SITA AI Industry Day

Readying South African Economy for AI

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Socio-economic effects of AI

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Socio-economic effects of AI

The common assumption today is that AI will replace human labour. forbes.com predicts a society and economy where co-existence of human intelligence and machine intelligence is inevitable…**Augmented Intelligence** is more realistic than **Artificial Intelligence…** [*Forbes.com*]…**3 things about Augmented Intelligence**

1. AI will Level Up Innovation

- The importance of human creativity cannot be discounted. Augmented Intelligence reflects the ongoing impact of AI in amplifying human innovation
- Beyond automation, there is also a complementary evolution in the processes of human design and innovation that build on computing technologies
- Across a host of industries—medicine, engineering, entertainment, transportation, and design, AI and machine learning continue to introduce new innovations that augment human performance.

2. Creativity will Flourish

- AI and machine learning are part of a creative transformation that holds the potential to regenerate a waning industrial society, leaving room for significant long-term innovation
- Even as computers automate routine labour they will also amplify work that requires creativity, problem solving, and social collaboration
- Creative Age, intrinsic passion is becoming pivotal to skilled professions so that economic needs (in the traditional sense) are becoming increasingly dependent on creativity and entrepreneurial innovation.

3. Education will be Redesigned

- AI and computer technologies are becoming a very real part of the global economy and this has important implications for how we think about the future of skilled labour
- When anything mentally routine or predictable can be reduced to an algorithm, it signals the need for a shift in our learning systems
- A new generation of inventors is being forced to surf the tide of technological innovation and schools will need to adapt accordingly
- A key challenge for educators is understanding the critical importance of human creativity in the context of AI and augmented intelligence, to ensure students value technology in the context of amplifying their own talents and capacities.

Source: National Development Plan 2030

The South African Problem Statement

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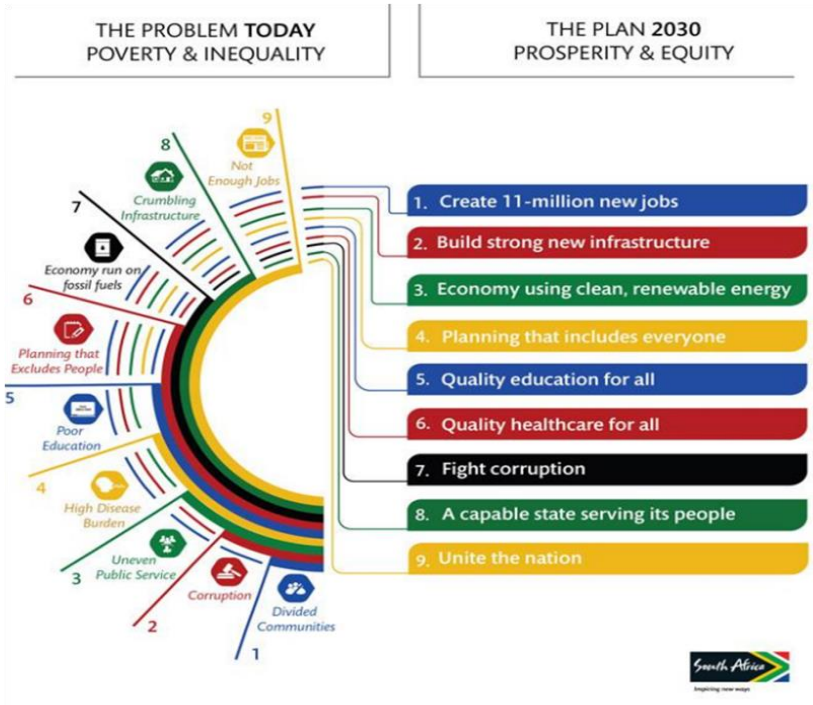
Vision 2030

Vision 2030 Outcomes of the NDP 2030 were established with the values and principles as enshrined in the constitution… the NDP encapsulates the vision as follows…

AIM

- Long-term vision and plan for SA
- Realize specific goals
  - draw on the energies of its people,
  - grow an inclusive economy
  - build capabilities,
  - enhance the capacity of the state,
  - and promoting leadership and partnerships throughout society



Source: National Development Plan 2030

Service delivery challenges

SA public service delivery challenges can largely be attributed to lack of service accessibility…

- Restrictive hours (7:30 – 15:30)
- Long queues
- Inconvenience

Office Hours

- Mainly “Face-to-face”
- Long travelling time
- High cost for Rural communities

Delivery Mode

- Service is department specific
- No integration
- Citizen must visit multiple offices
- Little use of intermediaries

Silo’s

- Poor service outlet distribution in Rural areas
- Favours advantaged communities
- Visitors have trouble to interact with government

Location

Transforming the Public Service

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Digital Transformation Trends in Government

Reference: Forbes. - 2017/06/29/top-6-digital-transformation-trends-in-government

Improving Connectivity and Mobility: The high levels of growth and penetration related to the usage of mobile devices in both low and high income population groups as well as rural and urban population groups requires a reflection on the initial thinking that mobile technologies excludes low income and rural populations. Trends in this space tend to motivate that mobile technologies have assisted in "Bridging the Digital Divide".

