



# ICT4E Status Report

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# CURRENT **ICT4E** activities in Cofimvaba

Learners & Home

ICT to Support  
Teaching & Learning



## ALL Cofimvaba schools

Quick win

- Rollout of **Dr Math**
- Exposure to Mxit educational tools
  - QuizMax (Maths & Science exercises/quizzes)
  - Siyavula (Maths & Science textbooks)  
(Gr 10 – 12)
- TIA-sponsored event at Cofimvaba High School
  - Organised by District and Province
  - Matric Maths & Science revision exercises
  - Dr Math publicity (presentations, posters, instructions, etc)
  - Cell C donated sim cards to give free access to Mxit
  - More than 1000 matrics reached



## Information and Communications Technology Research at the CSIR

The CSIR Meraka Institute is an operating unit of the CSIR (Council for Scientific and Industrial Research) focused on information and communications technology (ICT).

We are the largest group in South Africa dedicated to ICT research. We network locally and internationally, and work with organisations across the globe.

The Meraka business is research, development and innovation. Our goals are to enhance quality of life and economic competitiveness in South Africa. In the long term we aim to create new ICT industries and to make South Africa an optimal user of ICT.

We focus on key issues to benefit society:

- Enabling ICT readiness through infrastructure and access (broad band, inclusive use of ICT)
- Promoting ICT use for science, society and service delivery
- Contributing to ICT capabilities and skills - training and collaboration with universities

### Our competence areas

- Integrative platforms, systems and technologies
- Wireless networking and media
- Human language technologies and knowledge technologies
- Earth observation sciences
- The national cyberinfrastructure/e-infrastructure initiative (funded by the Department of Science and Technology)

### Our cross-cutting initiatives

- Rural development and access
- Education and mobile learning
- Service delivery

### Associated agencies

South Africa: Finland knowledge partnership on ICT (SAFPA); SAP Meraka Unit for Technology Development (SAP Meraka UTD); W3C office; South African French Programme for Information and Communications Science & Technology (SAFeIT); African Network Information Center (AFRINIC) - the regional Internet registry (RIR) for Africa.

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## Our Vision

To be a world class innovation agency that supports and enables technological innovations to achieve socio-economic benefits for South Africa

## Our Mission

To support technology innovators to unlock SA's global competitiveness and to deliver socio-economic value

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An initiative of the Department of Science and Technology



Province of the  
**EASTERN CAPE**  
EDUCATION

**MOST DEDICATED  
DISTRICT TO  
MULTILINGUALISM  
COFIMVABA DISTRICT  
2011**



Building blocks for  
**growth**  
education



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# CURRENT **ICT4E** activities in Cofimvaba

Teachers & School

Support for a 21<sup>st</sup>  
Century School  
Environment

ICT to Support  
Teaching & Learning

## Arthur Mfebe Pilot (June '12 – March '13)

- **Mobile learning pilot at Arthur Mfebe**
  - ✓ NMMU Govan Mbeki Mathematics Unit (Maths & Science teaching system)
  - ✓ Ethnographic study
- **Launched 17-18 Aug**
  - ✓ Dr Math
  - ✓ QuizMax exercises via Mxit
  - ✓ Free sim card (plus R5 airtime) from Cell C
  - ✓ Tablets to teachers
  - ✓ Teacher Training
- **Planned (13 Sep)**
  - Technology and infrastructure
    - Wifi in school/Wifi Mesh local network
    - Content server
    - Charging & Safe storage solutions
  - Models (shared mobile devices)

