



mHealth

Pan-African mHealth Initiative South Africa mHealth Feasibility Report

September 2013

This document aims to provide an overview of the feasibility of mHealth in South Africa from the mobile operator perspective, by describing at a high level:

- The opportunity for mHealth
- Current mHealth services
- Implementation landscape
- Policy / regulatory environment
- Options for scaling

The Opportunity for mHealth in South Africa

South Africa has high overall health spend, for relatively low levels of access and capacity in the public health sector

ACCESS

No. of health facilities	4,200
No. of people served per facility	11,742
% of population served by public	84%
Global ranking of health care system	# 175 / # 190

CAPACITY

	<u>SA</u>	<u>Africa</u>
Physicians /1000	0.77	0.22
Nurses /1000	4.08	1.17
Community health workers / 1000	0.2	0.45

COSTS

	<u>SA</u>	<u>Africa</u>	<u>Rank within Africa</u>
% of GDP spent on healthcare	8.5%	6%	#6
% of health care spend in public sector	40%	50%	#31

- Compared to rest of Africa, SA has a relatively high spend on health care compared to rest of Africa of USD930 per capita spend. However, the per capita spend is USD443 for someone in the public sector vs. USD3488 per capita for someone in the private system (comparable to average spend per capita in the UK), indicating highly inequalities in healthcare access.
- There is no shortage of physicians and nurses overall, although 70% of physicians and nurses operate in the private sector, and there is a relatively low concentration of community health workers.

Source : WHO Health Estimates, 2010

Priority health areas for South Africa are in maternal and child health and HIV / AIDS

ALIGNMENT TO Millennium Development Goals (MDGs)

MDG	1	2	3	4	5	6	7	8
Number of MDG indicators	9	3	3	4	6	10	11	10
Indicators deemed "unachievable"	1	0	0	3	3	2	2	1

MORTALITY

Cause of Death	Rank	Deaths	Male	Female
HIV / AIDs	1	165859	80089	85770
Ischaemic heart disease	2	32919	27134	18184
Homicide / violence	3	32485	19806	14539

- MDG 4 (on maternal health) and MDG 5 (on child mortality) are most in danger of not being achieved, while HIV / AIDS remains the top cause for mortality.

High mobile penetration and coverage comes with relatively high (though falling) usage costs

ACCESS

	<u>SA</u>	<u>Africa</u>	<u>Rank in Africa</u>
Mobile penetration (%)	132	73	#3
Mobile broadband (%)	20	7	#1

CAPACITY

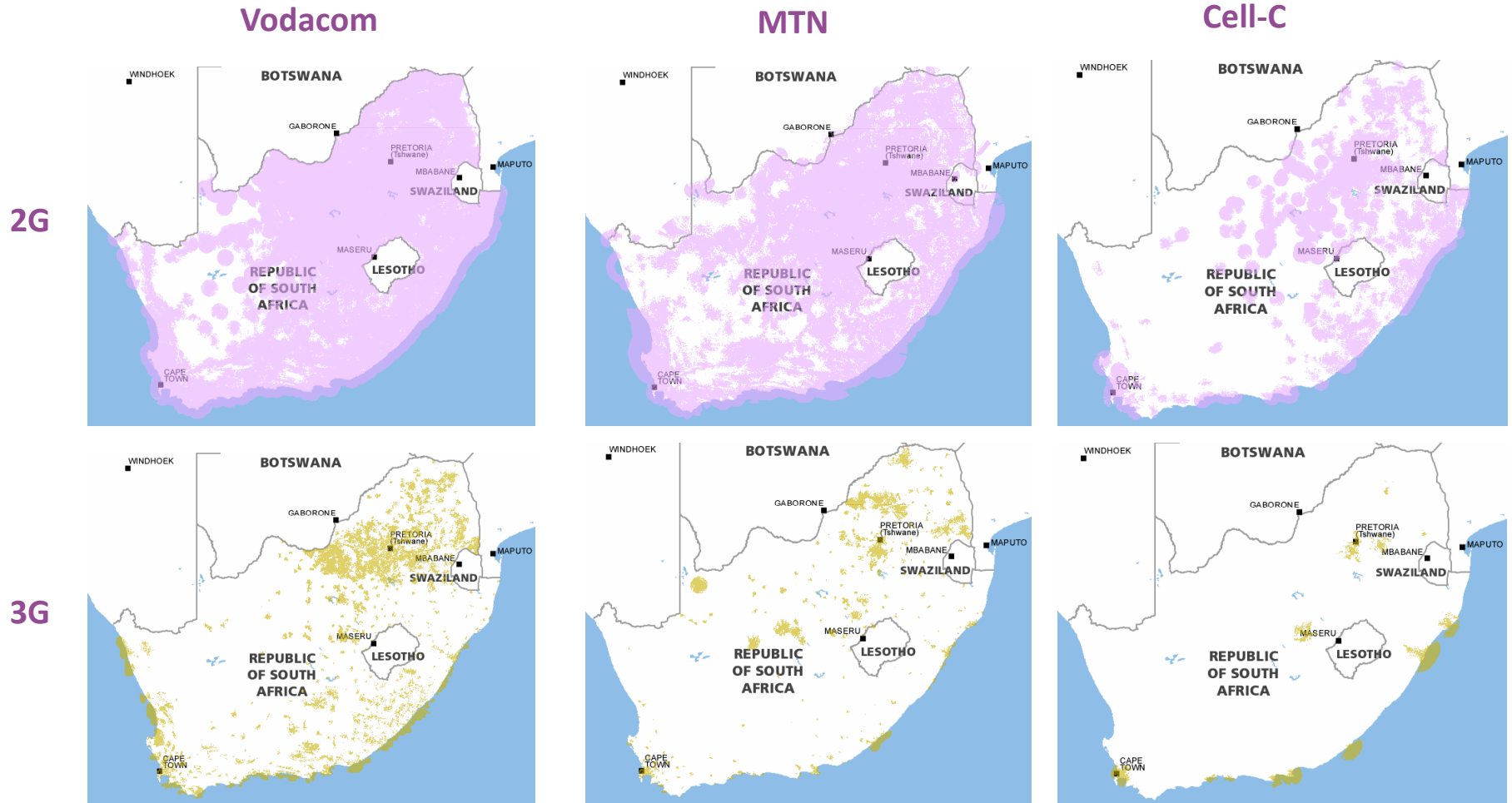
	<u>SA</u>	<u>Africa</u>	<u>Rank in Africa</u>
Coverage (population)	100	70.4	#1
Coverage (% area)	90	39.0	#5

