Appendix C

Working Groups Action Plans

C1. INFRASTRUCTURE ACTION PLAN

Contribution to the National ICT Plan

Over the last twenty years, Information and Communications Technologies (ICT) have become a most powerful force for economic and social transformation in the developed world. The general pervasiveness of ICT, and its accelerated ability to enhance efficiency and facilitate innovation, has made it the largest and most sustained contributor to productivity growth in most of the world's leading economies. E-Readiness rankings are, in this context, an important bell-weather to national growth prospects. Indeed, of the very many factors that position a country to accelerate its development, the strength of its ICT infrastructure is undeniably one of the most critical.

Trinidad and Tobago has established ambitious growth objectives aimed at achieving developed-world status by 2020. The potential for significant additional national revenues from the oil and gas sector makes this goal realistic. But natural resources run out and, long before they do, they can get much more expensive to extract. Profit margins and tax revenues diminish. So, unless the high profits produced in the short-term are harnessed for sustainable development, improvements in development rankings may be only temporary.

On the other hand, an economy founded on the fundamental pillars of skills development, innovative enterprise and productivity improvement makes for steady growth in corporate earnings, employment, living standards and tax revenues. An ICT infrastructure that enables and stimulates significant performance in these areas would rapidly become one of the principal drivers toward a more fully developed economy.

Unfortunately, and as the current e-Readiness Assessment highlights, Trinidad and Tobago's ICT infrastructure is not yet properly

positioned to play this central role in advancing the country's development agenda. The Infrastructure Action Plan has identified actions that need to be taken to help ensure that a robust ICT infrastructure is in place to support the development of the National ICT Plan.

The urgency of the recommendations of this report cannot be overemphasised. Trinidad and Tobago's ICT infrastructure can indeed become a fundamental building block upon which widespread national progress can be built. However, substantial reforms must be implemented quickly and in a determined manner. Otherwise the state of the country's ICT infrastructure would be more appropriately described as an obstacle to development. We are at a pivotal point.

Desired Outcomes and Key Strategies

Desired Outcomes

The Infrastructure Working Group began its deliberations by identifying a number of infrastructure outcomes that would be fundamental to achieving success across the national agenda. Our suggestions included:

- Appropriate technology infrastructure and standards to support current and future ICT needs;
- Improved service standards and accessibility of ICT, and lower costs;
- Increased competition introduced to ICT sector;
- SMEs benefiting from utilisation of ICT infrastructure;
- New ICT businesses established;
- Growing number of jobs in the ICT sector;
- Rationalisation of infrastructure in Government; and
- A proactive, well-supported, and innovative regulator.

These items were combined and developed into a number of strategies, recommended programs and supporting projects.

Key Strategies

By international standards, Trinidad and Tobago has a reliable and affordable fixed line telephone system that meets the basic needs of homes and businesses. This connectivity has been enhanced by the rapid uptake of cellular phone services**,** which are offered through competitive suppliers. However, mainly because of high prices relative to income levels, Trinidad and Tobago is lagging badly in the introduction of computers and Internet access.

With relatively few people and organisations connected, there isn't much incentive to enrich service offerings, provide on-line services or upgrade and extend the telecommunications infrastructure. In the absence of substantial new investment, Internet access speeds will remain low, precluding much in the way of multimedia delivery and further dampening interest in "getting connected".

From an infrastructure viewpoint, Trinidad and Tobago is in somewhat of a conundrum. The country will need a bold, multifaceted strategy and determined actions to get out and going. Here are the decisions that are seen as being the most crucial:

1. Increased competition in the ICT sector

If Trinidad and Tobago is to going to use ICT aggressively for economic and social development it must get more technology into more organisations and homes. The ICT sector must be encouraged to provide new products and services that offer real value at a price that less wealthy individuals and small businesses can afford.

While public programs can play an important role, they are no substitute for competitive market forces. The pre-eminent requirement is to get prices down while simultaneously enhancing service quality and variety. This is best done through the creation of open and effective competition in all areas of the ICT sector.

Overall the Trinidad and Tobago ICT sector is barely open to competitive forces. There is evidence of some competition in the ISP marketplace, with approximately 9 companies providing service. Cellular services are now available from multiple suppliers and new investors are entering the field. The broadcasting sector is very competitive with over 20 radio stations and 4 television providers. The cable system now has two providers although they cover different parts of the country.

While these sectors feature some competition, it is absent in the area of fixed-line telephony, which is by far the most critical segment of the market in terms of fostering economic development though productivity, innovation and skills improvement. If Trinidad and Tobago is to leap forward in its use of ICT for development there are a number of critical liberalisation decisions that must be taken promptly. A five-point program has been crafted. It provides a series of actions that have the potential to move the strategy forward quickly and effectively.

2. A proactive, well-supported and innovative regulator
Implementing and supporting a competitive telecommunications market is a major national undertaking, requiring a highly expert and well-run regulator. It needs a clear mandate from Government, adequate resources to do a thorough job and, perhaps most importantly, freedom from political interference. Foreign investors will not take the Trinidad and Tobago telecommunications market seriously with anything less.

The Government's decision to establish the Trinidad and Tobago Telecommunications Authority (TTTEL) as an independent regulator was implemented in 2001 with the *Telecommunications Act*. While TTTEL already has wide-ranging powers over the telecommunications sector, its mandate and organisation will need to be further strengthened to support the liberalisation activities already committed to by the Government. It is proposed that the Ministry of Public Administration and Information (MPAI) help TTTEL design and undertake a comprehensive agenda aimed at making telecommunication competition and innovation a reality in Trinidad and Tobago as soon as possible.

3. Improved service standards and accessibility of ICT
Generating effective competition by liberalising market framework provisions is the essential first step. However, by itself this will not create sufficient momentum to make ICT a powerful development instrument in the medium-term. Government will need to work with the non-profit and business sector to launch a series of well targeted, affordable and sustainable programs to generate demand for high value-added services that will help build Trinidad and Tobago's economy, society and culture.

We must get ICT technology and services into the hands of many more consumers and producers. And, we need to do this as quickly as possible.

Other Action Plans, particularly those focused on Human Resources and Government, are looking at a range of possible public initiatives to accomplish this. In this context, the Infrastructure Working Group has focused on three areas that deserve priority on the basis that they will immediately help to promote broad-based demand for telecommunications services and so contribute to the business case for more private investment within a liberalised telecommunications environment.

4. Appropriate technology to support future needs

If we are serious about the use of ICT as a major development tool for Trinidad and Tobago, and if we are working to build widespread ICT usage by individuals and organisations, then we have to begin building an adequate infrastructure throughout the country to meet tomorrow's bandwidth and volume needs. Broadband is the fundamental requirement.

There are many definitions about what broadband is with regards to speed. In most developed markets it is considered to be about 1.5 megabits per second of data throughput. This transmission level cannot be easily achieved though the traditional switched telephone service. In the case of Trinidad and Tobago this means that new and expensive infrastructure would need to be deployed by all parties, including telephone companies.

The cost of this investment and the long recovery period in such a small market will make creating broadband access a major challenge in all except the main urban centres. In fact, from a business perspective the rates that would have to be charged for broadband service, at least for the foreseeable future, may be prohibitive for all but the largest customers.

Thorough analysis and imaginative thinking around all the issues and options, including new technologies and innovative public-private partnership models is essential to providing a proper foundation for a National Broadband Strategy for Trinidad and Tobago. We are recommending the establishment of a separate Broadband Task Force unless it is possible to establish a special element of the current NICT Steering Committee with the appropriate mandate.

5. ICT-led growth in businesses and jobs

Whatever form of infrastructure is built for the future it will require a large national expenditure. This level of investment must pay off handsomely in terms of business growth and job creation. With one of the largest and best-educated workforces in the Caribbean, and with perhaps the Region's most diversified and entrepreneurial private sector, Trinidad and Tobago is well positioned to leverage a strengthened ICT infrastructure for economic

growth. We have some suggestions aimed at ensuring that this expansion is as rapid and substantial as possible.

Major Programs and Projects

Increased competition in the ICT sector

Increased competition in the ICT sector
Since the proclamation of the Telecommunications Authority Act of 2001, several initiatives have been undertaken by the GORTT towards the liberalization of telecommunications services in Trinidad and Tobago. Work is underway in establishing the necessary Regulatory Framework viz. the formulation of the required Rules and Regulations for promulgation the Telecommunications Act. This will ensure that the proper legal, technical and administrative framework is instituted prior to the introduction of full competition in the telecommunications sector.

Competition in the cellular, broadband and cable segments of the ICT market is planned for introduction by mid 2004.

Based on the above, this Action Plan proposes a five-point approach to the introduction of competition for other telecommunications services.

Acceleration of Telecommunication Liberalisation
Firstly, the Government should initiate all necessary action to end the monopoly over both the local telephone system and local telephone services. The objective should be for open fixed line competition to commence by 2005 with a call for new market participants. Locally owned market participants and those with international links should be encouraged.

Competition in International Telephone Connectivity
Secondly, the exclusive rights to switch international telecommunications should be removed from TSTT, the existing monopoly provider. By virtue of this monopoly, high prices for international voice and data traffic, including Internet services, are maintained. The Government should move to open the international connectivity field to other players, including satellite service providers.

This new competitive regime should also be in place by 2005.

Interconnection
Thirdly, as would exist for new cellular providers, interconnection to the dominant carrier i.e. TSTT should be available to any new providers of various telecommunications services. The same principle of interoperability will need to be applied and enforced to facilitate and enable seamless interconnection of various service providers. The Government should develop a suitable policy in consultation with the public, particularly experts in the business and academic sectors.

Access to Current Infrastructure
Fourthly, real competition in the fixed line area will only occur if competitors have access to existing telecommunications infrastructure, including poles and conduits, on a fair market basis. The resale of capacity and access to facilities must be a reality in the short term. This includes the access to telecommunication and cable facilities. It will also be necessary to clarify other essential conditions to preclude constraints to competition such as the right of competitors to co-locate telecommunications equipment on TSTT premises for a reasonable fee. The Ministry of Public Administration and Information will undertake all necessary policy work in this area and will engage expert assistance if necessary.

Encouraging Entrepreneurial initiatives
Finally, in moving forward in other areas of telecommunications development in Trinidad and Tobago, the Government should abide by the principle of competition. Where sufficient progress may not occur due to the high cost of entry, the Government should give preference to other options, such as competitively tendered public-private partnerships, over the provision of exclusive mandates.

A proactive, well-supported and innovative Regulator

Reinforcing the Regulator
As an independent regulator Trinidad and Tobago Telecommunications Authority (TTTEL) is less than three years old. Overseeing the competitive transformation of the telecommunications sectors has proven to be a daunting task, even in countries where independent regulators have been the tradition. TTTEL will need support from the most senior levels to create the necessary framework with appropriate staffing in order to develop and implement an agenda to achieve a competitive telecommunications environment.

TTTEL will need to have robust policies and processes in place in many areas, including:

- Establishing the necessary regulatory framework to introduce competition;
- Establishing parameters for new entrants to the telecom market;
- Reviewing existing policies in the context of competitive telecom provision, e.g., universal service provision and rate balancing;
- Establishing high standards for expert analysis and use appropriate technology regarding competing bids;
- Developing regulations for a competitive marketplace;
- Establishing a mechanism for constant review of regulations.
- Establishing the rules for phone number administration and portability;
- Ensuring provisions for enforcing compliance with policies and standards;
- Establishing robust and open appeals and dispute arbitration processes;
- Establishing means of identifying and addressing anti-competitive activities;
- Creating an environment encouraging research in technology, business models, performance standards and regulatory practices;
- Establishing stakeholders' fora;
- Establishing a complaints resolution mechanism.

Even though this is not a comprehensive list, it is already a very ambitious work programme. Clearly a great deal of emphasis needs to be placed on preparing an adequate budget to support the expansion of staff and other resources.

It is recommended that the Ministry of Public Administration and Information secure expert technical support to help TTTEL develop its programme and plans for supporting and regulating a fully competitive telecommunications market.

Improved service standards and accessibility of ICT

Making ICT More Accessible

A more competitive ICT sector will go a long way toward making advanced telecom and Internet services more affordable. But price is not the only hurdle that must overcome. ICT awareness and skills need to be fostered on a nation-wide basis. Public programs have an important role to play in at least three areas:

Community Connection Programme
First, a concerted Community Connection Programme (CCP) will play a key role in improving ICT awareness and accessibility. Properly equipped and staffed, community access sites have been shown to be very effective in exposing a large number of people to the benefits of ICT and the basic skills needed to utilise it. Additionally, as the new ICT demand, which Community Access Centres create, arises from many communities, numerous businesses, including small local ones, get to participate in servicing it.

These local suppliers of computers, software, Internet, installation and repair services and training become, in turn, the customers of larger domestic companies. This upward acceleration of the marketplace can have a much more powerful growth impact than would occur if demand expands only gradually and is satisfied by only a few large retailers.

Accordingly, purely from a market perspective, this Action Plan strongly endorses the recommendation of the Human Resources Working Group calling for the establishment of a large-scale deployment of Community Access Centres throughout the country. Consideration should be given to housing these centres in schools and libraries will help keep costs down and improve the prospects for sustainability.

Special emphasis must be placed on ensuring that the teachers and facilitators at the community centres are equipped with the necessary knowledge and experience to train and develop the people of the community.

School Connectivity Program
Another proven way to simulate ICT demand among non-users is to demonstrate its benefits in helping students learn. Many countries have experienced a rapid increase in computer, software and Internet sales following the introduction of a school connectivity program. Equally important, the extensive use of networked computers in classrooms will help build the "new economy" skills that are crucial to the objective of nurturing a more innovative and productive economy and a more open, collaborative and stable society.

This Action Plan strongly supports the recommendation for a national school networking program that will see all schools supplied with sufficient equipment, connectivity and technical support as to make the classroom use of computers meaningful from a teaching perspective.

Increasingly, broadband connectivity is required to meet this objective.

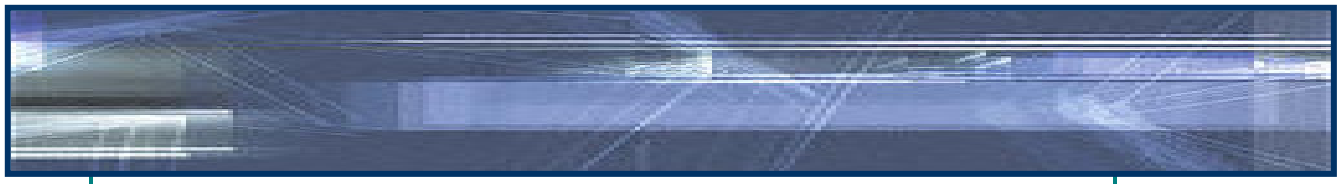
ICT Awareness Building and Technical Support with SMEs
A third priority initiative involves helping the large number of small business and non-profit organisations that currently use ICT only marginally, if at all, to become more aware of its operational advantages. There are a number of ways that this organisational ICT awareness building can be fostered and each has their benefits. Government could subsidise the provision of ICT training centres in urban locations and travelling ICT services in rural areas. Alternately organisations wishing to receive ICT assistance and fitting a certain profile could be given vouchers to acquire the services commercially where they exist. Faced with a similar challenge, the Government of Canada launched a partnership program, Student Connections, with the ICT sector and the university/college community to place specially trained students, at subsidised wages, in small and medium-sized companies.

While there are many program options, the key to success is to discuss needs with the client communities to determine whether such programs would be useful and how they should be offered. It is important to ensure that the special circumstances of the non-profit sector are identified and taken into account in program design.

In response to Government-assisted efforts to generate new demand, the ICT sector has the responsibility to consider innovative service packages that will better enable less-wealthy individuals and business customers to derive value from all aspects of the telecom marketplace. Obviously, marketing and pricing strategies are very competitive but segments of the industry could collaborate on designing and funding market surveys and could help refine service offerings and standards for the sector as a whole.

In order to provide support and ensure that the citizens are protected it is necessary to develop and enforce appropriate service standards.

ICT suppliers should also be open to sector-wide collaboration in the development of a national marketing campaign with Government that will raise the overall profile of ICT in the minds of citizens and consumers. Maintaining a strong public and political commitment to ICT accessibility is a big part of ensuring national success in its use.



Appropriate technology to support future needs

National Infrastructure Taskforce and Broadband Strategy

Why should a country with a small population, low computer and Internet penetration levels and fledgling ICT sector be talking about broadband? Why not just build telecom infrastructure incrementally as it is needed? Anyway, how can we afford broadband when so many other needs must be met?

There are many such questions about whether broadband connectivity is needed and can be afforded by Trinidad and Tobago. As other countries have found, the answers can be surprising. Some kinds of broadband networks are now less expensive to build and operate than narrowband ones.

New telecommunications technologies and business models have emerged that are giving countries, particularly small ones, new, exciting and affordable choices. For instance, on a total cost of ownership basis, broadband networks can sometimes pay for themselves in less than seven years compared to existing narrowband services. Connecting big public bandwidth users like health and education facilities with narrowband networks may actually be building in technical bottlenecks that will preclude effective ICT use within a few years. This can require a complete rebuild at a high and unnecessary cost.

