

Enabling Affordable Connectivity & Entrepreneurship for Accelerated Digital Transformation in Africa

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Dr Fisseha Mekuria, Chief Research Scientist.

**Council for Scientific & Industrial Research, CSIR.
Pretoria, South Africa.**

WIRELESS WORLD
RESEARCH FORUM



CSIR
Touching lives through innovation



CSIR's Vision and mission

VISION

We are accelerators of socio-economic prosperity in South Africa through leading innovation



MISSION

Collaboratively innovating and localising technologies while providing knowledge solutions for the inclusive and sustainable advancement of industry and society



CSIR

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CSIR Technology – Sector Clusters

A Multidisciplinary RD&I Org. Ready to Drive 4IR in Africa !



Advanced Agri & Food

Innovate to strengthen primary production, agro-processing and advance rural economies



Future Production Chemicals

Establish state-of-the-art (bio)-chemistry to drive local pharmaceutical and the broader chemical industries



NextGen Health

Develop technologies to drive improved health outcomes and patient-centric healthcare delivery



Future Production Manufacturing

Strengthen manufacturing value chain to enhance Industry Competitiveness



Future Production Mining

Support the growth and revitalisation of the mining industry



Defence & Security

Build resilient defence and security capabilities to strengthen national security technology capacity



SMART Places

Effect smarter resource use, sustainable economic growth and smart infrastructure and service developments



SMART Mobility

Enable South Africa to have an efficient, effective and integrated logistics sector



NextGen Enterprises & Institutions

Support the digitalisation of government, public institutions and private sectors

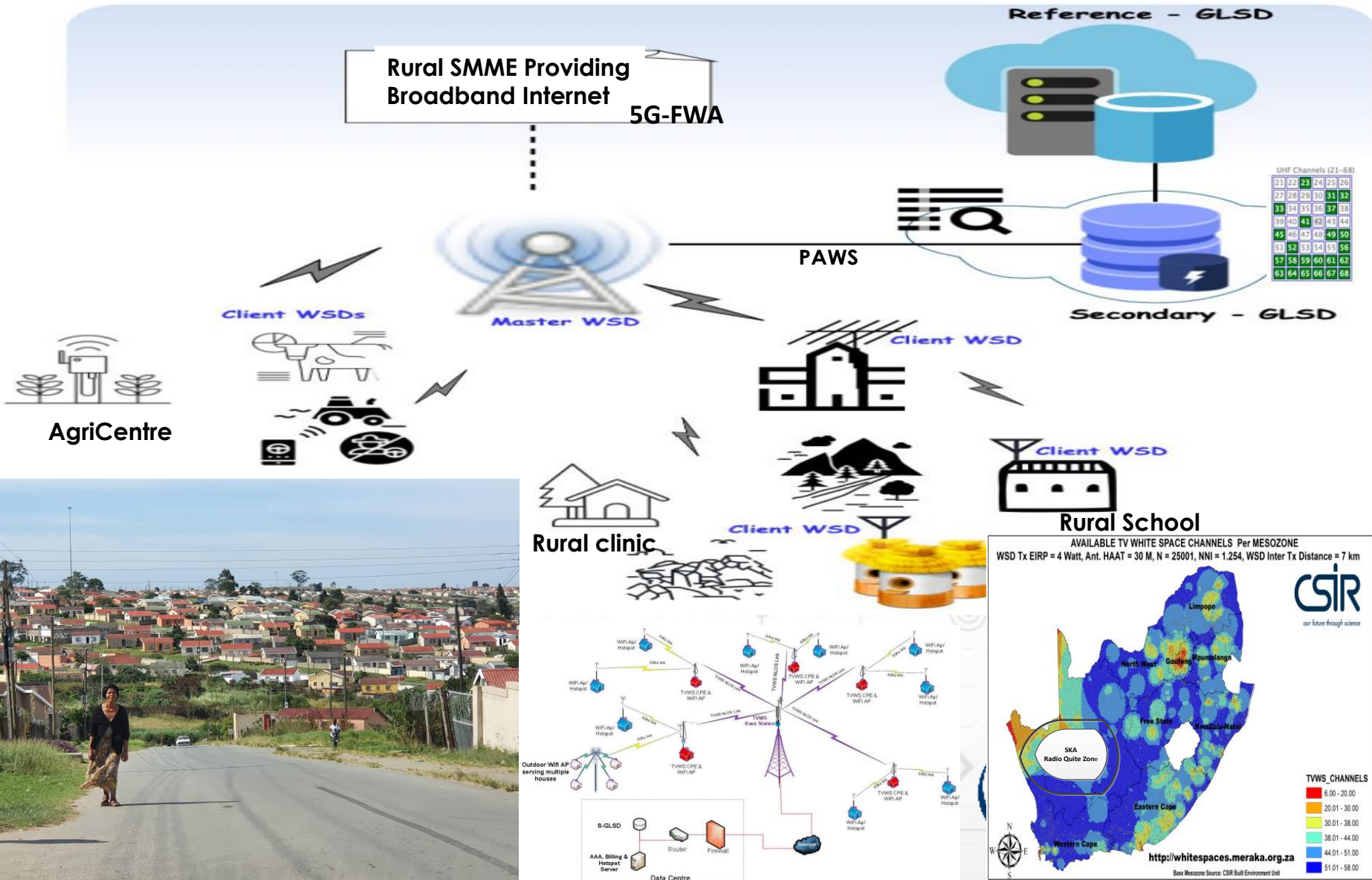
The clusters are technology industry convergences that represent the CSIR's strategic focus. They have been selected based on national priorities, potential for socioeconomic impact and the fourth industrial revolution.

