SURINAME – E-READINESS STUDY, CONNECTIVITY BACKBONE AND THREE ICT SYSTMES

PROJECT PAPER

I. MARCH 24, 2004

II. BACKGROUND

2.1 ***Introduction:*** This paper is to describe a brief background and current ICT e-government situations of the Government of Surinam (GOS) and explain how each ICT component in the Suriname Public Reform Loan project (SU0027) would fit into the over all picture of the future GOS's ICT and e-government strategy. The project will hire various consulting firms to implement different ICT initiatives. Therefore, not only this paper would be helpful for the Bank professionals but also for each consultant, consulting firm and the ICT coordinator in implementation unit to understand: an overall picture of the ICT related initiatives in the project, role of the each ICT initiative in the project, and GOS's possible direction toward e-government in the future.

2.2 ***E-strategy for modernization of the Government of Suriname*:** The Government of Suriname (GOS) needs an e-strategy in the future in order to operate efficiently, effectively and provide better services to citizens. Once the Internet becomes a mainstream for countries, an introduction of information communication technology to electronically connect the government activities and services becomes essential for government modernization. However, currently, the Government of Suriname (GOS) does not have any government-wide strategy concerning how to electronically connect government services and activities, or an organization or unit that centrally integrates current and future ICT activities across the government agencies. Although not many GOS agencies are connected electronically (no computer networks and no e-mails), there are several on-going ICT initiatives in individual government agencies. Without having coordination, each ministry modernizes its function areas by developing its own software and ICT system. Consequently, their system may or may not talk with other systems developed by different ministries. Without having a clear strategy and coordination, government agencies are also missing opportunities to share useful information with each other.

2.3 ***Various ICT initiatives of within financed by donors***: The Bank, together with bi-lateral donors such as the Netherlands, has been financing several projects to modernize government agencies using ICT.

a. The initiatives that are already automated and in operations: Several systems for financial administrations of the Ministry of Finance (MOF) financed by the Netherlands:

- the Central Administrative Unit, or the MOF data center that processes civil servants' payroll and pensions(CEBUMA),
- Central Paymasters Office (CPO) and,
- Tax systems.

b. The initiatives that are already funded and are on-going:

- Accounting and budgeting information system for the MOF financed by the Netherlands,
- Management information and Local Area Network(LAN) systems (SU-0023) for Education and Community Development (MOECD) by the IDB,
- A beneficiary information and payment system including the interconnection with the main district and field offices for the Ministry of Social Affairs by the IDB,
- Management information system for the Ministry of Housing by the IDB,
- Management information system for the Ministry of Health (Health Sector Reform) by the IDB and,
- Communication network via LAN systems for the Diet of National Assembly (DNA) by the IDB.

Unfortunately, even among the Bank's financed projects, there is no coordination among ministries concerning ICT systems development.

2.4 ***A single integrated e-strategy and coordination is needed*:** An up front integrated e-strategy and coordination will save significant amount of expense and efforts. Because of the lack of a coordination within the GOS, significant overlaps in infrastructure and systems in various initiatives are expected. In addition, these infrastructure, systems and application services may not be compatible for each other. In order to have smooth, effective and efficient communications and operations among different government agencies, the GOS may have to integrate several operating systems, several application services-software, several e-mail systems and several databases into one in the future. To redo the systems would not only create a major technical overhaul but also incur unnecessary and assumingly significant expenses. A carefully planned and centrally coordinated and integrated approach to build an ICT network for the whole government up

front will bring not only efficiency and transparency to the day-to-day government's operations, but also it will bring, in the long run, significant cost and efforts savings in terms of infrastructure, software development and human resources.