COSTS

	<u>SA</u>	<u>Africa</u>	<u>Rank in Africa</u>
Monthly average cost of ownership of mobile (USD)	10.6	10.0	#13
Average cost of SMS (USD)	0.11	0.076	#5

- Overall mobile penetration is among the highest in Africa, as is the quality and coverage of the mobile network. Mobile broadband as a proportion of total usage is the highest in Africa.
- While monthly average costs of mobile ownership have gone down by over 30% in the last 3 years, the costs of mobile usage relative to the rest of Africa (and the developed world) continues to be an issue. Texting costs are among the highest in Africa.

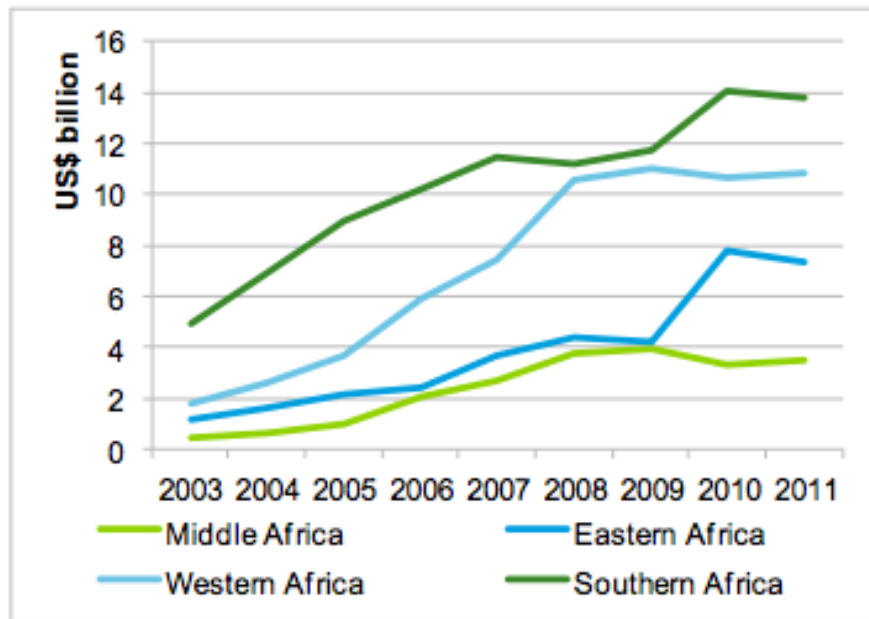
The 3 major networks between them cover 90% of South Africa, but 3G roll-out remains limited to urban areas



