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ICT Business Incubation: Evidence from Mauritius

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Abstract

The purpose of this paper is to examine the development of the ICT sector in Mauritius and the ICT Incubator Centre managed by the National Computer Board that has been successfully initiated and implemented.

The ICT sector in Mauritius has witnessed major development and undergone rapid and sustained growth over the past four years. The vision of the government to transform Mauritius into a Cyber Island in the year 2000 and making ICT the fifth pillar of the economy is gradually taking shape. One of the determining factors for the rapid development of the ICT sector is the high-level of political commitment through the ICT Ministerial Committee chaired by the Prime Minister. Under this Committee, three task forces were set up to manage the (i) Cyber City and Business Parks (ii) E-Education & Training and the (iii) E-Government. To this effect, the Government strategy has been fully geared to create a conducive environment to ensure unparalleled development of this sector.

As part of the ICT Development strategy, the National Computer Board had undertaken a feasibility study in May 2001 for the setting up of an ICT Incubator Centre, and submitted its recommendations to the parent Ministry. The document was instrumental to promote business incubation as an economic strategy and for securing funding to kick-start this project. In the Government Budget Speech 2001/2002 the following paragraph was noted *"In our drive to make of Mauritius a Cyber Island, we are not ignoring the need to promote Mauritian entrepreneurship. Our young people are endowed with talent and potential for innovative ideas in ICT. They need to be provided with the necessary support and facilities. The National Computer Board will set up an ICT incubator to promote start- ups."*. The mechanisms for the procurement, commissioning were initiated thereafter, and the Centre was fully operational in January 2003 with initially four tenants. The project was customised for the local context while paying special attention to the main recommendations of the feasibility report. The document also elaborates on the stages of development of the ICT Incubator Centre since its conception as an idea to its implementation.

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As an integrated effort to nurture ICT start-ups, the centre offers business support, logistics and infrastructural facilities to youngsters with innovative business ideas. The objective is to promote entrepreneurship and to create fledgling enterprises in the ICT Sector. The unit occupies a surface area of 500 sq mts and can accommodate nine start-ups. Besides the services and facilities provided, the Centre has developed a local network to promote and nurture its start-ups and to promote entrepreneurship. The Incubator Centre was initially conceived to help local entrepreneurs and gradually the joint venture undertakings comprising of local and foreign enterprises have been accommodated.

Since its operations eighteen enterprises have benefited from the business support, logistics and infrastructural facilities offered by the ICT Incubator Centre. As at date five enterprises have successfully graduated from this facility. As a case study, three enterprises' business track records during their tenancy at the ICT Incubator Centre will be examined namely M-ITC Co Ltd, Innovative Creative Lines (ICL) Ltd and AM Web Solutions Ltd.

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1. Economic Landscape

Since its independence in 1968, Mauritius has developed from a relatively low-income, agriculturally based economy to a middle-income diversified economy with growing industrial, financial, tourist and ICT sectors. For most of the period, annual growth has been in the order of 5% to 6%. This remarkable achievement has been reflected in more equitable income distribution, increased life expectancy, lowered infant mortality, and a much-improved infrastructure. Sugar cane is grown on about 90% of the cultivated land area and accounts for 25% of export earnings (CIA - The World Fact book – Mauritius 2005). Mauritius has achieved one of the highest per capita gross domestic products in Africa; about US$ 4,600 in 2003, up from about US$ 320 in the early 1970s. (IMF, 2005)

Notwithstanding its economic success, Mauritius has to reckon with several challenges to ensure sustainable development, which includes the rapid pace of technological progress, the increasing integration of global commodity and financial markets and the emergence of new low-cost competitor countries. The strengthening of major trading blocs, the likely erosion of market preferences under the WTO regime, and the increase in non-tariff barriers in the form of "green" and "social" protectionism have all called for innovative, flexible and determined responses.

After two decades of remarkable export-led economic growth, the economy has been redirected towards higher value, knowledge intensive products and services. The government's development strategy centres on expanding local financial institutions and making Information and Communication Technology a fifth pillar of the economy. The evolution of the economy over the past 30 years is shown in **Figure 1**.

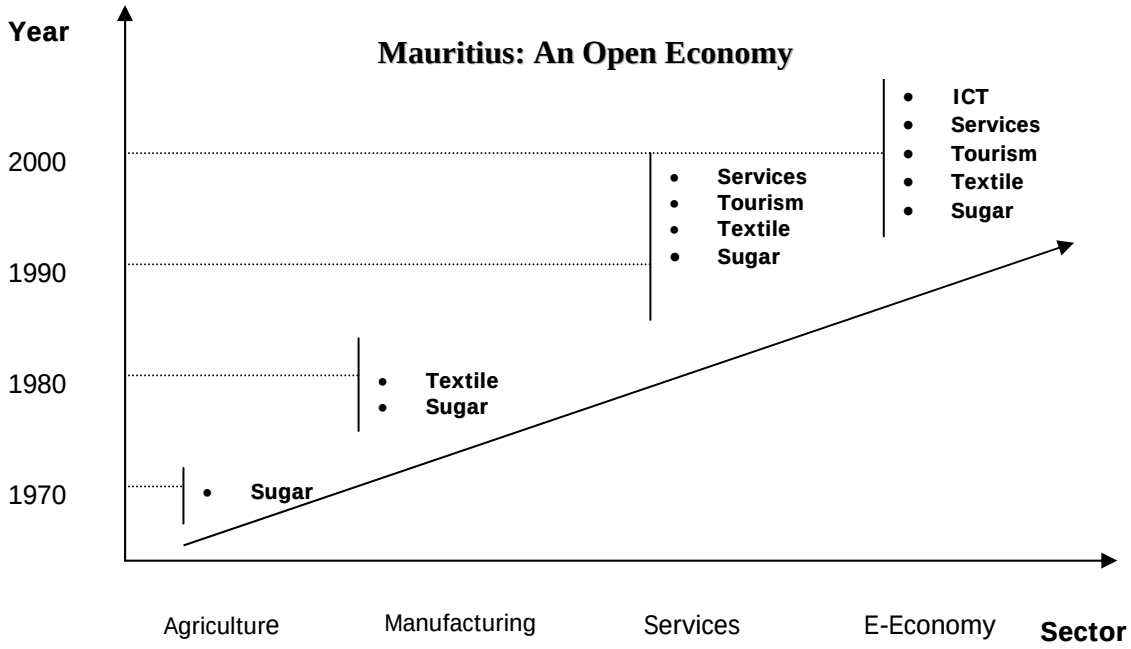


Figure 1

Source: Central Statistical Office (CSO)

2. Development of the ICT sector & ICT Strategy

The ICT sector in Mauritius has witnessed major development and undergone rapid and lasting growth over the past five years. The vision of the government to transform Mauritius into a Cyber Island in the year 2000 and making ICT the fifth pillar of the economy has gradually taken shape. One of the determining factors for the rapid development of the ICT sector was the high level of political commitment through the ICT Ministerial Committee chaired by the Prime Minister. Under this Committee, three task forces were set up to manage the (i) Cyber City and Business Parks (ii) E-Education & Training and the (iii) E-Government. To this effect, the Government strategy had been fully geared to create a conducive environment to ensure unparalleled development of this sector.

The ICT industry in Mauritius has evolved towards export-oriented services. An increasing number of foreign ICT companies have setup their development centres in Mauritius to conduct

software development, multimedia, BPO and ITES activities for the export market. Key players already in Mauritius include Microsoft, Infosys, Accenture, Oracle, Infinity BPO among others.

