



ANALYSIS

Scaling Mobile for Development

August 2013

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Overview

- The mobile phone holds the power of ubiquity. Across the developing world, around 40% of people now actively subscribe to mobile services. Well over 50% have access to a mobile, despite not owning one. Access to mobile services in the developing world has outpaced the rate at which much of the population is gaining access to basic services such as electricity, sanitation, and banking.
- As the one technology that is becoming widely accessible to all populations, including those at the bottom of the economic pyramid (BOP), there has been increased focus on the invaluable role mobile technology can play in improving social, economic and environmental development in emerging markets. As the remaining unconnected populations get access to mobile technology and the capabilities it provides, the lives of these populations will fundamentally shift. The simple increase in access to information at a faster pace, from new sources, will influence everything. Affordable mobile phones and the opportunities they usher in for the poor will be one of the most dramatic game-changing technologies the world has ever seen. Industry growth will happen with or without our intervention; the role of MDI will be to educate all those interested in harnessing the power of mobile for good.

Overview (continued)

- This confluence underlines the opportunity held by Mobile for Development, which seeks to draw investment and partnership to scale mobile-enabled services that can help to facilitate service delivery in the absence of traditional modes of infrastructure that would otherwise do this. Indeed, Mobile for Development is a growing sector, with well over 1,000 live services now tracked by the GSMA across the developing world in verticals such as money, health, education and entrepreneurship. The problem is that while the sector has enjoyed continued growth in the number of services over the last 5-7 years, scaling up services still proves to be a challenge and sustainable business models continue to be elusive.
- This work is designed to inform and add insight to help address these challenges. It has been developed by [Mobile for Development Intelligence](#) with support from the Rockefeller Foundation. Our inclusive approach included a research process and production of an interim and final report in April and May 2013 respectively, with a series of peer review workshops held in Nairobi, Kenya and Washington DC to drive collaboration and thought leadership across stakeholder groups.

About us

Mobile for Development Intelligence is a freely available, online platform of mobile market and impact data, analysis and access to an active community of practice in Mobile for Development. We believe that open access to high quality data will improve business decision making, increase total investment from both the commercial mobile industry and the development sector and accelerate economic, environmental and social impact from mobile solutions.

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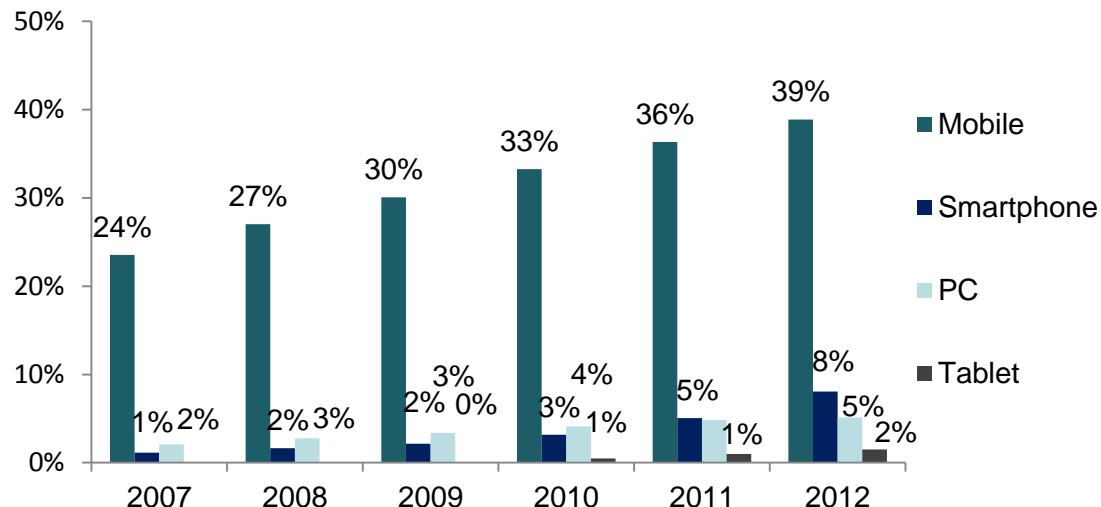
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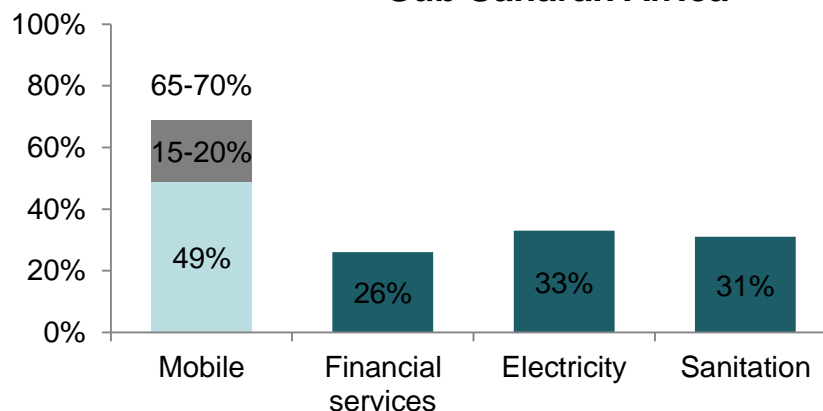
The next wave: harness the opportunity

- Nearly 50% of people own a mobile in the developing world, with this closer to 70% including those with access despite not owning one
- Relative to other consumer electronics devices, this makes mobile the nearest to ubiquity
- We expect growth to moderate a bit, but even still, an additional 130 million people will use start using mobile across the developing world *each year up to 2017*
- This presents an opportunity from sheer connections, but more importantly, by using mobile as an enabler to service access – both in rural and urban areas **(see slides 27-32)**

Penetration of population (developing world)

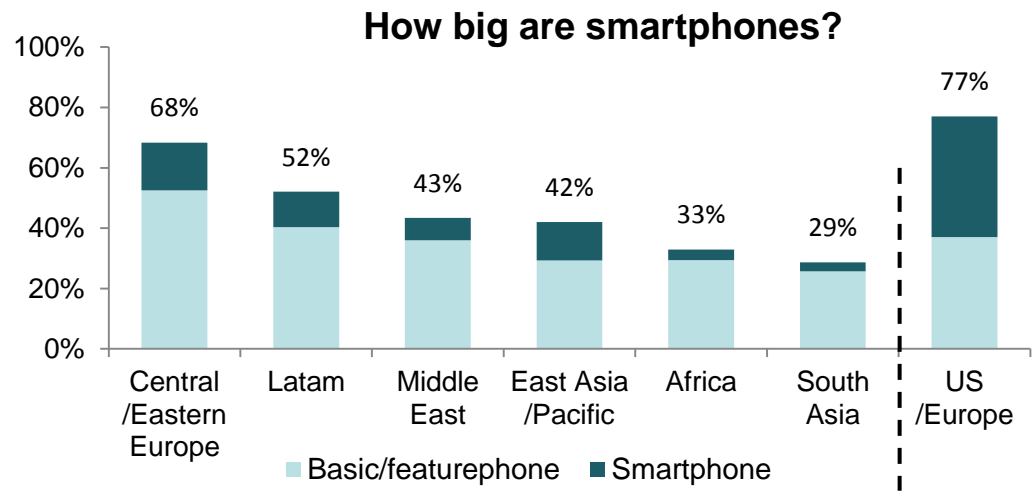
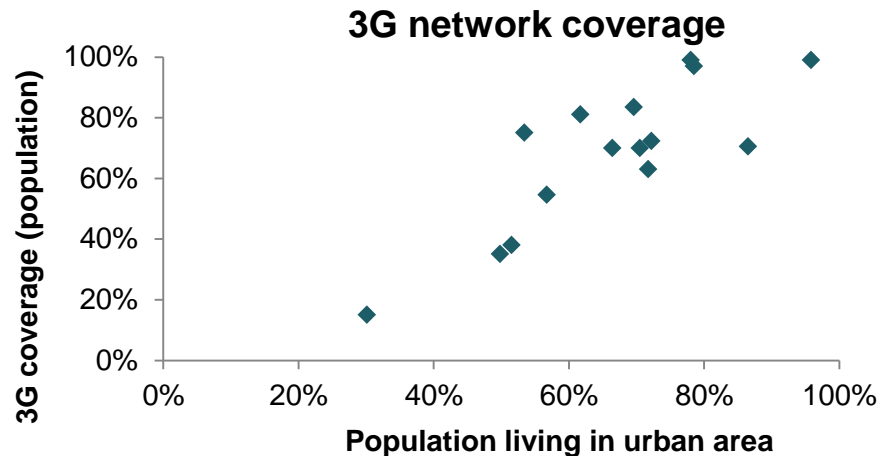


Sub Saharan Africa*



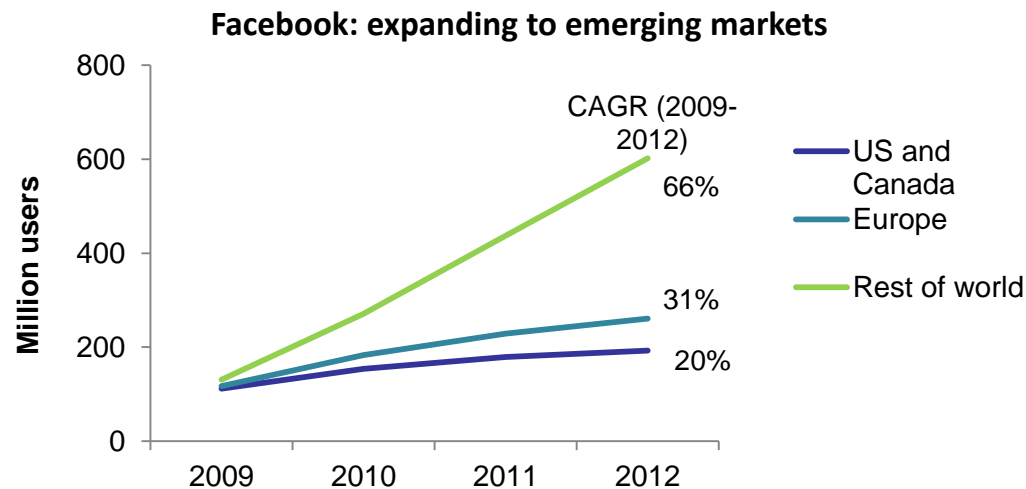
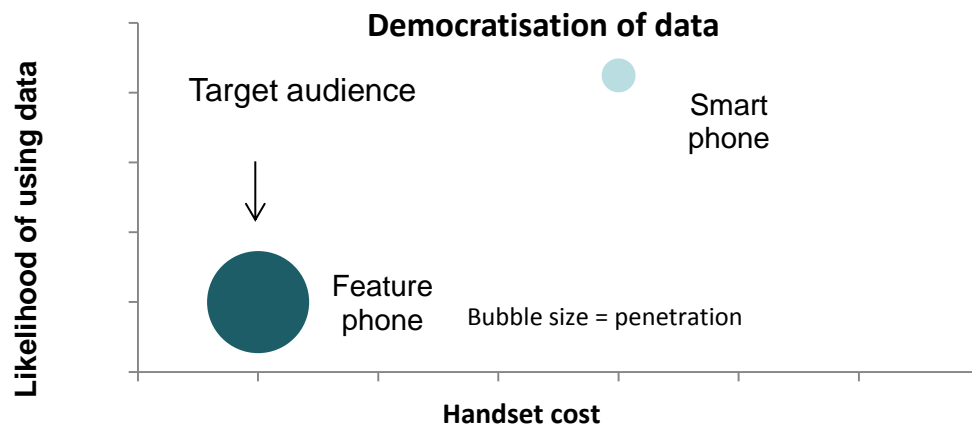
Smartphones have grown, but not (yet) driving growth

