# e-Government Initiatives in Mauritius



Ministry of Information and Communication Technology - Premchand Teeloku

Deputy Permanent Secretary

## Ministry of ICT

Vision:  To make of Mauritius a Cyberisland and the ICT leader in the Region

Mission:   To provide the right environment for the harnessing of Information & Communication
          Technologies to generate employment, increase national wealth, improve quality of life
          and create new opportunities for sustainable socio-economic development of Mauritius

## Business Parks of Mauritius Ltd

Vision & Mission

e Business Parks of Mauritius Ltd is a Government owned company, set up in 2001 for the development and management of Business Parks in Mauritius. It has established itself as a reliable

and indispensable partner for providing service land and office premises for ICT related activities. The Ebène CyberCity developed by BPML remains choicest location for ICT/BPO activities in Mauritius.

**CIB**

Vision & Mission

Promoting e-Governance - Provision of project management, consultancy and advisory services to Ministries and Departments for the successful implementation of e-government projects and on ICT matters.

**CISD**

## Vision & Mission

Providing Reliable, Timely and Cost-Effective ICT Support Services to Government Institutions
To achieve excellence in the provision of State-of-the-Art ICT Support Services to the Civil Service

**ICTA**

## Vision

To play a leading role in the future of ICT in Mauritius contributing to an efficient, competitive and optimally regulated ICT sector.

## Mission

To promote affordable and adequate access to quality ICT services through functional market-driven competition and regulatory principles in a trouble-free Networked Information and Knowledge Society.
Parliament passed the Information and Communication Technologies Authority Act in late 2001, effectively creating the ICT Authority which has the status of a body corporate.

Operators who want to start or conduct telecom operations must apply to the ICT Authority for a licence. The ICT Authority is also in charge of the Mauritian numbering plan and allocates number resources to telecom operators.

With the radio frequency being a limited natural resource, frequencies must be allocated fairly among those who apply. The authority is also empowered to investigate cases of radio interference.

The ICT Authority has, among other functions, to act as the Controller of Certification Authorities (CCA). The Controller of Certifying Authorities as the "Root" Authority certifies the technologies, infrastructure and practices of all the Certifying Authorities licensed to issue Digital Signature Certificates

It is also responsible for protecting consumers of telecommunication services.

**ITSU**

## Vision

To be the key facilitator in ensuring that Information Systems in Government are secure

## Mission

To disseminate knowledge on Information Security, promote the implementation of Information Security standards and establish IT security practices within Government

**Mauritius Post Ltd**

## Vision

To be recognised as a world class provider of postal and communication related services in the region.

## Mission

To provide access to an array of services across the country including postal, electronic information,
financial and government related services through a wide network of branches.

## NCB

### Vision & Mission

To be the key enabler in transforming Mauritius into a Cyber island and the regional ICT hub.

To e-power people, businesses and the public sector by developing and promoting ICT and ICT related services in Mauritius.

## SIL

### Vision

In three years, SIL will consolidate and expand its business activities by building on its human capital to be the best solution provider and the preferred partner in the ICT sector.

### Mission

SIL advises on, designs and implements total & high availability solutions, in areas of ERP implementation , enterprise computing solutions, disaster recovery, software development, facility management, IT consultings, training and support services using innovative technologies from leading ICT players.

SIL provides solutions for the public and private sectors in particular for administration, pension, finance, banking, insurance, utilities, telecom & health.

SIL empowers its customers through end user training on applications, training on technologies and hand holding.

# Agenda

- Facts about Mauritius
- e-Government Initiatives – operational
- Initiatives to move the ICT Sector and e-Government forward
- Budget 2013 measures
- e-Government initiatives – under implementation

# Facts about Mauritius

Size:                               2,040 sq Km
Population:                          1.2m
GDP Growth Rate (2011):             3.9%
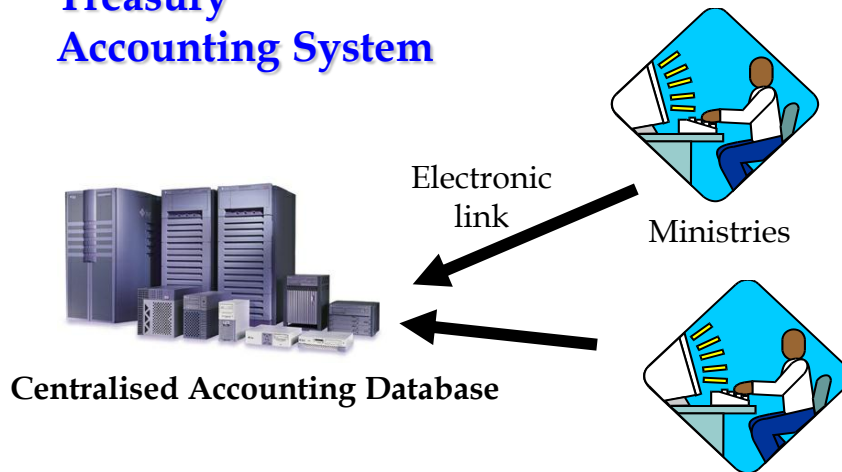Main pillars of the economy:        1. Financial Services
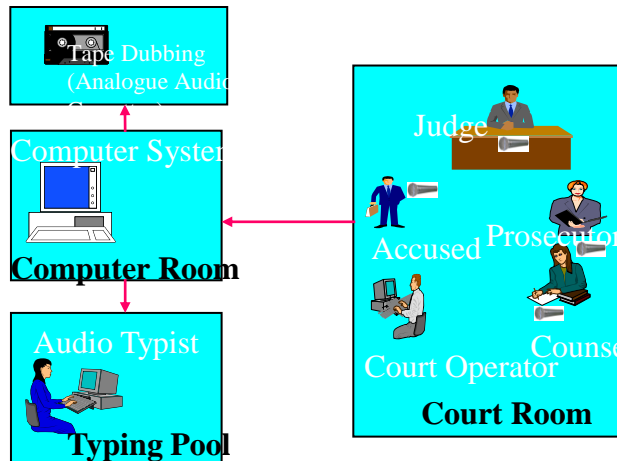                                    2. Tourism
                                    3. ICT
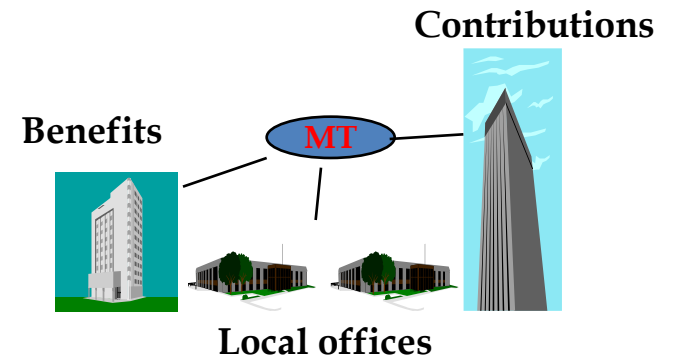
# **Facts about Mauritius**

- Free Education
- Free healthcare
- Free transport for students and the elderly

- PC Penetration:                35%
- Internet subscription:30%
- Broadband penetration:     23%
- Mobile Subscription:        >100%

# E-Government Applications (Operational)

## Treasury Accounting System

Electronic link

Ministries

Centralised Accounting Database

## Social Security System

Contributions

Benefits

MT

Local offices

## Digital Court Recording System

Tape Dubbing (Analogue Audio ...)