Salient Points

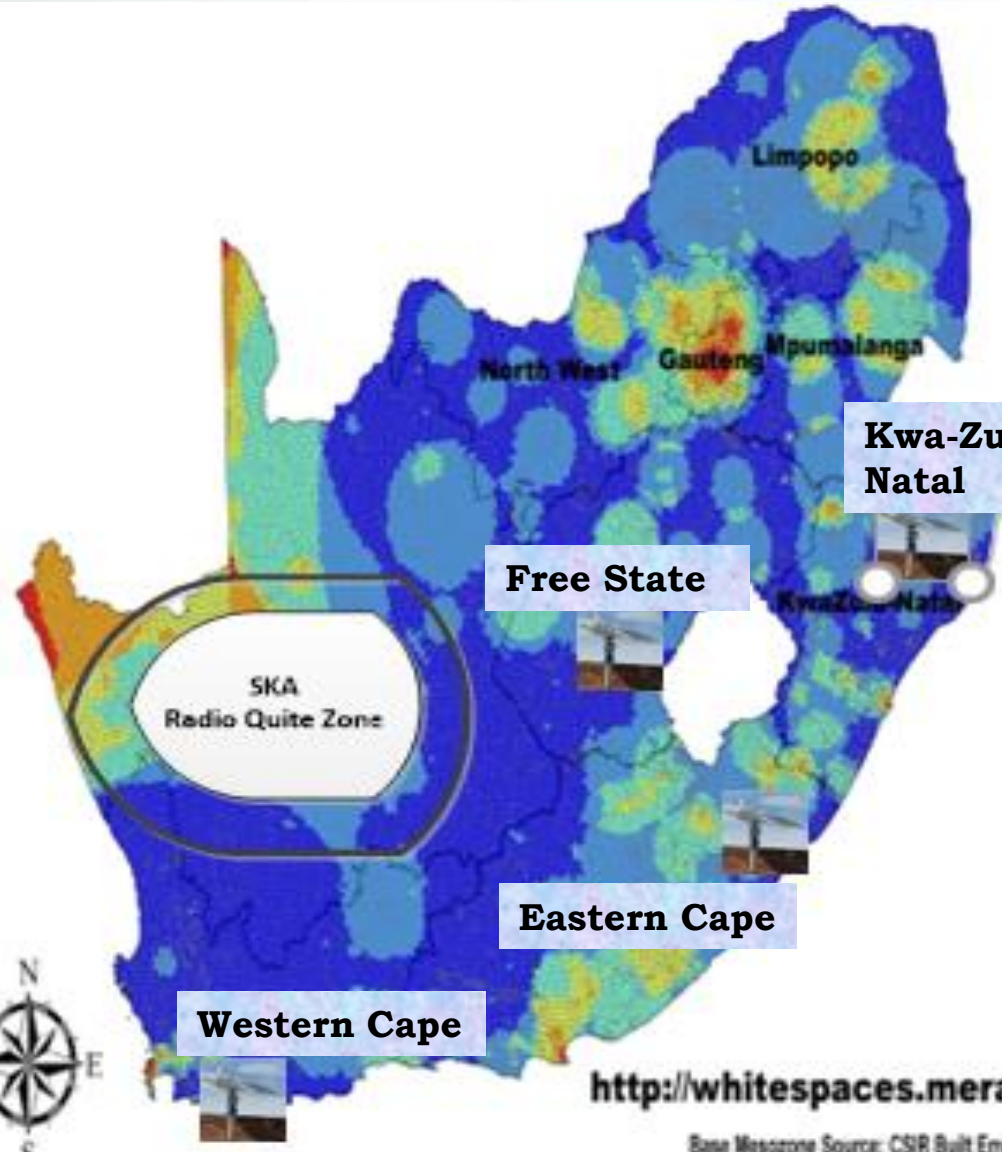


- ❑ **Importance of Digital Connectivity & Inclusion to Society.**
- ❑ **Digital Divide: Large Rural Population & Affluent City Metros.**
- ❑ **Affordable Broadband & ICT Services to Rural & Township Communities:**
 - Rural Schools, AgriCentres, Health Clinics, Public & Private Businesses
 - Connection to local Tech Hubs for Co-creation & Digital Literacy
- ❑ **Deployment & 4 PoC networks for data gathering in South Africa**
 - Phase 2+ plan 10 Communities.
 - Phase 3+ scaling and deployment in other Africa countries.
- ❑ **Rural Digital Entrepreneurs-SMMEs sustainable digital business models.**
 - Infrastructure Sharing, Technology Localization, IoT sensors, Value Added Societal ICT Services.
 - Creation of digital enterprises: Service & Tech industries in Africa
- ❑ **Data collection, Monitoring and Evaluation,.....**
- ❑ **Future Plans : 5G, 4IR, AI/ML, Smart Communities**

Affordable Broadband Deployment Scenario



Four PoC Sustainable Broadband Network Locations in South Africa



Supported Four DREs:

- ❖ Capacity Building Seminars.
- ❖ Network Planning & Deployment support
- ❖ Improving Digital Business Sustainability
- ❖ Connection to Local Tech hubs, for co-creation.



Wireless Networks & Smart Sensing -IoT the Path to Industrialization in Africa

75
YEAR
ANNIVERSARY

IoT is still in
its Infancy

**Smart
Industry**

- Efficient Resource use.
- 4IR Push

Wireless ↔ IoT Connections
are expected to grow.....

20
million
(2017)

90
million
(2023)