- Network coverage remains both a driver and limitation of mobile access
 - 2G coverage (which mostly services voice and text) is widespread, over 85-90% in most markets
 - 3G is more limited, especially in countries where a lot of the population lives in rural areas
- This is actually not a major problem now – 2G is fine for data use provided capacity is not overburdened
- Smartphones are the biggest data consumers, but they are still owned by less than 10% of people (compared to nearly 50% in US/Europe)
- We expect this to rise (as device prices continue to fall), but at an uneven pace, with mid and upper income groups the fastest adopters **(see slides 41-45)**



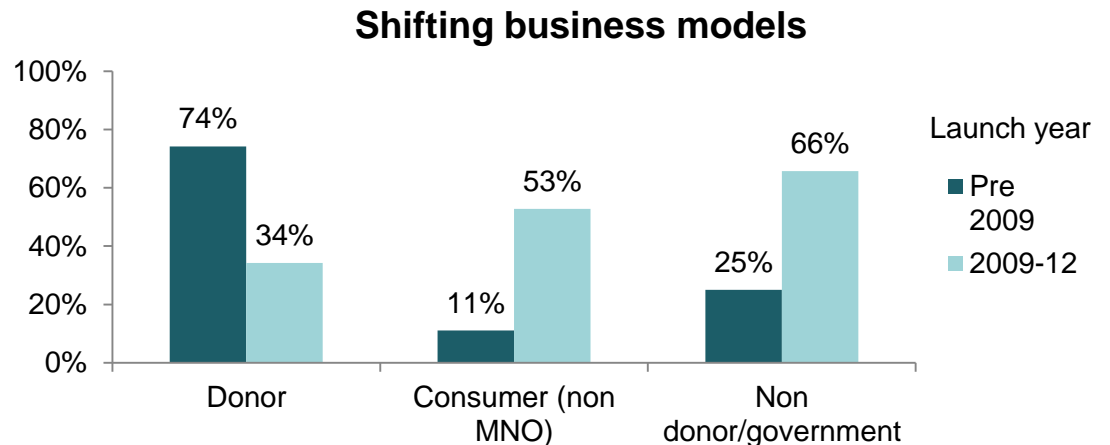
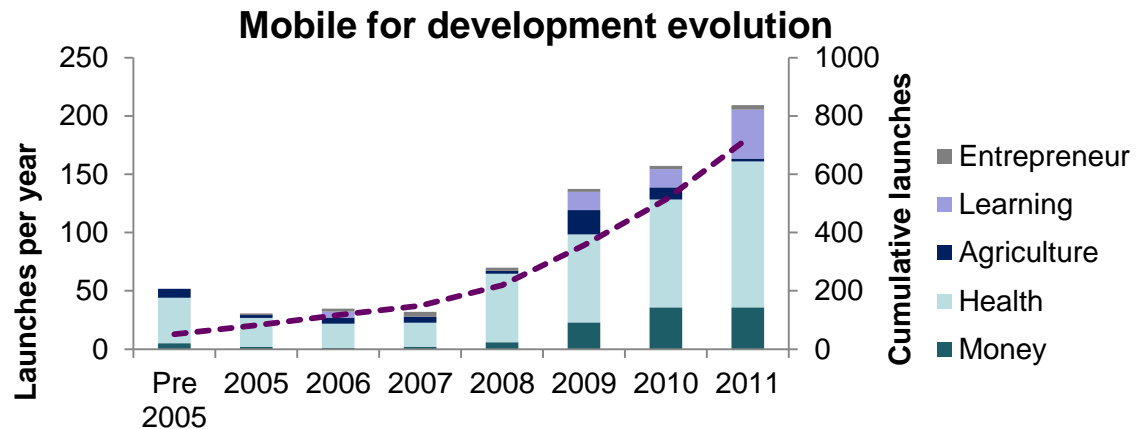
The real story is data

- But, does this matter?
- We believe it is more important to consider what a phone does, not what it is called
- The key story is mobile data
- There is an ongoing convergence in price and functionality between featurephones and lower priced smartphones (especially Android)
- In this sense, the featurephone audience presents a vast (and latent) market for VAS services
- It also has implications for how people generate content – here, using social networks on mobile will play a key role (**see slides 49-53; companion, section 1**)



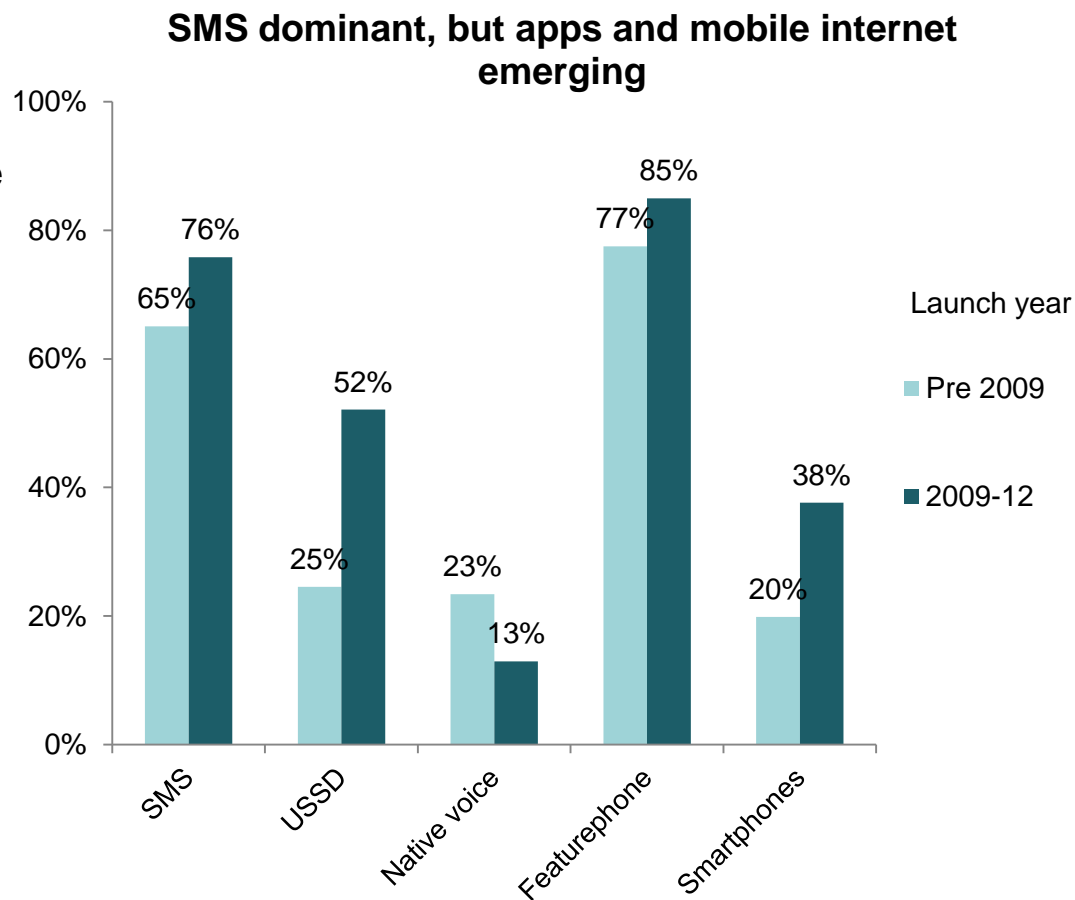
A growing sector in need of scale

- Mobile for Development is a growing sector, having attracted investment from mobile operators, entrepreneurs, investors and international development groups
- However, it has largely failed to scale – if the last 5 years were about growth in services, the next 5 will be on consolidating sustainable business models and ecosystems
- The momentum has already begun, with several sectors moving to revenue-based models as opposed to relying on donor funding (**see slides 56-65; companion, section 2**)



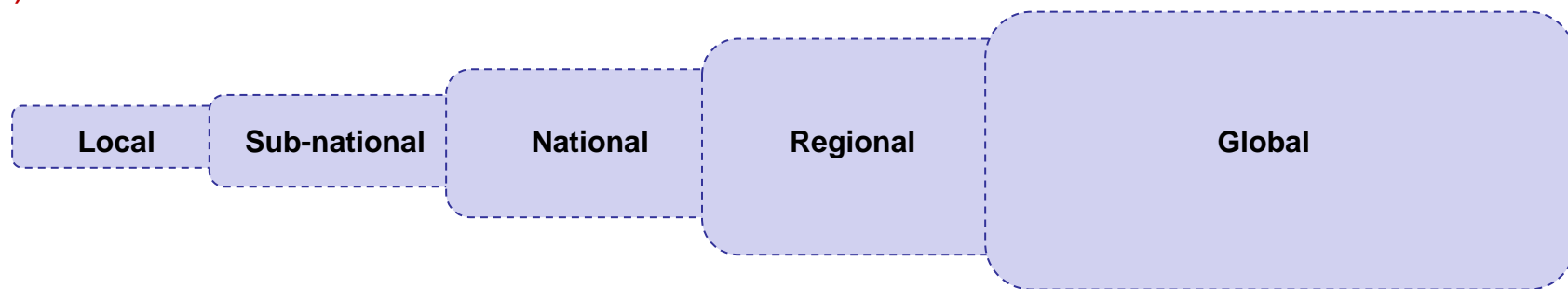
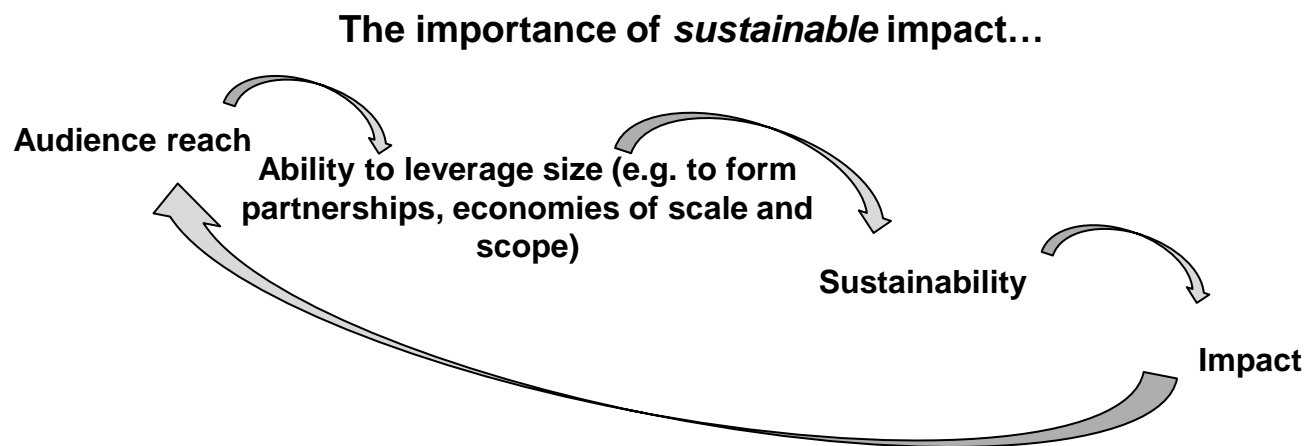
SMS remains dominant, but for how long?

