

PART 1: OVERVIEW & BACKGROUND INFORMATION

1. INTRODUCTION

1.1 Overview

South Africa has officially been a democracy for 10 years and has had a taste of both the positive and negative aspects sides of all that comes with a democratic government. The face of South Africa's economic and social sectors has changed dramatically in some areas and less dramatically in others.

One of South Africa's major initiatives in all sectors is that of job creation and addressing the challenges of creating a knowledgeable and driven workforce. The aim of such an initiative is to create an indigenous knowledge base that can be used to help solve the problems and create opportunities within South Africa, so that industry does not have to spend millions of dollars seeking answers and guidance from the outside world. This spend could then be utilised more effectively be more useful if it were circulating within our own development sectors and helping promote job creation, job retention, and a shared indigenous knowledge base.

The Information and Communication Technology (ICT) sector has had the brunt of the most diverse yet short-lived opportunities to make money in South Africa and beyond. The Y2K frenzy that circumnavigated the globe for the last three years of the previous century housed a boom in companies that concentrated whole-heartedly on upgrading systems to be compatible with the change of millennium. Many of these companies lasted for a very short time and only the dynamic few survived the transition. So did this influx of job creation have a positive influence on South Africa or did it impact negatively on the market by saturating it with unemployed computer specialists? Either way, the future must guarantee sustainability in the workplace and enough elasticity for the market to host these specialists. The country as a whole loses these professionals on a daily basis to other countries that use them in turn, to make them money in South Africa.

This trend places major pressure on the ICT sector in South Africa to create enough opportunities within our own markets to retain these specialists and in turn to create new opportunities within the sector. There are many obstacles to be overcome to ensure a well balanced sector. To name a few:

- The cost of education and the access to education in proportion the social status that most South Africans find themselves in;
- The ever increasing cost of labour and retaining highly skilled professionals;
- The absence of knowledge sharing and the inability of different areas of the ICT sector, both in the on a private and public sector, to talk to each other;
- Encouraging youth to seek areas of opportunity within our borders and not to look overseas where the "big money" is;
- Handling the influx of foreign innovation and how to integrate new technologies and ideas into our markets without skipping the important stages of development; and.

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- How to implement “home grown” ideas successfully to compliment current structures and trends in South Africa.

The research that will be undertaken will identify the major trends that can assist growth within the ICT sector in South Africa by looking at market trends and opportunities locally and abroad. Research has been done in this sector by the South African IT Industry Strategy (SAITIS) in 2000 and this research will complement this report by using it to as a parallel understand the situation that South Africa was in during that project. That project will however not be the only point of reference for our research.

The research will focus on the following to ensure that the relevant models and trends are utilised to define the gaps and areas of growth to assist the industry as a whole:

- Results of the SAITIS project of 2000;
- South African context: current projects and initiatives undertaken within the ICT sector and the extent to which they contribute to solutions;
- Cross-sectors views concerning other models and initiatives that have been drawn up and undertaken to address the areas of growth and job creation within those sectors;
- International case studies and models that have worked/failed in other developing countries as well as developed countries addressing industry job creation issues within their countries;
- Comparison of well known and utilised models from industry and the academic environment that have evolved from studies and reviews on this topic within the ICT sector;
- Government initiatives and projects aimed that aim at job creation and industry development and growth both locally and abroad; and
- Initiatives that relate to sustainability as well as growth throughout different sectors within the broader scope of ICT.

1.2 *Current views, strategies and initiatives*

- Already existing are various SETAs that address the current skills levels of employees for the sector (Isett Seta – the ICT specific Seta and the Services Seta – cross sector). Under the auspices of the Department of Trade and Industry (**the dti**), the Department of Communications (DoC) and the Department of Science and Technology (DST) strategies for business development and incubation of new ICTs are already in place (The Savant project and the BEE ICT Companies database, The Competitive Fund, The Innovation Fund, CSIRs ICT incubator centres, regulatory frameworks to expand and stimulate the ICT sector, the African ICT Achievers Awards). These initiatives address specific needs of the ICT sector.
- The broad-based approach can be seen in the strategic plans developed by the Department of Communications' National IT Plan and the current development of the ICT Charter. Addressing the Youth issue is the Youth Development Trust that also addresses the current status of youth development within the ICT sector. Tertiary institutions are focussing on not only creating a skilled labour force but on creating environments for innovation and development for the ICT sector. This can be seen through the various graduate programmes in Information Science and Computer Science which not only address ICT specific needs but cross-sectoral issues such as like business development, knowledge management and social development.

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- The above-mentioned approaches are not exclusive to one another but are complimenting each other. The broad based initiatives create strategies for holistic views that identify specific needs, which feed into the need-specific programmes. Need-specific programmes address key issues that will have an overall influence on the sector and ultimately lead to change and expansion of feed into changing and expanding the current views as adapted by the broad-based strategies.
- What comes to light is that the proper channels to link the need-specific programmes with the broad based strategies are not always functioning or not properly in place. These obstacles lead to duplication and could sometimes hamper the development of the ICT sector. What is lacking is a mechanism to bond these two perspectives and to create a link between the different initiatives.
- The SAITIS project between Canada and South Africa: The strategy is based on four pillars of development. The project is notable in that the strategy has been developed as part of a participative process whereby all key stakeholder groups were involved, including government, business, labour, academia and civil society. Stakeholder participation was secured through working groups, workshops and executive-level fora. Governance was provided by a South African Project Steering Committee elected by, and representative of key, stakeholder groups.
- *Government Initiatives:*

The South African government is taking the following initiatives to create jobs within the ICT sector:

ISETT SETA and the Department of Labour have undertaken the following initiatives to skill labourers so that they are competitive in there their jobs.

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NSDS Objective 1: Developing a culture of high quality lifelong learning				
NSDS Success indicators	SETA Target To March 2005	SETA Target for 2002-3	SETA Assumptions	Assistance from the Department of Labour
1.1 By March 2005, 70 per cent of all workers have at least a Level One qualifications on the NQF	By March 2005, 95% (11000) of all workers to have a level One qualification on the National Qualifications Framework	By March 2003 92% (3 000) of workers in the sector to have level One qualification on the National Qualifications Framework.	Availability of data	To define baseline data against which progress to be assessed To provide assistance to the SETA in the use of the standard M&E system
1.2 By March 2005, a minimum of 15 per cent of workers to have embarked on a structured learning programme, of whom at least 50 per cent will have completed their programme satisfactorily	By March 2005, a minimum of 30 %(42600) of workers to have embarked on a structured skills development programme, of whom at least 60 %(25560) have completed their programme satisfactorily.	By March 2003, a minimum of 10 %(14000) of workers in the sector to have embarked on a structured skills development programme, of whom at least 30% (4200) have completed their programme satisfactorily.	NQF fully developed for sector training Assessors trained. ETQA functioning Maths/science improved at school level In-company and branded product training forms part of the national standards	To provide baseline data To provide assistance to the SETA in the use of the standard M&E system
1.3 By March 2005, an average of 20 enterprises (to include large, medium and small enterprises) and at least five national government departments, to be committed to, or have achieved the Investors in People Standard	By March 2005, at least 40 private enterprises in the Sector (to include large, medium and small firms) and SITA to be committed to, or have achieved, an agreed national standard for enterprise-based, people development.	By March 2003 at least 10 private enterprises in the Sector (to include large, medium and small firms) and SETA to be committed to, or have achieved, an agreed national standard for enterprise based, people development.	Personal development skills training, e.g. management development, form part of national standards	To provide assistance to the SETA in the use of the standard M&E system

Based on baseline data of 142 000 people in the sector, these are the targets.

- SSP committee meetings
- Training for people who have qualifications less than NQF 1 – train 11000 people by March 2005, Therefore 2000 by March 2003.
- Participate highly and facilitate the development of Unit standards
- Training for 14 000 people should be taking place. In companies, skills development programmes etc.
- Matrix Committee between SSP and ETQA on RPL. Implement RPL programme based on existing RPL projects e.g. Construction SETA
- Track WSP's to see how many people are on structured learning programme
- Sponsor a multi-media learning programme

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- *Academic Initiatives*
 - The LINK Centre at the University of Witwatersrand looks at various developments within the ICT sector and develops strategies and projects to address the challenges and needs of the ICT sector.
 - Various tertiary institutions have graduate programmes in place to develop skilled ICT employees and to develop and stimulate new ICTs. Some of these efforts are multi-disciplined and address sectoral and cross-sectoral issues relating to ICTs.
 - Researchers in research centres and tertiary institutions develop various research projects that relate to subject matters of gender, equity, skills development, application of ICTs and new strategies for job creation for the ICT sector.
- *Examples of International developments and research projects include the following:*
 - The World Bank and various other UN Organisations are doing collaborative work on creating and developing the ICT sectors globally as well as the influence ICTs has across various sectors. The ICT4D projects, the Development Gateway and DotForce and WSIS initiatives are all mechanisms used to influence and develop the global ICT sector.
 - Under the auspices of the Commonwealth various initiatives are implemented to develop the ICT sector and link it with other sectors. Amongst these initiatives are a network called the Commonwealth Network of Information Technology for Development, the Commonwealth Institute and the Commonwealth Telecommunications Organisation. These structures create proper channels to link the various initiatives within member states, develop the ICT skills and regulate this industry.
 - Regional initiatives of the African Union, Nepad and SADC includes an e-Commission for Africa and IT Task Team for Southern Africa that combines and link various initiatives within Africa and its sub-regions. The IT Task Team of Southern Africa is closely aligned with the developments within the ICT sector of South Africa.
 - Within countries like India, Egypt and the United States of America various structures and initiatives have been created to combine the various initiatives within the ICT sector. These structures include creating a proper environment for the development of ICTs, ICT incubator centres and creation of proper channels and networks. Examples of these environments are the Smart Villages project in Egypt¹, Silicon Valley in the USA and the ICT city in Mumbai, India².

¹ See Part 3 Point 1.2.

² See Part 3 Point 1.3.

1.3 Context of the project

This research project is the result of various research initiatives and meetings held during the past two years relating to the development of the ICT sector and the impact it has on the job market. Previous research concentrated on the developments within the sector and empowerment issues. The aim of this project is to develop an understanding of the dynamics that will create jobs within the South African ICT sector.