CAGR of around 30%

Wireless & IoT for **Smart
Community** Applications



Energy, utilities, mining



Transport



Agriculture



Healthcare



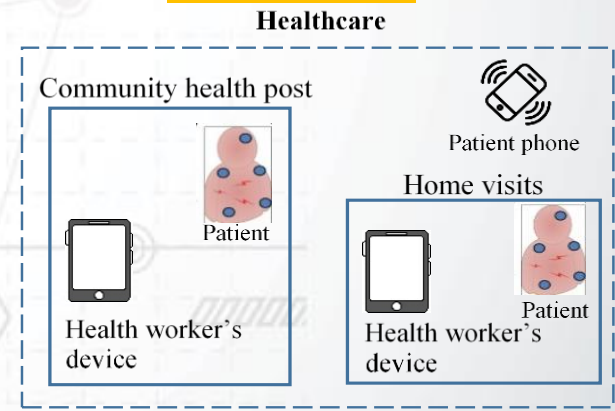
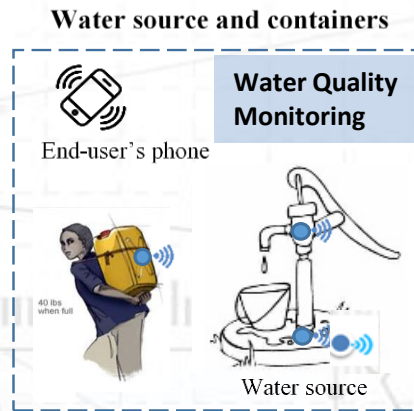
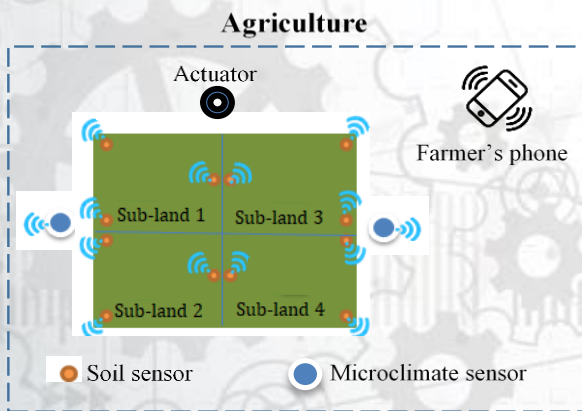
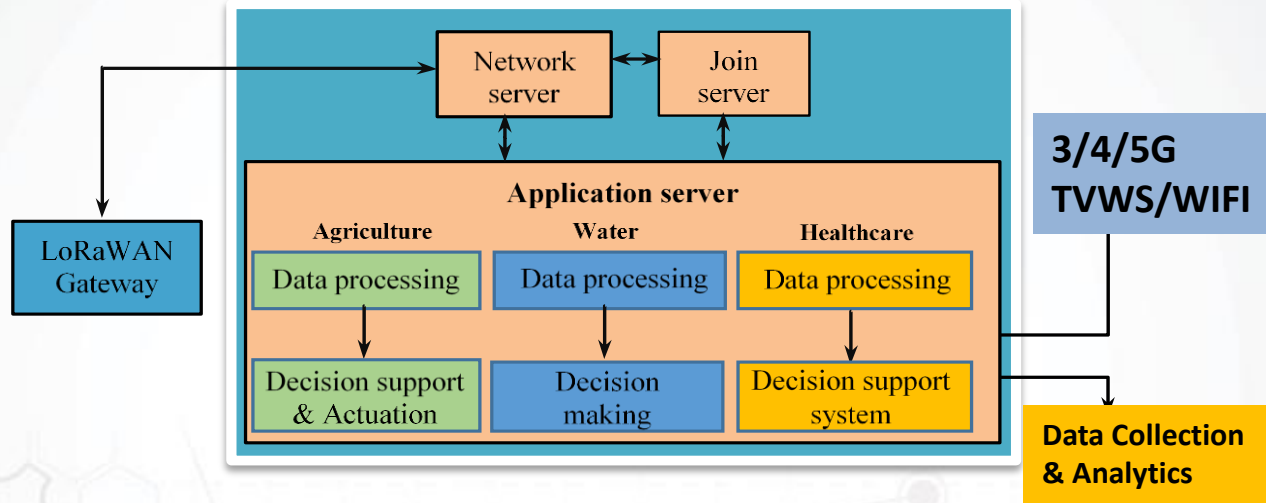
Data
Repository



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Smart Sensing: Innovative Services & Smart Industries



Smart Industries: Smart Mining, Green Energy & Biodiversity Restoration (UN2021-2030)



