<u>Draft</u>

E-Government Strategy

Prepared by the Sub-Committee on E-Government

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Ministry of the Civil Service

E-GOVERNMENT VISION

To empower the citizens of Barbados by improving the convenience, speed, efficiency, quality and variety of services and information delivered by Government

Ministry of the Civil Service

EXECUTIVE SUMMARY

Information and communication technology (ICT) is revolutionizing the way governments operate around the world by enabling them to improve the delivery of services to their customers and to streamline their operations. The Government of Barbados intends, as part of its strategy for public sector modernisation, to utilize all available new and emerging technologies to enhance the quality of life of its citizens.

The Permanent Secretary, Ministry of the Civil Service, in seeking to develop and implement Government's e-government policies and programmes, convened a number of meetings with key information technology personnel in the public service. The purpose of the meetings was to provide a forum for the exchange of experiences and ideas as well as to determine the scope and the structure of the e-government initiative.

Problems/Issues

A number of issues/problems were highlighted during the discussions, namely:

a.   Ownership of and accessibility to information /data;

b.   Interconnectivity and information sharing between the various ministries/departments;

c.   Inadequate physical infrastructure to support the deployment of new information systems;

d.   The need for a centralised unit, which would be responsible for all IS/IT issues. At present the responsibility for the provision of ICT services, policy formulation and programme development is shared by three government agencies: the Ministry of the Civil Service, Ministry of Commerce Consumer Affairs and Business Development and the Data Processing Department;

e.   The need for common standards, policies and procedures for the acquisition and deployment of both hardware and software;

f.   The need for additional IT posts to support existing and proposed projects; and more importantly, how best human resources can be deployed to meet efficiently the IT needs of the public sector given the scarcity of skills in this area;

g.   The need to ensure that only licensed software is used by Government agencies.

It was also recognised that there was an immediate need for an e-government strategy/plan to guide the process. As a result, a sub-committee was selected to develop a draft an e-government strategy for Barbados.

Goals

The broad goals for the Government of Barbados' e-government programme are:

a)   Better delivery of services to citizens and businesses;

b)   Greater productivity and efficiency in the operations of government agencies; and

c)   Greater transparency and governance through broadening public participation in the governmental process.

Objectives

The objectives of the e-government programme are:

a.   To establish a **structure** for the management of the e-government programme;

b.   To put in place the **technical infrastructure and architecture** to support the various e-government initiatives;

c.   To ensure that adequate **resources** (physical, human and financial) are provided to ensure the successful implementation of the e-government programme;

d.   To **review** and **enhance** all government services utilising ICT; and

e.   To develop a **communications/marketing strategy** to ensure that people, both external and internal to the public service, understand the vision, the changes that will occur and the tangible benefits to be derived from e-government.

Benefits of E-government

E-government programme will result in the following benefits to citizens, businesses and Government:

Benefits to Citizens & Businesses

➤ Speedier, more effective and efficient delivery of services to meet the expectations and requirements of citizens and businesses;

➤ Citizen empowerment through access to information;

➤ More friendly, convenient, anytime, anywhere citizen services;

➤ Significant improvement in Government to Citizen (G2C), and Government to Business (G2B) interfaces;

Benefits to Government

➤ Increased employee productivity;

➤ Facilitation of information reuse across and within the departments of Government;

➢ Reduced system maintenance and training requirements by adopting standard systems and processes;

➢ Cost-effectiveness in the operation of Government agencies;

➢ Improvement in Government-to-Government (G2G) interfaces;

➢ Less opportunities for corruption;

➢ Greater transparency in Government operations; and

➢ Increased revenue growth and a concomitant reduction in operating costs.

Recommendations

The major recommendations are as follows: -

1. The establishment of an E-government Steering Committee comprising major stakeholders from the private and public sectors, to give broad strategic direction to the e-government initiative;

2. The establishment of a Central Information Management Agency (CIMA) responsible for:

   i. The development of ICT strategies, policies and programmes geared at delivering governmental services through the use of information and communication technology;

   ii. The provision of IT services and advice to ministries and departments which do not have the necessary in-house capacity;

   iii. The management of ICT projects/programmes critical to the effective functioning of Government e.g. SmartStream;

   iv. The management of vendor relations;

v.   The provision of a forum for IT managers in the public sector to discuss ICT issues and to provide feedback on IT initiatives/issues to the central agency;

vi.   The establishment of standards with respect to ICT architectures with the aim of ensuring compatibility among the several systems in use in the public service;

vii.   Ensuring that systems operate in a secure environment;

viii.   The establishment of a methodology for the evaluation of ICT investments in the public sector; and

ix.   The development of the necessary IT skills in the public service in conjunction with the Training Administration Division to ensure the successful implementation of ICT projects

3.   The establishment of a committee to examine the staffing requirements of CIMA.

4.   The development of a strategic alliance between CIMA and the Office of Public Sector Reform (OPSR) to re-engineer processes in the public service in order to ensure that the use of information technology is incorporated into these processes, thus achieving the maximum benefit from the use of technology;

5.   The development and implementation of an appropriate technical infrastructure using broadband technology to link all government buildings in a wide area network;

6.   The establishment of a voice network using appropriate Internet technology to satisfy the voice requirements of the government;

7.   The review and the enhancement of all Government services utilising ICT; and

8.   The development of a programme of change management through education and training and the involvement of all stakeholders, in order to minimise any possible resistance to the introduction of E-government initiatives.

1. INTRODUCTION

Information and communication technology (ICT) is revolutionizing the way governments operate around the world by enabling them to improve the delivery of services to their customers and to streamline their operations. The Government of Barbados intends, as part of its strategy for public sector modernisation, to utilize all available new and emerging technologies to enhance the quality of life of its citizens.

E-government is defined as the use by government of ICT to extend and enhance the delivery of information and services to citizens, businesses and employees. It is part of a larger programme of reform - reforming how government works, manages information, manages internal functions, and serves citizens and businesses.

The Permanent Secretary, Ministry of the Civil Service having been assigned responsibility for e-government convened a number of meetings with key information technology personnel in the public sector. The purpose of these initial meetings was to provide a forum for the exchange of experiences and ideas as well as to determine the scope and the structure of the e-government initiative.

1.1. Problems/Issues

A number of issues were highlighted during these discussions, namely:

a. Ownership of and accessibility to information /data;

b. Interconnectivity and information sharing between the various ministries/departments;

c. Inadequate physical infrastructure to support the deployment of new information systems;

d. The need for a centralised unit, which would be responsible for all IS/IT issues. At present the responsibility for the provision of ICT services, policy formulation and programme development is shared by three government agencies: the Ministry of the Civil Service, Ministry of Commerce Consumer Affairs and Business Development and the Data Processing Department;

e. The need for common standards, policies and procedures with respect to the acquisition and deployment of both hardware and software;

f. The need for additional IT posts to support existing and proposed projects; and more importantly, the need for an assessment of how best human resources can be deployed to meet efficiently the IT needs of the public sector given the scarcity of skills in this area; and

g. The need to ensure that only licensed software is used by Government agencies.

The need for an e-government strategy/plan to guide the process was also identified during these meetings. As a result a sub-committee was selected to develop an e-government plan for Barbados.

2. CURRENT SITUATION

Currently, Public Service departments are thinking differently about their roles and are becoming active players, proactively developing and managing different information systems to respond to growing expectations of service quality. Some of the major initiatives undertaken by government are highlighted in **Appendix I**. The number of ICT projects and programmes as outlined in the appendix highlights the importance of ICT in improving the operations and service delivery of these departments. It also illustrates the need for a central agency to effectively coordinate and manage ICT initiatives so as to ensure the effective deployment and utilisation of ICT resources. Of greater significance, is that the number of ICT projects demonstrates that Government has a foundation on which to build and launch an effective and successful e-government programme.

3. DATA ON ICT IN BARBADOS

The sub-committee compiled and analysed data on ICT to determine Barbados' state of readiness for e-government see **Appendix II**. The compiled data shows that ICT is playing a more significant role in Barbadian society but the digital divide still exists. For e-government to be successful that divide would have to be bridged and specific measures will have to be taken by Government to bring all social groups within reach of new technologies. Strategies such as expanding the community development programme, the removal of duties on computers, the liberalisation of the telecommunications sector, the Edutech programme and the setting up of kiosks will assist greatly in bridging the digital divide, thereby providing the citizens of Barbados with the means and the ability to access Government's electronic services. In addition, adequate funds to support the various e-government programmes and an effective strategy are critical to the success of the e-government programme.

4. E-GOVERNMENT INTERACTIONS AND BENEFITS

4.1. Types of Interactions

In developing e-government projects/programmes, a review of the various types of governmental interactions is critical to its success. These interactions include Government to Citizen (G2C), Government to Business (G2B) and Government to Government (G2G). Interactions include:

➢ Provision of information

➢ Facilitation of communication with public officers and elected officials

➢ Information sharing and collaboration

➢ Communication between departments

➢ Payment for various services e.g. taxes, duties, permits and licenses

An electronic government will target all of these interactions to provide 24hour access from places convenient to citizens or businesses. The public will be able to access these services from their personal computers, public kiosks, and community centres or similar facilities.

4.2. Benefits of E-Government

There are many benefits to be derived from the implementation of an e-government programme in Barbados. These include:

Benefits to Citizens & Business

➢ Speedier, more effective and efficient delivery of services to meet the expectations and requirements of citizens and businesses;

➢ Citizen empowerment through access to information;

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➢ More friendly, convenient, anytime, anywhere citizen services;

➢ Significant improvement in Government to Citizen (G2C), and Government to Business (G2B) interfaces;

Benefits to Government

➢ Increased employee productivity;

➢ Facilitation of information reuse across and within the departments of Government;

➢ Reduced system maintenance and training requirements by adopting standard systems and processes;

➢ Cost-effectiveness in the operation of Government agencies;

➢ Improvement in Government-to-Government (G2G) interfaces;

➢ Less opportunities for corruption;

➢ Greater transparency in Government operations; and

➢ Increased revenue growth and a concomitant reduction in operating costs.

Fast and easy access to accurate information and a responsive public service will give our corporate community a competitive edge in their decision-making. It is also believed that wide ranging electronic access to the services of the government will result in a greater satisfaction level among citizens. In addition, faster and easier means of gathering information from citizens about their views on a wide range of matters will result in improved governance through the reduction of uncertainties in planning as well as the development of services for the various interest groups within the country.

5. E-GOVERNMENT GOALS

Arising from the Vision for e-government a number of broad goals for the e-government programme have been identified, namely:

a. Better delivery of services to citizens and businesses;

b. Greater productivity and efficiency in the operations of government agencies; and

c. Greater transparency and governance through broadening public participation in the governmental process.

6. E-GOVERNMENT OBJECTIVES

To ensure that these goals are achieved a number of objectives were identified:

a. To put in place a **structure** to manage the E-government programme

b. To put in place the **technical infrastructure and architecture** to support the various E-government initiatives

c. To ensure that adequate **resources** (physical, human and financial) are provided to support the successful implementation of the E-government programme.

d. To **review and enhance** all government services utilising ICT; and

e. To develop a **communications/marketing strategy** to ensure that people, both external and internal to the public service, understand the vision, the changes that will occur and the tangible benefits to be derived from E-government.

7. STRATEGIC FOCUS

In developing the E-government strategy the sub-committee identified the following as critical to its successful implementation.

7.1. Central Information Management Agency

The e-government sub-committee considered the need for an agency to manage the e-government programme and the placement of such an agency i.e. whether to locate the agency within Government, establish the agency as a statutory board or create the agency as a private sector entity. As stated previously, the provision of ICT services, policy formulation and programme development are currently distributed among three government agencies: the Ministry of the Civil Service (MCS), Ministry of Commerce Consumer Affairs and Business Development (MCC) and the Data Processing Department (DPD). This situation has resulted in inefficiencies and uncoordinated approaches in the delivery of ICT services in Government. In addition, the DPD as lead agency for ICT in the Public Service is currently unable to meet the heavy demands placed on it for the provision of ICT services. This has resulted in a number of problems/issues, some of which were highlighted in discussions between the Permanent Secretary, MCS and key information technology personnel, (see section 1.1.). This view was also supported in a report entitled 'National Strategic Information Technology Statement for Barbados' prepared by Mr. Stewart Bishop, Senior Lecturer UWI, for MCC. In this report Mr. Bishop stated that –

> "Unfortunately there is still not much evidence of the desired level of trust in the DPD's ability to solve user problems. In short the overall image of DPD remains lower than desirable. Organisational changes, active support and capable and committed leadership at the highest level in government are urgently needed if DPD is to contribute fully to effective computerisation of the public sector".

