



# A Five-Year Strategic Information Technology Plan for Jamaica

Government of Jamaica  
Revised MARCH 2002

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## ACKNOWLEDGMENTS

Webster's dictionary describes a Plan as "a scheme or method of achieving something." It is a "drawing to show proportion and relationship to parts." Strategy is the skillful planning and managing of an activity.

This Draft document ... "A Five Year Strategic Information Technology Plan for Jamaica," endeavors to provide a scheme for achieving social and economic progress by utilizing Information and Communications Technology (ICT) as a developmental vehicle. It strives to include all sectors of the economy in a skillfully designed plan. It represents the unified effort by representatives of two countries ... developed and developing, welded in one effort and for one purpose.

The preparation of this Strategic Plan owes much to the voluntary and significant assistance of the General Services Administration of the Federal Government of the United States of America. It is a timely and invaluable contribution to the developmental efforts of Jamaica. The supporting efforts of the United States Embassy in Jamaica in making this possible, must also be recognized.

The forging of these links and the spearheading of this project have been a notable initiative by the Ministry of Industry, Commerce and Technology in Jamaica. It represents a model of cooperation and effort between the Ministry and the Embassy of Jamaica in Washington, D.C.

Due credit must be given to Jamaica's Information Technology Advisory Council, whose earlier and significant work on a strategy document has been incorporated into this plan to make a homogenous whole.

Appreciation must also be expressed to JAMPRO, Jamaica's investment agency, for its very worthy contribution in the effort to make this truly a "strategic plan." The various Government ministries who made sectoral contributions to this document must also be commended for their spirit of cooperation. Finally, all the individuals in both the public and private sectors who gave invaluable comments during

the preparation of the draft must also be acknowledged for their efforts.

## **Message by the Rt. Hon. P.J. Patterson, Prime Minister of Jamaica, P.C., Q.C.**

### **WORKING IN THE CYBER WORLD**

Digital technology has changed the world, and the way governments, countries and corporate entities do business in the 21st century. In this cyber world, computers and telecommunications, and the use of the Internet have revolutionized communication systems, access to business information and the decision-making process.

As we begin a new century, and come to terms with the Digital Age, Jamaica has the opportunity to embrace the new concept of a "knowledge-based society" for social and economic development. We must, therefore, seize the initiative and build on the foundation that we have already laid, to establish new partnerships, develop new industries, to become more competitive in this new age.

We have already begun the process by taking a three-pronged approach to include: human resource development, the establishment of infrastructure and the enactment of new legislation and policies to create balance, stability and growth in the Information Technology Sector.

We have also signed an historic Telecommunications Heads of Agreement with Cable and Wireless, and we are in the process of establishing a new Telecommunications Act. The liberalization of the telecommunications sector will help us to nurture a culture which can stimulate creativity and take full advantage of Information Technology.

I welcome this timely initiative, which the Ministry of Commerce and Technology, the Information Technology Advisory Council and the members of the Cabinet Sub-Committee on Technology are pursuing, as well as the private efforts to provide the appropriate environment to empower our people to move the country into the forefront of this cyber revolution.

**The Rt. Hon. P. J. Patterson, P.C., Q.C**  
**Prime Minister of Jamaica**

**Message from Ministers Maxine Henry-Wilson, Phillip Paulwell and Burchell Whiteman— Cabinet Sub-Committee for Information Technology.**

Jamaica stands at the threshold of a golden opportunity. We can either act decisively and embrace it, or wait and be left behind. A global technological revolution is taking place. Advances in telecommunications, computer chip design and the explosive growth of the Internet are fueling this revolution, creating a world without borders. It is already being projected that at current rates of growth, the electronic economy will overtake the industrial economy by 2003. In short, the "information age" is here, and electronic networks have altered the economies of scale so that anyone, anywhere in the world can have instant access to information. Now for the first time, developing countries can compete in the global marketplace on an equal footing with their more developed partners.

With its proximity to the U.S., the country that is leading this information revolution, Jamaica is well positioned to take advantage of these developments. We must do this by not only expanding our ICT export sector, but also by embracing information technology in our society as a tool to promote economic development and improve the lives of every Jamaican. Indeed, the Government is firmly committed to the exponential growth of information technology in Jamaica. We see this as a national priority. It is for this reason that this sector has been identified as a priority for investment in the National Industrial Policy and a Ministry of Technology has been created.

Jamaica must aggressively pursue the expansion of the ICT sector, or this window of opportunity will be lost. This can only be done logically and systematically in the context of a National Plan, which will serve as a blueprint for the future. This Strategic Plan is such a blueprint, and its success will depend on the involvement of all segments of Jamaican society - the public and private sectors, academic institutions, trade associations, NGOS, the public, as well as Jamaicans overseas.

We have already begun to make progress: promoting the widespread use of computers in schools through initiatives such as "Jamaica 2000"; the creation of the Caribbean Institute of Technology to train increasing numbers of computer specialists; the construction of an informatics park in Portmore; and seeking to promote increased IT investment by leading U.S. firms such as Microsoft, ORACLE, EDS and Lucent Technologies. However much more needs to be done. This Strategic Plan will keep us on course and bring all constituencies in Jamaican society together cooperatively in pursuit of a common goal.

We would like to commend the Jamaica-U.S. Working Group for their commitment to this process. Most particularly, we want to express profound appreciation to the Office of Intergovernmental Solutions of the U.S. General Services Administration for the invaluable assistance given to Jamaica in the preparation of this Strategic Plan. We must also congratulate the Ministry of Commerce and Technology on its initiative in forging this important linkage, and our Embassy in Washington, for working closely with the Ministry in this effort. Finally, I want to thank the U.S. Embassy in Kingston for its support. This is yet another example of the spirit of cooperation and the partnership that currently exists between Jamaica and the United States.

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Senator, the Honorable Maxine Henry Wilson, MP Minister Without Portfolio, Office of the Prime Minister	Date
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The Honorable Phillip Paulwell, MP Minister of Industry, Commerce & Technology	Date
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The Honorable Burchell Whiteman, MP Minister of Education & Culture	Date
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# **EXECUTIVE SUMMARY**

## **INFORMATION TECHNOLOGY VISION**

Technology has transformed the traditional concept of value from that which is tangible, to that which is intangible. Information and knowledge are the currency of today's economy. Rapid advances in telecommunications technology, giving rise to the "virtual office" mean that firms can outsource services anywhere in the world, as distances and time differences are now meaningless. It is estimated that there are more than 400 million PCs worldwide. In the U.S. alone, over 61 percent of businesses have Internet access, and almost 50% of households. Furthermore, while the information technology sector in the U.S. accounts for only 8 percent of employment, it accounts for a third of economic growth. The U.S. Government is currently spending 4% of GDP on information technology, compared to 3% in Britain and 2% in Japan. Analysts predict that revenues from e-commerce will have grown exponentially from less than US\$100 billion in 1996 to US\$1,200 billion by 2002. As a result of these developments, many developing countries are working assiduously to position themselves as leading providers of a wide range of ICT services.

In recognition of this new environment, the Jamaican Government has made the integration of information technology into the Jamaican economy a high priority and a strategic imperative. Jamaica must become the center for ICT activities and investment in the Caribbean. With our proximity to the United States and other advantages such as language and relatively low labour costs, we are well placed to attract ICT firms and specialists, and to compete with other developing countries for market share of the global ICT business. However, in order to realize this vision, we must be proactive. While resources are limited, priorities can be established which can build the foundation for a rational expansion of the ICT sector into higher value-added services.

The signing of the historic "Heads of Agreement" between the Government and Cable & Wireless Jamaica Limited, in

September 1999 and the Telecommunications Bill passed by Parliament in February 2000, represent a significant step in creating an attractive environment for ICT investment. The Agreement calls for the liberalization of the telecommunications sector in three phases, over three years, with a focus on the creation of the necessary infrastructure for universal access, and “non-discrimination” in service delivery. The first two phases, the entrance of new players for the provision of cellular service and the opening up of the domestic telecommunications market, have already been completed. Two companies, Digicel and Centennial Digital Jamaica are now operating cellular services in Jamaica. The cellular market is estimated to be 1.2 million customers. As of the end of 2001, Cable and Wireless had 350,000 customers and Digicel 150,000. Centennial, which began operations in November 2001, is aiming for 47,000 in its first year of operations. The final phase of liberalization, opening up international service, must be completed by 2003. So far, liberalization has brought not only new firms into the market (over 60 licences have been issued for a variety of services), but prices for wireless telephone services and Internet service have been significantly reduced.

In the final analysis, the drive to transform Jamaica into a “knowledge-based society” will necessitate inter-governmental as well as private sector cooperation, commitment and partnership in the implementation of our Strategic Information Technology Plan.

## **THE STRATEGIC PLAN**

In order to achieve these objectives, expansion of the sector must be done in a logical and systematic manner, which will serve as a proper foundation for future development. The National Strategic Plan seeks to lay such a foundation—basing its success on the involvement of all segments of Jamaican society—the public and private sectors, academia, NGO’s, trade unions, etc. The plan analyses the capabilities and skills that currently exist in the country and offers policies, methodological strategies, projects and programmes to achieve the objectives.

Attaining the objective of a strong and effective ICT sector cannot be left only to market forces. There is strong recognition of the critical role of the private sector. Government however, must intervene because of the fragmented nature of the sector and the urgency to obtain its own niche in an already intensely competitive marketplace. Government has therefore:

**a) Established a Central Information Technology Office (CITO), also known as the Office of Partnerships.**

CITO is a Limited Liability Company, reporting directly to the Minister of Commerce and Technology, and through him to the Sub-Committee of Cabinet responsible for ICT. The creation of CITO as an entity separate and apart from the Government, with its own Board of Directors and administrative structure, provides the flexibility and independence required to effectively perform its role.

CITO is responsible for policy analysis and development, rather than policy implementation. The Office therefore monitors worldwide market trends and develops strategies, training policies and action plans to ensure the country's e-readiness in the emerging environment. The CITO is accordingly the main advisor to Government in areas such as E-commerce, the Internet, regulatory frameworks and E-Government, given its network of resources locally and abroad. Its position also allows it to play the leading role in coordinating ICT with regional and other international partners, and in sourcing grants and loans from appropriate sources.

**b) Established links between the CITO and Ministries, which are beginning to develop tactical plans and which will serve as the focal point for implementation of the plan—with specific emphasis being placed on the education sector as the spring-board for this leap forward.**

Cabinet has authorized CITO to work with Ministries to maintain cost-effectiveness and maximize structural & operational efficiencies with respect to IT plans. To ensure this goal, all ministries of government must submit their IT budgets to the Office for its approval.

- c) The goal of allocating some 2-4% of the budget for the ICT sector.

Given the adaptability and creativity of Jamaicans, the Government has begun to facilitate these talents by including ICT in the Public Sector Modernization Programme (PSMP) and encouraging citizens and policy makers to make the leap into cyberspace. **The PSMP is now about to enter Phase II. In Phase I, the operations of several major government revenue-generating agencies have been fully computerized including the Customs Department, the Office of the Registrar of Companies and the Registrar-General's Office.**

With changes in the technology, there are now opportunities for Jamaica to provide a broader range of ICT services, and a number of initiatives are already underway to support the growth of the sector. These include: a) the establishment of the Caribbean Institute of Technology in Montego Bay, which has already produced its first graduating classes; b) ongoing efforts to install computer labs in schools and train teachers in computer applications for the classroom, through the "Jamaica 2000" and "Ed Tech 20/20" programmes; c) the establishment of the Information Technology Advisory Council, the E-Business Advisory Committee and the Cabinet Sub-Committee for Information Technology; d) the phased liberalization of the telecommunications sector.

The aim is to create several thousand jobs in the industry over the next few years, and increase the sector's contribution to GDP to J\$10 billion (US\$250 million) within five years. Accordingly, the Strategic Plan outlines a series of short-term and long-term goals to facilitate the transition to an information technology-based economy.

The strategic goals and actions to support the strategies outlined above are laid out in great detail within the body of the plan and ensure full national participation. Mindful of the dynamism of the sector, the plan requires at least an annual review to ensure the fine-tuning and relevance of its programmes, to take advantage of changes in the technology.

The plan comes to terms with the realization that the technology is a ready tool to enhance the rapid development of all sectors in the economy and therefore it is truly national in its scope. High on its agenda, is the massive provision of jobs—not only in the technology industry but also in all sectors that utilize the technology

The establishment of the Central Information Office and the coordinating role outlined in its mandate is central to the success of the Strategic Plan itself. This will eliminate the waste and loss of cost-effectiveness and efficiency that comes from frequent overlapping of activities. It is an ambitious plan, which challenges the public and private sectors—the Jamaican people on a whole, to determine their economic fate in the 21st Century.

### **Short-term Goals**

In the first twelve months of the Plan's implementation, the Government must:

- Clearly articulate the information technology strategic vision for Jamaica;
- Immediately commission an assessment of the current status of ICT use in both the public and private sectors;
- Allocate 2-4 percent of the budget to jumpstart the industry;
- Accelerate the installation of computer labs in educational institutions;
- Facilitate private sector initiatives to dramatically increase public access to the internet;
- Utilize JAMPRO to promote investment and facilitate partnerships in the IT industry;
- Encourage individual Ministries to develop Tactical Plans to complement the Strategic Plan;

- Create a Chief Information Officer (ICT) position within each Ministry; and most importantly,
- Establish an Information Technology Authority reporting directly to the Minister of Industry, Commerce and Technology and through him, to the Cabinet's Sub-Committee for ICT. The Authority will serve as the focal point for implementing the Strategic Plan. It will establish linkages with the private sector (through the Information Technology Advisory Council and other agencies), government departments, trade associations and academic institutions.

Once these initiatives are well underway, a public awareness programme will be needed to create a strong demand for the types of services that ICT can provide, and foster an understanding of how a vibrant ICT sector can significantly increase economic growth in Jamaica. Concurrently, the following actions also will be required:

- The restructuring of the educational system via the development of a "Marshall Plan" to provide more information technology-related training and re-training at all levels linked to the needs of industry.
- The establishment of a transparent regulatory framework consistent with and adaptable to the emerging electronic business environment, covering areas such as privacy, protection of intellectual property and digital signatures;
- The creation of a system of investment incentives to spread ICT activities geographically across Jamaica;
- The development of the appropriate infrastructure to facilitate the delivery of government services, as well as access to government information.

