

Two Case studies of Innovation at the CSIR: UViRCO and Cellnostics

Liesbeth Botha,
Executive Director of Materials Science and Manufacturing

Delon Mudaly,
Intellectual Property and Commercialization Manager

Pieter van Rooyen,
“Entrepreneur in residence”

Date: 31 August 2011

1. CSIR mandate and start-ups
2. The UViRCO story
3. Plans for Cellnostics
4. Partners, stakeholders and roles
5. Challenges
6. Conclusion: Opportunities

CSIR Mandate and Startups

The CSIR must foster **industrial development** through multi-disciplinary research and **technological innovation**, in order to help **improve the quality of life** for all South Africans.

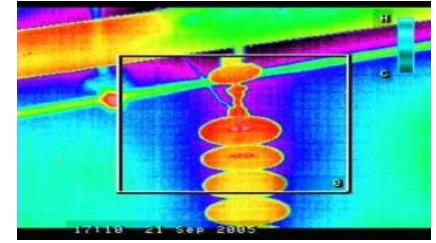
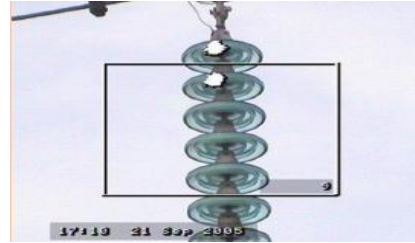
- ❑ Direct: new technologies (e.g. TB treatment)
- ❑ Indirect: new industry and growth (job and income creation)



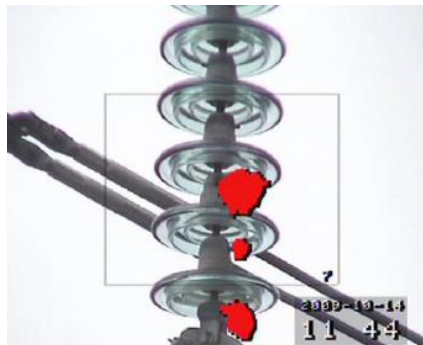
The UViRCO story: products



CoroCAM 504 – Daylight inspection - UV/Visible



MultiCAM – UV / IR / Visible



- CoroCAM I - night view, compact size
- CoroCAM III- low light applications (mainly for R&D)
- CoroCAM 504 -Daylight inspection (Ultra Violet)
- MultiCAM - viewing of UV/Infra Red

Technology development

- 1993 ESKOM – Transmission Department required technology to assist their insulator research and they approached CSIR
- 1994 ESKOM purchased CoroCAM I Camera (night viewer with recording)
- 1995 CoroCAM II (HV lab research system)
- 1997 CoroCAM III (low light improved system)
- 2001 Further R&D undertaken- development of CoroCAM IV – daylight detection system
- 2004 CoroCAM 504 was developed (improvement)
- 2005 CoroSOFT/ MultiSOFT - Image analyzing Software
- 2006 Multi Spectral Imaging system (IR/UV/Visible)
- 2007 Ongoing development
 - AirCAM (UAV mounted systems)
 - GasCAM (SF6 detection).

IP is in the form of **trade secrets** and **know-how** of **key creators** (developers and inventors) to CSIR proprietary technology packages.

Strong partnership exists between **ESKOM** and **CSIR MSM** R&D competency in **Electro-optics**.

Technology transfer strategy

- Due to increase in market interest (growth) CSIR and ESKOM decided to develop a technology transfer strategy for the CoroCAM® technology
- Team considered options on technology transfer including
 - JV
 - Spin-out
 - License to going concern
- Quantitative analysis
 - Developed key assumptions
 - Developed financials (cost structure) for each option
 - Compared financials
- Qualitative analysis
- Developed risks vs benefits for each option
- Examined deal specific problems & solutions.

Decision was taken by CSIR EXCO in Feb 2008 to spin out CoroCAM® as a Newco.

Company set-up

- ❑ Initiated Treasury approval request on 18/04/2008; in terms of Section 51 (1) (g) of the Public Finance Management Act
- ❑ UViRCO Technologies (Pty) Ltd registered in Aug 2008
- ❑ Manufacturing fully operational from 1 Nov 2008 at Persequor Technopark
- ❑ Six identified staff seconded to UViRCO two admin staff appointed
- ❑ Contracts:
 - Shareholders
 - Transfer of Assets
 - Transfer of staff
 - Loan
 - License
 - Pledge of shares
 - Sale of shares
- ❑ Final Approval from Treasury in Jan 2011
- ❑ Execution of all agreements, appointment of permanent staff April 2011.