2.1 Changing ICT Environment

The Changing ICT environment can be summarised as follows and shown in **Figure 2:** -

a) The creation of relevant IT bodies in the late 80's and the introduction of the Civil Service Computerisation Programme
b) Late 80's saw the enactment of IT laws to regulate and promote this sector
c) The Millennium witnessed the creation of several bodies, financial schemes and improvement of the existing legal structure to promote ICT.

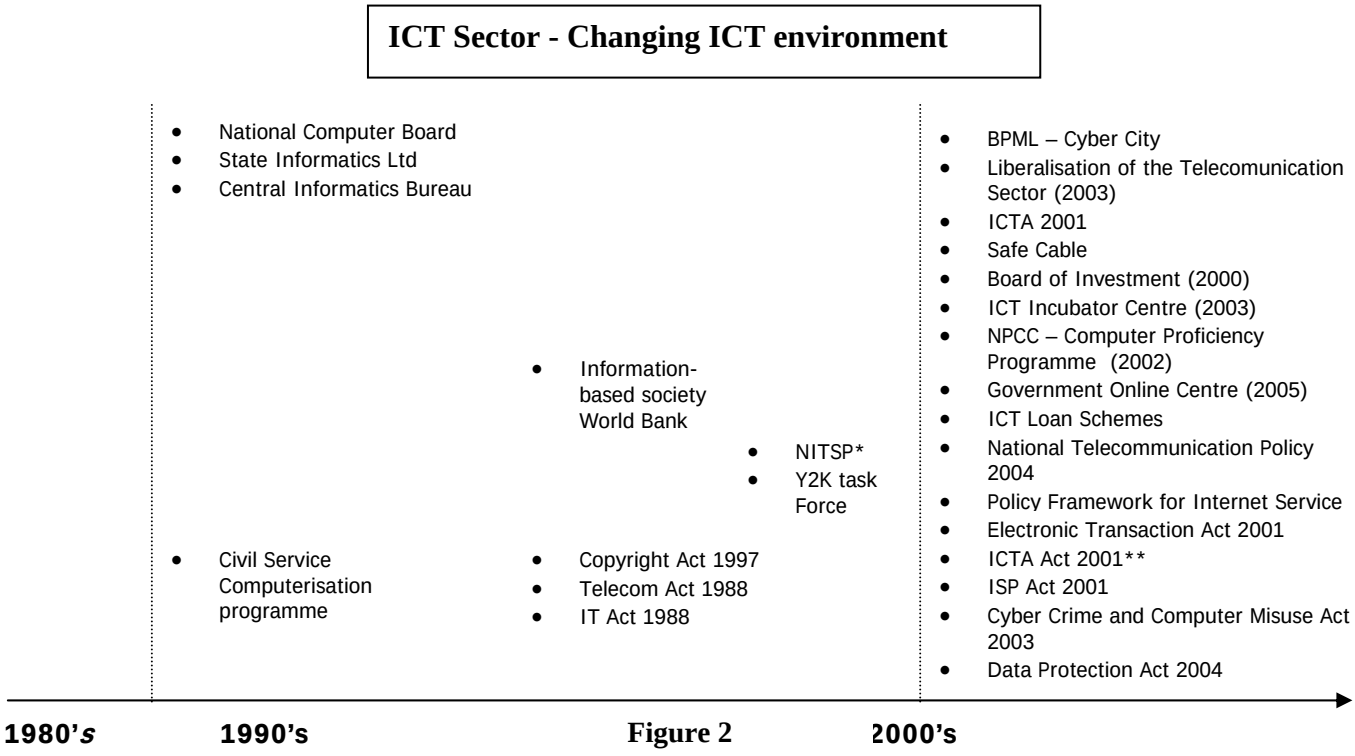


Figure 2

** National IT Strategic Plan*
*** Including the ICT Appeal Tribunal, ICT Advisory Council*

2.2 Early ICT Development – 80's

The evolution of the ICT sector in the late 80's has been gradual with the creation of the following institutions: - National Computer Board, State Informatics Ltd and the Central Informatics Bureau.

a. National Computer Board

The National Computer Board was set up in 1988 as a para-statal organization under the Ministry of Information Technology and Telecommunications. The mission of the National Computer Board is to promote the accelerated diffusion of Information Technology in every socio-economic sphere of Mauritius in line with the national goals and policies.

b. Central Informatics Bureau

The Central Informatics Bureau (CIB) was created in 1989 as a unit of the Ministry of Telecommunications and Information Technology. Its main functions are to plan and coordinate computerisation in the Civil Service.

c. State Informatics Ltd

State Informatics Limited (SIL) was established in 1989 as a stated owned company and could be considered as one of the largest ICT solutions provider in Mauritius. SIL has brought major contribution in the evolution and application of ICT in Mauritius over the last fifteen years. With its position at the forefront of technology, the state-owned company has continuously developing skills and expertise in state-of-the-art technologies to computerise both public and private sector institutions. Its successful strategic partnership with giants of the IT industry, namely Oracle, SUN, IBM, Microsoft and Veritas have extended the transfer of technology to Mauritius and the African region. SIL constantly concentrates its efforts in adopting the best technologies to meet the growing demands of the local and African markets.

2.3 ICT Legal Framework

The enactment of the following laws laid the first milestones for the development of the ICT sector: (a) Copyright Act - 1997 (b) Telecommunication Act - 1988 (c) The Information Technology Act - 1988. This effort was further reinforced with the enactment of the following laws: -

The Electronic Transactions Act 2000 (b) The Information and Communication Technologies (ICT) Act 2001 (repealing the Telecommunication Act 1988 and the Information Technology

Act 1988) (c) ISP Act (2001) for the regulation of ISP operators (d) The Computer Misuse and Cyber Crime Act 2003 (e) The Data Protection Act 2004.

2.4 Policies for the ICT Sector

The National Telecommunications Policy 2004 outlined the objectives and targets for the Telecommunications sectors and set out strategies to be adopted. It also set out the methodology that would ensure fair, effective and sustainable competition for the new market paradigm.

The Policy framework for Internet Service Providers (2001) has set out the policy framework for the provision of the Internet Services in Mauritius. Government policy was to create an investment-friendly environment to enhance fair competition through a level playing field and to ensure Internet access at all affordable costs.

2.5 Creation of New ICT Institutional Framework

The implementation of the ICT Strategy has witnessed the creation of several bodies to facilitate, promote and regulate the ICT sector.

The Government created Business Park of Mauritius Ltd (BPML) in 2000 to spearhead the development, construction and management of the state-of-the-art Technology and hi-tech Business Parks in Mauritius. The Cyber Tower; a 12 storey building of 42,274 m2 equipped with ultramodern features has been inaugurated in April 2005. A second tower is under construction, which would be operational in March 2006. More business parks would be located in strategic areas in the island.

The Board of Investment (BOI) was set up under the Investment Promotion Act of 2000, which was reviewed in 2004. The main objectives of the BOI are to attract investment and act as a facilitator to all investors. It has also encouraged ICT Development through the following schemes: - (a) ICT Development (b) The Pioneer Status Certificate. Both schemes offer fiscal and non-fiscal incentives to investors operating in the ICT sector.

The Information and Communication Authority (ICTA) was set up under the ICT Act 2001. It provides for economic and technical monitoring of the telecommunication industry in accordance with recognised international standard practices, including the promotion of fair competition and efficient market conduct within that industry, and ensuring appropriate

control, inspection and regulation of the industry. It is the main regulatory body for the Information Communications Technology and Postal services sectors. It also grants operator licenses, allocates frequencies and ensures safety and quality of every telecommunication service.