Computer System

**Computer Room**

Audio Typist

**Typing Pool**

Judge

Accused

Prosecutor

Court Operator

Counsel

**Court Room**

## Automated Fingerprint Identification System

Faces Can Lie ...

Fingerprints Never...

# E-Government Applications (Operational)

**TradeNet System**

**Labour Market Information System**

Banks

Customs

**Goods clearance system**

Importers/ Exporters

Shipping Agents

EIC's Rodrigues

Public

Dial up connection

Employers

**Employment Service**

LMIS Server

Job Seekers

INTERNET

(Work stations …)

Workstation  Workstation

Other Organisations

Dial up connection

Switch

ADSL connection

ISDN

Printer

Print Server

EIC's (Local)

EIC's (Local)

EIC's (Local)

- ✓ D atabase of registered job seekers and notified vacancies
- ✓ Electronic Labour exchange (Job Matching )
- ✓ Dissemination of data on sectoral developments
- ✓ S tatistics on employment unemployment and the labour market in general

# E-Government Applications (Operational)

**E-Parliament – Digital Recording System**



- Speed up the administrative process - enabling a quicker pace of conducting Government business
- Provide a better service for Parliamentarians and for the public, e.g. improve the timely availability of documents
- Facilitate the secure electronic creation, processing, distribution & management of documentation.

# E-Government Applications (Operational)

## Immigration and Border Control System

- Border Control System

- Visa System

- Residence Permit System

- Controversial Individual System

- Citizenship System

- Electronic Document Management System

- Workflow System

# Initiatives to move the ICT Sector and e-Government forward

- Legal and regulatory framework
  - Copyright Act
  - Information and Communication Technology Act
  - Electronic Transactions Act
  - Computer Misuse and Cybercrime Act
  - Data Protection Act

- Policies and strategies

  - National ICT Strategic Plan 2007 – 2011 and 2011 – 2014

  - National Broadband Policy 2012 – 2020

  - Open Access Policy

- ICT literacy

  - IC3 course

# Initiatives to move the ICT Sector and e-Government forward (contd)

- Increase Access to ICT
    - Government Portal being revamped – to support e-participation
    - Setting up of 178 Computer Clubs (at Community, Women Centres)
    - Setting up Public Internet Access Points at 95 Post Offices
- Skilled Human Resources – ICT
    - ICT Skills Development Programme (PPP in funding training for the youth, unemployed and reskilling of resources – 50% of stipend paid by Govt and 50% by private sector
    - ICT Academy

# Initiatives to move the ICT Sector and e-Government forward (contd)

- Setting up of Public Key Infrastructure (PKI) framework
  - Certification Authority licensed
  - Ministries of ICT, Finance and Civil Service to use digital signatures in their transactions as from January 2013
- Radio spectrum released for 4G
- WIFI Mauritius – WIFI zones at municipalities and district councils
- CERT

## Budgetary measures 2013

**EMBRACING A TECHNOLOGICAL FUTURE**
**Bridging the digital divide**
 On 1st January 2013, broadband price for 256kbps connection falls from Rs 349 (<$12)per month to Rs 200 (<$7), through a subsidy from the Universal Service Fund

**Online government**
 Major overhaul of Government IT services
 Launching of first batch of 8 e-payment services (March 2013) and m-payment services (end 2012)

## Budgetary measures 2013

**Harnessing the potential of our youth**
▪ Government will distribute free of charge next year one tablet to each student in Form IV totalling 20,000 devices MPs to receive tablets in March 2013 – all parliamentary material to available n electronic format only

▪ Mauritius to benefit from mass online IT training programme developed by MIT free of charge

▪ Setting up of "Emerging Leaders Award" with Robin Sharma as Chairman. Offer seed capital of U$100,000 to local projects of outstanding value

**Increasing our competitiveness**

⬚ Additional fall of 15% of International Private Leased circuits

⬚ Strengthening of Privacy Laws to spur Cloud Computing activity

**A new digital era**

⬚ Increase connectivity of Rodrigues by satellite from 37 to 155 megabyte

⬚ Switch off analogue television broadcast signal in Dec 2013 and release spectrum for new applications and services

⬚ Accelerate rollout of 4G

## Budgetary measures 2013

**Increasing our competitiveness**
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**A new digital era**
 Increase connectivity of Rodrigues by satellite from 37 to 155 megabyte
 Switch off analogue television broadcast signal in Dec 2013 and release spectrum for new applications and services
 Accelerate rollout of 4G

# E-Government Projects Under Implementation
## Mauritius National Identity Card (MNIC)
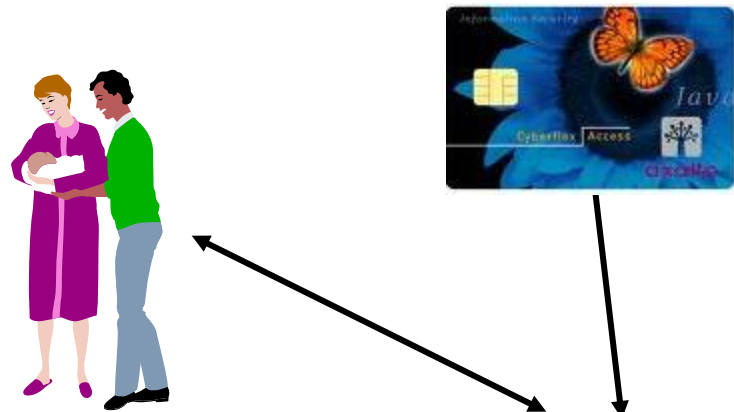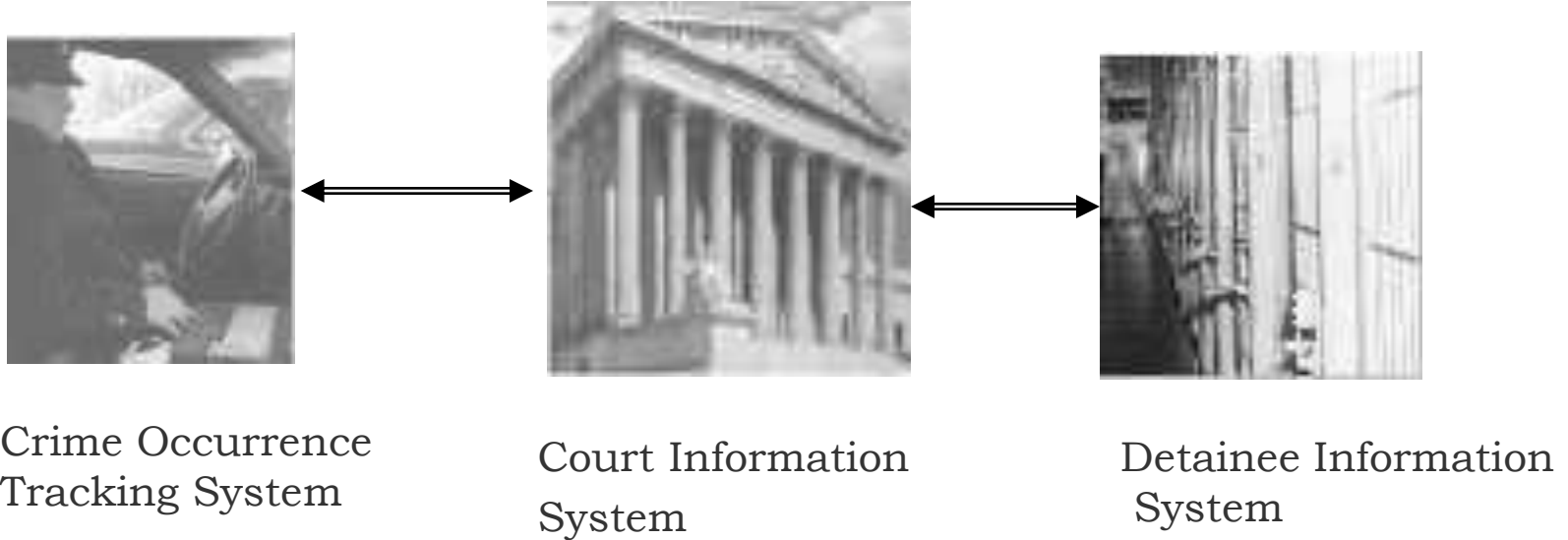