Outcomes and impact (1)

Offering these technologies to the High Voltage Industry is making a large impact in supplying :

- Reliable HV power generation and supply
- Reduced number of power outages
- Limit the breakdown of critical HV equipment
- Effective maintenance of HV equipment
- Reduced Power loss through identifying Corona sources
- *Quality* and *safe* inspection of old & new installations (substations, transmission lines, etc)
- Research tools – to improve HV equipment design and manufacturing processes i.e. insulators, conductors, transformers, etc.

Outcomes and impact (2)

- CoroCAM® / MultiCAM are recognised as world-class products: sold in 30 countries
- Transfer of new technologies from CSIR to UViRCO
- Opportunity to increase employment of skilled labour force when company grows
- Support to local industry – upstream: procurement of components; downstream: supply of product
- Eskom royalty stream stimulating R&D investment to CSIR

Particular lessons: UViRCO Pty Ltd

- ❑ Need determined and willing commercial champion/s
- ❑ Political will throughout the NSI to spin out many new entities, serially, with a view of developing an understanding of the technology transfer space and associated typical transactional terms, through our own experiences
- ❑ Institutional capacity and support to conduct analysis and conclude contracts
- ❑ Document processes for audit trails, institutional memory and case studies.

Introduction & Quick Facts

cellNostics develops a low cost diagnostics platform for the emerging mobile health care markets.



- Key employees committed
- Patent pending technology
 - Two US Provisional patents filed
- Traction with Ampath & NHLS
- Demo of technology available

What is the Opportunity?



Heart Attack Grill



QUADRUPLE
BYPASS
BURGER®



Developing World: 3 Billion people

<http://www.nature.com/diagnostics>

Developed World: 1 Billion people

 Kalorama Information Molecular Diagnostics, 2009



• Market Drivers

- Health care absent and very expensive
- Increase in non-communicable & infectious diseases
- Over 1 Billion people worldwide have chronic diseases
 - In US \$685 billion by 2020
- Rapid and fast analysis of biological samples
- Global shortage of health workers