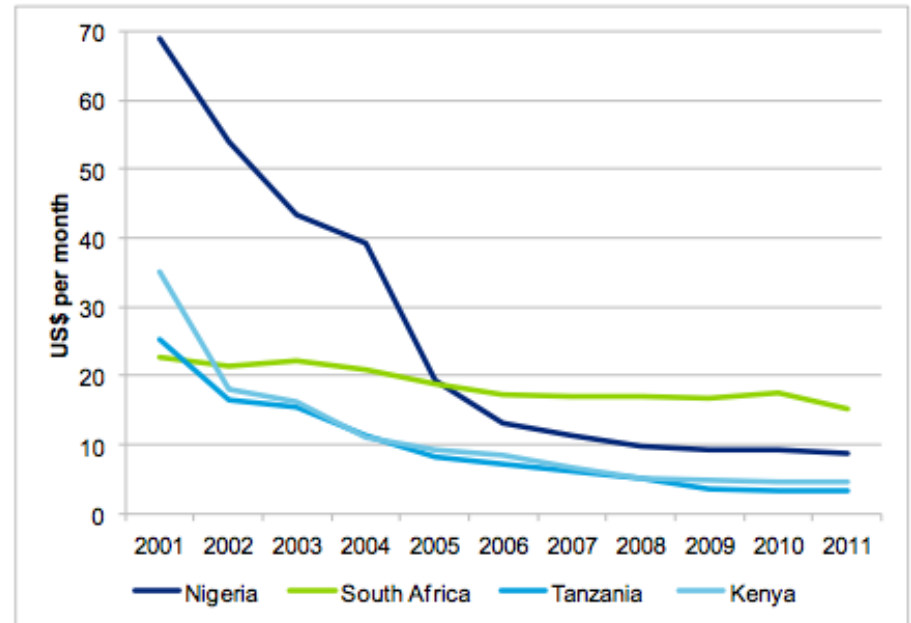
Source: GSMA Mobile for Development Intelligence, 2011

There is willingness to attract lower income customers in order to drive revenue, although the trend is less obvious in South Africa

Total mobile revenues



Average revenue per user

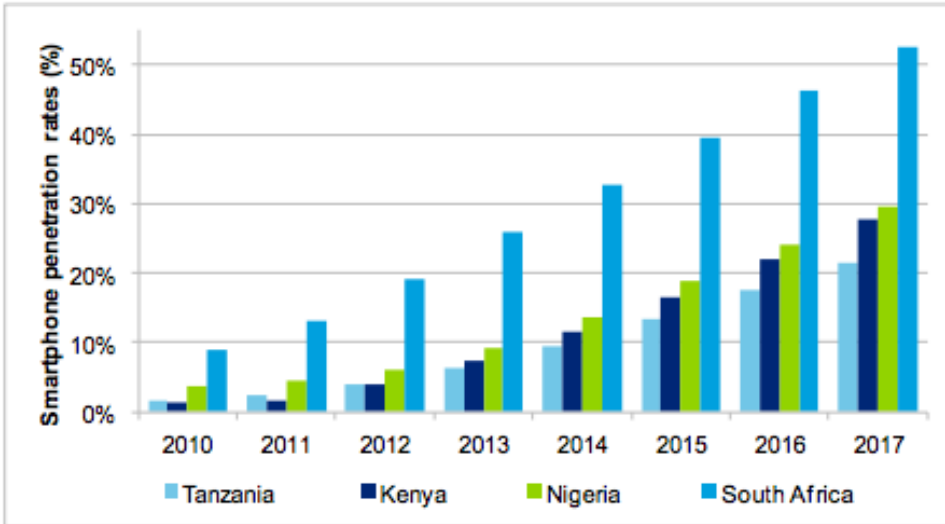


- Increasing total revenue coupled with falling average revenue per user points to increasing targeting of lower income consumers

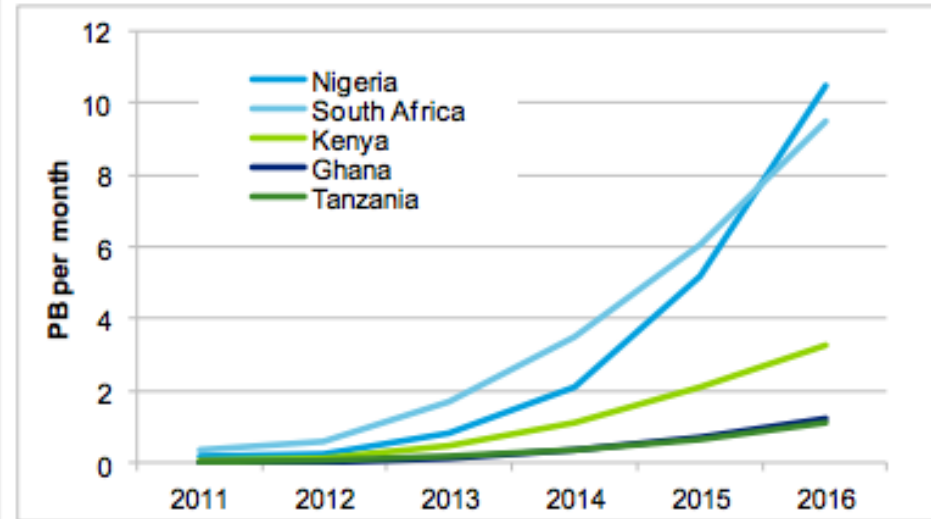
Source : GSMA Policy Brief Sub Saharan Africa, 2012

