen, Government to Business and Government to Employee. Individuals can now interact online with the Government on a vast range of matters. Available 24 hours a day, seven days a week, the eCitizen Portal provides a single access point to government information and services. These are organized and integrated in intuitive categories. The portal has been popular with individuals and businesses. Behind the success of eCitizen is the Public Service Infrastructure (PSi), a central facility that allows quick and efficient deployment of e-services. Launched on 1 March 2003, SingPass, or Singapore Personal Access, establishes a nation-wide personal authentication framework for e-services. With just a single identification and password to remember, SingPass makes it more convenient and easier for users to transact online with the Government. All Singapore residents above the age of 15, employment pass holders and their dependents are eligible for SingPass.

Government Electronic Business (GeBIZ) is an integrated, end-to-end online procurement system for the Public Sector. Local and international suppliers can now check out or participate in business opportunities with the Government in a more efficient, transparent and secure environment. For the business community, transacting online with the Government is now becoming the norm. Having easy and convenient online access to government agencies at all times means savings in time and money for the businesses. This is in line with our national drive to promote a pro-enterprise environment, to facilitate business growth in Singapore.

Business Needs	Previously or manually	Now through e-services
Incorporating a new company	- S$1,200 to S$35,000 (depending on company size) - Time required: 2 days	- S$300 (flat fee) - Time required: 2 hours
Submitting building plans	- Manual dispatching of documents to 12 agencies	- Savings of S$450 by submitting online
Setting up a new entertainment outlet	- Time required: 8 weeks	- Time required: 2 weeks

The G2B Portal is the first entry point for all local and international businesses to access a full suite of aggregated and integrated G2B information and services. Whether registering a new business entity or reporting of changes to business particulars, BizFile enables the online filing of such forms in a manner that is both faster and easier. By going online, a businessman no longer needs to liaise with multiple agencies or fill up multiple forms when requiring government services.

Government-to-Employee
Public officers remain key to any successful e-Government strategy. They play an important role ensuring that the Singapore Government benefits from fresh opportunities emerging from new technologies. Public officers are equip with the relevant skills needed to operate in the context of a government that must be increasingly collaborative, customer-centric and consultative. The InfoComm Education Programme (IEP) ensures that public officers are equipped with new ICT skills and competencies to take advantage of the growth in Infocomm capability to revamp internal processes and external service delivery.

Australia

The government of Australia has been proving e-Governance to citizen under various services such as
- ◈ Better Government,
- ◈ Better Information,
- ◈ Better Services,
- ◈ Better Business,
- ◈ Better Infrastructure, and
- ◈ Better Practice.

From 1997/98 to 2001/2002, the Prime Minister's commitment and agency client service strategies appear to have provided the major stimulus for agencies to offer services online to citizens and businesses. The take-up of government online services by business shows that 54% of small businesses with less than 4 people accessed government services via the Internet. This figure rose to 86% for businesses with greater than 100 people. The study found that there is ongoing demand for online services and that users believe significant benefits are available. It found that future demand for online government services might increase by approximately 30% in the period 2002 to 2004. Citizens and businesses indicated that in the next twelve months they would use the Internet to access Commonwealth Government information related to education, health, taxation, employment, weather, community support, and to a lesser extent family assistance information.

Benefits to User

- over 80% of all users indicated a moderate to significant improvement in the ease of finding information;
- approximately 75% indicated some or significant improvement in service quality;
- 75% saw either some (24%) or significant improvement (51%) in their ability to make decisions;
- over 80% of businesses and nearly 90% of government employees saw either some or significant improvements in the quality of their decision-making; and
- access to public records was considered more open by 68% of all users.

Benefits to Government

- 67% expected to reduce costs significantly due to improved business processes;
- 64% expected to reduce costs significantly by directly reducing costs of servicing - ie direct cost reductions, such as advertising, printed material, staff costs and client management costs; and
- 17% expected to reduce costs significantly by using multi agency delivery channels.

United Kingdom

Requires registration and enrolment with the Government Gateway. Information on electronic services available to importers and exporters.

Inland Revenue

EDI-based service enabling employers to submit and receive PAYE (Pay as You Earn) and NIC (National Insurance Contributions) forms and returns over the Internet. Corporate tax

service enabling companies to view details of their Corporation Tax position with the Inland Revenue online, including liabilities and payments for each accounting period as well as any interest or penalties that may have been charged. The system, which requires registration and enrolment with the Government Gateway.

HM Customs and Excise

Service enabling submission of VAT returns online. Users benefit from an extra seven days in which to make their payment and get fast, automatic EVR receipt acknowledgement. Additional incentives exist for certain types of businesses. Most services are based on the Customs Handling of Import and Export Freight (CHIEF) platform, one of the largest and most advanced Customs declaration processing systems in the world. The most notable of these electronic services is the New Export System (NES) that went live in 2002. A New Computerized Transit System (NCTS) implemented , and the objective is that all Import, Export and Transit Customs Declarations will ultimately be input electronically

Registration of a new company

Information and forms for company registration and company information submission. A Web-Filing service provides a secure system for presenters to submit selected company information, but not yet for company registration.