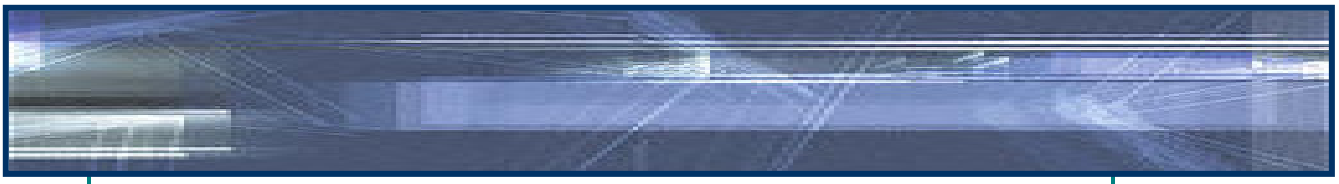
However, all models have their advantages and drawbacks. It is often difficult to determine the relevance of particular solutions to specific circumstances like those in Trinidad and Tobago. Accordingly, we need a National Infrastructure Task Force with a mandate to look at all the options and recommend a Bandwidth Strategy (such as Broadband) that will make sure that we have the future-oriented infrastructure platform from which to leap forward. We recommend the Task Force give the Government its recommendations by the end of 2004.

A National initiative is necessary to start this process and so the Government should facilitate technology development.

Harnessing ICT for Jobs and Markets
How do we ensure that a more competitive telecom environment and new investments in ICT translate into profitable business opportunities and more jobs? This Action Plan presents some suggestions for Government, business and academia.

e-Commerce Strategy and Programme
On the business front, there are several important opportunities. First, we must ensure that, with the accelerated deployment of lower cost, high bandwidth and more sophisticated telecom services, a much larger percentage of Trinidad and Tobago businesses are engaged in electronic commerce. Given the current low level of awareness about e-Commerce and how it can help extend markets, create closer supply linkages and improve productivity, the first major requirement is for a concerted E-Commerce Strategy and Program. This program should be jointly designed and delivered by Government and business. It should address a broad range of topics aimed at encouraging, by 2008, at least 50% of Trinidad and Tobago businesses to get connected and use e-Commerce solutions to improve business operations. In this context the programme should cover, inter alia:

- Accelerating legal, regulatory and infrastructure (Registration Auth and Certification Auth) progress in such areas as digital signatures, Public Key Infrastructure (PKI), trust and security;
- Establishing the lead authority on the management of domain names from within Trinidad and Tobago;
- Research on best practices in leading e-Commerce jurisdictions and on technical developments;
- Developing a consultation process with the construction and real estate market around smart building technologies and standards;
- Business opportunity identification activity aimed at finding areas in the e-Commerce domain where local business can develop niche markets;
- Technology diffusion and training to facilitate the adoption of e-Commerce solutions;
- Communications and awareness aimed a building an understanding of the value of and market for e-Commerce services;



- A procurement review of upcoming e-Government and e-Commerce requirements so that domestic firms can better participate in contracts; and
- An applications development support program that can, where needed and on a business case basis, help develop or acquire technology to foster new Trinidad and Tobago e-Commerce operations.

Small Business e-Commerce Application Development

Given the low rate of ICT skills in most Trinidad and Tobago businesses it is unlikely that most firms will be able to adopt disaggregated e-Commerce solutions. Therefore another opportunity area lies in creating or adapting an integrated e-Commerce application for widespread use by small businesses. This application would contain storefront, shopping cart, payment, back office, accounting and training software and content. Government could assist the business community by helping to underwrite the costs of designing and developing the application or by subsidising its initial purchase by small business.

Rather than licensing it for independent use, the application could be provided through applications service providers.

ICT Sector Expansion Strategy

A third opportunity area is the creation of a strategy for expanding the ICT sector itself. The preceding recommendations on telecommunications competition and infrastructure development will provide a powerful stimulus to local ICT suppliers. However, as the domestic market will always be small, it is imperative to leverage short-term increases in demand to establish areas where Trinidad and Tobago can be competitive regionally and globally in the medium and long-term. This will require a careful analysis of established and emerging ICT markets in areas like call centres, software development, ASP activities etc.

Increasing ICT Education and Training Programs

Trinidad and Tobago has only a limited supply of ICT-trained personnel and unfortunately for T&T, many people with these critical skills soon find attractive employment abroad. Skills shortages in key areas like computer and network support, information management and software development could seriously impede the ability of Trinidad and Tobago firms to respond both to the more aggressive use of ICT or to new market opportunities in the ICT market. Accordingly, it is important that the high school and post secondary education systems respond to the NICT Plan with new course offerings and increased placement in ICT-related disciplines. Vocational

and technical ICT training programs should be significantly expanded. Attention should also be given to creating ICT elements within business and other programs to better prepare graduates for the entrepreneurial opportunities that ICT presents.

Internship Programs

Government and the ICT business community should give consideration to developing internship and cooperative placement programs with the University of the West Indies and community colleges. Giving students early opportunities to gain work experience in the ICT field will encourage students in ICT-related studies and help retain them in Trinidad and Tobago upon graduation. As already mentioned, the scope of this initiative can be greatly expanded by providing some sort of wage subsidy thereby allowing smaller firms to hire ICT trained students to support their adoption of computers and the Internet.

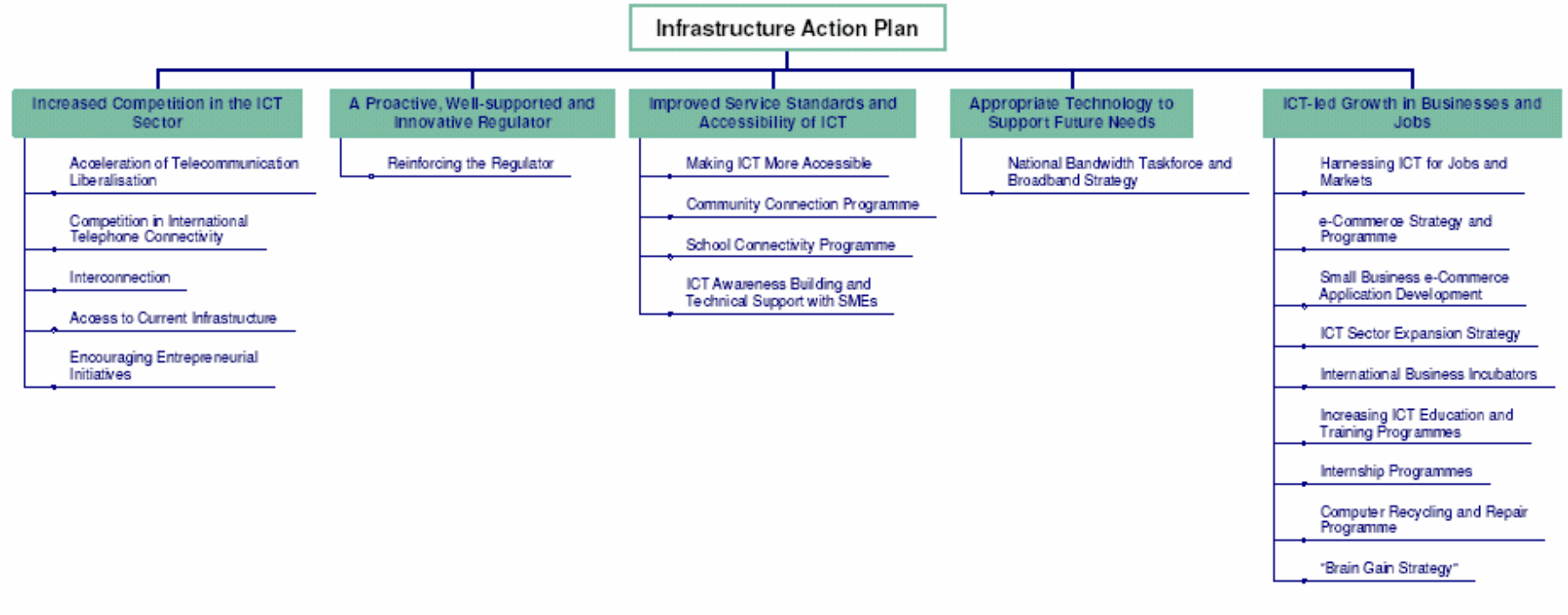
Computer Recycling and Repair Program

Another area with short-term job creation potential is computer recycling and repair. Low cost refurbished computers could be an attractive option for an initial purchase by many small businesses and families. North America is replete with high quality pre-owned ICT equipment. A way to stimulate local repair and recycling businesses would be for the Government to agree to purchase a percentage of the equipment it will need for schools, libraries and Community Access Centres from recyclers. As computer ownership becomes more widespread, small local recycling and repair businesses will naturally migrate into software installation, network troubleshooting and on-site equipment maintenance. This sort of ICT micro-enterprise is now a vibrant component of many small communities in North America.

"Brain Gain Strategy"

Finally, another aspect of the job creation challenge is to retain qualified people in Trinidad and Tobago and to attract back those who have left, especially when they have scarce skills. Powerful ICT applications now exist to facilitate the recruitment and placement of scarce talent and to link them with potential employers and Government immigration services. A review of some best-of-breed tools may be worthwhile.

Appendix: Infrastructure Action Plan "Key Strategies, Programmes and Projects"



C2. Human Resources Action Plan

Contribution to the National ICT Plan

Human and intellectual capital is now deemed as the most important resource for many developing countries – particularly those with limited, extraction-based, economies such as Trinidad & Tobago. ICT provides an outstanding mechanism for leveraging human and intellectual capital and for maximising social, economic and cultural benefits through the creation, exchange and knowledgeable interpretation of information. As Trinidad & Tobago further advances into the global information-based economy, it is paramount that there is a well-educated labour force, skilled in all aspects of ICT. It will be important not only to focus on creating training opportunities but also on promoting a national environment that is conducive to job creation and job enrichment in an effort to discourage the migration of skilled workers to more developed nations.

Developing proficiency in ICT should now be regarded as important as basic reading and writing skills. In order to advance ICT literacy among the entire population, ICT will need to be incorporated into the formal education system. However it is important to understand that this extends far beyond simply putting computers in schools. Maximum use and benefits will only be achieved through corresponding changes in the approaches to teacher training, curriculum development, and administration.

The aim of the Human Resources Working Group ICT Action Plan is to identify the major programmes and projects that will help develop and sustain a flourishing knowledge-based society in Trinidad & Tobago. In the relatively near future everyone within the country will have simplified access to ICT and will be able to understand and effectively use ICT in all aspects of their social, domestic and professional lives. The Plan will pay particular attention to education and the development of ICT related skills in children to ensure a sustainable solution. Engaging support from teachers, the Ministry of Education, the Ministry of Science Technology and Tertiary Education and the broader

community will be a critical component in achieving an effective and uniform take-up.

Desired Outcomes and Key Strategies

Desired Outcomes

At the outset of the project, the Human Resources Working Group identified a number of HR related outcomes that were felt to be important in determining the overall success of Trinidad & Tobago's national connectivity agenda. These included major outcomes such as:

- All schools and libraries to be connected;
- ICT training and education to be fully integrated into the school curriculum – as a tool and as content;
- Standardised measures of ICT proficiency;
- Universal access made available through Community Access Centres;
- Business opportunities to exist for ICT workers;
- All Government workers on-line and ICT literate; and
- An appropriate body organised, and in place within one year to manage ICT development.

1. Providing Universal Access

This strategy aims to provide everyone in Trinidad & Tobago with affordable, preferably free, public access to the Internet. With the combined efforts of Government, community groups, social agencies, libraries, schools, volunteer groups and the business community, the strategy will help everyone, wherever they live, take advantage of emerging opportunities in the new global knowledge-based economy. The strategy aims to use public locations such as schools, libraries and community centres as "on-ramps" to the global information society, and provide computer support and training for users where required. It is important to understand that "universal access" takes into consideration participation and accessibility for all individuals whether they are blind, using a wheelchair, hearing impaired, families with young children, temporarily using mobility aids (such as crutches), senior citizens or otherwise.

2. Developing and Sustaining a Knowledge-Based Society

In order to create a knowledge society, every individual must have the opportunity to participate in and contribute to the development of such a society, at whatever level is relevant and appropriate to the individual. This strategy is the lynchpin to the country's entire ICT agenda. It will be achieved through identifying, designing and implementing education and training programmes for all segments of the population – including teachers – and preparing students to be functional in all aspects of an ICT-dominated world. All schools will be equipped with computers and Internet access to facilitate uniformity of education, improve overall educational standards and allow students and educators to work collaboratively regardless of location. ICT will be used both as an educational tool and as a subject in its own right. Programmes will be put in place to ensure that ICT education is formalised into the general curriculum and that the educational, social and economic benefits resulting from ICT investments are clearly identified and measurable. This will include monitoring the number of new ICT-related jobs and opportunities that are created and assessing the effectiveness of incentives and initiatives aimed at preventing the loss of ICT professionals to other countries.

Libraries will play an important role in Trinidad & Tobago's knowledge society. All libraries will be equipped with computers and Internet access and all relevant information will be digitised.

3. Increasing Awareness, Promotion and Sensitisation

Successfully moving Trinidad & Tobago further into the global information society will require far more than installing computers and providing Internet access. Citizens and businesses will need to be aware of what the Internet is, how it can be best used, where they can find access and assistance if they require it, etc. An effective promotional campaign will need to be designed to stimulate increased take-up and encourage greater on-line interaction. Financial and other forms of incentive may be required to foster individual and corporate investment in ICT. Success stories and lessons learned will need to be shared and used as stepping-stones to even greater achievements. As the benefits of T&T's connectivity agenda take hold, the country will need to find innovative and compelling ways to present itself as an emerging player in the new knowledge-based economy. Done well, this will lead to new investments and greater economic prosperity.

Obviously, it will be important to avoid unnecessary hype and over-promising on the potential benefits of increased levels of connectivity.

However the impact of effective promotion and awareness can be substantial. It is felt to be a critical component in successful ICT development - unfortunately it is often overlooked or poorly executed. It is likely to require specialist assistance to be most effective.

Major Programmes and Projects

Providing Universal Access

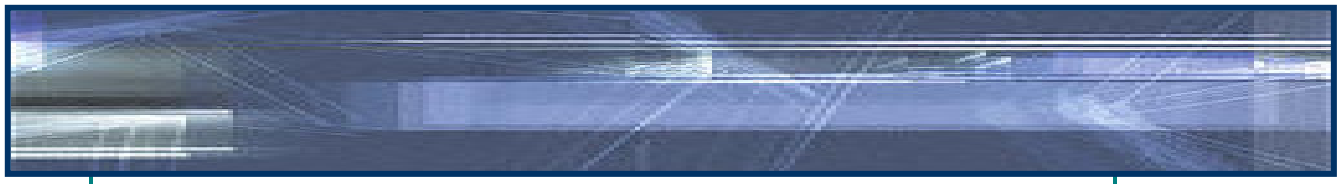
Community Connection Programme

The aim of the Community Connection Programme (CCP) is to provide residents of rural, remote and urban communities with affordable access to computers and the Internet in places like schools, community centres and libraries. It will provide access to those people who might not have computers or Internet access in their homes or workplaces.

With the combined efforts of government, community groups, social agencies, libraries, schools, volunteer groups and the business community, CCP will help everyone in Trinidad & Tobago, wherever they live, take advantage of emerging opportunities in the new global knowledge-based economy. Under CCP, public locations like schools, libraries and community centres will act as "on-ramps" to the global information society, and provide computer support and training wherever required.

The programme should be viewed as a community development tool. It will be used to enhance quality of life, facilitate cultural development and heritage preservation, accelerate communication between individuals, expedite interaction between the citizen and government, improve economic performance, provide new educational opportunities, and provide youth employment. CCP will provide everyone within Trinidad & Tobago with a new way to learn, and do business in today's knowledge-based economy.

The programme will have a significant impact at the grassroots level and will become an important economic and social development tool in communities. It is hoped that Community Access Centres will increasingly join together in networking opportunities enabling them to pool resources and form networks to be able to offer even more to their communities.



The Community Connection Programme will pursue the following objectives:

- To promote public awareness of the benefits and opportunities of using information technology and services;
- To help citizens become better informed through the exchange of ideas and information;
- To provide training for individuals in the use of information technologies;
- To support on-line delivery of government programmes and services;
- To facilitate business activities such as electronic commerce;
- To conduct on-line learning and research.

A number of projects will need to be launched in support of the Community Connection Programme including:

Site Location Assessment

Wherever possible, Community Access Centres should be collocated with schools, libraries and other community-based centres that have computers and Internet connectivity, as this will ensure best use of human, technical and financial resources. Of course this will not always be possible. A project will need to be established to identify those CACs that can be located with schools and libraries and a mechanism for selecting other areas of the country that are candidates for stand-alone Community Access Centres. There will need to be a formula identified to ensure consistent levels of access (time/distance to CACs etc.) for all citizens.

