St. Vincent and the Grenadines

Ministry for Telecommunications, Science, Technology and Innovation

National Information and Communication Technology

STRATEGY AND ACTION PLAN 2010 - 2015

Facilitated By:

PSTG CARIBBEAN

Sustainable. Competitive. Promoting Innovation. Transformative. People Centred.

September 2010

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PREFACE

Prime Minister and Minister of Telecommunications, Science & Technology

Dr. Honourable Ralph E. Gonsalves

Our country has not been immune from the challenges facing the world today, whether it is the impact of a weakened global financial market or the reduction in tourist visits to the Caribbean. We are faced with a contracting agricultural sector due to the loss of preferential prices for our bananas and other products. There are many limitations to our small size and economies of scale as with other Small Island Developing State' (SIDS) emerging economy. However, there are also advantages to our size in the ability to more easily implement critical proven innovations on a national scale. More-so the technologies of today, whether it is the mobile telephone, the Internet, the high speed global communications infrastructure, user friendly and easier-to-adapt software applications, or the ever-more powerful and affordable computers, have been changing the world and creating opportunites for countries like ours to leap frog and overcome the challenges of size, location and time. Information and Communication Technologies (ICTs) have changed the way the world works and re-defined how countries trade and interact with their citizens and with each other. ICTs have created the opportunity for us to create a new vision and to build a new future for our people, our children and our country.

The National 20-25 Plan has set a goal of becoming a Modern, Competitive, Multifaceted, Post-Colonial Economy which is local, national, regional, and global in its approach. St. Vincent & the Grenadines (SVG) had developed an ICT Strategy and Action Plan 2002 -2007, and I am pleased to state that we achieved most of our goals.

We have recognised the importance of carefully crafting a National ICT Strategic Plan which will take our country to 2015. We understand the need to build international relationships and to respond to the pressures of globalisation; and, therefore, I want to assure you of our country's commitment to the creation of a knowledge-based and smarter society. Our Ministry for Telecommunicatioins, Science, Technology and Innovation is mandated to ensure that our country is in the best possible position, in all sectors, to capitalise on the enabling capabilities of ICT. As we look to build and strengthen our service industry, ICT is going to play a vital role and the Caribbean is in an excellent location to offer a range of services like off-shoring and developing and promoting its creativity, culture and rich local content. The Ministry is looking to mould local ICT entrepreneurs with its various programmes and workshops, providing the necessary tools alongside business advice. We expect that the business community will rise to the occasion and grow the emerging ICT sector so that it makes a greater contribution to the national economy.

We also recognise the importance of having a broad concensus on how ICT can be used to support our national development effort and as a consequence, this National ICT Plan has been developed through the efforts of a large number of people who participated in our Sector Working Groups. These Working Groups utilised the expertise and experience of both the public and private sectors and,

therefore, took a holistic view of the programmes and projects that need to be pursued to 2015. You would see that the Plan addresses both government and the private sectors, and will impact on every citizen within the country and in the Diaspora, and on every business on our islands. Therefore for the Plan to be successful, every business, citizen, government employee and civil society organisation must be on board and working towards the common good of St. Vincent and the Grenadines.

I am pleased to state that ICT has been given prominance and a high level of priority, and that ICT is 'moving on' in St Vincent and the Grenadines. I am very happy to join our people and our country as we accelerate towards a modern competitive knowledge-based and smart society as we seek to support the national development aspirations of our people.

FOREWORD

Director of Telecommunications and Special Projects

Dr. Jerrol C. Thompson

Most strategies are designed to offer solutions to 'problems'. These strategies are delivered through frameworks and techniques that often necessitate the execution of costly experimental 'trial to decide' approaches to achieving developmental goals. This approach may offer substantial benefits by increasing the awareness of the specific role played by market forces in shaping the environment and, thereby providing a plan of action to address the 'problem'. This gain infuses economics into the strategy, draws on theory to support empirical evidence. While offering some short-term benefits, the strategy automatically narrows to a competitive game plan and nothing more, achieved through the application of the popular SWOT analysis framework that produces a breadth of options at the expense of required depth. This means significant quantities of time lost in the formulation process and minimal implementation focus - more about getting a range of ideas delivered at the outset than a living strategy over time. It tends to be created in isolation ignoring the imperative role of stakeholders in formulating and implementing the strategy.

Alternatively, the strategy formulation process adopted within the National ICT Strategy and Action Plan 2010 - 2015 is not just a conceptual framework based on a utopian idea; but a practical roadmap to an improved way of life for the country, and for its downstream benefactors and beneficiaries alike. Through the exploitation of the unique benefits offered by ICT, St. Vincent and the Grenadines has an unprecedented opportunity to transform our country into a knowledge-based society. At the heart of this strategy is 'purpose', complemented by a much more practical and less philosophical approach to ICT development. Indeed, leveraging on the 'purpose' and successes of the National ICT Plan 2002 to 2007, the launching point is re-defined based on three (3) main areas of focus for ICT development – infrastructure; content; and training. This approach to ICT development ensures that the new National ICT Plan is set within the local context. It also incorporates people, process, and technology - the three prerequisites for successful transformation of the country through ICT investments.

The successful execution and continuity of the short, medium, and long term strategies proposed in the new Plan means the role of the 'Strategist' is significant, arduous, and of a permanent nature. This calls for a level of e-leadership that is inseparable from the most senior level of the Ministry, Private Sector, Civil Society and beyond. Indeed, the Strategist/e-Leader must recognize the strategic significance and implications of each ICT investment being contemplated and the opportunities it presents, viewing them through the lens of the whole, even as those with lesser responsibilities may be seeing the same issues parochially. In other words, the e-Leader must be the champion of ICT transformation who drives the implementation of government-wide ICT

initiatives with a constant eye on the alignment with overarching national development objectives. Such decisions define the leadership capabilities required. As such, the functions of the Strategist must never be outsourced. Moreover, the strategies contemplated are not a permanent fixture; but require a regular review mechanism to guarantee their validity, relevance, and importance. Acknowledging that change is a welcome constant with a view to transform the economy through ICT, ongoing benefits can only accrue through a diligent perpetual monitoring and refresh process. This highlights the importance of the establishment of a new, refreshed National ICT Plan that incorporates the changing domestic, regional, and international environmental factors that require consideration based on potential implications of the current course of action. With this in mind, the recommended strategies and the articulation of future strategies are the primary enablers of innovation, sustainability, competitiveness, technology and socio-economic development. These strategies are never stand-alone; but are meant to integrate seamlessly to each of the relevant programs within the Public and Private sectors including education, social, and economic programs, and regional and international initiatives. I am, therefore, very pleased and excited to lead this National ICT Plan to successful implementation.

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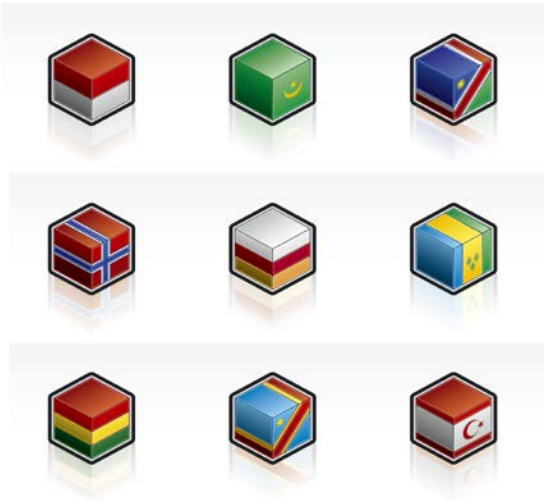
GLOSSARY OF TERMS

Abbreviations	Meanings
ACH	Automated Clearing House
ADSL	Asymmetric Digital Subscriber Line
ASP	Application Service Provider
ASYCUDA	Automatic System for Customs Data
AWARE	All Workers ARe e-Enabled
B2G	Business to Government
CARICAD	Caribbean Centre for Development Administration
CARFIS	Caribbean Fisheries Information System
C@ribNET	Caribbean Network (CKLN)
CBO	Community Based Organisation
CBT	Computer Based Training
CED	Centre for Enterprise Development
CIC	Chamber of industry and Commerce
CIPO	Commercial and Intellectual Property Organisation
CIDA	Canadian International Development Organisation
CKLN	Caribbean Knowledge Learning Network
C & W	Cable and Wireless
COE	Centre of Excellence
CORIC	Commuter Resource And Internet Centre
CTU	Caribbean Telecommunications Union
C2G	Citizen to Government
EC	Eastern Caribbean
ECCB	Eastern Caribbean Central Bank
ECCU	Eastern Caribbean Currency Union
ECTEL	Eastern Caribbean Telecommunications Authority
EDGE	Enhanced Data rates for GSM Evolution
EGRIP	Electronic Government Regional Integration Project
EMIS	Education Management Information System
EPA	Economic Partnership Agreement
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GDH	Government Data Warehouse
GPRS	General Packet Radio Service
G2G	Government to Government
ITSD	Information Technology Services Division
ICT	Information and Communication Technology
ICTO	Information Communication Technology Officer
IMF	International Monetary Fund
IPv6	Internet Protocol Version Six
IXP	Internet Exchange Point
ITU	International Telecommunications Union
JEMS	Judicial Enforcement Management System

Abbreviations	Meaning
KM	Knowledge Management
ISP	Internet Service Provider
LIME	Landline, Internet Mobile and Entertainment
LRC	Learning Resource Centre Milton Cato Memorial Hospital
MCMH	Management Information System
MIS	Ministry of Education
MOE	Micro, Small and Medium Enterprises
MSME	National Agricultural Information Management System
NAMIS	National Agricultural Production and Marketing Information System
NAPMIS	National Centre for Technological Innovation
NCTI	National Health Information System
NHIS	National Information and Communication Technology Training Project
NICTTP	National Telecommunication Regulatory Authority
NTRC	Organisation of American States
OAS	Organisation of Eastern Caribbean States
OECS	Plant & Animal Quarantine Information System
PAQIS	Personal Computers
PCs	Private Sector Development Project
PSP	Public Private Partnership
PPP	Reporting & Monitoring Information System
RMIS	Storage Area Network
SAN	Strategic Alliance Program
SAP	SIGTAX Standard Integrated Tax Administration System
SIGTAX	St. Vincent and the Grenadines
SVG	Special Framework of Assistance
SFA	Supporting Economic Management in the Caribbean
SEMCAR	Small and Medium Enterprises
SME	Sector Specific Working Group
SWG	St. Vincent and the Grenadines Education Network
SVGeNET	United Nations Department of Economic & Social Affairs
UNDESA	United Nations Development
UNDP	United States
US	Universal Service Fund
USF	Voice over Internet Protocol
VoIP	Value Added Tax
VAT	Universal Service Fund
USF	World Trade Organisation
WTO	

INTRODUCTION



Information and Communication Technology (ICT) has the capacity to transform small developing island states and emerging economies like St. Vincent and the Grenadines (SVG). ICT has already transformed many parts of the world by reducing or negating the impact of time, space, and size. For countries such as Singapore and Malta, it has become less and less important where they are located in the world or their size in physical terms. Despite their limited physical resources, they now have the ability to produce goods and services that are considered desirable by other countries of the world. Their size and island status no longer determine the quality of the service that they deliver to their citizens, businesses, and visitors. What these countries have done over the past decade, is to embrace and adapt ICT for their own use and to create a sustainable competitive advantage. They have motivated their citizens and businesses to take advantage of the enabling capabilities of ICT for their own gain, and ultimately for the benefit of their countries.

The Global Context

Internationally there is agreement on ICT development goals, including those in the Millennium Declaration, the Monterrey Consensus and the Johannesburg Declaration and Plan of Implementation.

The World Summit on the Information Society (**WSIS**) which took place in 2003 in Geneva and in 2005 in Tunis established a Plan of Action. One of its chief aims was to bridge the so-called global digital divide separating rich countries from poor countries by spreading access to the Internet in the developing world.

The ITU, through the WSIS goals, is also seeking to leverage ICT to advance developmental goals. The ultimate outcome is the building of a framework of an all-inclusive and equitable information society. SVG's ICT Strategy and Action plan in line with the WSIS action line items focuses on, among other things, ICT infrastructure, access, capacity building and economic development. Additionally, SVG's Strategy and Plan is well timed to benefit from this global emphasis being placed on ICT and can expect significance guidance and insight from other global bodies such as OECD and non-OECD governments, private sector actors, civil society organisations, regional and international organisations as they work together to accomplish the goal at hand.

The Objectives, goals and targets outlined in WSIS.

C1. *The role of governments and all stakeholders in the promotion of ICTs for development*
C2. *Information and communication infrastructure: an essential foundation for the Information Society*
C3. *Access to information and knowledge*
C4. *Capacity building*
C5. *Building confidence and security in the use of ICTs*
C6. *Enabling environment*
C8. *Cultural diversity and identity, linguistic diversity and local content*
C9. *Media*
C7. *ICT applications: benefits in all aspects of life.*
C10. *Ethical dimensions of the Information Society*
C11. *International and regional cooperation*

On a Caribbean regional level, **CARICOM** in collaboration with its stakeholders has developed a Regional Digital Development Strategy (RDDS) which addresses the implications of international treaties, regulations, standards and trade agreements, and pressing development/digital divide issues, e.g. WSIS.
The broad Caribbean regional goals included commitment to: Collaborative leadership, Research and Innovation for Sustainability, and Key social and economic development measures and objectives.

The Regional Digital Plan of Action addresses, among other things:
Access, Connectivity and Internet Governance;
Capacity-building and Sustainability
Business, Trade, Culture and Disaster Management; and
Policy Formulation and the Legal and Regulatory Framework for Implementation
ICT4D Statistics

These objectives included:
1. ICTs used to provide a supportive environment (business, regulatory, soft and hard infrastructure), for learning, working and social development
2. Education and lifelong learning environment established to support use of ICTs at levels of community, business and government
3. Creative use of ICT and a framework that is anchored in cultural industries, to encourage innovation
The Regional Vision: An inclusive Regional Knowledge Society driving sustainable development incorporated a number of objectives.

The Broad Regional Strategic Objectives

- To fully establish modern regional regulatory and open telecommunications infrastructures with affordable networks using converged technologies, to provide affordable and ubiquitous access
- Build a digital Community culture and increase the value and volume of the region's trained ICT workforce that can create with, develop and use ICT to improve life style and otherwise add personal and economic value
- To manage and use ICT to demonstrate good governance and increase efficiency in operations
- To establish a culture of innovation and quality, and to enable sustainable production of Regional digital goods and services, the development of cultural industries and the inclusion of local content in delivery of information
- To guide businesses and governments to use ICT for sustainable growth and support social development objectives through partnerships that use networked technologies

The **OECS** Sub-Region has developed an ICT strategy and has already developed a robust regional regulatory framework in ECTEL governed by a council of Telecommunications Ministers and national NTRCs. Through the EGRIP project, the OECS is developing the capacity to manage its e-Government initiatives and to strengthen the integration movement. This will build on the wider Caribbean regional effort on collaboration, create economies of scale, improve efficiency of administration, and ensure social inclusion and people participation.

The OECS's efforts have now turned to filling the gaps, monitoring the implementation and bringing more significant benefits of telecommunication liberalization and ICT to the people of the sub-region.
Fortunately, SVG can take advantage of the international experience and lessons learnt from countries like Barbados, Estonia, Malta and Singapore, to create its own unique ICT-enabled opportunities, and accelerate its national social and economic development. SVG can use ICTs to promote the core tourism, agricultural, and cultural attributes that the country is known for. It can improve the internal efficiencies and effectiveness of its ministries and agencies for the benefit of the country. It can use technology to create new electronic service delivery channels via the telephone and the Internet so that citizens will not have to travel to urban areas to obtain much needed government services. Knowledge can now be codified and used for individual and national development. SVG can derive the known benefits of being a knowledge based society that is linked to the global information economy.
In this context, it is useful to consider SVG's recent history of ICT planning and implementation. In 2002, the country's first five-year 'National ICT Strategy and Action Plan' was adopted by Cabinet after public consultation. A series of short term and long term goals were identified in the plan which included the complete liberalisation of the telecommunications market, and the development of a robust regulatory framework which included ECTEL and NTRC. However, over the last ten years, there have been substantial technological advancements, including the emergence of Voice over Internet Protocol (VoIP) and the resultant convergence of technologies. There have also been dramatic changes in the economic, financial, and geo-political make-up of the

Caribbean and the world with significant changes in attitude, usage, and demand by citizens, in particular youth, for new technological opportunities, training, greater transparency and social inclusion in the governance decision making process. These changes warrant a complete review and refresh of the national (and related regional) ICT strategy, and hence the need for an updated National ICT Strategy and Action Plan for SVG. This Plan must outline the mechanisms, including the enabling policy framework, and the programmes and projects that need to be implemented over the 2010 to 2015 period. It should define the way forward and proposes an implementation framework based on the local and international experience.

Therefore, the broad policies and strategies to be outlined in the updated National ICT Plan must include:

- Streamlining the existing telecommunications regulatory process for more cost effective regulations of utilities (and possibly energy) and enacting the required legislation and regulations to embrace ICT
- Ensuring there is a robust modern national next generation and regional ICT infrastructure which does not just meet, but exceeds international standards and the demands of investors in order to attract and draw them and to bolster our level of competitiveness. It must include the redundancy and innovation which can help to leapfrog any unnecessary stages and enable national development
- Ensuring a high percentage of households, government agencies, schools and businesses have access to adequate broadband access
- Leveraging the increase in mobile telephone penetration through the use of a suite of mobile government applications and e-government initiatives to improve efficiency of government and bring significant service improvements
- Enhancing the use of ICT in all sectors with an emphasis on education, health, agriculture and tourism
- Complementing the expansion of broadband access with increased access to computers at tele-centres, schools and community facilities, and implementing strategies which increase personal computers or laptops for students
- Ensuring that computer and internet usage is safe by addressing issues of cybercrime
- Empowering business and trade through the use of ICT in e-commerce
- Expanding training at all age levels with emphasis on bridging the digital divide by using ICT in education, the creation of skilled workers and advance training to produce ICT engineering and knowledge workers
- Facilitating the creation of local content, new appropriate software applications and the creation of a Vincentian and regional knowledge economy
- Developing and becoming known for an ICT export sector which feature the export of unique ICT and electronic goods and the export of ICT services

However, before determining what needs to be done in the future, it is important to determine what SVG has achieved and defining where it is starting from. It is also critical to review the international best practices and to extract relevant experiences that will assist SVG in moving forward. The re-launching point is therefore reviewed based on the best available national statistics and an assessment of performance against the 2002–2007 Strategic ICT Plan. It took into account selected international best practices and trends.

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DEFINING THE RE-LAUNCHING POINT

St. Vincent and the Grenadines is an archipelago in the Eastern Caribbean Sea comprising of 32 islands and cays. SVG is spread over 340 square kilometres. The population is concentrated in St. Vincent itself and dispersed across other islands such as Bequia, Union Island, Canouan, Mayreau, Mustique, Palm Island, and Petit St. Vincent. The country is a traditional small open economy which is highly susceptible to external economic shocks and natural disasters such as hurricanes. It relies heavily on agriculture, tourism, and construction as the major contributors to the economy. The population, estimated at 106,000 in the 2001 census and 118,000 (estimated) in July 2009, has a flat growth rate with migration matching natural growth. Unemployment was officially estimated at 15% and the country has a per capita GDP of US$ 5,335 (2009). The total labour force has been estimated in 2009, as 53,888. Foreign direct investment and domestic investment account for some 32% of GDP, which grew from just over US$ 1 billion in 2003 at an annual growth rate of about 11%, to an estimated US$ 1.5 billion in 2007.

The country's mainstay continues to be agriculture, predominantly bananas, which contribute about 50% of the total goods exported. However, over the last few years, agriculture and particularly the banana industry, declined significantly due to the erosion of European Union (EU) preferential market access for bananas, the impact of negative weather shocks, and disease. Despite the introduction of better irrigation and upgraded infrastructure, banana export earnings and volumes continued to fall, from EC$ 89.51 million in 2003 to EC$ 28.83 million in 2004. Agriculture is being gradually replaced by improved growth in the services sector - largely through developments in tourism. The % contribution of the agricultural sector to Real Gross Domestic Product fell from 11.66% in 2002 to 9.28 in 2006. The country's main revenue

is now determined by the level of tourism receipts and some foreign direct investment, and as such, the expansion of the tourism sector is being accelerated as part of the national development agenda. SVG has a small manufacturing sector and a small offshore financial sector. Fisheries and manufacturing production have also expanded and are contributing to economic growth.

1.1 NATIONAL STRATEGY AND ACTION PLAN 2002-2007

Recognising these challenges, Government has for many years been actively pursuing the development of alternate mechanisms to promote economic development, including the use of ICT. In 2001, the Government of St. Vincent & the Grenadines developed its first National Strategy and Action Plan 2002 – 2007. During the development process, assessments were conducted to establish the status of ICT development In SVG. Some of the resulting highlights are now presented below.

Governance is a critical pillar of any national ICT plan. With the change in Government on 28th March 2001, a new Ministry for Telecommunications, Science, Technology and Innovation was established. Government appointed an Information Communication Technology Advisory Council (ICTAC) as the lead advisory agency on development and implementation of ICT. Both of these organisations are critical contributors to successful implementation.

By 2002, the regulatory framework for telecommunications was well underway. An agreement was achieved with the incumbent, licenses were issued and regulations published. The regulator began pursuing internal capacity building and engaging in knowledge transfer.

"Strategies for the use of ICT are not universal. St. Vincent and the Grenadines faces different circumstances, financial means and priorities and will need a specifically tailored strategy. Nevertheless a strategy that focuses its ICT interventions towards achieving developmental goals is more likely to achieve marked socioeconomic development."

As a result of the policy to open up the telecommunication environment, domestic business activity has increased and lower prices have resulted as the once 'monopoly provider' moved their rates to address the growing competition.

The 2002 assessment recognised the significant absence of formal legal and regulatory frameworks governing e-commerce, within SVG and across the region. It was recognised that collaboration within the OECS was highly desired in addressing this aspect of commerce.

It was noted that relative to other developing countries, SVG and the OECS region as a whole had a significant comparative advantage through high levels of literacy and trainability in their workforce. The Ministry for Telecommunications, Science, Technology and Innovation and ICTAC has begun building on this base through the important step of increasing the level of computer literacy of the school-going population.

It was noted that apart from niche markets such as call centres, data processing centres and online gaming, the supply of ICT products and services was a small aspect of the SVG economy.

It was recognised that in most areas of the private sector, ICT was in the early stages of adoption.

THE MINISTRY FOR TELECOMMUNICATIONS, SCIENCE, TECHNOLOGY AND INNOVATION

This ICT strategy focussed on ICT as an enabler of development rather than the development of a definitive ICT Export Sector. The role of Government in utilising ICT to address its need for improvements in internal efficiency and effectiveness, while simultaneously demonstrating to its constituents the benefits as a "model user", was acknowledged in 2002. The need for the banking sector to support the growth of e-business by addressing existing financial impediments was noted, as was the need for SVG to move ahead with its planned Fiscal Incentive Act.

In the context described above, a Framework for Action was created to illustrate how to use and support ICT-based development. The Framework took a holistic and multidimensional approach to strengthening the synergies between the different developmental components that can be impacted by ICT. See Figure 1 which follows.

Using this Framework as the basis, a number of actions (*see pages 18-21*), short term goals and longer term goals were developed which form the 2002 – 2007 Plan. During the periods, 2002 - 2007 and 2007 - 2010, these actions and goals were addressed with varying degrees of success. Their completion was assessed as part of the development of this current 2010 – 2015 Plan, and the factors underpinning the completion rate were determined. These outputs were used to create a Performance Scorecard for the execution of the 2002 - 2007 National Strategy and Action Plan. The Scorecard provides a good summary of progress from 2002 to 2010 and is outlined below.

It is advisable to undertake aligned interventions in a number of ICT strategic areas including:

Coordinated actions, strong partnership and local implementation
This requires a greater focus on the interplay of the different components and a coordinated action among diverse stakeholders and an inclusive policy. The process will address barriers and resistance, put in place transitional mechanisms to address trade-offs and create positive incentives to change, needs and opportunities.

Global, National and Local Linkages

The Global network economy creates new opportunities for nations and communities. National ICT strategies must be positioned within the global context, while at the same time addressing the local context.

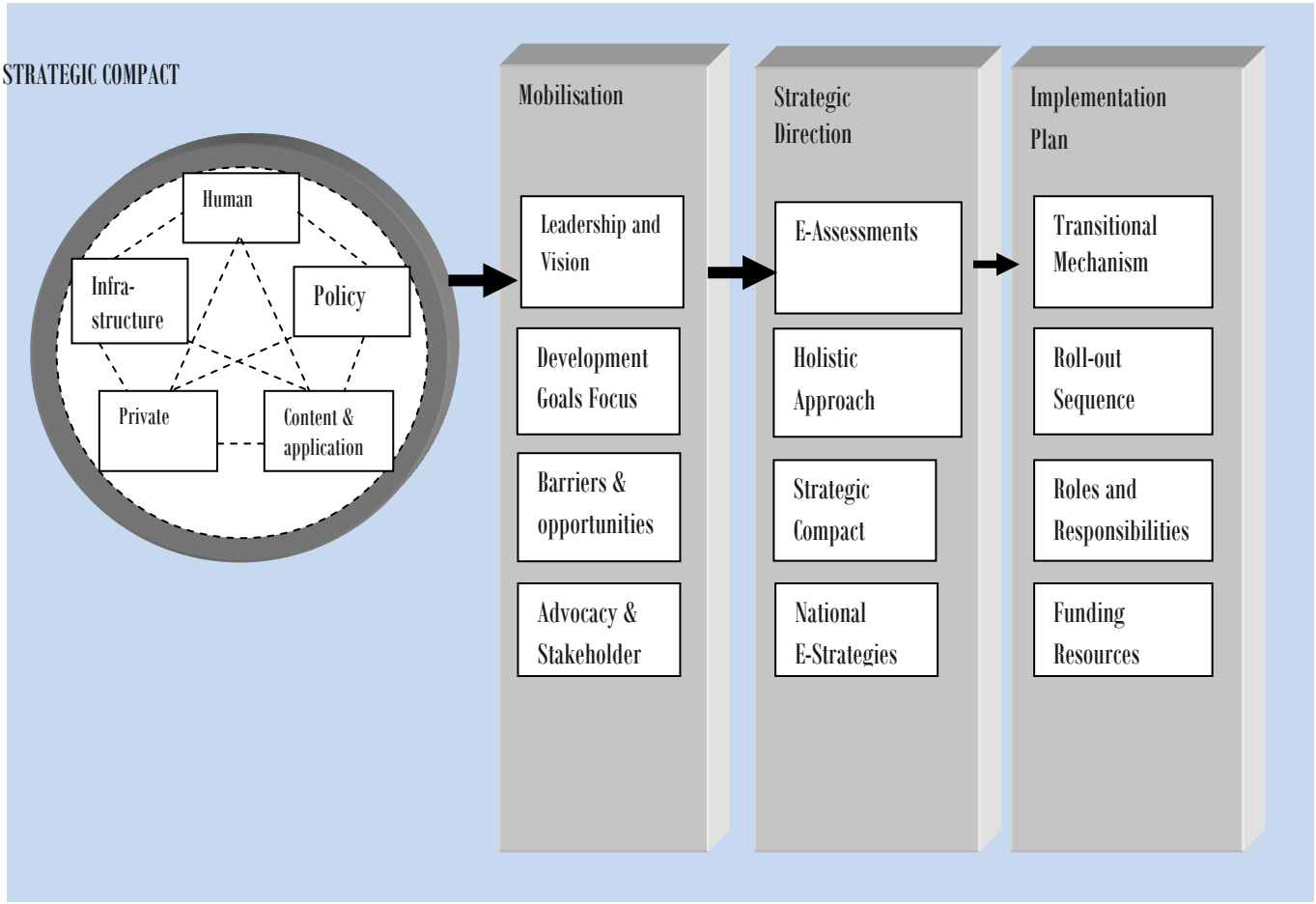

Figure 1: Framework for Action

PERFORMANCE SCORECARD
ACTIONS & SHORT TERM GOALS 2002 – 2007

	SHORT TERM ACTIONS	ACTORS	STATUS	COMMENTS
1	Clearly articulate the Information Technology strategic vision and plan for St. Vincent & the Grenadines with the expression of strong and lasting commitment by the Government.	Prime Minister	Completed	The process is ongoing
2	Fund the Strategic Plan with proceeds from telecommunications revenue, partnerships with the private sector, and aggressive investment promotions.	Ministry of Finance and DEVCO	Fairly successful	USF, European Union and World Bank Funding were arranged
3	Provide leadership among all segments of society by establishing an Information Communication Technology Advisory Council (ICTAC) reporting directly to the Minister of TSTI	MSTI	Completed	
4	Select an Information Communication Technology Officer (ICTO) in each ministry.	Each Ministry	50% completion	Frequent turnover of staff
	Establish an Information Technology Management Unit (ITMU) in each ministry.	Each Ministry	20% completion	Few Ministries have ITMU
5	Design and implement a common set of indicators for regular, formal and ongoing e-assessments covering ICT use, infrastructure training and industry.	NICTAF	20% completed	The relevant indicators have been identified but are yet to be implemented
6	Perform an immediate assessment of the current status of Information Technology use and connectivity in both public and private sectors.	ITSD	Completed	Several E- assessments have been performed
7	Adopt National ICT Policies and Strategies	NICTAF	Completed	Adopted in 2002
8	Consolidate the liberalisation process with the passage of the Telecoms Act, and agreement with Cable & Wireless.	ECTEL NTRC	Competed	The agreement and regulations have been developed

PERFORMANCE SCORECARD
ACTIONS & SHORT TERM GOALS 2002 – 2007

	SHORT TERM ACTIONS	ACTORS	STATUS	COMMENTS
9	Strengthen the NTRC.	ECTEL	Ongoing	The NTRC has been substantially strengthened
10	Launch e-government	ITSD	Successful and Ongoing	Several e-government initiatives launched
11	Accelerate the installation of computer labs in educational institution. Assess skills needed & adopt a common curriculum.	MOE	All Secondary Schools & 30% Primary Schools.	Many schools limited by a lack of infrastructure space for labs
12	ICT Literacy in Schools: Application of international skill certification in conjunction with TVET program and ICDL.	MOE	Adoption of Heart Foundation standards	Policy limited by insufficient labs and ICT trained teacher
13	Institute greater subsidized Internet access for schools/ colleges.	MTSTI MOE	USF support established	Utilise the USF to subsidize Internet access
14	Launch the National Institute of Technology (NIT) and promote its services.	MTSI NICTAF	Completed	Limited promotion of the services
15	Facilitate private sector initiatives to dramatically increase public access to the Internet.	ITSD	Ongoing	Collaboration with the CIC and Private Sector to promote strategic alliances
16	Complete and successfully pass legislation for Fiscal Incentives for the ICT services sector.	MCTI	Completed	Regulations yet to be gazetted

PERFORMANCE SCORECARD
ACTIONS & SHORT TERM GOALS 2002 – 2007

	SHORT TERM ACTIONS	ACTORS	STATUS	COMMENTS
17	Utilise Investment Promotion Unit to promote investments and facilitate partnerships in the Information Technology Industry.	MTSTI	Ongoing with moderate success	A more comprehensive and aggressive ICT Investment strategy is required
18	Create 2000 Jobs in the ICT Industry within 4 years of the plan's implementation.	MTSTI DEVCO	Mixed success	Over 800 jobs created at peak
19	Document existing legislation for adaptation and identify the need for new laws.	MSTI DEVCO	Completed	Most laws and regulations enacted or gazetted
20	Launch the Domain Name (VC) for SVG.	MTSTI NICTAF	Completed	Limited control and leverage of VC name

PERFORMANCE SCORECARD
LONGER TERM GOALS 2002 – 2007

	LONGER TERM GOALS	ACTORS	STATUS	COMMENTS
1	Gather secondary and tertiary syllabi and learning materials, and post to Web for distance learning.	MOE, MTSTI	Ongoing	Curriculum Unit collected syllabi but no posting
2	Initiate Tele-Centres for E-Awareness e-Literacy and Learning.	MOE	Completed NICTT project	Successful NICT training & ICT literacy project
3	Expand on e-Commerce use by growing a Caribbean Trade Portal extended to offshore physical warehouse facilities.	NICTAF DEVCO	Limited success nationally	Successfully implemented Caribbean Export Regional e-Commerce site
4	Establish a seamless e-banking environment.	Banking Sector	Successful adoption	Most commercial banks have implemented e-banking
5	Establish a fully-wired ICT hurricane-proof Techno-Park for Technology Incubators.	DEVCO	Completed COE & ICT Incubator -	COE for expansion to a Techno-Park
6	Attract start up companies as Technological Incubators.	Industry	Process started	Several firms attracted
7	Launch ICT Training for Tourism ventures and extend Web-based support for tourism ventures.	Ministry of Tourism NICTAF	Completed	Ministry of Tourism Site & Hotel Association

An assessment of the Score Card shows that there has been a relatively high degree of success with the implementation of the Actions and the achievement of the Goals established in the 2002 - 2007 Strategy and Action Plan. In defining the re-launching point and in completing the current situation e-assessment, the success of these short term Actions and longer term Actions were considered, and some important *ACTION ITEMS* were identified. These *ACTION ITEMS* inform the strategies and tactics to be utilised in moving forward in 2010 and beyond, and will now be considered alongside the 2010 current state assessment. Additionally, best practices in the context of SVG will be presented as these inform the re-launching strategy.

1.2 TELECOMMUNICATIONS AND ICT ADVANCEMENTS

The telecommunications infrastructure of a country is a foundational element of its ICT agenda and is a fundamental building block of a national ICT plan. As such, it is instructive to review some key telecommunications indicators for SVG and to assess how this defines the re-launching point for the 2010 – 2015 national ICT plan.

SVG is fortunate to have a relatively young population, with some 51% being under the age of 25 years, as it is generally acknowledged that young people have the most potential to embrace and innovate with ICT. So not surprisingly, given the tough economic realities, Government embarked on an aggressive and comprehensive ICT and Private Sector Development Programme to increase the country's efficiency and competitiveness. Recognising the nexus between ICT and national development, Government sought to develop a comprehensive National ICT Plan for the development and operation of the ICT sector itself, and for using ICT to enable other sectors, including government, over 2010 to 2015.

SVG's telecommunications infrastructure is relatively well developed and has improved substantially over the last decade. Fixed line penetration has been relatively stable, moving from 22.75% in 2004 to a peak of 23.43% in 2008, and settling at 22.24% in 2009. NTRC reports about 22,777 main telephone lines as of July 2008, shared between the two fixed line providers. This represents a total number of landlines to total number of households of about 54.6%. The % of fixed line subscribers over the last five years are shown in Figure 2 above. The

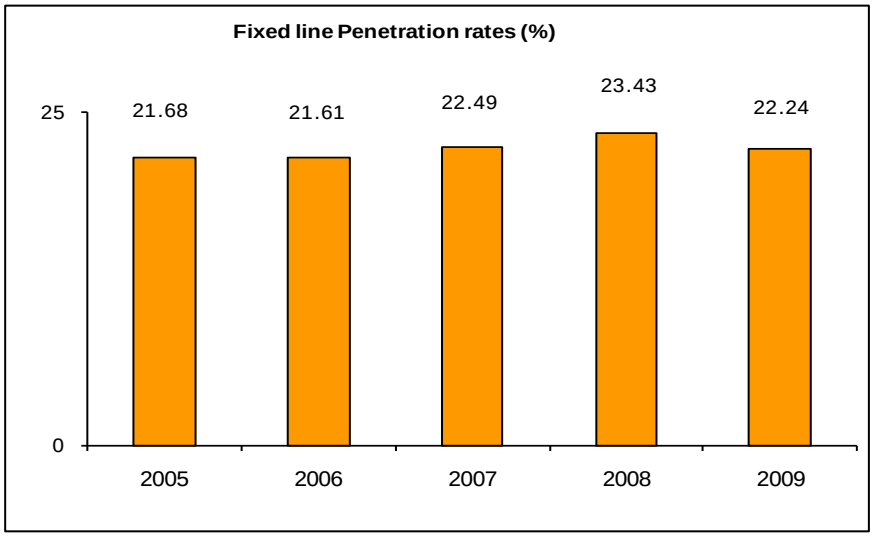

Figure 2: Fixed Line Penetration 2005 – 2009

rate in EC$ for 'fixed line to fixed line' during peak hours has stabilised, moving from $0.09 in 2004, to $0.07 during the period 2005 to 2008, and rising to $0.08 in 2009. 'Fixed line to mobile' has fallen over the period 2004 to 2009, from $0.81 to $0.70.