The committee is therefore of the view that the DPD, in its current state, would be unable to spearhead and effectively manage the e-government programme and that its role and functions needed to be redefined.

Additional research by the sub-committee revealed that in Canada, Singapore, Ireland and United States there was a clear plan and structure within government to spearhead the e-government programme. It was felt that having a centralised initiative/programme in those countries was vital to the success of e-government, which depends largely on cross agency co-operation. The bureaucracy of Government was also identified by the sub-committee as a possible hindrance to the e-government programme in Barbados but it was felt that locating the agency within central government would have a far greater positive impact than if it was located elsewhere.

It is therefore proposed that an agency called the Central Information Management Agency (CIMA) be created to manage the e-government programme with the DPD being incorporated into the new entity. This agency should be placed under the Ministry of the Civil Service or the Ministry of Finance since these ministries are central to the operations of Government. The concept for the establishment of CIMA is to:

➤ Provide leadership and vision for ICT in the Public Service;

➤ Promulgate policies and standards on the use and application of ICT in the Public Service;

➤ Ensure compliance with such policies and standards as well as carry out value for money reviews on investments made in ICT to date.

➤ Ensure the effective deployment of IT human resources

> ➤ Provide IT services and advice to ministries and departments which do not have the necessary in-house capacity; and

> ➤ Manage ICT projects/programmes critical to the effective functioning of Government e.g. SmartStream

The main functions/features of the Central Information Management Agency as identified by the sub-committee are outlined below: -

7.1.1. <u>ICT Strategy and Governance</u>

a.   One of the functions of CIMA should be to develop and articulate the macro ICT Vision and Strategy as well as establish ICT policies and standards within the public service.   In addition, CIMA should also be responsible for the design of an ICT investment assessment methodology. Hence, the IT budgets of all ministries and departments would have to be approved by CIMA prior to inclusion in their estimates.

b.   The success of CIMA will depend on how successfully it manages to disseminate its vision, its strategy and related policies, and its standards. Uptake will not happen as a matter of course but rather as a result of education, discussion and facilitation. Consequently, CIMA will need to place emphasis on developing an effective communication and marketing capability, which should also be a major component of CIMA's operations. Consultation, discussion and solicitation of users and stakeholders' views should be a core operating principle of CIMA.

c.   Compliance should also be a major function of CIMA. Firstly, there can be no ICT Governance framework if there is no agency responsible for its attainment. Thus,

achieving compliance - either by communication, enforcement or corrective action – should be a critical component of the CIMA philosophy.

d.   Data and its resulting transformation into information, constitutes the essential element of any ICT environment. The development and implementation of an effective meta-data framework should result in the seamless flow of information between the various ICT systems thereby improving the operations of government. CIMA should therefore be responsible for the development and articulation of the ICT meta-data framework.

e.   Security is another critical element to the success of any E-government programme and as a result, CIMA should be responsible for the overall security of all information and systems within Government.

7.1.2.   Operations

f.   CIMA should be staffed with a cadre of highly skilled technical staff whose primary assignment would be to assist the smaller ministries and departments that either have no IT skills or have inadequate IT skills, (an example of this, as identified by the subcommittee, is assisting departments in identifying their business requirements for ICT projects). The larger ministries and key departments of Government would retain their information technology units.

g.   CIMA should also be responsible for vendor management. The management of vendors and the related operational activities is critical to the success of E-government and therefore must be considered a major function of CIMA.

7.1.3. Secretariat to the Steering Committee/ Administrative Support

h.   It is envisioned that CIMA will function as the support arm of the Steering Committee on E-government. CIMA should therefore be responsible for the provision of all administrative services to the steering committee.

7.1.4.   Support Teams

To assist CIMA in fulfilling its mandate, it is proposed that a number of teams be set up as needed with specific terms of reference. These teams are:

a.   **Information Management Officers' Forum (IMOF)**

The Terms of Reference of IMOF should be to enable:

➢ CIMA to communicate to IMOs, initiatives underway and their status;

➢ CIMA to obtain feedback from IMOs on assignments/projects prior to formal submission for approval;

➢ CIMA to bring for discussion with IMOs issues relating to CIMA activity and ICT in general;

➢ IMOs to provide feedback to CIMA on ICT matters across the Public Service;

➢ IMOs to bring for discussion with CIMA issues relating to IMO / CIMA / Vendor activity and ICT in general.

It is to be noted that this forum is the mechanism through which Information Managers throughout the public sector would report to the CIMA.

b.   Corporate Architecture Team (CAT)

The terms of reference of this team should be to:

➢ Research and document the ICT architectures currently in use across the Public Service.

➢ Pursue opportunities for the integration of existing and new architectures into a corporate ICT architecture for the Public Service.

➢ Identify dependencies between existing and proposed information systems, both internal and external; assess their impact on the architecture, and advise on consequent changes to the corporate architecture.

➢ Collaborate with other CIMA Teams in the definition of the plan for the development of standards required for the implementation of the architecture and their enforcement.

c.   Policies and Standards Team (PST)

The Terms of Reference of this team should be to:

➢ Solicit user and private sector input in the formulation and review of the Public Service ICT policies and standards.

➢ Propose priorities relating to the ICT governance policy and standards.

➢ Review and propose amendments to Public Service ICT governance policies and standards.

➢ Ensure that such policies and standards are necessary, relevant, open, realisable and implementable.

d.   ICT Security Team

The Terms of Reference of this team should be to:

➢ Participate and shape the design of a security strategy for the Public Service;

➢ Steer the implementation of the security strategy across the Public Service;

➢ Review ICT security policies and standards prior to submission for approval;

➢ Issue best practices, policies, standards and guidelines to Public Service departments;

➢ Perform management reviews and audits of security framework within the Public Service;

➢ Ensure compliance with critical standards and policies across the Public Service

The diagram **below** highlights the main functions of CIMA, as identified by the subcommittee.

OGANISATIONAL CAPACITY

Leadership
Organisation/Management
Championing
Marketing/Public Relations
Change Management
Knowledge Management

SUPPLY MANAGEMENT

Market Monitoring
Supplier Relations
Contracts
New Developments

CIMA

STRATEGY/GOVERNANCE

Vision
Strategy/Business Requirements
Standards/Policy
Legislation

TECHNICAL CAPACITY

Security
Architecture
Integration
Operations
Project Managment
Training

7.1.5. Staffing - Central Information Management Agency

It is the view of the sub-committee that CIMA should be staffed with highly trained, experienced and competent personnel, able to respond to the rapidly changing IT environment as well as take care of the various needs of its customers. As indicated previously, it is proposed that the Data Processing Department be incorporated into CIMA but it is envisioned that additional posts may have to be created for CIMA to effectively carryout the functions identified above. It is therefore recommended that a committee be set up to look at the staffing and structure of CIMA.

7.1.6. Retention of Skilled Workers

The sub-committee also discussed the ability of Government to attract and retain skilled personnel. It was felt that the higher salaries in the private sector would be an inducement for the more talented, skilled and qualified IT staff in the public sector thereby affecting the success of the e-government programme. The sub-committee believes that consideration should be given to the following to ensure the retention and attraction of skilled and qualified IT personnel, especially at the senior level:

a. Allow the senior IT staff to work privately;

b. Place senior staff on contract which would allow for greater flexibility in terms of remuneration; and

c. The implementation of an effective reward system where bonuses are awarded based on the performance of employees.

7.2.   E-government Steering Committee

The Steering Committee is a critical component to the structure for e-government. It is responsible for the overall management of the e-government programme. The committee should comprised ICT stakeholders and practitioners from the various sectors of society both public and private and chaired by the Permanent Secretary of the parent ministry of CIMA. This committee should include: -

a.   Head of the Civil Service

b.   Union Representative(s) - NUPW, CTUSAB

c.   Representative(s) from the private sector e.g. Barbados Chamber of Commerce

d.   The head of CIMA

e.   PS Ministry of Finance/ PS Ministry of the Civil Service

f.   PS Ministry of Commerce, Consumer Affairs and Business Development

g.   PS Ministry of Industry and International Business

h.   The Director, Office of Public Sector Reform

Some of the main functions of this committee are:

a.   To provide leadership and direction;

b.   Evaluate the merits of various e-government proposals;

c.   Prioritise projects for funding;

7.3.   E-Champion

The e-government programme also requires an advocate to build political support across government, push for change and resources, publicly take "ownership" of the project and commit their time on a sustained basis. Nothing is more critical to the success of e-government than political will. Behind every successful e-government programme is a

visionary leader or leaders who advocate change even through difficult moments. The right leader has authority, is willing to take risks, is willing to secure funds for the programme, will commit time on an ongoing basis, and will publicly endorse and advocate e-government. The chairman of the e-government committee should be the advocate for the e-government programme in Barbados. The proposed e-government structure is shown graphically below.

E-Government Structure
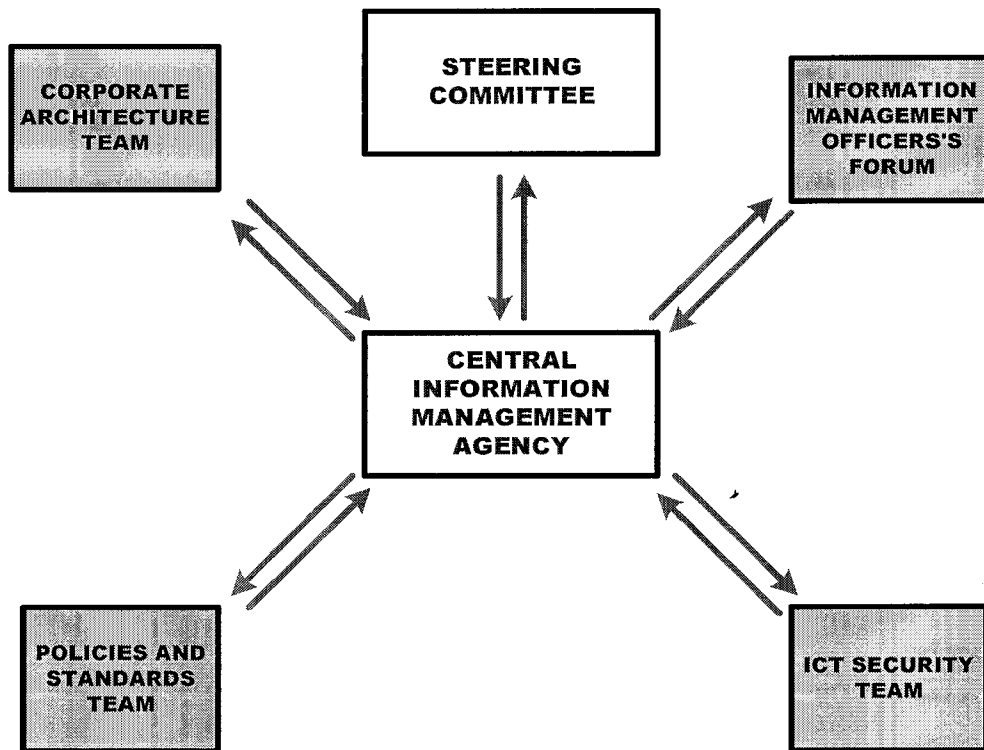
7.4.   <u>Re-engineering Government Processes</u>

The majority of the business processes in the public sector were established decades ago and have continued unchanged. In spite of major changes in the external environment and changes in the expectations of customers, both internally and externally, the business processes for the most part have not been restructured. Many business processes that could be completed in one step or one location are fragmented between different ministries/ departments or different sections within a given ministry/department.