Service and Content Toolkit

Every Community Access Centre (CAC) will be unique. The composition of services offered will depend on community needs and available resources. Other factors may include the proportion of the population represented by young people, seniors, professionals, the unemployed, and those that have little or no Internet experience. As a rule, CACs should provide users with access to the following types of information and services:

- Local and community information and services;
- Information regarding jobs, health and education;
- On-line learning – particularly in the area of ICT education
- Business information and services – especially for start-up and Small and Medium Enterprises (SMEs)

- Government services
- A section specifically tailored to the needs of children
- A section specifically tailored to the needs of senior citizens
- Hands-on training for basic ICT skills

There are a number of basic computer and Internet training programmes freely available on the Web that can be evaluated and employed by CACs. However, as site users become more experienced, many will want to enrol in more formalised training that will help acquire a skill recognised in the labour market. The CCP will be in a good position to negotiate relatively low cost licenses to various courses that can be delivered through individual sites for a fee. This may also help a number of CACs generate important sustainability revenues.

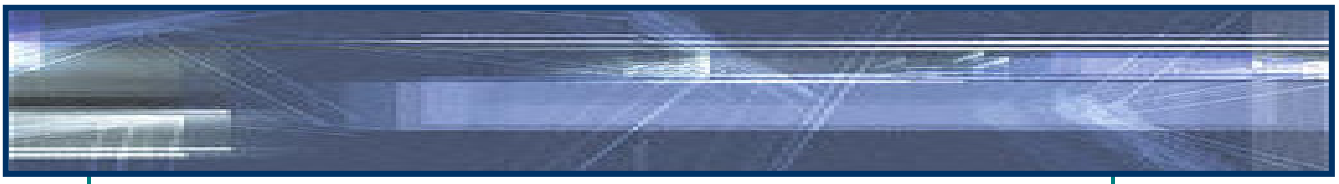
A project will need to be launched to develop a Service and Content Toolkit that can be used to assist communities in identifying appropriate information and services for their CAC. Advice regarding protection from offensive or illegal information will also need to be developed, most probably in conjunction with the Legal and Policy Working Group.

Computer and Connectivity Requirements

CACs will play a vital role in extending access to education and training systems and in facilitating the distribution of on-line government services – all important national priorities. To do so they will need a sufficient quantity of up to date computers, reliable high-speed connectivity and capable on-hand technical support.

To gauge the most appropriate level of technical infrastructure for CACs, it is important to establish some reasonable programme metrics. Considering that T&T's current level of Internet access is low, and the aim is to ramp it up quite quickly, a reasonably large number of CACs will be required within the first few years of the programme. A ratio of 2,000 people to one CAC site would mean about 600 sites would be needed within, say, five years. More research will need to be carried out in this area.

The amount of computer equipment will obviously vary with the size of the site and the expected demand from the community. Even the smallest sites require about 5 machines in order to allow a reasonable level of computer literacy training and Internet access. On this basis, an average of 15 computers per site will probably be needed initially.



These computers will have to be networked to an Internet-connected server and printer at every location. Each computer and server will need to have a licensed operating system and a suitable applications suite to support word processing, document creation, Web browsing and more advanced applications like e-learning. Open source software is fully adequate to handle basic requirements of this sort, thus avoiding much of the licensing costs.

A large number of users downloading a lot of data generate major bandwidth demand. Fast download speeds are particularly important to support advanced applications with dense digital content like e-learning and e-Government. For connectivity planning purposes it is reasonable to assume a minimum speed of about 128 kbps per active network user and a ratio of one active user for every ten available computers. This means that most of the smaller CAC sites, with five machines or less, will be able to rely on available 56 kbps dial-up connections. However, CAC sites with more than five computers are likely to face congestion problems even at the beginning of the Programme.

Technical support to the CAC sites to maintain the computers, software and network connections will also be essential. While hiring local talent to provide technical support of the sites will be an important option, these skills may simply not be resident in many of T&T's smaller communities and, accordingly, the time and cost incurred will be higher than the norm. For planning purposes, it is probably prudent to estimate one technician for every five centres and to provide an appropriate budget for parts and software upgrades.

Meeting the computer and networking needs of Connection Centres on an affordable and sustainable basis is one of the great challenges faced by those trying to close the Digital Divide. Trinidad and Tobago has an opportunity to think creatively about how it can create synergies across a number of connectivity silos so as to reduce costs, enhance benefits and, in so doing, leapfrog other nations. There are strong linkages here with the deliberations of the Infrastructure Working Group.

Identifying Accessibility Requirements

It will be important for CACs to be fully accessible for all members of society. This includes those with mobility disabilities, the deaf or hard of hearing, the blind or those with low vision, citizens with learning difficulties or communication disorders etc. Accessibility parameters for Community Access Centres will need to be identified and built into the design of all sites. Accessibility requirements will need to address three important considerations:

- Physical Accessibility – parking, ramps, doors, lighting, signage etc.
- Computer Station Access – table height and width, turning space, workspace design, lighting etc.
- Assistive technologies – including access technology, special education technology, adapted computer technology and assistive technology

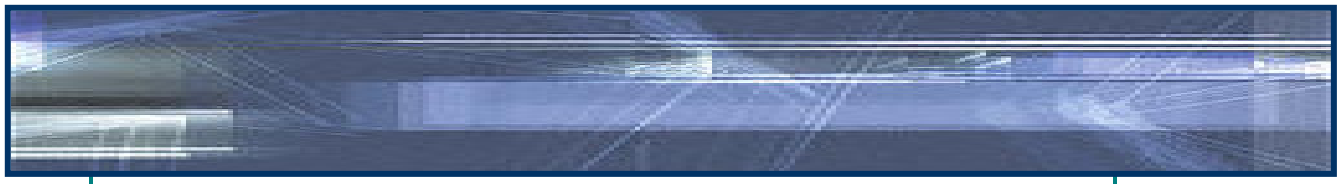
It will be important for this project team to seek the participation and contribution of people with disabilities during the design of the CAC accessibility requirements.

Centre Management/Volunteers/Training/Security

To function effectively, CACs will need to be staffed by computer literate people with good communications skills. It will be natural for people who are not very familiar with information technology to be somewhat intimidated initially. There are many proven techniques used in telecentres world-wide that can be borrowed and employed to build interest and usage. The CAC programme will need to work with community organisations to define awareness and training programmes that fit the interests and needs of the various user groups.

Many countries are meeting their CAC staffing needs by engaging young people to work alongside community volunteers to undertake site technical support, training and management responsibilities. Properly selected and trained young people can perform these roles very capably. At the same time, relying on youth to staff CACs creates entry-level employment opportunities that can translate into continuing employment in the ICT sector. Planning for the CCP should include a Youth Computer Corps involving at least one youth for each CAC on a continuing basis. Young people placed in these positions would need to go through a formal certification programme allowing them to provide high quality services and advice in a number of areas such as computer training, Internet training, e-Commerce training, technical assistance for small businesses, website design, troubleshooting etc. Successful candidates may well be computer science students interested in the Internet, but there will also be opportunities for students studying business, marketing, communications, administration and education.

Developed in conjunction with communities, a Guide to CAC Management would help identify the necessary administrative



requirements to successfully establish and run a well-functioning Centre. The guide should provide information on incorporation, hours of operation, access to Internet applications, acceptable use policy, financial management practices, security, health and safety, promotion and publicity etc.

The key to any well-run, sustainable CAC will be the staff and volunteers who provide the support required to run the site. Skill requirements and job descriptions will need to be developed, as will procedures for reference and background checks. At a minimum, volunteers must be responsible, well respected individuals from the local community. They should be in good health, polite, demonstrate good interpersonal skills and have a familiarity with technology. A guide to attracting, recruiting and retaining volunteers would be very helpful.

Sustainability Planning

Planning the ongoing viability and financial sustainability of the Community Connection Programme is of extreme importance and must be designed at the earliest possible opportunity. The sustainability planning exercise will need to examine a wide variety of topics such as:

- Provision, upgrading, repair and replacement of computers;
- Provision, upgrading, repair and replacement of furniture, workstations etc.;
- Fees and charges for use of the CACs;
- Fees and charges for training and technical assistance;
- The role of government; and
- The role of the private sector.

Developing and Sustaining a Knowledge-Based Society

Knowledge, Innovation and Development (KID) Programme

The educational development of Trinidad & Tobago's children for ongoing success in the digital era is the pivotal component of country's National ICT Strategy. Consequently, ICT education, with ICT both as a tool and as content, must now feature prominently throughout the nation's educational system.

The policy arguments in favour of the early introduction and effective use of information technology in education are straightforward and compelling:

- Nations aspiring to higher standards of living need to be more productive and creative than the norm;

- Information and communications technology is now one of the greatest sustained contributors to improvements in productivity and innovation in all segments of the public and private sectors;
- A management and labour force with advanced skills in ICT will be more competitive in developing and applying computer-based solutions to production problems and product opportunities; and
- Exposing young people to computers and the Internet in their formal and informal education will help prepare them to be highly productive citizens, workers and mangers.

Not surprisingly, schools and libraries now figure very high on the priority list in national ICT plans in virtually every developing country. Having said that, many countries have not been very effective in implementing their school networking programmes. A lot of money can be spent for only modest improvements in learning performance and skill development. Trinidad and Tobago has an opportunity to learn, and benefit, from the mistakes of others.

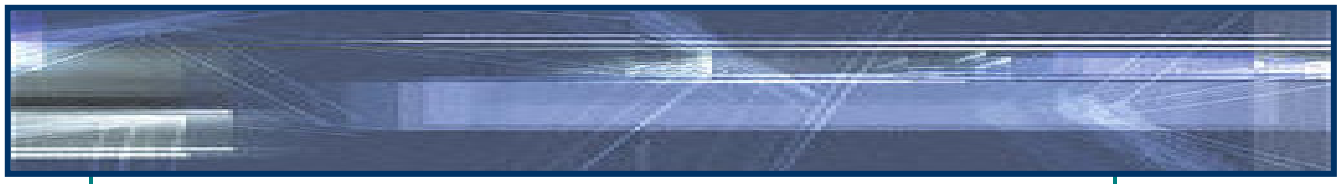
The fundamental lesson learned by other ICT initiatives is that focusing too much attention and money on ICT infrastructure can get in the way of what needs to be done to use networked computers effectively in the delivery of quality education. The real challenges lie in areas such as curriculum reform, change management, teacher training and content development.

The Knowledge Innovation and Development (KID) Programme will be a cornerstone of T&T's connectivity agenda. It will comprise of a large number of projects and will need significant resources for it to be delivered successfully. Initial projects will include:

SchoolNet
The aim of this project will be to connect all of the country's schools to the Internet by 2008. The project will examine the timing, sequencing and technical requirements needed for full school connectivity.

Ideally a school-networking infrastructure, while it will be expensive and challenging to implement, should be largely transparent and immaterial to the student, principal and teacher. It should be:

- Sufficiently powerful to bring new learning resources and learning opportunities to the schools (not just adequate to support current educational applications and materials);



- So affordable that it can be used without constraint in response to the learning needs of students and teachers;
- Completely reliable and trouble-free so that it doesn't impede effective teaching and complicate classroom management, and
- Flexible enough to accommodate rapid growth in usage as students and teachers come to rely on it as an increasingly important aid to learning.

Creating these conditions will require careful analysis of the ICT needs of the school system as a whole, the infrastructure options that are available and their applicability and affordability in Trinidad and Tobago. Ironically, as is being demonstrated in a growing number of school jurisdictions abroad, new technologies and techniques make it possible to create the desired school ICT conditions at less overall cost now than just a few years ago.

The fundamental starting point is to define the basic ICT needs of the schools system. Based on experience in North America and Europe, effective ICT-based teaching methods generally require a student to computer ratio of around 7 to 1 or somewhat lower. Integrating the Internet into a student-centred learning model involves extensive Web-based student research, use of on-line learning resources and collaborative learning. These activities require a basic minimum transmission speed of about 128 kbps per networked computer. This means that schools with about 80 students and up require network access at broadband levels while schools with smaller populations can rely more on narrowband delivery. However, because broadband access allows for a completely different configuration of school local area networks, it may be much more cost effective to link all schools with broadband whether they need this speed at present or not.

Dedicated fibre-based networks go a long way to creating the ideal conditions for school ICT use. They offer enormous bandwidth that is able to accommodate all present and foreseeable needs for educational ICT use. Once built, they are economical to operate and maintain, which allows for "always on" bandwidth to be provided very inexpensively.

As Trinidad and Tobago is aiming to accelerate its rate of development by using ICT aggressively and effectively, it will need to think carefully about how to avoid the many serious problems that developed countries have encountered in implementing computers and the Internet in schools and classrooms. In this context, the broadband option needs to be thoroughly examined from a cost-benefit standpoint. There are strong linkages here with the deliberations of the Infrastructure Working Group.

Other important components of the SchoolNet project will be to ensure that there is equity in the way schools are selected for inclusion in the programme and to coordinate the partnership and collaboration between the various stakeholders that will be involved in the management of the SchoolNet initiative. Developing methods to standardise and measure ICT proficiencies will need to be examined and identifying which schools are well positioned to serve as Community Access Centres will also need to be addressed.

Computers for Schools

SchoolNet, LibraryNet and the Community Connection Programme will all need to develop a mechanism for collecting, upgrading, repairing and replacing computers if the programmes are to have any form of longevity. The Computers for Schools (CFS) project will examine the feasibility of government and private sector organisations "donating" surplus computers for use in schools and communities. As a motivation for organisations to donate used computers to the programmes, it may be necessary to examine financial or other incentives to acknowledge contribution and to strengthen partnerships.

In addition to providing essential components to assist with classroom learning, the CFS project can provide a series of other benefits. It can provide scores of young people with an opportunity for job experience in repairing computers in CFS repair labs. These labs (supervised by experienced IT professionals) could provide early employment opportunities for recent IT graduates who, so often, experience the no job without experience/no experience without a job conundrum. School-based computer repair workshops could also be incorporated into the general curriculum providing real-world skills for students currently in the school system. Repairing and reusing fully serviceable computers that would have otherwise been scrapped will also yield environmental benefits by keeping, potentially toxic, IT waste out of landfill sites.

Curriculum, Content and Training

ICT is a critical instrument in helping countries move to a knowledge-based economy. It can make at least three fundamental contributions.

First, ICT skills themselves are increasingly essential for productive employment in an advanced industrial and commercial economy. Early and reasonably intense student exposure to computers, software and the Internet is required to build competitive skills.

Second, knowledge-based economies place a premium on creativity, collaboration and communications skills. Nurturing these capabilities requires new approaches to teaching and learning focused around student-centred pedagogy, such as the Canada's SchoolNet GrassRoots programme. While there are many elements to a successful instructional transition, adequately networked classrooms can facilitate and accelerate the process greatly.

Third, knowledge economies are based on continuous change. Learning is now a life long process and skills must be constantly refined and expanded. A networked education system is much more accessible and motivating in this regard. Clients can get to the system's resources and help more easily. ICT helps increase learning participation rates.

However, these benefits can only be achieved if the curriculum, content, pedagogical and administrative pillars of the education system are repositioned to take advantage of technology. It is important that this reform process not be predominantly focused on the technology and its possible productivity impact. Rather it should be primarily about how educational networking can help administrators, teachers, students, parents and the community to derive much more human and community capacity building benefits from the learning system and what changes need to be undertaken to achieve these.

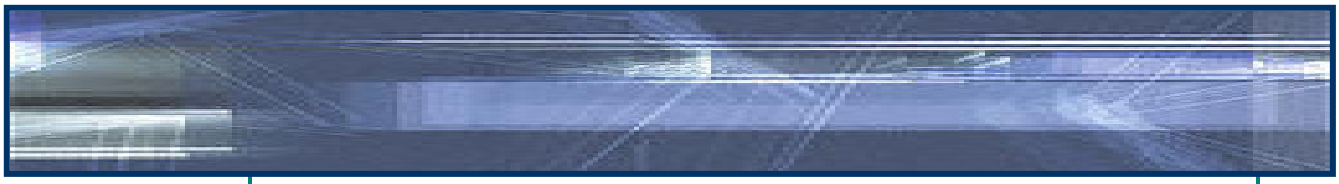
In this respect, consideration should be given to undertaking an e-Readiness review of the Trinidad and Tobago education system. This review should identify, inter alia, where and how curriculum, content, pedagogy, student evaluation, teacher training, technical support, performance evaluation may need to be adjusted to take full advantage of a more ICT-intensive approach to education.

Skills & Knowledge for the Information Era (SKIE)

A major outcome for the National ICT Strategy is the creation of additional ICT employment opportunities. The Skills & Knowledge for the Information Era (SKIE) Programme will include a series of projects aimed at training and job creation for those outside of the formal educational system – with a special focus on adult training.

LibraryNet

Life long learning is built on a strong foundation of literacy. While reading skills are usually acquired in schools, libraries play a critical role in nurturing



these skills and supporting adults in their continuing educational needs. The knowledge management skills acquired by librarian's position them well for supporting citizens, organisations and communities in raising awareness and building capacity in ICT skills. In this context, it is important that libraries in Trinidad & Tobago figure prominently in the implementation planning for the National ICT Strategy. LibraryNet will develop a programme to ensure that all libraries in the country are connected to the Internet by 2008. Libraries will receive the same degree of technology, training and support as the SchoolNet project. Experience elsewhere suggests that libraries also make excellent sites for Community Access Centres and close interaction with that initiative must be maintained to avoid unnecessary duplication of resources.