Mobile penetration has grown tremendously - 54.7% over the last 5 years, from 65.9% in 2004 to a high of 120.6% in 2009. There are now about 121,114 mobile users in SVG. This growth is due to government's strategic management of the sector which saw a new entrant entering the market in 2005 and the introduction of prepaid services. More than 90% of current mobile customers use prepaid services. Mobile handsets are now available at prices comparative to markets in the USA. Figure 3 illustrates the rapid growth in mobile penetration rates over the period 2005 to 2009.

'Mobile to mobile' calls have stayed relatively constant at $0.85 for the new entrant, rising to $0.86 in 2009. On the other hand, the incumbent's rates fell from $0.99 (2004) to match the new provider in 2006 and 2007, eventually falling to $0.63 (2009). 'Mobile to fixed line' moved from $0.88 in 2004 to $0.98 in 2009 for the new entrant. While the rates fell from $0.79 in 2004 to $0.63 for the incumbent. SVG is clearly experiencing the benefits of well-managed competition.

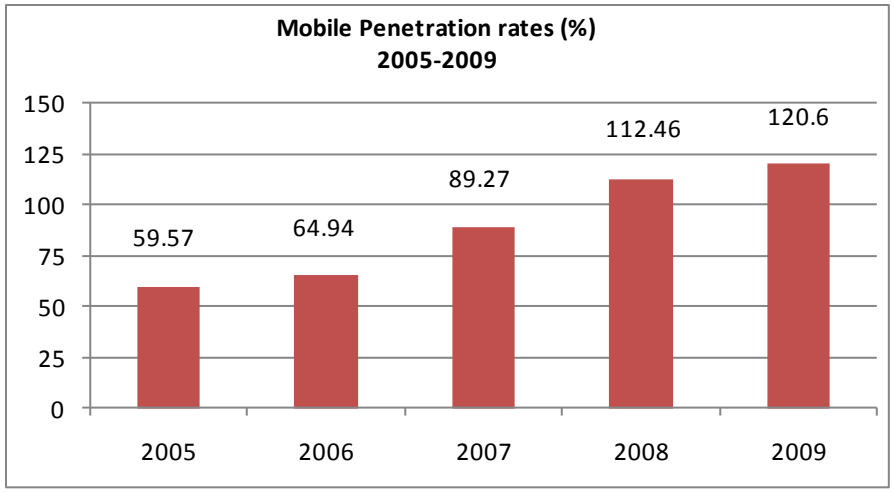

Figure 3: Mobile Penetration Rate 2005 – 2009

Internet penetration increased by about 200% over the period 2004 to 2009, growing from 4.29% to 12.30%. There are now about 990 Internet connections in SVG representing a 20% growth as compared to a 30% growth reported for 2008. Expansion in the Internet market was again fuelled by an uptake of fixed broadband service; the number of fixed broadband subscribers increased some 22% but was offset by a 24% reduction in dial-up subscribers. Fixed broadband subscribers accounted for 97% of all fixed Internet subscribers, up from 92% previously.

At the same time, the cost of Internet broadband fell significantly over the same period, from a cost of $299 for 256 kbps to a rate of $79 per month for the minimum speed offered to residential customers of 1 Mbps. There are presently three licensed fixed Internet Service Providers (ISPs) in SVG which offers one or more of the following: ADSL broadband, dial-up access, and high speed Internet access via cable modem.

Mobile Internet access is via ordinary mobile subscription using GPRS and EDGE rather than through a separate subscription for mobile broadband as true mobile broadband through 3G networks is not yet available to users. This made it very difficult to determine the true number of mobile Internet users in SVG as any subscriber with a GPRS or EDGE ready mobile phone can browse the Internet. Users with a pre-paid mobile subscription can access Internet service for $0.01 per kbps while post-paid users have access for $40 per month.

Network speed and quality are generally regarded as good across the country. DSL, ISDN, ADSL, Leased Circuits (frame relay) and Dial-Up service are available. The initial cost of access to the Internet for the residential customers averages around EC$ 219, with a recurrent cost averaging EC$ 90 per month for unlimited access. For commercial customers, the initial cost averages around EC$ 343. Subscriber complaints per 100 connections are about 17%, and generally ISPs attend to 40% of these complaints within 24 hours.

In addition to an estimated 18 Internet cafes, about 200 free or subsidized Internet access points are available across the country. Based on national import figures, it is estimated that personal computers (PCs) per 100 inhabitants averaged 43.5% over the period 2005 to 2009. It is therefore clear that citizens have reasonable access to the technology necessary to access on-line government services and information on the Internet, as tele-centres and Internet cafes are contributing significantly to making the Internet available to those who cannot afford personal access at home, or who do not have access from school, or at the workplace. However, such facilities are less common in the rural areas of the country as compared to availability in the urban communities. Though this figure appears to be moderate showing that citizens can access online government services and information via tele-centres, Internet cafes and from home, much more needs to be done to ensure that greater Internet access is available to every community including the rural areas of SVG.

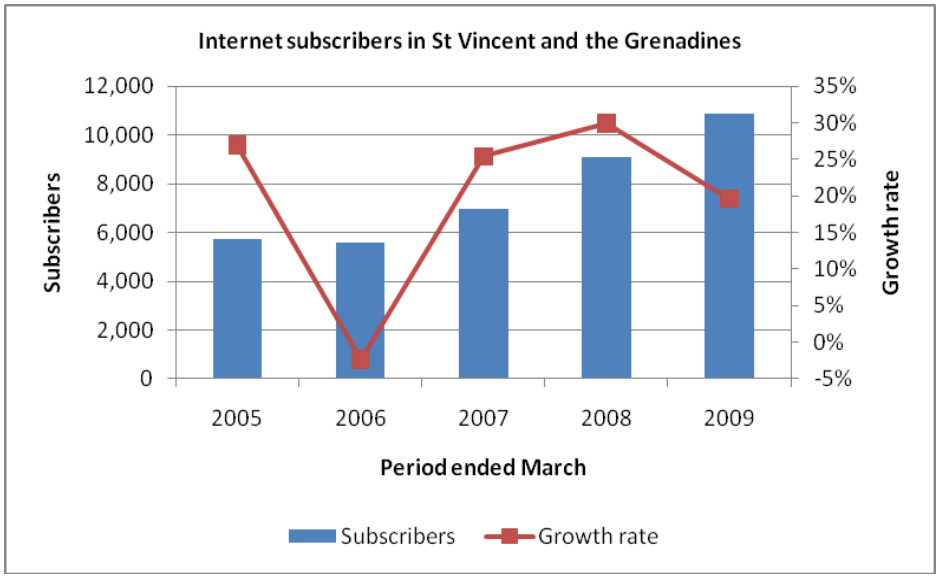

Figure 4: Internet Subscribers in St. Vincent and the Grenadines

Source: ECTEL/operators-with estimates where ECTEL did not receive data from operators

Action Item:

To enhance access to Broadband and facilitate the use of ICT and e-Government applications by communities, the USF will facilitate an additional 8,000 household broadband connections to exceed 50% penetration by 2015 and subsidised computers / laptops. Students will receive a special price for broadband connections.

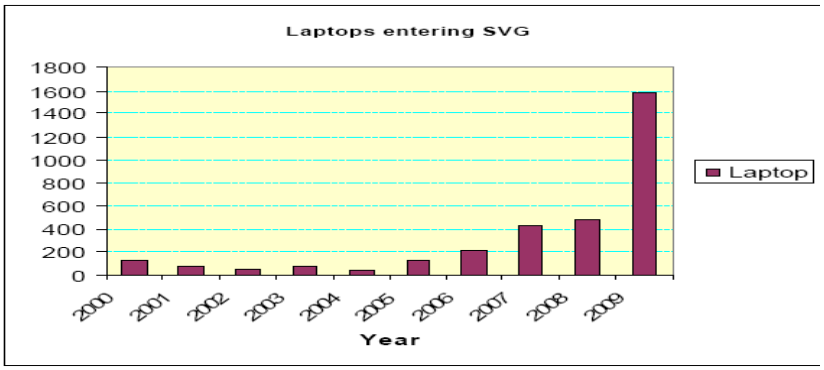

Figure 5: Laptops entering SVG 2000 -2009

Source: NTRC Universal Service Fund Annual Report 2009

This is critical to supporting the proposed national ICT initiatives to be implemented across the country.

Cable TV is available through a single cable TV operator whose distribution network currently connects about 13,789 households or about 64.2% of all households. The cable TV operator now offers digital TV alongside the analogue version. Another provider is also poised to offer IP TV. FM broadcasting facilities are widely available with about 13 stations in current operation. AM broadcasting infrastructure has been put in place and will be re-activated in the coming months. TV broadcasting covers about 70% of the island.

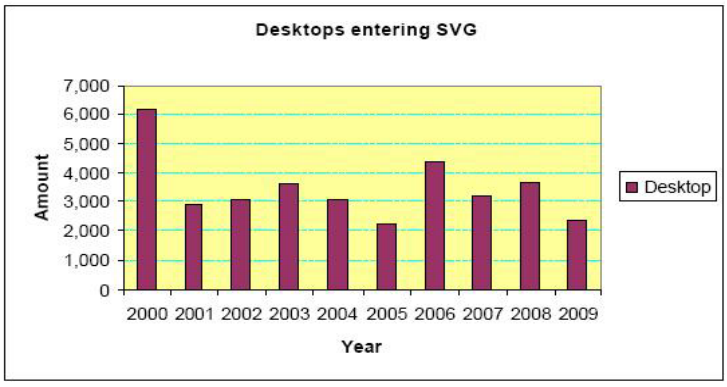

Figure 6: Desktops entering SVG 2000 – 2009

Source: NTRC Universal Service Fund Annual Report 2009

There is no local manufacture or assembly of ICT equipment in SVG, and local dealers / agents import ICT products - mainly from the USA. Most of the software used by the public and private sectors is imported. The use of open source products is limited but growing.

The Government is committed to increasing its broadband penetration and usage and has conducted extensive research on the provision of laptop computer devices to students of primary and secondary school age. In the exploration of several avenues, an offer has been made by Portugal to supply students in St. Vincent and the Grenadines with laptops. A rationale has been developed which shows that this is a viable project which is consistent with the growing trends towards laptop usage and greater mobility for continued learning.

Figure 5 indicates a significant increase in the number of laptops entering St. Vincent and the Grenadines during 2009. Figure 6 shows the amount of desktops and clearly shows a shift from desktops to laptops even though the desktop market is still larger than laptops. Several factors may have contributed to this emerging trend as laptops are more affordable and there is an increase of wireless Internet access at both domestic and public areas.

The ICT sector's contribution to GDP has been relatively stable, moving from 10.6% in 2004 to 10.7% in 2009, with a low of 10.2% in 2005. Investment in the sector varied from EC$ 33.8M in 2004 to EC$ 25.7M in 2009, with a low of EC$ 19.6M in 2005. The sector grew in direct employment from 147 in 2004 to 162 in 2009, despite the current challenges in the global economy. The ICT sector therefore remains an important contributor to the economy.

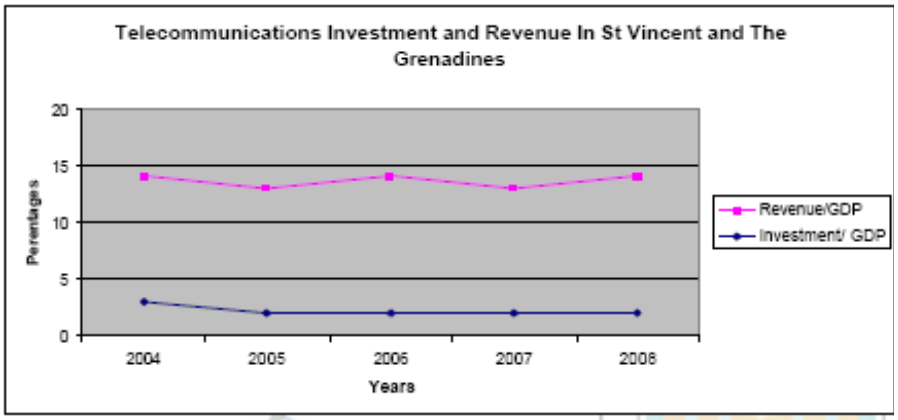

Figure 7: Telecommunications Investment and Revenue in SVG 2004 –2008
Source: ECTEL/Operators (includes estimates where ECTEL did not receive data)

Figure 7 shows a constant level of investment as the country has marginal increases and decreases in GDP.

It has been observed (see Figure 8) that revenues from the telecommunications operators has been on a steady incline since 2002 and reached the one hundred and fifty million mark in 2007. However in 2008, there was a slight decrease in the revenue received. This decrease was possibly due to the onset of the global economic crisis which has impacted most sectors in SVG. The revenue generated in 2009 was slightly higher than 2008.

1.3 THE POLICY, LEGAL & REGULATORY FRAMEWORK

May 2010 marked the 10th Anniversary of the ECTEL Treaty which presented a joint, harmonised, cost-effective approach to telecommunication regulations in the OECS, consistent with the thrust towards regional integration. ECTEL strongly supports the work of the National Regulatory Telecommunications Commission (NRTC).

The NRTC was established with the passing of the Telecommunications Act 2001. It regulates the telecommunications industry in SVG and is guided closely in its activities by the Eastern Caribbean Telecommunications Authority (ECTEL). NTRC's responsibilities include telecommunication regulation, technical and broadcasting regulation, licensing and fee collection, setting of technical standards, interconnection and dispute resolution, price regulation and providing advisory services to the government on telecommunications matters such as anti-competitive practices. It represents government in international telecommunications organizations and agencies, and ensures compatibility with the standards of the International Telecommunications Union (ITU).

On the other hand, the Ministry for Telecommunications, Science, Technology and Innovation, through its Information Technology Services Division (ITSD), manage ICT in the public sector. It is responsible for ICT policy, ICT services, standardization and awareness of ICT within SVG.

The NTRC is responsible for managing the Universal Service Fund (USF) which was established under Section 42 of the Telecommunications Act of 2001. This fund is intended to compensate telecommunications providers who are required to provide universal service. This service is typically Internet access and telecommunications to schools, hospitals, clinics, community and Learning Resource Centres, public voice telephony to rural communities and underserved areas, facilities for the differently abled, and provision of some maritime services.

The USF is funded by payments made by telecommunications providers according to the Telecommunication (Universal Service Fund) Contribution Order 2008 which was gazetted on 22nd April 2008, with retroactive effect from 1st January 2008. The USF regulations were gazetted on 16th September 2008, and the

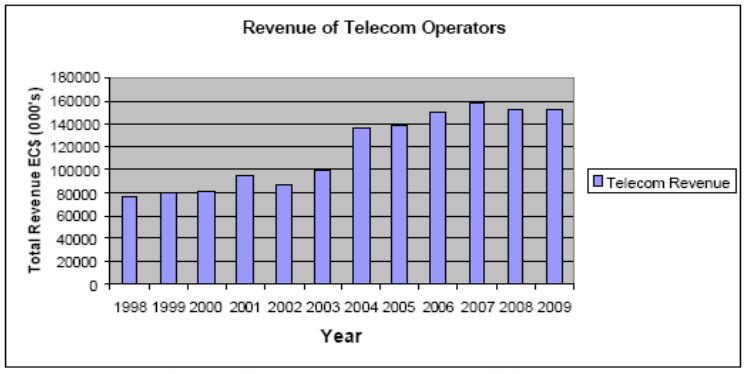

Figure 8: Investment of Companies in Telecoms
Source: NTRC Annual Report 2009

Telecommunications (Universal Service Fund) Guidelines 2009 provides for its management and usage. The USF was expected to accumulate EC$ 2.7 million by end 2009, of which EC$ 2.593 million will fund USF projects directly. Considerable work is in progress, including a country-wide survey, to determine priority projects for implementation from 2009 onwards. In order to promote the use of ICT for education, health and economic development, the Government has set goals of 70% for Households access to broadband, 80% access for Businesses and 100% access for Public Facilities - by 2015. However, the current goals of the USF have been identified as shown in the Table 1 below.

2010 USF GOALS	
#	Goal
1	Introduce Internet Broadband services at the community level in each of the major communities north of the Dry River and north of Coull's Hill (to achieve a 70% household penetration)
2	Outfit public institutions (health facilities and police stations) throughout SVG with computers and Internet access
3	Outfit public institutions with an emphasis on police stations with extra phone lines
4	Increase the cellular coverage in the Fancy, Sandy Bay, Overland and Owia villages
5	Place payphones along the main roads of all major communities throughout the island
6	Improve the maritime coverage of VHF and cellular phones around SVG
7	Increase Broadband penetration to households.
8	Improve access to computer devices for students and individuals.

Table 1: USF Goals for 2010

Notwithstanding the good progress made under the Telecommunications Act of 2001, Government has recognised the urgent need to manage the converged communications environment, in particular to encompass electronic communications. A new Bill is under development in coordination with ECTEL Member States, and is titled, '*Electronic Communications Bill*'. It will replace the Telecommunications Act. The new bill is aimed at bringing ICT under the existing regulatory process, allowing a liberalised and non-discriminatory entry into the electronic communications sector and enabling a robust competitive environment in which there is fairness, transparency and accountability on the part of the regulators of the sector. Government has recognised the need to strengthen the internal capacity of the NTRC and the Ministry for Telecommunications, Science, Technology and Innovation, and has therefore embarked on a telecommunications skills enhancement project at a cost of EC$ 512,068.

Good progress has been made with the introduction of legislation that enables the use of ICT for national development. For example, the Electronic Transaction Act of 2007 provides for the facilitation and regulation of electronic communications and transactions to prevent abuse and misuse of information systems and to provide for related matters. It addresses the legal requirements for electronic transactions, electronic signatures, accreditation, cryptography providers, consumer protection, protection of critical information systems, liability of service providers, cyber inspectors, information systems and computer related crimes, and procedural powers.

There have been workshops on the establishment of a regional Certification Authority which in a cost effective manner can approve the licensure of cryptography providers and accreditation electronic signature providers.

The Information and Communication Technology Services Investment Incentives Act, 2007 encourages and facilitates investment in the information and communication technology services sector, and stimulates employment in, and the development of, the private sector of Saint Vincent and the Grenadines by:

- Reducing impediments to investment in the information and communication technology services sector
- Providing appropriate inducements by way of tax reduction and other incentives specifically designed to encourage investment in the information and communication technology services sector.
- Adopting measures which are calculated to transfer technology and increase the rate at which the information and communication technology services sector is developed and expanded.

The ICT legislative framework was enhanced by the introduction of the Small Business Development Act of 2007 and the Consumer Protection Act of 2008. A new Small Business Development Policy was approved and adopted by cabinet in 2010 and in view of the new global environment; a new Small Business Development Act was drafted to be enacted in 2010. A new Investment Act is also being developed to replace the Fiscal Incentive Acts No 5 of 1982, in order to be in compliance with WTO mandates.

Action Item:

- *Enact the new Electronic Communications Act to replace the Telecommunications Act 2001.*
- *Enact the new Electronic Communications Act currently under consultations to replace the Telecommunications Act of 2001. This will recognise the trends of convergence of Broadcasting, Telecommunications and the various forms of Technology.*
- *Approve regulations for ICT Incentive Act, Electronic Transaction Act and establish a Regional Certification Authority*

In addition to the Acts identified above, the regulatory framework is quite robust and includes:

- Telecommunications (Universal Service Fund) Regulations 2008
- Telecommunications (Universal Service Fund Contribution) Order 2008
- Telecommunications (Licensing Classification) Regulations 2002
- Telecommunications (Dispute Resolution) Regulations 2007
- Telecommunications (Licensing Classification) (Amendment) Notice, 2002
- Telecommunications (Fees Regulations) 2007
- Telecommunications (Fees Amendment) 2008
- Telecommunications (Licensing and Authorisation) Regulations 2007
- Telecommunications (Private Network Licensing) Regulations 2002
- Telecommunications (Tariff) Regulations 2004
- Telecommunications (Interconnection) Regulations 2008
- Telecommunications (Spectrum Management) Regulations 2007
- Telecommunications (Numbering) Regulations 2008
- Telecommunications (Confidentiality in Networks & Services) Regulations 2002
- Telecommunications (Terminal Equipment & Public Network) Regulations 2002

Regulations have also been developed for the Money Services Act. The East Caribbean Central Bank is establishing an Automated Clearing House (ACH).

In a modern, competitive, post colonial Caribbean era, the nature of SVG's continued existence depend heavily on what the country can produce and market on the international market, but the cost of interconnecting and doing business is very expensive. It is imperative that new and existing technologies be adapted in order to bring about solutions; and in this particular case, the establishment of a National Internet Exchange Point (IXP).

The primary purpose of an IXP is to allow networks to interconnect directly rather than through one or more 3rd party networks. The advantages of the direct interconnection are numerous, but the primary reasons are cost, latency, and bandwidth. Traffic passing through an exchange is typically not billed by any party. However traffic to an ISP's upstream provider is; and in SVG's particular case all local ISPs buy bandwidth from a transit provider in the United States. At present an email from the Prime Minister to another member of government sitting across the hall must travel the route SVG, Barbados, Antigua, Miami and back before it reaches him. The case of moving the relevant IXP from Miami to St Kitts, a reduction from 6,000 miles (round trip) to perhaps one mile, the decrease in distance is so dramatic that cost can be minimized to near zero, while speeds can be increased from some multiple of STM-1 to 1 GBPS or 10 GBPS.

A local IXP would result in a vast increase in the network capacity (bandwidth) available for sale to domestic customers, without demanding significant corresponding capital or operational investment. This would make more bandwidth available for important activities such as video streaming and telemedicine and increase the national penetration of Broadband Internet. An IXP will also add more value to projects like CKLN, EGRIP and the Intranet Backbone. It will also make available a logical place to locate, and hence attract, other Internet infrastructure resources, such as top-level name servers, time servers, performance measurement tools, and research projects.

It is clear that SVG is at a disadvantage in the absence of a neighbouring IXP, and that this shortcoming needs to be addressed urgently.

A direct interconnection (often located in the same country or region) avoids the need for data to travel to other countries outside the region to get from one network to another, thus reducing latency and the possibility of attack from cybercrime. The third advantage, speed, is most noticeable in areas that have poorly developed long-distance connections and this is absolutely critical for web services, telemedicine and video conferencing, etc.

ISPs in the Caribbean region normally pay between 10 or 100 times more for data transport than ISPs in North America, Europe or Japan. Therefore, Caribbean ISPs typically have slower, more limited connections to the rest of the internet. However, a connection to a local IXP may allow them to transfer data without limit, and without cost, vastly improving the bandwidth between customers of the adjacent ISPs.

Action Item:

Establish National Task Force with Public, Private & Civil Society Stakeholders to:

1. *Install an IXP in SVG*
2. *Public Awareness on Cyber Security*
3. *Public Awareness on IPv6 Transition*

With the continuing depletion of available IPV4 addresses, a new version of the Internet Protocol was created called IPV6, also known as IP Next Generation (IPNG). Among other things, this version seeks to address the main issue of exhaustion of addresses to connect computers or hosts.

The introduction of this version means that SVG will have to take stock of what exists and with its ICT National Plan see how greater use of the initiatives can be implemented bearing in mind IPV6 will soon be adopted around the world.

1.4 WORLD BANK SURVEY: DOING BUSINESS IN ST. VINCENT & THE GRENADINES

The business sector in SVG can take advantage of ICT for internal improvements in efficiency and effectiveness, and equally important for interacting with Government. Recent (2007 & 2010) World Bank Surveys provide useful insights into how ICT is currently used by the business sector and makes suggestions as to the services provided by Government that can be improved. The World Bank assessment uses ten (10) distinct criteria shown in Table 2 below. It is useful to review some of the relevant World Bank results and recommendations, which inform the ICT current state assessment process.

	Criteria	St. Vincent & the Grenadines 2007	OECS Average 2007	St. Vincent & the Grenadines 2010
i.	Starting a business	29	46	45
ii.	Dealing with licenses	1	13	3
iii.	Employing Workers	48	39	57
iv.	Registering property	101	97	137
v.	Getting credit	83	98	87
vi.	Protecting investors	19	19	27
vii.	Paying taxes	32	61	62
viii.	Trading across borders	48	60	52
ix.	Enforcing contracts	125	128	102
x.	Closing a business	151	116	183

Table 2: SVG Ranking compared to OECS Average
Source: Doing Business OECS, 2007, IFC & Doing Business St. Vincent & the Grenadines, 2010, IFC

IPV6 has a large address space of 128 bits compared to 32 bits of the version 4. It addresses issues such as improving the quality of service required for some new applications like IP telephony, video/audio, interactive games or ecommerce which can be delivered over the network. This version easily deals with the avoidance of network traffic, loss of data or bandwidth.

In a nutshell, IPV6 will offer the following benefits:
1) Increased address space
2) More efficient routing
3) Reduced management requirement
4) Improved methods to change ISP
5) Better mobility support
6) Multi-homing
7) Security
8) Scoped address: link-local, site-local and global-address space

It is noted that overall, in 2007, St. Vincent and the Grenadines ranked 44th in the world. In dealing with licences, St. Vincent ranked first. However, in starting a company it ranked 29th, registering property 101st, paying taxes 32nd and closing a business 151st. In subsequent years, additional developed countries have been added to the World Bank survey, and a number of innovations have not been captured by the World Bank, resulting in a fall in some rankings of St. Vincent and the Grenadines in 2010.

The World Bank went on to make several specific recommendations for improving the competitiveness of SVG, which on review, provided a good assessment of the current challenges facing the business sector. Government has commenced action to implement all ICT and other non-ICT recommendations with the goal that SVG's level of competitiveness, ease of doing business and ranking will improve to be placed within the top 30 nations.

Table 3: ICT Recommendations to Improve Competitiveness

CRITERIA	SOME ICT RECOMMENDATIONS TO IMPROVE COMPETITIVENESS
Starting a business	Computerise records and introduce electronic name search Reduce the number of procedures
Dealing with licenses	Consolidate project clearances and provide information to builders on line to improve transparency.
Employing workers	
Registering property	Digitize records and introduce on-line access Consolidate and reduce taxes and fees.
Getting credit	Establish a Credit Information System
Protecting investors	
Paying taxes	Allow electronic filing and payment Keep tax rates moderate & consolidate number taxes
Trading across borders	Continue improvements on electronic data exchange & processing.
Enforcing contracts	
Closing a business	Amend Bankruptcy Act

Action Item

Make Solid advancements to the ten major recommendations to raise the competitiveness of SVG.

Introduce the mechanisms to effectively report on these advancements

The ICT initiatives that have been put in train include:

- Computerising of CIPO to enable to starting a Business on line
- Digitizing the Land Registry records and introducing on-line access to title searches and survey plans
- Introducing on-line tax payments
- Continually improving *ASYCUDA World* - customs data and clearance system – to facilitate movement of goods

There are therefore clear opportunities for improving the current usage of ICT by the business sector of SVG, and for upgrading the ICT-supported services provided by the public service to this important sector of the economy.

1.5 THE PUBLIC SECTOR AND ICT IN PUBLIC SECTOR REFORM

1.5.1 e-Government

Broadly speaking, e-Government is the use of ICT by a government for the provision of information and services to its citizens and businesses. This normally includes the efficient internal management of such information, better service delivery through electronic delivery channels, and greater citizen empowerment through easier access to information and more participation in public policy decision-making. It is useful to measure the state of readiness of countries with respect to e-government as such benchmarking enables countries to learn from each others' experiences. One such measure is the Global E-Government Readiness Index which has been assessed for many United Nations (UN) member states.

The Index includes an assessment of the state of website development within the public sector of a country, the state of the telecommunications infrastructure of the country, and finally the capacity of the people of the country to use the available technology for their own benefit as measured by their level of education. As such, it is a composite Index created from the Web Measure Index, the Telecommunication Infrastructure Index and the Human Capital Index of the country.

It is further noted that e-Government includes several types of electronic interactions, namely: government - to - government (G2G), government - to - business (G2B), business- to -government (B2G), government-to-citizen (G2C) and finally citizen-to-government (C2G).

While the other forms of interactions are important, the United Nations Global Survey is limited to the G2C and C2G aspects of e-Government. However, any comparative measurement of G2C and C2G includes some assessment of G2G since improvements in G2C and C2G are closely linked to G2G improvements.

Networked Readiness Index Variation 2006-2007				
Countries	Score 2006	Rank 2006-2007	Rank 2005-2006	Evolution
Denmark	5.71	1	3	↗ +2
Sweden	5.66	2	8	↗ +6
Singapore	5.6	3	2	↘ -1
Finland	5.59	4	5	↗ +1
Switzerland	5.58	5	9	↗ +4
Norway	5.42	10	13	↗ +3
Estonia	5.02	20	23	↗ +3
Slovenia	4.41	30	35	↗ +5
Lithuania	4.18	39	44	↗ +5
Barbados	4.18	40	n/a	New
India	4.06	44	40	↘ -4
Jamaica	4.05	45	54	↗ +9
South Africa	4	47	37	↘ -10
Costa Rica	3.77	56	69	↗ +13
Dominican Republic	3.56	66	89	↗ +23
Trinidad and Tobago	3.55	68	74	↗ +6
Guatemala	3.41	79	98	↗ +19
Ecuador	3.05	97	107	↗ +10
Guyana	3.01	98	111	↗ +13
Suriname	2.82	110	n/a	New

Table 4: UN Global E-Government Readiness Index 2007

Details of the results for the Caribbean are shown in Table 4 above. Unfortunately, St. Vincent & the Grenadines and other OECS states were not benchmarked in 2007. It is noteworthy that the highest ranked Caribbean countries are newly ranked Barbados at 40th, Jamaica (45th), and Trinidad and Tobago at 68th. The rankings for the region show an encouraging upward trend which SVG aims to replicate.

It is useful to consider some other relevant international rankings for ICT and related areas.

1.5.2 E-Readiness and Assessments

The 2007 network readiness assessment completed by the World Economic Forum is a useful measure. Details of the results for the Caribbean are shown in Table 5 below. It is noted that St. Vincent & the Grenadines ranked 98th in 2007, falling ten places from its ranking in 2005. It is further noted that SVG ranked 10th in the Caribbean out of 13 countries surveyed in 2007.

Table 5: The 2007 World Economic Forum Global IT Report: Network Readiness Index (NRI)

Country ID	Country	E-Readiness	Rank 2007	Rank 2005
15	Barbados	0.5667	46	61
174	Trinidad and Tobago	0.5307	54	66
51	Dominican Rep.	0.4943	68	82
12	Bahamas	0.4911	71	67
143	St. Kitts	0.4814	78	72
144	St. Lucia	0.4746	80	74
84	Jamaica	0.4679	85	59
68	Grenada	0.4545	92	95
6	Antigua	0.4485	96	86
145	**St. Vincent & the Grenadines**	**0.4306**	**98**	**88**
43	Cuba	0.399	111	103
50	Dominica	0.3746	116	119
73	Haiti	0.2097	165	180

Source: United Nations E-Government Readiness Knowledge Base

*The **Networked Readiness Index** (NRI) measures the propensity of countries to leverage the opportunities offered by ICT for development and increased competitiveness. In the most current report, 122 economies globally participated in the assessment. It also establishes a broad international framework mapping out the enabling factors of such capacity. It examines the preparedness of countries to use ICT effectively on three dimensions:*
1) General business, 2) Regulatory and 3) Infrastructure

Several countries have set the pace with the strategic use of ICT, in particular the Nordic countries. Their success is strongly linked to having a very strong focus on education, thus enabling the establishment of highly efficient educational institutions and a culture of innovation; and having transparent and well-functioning public institutions. This has resulted in a business-friendly environment with a strong readiness to adopt the latest technologies.

Denmark's outstanding levels of networked readiness have to do with the country's excellent regulatory environment, government's e-leadership in leveraging ICT for growth, resulting in impressive levels of Internet and PC usage, e-government and a dynamic e-business environment. A well-developed internal market, an emphasis on education and Research and Development (R&D) and a talent for pioneering applications and technologies have laid the basis for the development of a first-league high-tech industry.

Estonia, stands out for its impressive progress within the space of a decade in networked readiness and general competitiveness, driven by an efficient government ICT vision and strategy.

1.5.3 Challenges to e-Government

E-Government has the ability to impact the governance of a country and to influence the organisation of the public sector itself. A heavily centralized and controlling decision-making structure in government is antithetical to an emerging environment that is decentralized and horizontal and in which power, resources, and information are widely distributed. The latter environment is often that desired by the people of developing countries. Rigid hierarchical and prescriptive accountability mechanisms do not provide the flexibility required to develop policy and to adjust service delivery to meet changing circumstances or local realities of SVG. More collaboration and connecting with citizens and businesses will put public servants in the public eye and make them less anonymous. Managers and executives therefore must pay greater attention to career development, succession planning, value-added labour relations and other basic human resource management practices to ensure public officers are treated as a strategic resource. E-Government can therefore impact the foundation of public sector institutional frameworks, and consequently be challenging to get right despite its obvious benefits for all stakeholders. The need to interconnect the public sector has been recognised as a priority and Government is making progress with the development of an intranet. This project is aimed

at electronic connectivity between all ministries and agencies within the public sector, at a current anticipated cost of EC$ 566,347 for the first Phase.

The United Nations Department of Economic and Social Affairs (UNDESA) assisted the Government with enhancing SVG's official website. The development of a single entry government Web Portal is now being developed with assistance from the Government of Taiwan through the establishment of an ICT Centre. This project when completed will enable new portal functionality. SVG uses ICT as an enabler of economic development and in the growth of its ICT Business Sector. Essentially there are four (4) quadrants of activities which must be integrated to create a modern and dynamic ICT Sector. This comprises (1) a robust regulatory system; (2) adequate training of the human resource; (3) appropriate and relevant e-government initiatives, and; (4) building a vibrant innovative and creative ICT and business sectors including the promotion of businesses to adopt ICT. The effective management and coordination of the projects and ICT initiatives in this sector will increase efficiency, provider quicker transactions, ensure better trained citizens, reduce costs, increase revenue collection and spur greater business activity and competitiveness.