2.5 ***Three ICT related areas financed by the loan**:* The Suriname Public Sector Reform loan (SU0027)) will finance the following three ICT related areas in the GOS;

a. **E-readiness study** which will assess current ICT situation in GOS and provide recommendations on e-strategy in the future

b. **Ministry specific three Information Communication Technology (ICT) initiatives** to improve the efficiency, effectiveness and transparency of each function of the GOS:

- Human Resources Management Information System (HRMIS) for Ministry of Home Affaires(MHA),
- Civil Registry Management Information System (CBBMIS) for MHA an
- Procurement management Information/Database System (PROMIS) for Ministry of Finance (MOF)

c. **Connectivity backbone** to inter-connect government agencies

2.6 ***e-readiness study for current ICT assessments and for recommendations of the future GOS e-government deployment*:** The e-readiness study will layout the current ICT situations of Suriname (particularly within the GOS) and recommend the most appropriate structure to create and implement e-strategy. As explained, the current GOS has not defined a clear strategy in relation to ICT initiatives in individual government agencies. They also have not identified what exactly the problems are to be solved through ICT and e-initiatives; what kind of infrastructure is most appropriate for the GOS as a whole; what would be the most appropriate connectivity solution; what kind of organizational structures are necessary for a government wide e-government strategy; what kind of human resources should be developed etc. It is extremely important for GOS to accurately assess current ICT situations of individual agencies and to create a government-wide ICT or e-strategy into a single network. Since this loan project also includes various ICT initiatives, being parallel to implementation of three ICT initiatives, GOS needs to conduct an e-readiness study to evaluate the current ICT situation in the government, and identify problems and needs. The E-readiness study also will recommend the most appropriate infrastructure, organization structure and service applications for GOS to create and implement the government wide e-strategy, eventually a country-wide e-strategy.

2.7 ***Three ICT systems and problems of current information exchange systems:*** Without electronic connections, all the information is currently transferred via physical media and are not shared among agencies. The important information such as financial data (budget, tax, salary etc), human resources, civil registry and procurement data generated by each agency are not effectively and efficiently transferred and shared within the Government. As for data transfer, instead of using an electronic network, the information is compiled into physical media (such as CDs or diskettes) and sent by internal mail. This procedure not only takes a long time, but also the data is usually outdated and the clerical errors won't be corrected in real time. As a result, policy-making and management is weakened by lack of reliable information.

2.8 ***The functions of the three systems****:* The functions of HRMIS, CBBMIS and PROMIS are the following:

a. **HRIMIS** will manage information on civil servants such as recruitment, salary, benefit, pensions, and performance measurement by compiling human resource data into one central database. HRMIS needs to link human resource units in different ministries as well as the central paymaster, central administrative unit and budget/accounting system in the MOF. A performance measurement system within HRMIS will be a good indicator for each civil servant's promotion and demotion. By electronically connecting with systems in MOF, the payment of the civil servants will reflect their actual working records and performance. Currently, due to the lack of accurate data, payment and its eligibility is not necessary linked. For example, many part-time workers are paid with full time salary.

b. **CBBMIS** will manage all the citizens' information and compile them into a central database. The general statistics derived from the database will be used to manage government services to citizens, various infrastructure, government's budget allocation, as well as direct social services to the citizens; to assess its tax base, to provide water & sanitation services, health service, educations and telecommunication infrastructure. The individual citizens can access necessary personal data forms easily and they can receive pensions, health insurance and marriage licenses easily as well. Thus, CBBMIS needs to not only link the various CBB offices but also to establish a connection with various government agencies such as the Ministry of Home Affaires, Finance, Education, Health and Regional Development.

c. Finally **PROMIS** will compile and manage procurement related information on buying profiles such as information on goods and services (what they are purchasing), venders' demographic information, selection criteria, where these purchases are going, performance evaluation and bidding price of providers and share the information among the various governmental agencies so that the each government procurement will be more cost effective and transparent. The system can prevent favoritisms and unhealthy adhesion between government officials and specific venders. The PROMIS system and

its database, therefore, needs to link with procurement units of all governmental agencies and the budget/accounting system in MOF. The PROMIS system will be the very base for the future GOS deployment of the e-procurement system whenever the GOS and the industries are ready.

2.9 ***Connectivity Backbone which link all the government agencies:*** An installation of the intra-government connectivity backbone is the most cost effective way to interlink the government agencies. As is described in the above, in order to work effectively, the three systems will need to establish an electronic connection between various agencies, and buildings that are intended to exchange information. The intra-governmental connectivity infrastructure will link not only three systems with all the government agencies and functions electronically but also establish an electronic connection among all government agencies. This infrastructure will be extremely useful for developing future governmental services; improving internal administration and productivity; lowering internet access cost; and providing cost effective solutions to various e-government services in the future. The immediate beneficiary of this infrastructure will be MOF, since their new budgeting/accounting system, central paymasters and central administrative unit needs to be electronically connected with the individual Financial department (or units) in each ministry as well as the Central Bank.