Electronic Heritage Project

The Electronic Heritage Project, based on the highly successful Canadian Digital Collection initiative, would look to digitise important national heritage collections and place them on the Internet. In addition to capturing valuable cultural information and making it available to everyone, the project would contribute to electronic curriculum content, and create employment and skill development opportunities for those tasked with creating the digital and multimedia images.

Historical Connections Initiative

This project would look to have young and older citizens work together to develop an important online historical and cultural record of stories, folklore and genealogy that can be accessed and enjoyed by everyone. The objectives of the Historical Connections Initiative is to develop communication and technical skills in the young and the elderly, to foster intergenerational learning, to create an on-line historical and cultural resource and to provide schools and Community Access Centres with an informative educational activity.

Campus Connect Initiative

Another key element to a more ICT education system is the post secondary education system. With one of the main campuses of the University of the West Indies being situated in Trinidad & Tobago, there would seem to be at least three important opportunities to be considered. First, strengthening the network on the St. Augustine campus would increase student access to information technology and training in this field, and would lead to more ICT capacity in the graduate population and general workforce. Secondly, the university network could possibly be linked to school, library and Community Access Centres to expand access to post secondary studies through access to on-line distance

education across the country. Third, powered by an advanced network, the St. Augustine campus of UWI could play a lead role in terms of helping to expand access to post secondary studies across the region. In short, distance delivery of post secondary education could have important domestic as well as international benefits that should be carefully explored.

SkillNet

SkillNet is a project that will examine the development of a network of on-line services and tools aimed at helping employers and job seekers use the Internet for recruitment, career, labour information and learning. The project will be government sponsored and designed in partnership with industry sector councils, associations and the private sector to meet the needs of specific industry groups or sectors.

Private Sector Training

An additional mechanism for developing ICT skills in the general population is through training provided by private sector organisations to their own employees or delivered by private companies under contract. Of course the diversity and cost of such training varies widely but a common trend is toward computer and network-based delivery. For employers there are strong productivity arguments in favour of electronically supported training. Individuals also find ICT-based training compelling because it can allows them to progress more quickly than traditional group training in classrooms. Another interesting feature is that computerised training is a potentially attractive revenue source for Community Access Centres in their progress toward self-sustainability.

Major employers and the main providers of distance learning should be consulted, and perhaps form a roundtable with Government and other interested parties, to examine the financial and ICT architecture needed for the development of a robust model of life long learning.

National Innovation Council

For Trinidad & Tobago's National ICT strategy to be most successful it will need to be accompanied by a programme that looks to foster increased levels of innovation and entrepreneurship. If the country is to fully seize the opportunities offered by the global information society it will, consistently, need to make breakthroughs in science and technology, capture new markets with innovative products and be constantly developing world-class expertise and technical talent. A National Innovation Council, consisting of business leaders, academics, entrepreneurs and top government officials will be assembled and tasked with developing a

strategy to help stimulate and accelerate increased levels of innovation within the country. The Council will examine ways to create increased levels of knowledge and innovation at all levels of society, to encourage investment and improve quality of life. The Council will also explore new methods to attract, develop and retain the best and brightest people and improve business and regulatory policies to further support and encourage innovation.

Increasing Awareness, Promotion and Sensitisation

ICT Awareness Programme

All aspects of society will be included in a generic awareness campaign. This campaign will then be spun off and tailored to address specific interest groups. The generic awareness campaign will launch with a theme – a name with a visual image to support and encourage retention. The visual and programme title will be accompanied by a tagline or identifier which will provide a cursory explanation to assist in comprehension. This theme and logo (identity) must be created to speak to all segments of society. To be most effective, the identity must be simple, clean and concise.

Once the identity is established for the programme, a generic awareness campaign will be created. This multi media campaign will include television, radio, print, outdoor and new media (web) strategies. The campaign must reflect the voice of the people, from the people. It must avoid being positioned as an arbitrary government programme; it must be presented as a programme that will enhance and improve everyday life. It cannot be seen as threatening and must portray the future and it must be high energy, showing all aspects of life in T&T and representing all peoples.

As well as portraying the people of Trinidad and Tobago, the ICT Awareness Programme would benefit significantly if it was visibly supported by popular cultural icons such as highly respected names in sports, music and entertainment. The feasibility of this is to be closely examined.

The general direction that is established with the generic awareness campaign will then be spun-off to address specific marketing categories. The content will include a targeted explanation of the programme and how it can benefit the individual. It is important that the messaging ensures that readers can see themselves reaping direct benefits from the results of the country's connectivity agenda. It is also important that

these benefits are seen as tangible. More than simply increasing awareness, the programme must provide clear demonstration that increased ICT usage will provide access to a better lifestyle in terms of employment, wealth, health etc. – and that these benefits can be achieved in a reasonable and tangible time frame.

Specific projects within the ICT Awareness Programme would include:

Government Awareness Project
An awareness project utilising various media such as print and web will be created for circulation to all government personnel. The messaging will speak to the important role of government in terms of being the catalyst of T&T's National ICT initiative. It will also address the role and support required of government staff in ensuring that the ICT agenda is executed effectively. As with all the specific marketing categories, the messaging will clearly identify the benefits to the individual.

Educational Awareness Project
This campaign will be tailored to speak to all those in the education system. It will be broken into age specific categories including.

- Preschool
- Primary to middle school
- High School (teens)
- University and Colleges

A special campaign directed to facilitators, teachers and professors will be created to not only train the teachers, but also emphasising the importance of encouraging students to enthusiastically embrace ICT.

Enterprise Awareness Project
A business-to-business campaign will be created to notify small and medium enterprises of the opportunities that abound through the adoption of ICT. For the larger corporations, a Corporate Sponsorship Programme will be advertised.

Consumer Awareness Project
Although this awareness initiative will address all consumers, it will place specific focus on two specific segments of society - seniors and stay at home mothers. Both groups are great influencers and thus key to the success of the programme. Seniors will be informed that they too are included in the future of the country and vital to the success of the programme. Stay at home mothers will also be addressed as an important sector of the populace, particularly with respect to e-Commerce.

ICT Promotion Programme
A wide variety of materials will be required to create promotion of the various programmes and vocational opportunities. These will include:

Consumer Education
Consumer education will be divided into two tiers: the educators and the students. The ICT programme will create an increased requirement for technical support in all technology related fields. The current technical talent pool is inadequate to meet the needs of a successful national ICT campaign and many more technical support people will need to be trained and brought into the workforce. Facilitator's guides, videos, CD ROMs, teaching aids and work books will all be required to bring this sector up to speed. The students will in turn require similar elements and information materials to advance their involvement in the new initiative.

Community Access Centres will also be utilised on the same two tiers, for which the same educational materials will apply. A campaign to create awareness of the CACs will be required as part of a local area marketing plan. In remote or outlying areas where CACs do not exist, a mobile unit will be deployed. This mobile unit will be a customised recreational vehicle with audiovisual capabilities and generators to run the systems. A large screen will be set against the side of the vehicle with chairs set out for presentations, and computers will be available for hands-on access. Brochures and educational materials will be racked and flyers will be distributed in advance of the mobile unit's arrival, notifying the locals of its imminent arrival and generating enthusiasm, thus attendance.

Institutional Education
Again a two-tiered approach will be required. First we will need to teach the teachers; then we will need to provide the teachers with the appropriate materials to assist in the classroom. There will be various levels of learning materials available along with the various levels of marketing and awareness. Important in all marketing materials is the message of benefits. For example, the project must demonstrate to the preschoolers that computers are fun and demonstrate to the University and College sector that computers can ensure employment, high income and a stable career/future.

Corporate Programmes
Business to business opportunities and other profit driven benefits will be demonstrated to small and medium enterprises. The larger corporations,

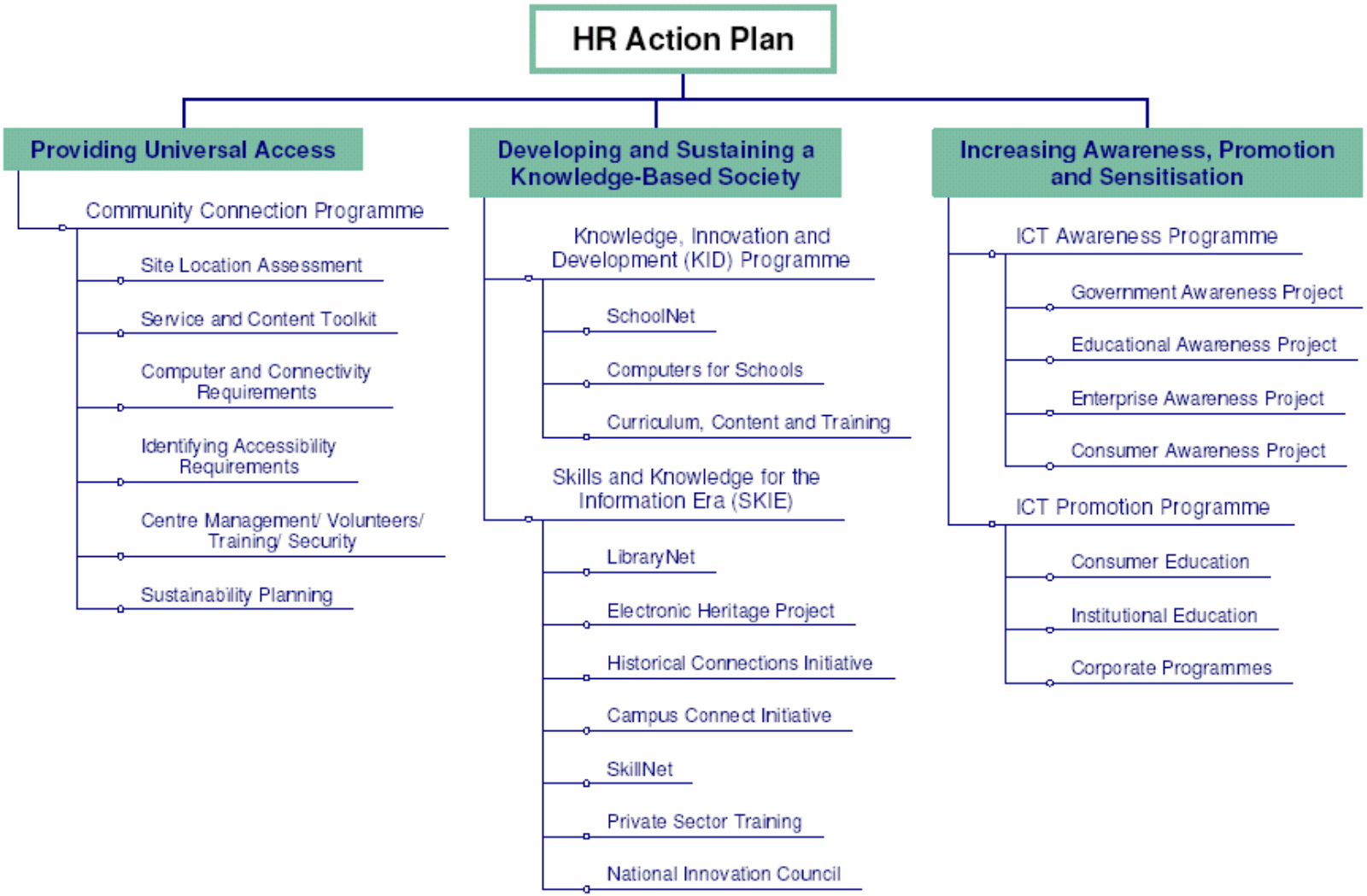
who are generally ahead of the technology curve, will be provided an opportunity to share in the exposure that all this messaging will create. Corporate sponsorship may be an effective strategy to:

- Assist in spreading the word; and
- Increase or defer the budget.

There are many ways in which Corporate Sponsorship can be utilized to create a win-win for the programme. For example, a banking institution may be interested in sponsoring the mobile unit or a local branch may be interested in providing sponsorship in the Community Access Centre. This is a very desirable programme for big business to be aligned with. Certain corporations may also be given the opportunity to conduct seminars and fly in key executives for speaking engagements and conduct media interviews. A full corporate sponsorship programme can be created for the ICT initiative.

A tradeshow booth will also be created to tour the country when the appropriate opportunity presents itself. This will include an educational kiosk, which will walk participants through all aspects of the ICT initiative. These electronic kiosks may also be placed in shopping malls, hotel lobbies, theatre lobbies and other places where the public comes together.

Appendix: Human Resources Action Plan "Key Strategies, Programmes and Projects



C3. Economy & Finance Action Plan

Contribution to the National ICT Plan

Implemented effectively, Trinidad & Tobago's ICT agenda has the potential to revolutionise the way that individuals, institutions, industries and government interact by broadening the reach and increasing the depth of communication. It can transform the buying and selling of goods and enrich the quality of information – which in turn creates additional corporate value.

With an enabling infrastructure built on easy access, low cost and open standards, start-up and small businesses will be able to compete in arenas that were traditionally only open to large players. New business models, such as on-line intermediaries will change the way entire industries function, enabling companies to compete internationally with a virtual, instead of a local, physical presence.
Trinidad & Tobago is well positioned to capitalise on the opportunities offered by the global information society. It is well situated to service both the North and South American markets, investment sources are available, Government is committed, current infrastructure build-out is adequate to meet short-term needs, and enabling legislation is being introduced. The general population is well educated and now sees careers in information technology more appealing than traditional professions such as law, medicine and accounting. There is a vibrant business environment with a large number of small and medium enterprises that could benefit significantly from increased levels of on-line trading. If the country moves aggressively, the Internet economy could provide tremendous opportunity for businesses working within T&T, and those local companies who trade beyond our borders.

This market expansion is by no means assured. As the e-Readiness and Benchmarking studies have indicated, Trinidad & Tobago lags badly in terms of business-to-consumer and business-to-business interactions. There are a few consumers on-line, but they are mainly browsing and not using the Internet as a convenient and reliable channel for buying goods

and products. Additionally government is in its early stages of electronic service delivery and not interacting with businesses on-line at this time.

Trinidad & Tobago must come to terms with there is no more "business as usual". Globalisation has been hastened by the Internet's powerful reach and distribution capabilities. Decades-old industries are facing massive change, and new economies are rapidly emerging. Traditional value chains are unravelling, and entire businesses being rebuilt from the ground up. In a relatively short period of time, all businesses will have to become e-businesses in some form if they are to survive in the digital economy.

All elements of society in Trinidad & Tobago stand to prosper from embracing ICT. T&T's e-business performance will have a growing impact on employment, sales, productivity, and investment throughout the economy. Jobs will be created in the technology field, but more will be created in areas such as sales, marketing, administration and manufacturing.

The aim of the Economy & Finance Action Plan is to identify the major programmes and projects that will assist in not only improving awareness of ICT in small business but also accelerating adoption, effective use and benefit realisation. For the Action Plan to achieve its ambitious goals it will need input, innovation and active participation from a wide range of stakeholders including government, TIDCO, NEDCO, SBDC, Chambers of Commerce, the Manufacturers Association, the Bankers Association, TSTT, the Telecommunications Authority and key academic institutions amongst others.

Desired Outcomes and Key Strategies

Desired Outcomes

At the outset of the project, the Economy & Finance Working Group identified a number of related outcomes that were felt to be important in determining the overall success of Trinidad & Tobago's national connectivity agenda. These included major outcomes such as:

- Development of the e-commerce (B2C), e-business (B2B) marketplace (domestic and international) – with a special focus on SMEs;

- Identification of T&T's "breakthrough" business opportunities through the intelligent application of ICT;
- Using ICT as a catalyst for business modernisation – including SCM, CRM etc;
- Increasing on-line interaction between industry and government;
- Development of an innovation agenda to accompany the ICT programme;
- Identifying the private sector's role in sustaining growth and development in the ICT programme;
- Identification of fiscal incentives including the role of venture capitalists; and
- Attracting, developing and retaining ICT talent – including the avoidance of the Brain Drain.

Key Strategies

During the course of the ICT planning session, the Economy & Finance Working Group refined its desired outcomes into three fundamental strategies. These strategies complement and build upon many of the themes put forward in Trinidad & Tobago's National e-Commerce Strategy 2004-2010:

1. Accelerating Transformation of the e-Marketplace
This Strategy examines some of the pre-requisites that are necessary to establish an enabling environment for the e-Marketplace. This is a relatively brief section of the Economy & Finance Action Plan as many of the fundamental requirements in support of increased levels of electronic interaction have been addressed by the other Working Groups.

2. Growing the e-Marketplace
This is the major component of the Action Plan, examining the various operational and tactical initiatives that will help grow and sustain e-Commerce and e-Business in Trinidad & Tobago. It also explores programmes to help develop the ICT sector, including the development of hub and cluster strategies, how ICT can help current industries and the important role Government has to play in increasing ICT take-up.