1.5.4 Key Role of the Information Technology Services Division (ITSD)

The Information Technology Services Division (ITSD) is the main ICT policy, advisory and technical maintenance services provider to the Government of St. Vincent and the Grenadines. The Division is headed by a Director who is the Chief Technical Advisor on Non-Regulatory ICT matters. Several major functional Units are integrated under the ITSD banner (refer to Figure 9 below) as follows:

1. The Web and Internet Content Unit designs, maintains and promotes the Government's and national web presence. The Unit maintains the Government Web site consistent with the Freedom of Information and Privacy Acts. The Intranet is geared to providing public servants with a range of electronic services which improve efficiency
2. The E-Mail, Internet and Intranet Network Services Unit provides public servants with professional email, Internet and Intranet services and a means for information to be disseminated throughout the Public Service and through which clients can communicate with officials
3. The Government Video-conferencing Services Unit
4. The Computer Repair Section which services computers throughout the government service
5. Development and upgrading of new software application and content creation where required by departments or where deemed necessary; and providing advice to ministries on the appropriateness of

ICT & THE BUSINESS SECTOR

The challenges are to separate out the many forces driving changes to this sector, to identify the critical trends from the false starts, and to piece together a big picture out of the many new visions. There are some emerging trends that cannot be ignored which include:

1. *The hot technologies with the greatest promise*
2. *The best practices needed to harness all this potential*
3. *The challenging blend of new paradigms*
4. *Fresh ideas and disruptive technologies and tactics needed to exploit and manage them*
5. *Green IT and its impact on society.*
6. *The megatrends – business acceleration, the commoditizing of IT, the new agility and beyond*
7. *The macro forces – standardization, globalization, super powers & sleeping dragons*
8. *The new IT responses – virtualization, convergence, search, the rise of IP*
9. *The upstart ideas – social networking, virtual world economies, social analytics, and user-generated media*

Action Item:
Make solid advancements in 10 major recommendations to raise the competitiveness of SVG and introduce the mechanisms to effectively report theses advancements.

software procured or developed by government

6. The Government Backbone, PBX and Network Maintenance Division
7. Monitoring of the EGRIP and other Non-EGRIP electronic government initiatives and providing implementation oversight
8. Provision of advice to other ministries and Departments on any major ICT initiatives being planned or implemented by these ministries
9. Representation of the SVG at regional and international levels on ICT policy and initiatives
10. Provision of technical advice to the National Centre for Technological Innovation

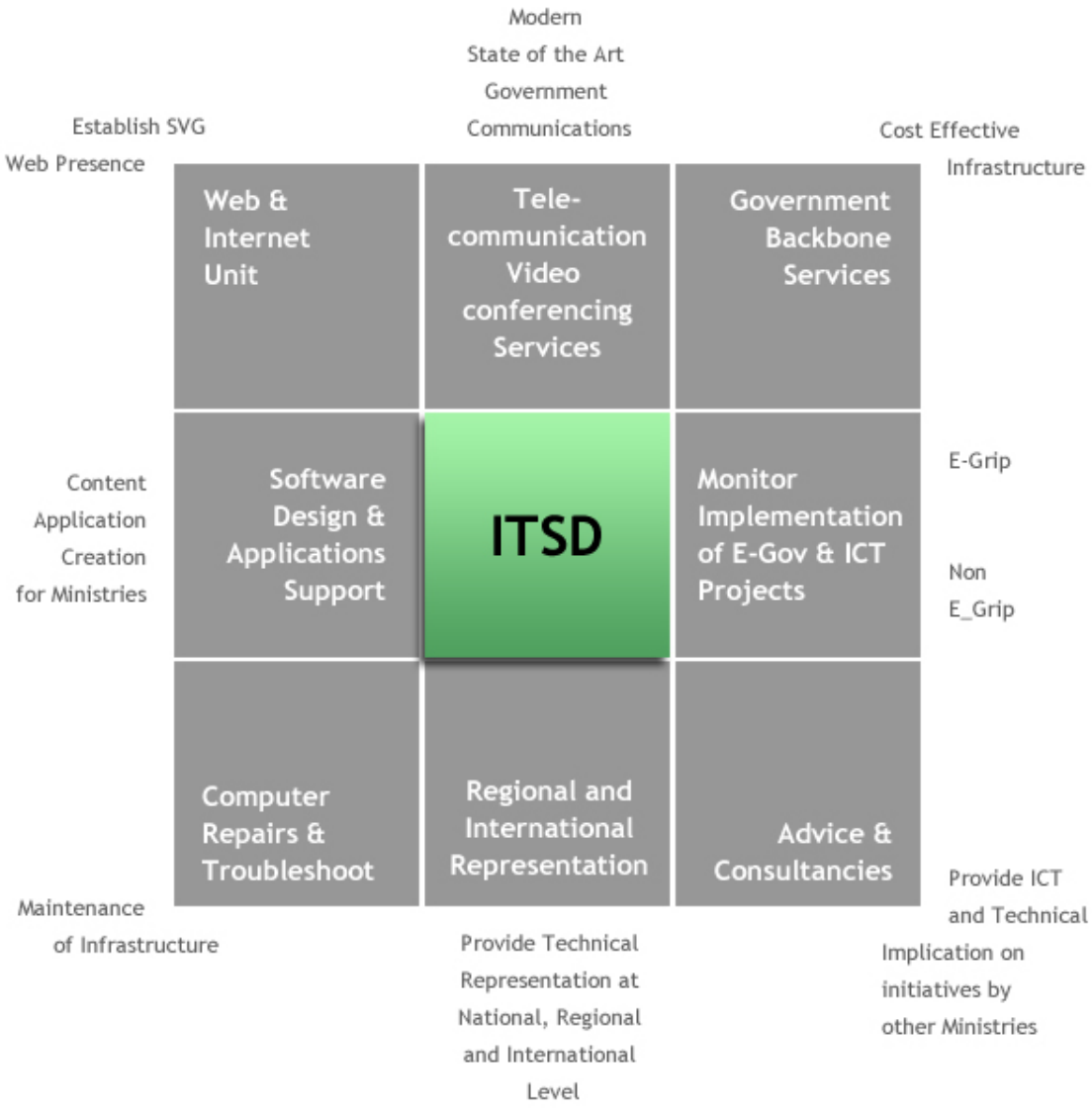

Figure 9: Functions of ITSD

1.6 TAIWAN ICT CENTRE

One significant development that is being put into place, is the agreement reached with the Taiwanese Government to provide assistance with the establishment of a state-of-the-art ICT Centre. This Centre will provide equipment and expertise for the development of applications, implementing advanced cyber-security measures, and the construction of a new government wide web portal through which citizens can access many on-line government services. The Taiwan ICT Centre will work with the ITSD in the implementation of the Government's e-government initiatives and provide advice and assistance in training and building the ICT capacity of other government agencies.

Table 6: Initiatives & Projects Proposed for the Taiwan ICT Centre

	INITIATITIVES & PROJECTS PROPOSED FOR THE TAIWAN ICT CENTRE
1	Development of a comprehensive Government Web Portal
2	Full implementation of a Police Records Information Capture and Management System
3	Establishment of a Government Data Warehouse
4	Enhancement of the Government Intranet
5	Training and Human Capacity building of Public Servants in the Management of ICT applications

1.7 ESTABLISHING ICT STANDARDS

As part of its current investment initiatives, SVG has begun the process of establishing standards and guidelines which will ensure that the country meets international best practice and is attractive for new businesses in the ICT sector. The Electronics Industry Code of Conduct (EICC) outlines standards to ensure that working conditions in the electronics industry are safe, that workers are treated with respect and dignity, and that design and manufacturing processes are environmentally responsible. SVG has commenced action to ensure that these standards are applied and complied with in the near future.

Another focus area of Government is ensuring that businesses exhibit strong 'corporate social and environmental responsibility' behaviour by ensuring that they understand the compelling need to act now. SVG is commencing action to let local and international businesses know that the country is firmly supportive of protecting the environment; and that Government is willing to work with industry to ensure that their CSER is met.

Furthermore, Government has acknowledged that the following factors, from an ICT perspective, have informed their strategic thinking:

Electronics Industry Code of Conduct

This Code outlines standards to ensure that working conditions in the electronics industry are safe, that workers are treated with respect and dignity, and that design and manufacturing processes are environmentally responsible. It notes that:

1. Suppliers must provide their employees with a safe and healthy workplace in compliance with all
2. Suppliers are required to uphold the highest standards of ethics
3. Suppliers must comply with all laws and regulations on bribery, corruption, and prohibited business practices

Corporate Social & Environmental Responsibility (CSER)

"CSER is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community, environment and society at large." Businesses must be both "profitable & responsible".

- Being environmentally-friendly is beneficial for both ICT and the enterprise
- A sustainable ICT strategy is good commercial practice
- ICT initiatives can and must lead in being more environmentally responsible
- Technology and ICT strategies can make efficient operations and save cost
- Energy consumption is an important area of focus for the ICT manager
- The need to share what other organisations are doing in SVG to comply with their CSER

SVG is currently moving aggressively to making the country ICT-friendly for the business sector.

1.8 WEB PORTAL (GOVERNMENT)

The Government is currently in the process of developing a new Government Web Portal, with planned deployment by the end of 2010. This electronic facility will enable Government to place information on-line in a form that meets the evolving needs of citizens and businesses. It will provide ministries and agencies with the capability of presenting content to the public that will support some of the requirements of the Freedom of Information Act (FOIA). It will allow a proactive approach to responding to the needs of the FOIA.

Government has also indicated its intention to build this portal based on Web 2.0 technologies, business models and current usage patterns. It is anticipated that this strategy will support greater user participation and more open business processes.

Action Item:

Construct a new Government Web 2.0 based Portal

Expand the Government Backbone to the rural areas

The Portal: New Home for Web 2.0 'Mashups' in the Organisation or Enterprise.

Web 2.0 is the next generation of technologies, business models, and usage patterns of the World Wide Web. Some of the major features of Web 2.0 are:

- Greater user participation - User-generated data and metadata, and user-centric designs
- Openness - Transparent processes, open application programming interfaces (APIs), and open-source software and content
- Lightweight, rather than heavyweight, technology - Scripting languages, asynchronous JavaScript and XML (Ajax)-based user interfaces, representational state transfer (REST)-based interaction protocol, RSS-based syndication and HTML-based micro-formats.
- Decentralized, distributed process - Ad hoc "mashups" of Web sites building on public APIs; bottom-up, bazaar-style development; and content tagged by locally defined "folksonomies," rather than one global taxonomy
- Web 2.0 will have a direct effect on enterprise portals, but this impact will start in the consumer world. Eventually, Web 2.0 mashups will appear in the enterprise, facilitated by portals

1.9 SUMMARY OF INITIATIVES IN THE ICT ENVIRONMENT

The Figure 10 below summaries the various initiatives being pursued by SVG and the region around four quadrants, namely:

- Effective Regulatory Services
- Well Trained Human Resources
- E-government Initiatives
- Business Development

It is clear that there are a lot of ICT initiatives being pursued across SVG. This current suite of initiatives, once managed well, will create a formidable strategic thrust and become a significant enabler of development and enhanced competitiveness for the country. The successful implementation of these current and proposed initiatives is critical both in defining the re-launching point, and in guiding the pathway and pace of the re-launch.

However, it is important to assess the resources available within SVG to support these initiatives and to identify any critical gaps that must be addressed. It is also important to consider how ICT is utilised in the other (non-ICT) sectors of the country.

Figure10: Summary of the Existing ICT Initiatives

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CURRENT USAGE BY NON-ICT SECTORS

Action Item:
Launch NAPMIS
Train Farmers and Extension Staff in the use of Information Systems and ICT in Agriculture

Action Item:
Make solid advancements in 10 major recommendations to raise the competitiveness of SVG and introduce the mechanisms to effectively report theses advancements

Action Item:

Create and Launch a well designed Web-2.0 Government Portal which allow sector stakeholder participation and centralised standards Draft Policy 26th June 2009

2.1 JUDICIARY

Government is utilising justice software, JEMS – Judicial Enforcement Management System, to facilitate the administration of the Courts. This application software supports all types of court cases, payments, warrants, sentencing, docket scheduling, and forms/reports generation.

The various registries (Civil Registry, Electoral Registry, and Commerce and Intellectual Property Registry (CIPO)) have been computerized, but needs to be integrated.

2.2 FINANCIAL ADMINISTRATION

Standard Integrated Tax Administration System (SIGTAX) is used to manage tax collection, while Automatic System for Customs Data (ASYCUDA) World supports Customs. SMARTSTREAM is utilised by the finance departments of Government.

2.3 AGRICULTURE

Work is in train on the development of a national agriculture production and marketing information system to provide market information and intelligence to the agricultural sector.

2.4 HEALTH

SVG has about 97 Medical Doctors, 298 Registered Nurses, 13 Dentists and about 47 Pharmacists, with a 2009 Health Budget of about EC$ 71,607,805. The country is home to a School of Nursing and to an Off-shore Medical College. A draft national strategic plan exists for health for the period 2007–2012. The stated goal of the sector is to improve the health status of the people through enhancing and expanding public health services, expansion of secondary services, improving the quality of and access to the services, and improving the decision making capacity of the sector.

The current challenges in the health sector include chronic non-communicable diseases, insufficient funding, the ineffective management of inventory, the excessive need of overseas referrals, insufficient statistical information on the appropriate utilisation of services and

supplies, and inadequate staffing including key specialisations. The sector is required to respond to an increase in the elderly and a decreasing birth rate. There are 39 clinics, 5 rural hospitals, 1 mental hospital, 1 private hospital, and 1 general hospital (Milton Cato Memorial Hospital - MCMH). Community care is provided through the clinics located across the country. Each clinic serves about 3,000 people and is easily accessible. Health centres are well staffed and provide a wide range of services, including midwifery, family planning, immunization and emergency care.

Action Item:

Launch HIS to track patient records, diagnostic tests, discharges summaries, medications, medical supplies, and laboratory results & health trends

Some computers are available at the Ministry, MCMH, and 4 district clinics. However ICT is now being introduced into various institutions and into the heath sector on a larger scale, including the provision of patient administration and medical records.

A major project, the National Health Information System, is expected to restructure and re-engineer the business processes at the hospitals and clinics and is anticipated to cost about EC$ 2.3 million. A new fibre optic cable was laid to connect the Ministry of Health with the MCMH. Telemedicine is being used at the MCMH. The mass media, particularly radio, is used to disseminate information to the public at large. With a new Diagnostic Hospital being built at Georgetown, three regional Poly-Clinics being built at Stubbs, Mespotamia and Buccament, and a new Milton Cato Memorial Hospital proposed for the Arnos Vale Airport Site after 2012, the connectivity between these institutions will present a major challenge.

2.5 EDUCATION

Formal education is provided at three levels: primary education (seven years), secondary education (five years), and tertiary education (two to three years). Specialisation starts at secondary level where programmes are offered from general / academic and extends to the tertiary level. There is currently no curriculum incorporating IT at the primary or secondary level. Formal education relating to IT or computer science is only available at the tertiary level.

The process of acquiring hardware and connecting schools to the Internet has accelerated over the last 3 years. According to the statistics available from the Ministry of Education (MOE), about 34 educational institutions have Internet connectivity via computer labs - which includes 18 primary schools and 12 secondary schools. The total number of students in SVG's educational system is 32,338 which include 3,426 pre-schoolers, 15,532 in primary schools, 11,688 in secondary schools and 1,692 in private schools.

While most institutions have Internet access via the principal office/lab, the number of students per PC in these institutions is 55.6 which are not optimal. The number of students with Internet connectivity is 9.7 per 100 primary school students and 6.4 per 100 secondary school

Education Technology

A complex set of forces now drives the uptake of educational technology:

1. Government policies are driving more educators to tailor their instruction to the individual needs of students
2. Important constituency groups expect to see technology used in the classroom
3. Online learning offers a solution to the challenge of increasing access while maintaining cost
4. Significant factors impede the more substantive adoption of educational technology
5. Popular support has waned for using technology as a tool to reform education institutions
6. Technology purchases must compete with other priorities for increasingly scarce budgetary resources
7. Moving to the next level of technology adoption requires significant and difficult behavioural changes

Educators are increasingly sophisticated consumers of educational technology:

8. The most appealing solutions will provide compelling evidence of their effectiveness
9. Seeking the benefits of standardization, institutions will migrate from point to enterprise-wide solutions
10. The acceptance of vendor-hosted solutions and other delivery options will grow in the market

students. It is therefore clear that the technology in the education system is not adequate for supporting acceleration in the utilization of ICT for national development, and in fact, is unlikely to even meet the current demand. It should be noted that budgetary constraints have been the main limiting factor in making ICT available to MOE. However, three (3) major initiatives will significantly improve or provide additional infrastructure, namely:

- The EU-funded ICT in Education Project
- The use of the Universal Service Fund to enhance connectivity for school and household access to wireless broadband
- The Laptop Project which will enable a level playing field

Figure 11 below illustrates the global trend of students to computers.

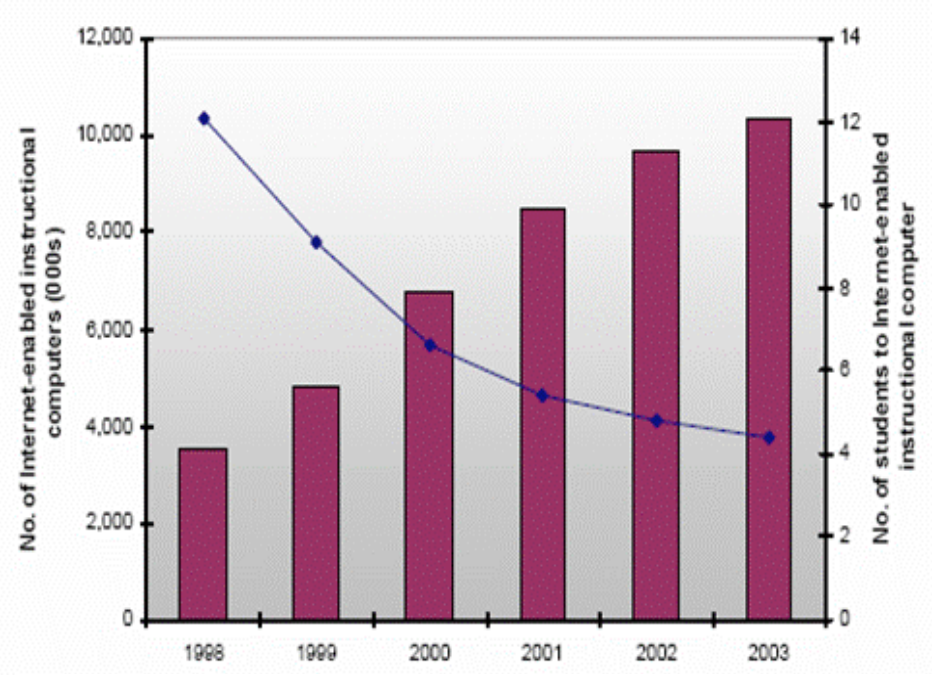


Figure 11: Global Trend on Student to Computer Ratio

Within this context, the Ministry of Education (MOE) embarked in late 2007, on an Improvement of Education through the use of Information and Communication Technology Project. This project is funded by the European Community (EU) to a maximum of 12.1 million Euros of the total cost of 13.27 million Euros. The operational implementation phase of the project is expected to be completed by 31 December 2011, and closed by 31 December 2013. The purpose of the project is to improve the quality of education at all levels nationwide by creating opportunities to use ICT in innovative ways, including its integration into the pedagogy of the teaching/learning processes.

ICT IN EDUCATION PROJECT

1. New wireless computer labs in all 20 Secondary Schools
2. New wireless computer labs in 43 (70%) of Primary Schools which have the infrastructure and space for computer labs
3. Ten (10) laptops for each of the remaining twenty (20) primary schools (which do not yet have the physical space for a computer lab)
4. Each school will receive innovative whiteboards, a projector and two teaching laptops for teachers to use ICT, internet and power-point presentations to prepared and teach certain subjects
5. Teachers will be retrained to use ICT to teach specific courses
6. The development of an on-line SVGeNET
7. The Project will construct three new high tech, state-of-the-art lecture theatres at the Community College to accommodate 1,000 students. It will also construct ICT labs and install Distance Learning Equipment for on-line degree courses

STUDENT LAPTOP NETBOOK PROJECT

30,000 Netbooks will be distributed to Primary, Secondary and Community College Students free.

1. It will raise the computer/ student ratio to 110%
2. It will facilitate the integration of ICT in education
3. SVGeNET will be used to facilitate teaching and learning

2.5.1 Project Scope

The education project has three focus areas, namely:

1. Improved educational management, administration and governance through the incorporation of effective strategies
2. Improved quality of basic education, and technical and vocational education and training, through the integration of ICT
3. Improved infrastructure at the SVG Community College to include ICT-enhanced facilities

It also supports the development of knowledge-based systems, SVGeNET, electronic document management, and information-driven decision making processes in the MOE. It includes hardware, software, computer networks, projectors, academic software, furniture and equipment, teacher training, and a modern Lecture Theatre and ICT facilities. The project includes maintenance of the procured infrastructure. When this project is completed, it is anticipated that the people of SVG will have the sustainable provision of learning opportunities for all. They should therefore be equipped with the skills and knowledge necessary for creating and maintaining a productive and innovative society.

Training of the people who are currently employed in the area of ICT has also been recognised as a priority. The need to increase local competitiveness and the employable of the local labour force is being addressed by the National Information and Communication Technology Training Project (NICTTP). This project is in progress at a cost of about EC$2,655,174, and is aimed at providing a cadre of trained persons with various levels of computer skills.

An adjunct to the massive expansion at schools and learning institutions is the use of the network of Learning Resource Centres (LRCs) Community Centres and Libraries. The Modern National Library will be a shining example of ICT in usage and virtual Libraries.

Action Item:

Launch SVGeNET to track student records, tests results reports, requisitions for supplies, repairs and other communications between teachers, principals and the MOE.

2.5.2 Human Development

Human Development Index	0.772
Combined gross enrolment ratio in education (%) 2007	68.9
Adult illiteracy rate (% aged 15 and above), 1999-2007	11.9
Female combined gross enrolment ratio (%), 2007	70.3
Public current expenditure on primary education per pupil (PPPUS)	1,227
Public expenditure on education as a percentage of total government expenditure, 2000 – 2007	16.1

Table 7: Human Development Statistics for SVG

The state of human development in SVG is captured in the statistics from the 2008 UNDP Human Development Report shown in Table 7.

2.5.3 National Technological Centre Innovation (NCTI)

The NCTI was established as a State Company in 2006 and won the contract to implement training under the NICTTP. It conducts training at the advanced level at its main facility in Kingstown and basic computer literacy at the network of Learning Resource Center labs in each constituency.

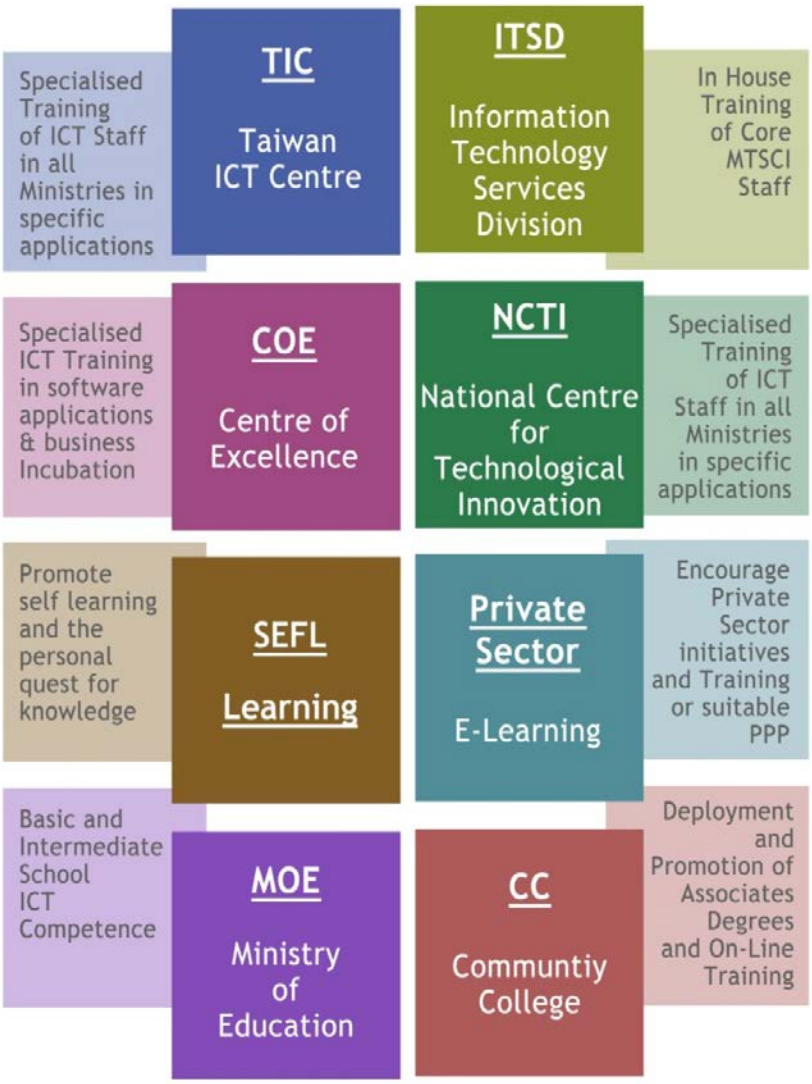


Figure12: Spectrum of Public Sector Training in ICT in the Education Sector (From Primary School to Advanced Training)

The NCTI is also expected to conduct training in software development at the new Centre of Excellence (COE) at Diamond. This training will focus on training talented individuals in the creation of a new wave of innovative web-based software applications including entertainment and games for mobile phones, and to meet the needs of the private sector.

2.5.4 Centre of Excellence (Diamond)

The Center of Excellence (COE) also provides services for ICT enterprises to be nurtured in resident, outreach and virtual incubators. There will be a focused drive to link the COE with other regional and international Centers of Excellence to facilitate the process of transfer of appropriate technology.

The COE will establish strategic alliances with the Government of India as part of a Windward Island (OECS) initiative which will provide state of the art ICT equipment and trainers.

Other strategic alliances will be sought with the COE to enable a global reach.

The various ICT training initiatives currently in train in SVG within the education sector has been summarised in pictorial form in Figure 12. It is clear that the strategic value of ICT in this sector has been recognised across the various educational institutions of the country. Close coordination and alignment of these various initiatives will aid tremendously in ensuring that the benefits anticipated are in fact achieved in this sector.

2.6 ICT & EMPLOYMENT

Information and communication technology skills have become increasingly fundamental for workers beyond the ICT sector itself. It is now desirable that lower wage, lower skill workers have basic ICT skills to enhance their employability. For example, auto repair, retail and health care are industries where incorporation of ICT into their workflows has raised the skills bar for workers.

However, despite the importance of having a basic knowledge of ICT, it is only part of the answer to job preparation. It is clear that soft skills, such as interpersonal communication, teamwork, and work attitudes or habits, are also essential for employability. In essence, lower wage, lower skill workers face multiple barriers, many of which are more complex than simple unfamiliarity with email or word processing. Therefore ICT literacy cannot be isolated from the larger social and personal context that exist globally and in SVG in particular.

Soft skills as well as solutions to challenges such as childcare, transportation, time, and appropriate attire are critically important. Social ties and personal networks are also recognized as crucial to finding a job and succeeding at work.

Notwithstanding the importance of other factors, SVG has begun the process of ensuring that the lower wage, lower skill workers have equitable access to ICT training and exposure.

Action Item:

Introduced a program which provides subsidised laptops to each student in St. Vincent and the Grenadines

2.6.1 Freedom of information

The Freedom of Information Act was passed in December 2003. This Act extends the right of members of the public to access public information about the operations of public authorities. Information about the rules and practices of public authorities which will affect members of the public must be readily available to persons affected by those rules and practices. Under this Act, the members of the public have the right to access information in documentary form which is in the possession of public authorities limited only by expectations and exemptions necessary for the protection of essential public interests and the private and business affairs of persons in respect of whom information is collected and held by public authorities. Also, this Act creates a right to bring about the amendment of records containing personal information that is incomplete, incorrect or misleading.

Action Item:

Establish Strategic Alliances between the COE and an International Company with sufficient technical depth, training capacity and global reach to make the COE a premier training institution and creator of software applications

2.6.2 Privacy

A side effect of being connected is the need to protect the privacy of the individual. This issue is closely linked to cyber security since in recent times databases containing personal information on thousands of persons have been compromised. This is an issue that affects the individual, large corporations, and public institutions. There are instances where some of the larger ICT companies collect personal information to support targeted marketing to their advertisers.

There is therefore a balance that needs to be struck by public sector policy makers in the creation of privacy legislation. This must be balance with the general requirements of the FOIA, and is an issue that is even more acute for small countries like SVG.

The Privacy Act for the Public Sector was passed in 2005. A Privacy Bill for the Private Sector is yet to be enacted and is required to complete the suite of enabling legislation.

Action Item:

A suite of ICT related legislation will be enacted:

Electronic Transaction Act; Data Protection Act; Electronic Crimes Bill; and Electronic Evidence Bill

A program of Child Online Protection will be promoted.

2.6.3 Cyber Security

The challenge of security is the ultimate side effect of a well connected society. The more connected SVG becomes, the more opportunities are created for individuals who wish to commit cyber crime. Developing countries have to be careful to not underestimate the security threat posed by being connected. In parallel with the many initiatives being taken in SVG to get connected to everyone and to the world, must be the completion of projects to protect such connectivity. This requires national projects which involve educating and training all users. It will involve new legislative measures and new investigative units within the security organisations of the country. As cyber crimes can be committed in any country from any country, it is important that SVG works closely with external agencies and establish the necessary bilateral and multilateral instruments to make investigations and trials as easy as possible. Work has commenced in SVG to address the cyber security challenge, but much remains to be done.

Government has recognised that the initiatives being undertaken to provide universal connectivity to the Internet creates other challenges that must be addressed in moving forward. To some extent, some initiatives are already in train in this regard. The Internet, by default, allows anyone to post anything on any subject for anyone to access anywhere in the world, unless specific effort is made to try to restrict this. This fact creates two areas of concern for SVG on the issue of content. The first issue is that of content that is created specifically for a criminal purpose; and the second issue is content that can lead to the programming of young minds that can lead to criminal and other non-productive behaviour in the future.

The control of content is a sensitive issue, especially in democratic countries such as SVG. There is a delicate balance that must be made between controlling content and the right of the individual to access content of their choice. SVG is currently in the process of creating public policy to address this concern. Equally important is the content on radio and television and its impact on local culture and the young people of SVG. Again, government policy with respect to local content and the nature of content on the airwaves are being developed.

The issue of cyber security is not just an issue for businesses and consumers. It is an issue of National Security whereby its effects can shut down the entire country as have been seen in the recent past in Eastern Europe.

SVG cannot wait until such events occur in the region, and therefore it is necessary to start planning and putting in place the necessary local and regional institutions to address this issue.

The Internet as a tool, rather than a goal in itself, has changed many of the traditional governance models that we have become used to in civil society.

2.6.4 Civil Society

The general centralized view of governance and services to civil society has been impacted by the Internet. It is clear that the centre of a country's social systems and networks is no longer at the figurative traditional central meeting place whether city or village square, but is now at the edges. Individual users have the ability to instantly act both locally and globally, and to interact with consummate ease with huge diverse human networks from the comfort of their homes. Almost anyone in society now has the power to create and distribute diverse content at will.

Once it is recognised that power is now in the hands of ordinary citizens, it is recognised that a great opportunity exists to orientate policy initiatives towards a true multi-stakeholder consensus style of non-centralized governance which can revolutionize the public sector by streamlining government services, and which can herald a new dialogue between the state and civil society.

The opportunity to mobilize otherwise unrecognised or previously unknown expertise and capability is innovative in itself and government is best placed to spearhead the enabling environment which will generate and disseminate home-grown knowledge at will.

SVG will therefore pursue the formulation of national policy which will nurture the human capital of the country. This policy will recognise the enormous potential for ordinary citizens across the social spectrum to contribute to their nation state with an increased sense of security, well being and belonging. The policy will enable the building of a highly creative and innovative society. It will attempt to exercise the minds of the youth so that they are able to partake on level footing with regional and international partners. But the policy will be so crafted to maintain the country's cultural differences and to enable the dissemination of the uniqueness of its people to others.

In order to unleash this national 'power source of the people', SVG must mainstream ICT into the

traditional economic sectors where it is recognised that an untapped knowledge pool exists. It is expected that new policies and strategic alliances will need to be created to achieve this objective. Such policies must address the creation of ad hoc community networks within the context of the existing telecommunications regulations which were originally designed to deal with specific legacy issues.

The Caribbean has been held up to much criticism for its apparent failure to generate content that is Caribbean-based and which is relevant to its people. However, if the content being created by Caribbean internet users on external networks like Facebook and IMVU and Tagged are reviewed, the talent of the people of the Caribbean becomes very apparent. The opportunity to exploit this untapped capability and capacity is real and significant, and SVG will take steps to make the best use of its people in this regard.

Government has recognised the emergence of social networking as having the capacity to significantly raise the level of contribution of civil society. It is therefore planned that SVG will apply these new tools and similar principles to the areas of culture and heritage, local festivals and music. Social networking tools will also be used to simulate discourse on the environment, health and safety, healthcare, and education. E-literacy or digital literacy is core to the creation of a knowledge-based society which is a primary aim of SVG. While many of the towns and villages in the country have the basic infrastructure in the form of resource centres, much more is needed to promote literacy at all levels and ensure that both young and old in the country are given the basic tools to allow them to participate in sustainable nation building.

While youth will be a major area of focus, equal emphasis will be placed on senior members of society to ensure that they can use technology for their own development. This is important given the traditional roles that the senior members play in maintaining discipline and social governance in homes, villages, towns and communities. NGOs, sporting associations, and other civil society groupings will also be supported and strengthened through ICT investments.

In essence, the innovation that is often inherent in civil society will be supported by ICT. A tailored SVG strategy will be developed to allow education, business and the public sector to partner with civil society to mobilize expertise and capacity to kick-start the generation and dissemination of new forms of knowledge within the country. This will be a transformative and people-centred approach built on ICT-based knowledge centres. In moving forward with the development of civil society, connectivity will be treated as a utility in the same way that electricity and water are utilities that enable modern societies. It is expected that a major proportion of civil society will be connected either at home or via a mobile device.

2.6.5 The Diaspora

The National Homecoming and Diaspora Framework for Action 2009 provide recommendations for action on behalf of Vincentians living abroad and those living in SVG. Government has begun planning on the use of ICT to better enhance business relations between SVG and the Diaspora.

2.7 DEVELOPING AN E-CITIZEN CHARTER

The development of an e-Citizens Charter along the lines of the document shown in the Appendix 2 is considered an important best practice which SVG will be pursuing. The development of the Charter will be done in conjunction with Civil Society and will include the participation of the Private Sector. The Charter will address the key issues of choice, freedom of information and privacy.

2.8 THE PRIVATE SECTOR

SVG has had a major monopoly telecommunications provider for over 100 years. Since the liberalisation of this sector, two new major providers, a refashioned incumbent, and other organisations have brought major advancements in technology, affordability and value to the ICT Sector.

However in order to achieve the true benefits and potential of liberalisation, the entire Private Sector has to be fully engaged, firstly to support the goals and initiatives of connectivity, and secondly to adopt ICT to improve their own internal efficiency, communication and marketing. Additionally, if the Sector fully engages in training of all employees in ICT, it is believed that this will improve their level of competitiveness, sustainability and success. Figure 13 below give some details of the challenges that business typically faces with utilization of ICT, which must be addressed by local enterprises in SVG, if they are to obtain the desired improvements. Developing core ICT skills within the organisation is a priority in ensuring the ICT operations function smoothly. The involvement of ICT leaders in the alignment of ICT and business strategy is also critical to the strategic use of ICT by any organisation.

At a regional level, organisations such as the Caribbean Telecommunications Union (CTU) and the Caribbean Organisation of National Telecommunication Operators (CANTO) have outlined programmes for connecting the Caribbean, in which partnerships with Governments and Civil Society are seen as critical to success.

There is a general perception that ICT leaders of departments and enterprises lack appropriate essential skills to meet the strategic needs of business enterprises and of governments, isolated from the strategy definition phases and relegated to delivering systems and maintenance procedures.

2.8.1 ICT for Economic Diversification

Under the EU Special Framework of Assistance 2005 Programme, the economic diversification, competitiveness and employment capacity improvement is being pursued for the productive sectors of SVG. The Programme aims to create an enabling environment and human resource pool to support the further introduction and sustainable use of ICT. In fact, the development of this National ICT strategy was supported by this Programme. SVG is pursuing diversification in several areas including agriculture, tourism and ICT, so it is useful to review how ICT is utilised in these sectors.

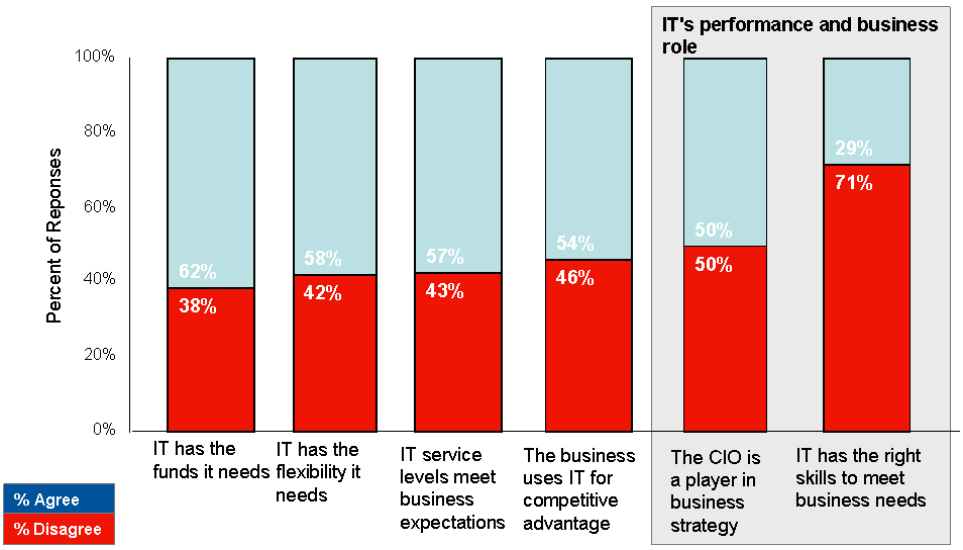


Figure 13: The ICT Challenges faced by Business

The Ministry of Agriculture is in the process of updating its 1997 – 2006 National Agriculture Development Plan. Within this context, work is in progress on the development of an Agricultural Portal and on the introduction of a National Agricultural Production and Marketing Information System. The implementation of a Geographic Information System is being investigated and a Land Bank Project is expected to be implemented soon.