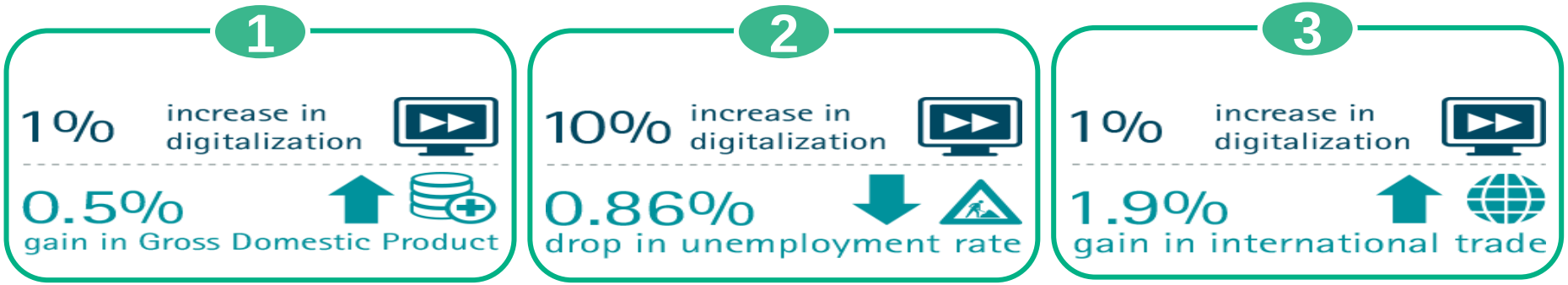
and protection of citizen information.

infrastructure capacity and investments.

- **Application automation** in the form of "on line", integrated cross function government process improving service delivery access and turn-around times.
- **Artificial Intelligence (AI) and Robotics** to improve process efficiencies, citizen access and experience in areas related to Call Centre services such as "Chatbots" for social services as well as Robotics in the Health (Telemedicine), Agricultural, Forest and fisheries sectors.

online, File tax submissions and maintaining contact and address details online.

The need for Government Digital Transformation



National e-Government Strategy and Roadmap – Vision

"**Digitise government services** while transforming South Africa into an **inclusive digital society** where all citizens can benefit from the opportunities offered by digital and mobile technologies to improve their **quality of life**. **Optimise service delivery** that provides **access** to government information and services **anytime and anywhere**. "

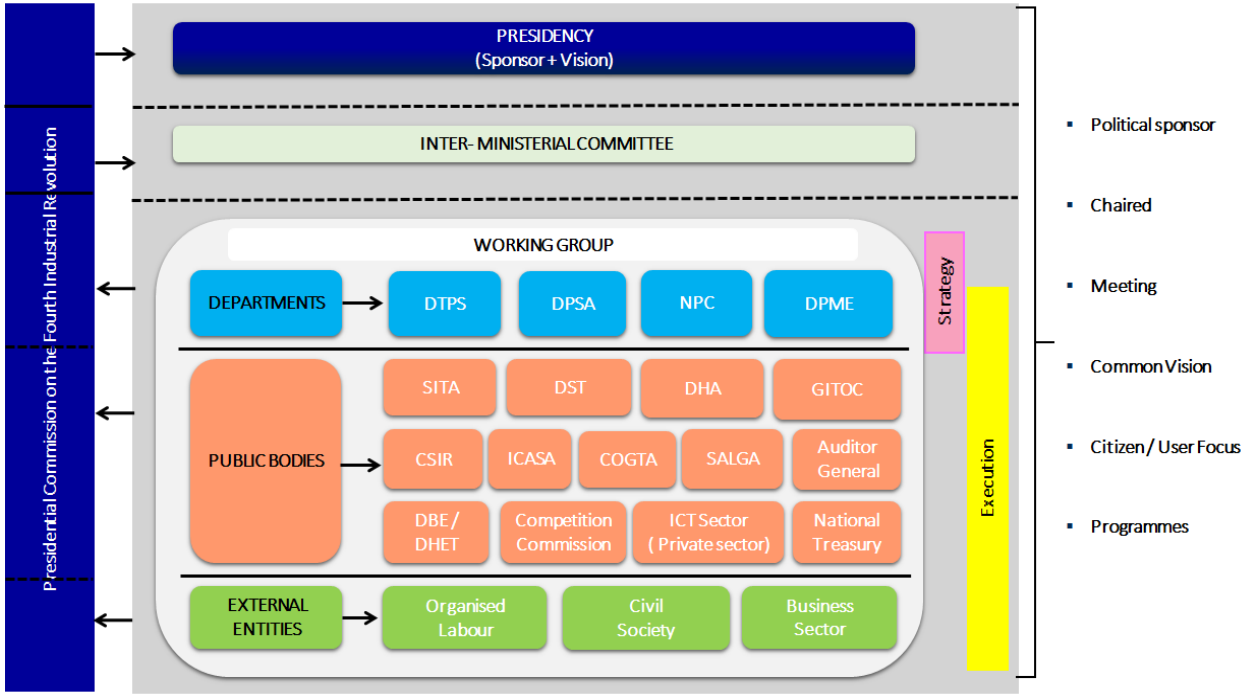
Draft SA Government Digital Transformation Strategy - Vision