Public procurement

There is no national e-procurement platform for the UK central government.

India

Most people in the government are not aware of the real implications of e-governance in India. India is trying to use e-governance only as a tool that can replace three man's work by one man. In fact e-governance is more costly to than time saving. The observations made with respect of e-governance in India are:

- it is a tedious process;
- it means staff cuts,
- it is costly and
- it is time consuming.

Right now the government is not really benefiting from e-governance, but in the long run a lot of initiatives that can actually be of aid. It is a feudalistic society where information is still power for many officers who fear transparency of government structure and thus protested. The whole debate today is on the availability of communication links, which are not available at present. To make e-government a reality, a lot of restructuring will have to be done. The government has invested about Rs 1,000 crore. The planning commission had allocated 2-3 percent of every organization on IT. If the total budget outlay for all industries is Rs 45,000 crore, 2 percent would be about Rs 1,000 crore, which is for IT or e-governance and the government does not have any plans to generate revenue from these projects.

The e-government initiative has not been seen in the Central Government activities whereas some of the State Governments had begun e-government services in their respective territories. We will look to their experiences.

Karnataka: E-governance takes the fast track

The IT Policy of the Government of Karnataka focuses on effective e-governance, which involves computerizing every department, and creating Web sites for every district. Today the technology find it easy to use the Internet to pay their electric bills, book a movie ticket, or apply for passports, IT is still some distance away from the reach of common person. The government is also in the process of training its employees in basic IT, which would hopefully make them more IT savvy. The government also plans to appoint Information Officers for each of the departments to ease out dissemination of information to the public.

Education

The state government exams and results, the government has e-enabled the entire process of seat allotments and results for the Common Entrance Test (CET). To keep up the good work going, the state has also computerized the SSLC and PUC examinations' processing and made the results available on the Web. This includes admissions for TCH and Bachelors in Education (BEd) courses, recruitment and transfer of teachers and placement of newly recruited teachers and probationary headmasters through computerized counseling. Yuva.com attempts to take IT to the students and underprivileged youth by building 225 training centres all over the state. The program targets women and families earning an income of less than Rs 36,000 per annum. The government has already identified these centres and allotted them IT institutes like Aptech, NIIT, SSI etc. Apart from this, the government had also taken up a project to inject IT-based education from Classes 8 to 10 in about 1,000 schools in the state.

Government Tax

The Karnataka government has computerized the payment of taxes, filing of returns, dealers registration, and vigilance and intelligence activities. The public works Finance Cell and the Zilla Panchayat units are computerized for monitoring monthly grants and releases. The treasury department has computerized payments and receipts in 20 of the 31 districts and 184 sub-treasuries dealing with transactions worth about Rs 20,000 crore. A network center has also been developed to handle a central database in Bangalore and disaster recovery centre at Dharwad.

Land Record

Computerized Land records and Registered Transfer Certificates will be made available to farmers soon. The Government plans also include setting up 7,500 information kiosks all over the state, and connecting all the sections of rural development. Zilla Parishads will be connected to a central system that will monitor all of their plans.

Vehicles Record

The government has been swift in computerizing the Motor Vehicle and Driver's Licenses while Licenses are being issued at one of the RTOs in the state as a pilot project and plans are under way to extend this to other RTOs as well. The process of integrating the whole data with the city traffic police departments are also to be taken up with the computerization of the five regional transport offices in the state and also the Transport Commissioner's Office. 153 police stations have been provided with computers while complaint registration systems are already computerized.

Forest Information
The forestry division is busy with its installation of Geological Information Systems packages. The department has already implemented a software package on financial accounting, forest offence cases, land use data, afforestation and wildlife management.

Ration Record
The Government also has plans to issue computerized ration cards in Bangalore and also install an information system relating to Targeted Public Distribution System (TDPS). Work is underway to computerize 40 municipal corporations in the state, while C-DAC has already computerized six.

IT Park
Software Technology Parks of India is a society set up by the Department of Communication & Information Technology, Government of India in 1991, with the objective of encouraging, promoting and boosting the Software Exports from India. STPI maintains internal engineering resources to provide consulting, training and implementation services. Services cover Network Design, System Integration, Installation, Operations and maintenance of application networks and facilities in varied areas ranging from VSATs to ATM based networks.