An Organisation of American States (OAS) project is also being pursued with the assistance of the Centre of Enterprise Development to reduce poverty in rural areas by assisting individuals in starting up businesses. Computer Resource and Internet Centres (CORIC) have been implemented in five rural communities to offer free computer access and instruction to citizens of all ages which will aid the establishment of SMEs.

The Ministry of Tourism, the Tourism Authority and the National Rivers, Beaches and Rivers Authority are responsible for the development of tourism in SVG.

The Ministry has completed a feasibility study on the establishment of Hospitality Institute to be completed by 2012. This Ministry is supported by the main government website which has many of SVG's attractions available online.

SVG is aiming to launch a one-stop shop travel portal by the end of 2010.The tourism sector produces a weekly newsletter, "What's on in SVG" which highlights weekly events, and which is distributed widely to visitors and hotels.

2.8.2 Investment Promotion in ICT

The National Investment Promotion Incorporation – SVG Invest has been mandated to deal with foreign investment including ICT, so that some level of attention is being paid to the ICT sector. The current business community in SVG has been characterised by succession of family ownership and management, heavily import reliant, and resistant to change, concentrated in the retail and distribution trade. It has been suggested that more than 75% of businesses utilise computers.

However, e-Commerce activities within the country are limited by the high costs of operating merchant accounts.

Work has been completed under the EU/SFA 2005 Business Skills and e-Business Incubators Project, Strategic Alliance Programme (SAP), on the utilisation of strategic alliances on key sectors. The SAP is expected to contribute to the economic diversification and improve the competitiveness and employment capacity of the ICT services, agricultural, manufacturing and tourism sectors through the fostering of strategic alliances between the beneficiary SMEs, local stakeholders, and regional / international partners.

For example, the SAP proposes to provide technical assistance in the development of at least three joint e-commerce projects in specified sectors with the participation of about 100 SMEs. It proposes among other things, the development of SVG's ICT Portal to act as a gateway for the promotion of ICT service providers which would contain the following:

- Directory of providers
- Service procurement facility marketplace
- Delivery of e-learning courses/webinars
- Central databank of all ICT initiatives in SVG
- Networking and development of an online community of ICT service providers
- ICT hub to attract investors
- Promote SVG as a competitive location for ICT Sector and Service Industries

The concept of business incubators is being pursued in the proposed Centre of Excellence and will play a role in supporting the software development business.

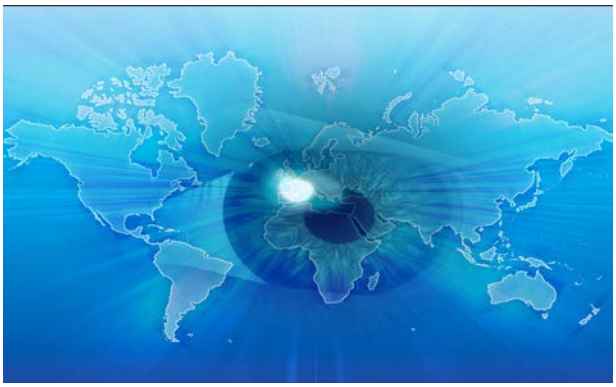
CIPO, Commercial Intellectual Property Organisation in 2010 will mandate business registration on line with a long transition for the persons who have difficulty with registering business names.

2.8.3 Off-shoring, In-sourcing, Supply Chaining, Customer Care Centre and Foreign Direct Investment

There are several Customer Care Centres in St. Vincent in Legal, Medical Transcription and Telemarketing. Substantial experience and lessons have been learnt on the success and failure of attracting such investments. It has become clear that the critical and important competitiveness and quality issues must be addressed in moving forward. These issues include the relatively high telecommunications cost, the choice of technology, quality of management, availability of human resource, and the skills required by potential employees.

The relocation of Arnos Vale Airport to Argyle provides tremendous opportunity for the creation of a New City, educational and sporting institutions, local businesses, and Foreign Direct Investment (FDI).

REGIONAL ORGANISATIONS AND ASSOCIATIONS



SVG is committed, actively participating and providing support to most regional ICT initiatives and these must be factored into the National ICT Strategy plan.

3.1 CARICOM

SVG is a member of CARICOM which has elaborated a regional policy on ICT. The country is a member of the CTU, ITU, CTO, CKLN, CARICAD, OECS EGRIP Project, ECTEL, OAS (CITEL), COMMONWEALTH SECRETARIAT, COMSYC and a regional network of TAIWANESE ICT Centres. The linkages are summarised in Figure 14.

The interaction between these regional organisations, and coordinating and aligning their activities are critical and involves the National Authorising Officer, National Planning Ministry, EFD, and cooperation of other state and Private Sector Agencies. Similarly the relationship with the major funding agencies of the European Union, World Bank, CIDA, UNDESA, UNDP, UNESCO, CDB and other donors needs to be carefully managed, coordinated and aligned.

The support of the regional organisations and the support from the regional organisations are an important part of SVG's national policy. The highest level of collaboration, cooperation and coordination is required to obtain the best value, synergy and successes from these regional agencies. CARICOM Heads of State, in November 2002, agreed on the need to diversify the economies of the Caribbean through the promotion of new technologies and regional cooperation through the mechanism of Centres of Excellence. The work of these agencies and their relevance to SVG will now be reviewed.

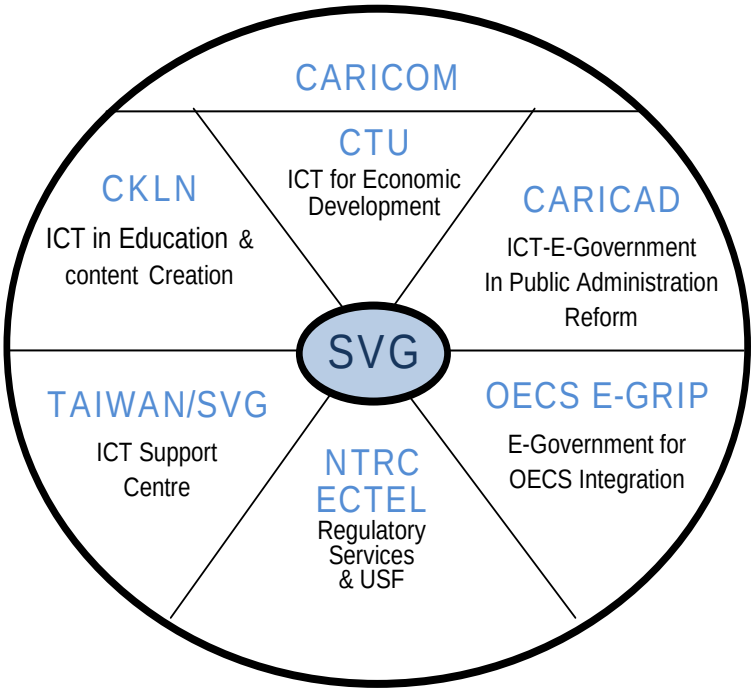


Figure 14: Diagram of SVG's Regional Links and Associations

3.2 CARIBBEAN KNOWLEDGE AND LEARNING NETWORK (CKLN)

The Caribbean Knowledge and Learning Network (CKLN) evolved in pursuance of the Network's implied vision, and to lay the foundation for the development of regional functional cooperation in the area of ICT.

The main objectives of the CKLN are defined as follows:

- To improve the relevance of tertiary education and training by increasing the number of accredited tertiary education programs recognized internationally for their excellence
- To strengthen tertiary institutions, foster specialization and knowledge sharing
- To ensure the convergence of fragmented regional and international initiatives to maximize results in the region as well as for the international market

At the 27th Meeting of the Conference of Heads of Government of the Caribbean Community in July 2006, it was decided to develop a Caribbean Regional Research and Education Network (C@ribNET), coordinated and managed by CKLN to enable the integration of Member States in the world's global education and research network infrastructure with the objective of enhancing regional competitiveness and the development of a knowledge-based economy. In this context, the vision for C@ribNET is that of a network of national research and education networks specifically intended to support:

- A virtual learning environment shared by Caribbean Institutions of Tertiary Research and Education Centres
- The connection of Universities and other Tertiary Institutions in the Caribbean to the Universities in Europe, North America, Latin America and elsewhere to facilitate research, collaboration and knowledge sharing
- Support for the Caribbean integration process by providing an enabling environment, through connectivity, in support of the Caribbean Single Market and Economy and the Economic Partnership Agreement
- Bridging the digital divide in the Region to achieve social cohesion of Caribbean people through digital inclusion

C@ribNET will support interactive learning, peer-to-peer exchange and the development of knowledge networks, and cost-effective access to high quality e-learning content and other knowledge resources drawn from the region and around the world. It is expected that the learning offerings made available on the Network are prioritized to the needs of the Caribbean labour market and the cultural and socio-economic context of CARICOM countries.

The goal of the CKLN is to: 'Leverage information and communications technology and modern approaches to education to enhance the global competitiveness of countries in the Region, overcoming the constraints of remoteness and scale in tertiary education.'

C@ribNET is planned with an initial phase for five years and is projected to be a network of national Research and Education (R&E) networks. It will be available to all public tertiary education institutions in CARICOM member states, including the University of the West Indies (UWI) and institutions in SVG, and expanded to other national public research facilities and other public sector/not- for-profit institutions engaged in research and education in the Caribbean. It is therefore essential for this CKLN's initiative to be integrated into SVG's ICT and educational initiatives.

3.3 CARIBBEAN TELECOMMUNICATIONS UNION

The Governments of the Member States of the Caribbean Community, cognizant of the growing importance of telecommunications for the social and economic development of the Caribbean and the need to foster international cooperation and development by means of efficient telecommunications services, established the Caribbean Telecommunications Union (CTU) by treaty, on 28th April, 1989. SVG is a vibrant member of the Caribbean Telecommunications Union (CTU) and has helped provided ICT leadership in the Caribbean. As a result of convergence of technologies, the CTU has expanded its role and mandate beyond telecommunications to that of ICT.

The original mandate of the CTU included:

1. Harmonize telecommunications and ICT policies, laws and regulations in CARICOM
2. Establish a permanent framework for regional collaboration among telecommunications regulators, policy makers and academics
3. Empowering the private sector to take a more active role in shaping policy on Free Trade negotiations and regional integration

The CTU has been actively engaged since 2005 in the process of ICT harmonization. It initiated a major project to reform and harmonise regional approaches to spectrum management and a focus on ICT for Economic Development.

3.3.1 Policy Development

The CTU has developed several Policy Documents of relevance and interest to SVG, including:

- Caribbean Spectrum Management Framework Policy informed by a Regional Task Force of policy advisors in

collaboration with regulators, operators and other stakeholders
- Caribbean Internet Governance Policy Framework
- Handbook for IPv4 Exhaust and IPv6 Adoption

3.3.2 Capacity Building and Public Awareness

The CTU has also conducted 6 Ministerial Briefing Seminars to apprise ICT Ministers of technological developments and the implications for national development and exposed more than 160 ICT stakeholders to Internet Governance issues. The organisation has trained 100 Caribbean ccTLD Managers and students, 180 Spectrum managers and technicians in various subjects in Spectrum Management, and 60 regulators on Numbering 3 Representation.

3.3.3 The CTU in Representing the Caribbean

The organisation was responsible for the inclusion of regional projects on the ITU's World Telecommunications Development Conference Agenda 2007-2011, and actively participates in regional and international ICT fora.

3.3.4 Industry Watch

The CTU has brought to the attention of SVG and Caribbean ICT Stakeholders several important issues, including:

- The potential difficulties posed by mobile operators using foreign Home Number Identification Codes
- That the Caribbean should be de-linked from Latin America and have responsibility for its own ITU Centre of Excellence nodes in the region
- The imminent exhaustion of IPv4 Internet addresses and the need for IPv6 adoption by member governments; and the establishment of national advisory bodies to manage this transition and provide adequate public awareness

3.3.5 Technical Support

The CTU routinely provides technical support to members and ICT stakeholders in the region. Some of the activities include:

- ICT Project Funding Proposal preparation
- Technical advice on ICT matters
- Review of ICT policy and regulatory documents
- Conducted Spectrum Field Audits in seven member states

	PLANNED REGIONAL INITIATIVES
1	Continuing the Caribbean ICT harmonisation process
2	Establishing the Caribbean Spectrum Management Task Force as a permanent advisory body to Member States
3	Promoting the adoption of IPv6 in the Caribbean
4	Implementing measures to facilitate information sharing between Caribbean Governments under its Connected Caribbean Initiative
5	Providing revenue-generating ICT-related services to augment the inadequate contributions of members

Table 8: Regional Initiatives of the CTU

The work of the CTU will continue to impact SVG; in particular its regional initiatives identified in Table 8 above, are important for the country.

3.4 CARICAD

SVG is also a member of CARICAD which is the region's lead agency on Public Sector Reform and the use of e-Government. CARICAD has developed a Regional E-Government Policy which outlines the appropriate focus for harmonised E-Government initiatives. The agency provides advice on and continued Public Administration Reform in the advancement of effective public administration.

3.5 EGRIP

SVG joined the World Bank funded Electronic Government for Regional Integration Project (EGRIP) in November 2009 with a strongly articulated political will and determination for sub-regional cooperation in the OECS. This cooperation is emphasised in the area of e-government, including the application of ICT for public sector modernisation with an IDA credit of US$ 2.3 million. In particular the focus is on improving competitiveness of SVG, enhancing public sector efficiency, transparency and accountability, developing the private sector, enhancing social inclusion, and facilitating sub-regional harmonisation and integration. EGRIP recognises the CARICOM Connectivity Agenda (2003), the Action-Oriented e-Government Strategy for Countries of the Caribbean Regions 2004-2007, the EU SFA 2005 Programme and CIDA's proposed Supporting Economic Management in the Caribbean (SEMCAR).

EGRIP has two main components, cross-sectoral e-government interventions and sectoral e-government.

3.5.1 The horizontal e-government interventions include:

- Policy and strategy implementation
- Legal and regulatory framework implementation
- ICT standards and total cost of ownership optimisation
- Regional e-government institutional framework strengthening
- Automated registries and multi-purpose ID systems

It is important to encompass the EGRIP initiatives in moving forward with the ICT agenda.

3.5.2 The vertical e-government interventions include:

- E-government in public financial management
- E-government in tax administration
- E-government in customs
- Electronic government procurement
- E-government in Health, Postal, Roads and other sectors

The e-Grip project has a well defined set of deliverables, a major outcome of which is the establishment of a team of technical expertise who can serve the sub-region in maintaining and continually upgrading the e-government systems critical infrastructure and applications. The project will also explore the measures to ensure self financing so as to avoid escalating costs.

3.5.3 E-Government Pitfalls

There are well identified pitfalls that must be avoided in developing and executing an e-government agenda which must be considered in designing a way forward.

It is well acknowledged that the adoption of technologies without developing the necessary human skills and capacities to manage, integrate and maintain them is not sustainable. Further, the centralized use of technologies by national government departments without ensuring that the benefits of technology are also derived by associated or intermediary institutions, such as local government, Parliament, and civil society, will create unbalanced institutions.

And finally, the failure to link better governance to broader and more inclusive democracy which gives voice to those who cannot afford technologies, but have needs and ideas to express, will create negative challenges for citizenry.

3.5.4 e-Government Integration Success

The focus has often been on using technology to build front-end visibility with the citizen. While this can potentially create a superior citizen experience, this is only possible if the backend technology enables the electronic completion of the service or information request. Otherwise, the end-to-end experience for the citizen will be poor. In this context, the end-to-end quality of the infrastructure must be continuously managed and strengthened to ensure maximum citizen care. And appropriate governance frameworks must be put in place.

Government accounts for fifty percent or more of ICT use. In SVG, it is the only entity that has the potential to support the development of a thriving ICT industry. SVG Government is also well positioned to be the catalyst for developing ICT careers to attract and retain people in the sector for the longer term, and therefore creating a sustainable ICT resource pool. The need to centralise ICT resources must therefore be investigated in greater detail. There is a need to determine the business case for outsourcing defined ICT activities to a Regional OECS Team or to the ICT community through Public-Private-Partnerships. The use of cloud computing technology needs to be investigated as a mechanism to ensure full e-government integration in a viable manner.

Figure 15 on the following page summarises the key issues and barriers that need to be addressed in moving e-government forward in SVG.

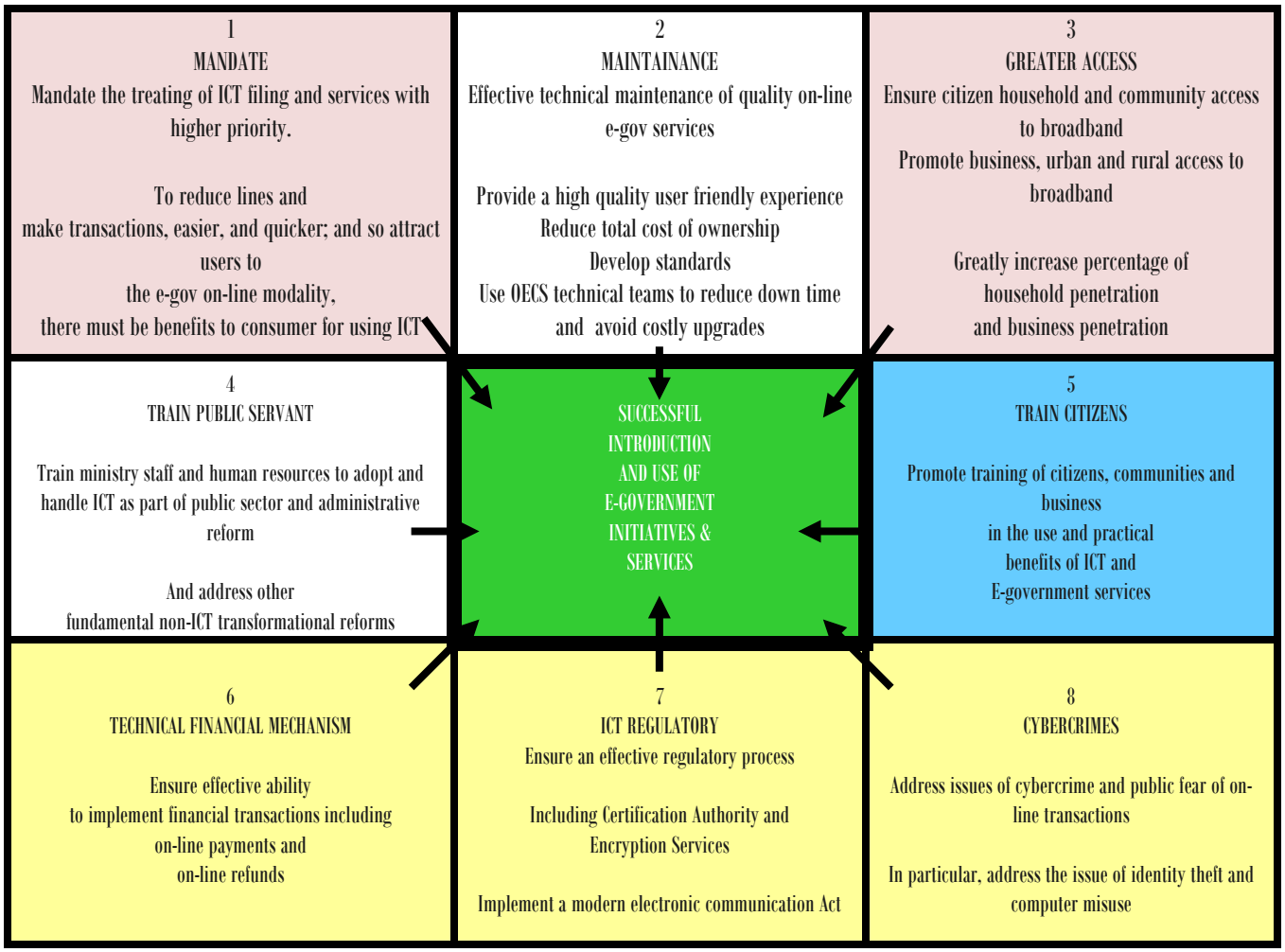


Figure 15: Ensuring Success of e-Government Initiatives

The success of implementing of the e-Government initiatives identified in the various preceding sections will largely depend on the degree to which the critical issues and barriers shown above are addressed. It is now necessary to consider how SVG can move forward in the context of the best practices that the country wishes to adopt and the current state of e-readiness defined previously.

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ACCELERATING FORWARD

4.1 THE ICT STRATEGY FUNDAMENTALS

An ICT Strategy is a blueprint that anchors and guides events and activities through a never ending lifecycle. It delivers technological advancements and is able to sustain itself through an iterative cycle of improvements for which the consensus of all parties is a critical success factor. If, however, the strategy is unilaterally altered or compromised without due regard to its custodians and to stakeholders, then it can 'self-destruct' and quickly become obsolete from lack of broad support.

Understanding the national development strategy and translating the current business-of-government strategy as a first step, is an indisputable best practice in shaping the ICT strategy and architecture in alignment with the goals and objectives of the SVG stakeholder community. Engaging the strategy's leadership at an early stage makes the strategy definition process a strong confidence-building measure. This is critically important for obtaining funding and ensuring successful implementation. The close partnering of ICT and sponsors (including business, government, and civil-society) in a collaborative manner delivers transparency and ensures that strong relationships are created which results in a partnership that delivers a rapid and agile approach to the use of ICT at a national level.

> The strategic plan must address the demands for transparency and privacy which require defined, documented security, standards and baselines for all national ICT assets. It must apply coherent, consistent risk management processes across all major classes of risk, especially in addressing compliance and governance requirements.

4.2 DEVELOPING THE NATIONAL ICT POLICY AND PLAN

A national ICT Policy and associated Strategic Plan have far reaching impacts, and must therefore be developed as a national effort to ensure ownership and support for its implementation. The private sector and key stakeholders must be part of the development process. Government therefore appointed several Sector-Specific Working Groups or SWGs. The architecture of the SWG is illustrated in Figure 16 and included:

- Technical Infrastructure
- Government (including Justice and National Security)
- Agriculture
- Community Development
- Health

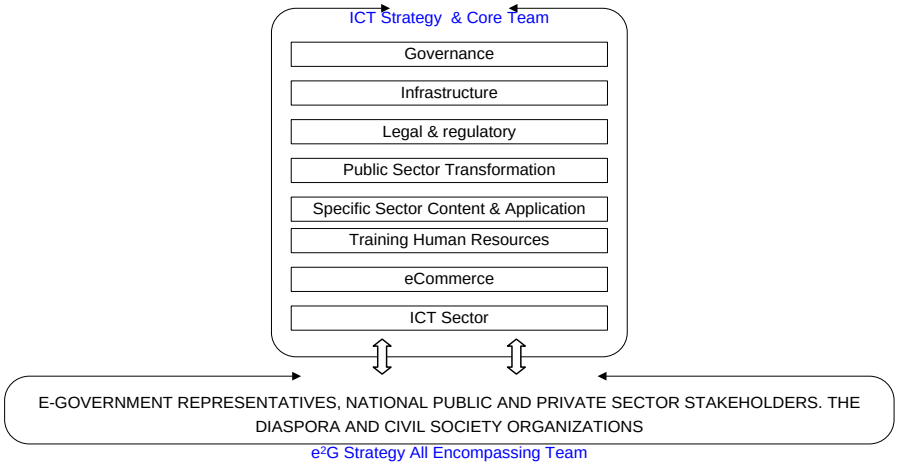

Figure 16: Architecture of SWG

- Tourism
- Legal and Regulatory
- Education and Human Resource Development
- Industry and ICT Sector (including Trade and Financial Services)

The members of the SWG were generally selected based on their experience and expertise in the specific sector, and were often well respected subject matter experts. With external facilitation and utilising a best practice development process, eVolve™, the SWGs met over the period May 2009 to March 2010, and crafted the national ICT policy and plan.

It should be noted that some of the initiatives that were considered by the SWGs did not made its way into this document as issues of prioritisation and resourcing had to be taken into consideration. However, this plan must be reviewed regularly and be kept updated annually as St. Vincent and the Grenadines progresses over the coming years else it will run the risk of becoming irrelevant to the national goals and aspirations. And such initiatives can be re-visited.

4.3 ICT VISION

The vision statement created for SVG focuses heavily on sustainability and on quality of life improvements for all of the country's people. It gives life to the desired outcomes of the National ICT Plan. The Vision is captured in the following statement:

"St. Vincent and the Grenadines is a sustainable knowledge-based society that maximises the use of Information and Communication Technology for greater competitiveness, economic development, an improved quality of life and work for all its people, at home and abroad."

The Vision is clear that the benefits of its ICT agenda must be shared equitably, within SVG and with the Diaspora. The inclusion of the Diaspora is an important mechanism in addressing resource constraints. An emphasis on improvements in the quality of work experience is explicitly detailed. Sustainability is considered key and underpins the vision, and Government expects that the considerable benefits of being a knowledge-based society will be derived by the country.

4.4 CORE VALUES

It was decided that there are some core values which underpin this Vision and which must be supported throughout the implementation effort. These core values were identified as follows:

- Sustainable
- Competitive
- Promoting Innovation
- Transformative
- People-centred

All stakeholders agreed that in the process of implementation, the core values must not be lost or subsumed, but are always explicitly built into each and every individual plan for execution. Key questions must be continuously asked: Will the outputs and outcomes of the ICT execution effort be sustainable? Will it enable St. Vincent and the Grenadines to become more competitive? Will it promote innovation? Will it enable the people and the country to become more effective and productive through its transformative capability? And finally does the execution agenda have people at its core? If any action taken or project executed under the ambit of this Plan does not provide satisfactory answers to the above tests or subset of these tests, then the action will need to be re-examined as it will not support the core values defined and therefore be inconsistent with the strategic direction desired for SVG.

4.5 DESIRED OUTCOMES

It was important that SVG determine the specific outcomes which it wants achieved within the life of the Plan. After much debate, particularly around the issue of available resources, the desired outcomes were defined and are presented below:

- Strengthened ICT sector contributing significantly to the country's economic vigour, to the drive for OECS sub-regional integration and economic union, and to regional integration
- Further strengthening of legislative and regulatory framework to embrace ICT, minimize cybercrimes, and engender greater trust and confidence in ICT among all citizens
- Processes which is inclusive of Civil Society, the Private Sector and the Diaspora
- Integrated government with all appropriate information and services on line and knowledge effectively managed by 2015
- Universal, affordable and secure access to Broadband Internet ICT services by all citizens, businesses and communities by 2015
- ICT is accessible and entrenched into the education system and an ICT-literate society created; and persons with high aptitude and excellence harnessed and facilitated to excel in this field
- Health care delivery optimised by use of ICT
- Growth of unique and innovative medium and micro ICT enterprises in the creation of local content and local software applications

- Using ICT for innovation, growth in the cultural arts and increased competitiveness of the private sector
- Attracting Investment in the ICT sector
- Computer and ICT waste managed effectively and safely
- ICT-enabled emergency response systems saving lives and protecting livelihoods and property

It is evident that in achieving these outcomes, SVG's growth and prosperity will have been accelerated, and the national ICT plan would have achieved its purpose.

4.6 NATIONAL ICT OBJECTIVES

The SWGs developed the broad objectives of the National ICT Policy and Plan. These were organised along the focus areas as follows:

4.6.1 Technical Infrastructure

To ensure that the national ICT infrastructure expands and adapts such that it delivers widespread, secure, and cost effective access to state-of-the-art ICT that meets the evolving needs of the country and its people.

4.6.2 Government (Inc. Justice and National Security)

To ensure that ICT is optimally utilised within government to improve cost-effectiveness and the quality of services provided to citizens and businesses, and to support the administration of justice and national security.

4.6.3 Agriculture

To enable the effective and efficient supply chain management (from production to sales and marketing) through the use of ICT and thereby promote the economic viability of agricultural related activities.

4.6.4 Community Development

To promote affordable and universal access to ICT services and resources in rural and underserved communities so as to develop and strengthen them, to impact on poverty and gender inequalities, and to improve disaster preparedness.

And additionally, to ensure Civil Society plays a critical role in community development, and that the borders which separate Vincentians within the Diaspora are broken down by the use of ICT.

4.6.5 Health

To enable greater equity in the allocation and use of health care resources by exploiting ICT mechanisms to promote quality health care delivery and management in a cost effective manner.

4.6.6 Tourism

To improve the overall coordination of the marketing and other destination management functions and to promote linkages with other key sectors, through the use of ICT and thereby enable the growth of the sector in terms of visitor arrivals, visitor expenditure and the overall level and distribution of revenue generated in the sector.

4.6.7 5.6.7 Legal and Regulatory

To establish a comprehensive harmonized legal and regulatory framework which facilitates the development of ICT within the country and which supports its participation in the global information society and economy.

4.6.8 Education and Human Resource Development

To establish mechanisms that utilize ICT in the education sector which will facilitate a better quality of life through life-long learning.

4.6.9 Industry and ICT Sector (incl. Trade and Financial Services)

To ensure that ICT is optimally utilised by industry, particularly medium and micro-enterprises, so as to improve internal operational efficiencies and to support the export of goods and services, and to ensure that the ICT sector itself expands and contributes significantly to the national economy.

More-so St, Vincent and the Grenadines endeavours to become the hub for ICT software development and the creation of appropriate local and exciting content and mobile applications.

4.7 POLICY STATEMENTS

The SWGs then focussed on the enabling policies which will facilitate the achievement of the objectives and desired outcomes outlined previously. The broad policy framework has been defined by policy statements which collectively contribute towards St. Vincent and the Grenadines achieving its National ICT Vision and hence contributes towards the social, economic, cultural and human resource development of the country. It is important to note that these policy statements are built on the e-readiness foundation outlined previously. The statements build on the best practices identified, and which are intended to bridge the current gaps and strengthen the ICT operational base. In some instances, the statements are intended to move SVG in a direction consistent with knowledge-based societies and economies.

These policy statements are given below by sectors:

4.7.1 Technical Infrastructure

- Establish mechanisms to ensure the continued development of reliable, state of the art, country-wide ICT infrastructure with adequate capacity and network speeds.
- Ensure all installed ICT infrastructure and capacity is utilized effectively and contributes to resilience, redundancy and emergency response at a national level.
- Continue to promote a competitive marketplace to enable lower cost of access and a wider range of services by institutions or individuals.
- Encourage the development of infrastructure to facilitate the safe and secure development of e-commerce.
- Facilitate equitable and widespread access to ICT products and services.
- Support the private sector in the development and maintenance of the national ICT infrastructure, and encourage continuous upgrades and investments in new ICT technologies.
- Facilitate the policy and governance framework to enable service delivery through IPv6, Internet Exchange Points and Data Centers.
- Develop a coordinated national cyberspace security response system to prevent, detect, deter, respond to and recover from cyber incidents.
- Establish a focal point for managing cyber incidents that bring together critical elements from government (including law enforcement) and essential elements from infrastructure operators and vendors to reduce both the risk and severity of incidents.
- Participate in watch, warning and incident response information sharing mechanisms.
- Develop, test and exercise emergency response plans, procedures, and protocols to ensure that government and non-government collaborators can build trust and coordinate effectively in a crisis.

4.7.2 Government (Inc. Justice and National Security)

- Mandate all ministries and agencies to incorporate the utilisation of ICT in their development plans, programmes and projects.
- Require that all appropriate government information be put on-line within a reasonable timeframe through a single government electronic portal.
- Encourage and support the provision of government services through electronic channels where appropriate and cost-effective.
- Develop and implement a policy framework to support and enable shared services within government, including the government backbone, email, Internet, VOIP and Storage Area Networks (SANs).
- Facilitate the policy and governance framework to enable integrated service delivery across government.
- Expand and strengthen the policy and standards framework utilised within government.
- Support the use of ICT to improve national security and the administration of justice in the country.
- Enhance the security of ICT users by implementing a Certificate Authority.
- Implement a human resource management information system across government.

4.7.3 Agriculture

- Establish and maintain an ICT mechanism for reporting, information sharing and increased policy dialogue.
- Promote the use of ICT to improve production technologies in agriculture, such as Automation Systems.
- Promote the use of appropriate ICT for the sustainable development of the Fisheries Industry including safety of fishers and harvesting of fish.
- Improve, upgrade and sustain a National Agricultural Production and Marketing Information System to support production, marketing, agro-processing and sector planning.
- Apply ICT to enhance agro-processing and value-addition to primary agri- and fish products including marketing and distribution.
- Develop and maintain a universal, affordable and secure access mechanism for data and information sharing among farmers and fishermen.
- Train stakeholders to effectively use appropriate ICT to meet their business needs.

4.7.4 Community & Cultural Development

- Sensitise and train rural communities in the use of ICTs as information sources.
- Build facilities to promote ICT training and computer-aided training for all communities.
- Enhance access to ICT services and applications through rural community libraries and resource centers.
- Develop and implement ICT-based tools to help communities develop micro-enterprises

and to tap into international markets so as to facilitate poverty alleviation.
- Support initiatives which encourage public, private and civil society partnerships in reaching all communities with ICT products and services, and which facilitate disaster preparedness.
- Ensure and safeguard national heritage, culture, traditions and the environment in the process of ICT development within communities.
- Use ICT to facilitate communication, dialogue and sharing of idea with Civil Society.
- Using ICT to facilitate the breaking down of virtual borders which separate Vincentians in the Diaspora and facilitate greater involvement in our socioeconomic development.
- Promote a national culture of security consistent with UNGA Resolutions 57/239 Creation of global culture of cyber security, and 58/199, Creation of a global culture of cyber security and the protection of critical information infrastructures.

4.7.5 Health

- Implement an integrated medical record and health information management system for the sector (HIS).
- Enact legislation, regulations, and protocols to facilitate the security and privacy of patient information.
- Develop a comprehensive electronic medical / health supply inventory management system.
- Create an enabling policy framework, legislation and regulations to support the broad deployment of telemedicine across the health system.
- Provide the technical infrastructure for the effective use of telemedicine applications.
- Provide high speed secure electronic connectivity between all health institutions.
- Implement a comprehensive staff information management system.

4.7.6 Tourism

- Develop an ICT-oriented Tourism sector for effective delivery of products and services.
- Enhance e-marketing and promotion of the tourism product to increase foreign exchange earnings.
- Establish and maintain a reliable Tourism Satellite Account System through the use of ICT.
- Develop a management information system for tourism through the use of ICT.
- Procure and use relevant ICT to support effective research, data collection and analysis in this sector.
- Build human resource capacity within tourism sector to facilitate the use of appropriate ICT for tourism development.

4.7.7 Legal and Regulatory

- Review and improve the existing policies, laws and regulations to facilitate and promote the utilisation of ICT by all sectors of the country and all segments of society.
- Ensure that the evolving legislative framework supports the long term development of the ICT sector.
- Support the development of the legislative and regulatory framework to enable e-commerce and the innovative use of ICT for economic development.
- Continue to grow and adapt the framework for enabling fair and equitable competition within the ICT market space.
- Formulate and strengthen the policy framework that enables and supports the growth and development of shared information resources and services across government, and between government and its key stakeholders.
- Review periodically the legal and regulatory framework in order to keep abreast of global ICT developments.
- Create awareness at national policy level about cyber security and the need for national action and international cooperation.
- Develop a national strategy to enhance cyber security to reduce the risks and effects of cyber disruptions
- Participate in international efforts for the prevention of, preparation for, response to, and recovery from incidents.
- Assess the current legal authorities and criminal code relating to cybercrime for adequacy.
- Draft and adopt substantive, procedural and mutual assistance laws and policies to address computer related crime.
- Establish or identify national Cybercrime units.
- Develop cooperative relationships with other elements of the national cyber-security infrastructure and the private sector.
- Develop an understanding among prosecutors, judges, and legislators of Cybercrime issues.
- Participate in the 24/7 Cybercrime Point of Contact Network.

4.7.8 Education and Human Resource Development

- Promote innovation, science and modern learning software technology for efficiency in education, as well as to promote skill development and professional capacity building.
- Improve the basic infrastructure with modern, wireless computer labs and other appropriate productivity tools.
- Develop a comprehensive plan for the smooth deployment of mobile computer devices (laptops) for students, as a learning tool, the maintenance and effective usage of the laptops at school and at home.
- Develop a focus on motivation and teacher training in ICT.
- Introduce an Education Management and Information Systems (EMIS) in a phased manner into the education sector to bring about more transparency, efficiency and productivity.
- Encourage and support ICT training and development of knowledge and its active use by all teachers and other public servants.
- Foster the use of ICT for formal and non-formal education, skills development and adult learning regardless of age, gender, ethnicity, disability or location.
- Encourage training in innovation and software applications development for the knowledge economy.