"Create an **innovative** public service that **leverages data** to **improve internal operations and citizens' experience**"

Source: Digital at Depth, Accenture, 2015

Governance Framework

Digital Transformation strategy within the government ecosystem requires coordinated digital leadership



Governance arrangements for pursuing a digital government agenda includes the following:

- securing leadership and political commitment to drive the strategy through multiple efforts aimed at promoting inter-ministerial co-ordination and collaboration, engagement and co-ordination across levels of government;
- maintaining coherence in the use of digital technologies that are integrated across policy areas and levels of government;
- establishing strong organisational and governance frameworks to co-ordinate implementation of the digital strategy, with appropriate checks and balances; and
- strengthening international co-operation to better serve citizens and businesses across borders, and maximise the benefits that can emerge from international digital strategies.

SITA Enabling environment

SITA enabling the public service Digital Transformation Journey…key strategic streams

Digital Economy

An economy where **digital technologies are a primary resource** for **economic activity** and where **digital innovation adds value to productive processes**, whether for the creation of goods or services.

Digital Transformation

DT is more than just a simple digital solution. It is a fundamental change in the sector as a whole.

Innovation in network structures and digital platforms

The Foundational Infrastructure is a core component of the Digital Enterprise

Operating Systems has to support many types of computing demands – Application Specific Software

Application Specific Software

Operating Systems

DIGITAL ECOSYSTEM

Hardware layer, physical devices connecting to the network layer and thus to the Internet

Undersea Cable System | National Broadband Networks | Specialised networks for Education (N/RRENs) | Local Broadband Connectivity | Mobile Voice Infrastructure

Required

Foundational Infrastructure for Digital Transformation

Innovation outputs for socio-economic advancements

Digital applications | Processes | Operations | Services

Build platforms

PLATFORMS

Use available platforms to create digital services

Modernised Public Service Portfolio

Learning and Human Resource capacity

Digital Skills

Hardware technologies and digital platform and systems architecture | Software design | Integration of IT with Business Engineering | IT/IS Management and Operations | Digital Strategy at Enterprise Level

Foundational knowledge Requirements (Generalists and Specialists)

Digital leadership, policy and regulatory environment

DIGITAL LEADERSHIP

Policy setting and defining rules for Regulation are two of the most important aspects of Digital Leadership.

POLICY

Leadership of DT can be exercised through making policies that unlock strategic thinking and doing the necessary for advancement.

Direction:
Provide guiding ideas for radical societal change, reduce barriers to change. Government signals the Desire to change – i.e. DT of society and economy.

Funding:
Direct major funding of the national budget towards particular policy choices (e.g. broadband, digital health, digital education, etc.).

Collaboration:
Encourage public-private sector collaboration where public sector is the consumer of digital services and private sector is the provider of infrastructure and services.

Limits:
Sets the goals and objectives that Government wishes to achieve and a few broad guidelines on how to get there. However, must remain technology neutral and encourage and open system and Solutions, flexibility and transparency.

REGULATION

Proving "clear rules of the game" for all players by establishing:

a) the rules for competition;
b) rules for consumer protection;
c) rules for pricing of services; and
d) rules for universal access to services.

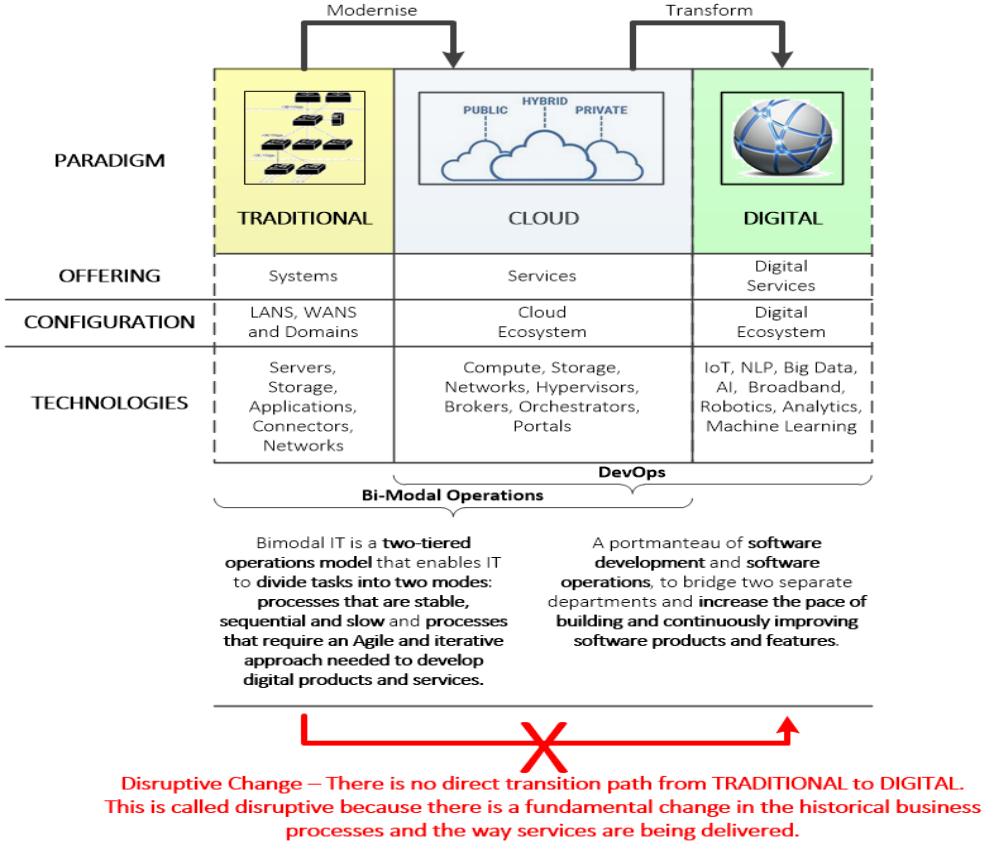
All these rules creates an environment of trust in which the consumer are eager to adopt new services, as risks are minimzed (e.g. loss of money, paying for poor products or services)