The establishment of NEDLAC aims to create social dialogue between Industry, Government and Labour movements. Since its inception various forums have been established to address key issues faced by all stakeholders. The ICT Sector Summit of 2002 focussed on the challenges faced by the ICT sector as well as how the ICT Sector can contribute towards the development of South Africa.

At the NEDLAC meeting in 2003 it was decided that under the auspices of FRIDGE at the IDC, a research project into Job Creation will be conducted.

This research project was commissioned after another FRIDGE research project relating to Research into an Agency, Mechanism or Institute for the ICT Sector. It was realised that during the study both these projects are interconnected and that the development of any possible model for development within the ICT sector will have an impact on any views that would be developed for Job Creation. This report therefore has to be read hand-in-hand with the Report on Research into the ICT Development Agency/Institute or Mechanism (September 2004).³

1.4 Definitions

The view taken in understanding the Job Creation can be explained as follows:

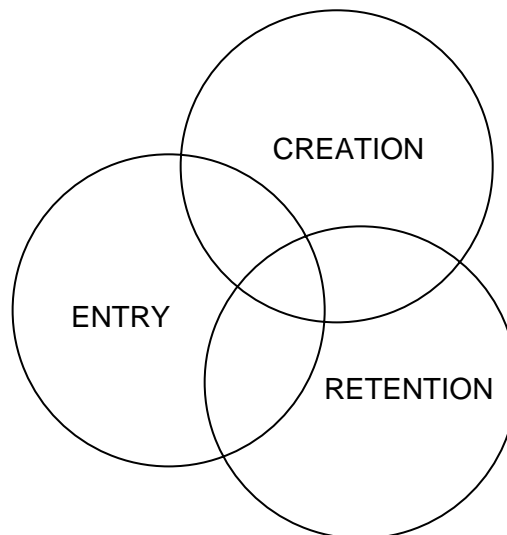


Diagram 1: Understanding Job Creation

³ See Venter & Rogers 2004.

- The key issues relating to the labour market within the ICT Sector can be seen as 3 spheres:
 - Entry – what are requirements for entry into the labour market?
 - Creation – how are new jobs created?
 - Retention – how are jobs sustained?
- The 3 spheres are constantly interacting and influencing each other. It also shows the inter-relationships between the different spheres.

1.5 Structure of the Report

This report is divided into 3 main parts:

- PART 1 – Overview and Background Information
 - Focus on current views, methodology and the current status of research
- PART 2 – Models and Recommendations
 - Focus on models, strategies and recommendations
- PART 3 – Appendices
 - Consists out of International and South African case studies and a list of sources used for this report

2. METHODOLOGY

2.1 Approach

The research was conducted using a multi-disciplined approach and dividing the research into different phases. A combination of data gathering processes were followed to ensure that all important information could be gathered and analysed for purpose of use within the report. The approach was done on three levels:

- Desktop research and analysis
 - As part of the aim to gain an understanding of the current initiatives and strategies that exists a thorough analysis was done were made of all available information. Various reports, articles and background information were sourced from different stakeholders. A review and analysis was conducted by using examples of various regional and country specific practices, projects and programmes. The various best practice examples were compared to identify abstract the common denominators for developing different models and strategies that would benefit Job Creation within the South African ICT sector.
- Literature Overviews
 - Currently various published works are available and although most of them are general in approach it allows for identification of different strategies, trends and views.

- Interviews
 - High-level interviews with key stakeholders were held. These interviews were used to identify trends and to clarify the information gathered. From these interviews the most current views were identified for use within the report.

2.2 Sampling

2.2.1 International Studies

A sample of various countries was taken to develop strategies and models. The aim of the research into these countries was to gain an understanding of:

- The ICT development strategies currently being implemented;
- What drives job creation; and
- The specific job creation strategies that are implemented within these countries.

This sample comprised out of countries with different social and economic status.

The sample included the following countries:

Egypt – An analysis of their ICT business development model through the Smart Village project was done.

India – Key elements within the outsourcing principles that resulted in a huge growth within the ICT sector were identified.

Canada – To understand the collaborative approach used to develop the ICT sector.

United Kingdom – A case study on an SMME development and Advanced Incubators.

2.2.2 South African Studies

Within the South African context environment the focus of the research was to identify main trends and due to the large amount of information and different initiatives, the research team identified key elements within South Africa as focus to compile a sample of ideas that could be used to develop possible strategies and models. As part of the final report the following are:

Government – The national departments DST, DoC, **the dti**, Labour, Education as well as regional initiatives by Provincial Governments (Western Cape, Gauteng, Free State, KwaZulu-Natal).

Educational Institutions – Universities (Stellenbosch, Pretoria, Durban Institute of Technology);

National Organisations – CSIR, NRF, HSRC, Isett Seta, Open Source Centre;

Regional Initiatives – Innovation Hub, CITI; and

Local Initiatives – Local Governments and Local Economic Development Plans

2.3 Sources

The sources used within this report are based on the following:

- Previous research conducted by various institutions and organisations within the South African government and non-government environment;
- Published works focussing on general trends and strategies within the international and South African context;
- Contemporary articles published in recent months relating to issues within the South African ICT sector;
- Discussion documents made available relating to new developments within the ICT sector;
- Published statistics relating to the economy and ICT sector.

There was a lack of complete and proper recent quantitative information. Most of the information that was gathered is of a qualitative nature and was used to identify key trends and strategies. A further obstacle experienced is the recent developments within the ICT sector that were initiated by various organisations to understand, develop, and expand the ICT sector. These initiatives address various issues that are aligned with also the aim of this research project. It was therefore the approach of the research team to understand these initiatives and integrate these approaches within the current research report.

2.4 Interviews

Key individuals were contacted to clarify elements of the some information gathered during the research period. Face to face and telephonic interviews were conducted. The interviews did not aim to gather specific new data but rather focussed on strategies and approaches undertaken by the organisations they represent.

3. CURRENT VIEWS

3.1 Background information

There are various strategies and models relating to job creation within the South African environment. In many cases job creation strategies are sometimes misaligned with the economic development strategies within regions and do not incorporate development of the ICT sector as one of the key drivers for job creation. The phenomena of having more than one job creation strategy within one region happens more often than not and in some cases these strategies do not align with that of the other regional strategies. Some job creation strategies tend to be very general and do not focus on specific sector but rather look at key principles that could benefit sectors.⁴

⁴ During interviews with CITI it was seen that this Agency does not have a job creation focus but rather would focuses on developing the ICT sector. It is seen that jobs will naturally be generated when there is growth (and more important sustainable growth) in the ICT sector. See Part 3 Point 2.1 for more on the model of CITI. See also PAWC Framework for Development 2004, Free State Development Plan 2004-2005,

3.1.1 International views

Globally the ICT sector is seen as one of the main "playing fields" for development. ICTs are seen as catalysts in encouraging economic growth and the development of more job opportunities. The question arises whether new jobs can be created by growing the ICT sector. The ICT sector is a skills dependent environment and therefore needs to focus on the development of skills rather than how it creates new jobs. Recent studies have shown that it is difficult to assess whether new jobs are created. This is mainly due to the changing landscape of the ICT sector and the fragmented structure of the ICT sector. Some view the ICT sector rather as an economic development tool than a job creator.⁵

These views are not generally accepted. According to studies amongst women, ICTs had a major impact on the development of women and also created new environments for women to be economically active in. The reasons why ICTs can create barriers to the job market are⁶:

- Lack of technologies being available in local languages;
- Governments do not have proper support programmes in place to implement ICTs and therefore the cost goes directly to the disempowered. Due to costs ICTs cannot be implemented;
- Some of the ICT policies are not aligned according to the gender specific needs and therefore wrong technologies are implemented. The choice of technologies needs to take into account gender specific needs.

The international community through organisations like the UNDP, are the major drivers behind developing the ICT sector and see this sector as one of the drivers for economic development and the creation of jobs.⁷ It is through the creation of an Information Society that economic growth and therefore more jobs can be created.⁸ The importance of focussing on ICTs was reiterated in the Accra Declaration.

The Accra Declaration on Technology and Economic Growth in Africa⁹

The third annual InterCED conference was held in Accra, Ghana in March 2004. The conference aimed to identify the opportunity that ICTs create for economic development and job creation. All sectors of society are pertinent to the success of developing the African economy. The parties involved in the conference agreed that existing technologies should be worked with and adapt them to relevant ways of fostering growth and regional sustainability. The main headings under which ICT issues were discussed were:

- The role of education;
- The role of local, state, and national governments;
- The role of business;

⁵ See Selhofer 2000.

⁶ See also Jorge 2002.

⁷ See Part 3 Point 1.7 and The UNDP website [<http://www.undp.org>]

⁸ From the international studies countries put high value on this principle. It is the view of Egypt's Ministry of Communication and Information Technologies "ICT is an important tool for robust economic growth [http://www.mcit.gov.eg/Egy_vis_infosoc.asp].

⁹ For more information see the Accra Declaration 2004.

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- The role of civil society, NGO's and indigenous professionals; and
- The role of international institutions, foundations, and funding agencies.

The role of Education

When businesses decide on locations and investments they look at issues such as infrastructure, economic stability, and growth potential. Within the ICT sector however the skills of the available workforce is on top of the list. The committee made the following recommendations for educating the relevant communities and sectors.

- African governments should start implementing ICT education from the earliest possible stages in a child's life. They recommend that ICT training should be carried out from kindergarten level through primary school and beyond.
- African governments should aggressively tackle the cost of education and make education as affordable as possible by using ICTs and innovative solutions.
- A strategic imperative of the continent as a whole is to focus on growing a well skilled and developed workforce.
- Education should be invested in, as it lays the foundations for the future and ultimately, education is critical to social and economic upliftment.
- Governments in Africa should work very hard on developing the education systems of Africa to compete with education standards of world leading countries. The use of ICTs in this education will allow Africans to be globally competitive.

The role of State and National Governments

Government's role is to generate and facilitate the creation growth of jobs through an environment that is conducive to sustainability and further development. The committee thus recommends that governments should:

- Carry on developing a legal infrastructure for e-procurement and the enforcement of this as it relates to both Internet and conventional transactions;
- Focus on regulating service provision and move toward deregulation of technology growth;
- Support the initiatives of regional approaches to issues of trade, tourism, ICTs, and monetary policies;
- Strive non-stop to eradicate corruption and build a sense of confidence for potential investors;
- Increase the trend of establishing private organisations so that a healthy and competitive market place is built;
- Create a system of incentives for larger corporations that lend capital to SMMEs as this builds capacity at all levels; and
- Help establish a close knit community that cares for its surroundings and the people in it.