Small proof-of-concept



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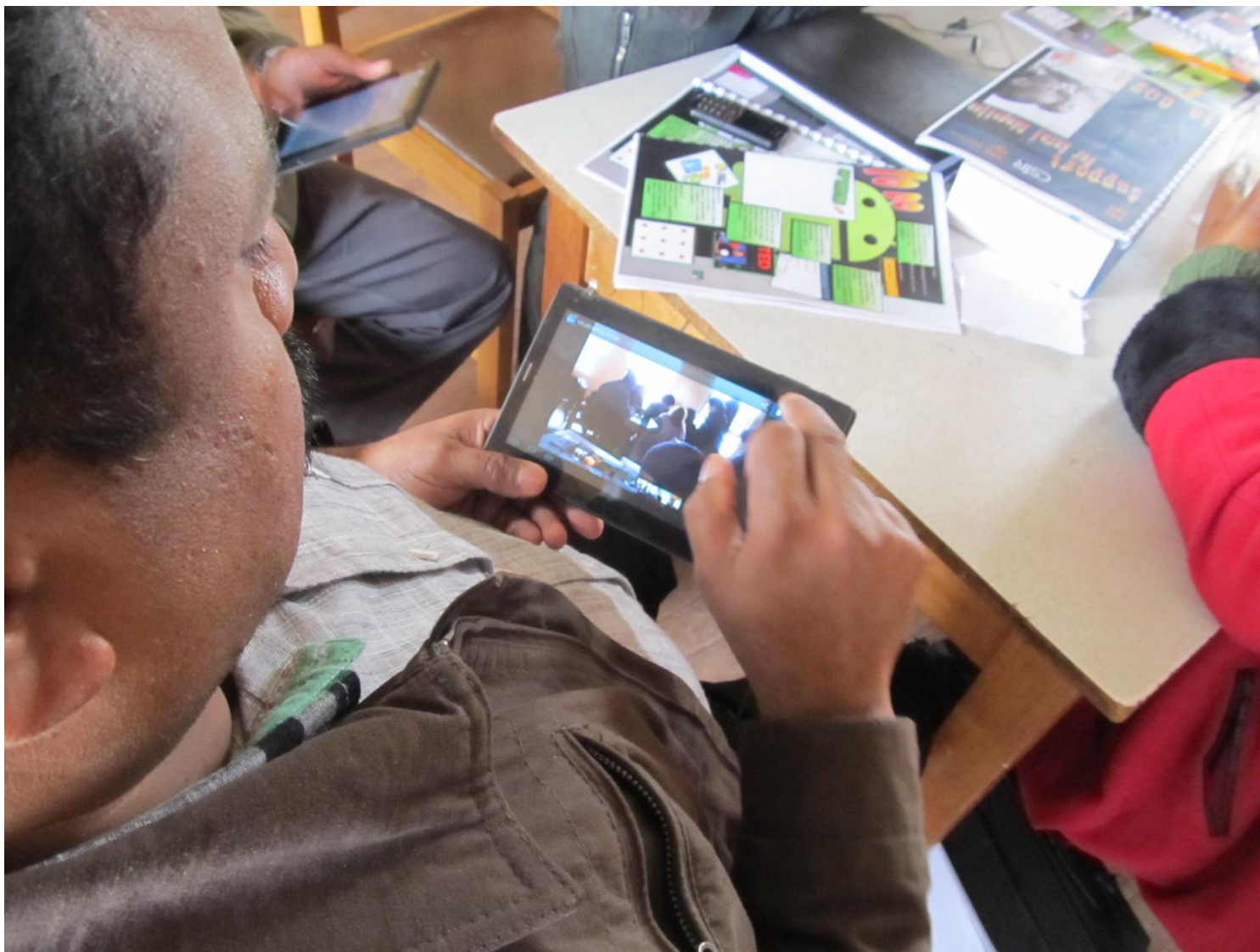




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# NEXT STEPS: **ICT4E** activities in Cofimvaba

Government & Policy

Support for informed  
& “smart” decision-  
making

## Preparation & Planning

### Wifi mesh in Cofimvaba rollout

Planning

#### ICT Register of possible interventions

- ✓ Categories
- ✓ Criteria
- ✓ Models/Decision-making tool based on Prospectus
- ✓ Prioritisation of interventions (those directly supporting eTextbook rollout to get top priority)
- ✓ Coordination critical