3. Expanding the e-Business Talent Pool
This strategy outlines some of the skill development programmes that will be needed in support of increased usage of ICT and the development of the e-Marketplace.

Major Programmes and Projects

Accelerating Transformation of the e-Marketplace

Increased Competition in the Telecommunications Sector

The Benchmarking and e-Readiness Assessments confirm that Trinidad & Tobago's ICT development is currently being constrained by the lack of competition in the local telecommunication industry. If the country's e-Economy is to flourish domestically and internationally, it will need access to reliable, secure, high-speed and affordable telecommunication infrastructure. This will be best achieved by opening up the telecommunications sector to competitive market forces. The Economy & Finance Team support the other Working Groups in recommending accelerated liberalisation of the telecommunications sector. Furthermore, it is recommended that government consult widely with industry when designing its liberalisation programme.

Promotion and Awareness

General Awareness

The Benchmarking and e-Readiness Assessments also confirm that there is only a small percentage (approximately 9%) of the general public regularly using the Internet, and as a result, only a very small percentage of local companies are using it as a business tool. An effective promotion and awareness campaign will be required if the country's connectivity agenda is to advance rapidly and more consumers and businesses are to embrace ICT. The Economy & Finance Team acknowledges the recommendations of the HR Working Group in this regard and suggests that special emphasis be focused on the needs and benefits of SMEs when designing the awareness campaign.

National Branding

An effective national branding effort that heightens Trinidad & Tobago's reputation as an innovative high-tech nation and a player in the global e-Marketplace will also go a long way in accelerating adoption of ICT in the local business community. It will assist in two ways. It will attract more international attention to T&T businesses from overseas markets and investors. And, it will provide local companies with increased confidence and incentive to move their businesses on-line. Some form of national icon may be a useful endorsement for this type of initiative.

Corporate Sponsorship

Attracting corporate sponsorship will assist the acceleration of the e-Marketplace in a number of ways. Sponsorship of Community Access Centres or e-Business training programmes will reduce the overall cost of the ICT agenda, increase overall ICT awareness for citizens and SMEs, demonstrate wide ownership of the ICT initiative within the country, and provide valuable exposure for the sponsor. The recommendations made by the HR Working Group in this area are strongly supported.

Fiscal Incentive Programme

A number of tax and other fiscal incentives have been identified as useful mechanisms for stimulating ICT take-up and ICT sector expansion. It is recommended that a thorough analysis of various fiscal incentives be carried out over the next twelve months. The Economy & Finance Working Group identified some potential incentives that are outlined below:

- Approved companies in the informatics sector should be entitled to a tax credit equal to 15% of the chargeable profits of such companies. Also, provision of or the development of Information Technology goods and services should be specifically included in section 16C of the Corporation Tax Act "Relief for Certain Companies" as an approved activity which, with applicable conditions for qualifications, would entitle such companies to obtain the tax credit. With the current tax rate of 30% such a credit would reduce the effective Corporate Tax rate to 15%.

- Given the high rate of obsolescence of computers, computer software and peripheries such as printers, products of this nature should be granted 100% wear and tear allowance in the year of purchase.

- The Technology Business Tax Certificate programme allows new or expanding technology businesses to turn their tax losses and credits into cash to grow their business. Approved businesses may sell their unused net operating loss carry forward to any corporate taxpayer for at least 75% of the value of the tax benefits. They can then use the money raised for working capital to buy equipment or facilities or for other business expenses. Such a tax credit certificate will be

issued on application by the Inland Revenue Division to technology businesses whose carry forward losses they have verified.

- IT services should be added to the list of services that qualify for Export Allowance under Part 4 of the Second Schedule of the Corporation Tax Act. Such services should also cover inter alia the development of computer software and the transmission of data pertaining to information technology. This would enable the information technology sector to avail itself of the benefits of export allowance on their export.

- Exemption of the Withholding Tax on royalties payable on transmission of information technology data.

- Providing foreign-based T&T nationals, who work in the ICT sector and are returning to the country, with Duty and VAT exemptions on all personal household effects.

- Another incentive programme could be competitive rates for office space in well-planned industrial parks equipped with modern telecommunications services.

Enabling Legislation

Appropriate legislation will be required to support increased levels of e-Commerce and e-Business. Currently, the lack of clear e-Marketplace rules constitutes a major barrier to the use and growth of e-Commerce. The findings of the Legal Working Group are acknowledged and supported in this area. In amending legislation, it is recommended that government consult widely with industry to establish its concerns and needs with regards to increased levels of electronic commerce.

Growing the e-Marketplace

The National ICT Strategy should provide Trinidad & Tobago with the necessary momentum to kick-start the e-Economy. The Economy & Finance Action Plan has identified a number of programmes and projects that will help grow and sustain a healthy electronic marketplace over the medium to long-term.

Developing the ICT Sector

Local Company Growth
The country's drive for increased levels of connectivity in schools, businesses, communities and government will result in significant growth opportunities for local suppliers of computers, software, Internet, installation and repair services, and training. Clear conditions for participation into the liberalised telecommunications sector will provide new entrants with both the confidence and tools to compete and prosper in this expanding market, also providing new business and employment potential.

There could well be thousands of new employment opportunities created, however technical and managerial skills must also be developed if the local ICT sector is to maximise its growth potential and flourish over the longer-term. Many of the necessary skills development requirements are identified under the strategy "Expanding the e-Business Talent Pool" found later in this Chapter, and in the Human Resources Working Group Action Plan.

Cluster Development Programme
A Cluster is a group of interconnected companies, educational and research institutes, and associations in any particular geographic location. Clusters develop as a result of linkages between the members and gain their importance from the synergies thus created. If Trinidad & Tobago takes an aggressive move in implementing its ICT agenda, there is thought to be a significant opportunity for the development of ICT-related Clusters in fields such as customer care centres, software development, application service providers, new media, data processing, computer assembly etc. Over the next twelve months, it is recommended that a study be commissioned to determine the opportunities, benefits and challenges that will be encountered in launching a major *Cluster Development Programme*.

ICT Anchor Company
It is recommended that the government and the private sector work together to explore the potential for attracting an "ICT Anchor Company" to the country. An "Anchor Company" is the term given to a major high-tech company such as a computer manufacturer, software developer or component assembly plant that is introduced to a community to help stimulate growth in the local ICT sector. The presence of these large high-tech companies helps attract the brightest IT talent, both technical and creative, and fosters training and development. Many of these Anchor Companies also result in the spin-off of numerous feeder companies by becoming major suppliers or buyers of goods and services. Costa Rica

recently attracted a large Intel plant and has reaped significant benefits as a result. A Feasibility Assessment to examine the requirements, benefits and challenges of attracting an ICT Anchor Company should be considered over the next twelve months.

ICT-Enabled Growth

Growing Traditional Industries
In addition to developing an ICT Sector within Trinidad & Tobago, the introduction of increased levels of connectivity and automation can be used to help grow current, more traditional businesses.

An e-Business Roundtable, comprising of leaders from government, industry and the technology sector will be assembled to provide vision and guidance in this area. The Roundtable will work with various Industry Associations to explore the potential for ICT being used as a catalyst for the further enhancement of foundation industries such as financial services, energy, ship building and repair, and port and fisheries management. There is potential for some of these larger industries to become "hubs" for electronic transactions across the Caribbean and Latin America. This should be closely examined as part of the Roundtable's mandate.

Smaller sectors, particularly areas such as tourism, medical training, culture (arts, music, crafts etc.) and exports in flowers, fruits and vegetables seem particularly suited for growth through ICT. The Roundtable will also work with representatives from these areas to examine how ICT can best be applied.

Business Modernization
Of course, business efficiencies and improved customer service levels will not be achieved solely by going on-line. It will also require management training, upgrades to and integration of back-office technologies, improvements to the supply-chain, enhanced manufacturing and production systems, and education on business process reengineering and other business improvement techniques. Advanced training packages that address these types of issues should be incorporated into the *SKIE Programme*. These courses should be practical, technical and targeted at senior ICT professionals and managers.

Experience from other jurisdictions has shown that increased levels of e-Commerce can place severe demands on distribution and logistical

systems. It is recommended that a study examining the current distribution and logistical infrastructure within Trinidad & Tobago, and its suitability for increased levels of e-Business be carried out in the next eighteen months. The Postal Service should be included in this study – perhaps as sponsor.

Student Connection Programme

The *Student Connection Programme* is an innovative initiative aimed at assisting SMEs ready themselves for e-Business and providing young adults with learning opportunities and early exposure to valuable work experience. *Student Connections* will place specially trained students from university or community colleges in small businesses or non-profit organisations to assist with the adoption of ICT. The companies will benefit from increased understanding and better use of ICT and the students, who will be paid for their services, will gain valuable job experience. The *Student Connections Programme* will be designed over the next twelve months.

Government to Business Interaction

Government has an important role to play in stimulating and accelerating the e-Economy, and will need to work closely with industry, especially SMEs, in designing programmes and services that prepare local companies for greater levels of electronic transactions. Government to business interaction can assist in a number of ways:

e-Government Portal

Government's introduction of a "client-centric Portal", that provides a one-stop-shop for all client information and services, is strongly supported by the Economy & Finance Working Group. A Gateway specifically tailored around the needs of T&T companies will help by making information and services easy to find – it should also provide access to practical tools and advice that will help SMEs move their businesses on-line.

It is recommended that the Business Gateway include interactive, practical information such as:

- *Business Start-Up* – Facilitation, market research, business planning, hiring employees, importing and exporting, etc.
- *Taxation* – Corporation tax, payroll deductions, excise taxes, VAT, etc.
- *Financing* – Government assistance, private sector financing, micro-credit, etc.

- *Regulations* – preferably tailored to specific industries or sectors
- *Human Resource Management* – HR planning, pay & benefits, labour laws, layoffs and terminations, health & safety
- *E-Business Training and Support* – information on Community Connection Programmes, local training centres, etc.

A wide variety of Government-to-Business service transactions should also be made available through the Business Gateway including:

- *Business Registration and Incorporation*
- *Business Name Search*
- *Tax remittances*
- *Import/Export/Customs Applications*
- *Land Use Building Permits*
- *Other business-related licenses and applications*

It is recommended that some form of "Business-to-Business-Connect" application be incorporated in the Business Gateway. This application would allow small buyers and suppliers to meet and interact on-line, helping generate new business and motivating SMEs to use ICT.

A help desk that provides support to small businesses, assists in starting up e-Businesses, and helps companies navigate their way around the Portal would also be helpful – especially in the early years.

e-Procurement

Government is the country's major buyer of goods and services. Many hundreds of companies sell to government every year. If government migrates its purchasing processes on-line it will likely result in the vast majority of suppliers also moving to the Internet – especially if this becomes the de facto manner in which government acquires goods and services in the future. It is recommended that government implement an e-Procurement solution in the mid-term – initially starting with an e-tendering module, which will not be so complex to implement. In addition to motivating suppliers to move on-line, e-Procurement should also offer operational efficiencies for government.

Consumer Protection

Most consumers are rightfully concerned about the privacy, security and accuracy of information transmitted over the Internet. It is recommended that a study of consumer protection issues, specific to

e-Commerce, be carried out over the next twelve months. In 2000, the OECD produced a document titled "Guidelines for Consumer Protection in the Context of Electronic Commerce" which will provide good reference in this area.

A *Consumer Gateway*, where all consumer-related information is centralized in a single site could also be a good candidate for inclusion in the e-Government portal and should also be considered.

Sustainability

ICT Industry Association

Technical infrastructure will only enable e-Business success to a certain degree. It is users, particularly business users who will employ the infrastructure to bring new money into their community that will make the e-Business network valuable and sustainable over the long-term. By encouraging widespread uptake and use of e-Business, and creating a united network of users, the joint benefits of the network will increase. This is the most direct way to improve Trinidad & Tobago's productivity and make the country more competitive in the global economy.

It is recommended that an ICT Industry Association be established to design an ICT Sector development framework, identify sector specific barriers, and develop standards and exchanges. The Association should examine how T&T's ICT sector can come together to create a powerful network to grow the industry, and advise other sectors on how ICT can be applied most effectively.

e-Business Roundtable

It is recommended that an *e-Business Roundtable* of top business people, technology experts and academics be assembled to serve as a "think-tank", to guide and challenge the Ministry of Public Administration and Information as it begins the implementation of the ICT agenda.

The Roundtable could also support the ICT Industry Association in its work in fields such as such as quality, standards, international marketing and strategic alliances.

The Roundtable should be further tasked with identifying tactics for reversing the Brain Drain into a Brain Gain.

Skills Development Programme

Building e-Business skills and a strong technical workforce is, and must remain, a critical element in making Trinidad & Tobago a more competitive country. Trinidad & Tobago needs to build its talent pool by the increasing the number of highly trained individuals within the workforce, and potentially by attracting skilled workers from outside the country. The Economy & Finance Working Group has identified a variety of initiatives that should be considered in this regard. Many of these initiatives may also have been addressed by the HR Working Group.

Community Connection and SKIE Programmes

Community Access Centres will provide a valuable, community-based location for the development of basic e-business skills. Specific focus should be placed on the e-Business needs of MSMEs. Access to electronic and hands-on training should be provided at the Centres. Subjects such as Computer Basics, Introduction to the Internet, Electronic Mail, Internet Applications, Business Tools on the Internet, and On-Line Transactions would be very beneficial.

Similar training packages should be developed as part of the *SKIE Programme* for delivery in training institutions outside of the CACs. However it is recommended that the *SKIE Programme* also incorporate more advanced training for technical personnel, CIOs and senior managers. A study to identify ICT training needs will have to be carried out as part of the design of the *SKIE Programme*. SMEs and ICT professionals must be actively involved in the design of this programme.

Computer Competency Certificate

It is recommended that Trinidad & Tobago adopt a programme to standardise basic computer skills and training and confirm the acquisition of recognised, up-to-date and relevant IT qualifications. It is further recommended that this programme be closely aligned to the EU International Computer Driving License, which has become internationally recognised and used in 88 countries and in more than 25 languages. The aims of such a programme include:

- Raising the general levels of competence in ICT in all sectors of society

- Enhancing mobility in business and improving productivity at work
- Enabling employers to make efficient investment in ICT
- Ensuring that best practice and quality issues are understood and implemented

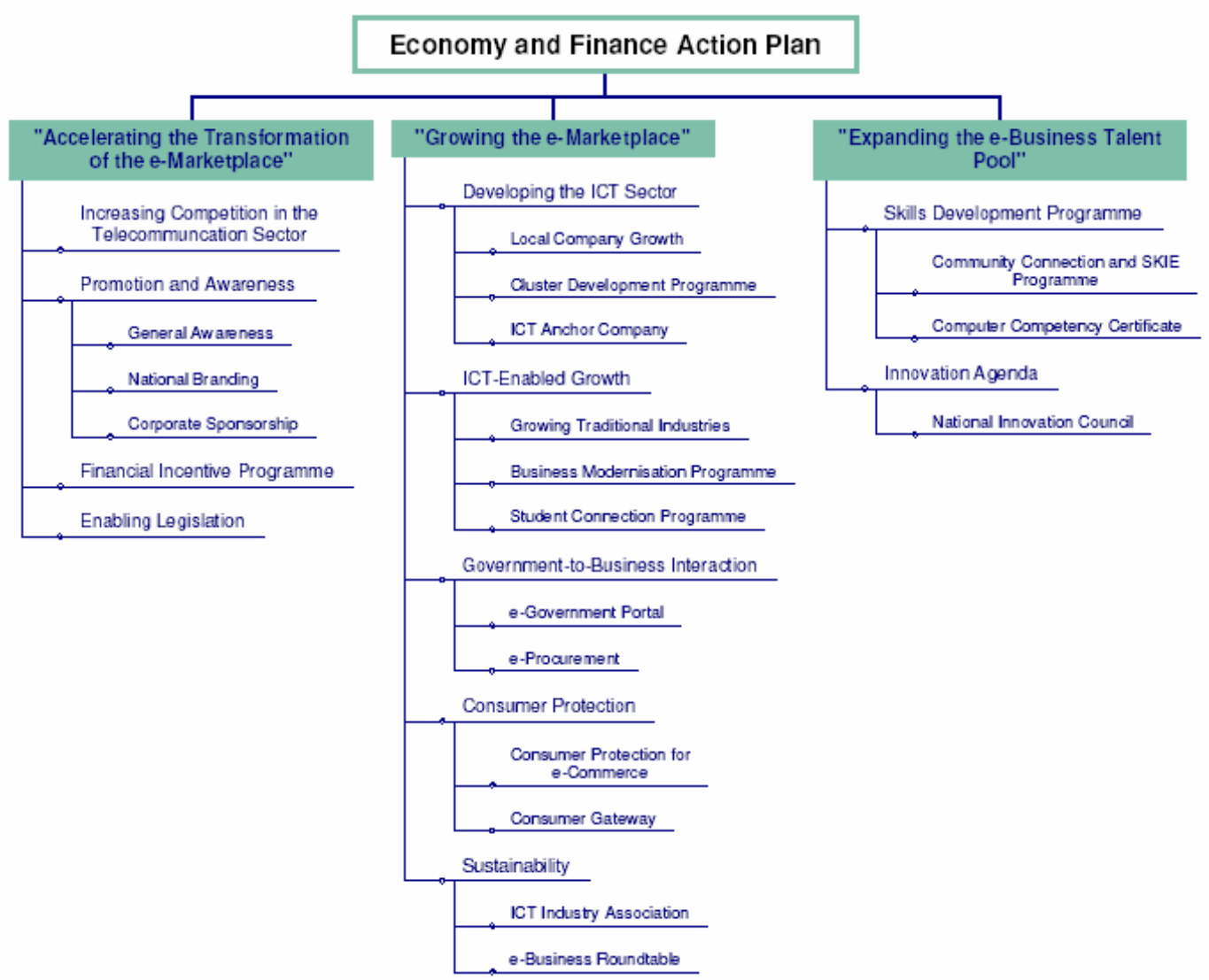
An analysis of the benefits of such a programme is to be undertaken within the next twelve months.