Electronic Communications Sector Regulator (DTPS):
Responsible for licensing fixed and mobile operators, broadcasters and Internet Service Providers. It is also responsible for regulating particular aspects of competition (general regulators – responsible for rule making for all economic sectors), pricing, consumer protection and other fixed and mobile markets.

Co-jurisdiction:
With increasing convergence in markets, we observe concurrent jurisdiction of two or more regulators.

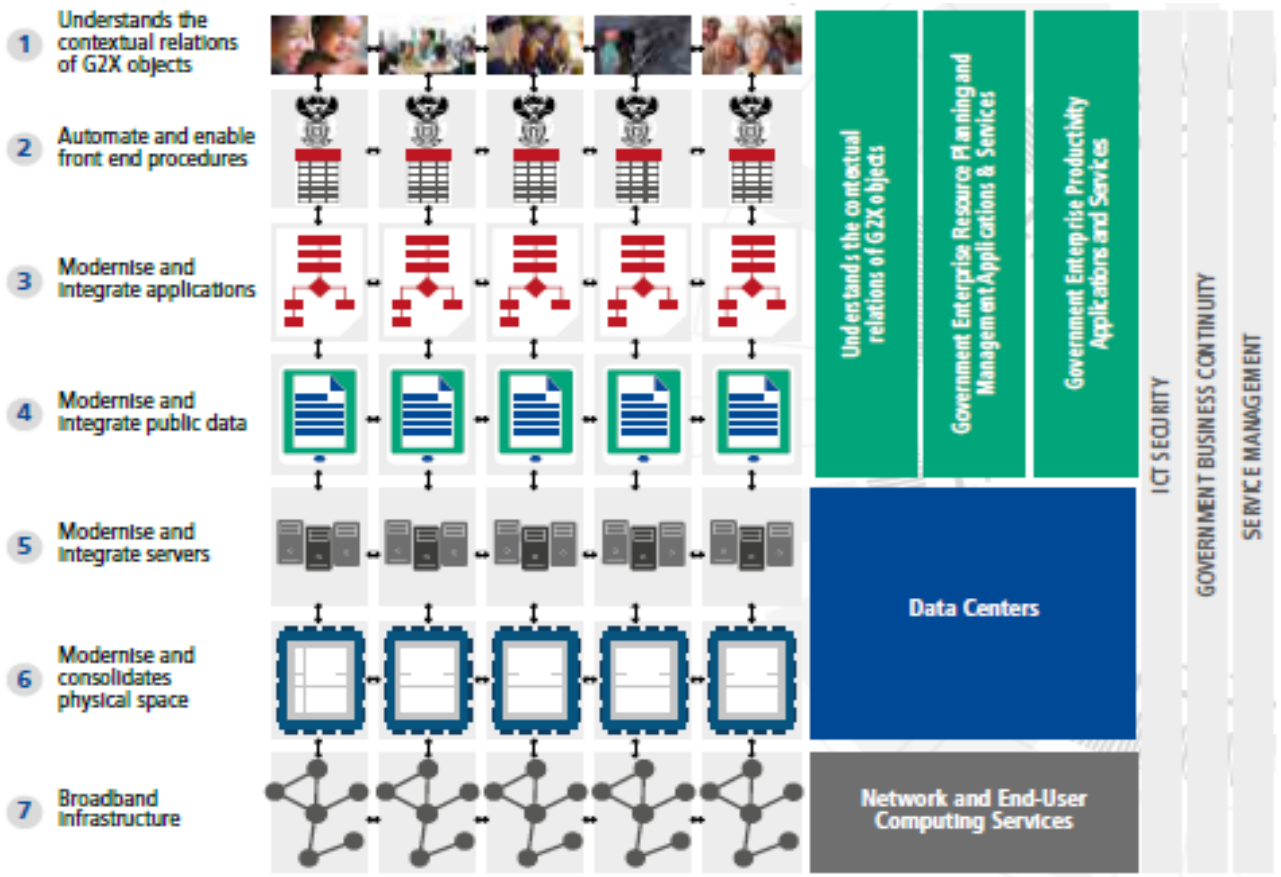
Public service Digital Transformation Journey

