



NEDLAC

**RESEARCH INTO THE ICT DEVELOPMENT
AGENCY, INSTITUTE OR MECHANISM**

**– FINAL REPORT –
EXECUTIVE SUMMARY**

December 2004

Prepared by:



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E1 OVERVIEW

This report is the culmination of a process started in 2002 during the NEDLAC ICT Sector Summit. At the end of the ICT Sector Summit an agreement was reached between all the delegates to create an Agency, Institute or Mechanism that could help develop the ICT sector.

ForgeAhead had been commissioned by NEDLAC through FRIDGE in 2004 to conduct research into developing an ICT development Agency, Institute or Mechanism. The aims of the research project were to:

- ∄ Understand the current status of research and information relating to the development of the ICT sector.
- ∄ Identify current initiatives, strategies and models that are currently used to develop the ICT sector
- ∄ Analyse International and South African examples of mechanisms, agencies and institutes that develop the ICT sector.
- ∄ Suggest possible strategies and models that could develop the South African ICT sector.
- ∄ Identify funding and governance models for the suggested models.

The results of this report must be read as guidelines for the establishment of such organisations and it aims at not duplicating past research or recommendations or re-creating current structures. The recommendations in the report build on these past developments and try to optimally use existing structures in an integrated and holistic way.

E1.1 General Views and Strategies

Across the board there is already many initiatives and strategies undertaken by public and private sector alike. The public sector through the involvement of **the dti**, the Department of Science and Technology, and the Department of Communications has established strategies for business establishment and development. There has been a major focus on the development of the ICT clusters in South Africa through the initiatives run by institutions such as BlueIQ in Gauteng, The Durban Institute of Technology in KwaZulu Natal, and the Cape IT Initiative in the Western Cape. The report looks at the various projects that run under the umbrella of these organisations as well as those of other privately funded organisations.

E1.2 Context of the project

The establishment of NEDLAC aimed to create social dialogue between Industry, Government and Labour movements. Since its inception various forums were 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 could contribute towards the development of South Africa.

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During the NEDLAC ICT Sector Summit an agreement was reached relating to the creation of two proposed structures. The two structures are as follows:

- € A development Agency that will focus on development factors of the ICT sector especially skills development, training and job creation. The focus of the Agency will be to assist employees (unemployed and employed).
- € An ICT Institute that will focus on understanding the ICT sector and the barriers it is experiencing and to develop strategies for job retention. The institute will develop the SMMEs of this sector and encourage more joint partnerships between SMMEs for projects and create a communication channel for identifying proper projects to work on.

The agreement stipulated that research needed to be conducted to inform various stakeholders on the current status relating to existing models and to understand what developments are currently taking place within the ICT sector. The research had to take into account the current international trends as well as South African initiatives.

The research would be conducted under the auspices of FRIDGE and would identify the current status of research relating to these structures as well as to identify possible structures that could be used as models. The recommendations of this research will be discussed and implemented at the next NEDLAC Summit.

E2. METHODOLOGY

E2.1 Approach

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

- € Desktop research and analysis
 - o To gain an understanding of the current initiatives and strategies that exist, a thorough analysis was made of all available information. Various reports, articles, and background information was sourced from different stakeholders. An analysis and review was conducted of the examples of various regional and country specific practices, projects and programmes. The various best practice examples were compared to identify the common denominators for developing different models of an ICT Development Agency and ICT Institute/Mechanism.
- € Literature Overviews
 - o Various published works are available and although most of them are general in their approach, it allows for the identification of different strategies, trends and views.

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€ Interviews

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

E2.2 Sampling

E2.2.1 International Studies

To develop strategies and models the research team investigated current initiatives of other countries. The aim of the research into these countries was not to analyse all aspects relating to the project but rather to focus on specific outstanding qualities that exist. This sample comprised out of countries with different social and economic status. The sample included the following countries:

- € United States of America – A review of the ICT mechanisms (for example incubators and accelerators) was made.
- € Egypt – An analysis of their ICT business development model through the Smart Village project was done.
- € India – Key elements of 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.
- € Malaysia – The focus was on the development "agents" that are involved in developing the ICT sector.
- € Chile – An analysis of the incubator programme established within a tertiary environment to develop ICT SMMEs was done.

E2.2.2 South African Studies

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

- € Government – The national departments DST, DoC, **the dti**, Labour, Education as well as regional initiatives by Provincial Governments (Western Cape & Gauteng).
- € Educational Institutions – Universities (Stellenbosch, Pretoria, Durban Institute of Technology).
- € National Organisations – CSIR, NRF, HSRC, Isett Seta, Open Source Centre.
- € Regional Initiatives – Innovation Hub and CITI.
- € Incubators/Mechanisms/Organisations – Various organisations were identified and the most relevant ones were analysed to identify key trends.

E3. STRUCTURE OF THE REPORT

This report is divided into 3 main parts:

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

E4. KEY FINDINGS FROM THE REPORT

E4.1 Roles & Functions of the Agency, Mechanism & Institute

The study suggested three (3) structures that would benefit and develop the ICT sector:

1. Agency: National ICT Council (NICTC)
2. Institute: Advanced Institute for ICT (AIICT)
3. Mechanism: Isett Seta

E4.1.1 Agency: National ICT Council (NICTC)

As suggested in the Alignment of the National Strategy, NICTC can be seen as the ideal agency that could drive the development of the ICT sector. It can function as a governing body for the ICT sector as well as for the stakeholders.

The Government members of the council will have executive powers relating to the initiatives in the departments they represent. They will manage and co-ordinate all initiatives within the departments that relate to the ICT sector. Through their co-ordination the government bodies (for example ICASA) will formulate and develop a regulation that affects the ICT sector. The council will also govern the Advanced ICT Institute as well as skills training through the Isett Seta. The Isett Seta will also provide skills training in ICTs for all other sectors that use ICTs. It will also have a direct influence on development and advancement within the ICT sector. The council will be an arbitrator relating to the ICT sector as well as a watchdog organisation ensuring that all the stakeholders deliver on their mandates. NICTC will have regulatory powers to streamline the various legislations that come from the Government Departments.