The role of Business

Private companies operate and function for one specific reason: profit. Although this is the main driver for privately owned companies, they are also the "champions" when it comes down to creating work and in turn jobs. It is the responsibility of businesses to be role models in their communities and to create a culture of growth and sustainability. The committee members request that businesses in Africa:

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- Should engage with governments to build physical and legal infrastructure that supports the well being of citizens. This should include activities such as *expanding competition, contract enforcement and transactional transparency; lend best practices to SMMEs to expand ICT adoption;*
- Develop relationships with academic and educational institutions to collaboratively groom a highly skilled workforce;
- Play the role of “big brother” in developing a culture of philanthropy that is demanding in its successes, but generous in their rewards; and.
- Encourage a regional approach to ICT policies, tourism, and monetary policies.

The role of Civil Society, NGOs, and Indigenous Professionals

These types of institutions play a vital role in helping Africa develop and grow by granting generous funding. The funding was traditionally aimed at not-for-profit organisations in developing countries. Transparency and professionalism was a big factor in the decision to fund such organisations, but over in the past few years, indigenous organisations have stood up to the challenge and enhanced their own capacities and sense of professionalism. These organisations have the capability today to become the leaders in the markets, but foundations and donor organisations continue to push funds through surrogate organisations that sometimes do not benefit or contribute to the region where it is required. The preference should remain with on indigenous organisations and funding should be pushed toward them. The committee urges these organisations to continue funding organisations that truly develop and impact the community or region intended. To achieve this, the committee recommends that:

- Information sharing should be pursued and protocol should be established to ensure the effective flow and sharing of information. The target should be to provide transparency and confidence amongst the donors, which in turn will create more funding initiatives;
- Become for flexible with donor grants and loans requiring government endorsement and use extra-governmental organisations as the lead partner in such grants;
- Enhance the professionalism and sustainability of organisations by encouraging cooperation between NGOs, the private sector, and academia to develop innovative ICT solutions at lower cost;
- A zero tolerance for corruption be instilled;
- Funding should be increased for projects that are innovative economic development initiatives that enhance and contribute to social capital.

The conference did address some of the key concerns and issues relating to sustainable technological growth in Africa. If the respective stakeholders take these above mentioned initiatives and plans seriously, it will be a great and worthwhile initiative for everyone on the continent.

Key Findings

The international initiatives that have been discussed could be used to align the train of thought surrounding the issues to gearing for preparedness. Foreign countries also experience the incredibly high cost of establishing business within their respective ICT sectors. The ideas that came from the Accra Declaration for example call for collaboration across a spectrum of government and the private sector. The committee believes that in the African context, using ICTs in the early stages of education is crucial. By implementing ICTs into schools and developing curriculum

around using ICTs everyday they believe a growth will be fostered and a higher skill level will be achieved when students leave school and choose career paths.

The value of ICTs is realised as being a major opportunity for growth in economies and markets of African countries. South Africa is at an advantage in that ICTs are being developed in our schools but as the declaration pointed out, private sector must get involved. Private sector is responsible for creating new business and developing sector growth and they ultimately drive the sector. With the private sector helping establish solid infrastructure and government driving the policies, creating opportunities for growth become not only a reality, but a feasible step towards a solution.

There is plenty of opportunity and space for growth in the ICT sector around the globe, and many countries have embraced the need to help bolster the initiatives. Only through cooperation and implementing a solid strategic work plan between private and public sector can Africa and South Africa create and manage growth within the sector and in turn create jobs and opportunities for people. Using the education system to introduce ICTs from an early stage in life can create ICT related opportunities in areas that before, never had access to the skills required to take advantage of what technology can offer.

3.1.2 South African National Views

The creation of jobs in the ICT sector does not rest solely on the shoulders of one specific organisation whether public or private. The Department of Labour (DOL) is doing a lot of work in partnership with other organisations to help increase the amount of jobs in the sector.¹⁰ The DOL has several key foundations that it builds its approach on, namely:¹¹

- Giving access to communication products and services at affordable costs so that the “working” people and the poor can benefit too;
- Advancing the direct interest of our members employed in the sector;
- Avoiding any negative impact the ICT sector can be faced with in expansion; and
- Placing emphasis on how critical the ICT sector is to the social and economic development of South Africa.

The real challenge the sector faces is promoting “*empowerment and powerlessness, promote connectivity and not dis-connectivity, promote jobs and not joblessness*” (ICT Sector Summit: 2002). The agreements reached by NEDLAC and COSATU tied the parties into an agreement whereby the stakeholders are responsible for:¹²

- Pursuing and achieving universal service that is affordable;
- Retaining and creating employment and promoting decent work;
- Implementing the goals of the RDP;
- Defining the growth trajectory for the sector that would allow it to maximise on job creation, investment, growth, and higher the living standards on a broader scale;
- Promoting education, training, and skills development; and
- Promoting rural development.

¹⁰ See also the DoL Annual Report 2003.

¹¹ See Vavi 2000.

¹² See Vavi 2000 and NEDLAC ICT Sector Summit Agreement 2002.

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Labour also believes that government is best suited to provide telecommunications services due to a number of economical factors:

- Telecommunications infrastructure promotes makes economic activity possible as it is an important factor in cost structure of firms and their location. The benefits on the economy as a whole far outweigh what can be earned by charging for services. Free market transactions will not be economically efficient as there are broader economic effects than that of service provider to client. Government intervention is thus required to ensure economically efficient outcomes.
- There is major under-investment by private sector in infrastructure due the fact that they are averse to risk because of the fact that private sector is risk averse and because they don't take the broader economic effects into account.
- Telecommunications improve the provision of other essential services such as education and health. However, the private sector will not take into account these wider benefits.
- South Africa has major service and infrastructure back logs. Competition in a basic needs sector like telecommunications is not necessary and will lead to profitable market segments that do not take into account the majority.

The parties also agreed that ICTs can contribute to further economic development, equity and social integration, and job creation. ICTs can intervene by:

- Linking together economic activity, both locally and overseas
- Supporting social interaction and integration
- Forming part of sound and timely decision-making in all fields
- Aiding democracy to run its course. ICTs convey valuable information to citizens so that they can make informed decisions
- Providing access to government services
- Helping reinforce the progress of South Africa as a unified nation

To monitor the progress of such interventions the parties created targets and time frames that could be benchmarked at any particular time. These targets aim to ensure:

- Efficient and reliable infrastructure for business
- Affordable access for communities
- A more concerted effort to promote the use of ICTs based on broader access to skills
- ICTs contribute in anyway to the creation of decent sustainable jobs whether directly or indirectly.

The implementation of this type of support group for the ICT sector is mission critical for the successful integration of ICTs into our communities. Without such a structure driving the initiatives and offering support services the chances are it will take a lot longer to come to terms with ICTs.

ICTs and Jobs

Job creation is one of the biggest issues South Africa faces as a country today. Unemployment is still rife and in March 2003 the economy only provided jobs for 11.56 million out of a possible 16.81 million resulting in a 31.2% unemployment rate. This rate is substantially higher than the 19.3% unemployment rate in 1996.¹³

¹³ South Africa Human Development Report 2003

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The advent of technological advancement in South Africa has brought forth very positive effects, but also many negative effects. There are varying degrees and directions of change caused by ICTs and one of those degrees is that ICTs are a catalyst for new markets within developed and developing countries. It is obviously easier to measure the impact of ICTs in environments where there is a higher amount of IT literacy because new skills are acquired more easily. In such environments, unlike South Africa, there is already a general consensus and acceptance of ICTs amongst the labour force and in those environments ICT innovation is quickly latched onto. It is a common fact that technological advancements bring structural and climatic change to industries because of the demand of new products and services, and in turn newer skills. These demands are exponential and across the globe there are still not enough skilled workers to fill the positions that are most needed i.e.: programmers, database administrators, web developers etc. But the focus is not only on the "new" arena's where skills are required but also on developing the existing skills pool but also developing ICT skills in jobs that already exist.¹⁴ The limiting factor on this issue however is that these jobs in developing countries, like South Africa are limited by the economic activity level, and thus the level of education available.

There is also a general consensus amongst ICT practitioners¹⁵ that job creation due to ICTs is incidental and takes a lot of time to develop and sustain. Unfortunately with the Dot.com bomb at the turn of the millennium, many of these jobs were lost due to the dramatic decline of "website" business. Technological advancement is generally the spanner in the works when it comes down to IT related jobs as the dynamics of the industry change constantly. Thus to some, ICTs are seen as job destroyers and not job creators and this debate rages on. It is true that ICTs do impact heavily on manual processes and that they have in the past destroyed jobs instead of creating them. This trend however is seen more in jobs relating to the older sectors (industrial sectors), but in the long run ICTs create jobs in the new and emerging sectors (telecommunications sectors). It is thus strategically important for government to develop and establish programs that expand current job-related sectors as technology advances. Silicon Valley is a prime example of innovation increasing prosperity of a local region and in turn creates technology regeneration in other industries.

The impact of ICTs is not necessarily a result of technology *per se*, but rather on how the technology is introduced by those who control the resources and jobs. The idea of ICT adoption does create a wide spread panic amongst workers because many times in the past it has cost some people their jobs. But ICTs in contrast, also create new products and services that generate work and jobs and are used to up skill the labour force. This all depends however, on how the adoption is managed and introduced. The adoption of ICTs does have a see saw effect, especially with the idea of decentralisation and distance. Technological advancement has ultimately made distance a non-entity and where jobs are lost centrally, they are re-created elsewhere. The social implications of this are large and the constant migration of people around the world finding work attests to this. People are constantly on the move and relocating, and it is becoming more and more common to find people leaving the cities for more rural destinations thanks to the nullification of distance through by technology. A prime example of this phenomenon is the increasing work

¹⁴ See Selhofer 2000.