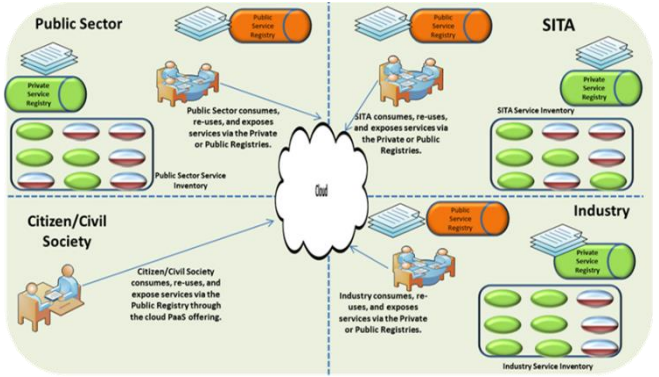
Recommended Roadmap to Digital Transformation…readying the public service for AI

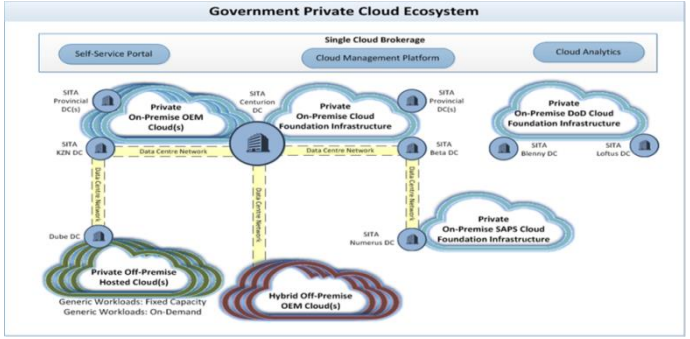


A Collaborative Ecosystem

An ecosystem for co-existence, co-creation, co-operation, and data-driven “open” innovation

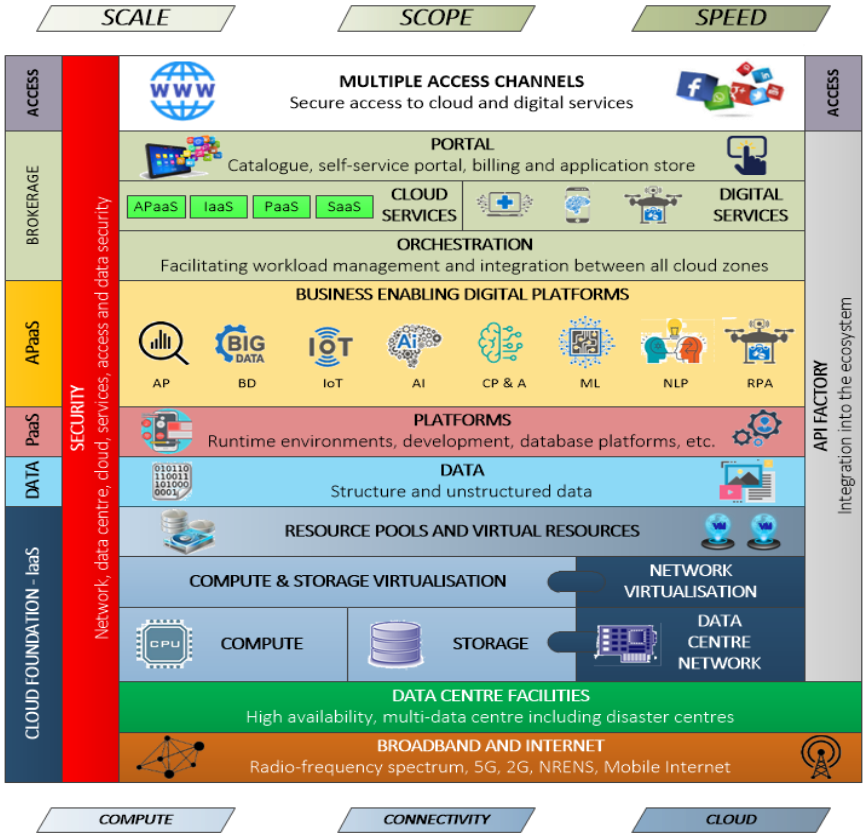






Cloud Computing

Internet accessible computing and data storage for effective AI



- Use multiple hosting environments on a usage-basis (opex versus capex for departments) with a common security fabric
- Allow for access to services using different access channels
- Provide a common access point (Portal) for all computing resources (basic hosting and digital services) used by the state and account for such usage in a common Software Asset Management (SAM) system
- Provide orchestration between multiple clouds to optimize functionality, cost and control
- Provide a number of 4IR foundational services
- Provide for logical linkages between State data resources (structured and unstructured) to enable integrated planning and execution within departments, within clusters and between departments and clusters
- Move away from transit and retail networks and peer with Tier-1 service provider and reduce data cost significantly

