

SOUTH AFRICA



Prepared by: Vinny Pillay
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science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



Overview

- South Africa's strategic context
- Framework for S&T cooperation with Europe
- ICT RDI Roadmap
- Institutions
- Government Supported – Examples of Initiatives
- Industry links





South Africa's strategic context

National Development Plan – 2030

- NDP - emphasizes the necessity to expand South Africa's science, technology and innovation outputs by increasing research and development spending by government and by encouraging industry to follow suit.
- NDP - sees ICT by 2030 underpinning a dynamic, inclusive and prosperous information society and knowledge economy, in which a seamless information infrastructure will meet the needs of citizens, business and the public sector, providing access to a wide range of services required for effective economic and social participation at a cost and quality at least equal to South Africa's competitors.





Framework for South Africa's S&T cooperation with Europe

- SA – EU S&T Cooperation Agreement
- Bilateral S&T Agreements many Member States
- SA – EU Strategic Partnership – strong focus on S&T at annual Summits
- Support Joint Africa-EU Strategy
- South Africa joined the Eureka network as an Associate Member in mid 2014





ICT as a priority

- ICT was identified as one of the key technology missions in the National Research and Development Strategy (2002)
- ICT research, development and innovation strategy has grown since - over the past six years government has invested R85 million in the strategy each year
- The strategy has contributed to advancing human capital development in areas such as: ICT for earth observation, human language technology, video coding and information security.



ICT RDI Roadmap

Background

DST - 10-year ICT RDI Roadmap, intended to:

- ▶ Take the national ICT RDI Strategy to the next level, in a way that strengthens the ***local ICT ecosystem***
- ▶ Enable DST to develop and implement a set of ***specific interventions*** required to guide and direct ICT RDI activity in South Africa
- ▶ ***Position South Africa more competitively*** in the global market, taking cognisance of and addressing the challenges facing a developing economy
- ▶ The Roadmap is driven by the potential to deliver socio-economic impact, and presents a sound case for increased public and private investment in ICT RDI.

Intent

1. Enable **increased** public and private **investment** in ICT RDI
2. Provide a **framework** to plan and coordinate technology development, in order **to enable efficient and sophisticated investment decision-making**




INTERNATIONAL BENCHMARKING

- **Global Drivers**

- Increased Individualism - people are requiring personalised and directed content chosen by them and suited to their preferences and styles
- Increased Green consciousness - climate change – energy - forefront of public
- Increased spend on entertainment
Increased consumer spend on Gaming, 3D Animation, Web- entertainment and other forms of digital entertainment
- Interaction on the move - expecting always on, everywhere broadband connectivity
- Urbanisation - increased focus on development such as Smart Cities, Wireless Area Networks, Smart Grids
- Wealth Creation - high-end markets are attracting most business focus
- Ageing Population - drives different needs in regards to medical requirements, labour divisions, entertainment, etc. - must be supported by latest technology development