¹⁵ Open debate of ICTs June 8-15 1998

being outsourced to countries like India and Singapore for American or European based companies. Efforts to cut labour and resource costs lead to major worldwide organisations relying on the low cost, yet highly skilled labour forces of countries such as these. Obviously, for the organisations themselves there is a lot of scepticism amongst the staff because this is taking jobs away from locals, but for those countries this type of business has become a major part of development and innovation.¹⁶

Using ICTs in development

Efforts must be coordinated to improve ICT infrastructure in developing countries and in turn to develop the managerial and IT skills of workers. The major resource of developing countries for the most part is the labour force and due to economic, social, political, and physical constraints this force cannot be mobilised as quickly as technology and capital, the chief resource of these countries. The current trend is that large multinational corporations fund the development of advanced enclaves of the sector whilst moving the high end practices elsewhere. This does not create development per se and bolster growth, because the workers never really have the true capacity and opportunity to improve. This issue boils down to formal structures of good governance and being able to balance growth, whilst maintaining high-end capability. One of the more important factors when introducing technology to developing countries is to take into account that many of the areas have never seen or even used technology. Much of the focus in these areas is based on communities and the sense of belonging to a particular group. In such environments mobilising people is simpler because of the natural coexistence of these communities, thus it is critical to coordinate the efforts of innovation with the natural process of the rural dwellers. Emphasising information sharing and participation must be contextualised to these unique situations. Without truly conveying the message of how technology can work for these communities in a relative context, the initiatives will never leave the ground.¹⁷ The message has to be clear and contextualised and most importantly not force fed, but nurtured and brought through by subtle interventions and efforts that work on longer time frames than they would in more advance countries. It is about educating the people and not exploiting the circumstance or community for quick gain without any opportunity for sustainability.

The full potential of ICTs will only be realised through sound education initiatives, and then only will truly reflect in the up and coming generations. The use of technology must become a way of life and approached holistically with room for growth. The issue of unemployed youth remains one of the biggest concerns within the environment of development. Many of the support mechanisms for the youth of South Africa lack the vision to incorporate ICTs as key to development and employment. The programmes focus on life skills and are not holistic in approach. In recent years some of these organisations have transformed themselves and incorporated ICT strategies in as their approach.¹⁸

¹⁶ The issue of Business Process Outsourcing (BPO) is discussed under the case studies section of this report. See Part 3 Point 1.4 on India.

¹⁷ See also Jorge 2002.

¹⁸ The following organisations are examples of some of the initiatives (see also Du Toit 2003):

- National Youth Commission is responsible for national youth policies and action plans. They established the Youth Information Services in 1998. This is a national information service to meet the needs of young people with no immediate access to

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ICTs can be used as a tool for development and the promotion of sustainable development and social equity. There is a growing trend in the relocation of work or BPO and these offer new opportunities for developing countries. It should be the onus of the country to create the market niches for these types of business practices and to openly display the competitive advantages of investing in such a country. The lack of capital, the requisite skills, and the basic infrastructure hampers most developing countries in using ICTs as a tool for development. The Employment creation can thus not be fully realised without the proper policy interventions from government, educational institutions, and key industry role players and stakeholders. While ICT offers substantial opportunities for informal sector activities and significant livelihood options, these are not adequately reflected in current approaches to jobs and work. The influx of ICT does however offer a unique opportunity to reconsider the future and implement strategies and plans that can harness the potential in the long run. ICTs do already and will continue in future to impact the way in which people work because they will either be included in the initiatives or excluded for whatever reasons. This is unfortunately the case in developing countries because the access to technology and information is limited, and policy and decision makers have not considered the future for workers who are technology "virgins" today. In other words, the approach must take into consideration people that have never use technology at all, and seemingly never will. The integration of technologies into these situations must be developed for the future, although in the short term it may cause some unrest amongst the labour force.

All areas and levels of society should be involved in drawing up and supporting policy development, and governments and trade unions need to collaborate and in turn the trade unions need to focus on employers. On a more holistic approach it is also necessary for organisations such as UNDP, UNESCO, and World Bank to come together to ensure that the gap does not widen between developed and developing countries.

Key Findings

There is a major similarity in the key findings observed within South Africa and those of other countries and that is: cooperation between private and public sector. There is also a major focus on access and making technology available to all regardless of location or wealth. The ICT sector summit in 2002 for example saw COSATU and NEDLAC aligning them with an initiative that creates and promotes access, training, and rural development. The parties also agreed that ICTs could make major contributions in economic development, equity and social integration and of course

advice and counselling resources on such priority issues as careers, educational opportunities, HIV/AIDS, etc. The Youth Commission has also created an ICT task team to develop strategies relating to ICTs and employment.

- Umsobomvu Youth Fund's main aim is to create a platform for job creation, skills development and skills transfer for young people. They design and conceptualise strategies with key partners and role players in the youth employment field with the focus on youth entrepreneurship-self-employment. Some of the SMMEs supported recently were focussed on ICTs.
- South African Graduates Development Association strives to address graduate unemployment and are one of the stakeholders within the Isett Seta. The aim of this organisation is to help unemployed graduates gain access to the job market.

job creation. The agreement stipulates timelines and targets as well that hold the stakeholders to a schedule and major responsibility in actively making a difference.

The major focus on job creation in South Africa has thrown ICTs into the good books of some, and the bad books of others. ICTs are viewed by some as job destroyers because they automate an otherwise manual process, thus taking jobs away from people. On the other hand ICTs are seen as a catalyst in creating jobs by supporting innovation and the development of new ideas. The major findings in South Africa lean more towards ICTs as a catalyst and using ICTs to create growth and sustainability. Using ICTs for development is also once again, centred on education and training and making educational tools and curriculum available to people at an early age. The view surrounding development is two fold, namely:

- Developing workers that have a need for further skills to fill gaps that are currently evident.
- Developing the youth from an early age as to create a long-term return on making ICTs part of the culture of future generations.

Developing the ICT sector in South Africa is not the responsibility of one particular group but rather the onus lies on all stakeholders of the sector. Without cooperation and buy in from all industry stakeholders the true potential of the initiatives will not be realised.

3.1.3 Job Creation through Cluster Development¹⁹

With the development initiatives happening in the different clusters in South Africa it is safe to assume that the creation and establishment of formal “cluster models” will impact rather largely on the labour force. The development of these clusters creates growth possibilities on two basic levels:

1. The establishment and development of SMME’s in the sector, which creates primary jobs/new jobs entirely.
2. These new SMME’s create another market for growth and the products and services rendered by these SMME’s create off shoot jobs as well.

The offshoot jobs mentioned above might not necessarily be IT jobs per se, but the development of the clusters as a market, makes ICT the catalyst for more opportunities within the sector itself. A prime example is the administration and financial aspects of an SMME. The core business may be a software house, but the day-to-day administrative functions will still require attention. In this scenario, the opportunities for bookkeepers, personal assistants and receptionists are high, but these people will also have to have basic computer literacy skills.

The overall benefit of cluster development in relation to creating jobs is that the sound structures and frameworks of the developing cluster not only create jobs, but create a stable environment whereby people can up skill themselves and generally create opportunities for themselves in the market. The market will be highly competitive however so the focus on highly skilled workers will increase, thus building on and growing the “knowledge” of the community and its members as a whole.”

¹⁹ For more information on the South African ICT Clusters see Part 3 Point 2.3.

Key Findings

Through cluster development the findings indicate that developing formal “cluster models” the cluster can develop and create growth by lending opportunity to SMMEs to develop them in turn, creating jobs. One of the advantages to approaching ICT development in the context of a cluster is the creation of off-shoot jobs. The development of the sector through SMMEs does not just mean that ICT related jobs are created, but jobs that fall across industry i.e. financial, administration, and human resources. This impacts job creation on a larger scale, and through ICTs jobs are created within the sector, but also absorb skills from other sectors.

3.1.3 South African Incubators

The process of business incubation in South Africa is still a very new concept and only established itself in 2000 when the Innovation Hub established its technology incubator. In the four years since, incubation processes have become widely used in South Africa and the incubation initiatives have expanded into other sectors. These incubation initiatives not only create sustainable business ventures, but foster communal and economic growth in the long run.

In March 2004 the South African Business Technology Incubator Association (SABTIA)²⁰ was established, and Jill Sawyer from the Innovation Hub was voted the first Chairperson of this association. The executive committee is made up of members from Softstart, Acorn Technologies, Furntech, Raizcorp, and Upstart. SABTIA is made up of government funded non-profit incubators as well as private for-profit incubators. The establishment of the association is to address issues concerned with incubation methods and models and their main objectives are to:

- Develop a network of organisations responsible for creating an infrastructure and support services for small and medium sized enterprises (SMEs), including especially historically disadvantaged communities, to turn their business ideas into viable and sustainable business propositions;
- Develop and sponsor activities for the promotion of business incubation in South Africa;
- Raise funds to promote the Association’s mission and purpose by means of fund-raising campaigns, donations, grants or borrowing from financial institutions;
- Lobby decision makers and stakeholders for the benefit of the business incubation community;
- Develop best practice standards and methods for business incubators;
- Develop and encourage professional conduct;
- Train organisations that support and assist SMEs;
- Establish networks to underpin economic development and growth (job creation); and
- Act as the South African node for international business incubation.

The general trends within the South African Incubator environment can be summarised as follows:

- Previous fragmented approaches to incubation and development are currently being address through the establishment of SABTIA;

²⁰ See <http://www.upstarts.co.za> – 2 March 2004 and Vecchiato 2004.

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- The incubation approach is currently successfully implemented across South Africa and has been producing various successful SMMEs;
- Through a combined effort more funds can be raised and properly allocated to the needed organisations; and,
- The current view is to eliminate duplication in the incubator environment.