### **Achievements**

**Within the past year, the following short-term goals have been achieved:**

- a) **An Information Technology Authority i.e. the Central Information Technology Office (CITO) has been established to coordinate implementation of the Plan, advise on policy**

**issues and create domestic and international partnerships with the public and private sectors.**

- b) An E-readiness assessment for Jamaica was commissioned by CITO via a grant from the infoDev program at the World Bank. It has now been completed. CITO has recommended that a salary and skills survey for the ICT sector be also conducted.**
- c) The Ministry of Education and the Ministry of Agriculture have begun the process of preparing their strategic plans for the use of ICT in education and agriculture respectively.**
- d) Most Government Ministries have appointed Chief Information Officers to be in charge of ICT matters.**
- e) Public Access to the Internet is increasing. The E-readiness Assessment for Jamaica<sup>1</sup> estimates that about 47% of the population based on survey results as a whole currently has access to the Internet. Grace Kennedy, a major private sector firm in Jamaica, in partnership with Western Union has installed computer kiosks with Internet Access in all the parish libraries. Cable and Wireless has also agreed to establish a number of Internet Access Points across the island. In addition, the Jamaica Sustainable Development Networking Program of the UNDP has established 6 community telecenters -- one of which is in Kingston. CITO is examining the feasibility of utilizing the existing computer labs in schools as access points for the public as well.**
- f) Over two-thirds of all schools are now equipped with computers, however access by all students is still limited.**

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<sup>1</sup> Allied Research Associates Ltd., *Jamaica's E-readiness Assessment*, January 2002, p. 24.

- g) JAMPRO has attracted a number of firms engaged in "high-end" ICT activities. These include: Advanced Integrated Services (AIS), which has developed the first online health adjudication system in the world; Multivisual, doing software design for BMW; and Overdrive Jamaica Ltd., a web-based publishing company.**

### **Pilot Projects**

A series of high profile pilot projects must be undertaken which can demonstrate the benefits of ICT in the short-term. These projects should further the government's goal of universal access to the technology and emphasize public access to information. Some of these projects should lay the foundation for the development of a national information infrastructure and will include for example, the use of Internet Access Points to provide a wide range of community services, such as on-line health care, weather and disaster preparedness bulletins, the marketing of products and agricultural extension services. Expansion of this infrastructure would also facilitate greater public access to government services, as well as communication with government agencies, the House of Parliament and parliamentarians, thereby enhancing the democratic process.

### **Legislation**

Government must also ensure as a priority, that legislation covering areas such as digital signatures, privacy, security and protection of intellectual property is put in place to facilitate the growth and development of Information Technology. In addition, existing laws that may hinder the growth of electronic commerce, should be reviewed and revised to reflect the new technology.

**Aside from the new Telecommunications Act, several new pieces of legislation important for the development of the ICT sector have either been enacted or introduced in parliament. These include the Intellectual Property Rights bill, the Access to Information bill and several amendments to the Copyright Act. E-commerce legislation has not yet been formulated however.**

## Education

The Ministry of Education and Culture, together with public and private educational institutions, will carry out programmes to ensure the provision for at least one computer lab in every school; and expand the range of educational programmes in the area of ICT, with special emphasis on the training of trainers and linked modules of training leading to the first degree university level.

## Public Awareness

A public awareness programme will be launched, to educate the public and boost demand for the services that ICT can provide. This programme should heighten awareness about the country's direction, its investment in ICT and the benefits and opportunities to be utilized.

## **Long-term Goals**

Other strategies must also be implemented which have a longer time horizon.

- The creation of a Nationwide Public ICT Network which is competitively priced (within reach of the average Jamaican), utilizes multiple sources, and relies on the private sector;
- The provision of efficient government services to the public through the use of ICT;
- The use of ICT to increase international trade by: a) providing user-friendly electronic access to import/export information, market research reports, customs duties, information on international financial assistance; b) developing a system to standardize trade and transportation data; c) utilizing paperless trading. JAMPRO has already begun the process with the introduction of the Jamaica Trade Point Programme.
- The Government must promote the development of e-commerce by using the Internet to carry out basic Government functions such as procurement and financial transactions. The Government should also facilitate private sector initiatives to install the necessary telecommunications infrastructure to support e-commerce and e-business.

## **The Role of the Private Sector**

The private sector has an integral role to play in this transformation of the Jamaican economy. ICT is a market-driven industry, which has the potential to create a new wave of economic development. The Government must provide the appropriate environment to encourage private sector activities in ICT. As “facilitator,” the Government can eliminate legislative, regulatory and administrative barriers and establish a transparent legal framework for the sector. Then the private sector itself must take the lead. There are opportunities for the development of innovative e-commerce ventures, improvement of management systems, speedier decision-making, provision of on-the-job training for workers, and the creation of more jobs. The Government will work with the private sector to create the most favorable environment for participating in ICT initiatives that fall within the framework of the Strategic Information Technology Plan.

## **Review Process**

The Strategic Plan is a dynamic document and it is anticipated that it will be amended over time, with experience, advances in technology, availability of funding and unforeseen opportunities or barriers. It will therefore be reviewed at least once a year (March) in order to monitor progress in implementation according to prescribed benchmarks, access lessons learned and to determine the next steps.

## **STRATEGIC INFORMATION TECHNOLOGY VISION**

As a small, open economy, Jamaica is critically dependent on international trade. Exports and imports currently account for 21% and 46% of GDP respectively. The country's small size and the traditional reliance on production of a few primary products have been constraints to industrialization and economic development. The move to diversify the economy to include export-oriented services (and increasing tourism), as well as non-traditional exports such as apparel manufacturing has not yielded the economic development gains expected. Information technology and e-commerce can enable Jamaica to capture niche markets and compete effectively with larger, more developed economies to take full advantage of globalization and free trade. To compete, Jamaica must exploit technology in marketing its products and services, and utilize information technology to improve efficiency in both the public and private sectors, ultimately enhancing the quality of life for all citizens.

Jamaica must become the center for ICT activities and investment in the Caribbean. With our proximity and telecommunications links to the United States and other advantages such as language and relatively low labour costs, we are well placed to attract ICT firms and specialists and to compete with other developing countries for market share of the ICT business. Jamaica has already captured a small share of the growing Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) market in the U.S. through Mona informatics Limited, which currently has a contract with a major U.S. corporation, Boeing to produce engineering drawings. This demonstrates how a small company can market its expertise to a large firm to fill a market niche. Other firms are also operating in various high-end ICT activities such as web-based publishing. Other local companies should replicate such an approach as we work to diversify into more advanced ICT processes.

However, in order to realize this IT vision, we must be proactive. While resources are limited, priorities can be

established which can build the foundation for a rational expansion of the IT sector. The emphasis in this process must be on the private sector. Undoubtedly, the Government has an important role to play as "facilitator", by providing the enabling environment to attract increased investment in informatics and the development of e-commerce. It can do this by eliminating legislative, regulatory and administrative barriers, and by establishing a transparent legal framework for the sector. Nevertheless, the private sector must take the lead.

This Strategic Plan highlights these priorities by identifying the major objectives for the next five years. It begins with an assessment of the current situation in the IT sector in Jamaica, in examining the barriers to the further development of the sector. In order to realize our strategic "vision", a series of short and long-term goals are identified. It is expected that substantial progress will be made on the short-term goals (Phase I and Phase II items) by December 31, 2001.

As stated earlier, it is essential that with experience, advances in technology, availability of funding and unforeseen opportunities or barriers, the Plan be reviewed/amended once each year.

## **I. STATUS OF THE INFORMATION TECHNOLOGY INDUSTRY IN JAMAICA**

Traditionally, the IT industry (Informatics Sector) in Jamaica has been limited to data entry, software development, and computer assembly. The local industry is focused primarily on low value-added services for export, namely data entry and call centers. There are 96 companies and affiliated institutions in the sector, working in the following areas.

- Software Distributors And Dealers
- Professional Services (I.E. Consulting, Technical Support And Software Development)
- Computer Training Companies
- Internet Service Providers
- Export Service Providers Of:
  - Data Entry
  - Telemarketing
  - Geographic Information Systems
  - Customised Software Services
  - CAD/CAM

The export thrust can be further subdivided into the following categories:

- |                                |              |
|--------------------------------|--------------|
| • Customised software services | 16 companies |
| • Data entry                   | 12 companies |
| • Telemarketing                | 3 companies  |
| • Multimedia                   | 1 company    |
| • GIS/CAD/CAM                  | 2 companies  |
| • Consultants/Others           | 3 companies  |

The most advanced sub-sector of the industry and that having the greatest potential for export growth is the provision of information technology services (e.g. programming, networking). There is a fast developing local

market for customized software, particularly in the financial sector. The E-readiness Assessment points out that a Jamaica Software Developers Association has been established. Members are exporting mostly to the Caribbean region, although a few companies (Advanced Digital Services [insurance applications], Ultra Quest [bill payment administration systems] and IMEX Technologies [web design and applications]) are exporting to the U.S.

There are about 70 computer dealers supplying ICT hardware and software, accessories and supplies. These include companies such as Innovative Systems Limited, Computer electronics and Office Services Limited and Business Management Limited. In addition, ICT support services, repair and maintenance are easily available.<sup>2</sup>

The ICT sector has been identified by the government as a priority sector, and therefore a number of initiatives have been undertaken to promote expansion. These have built on the first major initiative, namely the establishment of Jamaica Digiport International in the early 1980s, providing high-speed links via satellite to North America and Europe.

- a. The enactment of a new Telecommunications Bill liberalizing the sector.
- b. An emphasis on ICT training with the establishment of the Caribbean Institute of Technology to train computer specialists and the expansion of the program to several of the technical high schools across the island. In addition, the CISCO/Heart Academy has begun operations, with 30 students enrolled in the Cisco Certified Network Associate program.
- c. "Jamaica 2000" - launched in 1992 by the Jamaica Computer Society Education Foundation (JSCEF) in partnership with the HEART Trust/NTA and the Private Sector, through Business Partners. The aim of the programme is to establish computer labs in all secondary schools, community and teachers' colleges

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<sup>2</sup> Jamaica's E-readiness Assessment, January 2002.

throughout the island. One hundred and seventy out of 250 high schools have been equipped so far.

- d. The Ed Tech 20/20 Technology in Education Project for primary schools, a public/private partnership, with funding from the Inter-American Development Bank.
- e. The establishment of an E-Business Advisory Committee under the chairmanship of the private sector. The committee has already established priorities for the promotion of E-Business i.e. developing framework legislation, infrastructure development, and community access and government applications.

Despite its immense potential and ideal locational advantages, the sector faces a number of hurdles that must be overcome in order to achieve significant growth. These are:

- a) A skills and capability gap –Internationally, there is projected to be a huge shortfall in the number of ICT workers and Jamaica is no exception. This has been identified for immediate attention and in fact, some progress is already being made. The “skills gap” is also affected by the lack of closer coordination between training institutions and the public and private sector, so that potential workers are trained in the required skills. Efforts will also have to be made to retain trained professionals lost to foreign countries, thereby lessening the need to import ICT skills.
- b) Limited access to capital – Capital availability for start-ups is a difficult proposition and may require attracting venture capital or partnerships with overseas firms.
- c) Productivity levels and competitiveness-If the sector is to be internationally competitive, then labour productivity levels must be improved through specialized training in the technical high schools and tertiary educational institutions. The private sector must commit to the on-going training of existing

workers in cooperation with programmes such as the Government's HEART initiative

- d) Adoption of Technology - A vigorous effort is required to induce the nation as a whole to become technology oriented. There needs to be recognition especially at the tertiary level, that the richest areas for the generation of new ideas & innovation, occur in the areas where new technologies are bringing convergence between the traditional academic disciplines. We need to establish a new mindset and a culture of innovation.

## **II. SHORT-TERM GOALS**

To begin building the foundation, thirteen action items have been identified to be addressed in the next 12 months. These are called Phase I items. As these are completed and in place, six Phase II items will be initiated. We anticipate substantial progress through Phase II by December 31, 2000.

### **A. PHASE I INITIATIVES**

1. The Prime Minister will articulate the strategic information technology vision for Jamaica.

To ensure that this Strategic IT Plan is given credibility by the Ministers within the public sector and the citizenry of Jamaica, it must be clear that it has the support of the Prime Minister. Therefore, based on this plan, the Prime Minister should determine what message he wants to present. There will be no substitute for the credibility that such support will provide.

2. To jump start the programme and to obtain future cost savings and investments in the economy, Jamaica will spend 2% to 4% of the government's budget on ICT beginning in the fiscal year 2001.

The United States, which has invested heavily in information technology, spends 2% to 4% of its budget on information technology. Governments in other developed countries are doing the same. Jamaica needs a jump-start; therefore, the Government will allocate 2% to 4% of its budget to ICT initiatives in this Strategic Plan. This level of investment will continue for 6 to 7 years until the majority of the objectives in this plan have been achieved.

3. Jamaica will continue its efforts to bring competition into the telecommunications industry and promote the growth of the ICT sector.

Competition in the telecommunications industry will result in lower prices and greater opportunities for

service. Therefore, Jamaica will continue its efforts in this regard. The government will review and update the laws, regulations and incentives affecting the further development of ICT in Jamaica.

4. Jamaica will finalize the Strategic IT Plan and get buy-in from all stakeholders.

Stakeholders within Jamaica include Parliament, the Ministers, all government employees, the private sector, and the academic community. This Plan will be discussed with each of these stakeholder groups.

5. Each Ministry will develop a Tactical Plan that implements the objectives of the IT Plan.

Specific Ministries have been identified to carry out the actions within the Strategic IT Plan. These Ministries should review the Plan and develop tactical level plans to implement the actions they have been assigned, such as government services that could be targeted for electronic delivery or the establishment of and maintenance of the Ministry's Home Page. All Ministries should be linked on-line to the Prime Minister.

The use of Internet-based home pages is an effective vehicle to distribute information to citizens, potential investors from around the world, and potential consumers of Jamaica's highly specialized and unique products. Therefore each Ministry should develop a home page if one is not already on-line. Over time, these sites can be revised as experience is gained and they should be linked through a single window home page for Jamaica.

6. Jamaica will accelerate the establishment of computer labs with Internet access to reach a minimum of 30% of the primary and secondary schools within 12 months.

Investing in human resources, especially the youth of Jamaica will be one of the most important investments in our future. Our ultimate goal is a computer lab in every school. This will allow the children of Jamaica to have access to computers. This, in turn, will lead to the

ICT workforce of tomorrow. Educating our children will be the foundation of our IT infrastructure.

These computer labs will be made available during off-hours to the general public.

7. Jamaica will install computers in public places to provide access to e-mail and Internet.

Most Jamaicans do not have computers in their home. Our citizens need a place where they may use and experiment with the capabilities of a computer and the Internet. This will be accomplished when we install computers in places accessible to the public. In Phase I, 150 computers will be installed in each of the 14 parishes. Usage will be free of charge. We see this occurring through a series of task forces made up of government and industry representatives, as well as academic officials. Tertiary level students will be used to train citizens at these public access points.

8. Jamaica will establish an Information Technology Authority (ITA) (Office of Partnerships) that reports to the Minister of Industry, Commerce and Technology.