- **National Drivers**

- Mobile penetration - reached 100% in South Africa - relying on mobile phones for their livelihood, to access information and to connect with family and friends
 - Increased spend on entertainment - consumers are interested in Mobile Gaming, Ringtones, Images, and other products and services that can be utilized and accessed via a mobile device
 - Companies targeting Bottom of the Pyramid (BOP) Market - provide the most reliable source of growth in the ICT market. Companies are increasingly looking towards South Africa as a doorway to access the African market
 - Importance of Social Issues - such as Poverty Reduction, Service Delivery Efficiency, Job Creation are much more important than wealth creation
 - Affordability and Localisation - technologies must be affordable and localised, as most consumers can not afford to follow the latest trend in technology
 - Younger Population - South Africa has a much younger population. This influences technology needs and requirements
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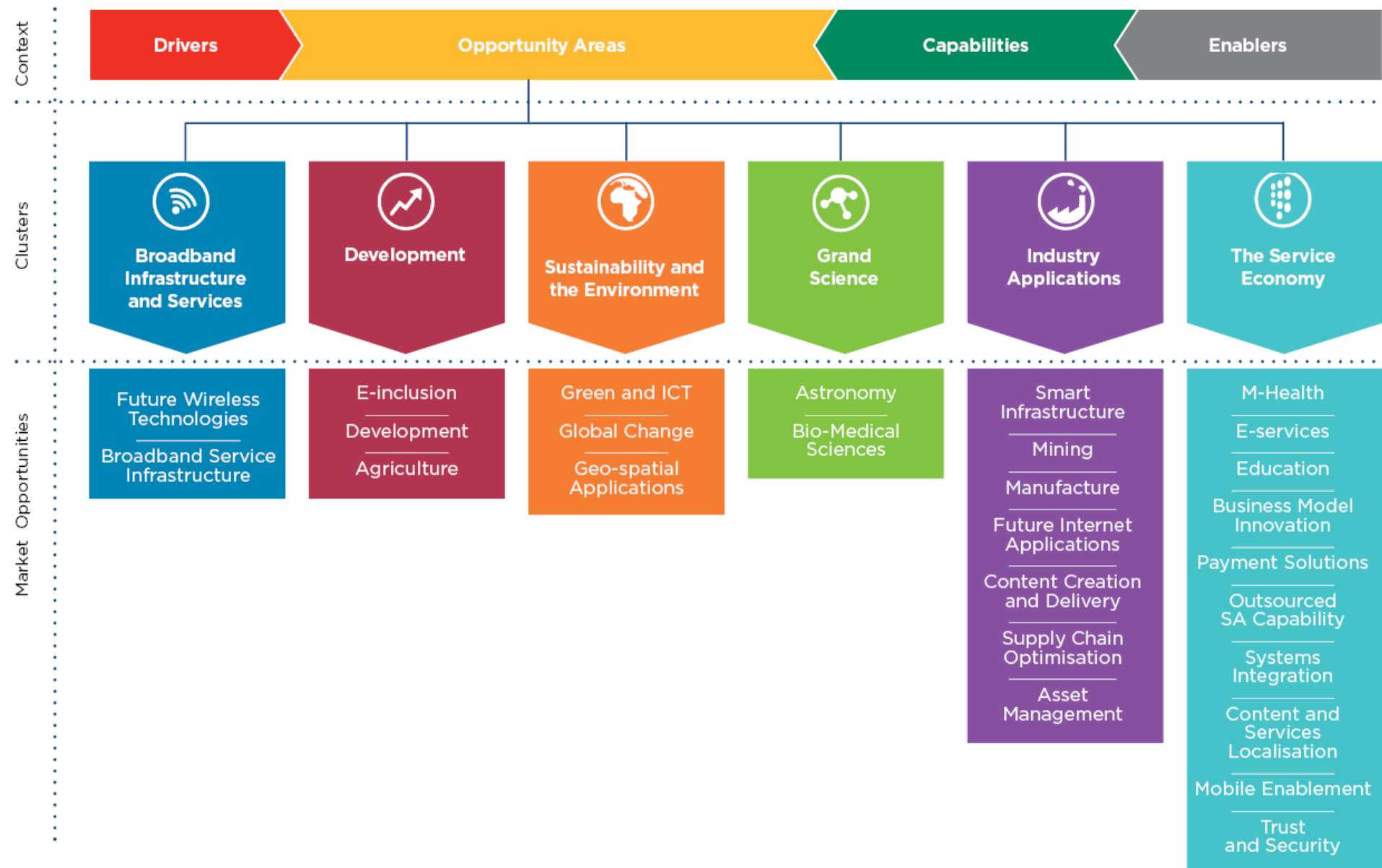
Opportunities

Represent areas of significant and attractive market need:

- **Broadband Infrastructure and Services** - Research and innovation into future means of providing access.
- **Development** - Enabling individuals to empower themselves: democratically, socially and economically.
- **Sustainability and the Environment** -Using ICT to optimise management of resources, assets and environments
- **Grand Science** -Leveraging the ICT component of Grand Science projects to create new industrial and service capability
- **Industry Applications** - Facilitating growth and performance in existing and emerging sectors
- **The Service Economy** - Enabling improved, lower cost and more convenient access and consumption of physical and digital services



Digital Advantage: 6-Point Cluster Driven Strategy



Addressing National Priorities in Six Areas

Priority Area

Government Entity



Broadband Infrastructure
and Services

DOC: Broadband Policy; Knowledge Economy

IDC: Commercialisation of new broadband technologies and business models



Astronomy
and Data Science

SKA: Data Science and Analytics
Big Data



Development

Poverty Alleviation



M-Health

DoH: NHI; E-Health Strategy



Smart
and Green

DEA: Green Fund (DBSA); Green Economy

DoE: Energy Efficiency

DMR: Sector strategy on Minerals and Processing

IDC: Investment in Green Technologies

Provinces, Municipalities (COJ): Smart Cities



Geo-Spatial
and Global Change

Disaster Prevention Management; Land Cover Change Detection

Global Change





Institutions

- The Meraka Institute is an operating unit of the CSIR focused on Information and communication technology (ICT).
- In the business of research, innovation and advanced human capital development - over 200 staff and students - s the largest group in South Africa dedicated to ICT research.
- Meraka contributes to enhancing quality of life and economic competitiveness in South Africa and the continent through ICT by:
 - researching and developing new technology that enables ICT access, inclusion and use
 - researching, developing and transferring innovative ICT products, processes and services into the market
 - researching, developing, building and operating world-class cyberinfrastructure
 - contributing skills and outcomes that are changing the profile of our ICT landscape.