2.10 ***Benefits of installing connectivity backbone for the GOS and various alternatives:*** Since installing an inter-governmental connectivity backbone is a high cost investment for the GOS, a local consultant was hired to analyze and discuss actual benefits and savings created by installing the backbone as well as various alternative solutions and recommendations concerning what kind of connective backbone is the most appropriate for the current GOS environment (see attached for the details).

2.11 ***Qualitative and quantitative benefits of the backbone.*** The installment of the connectivity backbone (and three ICT systems) will bring both qualitative and quantitative benefits to GOS. As for intangible socioeconomic benefits, the simpler, efficient and transparent electronic data transaction and clear information delivery will bring greater motivation of civil servants; enhance citizen's perception of selected public services; advance the quality of the public sector; all of which could marginally increase satisfaction with the political system, strengthening political stability and incentive private investment. As a result, the project could enjoy social support, and promote further institutional modernization.

2.12 As for tangible and measurable socioeconomic benefits, an installment of a connectivity backbone will bring benefits to the GOS in the following three areas. 1) cost benefit on inter-governmental communications, 2) cost benefit on application services, and 3) other benefits. (In detail, please see the attached report prepared by a local consultant)

a. ***1) Cost benefit on Inter-governmental communications*:** The connectivity backbone will save significant amount of money for Inter-governmental voice communications. Currently, both internal and external voice communications within the GOS have to go through external phone lines. Consequently, each government agency is paying per minute usages even for internal voice communications. According to the General Accounting Office (January 2002 to October 2002), the domestic communication expenditure of the GOS was about US$2.7million (year-end total of 2002 was US$3.2million). We conservatively estimates the cost of intra-governmental communications at 10% of this bill. Unless measures are taken, the communication cost will continue increasing with the future expansion of Internet and e-mail. If the GOS uses this intra-governmental communication network via the GOS connectivity backbone, the intra-government communications will become minimal, close to zero. This network could save the Government about US$320,000 per year at the prices of 2002[1] or US$ million-1,201,453 (present value) in seven years only for internal phone calls and related services.

b. ***Internet Access savings:*** The GOS can save Internet access and e-mail uses as well. For Internet access and e-mail uses, without a dedicated backbone, the government has to pay subscription fees and per minutes fees for each access point (depending on how many direct lines that each building has) to the Internet carrier and the phone company. Once Internet use and e-mail exchange becomes a common practice within the government, GOS can save a significant amount of money with a backbone that has only one access point to the external world (one subscription fee and one per minute fee). With a current structure of multiple access points in ministries, GOS has to pay subscription and per minutes fees for every access point.

c. ***2) Cost Benefit on Application Services:*** The connectivity backbone will save significant expense for application services. The backbone allows government agencies to share application and data through the network and will save significant expense.

   i. VPN services: Each agency does not have to set up its own WAN (Wide Area Network). Instead they can use the backbone as a part of their networks. For example, the savings from the currently planned WAN systems of MOF and CBB will be at least US$50,000.

   ii. Mail Services: A government-wide e-mail system with a backbone will eliminate current papers and courier/postal services (manpower) and save at least US$60,000 per year (US$5000 per month) and save over seven years US$184,533(present value).

iii. Data sharing: By sharing a database, application and web servers as well as systems administration, GOS will be able to save at least US$250,000 in three years.

iv. The savings of system administration and internet accounts savings in the future was estimated to be US$ 24,000 and US$18,000 respectively.

v. Government-wide applications: Applications developed by certain departments can be easily shared by other departments and other agencies.

d. ***3) Other service benefits:*** With a GOS connectivity backbone, other services such as video conferencing, fax services, time tracking and security services are possible.

2.13 ***Alternatives/options and cost/benefit estimate for a connectivity infrastructure:*** Then what kind of connectivity infrastructure is the most appropriate for the GOS? Among various connectivity infrastructure options and alternatives, four options have been considered, analyzed and discussed based on technical merits and cost effectiveness or return on investment: (Please see the attached report prepared by the local consultant for further detail).

