



**Final Project Technical Report**  
**World Development 2016 Report Symposium**  
*Tuesday, May 12, 2015 - Kingston, Jamaica*

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**By**

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**Ottawa, Canada**

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## Project Overview

Title: World Development 2016 Report Symposium

Project Duration: April 2015 – July 2015 (3 months)

Country: Jamaica

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Budget for Project Funding: \$2,255,900.00

## SUMMARY

The Symposium provided a forum for Caribbean stakeholders to discuss the interim 2016 World Development Report on Mind, Society and Behaviour. Regional experts collaborated to discuss Internet-related challenges being experienced by specific countries. The goal was to ascertain information on:

1. Whether and how the Internet has or could enable these countries to overcome the challenges of scalability, skills and market access;
2. Whether there are specific aspects of connectivity/creating connectivity that are critical for small island states, including in providing Government services;
3. The correlation between Internet (access), jobs and skills, and economic development.

The Symposium was organized into five main sections:

- Opening Session: Overview of World Development Report 2016 Internet for Development
- Session 1: Broadband ICT Access, Affordability, and Open Source Technology in the Caribbean
- Session 2: Caribbean Domestic Opportunities and Island States Integration
- Session 3: Regional e-Government Initiatives
- Closing Roundtable

The one-day Symposium on the 2016 World Development Report was organized by the Mona ICT Policy Centre, located within the Caribbean Institute of Media and Communication (CARIMAC), UWI in association with The World Bank. The event was held on Tuesday, May 12, 2015 at The University of the West Indies Regional Headquarters, Mona, Kingston, Jamaica.

## Overview

The World Development 2016 Report Symposium was a day-long meeting held on May 12, 2015 at the Regional Headquarters of the University of the West Indies. The project activities included:

- Engaging the participation of 41 national and regional stakeholders in a face-to-face consultation on the WDR2016. This included making travel and accommodation arrangements for 12 non-Jamaican participants.
- Developing Symposium Agenda and enlisting speakers locally and regionally.
- Making logistical arrangements for the Symposium, including arrangement of venue, refreshments, videographer, technical support and administrative coordination.
- Compiling all presentations and an outcome report on the event.

The Symposium was organized as follows:

8:30 am – 9:00 am	<b>Symposium Registration</b> , UWI Regional Headquarters, Mona, Kingston Jamaica
9:00 am – 10:00 am	<b>Opening Session: Overview of World Development Report 2016 Internet for Development</b>
	<b>Welcome and Opening Remarks:</b> Professor Hopeton Dunn, Director, Mona ICT Policy Centre, CARIMAC, The University of the West Indies Mona Campus, Jamaica
	<b>Greetings:</b> Honourable Julian Robinson, Minister of State, Ministry of Science, Technology, Energy and Mining (MSTEM), Jamaica
	<b>Overview of World Development Report 2016:</b> Dr. Uwe Deichmann, Co-Director, WDR 2016, Development Economist and Chief Economist, The World Bank
	Question and Answer Discussion
10:00 am – 10:15 am	<i>Coffee Break</i>
10:15 am – 11:00 am	<b>Session 1: Broadband ICT Access, Affordability, and Open Source Technology in the Caribbean</b> This session discussed how the region can utilize the Internet to impact economic growth. It will provide a forum and roadmap for better utilizing the Internet and ICTs to enhance Caribbean economic development.
	<i>Chair:</i> Mrs. Camille Facey, Attorney-at-law, FaceyLaw Attorneys-at-law
	<i>Presenters:</i> <ul style="list-style-type: none"> <li>- Dr. Tim Kelly, The World Bank, Washington D.C., USA</li> <li>- Dr. Maurice McNaughton, Director, Centre of Excellence on IT Enabled Innovation, Mona School of Business and Management, UWI Mona, Jamaica</li> </ul>

	<ul style="list-style-type: none"> <li>- Mr. Kwesi Prescod, Principal Consultant, Prescod Associates &amp; Company, Trinidad and Tobago</li> </ul>
11:00 am – 11: 15 am	Question and Answer Discussion
11:15 am – 12:00 pm	<p><b>Session 2: Caribbean Domestic Opportunities and Island States Integration</b></p> <p>The objective of the session was to explore domestic opportunities that will offer benefits for small island states. The session will discuss the development of policies that will guide the region to better integration into the global economy.</p> <p><i>Session Chair:</i> Dr. William Lawrence, Director, Professional Services Unit, Mona School of Business and Management, UWI Mona, Jamaica</p> <p><i>Presenters:</i></p> <ul style="list-style-type: none"> <li>- Dr. Indhira Santos, Senior Economist, The World Bank, Washington D.C., USA</li> <li>- Dr. Wesley Hughes, Financial Manager/Advisor, Development Economist, PetroCaribe Development Fund, Jamaica</li> <li>- Dr. Samuel Brathwaite, Lecturer, Department of Economics, UWI Mona, Guyana/Jamaica</li> </ul>
12:00 pm – 12:30 pm	Question and Answer Discussion
12:30 pm – 1:30 pm	<i>LUNCH</i>
1:30 pm – 3:00 pm	<p><b>Session 3 – Regional e-Government Initiatives</b></p> <p>The objective of this session was to explore regional experiences in e-government including emergent issues and challenges.</p> <p><i>Session Chair:</i> Celia Champagne, Trade Commissioner, Canadian High Commission to Jamaica</p> <p><i>Presenters:</i></p> <ul style="list-style-type: none"> <li>- Mr. Cecil McCain, Director of Post and Telecommunications, (Permanent Secretary Representative), Ministry of Science, Technology, Energy and Mining, Jamaica</li> <li>- Dr. Edmond Mansoor, Former Minister of ICTs, Antigua and Barbuda</li> <li>- Professor Evan Duggan, Chairman, eGov Jamaica</li> <li>- Ms. Karlene Francis, EPIC Program Officer, World Bank Group, infoDev, Jamaica</li> </ul> <p>Question and Answer Discussion</p>
3:00 pm – 3:55 pm	<p><b>Closing Roundtable:</b></p> <ul style="list-style-type: none"> <li>- Dr. Uwe Deichmann, Co-Director, WDR 2016, Development Economist and Chief Economist, The World Bank</li> <li>- Dr. Laurent Elder, Programme Leader, International Trade and Development, IDRC Canada</li> </ul>
3:55 pm – 4:00 pm	<p><b>Closing Remarks</b></p> <ul style="list-style-type: none"> <li>- Professor Hopeton Dunn, Director, Mona ICT Policy Centre, UWI Mona</li> </ul>