Innovation Agenda

National Innovation Council

The Economy & Finance Working Group endorses the introduction of a National Innovation Council in support of the country's campaign toward a knowledge-based society. The Council should explore an awards programme that acknowledges excellence and innovation in e-Business and e-Commerce for SMEs, an e-Entrepreneur programme and financial incentives for R&D and product innovation.

Appendix: Economy and Finance Action Plan "Key Strategies Programmes and Projects"



C4. GOVERNMENT ACTION PLAN

Contribution to the National ICT Plan

As the driving force behind the National ICT Plan, government has before it a great challenge – and a great opportunity. If Trinidad and Tobago is to become a knowledge-based society, government must take a lead role in promoting the adoption and benefits of ICT. The Government ICT Action Plan outlines how this is to be achieved.

Information and communication technology can help governments achieve dramatic improvements in the very things it was created to do – provide key services to citizens, businesses, organisations, and foreign entities. It has been shown that the effective use of technology can reduce the costs of government operations. However it can also be used to improve the quality of government services, in ways such as increased accessibility, responsiveness, transparency and accountability. In order to achieve these benefits, it is necessary to move beyond simple automation of functions, and concentrate on how ICT can be used to transform the broader public service.

Government touches all citizens' lives, in various ways at and at various times. By effectively adopting ICT, government can improve the quality, efficiency, and enjoyability of these interactions. In doing this, it can demonstrate to citizens and businesses alike that ICT is a tool that can help us do things better, whether it's getting a driver's license or starting a business, accessing health care or even voting.

Government has a responsibility to help improve its citizens' quality of life. As part of the National ICT Plan, the appropriate use of ICT in government can help Trinidad and Tobago deliver on this responsibility.

Desired Outcomes and Key Strategies

Desired Outcomes

Over the past several years, the Government of Trinidad and Tobago has been gradually incorporating ICT into its operations. Some benefits have already been achieved. However, as part of the National ICT planning process, the Government Working Group identified a number of additional outcomes that could be achieved as a result of this focused national initiative. Through facilitated discussions involving stakeholders from various areas of government, the following outcomes were selected as appropriate goals of the Government ICT Action Plan:

- All ministries, agencies and departments to be connected;
- All appropriate government services to be available electronically;
- All appropriate community-based services to be available electronically;
- A Government Portal and Intranet to be created;
- All necessary enabling legislation to be implemented;
- All necessary training and skills to be in place;
- Government service delivery standards to be improved;
- Government to be a "model user" of ICT, and a catalyst for ICT acceleration throughout society;
- Government to comprise a client-focused, technologically-knowledgeable culture; and
- ICT usage in government to be sustained through appropriate bodies, structure, and support.

These outcomes will be achieved through the implementation of five key strategies, described below.

Key Strategies

The desired outcomes of the e-Government development process can be achieved through the pursuit of five key strategies. These strategies, and their related programmes and projects, include the following:

- Electronic Service Delivery Strategy
- Public Sector Reform Strategy
- e-Government Awareness and Access Strategy
- e-Health Strategy
- e-Justice and National Security Strategy.

Electronic Service Delivery Strategy

In the digital age, governments must present their service offerings in ways that are simple and intuitive for citizens to use. The evolution of various electronic technologies has made this a very achievable goal. e-Government is about utilising information and communication technology in order to provide people with access to high-quality, citizen-centred services at the time and place of their choosing. Governments are being forced to consider what are the key things that citizens and businesses want to be able to do online. Information and services in immigration, licensing, health, education, and jobs feature prominently in most e-Government Programmes. However, e-Government is about more than putting up a series of uncoordinated Web pages. It requires proper strategy, management and governance. It requires careful thought and planning about the presentation and functionality of on-line services. And there must be suitably robust infrastructure and security to support these technologies.

This strategy addresses the range of programmes and projects, and the underlying infrastructure and support mechanisms, that will enable the delivery of electronic government information and services.

Government Portal Management Programme

The purpose of the Government Portal Management Programme is to coordinate the development and management of all electronic government services, both those that interface with the public, as well as those internal to the public sector. The Portal will utilise Internet and Intranet technology to provide a single point of contact for all those seeking information or services electronically. Subsequent generations of the Portal may deliver services via automated telephone technology and/or mobile computing devices ("m-government"). Management of the Portal will require the creation of an appropriate body with responsibility for planning policy, setting standards, and liaising with other government bodies to ensure that customers experience seamless electronic service.

The Government Portal Management Programme is pursuing the following objectives:

- To provide a single point of contact for all electronic government services regardless of the Ministry or government office responsible;
- To provide effective management, governance and accountability of electronic government service delivery;

- To provide mechanisms for making decisions concerning the direction and planning of e-government; and
- To provide effective reporting on the performance of the government portal.

A number of projects will need to be launched in support of the Government Portal Management Programme including:

Establishing Citizen-Centred Service Vision and Objectives
Utilising ICT to enable the creation of a citizen-service focused Government Portal requires a fundamental understanding of the principles and objectives of citizen-centred service. The "citizen-centric" service approach has been successfully applied in a growing number of jurisdictions worldwide. This approach supposes that service delivery should be based not on the organisational structures of government, but on the needs of people. In the past, this was an impossibility, as public sector organisations were constrained by the inability to rapidly process and distribute information. In the electronic age, governments have access to technologies and tools that allow organisational collaboration on an unprecedented scale. The application of these tools, in concert with redesigned operational processes and organisational relationships, is reshaping the way government works.

There have been many studies published that examine the concept of public sector service. (For examples, see "Good Practices in Citizen-Centred Service" by Blythe and Marson, Canadian Centre for Management Development 1999, and "Citizens First", CCMD 2003.) Government ICT project leaders must determine how the findings from these and other studies are to be applied in the development of the Portal, and define the guiding principles to be followed in the redesign of programmes and services. These principles shall be expressed as an overall vision for citizen-centred service in the public sector, which will be used to drive electronic service transformation efforts. They may also be a starting point in the design of citizen-centred services delivered via other channels, such as telephone and over-the-counter.

The vision and objectives identified in this project will be used as a reference point by other government projects, such as "Needs Assessment" below, that seek to define and respond to citizens' needs.

Needs Assessment ("Gillian's Story")
An integrated, efficient service approach begins with a reexamination of customers' needs, (where the term "customers" refers to anyone seeking

information or service from government). We know that government provides many highly essential services – how, when, and to whom are these delivered? It is useful to build a "customer lifecycle" profile for citizens, businesses, and international visitors. This approach allows for the identification, description, and categorisation of every interaction with government a fictional person (i.e. "Gillian") may have, from birth until death. As services are documented, opportunities to bundle complementary services will emerge, redundancies will be revealed, and new service delivery processes will be developed. The needs assessment exercise will also include a survey of how and when citizens would most prefer to access government services. When this information is combined with demographic data, profiles of different "communities" of citizens and businesses may emerge (e.g. seniors, students, rural residents, parents, small businesses, exporters, etc.). Later, when developing new service delivery channels, these customer and community needs assessment results will be useful in determining the mix of online, telephone, and over-the-counter services available to different groups of citizens in various areas.

Government Portal Development

The delivery of government information and services using ICT is the core functionality of e-Government. In the past, certain Ministries and government offices in Trinidad and Tobago have produced their own Websites, making selected information available to the public. However, these efforts have not been coordinated, which has resulted in inefficiencies and underutilised information resources. Citizens and businesses wishing to access government information are confused about what is available online, and where they can find it. No government-wide Web standards are enforced. Little information is shared between Ministries.

The Government Portal Development project represents a coordinated, integrated approach to making all appropriate government services accessible electronically. The project will begin with an assessment of citizens', businesses', and visitors' current service needs identified in "Gillian's Story". Then, before beginning the design, an informative exercise is to consider the features and functionalities of some of the more effective government portals in use in other jurisdictions. A "best practices" review of these Websites can be a useful learning exercise. Later, by incorporating elements of these sites' design into the T&T Government Portal, the design process can be fast-tracked.

The conceptual design phase of the project will identify the electronic information and services to be delivered via the portal, and the means by which they will be delivered. Coordination with the "Integrated Process Design" project will be essential, as this

project will identify how back-office processes and systems will generate, store and access information resources. Common look-and-feel design elements will start to be identified at this point also.

The Portal will present different functional areas to serve the needs of three main user types: citizens, businesses, and international visitors. A separate secure area of the Portal will be accessible by government employees. An initial list of potential information and services for each of these areas is described below.

The "Citizens" area of Trinidad and Tobago's Government Portal will include information and services such as:

- Information on jobs, benefits, health, education, and taxes;
- E-Services such as birth/death/marriage certificates, license and permit applications and renewals, e-payments (tickets, legal penalties, utilities, alimony, etc.), school registration, unemployment registration, and passport applications; and
- Contact information for various government services, and information on how to ensure service accountability, (e.g. centralised inquiries and complaints process, links to Freedom of Information and Ombudsperson's Office).

The "Business" area of Trinidad and Tobago's Government Portal will include information and services such as:

- Information about financing (incl. Micro-credit), business start-up, government programmes, joint ventures, and technical assistance;
- Regulatory information;
- Automated information services, e.g. When key legislation changes, or market conditions change;
- E-Customs information and services;
- Other e-services such as license applications and renewals, land and building taxes, e-payments (WASA and T&TEC), companies registry, Board of Inland Revenue Tax Calculation, Exporting assistance; and
- E-tendering and e-procurement.

The "International Visitors" area of Trinidad and Tobago's Government Portal will include information and services such as:

- Information on investment opportunities, citizenship, and tourism; and
- E-Services to be determined.

Information and services for government employees will also be accessible via secure areas of the Portal. These services may range from

employees' human resources information (e.g. benefits, attendance, grievances) to collaborative inter-departmental information sharing, to employment opportunities. As with the above areas, the array of information and services contained within the Portal must yet be determined.

Early iterations of the Portal will include simple, then increasingly complex information made available via a central government Website that utilises a standard design format (i.e. "common look and feel" for government entities). Later versions of the Portal will feature transactional services, and more sophisticated transactions. Additional Ministries and other government agencies may include their services in the Portal. Other service channels, such as those utilising mobile computing devices (m-government), may be explored. There is a need to plan the ongoing development of the Portal, in order to constantly meet constituents' e-Government service demands. The ongoing performance of the Portal must be monitored, including number and range of services, citizen satisfaction, cost savings, etc., in order to modify the functionality of the Portal.

Infrastructure Management Programme

In order for e-Government applications and processes to work most efficiently, appropriate technology infrastructure must be implemented and managed. The Infrastructure Management Programme will be responsible for providing a central, standardised approach to e-Government hardware, software, and network resources. It will take a lead role in implementing technical solutions of a shared nature, such as enterprise-wide software applications. It will also provide the supporting policy framework to enable such resources to be utilised by all appropriate government entities.

A ministry-by-ministry inventory of ICT resources has recently been completed, providing an accurate picture of government's current technological capabilities. Although e-Government planning is still in its early stages, it is clear even now that significant enhancements to the infrastructure will be required. It is imperative that the team responsible for government infrastructure management coordinate with the Integrated Process Design and Portal Development projects in order to gain an understanding of the future technology requirements.

Government technical architecture planning and design will be based on the requirements of various government stakeholders. At the heart of these requirements will be the ability for public sector bodies to communicate with others electronically. To this end, it is recommended that the Infrastructure Management Programme enable the seamless flow of information across the public sector through the creation of a Government

Interoperability Framework. The Framework will include policies and standards for connectivity, technical specifications, and operating instructions. It will ensure that technology platforms are compatible, and integrated. It will call for the deployment of standardised hardware and software based on open systems principles. It will describe standardised methods for the storage, retrieval and sharing of government data. And it will enhance information management capabilities through the use of common application frameworks.

The Infrastructure Management Programme will be responsible for the deployment and maintenance of the government Intranet. The Intranet will make use of the recently approved Government Backbone, which will provide Ministries with high-speed connectivity for the exchange of electronic data. It will assist with the deployment and management of shared systems for common administrative tasks, e.g. planning and budgeting, document management, payroll, HR, finance, etc. In short, it will be a programme responsive to the needs of the modern government organisation, providing technology that enables future processes of a "back office" and a "front office" nature.

Public Sector Reform Strategy

Information and communication technology represents an opportunity for government to do things differently than it has in the past. Introducing ICT in a pervasive way involves more than just technological change – it involves a re-thinking of the processes and organisational structures used to deliver public services. While much of the e-Government movement focuses on the customer-facing aspect of service delivery, this key strategy is concerned with the internal changes government needs to make in order to become a modern service-oriented organisation. Improved service quality, decreased costs, and increased responsiveness, transparency and accountability are some of the benefits associated with public sector reform. Thus the programmes described under this strategy focus on transforming the public sector, accompanied by the utilisation of ICT, in order to better serve its constituents.

Public Sector Transformation Programme

As part of the National ICT Plan, the Public Sector Transformation Programme will take a comprehensive and rigorous approach to modernising government operations. In this respect, the Programme will seek to accelerate efforts previously initiated in this area, providing increased coordination and resources.

Public Sector Transformation involves thinking about government services from the citizen's (or business') perspective. The programme will leverage the "citizen-centric" service findings identified in the "Citizen-centred Service Vision" and "Needs Assessment" projects described above.

A number of projects will need to be launched in support of the Public Sector Transformation Programme including:

Government-wide Integrated Process Design

As government organisations grow in size and sophistication, their operations tend to become increasingly fragmented. In various jurisdictions worldwide, this has led to inefficiencies, redundancies, and growing citizen frustration. "Dealing with government" has become a burden to people – unavoidable, but rarely enjoyable. The redesign of processes, focusing on opportunities to share information and resources within and across government departments, has the potential to reverse this trend.

Armed with an understanding of citizen needs and preferences (see "Gillian's Story"), it is possible to develop ideal processes for delivering services seamlessly, irrespective of government's internal organisational structures and current technology constraints. Focus should be placed on improving customer satisfaction, maximising efficiency, and eliminating redundancy. Operational, organisational and technological changes required to enable the future processes must be documented, and validated with affected stakeholders. Perceived costs, benefits and risks should also be identified, and used to evaluate the desirability of implementing various changes.

While organisational transformation requires much more than the introduction of new technology, technology can be a key enabler of integrated process design. With interdepartmental connectivity, (which is achievable with the implementation of the planned Communications Backbone), comes the opportunity to leverage shared systems of various types, which in turn leads to improved organisational performance.

Technologies that can assist with public sector transformation include:

- Common, government-wide desktop applications such as e-mail, scheduling, and word processing;
- Shared database systems, including a common data management platform;
- Government Intranet;
- Document (content) management system;

- Electronic workflow applications for automating, tasks, and for tracking work progress;
- Common financial management system;
- Customer relationship management (CRM) system;
- Unique customer identification system;
- other enterprise-wide systems (payroll, HR, e-procurement); and
- Decision support and knowledge management applications.

During all aspects of these projects, but particularly the design of new service delivery processes, channels and technology systems, it is imperative that these project teams work closely with the Government Portal Development and Infrastructure Management Programmes. These areas are interrelated; the former is responsible for delivering front-end e-Government services, the latter for providing the infrastructure on which e-Government systems will be based. Furthermore, government is currently embarked on certain enterprise-wide software implementations, such as financial management, debt management, and human resource information systems. These efforts must be coordinated with those of the larger Government ICT Plan. Public sector transformation will require the effective coordination of people, processes, and technology in order to be successful.

Public Sector ICT Skills Development

If government is committed to utilising ICT in a meaningful way it must build a citizen-centric and technologically knowledgeable workforce capable of exploiting its benefits. The administration and delivery of processes and services identified above in the "Integrated Process Design" project will require new roles, and new skills. Investment in skill development and acquisition will be a stated priority of government. This requires that staff have access to and training in appropriate technology tools and skills. It may also require a recruitment drive seeking to hire people already skilled in ICT. This project outlines how government can obtain the necessary ICT skills to enable the organisation to transform itself.