- SMS is the most commonly used technology for mobile-enabled services
- Voice-based services (either calling an operator, or using an IVR system) are less popular, with a niche in mobile health and agriculture applications
- This is easy to understand in the sense that SMS can be used on any phone, and it is relatively cheap to deploy
- However, we believe this will begin to change over the next 2-3 years
 - SMS is not effective for illiterate mobile users
 - Voice-based solutions have a higher up front investment, but carry longer term profit benefits
 - As smartphone penetration rises, more and more services will use apps and the mobile internet – indeed, this is already happening in the education and entrepreneurship sectors (**see slides 56-58; companion, section 2**)



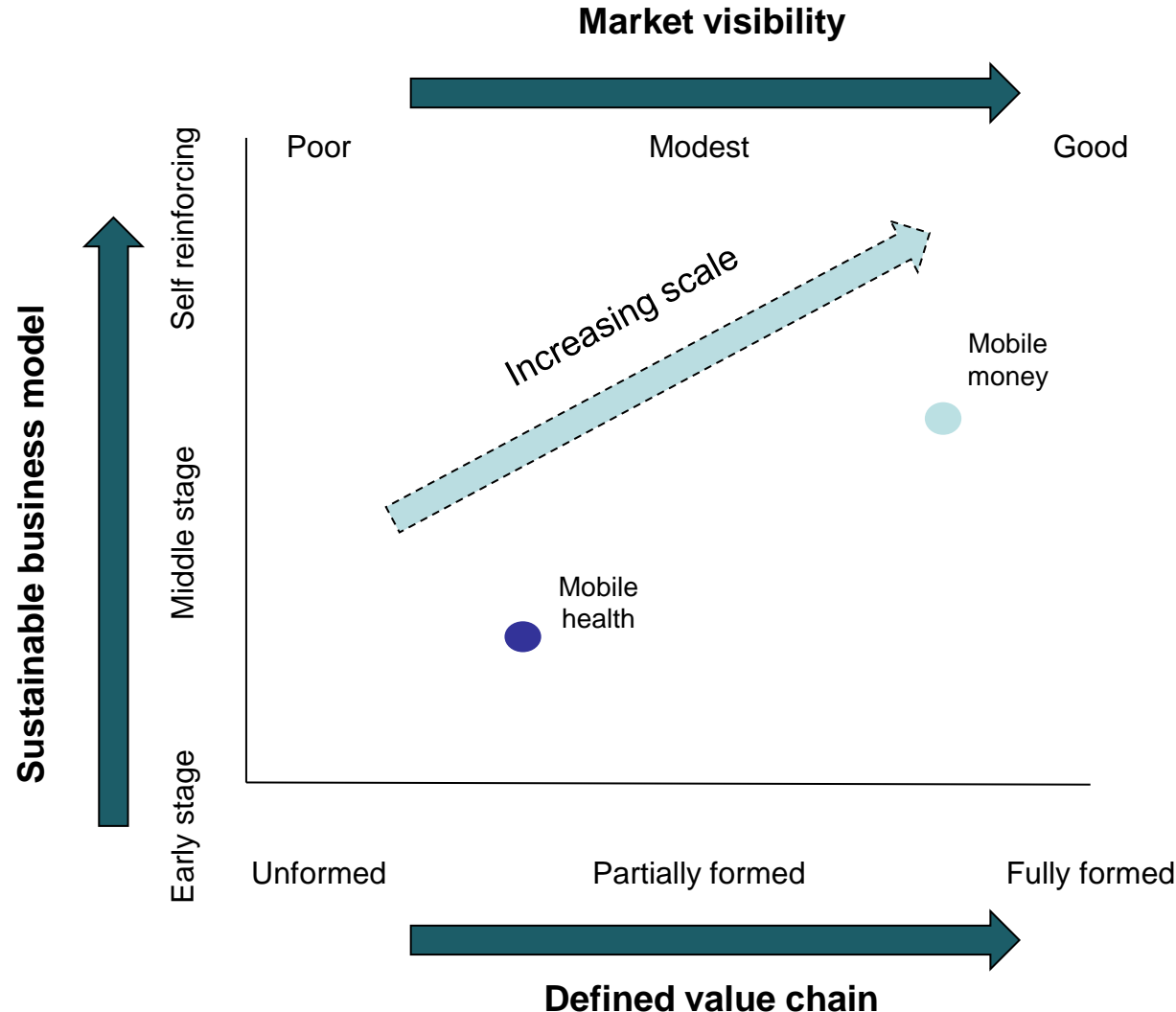
Impact means nothing unless it lasts

- No one will dispute the value of generating social impact
- The issue is whether that impact is sustainable
- This presents the central challenge (and opportunity) in M4D over the next 5 years: shifting to scaled services that, while offering the prospect of social impact, are foremost businesses with a defined value proposition (**see slide 89**)



Scale requires ecosystems

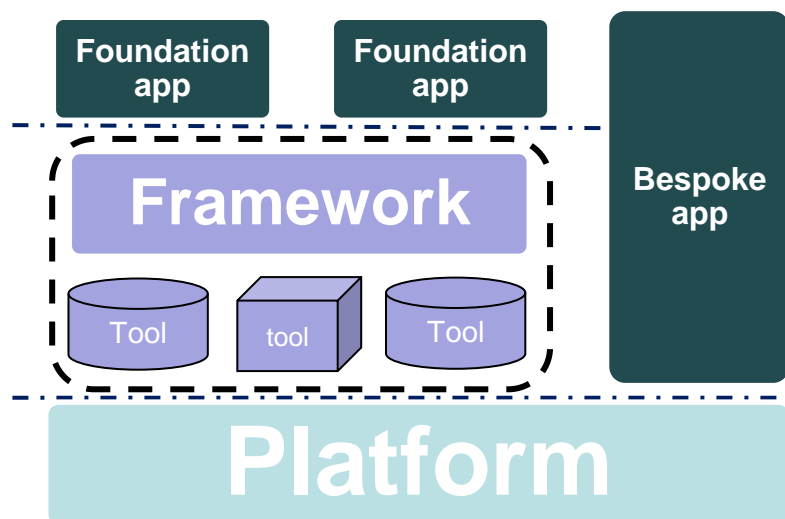
- Scale is very much a process of several factors coalescing
- While verticals such as mobile money or health will have some unique barriers to scale, some can be generalised across the wider sector
 - Defined value chains
 - Sustainable business models
 - Market visibility (e.g. the ability to source partnerships)
- Mobile money has so far achieved the greatest reach (having a clear value proposition), but others can follow – the demand side case is evident in the lack of service access, it is the supply side where the barriers must be overcome (**see slides 90-98; companion, section 3**)



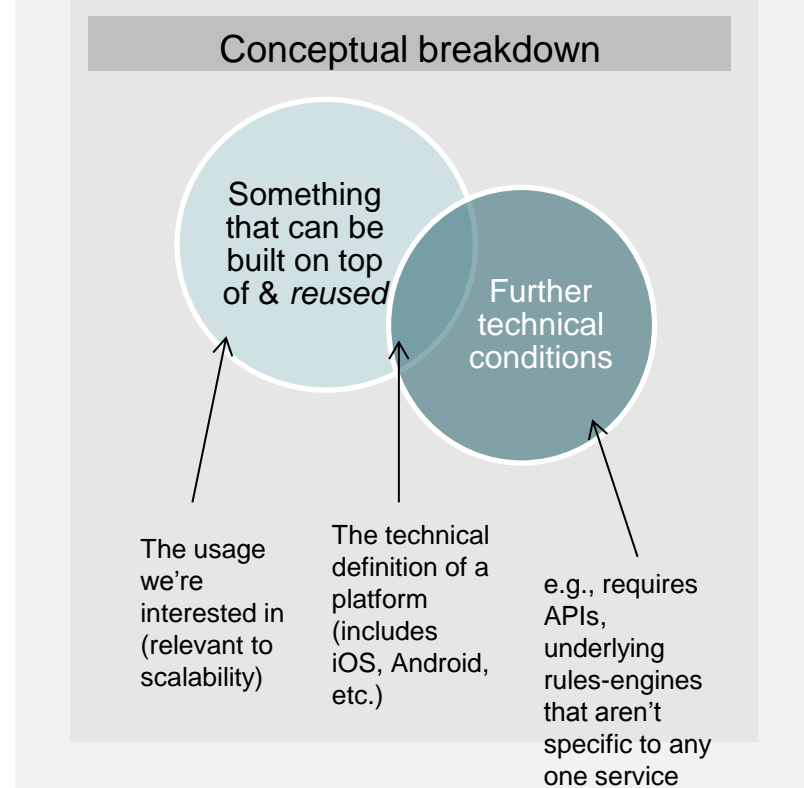
What, really, is a platform?