E4.1.2 Institute: Advanced Institute for ICT (AIICT)

The institution will not replace the current training facilities but will be an advanced institution that focuses on developing current graduates and developing advanced research. It will consist out of the best students from South African institutions. The faculty will be made up of experts in their fields that will have tenures within the Institute.

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The experts will be sourced from local institutions, centres of excellence that exist within various South African academic institutions, the industry, and international environments. It will have a strong R&D focus.

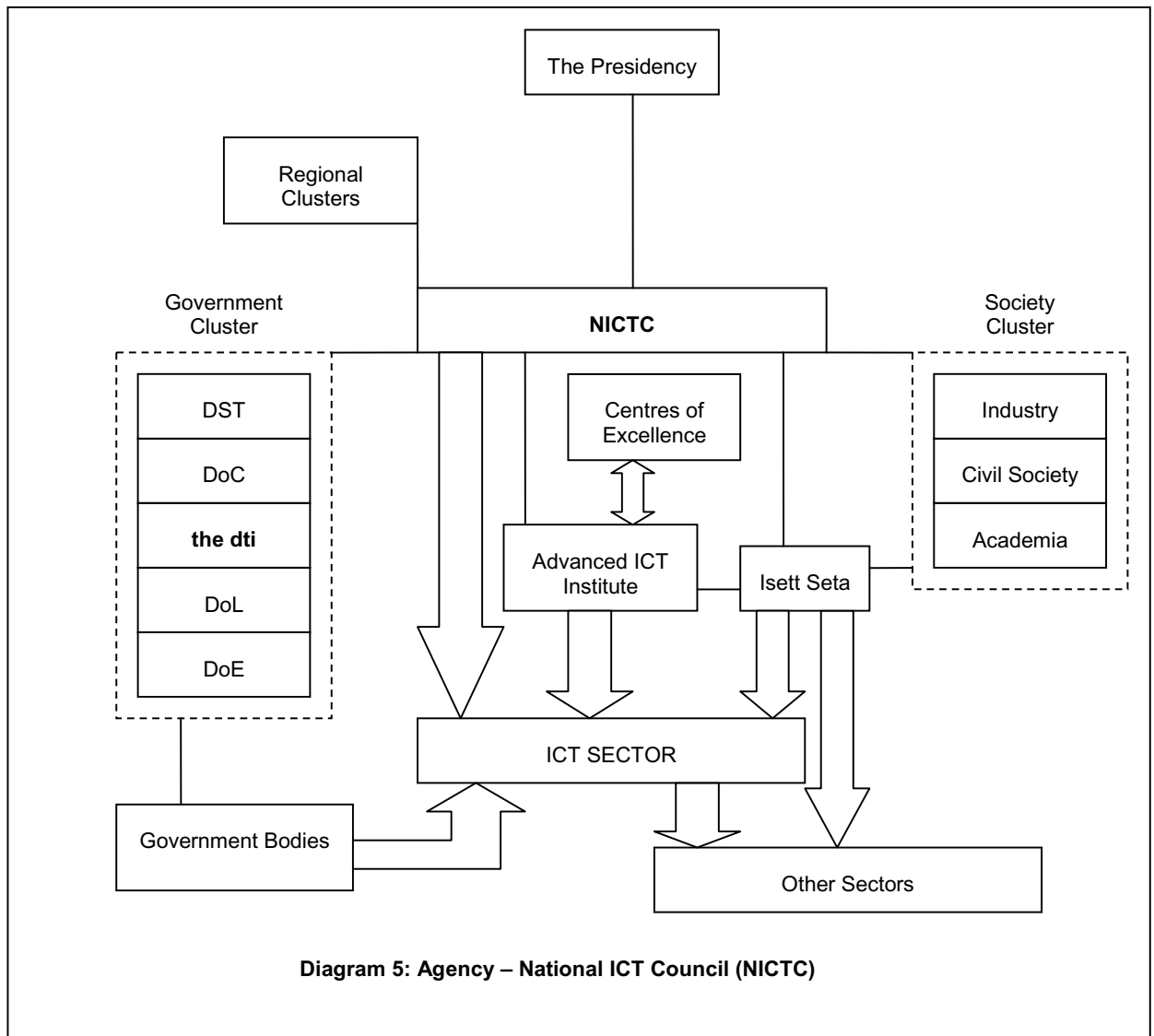
E4.1.3 Mechanism: Isett Seta

The proposed mechanism will focus on skills development, training, and job access processes. The current Isett Seta organisations already focus on the development of ICT skills within the ICT sector. The current structure needs to be expanded to include information on current jobs available in the market.

The Isett Seta will interact with all stakeholders in the ICT sector. It will focus on skills development and the creation of a skilled labour force. It will interact with training facilities to co-ordinate the development of proper curricula for ICT training. The Isett Seta will evaluate and standardise criteria for ICT skills training. The focus will not only be on the ICT sector but also to co-ordinate ICT skills training for all sectors.