## Participants and Attendance

The Symposium hosted participants from regional countries. Participants ranged from academia, government, NGOs and the private sector. The following participants were in attendance:

### Jamaica

1. Minister Julian Robinson, Minister of State, Ministry of Science, Technology, Energy and Mining (MSTEM)
2. Professor Hopeton Dunn, Director, Mona ICT Policy Centre, CARIMAC, UWI
3. Dr. Arlene Bailey, Lecturer, The University of the West Indies, Mona
4. Mr. Gary Campbell, Ministry of Science, Technology, Energy and Mining
5. Ms. Celia Champagne, Trade Commissioner, Canadian High Commission
6. Mr. Maurice Charvis, Deputy Director General, Office of Utilities Regulation
7. Mr. Kamau Chionesu, Lecturer, Mona School of Business and Management, UWI
8. Ms. Brigitte Collins, CIO, University of the West Indies, Mona
9. Professor Evan Duggan, Chairman, e-Gov Jamaica and Dean, Faculty of Social Sciences, The University of the West Indies, Mona
10. Mrs. Camille Facey, Attorney-at-Law, FaceyLaw
11. Ms. Karlene Francis, EPIC Programme Officer, World Bank Group, Infodev
12. Dr. Wesley Hughes, Financial Manager/Advisor, Development Economist, PetroCaribe Development Fund
13. Dr. William Lawrence, Director, Professional Services Unit, Mona School of Business and Management, UWI Mona
14. Mr. Cecil McCain, Director, Post and Telecommunications, Ministry of Science, Technology, Energy and Mining
15. Mr. Matthew McNaughton, Slash Roots Foundation
16. Dr. Maurice McNaughton, Centre of Excellence for IT-Enable Innovation, Mona School of Business and Management, UWI Mona
17. Dr. Indianna Minto-Coy, Centre of Excellence for IT-Enabled Innovation, Mona School of Business and Management, UWI Mona
18. Ms. Ayanna Samuels, InfoDev
19. Mr. Carlton Samuels, National ICT Advisory Committee, MSTEM
20. Mr. Christopher Serju, Gleaner Company
21. Ms. Alecia Smith-Edwards, Jamaica Information Service

<p>22. Ms. Judith Wedderburn, Friedrich Ebert Stiftung</p> <p>23. Mr. Richardo Williams, Economist, Ministry of Tourism</p> <p>24. Mr. Kalando Wilmot, The Write House</p> <p>25. Ms. Karena Bennett, Jamaica Observer</p> <p>26. Mr. Lancefield Davidson, Jamaica Information Service</p>
<p><b>Antigua and Barbuda</b></p> <p>27. Dr. Edmond Mansoor, MAVERICK</p>
<p><b>Barbados</b></p> <p>28. Mr. Sylvester Cadette, International Telecommunications Union</p> <p>29. Mr. Hallam Hope, Managing Director, CARITEL and Hope Communications Inc.</p>
<p><b>Canada</b></p> <p>30. Dr. Laurent Elder, Programme Leader, International Trade and Development, International Development Research Centre (IDRC)</p>
<p><b>Dominican Republic</b></p> <p>31. Mr. Yacine Khelladi, Economist and Research Consultant</p>
<p><b>Grenada</b></p> <p>32. Ms. Alice Bain, CARCIP</p>
<p><b>Guyana</b></p> <p>33. Dr. Samuel Brathwaite, Lecturer, Department of Economics, UWI</p>
<p><b>St. Vincent and the Grenadines</b></p> <p>34. Ms. Roxanne John, CARCIP</p>
<p><b>Trinidad and Tobago</b></p> <p>35. Mr. Alpha Obika, M.Phil Candidate, UWI</p> <p>36. Mr. Kwesi Prescod, IT Consultant</p> <p>37. Mr. Junior McIntyre, Caribbean Telecommunications Union</p>
<p><b>United States</b></p> <p>38. Dr. Uwe Deichmann, World Bank</p> <p>39. Dr. Tim Kelly, World Bank</p> <p>40. Dr. Indhira Santos, World, Bank</p> <p>41. Mr. Mart Kivine, World Bank</p>

## **Opening Session: Overview of World Development Report 2016: Internet For Development**

The opening session was chaired by Professor Hopeton Dunn, Director of the Mona ICT Policy Centre, CARIMAC, The University of the West Indies Mona Campus, Jamaica. He reinforced that the objective of the Symposium was to engage Caribbean input into the 2016 edition of the World Development Report. With the diversity of professionals represented, the Symposium, enable evidence-based discussions of the Caribbean's perspectives of the 2016 WDR analysis of growth and development using the tools of ICTs and the Internet.

With the region continuously examining how to enhance job creation and regional competitiveness, there is still need for accurate and reliable data to drive internet development. In 2011, the UWI conducted research and data-gathering through the Mona ICT Policy Centre, in association with the IDRC. The results of the research were published in a survey on ICT and broadband usage and discussions with Jamaica's government are underway to keep the information updated through a new survey.

### **Remarks from Honourable Julian Robinson, Minister of State, Ministry of Science, Technology, Energy and Mining (MSTEM), Jamaica**

The Minister noted that one of the challenges for the region was that there was not enough accurate data available. There was also a lack of funding to do continuous research and collect data that would drive and shape policies. The significance of the region's contribution to the WDR Report would be critical in capturing data on ICT and its influence regionally. Evidence suggests that ICTs do have an impact on transforming an economy, and in the case of the region, a 10% increase in broadband penetration could lead to a 1% growth in GDP.

The Minister indicated the Government's commitment to ensuring that all Jamaicans had access to technology and access to the Internet through the Universal Access Fund (including the E-Learning and Tablets in Schools Project). While access was important, it was not sufficient to transform an economy. With accessibility, ICTs, and the use of technology, efficiency would improve particularly within government sectors.

Jamaica's strategy was to appoint a Chief Information Officer to streamline ICTs across government ministries. Several commitments were undertaken in efforts to meet the country's ICT development goals, primarily to:

- Use ICTs to drive efficiencies in government service delivery: This would eliminate some manual processes and improve service to the public.
- Use ICTs to facilitate innovation and entrepreneurship especially among young people: This was being done through several initiatives including Start-up Jamaica and the Caribbean Mobile Innovation Project.
- Facilitate open data: There was potential for open data usage to aid transparency and accountability as well as to facilitate innovation.

Policy-wise, plans are underway to revise the ICT Act which has existed for approximately thirteen years, as well as to review the Cyber Crime legislation and the Data Protection legislation. The Jamaican Government is also examining the prospect of having a single regulator for ICT.