- To understand what technology is capable of scaling, it helps to be clear about what a platform is
- Despite liberal use of the term, there are not that many true platforms
- In fact, most mobile-enabled services are bespoke – designed to do one thing in one market
- Frameworks are more promising – scalable and cost effective – and it is here where more investment is needed (**see slides 84-88; companion, section 3**)

A more helpful view



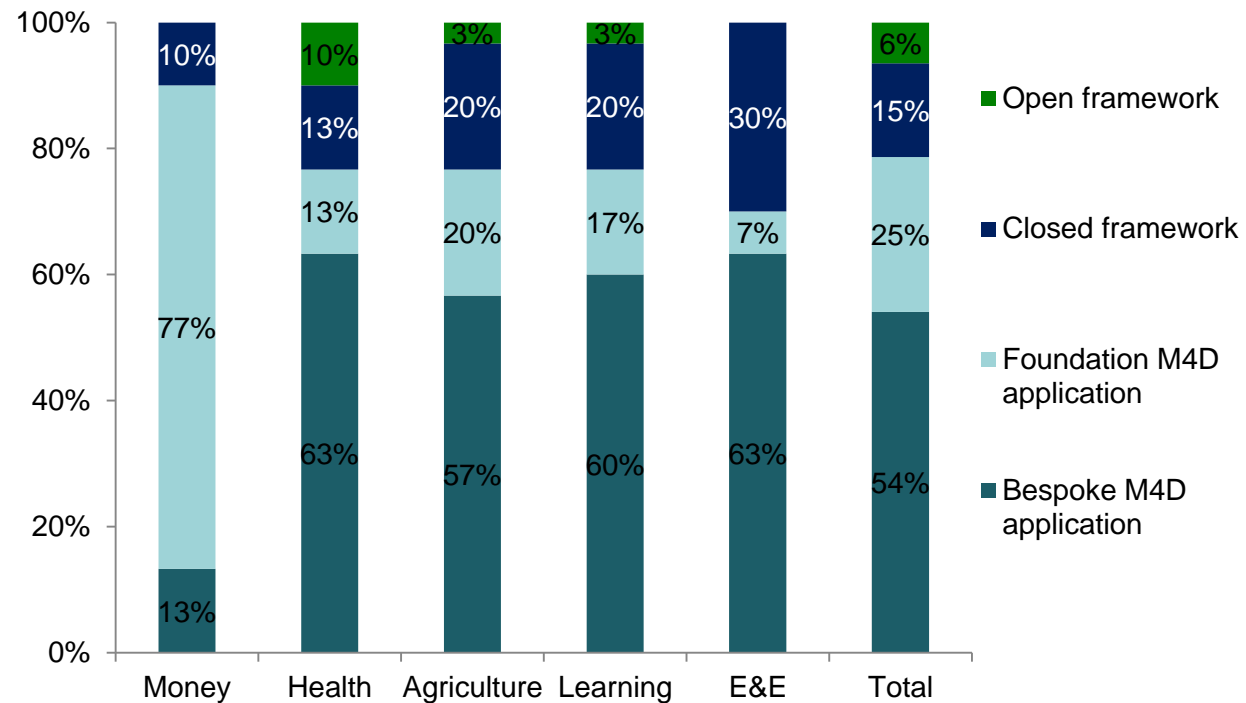
In theory...



Beautiful innovation, but siloed (except in mobile money)

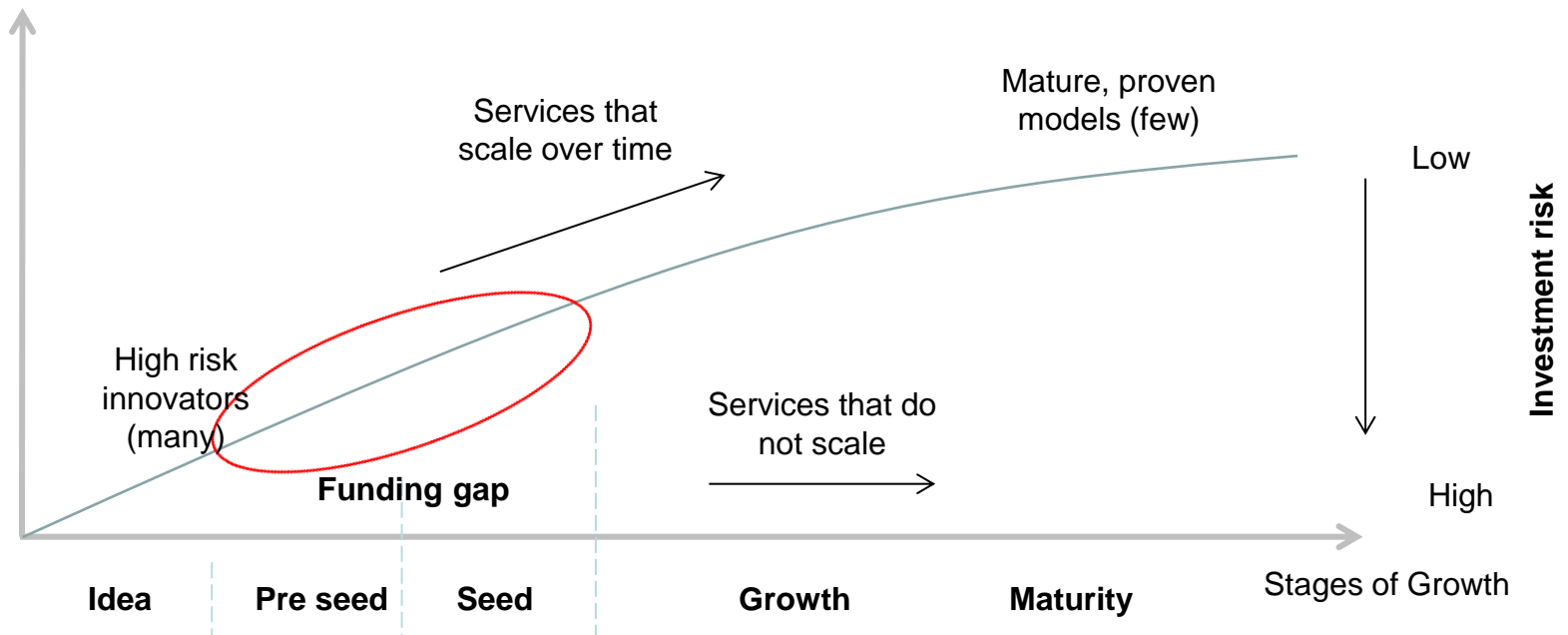
- Mobile, growth, developing business, changing people's lives – all are drivers for the innovation happening in mobile across the developing world
- The challenge is to consolidate this through partnerships (avoiding duplication and fragmentation) **(see slide 92)**

Does the mobile service use a framework?



The need to finance innovation

- There is also a need to finance this innovation
- Nowhere is this greater than for entrepreneurs at the early stage but not yet at the point of stable revenues (pre-growth)
- The good news is that the investment community (from traditional VCs to impact investors to donors) realise this and as such attitudes to risk/return are beginning to shift in favour of higher risk given the potential for disruptive innovation (despite the inherent high probability of failure)
- The challenge will be in sustaining this, and with it innovation hubs with a refilling community of entrepreneurs, investors and (increasingly) mobile operator involvement **(see slide 93; companion, section 3)**



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Mobile market: current and outlook

Key findings

Developing world is becoming connected at a rapid pace: nearly 40% of people in the developing world now subscribe to mobile services, with subscribers having grown at over 10% a year since 2007. Taking into account people who have access to a mobile, despite not owning one, would push the connected population to well over 50%

Network coverage is key: despite the rise in penetration, there is still a wide gap in coverage between urban and rural areas, with mobile penetration in urban areas up to double that of the rural population

Smartphones have grown, but are not the engines of growth: smartphones have grown to the point where we estimate just under 10% of people own one in the developing world, compared to virtually no take-up in 2007. This is dominated by low cost Android devices, which have steadily declined in price to below \$100. We expect growth to continue over the next 5 years, but mainly for mid and higher income segments

Democratising data: mobile operators and internet players are developing more innovative ways to get data into the hands of lower income segments, such as through hybrid data plans or even zero-cost mobile internet browsing

MNO	Vendor	Entrepreneur	Investor	International development	Government
High	High	High	High	High	High
High	High	Low	Low	Low	High
High	High	High	Moderate	Moderate	Low
High	High	High	Moderate	Moderate	Moderate

For implications, [see slide 26](#)

Relative importance*

- High
- Moderate
- Low

*While findings may have some relevance for all stakeholders, we have prioritised this to reflect the different roles, and therefore level of influence, held by each

Impact of mobile on development sectors

Key findings

M4D is growing: there are now over 800 live mobile-enabled products and services in the developing world, with growth having accelerated over the last 3 years. There are also interesting geographic distributions: mobile money in Africa, learning/education in Asia, with health and agriculture more balanced

Emergence of new business models: as new sectors in the M4D space have emerged since 2009, so too have new business models. Donor funding remains the most common model in mHealth, but others drawing revenue from consumers or business (e.g. using B2C, B2B and B2B2C) are used in the money, learning and entrepreneurship sectors in particular

SMS remains dominant, but new technologies are emerging: 67% of M4D services use SMS as an access medium, its popularity having *increased* since 2009. USSD also remains popular, with the use of the mobile web and apps on the rise

MNO	Vendor	Entrepreneur	Investor	International development	Government
High	Moderate	High	High	High	Moderate
High	Moderate	High	High	High	Moderate
High	Moderate	High	High	Moderate	Moderate

For implications, [see slide 55](#)

Relative importance*

- High
- Moderate
- Low

*While findings may have some relevance for all stakeholders, we have prioritised this to reflect the different roles, and therefore level of influence, held by each

Platforms, multiplicity and the drive for scale

Key findings

Barriers to scale are multi faceted: scale is driven by a number of factors related both to an organisation and the wider sector. Across the M4D sector, the most important are the presence of defined value chains, sustainable business models, and market visibility

An important distinction: it is important to distinguish between a true platform, a framework and a bespoke service. Platforms (e.g. Linux, iOS, Android) are generic and can accommodate a range of applications or services. Frameworks (e.g. Fundamo, Frontline SMS) are less generic than platforms, but provide many re-usable tools for others to use in M4D services. Bespoke M4D services are the least generic and are generally designed for one sector in one country

In the M4D sector, bespoke services are most common, followed by frameworks, with true platforms generally controlled by global TMT firms (with or without direct interests in M4D). We believe frameworks present the best route to scale, and warrant investment

Mobile money stands out: the mobile money sector has the most defined value chain, including a layer for vendors (e.g. Fundamo, Comviva) providing the underlying frameworks the services are built on

MNO	Vendor	Entrepreneur	Investor	International development	Government
High	High	High	High	High	High
Moderate	High	High	Moderate	High	Moderate
Moderate	High	High	Moderate	High	Moderate

For implications, [see slide 83](#)

Relative importance*

- High
- Moderate
- Low

*While findings may have some relevance for all stakeholders, we have prioritised this to reflect the different roles, and therefore level of influence, held by each

User-centric innovation

Key findings

Organisations, not departments: developing user-centric innovation means the end user must be at the heart of all parts of an organisation, including management culture, product and service design, and marketing

Segmentation and personas are key: M4D service providers must define target end user segments and develop personas that clearly define the gaps and opportunities that could be met by a given service

Cost and communication are key barriers: high up-front costs and the fact many M4D organisations have partnerships where each party has a different background and set of objectives create barriers to effective implementation of user-centric innovation