E4.2 Outline of different forms & Governance structures

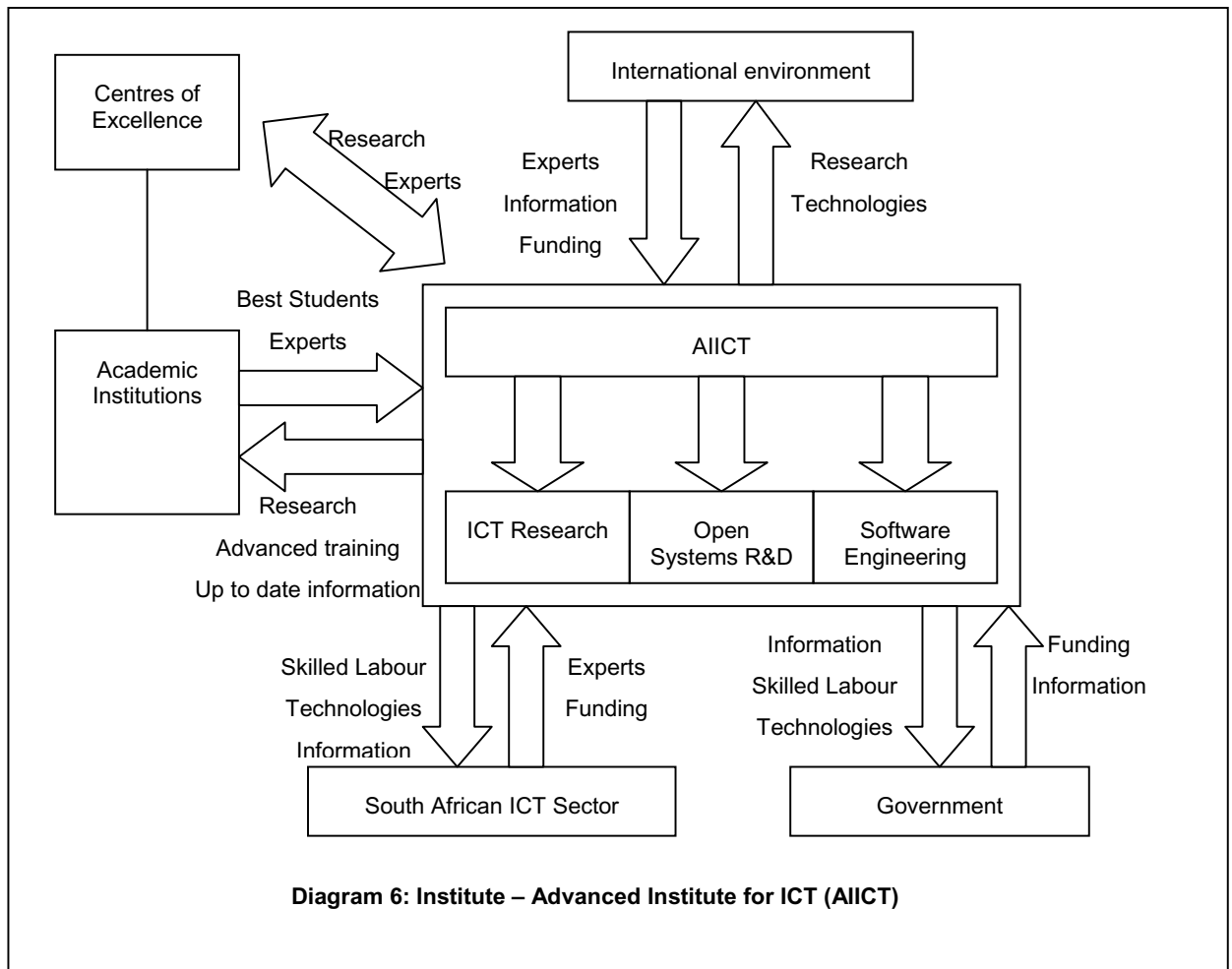
E4.2.1 Agency: National ICT Council (NICTC)



The Council Members: Will consist out of members from all the Government Departments with an influence on the ICT sector, Representatives from the Industry Associations, NGOs, and Academic environments.

Governance: Will report directly to the Presidency. Further reporting into the Government Cluster, Regional Cluster, and Society Cluster will be based on the sharing of information and advising. None of the clusters will have direct control over the functions of NICTC.

E4.2.2 Institute: Advanced Institute for ICT (AIICT)



Structure: The institute will be a University for ICTs and will provide post-graduate training (Masters, PhDs). It will consist out of 3 divisions:

- ≠ General ICT Research – focus on the development of research that could benefit the society which strongly focuses on the needs of the industry. This will include the development of hardware products.
- ≠ Open Systems R&D – focus on Open Source Software development and knowledge.
- ≠ Software Engineering – focus on development of application software and systems for use within society and for the global market.

Governance: Will be based on current Higher Education structures that consist out of an Institute Board with representatives from the various stakeholders (Academic institutions,

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Government, Industry and Civil Society). Final control of the Institute can be with a National Body as suggested with the NICTC.