An ITA is necessary to carry out and monitor the initiatives identified in this Plan. This office, The Office of Partnerships, will be outside the purview of the existing ministries and will provide the Minister with advice on strategies for the development of the ICT sector. This Office will be linked with the private sector through the Information Technology Advisory Council (IAC) and other agencies. It will identify opportunities for cross-government and private sector initiatives, coordinate those initiatives and develop policies and new programmes to implement this Strategic Plan and other successor plans. Furthermore, it will foster linkages between government, the ICT sector, the Jamaica Computer Society, trade associations, and academic institutions. In conjunction with the private sector, the Office will help to identify sources of financing for the ICT sector, and work with the relevant local and international authorities to development international standards for the sector (ISO etc.) and promote industry

oriented R&D. Finally, it will work with academic institutions and the Ministry of Education to develop a curriculum, which supports Jamaica's national ICT strategy.

Initially, this office will be staffed with about 12 people, but over time this staff will be expanded depending on emerging needs.

An estimated US\$2 million will be required to establish this Office.

9. Jamaica will establish a Chief Information Officer (ICT) position within each major Ministry.

The Chief Information Officer will be the primary point of contact within that Ministry for all information technology issues. Initially, the CIO position will be established in key Ministries with others to follow, when and if appropriate. The CIOs will be the linkage between the Office of Partnerships and individual ministries.

10. Jamaica will utilize JAMPRO to promote investment and facilitate partnerships in the ICT industry.

Jamaica is currently not viewed as a destination for the large information technology companies. Working with the Office of Partnerships, JAMPRO will have primary responsibility for "selling" Jamaica as a center for ICT in the Caribbean, through partnerships with local and foreign private sector companies. These partnerships may be used to obtain knowledge, support and resources such as equipment, software, training, micro-loans or facilities. JAMPRO will maintain an up-to-date picture of market trends in IT around the world. JAMPRO's goal will be to accelerate the rate on investment in the IT sector to increase its contribution to GDP to US\$250 million in five years.

11. Jamaica will develop a network of government, industry and university ICT points of contact.

Establishing a network of ICT professionals from all sectors will serve to create a community that has the

same interests, needs and challenges. Together, these points of contact can address their common issues and find solutions that could not be found independently. It has been found in other countries that these networks save governments much needed time and money by taking advantages of the experiences of others. Therefore, the private sector will establish a countrywide industry association with broad membership, which, in turn, will form linkages with similar organizations in the Caribbean region and elsewhere.

12. Jamaica will conduct a study to determine the current status of ICT use and make the information available to all sectors.

Many of the objectives within this plan require the government to assess the current state of ICT. For example, understanding the skill level is important when developing an educational plan. Designing a network to link the island is dependent on a clear understanding of "where we are" today. This plan should include a comprehensive assessment of the current state of IT, as well as an inventory of hardware, and software.

13. Jamaica will conduct a series of initial pilot projects.

Many sectors within Jamaica have strong information technology needs and are awaiting the introduction of the technology. To begin, Ministries should identify a list of projects that could be undertaken immediately as pilots. These pilot projects will allow knowledge and experience to be gained. The CIOs from each Ministry should form a group to review the potential projects and select at least three in each ministry to be accomplished in the first year. Examples include: an electronic commerce application for farmers/small businesses to use to seek out new niche markets for their sauces, jams, jellies, coffee and other products; linking the Ministers with the Prime Minister to promote the use of electronic mail; developing an application to ensure the prompt clearance of ships bringing products into Jamaican ports; or an application that would improve the tourism industry.

### **Pilot Project**

Initially, it is highly desirable to have a high profile successful project, to motivate support for the transformation in emphasis on national utilization of Information Technology. This must be a project that is equally accessible to the general public and facilitates the public's access to information. One possibility is a community development initiative with several components, to be developed in phases to realize its full potential. It involves the utilization of an appropriate network to provide:

- Increased public access to both the local and international communication networks for both social and productive purposes, for example:
  - a) Utilization of the Post Offices to provide a range of public services ranging from E-Mail services, (all Jamaicans should have an e-mail address and an electronic ID and pin by 2002): with adequate security of personal data, thus further reducing any class distinctions in access to basic services;
  - b) The provision on-line of healthcare, weather and disaster preparedness bulletins and detailed instructions;
  - c) Marketing products (e.g. agricultural products, handcrafts, etc.) locally and or internationally (Intranet/Internet);
  - d) Agricultural Extension services with linkages to local and international libraries, etc.

In a second phase:

- A special sub-project to improve the lives of the disabled.
- Supporting projects to integrate the technology into the very important entertainment industry;

- Supporting projects to bring sectors (and sub-sectors e.g. accounting), into the local and international marketplace.... e.g. an accounting firm could have on-line clients, say the Hyatt Hotels, with sub-contracts to “cottage industry” type or “virtual office” based accountants;
- Expanded use of this network would be the access to public libraries as well as to facilitate greater educational opportunities through the use of the technology e.g., distance learning; a broadened curriculum through ready accessibility of local and overseas-based institutions etc, and;
- Expansion of the network would also include greater public access and communication with the House of Parliament and Parliamentarians thus further enhancing the democratic process.

### **Achievements**

**Within the past year, the following short-term goals have been achieved:**

- a) An Information Technology Authority i.e. the Central Information Technology Office (CITO) has been established to coordinate implementation of the Plan, advise on policy issues and create domestic and international partnerships with the public and private sectors. A detailed description of its role is outlined in Appendix F.**
- b) An E-readiness assessment for Jamaica was commissioned by CITO via a grant from the infoDev program at the World Bank. It has now been completed. Based on the findings of this Report, CITO has recommended that a salary and skills survey for the ICT sector be also conducted.**
- c) The Ministry of Education and the Ministry of Agriculture have begun the process of preparing**

**their strategic plans for the use of ICT in education and agriculture respectively.**

- d) Most Government Ministries have appointed Chief Information Officers to be in charge of ICT matters.**
- e) Public Access to the Internet is increasing. The E-readiness Assessment for Jamaica<sup>3</sup> estimates that about 47% of the population as a whole currently has access to the Internet. Grace Kennedy, a major private sector firm in Jamaica, in partnership with Western Union has installed computer kiosks with Internet Access in all the parish libraries. Cable and Wireless has also agreed to establish a number of Internet Access Points across the island. In addition, the Jamaica Sustainable Development Networking Program of the UNDP has established 6 community telecenters -- one of which is in Kingston. CITO is examining the feasibility of utilizing the existing computer labs in schools as access points for the public as well.**
- f) Over two-thirds of all schools are now equipped with computers, however access by all students is still limited.**
- g) JAMPRO has attracted a number of firms engaged in "high-end" ICT activities. These include: Advanced Integrated Services (AIS), which has developed the first online health adjudication system in the world; Multivisual, doing software design for BMW; and Overdrive Jamaica Ltd., a web-based publishing company.**

## **B. PHASE II INITIATIVES**

1. Jamaica will establish a Public Awareness Programme.

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<sup>3</sup> *Jamaica's E-readiness Assessment*, January 2002.

Based on the limited use of information technology in Jamaica, some citizens do not have an appreciation of what technology can do for them or how it can change their lives. The public wants to know and should be informed when the government establishes new government programmes that will result in a significant investment. Jamaica will show progress through technology to improve the status of every citizen. This is a long-term programme that should result in a nationwide awareness of where Jamaica is going in its investment in technology. This raised awareness should create a strong demand for the types of services and information that technology provides. See Supplement to this document, Appendix D for the Outreach Plan.

2. Jamaica will develop a comprehensive plan that addresses our educational needs in all sectors of society.

As Jamaica begins the process to establish an information technology industry; to educate its people to take advantage of the higher paying jobs, and improve the way government operates, we will be depending on partnerships with the private sector. A comprehensive plan will be developed that addresses educating all sectors of society in information technology. This "Marshall Plan" will outline a long-term strategy for education. It will identify initiatives to retrain the current workforce to use modern programming languages and to establish professional jobs in information technology with appropriate salaries. The plan will also identify strategies to broaden the curriculum offered by universities, colleges, and technical and vocation schools in order to provide a robust information technology programme linked to the needs of industry. In addition, the plan will identify innovative ways to train current educators. Jamaica may also use existing virtual or distance learning facilities around the world.

3. Jamaica will establish a group to review and make recommendations to improve the procurement system.

The government needs a procurement system that is competitive, streamlined, and provides the best products

and services for the money spent. Therefore, Jamaica will establish a group to review the current procurement process and make recommendations for improvement. Many countries throughout the world have streamlined their procurement systems within the past several years. Jamaica will take advantage of those experiences in streamlining its procurement system.

4. Jamaica will establish a system of incentives to spread IT activities geographically in Jamaica.
5. Jamaica will establish computer labs with Internet access in an additional 30% of the primary and secondary schools by December 31, 2002.
6. Jamaica will facilitate the ease of public access to Government data and operations, thus ensuring greater transparency of government

This can be done through; for example, public kiosks with computer access to factual and frequently updated Intranet sites for Government Ministries and offices. This means the use of the Ministry of Industry, Commerce and Technology as a model Ministry in utilizing and encouraging use of the technology. This also means a network linkage between Government Ministries and public sector agencies, once a citizen supplies information, repetition should not be necessary.

### **Achievements**

- a) **With assistance from the World Bank, the GOJ has put together a procurement manual to increase efficiency and improve transparency in the procurement process. The Bank is recommending that an E-procurement system be put in place. In ICT sector, the government through the National Contracts Commission has opened the procurement process to a large extent by having qualified and certified companies register for contracts of US\$130,000-US\$1,630,000 and over. These contracts are for the installation, configuration, assembly, alteration and repair of computer**

**hardware and peripherals including network cabling, installation and any other necessary work. There are thirteen companies registered with the Commission certified in four grades. This step toward transparency in the contract award process is significant.<sup>4</sup>**

- b) The government has improved the incentives for ICT investment by amending the Export Incentives Act, so that ICT firms will now receive the same duty and tax concessions as manufacturing firms. In addition, all duties as well as sales tax have been removed from computers and peripherals.**
- a) Public Access to Government information online is increasing. Most government agencies now have web sites where the public can retrieve information as well as government data (e.g. on the Bank of Jamaica website).**

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<sup>4</sup> Jamaica's E-readiness Assessment, January 2002 p. 52.

## **II. LONGER-TERM GOALS AND INITIATIVES IN THE FIVE YEAR PLAN**

### **A IMPROVE THE PUBLIC'S ACCESS TO GOVERNMENT SERVICES**

#### 1. Background

There is an urgent need for the Government of Jamaica to assume a leadership role in integrating government and technology. This integration will enable the country to provide government services to the public while improving quality of life.

This is a complex undertaking that begins with a clear vision of how government can benefit from technology to change the way it does business, and a commitment to make the vision a reality. Only good leadership, which combines vision and commitment, can ensure sound investments in ICT to support changing Government's day-to-day business practices.

Currently, the quality of service to the public is generally poor and is characterized by: (i) cumbersome procedures; (ii) long delays; (iii) unsatisfactory resolution of problems faced by clients; (iv) high private costs of compliance with laws and regulations; and (v) discourteous behavior

The Report of the Committee of Advisors on Government Structure, also known as the Nettleford Report, summed up as follows, the public perception of government:

*"...Considerable concerns have been expressed about the poor quality of government in Jamaica. These largely centered around over-concentration of decision-making, which consigned the rest of the community to a largely peripheral role in the management of affairs; the low quality of the civil service; and the over-bureaucratization of its methods of work leading to a compliance rather than service orientation in its dealings with the public. In general the impression conveyed was of an over-manned, slow, lumbering bureaucracy characterized by low morale..."*

The Jamaican public sector displays characteristics commonly found in most established bureaucracies. Rigid laws and regulations govern Public Sector entities. Compliance with these laws and regulations takes precedence over achieving organizational objectives. In turn, this reduces responsiveness to emerging situations and discourages innovation.

Decision-making is hierarchical. For the most part, senior level officials are reluctant to delegate authority, while junior employees are reluctant to use even the limited powers that are delegated to them for fear of being penalized for mistakes that may occur in the process. The result is that most decisions get pushed up to the senior level. Many senior level officials regard themselves as policy makers, controllers or regulators, rather than facilitators.

Although a beginning has been made to shift organizational emphasis from inputs to outputs and outcomes through Programme Budgeting and Corporate Planning, public sector entities are not strictly held responsible for achieving pre-determined performance targets. So, only minimal emphasis is put on public service. For the most part, public officials are indifferent to the costs and inconvenience suffered by the public due to inefficiency or unresponsiveness.

In addition, both managerial and operational business processes in the public sector need re-engineering. Most of the current business processes were established decades ago and continue unchanged. In spite of major changes in the external environment and the role of the public sector, business processes have not been restructured. Many business processes that could be completed in one-step or location are fragmented between different organizations or different sections within a given organization.

Low salaries make it extremely difficult for the public sector to recruit individuals with the skills needed for technical and managerial positions at the entry and midlevels. Even when promising individuals join, they do not stay for long. Better opportunities and salaries cause them to move to the private sector. Usually, this occurs after they receive

formal and on-the-job training at the government's expense. For the most part, the public sector does not attract or retain the best and brightest. However, the Government has begun to make important changes in the operations of public sector institutions to improve efficiencies (customer service) through a Public Sector Modernization Programme.

The Public Sector Modernization programme is being funded by the Government of Jamaica, the World Bank, and the British Department for International Development and the European Union. The aim is to modernize 17 pilot agencies and 3 pilot Ministries, in order to enhance efficiency and improve performance, as well as the quality of service provided to the public. This includes computerizing their operations. In the first phase of the project, ten pilot agencies are to be transformed into Executive Agencies, with greater responsibility for service delivery, financial management and human resources management. Executive Agencies will be rewarded for realizing efficiency gains, improving effectiveness or realizing revenue increases. Conversely, sanctions will be applied for poor performance.

**At the end of 2001, all ten institutions had become Executive Agencies, including: the Registrar General's Department, the Administrator General's Department, the Office of the Registrar of Companies, the Management Institute for National Development (MIND), the Jamaica Information Service and JAMPRESS.**

Other aspects of this public sector programme include: i) privatizing or contracting out Government services in cases where these services are better performed by private providers; ii) reforming the Government procurement system to improve transparency and efficiency; iii) the establishment of computerized information systems in the public sector to improve financial and personnel management. The next phase of the initiative which begins this year, envisages extending the reforms to the entire public sector.

**In addition, similar reforms are taking place in local government. The Parish Infrastructure project being funded by the Inter-American Development Bank aims to fully computerize the operations of all the Parish Councils.**

In spite of these developments however, to date, the Government of Jamaica has operated without any overall strategic vision of the role of ICT in government. Today, existing technology makes it possible to have integrated electronic access to government information and government services. Jamaica is in a unique position to be a model for other developing countries wanting to bring government services closer to the public.

**However service delivery from central government as well as the Parish Councils is just beginning. In the central government, the initial focus is on the revenue-generating agencies e.g. the Customs Department and the Registrar of Companies, where some transactions can now be done online. The ICT project of the Inter-American Development Bank (IDB), currently in development will assist in the process by enabling the payment of taxes and fees to all fiscal agencies online.**

## 2. Goals

- a) The Government of Jamaica plans to provide its citizens with efficient government services through the use of ICT.
- b) Networks will be established to allow access to government services from libraries, post offices, banks, hospitals and other public locations. The Government will coordinate the locations, access, presentation methods, and sharing of resources. The key focus is to have citizens throughout the country, even in rural areas, be able to find and receive information and services from different government organizations consistently and easily.