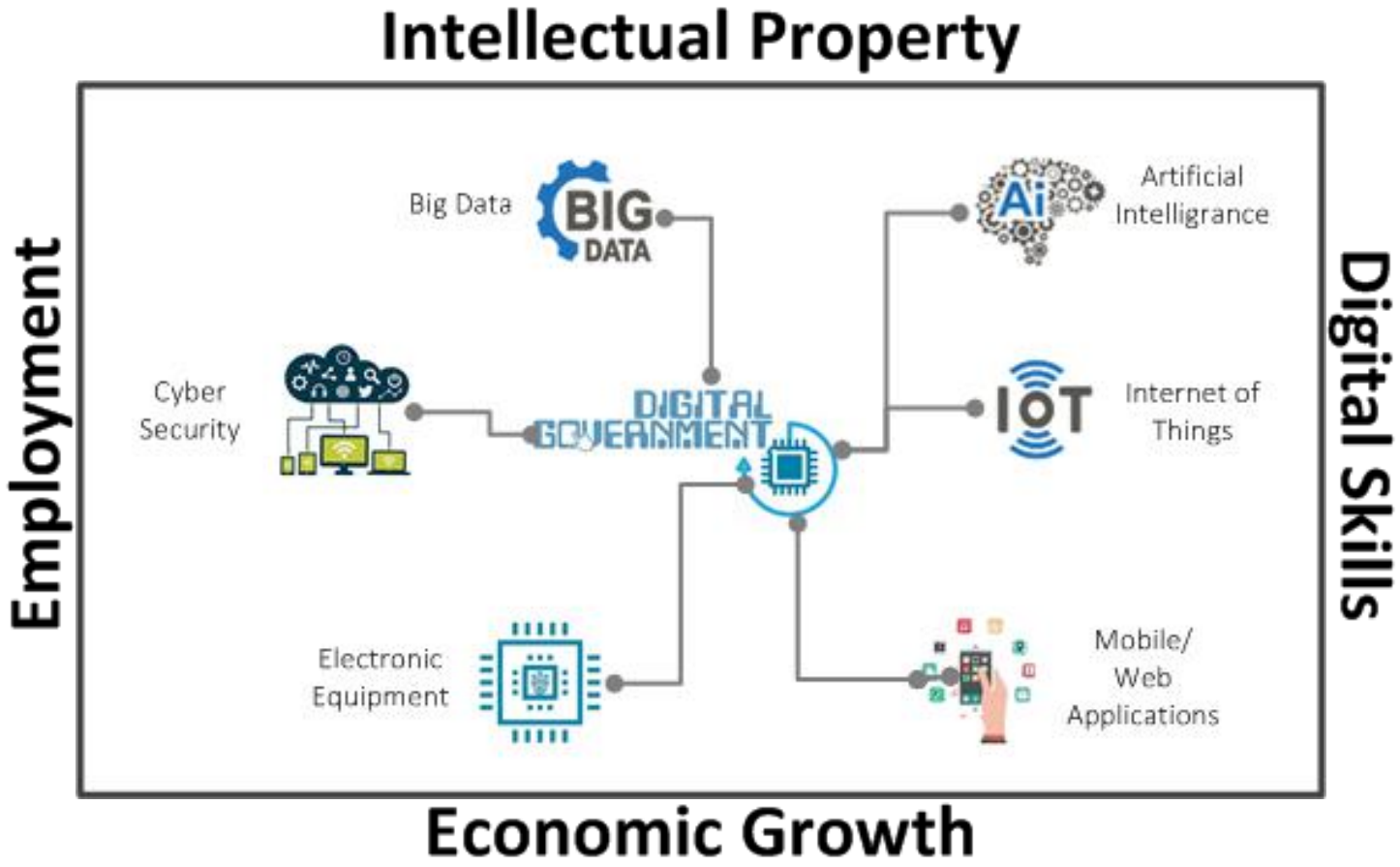
Data as a key asset for AI

Data is the main fuel for AI and Digital Transformation

Data drives the frictionless economy	Data drives the on-demand sharing economy	Data drives the co-creation economy	Data drives the orchestration economy	Data drives the Smart cities
...through ease of mobile money transfer	...endless opportunity for connecting supply and demand of any kind of shared (e.g. Uber)	...where citizens and consumers can create and recommend the kinds of services they seek from government and private-sector service providers.	...where global networks of suppliers are emerging and creating specialised resource bases to tap into, managed as networks of loosely organised people and parts rather than as highly hierarchical organisations	...through available data and the analytical capabilities to use the data to make major decisions on infrastructure, water, health, and other concerns.
...through crowdsourcing	...through integrated applications, incorporating digital mapping together with personal communication and online or mobile booking and other application elements			
...through online trade connecting manufacturers to buyers				
...through biometric identification to access public or private services				