E4.2.3 Mechanism: Isett Seta

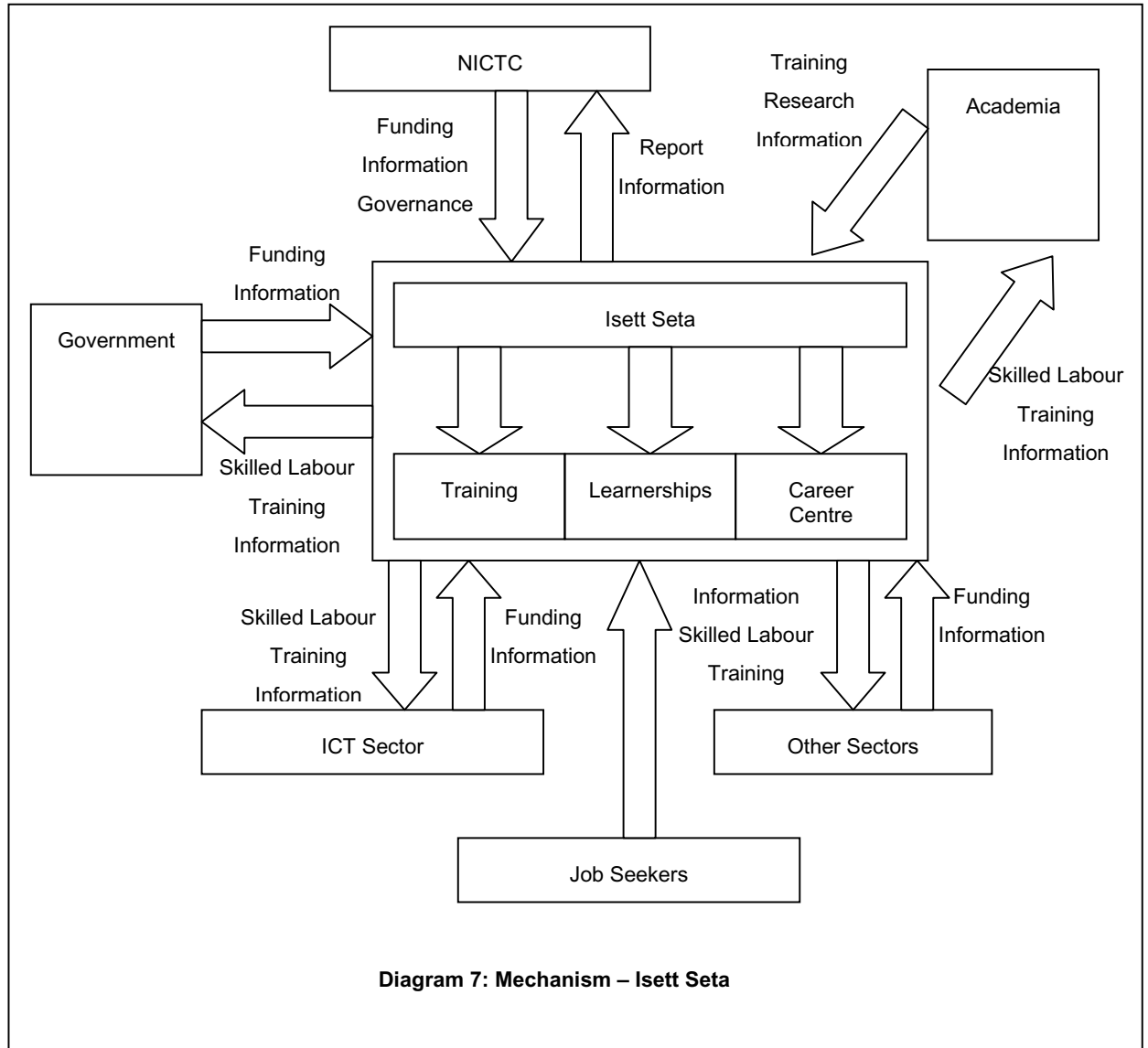


Diagram 7: Mechanism – Isett Seta

Structure: The structure will focus on 3 aspects:

- € *Training* – Providing training to Job seekers and facilitating and co-ordinating training of ICT skills. This division will interface with academia to develop proper curricula that will address the skills needs of industry.
- € *Learnerships* – Through the current Learnership programme skilled labour can be provided to the market.

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- € *Career Centre* – This centre will focus on gathering information regarding the current status of the ICT labour market and will co-ordinate the various initiatives for job placement. This centre will be accessible for industry, government, academia and job seekers and can receive up to date information relating to the job market.

Governance: Will report directly to the proposed NICTC. The Isett Seta will have a basic corporate structure.

E4.3 Possible funding mechanisms**E4.3.1 Agency: National ICT Council (NICTC)**

Funds can be re-allocated from the different departments to support staff and members of the council. Funds for advanced research would be taken from the current budgets of the government departments. Further funding will be generated from the current levies already paid by the ICT sector towards the Isett Seta. An incentive scheme for buy-in from industry can be developed to generate additional funds. Part of the taxes generated from industry can be directed towards the Council's R&D plans and to help fund the Institute. Fundraising through International donor organisations and other initiatives will provide adequate funds for administering and supporting research and development. Funding allocated by DoL for Learnerships can be distributed via NICTC.

E4.3.2 Institute: Advanced Institute for ICT (AICT)

Funds can be allocated from the existing research funds available. Further funding can be provided from the national subsidiary system through the DoE. Due to the nature of R&D, research and training can be combined into larger research projects and can be funded by the Innovation Fund and THRIP as well as the R&D funds specified within the DST and **the dti**. Various countries have shown interest in the development of this institute and are involved the consulting process. The countries with a close relationship with the South African in the R&D process are Germany, Finland and Sweden. Under the umbrella of Commonwealth organisations further funds can be obtained to develop the institute. Additional funds can be generated from the development of technologies and services as well as from International donors and the ICT sector.

E4.3.3 Mechanism: Isett Seta

Funds will be provided from the National Skills Fund as well as from levies paid by the industry. Further funds can be generated from services provided to stakeholders relating to information on the ICT labour market and through the registry of job seekers. Additional funds can be generated from the Industry as well as from International organisations. Currently international funds are available from multi-national organisations such as UNDP, World Bank and the European Union. These funds focus on the development of societies through the use of ICTs. They view the development of sustainable ICT sectors in every country as a means to create stable economies and communities.

E4.4 Current initiatives & strategies the proposed structures are build on

E4.4.1 Current Initiatives

Current models and mechanisms do exist within the South African environment but to a large extent. They function in smaller environments and do not access the entire ICT sector. Models that could be seen as an integrated are:

- ∄ The Innovation Hub and Science Park – Gauteng [Mechanism & Agency]
- ∄ Centre for eInnovation and CITI – Western Cape [Mechanism & Agency]
- ∄ Durban Institute for Technology, CSDTT and Technology Hub – KwaZulu-Natal [Mechanism, Agency & Institute]
- ∄ Advanced Institute for ICT – National Initiative [Institute]
- ∄ PNC on ISAD – National Initiative [Agency]
- ∄ Isett Seta – National Initiative [Agency]
- ∄ CSIR – National Initiative [Mechanism & Institute]
- ∄ NRF – National Initiative [Agency & Mechanism]

These models already exist and do have proper funding and governance structures. Due to the current misalignment of initiatives within the ICT sector most of the structures do not have the impact that they should have.