4.7.9 Industry and ICT Sector (incl. Trade and Financial Services)

- Create a conducive environment for a vibrant and sustainable ICT industry in SVG that is aligned to national priorities and which makes a significant economic contribution with a focus on content and software creation.
- Support and facilitate programs in the private sector that encourage the effective use of ICT to improve operational efficiencies and international competitiveness.
- Develop monitoring and measurement systems to enable government to determine the impact of its ICT policies and measures on the ICT sector and industry generally.
- Encourage and support local ICT innovation and development of the current and potential markets through incentive and other schemes.
- Encourage and promote joint ventures between local and foreign entrepreneurs in the ICT sector.
- Support the growth of the ICT sector by the strategic outsourcing of ICT support and services by government.
- Support the use of ICT by MSMEs as an enabler of growth and economic development, including the online registration of businesses.
- Develop government-industry collaborations that work effectively manage cyber risk and to protect cyberspace.
- Provide a mechanism for bringing a variety of perspective, equities, and knowledge together to reach consensus and move forward together to enhance security at a national level.

One of the most effective ways of ensuring that the desired outcomes and associated policy statements are achieved is through action: the execution of programmes and projects that are designed for this purpose. SVG thus focussed on the identification and development of such programmes and projects - with expert external facilitation. The National ICT Strategy and Action Plan was, therefore, crafted from ground up with implementation in mind, taking into consideration St. Vincent and the Grenadines' re-launching point.

[It should be noted that the issue of cyber security at a national level is of great concern to SVG. Detailed action plans were developed and these are outlined in an Appendix.]

HIS Unit – Ministry of Health

PROGRAMMES AND PROJECTS

THE MILTON CATO MEMORAL HOSPITAL

THE STUBBS POLYCLINIC & OTHER

The initiatives to be pursued by St. Vincent and the Grenadines in the next few years are organised as Programmes and Projects (Actions), which when executed well will enable the successful achievement of the defined Vision and the attainment of the desired outcomes. It is expected that the Programmes and Projects will be implemented and managed using a standard project management framework. A project management approach will ensure that the Plan has the greatest possible chance of success as it allows activities to be properly planned, and effectively monitored and controlled, during delivery.

Another practical way of looking at ICT proposals which will facilitate the citizen's level of understanding of benefits, promote usage, and still be consistent with the ICT abbreviation is INFRASTRUCTURE, CONTENT, and TRAINING.

This practical approach highlights the need for a modern, robust, nation-wide Infrastructure and connectivity which allows the private sector's and citizen's access to ICT and an adequate government-owned backbone to facilitate efficient, cost effective communication across the public administration.

Appropriate Content covers all the various e-government and other applications which are used or have been specially designed and crafted for the local context. It also includes the Training in ICT at all levels in schools, communities, and the public service for the creation of enlightened users, technicians and knowledge workers; and the promotion and adoption of these services by the business sector.

The Programmes and Projects identified to be completed during the period 2010 – 2015 are summarised by sectors in Table 8 below. It must be noted that some of these projects are currently being planned or are at some stage of implementation.

The National ICT Plan aims to embrace current initiatives and projects, and to bring them into a collective framework such that they can be reviewed and managed as a national portfolio, rather than, as unrelated or separate initiatives. This portfolio approach allows better prioritisation and resource allocation at a national level, and allows synergies and dependencies to be taken into account to maximise the benefits of ICT to the country.

A more goal and success oriented definition of ICT which should guide is:
INNOVATION, CONNECTIVITY and TRANSFORMATION

Table 9: Programmes and Projects

SECTOR		PROGRAMMES & PROJECTS	
Infrastructure (Connectivity)	Administrative Governance	Ministry MTSTI and System of ICTOs	National Implementation Secretariat
			National ICT Advisory Forum
			Transition to IPv6
	Technical Infrastructure	Universal Connectivity	
		Expand Government Backbone to Rural Areas	
Content And Applications	Government	e-Government	Communications Backbone
			Standards and Policies
			Portal
			Government On-Line
			Process Re-design
	Agriculture	AIMS – Agriculture Information Management System	
		NAPMIS - National Agricultural Production and Marketing Information System	
		'ICT in Agriculture'	
	Community Development	Community Empowerment	
		Ministry of Community Development's ICT Development	
		Community Integration	
	Health	e-Health	Portal
			Hospital Information System
			Policy, Legislation and Protocols
			Medical and Health Inventory System
			Telemedicine
			Infrastructure
			SIS - Staff Information System
			Electronic Tagging
	Tourism	'Virtual St. Vincent and the Grenadines'	
		Supply Chain Management	
	Legal and Regulatory	e-Legislation	
Training	Education and Human Resources	AWARE – ICT Literacy	
		ICT Infrastructure-in-Education	
		SMART People – ICT Enabled Life Long Learning	
Business	Industry and ICT Sector (inc. Trade and Financial Services)	e-Industry	Virtual Directory - Survey and Benchmarking
			Public Private Partnerships (PPPs)
			e-Commerce

5.1 INFRASTRUCTURE, CONTENT, AND TRAINING

A practical layman and citizen's approach to looking at ICT as Infrastructure, Content, and Training, and the technology initiatives specifically designed to enhance business, will now be considered.

5.1.1 Technical Infrastructure

SVG has made excellent progress with its national infrastructure as is evident in the rapid growth in mobile communications and in the movement of rates to a more affordable level. This Programme therefore seeks to monitor and evaluate the current initiatives in progress so as to maximise success and alignment with the needs of the national ICT agenda.

However, this Programme, Universal Connectivity, seeks to ensure that all of St. Vincent and the Grenadines has the same level of access to communications services irrespective of living in an urban or rural part of St. Vincent or on one of the Grenadine islands. This means continued strategic use of the Universal Service Fund and ensuring that the proposed projects are taken to completion and in fact expanded to include all communities over r the life of the Plan.

The Universal Connectivity Programme will build on the demand created by other programmes and projects under this Plan, such as the Community Integration Project and the various Portals that will be accessible at a community level in rural areas. This programme will build on the SMS capacity of the mobile telephony infrastructure for disaster preparedness and for dissemination of government information and delivery of e-services.

In order for citizens and business to participate in this medium, they must have access to Broadband and the computer related devices to access information.

It is imperative that SVG adapt technologies to create solutions to existing problems, and in this particular case, the establishment of a National Internet Exchange Point (IXP) is required. There are a number of benefits that can be derived directly from the establishment of a local IXP and these include the establishment of a well defined Internet economy that will keep SVG internet traffic local, enhance the Internet experience of users, reduce overall cost related to providing Internet services, promote and encourage the creation of local content, create Internet opportunities, build technical capacity, improved connectivity through fibre optic and high speed wireless, and the aggregation of demand will make it more attractive for additional transit providers to enter the market.

A local IXP would result in a vast increase in the network capacity (bandwidth) available for sale to domestic customers, without demanding any significant corresponding capital or operational investment. This would make more bandwidth available for important activities such as video streaming and telemedicine and increase the national penetration of broadband Internet. An IXP is a prerequisite to the development of any significant domestic content production, hosting, or co-location industry. This barrier must be overcome before major content providers like Google or Amazon will consider providing local services within national markets. The increased demand for these services, and the ISPs ability to supply them at a lower price-point, will serve to increase both market penetration and the total revenue-value of the market, relative to the pre-IXP status-quo. This is an important infrastructure initiative that will be given priority in implementation.

With the reduction of available IPv4 address space, a new version of the Internet Protocol was established called IPv6, also known as IP Next Generation (IPNG). This version will address the exhaustion of addresses to connect computers or host. However its implementation requires careful planning and coordination. SVG will have to take stock of what exists and manage its introduction.

5.1.2 e-Government

The e-Government Programme aims to provide a shared technology infrastructure that is stable and secure and which embraces a set of policies and standards for the connection to and use of this shared infrastructure. It provides for the development of the public sector people capacity to manage the e-government communications network that is already under construction and which will be expanded under this Programme. The e-government platform will enable G2G, C2G and B2G connectivity, while providing services such as domain management, security and intrusion protection, virtual private networks, firewalls, and physical connectivity between government locations. The shared infrastructure will enable the provision and management of shared services such as email, Internet, Intranet, Voice over IP, collocation of servers, application hosting and SAN facilities. The challenge will be for the government of SVG to re-organise itself to take advantage of the enabling technology to improve its business processes and its service delivery model to its businesses and citizens.

Further, the Programme will contain a Government On-line initiative and a Process Re-Design initiative. The scope of both these initiatives will be heavily dependent on the resources available and the level of support for transformation of the public sector through the strategic use of ICT.

An Internet exchange point (IX or IXP) is a physical infrastructure that allows different Internet Service Providers (ISPs) to exchange Internet traffic between their networks (autonomous systems) by means of mutual peering agreements, which allow traffic to be exchanged without cost. IXPs reduce the portion of an ISP's traffic which must be delivered via their upstream transit providers, thereby reducing the average per-bit delivery cost of their service. Furthermore, the increased number of paths learned through the IXP improves routing efficiency and fault tolerance.

The shared connectivity infrastructure or e-government backbone will have several Projects, namely Standards and Policies, Shared Services, Communications Infrastructure and a Government Portal.

It should be noted that this area of focus is central government and excludes health, education, agriculture etc which were special areas of focus in their own right

The Standards and Policies Project will cover a range of initiatives, in particular, the shared infrastructure usage, but also procurement and use of ICT within the public sector. It will cover areas such as data and information management, interconnectivity and interoperability, security, web standards, use of open source software, and standardisation of technology.

The Shared Services Project will focus on determining what services are best provided across the backbone to support all of government. This would include knowledge management including email, Internet, Intranet, VOIP, collocation of servers, use of SANs, and ASP operations.

The Communications Infrastructure initiative will extend and strengthen the Intranet that is being currently implemented. It will include the provision of firewalls, network management, load-sharing facilities, and enhanced bandwidth to ensure that all of government can be supported in a safe, secure manner while carrying the required digital traffic.

The use of a single point of entry via the Internet to all of government, or a Portal Project will be implemented as part of this Programme. The Portal project will include standards necessary for its success, including look and feel standards to maintenance and support issues. The central SVG Portal will be linked and integrated with the Agriculture, Tourism, Education and Community Development Portal. In fact, synergies and cost sharing should be pursued in moving forward with these initiatives.

The Government On-line initiative is a Programme in itself and will likely run for many years, depending on the resources available. This programme focuses on making all relevant government information available on-line and will make use of the Portal infrastructure discussed previously. It will involve the careful consideration of the information needs of all stakeholders, including citizens, businesses, visitors and employees, and obtaining and organising that information in an easy-to-understand, easy-to-access format on the Portal. The initial focus should be on information most needed by the stakeholders irrespective of the ministry or agency from which it is obtained.

The increased number of paths learned through an IXP improves routing efficiency and fault-tolerance for participants and renders participants far more resilient to international cable failures.

In parallel with putting information on-line, SVG must move to placing key services on-line wherever appropriate and cost-effective. Again, stakeholders must be consulted to determine the priorities, and the infrastructure required to achieve on-line service provisioning must be determined. The services that are normally prioritised include births, deaths, and marriages, the business registry, taxes, national identification, and passports. During the life of this Plan, the key services should be determined and the most common services placed on-line in a secure and accessible manner.

This initiative should look at all service delivery channels including the provision of information via the telephone. This will require a well-designed call centre which is equipped to handle all standard or most frequently asked service related questions from citizens. This government on-line initiative will build on the current ICT investments across government, including SIGTAX, SMARTSTREAM and ASYCUDA.

Investments in ICT, without a commensurate review of business processes, are often of limited value. Government, through the Business Process

Review Programme, will seek to improve the internal efficiencies and effectiveness of all Ministries and Agencies that are implementing ICTs under the umbrella of this Plan. This means that in general ICT investments would have a process re-design component. This Programme will deliver re-design projects for Government generally, and supports re-design initiatives for other agencies and areas of focus such as health and education. It is expected that the process re-design initiative, the Government On-line initiative and the common infrastructure projects such as the e-government backbone and the Portal, will be developed hand-in-hand to ensure synergies, compatibility and cost sharing.

5.1.3 Agriculture

Agriculture continues to be an important contributor to the economy of SVG, and supports many families across the country. It is important that this sector be strengthened so that it would become more globally competitive and in fact grow. The key objective of the Programmes and Projects in the area of agriculture is to enable the effective and efficient supply chain management, from production to sales and marketing, in SVG through the use of ICT. This will inevitably promote the economic viability of agricultural related activities by impacting on costs. It should be recognised that some of these initiatives, including the Agricultural Portal and the National Agricultural Production and Marketing Information System, are already in the planning or implementation stages. However, it is important to review and coordinate national ICT initiatives under a single unified umbrella. The key Programme and Projects are now presented.

The ***NAIMS, National Agricultural Information Management System***, or Programme will strengthen the information management, information sharing, and information reporting capabilities of the central Ministry and other agencies / organisations / stakeholders in the sector. This will lead to improved communication and policy dialogue with key sectors and stakeholders for the optimum benefit of St. Vincent and the Grenadines. This Programme has a number of associated Projects which collectively will deliver AIMS. These initiatives are now outlined.

- The **Reporting & Monitoring Information System (RMIS)** is an internal work management system. RMIS will allow the Ministry to manage its human and capital resources optimally.
- **Caribbean Fisheries Information System (CARIFIS)** will provide primary support to the fishermen of SVG. It will include the Fisheries Registration System that will register fishermen and monitor the catch so that the limited resources of the seas can be managed in a sustainable manner. It will facilitate the safety of fishermen. This information system will support the development and growth of the fisheries industry.
- The **Forestry Information Management System** will enable the Ministry to manage the forests and associated wildlife of SVG in a sustainable manner. It will facilitate controlled utilisation of the limited resources available within the country and allow this sector to contribute to the economy in an effective manner.

IPv6

In a nutshell, IPV6 will offer the following benefits:

1)Increased address space

2) More efficient routing

3) Reduced management requirement

4) Improved methods to change ISP

5) Better mobility support

6) Multi-homing

7) Security

8) Scoped address: link-local, site-local and global-address space

IPv6 brings a number of benefits such as the improved quality of service required for new applications like IP telephony, video/audio, interactive games and ecommerce. This version also easily deals with the avoidance of network traffic, loss of data or bandwidth.

- The agricultural sector has always been susceptible to the introduction of new or variations to existing diseases to plant and animals due to the uncontrolled and ineffective management of the entry of plant and animals to the country, both intentionally and unintentionally. The **Plant & Animal Quarantine Information System (PAQIS)** will provide the information system support to manage this challenge in a real time and proactive manner.
- The **Farmers Registration System** will allow the farming community to be registered and managed, particularly with respect to grants, subsidiaries and non-monetary benefits that are or may become available. It will allow the human resources that are devoted to this sector to be better managed.
- And finally, there is a need to manage the quality and quantity of the livestock within SVG. This will be done by the introduction of a **Livestock Registration System**. This will allow improved quality of livestock products to be facilitated, by better management of the animals themselves. It will facilitate disease management amongst other important management functions.

The ***NAPMIS - National Agricultural Production and Marketing Information System*** is a Programme that will include a number of systems that are intended to improve and support the supply chain management within the agricultural sector. It will support production, marketing, agro-processing and more effective sector planning. NAPMIS will enhance agro-processing and value-addition to the primary products of the agri- and fish products including improvement in distribution. It is recognised that good decisions can only be made consistently with good information. NAPMIS will therefore include the following information systems:

The NAIMS Programme entails the following series of related initiatives:

- **Reporting & Monitoring Information System (RMIS)**
- **Caribbean Fisheries Information System (CARIFIS)**
- **Forestry Information System**
- **Plant & Animal Quarantine Information System**
- **Farmers Registration System**
- **Livestock Registration System**

- **National Agriculture Production and Marketing Information System (NAMIS)** will support the marketing requirements of AIMS and will allow the Ministry to support farmers by providing information that will enable them to maximise the revenue that they generated from their produce. It will allow the Ministry to determine the best balance of products that should be produced by SVG and generally become the base decision support system for the sector. It will include a land bank system to track how land is being allocated to produce and to make land available for landless farmers interested in expansion or youths interested in agricultural start-ups.
- The **Agriculture Portal** will be the primary electronic entry point into the sector. It will provide links to all stakeholders with SVG and will enable stakeholders within and external to SVG to connect and to find the information required for operating and investing within the sector. Farmers and agencies generally operate independently in SVG, and this Portal is an important tool to facilitate the required linkages and the building of valuable business relationships. Furthermore, the Portal will provide linkages to banks, be accessible from community access centres, and assist farmers with the identification of niche markets and connections to foreign partners.

NAMIS and the Agricultural Portal will be integrated to improve the linkages between primary producers or farmers and consumers especially supermarkets, restaurants and hotels. The '***ICT in Agriculture***' Programme will promote the use of ICT to improve production technologies in agriculture such as the use of automation systems. Such systems improve the use of limited and costly resources such as water and fertiliser, and the use of technology for planting and harvesting. This Programme will focus on the identification and introduction of strategic ICT into the sector itself. The impact of strategic ICT should be greater yield, and better products on a more consistent basis at a lower cost.

Action Item:

Launch NAPMIS
Train Farmers and Extension Staff in the use of Information System and ICT in Agriculture

5.1.4 Community Development

The key objective of the Programmes and Projects in the Community Development area of focus is to leverage the power of ICT into the country's response to critical issues such as poverty reduction, social justice and gender equity and equality, institutional strengthening of the Ministry, collaboration, cooperative development and stakeholder empowerment, and finally disaster preparedness and recovery. Some aspects of these initiatives have already begun or are being planned. It is important that at a community level, from the ground up that the ICT infrastructure introduced delivers value to the community and its residents. This means that the community must see value in these technologies, and must be prepared and equipped to exploit its enabling capacity. It is recognised that stronger communities mean a more resilient society and generally results in a more productive country. This focus area has three Programmes, namely:

- Community Empowerment
- Ministry ICT Development
- Community Integration

The ***Community Empowerment*** Programme promotes the development and implementation of Projects that use ICT to enable community development and poverty alleviation. A policy framework will be created for the governance of this programme involving broad-based representation across the community development stakeholder group. Research will be done to identify successful ICT-enabled community development projects across the world; and the experiences and learning from such projects will be codified and transferred to other communities. The assistance of international agencies will be utilised to assist with this knowledge transfer effort. The use of ICT at a community level, in community centres and by all categories of users from the community will be encouraged. And finally, a funding mechanism for community based ICT projects and projects will be created utilising the financial and other capabilities of the public sector and with a special focus on utilisation of the enabling capacity of the private sector. This Programme will include Projects that seek to facilitate regional disaster preparedness, including the identification of funding and development and expansion of the existing infrastructure which includes appropriate application software.

The ***Ministry of Community Development's ICT Development*** Programme focuses on the institutional strengthening of the Ministry itself through ICT-enabled processes and the general integrating of ICT. This will include amongst other things the development of a Strategic ICT Plan for the Ministry, identification of funding for its implementation and the development of internal capacity to manage the success of such implementation.

The ***Community Integration*** Project involves the development of an electronic portal which will allow networking, collaboration and the consolidation of the service delivery capacity amongst all social development partners, namely: NGOs, CBOs, Community Associations, Cooperatives and Family Service Organisations. The mechanism for the management and operations of this Portal will need to be developed so that it benefits all partners equally, and the communities of interest directly. It will provide connectivity to other Ministries such as the Ministries of Agriculture and Tourism. The development of community level content for inclusion on the Portal is a useful initiative and can include the preparation of cultural artefacts which are of national interest or of interest to the Diaspora.

5.1.5 Health

The e-Health Programme is designed to facilitate greater equity in the allocation and use of healthcare resources by exploiting ICT mechanisms to promote quality healthcare delivery and management. The Programme will encompass technology components such as a web-enabled Health Information System (HIS) and the enactment of legislation, protocols and public education for utilisation of the health information which will be created. It includes the introduction of tele-medicine on a larger scale and improved connectivity amongst health institutions. It proposes a comprehensive staff information system and the piloting of the electronic tagging of patients. The Programmes builds on current initiatives by expanding on the computers that have been introduced at the Ministry, MCMH and the district clinics, and on the NHIS that is being introduced.

It is recognized that in this context, the HIS will collect standardized data and facilitate the retrieval, processing and reporting on the healthcare delivery system. However, it must protect patient's privacy and confidentiality and must be easy to use. In so doing the HIS must be robust and protected from disasters and must be easily accessible to health care providers and patients. It must improve the continuity of care and the provision of quality healthcare services to the population of SVG, and enable greater equity in the allocation and use of healthcare resources, given that SVG is a multi-island state with obvious geographical challenges and vulnerabilities to disasters. The HIS must also

provide citizens with access to appropriate yet comprehensive information that would inform and guide their health care management.

The HIS will contain a complete medical and health supply inventory system to manage inventory and expiration dates. It will provide information of individual drug items and drug interaction, track utilization and enable the management and allocation of limited resources across health districts.

A policy framework for tele-medicine will be crafted as part of this programme and which will enable the managed broad introduction of this technology into the health system. The enactment of appropriate legislation to ensure safe and secure operation will facilitate the use of telemedicine as a possible export service.

The ICT infrastructure to support the HIS and telemedicine by providing interconnectivity between health institutions and to the international health community will be developed as part of this Programme. The Infrastructure will also enable the implementation of a comprehensive staff information system, SIS, which is aimed at improving the management of personal staff information, benefits administration, professional development, succession planning, staffing and organization management and recruitment.

And finally the electronic tagging of patients will be piloted as part of this programme, as an inordinate number of patients abscond from the hospitals of SVG. Such tagging facilitates the tracking of patients by using a device or electronic tag to monitor the location and status of a patient from a central location. This will enhance the healthcare system. Attention will need to be paid to any possible legal issues that may arise through this initiative.

The e-Health Programme therefore proposes many related but integrated healthcare projects which need to be prioritized over the life of the plan.

Action Item:

Launch HIS and Connect all Clinics, Hospitals and Health Centres to Broadband

5.1.6 Tourism

The work of the Ministry of Tourism and associated agencies in the development of a one-stop travel Portal for St. Vincent and the Grenadines is strongly supported by this national ICT plan. This initiative forms the basis for the 'Virtual St. Vincent and the Grenadines' Project. This project seeks to maximise the use of ICTs to attract visitors to the country. It will expand the proposed Portal to be highly interactive, building on the SVG's 'many islands, different cultural experiences' of the cultural gems of Vincy Life theme. The opportunity exists here to utilise the private sector to build components of the required infrastructure such that it can be exported to the OECS in the medium term and to other island states in the long term. This portal will provide virtual tours, booking of flights, hotel and car rentals, promote tourism packages, brand SVG as a premier tourist destination, and maximise the revenue generated from current and proposed tourism products.

The second major initiative that is proposed under this sector is the integrated Supply Chain Management Project. During the life of this plan, ICTs will used to integrate all agencies, organisations and businesses within the tourism supply chain into a seamless whole. This means fresh produce from farmers will be available just in time to support the needs of visitors at the hotels and guest houses. It means that the SMEs which support the tourism sector will be able to obtain work on-line, invoice and receive payments electronically. This project will inevitably support the agricultural sector and because it will encourage all businesses to go on-line, it will grow the demand for ICT development and support – in effect strengthening the ICT sector itself.

5.1.7 Legal and Regulatory

Excellent progress has been made with the development of a robust legislative regime to support the telecommunications sector and with the introduction of the **Electronic Transaction Act**, the Information and Communications Technologies Services Investment Incentives Act & the Small Business Development Act in 2007. However, as the country accelerates its ICT agenda, the legal and regulatory framework needs to be further strengthened. This will be done under the e-Legislation Programme.

Under this Programme, the work with ECTEL in enacting the Electronics Communications Bill will be completed. As more information on citizens and businesses go on-line and as information becomes shared across ministries and agencies, and as health information goes on-line, the need to strengthen privacy and personal identification legislation becomes more important. The potential need for a Data Protection Commissioner or similar post will need to be considered carefully. The legislation currently in place will need to be reviewed to determine if it will fully provide the protection required for computer crime, electronic evidence, and increased e-commerce. This programme will also introduce training and capacity building requirements for the judiciary and the legal community.

Action Item:

Enact a new converged Electronic Communication Act to regulate the ICT Sector and replace the Telecommunications Act 2001

5.1.8 Education and Human Resources

The key objective of the Programmes and Projects in this area of focus is to establish mechanisms to utilise ICT to facilitate a better quality of life through life-long learning. It is intended that through the initiatives in this area that all persons within and entering the labour force will have the capacity to utilise ICT in their daily life through ICT literacy training. It will ensure that all institutions of learning in St. Vincent and the Grenadines will be equipped with the necessary technology and that teachers will be trained in utilising ICT as part of the learning process. The cost of technology necessary to support continuous education will need to be managed and opportunities for affording higher levels of training in ICT would be created.

In essence, ICT will be exploited to the fullest in enabling the empowerment of the human resources of the country to be the best that they can be. Several of the initiatives in this area of focus are being implemented and are therefore being brought into the overall National ICT vision. The Plan recognises the considerable investments over the last few years in acquiring hardware and connecting schools to the Internet. It builds and integrates the considerable investment in teacher training, modern buildings with ICT facilities and training of the local labour force. The Plan recognises that equipping the people of SVG, particular the children is critical to successful implementation. ICT which cannot be harnessed by people will inevitably be a useless investment. It also recognises the long term investment that must be made to transform the country to a knowledge-based society – the Plan prepares SVG for the social and economic challenges of the next two decades and that **no child leaves school without basic computer literacy**.

Action Item:

Continue training all aspect of the Human Resources

Establish programs where no child leaves school without basic computer literacy

The first Project is ***AWARE – All Workers ARe e-Enabled*** or the ICT Literacy Project, which will focus on the existing labour force and on new entrants into the workplace. A critical element of the ICT strategy is ensuring that people are equipped to take advantage of the enabling opportunities that ICT can present. It recognises that the current training opportunities in SVG are relatively limited in scope and are under-funded and centralised. A special focus will continue to be placed on the training of public officers so that the e-government investments can be fully and effectively exploited for the benefit of all. A catalogue of training necessary for computer literacy will be created and training providers will be identified to deliver the required material. An associated marketing plan will be developed to ensure that

Action Item:

Connect all Schools to Broadband Using the USF

Establish Computer Labs in all Schools & Community College

Use ICT in Teaching and introduce distance learning.

the needs of the various target groups, including those in the public service, are met.
The role of the Service Commission Department will need to be defined in the context of ***AWARE*** which seeks to address the level of ICT literacy only. Under this Project, the issue of the challenges faced by the people of SVG in obtaining ICT at affordable prices will be identified. Public consultation may be necessary to determine the nature and extent of the challenge, and an analysis of the ICT market and a determination of the strategies necessary to promote competitive and fair market pricing will be needed. These outputs will inform government policy in this regard to enable and support ***AWARE*** and its related projects.

The ***ICT Infrastructure-in-Education*** Project will build the required ICT infrastructure to provide Computer Based Training (CBT) through all available channels. The infrastructure will include computer labs, networks for connecting facilities, teaching and learning support software, and access to the Internet. Current training facilities would need to be reviewed and upgraded to a consistent sustainable high standard. Based on best practice research, special focus will be placed on developing and enabling ICT leadership and performance evaluation techniques. Teachers will be trained as part of their professional development, and a guide will be developed to ICT standards, professional development needs, and integration approaches. It is likely that the integration of ICT into teaching and learning will need to be incentivised and that funding will need to be identified or raised. It is also critical that teaching and learning resource materials be localised, and that regional partnerships will need to be created as a mechanism to manage cost and to enable regional growth and development. And finally, there is a need for an education portal as a mechanism to enable collaboration in the use and development of teaching and learning resources, and in enabling networking between school administrators, teachers, students and parents.

Action Item:

Commence software development training and content application creation at COE

Conduct training of Public Service Technical Professional on Government applications

The ***Smart People, Smart Worker*** Programme is designed to support ICT-enabled life-long learning. SVG is aiming to be more self-sufficient in managing its ICT development and on promoting innovation. It is being recognised that having higher level ICT skills will be valued and eventually rewarded. This Programme will therefore build on current initiatives and involve identifying the set of higher level ICT skills required to promote the development of SVG and developing an associated training plan to meet these needs. Courses will be designed and incentives will be created and offered to both training providers and students to encourage pursuance of higher level ICT skills training to create ***Smart People***.

For the public service in particular, software application projects will be developed to sustain and entrench the use of the higher level ICT skills being acquired by the public sector worker – the ***Smart (Knowledge) Worker***. This activity will be managed through a central body that will be created to identify and manage projects under the ***Smart Worker*** initiative and which will identify and engage experts to mentor, develop and transfer the skills through the experiential involvement of local professionals. So ***Smart Workers*** will be utilised for the benefits of SVG in that they would provide the capacity to provide application software systems and ICT systems to meet the needs of the public sector under this plan.

5.1.9 Industry and ICT Sector (Inc. Trade and Financial Services)

The initiatives proposed in this area of focus aim to develop the nascent ICT sector and to facilitate the utilisation of ICT by the business community itself. The development of e-Commerce will also provide an incentive for businesses to go on-line and to present SVG to the global business community. And finally the strategic introduction of Public Private Partnerships (PPPs) will be pursued as a mechanism to develop the ICT sector itself. These initiatives will be delivered as part of the e-Industry Programme.

The first initiative will focus on better defining the use of ICT by the business community and seek to better define and understand the capabilities and capacity of the ICT sector itself. This will require a comprehensive survey of what ICTs are used by the business community to support its internal business processes and to interact with the rest of the world, whether as part of a supply chain or offering its services via the Internet. It will seek to determine the capability of the organisations' employees to support an accelerated e-Industry programme. The ICT businesses will be surveyed to assess their capability to support the national ICT plan and to grow and support a profitable ICT sector. This survey will review the software development and support capability of the existing sector and the ability to support modern ICT as well as the capacity to innovate with technology. The information derived from this survey will be used to benchmark SVG with countries such as Barbados, Malta and Singapore and concrete recommendations developed to strengthen and develop both the business community and the ICT sector to take on the challenges that will arise in supporting the national ICT agenda. The information will also be utilised on the Government Portal or via the proposed ICT Portal as a Virtual Directory such that the services and capabilities of the business community of SVG can be presented and offered to the rest of the world.

St. Vincent and the Grenadines is now at a stage where it can leverage several investment criteria to intensively promote and attract greater ICT Investments.

1. **Low Competitive Telecommunication Costs**
2. **Highly Trained Labour Force in ICT**
3. **Suitable locations to accommodate ICT firms**
4. **Low Crime and soon easy air accessibility**
5. **Progressive Fiscal Incentive package**
6. **Assistance provided in identifying and training suitable human resources**

While the National Investment Promotion Incorporation – SVG has made some progress with foreign investment in the ICT sector, and the EU/SFA 2005 Business Skills and e-Business Incubator Project has sought to improve strategic alliances to strengthen the ICT sector, much more needs to be done.

Government is the largest consumer of ICT goods and services in SVG, and therefore has the potential to facilitate the growth of the ICT sector through the strategic outsourcing of some aspects of ICT development and support. This can be specific software development projects which have the potential for export to other Caribbean countries and the world at large. In this regard, the opportunities to work collaboratively with other OECS countries to develop ICT products that can be shared will be pursued.

In order for this strategic outsourcing arrangement to work, a clear policy framework must be developed. During the period of this Plan, it is expected that the policy framework will be crafted and approved and at least three ICT projects which have sharing and export potential will be distributed under PPPs to the ICT community. The role of the private sector in support the e-government agenda, including government on-line will be defined under this initiative.

E-Commerce initiatives are being pursued under the EU/SFA 2005 Project. These initiatives need to be considered under the ambit of the national ICT plan. The expansion of the proposed 100 SMEs in the ICT Portal project will be expanded to the entire SME community. The enabling policy framework to allow this Portal to grow and expand to support a thriving business community will be finalised and implemented. The Portal will expand to support full business-to-business transactions and support the export development effort in the long term.

5.2 ICT-ENABLED SMES

The smart use of tools and resources can make the difference for SMEs to survive and prosper. However, business owners still have to add a certain "X-factor" to ensure business success. There is a direct correlation between ICT adopted by SMEs and its competitiveness. The implication is that SMEs stand to make their businesses much more efficient and capable by taking advantage of the benefits of technology. Depending on affordability, high speed connectivity tend facilitate competitiveness; and

Action Item:

Action Item:

Invest Promotion will establish a brochure which effectively promotes SVG as an ideal location for ICT Investments

the use of support services such as end-user training, hardware and software sales, Web development and strategic consulting, and Internet services (e-mail excluded) also has a high correlation with competitiveness. Many SME owners in SVG would like to adopt technology and services to improve their efficiency but are financially constrained. This project will propose mechanism to address the financing challenges faced by SMEs in obtaining ICT.

5.3 ATTRACTING CUSTOMER CARE CENTRES

St. Vincent needs to be marketed as a destination where an ICT Investor has the highest chance of success. The labour cost is competitive and people tend to make the Customer Service Sector a long term career choice. This offers some organisational stability after expensive training has been conducted.

There are suitable locations within the Capital Kingstown or in the suburbs which offer access to quick transport and communications. The cost of telecommunications services has fallen considerably such that it is now competitive with the USA. For Telemarketing and Inbound Services, the language and accent is quite neutral and easily moulded to the targeted marketplace.

The low crime and tropical setting also offer an ideal distraction for the business executive compared to other locations at a higher risk for crime and travel related diseases.

A special focus will be taken and a project developed to promote SVG as an ideal location of ICT investments over the long term. It is expected that FDI improvements will be obtained through this and related measures.

5.4 KNOWLEDGE MANAGEMENT PROGRAMME

The adoption of technologies without developing local human skills and capacities to manage, integrate and maintain them is not sustainable. As a workforce ages and trained employees leave the marketplace or migrate, knowledge gaps grow and will negatively impact the implementation of the national ICT action plan. Successful implementation requires substantial quantities of trained and highly knowledgeable people. SVG needs to develop and retain knowledge to sustain and support ICT-enabled economic growth and development. It is therefore important that the country embarks on a tailored knowledge management programme. More information and best practices on knowledge management (KM) is given in Appendix 5.

Six Step Approach to Implementing KM Projects

Step 1 - Identify strategic and operational objectives
What are the general objectives for the organisation?
Consider the business and the environment;

Step 2 - Find functional, structural and business value
Find actual changes in efficiency and effectiveness that will achieve the desired objectives;
Consider the functional and structural organization;

Step 3 - Finding and using financially valuable knowledge
Knowledge does have an effect on efficiency and effectiveness ;
Consider the process and the individual;

Step 4 - Quantifying and understanding the knowledge
Ensures accurate understanding and codification or personalisation of that resource.
Considers the knowledge itself.

Step 5 - Integrating with information technology guide the infrastructure that supports the management of knowledge ;
Considers information and transmission ;

Step 6 - Select knowledge technique and technology
Making the right choice of knowledge management technique and enabling technology elements of a KM environment is important.

If employees possess valuable knowledge, government needs to identify this early, define a capture and knowledge-sharing strategy, and close the loop to any vulnerability. Therefore commencing a KM program is a key component of this five year plan.

5.5 CLOUD COMPUTING

A growing number of private and public organizations are turning to clouds or investigating the use of clouds to manage key applications, including basic word processing and spreadsheets through Google, CRM tools, ERP and databases. Many major enterprise application vendors have adapted or are adapting their applications to run in the cloud. Cloud computing is a new technology trend that has potential cost and other benefits for the government of SVG, and therefore needs to be investigated further.

The Cloud Computing model is illustrated in Figure 17 below.

Secure clouds may allow the government of SVG to create ICT resource pools across WANs, which can reduce the number of servers needed by the public sector, boost availability, and improve disaster recovery. This technology has revolutionary potential and therefore a technical team will be established by Government to evaluate the appropriateness, cost and benefits of cloud computing and the possibilities of deployment in St. Vincent & the Grenadines, the OECS Sub-region or the wider Caribbean.

More details can be obtained in Appendix 7.

5.6 EFFECTIVE INFORMATION MANAGEMENT

Information is the key to success when organised, processed, and available to the right people in a form conducive to rapid accurate decision making enabling the desired results. Poorly structured information prevents accuracy of decision-making. Today, ministries and agencies in SVG are being challenged by ineffective information management, and citizens and businesses are impacted by this shortcoming. Effective information management requires the careful and deliberate blend of human skills, processes and technology. SVG will therefore begin the process of improving information management across the public service with the strategic goal of significantly improving the quality of decision making at all levels of employees.

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SUMMARY OF STRATEGIES & ACTIONS

The Strategies and Actions proposed by the National ICT Plan are now summarised as this provides an integrated picture of the task facing SVG in moving forward with its ICT agenda. The summary is provided in tabular form as follows in Table 10. The Table also includes specific actions that will be taken to give effect to the strategies identified. By construction the Plan in this manner, the ICT agenda is becomes implementable.