**Dr Uwe Deichmann, Co-Director, WDR 2016, Development Economist and Chief Economist, The World Bank**

Dr. Diechmann provided an overview of the 2016 World Development Report. He noted that the Internet had changed people's lives and that massive computing power plus mobility had resulted in new meaning to freedom embodied by ICT tools such as the smart phone. Research suggests that a typical day in the life of the Internet includes 226 billion emails, 8.5 billion Youtube videos and 4 billion Google searches. With these Internet-usage figures, the World Development Report will aim to determine if the Internet had accelerated development. The analysis was being done along three lines: *growth*, *jobs* and *service delivery* which formed the first three chapters in the 2016 Report. The objective of the chapters would be to discuss the impact of the Internet, and whether or not the Internet has improved the productivity of businesses, expanded opportunities for people, and empowered citizens to hold their governments accountable.

The use of the term Internet in the Report will speak more broadly to digital technology and its impact on development. While the Internet has reduced transaction costs of many economic activities, it has enabled the completion of some tasks that did not exist before. In some cases, marginal costs have fallen to zero due to automation. The Report will unify the three different strands of the economics literature into one framework.

While there are many instances where the Internet promoted development, there are also many associated risks as listed below:

- *Impact on firms:* there was the expectation of greater competition with the Internet despite the aggregate impact not being as large as expected. The uptake of Internet by offline companies has been low and there is uncertainty as to how to regulate competition when online and offline companies compete. Of notice also, is the online space that seemed to favour natural monopolies with the emergence of dominant firms, e.g. Google and Facebook, which pushed smaller firms out.
- *Increased Opportunities:* The Internet has allowed for more labour opportunities and greater productivity and has rapidly changed labour markets. New forms of work, job creation and job destruction have increased in some economies, while job tenure was reduced. Automation eliminated jobs in some developed countries. These changes create challenges for individuals as employment grows at the two extremes of high-skilled employment and low-skilled employment. Middle income jobs are declining and the decline has established the risk of widening income inequality.
- There have been many e-government initiatives. Digital technology has helped in ensuring free and fair elections, increasing turnout and voter registration. But there could also be manipulation of information in election campaigns. Digital technology

has supported collective rallying for causes e.g. Orange revolution in the Ukraine in 2004 and Arab spring protests in 2011; and while hash tag activism has also increased citizen engagement, bad types of activism must also be taken into account.

A key point from the analysis is that the full potential of the Internet was not realized in most developing countries. There were two broad explanations:

1. The first explanation was the persistent lack of access to the Internet as the digital divide is still not closed. The Internet is still inaccessible and unaffordable to most people. Out of more than 7 billion people, 6 billion are without access to broadband Internet and 4 billion are without Internet, 2 billion are without mobile phones and half billion live outside of mobile phone signals. There is a digital access gap within each country across age income, geography, and gender. There is also a digital capability gap within countries with near universal access. These are barriers which are still important.
2. The second explanation offered was that the problem is not with the technology but with those aspects not affected by the Internet. The best results will be realized when the Internet and people complement each other.

The Report will argue that there are three main complements to ICT progress: *accountable institutions, skills, and good regulations*. Policies will be needed to make internet access universal, affordable, open and safe. For the supply of ICTs, competition policy, public-private partnerships and effective telecom or internet regulation are needed. For demand, global internet governance, overcoming filtering or censorship, personal privacy, and cyber security issues are some key areas.

The Report proposes reforms that promote competition and firm entry, skills improvement for people to take up digital opportunities and raise capacity and accountability of public institutions. Priorities for emerging economies that still have limited Internet should be to lay the foundations and increase Internet use. Priorities for transitioning countries would be to institute policies enabling people to use digital opportunities to be connected. For countries most advanced in digital transformation the priority should be to deal with the challenges such as online piracy that the Internet creates.

The Report will summarize that the Internet is not a shortcut to development by itself. The Internet can be a powerful enabler or accelerator of development if the right policies are in place so that people, businesses and governments can take full advantage of the opportunities that the Internet has brought.

## **Session 1: Broadband ICT Access, Affordability, and Open Source Technology in the Caribbean**

The session objective was to discuss how the region could utilize the Internet to impact economic growth and to provide a forum and roadmap for better utilizing the Internet and ICTs to enhance Caribbean economic development.

### **Presenter 1: Dr Tim Kelly, The World Bank, Washington D.C., USA**

Dr Kelly explained that access is still a problem as the Internet is yet to reach most of the world's poor. Most of the 7 billion are within mobile signal but high speed Internet is only available to 1.1 billion. Small island states and developing countries are a long way from achieving affordability in rural areas. There are clear divides in terms of gender and age and there is a high level of price variability which suggests policy failure as well as geography. In examining price variations, Jamaica has the lowest cost for data in the region, possibly due to larger size (geographically and in terms of economy) and historical associations with Cable and Wireless.

The World Development Report analyses price divide into four categories:

- first mile – how the network enters the country (international gateways);
- middle mile – national backbone and inter-city networks;
- last mile – local access network, universal service applications;
- invisible mile – non-visible network, e.g. spectrum, border crossings and cyber security - growing issue worldwide

According to Dr Kelly, policymakers are facing new challenges and internet governance is evolving towards a consensus based around a multi-stakeholder approach. Cyber security problems are worsening and the costs of keeping up with cyber security are growing. This will require public-private partnership to address these matters adequately. Privacy and data protection are characterized by very different national approaches, generating costs to businesses. The use of content filtering is growing, with more responsibility being pushed to content providers and the search engine providers. The related net neutrality debates are marked by hypocrisy.

If matters of access and affordability are addressed, a way can be made for an open access ecosystem where there is diversity. The chapter examines the role of governments in this ecosystem. Of interest is why ICT clusters appear and how they can be fostered. In this regard, there is collaboration with the Government of Canada and UWI on strengthening the Caribbean mobile ecosystem.

Dr Kelly noted that there are some tentative findings from the chapter. The internet does drive development but it works best when it is fast, affordable and always on. Achieving universal and affordable internet access will require open access networks and public private

partnerships where the market fails. Ensuring open and safe access poses significant new challenges. It requires greater international collaboration based on multi-stakeholderism. However, the greatest benefits come when the internet complements, not just replaces, other factors.

**Presenter 2 - Dr Maurice McNaughton, Director, Centre of Excellence on IT Enabled Innovation, Mona School of Business and Management, UWI Mona, Jamaica**

Dr McNaughton referenced the Global Competitiveness Index (GCI) and the Networked Readiness Index (NRI) noting that there is correlation between the indicators since some of the NRI is taken into account with the GCI. The Global Information Technology Report indicated some upward trends in ICT indicators, including mobile and internet. Other areas needed some work including ICT use and government efficiency, impact of ICTs on access to basic services and government online services.