Reliance on text / SMS as a form of mHealth may fall over time

Smartphone penetration



Usage of mobile data



- Increasing smartphone penetration and usage of mobile data indicating a reduced reliance on texts as a medium of communication over time

Mobile presents opportunities to increase access, improve capacity and reduce costs of health care

ACCESS

Improving health access to:

- health information (mobile messaging)
- diagnosis (mobile lab results, tele-triage)
- better treatment and monitoring (adherence monitoring, drug authentication)

CAPACITY

Improving health capacity by:

- more consistent education for health care workers (mobile enabled job aids, certification courses)
- decreasing errors in data collection and health assessment (mobile enabled risk assessments and data gathering)
- providing more direct access to health care expertise in areas with low / little health access (direct connections to health expertise via phone / video)

COSTS

Reducing burden of costs to:

- consumers who can minimise wasted trips to clinics
- the health system through patients managing their health better, more efficient / accurate data collection

Current mHealth Services

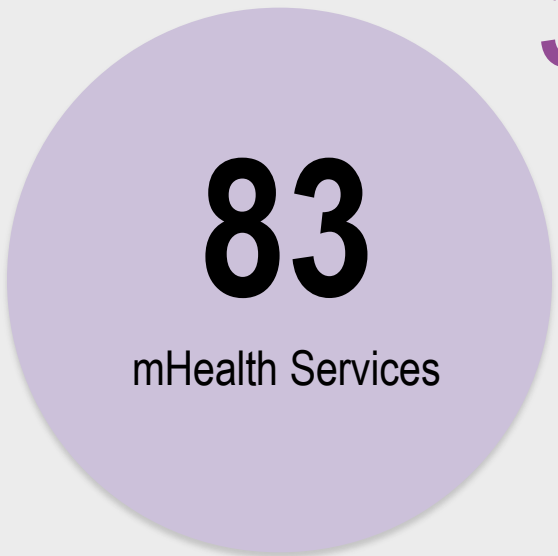
Demand generation and community health worker data collection efforts in Maternal & Child Health and HIV/AIDS are key use cases

Health Focus

42 focusing on HIV / AIDS
18 focusing on women and children

Use Cases

31 Community health worker data collection
27 Demand generation



Led By

46 led by NGOs
17 led by mobile operators (all by Vodacom)

Source : GSMA mHealth Tracker, June 2013

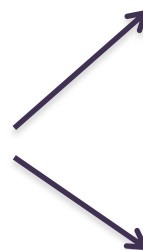
Focus: demand generation

General Use Case

Build awareness for service through health system, partners or mobile campaigns



SMS/PCM-based sign up to service to register pregnancy details



Multi-channel, stage-based / non-stage-based reminders on pregnancy / HIV status

Connection to national helplines for counseling and advice

Key Learnings



MAMA / Cell-Life – Uses **stage-based messaging** to create engagement with the user, anticipation for the next message, help with the bonding with the baby and dealing with the changes in the mother’s body



Praekelt – Uses **social media and networks** to create communities of interest between users, anonymous relief from anxiety

Challenges

- Dependence on expensive SMS transmission limit future sustainability
- May have to wait for fixed cost channels to reach wide adoption for true scale and reach for BoP
- Lack of widely recognised national guidelines on health content

Focus: community health worker registration and data collection

General Use Case

Mobile-based appointment planning and job aids



Registration and initial assessment

Follow up plan based on assessment

Campaign messages and stage-based reminders

Record of visit for supervision and incentive

Key Learnings



Integration into existing workflows helps promote adoption and change management



Selling benefits to community health workers by promoting the additional **credibility and time savings**