The ICT Appeal Tribunal was conceived through the ICT Act 2001. Its role is to hear and dispose of any appeal against a decision of the ICT Authority regarding disputes on ICT Related matters. Similarly, the ICT Advisory also complemented this Act to advise the Minister of Information Technology and Telecommunications on specific issues. These include the promotion of interested of consumers, purchasers and other users in respect of quality, variety and improvement of ICT services, tariff policy and the promotion of research and development of new ICT Techniques.

The National Productivity and Competitiveness Council (NPCC) was created in 2002 and has promoted ICT as tool for improving productivity. It has used the existing resources including existing IT school laboratory and resource persons after normal school hours to impart basic IT skills. NPCC had trained 37,000 people from different backgrounds and age groups (Source: Le Mauricien - 18 May 2005). As part of its IT culture promotion programme, the National Computer Board through its two IT Coached has trained up to 44,000 people in its ICT Literacy Programme.

The Government Online Centre (GOC) was set up in May 2005. The Government Online Centre (GOC) is a centralised data centre, which supports e-Government initiatives. It is equipped with the state-of-the-art IT Infrastructure. The government web portal (www.gov.mu) provides secure online government services round the clock. It also provides Internet access and email facilities to employees of Ministries and Departments, offers website publishing and hosting services and host common and back-office applications amongst others.

2.6 Telecommunications Infrastructure

The SAT-3/WASC/SAFE submarine optical fibre cable links Europe to the Far East through Mauritius and provides connectivity to worldwide destinations through ADSL, ISDN and high bandwidth international leased lines.

Mauritius Telecom, the national operator, has a Point of Presence (PoP) in Telehouse, Paris where major international bandwidth providers and key telecom operators are present for interconnection, thereby providing end-to-end service at very competitive rates.

The Government of Mauritius has brought forward the liberalisation of the telecommunications sector by one year, thus ending the exclusivity of the incumbent operator as from December 2002. The Telecommunication Sector is regulated by virtue of the ICT Act 2001 through an independent regulatory body, the Information and Communications Technology Authority (ICTA).

The sector comprises of (a) 2 fixed line operators (b) 3 mobile operators (c) 13 Internet Service Providers and (d) 8 International Long-Distance Operator. The table below summarises the services offered by various companies.

Licence	Company
Fixed Line Telephony-Public Switch (Fixed) Telephone Network (PSTN)	**1. Mauritius Telecom** **2. Mahanagar Telephone (Mtius) Ltd**
Mobile Telephony- Public Land Mobile Network (PLMN)	**1. Cellplus Mobile Communications Ltd** **2. Emtel Ltd** 3. Mahanagar Telephone (Mtius) Ltd
International Long Distance (ILD)	**1. TLC (Mauritius) Ltd** **2. City Call Ltd** **3. Data Communications Ltd** **4. Emtel Ltd** **5. Hot Link Co. Ltd** **6. I-Telecom Ltd** **7. Mahanagar Telephone (Mtius) Ltd** **8. Mauritius Telecom Ltd**
Internet Service Provider	**1. Africa Digital Bridges Network Ltd** 2. City Call Ltd 3. Clusterway Ltd **4. Data Communications Ltd** 5. Emtel Ltd **6. Harel Mallac & Co. Ltd** **7. I-Telecom Ltd*** **8. Mauripost Net Ltd** **9. MFDC Ltd*** 10. Paging Services Ltd **11. Rogers Telcom Ltd*** **12. SITA*** **13. Telecom Plus**
Internet Telephony Service	**1. Paging Services Ltd**
Facsimile Services	1. City Call Ltd 2. Telecom Plus Ltd **3. Van Tel Ltd**
Unified Messaging Service (UMS)	1. Africa Digital Bridges Network Ltd
Value Added Services	**1. Mauritius Telecom Ltd** 2. **Telecom Plus Ltd**

Source: ICTA

Note: Companies in bold are already operational.

* In the Internet Service Provider category, I-Telecom Ltd, MFDC Ltd, Rogers Telecom and SITA are operational but are not offering their services to the public.

2.7 The ITES-BPO Sector

IT-Enabled Services-Business Process Outsourcing (ITES-BPO) is seen as a very strong segment for the local ICT industry. Over the recent years, this sector has experienced an exponential growth. According to the BPO Secretariat, as at October 2005, 90 ITES-BPO companies were operating in the ICT sector and were employing 3,801 people. Call centres remains the highest generator of employment in the ICT sector with 2,071 people. The major BPO players currently operating in Mauritius include Accenture, Hinduja Group, Cendris (TPG Group), Centrefile, Berger-Levrault, Teleforma, Infinity Group and Victoria Group, amongst others.

The 90 companies operating in the ITES-BPO sector have generated a cumulative proposed investment level of Rs 1,445,162,274[1] with Call Centres and BPO companies having the highest levels of investment. Based on a recent survey carried out by the BOI, it appears that half of the proposed investment value has already been realised, i.e. Rs 726,445,492.

On the international scene, according to the NASSCOM McKinsey Study 2002, the global market size estimate of BPO was US$ 127 bn in 2001 and is expected to grow to US$ 234 bn in 2005 and US$ 310 bn in 2008. The main outsourcing destinations include Ireland, Australia, India, and the Philippines while China, Russia and Mexico are considered as upcoming destinations.

2.8 Financial schemes for the ICT Sector

The Development Bank of Mauritius Ltd announced the following financial schemes to facilitate investment in the ICT sector:-

(a) ICT Loan for setting up of enterprises engaged in ICT-enabled services. The ceiling for the loan is Rs 5 million bearing an interest of 8% p.a, which is repayable over a period five years.

[1] Source: BPO Secretariat, Board of Investment

(b) Under the Equity participation Fund a maximum amount of Rs 300,000 is provided to enterprises operating in the ICT and other high value-added sector, The scheme can be accessed at an interest rate of 8% per annum, which is payable out of dividends received by the borrower or otherwise during the previous financial year of the company. The loan will be guaranteed by a charge/pledge on the proposed shares to be acquired and a general floating charge after existing charges, if any, on the assets of the borrower.

(c) Under the Venture Capital Fund, maximum amount of Rs 1 million is provided to enterprises operating in the ICT sector. The purpose is to support start-ups and SMEs operating in the ICT sector including joint ventures with foreign partners. Interest Rate is not applicable and after a period of 6 years, the existing shareholders will have the choice to buy back the equity at a negotiated price.

(d) To simplify access to finance by SMEs engaged in the ICT and high value-added activities, which are unable to provide the traditional collaterals, an SME Loan Guarantee Fund has been set up to guarantee 50% of qualified SME loans. The Fund will guarantee 50% of the loan amount granted by the Development Bank of Mauritius. The maximum amount provided under this fund is Rs 500,000.

The bank periodically reviews the schemes to align them with government objectives to promote different sectors.