The National ICT Plan prescribes about 65 strategies and 129 actions within the areas of technical infrastructure, government, agriculture, community development, health, tourism, legal and regulatory, education and human development, industry and the ICT sector, and finally, governance and MTSTI.

Table 10: Summary of Strategies and Actions

	STRATEGIES	SPECIFIC ACTIONS	
6.1	**TECHNICAL INFRASTRUCTURE**		
1	Establish mechanisms to ensure the continued development of reliable, state of the art, country-wide ICT infrastructure with adequate capacity and network speeds.	• Ensure adequate Capacity of Submarine Fibre to the Island • Successful installation of at least 3 regional IXP - improved quality, security and local content. • Successful implementation of CKLN's Educational Inter-Island C@ribnet • 3G or 4G Wi-Max deployed by a provider • Completion of a provider's VOIP based NGN National Network • Island Wide Cable Modem coverage by provider • Completion of a Government owned Fibre Backbone connecting Ministries & departments • Complete the extension of the National Backbone to rural areas & government facilities • Networks for education, health & postal services • Adequate and affordable Computers and hardware are available in Public and Private Sector and to citizens to facilitate access to Internet, self learning and government services	
2	Ensure all installed ICT infrastructure and capacity is utilized effectively and contributes to resilience, redundancy and emergency response at a national level.	• Domestic Roaming for Emergency facilitated. • Backbone extended to rural areas and effective usage of the Government owned Backbone • New PBX systems deployed (Police & Health)	
3	Continue to promote a competitive marketplace to enable lower cost of access and a wider range of services by institutions or individuals.	• Ensure a robust regulatory Infrastructure (ECTEL and NTRC) • Approve the new Price Cap Plan and phased Interconnection agreement • Attract new mobile and Internet providers	
4	Encourage the development of infrastructure to facilitate the safe and secure development of e-commerce.	• Local or Sub-regional Web Hosting facilities established • Encourage banks to issue Merchant Accounts • Establish ECCB Automated Clearing House	

	STRATEGIES	SPECIFIC ACTIONS	
5	Facilitate equitable and widespread access to ICT products and services.	70% Household Broadband access using the Universal Service Fund (First Phase 48%) 90% access for Businesses and adoption of ICT	
6	Support the private sector in the development and maintenance of the national ICT infrastructure, encourage continuous upgrades and investments in new ICT technologies.	Telecom Providers included in National ICT Advisory Forum Quality of Service Regulations passed	
7	Reduce cost and travel to meetings and conferences with the use Videoconferencing.	Deployment of three (3) Videoconferencing centres in the Government Sector and encourage deployment in the Private Sector	
8	Facilitate the policy and governance framework to enable service delivery through IPv6, Internet Exchange Points and Data Centres.		
6.2	**GOVERNMENT (INC. JUSTICE AND NATIONAL SECURITY)**		
1	Provide e-Leadership at the ministerial, national, sub-regional and regional levels	Convey that Technology may represent only a small percent of the transformation process. The rest is changes in the organisational behaviour and culture	
2	Mandate all ministries and agencies to incorporate the utilisation of ICT in their development plans, programmes and projects.	Cabinet mandate all Ministries to participate and adopt the National ICT Strategy & Action Plan, to adopt ICT in their policies Consult the Ministry (ITSD) on all major ICT related initiatives Establish a date warehouse for back-up security	
3	Require that all appropriate government information be put on-line within a reasonable timeframe through a single government electronic portal.	New Government Portal Established Appropriate government information placed on line based on Freedom of Information and Privacy Acts	
4	Encourage and support the provision of government services through electronic channels where appropriate and cost-effective and .which improve revenue collection.	ASYCUDA World Customs clearance system ICT Tax Filing implemented On line searches for Business names implemented Delivery of substantial number of other revenue and cost effective government services on line	

	STRATEGIES	SPECIFIC ACTIONS	
5	Deploy E-Government initiatives to improve efficiency.	Expansion of the Government Intranet Computerisation of BRAGSA and public works Computerisation of the Postal System Deployment of an ICT Land Registry Computerisation of CIPO (start business on line)	
6	Develop and implement a policy framework to support and enable shared services within government, including the government backbone, email, Internet, VOIP and SANs.	Cabinet mandates the deployment of services sharing the Government Backbone	
7	Facilitate the policy and governance framework to enable integrated service delivery across government.	Fully participate and provide leadership in OECS e-GRIP Project Ensure total cost of ownership for software Establish Sub-Regional and National Tec team	
8	Expand and strengthen the policy and standards framework utilised within government.	Implement common equipment and software standards and public servants & citizens aware Publication of equipment, ICT and internet usage, misuse and abuse policy	
9	Support the use of ICT to improve national security and the administration of justice in the country.	Complete Police Information and fingerprint ICT Pay-Phones and security Web-Cams along every mile of highway, beaches and tourism sites deploy along with other CCTV initiatives. GMDSS Project for Yacht Security and Fisherfolk deployed	
10	Enhance the security of ICT users by implementing a Certificate Authority.		
11	Implement a human resource management information system across government.		
6.3	**AGRICULTURE**		
1	Establish and maintain an ICT mechanism for reporting, information sharing and increased policy dialogue.	Deploy NAMIS	
2	Promote the use of ICT to improve production technologies in agriculture, such as Automation Systems.	Deployment of wireless data entry of land usage and crops grown	
3	Promote the use of appropriate ICT for the sustainable development of the Fisheries Industry including safety of fishers and harvesting of fish.	Deployment of NAMIS for Fisheries Division	

	STRATEGIES	SPECIFIC ACTIONS	
4	Improve, upgrade and sustain a National Agricultural Production and Marketing Information System to support production, marketing, agro-processing and sector planning.	• Deployment of NAPMIS for Agricultural marketing	
5	Apply ICT to enhance agro-processing and value-addition to primary agri- and fish products including marketing and distribution.	• NAMIS	
6	Develop and maintain a universal, affordable and secure access mechanism for data and information sharing among farmers and fishermen.	• Provide greater use of ICT by encouraging and facilitating access to Broadband Internet using the USF	
7	Train stakeholders to effectively use appropriate ICT to meet their business needs.	• Conduct ICT awareness workshops and training in the benefits of computer literacy and learning in improving adoption of technology marketing, competitiveness of farmers and fisherfolk using the NCTI	
6.4	**COMMUNITY DEVELOPMENT**		
1	Sensitise and train rural communities in the use of ICTs as information sources.	• Ensure a 50% Computer literacy and awareness of the benefits of ICT among non-school population	
2	Build facilities to promote ICT training and computer-aided training for all communities.	• Continue Basic Computer training at community and Learning Resource Centres • Ensure training in ICDL , A+ etc.	
3	Enhance access to ICT services and applications through rural community libraries and resource centers.	• Ensure ICT Labs and Internet Broadband Connection to 100% of Community centres and LRC using the USF	
4	Develop and implement ICT-based tools to help communities develop micro-enterprises and to tap into international markets so as to facilitate poverty alleviation.	• Establish and Maintain ICT and Business Outreach Centres (IBOC) in five (5) rural areas (Chateaubelair, Barrouallie, Mespotamia, Georgetown and Union Island). • Encourage use of Web sites, Malls & Portals	
5	Support initiatives which encourage public, private and civil society partnerships in reaching all communities with ICT products and services, and which facilitate disaster preparedness.	• Improve access to underserved access • Ensure multiple competitive access to the entire nation • Promote redundancy in the interconnection between providers in case of disasters	USF NTRC

	STRATEGIES	SPECIFIC ACTIONS	
6	Ensure and safeguard national heritage, culture, traditions and the environment in the process of ICT development within communities.	Adopt Cultural and Creative Arts policy Conduct course in graphic and computer aided design (CAD)	
6.5	**HEALTH**		
1	Implement an integrated medical record information management system for the sector.	Deploy Health information System (HIS)	
2	Enact legislation, regulations, and protocols to facilitate the security and privacy of patient information.	Enact Legislation for privacy issues on HIS Protocols Established for utilisation of HIS	
2	Develop a comprehensive electronic medical / health supply inventory management system.		
3	Create an enabling policy framework, legislation and regulations to support the broad deployment of telemedicine across the health system.	Policy developed on Telemedicine Encourage reading and research in health issues by citizens Legislation enacted for safe and secure telemedicine	
4	Provide the technical infrastructure for the effective use of telemedicine applications.	Develop and implement a pilot application	
5	Provide high speed secure electronic connectivity between all health institutions.	Complete the Health information Backbone as part of the Government Backbone complemented by Web-enabled health applications	
6	Implement a comprehensive staff information management system.	Train and continually update Health staff in ICT and HIS	
6.6	**TOURISM**		
1	Develop an ICT-oriented Tourism sector for effective delivery of products and services.	100% awareness of benefits and usage of ICT by tourism establishments, facilities and sites Encourage the use of web sites or Joint Sites (Hotel Association)	
2	Enhance e-marketing and promotion of the tourism product to increase foreign exchange earnings.	Continually update, upgrade and Market the National Tourism Web site and Market SVG	
3	Establish and maintain a reliable Tourism Satellite Account System through the use of ICT.	Construct software application to facilitate reliable management of Tourism Satellite Account	

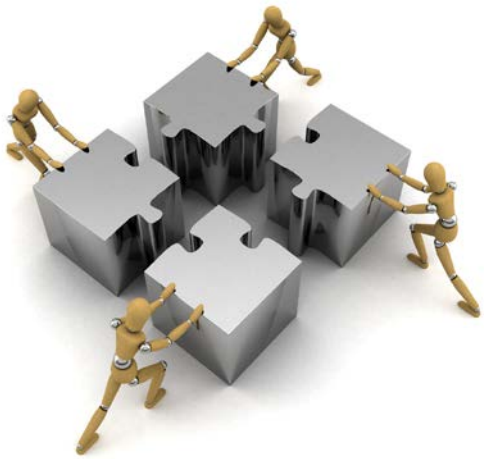
	STRATEGIES	SPECIFIC ACTIONS	
4	Develop a management information system for tourism through the use of ICT.	Construct software application to facilitate reliable management	
5	Procure and use relevant ICT to support effective research, data collection and analysis in this sector.		
6	Build human resource capacity within tourism sector to facilitate the use of appropriate ICT for tourism development.	Continue ICT training of existing human capacity in tourism sector and ensure new entries are effectively trained	
6.7	**LEGAL AND REGULATORY**		
1	Review and improve the existing policies, laws and regulations to facilitate and promote the utilisation of ICT by all sectors of the country and all segments of society.	Promote greater awareness and understanding of existing telecommunications and other ICT regulations Amend the Telecommunications Act by introducing the Electronic Communications Act Establish new regulations for the new Act Ensure adoption and publication of regulations for ICT related bills, Fiscal Incentive Act and Electronic Transaction Act	
2	Ensure that the evolving legislative framework supports the long term development of the ICT sector.	Provide leadership in the evolution of ECTEL and the NTRC Establish the roles of CARICOM, CTU, CKLN, CARICAD, ECTEL, NRTC and Ministry	
3	Support the development of the legislative and regulatory framework to enable e-commerce and the innovative use of ICT for economic development.	Establish a National or Regional Certification Authority (CA) Ensure the deployment of an ECCB Automated Clearing House	
4	Continue to grow and adapt the framework for enabling fair and equitable competition within the ICT market space.	Enact the OECS Competition Act	
5	Formulate and strengthen the policy framework that enables and supports the growth and development of shared information resources and services across government, and between government and its key stakeholders.	Policy for shared and legal framework for shared information developed within the context of the Freedom of Information Act and Privacy Act	
		National ID Card System Implemented Registries integrated to share appropriate information on deaths, births etc.	
6	Review periodically the legal and regulatory framework in order to keep abreast of global ICT developments.	Enact the Privacy Act for the Private sector to complement the Privacy act for the Public Sector already in-acted	

	STRATEGIES	SPECIFIC ACTIONS	
6.8	**EDUCATION AND HUMAN RESOURCE DEVELOPMENT**		
1	Promote modern software technology for efficiency in education, as well as to promote skill development and professional capacity building.	Obtain Master Licences deployment Promote deployment of Open Source Software Promote training and Skill at all levels of society	
2	Introduce an Education Management and Information Systems (EMIS) in a phased manner into the education sector to bring about more transparency, efficiency and productivity.	Successfully deployed EMIS Efficient use of EMIS by appropriate educational stakeholder	
3	Encourage and support ICT training and development of knowledge and its active use by all public servants, private sector and civil society.	Establish platform for distance learning SVG promoted as a smart Knowledge Based Society	
4	Foster the use of ICT for formal and non-formal education, skills development and adult learning regardless of age, gender, ethnicity, disability or location.	Implement the ICT in education project to ensure no child leaves school without a basic computer literacy due to computerization and training programs in primary schools, secondary schools and community college 90% Basic Computer literacy at school aged persons Upgrade the Community College to deliver on line training, to train and produce master teachers and use ICT in teaching specific or sections of subjects	EU EU
		Implement training **available** for all out of School Adults through the NCTI and other training institutions Advanced training in software development at the Centre of Excellence Encourage the development of private sector training institutions to assist with specialization.	
		Lifelong Self learning and skills development in research and on line encouraged	

	STRATEGIES	SPECIFIC ACTIONS	
6.9	**INDUSTRY AND ICT SECTOR (INCL. TRADE AND FINANCIAL SERVICES)**		
1	Create a conducive environment for a vibrant and sustainable ICT industry in SVG that is aligned to national priorities and which makes a significant economic contribution.	• Citizens sensitized to the new Small Business Development Policy • Regulations for the Electronic Transaction Act Implement • Regulations for ICT Incentive Act implemented • New Investment Act enacted to replace the current Fiscal Act Incentive Act	
2	Support and facilitate programs in the private sector that encourage the effective use of ICT to improve operational efficiencies and international competitiveness.	• Partnership with Chamber of Industry and Commerce (CIC) developed to promote adoption of appropriate ICT technologies among business sector	
3	Develop monitoring and measurement systems to enable government to determine the impact of its ICT policies and measures on the ICT sector and industry generally.	• Establish a unit under the Ministry of Telecoms & Industry to assess adoption and use of ICT • Greater credit options available to ICT related businesses	
4	Encourage and support local ICT innovation and development of the current and potential markets through incentive and other schemes.	• Greater technology transfer, adoption of innovation implemented • Significant increase in number of new ICT businesses, transformed businesses • Successful ICT Business incubated at Centre of Excellence (COE) and virtual incubates • Successful work at Rural Outreach Centres spurring many SME • E-Commerce established as a seamless, effective marketing tool for small businesses	
5	Encourage and promote joint ventures between local and foreign entrepreneurs in the ICT sector.	• Joint Ventures promoted • Strategic alliances encouraged • Encourage investments in Customer Care (Call) Centres • Deployment of the Centre of Excellence to promote ICT Incubation, Outreach and Virtual Incubates	
6	Support the growth of the ICT sector by the strategic outsourcing of ICT support and services by government.	• Explore outsourcing of support to private Sector. • Public Agency available for outsourcing for regional public sector initiatives	

	STRATEGIES	SPECIFIC ACTIONS	
6.10	**GOVERNANCE & MTSTI AS LEAD ICT MINISTRY**		
1	Ensure multi-stakeholder involvement in decisions	Continue National ICT Steering Advisory Forum	
		Establish system of ICTOs in each Ministry	
2	Establish Secretariat to monitor implementation	National Implementation Secretariat Established	
3	Manage National transition from IPv4 to IPv6	Establish IPv6 Transition Task Force	
		Successful transition from IPv4 to IPv6	
4	Ensure adequate Public awareness to Cybercrimes	Citizens extensively sensitised to Cybercrimes	
5	Adopt a policy of open source software applications	Develop policy	
6	Embrace and deploy Cloud computing	Investigate feasibility	

MOVING TO IMPLEMENTATION



The National ICT Plan **with 65 distinct strategies and 129 actions** will undoubtedly bring significant benefits to the citizens and businesses of St. Vincent and the Grenadines. However for successful implementation, based on an evaluation of the experiences of emerging economies, there are some recommended steps and actions that the Government of SVG must take, namely:

- Provide effective e-Leadership and Championing
- Put effective governance arrangements in place
- Engage an experienced implementation team
- Obtain funding and optimise procurement
- Monitor and manage major risks
- Implement quick wins to build confidence and support
- Manage the change and transformation
- Engage all stakeholders and communicate effectively
- Measure and report progress

7.1 LEADERSHIP

E-Leadership is a proven technique for creating an environment of speed and flexibility in the progress towards a digital economy. It will engage employees in the public and private sector and allow radical ideas to thrive as only those enterprises that move fast and innovate first will reap the financial and social rewards the digital economy has to offer.

The adoption of technology may represent only a small percent of the transformation process. The rest of an enterprise's metamorphosis represented by changes in the organisational behaviour and culture are at the heart of e-Leadership. As an e-Leader, the job is to transcend the inappropriate staid old culture and create an environment that encourages and rewards creativity, imagination, innovation, collegiality and discipline. History teaches us that, the societies to which wealth and power gravitate to, are less likely to be those that in response to challenges over a long period of time painstakingly build the enabling governance systems and institutions such that after it is finally built, it is obsolete; but rather those either by historical accident, or by seizing critical and timely opportunities, or by bold reforms become readied for the coming wave of change.

The leadership of the Ministry responsible for telecommunications, Science, Technology and Innovation and the Government of SVG will provide strong leadership at the national, sub-regional, regional and global level to adopt ICT and promote SVG and the Caribbean as a competitive place.

7.2 GOVERNANCE

The National ICT Plan is ambitious in its scope and impact. However, based on the experiences of several small island states, including Malta and Singapore, it is achievable. But one on the biggest challenges that has been identified over the past few years is the issue of governance. The Plan has many programmes and projects which will take many years to implement.

Implementation of the Plan will require the coordination of many ICT initiatives that are

currently underway in different ministries and agencies, and which have different funding bodies and mechanisms, and which have differing existing governance arrangements. However, unless synergies are created, resources are optimised, and all current planned and proposed ICT initiatives are aligned and coordinated, St. Vincent and the Grenadines will not achieve the known benefits of moving to a knowledge-based society in a reasonable timeframe.

The key to success is effective governance. There are several mechanisms proposed to ensure that the national ICT Plan is executed in a coordinated and optimised manner. Firstly, there is the need for a Steering Committee, chaired by the Minister responsible for Telecommunications, Science and Technology Innovation. It should include Ministers from the key ministries who are impacted by the Plan and who need to support its implementation, such as Ministers responsible for education, tourism, agriculture, health and finance. The Committee should have representation at the Permanent Secretary level, including the Permanent Secretary with responsibility for ICT.

The Ministerial Steering Committee will have the mandate to ensure the following objectives are achieved:

- The Plan is fully aligned with the national development goals of the country
- It is implemented as a cohesive whole and is fully integrated
- Appropriate funding and other resources are provided for its successful implementation
- The Government On-line and Business Process Re-design initiatives are coordinated across Government
- The engagement of the private sector and civil society is maximised
- EGRIP, CKLN, CTU and other regional initiatives are integrated, aligned and optimised with the Plan
- The initiatives of the proposed ICT Industry Association are supported
- The Plan is monitored and controlled throughout its life
- Risks are monitored and managed in a proactive manner

As the Plan moves deeper into implementation and horizontal projects across ministries and agencies come into focus, the need for a Chief Information Communication Technology Officer for Government should be pursued. This Officer will be responsible for common infrastructure across the public sector such as the government backbone, the portal, common policies and standards, horizontal business applications, e-services, strategic outsourcing, liaising with bodies such as CARICOM, ECTEL, OECS, CTU and the ITU on ICT matters, and reporting to the Steering Committee on implementation of the National ICT Plan.

The Plan places emphasis on growing the ICT sector so that it can make a significant contribution to the economic well-being of SVG. It also supports greater use of ICT within the business community to facilitate internal efficiencies and effectiveness and to optimise the supply chains, and connectivity to the global marketplace.

Given the relatively low level of ICT usage in business, the creation of an ICT Industry Association is a good mechanism to encourage collaboration and cohesion across the business community. This Association should be implemented and managed by the private sector with support and encouragement from Government. Its mandate will be to achieve the following objectives:

- Grow the ICT sector itself
- Facilitate the greater use of ICT by the business community
- Organise the business community to support the national ICT plan, including possible strategic outsourcing
- Encourage and support the use of ICT by citizens and visitors by going on-line with products and services
- Grow e-commence within SVG

7.3 IMPLEMENTATION TEAM

It is recognised that some of the initiatives proposed in the Plan are new; some are already in train, but need to be aligned with the national ICT vision; and some are in the planning stage. The resources that are available to execute the Plan are heavily dependent on what can be allocated by Government. Given the need for a dedicated focus on getting the Plan operational, there is a requirement for a National ICT Implementation Secretariat to get the implementation effort started. The Implementation Secretariat will evolve as the initiatives of the Plan accelerate, but its immediate mandate is as follows:

- Operationalise the National ICT Plan in the shortest possible time
- Initiate and deliver the Quick Win Projects
- Accelerate procurement consistent with the requirements of funding agencies and Government
- Support the promotion and awareness effort
- Begin the coordination process across government

- Report progress to the focal points, lead ministry and the Steering & Advisory Committee

This Secretariat is not expected to have more than 3 to 5 resources at inception but should be headed by a senior officer who is well respected in the ICT community and across government. Initially the National ICT Implementation Secretariat (NICTIS) will be centred in the EGRIP project which has funding for the next 4 years. It will incorporate two technical persons from the ITSD and E-Government units as supporting staff to assist with the monitoring.

- It will be directly involved in the implementation of EGRIP project activities
- It will closely monitor and be indirectly involved in Non-EGRIP project activities by other agencies.
- Monitor the progress of new initiatives and proposals which arise at different times

The Implementation Secretariat will liaise with designated ICT Officers (ICTOs), ICT or communication departments in each ministry and department and provide coordination of all ICT Activities.

The National ICT Steering & Advisory Forum will provide approval of the government ICT policy and major initiatives and make recommendations to Cabinet.

The various governance arrangements are illustrated in Figure 17 which follows.

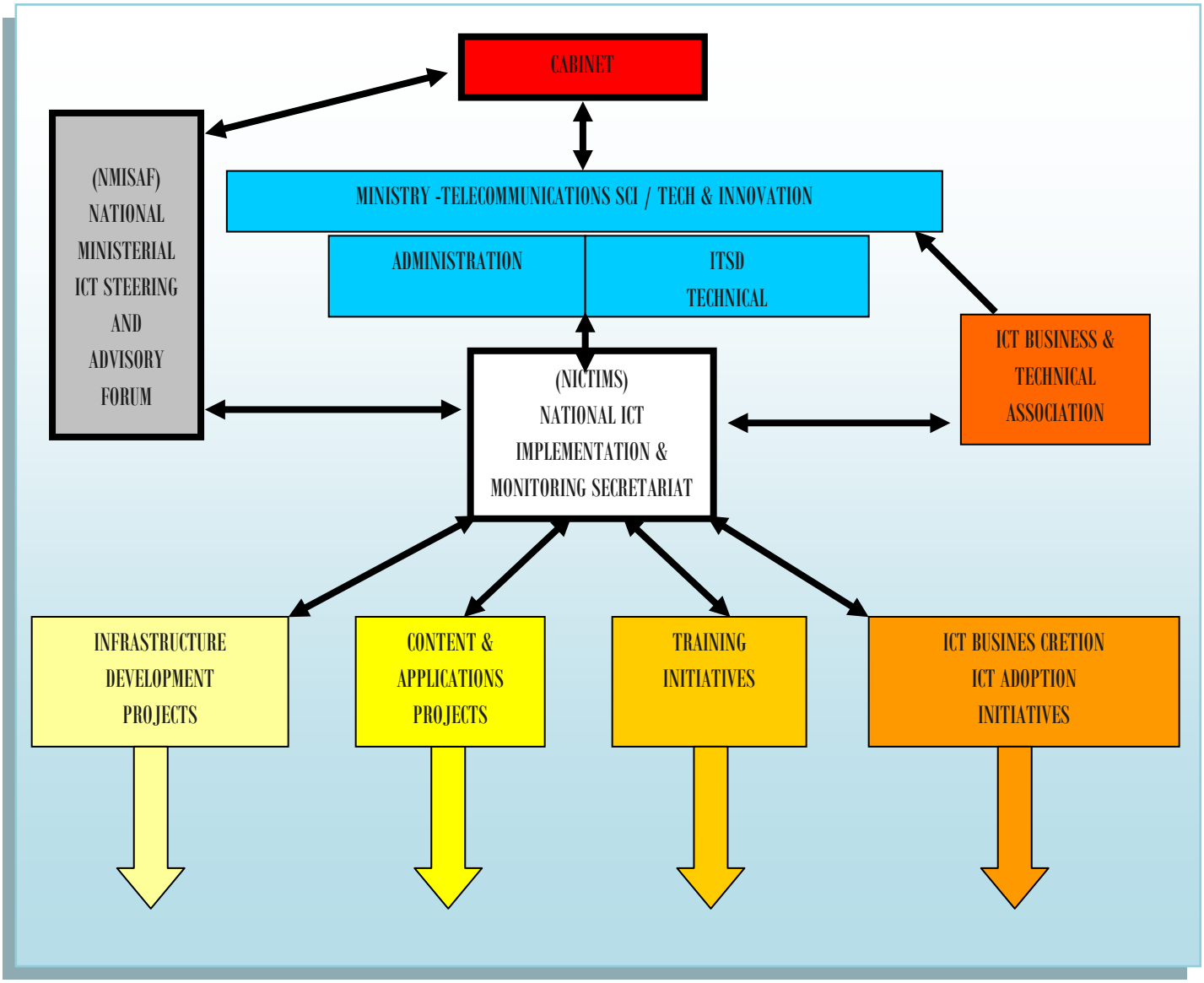


Figure 17: Relationship between NICTSAF, MTSTI and NICTIMS

The relationship between the NICTIMS and the other agencies is a critical issue and will help to avoid duplication, limit conflict between agencies and ensure cost effective and timely implementation of the various activities. The functions of NICTIMS is summarised in Table 11 below, and the various relationships in Figure 18 which follow. Other Government agencies will be mandated to cooperate with the NICTIS, ITSD and National ICT SAF to ensure that the objectives of the National ICT Strategy & Action Plan and the policies and objectives are achieved.

Table 11: Functions of NICTIMS

	Functions of NICTIMS	Collaborating Agency or Unit
1	To ensure implementation the activities under the OECS E-Grip Project	NICTIMS
2	To catalogue all current Ministry of Telecoms E-Government initiatives	ITSD
3	To catalogue all other current E-Government initiatives.	Assorted Agencies
4	To serve as the agency to convene the National ICT Steering Advisory Forum & secure approval or disapproval on the advice of the NICTSAF	Ministry Telecoms Administration
5	Monitor ICT initiatives implemented by the Taiwan ICT Centre to avoid duplication and ensure adherence to the national ICT Strategy	NICTIMS
6	To monitor all ICT initiatives planed by other agencies in Government Ensure the NICTSIF has been notified of these initiatives for approval	Assorted Agencies
7	Monitor actions included in the National ICT Strategy to ensure timely implementation by the supporting agency	ITSD
8	Monitor new initiatives which are not part of the National ICT Strategy	
9	Ensure the annual assessment studies required by the ITU, UNCTAD and UNEXCO are conducted by the relevant agencies, monitor the improvements or declines and ensure the results of Core Indices are posted on several accessible government Websites	
10	Assess St. Vincent and the Grenadines' world and regional ranking on a range of developmental indices	

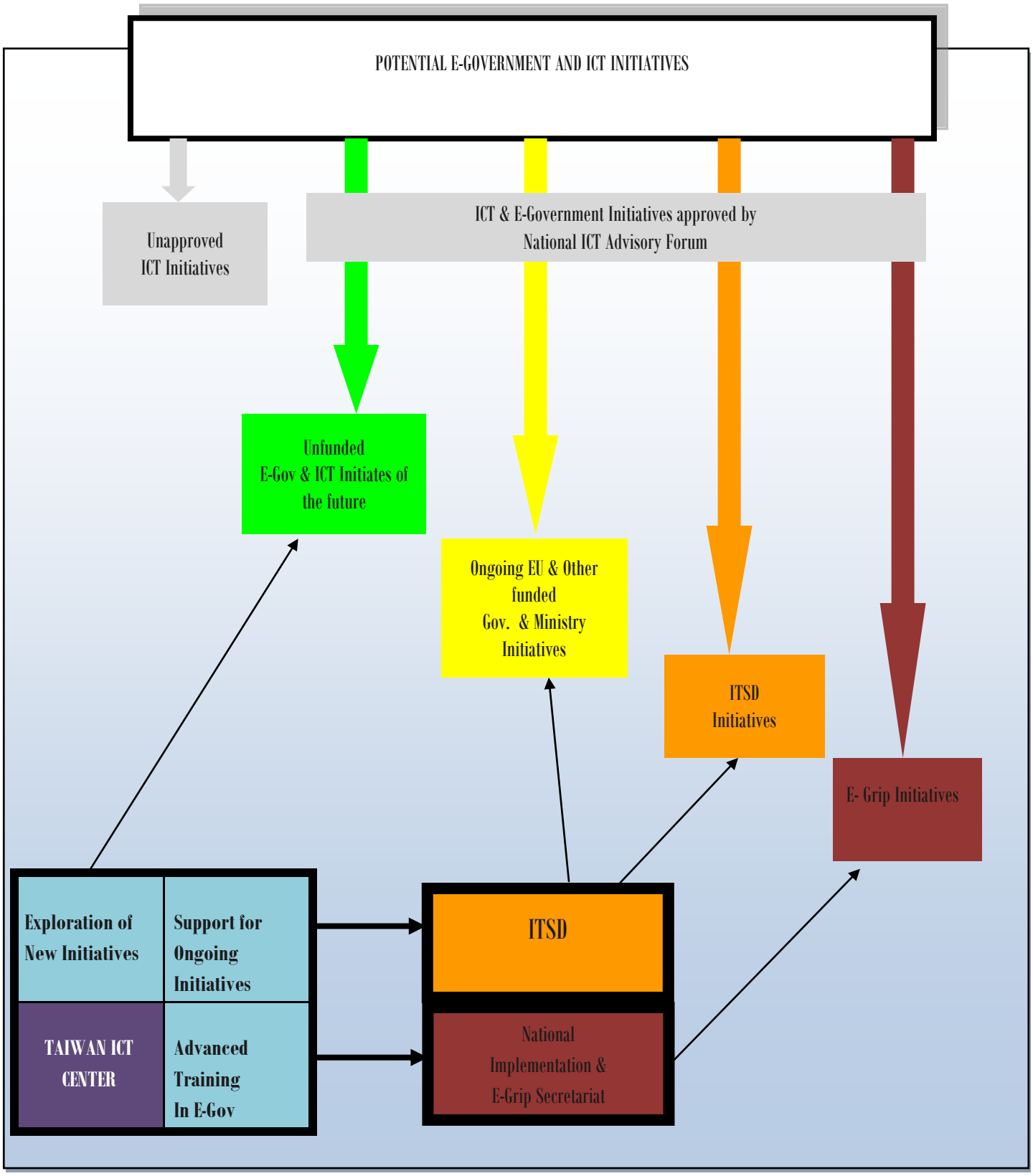


Figure 18: Relationship of ITSD, NICTIC and the Taiwan ICT Centre

7.4 FUNDING AND PROCUREMENT

Funding the Plan will always pose challenges. However it is generally true that international agencies will support well designed ICT programmes and that there is often room to optimise existing resources assigned to ICT initiatives across government when they are reviewed as an all-of-government portfolio. The Steering Advisory Committee (NICTSAF) and the National ICT Implementation Secretariat (NICTIS) therefore play critical roles in obtaining funding for the Plan. It is difficult to determine the cost of implementing the Plan without considerable more analysis and doing a more detailed design of each programme, project, or initiative. However using a costing by analogy process based on similar Plans in other island states, the potential budget for the Plan to 2015 will be in the order of US$ 25 million. This figure does not include investments made by the private sector in its own operations.

7.4.1 Source of Additional Funding or Cost Savings

Several other avenues for funding will be investigated and utilised, including the following:

1. Currently the Regulation of the Telecommunications Sector is fairly well funded through the collection of spectrum fees.
2. The regulations of the ICT Sector can also be funded by similar fees from regulating ICT services and using the same NTRC / ECTEL administrative structure.
3. Through the OECS EGRIP, there will be economies of scale in the regional procurement of software licenses, the creation of a regional expert and applications maintenance team.
4. Leveraging the support of the regional organisations for attendance at workshops, ICT industry meetings and advice at: CARICOM, CTU, ITU, CKLN and CARICAD.
5. Utilize the Taiwan ICT Centre to accelerate the creation of costly applications and avoid the cost of some expensive consultants and technical expertise.
6. Embrace Cloud Computing and Data Services to reduce costs.
7. Fully establish the Government Backbone to reduce cost of Government owned Intranet initiatives
8. Leverage the National ICT Strategy and Action Plan to obtain funding from donor organisations

International best practice has also shown that unless the procurement process within government is streamlined, the various initiatives will not align and integrate, and the aggressive timeline of the implementation will not be achieved, and ultimately the success of the integration across government will be stymied. It is therefore necessary for the National ICT Implementation Secretariat to work with the procurement agencies to streamline the processes within the accepted procurement policies and laws to ensure that the goods and services needed for success are procured when required.

7.5 RISK MANAGEMENT

Risk management is about the identification of the things that can go wrong in the implementation of the Plan and about designing plans to manage and mitigate such risks. An ambitious Plan such as this will be faced with many risks. These risks vary from lack of funding, insufficient human resources for execution, to weak stakeholder support. Some of the risks as associated mitigated actions are now considered.

One of the major risks is that of insufficient funding allocated to the implementation effort. This risk has been addressed in the process of development of the Plan to some degree, in that the SWGs were quite inclusive and therefore would have generated a degree of awareness and support for the Plan itself, which will facilitate the funding effort. The probability of this risk happening is high, using a high/medium/low scale. However, its impact is considered medium, using a high/medium/low scale, as some of these initiatives are already underway and in some cases available resources can be re-focussed if needed. The key mitigation strategies for this risk is to prioritise and focus on the key initiatives that best support the national development effort and to do these projects in the immediate term.

Additionally, the various funding and development agencies need to be engaged immediately as they will often support well designed and managed initiatives. And finally, a robust mechanism for submitting budget requests to Government must be developed and implemented, which will include monitoring processes, and detailed reporting on achievements and on the associated outputs, impacts and outcomes.

The second challenge that the Plan will face is the potential loss of momentum between the completion and approval of this Plan and its implementation. The probability of the risk is medium but its impact would be high. The probability of the risk is medium because the plan itself is supported by key stakeholders, including senior public officials. The key mitigating strategy is to move forward with the quick win initiatives immediately so that progress is demonstrated even while the Plan is being formally approved.

The scarcity of human resources to implement the Plan will always pose a serious risk. The Plan requires a broad range of skills and experience that may not be present within Government nor within St. Vincent and the Grenadines. The probability of this risk is high and the impact would be high. However, this risk can be managed by carefully prioritising the initiatives to enable skills and expertise to be developed over the implementation period, and to target the Diaspora for resources as well as strategically utilising external contracted resources. It is essential that Implementation Secretariat be appropriately staffed from inception.

While there are many other risks that will need to be reviewed and managed in the coming years, the final risk that will be identified is that of lack of coordination and integration across and within government itself, leading to a fragmentation of the implementation effort and unmanageable competition for the limited human and financial resources available with the country. The risk of this happening is considered medium with the impact on the success of the plan being high. The risk is considered to medium because the benefits of ICT across government is generally well known and well accepted, and therefore it is expected that once the Plan is seen to benefit all stakeholders in the medium term, co-operation will be eventually facilitated. However, to ensure that this risk is mitigated, the use of an Executive Sponsor in the form of a Minister is required. The Minister in charge of the Steering Committee is the clear choice or the Prime Minister if deemed necessary. The use of the Executive Sponsor will also mitigate any political risks that impact the Plan.

About Quick Wins

It is proposed that these quick win projects will be completed within six months using existing resources, while funding is sought for the larger more medium term projects and programmes. However, dedicated resources and a focussed effort is required if the various portals are to be created within this timeframe.