E4.4.2 Current Strategies

Looking at the current developments within the ICT sector the following strategies can be identified:

- ∄ National Initiatives for integrating and streamlining development within the ICT sector. The main strategies are:
 - ICT Roadmap
 - The National R&D Strategy
 - PNC on ISAD
 - **the dti** through CSIR, TISA and SMME development strategy
 - SABTIA
- ∄ Regional strategies are focussed on the development of clusters:
 - Western Cape through the Agency/Mechanism of CITI, Centre for eInnovation and City of Cape Town Metropole
 - Gauteng through Blue IQ and the Innovation Hub
 - KwaZulu-Natal through Durban Institute for Technology, CSDTT and eThekweni

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These strategies are focussed on aligning actions within the industry and between the different players within the sector.

E4.5 Cost estimates

The suggested models are built on existing structures of which current funding and budgets exist. The suggested models expand on the mandates of the current structures and should not have a large impact on costing. Cost estimates were not included as they will be obsolete in the context of current suggest structures.

E4.6 Benefits of proposed structures

E4.6.1 Agency: National ICT Council (NICTC)

This model streamlines the many efforts from the various clusters and creates a direct information channel due to members of all stakeholder groups. The Academic environment will be one of the major beneficiaries of such a structure due to the direct access of current developments and strategies that will influence the ICT sector. Academic institutions will be able to align their training curricula. A co-ordinated effort will have an effect on the current skills provision for the society cluster due to the direct control of the council. Skills training will be flexible and aligned with the developments of the ICT sector and see the bigger picture of the NICTC. The co-ordinated skills training for all sectors will ensure quality control and flexibility. The regional clusters will still have independence and a regional focus, but will benefit from this model by having direct access to information and the co-ordinated actions that the NICTC will undertake.

E4.3.2 Institute: Advanced Institute for ICT (AIICT)

A co-ordinated and aligned R&D programme will be implemented. A flexible environment will be created where experts from South Africa and the International environment can be used without tying them up in a permanent structure. The absorption rate of new trends and testing environments are more flexible within a centralised institution. An institute of this nature will ensure the co-ordination of research and provide direct access to current research nationally and internationally. It will enhance co-operation between academia and industry. Financially, such an approach will mean that current institutions can combine research projects through the Institute. The institute can provide properly skilled labour for the ICT sector and can rapidly respond to the changes within the market.

E4.3.3 Mechanism: Isett Seta

This model streamlines the many efforts relating to skills training and will create a standardised ICT skills training programme. Through this approach the ICT skills needed within the ICT sector as well as other sectors that rely on ICTs will be streamlined and standardised. This will prevent duplication and an oversupply of certain skills and a lack of other skills. The Isett Seta will also provide a value chain in developing skills, providing experience through learnerships, and placement within a permanent job

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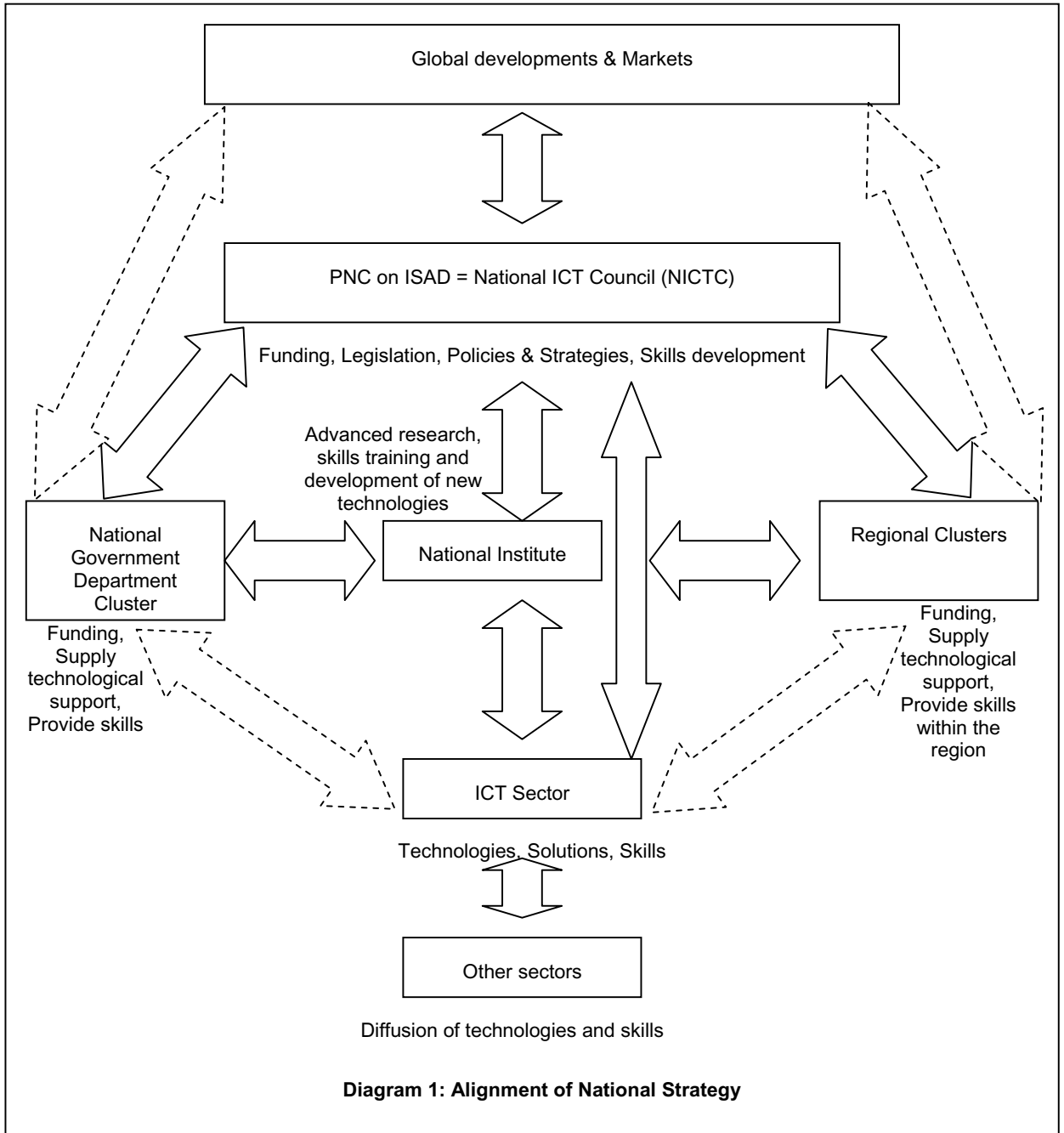
environment. This model creates a flexible resource and development centre where information can be kept updated.