2.9 Key ICT Indicators

Over the year Mauritius has experienced sustainable growth in terms of ICT usage as depicted in the table below: -

Key indicators	2000	2001	2002	2003	2004
Estimated Population (Millions)	1.193	1.205	1.217	1.228	1.233
Number of Households	296,300	305,900	311,300	321,000	n/a
Fixed Line teledensity	24%	26%	27%	28%	~29%
Cellular Mobile Phone teledensity	5%	25%	28%	38%	50%
Estimated household Internet penetration	12%	13%	16%	18%	n/a
% Household with a telephone	80	80	80	91	92

Source: CSO, National Computer Board, Mauritius Telecom

The growth of the ICT culture coupled with the liberalisation of the ISP Sector has contributed to the exponential growth of Internet users during the past years. The number of Internet users has increased from 87,000 in 2000 to 275,000 in 2004. The number of fixed line subscribers

increased from 262,000 in 2000 to 355,000 in 2004. The number of cellular phone subscribers has grown from 180,000 in 2000 to 600,000 in 2004.

Capacity building at the tertiary level through its enrolment has grown at an average rate of 14% during the past four years with more students taking ICT and ICT related subjects. The following table indicates the enrolment in ICT at tertiary level from 2001 to 2004.

	2001	**2002**	**2003**	**2004**
Local institutions	1046	1506	2162	2141
Distance Learning	2158	1962	1543	
Overseas	365	618	804	
Total number of students enrolled in ICT	3569	4086	4509	

Source: Tertiary Education Council

The IMF Report (2005) has highlighted the following competitive advantages for the ICT Sector

(a) *Strong political commitment and social consensus*. The vision of the government and the public is to transform Mauritius into a "Cyber Island".

(b) *Knowledge spill over from India*. The successful experience of the Indian ICT sector is being transferred to Mauritius. The Indian ICT sector is advising the Mauritians on a development strategy and will also be sub-contracting some of its operations to Mauritius and investing in the domestic sector.

(c) *Bilingual nature of the labour force*. The ability of the Mauritian labour force to speak both English and French is an important competitive advantage.

(d) *Infrastructure improvement*. The government is embarking on substantial capital outlays to set up the physical and communication infrastructure. As a springboard, the Ebene Cyber City started operating from December 2003 with much of its space for private investors already taken up by global ICT firms.

As ICT production becomes a larger share of total output, The ICT sector would play a greater role in driving Mauritian medium-term growth. The contribution to overall growth might amount to 10 per cent starting in 2004/05. However, the job creation of the ICT sector is expected to be limited.

Baseline Projection of the ICT Sector (In percent, unless otherwise indicated)						
	2002/03	**2003/04**	**2004/05**	**2005/06**	**2006/07**	**2007/08**
Share of nominal GDP	2.1	2.3	2.6	2.9	3.2	3.5
ICT real growth	10.0	17.0	20.0	16.0	15.0	15.0
Overall GDP growth	3.3	5.5	5.1	4.9	4.6	4.6
Contribution to growth	6.4	7.1	10.2	9.5	10.4	11.4
Total employment	2,000	5,000	8,000	9,000	10,000	11,000

Source: IMF 2005

3. ICT Business Incubation

The second part of this article deals with the business incubation experience in Mauritius.

3.1 First Attempt – Technology Business Incubator

A first attempt to set up a technology business incubator was tried through a consultancy exercise conducted by the Ministry of Industry and Industrial Technology with the assistance of UNIDO in 1991. The objectives of the study were (a) to explore the possibility of establishing a mechanism to provide support services to informatics activities in Mauritius (b) to assess the interest in forming a sub regional centre for Informatics training.

The economic situation in the 1990's called for intensification of work on enhancing quality, factor productivity and cost competitiveness existing product lines and for diversification into value-added, knowledge-intensive goods and services and for creating effective linkages between sectors as well as EPZ and non-EPZ industries. The informatics sector was considered as a potential sector for the creation of value, wealth and employment generation. The government had repeatedly stated its intentions to give informatics related activities a central role for the next industrial phase.

One of the recommendations of the study was to set up a Technology Business Incubator for Informatics business and tackling the following issues at the outset (a) Creation of a National Informatics Policy & Enabling environment (b) Ensure availability of technical Human Resources (b) Access to Risk Capital (d) Support Services such as reliable telecommunication network and workspaces.

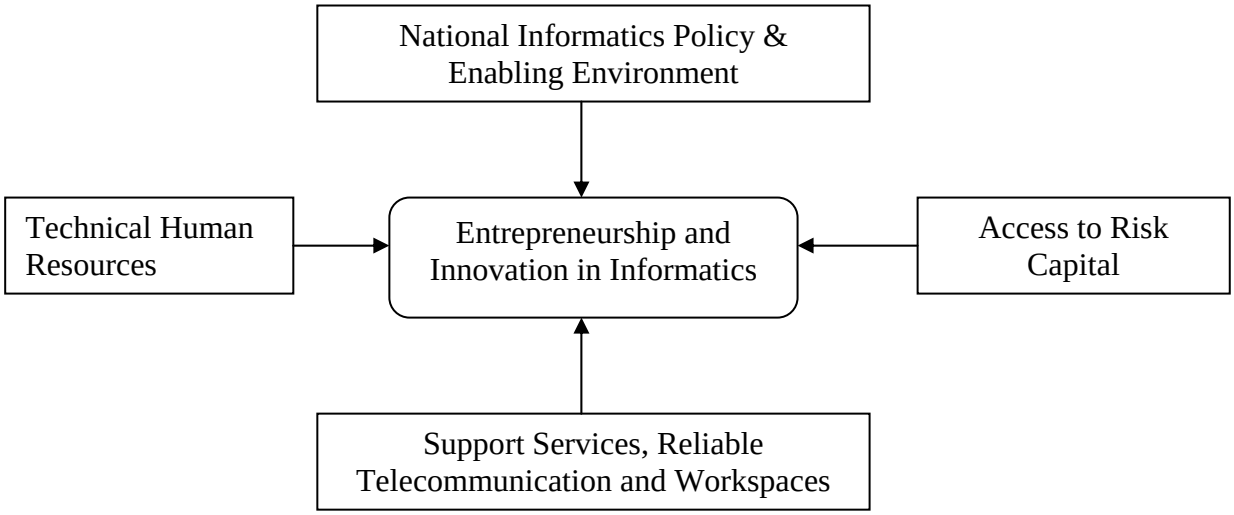


Figure 3

3.1.1 Technology Business Incubator

The Technical Business Incubator as per the study would be as follows: -

A micro-facility with a small trained motivated management staff, which would provide start-up companies with the following types of services: -

(a) Affordable workspace;
(b) Share facilities (such as receptionist, conference room, office equipment, and secretarial help);
(c) Focused support services (particularly on the software of business development such as management, marketing, legal, accounting and similar support;
(d) Access to seed money (often through an internal revolving fund, which would provide small loans on commercial terms but without significant collateral;
(e) The synergy of sharing (entrepreneurs working close to each other would be able to share experiences and also buy/sell form each other;

It was also emphasised the characteristics of an incubator would differ significantly from the usual workspaces in the following manner: -

(f) The incubator would primarily be for start-up companies;
(g) It would provide focussed management and technical assistance to tenants, from helping them to write business plans to securing working capital;
(h) It would have rigid entry requirements (only one in 10 applicants would usually be selected);

(i) It would have stipulated exit rules, so after 2 or 3 years the tenant must leave the space to make way for a new entrepreneur;

(j) The incubator would also serve important social functions such as (a) creating new self-owned businesses, particularly among youth, women and other disadvantaged groups, (b) helping disperse economic activity to non-metropolitan towns and rural areas, and (c) bridging the culture gap between university-research-laboratory-private/ state enterprises;

The technology incubator model proposed was as follows: -

Gross space	: 1,000 sq m (starting with 500 sq. m in first year)
Rentable space	: 750 sq m (balance being for common facilities)
Average space rented	: 675 sq m (due to partial vacancies)
No. of tenants	: 20 (in the 4th year, with 5 tenants in the first year).