MNO	Vendor	Entrepreneur	Investor	International development	Government
High	Low	High	High	High	Moderate
High	Low	High	High	High	Moderate
Moderate	Low	High	High	High	Moderate

For implications, [see slide 108](#)

Relative importance*

- High
- Moderate
- Low

*While findings may have some relevance for all stakeholders, we have prioritised this to reflect the different roles, and therefore level of influence, held by each

Role of government

Key findings

A ubiquitous influence: the role of government on the mobile for development sector is mostly indirect through setting regulation and influencing the business environment. Direct investment in mobile-enabled services has so far been limited, with this mostly focused on the health sector

USFs strong in theory, weak in reality: Despite Universal Service Funds (USFs) offering a way of underpinning coverage expansion to rural areas, these have been largely mired by inefficiency. Around \$11 billion has been collected worldwide but not actually been put towards any projects, with 97% of this in the developing world

Good business opportunities, not always the best environments: while the culture for entrepreneurship has improved in many markets (e.g. parts of Asia, Latam), there are still developing regions languishing – 63% of markets in Africa and 33% in South Asia still fall into the bottom quartile worldwide in the ease of doing business

MNO	Vendor	Entrepreneur	Investor	International development	Government
High	Moderate	High	Moderate	Moderate	High
High	Low	Low	Low	High	High
Moderate	Moderate	High	High	Moderate	High

For implications, [see slide 131](#)

Relative importance*

- High
- Moderate
- Low

*While findings may have some relevance for all stakeholders, we have prioritised this to reflect the different roles, and therefore level of influence, held by each

Learnings: Rockefeller Foundation

- Mobile has become a transformative technology, with ownership in the developing world nearing 50%, and still significant headroom for growth over the next 5 years. This growth will likely be fuelled by populations at the lower and middle income level, further underlining the opportunity of mobile-enabled services targeting these segments
- Mobile for Development as a sector is growing. The challenge over the next 3-5 years is to move away from growth purely in the number of services towards a scalable and sustainable model. From a foundation perspective, we would highlight two points in this context:
 - **Focus on the cross sector.** The route to scaling a sector is to re-use technology (frameworks) in different verticals, and in different countries. This horizontal, as opposed to vertical, way of thinking is driven by the recognition that, already, many services are essentially doing the same thing but under different brand names – whether this is in P2P (e.g. mobile-based recruitment solutions), in transactions using mobile money frameworks or other ways discussed in this report – which provides opportunities for leveraging existing technologies for more than their originally intended purpose
 - **Flexible business models.** To harness the innovation that is being developed by entrepreneurs and other organisations, it is important that investors and foundations recognise the need for flexibility in business models. A crucial, yet largely unfulfilled, requirement is for organisations to align services with customer needs. In a rapidly changing consumer environment, these needs are fluid, and as such business models are likely to change over time. Established risk perceptions in mature markets will need to be reconsidered in light of this to ensure this supply of innovation is harnessed. This is indeed starting to happen, the challenge will be in gaining widespread recognition from the investment and development community. We believe the Rockefeller Foundation can play a key role, both through its interventions and role as a thought leader
- The cross sector view and driving sustainable business models are changes that will be most effective from a foundation perspective if integrated at the organisational level. We see this report as a platform for further discussions between MDI and the Rockefeller Foundation on achieving this, and ultimately helping both parties in articulating these implications to the wider mobile and development communities

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What you need to know

Key findings

Developing world is becoming connected at a rapid pace: nearly 40% of people in the developing world now subscribe to mobile services, with subscribers having grown at over 10% a year since 2007. Taking into account people who have access to a mobile, despite not owning one, would push the connected population to well over 50%

Network coverage is key: despite the rise in penetration, there is still a wide gap in coverage between urban and rural areas, with mobile penetration in urban areas up to double that of the rural population

Smartphones have grown, but are not the engines of growth: smartphones have grown to the point where we estimate just under 10% of people own one in the developing world, compared to virtually no take-up in 2007. This is dominated by low cost Android devices, which have steadily declined in price to below \$100. We expect growth to continue over the next 5 years, but mainly for mid and higher income segments

Democratising data: mobile operators and internet players are developing more innovative ways to get data into the hands of lower income segments, such as through hybrid data plans or even zero-cost mobile internet browsing

Key implications

Harness the scale: while growth in the number of people using a mobile will moderate over the next 5 years, we still expect 130 million new mobile services subscribers *every year* to 2017. This means an increasing total addressable mobile for development market, uniquely positioned to use the mobile as an alternative to traditional modes of service delivery

➔ **Bridging the coverage gap is multi pronged:** to bridge the gap will require both further network roll-out and alternative solutions, such as by using green power for rural base stations. There is also a role for GSMA in lobbying for benign regulatory environments, and community power, which can be used both to aid mobile connectivity and access to utilities such as water and electricity

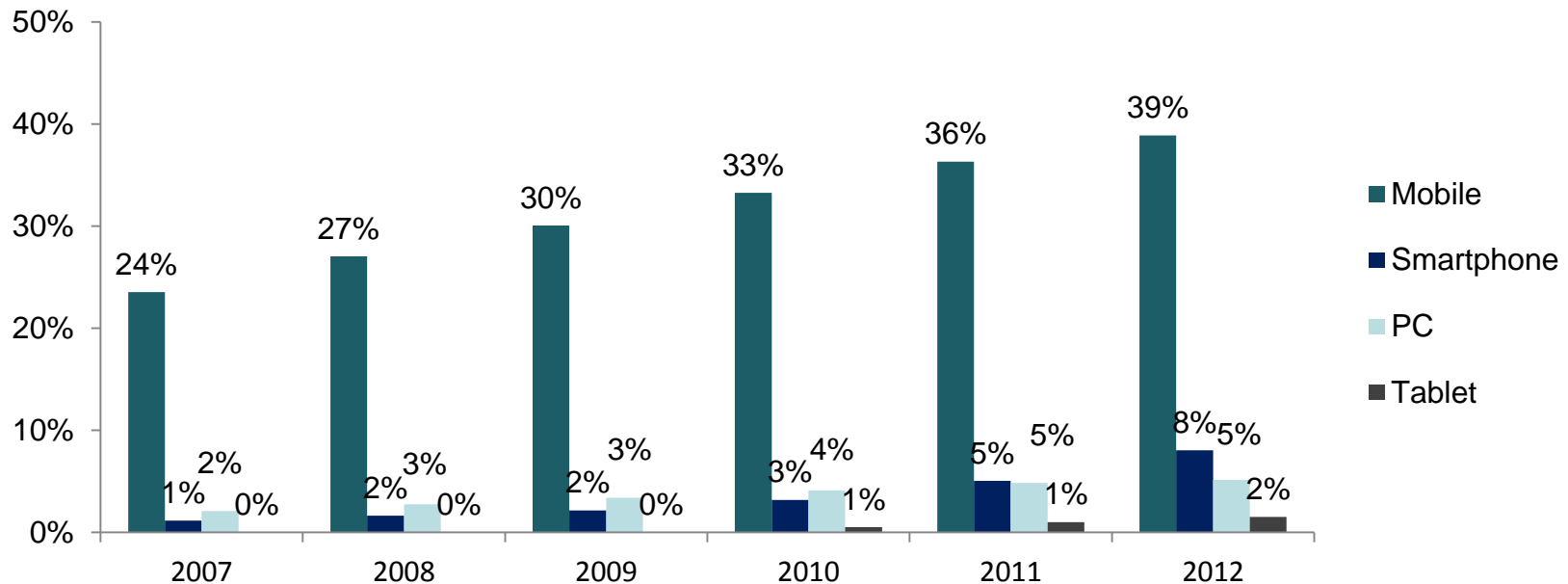
➔ **Featurephones and smartphones blur:** it is increasingly important to consider the convergence in price and functionality between higher end featurephones and lower end smartphones. M4D service providers should be aware that as smartphone penetration rises, while this opens a more personalised experience, it carries trade-offs, such as lower build quality and battery life

➔ **Mobile data is the common denominator:** more people, including those at the low income end, will gain access to mobile data, either on featurephones or smartphones. M4D services can tap into a range of handsets and through a range of mediums (e.g. pre-installed apps on a featurephone, browsing on a smartphone)

Mobile: the closest to ubiquity

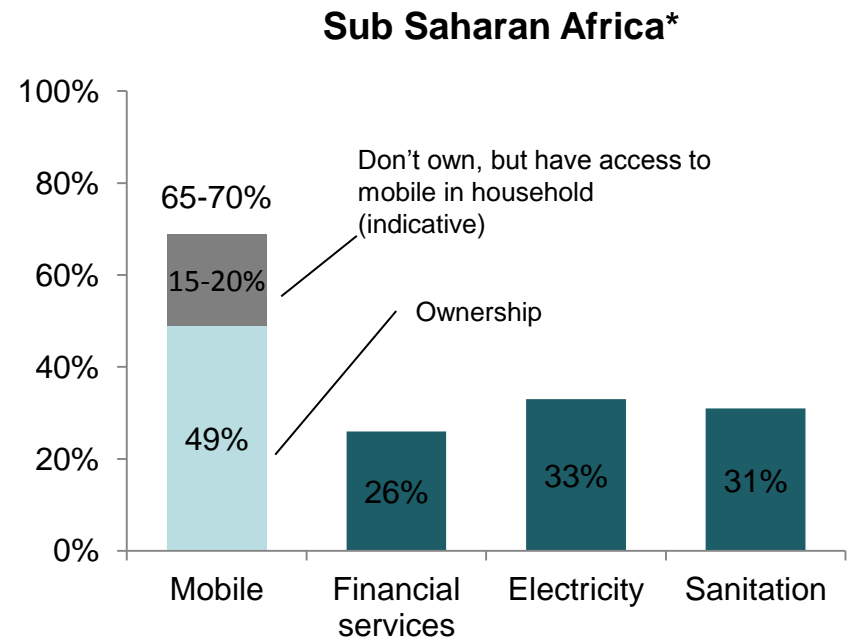
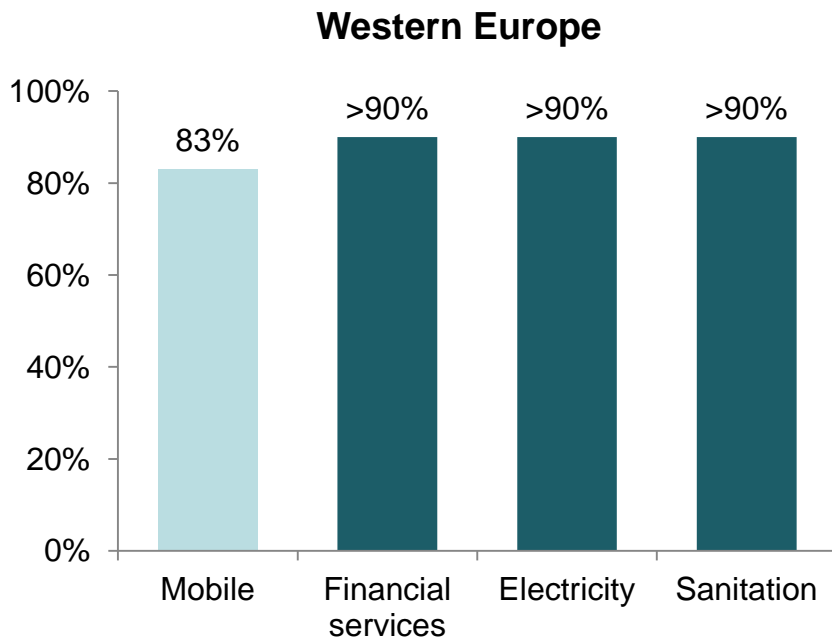
- On an ownership basis, the mobile phone is the most widely owned communication device in the developing world
- The PC is owned by a much smaller share of people, with tablets smaller still
- Access to a PC will be greater than ownership given device sharing, but the same is true of mobile, so the gap is unlikely to change