Tamil Nadu: Trends and Bottlenecks
E-Government will revolutionize the way the government works. It can potentially ensure transparency, effectiveness, and popular access. But the factors peculiar to success are awareness, willingness to use technology, level of penetration into the bureaucracy and availability of infrastructure. In Tamil Nadu, typical projects that have been implemented include a comprehensive state government information Web site. Apart from all the state-level tenders in English and Tamil, the site houses a wealth of documents and statistical information about the State. In addition, it has over 100 application forms in English and Tamil, a comprehensive database of land records, digitization of cadastral maps, a pilot project for Tele-medicine between a State level tertiary hospital and a taluka-level rural hospital, major IT projects in the Madras High Court and in the Police administration, application software for the Sub-Registrars' offices and District Registrars' offices; Regional Transport Offices (RTOs); Zonal RTOs; the Transport Commissioner's office; IT assessment circles and monitoring/development projects at the Block level, and pilot project for payment of utility bills over the Internet is planned for commissioning this financial year. Videoconferencing facilities have also been set up between the State headquarters and all District headquarters. However, implementation of this project is hampered due to non-availability of ISDN in 40 percent of the districts.

The strategic initiatives include developing Tamil fonts and software, which conform to the standards certified by the government. In fact, there was even a policy on privacy and right to information on the Tamil Nadu government information portal as well, though restrained. The successful rate is 28 percent of e-governance projects while 23 percent are dropped. The 70 percent of the population is rural and 35 percent is illiterate, the others do not necessarily know English. Only uniform and sustained development can achieve success.

A new PC costs about US$1,000 which is roughly twice the GDP of our country. Telephone penetration ought to be as high as 15 percent for which telecom has to be de-regulated. How was cable TV able to wire up 35 million people within a few years? It was because of de-regulation. What we need is a policy for universal Internet access. WLL (Wireless in Local Loop) can promote Internet access, but why should one be a basic services provider for voice

transmission? There is no point printing out land records in English to a farmer who does not know how to read or write. e-Governance is not interactive and mostly one-way communication, since Web sites are still first generation static sites.

Maharashtra: In tune with the times

The e-governance initiatives of Maharashtra government have been restricted to automating back office functions and business processes. But now, efforts are increasingly being made to implement 'G2C' applications. This means extending government services, information and utilities online to the 'common man' in urban areas as well as remote villages who will be able to pay utility bills online, register grievances, obtain documents with minimum hassle. E-Governance goes hand in hand with education and changing the mindset of the bureaucracy towards using IT to automating their work. The state government made the use of e-mail mandatory between State Headquarters and District-level Offices and Taluka Headquarters. Cabinet Meeting Information System (CMIS) for the Chief Secretary's office, a Web-based Letters' and Files Tracking System and an Executive Information System for the Chief Minister, other ministers and senior bureaucrats. The state government plans to set up computer labs in aided secondary and higher secondary schools and invest in IT training for teachers as well as students. With all these plans, it definitely seems that state government is all set to make Maharashtra a wired state.

In Warana, an e-village in Maharashtra, high-speed VSAT was used to allow Internet access to existing co-operative societies. The project aims to provide agricultural, medical, and education information to villagers by establishing networked "facilitation booths" in the villages. All the villages in the area have computer kiosks that are linked to a central network. Warana's project is providing farmers with access to essential information. The network keeps detailed records of all transactions with local sugar and milk cooperatives; it lists prices of farm produce in the region's agricultural markets (to help farmers decide what to plant or where to sell their produce); and it offers a daily weather forecast. India is attempting to duplicate the Warana experiment in other parts of the country.

Disaster Information A VHF and VSAT communications network, which will connect 3,000 offices all over the state, is among the major projects being implemented. This project is estimated to save around Rs 150 crore over the next five years against its installment cost of Rs 27 crore. As part of the network, an emergency operator's centre in Mantralaya, divisional and district control rooms as well as a disaster management information system will be set up. Thus, in the event of a natural calamity like flood or an earthquake, when telephone lines are down, all government offices would still be connected electronically to formulate disaster management plans.

Infrastructure & Services

Nearly 7,000 electronic kiosks would be set up all over the state and would maintain Web application servers, system delivery operations throughout the network, develop data warehouses and facilitate government revenue collection. Several companies including Reliance Industries have already begun laying optic fiber cables at an estimated investment of Rs 5,000 crore. A comprehensive MIS has been set up for the Department of Irrigation, Government of Maharashtra covering activities Stores & Inventory, Procurement, Construction Management, etc. The infrastructure includes a network among various levels in the Irrigation Department connecting Mantralaya and the divisional offices. Computerization