Operational structure: A small management group would provide technical and management services to tenants, and further secure other specialised assistance in marketing, legal and accounting matters from an informal network of outside professionals. On this basis, the staff in the fourth year of operations would consist of (i) Manager (preferably an entrepreneur with a wide circle of contacts in the local community) (ii) Deputy Manager (to cover administration, building services and financial management assistance) (iii) Technologist (part-time, with full familiarity in software engineering and informatics services) (iv) Secretary (v) Receptionist (starting in fourth year) (vi) Messenger/Clerk.

Building lease: In order to save capital costs and time, it would be preferable to secure a vacant factory-type building space from the Government on a low (or no) rental basis.

Advisory services: Incubator management would provide general support to all tenants. In addition, specific training, managerial, marketing, accounting and financial services will be provided on a cost-recovery basis.

Other incubator income: The incubator management could provide technical/managerial services to entrepreneurs outside the incubator, such as "sick companies" in existing industrial estates, etc and generate additional income for this venture.

Capital costs: It was assumed that the space rented would be in fair shape, and would require painting and partition work. In addition, provision for furniture and office equipment (computer,

fax, photocopies, and telephones) and pre-operational expenses, such as incubator promotion, etc would also need to be budgeted. (Possible grant technical assistance for preparing the feasibility study, training of incubator management, etc is not included in capital costs). The total capital investment for this venture was estimated at $100,000 and with a contingency expenditure of additional $75,000 was made.

Investment structure: It was proposed that the Development Bank of Mauritius would provide a revolving line of credit to be given as soft loans through the incubator management. The project would be funded through the creation of trust or foundation sponsored by various local agencies. The sponsorship for this project would be partly in the form of a grant and the balance in terms of soft loan from the bank

3.1.2 Non-realisation

This project was not realised for various reasons and summarised as follows: -

a) The business incubation concept was not internalised by policy makers during this period;
b) ICT was still in its earnest and the convergence in the business community was more oriented towards the provision of business support services;
c) The Telecommunication infrastructure was not well developed;
d) Financing for the ICT sector was not present;
e) The ICT legal framework was still in its infancy;
f) The incentive framework and policies was focussed to the development of the manufacturing sector, which was generating high employment and income;
g) The technical know-how in the ICT sector was focussed to the implementation of business solutions in enterprises rather than enterprise creation;

3.2 Second attempt – Technology Business Incubator

A delegation from the National Computer Board visited the Incubators/Technology Centres in Aachen Germany in April 2001, following which it was proposed to undertake a feasibility study to assess the viability of setting up an ICT Incubator Centre in Mauritius. The services of an international consultant were retained for this purpose. Dr Ulrich Dalrup from GFE Consulting Worldwide based in Germany undertook a three-day mission and detailed work plan was presented to put in place an ICT Incubator Centre under the auspices

of the National Computer Board. The main recommendations as per the feasibility report were as follows: -

(i) *As the Mauritian Government decided to go ahead with developing the digital industry in the country and to invest in a cyber-city infrastructure, the Incubator should be implemented at the earliest as this Incubator would serve to "breed" the ICT companies needed for the cyber city programme;*

(ii) *The need, to quickly close the technology gap with the OECD countries in the ICT sector;*

(iii) *Seeing the Indian ICT sector developing, Mauritius should develop its own resources to benefit from the high value added sector. With a highly qualified population and some outstanding IT-experts Mauritius should be able to quickly reach the running train of IT- business development and get its share of that emerging market;*

(iv) *The Mauritian economy would need highly qualified computer skilled workers;*

(v) *Investing in this sector would generate new employment with relatively high revenues;*

(vi) *Once this sector progresses, so called "linkage" industries should show up and "spin-offs" should give an auto-development to the sector;*

(vii) *Other sectors of the Mauritian economy should benefit from the new qualifications of the ICT sector;*

(viii) *Deregulations in the Telecom-sector, that might come one day also in Mauritius, would boost IT-business;*

(ix) *A co-operation with one of the successful Incubator programmes in Europe would facilitate this new venture. A two-year' cooperation with GFE/Technology Centre of Apache is proposed.*

The ICT incubator programme would be as follows: -

a) *an organisation, in the form of a private company, a public entity or an existing public or para-public institution, would manage the Incubator programme*

b) *an Incubator building;*

c) *a venture or / and risk fund, a bank or any other appropriate financial institution;*

d) *a consensus of relevant institutions and politics;*

e) *a technology producer (e.g. a Technical University), whose output would be skilled technology experts;*

f) *the individuals going into a start-up;*

g) *a network of helping, coaching and assisting institutions and individuals;*

The organization or the company/entity in charge of the Incubator programme would have to fulfil a number of activities/services:

(i) to identify potential start-uppers
(ii) to cooperate with technology developers or owners to promote and facilitate to identify suitable candidates
(iii) to set up a "Technology Transfer" with suitable technology developers, e.g. Universities etc
(iv) to "screen" among the candidates those considered fit for entrepreneurship and who's technology idea has a market chance
(v) to help the start-upper to set-up the financial foundation of its future company
(vi) to help the start-upper to formulate the companies Business Plan, statutes, opening balance and to assist to register the new company
(vii) to assist to find an appropriate office or production site (if no Incubator building is available)
(viii) to assist with advice in legal, bookkeeping, marketing matters
(ix) to organize missions to fairs and exhibitions
(x) to organize in house or local exhibitions
(xi) to supervise/coach the management
(xii) to advice the company in difficult situations, but also in periods of growth
(xiii) to make available "Business Angels"
(xiv) seminars on diverse business subjects
(xv) management of the Incubator building

The proposed organisational structure was as follows:-

(a) The creation of a new private company by stakeholders interested by the programme. The stakeholders would have to fund the budget of that company.

(b) Identify an existing entity or Governmental authority that could get additional mission this Incubator programme / or:

(c) To implement a new public or para-public institution in charge of the Incubator programme or to start the programme, the NCB would certainly have an interest to carry out the ICT-Incubator programme. In that case, NCB has to recruit the necessary new staff and enlarge its mission.

The proposed business incubator model was as follows: -

Incubator building	:	4000 to 5000 sq mts
Facilities	:	Networked office with access high bandwidth, IT infrastructure to support this centre; common services such as telephone, fax, photocopy services, meeting room and conference facilities, restaurant, secretarial facilities, technical equipments (digital projectors),
Business support and counselling	:	Preparation of business plan to new and potential start-ups and on-going business support to enterprise within the centre; offers in-house facilities, as an auditing company, a bank and other service providers.
Rental charge	:	Graduated charges up to a five year period the start-uppers pay in their first year only 60% of the calculated commercial rent - but in their last in fifth year they have to pay a full commercial rent.
Finance	:	Creation of a venture/risk fund for this new target group
Board representatives	:	(a) National Computer Board (b) Small and Medium Industries Development Organisation (SMIDO) (c) Development Bank of Mauritius (DBM) Ltd(d) Board of Investment (e) Joint Economic Council (f) Mauritius Research Council (g) University of Mauritius (h) Industrial and Vocational Training Board (IVTB) and (i) Mauritius Standard Bureau.
Networking	:	A Memorandum of Understanding (MOU) between National Computer Board (b) University of Mauritius and (c) SMIDO
Sector to be encouraged	:	Bio-technologies, medical-/pharmaceutical-technologies, marine-technologies and the crafts sector