## 3. Actions

Responsibility for the following actions will be shared among all Ministers with the following Ministers in the lead roles: Minister of Finance and Planning, and Minister of Industry, Commerce and Technology.

- a) There are two types of services: i) providing information to the public, and ii) allowing transactions to be performed. We recommend that early emphasis be placed on the former, i.e. provision of information to the public. The Minister of Industry, Commerce and Technology will establish a goal to provide a certain percentage of information services to the public within the next two years. For example, 50% of information services will be provided by the Year 2004.

**While a definitive goal has not yet been established, government agencies are now focused on providing information on their activities to the public via their websites. It is now possible for example to obtain the annual budget presentation by the Minister of Finance on the Ministry website. One can also readily access company information online from the Registrar of Companies.**

- b) Identify a set of government services suitable for electronic self-service. Enough progress has been made in other countries in the area of electronic government to permit identification and widespread deployment of a core set of commonly requested government services that citizens can initiate and complete in a single electronic session. To begin, each Minister can deliver some information online, and subsequently transition plans can be developed to address information service delivery in future years.

**Identification of these services has already been done under both the Public Sector Modernization Program and the Information Technology project of the IDB. Aside from the initial "roll-out" by the fiscal agencies, other entities such as the Registrar-General's Department will also focus on this, so that all documents for example can be requested, and where relevant delivered, online.**

- c) Expand locations where the public can access information and obtain public services. To ensure that all citizens have equal access to technology, establish a network of kiosk or computer systems that provide Government information and services in prominent locations in each region of Jamaica.

To broaden access to the rural communities, ICT needs to be placed where the public can use it in convenient community locations, such as libraries, post offices, banks, hospitals, and other government offices. For example, rural public libraries can be networked with main libraries to expand the services that are available to the public throughout the country.

**Community Access Points have already been established in all the parish libraries, and a few community telecenters now exist. The IDB project will build on these efforts by establishing or improving an estimated 75-100 of these centers in “marginal” communities ignored by private sector investors.**

- d) Use partnerships to obtain support, knowledge, loans, computers, services and training to further the development of the ICT industry in Jamaica. Develop partnerships with industry, universities, and multi-lateral and multinational organizations. Partnerships are vital to achieving strategic ICT goals. These partnerships facilitate major culture changes throughout the government. Public and private sector partners work together to provide more efficient and effective government services.

**CITO has been establishing and building on existing partnerships since the Strategic Plan was approved by parliament. Mentoring relationships have been established with a number of U.S. government agencies – the General Services Administration, the National Institute of Standards and Technology, the Department of Agriculture, the Department of Education, the Commerce Department. In addition linkages now exist with the Commonwealth Secretariat’s ICT initiative –**

**COMNET-IT, the World Bank, the IDB, USAID and UNDP, the Caribbean Development Bank and CARICOM.**

4. Private Sector Opportunities

- a) Expansion and continuing upgrading of the local "Intranet" network.
- b) The establishment of "on-line" facilities and the provision of a wide range of applicable services.

**(To be extended, as necessary, with each annual review.)**

## **B. ESTABLISH A NATIONWIDE PUBLIC NETWORK THAT IS COMPETITIVELY PRICED, UTILIZES MULTIPLE SOURCES, AND RELIES ON THE PRIVATE SECTOR**

### 1. Background

In order for the ICT industry to flourish, low cost, high-quality telecommunication and information services are necessary. Unfortunately, current access is limited for a large portion of the population and costs are non-competitive, especially in rural areas. A competitively priced national network would make more services available to more people. In order to create such a network, several competing telecommunications and ICT companies are needed. Digital telecommunication infrastructure is available in many areas. Prices for telecommunications services are now beginning to fall with more competition in the sector. However, access to telecommunications services still remains a challenge. It is estimated that there are only 19.6 main lines per 100 households in Jamaica, and approximately 6 mobile phones per 100,000 citizens.<sup>5</sup> An appropriate regulatory and socio-economic framework is also needed to support such a network.

Regulations must be reexamined to accommodate the modern telecommunications industry and address wireless and other value added services. An incentive structure must be established to encourage firms to expand networks, reach out to non-connected areas, implement competitive prices, and encourage investment in the network architecture and network services.

### 2. Goals

- a) There is a need to partner with private industry and telecommunication service providers to open industry and develop ICT applications for use over the network.
- b) The government must communicate the necessity and benefit of the network to citizens to generate market

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<sup>5</sup> Jamaica's E-readiness Assessment, p. 48.

demand; to the financial sector to generate venture capital and to foreign firms to encourage investment in the network. The network must be "sold" in terms of benefits to citizens and market potential for industry.

- c) Jamaica must generate the demand-pull for ICT necessary to create a market for sectors to target.

If implemented, this network will lead to increased productivity, communication capabilities and improved quality of life for all sectors of society.

### 3. Actions

- a) The Ministry of Industry, Commerce and Technology will take the lead role in establishing a nationwide public network.
- b) The Ministry of Industry, Commerce and Technology and the Ministry of Finance will work towards finding funding alternatives to support the development of a nationwide network.
  - i. World Bank, Inter-American Development Bank (IDB), and other bilateral and multi-lateral institutions
  - ii. Identify money available to invest from government.
  - iii. Create mechanisms for private sector participation through innovative funding strategies.
- c) The Ministry of Industry, Commerce and Technology will reexamine the regulatory framework to open competition in the value added and wireless services as well as telecommunications and establish competitive prices that balance rates with cost of services.
  - i. Reassert role as the Government entity which formulates telecommunications policy;
  - ii. Create an ICT and wireless specific policy that introduces competition into the ICT, data and wireless industries and encourages the use of emerging technologies;
  - iii. Strengthen the capabilities of the Office of Utilities Regulation (OUR) to effectively regulate the

- telecommunications industry and facilitate meaningful competition;
- iv. Fulfill regulatory commitments made to multilateral organizations including the World Trade Organization (WTO);
  - v. Revamp telecommunications law to make the industry open to new investment.

**The new Telecommunications Act has resulted in competition in wireless services and in the provision of internet service, resulting in significantly lower costs. Two wireless companies, Digicel and Centennial Digital Jamaica are now operating cellular services in Jamaica. The cellular market is estimated to be 1.2 million customers. As of the end of 2001, Cable and Wireless had 350,000 customers and Digicel 150,000. Centennial, which began operations in November 2001, is aiming for 47,000 in its first year of operations. There are currently 7 Internet Services Providers (ISPs), with a total of 70,000 subscribers.**

**However Cable and Wireless still remains the dominant fixed line carrier, and is likely to remain so for the foreseeable future, given the capital requirements involved.**

- d) The Ministry of Industry, Commerce and Technology will facilitate the extension of ICT infrastructure and the availability of telecommunications and data services to all citizens.
  - i. Support regional networks according to interoperability standards in areas not reached by service, with plans to connect network in one GRID of networks
  - ii. Create a policy environment through incentives and regulation that provides equal access to the nationwide network
    - 01. Provide ubiquitous access to high-speed data, telecommunication, and multimedia services by offering incentives for data and telecommunication companies to extend services to rural and disadvantaged areas.

02. Provide adequate bandwidth and/or connection capabilities through other technologies to accommodate a nationwide network

- e) In order to decide the best delivery mechanisms for telecommunication and data services to meet the needs of all citizens, periodically (no less than every 2 years) review telecommunications policy.
- f) Adopt a "regional" perspective in telecommunication regulation. Work with other countries to develop policies which pool resources and market power together in dealing with regional telecommunication providers.

#### 4. Private Sector Opportunities

- a) Ensure ready access to telephones by all Jamaicans.
- b) Complete and continuously upgrade and maximize access to the Internet.
- c) The provision of a high-speed domestic broadband backbone connected to the International Gateways.
- d) The provision of End User Connectivity at acceptable rates, specifications and "installation" timeframes for both business and consumer needs.

**(To be extended, as necessary, with each annual review)**

## **C. INCREASE INTERNATIONAL TRADE**

### **1. Background**

Jamaica is firmly committed to an open multilateral trading system. Accordingly, the government's trade policy focuses on trade liberalization, not only in the context of the World Trade Organization (WTO), but also at the regional level, with its CARICOM partners, and at the Hemispheric level, with active participation in the Free Trade Area of the Americas (FTAA) negotiations.

As a small, open economy, Jamaica is heavily dependent on international trade. Because of this economic vulnerability, the Jamaican economy is highly sensitive to global economic fluctuations and to changes in the economies of its major trading partners – the U.S., the U.K. and Canada. The U.S. alone accounts for over 45% of merchandise exports and 50-60% of merchandise imports. Structural features of the Jamaican economy – e.g. small size, small population, a limited range of resources – have had a negative impact on the country's ability to compete in global markets. Jamaica's challenge then is to increase competitiveness and increase imports.

In the past, the Export Processing Zone (EPZ) model was an effective mechanism to increase trade and attract foreign investment. As an integral part of the Government's export-oriented industrialization strategy, EPZs, through a host of financial and tax incentives, brought in new industries into Jamaica, such as apparel production and most importantly, data processing and other basic data transmission services using information technology. Indeed, the three Free Zones in Jamaica – Montego Bay, Kingston and Garmex – have made important contributions to the growth of the Jamaican economy over the years. While the EPZ model will continue to be expanded in Jamaica, particularly with the designation of free zone status for individual exporting firms, it is clear that new investment and trade promotion strategies are needed in the present international economic environment. Strategies that utilize information

technology, are both necessary and appropriate in the Information Age.

JAMPRO has begun a new approach by initiating the Jamaica Trade Point Programme. This is part of, the Global Trade Point Network (GTPNet), a programme conceived by UNCTAD in 1991 to increase developing countries' participation in international trade through greater use of the Internet. Jamaica Trade Point is a new way of doing business, which allows Jamaican companies to explore new markets and identify potential business partners through Electronic Trading Opportunities (ETOs). Trade Point seeks to project Jamaica as a premier trade and investment location. It provides new electronic trading opportunities for Jamaican as well as foreign businesses. Through a partnership with the Jamaica Exporters' Association, it showcases Jamaican companies and their goods and services by establishing electronic "shopping malls". Trade Point also facilitates international trade through linkages with customs, banking, insurance and transportation services.

**In addition, JAMPRO has a pilot program in place, "e-basket" in partnership with the rural Agricultural Development Authority (RADA). The program is also part of UNCTAD's GTPNet to "match" electronically the buyers and sellers of agricultural commodities. Purchases are not done over the Internet however. Several of the hotels purchase directly from local farmers using this system.**

Jamaica also needs to eliminate obstacles to trade, which include:

- Lack of adherence to international standards - ISO 9000, safety, environmental, packaging, labeling, trademark, copyright, and registration.
- Transportation and Roads - In particular, transportation bottlenecks - traffic congestion, poor urban and inter-city roads, and inadequate mass transit is principal barriers for businesses.

- Electricity and Telecommunications - The reliability of electricity and telecommunications services has improved in recent years, but costs remain high.
- Crime and Security - Personal safety, as well as security, are increasing concerns, particularly in Kingston.
- Labor Issues - Traditionally, management-labor relations have been difficult in certain industries, which have had a negative impact on the overall investment climate in recent years.

Technology has made the world a much smaller place. Voice and data communications link large countries and major cities with the most remote areas. The rapid growth of global commerce builds a strong economy, increases demands for goods and services, and promotes stability. Conditions have never been better for strengthening the economic ties among governments and trading partners.

#### 1. Goals

- a) The overall focus is to provide user-friendly electronic access to basic export and import information, market research reports, overseas contacts, duty rates, and information on international trade financial assistance.
- b) Develop a system that integrates information from different government agencies and standardize the trade and transportation data. This standardized data will be the same information importers and exporters use when conducting business.
- c) To begin, encourage a commercial partnership to set up a pilot trade network to operate electronic commerce within the post offices or in Community Access Points. The first phase objectives should be to:
  - i. Pilot electronic commerce services
  - ii. Champion the use of paperless trading
  - iii. Develop procedures for this effort
  - iv. Assist local industry with the transition to using electronic commerce.

Jamaica has considerable potential for increased levels of foreign investment. The country offers a stable political environment, easy access to the U.S. market, and an English-speaking population.

### 3. Actions

Responsibility for the following actions should be shared among: 1) The Minister of Foreign Affairs and Foreign Trade, 2) JAMPRO, 3) The Minister of National Security & Justice, 4) The Minister of Transport and Works, and 5) The Minister of Industry, Commerce and Technology.

- a) Ensure the trading environment is as seamless as possible, to help ensure Jamaica's competitiveness in global markets. The Government of Jamaica will continue to enhance the Trade Point Programme to facilitate open access to international trade data electronically.
- b) In the JAMPRO/JEA model, continue to exploit competitive niches that Jamaica can market abroad. JAMPRO is already involved in this regard.
  - i. Identify niche markets to target. In making a decision about foreign markets consider the following three steps.
    01. Assemble information about the economy and marketplace of the particular market
    02. Determine the targeted country's economic and market characteristics as well as its import laws and regulations.
    03. Develop a detailed plan for entering the markets.
  - ii. Following the planning and research disseminate the information in a timely manner utilizing a variety of media and stimulate action by the targeted community.
- c) Use electronic commerce to market and sell domestic products.

- i. Become affiliated with international trade associations.
  - ii. Use commercial products and practices as much as possible.
  - iii. Use electronic commerce to eliminate unnecessary business processes and to reengineer and automate remaining business processes.
  - iv. Identify electronic commerce services and pilot these services
- d) Review and improve the incentive programme to support small businesses in their use of ICT. In this regard, a business development mechanism is being created in the Ministry of Industry and Investment for small and micro enterprises.
- e) Review local standards and adopt international certification standards such as ISO 9000.
- The Bureau of Standards received a grant from the Multilateral Investment Fund (IDB) in 2001 to assist in this regard.**
- f) Review and accelerate the programmes to eliminate barriers to the expansion of trade. This is currently being done by the Development Council headed by the Prime Minister.

## **D. IMPLEMENT ELECTRONIC COMMERCE**

### 1. Background

Electronic commerce can be thought of as the shifting of business processes from paper to electronic transactions through the Internet. In the United States, electronic commerce has been defined as the exploitation of information technology to improve commerce. In the United Kingdom, electronic or e-commerce is defined simply as "doing business electronically." While e-commerce applications began in the logistics and procurement arenas, they now include on-line advertising and ordering, bill payment, and product delivery. Government applications include the distribution of benefit payments to citizens, the processing of applications for drivers' licenses and passports, and the payment of grants. The U.S. Department of Commerce report, "The Emerging Digital Economy" noted that "Both the new Internet-based companies and the traditional producers of goods and services are transforming their business processes into e-commerce processes in an effort to lower costs, improve customer service, and increase productivity."