Highly secure biometric ID card

PKI

MNIC system

Payment of pensions

Bus pass for old age
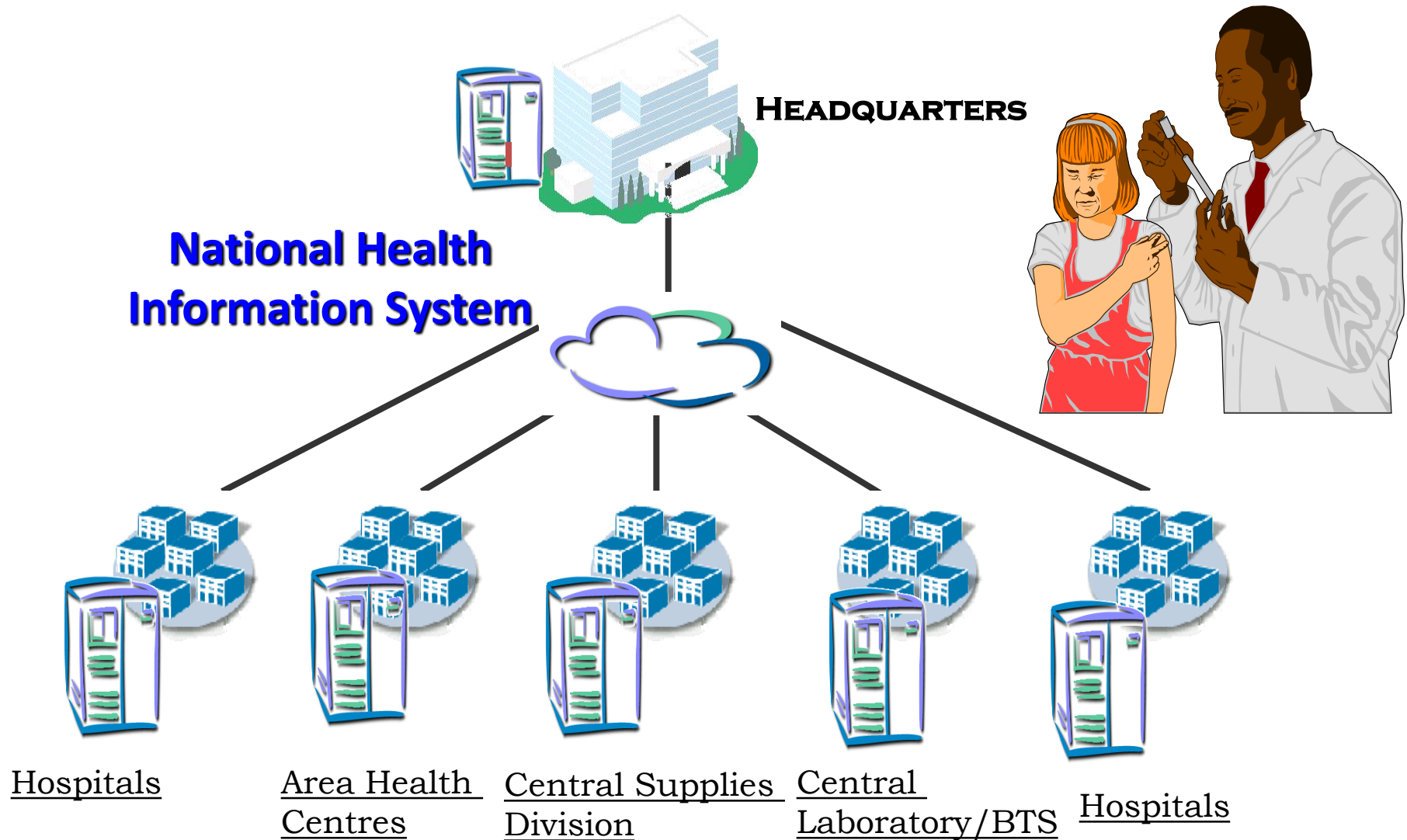
# E-Government Projects Under Implementation

## Crime Occurrence Tracking System



Crime Occurrence Tracking System

Court Information System

Detainee Information System

- ✓ Automated facilities for lodging of offences at Police Station for better customer service
- ✓ Centralised tracking of criminal offences lodged at Police Stations
- ✓ A tool for the analysis of criminal data
- ✓ Foundation for an Integrated Justice Information System (IJIS) linking the Police Department, the Courts and the Prisons Department

# E-Government Projects Under Implementation
## E-Health



Headquarters

National Health Information System

Hospitals

Area Health Centres

Central Supplies Division

Central Laboratory/BTS

Hospitals

# Some E-Government Projects under implementation

- E-Procurement – Assessment of parties interested to be prequalified in progress

- E-Payment gateway + m-payment – to be implemented through an outsourced model – 8 e-payment services online as from March 2013