- ***Option 1:*** **Leasing of existing private infrastructure**;
- ***Option 2*****: Wireless backbone;**
- ***Option 3:*** **Government owned wired backbone(optical fiber); and**
- ***Option 4:*** **Combination of options (2) and (3).**[2]

a. ***Option 1: leasing of an existing infrastructure from a private provider network (TeleSur's ATM network).*** In this option, the GOS will lease high speed network infrastructure from private carrier. The GOS should pay an initial investment plus monthly leasing fees in addition to its communication fees to the carrier every year. This cost would increase as communications volume expands. This option makes it easier for the Government to manage its communications. However, this option is rather expensive in the long run.

The initial investment has been estimated based on TeleSur data at US$147,000 (at price of 2003) while total annual expense for 47 sites would be close to US$643,148 per year (at price of 2003). The accumulated cost in seven years would be close to US$2.65million (present value) and GOS would continue paying the leasing fee (in this case US$643,143 at 2003 price) every year. If the above mentioned telephone bill savings and paper

savings are used as the solo benefit to the GOS for the backbone investment, the cost/benefit ratio of option one will be 0.53.

b. ***Option 2: an installation of a wireless backbone***. In this option, the GOS will install a wireless network to inter-connect government agencies. The government's 47 sites will have its own dish and all the internal communications will be going thorough wireless transmission. The installation cost is relatively low, at around US$241,000 (at 2003 price) and annual maintenance cost is estimated at US$77,000[3](at 2003 price). Over seven years, the accumulated cost would be US$500,054(present value)[4]. Although this option is the most economical, compared to optical fiber solutions, wireless communications are not necessarily the most desirable solution for large amounts of data given Surinamese climate where occasional tropical storms could hinder or interrupt communications temporarily[5] . If the telephone bill and paper savings are used as a solo benefit for the backbone investment, the cost/benefit ratio of option two will be 2.82.

c. ***Option 3: an installation of a dedicated optical fiber ring owned by the Government to link all the public agencies.*** In this option, the GOS will install and own an optical fiber network to inter-connect government agencies. Since Paramaribo is a small city, most government buildings are located within close distance. Also the price of optical fiber itself has dramatically reduced in recent years. Once a dedicated connectivity backbone is installed and owned by the government, other than annual maintenance expenditure, the intra-governmental communications expenditures could have a marginal cost close to zero. Also Optical fiber lines enable high-speed communication transaction easily and are one of the most secure communication lines available.

   The initial investment is estimated to be roughly US $ 1.6million (at 2003 price), while the annual maintenance cost could be US$106,000[6](at 2003 price). Accumulated cost over seven years will be close to US $1.7 million (present value). Although this option is not a bad investment, considering the return on investment, in our project, this amount is a little beyond our scope. Again, using the telephone bill savings and paper savings as a solo benefit for the backbone investment, cost/benefit ratio of option three will be 0.82.

d. ***Option 4: a combination solution of options 2 and 3***. This option is a combination of a dedicated wireless network and a dedicated optical fiber network. The largest part of the data, particularly large financial data

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[3] Maintenance to be performed by private provider.

[4] Based on current commercial tariffs in Suriname.

5 New technologies, like WIMAX, still not commercially available, could in the near future make wireless communications even more attractive due to its cost as well as its expected reliability and range.

6 Based on United cable corporation, a leading infrastructure company in Suriname that has installed optical networks for major companies such as Telesur and Staatsolie.

transactions, will be managed via a dedicated optical fiber network. The optical fiber network is composed of a main dedicated ring in the downtown area where most government facilities are concentrated (23 sites) and a small ring which connect CEBUMA (Central Administrative Unit and the Data Center of MOF) and two other ministries close to CEBUMA. The rest of the government facilities outside of downtown will be linked via a highly secured dedicated wireless network (22 sites) to the main optical fiber ring.