Broadband is the enabling tool which drives digital convergence. There is the relation between the supply-side and the demand-side and one drives the other resulting in a self-sustaining ecosystem. The question is how do we transition through the digital effectiveness continuum through awareness, access, diffusion, exploitation to innovation and specifically alter the ICT producer/consumer ratio in the region.

Reference was made to some of the barriers to innovation which were named in the global competitiveness report. These include: the propensity to acquire rather than create technological solutions; low levels of commitment to, and investment in R&D by both public and private sectors in collaboration with academia; inadequate government leadership in its own adoption, procurement and use of ICT that can stimulate technological development and indigenous innovation. According to Dr McNaughton, in many economies, government involvement is disproportionate as they are the biggest transactors, the biggest consumers and the biggest employers. This has a significant impact on how well an economy functions.

Dr McNaughton suggested that to transition to a net producer of ICT innovations, ICT value proposition must be examined and options must exist to reduce the cost of what is spent. There needs to be improved efficiency and effectiveness of the government through ICT with purposeful use of appropriate ICT applications. There also needs to be stimulation of enhanced and new business opportunities in the local and regional ICT sector by fostering entrepreneurship and innovation.

The value proposition is built around 3 pillars:

1. Use open data as raw material to build out ICT and ICT-related goods and services. Combine the spirit of collaboration between private, public, government, technologists, and academia.
2. Government should act as a platform stimulating development around these technologies. Government must encourage the use of open source software, encouraging local software developers to build new capabilities.

3. Entrepreneurship and innovation would be the third pillar with the encouragement of new ventures/start-ups to develop indigenous applications, creating jobs and fostering the knowledge society.

With the government as a platform for e-development it would rely heavily on open data, open innovation (co-creation of solutions) and the mobile ecosystem (access, service delivery and financial transactions). However a paradigm shift is needed toward Gov 2.0 with a more decentralized, collaborative approach taking on the consumer/citizen perspective and having initiatives based on Government-Citizen partnership, collective intelligence and crowd sourcing.

**Presenter 3 - Mr Kwesi Prescod, Principal Consultant, Prescod Associates & Company, Trinidad and Tobago**

Mr Prescod noted that his objective would be to focus on macro-economic concerns of ICT as an enabler of extra-regional trade and subject of FDI, as well as to briefly discuss the I-economy and the existing Caribbean experience. The presentation was aimed at identifying the key aspects of the ICT development pyramid, and exploring how governments in their role as framework establishers could have an impact. The context to recent developments in the regional ICT sector was also reviewed.

It was suggested that the challenge facing the Caribbean e-economy is international telecoms, which is traditionally the dominant form of tele-commerce in the region. The net capital inflows are reducing as providers migrate to VoIP solutions. However, Internet-based telecoms is emerging as a dominant form of communications with popular applications such as the worldwide web, e-mail and VoIP. The gross capital outflows are estimated at greater than US\$1100M annually just for providing access to the Internet. Currently there are few Internet-based revenue inflows associated with the mere provision of access to the Internet. As such, it is critical to devise other things to convert the internet into an income resource.

How do CARICOM States restructure themselves to optimally benefit from the increased access to the Global Information Society? Mr Prescod noted that the information society is based on the premise of utilising automated processing systems to enhance service delivery to markets and persons anywhere in the world. A fundamental presumption to achieve this goal is the provision of telecommunications services by:

- extending the infrastructure grid to as many persons worldwide, and
- commoditizing those services such that the cost of access is generally affordable.

This results in the cumulative effect of positioning ICT-based services as the ubiquitous levelling agent for personal and economic development across the globe. As the core imperatives of commerce remain unchanged, this commercial information-ready transmission creates opportunities for enhanced business relationships. The ease of exchange of such commercial information introduces new paradigms where information is used to support transactions related to physical goods and traditional services, and where information itself is the key commodity traded. Without widespread access, the e-ecosystem is compromised.

According to Mr Prescod, administration of this paradigm is largely the oversight of domestic and international trade facilitation systems. There are considerations of protection and enforcement including law enforcement, customs administration, and expeditious judicial arbitration. Further, to provide comfort to both consumers and investors these systems should encourage integration of online payment systems and the protection of personal and commercial privacy. These frameworks are essential before particular forms of commerce can be effected and would help us to move from a factory-based to a knowledge-based economy.

Reference was made to recent developments in facilitating ICT trade in the Caribbean. Since 2010, a series of mergers and acquisitions across the region have resulted in the demise of most stand-alone carriers and ISP's; Centralisation in the provision of mass storage services and consolidation of networks (domestic, sub-regional and international) into two (2) major oligopolistic trans-regional operations. The regional network is largely dominated by one company and this trend threatens the process of market-based commoditization of these services. Without strong regulatory oversight, there is potential for steady increase in the cost of services and a decline in innovation in service delivery. This would constrain development on the upper tiers of the ICT Development Pyramid.

It was noted that CARICOM Member States have made some strides in e-services with the widespread deployment of IXP's. E-Government websites are the status quo, providing information and some online application interfaces. Widespread e-Government and e-Business is constrained by lack of integration of regionally domiciled e-Payments Solutions. The use of US-based online payment solutions demand use of credit cards which do not have widespread penetration in the region. There is extensive use of social media and e-commerce facilitating platforms that are located outside of the region. There is also limited evidence of use of domestically domiciled hosting solutions. The architecture of how we do the Internet does not provide for the benefits of IXP's to fully redound to consumers, businesses and governments.

Mr Prescod highlighted that CARICOM Member States have made great progress in enacting harmonised laws with respect to electronic transactions, e-signatures and data protection. Model laws have been prepared and work continues across the region to enact laws relating to cyber-crime, interception of communication laws and electronic evidence. While there is continued contention on the establishment of a single, final appellate forum and a single ICT Marketplace, there is a disjointed assumption that CCJ can act as a major roadblock to the development of a single ICT Marketplace. There is also the underlying challenge of micro-financing and online payment end-to-end payment systems.

CARICOM Member States have begun modernising and harmonising ICT policy and legal frameworks to support administration of information-based products and services. But work still needs to be done to incentivise both users and operators to use and develop domestic content hosting platforms. A common approach is needed to establishing a region-centric online micro-financing and e-payment system. There is the need to transform regional frameworks to treat issues of convergence such as content and address rationalisation and non-discrimination. There is also the need to harmonise and strengthen the rules and enforcement of intellectual property laws both online and offline.