- E-Judiciary – Phase 1 - e-filing of Civil Cases reached UAT stage

- E-Education – Provision of Tablet PCs to 20,000 Form IV students by March 2013

- Automated Budget System – SRS being finalised

# Government Intranet System
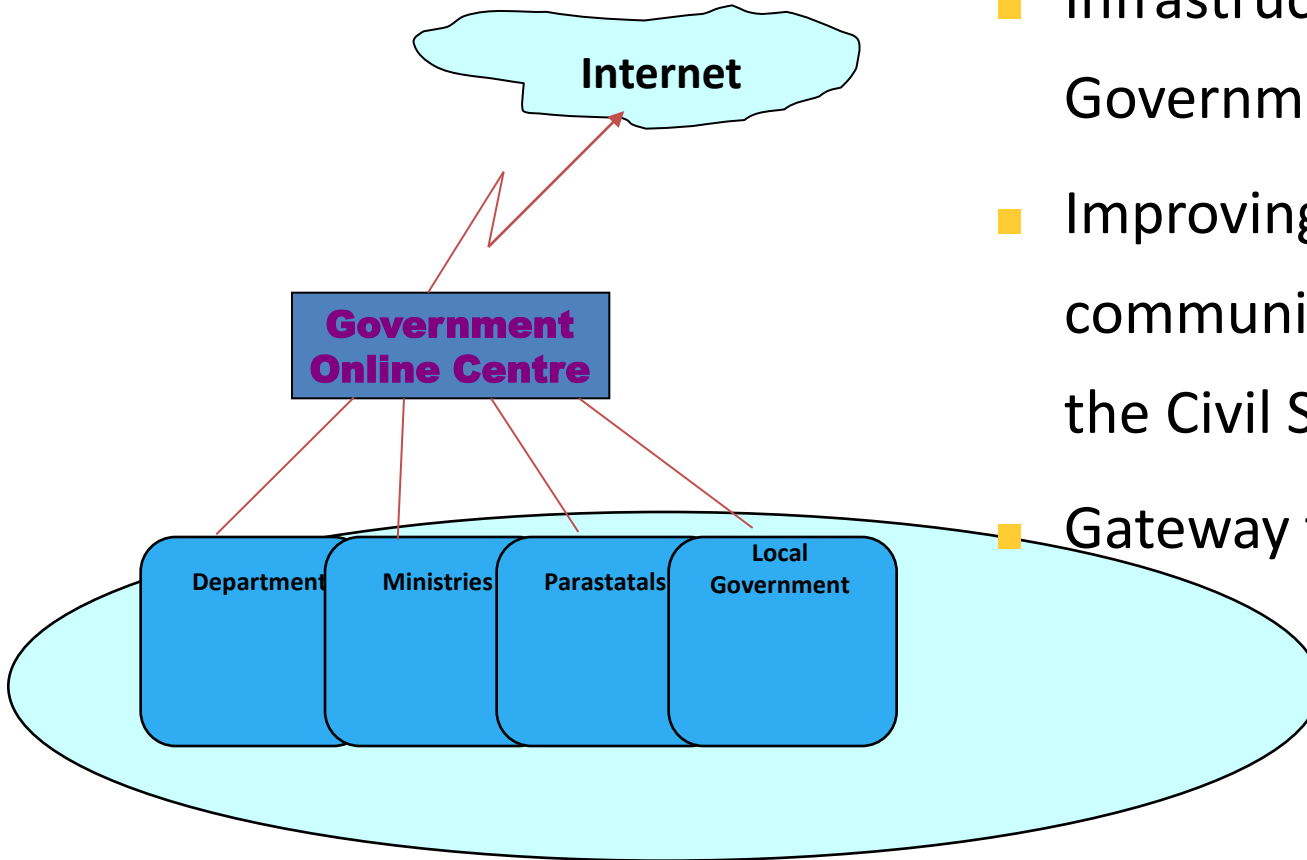


- Infrastructure for a joined-up Government

- Improving electronic communication capability of the Civil Service

- Gateway to the GOC

# Electronic Delivery of Services (e-Services)

53 e-services

Some examples:

- Application for Learner's Driving Licence
- Application for Vacancies at Public and Displined Forces Commission
- Application for Work Permit
- Application for Appointment for Vehicle Examination
- Application for Women Courses
- Application for Environment Complaint

# ICT Sector - Infrastructure

- Modern telecommunications infrastructures and services at competitive rates *(SAFE, LION, LION 2, Liberalisation of Telecoms)*

- Quality ICT Parks

# Legal Framework

- Sound Legal Framework for the development of the ICT Sector

- Legislations already in place:

  - Copyright Act 1997: Protection of the Intellectual Property

  - Electronic Transaction Act 2000, amended in 2009 (to setup PKI eco system): E-commerce

  - ICT Act 2001: Regulation of ICTs

  - Computer Misuse and Cybercrime Act 2003: Protect against cyber crime

  - Data Protection Act 2004: Confidentiality and Protection of Data

# ICT Economic Indicators

- Contribution to GDP– 6.4 per cent in 2012

  (compared to 4.7 in 2002)

- Value added – Rs bn 19.4 in 2012

  (compared to        Rs bn 6 in 2002)

- Growth Rate– 9.5 per cent in 2012

- Turnover generated in 2011 – Rs bn 33.4

- Export of ICT Services in 2011 – Rs bn 4.6

# Fixed Line and Mobile Phone penetration

▶ **Mobile Phone subscriptions has surpassed the 100 percent mark since 2011**

| Subscriptions | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Fixed Line | 363,600 | 375,100 | 387,700 | 374,600 | 349,100 |
| Fixed Line per 100 inhab. | 28.6 | 29.4 | 30.2 | 29.1 | 27.03 |
| Mobile Phone | 1,033,300 | 1,086,800 | 1,190,900 | 1,294,100 | 1,485,800 |
| Mobile Phone per 100 inhab. | 81.2 | 85.1 | 92.8 | 100.4 | 115.05 |

# Internet Penetration

▸ **Total number of Internet subscriptions improved drastically to 568,700 in 2012 (increasing by 53.7%)**

| Subscriptions | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Internet (total) | 199,500 | 284,000 | 284,200 | 370,000 | 568,700 |
| Internet per 100 inhab. | 15.7 | 22.2 | 22.1 | 28.7 | 44.04 |
| Broadband Internet | 157,300 | 251,800 | 258,500 | 279,800 | 423,300 |
| Broadband Internet per 100 inhab. | 12.4 | 19.7 | 20.1 | 21.7 | 32.78 |

# Tariffs for Internet Access

▸ **Price of Internet has gone down drastically over the period 2008 to 2013**

| Tariffs | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|
| ADSL Home (1 Mb unlimited) | 5,990 | 1,360 | 1,190 | 708 | 708 | 708 |
| ADSL Business (1 Mb unlimited) | 5,990 | 5,000 | 4,900 | 2,400 | 1,890 | 1,890 |
| IPLC – Full Circuit (2 Mbps) | 6,300 | 4,900 | 4,900 | 4,100 | 3,500 | 2,975 |

# Software Industry in Mauritius

▸ **The share of the software industry to the ICT sector is becoming increasingly important**

|  | **2007** | **2008** | **2009** | **2010** | **2011** |
|---|---|---|---|---|---|
| Contribution of the software industry to the ICT sector (Rs M) | 1,350 | 1,800 | 2,400 | 3,275 | 3,920 |
| Percentage contribution of the software industry to the ICT sector | 12% | 14% | 16% | 19% | 21% |