It is important that governments establish policies to facilitate, not hinder, Internet development. There are five principles, first set out in a report released by former President Clinton in 1997, *A Framework for Global Electronic Commerce* that serve as a guide to Jamaica and other nations in establishing their e-commerce strategy.

### **Principles**

1. Private Sector Leadership: The private sector should lead. The Internet should develop as a market-driven arena not a regulated industry. Even where collective action is necessary, governments should encourage industry self-regulation and private sector leadership where possible. Governments should avoid undue restrictions on electronic commerce. In general, parties should be able to enter into legitimate agreements to buy and sell products and services across the Internet with minimal government involvement or intervention.

2. Avoidance of Undue Restrictions: Governments should refrain from imposing new and unnecessary regulations, bureaucratic procedures or new taxes and tariffs on commercial activities that take place via the Internet.

3. Establishment of a Legal Environment Based on a Contractual Model of Law: Where government involvement is needed, its aim should be to support and enforce a predictable, minimalist, consistent and simple legal environment for commerce. Where government intervention is necessary, its role should be to ensure competition, protect intellectual property and privacy, prevent fraud, foster transparency and facilitate dispute resolution, not to regulate.

4. Recognition of the Unique Qualities of the Internet: Governments should recognize the unique qualities of the Internet. The genius and explosive success of the Internet can be attributed in part to its decentralized nature and to its tradition of bottom-up governance. We should not assume that the regulatory frameworks established over the past sixty years for telecommunication, radio and television fit the Internet. Existing laws and regulations that may hinder electronic commerce should be reviewed and revised or eliminated to reflect the needs of the new electronic age.

5. Global E-commerce: Electronic commerce on the Internet should be facilitated with a global perspective. The Internet is a global marketplace. The legal framework supporting commercial transactions should be consistent and predictable regardless of the jurisdiction in which a particular buyer and seller reside.

Ongoing discussions on E-commerce within the FTAA should also prove instructive and useful for the development of Jamaica's E-commerce guiding principles.

**E-commerce in Jamaica is in its fledgling stage. An immediate priority is the formulation of principles to guide its development. In addition, legislation to facilitate E-commerce (privacy, electronic signatures,**

**consumer protection for electronic transactions etc.)  
has not yet been formulated.**

2. Goals

- a) The government must promote e-commerce by using the Internet and information technology to carry out certain government functions. One of the first steps is to define which applications will benefit most. Automated purchasing, financial transactions, payroll applications are promising. The next step is to develop and fund an e-commerce pilot project (See Section II).
- b) The government must create a favorable environment for e-commerce by Reviewing laws, rules and regulations that could impede its development in the private and public sectors.
  - i. Laws covering digital signatures, privacy, security, intellectual property protection (copyright, patent, and trademark) and the legal acceptability of electronic documents be reviewed and possibly revised.
  - ii. The U. S. Government has taken the lead on addressing many international e-commerce issues. Jamaica should form liaisons with the Department of Treasury to keep informed on electronic payment systems and electronic banking.
  - iii. Jamaica should also review the work of the United Nations Commission on International Trade Law (UNICTRAL). The Commission has just completed a model law that supports the commercial use of international contracts in e-commerce.
- c) The Government must facilitate private sector initiatives to install the necessary telecommunications infrastructure, which are required to support e-commerce in Jamaica over the next five years. (See Appendix C for details of infrastructure requirements)

3. Actions

- a) The E-commerce Advisory Council will develop strategic goals for e-commerce, incorporating both the public and private sector. This plan will include, for example, a study to determine what government applications would benefit most from e-commerce as well as a plan to provide locations where the public can use the Internet for e-commerce. CITO will review these goals on an ongoing basis.
- b) The Prime Minister will establish an E-commerce goal that can be reached by the year 2004. (e.g. By the year 2004, 50% of Jamaica's government procurement will be done electronically.) Each Ministry will develop strategic plans to achieve this goal.
- c) Within the favourable environment created by the government, the private sector will assist the government in developing innovative funding to build an e-commerce infrastructure nationally. (e.g. Venture Capital and partnerships)
- d) The Minister of Industry, Commerce and Technology should review and update those laws and regulations affecting the development of e-commerce and promote policies to ensure that significant progress is made in implementing E-commerce in accordance with the Prime Minister's goals.
- e) The Minister of Finance and Planning should develop a pilot project for the electronic posting of government business opportunities. The electronic posing system will provide government agencies and departments with convenient and universal Internet access and the private sector will have one place to go to for this information.
- f) The Minister of Industry, Commerce and Technology should develop an incentive scheme to promote the use of e-commerce in the private sector via vehicles such as the Trade Point Programme.

- g) The Minister of Education and Culture should launch a programme to promote development and training of electronic commerce professionals.

#### 4. Private Sector Opportunities

- a) The provision of advertising services to overseas clients through audio-visual services, utilizing local scenery, culture (music, history etc.) and talents.
  - b) The offering of accounting services to overseas companies.
  - c) The provision of local and international marketing services.
- (To be expanded, as necessary at each annual review).

## **IV. TOOLS TO BUILD AN INFORMATION TECHNOLOGY INDUSTRY IN JAMAICA**

### **A. ENHANCE IT LEARNING**

#### 1. Background

The development and strengthening of a local ICT industry in an increasingly global society requires the ability of citizens to function fully in a technology-based world. Investing in human resources through education provides a foundation for achieving Jamaica's entry into the information society. The government should take the lead and there are many opportunities to promote ICT learning in both the public and private sectors. The government also has a responsibility to adjust the Jamaican educational system so that all school children have equal access to ICT and can develop the skills to compete in an electronic age. However, access to computers is not enough. The government must ensure that educational facilities exist and that they are adequate and accessible.

#### 2. Goals

- a) The private sector and academia not only need to support the leadership role of the government, but they need to make their own investments in education. The government must encourage private sector initiatives by offering incentives to companies to train existing ICT personnel. The private sector can identify the ICT skills that they need and form joint ventures with multinational companies to provide specialized training.
- b) The government must provide incentives to the faculties of universities, vocational schools, and even secondary schools to collaborate and work with the private sector.

#### 3. Actions

- a) The Prime Minister will establish a goal for computer access within schools that can be obtained by the year 2004. (e.g., By the end of year 2004, at least 80% of Jamaican schools will have a computer laboratory with up to 30 computers each to prepare the new generation

for the Information Age.) These labs will be available for use by the community on a structured basis outside of normal school hours where feasible.

- b) The Minister of Education, Youth and Culture will develop a type of "Marshall Plan" to educate all sectors in the society, retrain the ICT workforce to use modern programming languages, and broaden the ICT curriculum offered by the universities, colleges, and technical and vocational schools.
  - i. Conduct a survey to establish the extent and use of ICT in the education system in Jamaica
  - ii. Launch a public awareness programme to promote ICT literacy
  - iii. Establish computer labs in every primary and secondary school and put in place provisions for training/servicing equipment
  - iv. Strengthen computer studies in secondary schools
  - v. Broaden the curriculum of ICT degree programmes
  - vi. Provide advanced ICT skills training in the vocational schools
  - vii. Define vocational ICT career opportunities
  - viii. Establish an Educational Advisory Board with representatives from industry, academia, government
- c) The established public sector training agency, the Management Institute for National Development (MIND), will ensure that the public service establish and develop a pool of skilled, in-house ICT professionals.
  - i. A computer literacy programme will be initiated to ensure that all public sector employees have access to PCs and learn how to use electronic mail, perform word processing, and use the Internet.
  - ii. Internet-based distance learning should be encouraged rather than developing new courses.
  - iii. Training will be geared to the needs of the public sector.
- d) The private sector will be encouraged to provide educational training and retraining at all levels.

- i. Over 6 to 7 years, to jump start this programme, the government and its industry partners should share in the cost of supporting personnel on approved training programmes.
- ii. Provide access to ICT career development programmes to create upward mobility and create more IT capabilities.
- iii. Establish a network of Jamaican ICT professionals and consultants worldwide to encourage the sharing of knowledge.
- iv. Encourage ICT professionals to teach ICT courses at universities and vocational schools.

#### 4. Private Sector Opportunities

- a) The completion of an education (audio-visual) network locally to provide new teaching tools and provide students with the widest possible choice of subjects.
- b) The provision of specific educational programmes on-line – e.g. the development of upgrading programmes for those currently employed, etc.
- c) The offering of specific courses (e.g. culturally defined) to the international community.
- d) The establishment of studio facilities for the preparation of programmes/projects for educational purposes.  
**(To expand, as necessary, at each annual review).**

## **B. ESTABLISH THE ORGANIZATIONAL STRUCTURES AND PROCEDURES NEEDED TO IMPLEMENT THE STRATEGIC PLAN**

### 1. Introduction

Government is being challenged to recreate itself. Citizens and policy makers alike want to see government succeed, and technology is one of the tools that can make this happen. Success is dependent on government taking the initiative to begin the process.

ICT must not be applied haphazardly. It also must not be used simply to automate existing practices. Instead, ICT must be seen as the essential enabler for the government.

The ICT acquisition process is primarily based on laws, policies and regulations. Many reform efforts are encouraging business process innovations. Furthermore, being aware of the legislation that is in place helps in understanding why certain processes are important. The Government must expedite and simplify the means through which ICT is acquired.

Nevertheless, business planning for expanding the use of ICT must be addressed independently of acquisition planning. Business planning focuses on the steps involved in deciding what is needed. This should be done before considering how to acquire it. The business planning process helps to decide if an acquisition ought to be made.

The Government of Jamaica lacks appropriate access to the most efficient, cost-effective ICT products. To date, the government has not had a coherent plan on how to most effectively tap the potential of using ICT.

### 2. Goals

- a) The government must devise a master plan for the acquisition of ICT products with input from individual Ministries and an assessment of current investment in ICT (See Appendix B).

- b) Building on the Public Sector Modernization programme, the government must continue to devise ways to use ICT to enhance service delivery and procurement.

### 3. Actions

The Minister of Commerce and Technology should be responsible for the following actions.

- a) Establish a Central Information Technology Office (Office of Partnerships) that reports directly to the Minister of Industry, Commerce and Technology, and through him to the Cabinet Sub-Committee for IT, which will serve as the focal point for implementing the Strategic IT Plan
- b) Establish CIO Office (IT) in each Ministry to report to the Office of Partnerships. The CIO Offices will:
  - i. Provide support to CITO
  - ii. Promote the development of standards and best practices
  - iii. Coordinate, recommend, and implement ICT initiatives for improved customer service and government efficiency.

### 4. Private Sector Opportunities

- a) Development of web-based products for online procurement
- b) Development of products to streamline government processes and service delivery
- c) Provision of ICT services to the public sector

**(To be added, as necessary, at each annual review.)**

## **C. ENCOURAGE INVESTMENT IN INFORMATION TECHNOLOGY**

### 1. Introduction

The ICT industry in Jamaica is export-oriented, and highly fragmented without a critical mass in any one specialty e.g. multimedia or Geographic Information Systems (GIS), which allows it to stand out in the global economy.

Jamaica has many attractive characteristics for ICT investment such as the availability of a skilled, trainable workforce, and proximity to the United States. Furthermore, there are no restrictions on foreign investment and no foreign exchange controls. In addition, there is a modern digital telecommunications infrastructure in most urban areas. Finally, Jamaica offers strong cultural and language affinities with North America and the United Kingdom. These characteristics have done a great deal to spur growth already within the ICT sector. Indeed, there are still many outsourcing opportunities available to Jamaican companies: more than the country can probably absorb. However, most of the current jobs involve low-end operations of data entry and call centers.

Jamaica has already used the Free Zone or EPZ model to spur investment in ICT. The Montego Bay Free Zone is adjacent to a Digiport, which offers high-speed data transmission services to firms located within the Free zones. In addition to this telecommunications advantage, firms also receive generous profit and tax exemptions and other incentives. Export oriented ICT firms located outside of Free Zones are also eligible for these incentives as "stand-alone" Free Zones. Jamaica has begun to construct a free zone devoted exclusively to information technology companies. This Informatics Park is located in Portmore, and its ICT infrastructure will provide service to various sectors of the economy such as health, education and agriculture. This will closely integrate the Park with the rest of the country.

### 2. Goals

- a) To encourage ICT investment, there must be a capable labor force to help attract investment.
- b) Administrative requirements should be made as unburdensome as possible.
- c) Joint venture partnerships should be encouraged to bring skills, capital or markets.
- d) In the short term, Jamaica should focus on the international market, identifying market opportunities and needs, and by developing niche markets in the ICT industry, position Jamaica internationally.
- e) A sound regulatory and performance-based incentive environment should be established to promote rather than impede ICT investment.
- f) A secondary, but very important benefit of investment in the ICT industry will be the improved situation of Jamaican workers, in terms of higher-paying skill-based jobs, an increase in the availability of information services and lower costs for telecommunication and information services

#### 4. Actions

The following activities are necessary to create an environment in which investment in information technology can thrive.

- a) The Ministry of Industry, Commerce and Technology will propose Information Technology specific Policies, Regulations and Legislation that foster ICT Industry development and promote investment. These policies should:
  - i. Ensure confidentiality of data and protection of software
  - ii. Promote competition to achieve the best service for the best price and to enhance investment.
  - iii. Provide intellectual property protection (Not restricted to ICT)
  - iv. Set international standards and best practices

- v. Promote equal access of telecommunications services to Jamaicans
- vi. Reassert government's role as the maker of Telecommunications and IT policy

**Jamaica has already taken important steps in the area of intellectual property rights protection. An Intellectual Property Rights Act is in place, together with an Intellectual Property Rights Office, and several bilateral treaties have been signed with various countries, including the U.S. In 1999, the Trademark Act and the Copyright Amendment Act were both enacted, consistent with the WTO TRIPS Agreement, together with the establishment of the Jamaican Copyright Licensing Agency.<sup>6</sup>**

- b) JAMPRO, The Ministry of Foreign Trade and the Ministry of Industry, Commerce and Technology should work to streamline the administrative requirements of those firms investing in ICT by creating a transparent and seamless application process for work permits and tax incentives, reducing customs processing times, and creating a real functioning "one-stop-shop" for ICT investors in Jamaica - a "demand cluster" for foreign investment. *JAMPRO needs to be the "one-stop-shop" for ICT investment.*
- c) The Ministry of Industry, Commerce and Technology should establish an incentive programme that encourages ICT Investment.
  - i. Tie incentives to performance based criteria such as, tax breaks based on levels of domestic personnel, rebates on training and skills upgrades for employers, low employment turnover
  - ii. Work with the *Tourism Office* to offer tourism-based incentives. Entice software professionals to work on projects in Jamaica in the hope that the climate and culture will entice them to stay. (Working getaways),
  - iii. Special tax rates, grants and other incentives for start-up enterprises in ICT

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<sup>6</sup> Jamaica's E-readiness Assessment, p. 11.