Penetration of population (developing world)



Access to services

- While access to **basic services** such as electricity and sanitation is near universal in most developed markets, it remains a minority in developing regions
- Mobile access – either through direct ownership or having access to a mobile in the household – is more widespread, positioning it as a unique catalyst helping to increase access to these services

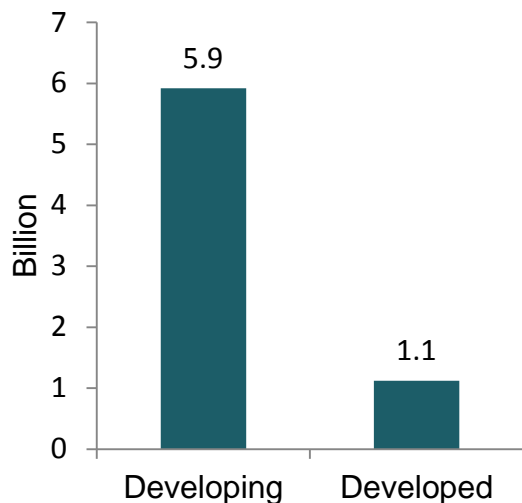


*Mobile and financial services includes select countries

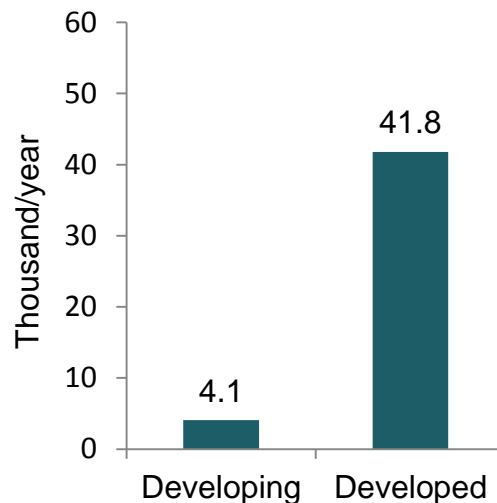
High growth economies, even higher in mobile

- There are now around 6 billion people living in the developing world, six times that of the developed
- Incomes remain much lower, but have grown at 5% a year over the last 4 years
- Mobile adoption has grown even faster, but still over half the developing world population is yet to own a mobile, leaving a large opportunity for the mobile industry, and in turn presenting social and economic opportunities in connecting low income segments (e.g. Mobile for Development sector)

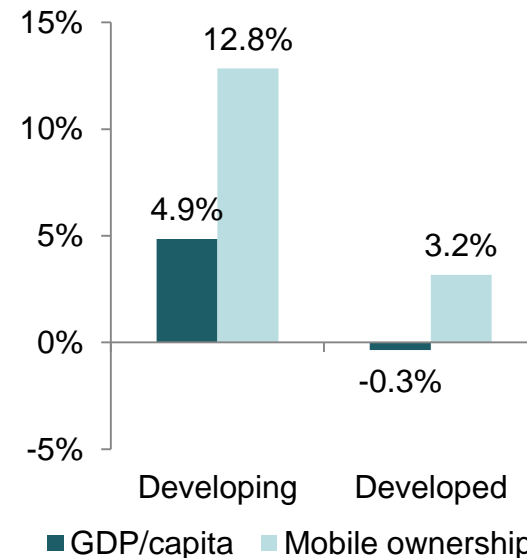
Population



GDP/capita (\$)



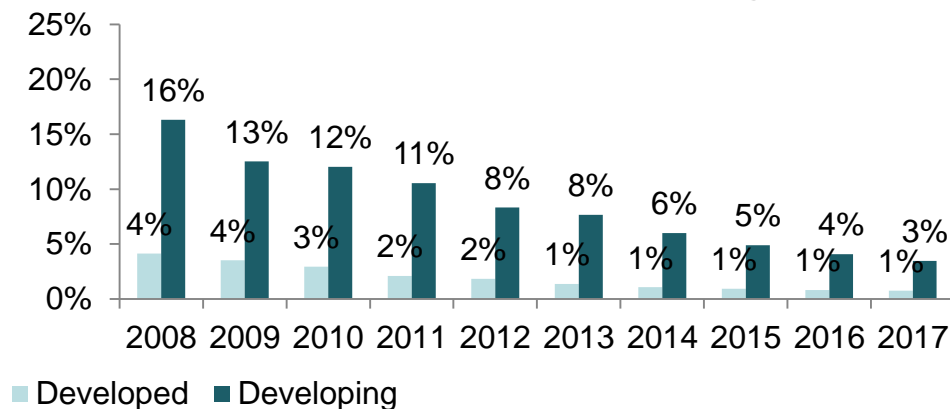
Growth, 2007-11*



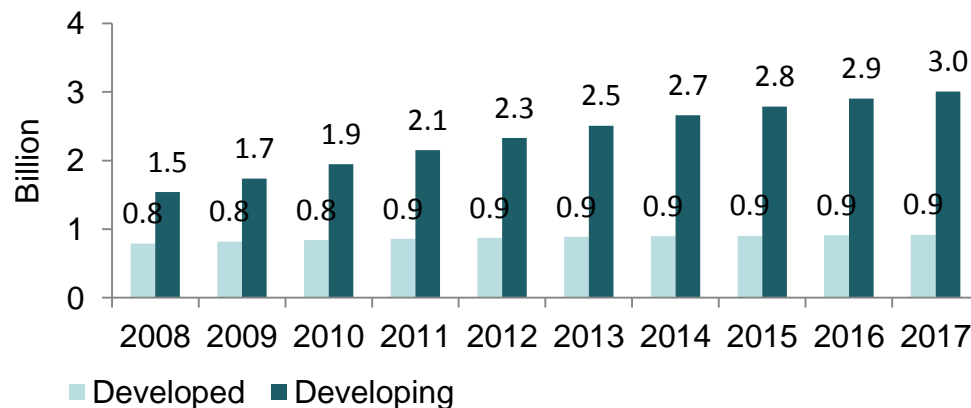
Growth will come from the developing world

- Growth in active mobile subscribers in the developing world has been very strong the last 5 years at over 10%
- Even though we expect growth to slow to 2017, this still translates into around 130 million new people subscribing to mobile services *every year* in the developing world
- By contrast, most mature markets have reached saturation (something which will happen in developing regions, but not for several years)

Active mobile subscriber growth

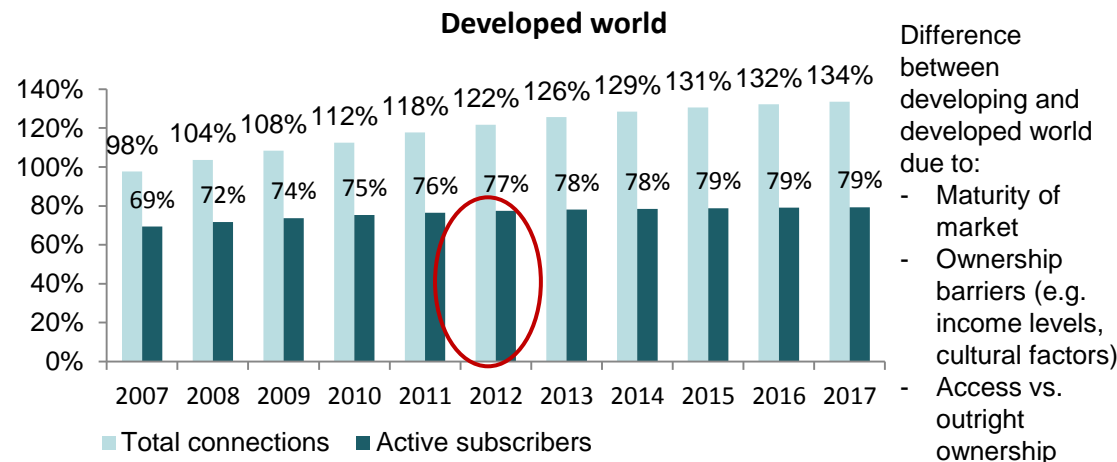
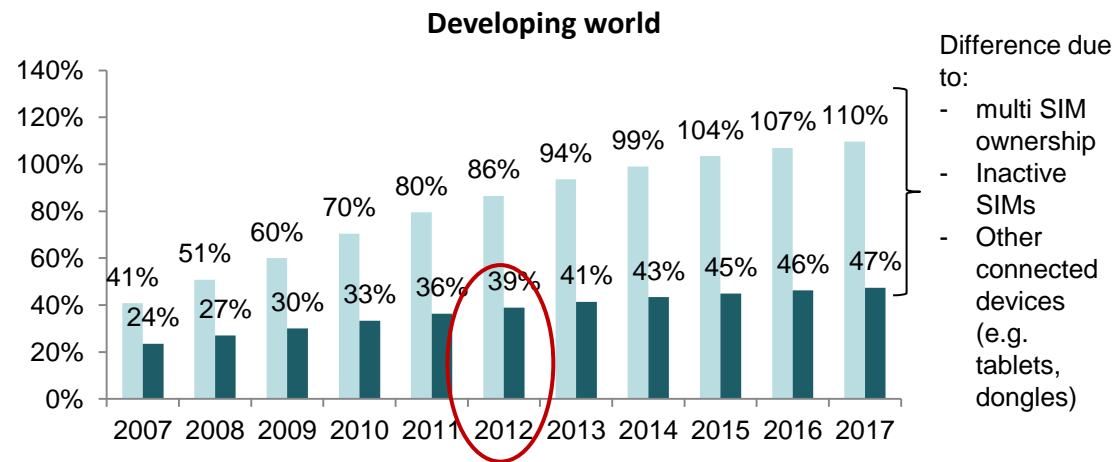