7.6 QUICK WINS

It is important to kick-start the implementation of the Plan as soon as possible to ensure that momentum is not lost from the planning effort and to build on the support created through the use of the Sector Working Groups. This can be achieved by the implementation of some Quick Win projects (summarised in Table 12 on the following page) which have the following characteristics:

- They can commence with relatively few resources that are generally available
- They have a high probability of success and deliver tangible results
- They can be completed within 6 to 9 months
- They will have high visibility and can generate significant support amongst a broad range of stakeholders
- They demonstrate Government's commitment to the success of the Plan

Table 12: Twenty-four Quick Wins

QUICK WINS			Time Lines
1		Establish the National ICT Steering & Advisory Committee which will demonstrate the assignment of the most senior resources of Government, civil society and private sector to the effort	Immediate
2		Appoint the National ICT Implementation Secretariat with a Head who is highly respected by both the public and private sectors. This will demonstrate commitment and will engage stakeholders in moving forward, and accelerate the implementation and procurement effort which will be attractive to the ICT industry	1 Month
3		Demonstrate commitment to citizens by connecting all schools, LRCs to broadband	3 Months
4		Introduce a special connectivity price for students to improve connectivity among students	3 Months
5		Demonstrate commitment to Connectivity Agenda by ensuring an additional 8,000 households are connected and affordable personal or household computer devices are being used.	6 Months
6		Improve the quality of broadband, its security and spur creation of local content by deploying Caribbean Internet Exchange Points (IXPs) and establish a national IXP in SVG	2 Months
7		Provide effective public awareness for the transition to IPv6	9 Months
8		Introduce a major educational and public awareness drive on Cybercrime	9 Months
9		Ensure the establishment of IXP	
10		Launch the Centre of Excellence and ICT Incubators at Diamond to signal the focus on addressing the scarcity of human resource and bolster the management of Rural Centres	2 Months
11		Establish a Taiwanese/SVG ICT Centre through an MOU to construct and strengthen the SVG Portal as its first priority so as to include more relevant government information and perhaps some key on-line services. The on-line services can include the integration of other web-base applications through the Portal	4 Months
12		Accelerate the development of key policies and standards necessary for the government on-line initiative and for supporting horizontal connectivity across Government. In particular, the policies and standards to allow a common look and feel for the various portals and for sharing of information need to be expedited	4 Months
13		Articulate the Sector policies for Agriculture, Health, Tourism and Education	Immediate
14		Accelerate the completion of the Portals and information systems for the Ministries responsible for Tourism, Agriculture, Health and Education by launching NAMIS, HIS and EIS information systems and integrate these into the SVG Portal, with a common look and feel. This initiative will demonstrate collaboration in real terms	3 Months
15		Deploy new PBX System and monitor cost savings and benefits	6 Months
16		Deploy CIPO's on line registry and application single form Deploy Land Registry to demonstrate greater ease of doing business.	3 Months 6 Months
17		Fully Deploy ASYCUDA World and launch Start design e-Tax Plan to demonstrate increased revenue collections	6 Months 9 Months

	QUICK WINS		Time Lines
18		Introduce a Video Conferencing system nationally and encourage similar deployment regionally to reduce cost of attending meetings and increase local participation.	2 Months
19		Complete the tele-medicine policy framework and begin formal pilots of this service	3 Months
20		Appoint the ICT Industry Association with a mandate to develop some short term recommendations for the ICT sector, including surveying and benchmarking the sector itself, determining its priorities and coordinating a database of local, regional and Diaspora human resources and expertise.	3 Months
21		Initiate the Community Integration Programme including the development of the Community Portal.	
22		Initiate some of the projects proposed under the Universal Service Fund as a matter of priority under the umbrella of the Plan as funding is available, and determine community priorities through continued stakeholder consultations. • Launch USF highway and tourism payphone project to improve security • Launch Internet connection to all schools & LRCs by September 2010 school term • Launch broadband connect to 8,000 households and supporting computer devices	3 Months
23		Develop a marketing package in conjunction with SVG-Invest for the attraction of FDI in the ICT Sector.	6 months
24		Develop the framework, policy and approach for streamlined procurement and for possible outsourcing of ICT initiatives from Government as a mechanism to grow the private sector	1 Year

It is proposed that these quick win projects will be completed within six months using existing resources, while funding is sought for the larger more medium term projects and programmes. However, dedicated resources and a focussed effort are required if the various portals are to be created within this timeframe.

7.7 CHANGE MANAGEMENT

One of the biggest challenges that Government will face in implementing the business process re-design programme within ministries and agencies is the management of change that will arise from the new ICT-supported business processes and from the provision of support for the electronic delivery challenges that will be introduced.

Government will need to develop a change management strategy which will facilitate and strengthen the service delivery culture within the public service and which will encourage the establishment and measurement of service delivery standards across all service delivery channels on a routine and regular basis.

7.8 STAKEHOLDER ENGAGEMENT AND COMMUNICATIONS

It is almost self-evident that unless stakeholders buy into the initiatives being implemented on their behalf that investments in technology will be of limited value. It is therefore critical that stakeholder engagement be strengthened so that the programmes and projects continue to be shaped to meet their needs. This is important in the case of industry as they are required to make investments in ICT and in training their people in order to derive the benefits of the initiatives being pursued under the Plan. Citizens and communities will need to be fully engaged if they are to grasp the opportunities that will be presented to them on the educational and training front and at the community level. The communications effort will need to be sustained and focussed, and will therefore required dedicated resources and appropriate funding over the life of the Plan.

7.9 MONITORING AND REPORTING

It is generally accepted that what is measured, monitored and reported gets focussed attention by the stakeholders who are impacted. It is important that the outputs, outcomes and impacts of the implementation of the national ICT Plan be measured and reported. In many instances, current measurement systems will suffice such as the systems in place with NTRC and ECTEL for the telecommunications sector. In many cases though, new measurements systems will have to be put in place to determine the impact and outcomes of the wide range of ICT initiatives. This may involve support from the Central Statistical Office and the commissioning of other surveys which is critical to the success of the Plan, and ensuring on-going support of development and funding agencies.

It is also important that the progress of SVG against the Plan is routinely reported to international agencies such as the ITU, World Economic Forum and other bodies that rank countries on their e-agenda, so that SVG's progress can be properly reflected on the international stage. The Advisory Committee and the Implementation Secretariat Committee will have important roles in ensuring that monitoring and reporting is appropriate to the requirements of the Plan.

7.10 ASSESSING AND IMPROVING THE CORE ICT INDICES

The National ICT Implementation & Monitoring Secretariat (NICTIMS) will ensure the relevant national agencies, National Telecommunications Regulatory Commission (NTRC), National Statistical Office (NSO) and UNESCO Education Statistical Secretariat conducts annual surveys in the five (5) areas of interest. 1. ICT Infrastructure (NTRC - ITU). 2. House-Hold ICT usage (NSO - ITU) 3. Business usage of ICT (NSO - UNCTAD) 4. ICT Trade (NSO – UNCTAD and 5. ICT use in Education (UNESCO).

The ICT Infrastructure will be conducted quarterly; however, the Household assessment can only realistically be conducted every 10 years as part of a census as in 2001 and now in 2011. The business and Educational surveys will be conducted for the first time in 2011 and subsequently on an annual basis.

Several projects, including the Laptop per Student Project and the use of the USF to improve connectivity will significantly improve all the Vincentian indices and is likely to catapult SVG to an unprecedented top bracket of the global rankings.

CONCLUSION

St. Vincent and the Grenadines have commenced on an exciting new journey of accelerating the country to a knowledge-based society and economy through the implementation of a pragmatic and well-thought our national ICT strategy and action plan. This re-launch is built of the good successes of the previous national ICT strategy, and has been crafted by a large number of stakeholders.

The Plan recognises the challenges facing its implementation and the cost to achieve its strategic outcomes but it is expected that with exemplary e-leadership at the senior levels, with good project management, with continued broad stakeholder involvement and with pride, enthusiasm and support of citizens and businesses, then SVG will grow and prosper with ICT in the coming years. An exciting new future is being created for the children and the people of SVG.

The Strategy & Action Plan will be reviewed annually by the Ministry responsible for Telecommunications, the National ICT Ministerial Steering & Advisory Forum **(NIMSAF)** and Stakeholders. The grid of current projects and new ICT initiatives will be upgraded.

POLICY REFERENCES

1. Electronic Transaction Act
   http://www.gov.vc/images/stories/Gov_images/docs/electronic%20transactions%20act%202007.pdf
2. ICT in Education Policy
3. ICT Policy 2002 to 2007 Regional Digital Development Strategy
   http://caricomict4d.org/images/stories/docs/draft_regional_ict_strategy.pdf

ACKNOWLEDGEMENTS

This Plan represents the inputs, ideas and contributions of many persons in St. Vincent and the Grenadines. It includes the expert and comprehensive participation of the Sector Working Groups and the support of the staff of the Ministry responsible for Telecommunications, Science, Technology and Innovation. The contributions and guidance of the Project Manager - EU SFA 2005, the Permanent Secretary of the Ministry and the guidance and vision of the Director of Telecommunications and Special Projects (Former Honourable Minister of Telecommunications, Science, Technology and Industry).

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APPENDICIES

1. Examples of E-citizen Charter
2. E-Readiness Charts
3. Cyber security – National Strategy
4. Internet Exchange Point
5. Knowledge Management
6. Effective Information Management
7. Cloud Computing Considerations
8. Core Indicators
9. ICT Projects, Donors & Focal Points

1: EXAMPLE OF E-CITIZEN CHARTER –THE NETHERLANDS

- **Choice of Channel -** As a citizen I can choose myself in which way to deal with the government. Governments ensure multi channel service delivery, i.e. the availability of all communication channels: visit, letter, phone, e-mail, and Internet.

- **Transparent Public Sector -** As a citizen I know where to apply for official information and public services. Government guaranties one-stop shop service delivery and acts as one seamless entity with no wrong doors.

- **Overview of Rights and Duties -** As a citizen I know which services I am entitled to under which conditions. Government ensures that my rights and duties are at all times transparent.

- **Personalized Information -** As a citizen I am entitled to information that is complete, up to date and consistent. Government supplies appropriate information tailored to my needs.

- **Convenient Services -** As a citizen I can choose to provide personal data once and expect to be served in a proactive way. Government makes clear what records it keeps about me and does not use data without my consent.

- **Comprehensive Procedures -** As a citizen I can easily get to know how government works and monitors progress. Government keeps me informed of procedures I am involved in by way of tracking and tracing.

- **Trust and Reliability -** As a citizen I presume government to be electronically competent. Government guarantees secure identity management and reliable storage of electronic documents.

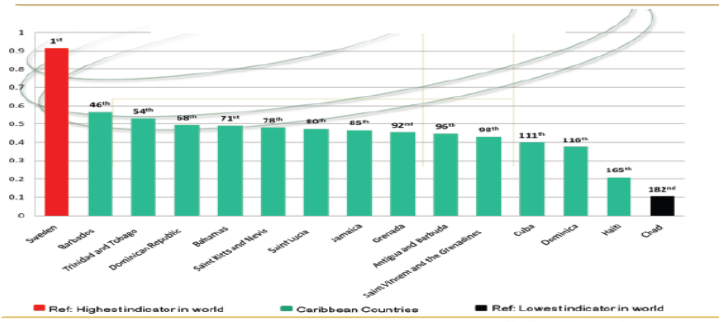
- **Considerate Administration -** As a citizen I can file ideas for improvement and lodge complaints. Government compensates mistakes and uses feedback information to improve its products and procedures.

- **Accountability and Benchmarking -** As a citizen I am able to compare, check and measure government outcome. Government actively supplies benchmark information about its performance.

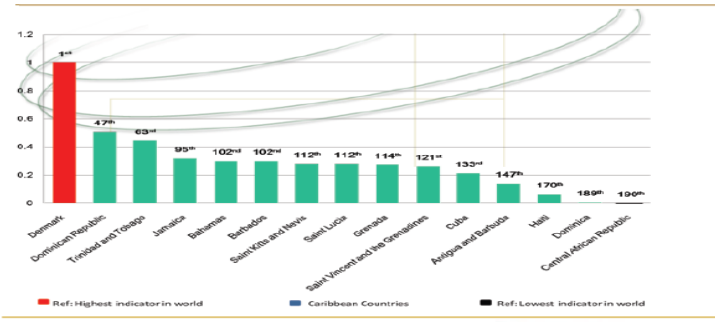
- **Engagement and Empowerment -** As a citizen, I am invited to participate in decision-making and to promote my interest. Government supports empowerment and ensures that the necessary information and instruments are available.

2:E-READINESS CHARTS

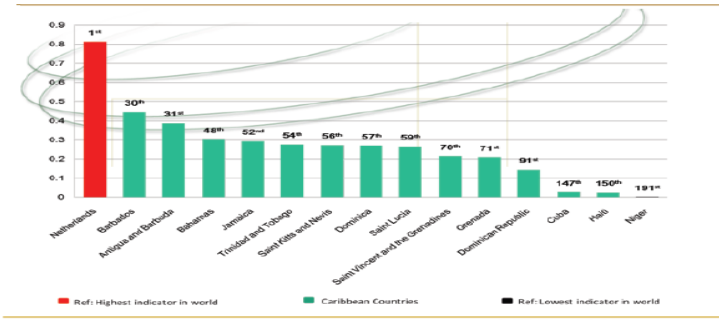
eGovernment Readiness



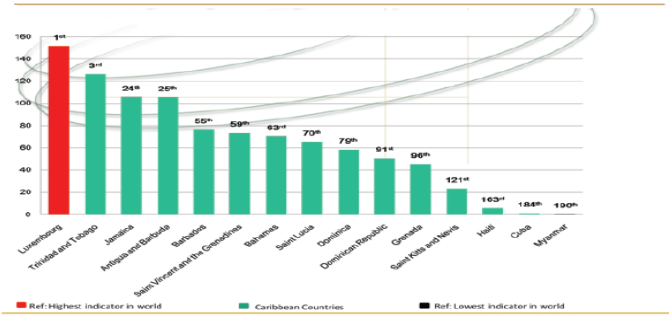
Web Measure Index



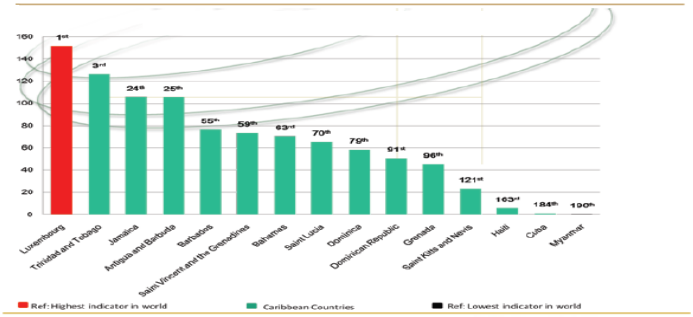
Telecom Infrastructure Indices



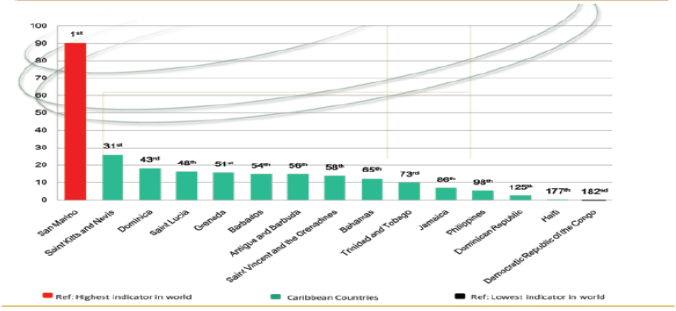
Caribbean Mobile User Indices



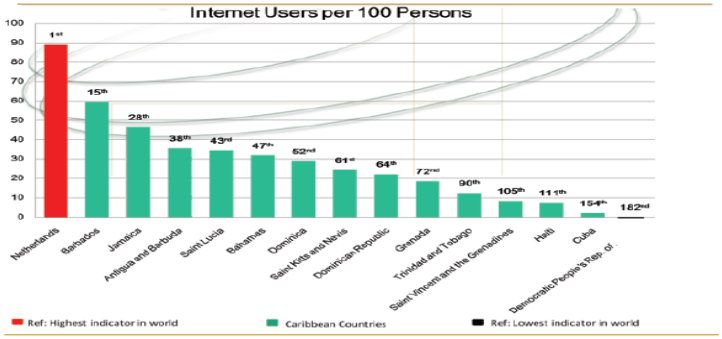
Caribbean Mobile User Indices



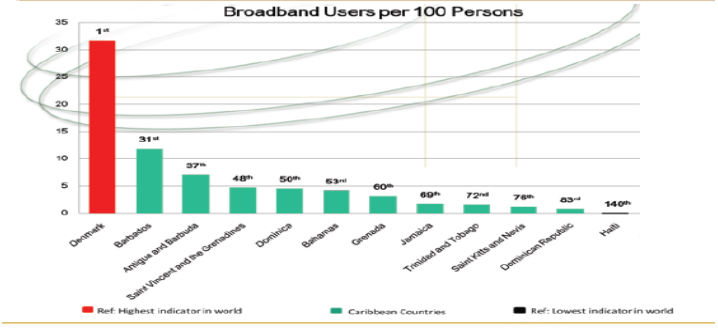
Caribbean PC Indices



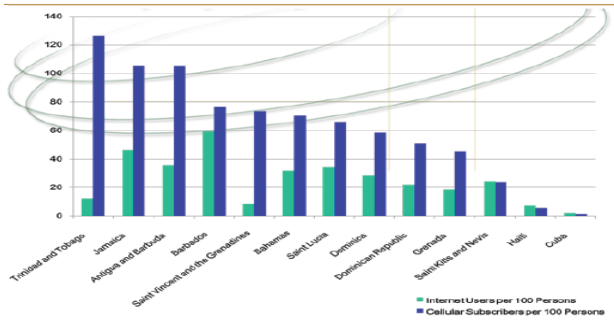
Caribbean Internet User Indices



Caribbean Broadband Indices



Case for Mobile as Access Channel for e-Gov



3:CYBER SECURITY – NATIONAL STRATEGY

Protection of cyberspace is essential to national security and our nation's economic well-being. Cyberspace interconnects our ministries, industries, health systems and crosses national borders. Coordinated national action by government, the private sector, and citizens/users is required for the prevention of, preparation for, response to, and recovery from incidents. Cooperation and coordination with international partners are also required.

Goals:

1. Create awareness at national policy level about cyber security and the need for national action and international cooperation.
2. Develop a national strategy to enhance cyber security to reduce the risks and effects of cyber disruptions.
3. Participate in international efforts for the prevention of, preparation for, response to, and recovery from incidents.

Specific Steps to Achieve Goals:

1. Persuade national leaders in government of the need for national action to address threats to and vulnerabilities of national cyber infrastructure through policy level discussions.
2. 2. Appoint a lead person and institution for the overall national effort. Two Computer Security Incident Response Teams will be

   located in the ITSD and the Royal SVG Police Force with national responsibility (N-CSIRT) will be established, and identify lead institutions for each elements of national strategy.
3. Identify the appropriate experts and policy makers within government ministries,
4. government, and private sector, and their roles.
5. Identify Cooperative arrangements for and among all participants.
6. Establish mechanisms for cooperation among government and private sector entities at the national level.
7. Identify international expert counterparts and foster international efforts to address cyber security issues, including information sharing assistance efforts.
8. Establish an integrated risk management process for identifying and prioritizing protective efforts for cyber security.
9. Assess and periodically reassess the current state of cyber security efforts and develop program priorities.
10. Identify training requirements and how to achieve them.

Government-Industry collaboration

Policy: The protection of cyberspace is a shared responsibility that requires cooperation between governments at all levels and the private sector, which owns and operates much of the underlying infrastructure.

Goals:

1. Develop government-industry collaborations that work effectively manage cyber risk and to protect cyberspace.
2. Provide a mechanism for bringing a variety of perspective, equities, and knowledge together to reach consensus and move
3. forward together to enhance security at a national level.

Specific Steps To Achieve Goals:

1. Include industry perspectives in the earliest stages of development and implementation of security policy and related efforts.
2. Encourage development of private sector groups from different critical infrastructure industries to address common security interests collaboratively with government.
3. Bring private sector groups and government together in trusted forums to address common cyber security challenges.
4. Encourage cooperation among groups from interdependent industries.
5. Establish cooperative arrangements between government and the private sector for incident management.

Deterring Cybercrime

Policy: The protection of cyberspace requires updating criminal laws, procedures and policy to address and respond to Cybercrime.

Goals:

1. Assess the current legal authorities for adequacy. A country should review its criminal code to determine if it is adequate to address current (and future) problems.
2. Draft and adopt substantive, procedural and mutual assistance laws and policies to address computer related crime.
3. Establish or identify national Cybercrime units.
4. Develop cooperative relationships with other elements of the national cyber-

security infrastructure and the private sector.

5. Develop an understanding among prosecutors, judges, and legislators of Cybercrime issues.
6. Participate in the 24/7 Cybercrime Point of Contact Network.

Development of Incident Management Capabilities

Policy: The protection of cyberspace requires an organization to serve as the national focal point for securing cyberspace, whose mission includes watch, warning, response and recovery efforts and the facilitation of collaboration between and among government entities at the national, state and local levels; the private sector; academia; and the international community.

Goals:

1. Develop a coordinated national cyberspace security response system to prevent, detect, deter, respond to and recover from cyber incidents.
2. Establish a focal point for managing cyber incidents that bring together critical elements from government (including law enforcement) and essential elements from infrastructure operators and vendors to reduce both the risk and severity of incidents.
3. Participate in watch, warning and incident response information sharing mechanisms.
4. Develop, test and exercise emergency response plans, procedures, and protocols to ensure that government and non-government collaborators can build trust and coordinate effectively in a crisis.

Specific Steps To Achieve Goals:

1. Identify or establish a national Computer Security Incident Response Team (N-CSIRT).
2. Establish mechanisms within government for coordination among civilian and government agencies.
3. Establish collaborative relationships with industry to prepare for, detect, respond to, and recover from national cyber incidents.
4. Establish point(s) of contact within government agencies, industry and international partners to facilitate consultation, cooperation, and information exchange with the N-CSIRT.
5. Participate in international cooperative and information sharing activities.
6. Develop tools and procedures for the protection of the cyber resources of government entities.
7. Develop a capability through the N-CSIRT for coordination of government operations to respond to and recover from large-scale cyber attacks.
8. Promote responsible disclosure practices to protect operations and the integrity of cyber infrastructure.

Develop A Culture Of Cyber Security

Policy: Because personal computers are becoming ever more powerful, technologies are converging, the use of ICTs is becoming more and more widespread, and connections across national borders are increasing. All participants who develop, own, provide, manage, service and use information networks must understand cyber security and take action appropriate to their roles to protect cyberspace. Government must take a leadership role in bringing about this culture of cyber security and in supporting the efforts of other participants.

Goals

1. Promote a national culture of security consistent with UNGA Resolutions 57/239 creation of global culture of cyber security, and 58/199, Creation of a global culture of cyber security and the protection of critical information infrastructures.

Action Item:

Action Item:
Launch Policy on Cyber security & Cyber Crimes as part of IPv6 Task Force

Launch campaign on computer use and misuse in the Public Service and standards for equipment

Specific Steps To Achieve Goals:

1. Implement a cyber security plan for government – operated systems.
2. Implement security awareness programs and initiatives for users of government systems and networks.
3. Encourage the development of a Culture of Cyber security in business enterprises.
4. Support outreach to civil society with special attention to the needs of children and individual users.
5. Promote a comprehensive national awareness program so that all participants – businesses, the general workforce, and the general population – secure their own parts of cyberspace.
6. Enhance Science and Technology (S&T) and Research and Development (R&D) activities.
7. Review existing privacy regime and update it to the online environment.
8. Develop awareness of cyber risks and available solutions.

4:INTERNET EXCHANGE POINT (IXP)

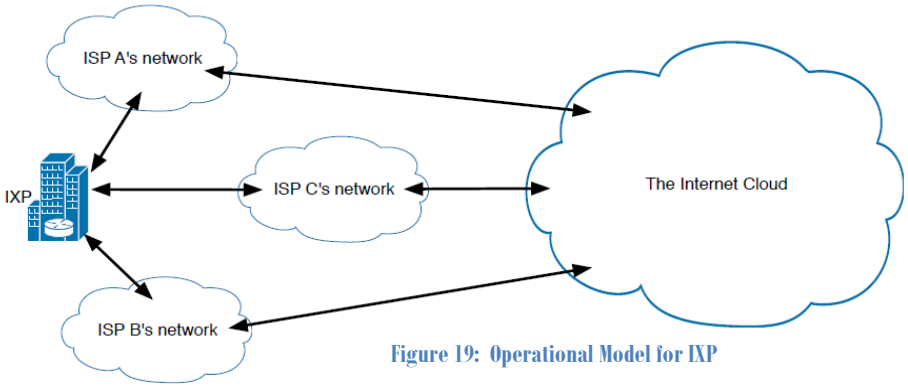


Figure 19: Operational Model for IXP

As time progresses and the world's population continue to increase at an exponential rate, more and more strains are placed on the fixed amount of non-renewable resources that are at our disposal. With the collapse of the banana industry, a fragile tourism industry, a global economic crisis and a culture that is consumer based rather than production based, SVG find itself in a fiscal dilemma trying to chart a way forward. SVG therefore has to turn to non-traditional ways of developing and sustaining the economy.

In a modern, competitive, post colonial Caribbean civilization, the nature of our continued existence depend heavily on what we can produce and market on the international market, but the cost of interconnecting and doing business is very expensive. It is imperative that we adapt to new and existing technologies in order to bring about solutions to these problems, and one such strategy is to employ the use of Information Telecommunication Technology (ICT); and in this particular case, the establishment of a National Internet Exchange Point (IXP) as illustrated in Figure 19 above.

The primary purpose of an IXP is to allow networks to interconnect directly rather than through one or more 3rd party networks. The advantages of the direct interconnection are numerous, but the primary reasons are cost, latency, and bandwidth. Traffic passing through an exchange is typically not billed by any party. However traffic to an ISP's upstream provider is, and in our particular case, all our local ISPs buy bandwidth from a transit provider in the United States. Moreover, there are quite a number of other benefits that can be derived directly from the establishment of a local IXP and these include: the establishment of a well-defined Internet Economy that would keep SVG internet traffic local, enhance the internet experience of users, reduce overall cost related to providing internet services, promote and encourage the creation of local content, create internet opportunities, and build technical capacity. It would include improved connectivity through fibre optic and high speed wireless (FSO) connectivity, GSM Operators - GPRS/3G Services, establishment of Academic Networks – Providers, E-learning, Local Loop Operators (LLO's) - Voice/data, Content hosting providers - e-business, more of Government including e-government, Multi-media Service providers - SMS/gaming. In addition, aggregation of demand makes it more attractive for additional transit providers to enter the market.

A direct interconnection (often located in the same country or region) avoids the need for data to travel to other countries outside the region to get from one network to another, thus reducing latency and the possibility of attack from cybercrime. The third advantage, speed, is most noticeable in areas that have poorly developed long-distance connections and this is absolutely critical to our web services, telemedicine and video conferencing, etc. ISPs in the Caribbean region normally pay between 10 or 100 times more for data transport than ISPs in North America, Europe or Japan. Therefore, our ISPs typically have slower, more limited connections to the rest of the internet. However, a connection to a local IXP may allow them to transfer data without limit, and without cost, vastly improving the bandwidth between customers of the adjacent ISPs.

At present an email from the Prime Minister to another member of government sitting across the hall must travel the route SVG, Barbados, Antigua, Miami and back before it reaches him. The case of moving the relevant IXP from Miami to St Kitts, a reduction from 6,000 miles (round trip) to perhaps one mile, the decrease in distance is so dramatic that cost can be minimized to near zero, while speeds can be increased from some multiple of STM-1 to 1 GB or 10 GB.

IPV6 also brings with it a number of benefits such as the quality of service required for some new applications like IP telephony, video/audio, interactive games or ecommerce which can be delivered over the network. This version easily deals with the avoidance of network traffic, loss of data or bandwidth.

A local IXP would result in a vast increase in the network capacity (bandwidth) available for sale to domestic customers, without demanding any significant corresponding capital or operational investment. This would make more bandwidth available for important activities such as video streaming and telemedicine and increase the national penetration of Broadband Internet.

An IXP is a prerequisite to the development of any significant domestic content production, hosting, or collocation industry. This barrier must be surpassed before major content providers like Google, Amazon, Akamai, or UltraDNS will even consider providing local services within Caribbean national markets. The increased demand for these services, and ISPs ability to supply them at a new lower price-point, serves to increase both market penetration and the total revenue-value of the market, relative to the pre-IXP status-quo.

The maturation of the local network infrastructure provides a nucleus for education and retention of the Internet-skilled labour force that ISPs, central government, schools and the private sector need in order to continue their growth and economic progress.

Furthermore, sending sensitive data across national borders presents a privacy risk to governments and corporations. By keeping local traffic local, sensitive data is not subject to inspection by other governments. Then too, the having a local IXP will aid in the setting up of a local certificate authority and web hosting facility. This will enable more of our businesses to do ecommerce in a safer and more secure internet environment.

An IXP enables co-ordination of security, infrastructure protection, and abuse response activities. As our society becomes more ICT oriented and internet dependent, so too will number of incidents of cyber crime. Internet crimes are not like traditional crimes and can be committed across jurisdiction. Having an IXP will make it easier for us to track and bring these criminals to justice.

An IXP will, therefore, add more value to projects like CKLN, EGRIP and the Intranet Backbone It will also make available a logical place to locate, and hence attract, other Internet infrastructure resources. For example top-level name servers, time servers, performance measurement tools, research projects.

Action: Establishing The IXP

- Communicate with the internet society the desire to establish the IXP
- Form a small working-group of committed-participant organizations
- Determine a neutral location that is acceptable to all
- Define an IXP policy document that participants agree to abide by
- Secure small IPv4 and IPv6 subnets from ARIN/LACNIC for the peering subnet
- Install a Gigabit-Ethernet capable switch
- Configure BGP rout- announcement between peers. Fully include the community in the process; awareness raising and training activities may be necessary. Potential members will need to be familiar with the Border Gateway Protocol (BGP), which is used for routing between networks, and each network will need to have a publicly registered Autonomous System Number (ASN) for their exchange communications. This can be obtained from the relevant Regional Internet Registry.
- Establishment of neutral ISP associations capable of managing IXPs and other shared facilities on behalf of their members
- The most important features of the IXP facility are reliable and redundant power supplies, air conditioning, security, space for growth, and access to communications infrastructure. Most important, the facility should retain a neutral status with its members. Proximity and accessibility of the facility are also factors to consider.

Transition to IPv6

With the depletion of IPV4, a new version of the Internet Protocol was established called IPV6, also known as IP Next Generation (IPNG). This version seeks to address the main issue of exhaustion of addresses to connect computers or host. It has a large address space of 128 bits compared to 32 bits of the version 4. The introduction of this version means that SVG will have to take stock of what exists and with its ICT National Plan see how greater use of the initiatives can be implemented bearing in mind IPV6 would soon be adopted around the world. In a nutshell, IPV6 will offer the following benefits:

1) Increased address space
2) More efficient routing
3) Reduced management requirement
4) Improved methods to change ISP
5) Better mobility support
6) Multi-homing
7) Security
8) Scoped address: link-local, site-local and global-address space

The increased number of paths learned through an IXP improves routing efficiency and fault-tolerance for participants and renders participants far more resilient to international cable failures.

5: KNOWLEDGE MANAGEMENT

The adoption of technologies without developing human skills and capacities to manage, integrate and sustain them. The centralized use of technologies by national government departments, without developing and extending the benefit of technology to intermediary institutions, such as local government, parliament, parties, civil society organization and independent media. A failure to link better governance to broader and more inclusive democracy which gives voice to those who cannot afford technologies, but have needs and ideas to express. These are all critical lessons learned in the use of ICT for development.

Historically, the focus has been on building front-end visibility with the citizen. However, while establishing superior citizen experiences, the backend must be made capable to ensure such initiatives are not wasted. Clearly, the quality of the infrastructure must be continuously managed and strengthened to ensure maximum citizen care. Governance frameworks and technology architectures must integrate the human, financial and social aspects to guarantee precision and accuracy of response.

The main advantage of any advance in technology is to allow more attention to the real goals and challenges of knowledge management (KM), which will always concentrate on people and operational issues. Improved portal, content management and collaboration (PCC) facilities have removed many of the basic technical impediments to using knowledge assets in enterprises. KM projects can concentrate on where to target these efforts and how to manage them effectively - see Figure 20 below - using the following steps.

Step 1 - Identify strategic and operational objectives.

What are the general objectives for the organisation?

Consider the business and the environment.

Step 2 - Find functional, structural and business value.

Find actual changes in efficiency and effectiveness that will achieve the desired objectives.

Consider the functional and structural organisation.

Step 3 - Finding and using financially valuable knowledge.

Knowledge does have an effect on efficiency and effectiveness.

Consider the process and the individual.

Step 4 - Quantifying and understanding the knowledge.

Ensures accurate understanding and codification or personalisation of that resource.

Consider the knowledge itself.

Step 5 - Integrating with information technology guide the infrastructure that supports the management of knowledge.

Consider information and transmission.

Step 6 - Select knowledge technique and technology.

Making the right choice of knowledge management technique and enabling technology elements of a KM environment.

Critical components which should not be ignored in the development process include:

- Security
- Infrastructure
- Enterprise Applications Integration
- People & Learning
- Connectivity
- Collaboration
- Storage
- Disaster Protection

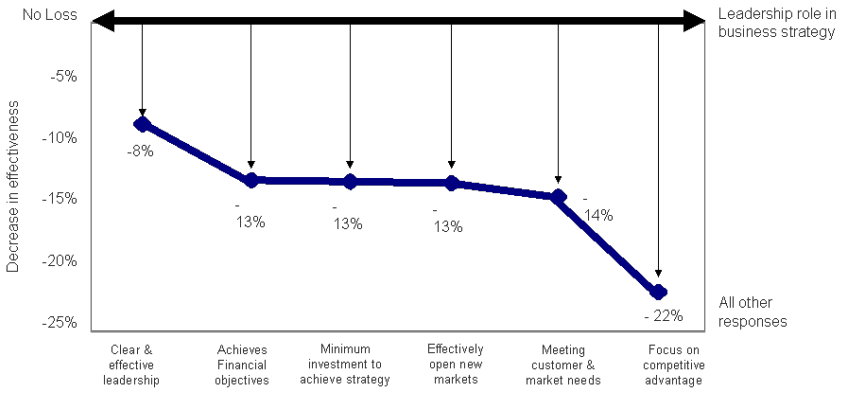


Figure20: Six step approach to implementing knowledge management projects

Table 13: Knowledge Management Trends

1. Government policies are driving more educators to tailor their instruction to the individual needs of students
2. Important constituency groups expect to see technology used in the classroom
3. Online learning offers a solution to the challenge of increasing access while maintaining costs
4. Popular support has waned for using technology as a tool to reform education institutions
5. Technology purchases must compete with other priorities for increasingly scarce budgetary resources and must be targeted and cost-effective
6. Moving to the next level of technology adoption requires significant and difficult behavioural changes
7. The most appealing solutions must also provide compelling evidence of their effectiveness
8. Seeking the benefits of standardization, lessons learnt and proven benefits, institutions will migrate from point to enterprise-wide solutions
9. The acceptance of Cloud Computing and other vendor-hosted solutions and other delivery options will grow in the market
10. The uptake of LMS solutions will expand rapidly in the Caribbean's higher education market
11. There are four approaches that institutions are likely to take when selecting an LMS solution
12. Institutional preferences for LMS solutions are not monolithic and vary across geographic regions
13. Lecture capture solutions represent the next horizon for extending the power of LMS solutions. The deployment of Master Teachers (The best teachers) to teach across the network will emerge

Action Item:

Examine existing KM projects to ensure that they address the trends and best practices of Table 13.

Knowledge Management In Government

It is critical to design a KM program aimed at knowledge sharing and preservation to ensure no loss of knowledge occurs as a result of key employees leaving the organization or retiring or to maintain strong levels of security - see KM trends in Table 13 above. If employees possess valuable knowledge, government needs to identify this early, define a capture and knowledge-sharing strategy based on their personal style, and close the loop to any vulnerability. If this process is not planned for disaster it could lead to an imminent crisis. The exit strategy should be based on risk mitigation. It's important to note that:

1) The knowledge transfer question is relevant for all workforce reconfiguration programs, including those stemming from reorganization, outsourcing, mergers and acquisitions and consolidation. Retirement is quite possibly the only thing on any organization's radar screen that it can anticipate.
2) Determining who has the knowledge is a process of interaction, interviews and open-ended questions. If stakeholders wait for an investment in software tools for this, they'll never capture the knowledge before people leave.
3) The knowledge transfer process could be more about how to reconstruct knowledge than how to replicate or document it.
4) The living, breathing interview process quickly reveals who are the high-value members — those people who form the connective tissue, to whom many people in multiple constituent groups turn for information and whose importance in that role is seldom acknowledged or recognized.