▸ **The growth rate of the software industry as at 2011 was at 13 percent**

# ICT-BPO space

▶ **Some 575 ICT-BPO companies presently operates in Mauritius**

▶ **Range of activities include:**

Software Development, Call centre operations, Business Process Outsourcing, IT-enabled services (ITES), Web-enabled services, hardware assembly and sales, Networking, Consultancy, Multimedia Development, Disaster
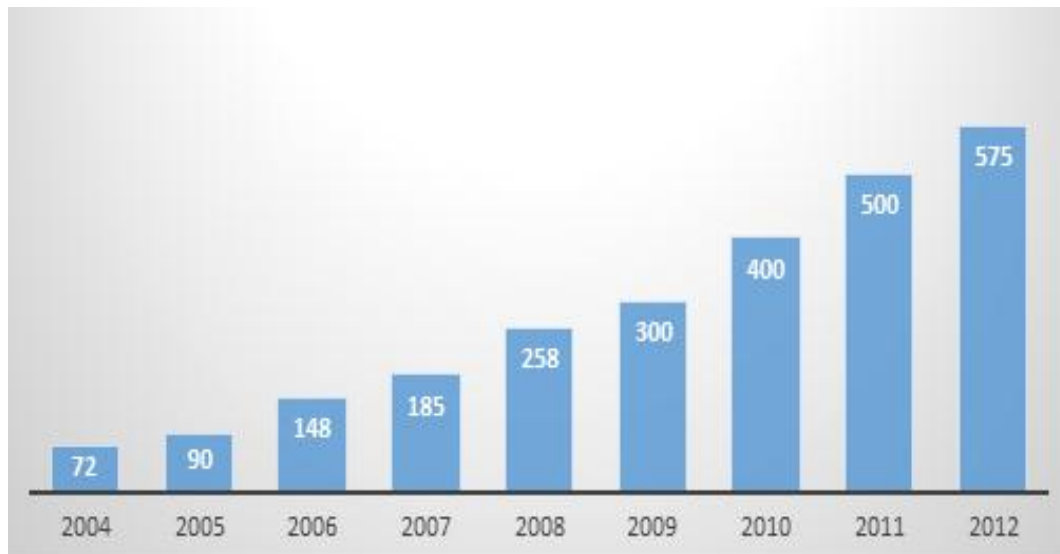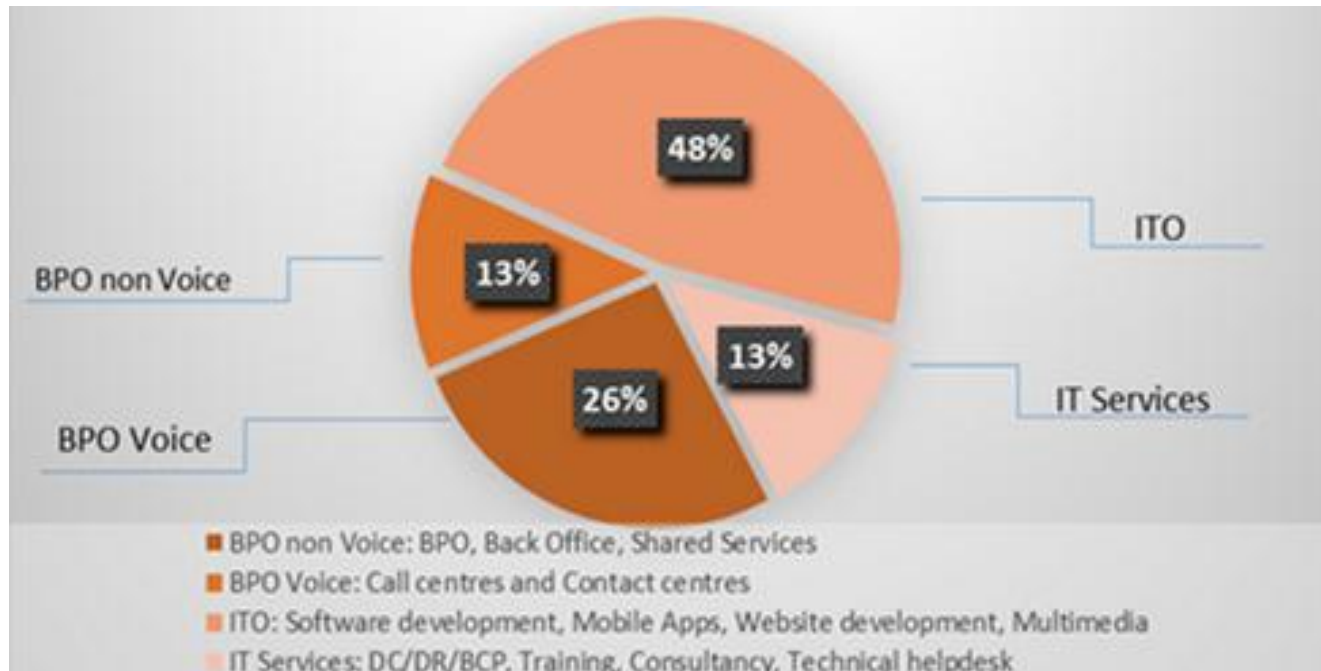
# Employment in the ICT-BPO industry

▶ **The industry is approaching the 18,000 mark**

▶ **BPO remains a major segment generating employment**

# Segments of ICT-BPO space

▸ **ITO (Software Development, Mobile Apps, Web Development and Multimedia Development) represents 48% of the share and remains a major component of the ICT-BPO space**



BPO non Voice: BPO, Back Office, Shared Services
BPO Voice: Call centres and Contact centres
ITO: Software development, Mobile Apps, Website development, Multimedia
IT Services: DC/DR/BCP, Training, Consultancy, Technical helpdesk

# International Rankings

▸ **Mauritius among the top 2 countries in Africa for all indices**

| Index | Rankings |
|---|---|
| ICT Development Index - 2011 | 74$^{th}$ over 155 countries |
| ICT Price Basket -2011 | 39$^{th}$ over 161 countries |
| Networked Readiness Index - 2013 | 55$^{th}$ over 144 countries |
| E-Government Development Index -2012 | 93$^{rd}$ over 193 countries |
| Doing Business – 2013 | 19$^{th}$ over 185 countries |
| Global Service Location Index -2011 | 36$^{th}$ over 50 countries |
| Global Competitiveness Index -2013 | 54$^{th}$ over 144 countries |

# Networked Readiness Index (NRI) 2013

▸ **Mauritius improved its Political and Regulatory sub-index by 3 ranks (from 39th in 2012 to 36th in 2013)**

▸ **The country is ranked 12th as far as Affordability is concerned**

| Indicators | Rankings |
|---|---|
| Effectiveness of law making bodies | 19 |
| Laws relating to ICT | 43 |
| Efficiency of legal system in settling disputes | 26 |
| Efficiency of legal system in challenging regulations | 30 |
| Intellectual IP Protection | 54 |
| Software piracy rate, % software installed | 48 |

# Software Piracy Rates & Commercial Value of Unlicensed Software in Mauritius

▸ **The Software Piracy Rate in Mauritius is 57%  (*over total software units installed*)**

| Year | Piracy Rate | Value ($ M) |
|------|-------------|-------------|
| 2011 | 57% | 7 |
| 2010 | 56% | 5 |
| 2009 | 56% | 4 |
| 2008 | 57% | 5 |
| 2007 | 57% | 4 |

# Software Piracy Rates in 2011- Global

▶ **The Software Piracy Rate is lowest in Northern America**

| Country | Piracy Rate |
|---|---|
| Northern America | 19% |
| Western Europe | 32% |
| Middle East & Africa | 58% |
| Asia Pacific | 60% |
| Latin America | 61% |
| Central and Eastern Europe | 62% |

For more information please visit us on the Mauritius ICT Indicators Web Portal at
http://indicators.ncb.mu

**WSIS Action lines**
**C3 – Access to information and knowledge**
**Activity Title: Setting up of Computer Clubs on a regional basis**

**Description:**
The project is in line with the WSIS Action Line of the role of public governance authorities and all stakeholders in the promotion of ICTs for development.