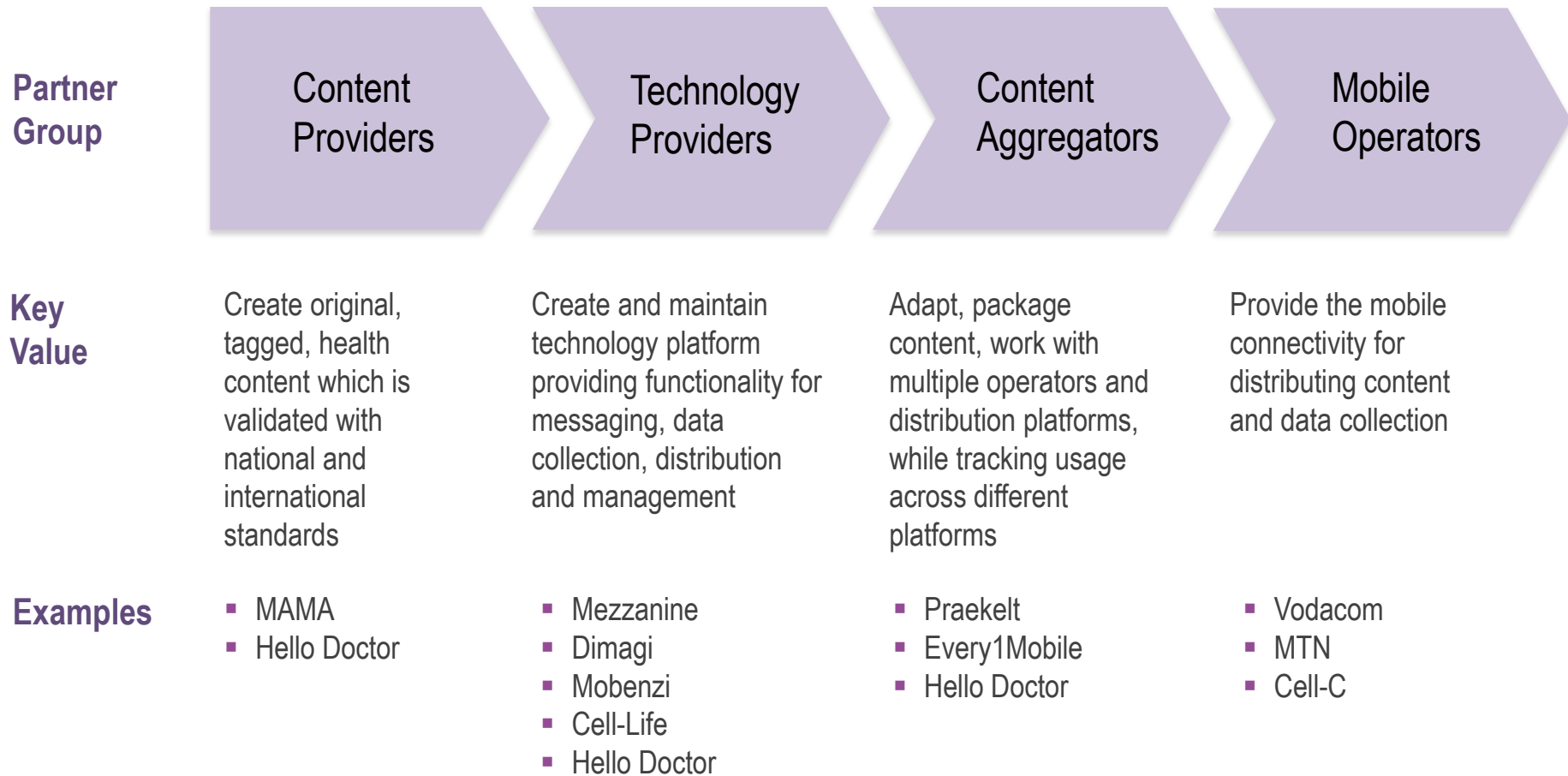
Selling benefits to the health system **by reducing errors and time taken in manual transcription of logbooks**

Challenges

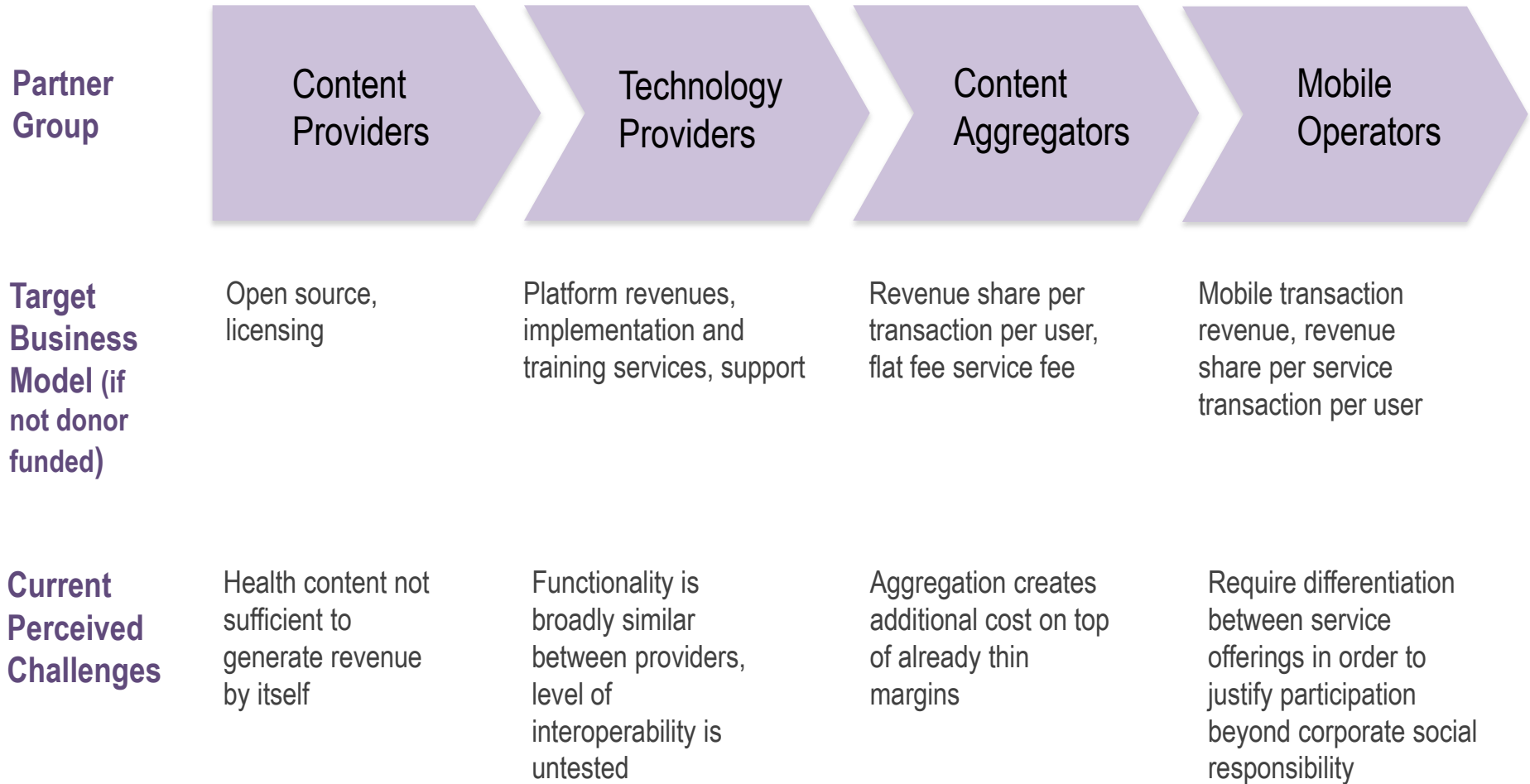
- Integration into external systems is uncertain
- Interoperability of systems at the data (can data be exchanged?)
- Interoperability of systems at the usage level (can CHWs who have used one system switch to another?)