Digital Transformation explores such transformation in all of its guises

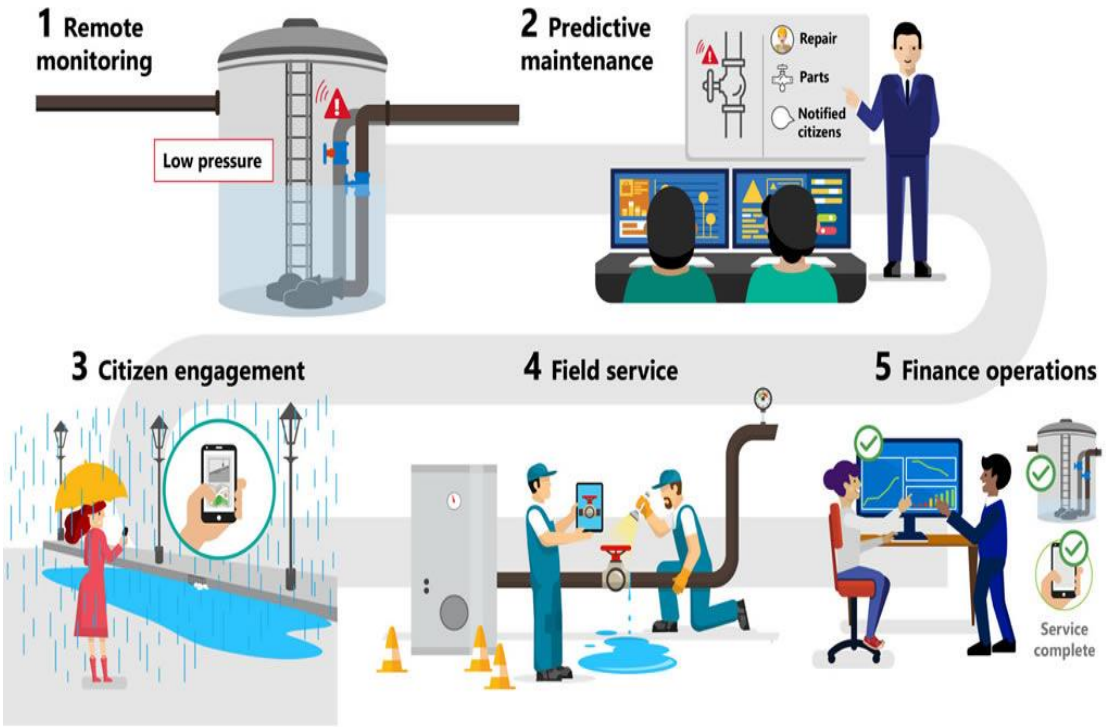
AI-enabled digital society



Target

- Government
- Civil Society
- Youth – Unemployed
- Schools
- Tertiary Institutions
- ICT Industry
- Financial Institutions

AI-driven Public Works [*Microsoft*]



How it works

- Helps field service workers identify and repair malfunctioning assets before damage occurs
- Reduces the need for service calls by enabling field service workers to remotely diagnose equipment issues
- Arms field service workers with the diagnostic information they need to ensure a first-time fix
- Enables organizations to analyze equipment failure patterns to improve maintenance strategies

Building Smart Communities

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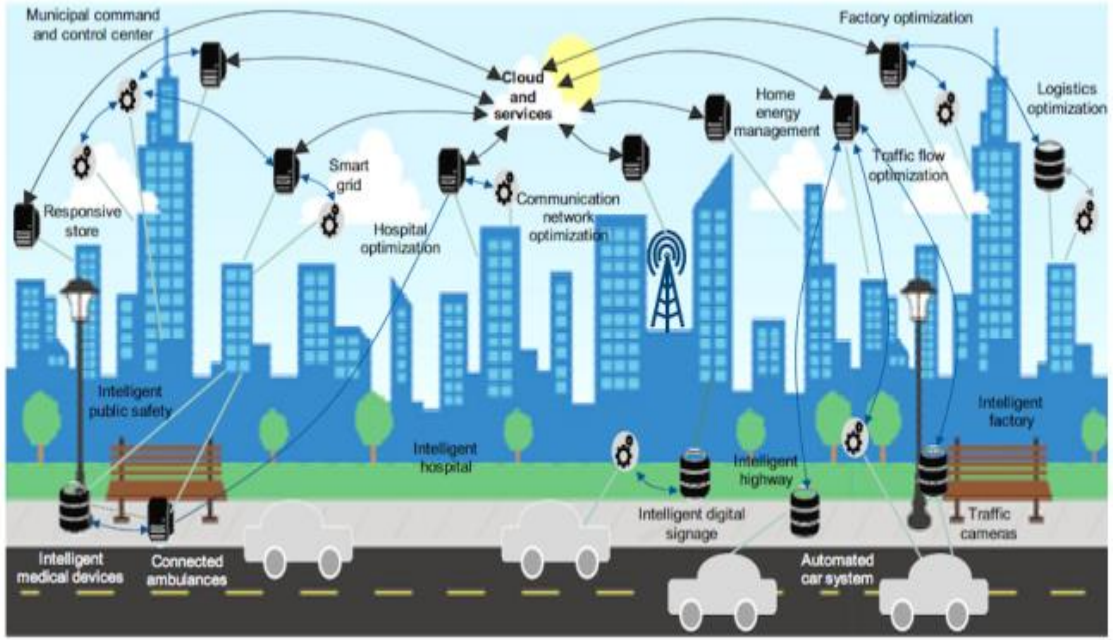
AI driving smart communities



Characteristics for smart communities

- Data is collected.
- Data is analysed - Use of statistical algorithms and machine learning turning data into valuable information providing "**Hindsight** – What happened", "**Insight** – Why it happened", and "**Foresight** – What will happen".
- Data is used to cut expenses, improve efficiencies and effectiveness.