Computer Clubs contribute to the development of Mauritius by facilitating the democratisation of ICTs in order to contribute in the alleviation of poverty within the community through the use of ICTs and free access to broadband Internet. It helps in removing the barriers to bridge the "Digital Divide" through democratised access for the whole community and promotes ICT for educational, personal and social development.

As at date, a total of 212 Computer Clubs have been set up across the island in namely:

23 Youth Centres

17 Women Centres

84 Community Centres
57 Social Welfare Centres
20 Day Care Centres
11 NGOs/Municipal councils/Village Hall

An additional 62 Computer Clubs are in the setting up phase in 48 Community Centres, 4 Village Halls/NGOs and 10 in Rodrigues.

So far, 679,032 registrations have been noted in Computer Clubs to have benefited from the free access to ICT tools and Internet.

Activity Geographical Coverage: National
Activity Timescale: Ongoing
Activity Partnership: UNDP, Mauritius Telecom Foundation, Microsoft

**WSIS**

**Project Descriptions**

**Activity Title:** Implementation of a Child Safety Online Action Plan
**Activity Type:** Project

**Activity Description:**
The Objective of the Child Safety Online Action Plan is to address the issue of Child Safety Online in Mauritius. This is implemented by National Computer Board to sensitise the youth about the dangers of the Internet.
A workshop targeting secondary school students and teachers was organised on the occasion of Safer Internet Day 2012, whereby presentations on different aspects of online security were held for some 400 participant.
Furthermore, as part of the Child Safety Action Plan, NCB conducted awareness sessions for students in more than 25 secondary schools and some 3000 students have been sensitised.
Awareness sessions on "Child Online Safety" have been carried out in 2012 for primary and secondary school ICT teachers in all four zones of the country. Some 200 teachers were sensitized.

Activities to carried out in 2013:

NCB has carried out awareness sessions for secondary school teachers so that they can better educate the students on Information Security related issues. Some 100 teachers have been sensitized.

Awareness Sessions on Internet Safety for Secondary schools is being carried out and some 3000 students are targeted.

Dissemination of E-booklet on the security aspect of Responsible Online Choices for Youngsters

Young people from the whole country will be able to benefit from the above mentioned activities to be able to better protect themselves against the dangers of the Internet.

Activity Geographical Coverage: National

Activity Timescale: Ongoing

Activity Partnership: Ministry of Education and Human Resources

Activity website: Safer Internet Day  (http://www.ncb.mu/sid)

**WSIS Action lines**
**C3 – Access to information and knowledge**
**Activity Title: Cyber Caravan**
**Activity Type:** Project

**Activity Description:**
The Cyber Caravan Project aims at making ICT facilities available to the community especially in remote areas targeting people who cannot afford a computer.
The main objectives of the Cyber Caravan Project are:
To raise the level of knowledge about ICT and usage of computers and common computer applications, such as office tools, Email and Internet.

To promote and encourage ICT Literacy.

To enable people to form part of the global society.
As at date, more than 138,000 persons have been initiated in ICT in the NCB's three Cyber Caravans.

A constant monitoring is done to ensure all regions of the island are covered.

Activity Geographical Coverage: National

Activity Timescale: October 2000 - ongoing

Activity Partnership: Ministry of Gender Equality, Child Development and Family Welfare, Ministry of Social Security, National Empowerment Foundation, Ministry of Labour, NGOs, Youth Clubs, United Bus Service and MT Foundation.

Activity website: [NCB Cyber Caravan](NCB Cyber Caravan)

**WSIS**

**Project Descriptions**

**Activity Title:** Building confidence and security in the use of ICTs at the National Level.
**Activity Type:** Programme

**Activity Description:**
The objective of this programme is to promote and implement secure use of ICTs at the national level targeting public and private sectors, ISPs, Media and the Academia. In this regard, The Mauritian Computer Emergency Response Team (CERT-MU) has been set up by The National Computer Board (NCB) to respond to and manage cyber security incidents reported both at the national and international level, assist local organizations in implementing secure measures to safeguard their assets and raise awareness on Information Security related issues at the national Level.

A number of initiatives are being carried out with relation to the above:
Dissemination of Information security news including Advisories, Vulnerability Notes and Virus Alerts on a daily basis

**WSIS**

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Assistance in handling and responding to Cyber Security Incidents

19 Technology workshops including Safer Internet Day and Computer Security Day, have been organized in the past 4 years which has benefited some 3000 participants

Implementation of a Child Safety Online Action Plan which includes organization of Safer Internet day and awareness for the youth about the dangers of the Internet

Assisting Parastatal Organisations of the country to implement Information Security Management System (ISMS) with regards to ISO 27001

Elaboration and implementation of an Anti-Spam Action Plan at the National Level

Provide free vulnerability scanning service using sophisticated tools to local organizations

CERT-MU publications including Security Guidelines, Brochures and E-Security Newsletter. Some 35,000 copies have already been disseminated to the public in general

Third Party Security Audit for Parastatal Organizations.

Further details with regards to the above mentioned activities can be obtained from NCB's and CERT-MU's website respectively:

www.ncb.mu
www.cert-mu.org.mu


Activity Geographical Coverage: National
Activity Timescale: Ongoing
Activity Timeframe: January 2013-December 2013
Activity Partnership: ISPs, Ministry of ICT, Ministry of Education and Human Resources
Activity website: NCB Security Awareness

**WSIS Action lines**
**C3 – Access to information and knowledge**
**Activity Title: Universal ICT Education Programme – Internet and Computing Core Certification (IC3) Course**

The National Computer Board (NCB) operating under the aegis of the Ministry of Information Technology and Telecommunications is implementing the Prime Minister's Universal ICT Education Programme (UIEP) since September 2006.

One of the priorities of the programme is the introduction of the internationally acknowledged **Internet and Computing Core Certification (IC3)** course with a view of making it the benchmark for digital literacy/proficiency in Mauritius.  The programme aims at training a maximum number of persons comprising students, employees, non-employee and the population at large on the IC3 course in line with Government's vision of accelerating the transformation of Mauritius into an ICT hub and in developing ICT into a major pillar of the economy.

The IC3 course is of 45 hours duration and is delivered in the computer labs of some 55 State Secondary Schools after school hours on week-days and during weekends.  There exist nine time table options.