3.3 Financial Assistance for the programme

a) SMIDO would be a co-investor in an Incubator Building (with 3.5 million Rs). SMIDO would also co-finance (50%) the business plans of the start uppers as it has a long experience with SME development;

b) Development Bank of Mauritius could fund the investments of the start-uppers up to 60%. DBM could also evaluate the start-up candidates prior to become accepted to the programme;

c) The University of Mauritius would be the "technology producer" and is a "producer" of start-upper candidates;

d) The Mauritius Research Council would be a facilitator for research work and could finance studies and research and development of the start-uppers;

e) Board of Investment and the Mauritian Embassies abroad could promote the programme overseas to identify returning start-uppers;

f) Private Banks might realize a venture/risk fund;

g) Elder highly experienced VIPs of Mauritius could become Business Angels;

h) A network of competence, from the island and from abroad could assist this programme;

3.4 The National Computer Board – ICT Incubator Centre

Following the recommendations made by Professor U.Dalrup in the feasibility report for the setting up of an ICT Incubator Centre, the National Computer Board requested funding from the Ministry of Information Technology and Telecommunications for this project. The document was instrumental to promote business incubation as an economic strategy and for securing funding to kick-start this project.

In the Government Budget Speech 2001/2002 the following paragraph was noted, "*In our drive to make of Mauritius a Cyber Island, we are not ignoring the need to promote Mauritian entrepreneurship. Our young people are endowed with talent and potential for innovative ideas in ICT. They need to be provided with the necessary support and facilities. The National Computer Board will set up an ICT incubator to promote start- ups"*. The mechanisms for the procurement, commissioning were initiated thereafter, and the Centre was fully operational in January 2003 with initially four tenants. The project was customised for the local context while paying special attention to the main recommendations of the feasibility report.

As an integrated effort to nurture ICT start-ups, the centre offers business support, logistics and infrastructure facilities to youngsters with innovative business ideas. The objective is to promote entrepreneurship and to create fledgling enterprises in the ICT Sector. The unit occupies a surface area of 500 sq mts and can accommodate nine start-ups. Besides the services and facilities provided, the Centre has developed a local network to promote and nurture its start-ups and to promote entrepreneurship. The Incubator Centre was initially conceived to assist local entrepreneurs and gradually the joint venture undertakings comprising of local and foreign enterprises have been accommodated.

The National Computer Board Incubator Centre came into operation in January 2003 and was officially launched on the 21st April 2003. The ICT Incubator Centre provides infrastructural, logistics and business support to start-ups in the ICT sector. It covers a surface area of 5,534.24 sq ft and can accommodate up to nine start-ups.

The vision of the ICT Incubator Centre is to be a centre of excellence where ideas and entrepreneurship are transformed into successful and viable business ventures. It mission is to boost entrepreneurship in the ICT sector and to provide start-ups with the necessary business advisory services and financial support with viable business ventures.

The objectives of the ICT Incubator Centre are to: -

a) Promote entrepreneurship in the ICT sector
b) Boost job creation in the ICT sector
c) Develop linkages with other institutions
d) Market its start-ups

The Centre offers infrastructure, logistics and business support to the start-ups in the ICT Sector.

Each office unit occupies a surface area of 20 sq mts and is networked with ADSL, data and telephone points, electricity and air-conditioning system. Access to premises is provided through an automated secured system. The Centre is equipped with a meeting room and provides a shared administration service include fax, photocopy and secretarial support.
The Incubator Management Team provides business support and advice to start-ups at the Centre. Training programmes are organised regularly at the Centre for capacity building of start-ups. Informative sessions are organised by the National Computer Board with key support institutions such as the Board of Investment, Development Bank of Mauritius Ltd amongst others. Regular meetings are organised with start-ups by the Incubator Management Team on issues related to enterprise development and marketing.

A start-up can benefit from the facilities and services offered by the ICT Incubator Centre for a maximum period of three years.

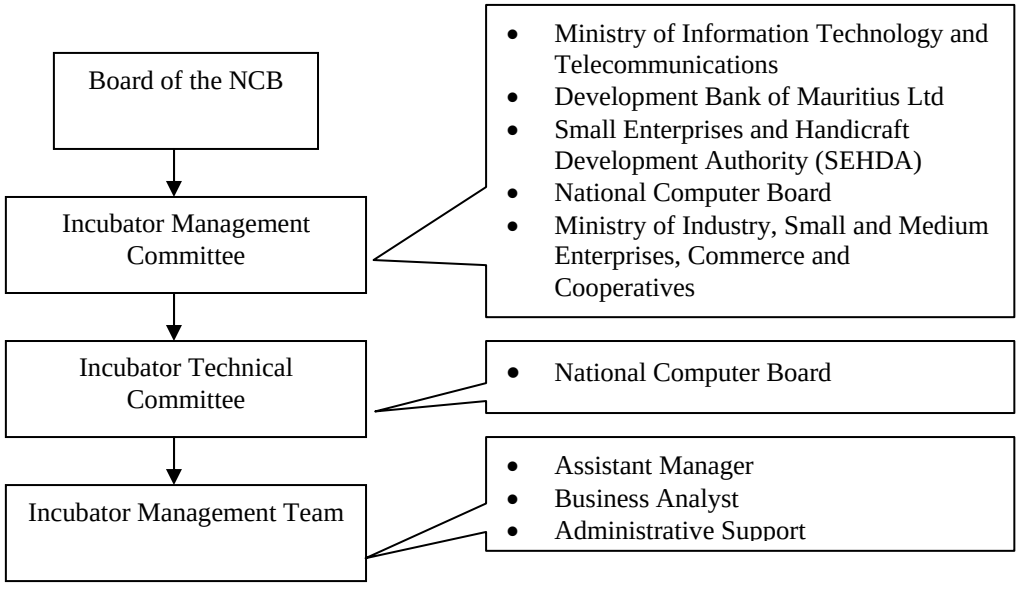
The charges for the centre are as follows: -

Period	Monthly Charge (Rs)	Equivalence in US$
Year 1	6,000	194
Year 2	7,500	242
Year 3	8,625	278

3.5 Management of the ICT Incubator Centre

i) Incubator Management Committee

The activities of the ICT Incubator Centre are being monitored by an Incubator Management Committee. The membership to this committee includes the representatives from the Ministry of Information Technology and Telecommunications, the Development Bank of Mauritius (DBM) Ltd, Small Enterprises and Handicraft Development Authority (SEHDA) (formerly SMIDO), National Computer Board and the Ministry of Industry, Small and Medium Enterprises, Commerce and Cooperatives. The committee meets on a regular basis for policy decisions and approval of projects. The organisation structure is as follows: -



ii) Staffing

The National Computer Board – ICT Incubator Centre is managed by one Assistant Manager and a Business Analyst. One Word Processing officer provides Secretarial and Administrative support.

iii) Technical Team

A technical team comprising of members of the NCB screens and reviews the project proposals received from potential start-ups for the ICT Incubator Centre and make recommendations to the Incubator Management Committee.

3.6 Cost Benefit Analysis – Investment, Turnover and Employment creation

i) Investment and running cost

The ICT Incubator Centre was set up with an initial investment of Rs 2.15 million

The capital expenditure included the setting up of the necessary infrastructure and logistics for operating the Centre. It included cabling, wiring for broadband Internet connectivity, setting up of network points and setting up of the IT infrastructure. Meeting room facilities is available which is equipped with one multimedia projector and one laptop for visual presentation.