Key Findings

The development and promotion of incubation initiatives like the Innovation Hub, not only helps develop the bright minds of the future, but also helps grow the industry as a whole. The skills that are transferred from incubator to incubatee raise the levels of skills within that specific niche. The niche in itself could create a whole new trend in ICT practice that could one day be another Microsoft or Oracle and create thousands of jobs both locally and abroad. The advantage of the incubation program is that the idea and ventures are grown slowly and meticulously so that the risk of failure is minimized. This action already promotes a sustainable business venture with products and services that satisfy a market need. A prime example is incubators in the USA:

“In 2001 alone, North American incubators assisted more than 35,000 start-up companies that provided full-time employment for nearly 82,000 workers and generated annual earnings of more than \$7 billion”²¹

3.1.5 Academic Initiatives²²

The Academic environment focuses on skills development rather than on proper job creation. The core mandate of academic institutions is:

- Education and Training
- Research
- Information gathering and dissemination

It is mainly through these actions that Academia contributes towards the ICT sector. Although in principle this means that activities focus on development of the ICT sector, various initiatives in recent years have indicated that educational institutions are more and more focussed on the development of products for further revenue generation. These projects have led to various success stories most noteworthy South Africa's first satellite.²³ The Research & Development projects within South African academic institutions are more and more focussed on the development of products for the market.²⁴

²¹ www.nbia.org/resource_center/bus_inc_facts/index.php

²² For more in depth discussion the R&D functions of the academic environment see Venter & Rogers 2004.

²³ An ICT company owned by the University of Stellenbosch and members of the original Sunsat micro-Satellite research team was formed which are employing different people as well as providing in house training for students. See <http://www.sunspace.co.za/> for further information. For information on Sunsat see <http://esl.ee.sun.ac.za/projects/sunsat>.

²⁴ Van Solms 2003 that although there is a move towards the development of products and creating businesses out of research projects a national strategy needs to be developed to

The creation of the Advanced Institute for ICT (AIICT) will lead to a greater drive to enable proper development of products and skilled labour for the ICT market and will also incorporate development of business skills to ensure that graduates can create their own sustainable businesses if they so choose.²⁵

Educational institutions are an invaluable asset towards the contribution of skilled labour it is more evident that tertiary institutions are getting involved in the learnership programmes contributing towards training and providing environments for incubation and business development. The Institute for Satellite & Software Applications (ISSA) is a partnership between DoC, the University of Stellenbosch and Carnegie Mellon University. The tertiary institutions provide training and research facilities for this institute.²⁶ Recently special training courses were developed at the University of Witwatersrand. The programme will focus on post-graduate students and is linked with a learnership programme to enable these students to become economically active (= employed) in a shorter period.²⁷

Key Findings

Academic environments also focus on the development of ICT skilled labour but more recently they have focussed on creating income generating ICT companies that would absorb some of the skilled labour they produce. The focus of academia still remains on upskilling and the development of skilled labour and a greater interaction between Industry, Government and Academia is required to enable a streamlined flow of developing skilled labour and absorption into the workplace.

3.1.6 Industry Initiatives

The ICT sector is a difficult sector to analyse due to its fragmented nature and complex links into other sectors.²⁸ The effect of the Dot.com bomb is still having taking its toll on the industry and international trends and the changes to the global economy have seen many companies revenues go down. The stronger South African currency is seen by some companies as one of the reasons for lower performance and is even used as excuse for job losses. In general the ICT sector has started to adjust business practices to be more conservative in their approach to expanding the business footprint (national and international) and this is seen as a form of consolidating the market rather than rapidly growing and gaining new markets.

Amongst the key concerns is the lack of empowerment amongst PDIs with research showing that only 10% of South African ICT companies have a BEE of 25% and higher.²⁹ Unemployment amongst black citizens is still extremely high and it has raised questions within the ICT sector relating to the development of this sector as

change the rating of academic research to incorporate products as part of the research output.

²⁵ For more information on the proposed AIICT see Van Solms 2003 and Van Harmelen 2003.

²⁶ See <http://www.issa.org.za> and DoC's portfolios at <http://www.doc.gov.za/>

²⁷ See Mothibi 2004.

²⁸ See Moleke, Paterson & Roodt 2003.

²⁹ These statistics are based on preliminary results from **the dti** ICT-E BEE Database 2004.

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well as the creation of jobs. Currently the sector is creating an Empowerment Charter to address these issues.³⁰

<i>Province</i>	<i>Amount</i>
Western Cape	155
Mpumalanga	17
Eastern Cape	25
Northern Cape	7
Free State	12
Gauteng	543
Limpopo	12
North West	7
KwaZulu Natal	75
Total:	953
Distribution of BEE ICTE Companies in South Africa	

Source: the dti BEE ICTE Companies 2004

The table above shows that the concentration of BEE companies is in Gauteng, Western Cape and KwaZulu Natal. In other provinces there is a very low presence of any ICT companies not to mention BEE ICT-E companies. For potential growth and possible job creation, attention needs to focus on other provinces to establish ICT companies within the other regions.³¹

This may seem that the industry is not doing much for job creation but recently the industry has started to invest in itself by contributing towards job creation projects. The focus is especially on the development of SMMEs, which is a potential vehicle for economic development especially amongst the PDI communities.³² Various national initiatives created by Government are funded by the ICT sector.³³

Current SMME Development Strategies

There are initiatives within the ICT sector that are geared toward developing ICT SMMEs so that a portion of the unemployed ICT labour can be absorbed. In South Africa³⁴ approximately 2.3 million individuals are self-employed, of this amount only about 338 000 employ further staff. This resulted in 734 000 jobs being created which does not quite match the theory that SMME development is one of the keys to job creation. The ability of SMMEs to create jobs could most certainly come under question as the statistics do not do it any favours, but job creation is not just an increase in the labour force. Job creation is also about creating new niches and empowering individuals. Currently in South Africa, SMMEs contribute to about half of the employment in South Africa and about 30% of the country's Gross Domestic

³⁰ For further information see ICT Empowerment Charter Draft 4, 2004.

³¹ See Part 2 Point 1.2.2.

³² See Unemployed Graduates, Computing SA 2004; Centre of Excellence, Computing SA 2004; Mothibi 2004.

³³ Examples are Youth Development Trust [<http://www.ydt.co.za/>], Umsobomvu Youth Fund [<http://www.uvf.org.za/>] and the Nations Trust [<http://www.thenationstrust.org/>].

³⁴ See also Boosting small businesses on SouthAfrica.info.

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Product (GDP). To add to this one out of five units exported is created within the SMME sector.³⁵

The DTI facilitates many of the projects and the initiatives surrounding the development of SMMEs in conjunction with associated partners such as the Centre for Small Business Promotion (CSBP), Ntsika Enterprise Promotion Agency and Khula Enterprise Finance. The CSBP aims to implement and administer the aims of the national strategy of which job creation forms a part. The European Union (EU) agreed to donate approximately R550 million to help start a risk capital fund specifically for SMMEs. The fund is administered by the Industrial Development Corporation (IDC) and the European Investment Bank and an estimated 90 enterprises stand to benefit from the donation.

The DTI houses an online initiative known as the Business Referral and Information Network (BRAIN), which offers basic services and information to entrepreneurs. The website includes information about SMME support agencies as well as information and links to business centres across South Africa. The DTI also has a support project together with the Council for Scientific and Industrial Research (CSIR), and the National Coordinating Office for manufacturing Advisory Centres (Namac) known as FRAIN. The Franchise Advice and Information Network (FRAIN) aim to support and offer services to individuals and SMMEs to ensure stability and growth in franchise businesses across South Africa.

There are also initiatives that have been driven by private sector such as the collaboration of ForgeAhead and Ntsika.³⁶ In partnership with **the dti**, DOC, HP, EDS, the Isett Seta, Innovation Hub, and the British National Council the group aimed to:

“Coordinate and facilitate access to relevant SMME initiatives to improve the status of and ensure the profitability of ICT SMMEs” (Jane Mosebi, 2002)

In short, the objectives of the process was to create market access and business development support through activities such as networking forums, research/market intelligence, international and local business linkages, tender bidding advice, road shows, skills development, and access to finances. It is important to note that the project never reached completion, but not due to a lack of commitment from stakeholders and clients, but rather due to the massive amount of capital that was required to see the project through to maturity.³⁷

The initiatives and projects attempted by industry stakeholders need major financial backing, and unfortunately there is not that much money available to the cause. Without financial aid it is very difficult for an SMME to find their feet in the market and become an established sustainable business. This results in a classical catch 22 situation for both parties: no funds no growth, no growth no funds. It is an unfortunate situation for both industry and government but the potential is there. It is up to the stakeholders to find away around the problems and drive the process of SMME development through to completion. The success of the projects cannot be measured by the amount of start-up businesses at any given time, but rather the amount of sustainable businesses that have been created.

³⁵ See also Boosting small businesses on SouthAfrica.info.

³⁶ See Part 3 Point 2.6.

³⁷ See Part 3 Point 2.6.

Key Findings

The initiatives taken by industry in this regard are the development of the ICT Empowerment Charter. The charter aims to level the inequalities of the past and helps generate the development of HDIs and to generate the growth of these people in the sector. Industry is also focussing heavily on the creation of SMMEs within the sector, which will spur economic growth and development.

3.1.7 The South African Government

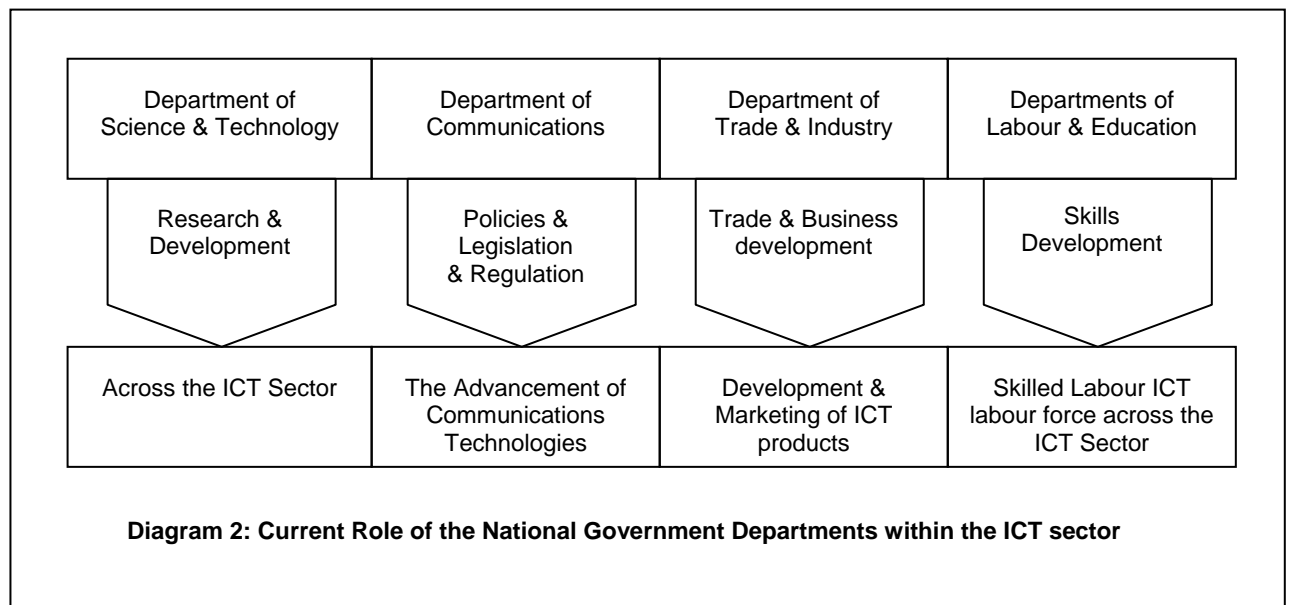
National Government

Currently various National Government Departments are active within the ICT sector. These departments have created a fragmented strategy towards the development of the ICT sector, which results in a direct impact on the job market within the ICT sector.