Humans that subscribe to mobile services



Penetration

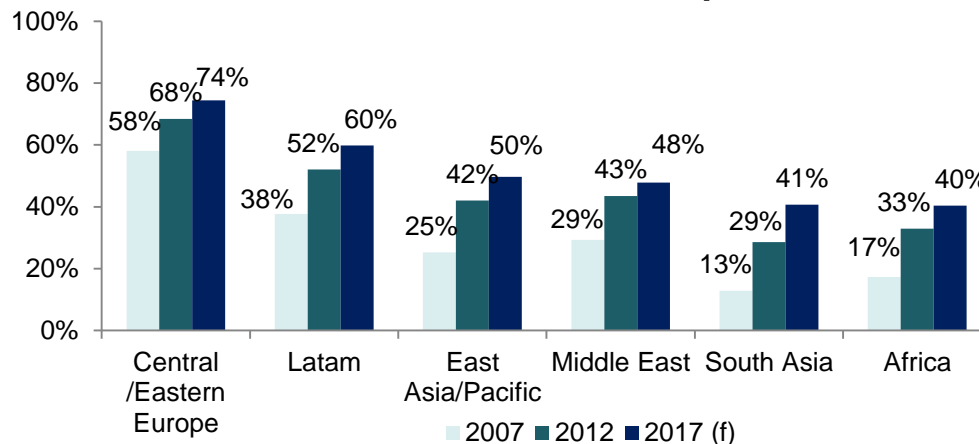
- We draw an important distinction between total penetration and active subscriber penetration
- **Total penetration** reflects all SIM cards (for mobiles, tablets etc), but also counts multi-SIM owners (common in the developing world to save money on calls) and some people who are registered but are only very infrequent users of their phone
- **Active subscriber penetration** reflects our estimate for the number of people who actively subscribe to mobile services
- This is a more representative measure in market sizing Mobile for Development
 - Reflects potential human user base of a service
 - Overlay population with access to a mobile (relevant for some sectors such as mobile learning)



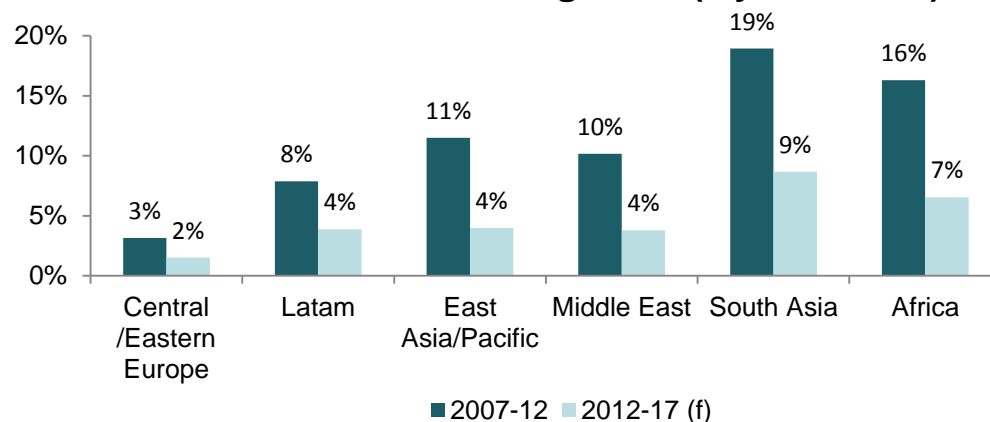
Regional view: soaring growth in India, Africa

- There is considerable variation in mobile penetration within the developing world, although penetration has risen fairly evenly over the last 5 years
- Central/Eastern Europe is nearing maturity in penetration terms, while most other regions still have significant headroom
- South Asia (e.g. India, Bangladesh, Sri Lanka) and Africa are the highest growth regions at close to 20% over the last 5 years, and we expect these regions to continue as growth leaders over the next 5 years, albeit at a slower pace

Active mobile subscriber penetration



Active subscriber growth (5 year CAGR)



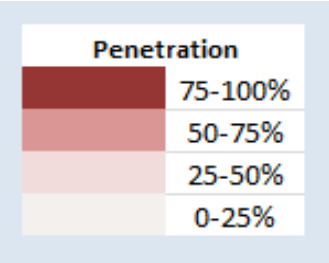
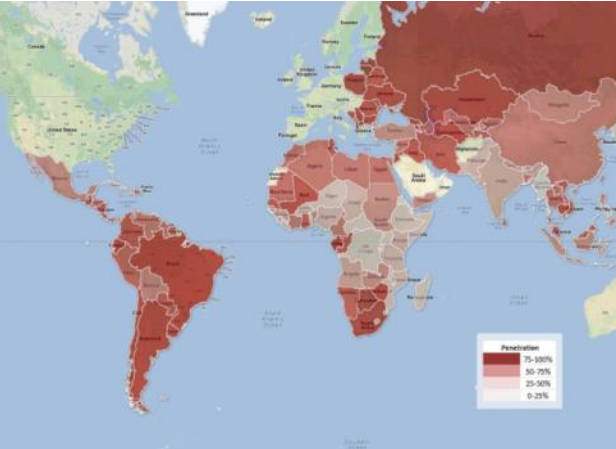
Rise in the developing world

Mobile penetration

2007

2012

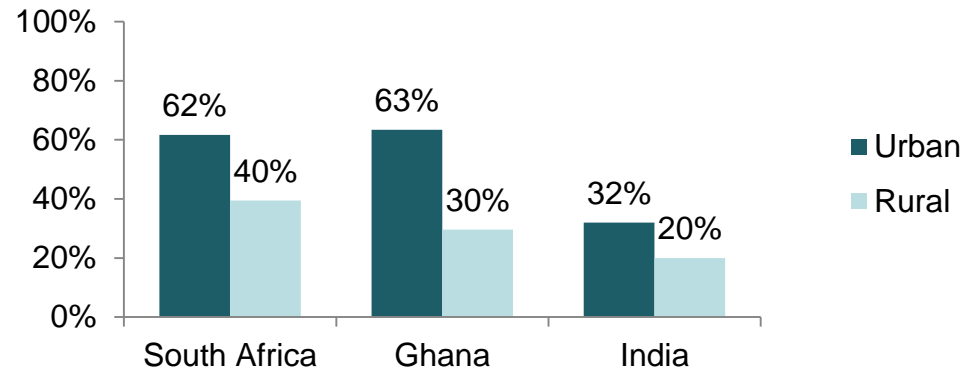
2017



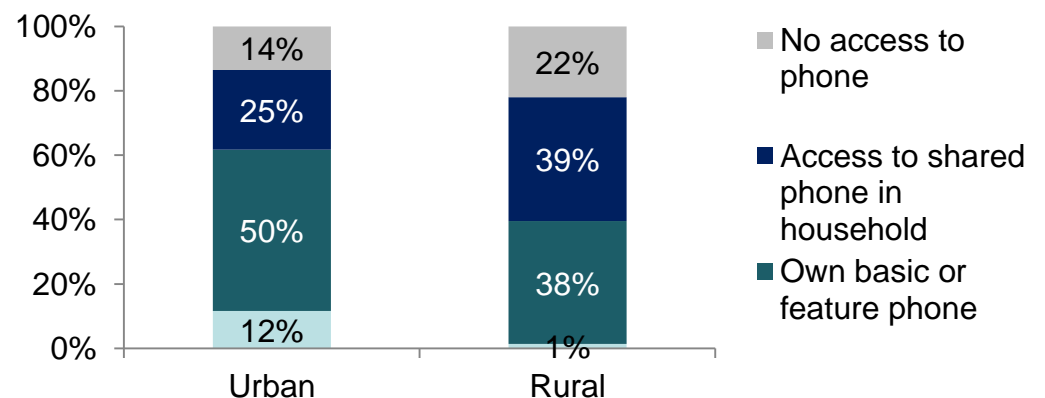
Urban/rural divide

- Large coverage gap
 - Cost of network roll out
 - Return on investment to mobile operator
- Shared access brings several implications
 - Augments the M4D reachable audience
 - Latent demand for mobile ownership
 - Virtual SIM technology (e.g. Movirtu)
 - Multiple log ins on one phone, each with a separate tariff (e.g. for women who could not otherwise own a phone)
 - Mobile as a utility (for now)
 - Design of M4D services (personalised nature)
 - This form of access likely to continue in rural markets in particular

Active subscriber penetration



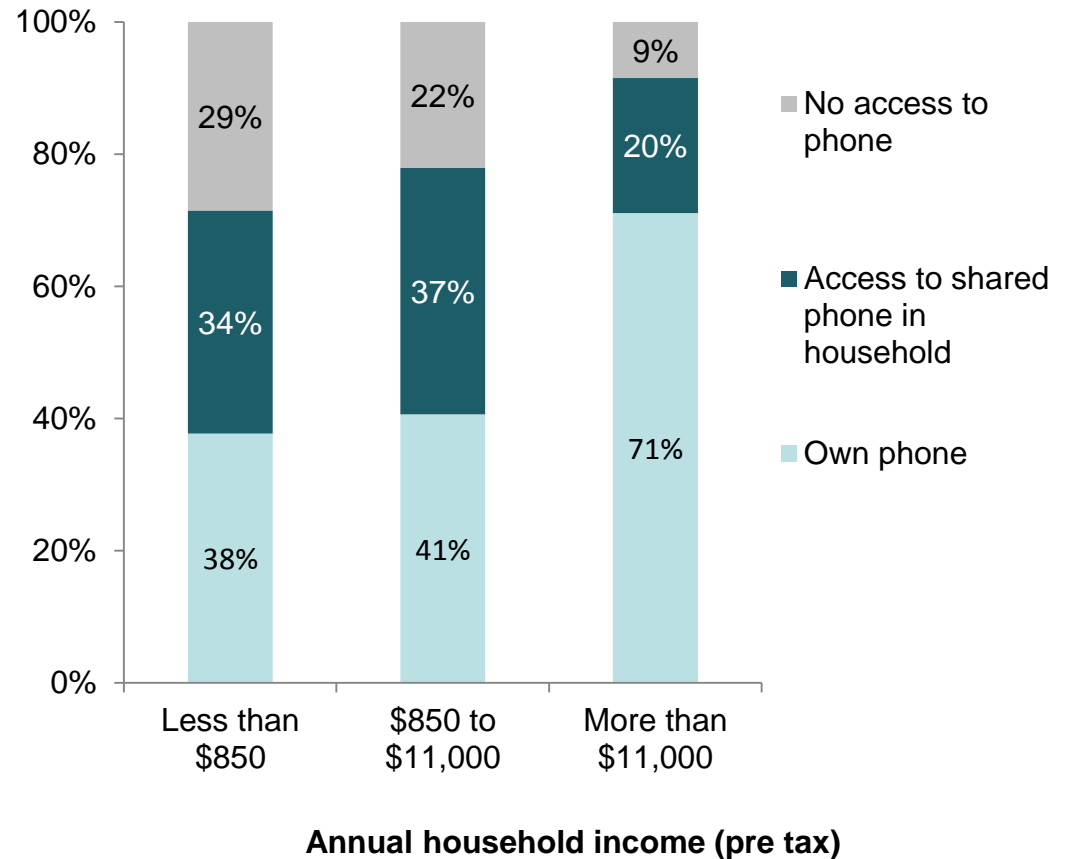
Active subscriber penetration, South Africa