Mr Prescod concluded that there needs to be consideration of the viability for creating regional administrative and judicial institutions to strengthen oversight trans-national/intra-regional regulatory concerns. When completed these can redound to the development of value added frameworks to first establish, and then strengthen a brand of CARICOM-based e-commerce products.

## **Session 2: Caribbean Domestic Opportunities and Island States Integration**

The objective of the session was to explore domestic opportunities that would offer benefits for small island states. The session discussed the development of policies that will guide the region to better integration into the global economy.

**Presenter 1 - Dr Indhira Santos, Senior Economist, The World Bank, Washington D.C., USA**

Dr. Santos explored ICT as a driver of employment particularly outside of the ICT sector. She started out by asking 3 questions:

1. How do technologies create jobs and increase economic opportunities?
2. What has allowed some people to use technology to get better jobs and higher wages while others have not been able to use these technologies productively? and most importantly
3. What policy reforms are necessary, to ensure that everyone is able to have access to the internet and to make sure that those benefits of the internet are widely shared?

According to Dr Santos, the main message being concluded in the report is that digital technologies, that is, the internet and mobile phones can improve overall welfare and can reduce poverty, but without complementary investments, it can also worsen inequality. The challenge is that not everyone is in a position to use the technology.

Evidence suggests that the internet can create jobs and help overcome barriers to accessing jobs – barriers that have to do with information, barriers to costs and barriers to distance. But the changes that accompany the internet can be disruptive to the labour market. In the same way that they can create jobs, they can also destroy many jobs. Of importance are the persons who lose their jobs and do not have the necessary skills to get the new jobs. In many cases there is a strong mismatch and skills required to do productive jobs are changing rapidly. These new challenges and disruptions create a situation whereby the benefits of the internet without complementary “analogue” policy, can dampen the development potential of the internet and skew its benefits toward those who are already better off (i.e. the rich and those highly skilled).

Dr Santos noted that the areas of expansion of internet access needed to be accompanied by two basic areas of policy: (1) skills development, basic cognitive and emotional skills i.e., literacy and advanced skills like critical thinking and problem solving; and (2) an agenda of social protection for those who may not be equipped for ICT and needed to be trained. Further, a comparison was made of 10 countries globally, highlighting the contribution of ICT to employment from 2012-2013 and showing the ICT sector versus ICT occupations and the percentage share of employment. It was noted that in developing countries 1-2% of employment was in ICT, while in developed countries it was at most 4% of employment.

The Report indicated that direct job creation is small in relation to the ICT sector and ICT occupations. Most benefits can be indirect in terms of job creation particularly through the

expansion of businesses. Indirect benefits can result firstly in job creation by firms when they use technology. Secondly, these technologies can connect people to opportunities and jobs, and thirdly, when there is a job, technology can increase productivity to allow for higher income earning.

In some countries that have been reviewed, research showed that when firms use digital technology productively, they can increase employment and persons with jobs can get higher wages. This was evidenced in China, Mexico and Brazil where firms changed the type of workers they needed for the type of employment. For example, in agro-business they hired persons that complemented technology.

Dr Santos pointed out another indirect source of job creation as offshoring and outsourcing of services. In some countries e.g. the Philippines, large employment is outsourced. Online outsourcing and micro work continues to grow and this is where there is a platform to match firms that are looking for people with certain skills and workers who are applying for jobs. Oftentimes, jobs are outsourced to the developing countries where wages are lower.

Research shows that entrepreneurship is another indirect source of job creation. While there is direct entrepreneurship in the ICT sector, there is also ICT-enabled entrepreneurship, e.g. E-commerce and the sharing economy. In China, approximately 10 million jobs have been directly created through e-commerce and 2 million jobs in logistic as the sharing economy connects people to opportunities. While studies show that only one-third of people globally use technologies at work, if people are not equipped to take advantage of the technology, some persons will be at a disadvantage.

The policy conclusions were noted as follows:

- Technology changes the skills required to succeed in a modern economy, such as foundational skills and digital skills;
- Technology also accelerates the pace of change, making skills obsolete more quickly and opening up new opportunities. There needs to be preparation for careers, not just jobs. Social assistance should be strengthened for those who cannot successfully transition;
- Labour regulations, social protection and taxation systems should be adapted for new forms of work to increase non-wage employment.

**Presenter 2 - Dr Wesley Hughes, Financial Manager/Advisor, Development Economist, PetroCaribe Development Fund, Jamaica**

From an analogue economist perspective, Dr Hughes expressed concern about the population's income levels to take advantage of ICTs. He referenced Jamaica's Vision 2030 National Development Plan which states that "Jamaica is to develop an advanced ICT industry that achieves sustained global competitiveness, driven by private sector investment which enhances the productivity of our goods and services producing sectors".

According to Dr Hughes, low productivity growth has been the main determinant of low levels of economic growth in Latin America and the Caribbean over the last two and a half decades. While aggregate efficiency gains, was a complex issue, incentives needed to be aligned and opportunities for firms with good ideas should thrive and grow. He explained that low productivity is an unintended consequence of market failure, and inappropriate policies that distort incentives, preventing efficient firms from growing and expanding. This also promoted the survival of inefficient companies.

Studies have shown a correlation between the diffusion of ICT and the reversal of low productivity. However, the adoption of ICT takes time to affect productivity. A vital component is the investment of organization capital, that is, organization of the workplace and workforce and accumulation of new skills for workers and managers. In the early years of public sector reform, there was an objective to adopt ICT, but still having a compromise of keeping a paper-based system. If problems arose, persons reverted to the paper system while the investment in hardware and software were underutilized. There was therefore wasted capital, continued inefficiency, frustrated customers and conflicts between IT systems and paper.

Dr Hughes suggested that the region is trapped in a sea of low growth and low productivity. There is no national or regional movement pushing for growth and key players are needed to act in concert to achieve national objectives for growth. Further, the key roles of the state are to create, maintain and upgrade the legal, institutional and security framework. There is the need to build and maintain a formal macro-economic framework and provide the environment for all to thrive.

The state must invest in partnership or in public goods on its own for example, physical infrastructure, water system, and energy system. The state must also invest in innovation for goods and services that will serve the global economy. Jamaica and the region are integrated with the global economy through ICT, trans-shipments, liberal trade regimes, movement of capital and people. These forces of globalization are shaping the economies, and they will be around for a long time. According to Dr Hughes, the Caribbean's role is to adapt to an inter-dependent world, using ICT to accomplish this. One element of the globalized world is procurement and procurement rules are governed by international involvement with organizations such as The World Bank, IMF, IDB, and the European Union.