Implementation Landscape

South Africa has a wealth of experience in each partner group within the mHealth value chain











Partner groups have well defined target business models for sustainability, but there are challenges to execute on plans



Implementation Landscape (Mobile Operators)

Top mobile operators in Sub-Saharan Africa by connections

Operators	Total connections	Headquartered	Countries
	103,319,174	South Africa	Liberia, Botswana, Guinea, Benin, Cameroon, Congo, Côte d'Ivoire, Ghana, Guinea-Bissau, Nigeria, Rwanda, South Africa, Swaziland, Uganda, Zambia.
	70,955,587	United Kingdom	DRC, Lesotho, Mozambique, South Africa (Vodacom), Tanzania, Ghana, Kenya (Safaricom)
	63,507,689	India	Burkina Faso, Chad, Congo, DRC, Gabon, Ghana, Kenya, Madagascar, Malawi, Niger, Nigeria, Rwanda, Sierra Leone, Tanzania, Uganda, Zambia.
	28,592,053	France	Côte d'Ivoire, Botswana, Cameroon, CAR, Madagascar, Niger, Uganda, Equatorial Guinea, Mauritius, Guinea, Guinea-Bissau, Mali, Senegal, Kenya.
 Globalcom	23,859,754	Nigeria	Benin, Ghana, Nigeria
	19,402,674	UAE	Tanzania, Nigeria, Benin, CAR, Côte d'Ivoire, Gabon, Niger, Togo
 Millicom	16,961,871	Luxembourg	Chad, DRC, Ghana, Rwanda, Senegal, Tanzania, Mauritius.
	2,147,588	Sudan	Mauritania, Ghana, Senegal, Guinea, Nigeria.

Source : GSMA Mobile for Development Intelligence, 2011 / ITU, 2008

Mobile operators will want to differentiate their offering for commercial sustainability



Pursuing a platform strategy through investment in a dedicated mHealth service provider (Mezzanine) which has experience in a number of health areas with possible expansion into other mobile development sectors (agriculture)

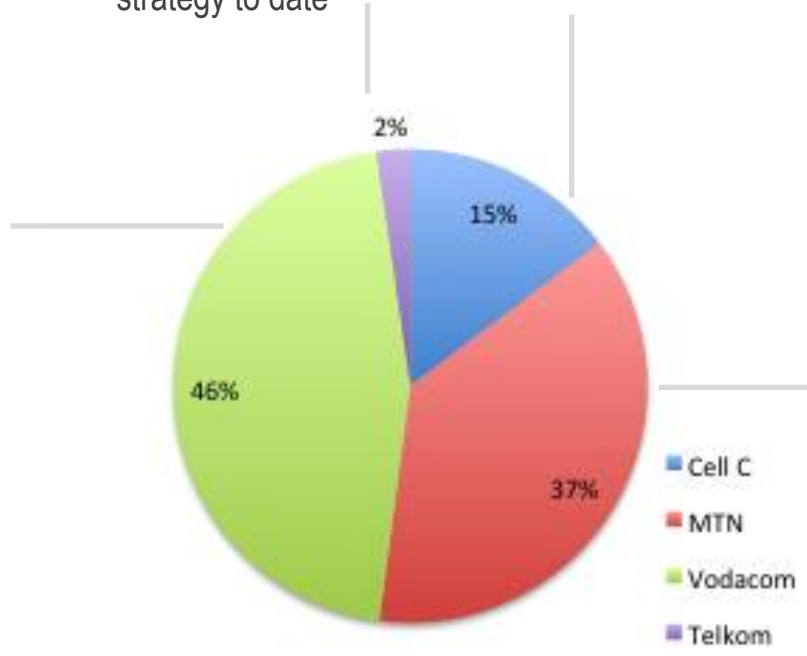
Telkom Mobile
No perceived mHealth strategy to date