The National Computer Board meets the running cost for the ICT Incubator Centre through its yearly grant secured from the Ministry of Information Technology and Telecommunications. The running cost for the ICT Incubator Centre is estimated to be Rs 3.2 million per annum and includes rental cost of the building, staffing costs, electricity, telephone, ADSL Connection, and shared administration services such as photocopy and fax facilities among others.

The Centre also generates some revenue from the facilities and services offered to the start-ups located on the premises and include rent, fax and photocopying services. The revenue collected from these services is estimated at Rs 600,000 per annum.

ii) Investment by start-ups and job creation

One of the main objectives for the setting up of the ICT Incubator Centre was emphasis on employment creation.

Employment created in the financial year 2002/03 was 27, and 27 new jobs have been created Financial year 2003/04. For the financial year 2004/05, 33 new jobs were created. Similarly, the start-ups at the Incubator Centre have invested an amount of Rs 15.7 million in their business venture up to date.

3.7 Start-ups at ICT Incubator Centre

1. Since the ICT Incubator Centre became operational, the Centre has supported 17 start-ups in the ICT sector.
2. Out of these 17 start-ups, 5 companies have successfully graduated from the Incubator Centre.

Key indicators on start-ups at the ICT Incubator Centre are as follows: -

	2002/03	2003/04	2004/05	Total
No of Companies hosted / Supported	6	11	13	18
Employment Created (New)	27	27	33	87
Investment made by these companies	Rs 2,440,000	Rs 5,217,400	Rs 8,042,600	Rs 15,700,000
No of Companies going out of the Centre				
Successful	-	1[a]	4[b]	5
Unsuccessful	-	3	1	4
Total	-	4	5	9

Source : National Computer Board
Successful here means graduating from the Incubator centre to a new location

Note: (a) Alliance Réseaux Ocean Indien Ltd (Dec 2003) (b) Innovative and Creative Lines Ltd (August 2004), Active Connect Ltd (February 2005), M-ITC Ltd (June 2005) and AM Web Solutions Ltd (June 2005)

Based on the regular meetings with the start-ups (formal and informal) at the ICT Incubator Centre. A SWOT Analysis was formulated to this effect .The SWOT analysis captures the key strengths and weaknesses and also describes the opportunities and threats facing the start-ups at the National Computer Board – ICT Incubator Centre.

a) **Strengths**	b) **Weaknesses**
❑ Access to services provided by the Incubator Centre. ❑ Access to common logistics and shared administration facilities. ❑ In-house business counselling and timely advice. ❑ Secured workspace and subsequently flexible working hours. ❑ Access to various institutional network support and contacts through the National Computer Board. ❑ Easy access for media and events coverage. ❑ Networking with start-ups at the Incubator Centre is an added advantage for enterprise development. ❑ Flexibility - The ability to meet the customer's needs with a customized, flexible solution. ❑ Access to pool of graduates from the University of Mauritius for short-term assignments.	❑ The difficulty of building brand equity. ❑ Management training for promoters and employees. ❑ Loans facilities by banks not easily accessible. ❑ Specialised skills in ICT difficult to find. ❑ Absence of the local infrastructure for conducting online transactions and real time credit card validation mechanism.
c) **Opportunity**	d) **Threat**

❑ Increased business opportunities through outsourcing and potential joint ventures with the development of the Cyber City. ❑ Declining cost of Internet connectivity will create business opportunities for the start-ups. ❑ A period of three years of incubation increases the survival prospect of the start-ups.	❑ Future/potential competition from large ICT companies and multi-nationals. ❑ Given the nature of computer technology, investment in skills development and new software impedes on the cash flow of the start-ups.

Source: National Computer Board

3.8 Success & Failure

The ICT Incubator Centre has nurtured eighteen enterprises out of which some have successfully graduated while a few ones have closed down. The success rate has been attributable mostly to the perseverance, qualities of the entrepreneurs and the business network developed by the Incubator Centre. Failures of enterprise have been characterised (a) technical deficiencies (b) Inability of the entrepreneurs to properly market the product.

Under the technical deficiencies category, the absence of the local infrastructure for conducting online transactions and real time credit card validation mechanism was a major handicap to promote online transactions. At the same time, the purchasing habit of local consumers has been largely been limited to cash, cheque and with little credit card facilities.

On the other hand, the inability to properly market the product and services has also contributed to some extent to the downfall of some enterprises. The added burden of the rising cost of the facilities & services used by the enterprises at the Centre plus the salaries of employees accentuated the demise of these enterprises.

As a case study the business track records of M-ITC Co Ltd, Innovative and Creative Lines (ICL) Ltd and AM Web Solutions Ltd are detailed in Annex I, II, and III respectively.

3.9 Partnership and International Co-operation

The National Computer Board is working in close collaboration with local stakeholders in the areas of business development and capacity building. It includes the University of Mauritius, SEHDA amongst others. At the international level, the National Computer Board – ICT Incubator Centre has benefited of UNDP and the World Bank for technical assistance.

i) University of Mauritius

The National Computer Board had signed a memorandum of understanding with the University of Mauritius in the year 2002. The agreement had clearly set up guidelines for areas of cooperation, which includes provision for training, consultancy, marketing and mentoring to start-ups and to encourage Entrepreneurship Development in the ICT sector. In this context, a series of activities were organised jointly by the National Computer Board and the University of Mauritius.

ii) UNDP Assistance

The National Computer Board had prepared a project proposal to support new and potential start-ups incubators in the field of ICT. The aim of the study was be to appraise the existing facilities and services offered to start-ups and examine ways for enhancement. The study also assessed the capacity needs of start-ups and of the incubator management team, while paying special attention on the business and marketing perspectives for long run sustainability of the Centre. The exercise also considered the existing links between institutions (local and International) and advise on the long term planning of the Incubator Centre addressing issues such as clustering and networking with International institutions. The project would be carried out in two phases. Phase I dealt with a study and recommendations, while Phase II would deal with the implementations of the recommendations. For Phase I, the NCB has benefited the financial assistance of UNDP for an amount of US$ 19,200. The Phase I of this project has been completed. The main recommendations included the following :-

Creation of critical mass for sustaining the ICT Incubator Centre. The consultant has recommended that a critical mass of 20-30 start-ups were required to make this project sustainable. To this effect, the Centre needs to be relocated outside the city of Port-Louis.

Creation of a Virtual Incubator Module. It was also proposed that a Virtual Business Incubator Network be created to support start-ups not physically located at the Centre. It would supported through a web portal and would include training, counselling brainstorming and mentoring activities.

Capacity building programme. Under this component the capacity building of (a) the Incubator Management Team (b) Start-ups (c) potential start-ups have been addressed.

Pre-incubation Cell. To re-enforce the collaboration between the National Computer Board – ICT Incubator Centre and the University of Mauritius, it has been proposed to set a pre-incubation within the latter premises. Faculty members and students would also be able to contribute and benefit from this initiative. The aim of the project would also be to

commercialise the research undertaken at the University. This initiative will also help to bridge the gap between research undertaken and its commercial use with the industry.

iii) InfoDev ICT Incubator Initiative

The National Computer Board has received funding under the Info*Dev* ICT Incubator initiative of the World Bank for an amount of US$ 100,000 in June 2004. The funding would be used to provide technical assistance and capacity building of the ICT Incubator Centre for Phase II of the above-mentioned project.

Conclusion

The ICT Incubator Centre has been implemented within a conducive environment whereby policies have been oriented to the development of the ICT sector. It is believed that the business incubation policy would be successful if it is an integrated strategy of the economic development process and supported by all the stakeholders.