There are other challenges to rapid ICT development and growth as identified in Vision 2030. There is limited ability to measure benefits and impact of ICT investment, and gaps in skills of ICT among the workforce and low value added services for export. There is also limited access to capital for new ventures in the ICT sector and weak human capital skills in the outsourcing areas. Further challenges include the slow growth in e-commerce, e-government, knowledge management, and the manufacture of hardware and software. Dr Hughes suggested that the lobbying for removal of barriers to growth and capital movement by public/private partnership and congruence between public sector investment and private sector needs and demands would help to alleviate the challenges.

**Presenter 3 - Dr. Samuel Braithwaite, Lecturer, Department of Economics, UWI Mona, Guyana/Jamaica**

According to Dr Braithwaite, ICT increased the range of human choice through increased opportunities, and increased information on what opportunities exist. ICT can improve information gathering, information dissemination, organizational efficiency and cost saving, if used efficiently. Money can be saved, resources can be freed up and this would result in an increase in available choices.

Referencing sections of the 2008 WDR Report and Sir Arthur Lewis' theory, Dr Braithwaite agreed that structural change in agriculture was needed and that technological advancement could result in sustainable agricultural development. He alluded to the importance of agriculture and noted that three out of four people in developing countries lived in rural areas, with most depending on agriculture. Dr Braithwaite suggested that poverty alleviation was possible if there was a focus on agriculture especially in the rural areas.

Evidence suggests that agriculture in rural areas is not based in large plantations, but instead small scale farming. Reference was made to the WDR report which indicated that there were "Rapid agricultural growth - in India following technological innovations (the diffusion of high yielding varieties) and in China following institutional innovations - was accompanied by major declines in rural poverty."

Employing ICT tools in agriculture can reduce food expenditure. The CARICOM food bill is approximately US\$ 4.75 billion per year. Countries such as Jamaica, Guyana, Belize and Suriname could feed the region if they utilised ICTs. An example of ICT use in agriculture is seen in Jamaica, where RADA has a system that they send text messages to farmers, e.g. for adverse weather conditions and information of pests and disease outbreaks.

ICTs can be used in agriculture to provide:

- information on pricing;
- More local programmes on how to use our local produce (using old ICTs such as television)
- Agri-tourism initiatives in the CARICOM

Dr Braithwaite suggested that the use of the Internet through professional websites can be used to assist in Agri-tourism initiatives. He concluded that information can be provided using both old and new ICT.

## Session 3: Regional E-Government Initiatives

The objective of this session was to explore regional experiences in e-government including emergent issues and challenges.

**Presenter 1 - Mr Cecil McCain, Director of Post and Telecommunications, (Permanent Secretary Representative), Ministry of Science, Technology, Energy and Mining, Jamaica**

Mr McCain presented the Jamaican experience with e-Government. He noted existing issues as the multiple data networks within the GOJ with separate networks running on separate platforms having little similarities. There are multiple non-standardized hardware platforms with duplication of expensive infrastructure, multiple installations of enterprise type software systems and solutions and uncoordinated backup and disaster recovery systems for GOJ-ICT Assets. Other challenges included the disparate web interfaces with the users of GOJ systems which are mainly informational rather than interactive or transactional.

It was noted that most of the services offered by the government to citizens were primarily through 'brick and mortar' service channels. Further, there is inefficient determination, allocation and prioritization of the GOJ's human and physical resources to maintain proper service levels associated with ICT functions. There is also an inability of the GOJ to ascertain at this point, an inventory of government-owned ICT assets, and annual ICT spend. These issues are not unique to Jamaica, however, the Jamaican Government's strategy is to address e-Government with a fragmented approach, while addressing solutions on a 'whole-of-government' basis.

There is still a digital divide with large differences among the population in the level of access to the internet and therefore the ability to benefit from e-Government. There are also legislative and financial barriers, as well as funding arrangements that inhibit e-Government processes and require better coordination and collaboration. One of the earliest approaches to a solution began with Fiscal Services in 1995. Since then, there was the Central Information Technology Office (CITO) which was established in 2001 as an implementation measure of the National ICT Strategy. Among the objectives were to develop an Information Technology policy, develop strategies and plans, to monitor implementation of plans and to provide advice. The Ministry Paper No 56: Government at your Service intended to "spearhead the use of information and communication technology to allow the Government to manage in a more innovative, integrated, and coordinated manner, measure efficiency and improve the planning processes of government."

According to Mr McCain, in an effort to overcome the previous framework which was costly and inefficient, a GOJ ICT Policy was established in 2011 as a new framework. The policy aimed at ensuring that ICTs are optimally utilized to facilitate transparency and accountability within the government, in citizen engagement with the government, and to integrate fragmented systems to enhance delivery of public services. In keeping with the National ICT Strategy the Government needs to be a model user of ICTs. The policy objective was to create a:

- transformational state bureaucracy;

- 'on demand' government through integrated 'end to end' processes across the Government service and with stakeholders;
- effective communication;
- stimulation of public involvement;
- empowerment of citizens; minimization of social exclusion, and
- realization of the knowledge based society.

In Jamaica, the Public Sector Master Rationalization (PSMR) Plan of May 2011 determined that Central Information Technology Office (CITO) would set policy related to ICT, including setting and monitoring standards for software and hardware, procurement, installation and training across government. CITO would become a unit within the Ministry, headed by a Chief Information Officer. Fiscal Services Limited would assume the role of providing general ICT services to the entire Government and not just the Revenue Departments as was previously mandated. A Chief Information Officer was to lead CITO responsible for providing technology vision and leadership in the development and implementation of GOJ's ICT strategies and corporate programs, as well as GOJ's information technology and systems.

The expected outcomes to these reforms are: improved government efficiency; improved service quality; improved accountability and transparency; improved trust between citizens and government; greater citizen engagement.

### **Presenter 2 - Dr. Edmond Mansoor, Former Minister of ICTs, Antigua and Barbuda**

Dr Mansoor noted that in 2003 CARICAD and UNDESA carried out an e-Gov readiness assessment. The outcome document noted that "Caribbean countries represent a somewhat limited capacity for e-Gov development mainly due to low levels of ICT infrastructure development and educational attainment". In examining the components of e-Gov Readiness Index there are: web measure; telecom index; and human capital index. The Caribbean countries did not feature developed facilities for e-participation (which had three components: e-information, e-consultation, e-decision making).