60%  
Complete

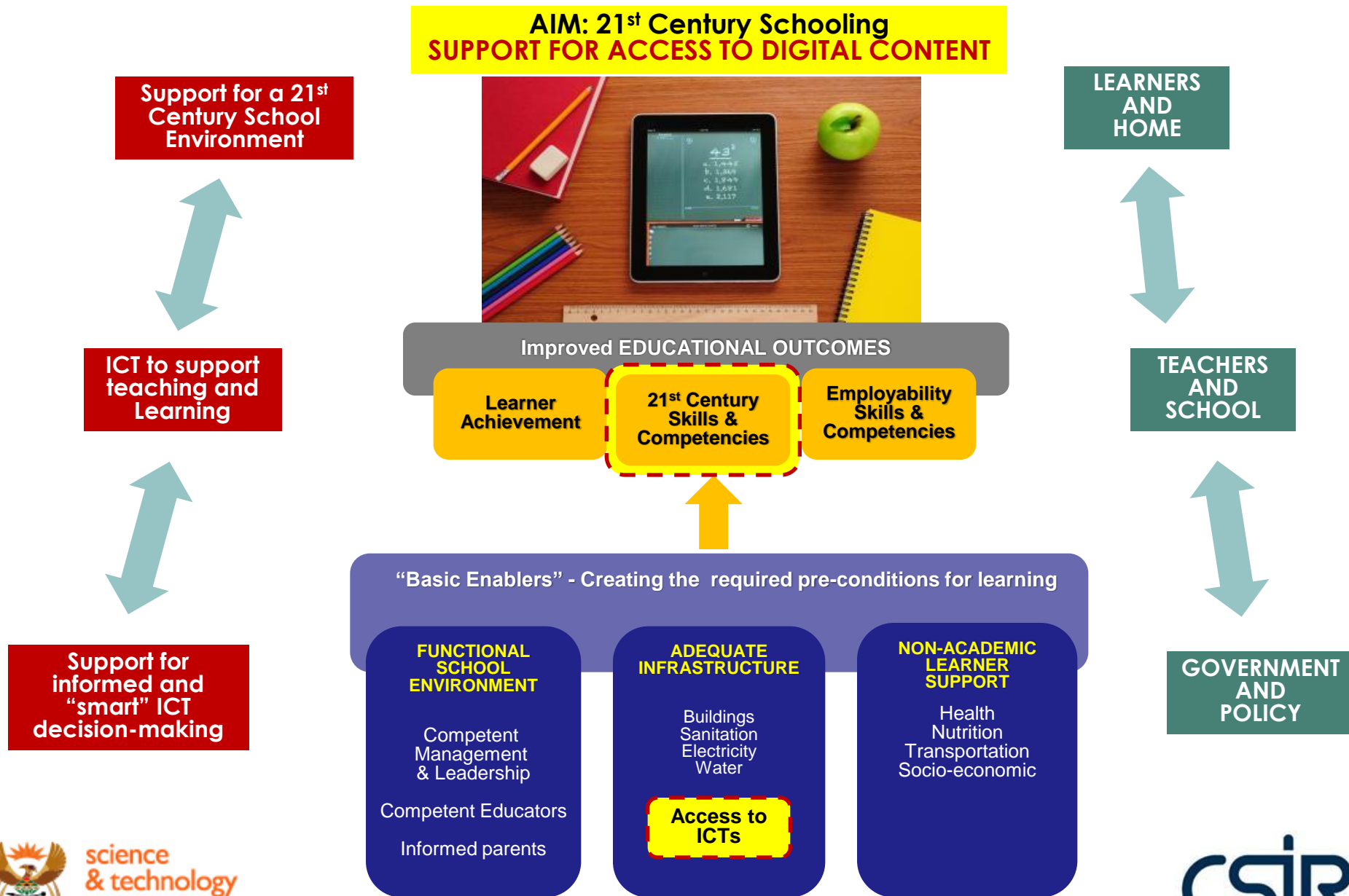
#### Planning for an **eTextbook Rollout**

- ✓ Nciba district  
(26 schools, 6500 learners), starting Jan 2013
- ✓ Workshop 27 Aug - OUTPUT: Proposal
- ✓ Proposal: Submit 7 Sep

50%  
Complete







# eTextbook

## Issues

NOW



**Learning and Teaching Support Material** consisting of paper-based textbooks, workbooks & readers

LEARNERS  
AND  
HOME

TEACHERS  
AND  
SCHOOL

GOVERNMENT  
AND  
POLICY

?