Drivers for smart communities

- IoT – Connected objects collecting and disseminating information.
- Telecommunications – Broadband networks (SA Connect).
- Cloud-based computing and Data Storage – Internet accessible computing and storage resources (GPCE).
- Social Media – Devices collecting and generating data useful for trend analysis, monitoring sentiments, for better decision-making.

Digital transformation through AI

Smart citizenry, smart economies, smart communities and smart cities are fundamental outcomes of digital transformation of the SA Government, where Data Analytics and AI are catalysts

Social Services:

- Public Works.
- Justice and Crime Prevention
- Human Resources and Administration
- Education
- Communication
- Billing and Budget
- Health
- Housing.

Analytics and AI

Outcomes:

- increased public value
- cost savings and less waste
- new efficiencies
- increased safety
- economic development and growth.
- more openness
- personalised service delivery
- improved dialogue with citizens and business
- Forecasting and proactive service delivery.

Building SA Skills for AI and Digital Transformation

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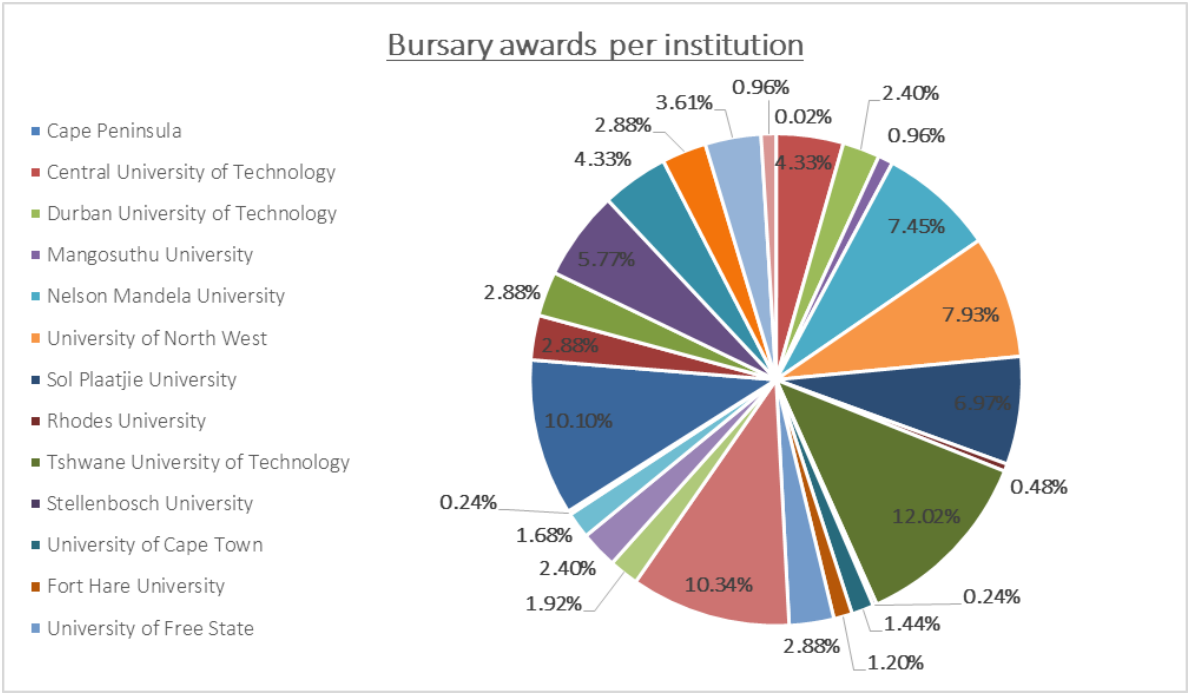
Digital Skills for SA

- Internal Bursaries
- External Bursaries
- Digital Learnerships for unemployed youth and people living with disabilities
- Digital Academies at school level focusing on software development

- Appoint 102 learners living with disabilities.
- SITA has a tertiary bursary scheme to support students for tertiary studies in tech (engineering, computer science, etc) and applied tech (e.g. agriculture/social studies, environmental studies overlaid with IoT, Data Analytics, Robotics etc). Each bursary will cover the following per annum:
  - tuition ~ R50,000
  - study material ~ R10,000
  - accommodation ~ R40,000
  - meal allowance ~ R14, 400
  - transport ~ R10,000
  - **Total~ R124, 400**
- Total SITA spend on the bursary scheme this academic year: **R37m**
- We have received +4000 applications

Digital Skills – External Bursary Scheme

	Province	Number	Distribution
Bursary Allocations by Province	Eastern Cape	44	11%
	Free State	33	8%
	Gauteng	146	35%
	KZN	36	9%
	Limpopo	48	12%
	Mpumalanga	20	5%
	North West	30	7%
	Northern Cape	24	6%
	Western Cape	35	8%
	Total	**416**	**100%**



Thank You