New entrant into mHealth, will be initially focusing on delivering health content



Pursuing partnerships with existing mHealth service providers rather than direct investment to develop capability in mHealth



MARKET SHARE BY SUBSCRIBERS

Vodacom – Integrated mHealth Platform



Target customer strategy

- Government health department
- NGOs
- Donors
- Health service providers (Pharma; Health Insurers; Practitioners, etc.)
- Multiple health domains
- Other content domains

Target direct revenue strategy

- Platform licensing revenue
- Platform customisation revenue
- Training
- Support credits
- Managed service (Software as a service & Platform as a service)

Target indirect revenue strategy

- Hosting
- Data management
- Link to vouchers
- Mobile payment
- Content management
- Virtual training services

KEY POINTS

- Clear and consistent global Vodafone Group health strategy
- Extensive relationships in government and implementation experience via work with GeoMed (now Mezzanine)
- Holistic strategy involving messaging, community health worker engagement, and eventual health record integration
- An independent neutral position in Health value chain

MTN – Commercial consumer mHealth



Target customer strategy

- Basic health package for low income consumers
- Premium health package for high income consumers

Target direct revenue strategy

- Revenue share based on health packages

Target indirect revenue strategy

- Premium rate connectivity linked to health packages
- Data sharing with healthcare insurer

KEY POINTS

- Has experience in rolling out health services through a series of pilots
- Strong interest in going beyond pilots through the renewed focus on a group-wide mHealth strategy and partnerships to achieve this goal
- Committed to enabling overall consumer engagement in health care by
 - Increasing the flow of information;
 - Lowering costs through better decision-making;
 - Fewer in-person visits;
 - Greater adherence to treatment plans;
 - Improving satisfaction with the service experience

Cell C – Value added services bundling



Target customer strategy

- Lifestyle bundles and packages to existing consumers
- Health systems (future)

Target direct revenue strategy

- Health content as a means of differentiation (or to keep up with competition)

KEY POINTS

- Has brought on board new management with experience and interest in mHealth
- As a new entrant in mHealth, great interest in creating momentum in mHealth as a new content strategy

Implementation Landscape

(Mobile Operators – Perceptions of mHealth Services)

The potential for mobile operators in mHealth is high in concept, but evidence of commercial impact so far is sporadic

VALUE DRIVER

Support national health outcomes

BENEFIT FOR OPERATORS

- Customer loyalty / retention
- Government relations
- Employee satisfaction

INDICATIVE PROOF POINTS

- Scale (# reached)
- Mortality (deaths)
- Cost burden (\$\$)

Some evidence of impact in public health

Competitive differentiation

- Customer loyalty / retention
- Increased usage of core services

- Churn reduction
- Usage of text / voice / data increase

Ability to leverage ICT capabilities

- Increase usage of consumer capabilities (e.g. mobile money)
- Increase usage of enterprise capabilities (e.g. data center, cloud services, videoconferencing)

- Mobile money transactions increase

- Increased services packaged with ICT capabilities

Some evidence of impact among developed country operators

Ability to generate new revenue streams

- New customer types
- New revenue streams

- New customer signup
- Volume of new revenue streams


Value drivers: Mobile messaging vs mHealth platforms


VALUE DRIVER

MOBILE MESSAGING e.g. MAMA



mHEALTH PLATFORMS e.g. Mobenzi / Mezzanine


Support national health outcomes

 Positive behavioural change through mobile messaging


 Positive adoption from community health workers in terms of increased efficiency and accuracy


Competitive differentiation

 Messaging by itself is a commodity service
 Difficulty to adapt content without diluting core message


 Potential for differentiation depending on specific nature of partnership


Ability to leverage ICT capabilities

 Little to no leverage

 Potential for leverage into national health systems

Ability to generate new revenue streams

 Very little evidence of commercial sustainability apart from in developed countries

 Theoretical business models exist for multiple health sectors, appealing to governments and NGOs

 Strong alignment  Uncertain alignment  Weak alignment

Implementation Landscape

(Perceptions of a selection of mHealth Solution Providers
from Mobile Operators)