- iv. With JAMPRO, develop the market by promoting Jamaica as an ICT destination to investors
- d) All Government Ministries must work toward creating a socio-economic climate conducive to ICT investment, such as to:
- i. Create an environment of trust between citizens and government.
  - ii. Ensure that government sponsored ICT initiatives do not subordinate citizen needs to external interests
  - iii. Create a Public Awareness programme to educate the general population, the ICT user community, educational and training institutions, and government agencies on the necessity of ICT investment and potential benefits to them to create the demand for ICT services.
  - iv. Implement education programmes to develop mid-to-high level base IT skills (See ICT Learning)
  - v. Extend ICT investment benefits to poor and unempowered groups, such as women, and the rural population
  - vi. Address administrative weaknesses in the public sector
  - vii. Upgrade physical infrastructure (roads, traffic problems, ensure a consistent supply of electricity)
  - viii. Set quality of life standards for work environments
  - ix. Increase the availability of competitively priced telecommunications services (See "Establish a Nationwide Network")
  - x. With help of industry and academia, develop and promote sound managerial and marketing practices, business skills, and the work processes necessary for organizational innovation in order to support a dynamic ICT industry.
- e) JAMPRO and CITO will work to strategically position Jamaica in the global market.
- i. Establish a joint public-private information gathering and dissemination programme designed to collect, compile, analyze and disseminate international and internal (resources, industry

- demographics) market information. Publish information on the web. Establish an ICT Intelligence network that industry can use to make decisions
- ii. Identify foreign demands and needs in the ICT industry, especially in the United States and the EU
  - iii. With market information, identify market niches that can be exploited in the global market.
  - iv. Tie Jamaican production to international demand
  - v. Integrate further into International Production networks
  - vi. Refocus domestic industry on the foreign market and foreign opportunities
  - vii. Move Jamaica from the low-end of ICT applications to the mid-to-high level applications. Mid-to high-level services are those that require high levels of accuracy and the knowledge and judgement to execute complicated tasks.
  - viii. Leverage current relationships between domestic and foreign firms. Firms with data-entry operation can use them as a springboard to higher level ICT applications, similar to what happened in India
- f) JAMPRO and CITO should seek to utilize partnerships to foster growth in the IT industry.
- i. Encourage joint ventures between foreign companies and Jamaican firms, which offer Jamaica jobs and foreign expertise, which Jamaica can adapt to its own needs.
  - ii. Create an environment of trust and communication between domestic and foreign ICT firms.
  - iii. Create a network of domestic ICT firms to pool resources, share risk, marketing and training functions, and increase negotiating power
  - iv. Partner with Universities and academia to develop ICT applications
- g) The Ministry of Finance will work to increase the availability of venture capital to IT firms by educating the financial sector about the importance of ICT investment. Bring together the financial sector along

with government and ICT industry officials to draw up a general return on investment plan for investment in ICT.

4. Private Sector Opportunities

**(To be added to as necessary, at each annual review).**

## **V. SECTOR SPECIFIC INFORMATION TECHNOLOGY GOALS**

There are great opportunities for the use of technology in the delivery of services in various sectors of the economy, e.g., health, education, criminal justice, agriculture, and tourism. Government ministries therefore need to develop sector-wide plans to address opportunities, problems to be overcome, initiatives underway, and future initiatives, including resources that will be required in the next 2-3 years. It is recommended that these sector-wide plans become part of the corporate planning process in each Ministry. A template will be provided to assist in developing these corporate strategic plans.

The template will include :

- A. Assessment of where we are today
- B. Barriers to using technology to support the sector
- C. Need for change
- D. Discussion of ICT goals as well as possible projects

These plans should be developed in accordance with the overall vision and direction provided in the Five-Year Strategic Information Technology Plan for Jamaica.

**A. ASSESSMENT OF THE CURRENT SITUATION** - *Before we decide where to go, we must first assess where we are. An examination of the current environment is a necessary component of any strategic plan. This should examine the current use of ICT within the Sector.*

- 1. Sector Description
  - a. Develop a broad statement of how ICT is used within the Sector
  - b. Identify key officials, organizations and constituencies within the Sector - Roles and responsibilities

- c. Describe the overall missions and programs (business lines, functions) of the relevant Ministries'/agencies within the Sector.
  - Major accomplishments within the past calendar year
  - How is ICT being used to support mission/programs in the Sector?
  
2. Regulatory Framework - Describe the laws, regulations, and policies relevant to the use of Information Technology in the Sector
  
3. Current ICT Environment - *This assessment of the current ICT environment is meant to address the entire Sector and not just a specific ministry. For example, an inventory of hardware within the Health Sector is not confined to systems in use by the Ministry of Health. The inventory could also include systems in use by hospitals and clinics throughout Jamaica. The inventory does not have to be exhaustive, but should be as detailed as possible to provide an accurate picture of the environment.*
  - a. Existing Sector ICT Plans and initiatives
  
  - b. Develop a broad description of the ICT hardware and software used in the Sector (Mainframes vs. PC's, commercial software packages, etc.)
  
  - c. List and describe major program applications
    - Current applications critical to the Sector's mission
    - Current administrative applications
    - New service delivery applications being considered or under development for business partners and citizens
  
  - d. Develop a broad description of the Networks used in the sector - *This section should address Local Area Networks, Wide Area Networks, Communications software, the availability of Internet access to key officials, organizations and constituencies within the Sector. Also, the use of special service delivery vehicles (Kiosks, Web-*

*enabled systems, Postal Service Networks, ATM machines, physical government offices) should be highlighted.*

- e. Assess how information is shared and managed among Ministries, officials, organizations, and constituencies within the Sector.
  - Applications that exchange data across Ministries, organizations, and constituencies within the Sector
  - Security safeguards implemented within the Sector
  - Sensitive or classified data needing special safeguards
  - Privacy concerns
- f. Identify partnerships that support the sector - e.g. public-private partnerships, partnerships between ministries, etc.
- g. Determine ICT capabilities of the Sector's workforce
  - Assess the number of ICT professionals available to support the delivery of services within the Sector.
  - Identify skills and experience levels of these ICT professionals
- h. List private sources of funding for the Sector
- i. List public sources of funding for the Sector based on the ICT budget (current year + 2 years) of the leading Ministry in the Sector
  - ICT as a percentage of the total Ministry budget
  - Funds spent on each application critical to the mission of the Ministry
  - Funds spent on each major administrative application
  - Funds spent on contracted services

**B. POTENTIAL BARRIERS TO USING INFORMATION TECHNOLOGY TO SUPPORT THE SECTOR**

*- Below is a list of common obstacles that affect the use of information technology in many governments. Describe any of the barriers that restrict progress in the Sector.*

1. Funding
2. Regulatory environment
3. Network environment
4. Cultural values
5. Workforce
  - a. Number of skilled and experienced ICT professionals
  - b. Availability of ICT education and training
  - c. Migration of skilled ICT professionals to other countries
6. Procurement processes
  - a. Length of time required to award contracts
  - b. Insufficient number of existing contracts to allow timely acquisition of ICT products and services
  - c. Insufficient pool of ICT industry providers
  - d. Need for a competitive procurement system
  - e. Other barriers in the procurement process
7. Difficulty in obtaining collaboration and support between officials, organizations and constituencies within the Sector
8. Bureaucratic government procedures which extend the decision-making process
9. Other barriers

**C. GOALS AND POSSIBLE PROJECTS** -- *The goals in the sector specific plans should build on and implement the goals of the Five-Year Strategic Information Technology Plan for Jamaica. Progress relative to the goals should be*

*measurable and reported to citizens to stimulate dialogue and build buy-in.*

1. Envision the ideal environment and what information technology can do for the Sector
2. Identify and charter a champion for ICT within the Sector.
3. Identify Phase I goals for the Sector to be accomplished within the first 12 months. (See "Phase I Initiatives" in the *Five-Year Strategic Information Technology Plan for Jamaica.*)
4. Identify Phase II goals for the Sector. Substantial progress should be made toward the Phase II goals by December 31, 2004. (See Phase II Initiatives in the *Five Year Strategic Information Technology Plan for Jamaica.*)
5. Identify longer-term goals for the Sector to be accomplished over a five-year period. (See "Longer-Term Goals and Initiatives in the Five Year Plan" in the *Five Year Strategic Information Technology Plan for Jamaica.*)

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## **APPENDICES TO THE STRATEGIC INFORMATION TECHNOLOGY PLAN**

(Included here are summarized templates for the Sector Plans, which are to be completed by each Sector. This section will therefore to be completed when sectoral Plans become available.

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**APPENDIX A:  
Sector Specific IT Policies and Priorities**

## **I. EDUCATION**

### **Information And Communication Technology Policy Framework For Use In The Education System -----**

December 1998

#### **Preamble**

This draft (IT) ICT Policy for Education is based on the Government's recognition of knowledge as a necessary basis for sustainable human development.

The Policy therefore seeks to define the roles of all parties in the new smart partnerships of the public, private and community sectors required to drive the far-reaching changes needed to achieve knowledge for all in the new Information Age.

The Ministry of Education and Culture recognized its responsibility to utilize the technology and to facilitate wide participation in this effort to develop a meaningful policy. It seeks to articulate the principles and guide the actions required to fully utilize the available information and communication technologies to improve the management of the sector.

The ultimate purpose is for more effective creation and delivery of educational products for improved teaching and learning in Jamaica.

As we seek to realize the benefits of the new technologies, the Ministry recognizes the risk of increasing the knowledge gap, and so the policy pays special attention to the issues of access and equity as we expand the opportunities for lifelong learning for all our citizens, anytime and anywhere.

#### **Introduction**

Information and Communication Technology (ICT) is profoundly affecting every aspect of human activity. Its greatest potential lies in human resource development. To compete successfully in a fiercely competitive global economic environment a highly skilled and educated workforce with aptitude and skills in the application of

information and communication technologies in every day life will be essential.

As stated in the National Industrial Policy (1996), Jamaica seeks to promote the transformation of the structure of the Jamaican economy. It notes *"there exists a notable global tendency for a shift away from natural-resource-based primary products, towards knowledge-based and human-resource-intensive goods and services"* (p.27). It states that *"opportunities also exist for information technology to be the driver in the development of interactive training programmes and distance education, that will complement training efforts within the information technology industry itself as well as through the entire educational system"* (p.125).

Research has shown that ICT can provide stakeholders and administrators with new tools for increased communication for management efficiencies, and teachers and learners with improved learning opportunities by:

- empowering citizens, managers and other stakeholders by enabling online teamwork for increased participation, collaboration and information sharing through the use of email, the Web and other remote collaboration tools
- enabling the rapid creation and inexpensive distribution of educational information and knowledge
- encouraging professional development, in-service-training, remote support and mentoring for lifelong learning for teachers, managers and other citizens
- facilitating fast and easy access to information and expertise around the world.
- increasing motivation through the use of multimedia (sound, video, graphics, animation and text.)
- allowing each student to learn at his/her level and speed thereby giving pupils greater control over their own learning.
- enhancing the development of the abilities of mentally and physically challenged students.
- promoting active rather than passive learning.
- engaging students in research, data analysis and problem solving, thereby facilitating higher-order

thinking processes such as synthesizing, interpreting and hypothesizing.

In the context of these new opportunities, this national policy for ICT in Education is intended to locate Jamaica in the emerging global knowledge-based economy. This will be achieved by strategic investment in education to enable greater productivity in the workforce and thus increased national competitiveness.

### **Purpose Of The Policy**

In an effort to harmonize the efforts in the education sector with the national effort, the Ministry of Education and Culture (MOE&C) is proposing this policy for stakeholder inputs to the process of defining a Common Vision for the systematic integration of Information and Communications Technology in the education system.

As the Ministry is moving toward empowering local stakeholders through decentralization of its central and regional operations, it recognizes the obligations demanded and the opportunities afforded by ICT as the nation, led by the government, seeks to modernize all aspects of management, administration and service delivery.

The Ministry itself, in its central and regional operations, will therefore lead by its own proactive adoption of ICT in its internal processes and in its communication with national and international stakeholders.

Without limiting itself to any specific forecasts or projections of manpower needs, the policy addresses itself to the creation of a human resource platform through the formal education system up to the end of high schooling on which the tertiary institutions can build the array of skills and competencies needed for productivity, research, economic growth and genuinely sustainable development.

In the process, individual creativity, innovation, inventiveness will be encouraged and facilitated by improving the environments in which interaction with the technology takes place.

The Objectives of the policy are to:

1. promote equitable access to educational resources through the strategic application of ICT.
2. make all school leavers computer literate thereby providing them with the requisite ICT skills as a platform for imminent employment and/or entry to specialized training for the information economy
3. create a teaching force in which all practitioners possess the critical requisite skills and competencies required to use ICT as a tool in enhancing the teaching/learning process and a cadre of ICT teacher specialists.
4. improve the efficiency and effectiveness of educational administration through the promotion of the use of **appropriate** school management **information** systems.
5. Exploit the interactive potential of Information and Communications Technology in the provision of life long learning, anytime, anywhere via distance education programmes.
6. create **smart partnerships** for a sustainable ICT programme through collaboration with between the **public**, private **and community** sectors,
7. establish a schools network system for the collaborative sharing of educational resources **and stakeholder participation**.
8. employ the new ICT tools for increased online communication, stakeholder participation and improved management of the sector.

### **Issues Giving Rise To Policy Considerations**

There have been many MOE&C, private sector and school community initiatives to introduce information technology in the education system over the last fifteen years. Currently, schools are utilizing ICT to teach computer studies and information technology at the CXC level as a component of the Business Education programme, for computer assisted instruction for remediation, numeracy and literacy, for promoting computer literacy, to enhance learning in all subject areas, and for research purposes, utilizing software and the Internet. However, these initiatives and practices have had no guiding policy.

It is now therefore an imperative that MOE&C develop a policy that will guide the successful integration of ICT in the education system. This is necessary to ensure standardization, reduce wastage and ineffective use of the technology and optimize its use to enhance teaching and learning.

Several issues have been considered in order for the country to make optimal use of ICT in the teaching/learning process. With the rapid changes in the technology itself and its applications, these issues and others will have to be constantly reviewed to ensure that policies are kept relevant and current.

Relevant considerations and policy objectives include:

1. The MOE&C's institutional capacity to utilize information management tools and to ensure the implementation and support of ICT programmes in the nation's schools.
2. The revised policy instruments, including incentives, guidelines and performance evaluation instruments as appropriate to management in the information age.
3. The supply of hardware and relevant software to allow students equitable access to the technology.
4. The equipping and retooling of Teacher Training Colleges to prepare teachers in the integration of ICT in the curriculum.
5. The country's capacity to develop software and courseware, which support the curriculum and reflect Jamaican culture.
6. The capacity of suppliers to maintain hardware and software supplied to the school system.
7. The funding required for the introduction, maintenance and sustainability of ICT programmes.
8. The development of ICT curricula for the primary and lower secondary levels of the education system.