E4.3.4 General Benefits

An Aligned National Strategy

These different structures will enable the ICT sector to develop in a co-ordinated and integrated fashion in the development of the ICT sector. The following diagram shows envisioned end results of an aligned National Strategy.

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The following must be noted:

- € The current organisation PNC on ISAD is already mandated to develop strategies and create a path for the ICT sector to travel. Its members are Industry, Civil Society, Academia and Government which provide it with a broad representation of all stakeholders that have an influence on the ICT Sector. This representation allows for this organisation to become an agency that could

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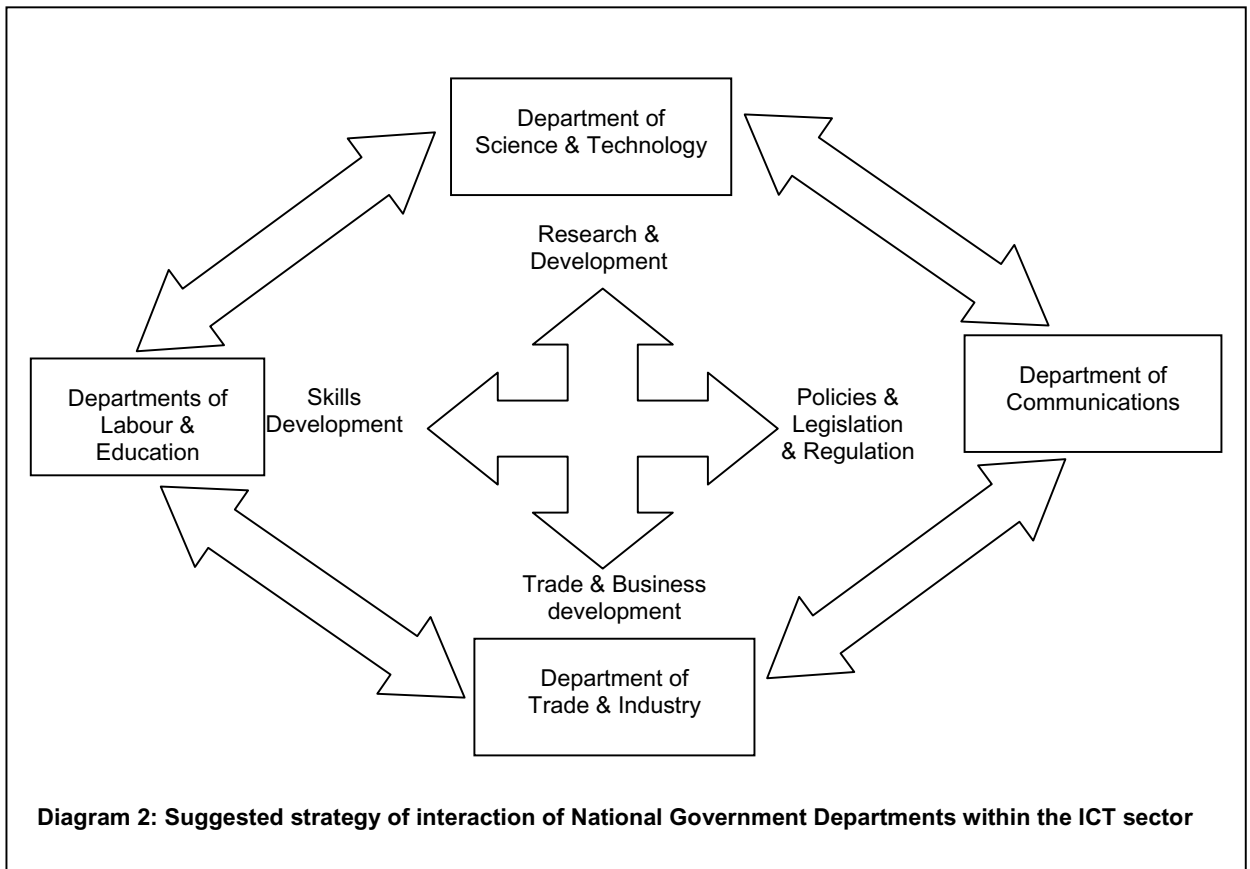
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provide funding, policies, strategies and "regulate" the industry. It can become a National ICT council that provides clear guidance to the individual groups that influence the sector but can coordinate the actions and prevents duplication. This Council will thus eliminate the so-called turf wars between departments and regional developments and become the "champion" for ICTs. The NICTC will directly interact with the ICT sector and will also manage the information between the regional ICT clusters and the government cluster.