Institutions

Meraka's research and development covers the following areas:

- Earth observation science and information technology
- knowledge technologies
- Networks and media
- Integrative systems, platforms and technologies
- Cyberinfrastructure



Institutions

- The Centre for High Performance Computing has a vision to provide South African researchers with world-class facilities and make SA a destination for high-end computing within the southern hemisphere.
- CHPC - initiative of the Department of Science & Technology and is managed by the Meraka Institute of the CSIR.
- The CHPC is one of three primary pillars of the national cyberinfrastructure. The South African National Research Network (SANReN) and the Very Large Databases (VLDB) complement the CHPC through the provision of high-speed, high-bandwidth connectivity, and the effective curation of a variety of notably large databases
- The (SANReN) is part of a comprehensive South African government approach to cyberinfrastructure to ensure successful participation of South African researchers in the global knowledge production effort. SANReN is managed and implemented by the CSIR Meraka Institute.



Square Kilometre Array (SKA)

- South Africa, together with other African partner countries and Australia will host the SKA
- Big science” projects, such as SKA are the nursery for the next generation of physicists, mathematicians, computer scientists and other specialists.
- This astronomy infrastructure presents a massive leap forward – IT infrastructure, bringing enhanced high speed connectivity and computing capability to Africa.
- Radio astronomy is a powerful driver for innovation in domains such as information and communication technologies
- The SKA is an iconic project for world science. It brings together groundbreaking science with cutting-edge technological innovations.

- The technologies that are being developed for the SKA and its precursors – such as signal processing, very fast computers and data transport, image processing and wireless, big data - are key technologies in IT for the future.
- Linked to astronomy, the DST, in collaboration with the Department of Public Enterprises and the state-owned company, Broadband Infraco, has invested more than R600 million in the acquisition of broadband capacity on the West Africa Cable System.
- This will support the work of the MeerKAT and the SKA to retain South Africa's well recognised global status in the field of space and astronomy.

Community wireless mesh network project

- The project aims to take broadband infrastructure to rural communities and equip individuals there with the necessary entrepreneurial and technical skills to build and operate large-area wireless networks, also known as community wireless networks.
- By the end of the project it is hoped that 45 small enterprises run by village operators will have been established and given Internet access, and 450 government sites – most of them schools – will have the use of voice-over Internet protocol. R86,2 million was allocated to this project

Digital Doorway

- The Digital Doorway is a joint initiative between the DST and the CSIR Meraka Institute. The vision of the Digital Doorway initiative is to make a fundamental difference to computer literacy and associated skills in Africa.
- Underpinning the project is the idea of people's inherent cognitive ability to teach themselves computer skills without help. For this to happen, computers must be easily accessible to potential learners in an environment in which they can experiment. Apart from the ability to read text, literacy also involves image and screen literacy, particularly information navigation. Through access to information and communication technologies, a new way of learning by "discovery" rather than by "lecture" becomes possible.



Links with Multinationals

- The Department values the involvement of the private sector in facilitating world-class research and innovation and has recently established the DST ICT Multi-National Companies Cooperation (MNCC) Programme.
- Some collaborations that the Department has - Microsoft South Africa, SAP and Nokia (IBM & CISCO)
- These collaborations focus on four broad areas; (1) establishing R&D and innovation platforms and laboratories; (2) human capital development - both high-end and technical skills; (3) innovation and technology-based small and medium enterprise (SME) development; and (4) adoption of practices that foster and permit the transfer and rapid diffusion of technology without infringing on applicable laws governing intellectual property rights.



Information technology

- The sector contributes approximately 8.2% to South Africa's GDP
- Whilst South Africa applies the world's best technology, it simultaneously reshapes these technologies to meet unique market needs and opportunities
- Strength lies in developing packaged software solutions
- Solutions are ideally suited to Africa and other emerging markets using ICT to address infrastructure matters such as mobile banking, e-schooling, e-Government, e-health and prepayment for basic services



Telecommunications

- The South African telecommunications sector is the largest and most advanced in Africa and is 99% digital
- South African firms have extensive experience and a proven track record in supplying a wide range of products and services:
 - Technologically advanced fixed line, wireless and satellite communication technologies
 - Innovative rural telecommunications solutions
 - Prime contracting on complex projects such as satellites, telecommunications networks and collaborative technologies on hybrid networks
 - End-user applications
 - Routing systems between fixed and mobile networks
 - Microwave, antennae and RFID solutions
 - Mobile and self-contained datacentres and remote support



The Electronics Contracting Manufacturing Sector

- South Africa has a well-established electronics manufacturing sector that has been in existence for over 40 years and has a critical mass of experienced firms
- Firms can offer a complete electronics value chain that ranges from design, engineering, manufacturing, testing, implementation and maintenance
- Customers range from large multinationals to specialised local customers in a wide range of industries
- South Africa is a pioneer in the development of security systems, keyless starting, lighting control, fuel injection, central locking and robotics for leading automotive firms



Conclusion

- The South African ICT sector is an emerging one
- Government has developed the framework for cooperation
- Industry is proving to have pockets of excellence
- Opportunity for engagement in selected areas



Contact details

- South African Department of Science and Technology
 - <http://www.dst.gov.za>
- European South African Science and Technology Advancement Programme
 - <http://www.esastap.org.za>
- Senior Science & technology representative to the EU
 - Vinny.pillay@dst.gov.za





Thank you