A recently published European Commission survey on e-government, "Reorganisation of Government Back Offices for Better Electronic Public Services - European Good Practices", supports the view that government processes must be reviewed and, if possible, re-engineered to achieve maximum e-government benefits. The survey revealed that public administrations that combine substantial reorganisation of the way they work with the use of information and communication technologies to deliver new e-government services get higher appreciation ratings from businesses and citizens. It was stated that the improved organisational performances were due to the fact that reorganisation reduces cost, increases productivity, and provides flexibility and simpler organisational structures. In addition, it also helps to improve how systems work together across the administration and can improve the working environment.

Locally, a number of departments have recognised the deficiencies in their business processes and have taken steps to improve their operations. A good example of the use of information technology to improve the business process is the EEPSI project. Government business processes must be re-engineered to improve efficiency and provide quality services to the citizens of Barbados. Therefore, as a priority, all business processes will be reviewed and, if necessary, re-engineered to improve Government's efficiency.

The sub-committee considered the role of CIMA and the Office of Public Sector Reform (OPSR) in re-engineering the processes in government. OPSR was considered because of its role in reforming the operations of Government. Amalgamation of the two agencies was considered, but ruled out because of the possible effects that it could have on Government's Public Sector Reform programme. A strategic alliance was considered a more viable option where teams comprising officers from both agencies would analyse and re-engineer the various processes in government. The sub-committee was also of the view that, for this arrangement to be successful, both agencies would have to be placed under the same Ministry to avoid the pitfalls of inter-ministry coordination. It is therefore recommended that a strategic alliance be created between CIMA and OPSR and that both agencies be placed under the same parent ministry. A diagram outlining this relationship is shown below.

Diagram of Parent Ministry /CIMA/OPSR Interactions

Ministry of the Civil Service / Ministry of Finance and Economic Affairs

The Office of Public Sector Reform (OPSR)

Central Information Management Agency (CIMA)
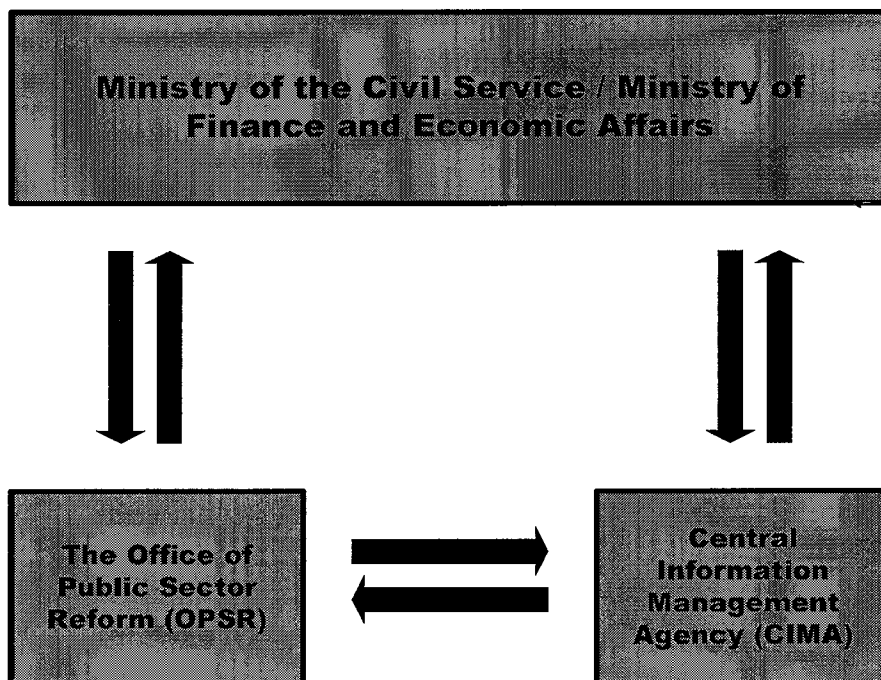
7.5.   Infrastructure

To improve the communication and information flow between the various ministries and departments, it is proposed that a wide-area-network (WAN) linking all major government offices be setup. The WAN will provide a broadband connection (high speed link) to all major government offices. This will ensure that all government ministries will have the capability to communicate effectively. The WAN will be a state of the art integrated network capable of carrying voice, data and video. This network will satisfy all present and future e-government requirements and serve as a catalyst for government to aggressively implement e-government programmes as well as providing the basis for the rationalisation of government's current data and voice network. It will also permit video conferencing to be implemented in a cost effective manner.

Government currently has in operation four wide-area-networks namely:

Smart Stream   ASYCUDA

EEPSI   MPT (Licensing Authority)

These networks have been developed independently and there is no communication between them. The result has been that when these networks are utilised by any ministry or department, data is delivered on separate wires. To improve the efficiency and effectiveness of communication between the various ministries and departments, Government will rationalise these networks and provide those services utilizing the high-speed broadband connection.

7.5.1.   Government's Voice Network

The Government's voice network is based on a PABX (Private Branch Exchange) and key systems. Individual ministries have their unique systems and Government currently pays Cable and Wireless in excess of 4 million dollars annually. With the deployment of the high speed WAN, the Government would have the unique opportunity to deploy one or two PABXs using Internet based technology (VO/IP) to completely satisfy the voice requirements of Government. This would result in substantial savings of as much as 60% of current payments to Cable and Wireless.

7.5.2.   Internet

Ministries and departments, in providing Internet service to their employees, utilise the services of several ISP's. Government could realise tremendous savings if the services of one Internet provider are utilised for connectivity instead of the several ISP's. In addition, with the utilisation of one provider, security would be enhanced with Government having only one point of entry to the Internet instead of several points of entry if more than one provider is utilised. Therefore, to make the provision of Internet services more cost effective, CIMA should be assigned the responsibility for negotiating with the ISP's and in contracting the services of a sole ISP for the Government of Barbados.

7.5.3.   Email

The provision of an effective government-wide email system is a critical factor for improved communication in the public sector. Currently, the email addresses used in Government are non-standard thus making it difficult to manage email addresses and to determine the email address of a particular person. Although the Data Processing Department is trying to rectify this problem with the development of an Internet Policy, it is

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felt that an effective government-wide email system should be developed and controlled by a central agency having the responsibility for the management of such a system and include such functions as developing policy for the control and management of email accounts. CIMA should be responsible for the development and management of Government's email system.

7.6.   E-Government Partnerships

Part of the strategy for the implementation of the e-government programme will be the development of partnerships with the private sector. There are many reasons for developing partnerships with the private sector. Firstly, there is the possibility of cost-sharing projects. Secondly, the private sector has invaluable expertise that can be tapped by government in the areas of customer service, work productivity gains, and personnel efficiency. Finally there is the possibility of technology transfer from the private to the public sector.

The Government of Mauritius effectively utilises public-private partnerships in the provision of e-government services. For example, the Contributions Network Project is a public-private sector partnership that connects all large employers, and the majority of small ones, to the relevant government tax departments via a single point of contact. The system enables employers to submit their returns directly through a two-way, fully electronic system. The benefits which the Mauritius government derived from the development of the system were:

a.   A faster electronic process

b.   No need for reconciliation

c.   A better cash flow control for businesses

d.   Redeployment of government staff to more productive tasks

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When feasible, CIMA will utilise public-private sector partnerships when implementing E-government projects.

7.7.   <u>Security</u>

Security is a critical element in the success of e-government and it must be carefully planned and implemented. It is possible for security breaches to occur. However, with proper planning and implementation and with an effective security policy in place, security breaches would be difficult to achieve.

Government's information systems can be vulnerable to attacks externally and from within the public service. The external threat comes from intruders known as hackers. Hackers steal into target systems, via a network from outside, and tamper, extract, or destroy data inside or even crash the systems, or totally prevent their use. Attacks could also come from computer viruses, which attack and sometimes shutdown information systems. The recently publicised disruptions overseas caused by virus, worm and denial of service attacks on both commercial and government websites illustrate the potential for damage.

Internally, the security threat could come from public officers who might intentionally disclose the information they handle to outsiders, or illegally access other organisations' systems or destroy important data. The sub-committee identified three key elements as they relate to e-government security i.e., integrity, confidentiality, and availability.

Availability -   Ensuring that authorised users have access to information and associated assets when required

Confidentiality -	Ensuring that information is accessible only to those authorised to have access
Integrity -	Safeguarding the accuracy and completeness of information and processing methods

A number of measures will be used to ensure that all e-government systems are adequately secured to guarantee confidence in those systems by the internal users, the public and businesses that access them.

Hardware Solution

This includes the use of firewalls and hardware routers to permit the correct levels of access to only authorised users.

Software Solution

Authentication and software access control which would encompass the use of user groups and directory and files level security. This would cover best practices by rigidly implementing features like minimum password length and forced password changes, and the keeping of password histories to prevent reuse of the same password.

Security Policy

A security policy will be developed for the public service of Barbados. A security policy is a set of laws, rules and practices that regulates how assets, including sensitive information, are managed, protected and distributed. It

clearly defines the role and responsibility of all government employees in securing the various E-government systems.

Punitive measures for breaches of the security policies will also be clearly defined. All government employees would be expected to familiarise themselves with the document and sign a consent form indicating that they are willing to abide by the terms outlined in the policy.

Classification Policy

A classification policy will also be developed. The classification policy will set out the levels of security to be applied to government documents and define how those documents are to be protected.

Security Education

Security Education is critical to the success of the security plan. This process should be ongoing with government employees being educated about the security pitfalls. Constant security awareness will develop an organisational culture in which security becomes the norm and the "business" of all Government employees.

Detection

There are a number of security tools that will be utilised by CIMA to assist in detecting security problems/issues. They are:

a. Intrusion Detection Software;

b. Scanning Devices to find and close open ports which are vulnerable to hacks and attacks;

c. Antiviral Software and content filtering; and

d. System Audit programs

Disaster Recovery Plan

Disaster Recovery Plan(s) will also be developed. The Disaster Recovery Plan will clearly outline the steps to be taken to restore the various system(s) to their pre-crisis state.

7.8.   Change Management

Civil servants may resist the implementation of the e-government programme and refuse to adapt to new processes and procedures in service delivery. This might result from a variety of reasons including:

◆ Fear that technology will make them obsolete and that they will lose their jobs;

◆ Fear that they will lose power over their area of control;

◆ Unfamiliarity with technology and fear that they will look stupid in front of others if they do not use it correctly;

◆ Fear that technology will mean more work for them; or

♦ Belief that they have nothing to gain professionally from adapting to new technology, and nothing to lose if they refuse.

A number of methodologies will be used to overcome this expected resistance namely:

Seek "Buy-In"

Public officers, especially those at the higher levels of management will be involved in the planning process for projects. This will ensure that officers understand how the e-government project/programme will actually affect their work, and that of their subordinates, so that they can help manage employees' expectations.

Educate

Public officers will be educated on the goals and objectives of the programme as well as informed of their new roles when implementation occurs. It is vital to manage expectations and respond appropriately to shifting perceptions at all stages while the e-government project unfolds.

Training

Some governments have found that by training managers it created acceptance of the implementation of new systems and programmes. In addition, the training of public officers in general, in advance of the implementation of new systems, will have the effect of lessening that resistance to change. If public officers understand the new methods, they are less likely to resist them. Therefore, training programs will be developed for senior managers and staff to gain acceptance of e-government programmes and projects.

7.9.   Training Programmes

Specific training programmes will need to be planned and implemented throughout the Public Sector in order to develop human resource capabilities. A skills audit would have to be undertaken and a training strategy developed for successful implementation of the e-government programme. The training strategy should not only target computer literacy and competence, but also service delivery skills and customer management techniques and sensibility.

7.10.   Inter-Ministry/Department Communication

Collaboration between ministries and departments must be addressed to improve government's operations. The methods to be used to improve collaboration will depend on a number of factors, namely:

a. Data Generation

b. Data Ownership

c. Data Sharing

d. Management of National Data

e. Intra-network Connectivity.

Data Generation

Data is generated at every stage of government's activities and consist of:

a. Reports and documents created for a variety of reasons

b. Communications internally and with citizens, social partners, international agencies and suppliers

c. Collection and analysis of information from varying sources

Presently most of this information resides where it was generated, in paper form, and is not very accessible. With re-engineering and adequate storage this information will become much more available.