The initial investment, including maintenance will cost up to US$702,281.[7](at price of 2003) (initial investment cost, US$469,000 plus maintenance cost, US$81,400). Accumulated cost over seven years will be US $707,413 (present value). The fourth option is the second best economically but the best considering reliability given the available technology. With telephone bill savings and paper savings as solo benefit for the backbone investment, the cost/benefit ratio of option four is 2.00.

i. Main and CEBUMA ring: Office of President, Auditor's Office, Attorney General, Court Martial, Court of Justice, National Assembly, Department of Interior, Department of State, Ministry of Home Affairs, Ministry of Justice and Police, Ministry of Natural Resource, Ministry of Regional Development, Ministry of Social Affairs, one of CBB, Ministry of Finance; three Tax Offices; Collection Office; Central Paymasters, Treasury Department; Central Administration Unit (CEBUMA); Accounting Office, Central Bank, land registrar and one of Ministry of Education.

ii. Wireless Network: Office of Vice President, Ministry of Planning Ministry of Labor, Technology and Environment, Ministry of Defense, Ministry of Industry, Ministry of Infrastructure, Ministry of transport, communication and tourism, one part of Ministry of Education, some of the CBB offices, Customs, Statistic Office, Police Department

2.13 ***The most feasible option among the above four:*** Based on the above analysis, the option 4 was selected as a reference for the project analysis (see project report, SU0027). In this analysis, although the option 2 is more economical than option 4 (the expenditure of option 4 over the seven years is US$200,000 larger than the option 2), the option 4 provide more secured network. With option 4, the most crucial data transactions such as financial data transactions conducted by MOF will be covered by a highly secured optical fiber ring. The actual connectivity backbone which will be adopted in this project may be slightly different from our selected option, depend on how consulting firms will propose their option in their competitive biddings.

[7] Maintenance to be performed by private provider.

III. OBJECTIVES AND PROGRAM DESCRIPTION

A. Objective

3.1 The ultimate objective of the ICT related part of this project is to modernize the government of Suriname (GOS) and to improve the transparency, efficiency, effectiveness and accountability of the GOS activities and services as a whole by using information communication and technology most effectively and efficiently.

B. Description

3.2 The project will assist the GOS in achieving the above-mentioned goal by: (i) conducting an e-readiness study outlining the current ICT situation in government, identifying issues and problems and recommending appropriate solutions; (ii) installing a connectivity backbone to link all the government activities electronically; and iii) installing three specific MIS systems; Human Resources Management Information Systems (HRMIS), Civil Registry management Information Systems (CBBMIS) and Procurement Information Systems (PROMIS).

3.3 ***Implementations of the e-readiness study:***. In order to coordinate various initiatives in each ministry as well as to provide a basis for future development of e-government and prepare for the development of the information society, the e-readiness study is critical. The e-readiness study is composed of two parts;

3.4 The scope of the first part is mainly within the GOS. The second part is to expand the study scope to a country level. The first part of study, particularly, needs to be developed parallel to the implementations of other parts of the project and closely provide guidance and direction to the project

3.5 The first part of the study will include;

a. to evaluate current status of ICT related initiatives in each ministry and government agency, infrastructure needs, human resource capability, information flows among the government agencies and connectivity needs such as Internet access and options;

b. to recommend the most appropriate mechanism and structure for the GOS to integrate different ICT-related initiatives and activities in different government agencies into one government ICT framework;

c. to provide an appropriate technical guidance on system requirements for the three ICT systems so that the most appropriate and integrated systems will be incorporated into the initiatives;

d. to assess legal and regulatory instruments in the country and propose relevant new legislation if needed;

e. to identify the potential (issues, offer and demand) to create an e-government strategy in the future, including how to prioritize independent activities, how to implement a strategy, how and under which authority to create a central coordination unit for e-government;

3.6 The second part of the study will include;

a. to evaluate the basic infrastructure, connectivity of the country;

b. to evaluate the offer and future demand of human resources in the country related to ICT and propose a strategy for developing human capital;

c. to conduct an e-procurement feasibility study; In the scope of the project, the GOS will install the government-wide procurement database and MIS system. The system eventually may need to be developed and linked with external private venders when market is ready. As a part two of the e-readiness study, e-procurement feasibility study will also assess infrastructure and human resource needs among the private sectors of Suriname to take advantage of the electronic transactions.

d. to assess private sector development and future needs for ICT paying attention to potential gains in competitiveness.

e. to provide a diagnosis- a strategy and policy options for future development of information technology in the Government and the country.