References

1. Board of Investment - http://www.boimauritius.com/
2. Business Park of Mauritius Ltd http://www.e-cybercity.mu/
3. Central Statistical Office - http://statistics.gov.mu
4. CIA - The World Fact book - Mauritius 2005
5. E-Government Initiatives 2000-2004 - Ministry of Information Technology and Telecommunications, Republic of Mauritius
6. Feasibility Report for the ICT Incubator Programme by Dr. Ulrich Daldrup (2001)
7. Government Online Centre - http://www.gov.mu
8. ICT Outlook 2000-2004 - Ministry of Information Technology and Telecommunications, Mauritius - http://telecomit.gov.mu
9. ICT Outlook 2002 - ICT Penetration within the Mauritian Society, National Computer Board.
10. Information and Communication Authority - http://www.icta.mu
11. Information Pack - National Computer Board - ICT Incubator Centre

12. Integrated Strategic Action - Programme for 1998-2005 - Summary Report, National Computer Board.
13. Mauritius – Challenges of Sustained Growth , IMF 2005
14. National Computer Board, http://www.ncb.mu
15. National Computer Board – ICT Incubator Centre, http://incubator.intnet.mu
16. National Productivity and Competitiveness Council - http://www.npccmauritius.com
17. Support Arrangements for Development of Informatics in Mauritius (1992), Preliminary study for the United Industrial Development Organisation.

(Exchange rate 1 US$ = MUR (Rs) 31)

ANNEX I

Start-up	**M-ITC Ltd**	
Date of Entry	1st October 2004	
Date of Departure	30th June 2005	
Promoter Name	Mr Michael Jose Motet	
Activity	IT Consultancy The enterprise is currently providing software development and consultancy services to enterprises operating in Denmark. The contracts are obtained from companies based in Denmark, which are actually outsourcing part of their software development to M-ITC Ltd. The IT solutions are developed using C++, C# (.Net), Linux, Unix, Mac and Windows.	
New Location	34, Remy Ollier St, Port-Louis	
URL	http://www.m-itc.net/	
New Office Space Area	60 sq mts	
Useful indicators	**Initial**	**Actual**
Investment	Rs 100,000	Rs 600,000*
Labour	4	11
Turnover	Rs 1,1 m	Rs 3 M
	* Investment has been made on hardware and open source software has been used mostly for development purposes. The new location will easily accommodate the additional staff recruited by the enterprise. In-house training has been undertaken by Danish trainers.	
Investment Certificate (if any)	The company has acquired an ICT Certificate from the Board of Investment for the "development of customised secure business solutions such as the public key infrastructure (PKI) modules for export only" on 6th January 2005.	
Target Market	Denmark contractors which outsource major government software development contracts to small companies	
Benefits obtained from the ICT Incubator Centre	The company has acknowledged the contribution of the ICT Incubator Centre during the enterprise initial and critical phase of development. The infrastructural support including office space, fast Internet Connection via the ADSL connection and shared facilities – telephone, fax services and logistics were essential for the growth and expansion of the company. The enterprise was able to focus on its core competencies i.e software development	
Challenges	The main challenge of the enterprise as at date was to be able to get the right candidate and providing on the job training.The company has earlier advertised in various newspapers to attract candidates with expertise in Java, C++ and Linux. Interviews were conducted on the premises of the Centre. The Ministry of Labour had contacted them and sent a number of potential candidates for consideration.(~ 100 C.V's). These people have been registered with the Ministry recently.	
Comments	*"Without the support of the National Computer Board – ICT Incubator Centre I would not have been able to start a business in Mauritius".*	

ANNEX II

Start-up	**Innovative & Creative lines (ICL) Ltd**	
Date of Entry	1st April, 2003	
Date of Departure	31st August 2004	
Promoter Name	**Mr Rajiv Juwaheer**	
Activity	Developing Web Applications and providing Web Solutions to enterprises. The enterprise is providing Web solutions and Web applications Development to local SMEs. The allied activities of the enterprise include:- (a) Website Development (b) Setting up, commissioning of Web servers and Database servers for online stores (c) Maintenance of Web & E-commerce sites.The company has diverstified its activities to include training on ICT. To this effect, the enterprise has a training room facility that can accomodate 15 persons. A computer room with 10 personal computers are available. A workshop facility has also been catered for maintenance and software development purposes.	
New Location	5, Octave Sandapa St, Port-Louis	
URL	http:// www.iclnetwork.com/	
New Office Space Area	80 sq mts	
Useful indicators	**Initial**	**Actual**
Investment	Rs 400,000	Rs 0.9 m*
Labour	3	8
Turnover	Rs 775,000	Rs 900,000
	* Investment has been made in the renovation of new office and acquisition of hardware for the company.	
Investment Certificate (if any)	none	
Target Market	Mr Juwaheer is targeting local SMEs and individuals for its services.	
Benefits obtained from the ICT Incubator Centre	The promoters and his staff have benefitted from the infrastructural facilities and supports through its training and informative sessions organised by the NCB. The informal meetings have benefitted the enterprise in acceding the appropriate information on a timely basis.Through the participation at the InfoTech , an annual event organised by the NCB, the company has profiled potential enterprises for its services.	
Challenges	The main challenge has been marketing its services, as clients are constantly looking for competitive prices.	
Comments	*The ICT Incubator Centre facilitates the early stage of business development through its various support systems*	

ANNEX III

Start-up	**AM Web Solutions Ltd**	
Date of Entry	1st March 2004	
Date of Departure	31st June 2005	
Promoter Name	Mr Remy Grandpierre (French National)	
Activity	Provision of website development services, website-hosting services, 3D animation and multimedia content development.	
New Location	Grand Baie, Business Park	
URL	http://www.amltd.net/	
New Office Space Area	60 sq mts	
Useful indicators	**Initial**	**Actual**
Investment	Rs 697,000	Rs 1.15 m*
Labour	3	10
Turnover	Rs 0.5 m	Rs 1.5 m
	* Seven additional staff have been recruited as the existing office space at the ICT Incubator Centre was not able to accommodate the new staff.	
Investment Certificate (if any)	The company has acquired an ICT Certificate from the Board of Investment for "website development and multimedia content development services" on 23rd March 2005.	
Target Market	Mr Grandpierre is already in contract with approximately 40 clients in Mauritius. The target market include small and medium businesses and small hotels.The foreign market includes France, Réunion Island, Mayotte / Comoros, Madagascar, Seychelles and South Africa. Mr. Grandpierre has established contracts with potential clients in some of these countries. Some of these contracts include Isorol and Leader Club (France), Mayotte's Edition Grand Public (business directory & booking portal) and the Réunion-based communication agency Yasib.com.	
Benefits obtained from the ICT Incubator Centre	The company has benefited from the infrastructural facilities, logistics and the business support provided by the ICT Incubator Centre during its stay. Mr GrandPierre has participated in the InfoTech 2004 event organised by the National Computer Board. The event was an opportunity to market its services to the local SMEs and to establish network contact. The informative sessions on the various facilities, incentives, and legal framework and obligations organised by the National Computer Board have been helpful to the promoter given that he was not well versed with the existing legislation system for business in Mauritius.	
Challenges	The company has interviewed many candidates with specific experience in PhP and most of them had little working experience. Following several advertisement in the newspapers and lists obtained from the manpower database of the NCB, some reruitments have been made.	
Comments	*"Besides logistic and infrastructural support offered by the Centre, I have been obtained appropriate information regarding business development in Mauritius"* .	