In 2009, CARICAD produced an e-Gov Readiness SWOT Analysis based on the UN e-Gov Survey 2008 report. The weaknesses included leadership and governance, including lack of synergy, lack of inter-agency communication and silos in government related to e-Gov and ICT. Infrastructure was another weakness indicated including low broadband penetration and capacity and low levels of computer ownership and low levels of Internet penetration. Weaknesses included human resources, with limited computer literacy in government and minimal desire to use the internet on the part of government employees. Policy and legal weaknesses include slow pace in policy framing and inadequate supply of ICT-trained legal professionals.

According to Dr Mansoor, it is up to policy makers to take the necessary actions to amplify the strengths and diminish the weaknesses. Amplifying the strengths requires substantial private

sector investment. Research shows that in Antigua and Barbuda there is 88% internet penetration and 125% mobile penetration. There is now digital opportunity rather than a “digital divide”. Regardless, concerns remain regarding: the cost of internet connections; boosting innovation, business and employment and driving competitiveness; using ICT as a tool for improving public administration; and promoting a culture of transparency.

There should also be focus on m-powering development. Studies show that there are 6.3 billion mobile subscribers worldwide including in rural and remote areas. Billions of people remain unconnected and have never experienced the internet. The Caribbean will need to capitalize on the availability and reach of mobile networks to strengthen economic circumstances of individuals and communities. Dr Mansoor noted that infrastructure alone is not enough to lead to sustainable development. There needs to be right policies, regulations and legal framework that will open doors to new ICT applications and services, including m-banking, e-health, e-education and e-environment.

The following goals and challenges were noted within the Antigua and Barbuda Framework:

- Computerizing education (with the challenge of getting the various arms of government to work together)
- Smartphones as the best way to access to the internet (but regulations can inhibit investment)
- Maximizing the multiplier effect of broadband (with the challenge of creating content that will create demand)
- Data protection and privacy, copyright enforcement and strengthened security (with the challenge of lack of inter-agency cooperation)

Policy and political will are important prerequisites to the growth of e-government. A pro investment and investor friendly environment is needed and e-Government must be addressed in the context of the exploding growth in mobile cellular technology and app technology. Antigua and Barbuda developed a single ministry for information technology, broadcasting, telecommunications and science. The human capital was also identified and so an ICT Consultant with pan-Caribbean experience was contracted and Master’s level graduates worked in the Project Management Units. Public Private People’s Partnerships were established to enable the government to become a model utilizer of new technologies. These changes inspired investor confidence and consequent investment of \$0.5 Billion EC in ICT sector over a ten year period.

The country laid the foundation by landing a submarine cable. This resulted in a decrease in wholesale broadband rates by more than 80%. The government established award winning mobile IT classrooms and 32 community computer access centers (rural schools and communities). The government portal brought all ministries, all forms and all laws online. Thousands of PCs were installed in every agency of Government, broadband connectivity on a Wi-Fi mesh network, and mass training of public servants in ICTs. We also enforce Electronic Border Control, e-VISA and customs clearance (at air and seaports).

For 2009-2014 the focus was on broadband Internet connectivity, innovation, entrepreneurship, job creation and sustainability. High speed broadband became the currency of the Internet. There was a high appetite for broadband both by Government and the private sector. New investments were required in 4G technologies. Digicel launched first ever 4G LTE platform (north OECS hub) and then award-winning Government Assisted Technology Endeavour (GATE) was born. 4G LTE tablets and 4G LTE connectivity were deployed for every student at State College and every secondary school student. We implemented the ICT Cadet Program and LTE connectivity to 1,000 Government locations and LTE for every early childhood center. \$12.5 M EC was investment in GATE program by Digicel and \$35 M EC in new LTE network.

The Heart Programme (Human Entrepreneurship Assistive Resource Technologies) was also launched. In partnership with LIME, the Antiguan government invested \$12.5 M EC in HEART and \$37 million EC in a new 4G LTE network. The programme financed Business startups for Girls, ICTs for existing and potential business owners and mobile app seminars. It also deployed 1,500 iPad airs and 4G LTE connectivity for public servants. A new state of the art center for special needs person was established leveraging on ICTs as an equalizer.

In conclusion, Dr Mansoor suggested greater synergy is urgently required if the region is going to make collective and unified steps in implementation. Strong consideration should be given to a core basket of e-Government services that all Governments should implement as part of a methodical approach to adding to the basket.

### **Presenter 3 - Professor Evan Duggan, Chairman, eGov Jamaica**

According to Professor Duggan, Global populations are estimated at about 7.5 billion and close to 7 billion have access to digital signals and 5.3 billion have access to a mobile phone. Huge opportunities are offered by recent digital development, including online services, big data, social media, mobile apps, or cloud computing. These opportunities are redefining the way e-government is seen as a way to increase efficiency and effectiveness of governments. This can be done through providing seamless transfer of information between government ministries, departments and agencies and other stakeholders. Governments can also respond to demands for transparency and accountability. In the Caribbean, the extensive mobile infrastructure has placed great optimism in ICTs.<sup>1</sup> But we have come a long way since then.

Professor Duggan referenced the World Bank's definition of e-Government as "the use of information and communications technologies by governments to enhance the range and quality of information and services provided to citizens, businesses, civil society organizations, and other government agencies in an efficient, cost-effective and convenient manner, making government processes more transparent and accountable and strengthening democracy." He noted that the dominant objectives of e-Government is to improve delivery of services to citizens, businesses and employees; to engage citizens in the process of governance through interaction; to empower citizens through access to knowledge and information; and to facilitate the effective working of government and alleviate bureaucratic inefficiencies.

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<sup>1</sup> On November 29, 1997, **The Economist**, in an article entitled Jamaica 1, Information Technology 0, reported on Jamaica's failed attempt to introduce an electronic voting system for the 1997 general elections.

In examining Gartner's Four-Phase e-Gov Maturity Model to frame the discussion, Professor Duggan noted that Phase 1 is the phase of information which is defined by web presence with the technologies providing relevant information to the public. In this phase government information is publicly accessible; processes are described and thus become more transparent. This improves democracy and service. Phase 2 is characterized by interaction between government and the public. The public can ask questions via e-mail, use search engines for information and download documents. Phase 3 is the transaction phase where more advanced technology (G2C and G2B) is used to offer higher-value services. Internal (G2G) processes are redesigned to provide reliable service. The public is able to complete transactions on-line without visiting an office. In Phase 4, the transformation phase, information systems are integrated and the public can get G2C and G2B services at single point of contact, i.e. one (virtual) counter.