3.7 ***Implementations of the connectivity backbone****:* In order to provide connectivity to the management and information systems for civil service, civil registry and procurement, it is important to install a cost effective and secure electronic communication network. The connectivity backbone will eventually serve a government-wide connectivity backbone or electronic communication network so that the government can save significant internal communication expense as well as share real time information/data among themselves. The major activities include:

a. to gain consensus among different government agencies so that the installment of the backbone will be conducted smoothly;

b. to install a dedicated backbone for the GOS based on an open bidding process where the Terms of Reference (TOR) of the consulting firm will specify the objectives of the connection (see below basic requirements) and private providers will present technological options for fulfilling the objectives of connectivity;

c. to assure that backbone is physically connected to each government facility, at least to voice communication facilities

d. to assure that the backbone will be able to provide high quality and highly secured communications to all the government functions and facilities

3.8 ***Basic requirements for the connectivity backbone***;

a. to review four options analyzed by the local consultant

b. to connect forty-seven sites in the area of Paramaribo, 25 of which are considered high traffic data and should have a guarantee of steady connection in spite of tropical rains;

c. to connect with each facility's existing communication systems (telephone line, Internet access point);

d. to provide high performance encryption system to secure data confidentiality;

e. to place redundancy lines to secure the communication in case the backbone infrastructure is damaged.

3.9 ***Implementations of the three ICT systems***: After the backbone is installed and all the government organizations within the Paramaribo are connected, ICT systems in each component (HRMIS, CBBMIS and PROMIS) will be developed and installed. Each system/database needs:

a. to reflect diagnosis and guidance provided by the e-readiness study

b. to be coordinated by a strong ICT coordinator who can coordinate and provide day-to-day practical guidance, not only technical but also political aspects of these systems, other GOS/ICT initiative as well as backbone resides in the implementation unit;

c. to reflect newly revised personal act, newly created and revised civil registry procedure and newly drafted procurement regulations and laws respectively;

d. to be linked with other ministries via the connectivity backbone of the government;

e. to be compatible with the others and each of them should be integrated into one government system such as financial administration systems.

3.10 ***Project executions***. The following are the key areas in order to execute the project properly.

3.11 ***A) Training for both users and ICT professionals*:** The training for both actual users and ICT professionals to support the systems are essential for the successful

ICT implementations. The Information Communication Technology (ICT) is a tool to make the GOS work more efficiently, effective and transparent. The tool has to be simple to use and people have to use it. Also the tools have to be maintained and supported by professionals. Following are the minimum training needs:

a. ***Training for the system users :*** After each ICT system is installed, training should be provided to all the prospective users concerning usage, implications, and future possible expansions. St the same time, it is useful to have feedbacks from the users.

b. ***Training for the ICT professionals:*** Training also should be provided to the ICT professionals in each ministry so that they can provide maintenance, trouble shootings and even upgrading of the systems in the future. The ICT professional in the ministries should be able to provide training to users as well.

c. ***Training for the Backbone maintenance:*** If the government owns its own infrastructure (connectivity backbone), the government has to take a responsibility to maintain the infrastructure. The government has an option to enter into a retainer agreement with the outside telecom firm and ask them to maintain the lines or train (or hire) its own ICT professionals so that they can maintain dedicated lines if necessary.

3.12 ***B). The project management structure of the ICT-related area of the project*:** Since the high proportion of this loan is allocated to ICT-related areas such as installing MIS and a connectivity backbone, it is important to place the ICT coordinator within the project management/organization structure. (See attached)

3.13 ***C). The Key personnel (consultants) to develop the project***: The brief requirement of the consulting firms and key personnel to develop the project are as follows: (Please refer to TORs on hiring consultants for further detail.)

a. ***ICT coordinator:*** As a core member of the implementation unit, an ICT coordinator will coordinate all the ICT components (e-readiness study, connectivity backbone, HRMIS system, CBB system and PRO system) of the project. The coordinator will not only make sure that technical specifications are compatible among the three systems and integrated into the backbone but also that the new procedures developed through the three components of the project will reflect the systems. The coordinator also will coordinate with other initiatives within the government such as the initiatives of the Ministry of Finance, the Ministry of Health, DNA etc. The coordinator will make sure that all the systems are compatible and will be integrated into one government network system (presumably will be in web-based) in the future.