KM In Technical Support

Most ICT managers who want to start their KM initiatives begin with the ICT department. Technical support is a good place to start, as it is an expensive, high-profile function where finding the right answer quickly is critical.

ICT service and support delivered via a Web portal is a proven method of increasing customer satisfaction and significantly lowering costs. Lowering costs can be the main driver for a self-service Web portal. However, ICT organizations also look to self-service to improve the consistency and quality of service support, reduce the volume of unnecessary status checks, expand the hours of operations of ICT support, involve employees more in the process of service support design, allow employees to solve issues quicker, offer another avenue for requesting service, and educate employees on how to resolve future issues independently.

While ICT can be a good place to start, we find that extending systems developed here to the rest of the organization is rarely successful. ICT employees are generally more receptive to these techniques, and the systems developed for ICT generally do not meet the needs of Line-of-Business (LOB) groups. Several vendors offer packaged solutions for help desk KM, either as part of an overall service management package or standalone. The alternative is to build your own solution.

KM In A High-Performance Workplace

Justification for position and speed of adoption

Knowledge management first appeared in a Hype Cycle in 1997, and has since followed a predictable path through the hype. It has now left the Trough of Disillusionment and begun to climb the Slope of Enlightenment. It is expected that KM will go off the hype cycle, due to its widespread adoption.

The wide variety of technologies that enable knowledge management — portals, content management, collaboration and many others — are steadily improving their support for the human and work processes of knowledge management.

Action Item:

Enterprises can use knowledge management programs to support individual users, teams or their entire organization. But they should concentrate on teams, as research shows that this is where the greatest benefits arise in terms of productivity and innovation.

Action Item:

Sensitize the Public and Private Sector to benefits of KM
KM governance requires both top-down and bottom-up efforts, although much more of the latter than the former.

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6: EFFECTIVE INFORMATION MANAGEMENT

Information is the key to success when organised, processed, and available to the right people in a form conducive to rapid accurate decision making enabling the desired results. The burden of poorly structured information eliminates accuracy of decision-making. Today, organisations in every sector are experiencing the reality of this perspective as they strive to maintain a competitive position, increase effectiveness or offer efficiency, in an environment shaped by value and quality of information. The traditional boundaries of the organisation are becoming increasingly blurred as business partnerships evolve into complex interrelationships, customers and citizens expect rapid access to services and localised operations feel the impact of globalisation.

Information management no longer represents a repository but a transactional capability for simpler, faster, secure collaboration. As with any transactional environment, tactical investments in solutions introduce the risk of unmanageable chaos. The added challenge of effectively information use requires the careful and deliberate blend of human skills, processes and technology. All such tactical investments require strategy formulation driven ultimately by the requirements of individuals and groups, as well as by the objectives of the organisation.

There must be a solid underlying infrastructure that provides cost effective storage, security, and business continuity; a management layer to handle classification, lifecycle management, integration, and data quality; a services layer to provide information capture, search, retrieval, query, and analysis; and a delivery layer to enable reporting, publishing, customisation, and collaboration. These capabilities must span structured and unstructured information, combine both tangible and intangible sources, and be abstracted as far as possible from individual technologies.

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7:CLOUD COMPUTING CONSIDERATIONS

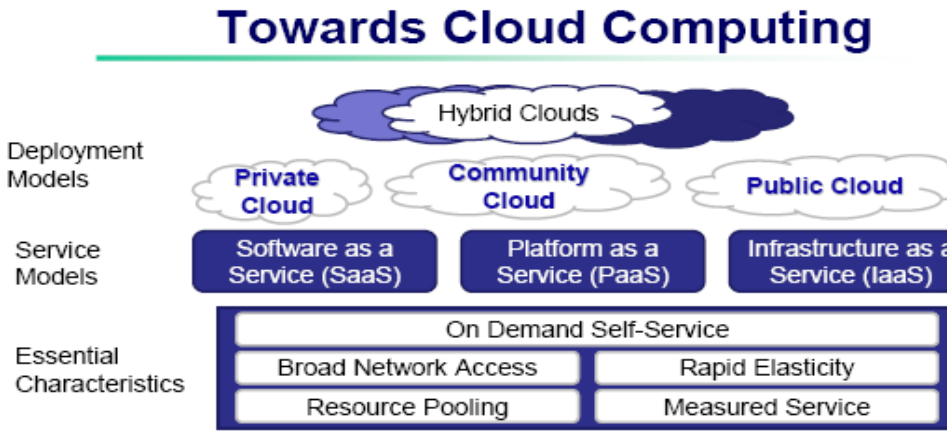

Figure 21: Cloud Computing

Governments agencies are finding it increasingly costly and difficult to procure, set up, maintain, and secure traditional computing architectures. Many argue that government need not get involved in the details of buying and maintaining complex computer systems. Consequently, Governments around the world are actively looking into cloud computing as a means of increasing efficiency and reducing cost. This Appendix outlines highlight the value and risk associated with this new concept. However, before exploring the merits of Cloud computing it's important to understand fundamental concepts including the definition, characteristics and variation.

Definition

According to the National Institute of Standards and Technology (NIST) "Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

Characteristics

They also identify five characteristics of cloud computing - see Figure 21 above:

- On demand self-service
- Broad Network Access
- Resource Pooling
- Rapid Elasticity and
- Measured Service[1]

Service Models

The relationship between cloud client and provider can vary significantly. An organization can pay an outside cloud provider for data, applications, operating platforms, raw digital storage, and/or processing resources: Data as a Service (DaaS), Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS), respectively.

Deployment Method

These can be categorised using four services models – public, private, community and hybrid. The public model can be considered the original model of cloud computing.
In this typical cloud computing scenario organisations run their applications from a data centre provided by a third-party – the cloud provider.

Pros

Figure 22 highlights the Pros of Public Cloud computing. A key advantage is that the provider is responsible for providing the infrastructure, servers, storage and networking necessary to ensure the availability and scalability of the applications. This allows Government to focus on what matters and without having to worry about technology side of things.
Cloud computing allows government to buy in only wanted services, when wanted, cutting the upfront capital costs of computers and peripherals.
Additionally, extra services can be added (or taken away) at a moment's notice as needs change without waiting weeks or months for the new computer (and its software) to arrive.

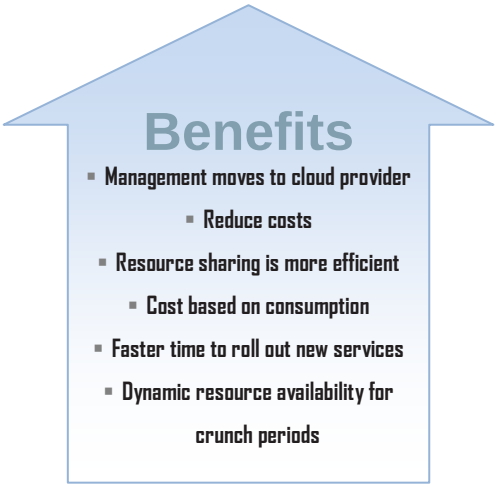

Figure 22: Benefits to Cloud Computing

No doubt this model also lends itself well to Government agencies more efficiently, and effectively sharing resources.

Inhibitors

Despite all heralded pros of Cloud computing Governments must be sober its adoption of this concept. The following questions represent some of the more popular considerations requiring resolution before the adoption of cloud computing within any government - refer to Figure 23.

Governance Arrangement: Who owns/accesses/deletes/replicates data in the cloud?

Legislation, policies and regulations: The legal framework must support this concept therefore Governments must develop the relevant policies and regulations that would support the proper implementation and offer protection to all parties involved.

Analyse Hidden Cost: Instead of purchasing computers and software, cloud computing means you buy services, so one-off, upfront capital costs become ongoing operating costs instead. Higher ongoing operating costs. Will cloud computing work out more expensive?

Lock-in: Governments' options are limited to what's being offered by providers. Furthermore the risk of being locked into proprietary or vendor-recommended systems is very real. Consideration must be given to the ease of migration to another system or service provider if needed to? Additionally, how interoperable would one cloud be to another offered by a different provider?

Need for Robust SLA: Greater dependency on service providers requires government to develop robust SLS to ensure that problems get resolved quickly?

Availability & Reliability: What happens if supplier suddenly decides to stop supporting a product or system you've come to depend on?

Security and Privacy: Potential privacy and security risks of putting valuable data on someone else's system in an unknown location? Where does the data reside and does the location have legal ramifications.

"Public and private clouds aren't for every organization and every situation," concludes PricewaterhouseCoopers' Lobel, "but they will play a key role in ICT."A technical team will evaluate the appropriateness, cost and benefits of cloud computing and the possibilities of deployment in St. Vincent & the Grenadines, the OECS Sub-region or the wider Caribbean.

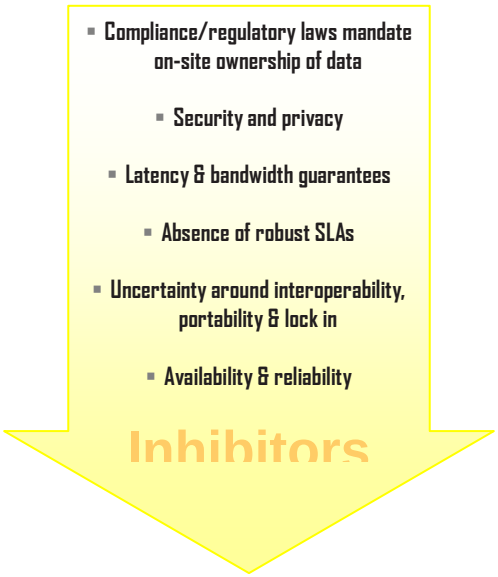

Figure 23: Inhibitors to the Adoption of Cloud Computing

References

[1] *IA Newsletter* Vol 13 No 2 Spring 2010 • http://iac.dtic.mil/iatac

8: CORE INDICATORS

The main purpose of the core list of ICT Indicators is to help countries produce standardized, high quality and internationally comparable data on Information and Communication Technology. To assist in achieving this goal, the indicators must have associated statistical standards and guidance. There are currently 46 ICT indicators in the 2010 revised core list and two (2) reference indicators. In comparison, the 2005 list only contained 41 ICT indicators. The Geneva phase of the World Summit on the Information Society (WSIS) in 2003 highlighted the importance of benchmarking and measuring progress towards the Information Society. The 2005 Tunis phase of WSIS re-iterated the importance and at the second phase of WSIS, held in Tunis in November 2005 the final list was officially launched. The 2005 core list included 41 core ICT indicators in several groups: (1) ICT infrastructure and access; (2) access to, and use of, ICT by households and individuals; (3) use of ICT by businesses; the ICT sector; and (4) trade in ICT goods.

The original 41 core list and the revisions it underwent were based on a supply/demand conceptual model of the information society. Feedback on the policy and practical relevance of the core indicators in 2008 and their particular relevance resulted in the addition of new categories in the household and business use indicators to reflect changes in the nature of ICT use. They included categories on mobile Internet access, updates to means of Internet access to include mobile broadband, more details on communication using the Internet, new business Internet activities and the adoption of OECD tariff basket methodology for measuring mobile cellular prepaid tariffs.

An important improvement to the first core list has been the addition of eight new indicators on measuring ICT in education which were developed by the UNESCO.

A number of other possible ICT indicators, including indicators on (1) the economic and social impacts of ICT, (2) e-government, (3) barriers to ICT use, (4) ICT expenditure, (5) investment, (6) trade in ICT services, (7) ICT security & (7) trust are being developed. Indicators in these and other areas, such as (8) use of mobile telephony and (9) digital content, may be added to the core list in the future, after more development work.

The core indicators on ICT infrastructure and access are collected by the International Telecommunication Union (ITU), as part of a much larger collection of telecommunication indicators. The ITU data, some of which go back as far as 1960, are published in the World Telecommunication/ICT Indicators Database (ITU) and are defined in ITU's Telecommunication Indicators Handbook (ITU, 2007).

Data for the indicators come from several sources, the main one of which is an annual survey of telecommunication authorities and some private companies. Other sources include reports provided by telecommunication regulatory authorities, ministries and operators. Because data are collected from providers rather than users, they are widely available for both developed and developing economies.

ICT household and educational statistics should be collected by National Statistical Offices through household surveys and census. Most developed economies have been collecting these statistics for years, using model OECD questionnaires. Other economies are making good progress in collecting these indicators using the core indicators and associated standards. Most countries do not have good time series of ICT access and ICT use data and much of the available data are out-of-date, therefore, less useful, given the pace of change in adoption of many technologies.

In St. Vincent & the Grenadines, the National Telecommunications Regulatory Commission (NTRC) has been only mandated to collect infrastructure, traffic, tariff, policy, legislative, regulatory and infrastructure investment data which includes the core ICT Infrastructure Indices and forward it to the ITU. However, the other core indices (Household access and use, business, trade and education were not being collected and forwarded by the National Statistical Office or any agency. Instead there has been a reliance on old data from the 2001 National Census which precedes the tremendous advances in household usage of ICT, the introduction of one laptop (Net-book) per student and the Educational Revolution. A new collaborative approach will ensure this data is collected, posted on several Web sites (NTRC, Government and National Statistical Office Web sites and forwarded to the relevant international agencies (ITU, UNCTAD and UNESCO). St. Vincent & the Grenadines plans to make a major leap in ICT usage indices in 2011.

ITU Contact: Ms. Doris Olaya

A1	Fixed telephone lines per 100 inhabitants
A2	Mobile cellular telephone subscriptions per 100 inhabitants
A3	Fixed Internet subscribers per 100 inhabitants
A4	Fixed broadband Internet subscribers per 100 inhabitants
A5	Mobile broadband subscriptions per 100 inhabitants
A6	International Internet bandwidth per inhabitant (bits/second/inhabitant)
A7	Percentage of the population covered by a mobile cellular telephone network
A8	Fixed broadband Internet access tariffs per month in US$, and as a percentage of monthly per capita income
A9	Mobile cellular telephone prepaid tariffs per month in US$, and as a percentage of monthly per capita income
A10	Percentage of localities with public Internet access centers (PIACs)
HH1	Proportion of households with a radio
HH2	Proportion of households with a TV
HH3	Proportion of households with telephone
HH4	Proportion of households with a computer
HH5	Proportion of individuals who used a computer in the last 12 months
HH6	Proportion of households with Internet access
HH7	Proportion of individuals who used the Internet in the last 12 months
HH8	Location of individual use of the Internet in the last 12 months
HH9	Internet activities undertaken by individuals in the last 12 months
HH10	Proportion of individuals who used a mobile cellular telephone in the last 12 months
HH11	Proportion of households with access to the Internet by type of access
HH12	Frequency of individual use of the Internet in the last 12 months
HHR1	Proportion of households with electricity

UNCTAD Contact: Ms. Scarlett.Fondeur
Scarlett.Fondeur.Gil@unctad.org

B1	Proportion of businesses using computers
B2	Proportion of persons employed routinely using computers
B3	Proportion of businesses using the Internet
B4	Proportion of persons employed routinely using the Internet
B5	Proportion of businesses with a web presence
B6	Proportion of businesses with an intranet
B7	Proportion of businesses receiving orders over the Internet
B8	Proportion of businesses placing orders over the Internet
B9	Proportion of businesses using the Internet by type of access
B10	Proportion of businesses with a local area network (LAN)
B11	Proportion of businesses with an extranet
B12	Proportion of businesses using the Internet by type of activity
ICT1	Proportion of total business sector workforce involved in the ICT sector
ICT2	ICT sector share of gross value added
ICT3	ICT goods imports as a percentage of total imports
ICT4	ICT goods exports as a percentage of total exports

UNESCO Contact: Mr. Claude Akpabie:
c.akpabie@uis.unesco.org

ED1	Proportion of schools with a radio used for educational purposes
ED2	Proportion of schools with a television used for educational purposes
ED3	Proportion of schools with a telephone communication facility
ED4	Learners-to-computer ratio in schools with computer-assisted instruction
ED5	Proportion of schools with Internet access by type of access
ED6	Proportion of learners who have access to the Internet at school
ED7	Proportion of learners enrolled at the post-secondary level in ICT-related fields
ED8	Proportion of ICT-qualified teachers in schools
EDR1	Proportion of schools with electricity

9: ICT PROJECTS, DONORS AND FOCAL POINTS

ICT INITIATIVES ST. VINCENT & THE GRENADINES 2010 – 2015 (INFRASTRUCTURE)

SECTORS		ICT INITIATIVES AND ACTIVITIES	START DATE	EXPECTED DATE FOR COMPLETE	DONOR FINANCIA SUPPORT	FOCAL POINT CONTACT	PHONE (784)	E-MAIL
A-INFRASTRUCTURE								
• LEGISLATIVE	AL1	Telecommunications Act 2001 2001	-	2001	-	-	-	ag.gov.vc@gmail.com
ENABLING	AL 2	Freedom of Information Act 2005	-	2006	PM Office	AG Office	-	ag.gov.vc@gmail.com
FRAMEWORK	AL 3	Privacy Act 2006	-	2006	PM Office	AG Office	-	ag.gov.vc@gmail.com
	AL 4	Electronic Transaction Act 2008	-	2007	PM Office	AG Office	-	ag.gov.vc@gmail.com
	AL 5	Payment System Act 2009	-	2008	ECCB	Min. Finance	-	office.finance@mail.gov.vc
	AL 6	ICT Fiscal Incentive Act 2008	-	2008	GOV. SVG	Min. Industry	-	eclarke@gov.vc
	AL 7	HIPCAR Legislative review & regulations 2010	-	March 2011	CARICOM	CTU - AG Office	-	ag.gov.vc@gmail.com
	AL 8	**Electronic Transaction Act Regulations 2011**	-	March 2011	E-Grip-OECS	Telecoms	456-1223	office.telecom@mail.gov.vc
	AL 9	ICT Fiscal Incentive Act Regulations 2011		March 2011	Industry	E. Clarke	456-1223	eclarke@gov.vc
• REGULATORY	AR10	Establishment of Regulator ECTEL Treaty 2000	-	2000	OECS	ECTEL - NTRC	457-2279	ntrc@ntrc.vc
FRAMEWORK	AR11	Establishment of NTRC 2002	-	2002	GOV. SVG	ECTEL - NTRC	457-2279	ntrc@ntrc.vc
	AR12	Current Telecommunications Regulations Suite	2003	2003	NTRC	Apollo Knights	457-2279	aknights@ntrc.vc
	AR13	Electronic Communications Bill 2011	2010	Sept. 2011	ECTEL	Apollo Knights	457-2279	aknights@ntrc.vc
	AR14	New Electronic Communications Suite of Regulations	2011	Jan 2013	NTRC	Apollo Knights	457-2279	aknights@ntrc.vc
	AR15	Legislation enacted for safe and secure telemedicine	2010	Sept 2011	ECTEL-NTRC	PS. Shirla Francis	457-0905	sfrancis@gov.vc
	AR16	**Broadcast Legislation & Regulations**	2005	June 2011	OECS /Min Info	AG Office	-	ag.gov.vc@gmail.com
• CONNECTIVITY	AC17	Landing of Southern Submarine Fiber 2007	-	2007	Karib Cable	Ian Mulhurn	457-1600	info@karibcable.com
	AC18	Launch and Assessment of Next Generation Network (NGN) 2010	-	Sept. 2010	LIME	Angus Steel	457-1901	angus.steele@lime.com
	AC19	Launch/Assessment Karib Cable -Internet Triple Play & Digital network	-	June 2010	Karib Cable	Ian Mulhurn	457-1600	info@karibcable.com
	AC20	Island Wide Cable Modem coverage	-	June 2010	Karib Cable	Ian Mulhurn	457-1600	info@karibcable.com
	AC21	Government Backbone Establishment	2003	2010	GOV. SVG	ITSD - A. Bailey	457-1007	andre.bailey@gov.vc

	AC22	Government Backbone Extension to Campden Park	2011		2011	World Bank	ITSD - A. Bailey	457-1007	andre.bailey@gov.vc
	AC23	Government Backbone Extension to Arnos Vale / Argyle	2011		2012	World Bank	ITSD - A. Bailey	457-1007	andre.bailey@gov.vc
	AC24	Extension of National Backbone to government facilities rural areas	-		2013	ITSD	ITSD - A. Bailey	457-1007	andre.bailey@gov.vc
	AC25	Government Digital PBX Project (1.Police 2. Health. 3. Public Service)	-	June	2011	GOV. SVG	Andre Bailey	456-1223	andre.bailey@gov.vc
	AC26	Government Telephone 25% cost reduction initiative	-	March	2011	GOV. SVG	Camilla Mandeville	456-1223	mandevillecam@gov.vc
	AC27	**National SVG Internet Exchange Point (IXP) Establishment**	-	Nov.	2011	GOV. SVG	Caswallan Duncan	456-1223	netadmin@gov.vc
	AC28	IPv6 Transition Public Awareness	2011	June	2011	GOV. SVG	Emma Jackson	456-1223	emmajackson@gov.vc
• **ACCESS**	AA29	Launch of Universal Service Fund (USF) 70% Household Broadband	2009	March	2011	NTRC	Apollo Knights	457-2279	aknights@ntrc.vc
	AA30	USF Fund Connectivity to Schools / Clinic and Public Building	-	April	2011	NTRC	Apollo Knights	457-2279	aknights@ntrc.vc
	AA31	**One Laptop per Student Project**	-	March	2011	MIN. EDU	PS Nicole Baker	457-1104	ps.education@mail.gov.vc
	AA32	Pay-Phones & Security Web-Cams every mile of highway, beaches	-	March	2011	NTRC - USF	LIME Angus Steel	457-1901	angus.steele@time4lime.com
	AA33	GMDSS Project for Yacht Security and Fisherfolk	-	June	2011	NTRC - USF	LIME Angus Steel	457-1901	angus.steele@time4lime.com
	AA34	Free Wi-Fi in Kingstown and New City of Arnos Vale	-		2013	Southern Fiber	ITSD - A. Bailey	457-1007	andre.bailey@gov.vc

(AL) A-Legal; (AR) A-Regulatory; (AC) A-Connectivity: (AA) A-Access

ICT INITIATIVES ST. VINCENT & THE GRENADINES 2010 – 2015 (CONTENT & E-GOVERNMENT)

SECTORS		ICT INITIATIVES AND ACTIVITIES		EXPECTED DATE FOR COMPLETION	DONOR FINANCIAL SUPPORT	FOCAL POINT CONTACT	PHONE (784)	E-MAIL
C - CONTENT								
• E-GRIP	C1	Policy Strategy and Action Plan (Document) Implementation	2008	May 2011	EU / PSTG	Jacqueline Creese	456-1223	jcreese@gov.vc
PROJECT	C2	Legal and Regulatory Framework Implementation	-	March 2011	World Bank -eGrip	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc
	C3	ICT Standards and Total Cost of Ownership Optimization	-	2011	World Bank -eGrip	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc
	C4	**Regional E-Government Institution Framework Strengthening**	-	2012	World Bank -eGrip	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc
	C5	Automated Registries & Multi-Purpose Identification Systems	-	2012	World Bank -eGrip	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc
CONTENT	C6	E-Government in Public Financial Management	Feb 11	Sept. 2011	World Bank -eGrip	Edmond Jackson	457-1343	eajackson@gov.vc
• E-GRIP	C7	E-Government in Tax Administration	-	2012	World Bank -eGrip	Kelvin Pompey	457-1493	svgird@gov.vc
PROJECT	C8	E-Government in Customs (Regional)	-	2012	World Bank -Custom	C. Lynch (Custom)	457-2421	asycustoms@vincysurf.vc
	C9	Electronic Government Procurement Legislation & System	-	2012	World Bank -eGrip	Edmond Jackson	457-1343	eajackson@gov.vc
	C10	**E-Government Health & Public Service Capacity Building**	-	Ongoing	World Bank	PS. Francis	457-0905	sfrancis@gov.vc
	C11	E-Videoconferencing	-	June 2011	World Bank -eGrip	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc
	C12	E-Postal Services	-	June 2011	World Bank -eGrip	Ms. Jack (Post)	457-1744	svgpostalcorp@vincysurf.com
	C13	E-BRAGSA	-	Sept. 2011	World Bank -eGrip	Brian George	457-2956	bragsaoffice@gmail.vc
	C14	ASYCUDA ++ to ASYCUDA World Transition	2010	May 2011	GOV Customs	C. Lynch	457-2421	asycustoms@vincysurf.vc
• E – INCLUSION	C15	**Public Awareness Project on e-Gov initiatives & Internet Usage**	Feb 11	Ongoing	GOV. SVG Web-eGov	Emma Jackson	456-1223	emmajackson@gov.vc
	C16	Public Awareness on Email – security, use & professionalism	Feb 11	Ongoing	GOV. SVG Web-eGov	Emma Jackson	456-1223	emmajackson@gov.vc
	C17	Public Awareness on Abuse / Cybercrime & Green Computing	Feb 11	Ongoing	GOV. SVG Web-eGov	Simone Joseph	456-1223	simonejoseph@gov.vc
	C18	Government Web Portal Constructed	-	Dec. 2011	Government Taiwan	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc
• EFFICIENCY	C19	Government Intranet Upgraded.	-	Dec. 2011	Government Taiwan	Jacqueline Creese	456-1223	jcreese@gov.vc
	C20	**MOU Establish Taiwanese / SVG – E Government –ICT Centre**	Oct. 10	Ongoing	Government Taiwan	Caswallan Duncan	456-1223	netadmin@gov.vc
• AGRICULTURE	C21	Agriculture ICT Information Marketing System (NAMIS)	June 09	May 2011	EU	Donnette O'Neil	457-1007	ddelpesche@gov.vc
• HEALTH	C22	E-Health Information System (HIS)	June 09	Oct. 2010	World Bank -Health	PS. Francis	450-0462	sfrancis@gov.vc
• EDUCATION	C23	Education Information Management System (EMIS)	June 10	Sept. 2011	EU	Dr. V. Marks	457-1114	vca.marks@gmail.com
• LAND	C24	Land Registry Digitization Project (LRDP)	May 09	May 2011	EU	Hudson Nedd	457-1588	huddyned@gov.vc
• BUSINESS	C25	Computerization of CIPO (Starting a Business on Line)	May 09	May 2011	EU	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc

• **NAT. SECURIT**	C26	Complete Police Criminal Information and fingerprint ICT System	June 09	Dec. 2011	Government Taiwan	Caswallan Duncan	456-1223	netadmin@gov.vc
• **LABOUR**	C27	Labour Management Information System (LMIS)	Mar 11	Ongoing	GOV.SVG	Mr. Stewart	457-1789	labourdpt@gmail.com
• **MONITOR WEB**	C28	**Link all Government Web Sites to Government Portal**	-	Dec. 2011	GOV. SVG Web-eGov	ITSD – A. Bailey	457-1007	andre.bailey@gov.vc
PRESENCE	C29	Monitor National Tourism Web Site and SVG-INVEST Web Site	-	Ongoing	GOV. SVG Web-eGov	Simone Joseph	456-1223	simonejoseph@gov.vc
	C30	Monitor API & NBC Radio Web Site.	-	Ongoing	GOV. SVG Web-eGov	Simone Joseph	456-1223	simonejoseph@gov.vc
	C31	Monitor Financial Web Sites (Asycuda / E- Tax / Licenses Site	-	Ongoing	GOV. SVG Web-eGov	Simone Joseph	456-1223	simonejoseph@gov.vc
	C32	Monitor Statistics / CIPO / NAMIS / Trade & Lands Web Site	-	Ongoing	GOV. SVG Web-eGov	Simone Joseph	456-1223	simonejoseph@gov.vc
• **CONTENT**	C31	Mobile Applications Competition	Mar 11	Sept. 2011	PS - LIME	Rudy Daniel	498-8277	rudi.daniel@gmail.com
• **BACK-UP**	C32	Knowledge Management & Back-Up Storage	June11	Sept. 2012	GOV. SVG Web	Andre Bailey	456-1223	andre.bailey@gov.vc
• **SOCIAL NET-WK**	C34	Practical Aps Social networking content (YouTube, Facebook, Twitter)	June11	Ongoing	GOV. SVG Web	Dr. Thompson	456-1223	drjthompson@gov.vc

(C) C-EGRIP Project; C- E-Inclusion; C-Efficiency; C-Agriculture; C-Health: C- Education; C- Land; C-Business; C-National Security; C-Labour;

C-Monitor Web Presence; C-Content; C-Backup; C-Social Networking

ICT INITIATIVES ST. VINCENT & THE GRENADINES 2010 – 2015 (EDUCATION & TRAINING)

SECTORS		ICT INITIATIVES AND ACTIVITIES	START DATE	EXPECTED DATE FOR COMPLETION	DONOR FINANCIAL SUPPORT	FOCAL POINT CONTACT	PHONE (784)	E-MAIL
T - TRAINING								
• CAPACITY	TC1	National ICT Training Project (NICTTP)	Feb 09	July 2010	European Union	NCTI	456-2971	svgncti@gmail.com
• EDUCATION	TE2	ICT In Education Project	2009	Dec 2010	European Union	PS. Nicole Baker	457-1104	ps.education@gov.vc
	TE3	Schools Computer Labs Network	2009		European Union	Dr. V. Marks	457-1114	vca.marks@gmail.com
	TE4	Community College Lecture Hall and Computer Lab	2009		European Union	Dr. V. Marks	457-1114	vca.marks@gmail.com
	TE5	Community College Distance Learning Platform	2011		GOV. SVG	Dr. Warrican		joel.warrican@svgcc.edu.vc
	TE6	Digital Classroom Program (French)			ECTEL	Grantley Williams	532-8576	grantleywilliams@gmail.com
	TE7	CKLN ICT Content Creation and Distance Learning Project	2007	-	EU / CKLN	Dr. J. Thompson	457-0026	drjthompson@gov.vc
• COMMUNITY	TC8	Westwood Computer Repair Centre	May 11	Ongoing	European Union	Francis Palmer	457-1504	adulteducation2@yahoo
	TC9	ICT Training at (15) Learning Resource Centers (LRC)	-	Ongoing	Adult Education.	Francis Palmer	457-1504	adulteducation2@yahoo
	TC10	National Centre Technological Innovation (NCTI) ICT Training Centre	-	Ongoing	GOV. SVG	NCTI	456-2971	svgncti@gmail.com
	TC11	NCTI Distance Learning Program		Ongoing	GOV. SVG	NCTI	456-2971	svgncti@gmail.com
• PUBLIC SECTOR	TP12	Health Human Resource ICT Capacity Building -Nurses Pharmacy etc	-	Ongoing	E-Grip	Min. Health NCTI	456-2971	sfrancis@gov.vc
	TP13	Education Human Resource ICT Capacity Building –(Teachers)		Ongoing	UNESCO	Min. Edu. NCTI	456-2971	svgncti@gmail.com
	TP14	National Security Human Resource Capacity Building–Police Prison		Ongoing	Gov. SVG-PMO	Min. Nat Security	457-1426	office.natsec@mail.gov.vc
	TP15	Public Servants Capacity Building Project		Ongoing	CARICAD	PSC - NCTI	456-2971	svgncti@gmail.com
	TP16	Senior Public Servant Capacity Building		Ongoing	Gov. SVG-PMO	PSC - NCTI	456-2971	svgncti@gmail.com
• ADVANCE	TA17	**Taiwan-SVG ICT Center Software and Application Training**	May 11	2014	Taiwan	Caswallan Duncan	456-1223	netadmin@gov.vc
TRAINING	TA18	**Centre Of Excellence NCTI Software Training (Diamond)**	May 11	Ongoing	NCTI	NCTI	456-2971	svgncti@gmail.com
	TA19	**MOU with Government India SVG-India Software Training Centre**	May 11	Ongoing	GOV. India	NCTI	456-2971	svgncti@gmail.com
D – ADMINISTRATION								
	A1	Provide bold and effective E- Leadership	-	Ongoing	PM Gonsalves	Dr. J. Thompson	457-0026	drjthompson@gov.vc

	A2	**Establish the National ICT Steering & Advisory Committee**	2009	Ongoing	GOV. SVG	PS Weeks	456-1223	weekslm@gov.vc weekslm@hotmail.com
	A3	Appoint the National ICT Implementation Secretariat	May 11	Ongoing	GOV. SVG	ICT Director	456-1223	office.telecom@gov.vc
	A4	Monitor and ensure accurate Indices project	May 11	Ongoing	GOV. SVG	ICT Director	456-1223	office.telecom@gov.vc
	A5	National Knowledge Management Platform			GOV. SVG	ITSD A. Bailey	457-1007	andre.bailey@gov.vc
	A6	Provide support and leadership at Regional level (CTU / CARICAD)		Ongoing	GOV. SVG	PS Weeks	457-1223	weekslm@gov.vc weekslm@hotmail.com

(TE) T- **EDUCATION;** (TC) T- **COMMUNITY;** (TP) T-**PUBLIC SECTOR;** (TA) T- **ADVANCE;** (A) A- **ADMINISTRATION**

ICT INITIATIVES ST. VINCENT & THE GRENADINES 2010 – 2015 (INNOVATION, E-BUSINESS & ECOMMERCE)

SECTORS		ICT INITIATIVES AND ACTIVITIES	START DATE	EXPECTED DATE FOR COMPLETE	DONOR FINANCIA SUPPORT	FOCAL POINT CONTACT	PHONE (784)	E-MAIL
I - INNOVATION								
	I1	**Promote a National Culture of Innovation**		Ongoing	GOV. SVG	Philip Jackson	456-1223	pcjackson@gov.vc
	I2	Selected promotion of Technologies to be Transferred		Ongoing	GOV. SVG	Philip Jackson	456-1223	pcjackson@gov.vc
B - ICT BUSINESS								
DEVELOPMENT								
	B1	**Centre of Excellence (COE) ICT Incubator Project (Diamond)**	2011	Ongoing	EU	CED - F. Lewis	451-2235	flewis@ced.vg.com
• INFRASTRUCTUR	B2	Establish and Maintain ICT and Business Outreach Centres (IBOC) in five (5 rural areas. (Chateaubelair / Mesopotamia / G-Town / Union Is)	2011	Ongoing	GOV. SVG	CED - F. Lewis	451-2235	flewis@ced.vg.com
& PROMOTION								
	B3	Greater technology transfer, adoption of innovation implemented.	Feb 11	Ongoing	Science & Tech	Philip Jackson	456-1223	pcjackson@gov.vc
• ATTRACTING	B4	**MOU Strategic Alliance ICT Company Software Development Project**	2011	Ongoing	GOV. India	NCTI	456-2971	weekslm@gov.vc
ICT BUSINESS	B5	ICT Coding and training Support ICT Sector	March 11	Ongoing	GOV. SVG	Tricia Pompey	456-2971	tpompey@gov.vc
	B6	Discovery Works Legal Support ICT Sector	-	-	ICT Sector	Tricia Pompey	456-1223	tpompey@gov.vc
	B7	Brown's Cell Phone Assembly & Manufacture Company ICT Sector	-	-	ICT Sector	Tricia Pompey	456-1223	tpompey@gov.vc
	B8	Establishment ICT Venture Capital Fund ICT Sector	-	-	World Bank	PS Weeks	456-1223	weekslm@gov.vc
• E- COMMERCE	B9	Local or Sub-regional Web Hosting facilities established. ICT Sector	2011	-	-	Andre Bailey	457-1007	andre.bailey@gov.vc
	B10	Encourage Banks to issue Merchant Accounts ICT Sector	2011	-	-	Dr. Thompson	457-0026	drjthompson@gov.vc
	B11	Establish ECCB Automated Clearing House ICT Sector	2011	-	ECCB	Local Banks	-	drjthompson@gov.vc
	B12	**E-Commerce established as a seamless, effective marketing tool for small businesses, cultural enterprise, arts, crafts and retailers.** ICT Sector	2011	Ongoing	NCTI / CED	Charles Burke	456-2971	drjthompson@gov.vc

• **INDICES**	B13	**Collection, improvement and Monitoring of Indices**	2011	Ongoing	GOV. SVG	PS Weeks	456-1223	weekslm@gov.vc
	B14	**Conduct ICT Usage Business Survey & Business Indices**	2011	Annual	NTRC	Apollo Knights	457-2279	aknights@ntrc.vc
	B15	**Establish Data Warehouse (1. Public & 2. Private)**	2011	2012	GOV. SVG	ITSD A. Bailey	456-1223	andre.bailey@gov.vc