The national departments that influence and develop the ICT sector are currently:

- Department of Science & Technology (DST)³⁸
- Department of Communications (DoC)
- Department of Trade & Industry (**the dti**)
- Department of Education (DoE)
- Department of Labour (DoL)

The following diagram explains the roles the different national departments play within the ICT sector.



Please Note:

- Although the main task of skills development falls within the environment of the departments of Labour & Education various initiatives are undertaken within the other shown departments to develop specific skills. This has led to duplication of skills development in certain areas and

³⁸ Originally part of the Department of Arts, Culture, Science & Technology the DST was formed in 2003 to create a focussed department on Science & Technology.

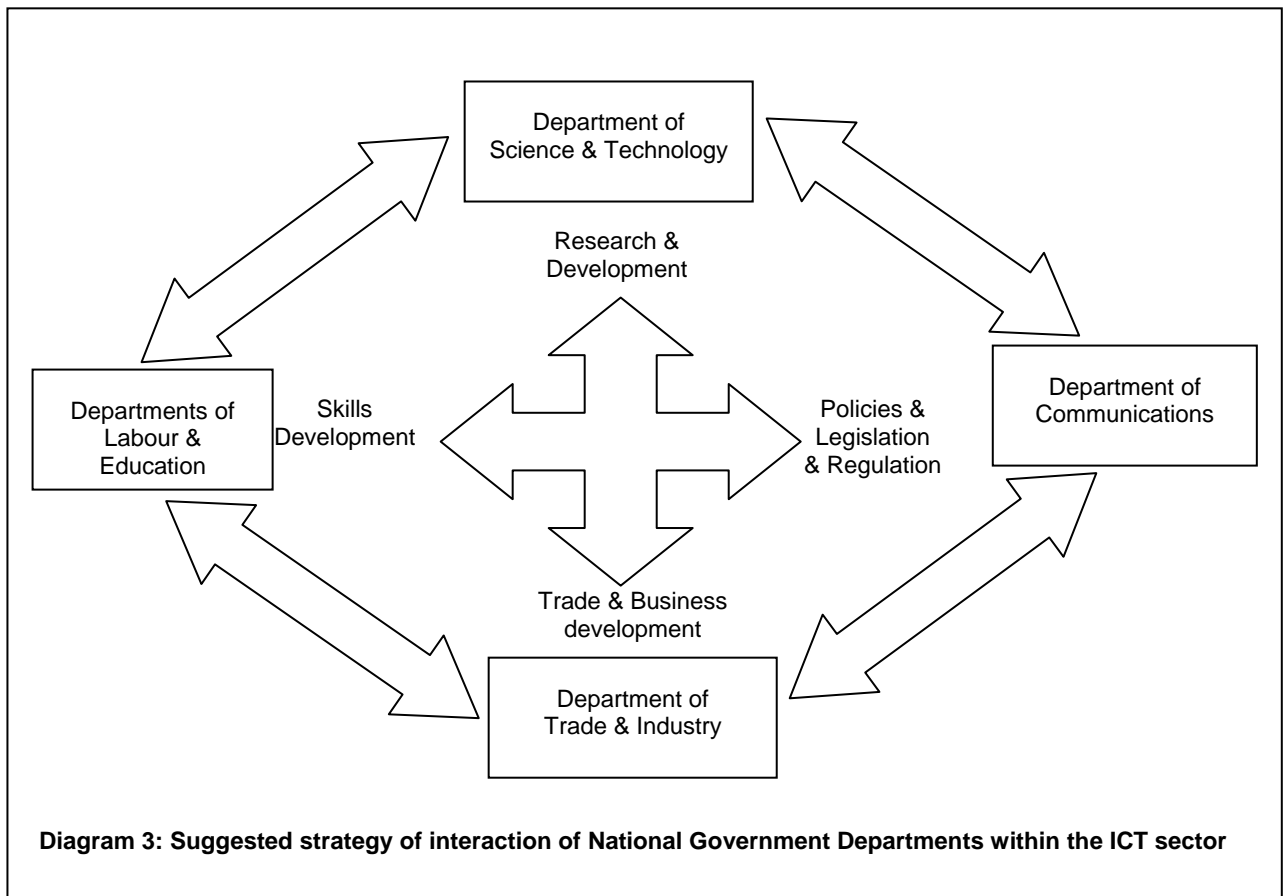
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exclusion of other skills (for example Business Management, Labour Relations and Marketing Skills).

- The current structure has created a cluster outlook with barriers between the different Government Departments and also created duplication processes in development of the ICT sector and so-called turf wars in relation to who "owns" the specific ICT sector.
- The various departments are structured to focus on their primary tasks, currently this has led to a fragmented approach to development and job creation within the ICT sector

To enable development within the ICT sector and co-ordinate efforts create a co-ordinated effort for job creation, a suggested strategy for the alignment of National Government Departments was developed. It can be explained as follows:



Please Note:

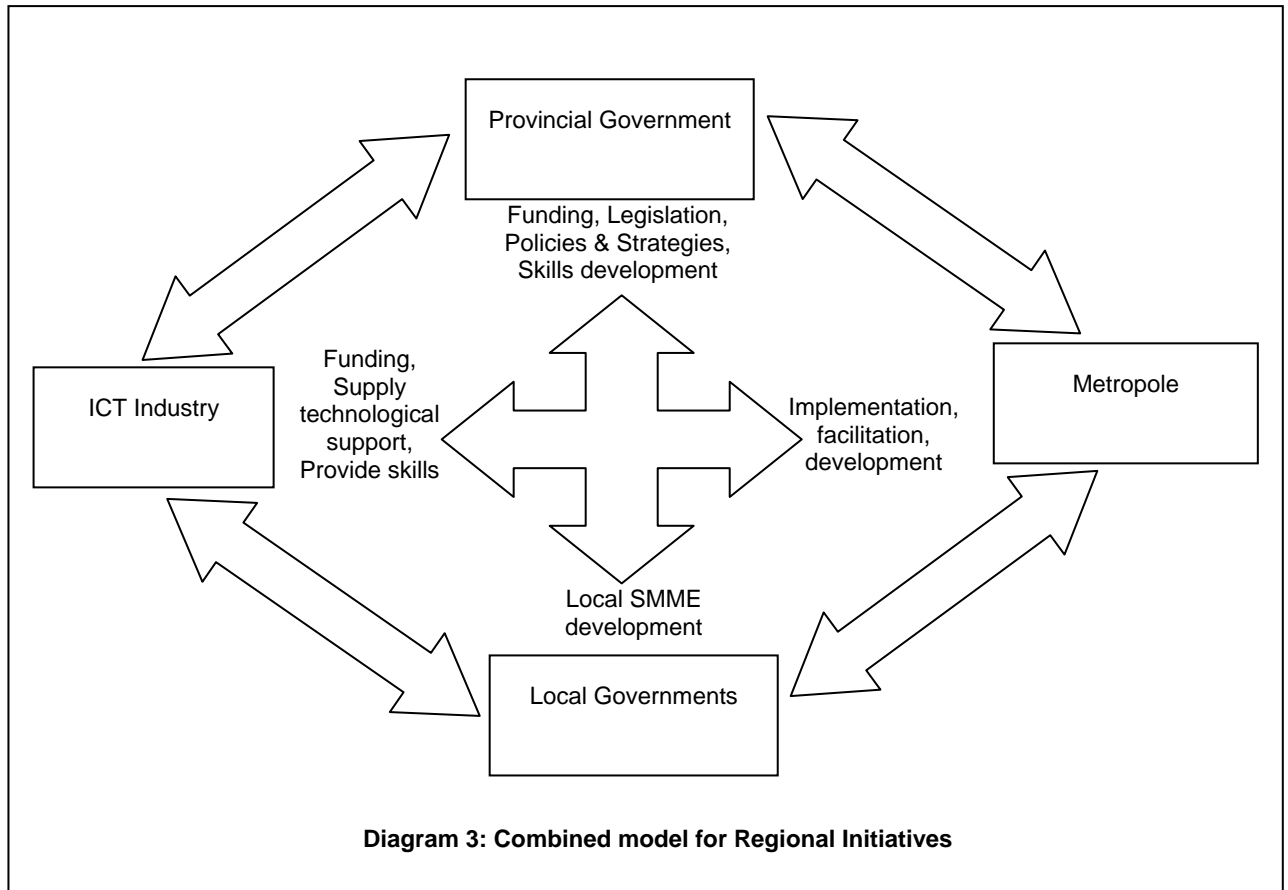
- This diagram must be seen as a ball where all the different departments interact with every department and ensures that issues relating to the core focus of the specific department are managed by the specific department.
- It shows how this type of interaction will have a direct influence on other sections – for example if a policy change is implemented and properly managed by the DoC this will have an effect on skills that are needed but it will also change the Research & Development strategies.
- The proposed structure is clustering the main focus areas of each department at a proper position to ensure that no duplication will happen in the future. This proposal aligns with the current strategy of the ICT roadmap that integrates and documents all current ICT developments and strategies.
- For a national vision and strategy to be successful greater effort must be done to integrate the various government institutions' ICT development – this would mean that the focus of some of the departments need to expand their focus to include the broad ICT sector.