Working closely with the Integrated Process Design team will allow this project team to identify the roles and skills that will be required to deliver future processes and services, with emphasis on ICT and customer service skills. Minimal and optimal knowledge and skill requirements should be identified, along with corresponding training and skill acquisition strategies. ICT skills could include the following:

- Basic Internet and email usage;

- Enterprise applications usage, such as workflow, finance, payroll, HR, and knowledge management applications;
- Customer service training;
- Change management and psychological transformation; and
- Principles behind "the learning organisation".

In order to ensure there is appropriate leadership of ICT initiatives in government, it would be useful to implement a Government CIO training programme. The skills learned by participants in this programme, including ICT project management, user needs assessment and acceptance testing, and risk identification and management techniques, would be of great benefit in the many government areas undergoing transformation involving ICT.

In addition to initiatives geared at hiring trained personnel, an array of skill development approaches can be utilised to prepare employees to perform modern e-government functions. These training approaches may include:

- Computer-based training (CBT)
- Distance education – online learning and "virtual classrooms"
- Classroom learning
- Offsite training
- Peer-to-peer training
- Vendor-sponsored certification programmes

In order to track and manage performance, and ensure that staff are adapting and thriving in the new environment, consistent performance management appraisals are required. Such appraisals can be used to focus on both individual and group performance, and may include activities such as skills testing, performance reporting, and incentives linking compensation and recognition to performance.

For more on managing organisational and individual performance, see "Performance Management" below.

Government Service Centres and Call Centres

The administration and delivery of processes and services identified in "Integrated Process Design" will require new ways of delivering government services, not services specific to individual ministries. Integration and coordination is required in order to deliver these services efficiently, while improving customer service. Integrated processes and technology must be implemented

to allow services to be delivered centrally (i.e. not only from individual ministry offices). Just as the development of a Government Portal will enable the delivery of government services via the Internet, the formation of Government Service Centres and Call Centres will address service delivery over more familiar channels – over the counter, and over the phone. In order to provide a seamless experience for the customer, and minimise their challenges in receiving services (visiting multiple offices, understanding process to receive services, making multiple payments or applications, etc.) Government Service Centres will be set up to deliver all government services, including services to businesses, which will result in the GSCs also being "Small Business Service Centres". This will require that customer service staff (both counter and telephone) be trained to provide information and services in a number of different areas. Staff must be equipped with appropriate tools for easy look and retrieval of specific programme or service information. An up-to-date electronic directory of services and contact people will be required in order to allow the direct ("warm") transfer of a citizen to a service specialist, (e.g. case worker), in any area of government.

In order to enable this manner of centralised service delivery, "back-office" processes and technology will be shared by telephone, over-the-counter and electronic channels, thereby achieving efficiency savings and eliminating redundancies. To achieve this, this project must work collaboratively with multiple Government project teams, including "Integrated Process Design", "Government Portal Development", and "Infrastructure Management".

"Transparency in Government"

Through the application of e-Government approaches and technologies, government has the opportunity to provide much greater transparency and accountability in its dealings with the public. If public sector organisations are going to play a lead role in transforming Trinidad and Tobago into a knowledge society, citizen trust and confidence in the openness and efficiency of government is paramount.

This initiative will provide citizens with insight and information about the inner workings of government, thereby engendering a relationship that promotes and builds citizens' trust in the public sector by improving responsiveness and accountability.

The "Transparency in Government" project is pursuing the following objectives:

- To promote greater citizen participation in government
- To eliminate corrupt practices
- To provide citizens with information about government processes
- To improve government accountability
- To build and promote trust
- To attract international recognition, which may lead to increased foreign investment

As part of government's agenda to create a citizen-centred organisation, accountability mechanisms should be put in place to ensure that organisations and individuals are responsive to the needs of customers (both external and internal to government). For example, workflow systems can include "traceability" functions to determine who has accessed files, and when. There should be multiple methods and opportunities for customers to comment on service received, and processes to "close the loop" on contacts initiated. This will require the establishment of a reliable, efficient process for publishing information on government initiatives, programmes, and results. It will also require, perhaps in collaboration with the existing Ombudsperson's Office, the implementation of an independent, transparent process for addressing and responding to public inquiries and complaints of a significant nature.

Finally, increasing citizen participation in government is one of the long-term goals of the e-Government movement. Increased public participation can lead to better public policy-making, improved government responsiveness, and a strengthened and empowered society. ICT is a tool that can help citizens exercise their democratic rights. Technology can make it possible for people to easily access government information, follow the political process, discuss and comment on public policy, and provide feedback on public policy initiatives. As in the physical world, security in the electronic environment is of the utmost concern when it comes to sharing public and individual information. Many factors will influence the timing of introducing e-Democracy mechanisms. However, once citizens experience the potential of e-Democracy tools to improve the quality of their governance, they are likely to be embraced by the connected population.

Performance Management Programme

In government, as in all major organisations, what gets measured gets done. Government can demonstrate its commitment to service delivery improvement through the implementation of a robust performance management programme, measuring and tracking

results in a number of ways:

- Customer feedback from citizens, businesses and visitors;
- Citizen Surveys;
- Staff feedback;
- Performance management software; and
- Service performance monitoring and reporting.

The findings from performance management studies can be used to update and improve process, technology and organisational designs, potentially leading to benefits such as:

- Improvement in time taken to respond to service requests, queries and complaints;
- Cost reduction;
- Improved service quality or quantity;
- Increased inter-agency integration and information sharing;
- Improved employee satisfaction; and
- Improved government accountability.

e-Government Awareness and Access Strategy

e-Government has the potential to provide greater benefits the more it is used. For example, as more people move away from using outdated service channels in favour of more efficient electronic ones, government reaps benefits in cost savings and/or improved service quality. The more individuals that are able to access efficient, high quality services at anytime and anyplace, realising time savings, greater convenience, and improved customer service in the process, the greater society benefits. It is imperative that government promote public awareness of and access to e-Government services. All members of society interact with government at one point in their lives. For this reason, government has a unique opportunity to act as a catalyst for change, using their electronic services and programmes as an incentive for citizens and businesses to get on-line. This strategy addresses the means by which the public sector can increase public participation in the knowledge economy.

Public Awareness Programme

For its part of the National ICT Plan, government is determining how it can do things differently, not only for the tangible benefits this will produce, but also to enhance its image as a contemporary organisation. As government efficiency and responsiveness improves, its image as a slow-moving bureaucracy will be eroded, replaced by one of a modern, efficient and effective organisation. It is important that the government embark on a Public Awareness Programme, coordinated with the National ICT Awareness Programme, in order to ensure the public's perception of its capabilities matches the reality.

The Programme will have external and internal facing elements, each utilising various communications media. Internally, the Programme will inform public sector personnel of government's role as a catalyst in T&T's National ICT initiative. It will also address the role and support required of government staff in ensuring the ICT agenda is executed effectively. Externally, public awareness efforts will focus on government's emerging ability to service citizens more effectively through the use of information and communication technology. In addition to print, television and radio media, an "e-Government roadshow" presentation will be shown to groups in various parts of the country in order to share information, and respond to questions and feedback on government ICT planning efforts. As with all ICT marketing efforts, the messaging will clearly identify the benefits to the individual.

e-Health Strategy

Health care is one of the most important services that government provides to its constituents. In other jurisdictions around the world, governments are utilising ICT to provide higher quality health care for lower costs. Clearly this is an area that Trinidad and Tobago is interested in exploring further. At this point, ICT planning in the health care sector is in its infancy. While the electronic delivery of certain government services, such as submitting various forms and payments, has been discussed in some detail, e-Health services have not yet been described. Thus, it is recommended that the initial stage of the e-Health strategy focus on the development of an e-Health Feasibility Study.

e-Health Feasibility Study

There are a number of avenues that need to be explored in order to develop electronic health care services in a meaningful way. A feasibility study will examine four key areas of e-Health:

- Online health care services, such as online medical and health information sites, electronic diagnosis and treatment networks, and collaborative initiatives between health care providers;
- Supporting infrastructure, including physical, technical and legislative infrastructure, interoperability standards, and security parameters;
- Health care education initiatives, collaborating with the education sector to develop health care training initiatives using ICT; and
- Business opportunities in the health sector such as health record transcription services, e-health content development, and collaborative ventures with other CARICOM countries.

The development of the study will involve key stakeholders from the health care field, including physicians, nurses, Ministry staff, ICT professionals, and international health care experts. The purpose of the study will be to describe T&T's current health care environment, identify key opportunities and risks, and recommend actions for improving health care through the use of ICT.

e-Justice and National Security Strategy

In Trinidad and Tobago, the administration of justice and security is a dual role performed by the Ministry of the Attorney General and the Ministry of National Security respectively. While in the past the separation of these functions into two organisational units made sense for many reasons, in the electronic world it is important to determine how these entities can collaborate in order to better protect the public. In many jurisdictions, the development of an "e-Justice" system, in which critical information is made available to authorized officials throughout the country, has been an effective way to improve the administration of justice, and enhance public safety. As part of the National ICT Plan, it is time for Trinidad and Tobago to consider the feasibility of embarking on an e-Justice and National Security Strategy.

e-Justice Feasibility Study

As with e-Health, the application of ICT to the area of public security is a subject of enormous scope. There are innumerable ways in which technology may be applied in order to prevent crime, improve the administration of justice, increase the effectiveness of law enforcement agencies, and better inform the public of threats to their safety. Additionally, with the widespread use of ICT comes the threat of new types of crimes, including computer "hacking", identify theft, and software piracy. A future e-Justice Programme must oversee the management of several projects that focus on the deterrence, prevention, and prosecution of crimes, and the overall enhancement of public safety through the use of ICT. At this early stage in the development of e-Justice it is important to consider what is possible in T&T, given the current environment.

There are a number of avenues that need to be explored in order to develop a national e-Justice Programme. It is recommended that a feasibility study be conducted, identifying opportunities and challenges in several key areas, described below.

CyberLaws and CyberCrime

While the use of ICT has the potential to improve the quality of life in Trinidad and Tobago, it also opens new avenues for illicit activities. Computer "hacking", identity theft, software piracy, denial-of-service attacks, and corporate espionage are all examples of crimes made possible, or made simpler, by the adoption of ICT by citizens and businesses. In response to this threat, the creation of new laws, and new organisations for enforcing these laws, is appropriate. It is necessary to review existing legislation in order to understand its weaknesses in light of new potential threats. Additionally, the ability of domestic law enforcement agencies to detect and prevent these crimes must be evaluated. Based on these assessments, recommendations will be presented for the formation of new legislation and new law enforcement agencies to fight the emergence of cyber crime.

Integrated Justice Network

A feasibility study will examine the potential for integrating the information systems of the various National Security and Attorney General organisations in order to allow the more timely and efficient sharing of knowledge that leads to the detection and prevention of crime. The study will also examine how other Ministries and agencies could be tied into the Integrated Justice Network as needed, including the Revenue Authority, Customs, Board of Inland Revenue and the Licensing Division.

If considered feasible, the Network would allow information on offenders, crimes, and proceedings to be accessed, (by authorised persons), at any point in the country at any time. It would also enable law enforcement agencies to identify patterns of criminal activities that presently go undetected.

This capability would allow a host of Integrated Justice Network (IJN) applications to be developed, including:

- Tax evasion detection and revenue recovery;
- Neighbourhood intrusion detection and Rapid Response;
- Cyber crime detection and prevention;
- Customs Information System;
- License information system (e.g. vehicle registration);
- Immigration system, including deportee database;
- Intelligence network, linked to foreign databases;
- "Dangerous offender" registry; and
- "Family crimes" registry.

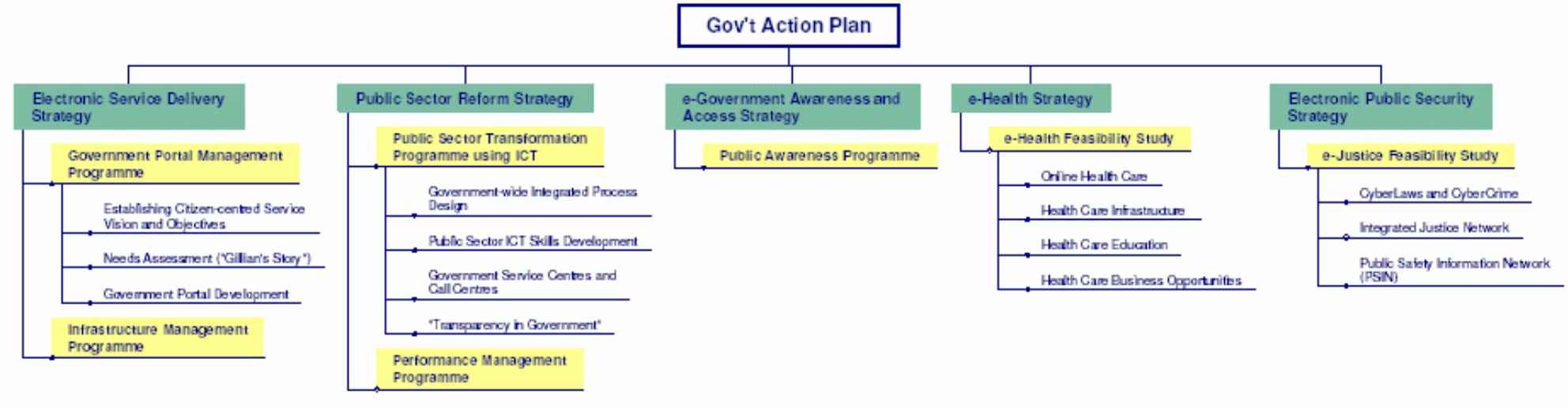
Where appropriate, information produced by the IJN could be communicated to the public via the Public Safety Information Network (PSIN), described below.

Public Safety Information Network

Lastly, the e-Justice Feasibility Study will examine the potential for media channels to be utilised for the rapid dissemination of information related to threats to public safety. The identification of threats due to crime and terrorism could originate from the Integrated Justice Network. Other threats– environmental, health-related, etc. – could be identified by appropriate ministries and agencies, and relayed to PSIN using ICT channels.

The development of the e-Justice Feasibility Study will involve key stakeholders from the both the justice and national security areas, including judges, lawyers, court officials, police officers, defence force members, ICT professionals, and international experts. The purpose of the study will be to describe T&T's current environment, identify key opportunities and risks, and recommend actions for improving public safety and the administration and enforcement of justice through the use of ICT.

Appendix: Government Action Plan "Key Strategies, Programmes and Projects"



C5. Legal & Policy Action Plan

Contribution to the National ICT Plan

Successful adoption and diffusion of any national connectivity agenda is significantly dependent upon a stable and clear regulatory and legal infrastructure that promotes, rather than hinders, the deployment of ICT. The framework must not only provide the "rules of the game" for investors in, and developers of ICT capacity, but it also must deal with the effects and outcomes of being a "connected society" that is actively participating in the global information-based economy.

The aim of the Legal Working Group ICT Action Plan is to identify the major laws, regulations and governing structures that will need to be reviewed, amended and enacted to address topics including but not limited to data protection, privacy, security and authentication, computer misuse, e-Commerce and e-Governance, taxes, custom duties, intellectual property, regulation of the telecommunications sector and Internet issues.

It is important to recognise that some work has already been undertaken in developing a policy and legal framework for the development of the telecommunications sector and to address the new issues and challenges that have been introduced by e-Commerce in Trinidad and Tobago. The following statutes have been enacted:

- The Telecommunications Act 2001
- The Computer Misuse Act 2000
- The Electronic Transfer of Funds (Crime) Act 2000
- The Copyright Act 1997
- Trademarks Act of 1994

Other pieces of legislation which are expected to be taken to Parliament for its consideration are:

- The Electronic Transactions Bill 2002 which seeks to give legal recognition to electronic documents and signatures and will deal with issues of validity of electronic contracts and liability of Intermediaries such as ISPs
- The Data Protection Bill which will provide protection to individuals with respect to their right to the privacy of their personal information
- The Trademarks Amendment Bill 2003
- The Copyright Amendment Bill 2000

As an enabler of ICT adoption, the Legal ICT Action Plan touches on a large number of areas and involves a wide variety of stakeholder groups. The programmes and projects identified within the Plan will only be implemented effectively if there is close coordination and cooperation amongst the various partners. Ongoing liaison with the Ministry of the Attorney General, Ministry of Legal Affairs, Ministry of Finance, TSTT, the Association of Independent Internet Service Providers (AIISP), the Chambers of Commerce and a number of other organisations is critical to this process.