b. ***International consulting firms for e-readiness study:*** Conduct an e-readiness study composed of two parts. Part 1: A study for the government of

Suriname. Evaluate and assess ICT(e) capabilities of all the current government function areas: a) infrastructure for both connectivity backbone and each functional area (LAN, computer equipment, etc.) b) Human resource capability; c) Information flow within the functional area and among governmental organizations and d) recommend an optimal ICT architecture for the government as well as the organizational structure for the GOS's e-strategy creation. Part 2: e-readiness in the country expanding the scope to the Private sector including infrastructure, human resource capacity, e-procurement study and others. The study will be a base for the GOS to create a national ICT strategy in the future.

c. ***International ICT infrastructure firm:*** Install a connectivity backbone to the GOS and connect all the important government facilities in Paramaribo into one loop, using both optical fibers and wireless network. The firm will make sure to create connectivity between the backbone and LAN systems within the Ministry of Home Affairs, HR units in GOS agencies, CBB, Ministry of Finance and procurement units in GOS agencies.

d. ***Three International ICT firms:*** Each firm will focus on specific components. HRMIS, CBBMIS and PROMIS. Each firm should have at least one senior consultant to coordinate with new policies, regulations and procedures that the project will develop. Three should use the same OS, same database application and other application software (if possible), the same e-mail system etc. HRMIS: compile data, create database, connect with other agencies, create small LAN systems for each HR unit (if necessary) and connect with the backbone, create MIS, and create web site. CBBMIS: compile data, create database, connect within the CBB and other agencies, create LAN and create web site. PROMIS, compile data, create bulletin board, connect with other agencies and create web site.

3.14 Other issues need to be considered.

3.15 ***The coordination with the TC, National technology strategy***: TC, the preparation of National Technology Strategy, is in the IDB pipeline either in 2004 or 2005. This TC should reflect the results and recommendations of the above e-readiness study which includes the e-procurement study. An e-readiness study within the government will most likely create the unit that will be in charge of e-government strategy and e-strategy for the country. Since the literacy ratio of the Surinamese is rather high (more than 93%), once the strategy and infrastructure is set, modernization of the country could be much faster than we anticipate.

Investment and Benefits Table
The four backbone investment options
US$

		US$									
		One time Investment	Annual Cost	0	1	2	3	4	5	6	Total
					YEARS						
	Option 1	147,000	643,148	215,880	422,168	459,427	452,537	402,923	366,947	334,184	2,654,066
	Option 2	241,000	76,500	86,746	124,369	88,413	69,203	47,926	43,647	39,750	500,054
	Option 3	1,582,000	106,200	461,240	586,502	311,188	181,882	66,533	60,592	55,182	1,723,120
	Option 4	469,000	81,400	150,377	202,855	126,188	88,258	50,996	46,443	42,296	707,413
Benefit											
Telephone savings					145,714	236,972	241,711	220,130	200,475	182,576	1,227,577
Paper savings					16,393	9,722	45,321	41,274	37,589	34,233	184,533
Total					162,107	246,694	287,032	261,404	238,064	216,809	1,412,110
Cash flow	Option 1			(215,880)	(260,061)	(212,733)	(165,505)	(141,519)	(128,883)	(117,376)	(1,241,956)
	Option 2			(86,746)	37,739	158,281	217,829	213,478	194,417	177,059	912,056
	Option 3			(461,240)	(424,395)	(64,494)	105,150	194,871	177,472	161,626	(311,010)
	Option 4			(150,377)	(40,748)	120,506	198,774	210,408	191,622	174,513	704,697
Accumulated	Option 1			(215,880)	(475,940)	(688,673)	(854,179)	(995,697)	(1,124,580)	(1,241,956)	
Cash flow	Option 2			(86,746)	(49,007)	109,274	327,102	540,580	734,997	912,056	
	Option 3			(461,240)	(885,635)	(950,129)	(844,980)	(650,108)	(472,636)	(311,010)	
	Option 4			(150,377)	(191,125)	(70,619)	128,155	338,563	530,184	704,697	
Cost Benefit	Option 1			0.53							
Ratio	Option 2			2.82							
	Option 3			0.82							
	Option 4			2.00							

Discount @ 12%