## **Background**

The public formal education system is comprised of four educational levels: early childhood, primary, secondary and tertiary. In 1997/98, formal public education was offered to

approximately 670,000 students in 1000 educational institutions and approximately 22,000 teachers. The government has placed on record its commitment *"to provide every school with an Internet connection where the telephone facility exists and to supply the others with the relevant software to expand their access to relevant material, relevant concepts and learning approaches"*. Extract from the 1997 Budget speech by the Rt. Honourable P.J. Patterson.

There have been a number of initiatives in the implementation of ICT programmes in the education system. One of the earliest initiatives was the establishment of model computer education centre at St. Andrew Technical High School in 1983-84. This was funded by Control Data Corporation, a U.S-based computer firm. Software-the Plato Learning system was used for remedial instruction in Mathematics and Reading with positive results. Computer-based vocational education was also taught.

With support from the UNDP, the Ministry introduced a pilot project at Montego Bay High School in a computer laboratory built by the School's Parent Teachers Association. This laboratory was equipped and furnished by the project and students from neighbouring schools used the laboratory utilizing courseware selected by Ministry of Education officers in the USA which was thought to be relevant to the grades 7-9 curriculum.

Since 1990, the Jamaica Computer Society Education Foundation (JCSEF), with support from the Business Partners for Education, the Ministry of Education and Culture, the Human Employment and Resource Training Trust/National Training Agency (HEART/NTA) and other partners in the private sector, has been implementing programmes to improve the quality of education in Jamaican schools through the introduction of computer technology.

### **The Jamaica 2000 Project**

In 1992, the JCSEF in partnership with the HEART Trust/NTA, the private sector through the Business Partners, and secondary school communities launched the

Jamaica 2000 Project. The aim of this project was to establish a fully equipped fifteen-station computer laboratory in each secondary school, community college and teachers' college and provide in-service training for teachers. The initial aim of the project was to provide opportunities for students of the upper secondary level to pursue computer studies in the CXC examinations enlarging the pool of potential computer professionals. Use of computers later evolved to include remedial education in numeracy and literacy for students enrolled at the lower secondary level.

The HEART Trust contributed approximately J\$60M to this initiative. School communities provided space for the computer laboratories by constructing laboratories or converting existing space, securing the facilities and providing electrical installation. School communities contributed 20 per cent, the HEART Trust contributed 40 per cent and the Business Partners 40 per cent of the costs required. To date 83 computer laboratories have been established.

The Ed tech 20/20 Technology in Education Project for primary schools was initiated by the Round Table Think Tank, a body including representatives from the public and private sectors, educators, the media and JCSEF. The project received US\$1M from the IDB to implement a pilot project in four primary school clusters in four parishes, St. Elizabeth - Malvern, St. Mary - Oracabessa, St. Catherine - Above Rocks and Clarendon - Frankfield. The computer facilities were placed in areas where computer laboratories already existed in secondary and tertiary educational institutions.

The Joint Board of Teacher Education has developed a wide area network, which facilitates a range of interactive communication between the Institute of Education at the U.W.I. and the colleges. It is also proving valuable to participating schools as on line management information systems.

At the Jose Marti Technical High School, state-of-the-art electronic drafting technology is in place for student use through the Japanese Technical Co-operation Agreement.

While these formal initiatives were taking place, a number of schools have undertaken their own projects, as a part of their development plan, often supported by private sector contributions and/or with support from alumni or Parent Teacher Associations.

### **Factors Which Will Impact On The Policy**

1. Equity of access to the technology for all students.
2. Preparation of teachers to optimize the use of ICT in the teaching/learning process. The process of preparing teachers in training as well as the 'upskilling' of those now in the classroom.
3. Provision of technicians to support the work of teachers and administrators in the schools.
4. Security of hardware and software in schools.
5. Health and safety issues
6. Cultural relevance and suitability of courseware
7. Sustainability of programmes considering the high rate of obsolescence of equipment and the high cost of replacement relative to the country's resources.
8. Capacity of the central Ministry to manage the partnership process for development and to monitor the implementation of the policy at the institutional level.

The MOE&C Media Services Unit has been restructured as posts were classified to staff an Educational Technology Unit. New posts in print, video and courseware production were provided so that courseware would be developed in this unit, or customized where necessary.

The MOE&C websites will be developed, together with an INTRANET for the school system using content prepared by the various units of the MOE&C as well as by individuals and groups within the sector. The Intranet will be of help to teachers, administrators, student's parents and other stakeholders.

## **POLICY POSITIONS**

**1. Equity of access is an overriding consideration. The Ministry of Education will therefore work collaboratively with educational institutions to make available facilities, equipment and personnel to permit access to ITC for all students.**

- a) Schools will be expected to use the most effective configuration - classroom, type of equipment, networking, and software - to optimize both access and quality.
- b) While schools are expected to make ICT facilities available to the community and to use the proceeds from the sale of services to sustain and develop their ICT facilities and programmes, outreach and commercial activities must not compromise access and quality for the students.
- c) Accountability for all ICT resources, as with all other school property and facilities rests with the school's administration.

**2. Students completing primary education should have had some exposure to ICT, and possess some awareness of its applications.**

**3. Students leaving grade 11 after five years of secondary education must be computer literate defined as being able to use a computer safely to do the following**

- a) compose a document using word processing functions, being able to copy, cut, paste, save and print
- b) prepare a simple spreadsheet
- c) send and receive an electronic mail message
- d) access sites on the internet

**4. ICT at the institutional level will serve multiple purposes, all of which contribute to the creation of knowledge-based, information oriented, systems driven modern society. These include primarily**

- a) supporting individual mastery of literacy and numeracy skills at the primary level

- b) improving the general quality of learning throughout the curriculum
- c) providing strong support for technical/vocational programmes in the upper levels of the secondary system
- d) remediation where needed
- e) increasing professional development opportunities for teachers and other staff
- f) improving the efficiency of the school's administration, including student record keeping
- g) facilitating the accurate and timely flow of data and information between institutions and the Ministry of Education and Culture
- h) building the creative capacity and the expertise of ICT users and sharing the products with others

**5. The Ministry of Education and Culture will have the responsibility of ensuring the most efficient use of all resources involved. It will expand its existing courseware evaluation committee to include a broader representation from the stakeholder community to perform a number of functions. The ICT Standards Committee will perform the following**

- a) advising on the appropriateness of hardware
- b) determining approved software for educational/curriculum purposes
- c) determining management systems to ensure compatibility with the national system

**6. The Ministry of Education and Culture will actively encourage collaborative partnerships in furtherance of the national development objectives. To this end, it will**

- a) work with public and private, local and foreign training institutions to expand the number of teachers equipped to work in an ICT mode within the schools
- b) develop guidelines for schools to work directly with providers of goods and services required by the ICT programme in their institutions

- c) remain responsive to the needs of corporations, small business enterprises and individuals in respect of ICT skills and the relevant curricula
- d) encourage the sharing of skills between the schools and the workplace
- e) provide information to the private sector on partnership opportunities with individual educational institutions, including the extent of tax incentives for benefactions.

**7. The Ministry of Education and Culture will also work with the Ministries of Finance & Planning, Industry, Commerce & Technology, and with the Office of the Prime Minister (Information) as well as the Cabinet Office, making maximum use of the opportunities available through the Telecommunications Policy arrangements to ensure that access to the relevant services is available to the entire student population at the best possible cost.**

**8. The staffing arrangements in the schools and the recurrent costs for approved programmes will be reviewed and modified from time to time by the MOEC to ensure that the efficiency of the operations is supported.**

**9. Financing of ICT within the education sector will remain as a partnership exercise. The partners will include:**

- a) The Government of Jamaica through the Ministry of Education and its agencies Public Corporations and Statutory Bodies
- b) Private Enterprise
- c) Local and International Foundations
- d) Bilateral and Multilateral Organizations
- e) Community Organizations
- f) The educational institutions through income-generating activities
- g) Parents through the cost-sharing mechanisms in secondary and tertiary institutions

- 10. All policies and provisions in respect of copyright, professional conduct; confidentiality, rights and responsibilities of lecturers, teachers, instructors, trainees and students will apply to the conduct of ICT programmes.**

*Ministry of Education & Culture  
2 National Heroes Circle*

**Kingston,  
Jamaica**  
*December 1998*

## **II. Agriculture**

### **A02: Address the Information Technology Needs of Our Nation's Agricultural Community**

- A02.1 Assessment of where we are today
- A02.2 Barriers to using technology to support the agricultural industry
- A02.3 Need for change
- A02.4 Discussion of where we want to be

#### **Actions**

- a. Define the agricultural community information requirements
- b. Establish a joint government-private sector Advisory group
- c. Prepare an implementation plan to use IT to promote the agriculture community
- d. Place research facilities online
- e. Use e-commerce to market and sell agricultural products
- f. Use technology to provide agricultural information online (crop development, harvesting techniques, financial and technical assistance, and other educational materials)

## **III. Health**

### **A03: Address the Information Technology Needs of Our Nation's Health System**

- A03.1 Assessment of where we are today
- A03.2 Barriers to using technology to support the national health system
- A03.3 Need for change
- A03.4 Discussion of where we want to be

#### **Actions**

- 1. Define the information requirements of our health system
- 2. Establish a joint government-private sector Advisory Group
- 3. Prepare an implementation plan to use IT to support the national health system
- 4. Place research facilities online

5. Network together the hospitals to facilitate the use of tele-medicine and other health care related technologies

#### **IV. Criminal Justice**

##### **A04: Address the Information Technology Needs of Our Nation's Security & Justice Community**

- A04.1 Assessment of where we are today
- A04.2 Barriers to using technology to support the security & justice system
- A04.3 Need for change
- A04.4 Discussion of where we want to be

##### **Actions**

1. Define the information requirements of the security & justice system
2. Establish a joint government-private sector Advisory Group
3. Prepare an implementation plan to use IT to support the security & justice community
4. Network together the courts and the security & justice system

#### **V. Tourism**

##### **A:05 Address the Information technology needs of Tourism.**

- A05.1 Assessment of where we are today
- A05.2 Barriers to using technology to support the national health system
- A05.3 Need for change
- A05.4 Discussion of where we want to be

##### **Actions**

1. Define the information requirements of our tourism sector
2. Establish a joint government-private sector Advisory Group
3. Prepare an implementation plan to use IT to support the national tourism sector
4. Place research facilities online

5. Network together the sector to facilitate the use of the technology for improved marketing and servicing of the sector

## **APPENDIX B**

### **Assessment of Current Investment in IT to Support the Business of Government and the Delivery of Services by:**

- I. Ministry of Agriculture
- II. Ministry of Education and Culture
- III. Ministry of Industry, Commerce and Technology
- IV. Ministry of Labor and Social Security
- V. Ministry of Land and Environment
- VI. Ministry of Local Government and Community Development
- VII. Ministry of Transport and Works
- VIII. Ministry of Water and Housing
- IX. Ministry of Mining and Energy
- X. Ministry of Finance and Planning
- XI. Ministry of Health
- XII. Ministry of National Security and Justice

## **APPENDIX C: An Overview of the Telecommunications Infrastructure Required to Support Electronic Commerce in Jamaica**

This document provides an overview of the telecommunications infrastructure required to support electronic commerce in Jamaica over the next 5 years. This time limit is deliberate as the recommendations are based on existing technologies, which have been proven already, or are in the process of being commercialized,

The basic principles applied to arrive at the recommended infrastructure are as follows:

1. Electronic commerce requires similar attributes for success as all other forms of commerce (particularly retail). These are (1) fast access to information on a product or service; (2) speedy checkout at the cash register; and (3) no interruptions while either actions are taking place.
2. The ability to attract and service a large and growing customer base over time with no reduction in the quality of service.

The required telecommunications infrastructure thus comes down to one which is able to provide reliable, high speed connections to as broad a range of users as possible, with the capability to transfer all types of traffic (voice, video and data), as well as being scalable to accommodate increased traffic over time.

As this document is limited to considerations of the telecommunications infrastructure, the focus will be on meeting the requirements stated above in three critical areas. They are:

1. International connectivity to the Internet
2. Domestic broadband backbone
3. End user connectivity (business and consumer)

### **1. *International Connectivity To The internet***

International connectivity to the Internet is required to facilitate commercial activities by foreigners seeking to make purchases on systems based in Jamaica, as well as to facilitate Jamaicans seeking to make purchases on systems installed outside of Jamaica.

The connection to the Internet from Jamaica will require redundant links with minimum latency during transmission. Ideally these links should be provided by fibre optic cable capable of supporting gigabit transfer rates in the future.

At this time -o (44.736 Mbps) or OC-1 (51.84 Mbps) would be more than adequate, but as traffic increases, the required bandwidth for the international links would grow through OC-3 (155.52 Mbps) to possibly as high as OC-24 (1,244.16 Mbps).

### **2. *Domestic Broadband Backbone***

It is expected that for electronic commerce to be successful in Jamaica, domestic commercial activity will have to be supported. To facilitate this the country will require a high-speed domestic broadband backbone connected to the international gateways previously discussed. The backbone also has to be able to provide a high level of resilience to ensure that failure in one segment will not cripple large areas of the network.

The recommended broadband backbone for Jamaica is a fibre optic ring passing through every major township or population centre. The backbone should utilize packet switching technology, either Asynchronous Transfer Mode (ATM) or Frame Relay, and ultimately be capable of supporting transfer rates in the gigabit range.

### **3. *End User Connectivity***

Ultimately, to support electronic commerce, connectivity will have to be provided to the providers and purchasers of the goods and services to be traded electronically. These end users will have to connect to the domestic broadband backbone at rates much faster

than what is available today if electronic commerce is to become widely accepted.

As end users fall into 2 main categories (business and consumer) with different needs, end user connectivity will be examined separately for each category of user.

### 3.1 Business Connectivity

Connectivity to the broadband backbone for business users should be provided in two ways. The first should be Frame Relay, which utilizes packet switching technology and can support transfer rates from 56 Kbps to 45 Mbps, while supporting voice, video and data. Larger organizations, Internet Service Providers, and electronic commerce web sites would require this type of connection.

The second option for connectivity should address the needs of smaller organizations that cannot afford persistent high-speed connections. These users should be connected via either ISDN or Digital Subscriber Line (xDSL). Both services can be provided over the existing copper wire line infrastructure and will be more affordable than Frame Relay, while being able to support substantially higher bandwidths than the existing dial-up access over analog circuits. Transfer rates will typically range from 64 Kbps to 1 Mbps and greater.

### 3.2 Consumer Connectivity

While some consumers may be able to afford ISDN or XDSL access the majority will not. To provide consumers with the connectivity required to support electronic commerce, the recommended technologies are data over cable and wireless local loop (WLL).

Connectivity via cable is rapidly emerging as the preferred means of providing high speed Internet access to the household in North America. In Jamaica, cable television subscriptions are growing at a substantial rate and significant penetration is being achieved in most major population centres. Adapting this technology to facilitate Internet access is seen as

the easiest way to provide the consumer with the high-speed access required to support electronic commerce.