Cellnostics *POC*

Samsung Galaxy Tab

- Android operating system

Cellnostics Application



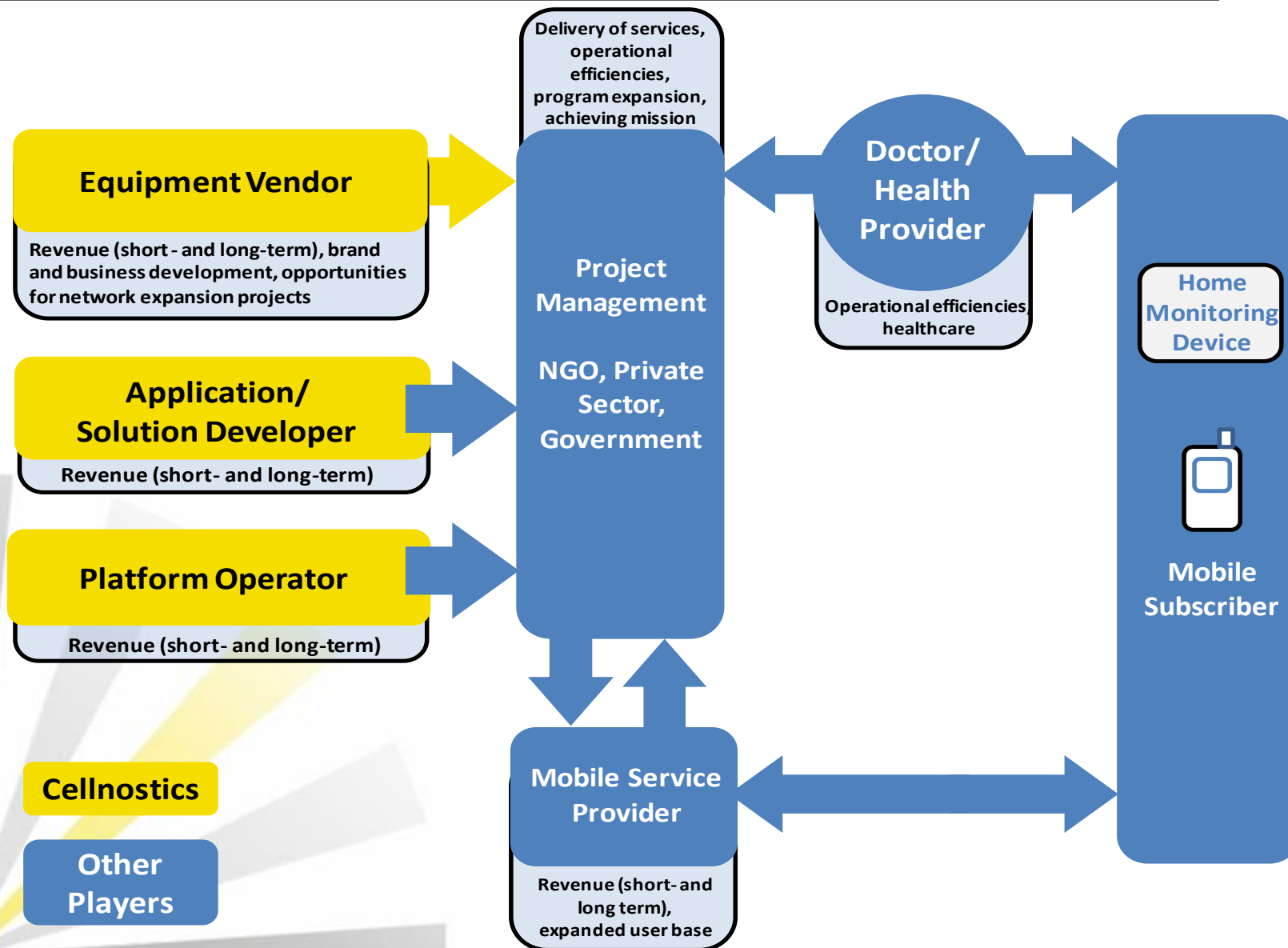
Lensless microscope

- Blood smear for diagnosis by microscopy

Built in Camera

- Lateral flow device for diagnosis by colour indication

Business Model

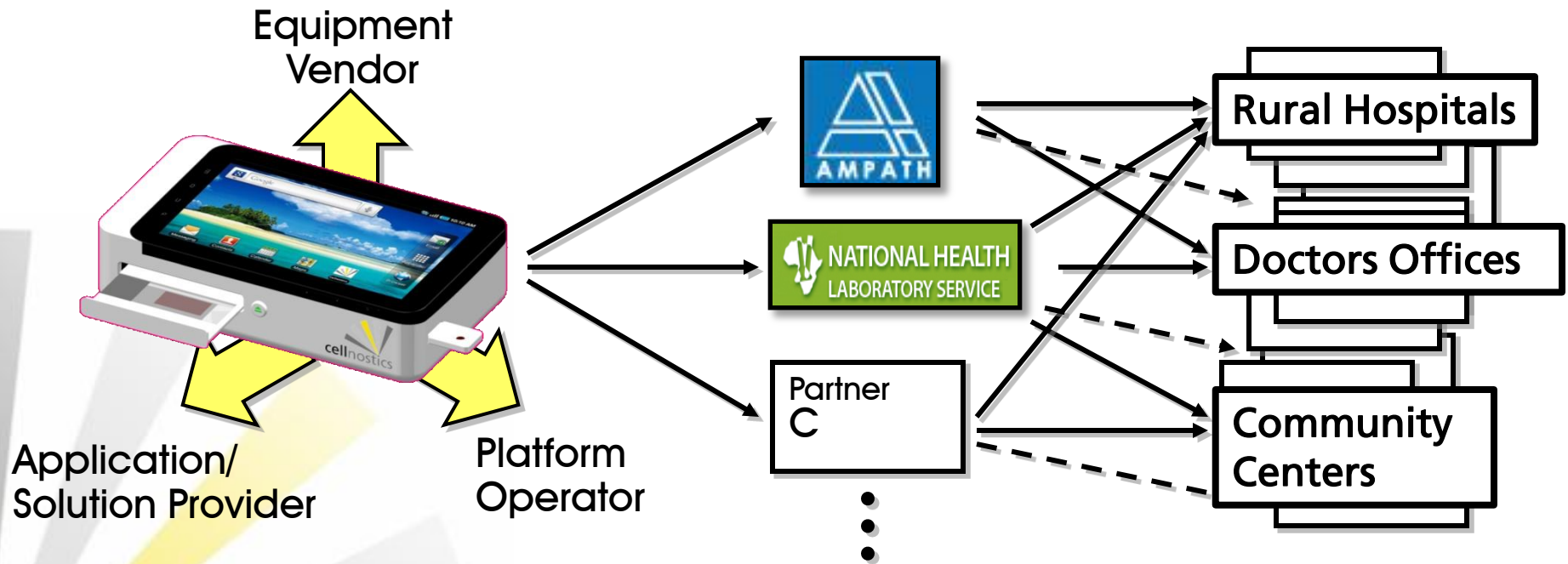


Go-to-Market Strategy

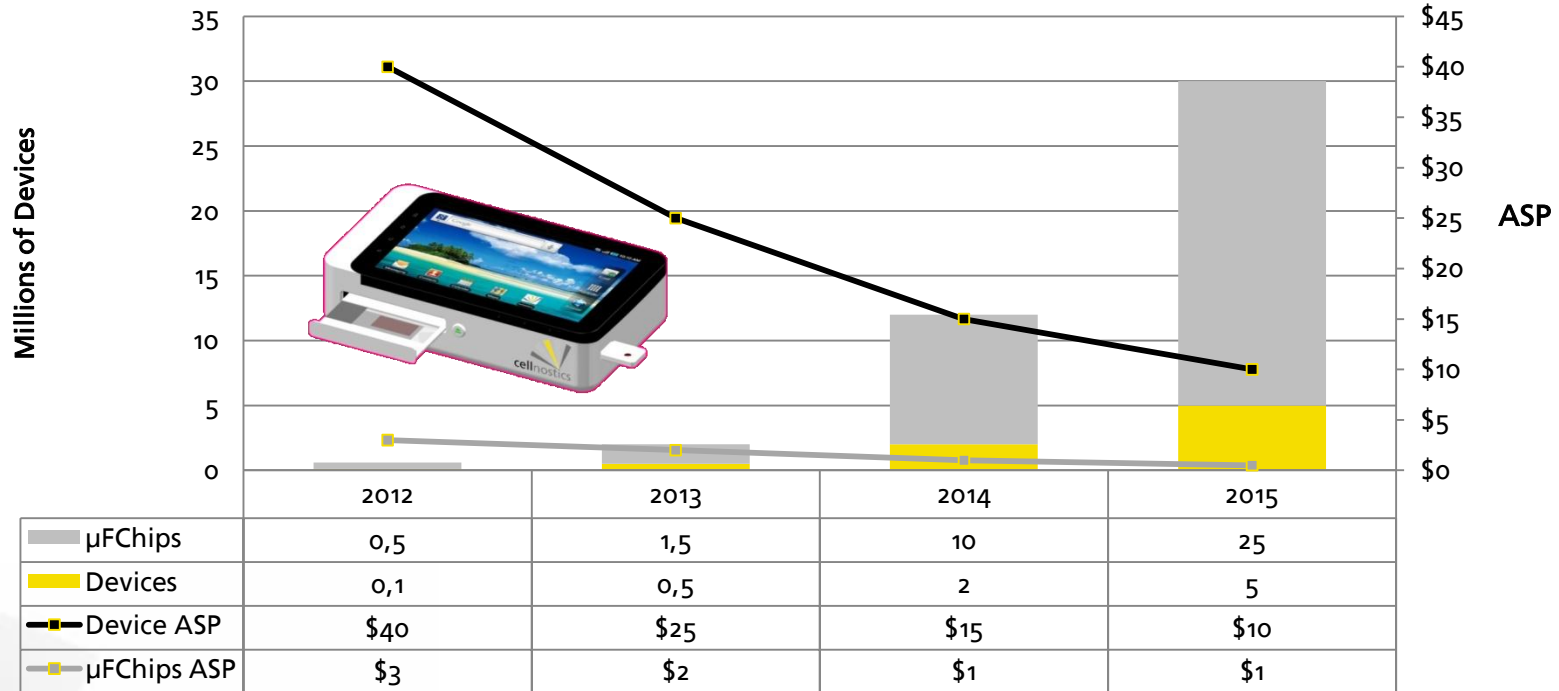
Cellnostics

Private Sector/
Government

Installed Base



Projected Revenue: Phase 1



- Two revenue components
 - Devices & μFChips
 - Assumptions: Reduction of ASP of Devices and μFChips year on year.
 - Revenue in 2015: \$75M
 - TAM in 2015 is greater than \$6B

Partners, stakeholders and roles

- Advocacy: DST & TIA, Treasury, the dti, DoED & IDC, CSIR Board and Executive
- Funders:
 - DST & TIA,
 - the dti,
 - DoED & IDC,
 - Private Sector investment, e.g. Sanlam
 - Private Sector entrepreneurial industry, e.g. Sasol, Ampath
 - SoEs, e.g. Eskom, Transnet
 - Public Sector entities, e.g. NHLS
- Support and development: IP and TT support offices, NIPMO, “Fund managers” e.g. *Quintessential Africa*, Innovation Hub
- Intrapreneurs and Entrepreneurs
- IP and business idea generators and visionaries

Challenges

- Visionaries and business idea generators
- Lack of (serial) Intrapreneurs and Entrepreneurs
- Technical depth (attract international talent)
- Fragmented funding
- Remuneration and career path: technical versus management

- CSIR costs:
 - Perceived and real HR costs
 - Overheads
- CSIR institutional culture:
 - Research mindset
 - Project-based organization
 - Human capital policies

- Fragmented NSI

- Capacity to support and develop opportunities (mentoring role and more)

Conclusion: Opportunities

- ✓ Pockets of leadership and management will in NSI
- ✓ Public funding agencies like TIA and IDC – build mutual understanding
- ✓ CSIR mandate
- ✓ Private funding – identify and partner with innovative and entrepreneurial companies
- ✓ Smart, innovative, entrepreneurial individuals