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Provincial Government

The South African sector is not only established in one area, and the development of ICT clusters in different regions have complicated efforts to develop the sector and to co-ordinate efforts relating to Job Creation. The following diagram illustrates a strategy for the ICT clusters and can be used within all the provinces to develop their own ICT sector and co-ordinate job creation plans.



Please Note:

- A proper interaction between the various government organisations, structures and private sector must be created where the core functions of each of these organisations must be used to implement and sustain development within the ICT sector.
- The current models that are developing look at development and the view within regions are to focus on the strengths within that region to develop a regional-specific ICT sector.
- From developing a sustainable ICT sector in that region jobs will be generated. It has been noted that currently the focus is rather to look at proper skills development and business development that will generate economic growth.
- The regional models need to align with National initiatives through means of funding and access to information.

More than ever before, ICTs are seen as key to service delivery within the government environment. Local Governments face tough regulations regarding service delivery and corporate governance.³⁹ Research conducted in the use of ICTs

³⁹ See The Municipal Finance Management Act 2003

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in Local Governments has shown that the major obstacle for the implementation of ICTs is the lack of skilled labour. In many cases Local governments are using people with basic knowledge to run their IT departments because due to the reasons that they do not have access to any no other persons in their areas.⁴⁰ Amongst the functions of Local Governments is Local Economic Development (LED).⁴¹ These plans must look at development of SMMEs. In many cases the Local Governments do not see the potential of ICT SMMEs as contributors towards their local economies.

Government Agencies

Various government agencies are also involved with the ICT sector and are directly or indirectly influencing this sector. The following are the main players within the sector:

- Council for Scientific and Industrial Research (CSIR) – Various divisions and departments concentrate on the development of technologies and products.⁴²
- The National Research Foundation (NRF) contributes to various R&D projects throughout South Africa. This foundation is a major provider of funds for research projects within tertiary institutions.⁴³
- The Human Science Research Council (HSRC) focuses on the development of the society and the preservation of cultures. Through various research programmes the focus is on the sociological impact various developments (for example ICTs) have on society. Some of the research focuses on the human interaction with ICTs and what effect it has on society.⁴⁴
- State Information Technology Agency (SITA) is the main agency mandated to provide the ICT infrastructure to the various government structures. They have recently developed a Youth Internship Programme to develop properly skilled staff.⁴⁵
- Isett Seta is the SETA for the ICT sector and provides funding and training programmes. This SETA have various collaborative projects with industry as well as different government departments mainly DoL and DoC. Currently the focus of this SETA is skills development within the ICT sector.⁴⁶. Currently this SETA is

⁴⁰ See Reports 1-5 by Venter et al 2004.

⁴¹ For further information see DPLG [<http://www.dplg.gov.za>]

⁴² For further information see <http://www.csir.co.za>

⁴³ For further information see <http://www.nrf.ac.za>

⁴⁴ For further information see <http://www.hsrc.ac.za/>.

⁴⁵ The Youth Internship Programme is funded from "outside" the ICT sector departments namely DPSA and the Public Sector Seta. For further information on the YIP see <http://www.sita.co.za/internship/Default.htm>. For general information on SITA see <http://www.sita.co.za>.

⁴⁶ The Isett Seta does not focus on ICT skills development within other sectors and sees its main task to develop skills within the ICT sector *per se*. This view has caused various problems relating to the developing of ICT skills in other sectors. For further information see <http://www.isett.org.za>.

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conducting a skills gap analysis within the ICT sector to understand the skills required to develop the ICT sector.⁴⁷

- The Presidential National Commission on Information Society and Development (PNC on ISAD) was established by the Presidency and was formed to create a consulting council for various departments and the President relating to the use and implementation of ICTs. The mandate of the PNC on ISAD was to advise on ICTs, investigate ICT strategies and recommend the proper co-ordination structure for ICT development.⁴⁸

Key Findings

Government has a fragmented approach to the development of the ICT sector and does not focus enough on its potential to absorb ICT skilled labour into its IT functions. The core focus of government must be the following:

- To streamline the interaction between the different departments to co-ordinate ICT strategies and policies.
- To become an alternative point of access for ICT skilled workers to gain employment as well as experience.
- To create formalised partnerships with the ICT industry to establish environments for the development of the ICT sector as well as to absorb current ICT workers.

Various structures do exist within government that must formally "side" with the ICT sector and become the ICT sectors vehicles for job creation and growth. These structures often work against each other and the ICT industry and a formal structure and an agreement must be reached to encourage co-operation and greater interaction.

The immense potential of the various levels of government levels as job creation vehicles have not been reached.

3.1.8 The Status of the Market***The Labour Market***

According to the Labour Force Survey (LFS) of 2003, it is estimated that somewhere between 11,395,000 and 11,849,000 people are currently employed in South Africa.⁴⁹ According to current statistics there is an estimated 29.9 million people between the ages 15-65 years. 16.2 million are seen as being able to be economically active. Of this number 4.6 million are unemployed. 13.7 million are not economically active (5.3 million were scholars; 1.3 million was disabled).

⁴⁷ Similar research was conducted by **the dti** through SAITIS and analysed the current skills required. Further research conducted for the ICT Roadmap has also addressed the same topic.

⁴⁸ This Commission unfortunately only reported to the President and most of its recommendations and initiatives have been ignored by the other departments. As champion for the development of the South African ICT sector this commission failed to be an integrated and holistic driver. For further information see <http://www.pnc.gov.za>.

⁴⁹ The status as in September 2003.

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Various factors influence the employment rate in South Africa. Some see Globalisation as a negative influence, whilst others see it as a positive development. Recent data shows that globalisation does have a negative influence on home grown industries due to the relaxation on importations that results in job loss within the South African "born" companies, but has resulted in higher employment within those exporting services and goods.⁵⁰

Labour Market Trends in September 2003 (official definition of Unemployment)				
		Lower Limit ('000)	Estimate ('000)	Upper Limit ('000)
a	Total employed	11 395	11 622	11 849
b	Total unemployed (official definition)	4 369	4 570	4 771
c	Total economically active = a+b	15 878	16 192	16 506
d	Total not economically active	13 394	13 725	14 055
e	Total aged 15-65 years = c+d	29 406	29 917	30 429
f	Official unemployment rate = $b*100/c$	27,3%	28,2%	29,2%
g	Labour force participation rate = $c*100/e$	53,4%	54,1%	54,8%
h	Labour absorption rate = $a*100/e$	38,1%	38,8%	39,6%

Source: LFS 2003

Changes in the global market also impact the South African market. These trends can be seen with ICT workers with the apex of employment being in 1999 and 2000. In 2000 81,573 ICT Workers were employed. A rapid decline was experienced after 2000 with current estimates showing that approximately 59,000 ICT Workers are employed.⁵¹

The current trends in employment of ICT workers are different depending on the services that can be provided and in which economic sector these workers are employed. Data indicates an uneven distribution of ICT Workers across all economic sectors. It is also noteworthy that in those sub-sectors whose core business is not IT-based workers will have contracts rather than permanent employment. Current employment trends also see better skilled workers are needed. This trend is mostly due to South African companies aiming to become more competitive, streamlining their business processes and adopting advanced ICT systems as part of their business processes.⁵²

Data indicates that the retrenchment of staff within companies with a South African market focus is high but that absorption of staff within companies with a South African-International market focus is also high. The data is unclear whether new jobs are created or if one only sees the movement of jobs from one place to another. The

⁵⁰ See Pretorius & Blaauw 2003.

⁵¹ See Moleke, Paterson & Roodt 2003.

⁵² See Pretorius & Blaauw 2003 and Moleke, Paterson & Roodt 2003.

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current status of a relative low labour absorption rate (approximately 38%) shows that even within the ICT sector job creation possibilities are still low.⁵³

Export in Dynamic Goods

The following indicators are used to show the influence of the global market on the South African sector. The focus is on dynamic products and the market share of South Africa.⁵⁴

Rank	SITC4	Products	Market share	SA rank i.t.o. share
34	7611	Television receivers, colour	0.091%	21
20	7522	Complete digital data processing machines	0.018%	36
1	7764	Electronic microcircuits	0.009%	38

Source: TIPS March 2004

According to Dirk van Seventer from TIPS and Katherine Gibson from the Competition Commission, South Africa has a very low presence in the global market relating to dynamic goods especially in ICTs but the country is showing rapid growth and will continue to do so.⁵⁵

The following table shows ICT related dynamic products in world exports and shows South African ranking according to change in the market share (=1985-2000).

Rank	SITC4	Products	Developing country share	SA Market share	SA Rank i.t.o. share	SA Export growth 92-00	SA Export growth 97-00
1	7764	Electronic microcircuits	57.6%	0.009%	38	27.7%	53.3%
3	7524	Digital central storage units, separately consigned	43.3%	0.007%	39	18.2%	16.0%
4	7643	Radiotelegraphic radiotelephonic transmitters %	39.9%	0.199%	9	32.6%	41.4%
7	7641	Elect. Line telephonic & telegraphic apparatus	25.4%	0.081%	22	5.6%	2.0%
8	7523	Complete digital central processing units	16.5%	0.023%	33	19.8%	4.4%
9	7721	Elect. App. – switches, relays, fuses, plugs etc	26.6%	0.101%	19	6.7%	-4.8%

⁵³ See LBS 2003.

⁵⁴ These statistics are based on Van Seventer & Gibson 2004, Hanival 2004 and Zalk 2004.