Some important watchwords are disintermediation (removing intermediary levels), excellence (provide the highest quality service that will "delight clients"; accountability and transparency (contributing to cost reduction and social inclusiveness); reduce corruption; trust (create value, deliver results, and continuously improve operations of government; innovation (creativity and ingenuity); and citizen empowerment.

Professor Duggan noted that the end result is the move from manual to automated facilities; fragmented to integrated services; closed to transparent systems; bureaucratic to citizen-centric processes; intuition/guess-work to informed decision making; and from authoritarian to service oriented and participatory governance.

Some early initiatives in the region include the creation of an e-Government Unit created in 2001 in Trinidad. In Jamaica, the major e-government strategy was developed in 2001. ICT initiatives in Barbados began in 2000. Other countries with relevant strategies are Antigua and Barbuda, The Bahamas and Grenada. Those that started with e-Government strategies earlier are doing better in the Ease of Doing Business in the Caribbean – IFC Rankings. Meanwhile for the Network Readiness Index, the Caribbean is not doing well with the government's use of ICTs. Seventeen Caribbean Countries use ASYCUDA, a customs management system. Also three countries are implementing single window trade facilitation (Barbados, Jamaica and Trinidad).

Professor Duggan concluded that there needed to be transformation from rhetoric to reality. In quoting Vance Havner, he agreed that "The vision must be followed by the venture. It is not enough to stare up the steps - we must step up the stairs."

**Presenter 4 - Ms. Karlene Francis, EPIC Program Officer, World Bank Group, infoDev, Jamaica**

Ms. Francis' objective was to discuss practical applications at the regional level, particularly the OECS Electronic Government for Regional Integration Project (EGRIP). She noted the EGRIP Development objective as "to promote the efficiency, quality, and transparency of public services through the delivery of regionally integrated e-government applications that take advantage of economies of scale". This objective was financed by CDB (US\$2.5M), IDB (US\$9.6M) and participating countries (0.95M) for a total of US\$13.05M.

Among the achievements of the EGRIP Development objective was a suite of OECS Harmonized E-government Legislation. The project also initiated the provision of ICT Planning and Management Tools and the strengthening of the National Health Management Information Systems (NHMIS). The project implemented a front end tax electronic filing system; an electronic procurement system; and a multi-purpose identification system across OECS.

The following are some of the emergent challenges with the possible relevant solutions:

- **High cost of financing e-government systems:** This challenge could be resolved through the economies of scale realized in regional and national projects. Also, governments should prioritize systems that have greatest impact.
- **Lack of policy and legal framework:** This could be resolved through the development of e-Government specific policy. Political support should prioritize the enactment of relevant e-government legislation. The policy framework should support the re-engineering of workflow to facilitate whole-of-government approach.
- **Lack of institutional framework and capacity:** A central agency should be responsible for e-Government. There is also a need for harmonization of e-Government standards, ICT management and investment practices.
- **Lack of infrastructure and effective usage:** This should be resolved by a secured government network to connect government agencies.
- **Sustainability:** This can be addressed by focusing on demand-driven solutions, perhaps with the help of a feasibility study. A sustainability component should be included in any plan and a feature for citizen feedback is needed.

## **Closing Roundtable**

The objective of this session was to explore regional experiences in e-government including emergent issues and challenges.

### **Presenter 1 - Dr. Laurent Elder, Programme Leader, International Trade and Development, IDRC Canada**

Dr Elder noted that the internet can be a disruptive innovation, possibly the most disruptive ever, because it is happening quickly and it is affecting every aspect of development. While acknowledging its advantage with an example that Jamaica is ranked 8<sup>th</sup> in terms of usage of oDesk – a micro work application, he conversely noted the disruption through the demise of Kodak which had 145,000 employees at its peak and was worth a few billion dollars.

In going forward, ascertaining how and in what circumstances do ICTs help achieve development aims is relevant. Getting good data and replicating developments should be matters to be addressed. Dr Elder suggested that the modest proposal is to enable inclusive benefits and connect the next (or last) billion. Skills should be built and marginalized groups (including women) examined. There is the need for effective ICT public policy, including competition policy, intellectual property policy, trade policy and education, health and social policy.

### **Presenter 2 - Dr. Uwe Deichmann, Co-Director, WDR 2016, Development Economist and Chief Economist, The World Bank**

Dr Deichmann reiterated that the Report will address the way forward. He noted that the draft chapters would take into account, the feedback from the Symposium. Presentations from the Symposium will be available on-line on The World Bank's website and feedback or additional information was invited from all participants.

### **Closing Remarks: Professor Hopeton Dunn, Director, Mona ICT Policy Centre, UWI Mona**

Outcomes of the discussions will be used for inclusion in the Report and will also be used for academic sharing and public information within the region. Special thanks were expressed to all presenters, chairs and the attendees especially those who responded promptly to attend. Appreciation was also expressed to the supporting organizing team.

## **Project Outcomes**

The Symposium provided a forum and roadmap to better understand the role of the Internet and ICTs in enhancing Caribbean Economic Development. It allowed regional collaboration and information sharing for development objectives. It also provided the framework for inputting the World Development Report (WDR) and its performance indices into regional foreground as vital data and measures in evaluating Caribbean economic and ICT development. The Symposium created research, teaching and learning opportunities in exploring the importance of the Internet and of access to skills development and job creation for a wider public. There are key outcomes which can inform the role of internet in the development of Caribbean states and possibly other Small Island Developing States.

A major issue identified was the need for affordable and pervasive always-on internet access. The roll out of relevant technical infrastructure would continue to drive the development of the digital ecosystem. Far more work needs to be done in training and human capacity building so that individuals within these societies will be able to capitalize on the internet for their own self-improvement and so they can contribute to the productivity of the nation states. In addition, small states such as ours continue to struggle with the dearth of accurate, current and reliable data in order to have a true understanding of ICT diffusion and impact across communities, businesses and the public sector. Funding is a key challenge in this effort for the accumulation of evidence to inform ICT related policy.

There remains an imperative for governments to employ e-governance strategies towards more efficient, inclusive, accountable and transparent frameworks for decision making. Open data should be facilitated to this end, but in many jurisdictions a paradigm shift towards openness is needed. ICT-relevant policies also need to be re-vamped, especially those which enable competition, security and privacy. Greater collaboration is needed across the region for greater synergy and unified steps in implementation of ICT policies. Multistakeholder approaches, involving the public and private sectors as well as consumers, should be employed for developing such local and regional policies.

Entrepreneurship and innovation should be promoted within states to develop indigenous applications, create jobs and foster the knowledge society. The mining of open data can be a source of innovation if we can identify culturally appropriate products and services that can use the data. Again, capacity building is critical for the success of any such efforts.