Data Ownership

The question arises as to the ownership of data and rights to access it by other departments. Definitive policies must be articulated as to who owns the data and how it is to be exploited. It is recommended that the data be owned by the state and may be exploited by the various government agencies, provided that the rights of the citizens are not compromised. This therefore, calls for the categorising of data and specific legal guidelines specifying controls on different classes of information.

When projects are funded by external agencies, part of the agreement of understanding between the government and those agencies should be the question of ownership of data generated and the means via which it may be exploited.

Data Sharing

Data sharing is a natural off-shoot of data ownership. The basic principle of sharing data with other government departments can be considered the norm but classification and legal restrictions on some data will require that only summaries or some other amalgamation of the data must be made available. The question of who can have access to what is also a matter of some importance.

Management of National Data

The management of the national data and, by extension, the national network that links these sources of information is also of great importance. The amassing of this information and making it readily accessible can easily become one of considerable importance as far as national security is concerned. This store can be used for great national good or abused by vindictive and dictatorial persons. Protections and safeguards must therefore be built into the management structure.

The theoretical discussion of this issue and the types of safeguards that should be included require the engagement of the legal, technical and social thinkers of our society. The final structure should, as far as is possible, satisfy the concerns of these interest groups.

Until this issue is settled, data should remain in its dispersed form with the generating agencies. Sharing and collaboration may be conducted on an 'as needed' basis.

7.11. Public Interaction with Government

The public participation and acceptance of e-government projects are critical to the success of the e-government strategy and programme. To this end some of the initial e-government projects will be utilised to generate interest in the program. Such projects will have high visibility and a great probability for success. Some of the factors that would influence project selection are:

a.   The number of persons affected by the project; and

b.   The ability to significantly reduce process time and turnaround time thereby affecting the waiting time of the public.

Ministry of the Civil Service

The implementation of a service wide **document management system** and the development of an effective **licensing information system** were identified by the sub-committee as possible projects where quick successes could be achieved. The development of a **portal** and websites for the various ministries and departments will also assist in gaining acceptance of the e-government programme. The portal will provide a single point of access to information and services, 24 hours a day, thus improving the public's interaction with Government.

7.12.   <u>Communications and Marketing Strategy</u>

An important aspect of the e-government programme that is critical to its success is the promotion and marketing of the programme. There is little point in committing resources to the e-government programme if the various e-services remain 'hidden' and therefore unused by customers both internal and external to the public service and little is known of the role and function of CIMA.

The e-government communication and marketing strategy should be based on the recognition of a few simple principles:

- Communication must be two-way;
- There is added value and benefit in working partnerships and collaborations; and
- Individual attitudes and behaviours are the sum of the cultural, social and psychological influences.

Provided these principles are understood, the communication and marketing strategy can reap the benefits of tailor-made solutions targeted to specific groups within the Barbadian citizenry. There are several benefits to this approach, i.e. reducing wastage in relation to

time, finances and human resources as well as the definition of targeted segments of e-government's audience. The strategy should aim to:

- Build and maintain the reputation of the CIMA and the programme;
- Sell the various e-government services;
- Encourage feedback and citizen participation;
- Increase public service participation;
- Improve service delivery through staff involvement;
- Benefit disadvantaged audience groups;
- Influence opinion-formers of the importance of the e-government programme;
- Provide simple, value-added information to audiences to raise their capabilities and capacity to make choices;
- Demonstrate that the e-government programme meets the needs of citizens and Government as a whole;
- Consult with and gain agreement and trust from respective audiences;
- Explain clearly the proposals of the programme to all audiences; and
- Be accountable by providing clear information about the agency and its services so audiences can make clear decisions regarding performance.

Various mediums will be utilised to promote and market the e-government programme, i.e.:

- Press
- Direct mail
- Stationery

- TV and Radio
- Public meetings and seminars
- Internet e.g. registering websites with the major search engines

7.12.1.   E-government   In-house   Communications   and Marketing Function

The sub-committee is of the view that communication and marketing as it relates to e-government should be an in-house function of CIMA. An officer should therefore be assigned on a full time basis, dedicated to the production and execution of the e-government communication and marketing strategy.

8.   SUMMARY OF RECOMMENDATIONS

Overleaf is a summary of the recommendations proposed by the sub-committee on e-government: -

GOAL	OBJECTIVE	RECOMMENDATIONS
Better delivery of services to citizens and businesses	To review and enhance all government services utilising ICT	a. Identify and review all Government services b. Rank all services in order of priority and identify projects were quick successes could be achieved
Greater productivity and efficiency in the operations of government agencies	To put in place a structure to manage the E-government programme	a. Create a Central Information Management Agency (CIMA) and a Steering Committee on E-government b. Establish a committee to examine the staffing requirements of CIMA c. Develop a strategic alliance between CIMA and the Office of Public Sector Reform (OPSR)
	To put in place the technical infrastructure and architecture to support the various E-government initiatives	a. Set-up a high-speed wide area network (WAN) linking all major government offices b. Deploy one or two PABXs using Internet based technology (VO/IP) to completely satisfy the voice requirements of Government. c. Set-up a Government-wide email system d. Select one Internet service provider for the public sector
	To ensure that adequate resources (physical, human and financial) are provided to support the successful implementation of the E-government programme.	a. Conduct a skills audit to determine ICT competency levels in the public sector b. Develop an E-government training strategy that would target not only computer literacy and competence but also service delivery skills and customer management techniques and sensibility

GOAL	OBJECTIVE	RECOMMENDATIONS
		c. Develop a programme of change management through education and training and the involvement of all stakeholders, in order to minimise any possible resistance to the introduction of E-government initiatives.
Greater transparency and governance through broadening public participation in the governmental process	To develop a communications/ marketing strategy to ensure that people, both external and internal to the public service, understand the vision, the changes that will occur and the tangible benefits to be derived from E-government	a. To develop a communications/ marketing strategy to support the E-government programme b. To create a post at CIMA to be responsible for the production and execution of the E-government communication and marketing strategy

9.   CONCLUSION

The implementation of E-government in Barbados will result in a revolution in the way in which Government operates and in the way in which it interacts with businesses and the public. As stated previously the E-government programme will result in a number of tangible benefits i.e., the streamlining of processes, increased employee productivity, greater interaction with the public and the provision of services 24hours a day. It will result in a more transparent, open and citizen-centred Government thereby enhancing the governance of the country. It is hoped that the E-government strategy, which sets out the framework for the E-government programme in Barbados, is utilised as a catalyst for reforming the operations of government.

10.   SUB-COMMITTEE MEMBERS

The E-government sub-committee that prepared the draft strategy comprised:

Mr. Ovvyng Harewood	Director of Information Systems, Ministry of the Civil Service - Chairman
Mr. Eutace A. Russell	Manager Information Systems, Ministry of Home Affairs
Mr. Chesterfield Browne	Systems Database Administrator, Samuel Jackman Prescod Polytechnic
Mr. Samuel Inniss	Senior Agricultural Assistant, Ministry of Agriculture and Rural Development
Mr. Charley Browne	E-government Development Officer, Ministry of the Civil Service

11.   STRATEGIES

Based on the recommendations of the subcommittee the following strategies should be adopted to ensure the successful implementation of the E-government Strategy.

Objective	Strategy	Strategic Programmes/Tasks	Responsibility
To Put in place a structure to manage the E-government programme	To obtain final approval on the E-government strategy – which includes a structure to support the E-government programme	Prepare a cabinet paper for submission to Cabinet - obtain final approval of plan Set up a committee to examine the staffing requirements of the Central Information Management Agency (CIMA) Create the CIMA and the E-government Steering Committee to manage the E-government programme	Ministry of the Civil Service The Data Processing Department Stakeholders
To review and enhance all government services utilising ICT	To setup a team comprising officers from the CIMA and the OPSR to undertake the review	To review and rank all government services and identifying projects where quick successes could be achieved	CIMA, OPSR
To put in place the technical infrastructure and architecture to support the various E-government initiatives	To implement the recommendations outlined in the E-government Strategy i.e. to setup a high speed WAN, deploy one or two PABXs using VO/IP, setup a government-wide email system and selection of one Internet service provider for the public sector	Prepare detailed project plans for all the activities to be undertaken. Identify suitable vendor(s), opportunities for partnerships and funding Obtain approval and support for the various projects	CIMA, The E-government Steering Committee

Objective	Strategy	Strategic Programmes/Tasks	Responsibility
To ensure resources (physical, human, financial) are provided to support the successful implementation of the E-government programme	Undertake an audit of the human and physical resources in the public sector	Undertake a skills audit and an audit of the physical resources of government Develop strategies and programmes e.g. a comprehensive training strategy to deal with any identified deficiencies	CIMA Training Administration Division

APPENDIX I

ICT Projects and Programmes

I. **The Computerisation of Government's Financial and Human Resource Functions (SmartStream)**

The main goal of this project is to modernise and streamline Government's financial and human resource management systems. The software utilised to achieve this modernisation is the Smartstream Product Suite. The SmartStream Product Suite includes: SmartStream Financials, (comprising the Ledger, Funds Control, Accounts Receivable and Budget modules); SmartStream Procurement (made up of the Payables and Purchasing modules); and SmartStream Human Resources (of which the Payroll and Personnel modules have been implemented). A Cash Receipting module has also been developed specifically for the Government of Barbados using the SmartStream infrastructure to allow for integration with the Financials system. The benefits of implementing Smartstream include: -

- Better management of Government's financial, procurement and payment processes;
- Greater control in the recruitment and personnel development functions; and
- Enhanced information reporting and access.

The implementation of Smartstream has also made a number of other opportunities available to the public service in terms of how business is done. Some of these developments include:

- The introduction of an intranet system across the public service thereby allowing officers across the service to communicate with each other using electronic media. (This means that documents and messages can be more easily transmitted across the

service with the assurance that they are routed directly to the individual for whom they are intended); and

- The development of a web page for use on the intranet. (This page will be accessible to all public officers and will include information on areas such as the General Orders, the Civil Establishment Act, the Pensions Act, the Financial Administration and Audit Act and Rules, health in the work place and basic computer trouble shooting tips. Officers across the service will be encouraged to make contributions to the web page so that it will remain a dynamic instrument.)

II.   The Enabling Environment for Private Sector Investment (EEPSI)

One of the major computer projects being undertaken by Government is the Enabling Environment for Private Sector Investment (EEPSI). The Ministry of Industry and International Business is responsible for the implementation of this project. This project aims to establish an information systems network within Government to facilitate the improved performance in promoting and facilitating private sector investment through collaborative working and shared access to common information. The successful implementation of the project will lead to improved efficiency through secured telecommunication infrastructure. This would reduce information redundancy, thereby resulting in improved customer service to current and prospective investors around the world. The project will provide a "One-Stop-Shop" solution for investors and agents, 24 hours a day, 7 days a week, internationally. Currently there are 15 government agencies linked to this network.

III.   Automated Systems for Customs Data (ASYCUDA)

The Customs and Excise Department implemented the ASYCUDA version 2 in 1993. The ASYCUDA project led to the simplification of procedures where eleven different import and export declarations forms were replaced by the Single Administrative Document. The current ASYCUDA version 2.7 will be upgraded to the latest, ASYCUDA ++ version 3. The upgrade will enable the department to embark on full electronic document processing which will:

- Reduce the cost of doing business;
- Increase revenue collection;
- Reduce turnaround times;
- Improve trade data collection and retrieval; and
- Generally enhance departmental efficiency and effectiveness.

IV.   The Education Sector Enhancement Programme (Edutech)

This is a comprehensive education reform programme for the primary and secondary schools in Barbados. The specific objectives of the program are to: -

- Repair and upgrade the existing school plant;
- Integrate all available information and communication technologies within the school system;
- Provide teacher training to enhance pedagogical skills;
- Achieve the desired balance between teacher–centred and child-centred approaches; and

- Strengthen the capacity of the Ministry of Education to effectively manage the education system.

The Edutech project should result in the future generation of Barbadians being technologically savvy and highly skilled. This will result in increased demands for E-government services as well as provide a pool of highly skilled workers, which can be utilized to support the E-government programme.