of the State Registration and Stamps Department developed by C-DAC is poised at facilitating efficient property transfer and stamp duty registration. Automation of document registration, archival and stamp duty calculation system will help officials and customers by allowing quick storage and retrieval of important registered documents. Computerization of the Public Works Department which takes care of the construction, and maintenance of roads, bridges, housing and government buildings is another major step towards e-governance. This will enable the PWD to keep track of the enormous amount of projects and contractors at various stages of the project at different locations. It would also enable officials to generate reports and returns to be submitted to supervising officers and the government, the compilation of which often results in duplication of efforts in the current manual system of working. With the official Web site of the PWD now in operation, businessmen, contractors, service providers and citizens will no longer have to wait for long hours at the nearest PWD office to obtain information on permissions and clearances, NoCs (no objection certificates) for works like laying pipelines or constructing buildings along a road. Contractors placing bids for PWD projects can get information on new projects, completed projects and ongoing projects. The Web site of the Bombay Suburban Electricity Supply (BSES) launched this April, is another endeavour by the state government to use the Internet to let citizens have access to services online. You can view your bill, check out the meter reading and payment details as well as make billing related enquiries online by just entering your consumer and meter number online. The Integrated Octroi Management System for Pimpri-Chinchwad Municipal Corporation (PCMC) computerises the entire operations of the Octroi Department of PCMC including collection of octroi at the Naka's and consolidation of the information at the Head Office. The system is based on dial-up networking for transfer of information from the Nakas to the head office. The system has been implemented at 14 Nakas and the head office.

Reference Websites

Main eGovernment for Development Pages:

Web Address	Description
http://www.developmentgateway.org/node/130619/	Development Gateway e-government portal
http://www1.worldbank.org/publicsector/egov/index.htm	e-Government cases from the World Bank
http://www.digitalgovernance.org/	Digital Governance project
http://www.unpan.org/egovernment.asp	UN Public Administration Network

Other eGovernment for Development Pages:

Web Address	Description
http://www.digitalopportunity.org/themes/topic/topic_344_1.shtml	Digital Opportunity Channel e-governance content index
http://www.electronicgov.net/	Commonwealth Centre for Electronic Governance
http://www.clad.org.ve/siare/innotend/gobelec/gobelec.html	CLAD links to Latin American e-government case and policy summaries (in Spanish)
http://www.pstm.net/	Public Sector Technology and Management: focus on e-government in Asia

Individual Developing Country eGovernment Pages:

Web Address	Description
http://www.egovindia.org/	India

Industrialised Country eGovernment Cases, Discussion and News:

Web Address	Description
http://www.ctg.albany.edu/	Center for Technology in Government (mainly US)
http://www.fcw.com/	Federal Computer Weekly and Civic.com magazines plus Government CIO summit covering IT in government (mainly US)
http://www.gcn.com/egovernment/	Government Computer News: e-gov news (US)
http://www.govtech.net/	Government Technology magazine covering IT in government plus other resources (mainly US)
http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=showChapter&chapterID=140&preChapterID=0	IDA's eGovernment Observatory: news, cases, surveys (mainly Europe)
http://www.ica-it.org/	International Council for IT in Government Administration
http://govinfo.library.unt.edu/npr/index.htm	National Partnership for Reinventing Government (US) (closed 2001)
http://www.kable.co.uk/	Signposts to Government (mainly UK)
http://www.citu.gov.uk/	Some electronic government pilot cases from UK

Industrialised Country eGovernment Strategies, Initiatives or Policies:

Web Address	Description
http://www.agimo.gov.au/	Australia
http://www.crossingboundaries.ca/	Canada
http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=home	European Union Interchange of Data between Administrations project
http://www.governments-online.org/	Governments Online International Network
http://www.manaboo.com/english/egov_japan.htm	Japan e-gov links
http://www.egov.gov.sg/	Singapore
http://www.citu.gov.uk/	UK
http://www.itpolicy.gsa.gov/	US

Industrialised Country Other eGovernment Sites:

Web Address	Description
http://www.headstar.com/egb/	e-Government Bulletin (mainly UK-oriented)
http://www.government-online.be/	e-Government Online (European with a Belgian flavour)
http://europa.eu.int/information_society/programmes/egov_rd/index_en.htm	European Commission e-government research and development site
http://www.lgov.org/library_frames.html	Examples of IT-related contracts, tenders, procedures in US local government
http://www.educause.edu/ITManagementAndLeadership/645?parent_id=101	Examples of IT-related policies, plans, requests for proposal, system and position descriptions from educational institutions
http://www.indiana.edu/~egov/	Follow 'Reserves' guidance to find repository of 40 online readings on e-government
http://egovlinks.com/modules.php?name=Web_Links&l_op=viewlink&cid=10	Global links to e-government material
http://idpm.man.ac.uk/publications/wp/igov/index.shtml	iGovernment working papers from IDPM, University of Manchester
http://itrb.gov/	Information Technology Resources Board (US)
http://www-1.ibm.com/industries/government/ieg/	Institute for Electronic Government
http://www.oecd.org/topic/0,2686,en_2649_34129_1_1_1_1_37405,00.html	OECD's Public Management Service e-Government documents
http://www.lib.lsu.edu/gov/fedgov.html	US federal government agencies directory