- € Interaction with the global environment for new technologies, possible markets, and information will channel through the NICTC. This council will then distribute and supply the proper information to the relevant clusters and organisations eliminating duplication.
- € The National Government Cluster will be a combined effort of the different national departments taking the lead from the NICTC. The departments will focus on their mandates that relate to the ICT sector. Interaction and funding for projects will run through the NICTC. This cluster will interact with the ICT sector but will be restricted to specific projects and funding. Influencing and changing the ICT sector will be done through the NICTC.
- € The Regional Clusters will focus on the development of a proper ICT industry within their regions and will interact with National Departments through the NICTC. Interaction with the ICT sector will relate to the development of strategies and identifying the specific needs of the ICT industry within that region.
- € A national Institute for ICTs will be created and will focus on developing new technologies, developing advanced ICTs, conduct advanced research, and provide training. This institute will not replace the current tertiary institutes but will combine efforts and provide high level R&D.
- € The ICT sector will directly interact with the NICTC and with the Institute. The sector will interact with government departments directly and would follow the lead of the NICTC. The developments and strategies as devised by NICTC will be implemented through the ICT sector into the different sectors. This will create an environment for the ICT sector to better interact with the other sectors and be a direct influence on the diffusion of ICTs within those sectors.

Alignment of National Government Departments

The national approach is currently undergoing changes so that the approach will be able to integrate the various processes. The three (3) structures and the aligned National Strategy will influence the interaction of various government departments has on the ICT sector. The following diagram is a suggested strategy that will show a more integrated process of interaction and breaking down the current fragmented view:

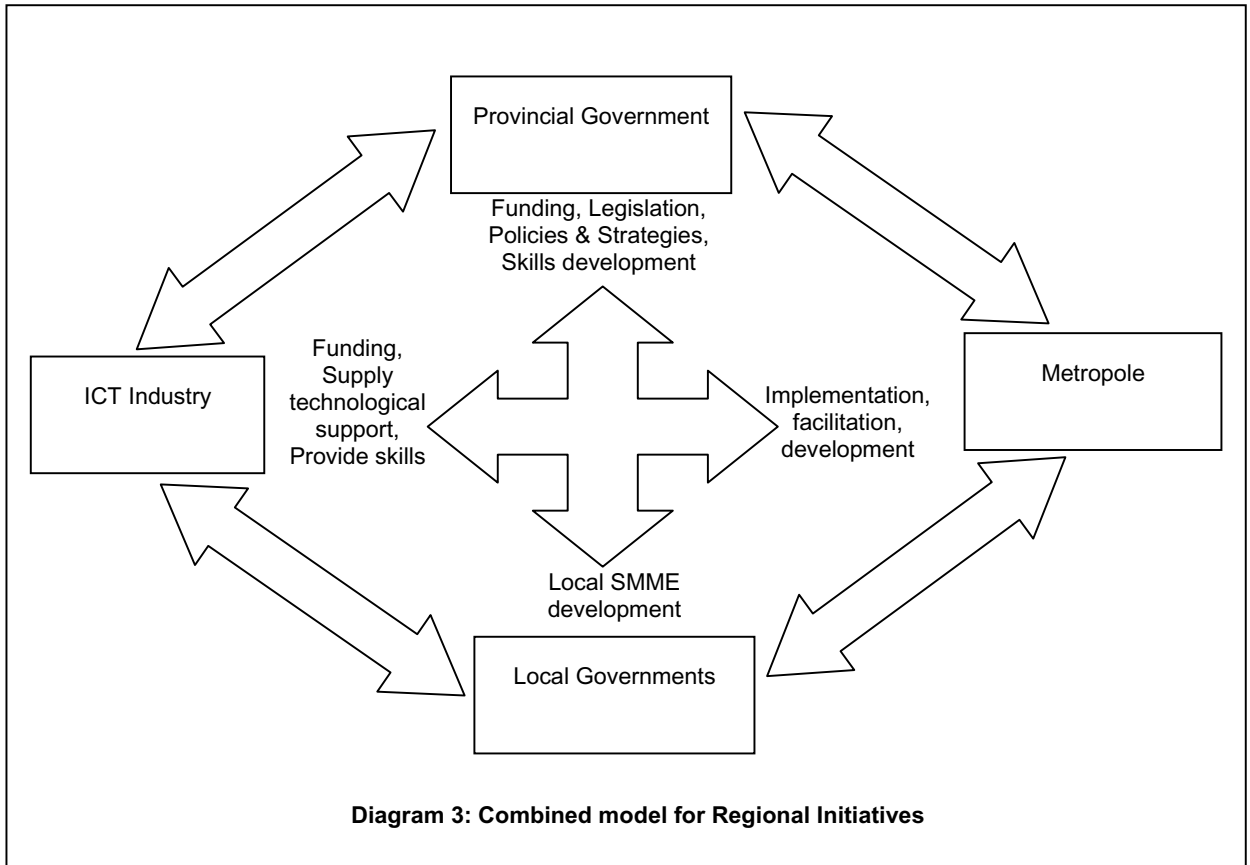


The following must be noted

- ∄ This diagram must be seen as a ball where all the different departments interact with every department. To ensure that issues relating to the core focus of the specific department is 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 Communications this will have an effect on the skills that are needed and will change the Research & Development strategies.
- ∄ 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 a focussed attempt must be made to integrate the various government institutions' for ICT development – this would mean that some of the departments would need to expand their focus to include the broad ICT sector.

Alignment of Regional Initiatives

Regional initiatives will also benefit from the development of the three (3) structures and will create a model for growth of ICT sectors within different regions.



The following must be noted:

- ∓ 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.
- ∓ Developing a sustainable ICT sector in a region will ensure jobs are generated. It has been noted that the current focus is looking 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.