21<sup>st</sup> Century Schooling



**Learning and Teaching Support Material** consisting of interactive multimedia learning resources

## Project Management

### CONTENT

Standards  
Distribution  
Costs

### TECHNOLOGY

Devices  
Infrastructure  
Connectivity

### PEDAGOGY

Preparation  
In the classroom  
Assessment

### CHANGE MANAGEMENT

Technology  
People  
Process

### OPERATIONS

Distribution & Logistics  
Support & Maintenance  
Training

### RESEARCH

Masters & PhD  
Technology R&D  
ICT4E R&D

M & E



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# eTextbook Process

- **Scoping & Planning**
  - Unpack each component
  - Prioritise, Scope, Phase & Cost
- **Prepare Project proposal**
  - High level budget
  - Funding strategy
  - Contracting process (DST, DBE, Meraka?)
- **Constitute “Dream Team”**
  - Advisors + Workers
  - Transparent Meraka RFI/RFP/RFT process
- **Pre-work**
  - Wifi installation
  - Device testing, procurement, setup
  - Training, school preparation, manufacturing, content creation, etc.
- **Phased implementation 2013**



# Components - CONTENT

**CONTENT**  
Standards  
Distribution  
Costs

- **Aim: Standards-based approach**
  - Independent of device/vendor – Apple, Android, Microsoft, ?
  - Open content (OER) as much as possible
  - CHOICE
- **Identify CONTENT champion**
  - RFI process – “Worker”
  - Identify advisor(s)
- **Develop content “models”**
  - Conversion process (per type – workbook, textbook, reader, teacher notes, etc.)
  - Phases (static to dynamic, interactive, multimedia)
  - Use in the classroom
  - Updating process
  - Costs
  - Long-term roles & responsibilities
- **Opportunities**
  - Digital library system (e.g. readers)
  - Appstore model (to download/purchase apps, textbooks, multimedia, games, etc.)



# Components - TECHNOLOGY

## TECHNOLOGY

Devices  
Infrastructure  
Connectivity

- **Aim: Standards-based approach**
  - Interoperability/Sustainability/etc.
  - Open source (as much as possible)
  - CHOICE
- **Meraka as TECHNOLOGY champion**
  - RFI process – “Workers”
  - Identify advisor(s)
- **Develop technology “models”**
  - Device/network choice
  - Rollout, support & maintenance, replacement, monitoring, power
  - School infrastructure (storage, recharge, content servers, wifi networks)
  - Community infrastructure (recharge hubs, shared wifi access, mobile networks, etc.)
  - Use in the classroom/home
  - Costs
  - CSIR Meraka as “incubator”, but need to develop handover plan & future business model
- **Opportunities**
  - New h/w, s/w development

# Components - PEDAGOGY

## PEDAGOGY

Preparation  
In the classroom  
Assessment

- **Aim: Experimental approach, built on best practise – how to teach with technology**

- NOT technology training
- Mobile learning curriculum
- Pre-service education (universities)
- In-service training

- **Meraka as PEDAGOGY champion**

- Current Arthur Mfebe work to inform
- Training material to be made available under an open content license
- Identify training institution (SchoolNet SA?)
- Publish RFI
- Engage
- Training plan for teachers (Start December 2012?)





# Components – CHANGE MANAGEMENT

## CHANGE MANAGEMENT

Technology  
People  
Process



- **Aim: Prepare the school**
  - Soft skills (management, ICT vision/strategy/policy, confidence, etc.)
  - Technology management
- **Appoint CHANGE MANAGEMENT champion**
  - RFI process – “Workers”
  - Identify advisor(s)
- **Improve existing “models”**
  - Mobile dimension
  - Costs
  - CSIR Meraka as “incubator”, but need to develop handover plan & future business model
- **Opportunities**
  - New models

# Components – OPERATIONS

## OPERATIONS

Logistics & Distribution  
Support & Maintenance  
Training



- **Aim: Develop Rollout models**
  - Rollout Plan
  - Distribution of devices and supporting infrastructure
  - Support & Maintenance plan
- **Identify OPERATIONS champion**
  - RFI/P/T/Q process – “Workers”
  - Identify advisor(s)
  - Identify partners (gov, private, NGO, etc.)
- **Develop “models”**
  - Support & maintenance
    - Local unemployed youth employed per group of schools?
  - Rollout, support & maintenance, replacement, monitoring, power, content updates
  - School infrastructure (storage, recharge, content servers, wifi networks)
  - Community infrastructure (recharge hubs, shared wifi access, mobile networks, etc.)
  - Costs
  - CSIR Meraka as “incubator”, but need to develop handover plan & future business model
- **Opportunities**
  - New Models