V.   Community Technology Programme (CTP)

The Community Technology Programme (CTP) is an initiative of the Community Development Department and was included in the submission of the 1999/2000 estimates as part of the Community Resource Centre programmes. The initiative caught the attention of the Prime Minister who, in his October 2000 presentation of the Economic Report to Parliament, announced the allocation of an additional $1 million to the Department " *to help transform community centres into resource centres at which access to Internet facilities and training in information technology can be provided on a community basis"*. The Prime Minister further stated that the initiative was intended *"to ensure that children of families which cannot afford to provide such facilities at home, have access within their communities to such necessary tool kits for survival and success in the information age"*.

The goal of the CTP is to provide effective access to technology and the Internet to economically disadvantaged community members. The programme will significantly increase educational attainment, and socially and culturally enrich children, parents, families and disadvantaged community members residing in rural and urban communities. It will also provide opportunities for educational advancement, access to services and communications, and enhance job, career and business opportunities for adults.

Ministry of the Civil Service

Currently ten (10) Community Resource Centres are in operation across Barbados, with Internet access being available to persons from 9:30 a.m. to 9:30 p.m. Monday to Saturday. In addition, approximately 1121 persons have been trained with those graduating ranging in age from 12-83, covering such areas as:

- Introduction to Windows
- Introduction to Keyboarding
- Introduction to Word Processing
- Introduction to the Internet

Data on the computer technology programme reveal that of the 1121 persons trained:

- 833 (74.3%) were females and 25.7% were males;
- 702 (62.6%) were employed either full or part-time, 29.4% unemployed and 8.0% retired; and
- 90 were retirees the oldest one being 83 years. Of these, 81% were females and 19% males.

VI.   Immigration Department

The Immigration Department currently maintains a database of all arrival and departure information for all travellers entering or leaving the country, all applications for Barbados passports and all status information. This data allows Immigration Officers to carryout checks at the various ports of entry on individuals entering or leaving the country. Overseas missions also have restricted remote access to this data via the Internet. The Department will also shortly undertake a passport project consisting of two elements, namely:

- A fully digital passport issuing system at the main office and in due course at the overseas missions; and

- Passport scanning at the ports of entry

The digital passport issuing system is being configured to capture personal data including digital images of applicants, based on the International Civil Aviation Organisation's (ICAO) current standards. The single most important element of this new system is the preparation of the main bio-data page and the technology used in its creation. This is done by printing the information in a special film using a high-resolution laser printer and using heat to transfer the data to the page in the book. In addition, photographs will no longer be glued in the book since digital images will be transferred to the book by the same process mentioned above. This system should result in the reduction of fraudulent documents leading to a more secure travel document.

The passport scanning initiative involves the installation of passport readers at the ports of entry so that these may be used with machine-readable passports. Portable readers will be used mainly at the Bridgetown seaport as Immigration Officers usually carryout the processing of passengers on board the ships. The introduction of readers at the ports of entry will increase security with the use of digital images, as well as record accurate bio-data details of travellers.

VII. The Town and Country Planning Department

The Town and Country Planning Department is in the process of developing a new computerised application system. This system will facilitate a high-level of control and management of its application process, as well as increase the efficiency throughout the office thereby providing improved service to the public. This solution will provide an easy-to-use and secure system that allows for:

- Greater flexibility for querying the data;

- More accurate data entry especially at the front desk;

- Greater management of all types of applications e.g. complaints enforcement;

- Greater enforcement of business rules and regulations;

- Increased security; and

- On-demand updating and maintenance of records.

VIII.   The National Insurance Department

The National Insurance Department (NID) has embarked on a programme to streamline and modernise its operations. The NID commenced the implementation of its Strategic Information Technology Plan (SITP) during fiscal year 2003. The plan labelled Systems to Transform, Re-Engineer, Integrate and Develop the Environment at NIS (STRIDES@NIS) consists of thirty-five projects. The focus of the plan is on the application of the latest technologies to significantly reduce operating cost, improve customer services and channel critical information regarding registrants, contributions, benefits claimed etc. to the respective individuals and sections for processing. The technologies to be used include the Internet, data warehousing, electronic data interchange, workflow management, document management, e-commerce and a cashless environment.

To date, the first phase of the project has been implemented. This phase involves the replacement of all core business legacy software by SAP, an enterprise software package that was customised to the needs of NID. The second phase is scheduled to begin in March 2004. This component of the project will see the implementation of the following areas: - investments, material management, time management and payroll and a business warehouse for improved statistical reporting. In addition, this phase will also see the implementation of a portal Interactive Voice Response system (IVR) and Customer Relationship Management System (CRM) to provide increased customer self-service as well as case management and better tracking of documentation particularly with respect to Benefits, Medical Tribunals and Severance Tribunals matters as well as improved management of legal cases against employers and other agencies. An Electronic Document Management System (EDMS) will also be implemented as part of the modernisation effort.

IX.   The Forensic Sciences Centre

Barcode Evidence Analysis Statistical Tracking System

The Forensic Sciences Centre has implemented a Barcode Evidence Analysis Statistical Tracking and Laboratory Information Management System. The Barcode Evidence Analysis Statistical Tracking and Laboratory Information Management System is a comprehensive computer software solution for effective management of forensic crime laboratories. The Barcode Evidence Analysis Statistical Tracking System incorporates state-of-the art technologies such as bar coding, instrument interfacing, signature capture, palm pilots, browser-based information distribution and many other features. The Barcode Evidence Analysis Statistical Tracking system will help analysts and supervisors alike spend their time more efficiently while collecting and managing data more accurately and seamlessly. The Barcode Evidence Analysis Statistical Tracking system also provides an easy to learn and understand environment to track and record case information, evidence flow, sample analysis and report generation. In addition the Barcode Evidence Analysis Statistical Tracking system also manages information outside of case related activities, for example, training, research, presentations, supply ordering, billing, equipment maintenance and quality assurance.

VO/IP

The Forensic Sciences Centre has also implemented a state-of-the-art VO/IP communications system. One of the main components of this system is the Nortel Meridian 1 Option 11C PABX which supports digital telephone, in-house wireless communications, call pilot messaging, PC-based call accounting and systems based management. Only two primary voice lines are used, between the provider Cable and Wireless and the Forensic Centre and this supports about fifty (50) telephones in the building which can make simultaneous out-of-building phone calls. The Forensic Science Centre is one of the first departments in Government to have implemented a VO/IP system.

X.   International Transport Division

The Grantley Adams International Airport (GAIA)

ATOM

GAIA has implemented an information system called ATOM for air traffic management. This system networks their Aeronautical Information System (AIS), Tower (TWR), Terminal (TMA) areas as well as the Accounts Department. In brief it passes flight information data around the network to these areas. This information consists of landing times, takeoff times, parking duration, flight plan data etc. The Accounts department utilises ATOM for the billing of airlines.

CUTE

GAIA has also implemented CUTE (common user terminal equipment) a network of airline host systems connected to 100 odd terminals via a wireless network to allow any airline to check-in a passenger from any terminal. The main purpose of developing this system was to allow for the easy movement of airlines around the terminal building. This was needed because of the refurbishment and expansion of the airport, which resulted in the relocation of some airlines. This system is the first completely wireless CUTE system installed anywhere in the world.

FIDS/BIDS

A Flight Information Display System (FIDS) and a Baggage Information Display System (BIDS) will be implemented at the end of the construction phase of the airport expansion project. FIDS is a standard airport facility which provides passengers and the general airport community with information on scheduled airline arrivals and departures. The system proposed for GAIA will be networked through the airport with each airline providing inputs directly from its office, with the intention of keeping information display current. It is planned to make this information available to hotels and the general public via the Internet.

Ministry of the Civil Service

The BIDS is another standard airport feature, which displays the movement and location of arriving passenger's baggage in the arrival terminal.

In the planning stages is the development of a data warehouse to facilitate the sharing of data e.g. on arrivals and departures, with other agencies and for use by management of the airport. The data warehouse will summarise and correlate information from ATOM, CUTE and the other information systems and provide access to those that require this information. Agencies that might require data from the data warehouse include Immigration, Customs, Police, Statistical Department and the Barbados Hotel Association.

Security is another issue being addressed by airport management with the installation of a Security Access Control and Surveillance system. This system will provide a networked integrated security system to provide access control into secure areas of the airport on a 24-hour basis.

Technical Section – International Transport Division

The Data Processing Department has been requested to create an electronic database for the Barbados Small Vessel Registry. The database will allow for the generation of reports required for the purposes of monitoring, inspection and the payment of fees. Information will also be provided more timely when requested by agencies such as the Barbados Coast Guard and the Barbados Police Force.

The Technical Section in conjunction with the Air Transport Licensing Authority and the Barbados Tourism Authority is also in the process of establishing a database for aeronautical statistics, which can be shared. The database will make the compilation of statistics easier and provide up to date reports required by civil aviation and tourism officials.

Registry – International Transport Division

The Data Processing Department has been requested to computerise the registry at the International Transport Division. This system would result in easier searching and retrieval of files. It will also allow for an accurate record of file movements to be kept.

XI. Integrated Justice Information System (IJIS)

The Attorney General's Office with the assistance of the International Development Bank (IDB) is undertaking a project to modernise the justice sector by improving court administration processes and enhancing access to justice in an effort to reduce the economic and social costs associated with crime. A central element of this project is the implementation of an Integrated Justice Information System across the sector to fill information gaps, facilitate information sharing and communication and improve access to justice through timely and efficient processing practices. It is aimed at transforming the criminal justice system into a modern, efficient, effective and integrated system bringing about the following benefits:

- Reduction in the costs to the criminal justice system;
- Provision of information on offenders and crime where and when it is needed;
- Identification of persons with histories of prior criminal activity quickly and reliably;
- Provision of mechanisms to identify repeat offenders and automate the system of notifying stakeholders in the criminal justice system when repeat offenders enter the criminal justice process;
- Base decisions on bail, community diversion, prosecution, sentencing and incarceration on accurate and timely information.

Ministry of the Civil Service

The IJIS will encompass the reengineering of the justice sector agencies in order to achieve swift and efficient processing of cases through the system and will involve establishing a modern information exchange and document flow system with research monitoring capabilities, which would interface with a computerised court management system. The application will be implemented within the following departments:

- Police Department
- Probation Department
- HM Prisons

- The Director of Public Prosecution

- All other relevant stakeholders in the Justice Sector

- Registration/ Judicial Departments
- Government Industrial Schools
- The National Task Force on Crime Prevention

- The National Council on Substance Abuse

XII. The Police Department

The Police Department is in the process of implementing a secure, island wide, voice and data wireless communications network. This system will be utilised not only by the Police Department but also by all emergency services agencies in Barbados like the Central Emergency Relief Organisation (CERO) and the Fire Department. The main goals of this project are:

- To enhance the protection and effectiveness of public safety officers by providing fast and dependable voice and data communication;
- To provide the citizens of Barbados with improved coordinated response services;

- To integrate different agencies into the system, maximizing the benefits of coordinated response services; and

- To ensure that the agencies will maintain complete control and privacy of their operations.

In addition to enhancing radio voice communications, one of the main objectives of this project is to implement a wide area mobile data system that will enable police officers to access all their agency's databases in a safe, fast and wireless way. This capability will also be extended to the other emergency services agencies.

Cabling of the Police Department has also started with a view to the establishment of local area networks (LANs) and a wide area network (WAN). Headquarters, Traffic and Transport, Divisional Headquarters (North and South) and the drug squad have been completed, whilst District "D", "B", Hastings, Worthing, Bellplaine, Black Rock, The Glebe, the Airport, and the Bridgetown Port are still to be cabled. Databases have been setup to capture crime, traffic and accident data. Eighteen officers have been trained and classes in basic computer skills are continuing for senior and middle management to enable them to use the system when it becomes fully operational. In respect to the Regional Police Training Centre, the three separate peer-to-peer networks will be upgraded:

a. To facilitate file sharing;

b. To facilitate research for both staff and students;

c. To permit on site training;

XIII.   Central Emergency Relief Organisation

In recognising the role that a Geographic Information System (GIS) can play in the management of information pertaining to disaster management i.e. hazard and vulnerability analysis, contingency planning and emergency response, CERO is seeking to setup a Geographic Information System (GIS) at the department. Under the current project, computer software and hardware have been secured and database information is being collected from strategic partners to complete the system.