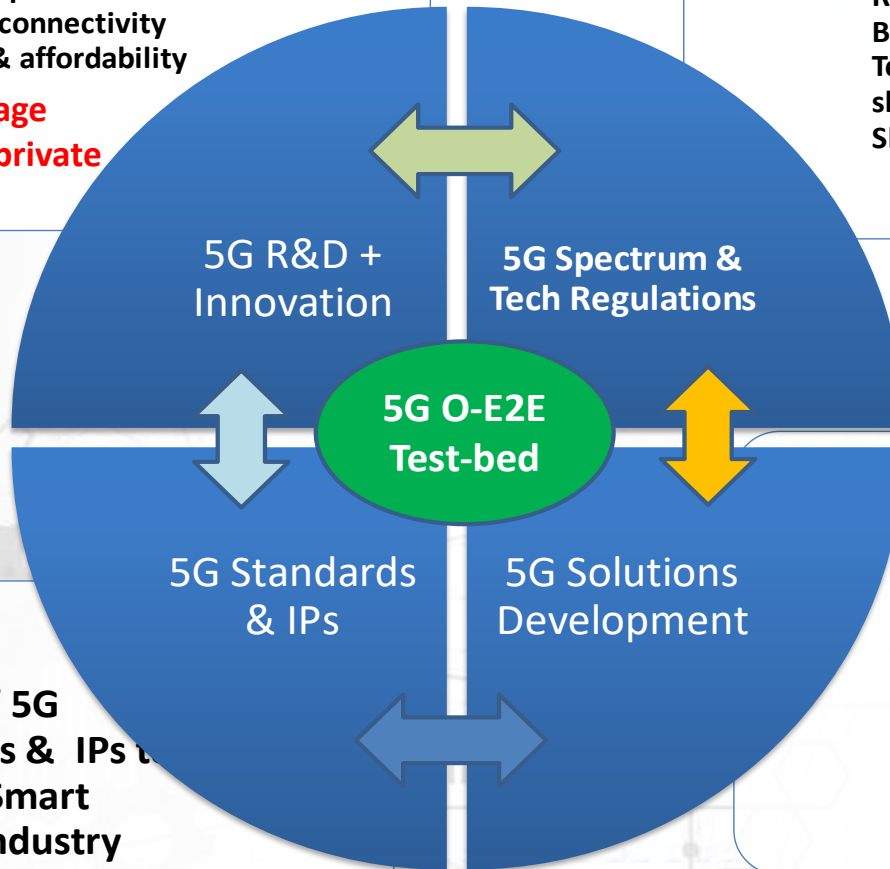
Recommendation: Regional Open End-2-End 5G Test-beds !



- Promote a Smooth 5G Migration & Support Sustainable 5G connectivity Greenetworks & affordability
- Inform & Engage The Public & private Businesses**

- New Spectrum Regulations & Business models. Testing Network slicing & RAN Sharing

- 5G-E2ET as enabler for Digital Transformation & 4IR
- 5G-E2ET For Bio-diversity Protection & Restoration



- 4th Leg of 5G Standards & IPs to SMEs & Smart Service industry

- Innovative 5G Use cases, Apps & Services: The MPESA's of 5G, Smart Industry Verticals

Affordable Broadband & Digital Entrepreneurship

Catalytic and transformative traits ...



- 1. Attracting local and international support, for example**
 - **UK FCDO will fund a post-implementation project for Monitoring and Evaluation as well as technical support to the four beneficiary SMME network operators,**
 - **Old Mutual is providing financial support to one of the beneficiary SMMEs by virtue of the envisaged project success**
- 2. Enabling broadband ICT Services in Rural and Township Communities**
 - **Rural Schools, AgriCentres, Health Clinics, Public and Private Businesses**
 - **Investing in Women & Youth led rural digital entrepreneurs.**
- 3. Improving SMMEs sustainable digital business models: Infrastructure sharing, Technology Localization, IoT Sensors, Value Added Services**
- 4. Creating a much needed digital skills development and employment opportunities**
- 5. Reducing/reversing the adverse effects of the Covid-19 pandemic and enabling economic recovery.**
- 6. Green Technologies & Biodiversity Restoration Capabilities.**



Impacting Beneficiary Communities with Digital Inclusion



Broadband Connectivity Launch, Eastern Cape Community, South Africa, May 4, 2021.

**Municipality & Community Leaders,
Rural Schools, Health Clinics, Agri-business....**
Connecting the Unconnected & Digitally Including Communities !



Conclusion & Recommendations for Future Activities



- ❑ Accelerated Digital Transformation & Sustainability:
 - Affordable Digital Connectivity + Innovative Business Models for RDEs
 - Connecting the Digital Entrepreneurs (SMEs) to Tech Hubs for Co-Creation
- ❑ Phase I: 4 PoC sites in broadband network deployments in collaboration with the RDEs.
- ❑ Phase II: Extended program 10 sites in all Provinces in South Africa.
- ❑ Wireless Broadband Networks + smart sensors for water, health, agri-business, mining....Creating the Smart Industries for Africa
- ❑ 4IR Requires a Multidisciplinary R&D Standardization Effort : an Achilles heel
- ❑ Recommendation to ITU and Partners: Support Regional 5G+E2E Testbeds for Digital Innovation and Transformation of Africa.





CSIR, ITU & WWRF Partnering to Empower Rural & Township Digital Entrepreneurs to Enable Digital Connectivity and Accelerate Sustainable Socio-Economic Development for Industrialization in Africa.

Thank you !

fmekuria@csir.co.za