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# Components - RESEARCH

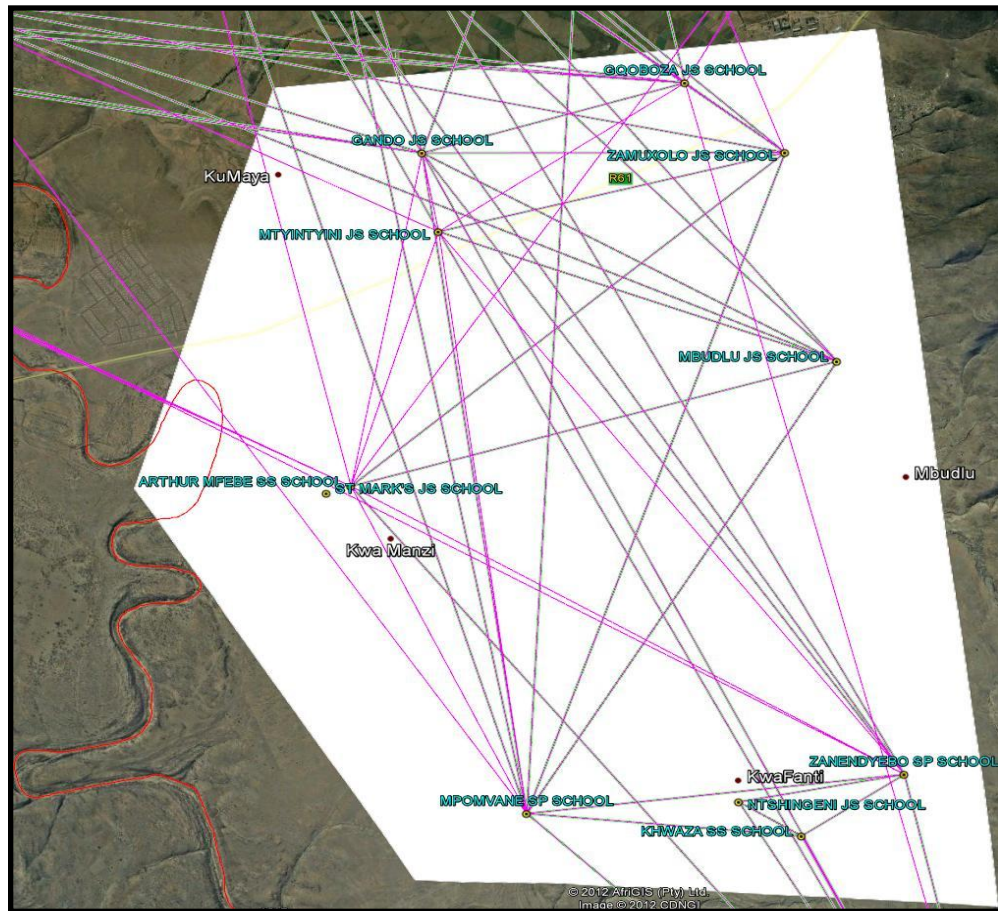
## RESEARCH

Masters & PhD  
Technology R&D  
ICT4E R&D



- **Aim: Identify replication and rollout models**
  - Develop potential models (devices, content, rollout, training, etc.) to be investigated
  - Develop research strategy and plan
  - Bring universities on board (multi-disciplinary research environment, looking at different angles of intervention)
- **Meraka as RESEARCH champion**
  - Partner with NRF
  - RFP process via NRF – Masters and PhD candidates
  - Partner with universities
  - Identify supervisors
- **Identify working “models”**
  - Policy support (based on research and practice in real-world environments)
  - Costs

# Implementation: Phase 1: 6 Schools: Jan 2013



Approx 1600 learners  
70 educators  
6 Support staff

- Arthur Mfebe SS (10 – 12)
  - 277 learners
  - 13 educators + 1
- St Marks JS (R – 9)
  - 386 learners
  - 14 educators + 1
- Zamuxolo JS (R – 9)
  - 366 learners
  - 14 educators + 1
- Gqoboza JS (R – 9)
  - 211 learners
  - 8 educators + 1
- \*Gando JS
- \*Mtyntyni JS
- Mbudlu JS (R – 9)
  - 401 learners
  - 15 educators + 1
- Mpomvane SP (R – 6)
  - 152 learners
  - 6 educators + 1



## Controlled use



Shared - in the classroom

## Foundation Phase (R – 3)



## Content



Existing, pre-loaded

## Support & Maintenance



Local youngsters

## Ruggedised Devices



Off-the-shelf 7" Android

## Content server per school



Accessible via Wifi

## Storage & Charging



Lockers + battery backup



Thank you