XIV.   The Ministry of Health

To improve the efficiency in the health sector, a five-phase project has been developed by the Project Design and Implementation Unit, Ministry of Health. The aim of the project is to have information systems designed for evidenced-based decision making, information sharing and research. The five phases are:

Phase I   Planning and preparatory work (completed);

Phase II   Installation of two core modules in a wide-area-network
                        (WAN) in all health centres;

Phase III   Installation of other disease management modules in the
                        primary health care system;

Phase IV   Establishment of a fully staffed Health Information Unit;
                        and

Phase V   Establishment of a Hospital Information System.

Phases I, II and III will form the foundation for phase IV which is expected to be completed in 2005. Phase V, the establishment of a Hospital Information System has already started. This project will have the impact of standardising and streamlining all data gathering and processing as well as information flows throughout the public health system. A pilot phase connecting four polyclinics and the Planning Unit in a wide-area-network, and implementing the two core modules (patient registration and immunisation tracking), will begin shortly.

Ladymeade Reference Unit Project.

This project, which is funded by the World Bank and executed by the AIDS Commission and the Ministry of Health, will result in the establishment of a WAN linking the Ladymeade Reference Unit, the Chief Medical Officer's Office, the AIDS Commission and the polyclinics. Its aim is the implementation of a clinical information system to support the HIV/AIDS case management for the diagnosis, treatment, cost and outcome assessment of the highly active anti-retroviral treatment and opportunistic infections as well as for the surveillance and monitoring of HIV/AIDS/STI (Sexually Transmitted Infections) for the Ministry of Health's care, treatment and support surveillance components of the Barbados National AIDS programme. The project phases are:

Phase I (completed)	The establishment of the first LAN at the Ladymeade Reference Unit. The case management to be used is known as SHIP (Sexual Health Information Programme).
Phase II	This phase will see the expansion of the LAN into a WAN in the areas before mentioned.

Ministry of the Civil Service

The Barbados Drug Service

The Barbados Drug Service currently utilises a number of LANs, which are not integrated. Three main custom-made software applications packages run on these networks. These are:

PHARMS	For dispensing and inventory control of drugs;
BSUS	The special benefits programme; and
BDS	The forecasting and tendering software

PHARMS was recently upgraded and the department is now looking at upgrading the other two, especially the BSUS. The upgraded PHARMS will now allow the Drug Service to acquire information in respect of:

- Dispensing – keeping track of patient history;
- Statistical Analysis - Keeping track of drugs dispensed and summarising drug use by drug name, therapeutic class and doctor;
- Produce monthly reports on all activity in the pharmacy; and
- Produce a suggested re-order quantity

In addition, it is proposed to link the department to all government pharmacies and all participating private pharmacies.

XV.   The Ministry of Agriculture and Rural Development

A network has been established at the Ministry of Agriculture and Rural Development (headquarters) to facilitate the exchange of information. The network features:

- Network Printing
- Email and other file exchanges
- Internet access

A database has also been created in the Registry to enhance that section's operations. At present the registry can track documents coming into the Ministry and the movement of files throughout the office. The Ministry is exploring the possibility of implementing an electronic document management system to further improve office efficiency. This system will feature:

- The storage of all internally generated documents
- The electronic storage of documents received (less than five pages)

In addition to the Ministry's main office, other networks have been established at the Fisheries Department, Soil Conservation, Agricultural Information Unit, Analytical Services and Veterinary Services to improve their operations.

XVI.   The Ministry of labour and Social Security, the Labour Department and the National Employment Bureau

BLMIS Website

The Ministry of Labour in conjunction with the Labour Department and the National Employment Bureau (NEB) has developed and is now managing the Barbados Labour

Market Information Systems (BLMIS) website. It was developed to disseminate accurate and timely labour market information to the public. The website can be divided into two functional areas as follows:

- Job market facilitation, bringing together jobseekers, employers and career planners; and

- The dissemination of labour market information such as labour legislation, market trends and information on key agents in the labour market.

The BLMIS website provides many benefits including:

- Assisting jobseekers with finding jobs and planning their careers;

- Allowing registered employers the facility to post vacancies and search for suitable candidates for a job; and

- Informing the general public about various government programmes.

BARSOC

In addition to the BLMIS website, the Ministry of Labour in conjunction with the International Labour Organisation (ILO) is presently working on updating the Barbados Standard Occupation Classification (BARSOC), which was last published in July 1990. BARSOC is a list of occupations existing in the Barbados Labour Market, along with information on the possible duties/tasks, and the educational requirements of each occupation. The Ministry of labour is in the process of developing a database programme that will facilitate the easy and continuous updating of the BARSOC.

ESIS

Part of the mandate of the National Employment Bureau (NEB) is to help jobseekers find jobs. To facilitate this process the NEB collects relevant information from both

employers and jobseekers. At the moment the process is done manually. The information collected is stored on various cards at the NEB. Because of the way the information is stored, trying to match the correct jobseeker to an available vacancy or scheduling of other services is very time consuming and not very efficient. To this end, the Ministry of Labour and Social Security along with the National Employment Bureau and the Data Processing Department, are in the process of developing a computerised system called the Employment Service Information System (ESIS).

The ESIS project would not only speed up the job matching process for both local and international placements, but would also assist members of staff at the NEB in the performance of other duties such as consultations. Furthermore, it would allow the Ministry of Labour's Manpower and Research Unit (MRSU) to get a better picture of what is happening in the Labour Market. This would be done by the combined statistical information gathered from both the ESIS programme and the BLMIS website on jobs available, job placements and number of job- seekers.

Resource Centre

A Resource Centre was setup at the National Employment Bureau with the assistance of the US Department of Labour (USDOL) in January 2001 to give the Barbadian public access to labour market information through the latest computer technology. Some of functions of this centre are:

On-line Registration

Employers register on-line and employees enter their resumes on-line through the website www.labour.gov.bb. After the Employer registers and is authenticated, the Resource Centre officer issues a username and password which allows for the posting of vacancies and access to thousands of on-line resumes.

Free Internet Access

Clients use the Internet to search websites for job opportunities, email employers or conduct research on work-related topics to become more knowledgeable and more marketable.

WinWay Resume Programme

Clients use the Resource Centre to enter their résumé on-line or develop their résumés through an application called the WinWay Résumé Programme. The WinWay Résumé Programme has a résumé template which is used to develop error-free, job-winning résumés and cover letters with over 13,000 examples of each. Over 100,000 job categories can be searched for job profiles, which can be automatically pasted into your résumé. The programme features fifteen layout themes, which assist in developing sharp and professional looking résumés. The video attached to the programme teaches clients how to answer difficult interview questions and how to conduct job searches. Clients can also print the application letter, the envelope and the résumé.

Work Importance Profiler

This programme helps clients to decide what is most important to them in an occupation and to identify occupations that they may find satisfying.

Interest Profiler

This programme helps clients to decide what their interests are and how they are related to the world of work. They can then look at what kinds of occupations and careers they may want to explore.

XVII. The Training Division

Management Training System

An information system called "Management Training System" is currently being developed for the department to improve its operations. The development of this system arose out of the department's Information System/Information Technology Plan, which has as its goals:

- Sharing information quickly, easily and appropriately –inside and outside the Training Administration Division;
- Securing and protecting information;
- Providing reliable, trusted and cost effective information technology services; and
- Using information technology to improve program effectiveness and performance.

The Management Training System comprises a number of modules, namely:

- Library Management
- Registry System

- Training Course Management
- Training Fund Management

A website has also been developed as part of the system where applicants would in the future be able to register for courses online.

IT Training

Government's Training Division has responded to the need for information technology training by offering a number of IT related programmes, including:

- Introduction to Computer Applications
- Introduction to Desktop Publishing
- Advanced Excel

- Advance Word
- Computer Programming using Visual Basic/.net
- Intermediate Access

- IT-Senior Managers
- Microsoft Certified Systems Engineer
- Microsoft SQL Server

- Systems Analysis & Development
- Web-Page Design

Many officers have been trained with some receiving professional certification e.g. Microsoft Certified Systems Engineer (MCSE), Microsoft Certified Professional (MCP) and A+. The training of officers in the above courses would assist Government in implementing and sustaining the E-government programme.

XVIII. Erdistion Teacher's Training College

The Erdiston Teacher's Training College is utilising ICT to improve its operations as well as to enhance the skills of its students in IT through a number of training initiatives. These initiatives and their benefits are listed below:

Initiative	Description and Benefits
Distance Learning: Special needs education (Joint distance programmes between the Ministry of Education, Youth Affairs and Sport, Erdiston College and Mount St Vincent University)	Reduce cost by allowing students to operate from their home base (less transportation and accommodation costs)
Intranet	To promote inter-staff and staff-student communication on matters internal to the College, e.g. assignments for students and other

Initiative	Description and Benefits
	permitted educational material etc.
Website	To provide information on the institution as well as provide information on current programmes

In addition to the above, a number of IT related courses were also developed as part of the Edutech programme, i.e.:

- Basic Technology Mastery
- Integration of Technologies Workshops
- Management of School Libraries and Media Resources

- Teaching Methodologies
- School Financial Management
- School Administrative Procedures

XIX.   Samuel Jackman Prescod Polytechnic (SJPP)

The SJPP is utilising ICT to improve and enhance its operations in a number of areas including its Open and Flexible Learning (OFL) Programme, which provides students with greater access to courses/programmes. At present, courses are offered using printed materials, email and chat but the SJPP is exploring options for the expansion of the programme through the online delivery of courses using an electronic learning platform, commonly called a Virtual or Online Learning Environment utilising the Internet.

In addition to the OFL programme, an Intranet is being developed in-house by SJPP staff, to provide information and services for staff as well as students. An example of the types of information and services that will be on the Intranet include, information on various programs, program timetables, school regulations, notices, instructor handbooks, student handbooks, library services and the provision of links to online training as part of staff development.

A website is also being developed to be used initially for the dissemination of programme information, application forms and campus news. The medium to long-term plan is to further enhance the SJPP's web presence by offering services such as online registration, online access to results by students, online surveys and online payment of fees (subject to government regulations).

The campus network is also being upgraded to improve operations. New firewall and enterprise antivirus software will shortly be installed and configured. All administrative and teaching staff will be provided with email addresses at the www.sjpp.edu.bb domain to improve communication across campus.

XX.   The Data Processing Department

The mission of the Data Processing Department (DPD) is to promote the use of Information and Communication Technologies (ICTs) in order to foster national, social and economic development as well as to help the public service conduct its business more efficiently. Currently, the Department is responsible for the following projects, programmes and services:

Development of an Integrated Portal

a.   The Internet portal will be an electronic gateway to government's information and services. This facility will allow the Government of Barbados to present a single official face to the world and will eventually allow for dynamic business transactions and a variety of business opportunities. A phased approach will be utilised in the development of the portal. The pilot phase will include the development of a government-wide intranet to be used initially by senior public officers.   The

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government-wide intranet will act as a single point of access to government's information by employees and will be integrated with the Internet portal. In addition, the pilot phase will also include the provision of some services to the public. The Licensing Authority, Driver's Licensing System has been identified for use in the pilot and discussions are being held with other departments for the use of other applications.

As a result of the high development costs a business case on the integrated portal has been submitted to the Ministry of Finance to obtain funding. It is planned to have the pilot of the portal in place by the next financial year.

Web Site Development

b.   The DPD develops and maintains websites for agencies needing this service and also facilitates the hosting of websites. The Government of Barbados Network (GOBINET-www.barbados.gov.bb) and the Barbados Government Information Service websites were recently revised. The Community Independence Celebration Secretariat and the Pan-African Commission sites were launched in the latter part of 2003. Currently, the websites of approx. 21 departments can be accessed from GOBINET:

- Central Emergency Relief Organisation
- The Ministry of Commerce, Consumer Affairs and Business Development
- The Customs and Excise Department
- The Fair Trading Commission
- The Ministry of Foreign Affairs and Foreign Trade
- Ministry of Industry and International Business

- The Coastal Zone Management Unit
- Corporate Affairs & Intellectual Property Office
- Edutech
- The Barbados Fire Service
- Government Information Service

- The Ministry of labour

- Land Tax Department
- National Conservation Commission
- National Insurance Scheme
- Parliament of Barbados
- Ministry of Tourism

- National Library Service
- National HIV/AIDS Commission
- The Barbados Postal Service
- Sewerage and Solid Waste project Unit, Ministry of Health

Provision of Connectivity within the Public Service

c.   Currently the internal (intra-agency) technical infrastructure across government is highly fragmented with disparate systems, data sources and data models. Information must be shared across multiple agencies and constituents (inter-agency interoperability). It is planned during the next financial year to prepare a proposal for the implementation of an infrastructure which would facilitate the delivery of government services and access to government information. Security on the current infrastructure is also of some concern. An IT security diagnostic review will be carried out during the coming year.