⁵⁵ Van Seventer & Gibson 2004

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10	7788	Other elect. Machinery and equipment	33.6%	0.109%	18	16.3%	-0.5%
14	7525	Peripheral units, incl. control %adapting units	52.4%	0.012%	37	6.6%	-13.6%
15	7712	Other electric power machinery, parts of 771--	38.5%	0.048%	27	10%	-9.7%
16	7731	Insulated, elect. Wire, cable, bars, strip and the like	49%	0.210%	8	22.8%	9.6%
20	7522	Complete digital data processing machines	69.7%	0.018%	36	-7%	-0.1%
24	7763	Diodes, transistors and sim.semi-conductor devices.	52.9%	0.029%	30	37%	86.5%
27	8983	Gramophone records and sim.sound recordings	27.2%	0.026%	32	0.9%	4.9%
31	7284	Mach.&appliances for specialised particular ind.	15.6%	0.144%	12	11.1%	-6.8%
34	7611	Television receivers, colour	71.8%	0.091%	21	47.5%	21.2%

Source: TIPS March 2004

The trends that can be identified regarding global trade are the following:⁵⁶

- Developed countries still have high levels of gain in global trade.
- Developing countries differ widely in export performance

According to Nimrod Zalk at **the dti**, the world economy shows that consumers are demanding more sophisticated products. The South African ICT sector therefore needs to look at this trend. Higher competition can be expected from other countries relating to the shifts in the use of ICT systems and problems relating to up-skilling unskilled labour.⁵⁷ It is of further note that Trans-National Corporations (TNC's) originating from developed countries still controls global production. Stephen Hanival cautions the South African industries that South Africa is losing its market share in general although the economy is showing growth internally.⁵⁸

According to Nimrod Zalk these trends have the following policy implications for South Africa:

- A systematic examination of the South African industrial structure is needed to establish why certain products sustain their growth and other fail.
- An analysis of the South African approach to industrialisation that proceed in a linear fashion from resource based through increasing levels of value addition
- South Africa do not need to master the whole production process but can focus on strengths within the production cycle.
- Strength lies in service outsourcing.

⁵⁶ See Zalk 2004.

⁵⁷ See Zalk 2004.

⁵⁸ See Hanival 2004.

Status of SMMEs

The South African economy can be classified as "a classic middle income economy with high levels of inequality and poverty, but moreover as a dualistic economy – with high and low productivity sectors."⁵⁹ According to Rashad Cassim SMMEs contribute 25% towards the South African economy. The labour market is currently still too fragmented with different levels of skills and productivity that has a negative effect on SMMEs. Regional and sectoral cluster developments must be encouraged because this will have a positive effect on development and give SMMEs more growth space. Reg Rumney noted that the government's BEE policy must move away from the direct equity position to that of alternative means of distributing wealth because this will give more stimulation for growth of SMMEs.⁶⁰

The *status quo* view that SMMEs are contributing towards job creation is currently re-evaluated. Economic indicators show that SMMEs do contribute to half of employment in South Africa but that these numbers are constantly changing due to the unstable market conditions. SMMEs are especially vulnerable to changes and economic downturns and need more support from government and bigger companies to gain access to markets and sustainable contracts.⁶¹ These changes have a direct effect on the employment numbers.

3.3 Current Research

Various research reports were accessed to form the views as expressed within this report. The following section will give a brief overview of some of the more important research that had been conducted in recent years and to get a general overview of the recommendations contained within.

3.3.1 SAITIS

The South African Information Technology Industry Strategy (SAITIS) project was conducted from 1996 to 2002 and looked various sub-sectors within the ICT sector. Three main areas of concern were identified by the studies.⁶²

- Lack of appropriate skills base for IT sector.
- Need for accelerated liberalisation of the telecommunications sector.
- Need for stronger entrepreneurial base for the IT industry.

Four areas for development were identified:

- Enhancing Competitiveness
- Creation of an enabling environment

⁵⁹ Cassim et al 2004.

⁶⁰ Cassim et al 2004.

⁶¹ See Boosting small businesses 2004, Pretorius & Blaauw 2003 and Nwogbo 2004.

⁶² See the individual reports for more specific findings – SAITIS: ICT Cluster Development 2002; SAITIS: Black & Women ICT SMME Skills & Enterprise Development 2002; SAITIS: A survey of the IT Industry and related jobs and skills in South Africa 2000; SAITIS: ICT Diffusion and ICT Applications in Usage Sectors 2002; SAITIS: ICT Innovation Fund 2002; SAITIS: ICT Sector Portal; SAITIS: Youth Internship Incentive Programme 2002; SAITIS: Review of Policies Impacting the ICT Sector 2002; SAITIS: Reskilling of Retrenched Workers in ICT 2002; SAITIS: An Assessment of the ICT Labour Market 2002.

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- Proper human resource development strategy is needed
- The creation of a South African Information Society

Many of the recommendations of the report focussed on the internal problems relating to unskilled labour, low productiveness and the lack of entrepreneurship. Some key recommendations were:

- Create incentives for the private sector to invest in retraining staff.
- Establish co-ordinated structures to support SMME development specifically in the IT sector
- Stronger co-ordination between government, the IT industry, industry associations and other stakeholders
- A strong and unified national strategy for the development of the ICT sector
- Develop a strategy to identify potential sources of skilled labour
- The creation of mechanisms that links Government, Industry and society
- Need to develop innovative solutions to increase the visibility of ICTs

3.3.2 the dti Sector Reports⁶³

The sector reports focussed on the diffusion and use of ICTs in other sectors. These reports aim to establish an understanding of the use of ICTs outside the ICT sector and provide valuable input relating to development areas for the ICT sector to focus on and where possible, markets still need to be developed or captured.

This research programme analysed the following sectors:

- Platinum Mining
- Automotive Manufacturing
- Clothing Manufacturing
- Deciduous Fruit Farming
- Cultural Tourism
- Health Information Flows
- Biotechnology
- Multimedia

Within each report key factors and issues on ICTs were identified. The main findings of these reports were the following⁶⁴:

- Cost, availability and reliability of Telecommunications are inhibiting the use and implementation of ICTs.
- Training support and incentives are needed for the development of skilled ICT labour. Training need to be multi-disciplined and must include business skills as well as required ICT skills.
- An awareness campaign is needed amongst the sectors to inform them about the benefits for the use of ICTs.

⁶³ *Although the following research projects did not focus on jobs or job creation some of the conclusions relates to the development of the ICT sector which will have a direct influence on skills requirements and the labour marker.*

⁶⁴ See **the dti** Sector Report on ICT Diffusion and Applications: Overview and Synthesis of Main Findings 2002.

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- ICTs are implemented to enhance communication and create better flow of information and to create common business standards regarding the form of data that is transferred.
- There are no proper ICT quality control standards for implementation of ICTs within a business environment.
- There must be a greater effort for the ICT sector to interact with the other sectors.
- The costs of ICT solutions are still too high.
- Government need to support the efforts to adapt ICTs as part of the business processes within these sectors and therefore need to develop an incentive scheme.

These reports included different actions that the ICT sector, other sectors and the Government need to undertake to enable better diffusion of ICTs within the other sectors.⁶⁵ Some of the actions that still need to be addressed since publication of the reports are the following:

- Expedite liberalisation of the Telecommunications Industry⁶⁶
- Better co-ordination of ICT training across the SETAs mandates
- The implementation proper incentive schemes
- The creation of common standards across the ICT sector

3.3.3 ICT Roadmap⁶⁷

Since 2003 DST has implemented the ICT Roadmap Strategy. This strategy is created to integrate the various initiatives relating to the ICT sector. This process has similarities to that of the SAITIS and **the dti** Sector reports. The difference in this process is that it includes most of the stakeholders from Academia, Government, Private Sector and Civil Society. The aim of the process is to create a roadmap for the development of the ICT sector. This process will be finalised by 2004 beginning of 2005. Currently the focus is on 5 areas within the ICT sector that could identify possible markets and skills development. The 5 areas are:

- Futureweb applications
- GIS
- Human-Computer Interface
- High Performance Computing
- Wireless & Satellite Technologies

⁶⁵ For more information see the separate reports on each sector: **the dti** Sector Report on ICT Diffusion and Applications: Automotive Sector 2002; **the dti** Sector Report on ICT Diffusion and Applications: Biotechnology Sector 2002; **the dti** Sector Report on ICT Diffusion and Applications: Clothing Sector 2002; **the dti** Sector Report on ICT Diffusion and Applications: Deciduous Fruit Sector 2002; **the dti** Sector Report on ICT Diffusion and Applications: Health Information Flows Sector 2002; **the dti** Sector Report on ICT Diffusion and Applications: Platinum Mining Sector 2002; **the dti** Sector Report on ICT Diffusion and Applications: Cultural Tourism Sector 2002.

⁶⁶ This is addressed in Ivy Matsepe-Casaburri's speech dating 2 September 2004

⁶⁷ For further information see <http://www.ictroadmap.co.za>.

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The basic results of these studies relate to that of the findings of **the dti** sector reports:⁶⁸ The key barriers identified are the following:

- Government's fragmented approach to the development of ICTs
- Telecommunications infrastructure inhibits growth
- No clear champion driving the development of the ICT sector
- Lack of proper skills for the development of advanced technologies
- ICT sector and its associations creates a fragmented environment for developing ICTs
- Telecommunications regulations are currently inhibiting growth within the ICT sector.
- Fragmented interaction between Industry and research environments for the development of new technologies.

3.3.4 Key Findings

The efforts of projects such as SAITIS, **the dti** Sector Reports, and the ICT roadmap all aim at identifying and understanding the role of ICTs within the sector and across other sectors. The conclusions of the reports (excluding the ICT roadmap)⁶⁹ are basically aimed at liberalising the ICT sector so that it allows for innovation and expansion by granting cost effective and accessible ICT infrastructure and services. The reports identify how ICTs operate and fit into the economy and industries of South Africa. The findings all relate to issues that can only be taken advantage of if the ICT sector is liberalised. September 2004 saw the policy announcements from the Ministry of Communications allowing the liberalisation of the telecommunications sector.⁷⁰ Through the liberalisation of the sector the opportunity to develop and expand the current sector in South Africa can now be achieved and planned for. By incorporating the new freedoms within the telecommunications sector to policies and initiatives currently happening in South Africa⁷¹ giant steps can be made to create sustainable initiatives that will benefit the efforts of everyone in the sector.

⁶⁸ For more information relating to the key findings see the individual reports: ICT Roadmap: Technology Roadmap for Futureweb Applications 2003; ICT Roadmap: Technology Roadmap for Geo-Information Science 2003; ICT Roadmap: Technology Roadmap for Human-Computer Interface 2003; ICT Roadmap: Technology Roadmap for Wireless and Satellite Technologies 2003.

⁶⁹ The ICT Roadmap will only be completed towards the beginning of 2005

⁷⁰ See overview of Minister Matsepe-Casaburri's speech September 2, 2004

⁷¹ See also Part 2 Point 2.1-6.