Operational drivers – what operators evaluate mHealth service providers on

OPERATIONAL DRIVER

Leverage operator core capabilities

Complementary capabilities

Minimise implementation risks

Offer optimal commercial terms

DISCUSSION AREAS

- Core connectivity
- Support capability
- Business infrastructure
- Funding
- Content
- Technology
- Relationships / credibility
- Implementation experience / support capability
- Regional coverage
- Funding
- Experience with regulatory issues : telemedicine, data consent, privacy, ownership
- Experience with technical issues : linkage to national systems, standards, interoperability
- Readiness of health workforce
- Up-front investment commitment
- Ongoing revenue share
- Exclusivity
- Commercial conflicts of interest
- Timing

MAMA – Strong brand and content proposition

OPERATIONAL DRIVER

Leverage of operator core capabilities

Complementary capabilities

Minimise implementation risk

Offer optimal commercial terms

DISCUSSION AREAS

- Perception that all that is being asked for is cheap / free connectivity
- MAMA brand is very strong
- Staged based messaging consistent with mobile VAS model of creating continued engagement
- High regard of Praekelt’s overall approach of community engagement
- Appeal of content across cultures / districts / populations is a question
- Low regulatory risk, as content is validated by international bodies, and associated with a big healthcare brand
- Content delivery is a familiar service concept for operators
- MAMA is relatively “easy” to use
- The promise of cheap / free high quality content
- No long term business model (for operators) for SMS-only model
- Unfavourable comparison to other mobile content VAS



Mezzanine – Strong technical offering

OPERATIONAL DRIVER

Leverage of operator core capabilities

Complementary partner capabilities

Minimise implementation risk

Offer optimal commercial terms

DISCUSSION AREAS

- Potentially leverage the full range of operator capabilities e.g. switching, billing, support networks, call centers, mobile wallets and customer databases
- Mezzanine has proprietary, but network agnostic, technology which is field tested across a number of different health areas, as well as potentially other mobile for development areas
- A well articulated strategy in implementation, ongoing R&D and support
- May be challenging in cross-operator uptake in geographies with strong Vodacom presence
- Dependency on external standards and national systems
- Issues with community health worker capacity and incentives
- Well articulated business model offering alternative revenue streams
- Dependent on healthcare financing being diverted into community health worker empowerment

Hello Doctor – Strong commercial offering

OPERATIONAL DRIVER

Leverage of operator core capabilities

Complementary partner capabilities

Minimise implementation risk

Offer optimal commercial terms

DISCUSSION AREAS

- Primarily leverages the operator’s subscriber base and distribution capability

- Part of broader commercial health strategy with linkages into mainstream media
- Linkage into the healthcare insurance capabilities
- Access to a physician network
- Major South Africa TV personality involved

- Hello Doctor has a proven business model and track record in commercialization
- Well balanced technology and marketing teams
- Recent negative history with regulatory bodies and medical professional councils with regard to appropriateness of telemedicine deployment

- Complementary geographical coverage



Policy / Regulatory Environment

A number of emerging opportunities within the enabling environment can address historical issues with implementation

Challenges

Integration into National Systems

- Negative perceived history of e-Health implementation creating uncertainty within public sector
- Operational challenges with registration and relationships with other agencies

Regulation on Health Policy and Financing

- Position on data ownership, privacy and consent not fully understood
- Insufficient evidence for public payors to integrate mHealth into current intervention strategy
- Taxation on mobile remains relatively high among African countries

Standards & Interoperability

- Lack of a nationally mandated framework for standards and interoperability means uncertainty for service providers

Opportunities

- eHealth strategy and priorities have been defined
- Vendors for national-level integration of health data have been shortlisted

- Pan-African mHealth Initiative collaboration will demonstrate a business case across a consortium of partners for a defined set of mHealth services
- Usage of Universal Access Fund as yet untapped

- Strong leadership within the Pan-African mHealth Initiative consortium and willingness to collaborate can show the way for other sectors to adopt a framework for collaborative competition

Options for Next Steps

Key findings

CHALLENGES

- Multiple mHealth services which have had problems reaching national scale
- Lack of articulated, tested standards for mHealth
- Lack of business case at scale for commercial roll-out of mHealth services

OPPORTUNITIES

- Similarities in use cases and objectives across the different mHealth services
- Expertise and lessons learnt across the mHealth implementation value chain
- Commitment and interest from mobile operators as well as mHealth service providers for collaborative action

Recommendations

- Convene a group of mHealth stakeholders from both mobile and health sectors to agree to a common product concept based on the similarities in use cases and objectives
- Develop a “minimum” level of technical standards that will demonstrate interoperability on a defined use case which has high national impact i.e. registration of mothers and subscription to maternal messaging
- Test the applicability of those standards from a technical and implementation standpoint
- Develop a national business case that draws upon the commonalities between the objectives of both the mobile and health communities, which can be used to justify the roll out of services at scale

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