Data Entry Services

d.   In addition to the keying of in-house data, the DPD's data entry staff key life certificates for pensioners and the monthly payroll for departments not currently on-line to the Smartstream project. Data entry services are also provided to other departments on request. During the last financial year, data entry services were provided to the National Disability Unit, Personnel Administration Division, the Ministry of Public Works and Transport, the Barbados Drug Service, the Barbados Vocational Training Board and the Inland Revenue Department (keying of income tax returns).

Auditing of Computer Assets

e.   A service-wide audit of all government software and hardware assets will be started shortly. The audit will ensure proper budgeting and government's compliance with the terms of the current Microsoft Corporation Licensing Agreement. An asset management system has been developed to catalogue all of government's computer hardware and software assets. Proper use of this system should result in a reduction of duplication with government agencies and allow for the planning of hardware replacement. The DPD will work in collaboration with the Treasury Department since the database for the computer assets will form a part of government's overall asset management programme. The audit exercise is scheduled to start early in the next financial year.

Development of IT Strategic Plans

f.   One of the objectives of this effort is to ensure that adequate planning is carried out for information technology needs within the public service. The DPD will be visiting each ministry with a view to identifying those business processes which can be enabled through the use of information technology. All ministries will be encouraged to develop ICT strategic plans and the DPD will provide assistance as needed.

Information Technology Standards Development

g.   The DPD has developed an Internet Policy and is working with the Office of the Attorney General in developing an IT Security Policy. A Systems development methodology will be developed for use throughout the public service. In addition, various standards pertaining to information technology will be developed on an ongoing basis. The Internet Policy seeks to give guidance to departments seeking to make use of the Internet. These standards encompass government's use of the Internet from two perspectives: -

- The publishing of governmental information on the Internet; and

- The use of the Internet by public officers;

Product Licensing

h.   The DPD is in the second year of managing the Microsoft Software Licensing Agreement, which is funded by the Ministry of Finance. The Ministry of Finance has requested that licenses be acquired for anti-virus and AutoCAD software. It is hoped that these licenses will be available in the next financial year.

Help Desk Facilitation

i.   The Department's help desk currently responds to several requests for assistance. Below are some of the areas in which assistance was provided:

- Web Design;
- Hardware and Software problems;

- Reviewing of the Counter Management System at the Post Office;

- Reviewing of the System at Inland Revenue;

- Part of Security Team led by Ministry of Home Affairs;

- Reviewing of the System at Erdiston College.

The Help Desk facility is to be expanded to allow for coordinating support and incident reporting on all IT matters processed by the department.

Computer Maintenance

j.   The department runs a preventative maintenance programme on computers and printers throughout the Public Service. The programme will be expanded to cover other aspects of minor maintenance. To this end two officers are currently being trained in Advanced Computer Maintenance at the Samuel Jackman Prescod Polytechnic.

Network Setup and Maintenance

k.   The department responds to requests for the maintenance and setup of computer networks. During the last financial year, networks were setup and/or maintained at the Ministry of Commerce, the National Disability Unit, the Town and Country Planning Department, and the Fisheries and Cooperatives Division.

Information Systems Development

l.   Systems will continue to be developed and maintained. The DPD currently responds to a number of requests for computer systems. The Voter Registration System for the Electoral and Boundaries Commission was upgraded and used for the General Elections held in May 2003. The Motor Vehicle and Drivers' Licensing systems were

upgraded so that the receipts and licence discs could be printed. A Registry System and a Tax Records System (TD5) developed by Data Processing Department are now being deployed in several government agencies. Other agencies for which systems are being developed include:

- The Children's Development Centre;
- Urban Development Commission;
- Ministry of Commerce;
- Department of Commerce and Consumer Affairs;
- National Disability Unit;
- National Conservation Commission;
- Ministry of Labour;
- National Employment Bureau;
- Ministry of Tourism;
- Community Legal Services;
- Coroner's Court;
- Welfare Department;
- Barbados Fire Service;
- Fisheries Department;
- Ministry of International Transport.

To avoid duplication, departments have been circularized to ensure that they inform the DPD of proposed software development.

Conducting of Information Technology Training Courses

m.   The department continues to work with the Training Administration Division to ensure that the goal of having every public officer trained in Information Technology

is attained. During the 2003 financial year, seven (7) training courses in the use of the Microsoft Office suite were conducted and eighty-two (82) persons trained.

Establishing of Partnerships with the Private Sector

n.   The DPD has found the private sector to be valuable partners and will continue to explore models and develop guidelines for further cooperation. Various seminars were hosted by the department and facilitated by the private sector. Among these were 'Server Technology Simplified', 'Wireless Technology', 'Security' and 'Smart Card Technology'.

Coordination of the Single Card Initiative Programme

o.   When the Drivers' Licensing and National Registration Systems were developed by this department, it was envisaged that eventually one card would serve as a national identification and drivers' license. The Ministry of Public Works now wants to move from the current book to a plastic card drivers' license. In addition, the Electoral and Boundaries Commission is about to reissue the identification cards. A card is also being considered for use for inter-regional travel as part of the CSME initiative.

A single card therefore seems appropriate for immigration and licensing purposes and for national identification. The use of this card would of course over time be extended to cover other agencies e.g. the National Insurance Department. The DPD plans to provide the technical expertise to the relevant agencies should the use of this 'single card' be approved. A concept Paper on the Single-Card Initiative has been submitted to the Ministry of Finance for comments.

XXI. Ministry of Commerce Consumer Affairs and Business Development

The Ministry of Commerce Consumer Affairs and Business Development is undertaking a number of initiatives that will assist in creating an enabling environment for E-government. Those initiatives are the passing of the Electronic Transaction Act and the drafting of the Data Protection Act and the Computer Misuse Act.

The Electronic Transactions Act

The Electronic Transactions Act was prepared following consultations involving the Ministry of Commerce, Consumer Affairs and Business Development, stakeholders from the public and private sectors, and consultants who undertook the study on the facilitation of electronic commerce in Barbados. The Act makes provision for:

a. The establishment of a legal environment for the conduct of electronic commerce;

b. The processing of electronic transactions; and

c. The use and adoption of electronic communication as an alternative means of transacting business.

Since the enactment of this legislation there are plans to amend certain sections of the Act. In addition, regulations giving effect to this Act are currently being drafted.

Data Protection and Computer Misuse Act

The Ministry of Commerce, Consumer Affairs and Business Development is currently drafting the Data Protection Act and the Computer Misuse Act. The purpose of the Data Protection Act is to:

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a. To protect the privacy of individuals; and

b. To regulate the processing of information relating to individuals and the obtaining, holding, use or disclosure of such information

The Computer Misuse Act makes provision for the protection of computer systems and information contained in those systems from unauthorized access by individuals, or from abuse by individuals with authorized access and for related matters.

National ICT Strategic Plan

The Ministry of Commerce Consumer Affairs and Business Development is also responsible for the development of a National ICT Strategic Plan for Barbados. This plan is being developed to guide and promote the development of ICT in Barbados. A Consultant has been selected to prepare the strategy for Barbados.

National Advisory Committee on ICT

A National Advisory Committee on Information and Communication Technologies chaired by Mr. Philip Goddard, the Prime Minister's Special Envoy on ICT is also under the responsibility of the Ministry of Commerce and Consumer Affairs. This committee consists of members from Government, private sector, non-governmental organisations and the union. The mandate of the committee is to: -

a. Advise the Minister on ICT policies;

b. Advise the Minister on the preparation and implementation of the ICT plan for Barbados;

c. Promoting the application and use of ICTs in Barbados; and

d. Encourage the development of a culture of innovation in the business community and facilitating cooperation among the public sector, the private sector, labour and civil society in the development and use of ICTs.

APPENDIX II

Data on ICT

I. E-Readiness Survey

A survey to determine Barbados' state of e-readiness was conducted in 2003 by Systems Consulting for the National Council for Science and Technology. This survey revealed the following information:

a. Internet usage in Barbados, both within the home and the workplace, is on the increase;

b. There is still evidence of the "Digital Divide" as Internet usage has still not yet permeated to all segments of the Barbadian society;

c. Dial-up via a 56k modem is the most common type of Internet connection;

d. The majority of Internet users, both commercial and residential are generally satisfied with the reliability of their connections. However, the respondents expressed discontent with the Internet rates currently being charged by the ISPs in Barbados;

e. Government received an average score for its efforts at making E-readiness a national priority. Making the Internet accessible was the most highly rated of the components. Conversely, dissatisfaction was highest with the lack of progress made in automating governmental processes;

f. When asked about what online activities they would engage in if they were made available, the opportunity to register online for jobs, registering online for courses/seminars, requesting Government information online and making appointments with Government officials appealed most to the respondents;

g. Government needs to ensure that its websites are adequately publicized and marketed; and

h. Interviewees cited the need for an overall IT strategy to guide the process.

II. Barbados' Information Technology Indicators Study

This study conducted in 2004 by Systems Consulting for the National Council for Science and Technology builds on the 2003 E-Readiness Survey by gathering more detailed information at the household level on several key Information Technology indicators. The objectives of the study were to gather information on: -

- ☐ Citizen ownership and access to information technology based on income, education and other demographic factors
- ☐ Levels of information literacy and proficiency
- ☐ The degree of integration and proficiency
- ☐ Citizens feelings about privacy, security and safety on the Internet

The major findings of this survey are: -

a. Computer usage in Barbados is relatively high, with about six out of every ten (56.7%) individuals surveyed being users of this technology but that the "digital divide" still exist, with the average computer-savvy Barbadian being young, educated and coming from more affluent households;

b. Approximately 70% of Barbadian users have computer access at home, while 45.8% use the computer in their workplace;

c. On average, users spend about 19 hours a week on the computer, with one third (35.4%) spending 7 hours a week or less and about one fifth of users spending more than 40 hours a week. Users particularly from households with incomes below $2,500 (63.6%) and the unemployed sector (78.6%) indicate dissatisfaction with their current usage times and a desire to spend more time using the computer;

d. Among computer users, cost (61.1%) is the primary barrier to home computer ownership while a lack of access prohibits about one-third (32.9%) of non-users from becoming computer-savvy;

e. Close to 90% of computer users also have Internet access. The main locations of online access of Internet users are at home (68.9%) or at work (33.9%);

f. The vast majority (98.4%) of those who use the Internet at home do so via a "dial-up 56k" connection. Internet users spend on average 9.7 hours/week online with three quarters (77.2%) spending 14 hours or less per week in cyberspace;

g. Although the level of Internet usage is high, the overall level of E-commerce activity at the household level is relatively low with Barbadian still hesitant about online selling and buying. Those who have yet to engage in online shopping cite a lack of interest/need (36.7%) as there main reason. Not owning a credit card (29.4%) as well as concerns about online security/privacy (17.5%) are also barriers preventing the growth of E-commercial activity among Barbadian Internet users;

h. Cyberspace security and privacy when conducting financial transactions remain a concern for the majority of Barbadians. Approximately 57% of respondents, notable females and computer non-users, display a lack of confidence, while an additional 18.6%, particularly elderly citizens over the age of 50 years are still unsure about the reliability of the Internet in this area;

i. Even with the negative perceptions about the computer and the Internet, Barbadians, generally believe that computers and the Internet have had a positive impact on their personal lives. Specifically, two thirds (67.5%) agree that the computer's impact on their lives has been positive;

j. In response to access to ICTs (Television, Cellular phone, Subscription TV, PDA/Handheld computer, Pager) it was revealed that: -

- □ Television ownership (96.1%) is widespread across all of the demographic categories.