The course comprises three core modules as follows:  Computing Fundamentals, Key Applications (Word Processing, Spreadsheets, and Presentation Package) and Living Online.  A certificate of attendance is awarded by the National Computer Board to all those participants who **complete at least 41 hours of the course.**

**The IC3 certification which is internationally acknowledged** has also been introduced by the NCB in collaboration with the University of Mauritius since August 2007.   The IC3 certificate is recognised by UNESCO, UNDP and high players like Microsoft.   The IC3 certificate is accepted as one of the pre-requisite to admission for undergraduate course at the University of Mauritius and University of Technology, Mauritius.

The IC3 course content has also been integrated in the Computer Studies syllabus for students of Forms I to Form III in both State and Private Secondary Schools since January 2007 (in Mauritius and

Rodrigues as well).  Students of State and Private Secondary Schools completing their Form III as from December 2007 also complete the IC3 which has been integrated in their school curriculum.

The NCB has also produced in collaboration with the Mauritius College of the Air a first series of 12 Educational Video Clips based on the internationally acknowledged Internet and Computing Core Certification (IC3) course syllabus.

The clips have been broadcast on the MBC Knowledge Channel and MBC 2 and is one of the initiatives in line with the Government's programme 2010 – 2015 to bridge the digital divide.

The UIEP Project has also been implemented in Rodrigues in collaboration with the Commission of Education and Others since March 2007.  4,658 (inclusive of Form III Integration  - 2,435) participants have followed the IC3 training in Rodrigues.

Till date, the NCB has received more than 174,933 applications for the IC3 course out of which 157,804 participants have already completed the training.

Internet Broadband for an inclusive digital Society
Where does Mauritius stand?

Mauritius is a small island economy in the Indian Ocean with a population of 1.3 million people and a per capita income of US$ 8,385 in 2011. Since independence in 1968, Mauritius has made impressive economic and social achievements and is outperforming most other countries in the region. There is wide recognition of the essential role of ICT, especially, high-speed broadband networks - as cross-cutting and multi-sector enablers for the achievement of the Millennium Development Goals (MDGs) agenda relating to poverty, education, gender, science, culture, health and the environment. It is an irrefutable fact that broadband is a project for the planet that will enable nations to become truly connected and transformed. In wake of the foregoing, the Broadband Commission for Digital Development offers a unique opportunity to focus attention on accelerating the formulation and implementation of relevant national ICT policies in line with the MDGs. In Mauritius, the Ministry of Information and Communication Technology worked out a National Broadband Policy

2012 – 2020 (NBP2012), which sets out a strategic vision for a broadband Intelligent Mauritius, branded as "Towards i-Mauritius" and establishes national goals regarding broadband while elaborating specific policies to achieve those goals within the overarching National ICT Strategic Plan (NICTSP) 2011-2014 context. The Information and Communication Technologies Authority (ICTA), the national regulator for ICT and Postal Services treats broadband transmission as a telecommunication service subject to the statutory requirements set forth under section 24 of the ICT Act2001, as amended.

Government is fully aware that the National Broadband Policy formulation must take into consideration the short and long-term national objectives within a context of ever-changing social, economic, political, and technological conditions. A current state assessment of broadband in Mauritius has initially been made in order to be in a better position to make the NBP2012 more responsive to the new opportunities and challenges facing the electronic communications sector in becoming an important vector for economic growth.

To continually improve the resilience of the overall network, Government has reinforced the investment climate through the open access policy which is typically required at both the core and access levels, with the bottom-line being the provision of increasingly better, faster and more secure services for businesses and the public at large.

As regards the actual capacity available in terms of outgoing international Internet bandwidth, the latter stands at some 4.34 Gbps as at Quarter 2 of 2011, having experienced more than forty-fold increase over the period 2005 to 2011, as compared to 116 Mbps in 2005. In terms of total international bandwidth capacity which currently stands at nearly 10 Gbps in 2011, there has again been a forty-fold increase compared to its initial level in 2005. This increase in international bandwidth usage has served as a boost to the various ICT related activities such as ITES-BPO, call centres, international voice traffic, and Internet access among others. Government's intention is to maintain this trend of bandwidth capacity growth. In this context, Government formulated the **Open Access Policy** in October 2010 with a view to setting the propitious environment to catalyse this trend. Further, Government welcomes the coming into operation of various other regional undersea cable projects (such as LION Phase 2, EASSy, etc…)

in the near future, which will have the ultimate effect of significantly increasing the international bandwidth capacity and improving on route diversity.

**Current State Assessment for Broadband in Mauritius**

**1. Tariffs for International Bandwidth**
Much has been accomplished in terms of falling prices for international connectivity, especially over the period 2002 to 2012, facilitated through various determinations made by the ICTA pursuant to applications made by the incumbent operator. A similar picture is applicable in terms of bilateral half circuits over an identical period, with an average reduction of up to 77% over the selected routes.

**2. Domestic Connectivity**
Network Access Providers are under pressure to continuously improve both the capacity and efficiency of their national networks, with the objective of achieving sustained revenue growth, through customer retention and the supply of innovative solutions, in line with global trends.

Therefore, physical network upgrades to ensure spare capacity and future service deployment, together with investment in new technologies, are the pre-requisites to maintaining their competitive positions in the various telecommunications markets.

## 3. Wholesale ADSL

Wholesale ADSL lines represent one of the core components for the supply of retail internet services in Mauritius, on top of the requirement for international internet bandwidth. This particular component, specifically provided as part of the domestic copper based fixed line network of the incumbent operator, has benefited from several tariff reductions over the past 5 years. The latest determination by the ICTA in December 2011 has resulted in a substantial decrease ranging from 30% to 50% from the prevailing price levels, depending on the selected speed and committed number of lines.

## 4. IP over Frame Relay / SHDSL

IP over Frame Relay services are again offered on the domestic copper wire network of the abovementioned operator and are gradually being upgraded to IP over SHDSL services, which use more contemporary compression standards, thereby enabling additional capacity to be extracted from the same line. A decrease in the tariffs of such services was witnessed in 2011, with a reduction ranging from 5% to 41% becoming applicable, depending on the selected speeds.

**5. Point to Point Internet Connection**

In contrast to the wired solutions discussed above, Point to Point Internet connection services have been deployed by another operator so far, through its investment into a Wimax network, which makes use of radio frequencies to operate, hence bypassing the need to install underground wired infrastructure.

**6. Domestic Leased Circuits**

In 2010, the ICTA received numerous expressions of interest, and eventually applications for Network Services Provider (National) licences to deploy fibre backbones and Wimax-based backbones. A new Network Service Provider licence has been issued in 2011 by the ICTA and it is anticipated that the eventual deployment of the said infrastructures in the future will generate the necessary competitive reactions in this market segment, such that the prices of domestic connectivity will be far more affordable than the present levels.

**7. Internet Subscribers**

The number of Internet subscribers in September 2011 was 287,339 representing some 23 subscribers per 100 inhabitants. Out of the 287,339 subscribers, 43% were mobile Internet users.