Cable will be limited to larger urban centres because of the cost of the cable infrastructure. To meet the needs of the remote users, NVLL will probably emerge as the most cost-effective method of providing connectivity to consumers. Unfortunately, this is still an emerging technology; so remote users will probably have to wait some time for high-speed access to be made available on a widespread basis.

Edward Alexander  
July 30,1999

## **APPENDIX D: Outreach (i.e. Marketing) Plan**

### **Important points to remember when marketing the Plan:**

1. Identify key organizations and officials from whom we need buy-in.
  - Government/Opposition
  - Local and international, and multi-national organizations
  - Private Sector; local (large and small) and international
  - Identify key individuals (<10)
  - Education
  - Jamaicans overseas
2. Obtain buy-in from Prime Minister and key ministers; allow support for the plan to snowball (with support from the P.M.).
3. Must be visible at all levels of society - grade school to boardroom
4. Identify key areas of opportunity - training and education, infrastructure, software development.
5. Develop a realistic tag line used by all sectors.

#### Suggested slogans

"Just do ICT."

"Invest in ICT"

6. Stress the importance of ICT to the development of Jamaica. The Jamaica Information Service (JIS) will deliver the "message."
7. Prioritize initiatives to get an early win. Look especially at initiatives in Phase I of the Plan.
8. Who are the marketing managers?

9. Devote August and September to building excitement and acceptance in all sectors.
10. Set up communication lines between industry and government, e.g. Town hall meetings
11. Message from IAC after the Prime Minister's message. Also, a statement from the opposition party
12. Be flexible - Market the plan from many different angles.
13. Develop "teasers" for IT Plan - web page, cyber cafe, radio address, TV, comment lines, call-in-shows. Make report "sexy."
14. Make multilateral organizations aware of plan - Give briefings to potential donors - PIOJ.
15. Testimonials from countries moving in similar directions with ICT - Singapore, Taiwan, Malta
16. Formalize the marketing plan
17. Identify forums to get the word out.
18. Put the plan on the Web. Provide constant reviews and updates.

## **Appendix E:**

## **Summary List of Private Sector Opportunities**

### **Introduction.**

**The Key to the success of attracting Private Sector participation in accelerating** *and* making the establishment of Information Technology islandwide and profitable, is by Government adopting the role of Facilitator and providing an environment conducive to attracting investments. The description of Government's expected role in this regard, has been carefully laid out else where in this document to portray government as a facilitator—prepared not only to continually review it's incentives, but to adapt its operations to utilizing the technology itself. The end purpose being, the maximum use of the cost effectiveness and efficiencies of the Technology. Within this ambit, the entrepreneurship ability of the private sector, re-enhanced by a level playing field for open competition, will determine the success of this industry. These qualities will also open out every possible opportunity to be profitably exploited.

The areas for private sector participation, are wide and varied and the following list is only an indication of possible areas to be exploited. The resolution of the license of C&W Jamaica LTD; should open the field to new participants and both accelerate the pace of development and realize the reduction of unit costs.

### **PRIVATE SECTOR OPPORTUNITIES.**

1. In terms of the **Telecommunications Infrastructure**, the Private Sector will be able to: -
  - a) Ensure ready access to telephone service by all Jamaicans;
  - b) Complete and continuously upgrade, maximum access to the Internet;
  - c) The provision of a high speed domestic broadband backbone connected to the International Gateways;
  - d) The provision of End User Connectivity at acceptable rates, specifications and "installation" timeframes for both business and consumer needs.

- e) Expansion of and continuing upgrading of the local "Intranet" network and the setting up of "on-line" facilities and services; and
- f) Operation of and continuing enhancement of a local "Trade Point" application;

2. In terms of **Education**, the Private sector will have the opportunity to participate in: -

- a) The completion of an education (audio-visual) network locally to provide new teaching tools and enabling students the widest possible choice of subjects;
- b) The provision of specific educational programs on-line—e.g. the development of upgrading programs for the currently employed, etc;
- c) The establishment of on-line research services/facilities
- d) The offering of specific courses (e.g. culturally defined) to the international community; and
- e) The establishment of studio facilities for the preparation of programs/projects for educational purposes.

3. In terms of **Agriculture**, the Private Sector can provide: -

- a) Research and Extension services on-line;
- b) Educational programs specific to agriculture—e.g. post harvesting techniques; guidance on the locally available financial and technical assistance; and
- c) Marketing Services—locally and overseas (e.g. Trade Point);

4. In terms of **Health**, the Private Sector can offer: -

- a) On-line educational programs for Health Professionals—e.g. upgrading for licenses; updating on new procedures/approaches; (Type-Global Consult Link), etc;
- b) On-line referral system e.g Analyses, Consultations etc;
- c) Establishment of a Telemedicine network for Hospitals/Clinics and Specialists;
- d) Clinical Education Programs to all categories of health workers through the Telemedicine network;
- e) The setting up and operating of Teleradiology (local & international) Linkages, for example, to facilitate diagnostic opinions on radiology images at remote

locations using the computer and telecommunications technologies, and

- f) Facilitating the establishment of Health Tourism—re ensuring continuous access to both medical and referral services etc; while utilizing healthy environments.

5. In terms of **Tourism**, the Private Sector can provide:

-

- a) A focused marketing service using the advantages of the Technology; and
- b) Booking Services for Airlines, Hotels etc.

6. In terms of the **Justice** System, the Private Sector can provide: -

- a) A network linking the Courts/Records System;
- b) The Provision of "Witness Provision Services"---e.g., at a distance, audio/visual transmissions;
- c) Recording of Court Sessions and referral systems;
- d) The provision of and maintenance of a specified telecommunication system for the Jamaica Constabulary with ready linkage with the Jamaica Defence Force; and
- e) The provision of an applicable records system with international linkages.

7. In regards to **Commerce**, the Private Sector would have been involved in the above mentioned commercial applications, as well as: -

- a) The provision of Advertising Services to overseas based clients through audio/visual services, utilizing local scenery, culture (music, history etc) and talents;
- b) The offering of accounting services to overseas based companies; and
- c) The provision of local and international marketing services, etc;

The above are but examples of the many services, which the private sector can offer. There are much more services which their own entrepreneurial abilities will uncover and target.

**Appendix F: Summary Description of Central  
Information Technology Office (Office of  
Partnerships)**

## **CREATING AN INFORMATION SOCIETY IN JAMAICA: THE ROLE OF THE CENTRAL INFORMATION TECHNOLOGY OFFICE (CITO)**

### **CONTEXT**

In recognition of the critical importance of information and communication technology (ICT) to the development of Jamaica, the Cabinet in February 2001 approved a Five-Year National Strategic Information Technology Plan and concurrently, the establishment of the Central Information Technology Office to monitor and coordinate the implementation of the Plan.

The Strategic Plan itself called for an Office of Partnerships to perform this role, out of a realization that successful implementation of any ICT policy recommendations for Jamaica would only be possible through collaboration among key stakeholders. Hence CITO, or the Office of Partnerships, will carry out its mandate based on a spirit of partnership between various important constituencies – public and private sectors, non-governmental organizations, academic institutions, local Jamaican communities. Hence, CITO is also known as the Office of Partnerships.

In this regard, the Office has been established as a limited liability company (LLC.), reporting directly to the Minister of Industry, Commerce and Technology (MICT) and through him to the Cabinet Sub-Committee for Information Technology, which includes the Minister of Education, Youth and Culture, the Minister of Information and the Minister of Industry, Commerce and Technology. The creation of CITO as an entity separate and apart from the Government, with its own Board of Directors and administrative structure, provides the flexibility and independence required to effectively perform its role.

### **ROLE AND FUNCTION**

The Office has four main functions:

- a) to clearly articulate the information technology strategic “vision” for Jamaica;

- b) to provide policy advice to the Minister on strategies for the development of the ICT sector;
- c) working to ensure that the goals of the National IT Plan are implemented; and
- d) to foster linkages and creative partnerships between various constituencies for project development and investment in the ICT sector in Jamaica.

**a) Articulating the Strategic ICT “Vision”**

The National ICT Plan clearly recognizes that as small, open economy, with a reliance on a narrow range of exports, Jamaica is at a disadvantage in the global marketplace. Furthermore, the move to diversify the economy to include export-oriented services (increasing tourism), as well as non-traditional exports such as apparel manufacturing has not yielded the economic development gains expected. It states that information technology and e-commerce effectively eliminate size and distance from markets as constraints to export growth. Jamaica can therefore capture niche markets in IT and compete effectively with larger, more developed economies to take full advantage of current globalization trends. To compete, Jamaica must exploit technology in marketing its products and services, and utilize information technology to improve efficiency in both the public and private sectors, ultimately enhancing the quality of life for all citizens.

The Strategic “ Vision” is therefore that Jamaica must become an information society and the center for ICT activities and investment in the Caribbean. With our proximity and telecommunications links to the United States and other advantages such as language and relatively low labour costs, we are also well placed to compete with other developing countries for market share of the ICT business. In addition, information technology must be ultimately utilized in all aspects of Jamaican life and in all sectors. It must have relevance for activities at the community level, and in order for this to occur, there must be affordable access to the technology for every Jamaican.

CITO must articulate and continuously refine this “vision” so that every Jamaican understands the importance of IT to Jamaica’s development and most critically, the relevance of

IT to his or her own economic circumstances. In this regard, CITO is already working with the Jamaica Information Service to develop a public awareness campaign.

**b) Providing Policy Advice**

CITO recognizes that a key constraint to realizing the Strategic Vision is a lack of resources. However, the emphasis must be on the private sector, in any expansion of ICT activities in Jamaica and the effort to achieve universal access to the technology. The government however, has a vital role to play as a "facilitator", by providing the enabling environment to attract increased investment and outsourcing in informatics and also in the development of e-commerce. It can do this by eliminating legislative, regulatory and administrative barriers, and by establishing a transparent legal framework for the sector.

CITO has an important contribution to make to government efforts by providing policy, technical advice and guidance on local and international issues impacting on the sector. The Office is also the main advisor to Government in areas such as E-commerce, the Internet, regulatory frameworks and E-Government, given its network of resources locally and abroad.

**c) Working to ensure implementation of the National IT Plan goals**

The Strategic Plan identifies a series of short and long-term goals. These include:

1. Commissioning an assessment of the status of IT use in both the public and private sectors i.e. an E-readiness Assessment.
2. Facilitating private sector initiatives to dramatically increase public access to the Internet.
3. Encouraging individual Ministries to develop sectoral IT plans to complement the National Plan.
4. Creating a Chief Information Officer position in each Ministry

5. The creation of a system of investment incentives to spread IT activities geographically across Jamaica.
6. The development of the appropriate infrastructure to facilitate the delivery of government services, as well as access to government information.
7. The restructuring of the educational system to provide more information technology-related training and re-training at all levels linked to the needs of industry.
8. Implementation of a series of pilot projects to demonstrate the benefits of IT and to further the government's goal of universal access to the technology and emphasize public access to information. Ideally, some of these projects should lay the foundation for the development of a national information infrastructure.

Within the first few months of its existence, CITO had already taken important steps towards the realization of many of these goals. First, CITO secured a grant from the World Bank (infoDev) to prepare an E-readiness Assessment. The E-readiness Report has been completed and an evaluation report is being prepared.

Second, CITO has already established important linkages with all the Ministries. The Office is actively working with the Ministries of Agriculture and Education to facilitate the creation of their respective sectoral plans. Towards this end, CITO, with sponsorship from the Commonwealth Secretariat, UNESCO and the Caribbean Development Bank, held a workshop for ICT planners in the Caribbean region earlier this year to discuss how to formulate sectoral plans. The Workshop was an unqualified success, with Jamaican participants, 50 representatives from other CARICOM states and one representative each from Haiti and Cuba.

In addition, the Cabinet has authorized CITO to work with Ministries to maintain cost-effectiveness and maximize structural & operational efficiencies with respect to ICT

plans. To ensure this goal, all ministries of government must submit their ICT budgets to the Office for its approval.

Third, CITO has been in discussions with multilateral donors as well as U.S. NGOs and private sector firms about possible pilot projects focusing on ICT access at the community level. One proposal has already been submitted for funding.

Finally, CITO is in the process of preparing an Operational Plan to properly execute all aspects of its mandate.

#### **d) Fostering Linkages and Creative partnerships between various constituencies**

This is perhaps the most important aspect of CITO's work. In its role as "facilitator", effective and enduring partnerships which are fostered by the Office will ultimately result in the achievement of the goals of the National Plan, including those outlined above.

The composition of the CITO Board itself is representative of the public-private sector collaboration that the Office is trying to achieve, with representation from companies such as Air Jamaica, PanJam, CCS Jamaica Ltd., the Jamaica Chamber of Commerce, and public sector entities such as JIS and HEART.

CITO has been working on creating and strengthening existing overseas partnerships. In effect, garnering international technical and financial support for the modernization and development of the ICT sector. Several U.S. government agencies (e.g. the U.S. Department of Agriculture, the U.S. Department of Education and the National Institute for Science and Technology) have already agreed to provide mentoring to their counterpart agencies in Jamaica in a number of areas. In addition, the World Bank has provided an additional grant to CITO to prepare the business plan for the creation of Jamaica Gateway (portal) that would incorporate and dramatically expand on the existing JIS site.

Finally, CITO will receive technical assistance to carry out its mandate, under a US\$20 million ICT project being

funded by the Inter-American Development Bank. The project also includes: a) an E-government initiative to lay the foundation for a public sector ICT infrastructure, by putting a number of the revenue-collecting agencies online, "web enabling" the operations of the key trade agencies, conducting a feasibility study for e-procurement and a similar study for the implementation of an e-marketplace for the Rural Agricultural Development Agency (RADA); and b) a community outreach program to provide connectivity i.e. ICT access at the local level, via Community Access Points in marginal areas ignored by private sector investors. This project will begin in the third quarter of 2002.

CITO has also realized the important role that Jamaican nationals who are information technology specialists overseas can play in the further development of ICT activities in Jamaica. As a result, the Office, with the help of the Jamaican Embassy in Washington has already assembled a team of volunteer technical "advisors" who have been providing ongoing assistance. Similar panels will be established elsewhere in the U.S., as well as Canada and Europe.

## **Conclusion**

CITO was envisioned as company with a small core of highly qualified experts and which would therefore work closely with existing public agencies and private companies to execute many of its initiatives. Although CITO only officially began operations in June of 2001, the Office has already has some critical successes. It will be important to build on these achievements and firmly establish credibility at all levels in Jamaica. At the same time, we must build on our existing effort overseas to communicate CITO's role in implementing the National Strategic Plan. According to the World Bank, Jamaica is one of the few countries in the world at the moment, which has completed a Plan that is actually being implemented, and we must capitalize on this achievement.

If CITO focuses on the partnership aspect of its mandate Jamaica can make great strides in ICT development and play an important role in this regard in the Caribbean region.

CITO - Washington, DC.  
December 2001 – Revised March 2002