E5. FURTHER VIEWS & OTHER FINDINGS FROM THE REPORT

E5.1 International Views

- ∓ Mechanisms that create sustainable development, funding possibilities and proper governance structures.
- ∓ Cross sector views and interaction between industry players – ways to create opportunities for industry to interact and develop holistic approaches that will enhance the development of the ICT sector.
- ∓ Development zones that give new enterprises the opportunity to develop their business.
- ∓ A unified government effort through one government department that drives the development of the ICT sector.
- ∓ Special incentives and government support that would enable growth and development.
- ∓ Strategic focus on specific sectors – the drivers behind the development of certain sectors that will give a competitive edge in the international ICT market.

E5.2 National Views

- ∓ Fragmented interactions within the Government environments which create obstacles for the development of the ICT sector.
- ∓ No aligned strategy between the Government departments that enable a smooth and holistic strategy for development.
- ∓ No proper champion that drives the ICT sector (most of the actions are independent or just involve certain departments). This approach leads to duplication in many instances and de-focused actions.
- ∓ Strategy development is linked too heavily with the mandates of a specific department and they are not integrated with the other strategies which have already been developed.
- ∓ National agencies are reporting to various "masters" and some of the strategies are not aligned with that of the departments to whom they should report.
- ∓ Currently strategies are implemented to re-align the various initiatives and to create a holistic strategy that includes all the various departments and agencies.

E5.3 The South African ICT Cluster Development

- ∓ The developments focus on the ICT sector within a region rather than on the ICT sector as a whole.
- ∓ The clusters are supported by Government as well as the industry.

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- ∄ There are currently "champions" driving the cluster developments. In KwaZulu-Natal the cluster development is driven by a recently established centre. In Gauteng and Western Cape organisations acting as agencies are spearheading the development.

E5.4 South African Incubators

- ∄ Previous fragmented approaches to incubation and development are currently being addressed through the establishment of SABTIA.
- ∄ The incubation approach has been successfully implemented across South Africa and has been producing various successful SMMEs.
- ∄ Through a combined effort more funds can be raised and allocated to organisations that need financial support.
- ∄ The current view is to eliminate duplication in the incubator environment.

E5.5 Academic Initiatives

- ∄ There is a fragmented approach by the different departments focussing on the ICT sector. Currently processes are underway to align these systems.
- ∄ There is no proper interface with Isett Seta which leads to further fragmentation in skills development.
- ∄ Some academic institutions are making an effort to interface with the industry to create mechanisms for development.
- ∄ Centres of Excellence are implemented within an academic environment and this has led to the development of new technology and further economic growth.

E5.6 Industry Initiatives

- ∄ The sector is very fragmented and initiatives are not always co-ordinated.
- ∄ Some sectors work against each other rather than with each other to develop new markets and products.
- ∄ In some cases, the support of development programmes is not always long term strategies or aimed at benefiting the sector. Many companies use development as a vehicle for marketing themselves.
- ∄ SMME development is not always aligned with the development of global and South African developments within the ICT sector. SMMEs need more support and special incentives from government to develop and expand their business.

E5.7 Current Research

- ∄ Government fragmented approach to the development of ICTs.
- ∄ Telecommunications infrastructure inhibits growth.
- ∄ No clear champion driving the development of the ICT sector.

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- ∄ Lack of proper skills for the development of advanced technologies.
- ∄ ICT sector and its associations create a fragmented environment for developing ICTs.
- ∄ Fragmented interaction between Industry and research environments for the development of new technologies.

E5.8 Overview of various case studies

There are many examples across the globe of development strategies that South Africa can learn from. There have been consortiums established, and millions of dollars spent on trying to up-skill, educate, and transform people into knowledge machines. The approaches taken are sometimes very different but the crux of it remains the same: Sustainable Development. The general approach to the case studies was to identify good, practical examples from across the world. The case studies are not only focussed on developing countries. Models and ideas of very advanced countries were looked at as well.

The aims and approaches of some of the development initiatives may differ from others when it boils down to the physical product or service. For the most part however, these mechanisms share many common traits. All of the agencies and mechanisms share one definite trait amongst themselves, and that is SMME development. In helping to develop stable organisations, all these initiatives believe wholeheartedly that SMME development will create healthy markets, and in turn create more jobs. The incubators in the USA for example are all run in close partnership with major academic institutions, whereas the projects in South Africa look more to private sector investment. Neither is however wrong, and the case studies bring to light the wide array of approaches to develop mechanisms and agencies.

E5.8.1 International examples

Internationally the research team looked into initiatives in North America, South America, Europe, Asia, and North Africa. North America is obviously quite advanced in development policies and strategies and they have already experienced sound results in many of their projects. In South America, the University of Chile has a very well established incubator program called AccessNova. It is aimed at technology innovation and advancement in order to establish sustainable SMME's. Egypt boasts a Smart Village that has drawn major investment and global interest pertaining not only to its beauty as a physical building, but also to its technologically advanced infrastructure. The list goes on of these types of projects and South Africa can really learn from what has been tried and tested in other environments. One of the critical success factors that seem to be native to most of the strategies is the idea of knowledge sharing and cooperation across industry sectors. The success of many of the projects relies on a sound communication base and like minded collaboration which in turn creates a knowledgeable and highly competitive environment.

E5.8.2 South African examples

Locally there is a sense of urgency to take advantage of the opportunities created by such initiatives. South Africa has only recently established a governing body for incubators and the last four years has seen great progress in these initiatives. The Innovation Hub, Godisa, and Raizcorp are prime examples of the incubation practice at work and they have already all had some incredible results. The drive to create sustainable development and knowledge growth is supported by government to an extent, but is mainly driven by private sector and academia. South Africa is not yet at a stage like some of their foreign counterparts where a visible return on investment is evident. The success of the business incubation practice up until now has been measured in quantity, not quality. South Africa also has three main ICT clusters that focus heavily on economic development and sustainable growth for new ventures. These clusters have sound support systems and have managed to create a large opportunity for investment.