## 8. Type of Internet Access

Broadband Internet, defined as Internet connectivity at speed of at least 256 Kbps, was introduced in 2002. In September 2011, the number of broadband Internet subscribers was 232,611. The said subscribers had access to the service through Digital Subscriber Line (DSL) connection, mobile cellular telephone, using General Packet Radio Service (GPRS) including the Wireless Application Protocol (WAP), and the third Generation of Mobile telephony (3G).

## 9. ICT Access and Use by Households

It is reported that the percentage of households with mobile cellular telephone increased from 82.8% in 2008 to 87.5% in 2010. Households with television increased slightly to 96.9% in 2010 from 96.4% two years back. As far as paid TV channels, computers per household and ADSL connections are concerned, a significant overall increase has been noted.

## 10. ICT Access and Use by Individuals

Figures from surveys carried out, clearly indicate that in both 2010 and 2008 the use of computer and internet was highest among the young age groups and lowest among the higher age groups.

## 11. ICT Usage in Education

**Primary schools:** At the end of March 2010, it is reported that the percentage of primary schools providing Internet access to students for study purposes increased to 56% from 20% in 2009. The number of students per computer improved to 27 in 2010 compared to 25 in 2009.

**Secondary schools:** At the end of March 2010, the percentage of secondary schools reported to be providing Internet access to students went down to 94.7% from 95.7% in 2009.

**Tertiary education level:** The number of students enrolled in ICT or an ICT-dominated field at tertiary level was 3,694 in 2010/2011 compared to 3,475 in 2009/2010. As a percentage of total number of students enrolled at tertiary level, ICT courses enrolment represented 8.3% in 2010/2011 and 8.5% in 2009/2010.

## 12. ICT Usage in Business

Among large establishments, i.e. those employing 10 or more persons in 2009, there has been a general increase in ICT usage. In 2009, 97.9% of large establishments had computers against 96.6% in 2008. The percentage of establishments having website was 48.3% in 2009 compared to 43.9% in 2008. Establishments using Internet/Email reached 92.0% in 2009 compared to 90.4% in 2008.

The results also showed that ICT usage was highest among establishments in the tertiary sector comprising trade, hotels & restaurants, transport and all the other service industries, and lowest in the primary sector which covers agriculture, hunting, forestry & fishing and mining & quarrying.

**13. The ICT Sector as an Engine of Growth**
Available estimates for the ITES-BPO sector, when linked with the cost of international connectivity, would suggest that for every USD 100 average decrease in the cost of international bandwidth connectivity, nearly 2 new start ups are created within the IT-BPO industry. This definitely helps to reinforce the notion of an even more significant contribution by the ICT sector to the GDP. Furthermore, the reductions in the prices of telecom services that took place in December 2011 will have spill over effect, be it in terms of the consumption for the ICT sector itself or for other sectors that will adopt ICTs. More importantly, the Public Key Infrastructure being put in place will give a new dimension to the way business is conducted, as this will ensure the confidentiality, non-repudiation and authenticity features that are required in the virtual world. Taking all the above factors together, a contribution which will largely exceeds the very conservative estimate is expected.

It should further be noted that over the period 2005 to 2010, the growth rate of the ICT sector has been maintained in double digit figures; there are reasons to believe that this trend should persist. In light of this observation, it is anticipated that the sector's contribution to overall GDP will maintain a better ascendancy. It is opportune, that the ICT sector in Mauritius finds itself in the midst of critical developments, with the Government fully backing this sector as the 3rd pillar, and streamlining the growth path ahead through its various initiatives over the past years. This has been heavily translated into concerted efforts towards telecommunication network development, which will place Mauritius on equal standing with many advanced economies, in terms of offering and benefiting from the next generation of ICT services.

**Policy Objectives**

The National Broadband Policy 2012 – 2020 (NBP2012) purports to facilitate the provision of affordable, accessible, universal access to broadband infrastructure and services to promote the social and economic opportunities made available by broadband in order to ensure the best possible conditions under which Mauritius can grow further as a knowledge-based society.  The policy objectives of this NBP2012 are:

To achieve robust competition and as a result maximise consumer welfare, innovation and investment.

To ensure efficient allocation and management of scarce resources, such as spectrum, facilities (e.g. poles), and rights-of-way, to encourage network upgrades and competitive entry.

To reform current universal service mechanisms to support universal deployment of broadband in even high-cost areas and ensure that low-income Mauritians can afford broadband.

To support efforts to boost adoption and utilisation of broadband.

To facilitate reform to laws, policies, standards and incentives to maximize the benefits of broadband in sectors where government influences significantly, such as public education, health care and government operations.

In order to achieve the above policy objectives, it will be necessary to consolidate mechanisms and build upon market-oriented policies to create an enabling framework for the development of the broadband ecosystem in terms of each of the objectives set, as per the following action lines:

Establishing Competition Policies;
Ensuring efficient allocation and management of scarce resources;
Reforming Universal Service Mechanisms;

Support adoption and utilisation of broadband;
Updating policies, setting standards and aligning incentives to maximize use for national priorities.

**Targets**

In order to ensure that measurable progress is made in the achievement of the set objectives, in addition to the action lines mentioned above, the NBP2012 also identifies six targets to be adopted by Mauritius, as set out hereunder, to serve as a compass over the next decade and which should be tracked very closely:-

By 2014, at least 60% of homes should have affordable access to actual download speeds of at least 10 Mbps and actual upload speeds of at least 5 Mbps; and by 2020, almost 100% of home should have affordable access to actual download of 100 Mbps.
Mauritius should become a leader in the region in mobile innovation, with the fastest and most extensive wireless networks by 2020.

By 2020, every Mauritian should have affordable access to robust broadband service and the means and skills to subscribe thereto if they so choose.

By 2020, every public institution should have affordable access to at least 100 Mbps broadband service to anchor institutions such as schools, hospitals and government buildings.

To ensure safety of the public at large, every alarm monitoring and security response service provider should, by 2020, have access to a nationwide, wireless, interoperable broadband public safety network.

To ensure that Mauritius leads in the clean energy economy in line with the Maurice ile Durable (MID) programme, every Mauritian should, by 2020, be able to use broadband to track and manage their real-time energy consumption.

## CONCLUSION

Mauritius is at a point of inflexion in its ICT journey and this broadband policy comes at a time where the country can really leapfrog the sector forward to bring its benefits to other sectors. But broadband alone will not solve all the citizens' problems. It cannot on its own ensure that Mauritius bestows the best job, education, health care, public safety and government services on each and every Mauritian. Broadband is a critical prerequisite, though, to solutions to many of the challenges that are currently being faced. It can open up ways for innovators and entrepreneurs to assert leadership in the region. It can unlock doors of opportunity long closed by geography. It can enable education beyond the classroom and health care beyond the clinic and hospitals. Broadband is a modern necessity of life, not a luxury. It ought to be found in every village, in every home of this country. There has long been talk of the widespread and affordable use of broadband. The NBP2012is about how to start making it happen. It is a transition from simple chatter to the difficult but achievable reality of implementation as enshrined in this Paper through the various policy measures.