Desired Outcomes and Key Strategies

Desired Outcomes

At the outset of the project, the Legal Working Group identified a number of outcomes that are critical in determining the overall success of Trinidad and Tobago's connectivity agenda. It also recognised that legislation is a key enabler in providing an appropriate environment for the achievement of these outcomes:

These included major outcomes such as:

- Easy and affordable access to ICT Infrastructure
- Accelerated take-up and growth of e-Commerce
- Enhanced credibility and attractiveness of Trinidad and Tobago to investors with the creation of a stable, innovative and technologically superior e-Commerce environment
- Adequate protection for consumers in the electronic marketplace

- An effective and efficient judicial and legal community that is knowledgeable about ICT issues and equipped with appropriate training in ICT-related skills and is afforded easy access to electronic legal research libraries
- More efficient and effective government processes that provide greater transparency, opportunities for citizen participation in policy making and increased access to government information

Key Strategies

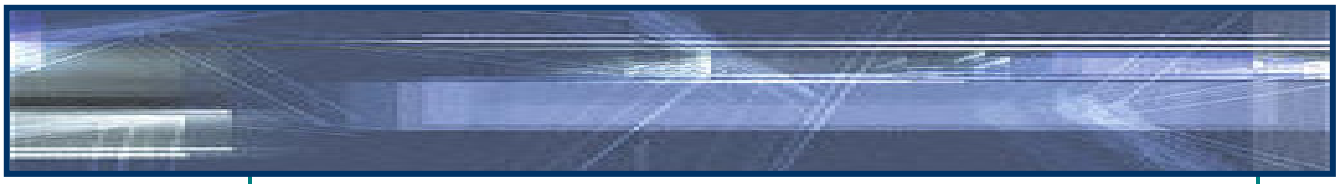
During the course of the ICT planning session, the Legal Working Group refined its desired outcomes into four overarching strategies:

1. Developing a Legislative Framework and Appropriate Policies to Support a Robust ICT Infrastructure

The Telecommunications sector is the foundation of Trinidad and Tobago's robust ICT Infrastructure. The *Telecommunications Act 2001* establishes the basic legal structure for liberalisation of the telecommunications industry. The implementation of the statute requires the development of a regulatory framework for overseeing the transition to an open competitive telecommunications environment. Many jurisdictions have found that transition to a liberalised market has required a sophisticated, effective, credible and imaginative regulator. The implementation of the *Telecommunications Act* will be a critical step towards enhancing ICT infrastructure. Among matters that will be dealt with in this element of the Action Plan are, the prevention of anti-competitive practices, such as inappropriate cross-subsidisation, and rules of service governing carriers, as well as rules for access to the basic network by competing carriers.

2. Enabling e-Commerce and e-Government

To fully enable e-Commerce and e-Government, a legal infrastructure is as important as the physical infrastructure. In addition to a basic regulatory structure governing telecommunications and market liberalisation, a number of legal areas will require review and amendment. In some instances new legislation will need to be enacted where no law exists. For, example, proposed competition legislation will need to be reviewed and enacted to reflect the needs of a liberalised environment where new investors will be competing with an entrenched monopoly (in which government has a significant shareholding) that has the competitive advantage, thereby discouraging investment in this sector.



It is necessary to legislate for electronic commerce so as to remove obstacles to the legal validity of electronic contracts and to achieve legal certainty in the electronic environment. The lack of clear rules constitute a major barrier to the use and growth of e-commerce because the traditional rules which govern the relationships between parties to business transactions and which have evolved over time were created for a paper-based world. As new forms of business practices evolve, the traditional rules have become less clear in their application to an electronic environment.

The aim of the legislation will be to ensure equal treatment to paper and electronic transactions by clarifying how existing rules apply and updating them where necessary in a consistent and predictable manner. The Electronic Transactions Bill 2002 represents an important step in that direction. Its main provisions seek to grant legal validity to electronic transactions and signatures and to allow for their admissibility as evidence in a Court of law. Priority should be given to finalising this piece of draft legislation and enacting it into law.

Appropriate amendments to the existing Intellectual Property legislation (Copyright) need to be made to ensure the appropriate and unambiguous protection of electronic documents and electronic versions of already protected physical documents.

Issues of cyber squatting and other infringements of the rights of trademark owners on the Internet must also be addressed and the existing rules governing the use of trademarks and brands need to be amended.

With the Internet assuming increased importance as a commercial tool, greater attention needs to be paid to developing a policy to address Internet governance and domain name issues that is in keeping with international developments in this area.

Security of the Internet and the protection of individuals' rights to the privacy of their personal information are key measures for building users' trust in e-commerce and the new legislation must address these important areas.

The use of encryption technologies and certification authorities can provide the security that is required for electronic transactions by ensuring the integrity and confidentiality of messages that are exchanged. They can also provide the important element of repudiation,

which prevents any party to a transaction from denying his participation in the transaction.

The electronic environment also raises new issues for labour and existing legislation will require updating to deal with the new challenges.

3. Citizen/User Protection

There are concerns about a rapid transformation to a borderless information society that disregards national boundaries and which provides capacities for data collection retrieval, compilation, comparison, and creation of new data to a degree never known or even dreamed of only a few years ago. These concerns have some foundation.

It is usually the role of government in a "wired" society to ensure that appropriate safeguards, even prohibitions, are in place to provide protection from these risks. This is not to say, necessarily, that all protections of citizens and users can be accomplished solely through government regulation. The approach to consumer protection will be based on the strengthening of the consumer protection framework through legislative measures, encouraging self-regulation within the more structured sectors and through consumer awareness. The government will undoubtedly play a lead role along with industry, citizens and users themselves.

4. Appropriate Skills and Training for the Judicial/Legal Community

Achievement of the objectives set out above will, of necessity, require the development of a complex and multi-faceted legislative framework. This framework can only be as effective as the persons charged with the responsibility of giving life to it. Law enforcement is therefore an important component of the Legal Action Plan and in this regard, the enforcement authorities as well as the legal and judicial community have a significant role to play. Without the necessary training and development of Law Enforcement Personnel and legal and judicial officers in the new technology, the framework that is created will be ineffective and of little practical value.

Developing Appropriate Policies and Legislative Framework to Support a Robust ICT Infrastructure

Legislative Review

Having a solid legislative base to support ICT development within Trinidad & Tobago is as important as having the appropriate technology in place. A Legislative Review will be launched to examine the suitability of the current legislation for supporting new levels of ICT infrastructure.

The Review will examine a number of areas, including:

The Electronic Transactions Bill and related e-Legislation
A review of a number of current laws will need to be carried out to determine their appropriateness for use in an electronic environment.

Full implementation of e-Government and e-Commerce will require amendments to a number of pieces of legislation dealing with commerce and international trade, rules of evidence, recognition of electronic contracts, Rules of Court dealing with filing and service of court documents and the general streamlining of legal processes.

The Electronic Transactions Bill must be reviewed to ensure compliance with the legal principles that have been developed and adopted internationally by countries, which have enacted e-Commerce legislation. They include but are not limited to:

- Media neutrality (the creation of a medium neutral environment that does not discriminate between paper and non-paper transactions)
- Notarisation
- Use of electronic agents
- Liability of electronic intermediaries
- Technology neutrality

The Telecommunications Act 2001
Due to the passage of time and a greater appreciation for the complexities of the telecommunications sector, it is felt that a review of the 2001 Telecommunications Act be undertaken, and if necessary amendments, be effected, prior to full proclamation. This review of

existing legislation and related policies and guidelines will ensure that the *Act* is up to date, and relevant prior to proclamation. At the same time, Regulations should be developed that will provide for the establishment of performance standards and for mechanisms to be put in place for mandatory review of new legislation and the new regulatory structure at the end of an appropriate time period.

Competition Legislation to Promote Increased Levels of Competition in the Telecommunications Sector

The key to the development of the Telecommunications and ICT sectors is the creation of a well-regulated competitive environment. Under this new regime, citizens will benefit from a system of universal access to telecommunications services with greater affordability and accessibility of ICT. This in turn will promote an increase in e-Commerce activities and the use of government services on-line, encourage new public sector procurement policies and the development of a dynamic platform for the introduction of new technologies. Critical to the achievement of this goal is the conduct of a comprehensive review of existing laws regulating the telecommunications sector to identify any barriers that may hinder competition. This will be followed by the development of an appropriate legal framework to regulate anti-competitive practices and to provide for interconnection, universal access and service, fair pricing policies and quality standards of service.

Full Implementation of the Telecommunications Authority

The Trinidad and Tobago Telecommunications Authority (TTTEL) established by the *Telecommunications Act 2001* is in the process of preparing itself for full implementation of the *Act* when it is proclaimed. The staffing process for this agency has already begun.

Under the Act, TTTEL will be responsible for making recommendations to the responsible Minister regarding the granting of concessions and licenses. It will also be responsible for monitoring and ensuring compliance with conditions set out in the concession agreements or licences. The Authority will need to establish universal service standards (including access for persons with disabilities) and set the terms and conditions of access to the infrastructure network.

TTTEL will most probably need to work with TSTT and other providers to establish costing methodologies and develop terms and conditions (including access charges) for connection to the existing infrastructure network. Experience in other jurisdictions has shown that implementation of competitive services places new and challenging demands on regulators. Potential abuse of the incumbent's dominant position

and the creation of access "bottlenecks" must be avoided. Regulation must play a more important role than before in ensuring choice and innovation thrive.

Enabling e-Commerce and e-Government

The Creation of Policy and Legislation to Enable e-Commerce and e-Government

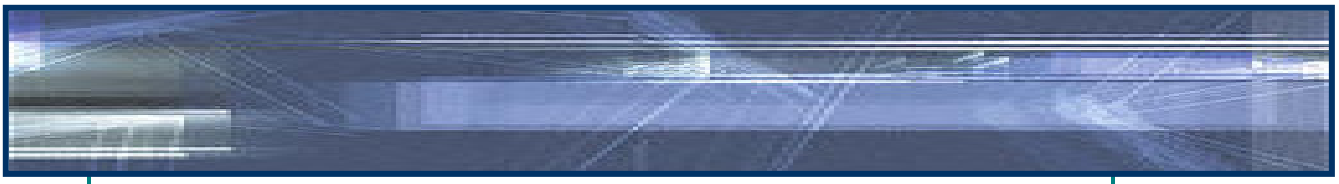
e-Commerce and e-Government must be developed to provide viable options for conducting business in Trinidad and Tobago if the National ICT Strategy is to achieve its ambitious goals. It is imperative that the Government adopts appropriate policies and enacts the supporting legislation that will facilitate the use of ICT as a tool for accessing government services and for conducting business online.

Legislative Review and Amendment

A key strategy in promoting effective participation in the digital environment is the building of trust by ensuring secure transactions, protecting the privacy of users' personal information, providing adequate safeguards for the protection of the interests of consumers and the rights of owners of intellectual property.

The creation of a predictable legal environment is also important for promoting effective participation in the e-marketplace since the traditional rules that governed the conduct of business are less than clear in their application to the new environment.

The increase in electronic access to information held by the Government will also create a need for the Government to develop the capability to deal with increased numbers of requests for information. A number of governments have in place fairly sophisticated access regimes that provide useful models of best practices that may be adopted by Trinidad and Tobago in developing policy in this area. . The basic principle is that the public has the right of access to information, subject to certain exceptions. Personal information is protected, but available to those to whom it relates. Commercial information and trade secrets are also protected. Most information about a government's activities is already accessible, subject to narrow exemptions for security, law enforcement and deliberations of Cabinet. There is generally a role for an independent decision-maker to enforce the application of the access and privacy legislation.



Amendments to update legislation in areas such as commercial transactions, misleading advertising and in other fields will also be required.

The Legal Working Group has identified a number of critical areas where new legislation is required. They include:

- Dispute Resolution
- ISP Liability
- Ownership of Information
- Electronic documents and signatures – including regulatory filings
- Validity of electronic contracts
- Privacy and data protection
- Intellectual Property and Copyright Protection
- Internet content such as misleading advertisement and defamatory material
- Ownership of information transmitted electronically
- The legal issues arising from the digitisation of government registry records such as:
  - Land Registry
  - Companies Registry
  - Births and Deaths Registry
  - Licensing Department
  - Customs and Excise Department
  - Inland Revenue Department
  - Immigration Department
- Labour and Employment Legislation

The creation of a legal framework to provide for the recognition of electronic transactions, security and authentication, and the issue of privacy must be addressed as a matter of priority.

e-Governance Analysis

Although Trinidad & Tobago's e-Government agenda is in its early stages, it may be an opportune time to examine the legal aspects of increased levels of government transparency, public reporting, e-Governance and e-Democracy.

Internet Governance and Domain Names

The Domain Name System (DNS) has many public policy implications and the worldview tends towards recognition of the country code Top Level Domain (ccTLD) as a valuable national asset. ICANN as the body responsible for the technical coordination of the global Internet system, has

taken the official position that the ccTLD is a public resource and on that basis has introduced a set of principles for the development of best practices for the delegation and administration of country codes within the global DNS.

A number of countries have been taking steps to regularize their system of administration of their ccTLDs. Some have introduced legislation to deal with the abuse of the Domain Name System through cyber squatting and other abusive practices. It is also widely recognised that the DNS also provides valuable portals for promoting the country's goods and services on the Internet through use of its country code as a brand name.

It is important that we develop a National Policy for the management of the .tt country code Top Level Domain that reflects developments which are taking place internationally.

Citizen and User Protection

Citizen and User Protection

The purpose behind a rigorous legislative framework for the protection of consumers is many-fold:

- Building of confidence by consumers
- Security of e-transactions
- Privacy of personal information
- Protection against harmful and defamatory Internet content
- Inexpensive redress
- Full disclosure in on-line transactions
- To ensure effective enforcement of the laws

Code of Practice for Consumer Protection in Electronic Commerce

Self-regulation will be an important component of the regulatory framework and merchants will be encouraged to adopt this approach to supplement Government legislative controls.

A Code of Practice for Consumer Protection in Electronic Commerce will be developed to establish benchmarks for good business practices for merchants conducting on-line business transactions with consumers. The Code will be developed by using the Organisation for Economic Cooperation and Development's (OECD's) guidelines for consumer protection in the context of electronic commerce.

Consumer Gateway
A Consumer Gateway will be developed as part of the overall e-Government Portal. The Gateway will allow consumers to quickly and confidently search for consumer information and services on the Web. Users will find everything from lists of product and food recalls and alerts on the latest consumer scams and frauds, to a wide array of interactive financial calculators that can help decide which bank or credit card is most appropriate or whether consumers should buy or lease their next vehicle. Additionally, it will offer valuable tips on how to protect oneself in various consumer situations such as shopping on-line, investing, dealing with telemarketers or door-to-door sales people, renovation contractors, car repairs etc.

Privacy and Confidentiality
The strategy to enhance citizen and user protection will also examine the important items of privacy and confidentiality. This includes such matters as protection of personal privacy for citizens regarding information held in databanks by both the public and private sectors.

The strategy will also deal with such matters as limitations on collection and use of data for anything other than its original purpose; and limitations on the use of data without permission from the person who supplied the data. In addition to protection of personal data, firms will want to be assured that any commercially sensitive information placed in the hands of government or in other databanks will be protected to avoid economic damage. Privacy legislation should also make provision for a number of these issues including unsolicited e-mail.

Intellectual Property Protection Policy
Trinidad & Tobago's acceleration into the information-society will result in a vast increase in the amount of digital information that is created, transmitted, shared and stored. All information, including concepts (whether in physical or electronic form) has an owner – the person who originally created that information. Copyright and Intellectual Property protection are important aspects in ensuring the integrity of original content and the rights of the owner of that content. This is particularly relevant for those people and organisations whose livelihood depends on the creation and sale of information, concepts and designs. Increased levels of electronic commerce and the exchange of digital information provide very real challenges with respect to protection of intellectual property and original content. A policy paper will be developed that examines the issues and appropriate actions required to provide high levels of Copyright and

Intellectual Property protection for all forms of electronic information, data and designs.

Protection from Inappropriate Content on the Internet
Broader access to the Internet and e-Commerce can raise issues regarding inappropriate electronic material. This includes pornography, websites and messages intended to foster hate or racism, and various scams that thrive in an atmosphere unrestricted by national borders and effective national law. With respect to pornography and hate messages, a balance between freedom of speech and protection from unwanted (or illegal) messages has to be sought. International cooperation may be required to deal with many of these issues, including such matters as child pornography.

Unique Identification
Another issue that will need to be examined is the development and use of unique identifiers that facilitate secure communication and authentication across the Internet. Although these protocols should promote increased confidence in e-Commerce and provide enhanced levels of consumer protection from potential fraud and disclosure of private matters, they could also raise a number of concerns with regards to privacy and personal identification. Unique identifiers often give the perception of "big brother", profiling, loss of personal identity and other civil rights matters. A study into the potential impacts of unique identification, the benefits and the concerns, will be carried out.

Appropriate Skills and Training for the Judicial/Legal Community

Technical Training

For centuries, the judicial and legal community has performed its role in a predominantly paper-based environment. Although there has been an

increase in levels of automation and electronic aids introduced into the system in recent years, the legal community still has some considerable distance to cover before it can be considered fully ready to participate in the digital society. Furthermore, judicial and legal officers will need to be provided with training programmes to increase awareness, understanding and effectiveness of legislation and processes that are peculiar to an electronic environment.

ICT Needs Assessment

As a preliminary step, a Needs Assessment will be carried out to examine the current level of ICT availability and usage within the legal community. The assessment will examine other jurisdictions that have introduced ICT into the justice system and have successfully introduced new laws to deal with enhanced levels of connectivity. The study will provide analysis and recommendations on the levels of ICT, the ability of judicial and legal officers to work more closely with ICT in the future and the level of training and awareness that will be required to prepare the community for effective application of new laws relating to the information-society.

Appendix: Legal and Policy Action Plan "Key Strategies, Programmes and Projects"