- □ Six in ten (61.2%) respondents, mainly students and the under 50-age group, own cellular phones

- □ About half (49.2%) of the respondent base, particular households with income totalling in excess of $2,500 are customers of a TV subscription service like MCTV, Direct or Satellite TV

- □ PDAs (5.3%) and Pagers (3.5%) are owned by significantly smaller segments of the population

III.   The UN Global E-government Survey

The United Nations conducted a global survey on E-government in 2003. The survey assessed 191 countries according to a composite index of E-government readiness based on website assessment, telecommunication infrastructure and human resource endowment. The objectives of the survey were to:

a. Present a snapshot of the state of comparative E-government readiness of the countries of the world;

b. Provide an appraisal of the use of E-government as a tool in the delivery of services to the public in its capacity as consumer of such services;

c. Provide a comparative assessment of the willingness and ability of governments to involve the public in e-participation; and

d. Provide a benchmarking tool for monitoring the progress of countries as they move towards higher levels of digital public service delivery in the future.

In terms of major findings, the survey identified some factors critical to the successful implementation of E-government programmes. Finance was identified as a critical element where it was stated that financial means are an important determinant of successful E-government initiatives. It was also revealed that most developed countries had the necessary financial means to invest in developing and expanding E-government service delivery. Another critical element that was identified was the need for a well-thought-out strategy. This factor was identified as a major contributing factor in successful E-government programmes in most of the North American and European countries. The United States with an index of 0.927 was identified as the world leader followed by Sweden 0.840. The index for Barbados was 0.413, which is above the world average of 0.402. The overall ranking of Barbados was 76 out of 173 countries in the world

IV. ITU World Telecommunication Indicators 2003

The Subcommittee reviewed data on Barbados that was compiled by the International Telecommunication Union (ITU). This data was obtained from the telecommunication authorities and operating companies in the countries under review. Additional data was supplemented by reviewing annual reports and statistical yearbooks of telecommunication ministries, regulators, operators and industry associations. The telecommunication indicators for the following periods were analysed:

Estimated Number of Internet Users Inhabitants
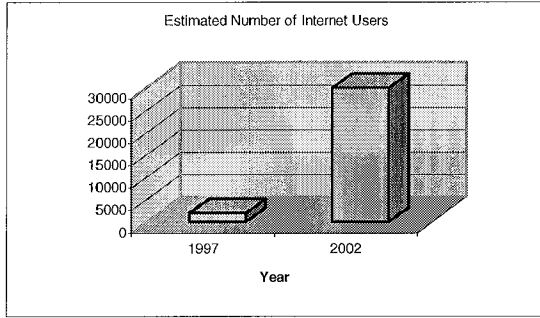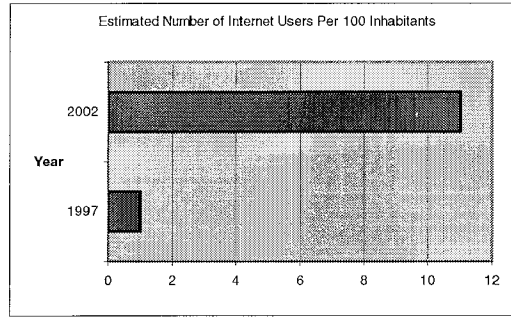
Estimated Number of Internet Users Per 100

| Year	Estimated number of Internet users	Year	Estimated number of Internet users Per 100 Inhabitants

1997	2000
2002	30,000

Table 2

1997	1
2002	11

Table 3

Chart 2

Chart 3

Cellular Mobile Subscribers (Total)

Year	Cellular Mobile Subscribers (Total)
1997	8013
2002	53100

Table 4

Cellular Mobile Subscribers Per 100 Inhabitants

Year	Cellular mobile subscribers per 100 inhabitants
1997	3
2002	20

Table 5
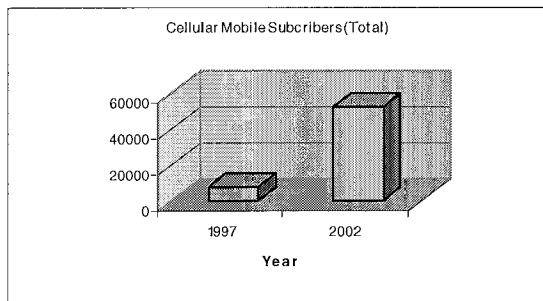
Chart 4
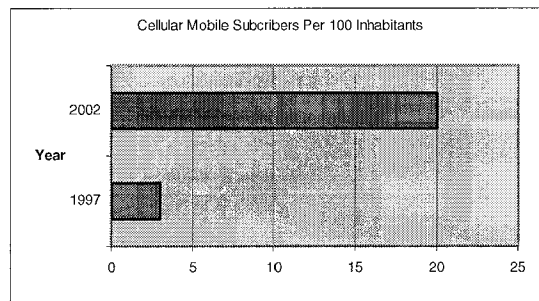
Chart 5

Total Telephone Subscribers

Total Telephone Subscribers Per 100 Inhabitants

Ministry of the Civil Service

Year	Total Telephone Subscribers
1997	108500
2002	133000

Table 6

Year	Total telephone subscribers per 100 inhabitants
1997	41
2002	50

Table 7
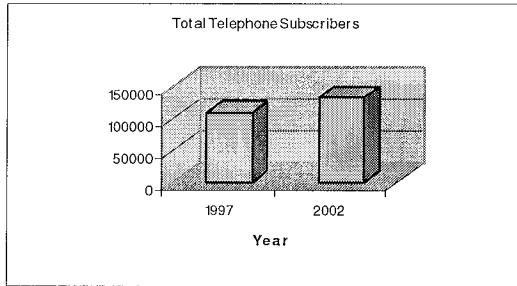
Chart 6
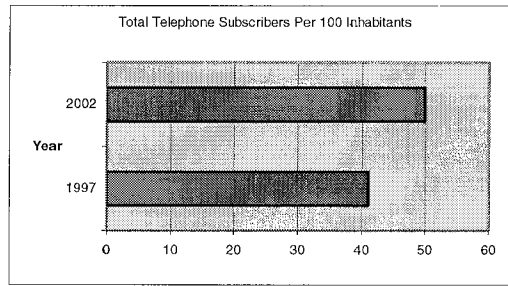
Chart 7

Personal Computers

Personal Computers Per 100 Inhabitants

Year	Personal Computers
1997	18000
2002	28000

Table 8

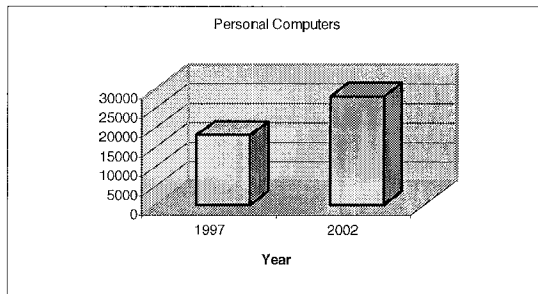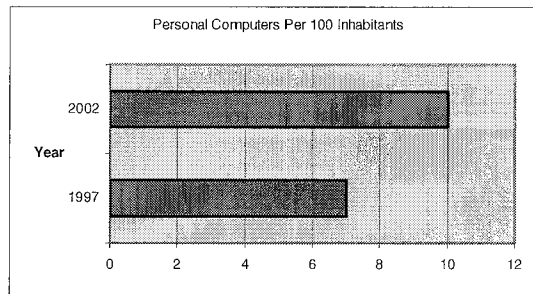| Year	Personal Computers Per 100 Inhabitants
1997	7
2002	10

Table 9

Chart 8

Chart 9

The data shows that even though there was growth in all indicators reviewed over the six-year period, the digital divide was very evident. All indicators with the exception of 'Total

90

Telephone Subscribers' have low population ratios e.g. for 'Personal Computers' the ratio was 10 out of 100 inhabitants, while the ratio for **'Total Telephone Subscribers '** was 50 out of 100 inhabitants.

V.   2000 Population and Housing Census

The Barbados Statistical Service conducted a population and housing census in 2000. The Population Census highlighted the following data as it relates to ICT in Barbados:

Item	No. Of Dwelling Units Having Listed Item	Percentage of Dwelling Units
Cellular Telephone	11,018	%13.27
Other Telephone – Land Lines	68,536	%82.55
Computers	17,937	%21.60
Internet Access	11,828	%14.25
Television	77,095	%92.8
Satellite T.V. System	18,433	%22.2

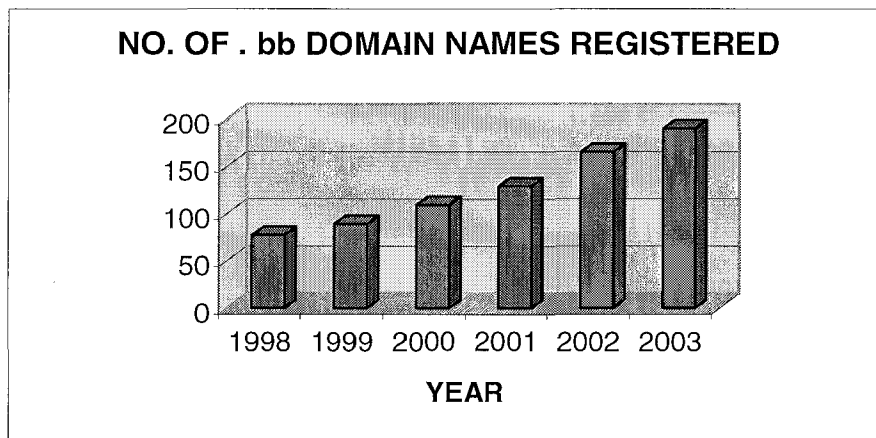**Total Occupied Dwelling Units   83,026**

The data shows that in 2000, approx. 83% of dwelling units had at least a telephone and 21% had computers. The percentage of dwelling units with a cellular phone was 13% and those with Internet access was 14%.   Dwelling units with televisions recorded the greatest percentage 92.8% with those having a satellite TV system being 22.2%.

VI.   Growth in Domain Names

Cable and Wireless currently has sole responsibility for administering the domain names with the designation .bb. Over a six-year period the number of domain names registered was as follows:

Year	No. Registered .bb Domain Names
1998	77
1999	89
2000	109
2001	129
2002	165
2003	190

The chart and table above show a gradual increase in domain names registered from 77 in 1998 to **190** in 2003. See chart below: -

NO. OF . bb DOMAIN NAMES REGISTERED

GLOSSARY

ICT (Information and Communication Technology)
The application of modern communications and computing technologies to the creation, management and use of information

Information System
A system consisting of hardware, software, network and recording media, that is installed in an organisation for business processing

Information Technology
Any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information.

Metadata
Metadata is "about data," or, more specifically, "information about data."

Bandwidth
Bandwidth is the information-carrying capacity of a communication channel. The channel may be analog or digital.

WAN (Wide Area Network)
A WAN is generally an extension of an internal network into the wide area using private circuits. WANs links geographically dispersed offices.

LAN (Local Area Network)
A LAN is a shared communication system to which many computers are attached. A LAN, as its name implies, is limited to a local area.

Internet
The Internet is a global web of interconnected computer networks-a "network of networks."

Intranet
An *intranet* is an internal network that implements Internet and Web technologies such as Web servers and Web browsers that use HTTP and HTML

Extranet
An *extranet* is an intranet that has been extended outside the company to a business partner, with transmissions going over the Internet or across private lines.

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VoIP (Voice-over-IP)

Voice-over-IP or IP telephony, is the real-time delivery of voice between two or more parties, across networks using the Internet protocols.

Broadband

Broadband communications is usually considered to be any technology with transmission rates above the fastest speed available over a telephone line.

PABX

A PABX is a telephone switch located on the premises of a company. It allows telephone users to set up circuit-switched voice calls among other users in the same company or to set up calls across the public-switched telephone network.

Hacker

Computer users who make unauthorised access to computer systems owned by other individuals or organisations.

Data Warehouse

A separate database dedicated to decision support. Data is transferred from transaction processing systems and integrated. It is accessed to provide management information through report writers, query tools, data access and retrieval tools and enterprise information systems

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