Income divide

- We show here one estimate based on data from South Africa
- If these figures are accurate and indicative of other countries, there are interesting implications that arise
- Little difference in penetration between incomes of below \$850/year up to \$11,000 year (\$2-\$30/day)
- Implies mobile seen more as utility than luxury, even for those with little disposable income

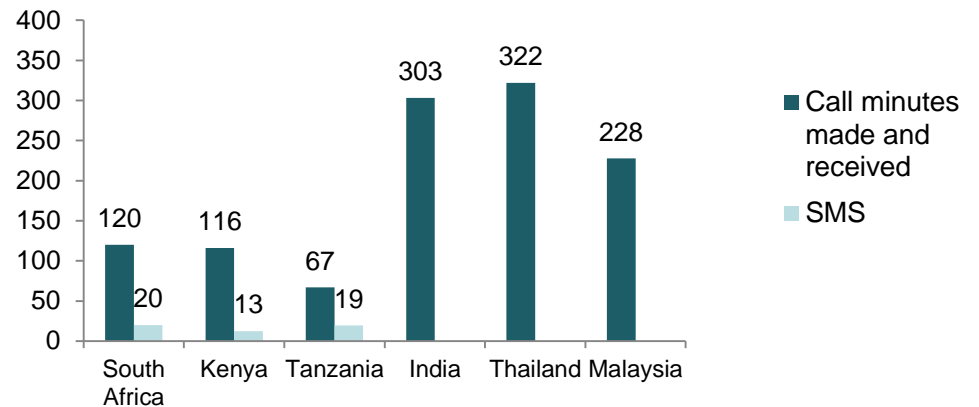
Active subscriber penetration, South Africa



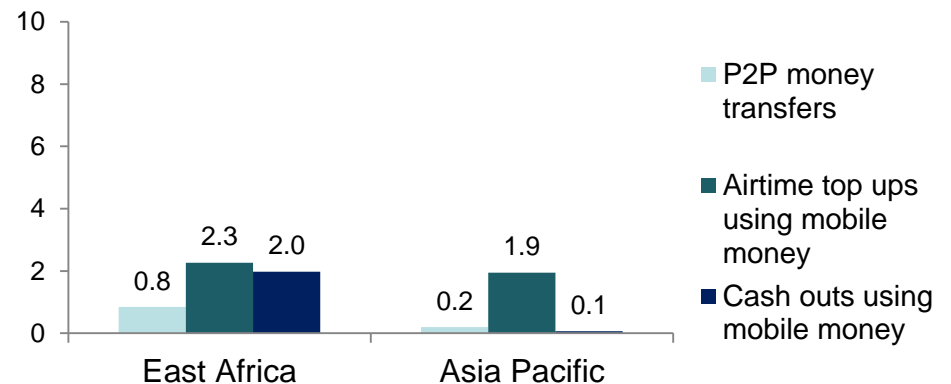
User behaviours – what do people do on their phone?

- In Africa, call minutes are generally higher than texts (e.g. around 3-4 minutes per day vs. 1-2 SMS)
- There is also the use of other functions using a mobile
 - P2P money transfers
 - Cash ins and outs using a mobile account
- Text-based communication should be seen beyond just SMS
 - Social networking – e.g. 5% of African population uses Facebook, but this goes up to 30% among those who use the internet
 - As people get even low end phones with basic data access, social networks likely to become more popular mode of communication on mobile

Calls and texts (per month)



Other mobile transactions (per month)

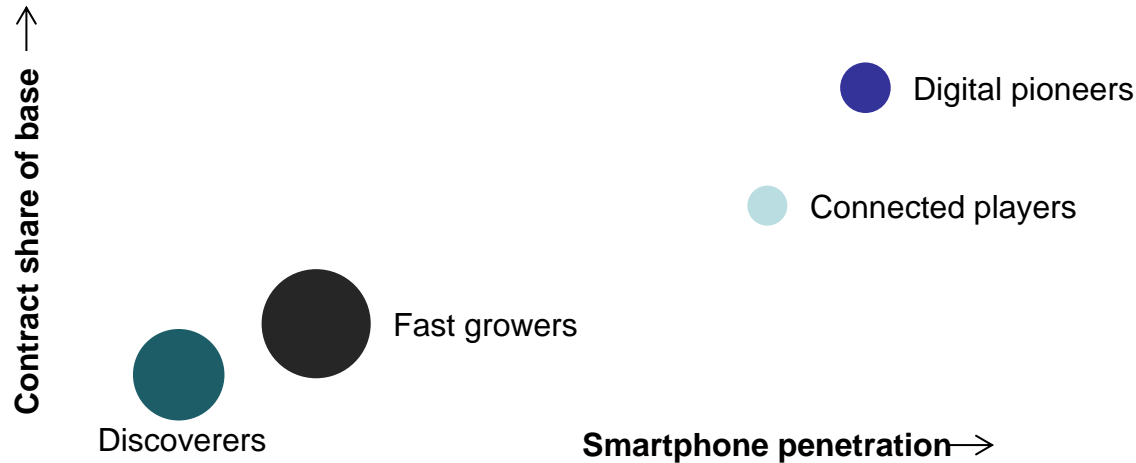


Note: SMS data for India, Thailand, Malaysia not available for this report
Source: GSMA Wireless Intelligence, GSMA Mobile Money for the Unbanked 2011 Global Mobile Money Adoption Survey, Internet World Stats

Prepaid and contract plans

	Prepaid	Contract
Term	None	Commit to minimum (e.g. 18, 24 months)
Customer spend	Limited by size of top up (often \$5 or under)	Minimum = contracted months x monthly tariff Maximum = minimum + overage + other (e.g. roaming)
Barriers to acquisition	Logistical (e.g. proximity to an airtime vendor) SIM registration provides identity barrier	Low income Lack of identity documents Poor credit history Lack of credit history
Mobile operator view	Lower customer lifetime value on airtime fees; less willing to subsidise handsets Limited ownership of customer Lower data/VAS uptake	Higher customer lifetime value on airtime fees; more willing to subsidise handsets Better knowledge/relationship of end users
Is the dominant structure in	Africa, Middle East, Latam, parts of Asia (e.g. China, India)	North America, Western Europe, parts of Asia (e.g. South Korea, Taiwan)

How do the mobile operators think about different markets?



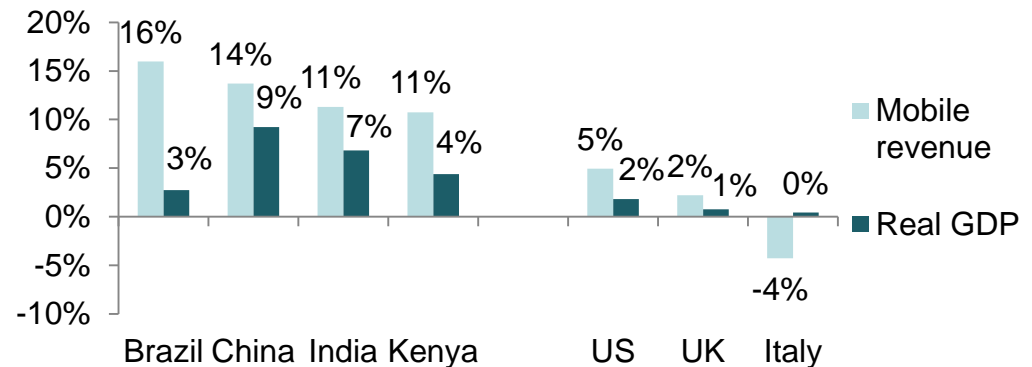
Note: sphere size based on population

	Challenges	Strategic focus
Digital pioneers and connected players E. Asia, N. America, Nordics, Australasia, W. Europe	<ul style="list-style-type: none"> • Monetising network investment • Data explosion and network capacity • Stagnation of traditional revenue 	<ul style="list-style-type: none"> • Intelligent networks • 4G roll out • Service innovation • Revenue diversification
Fast growers Middle East, Latam, SE Asia, E. Europe, Russia, China, S. Africa	<ul style="list-style-type: none"> • Growth of users generally • Data take-up from low ARPU • Low post-paid penetration 	<ul style="list-style-type: none"> • 3G network roll outs • Low cost internet ecosystems • Strengthening customer engagement
Discoverers Africa, S. Asia	<ul style="list-style-type: none"> • Network deployment and coverage • Profitability with very low ARPU customers 	<ul style="list-style-type: none"> • Cost effective network coverage • Service innovation addressing local needs

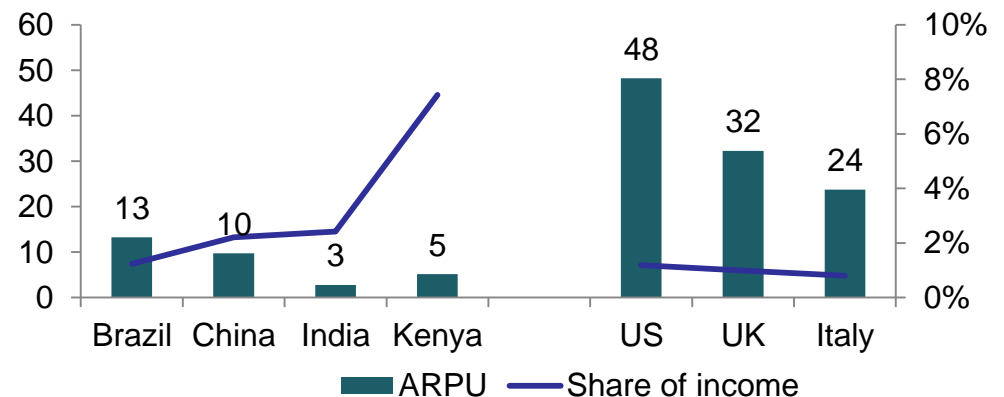
High growth, low spend

- Growth of the mobile sector in many developing countries is higher than in mature markets given their high economic growth and continued rise in mobile penetration
- However, people spend much less on mobile in developing markets, as the vast majority of users are prepay, making airtime costs a higher share of income (e.g. 2-3% on average, more for markets such as Kenya, compared to around 1% in developed markets)
- This ratio would be even higher among the base of pyramid users

Mobile vs. economic growth

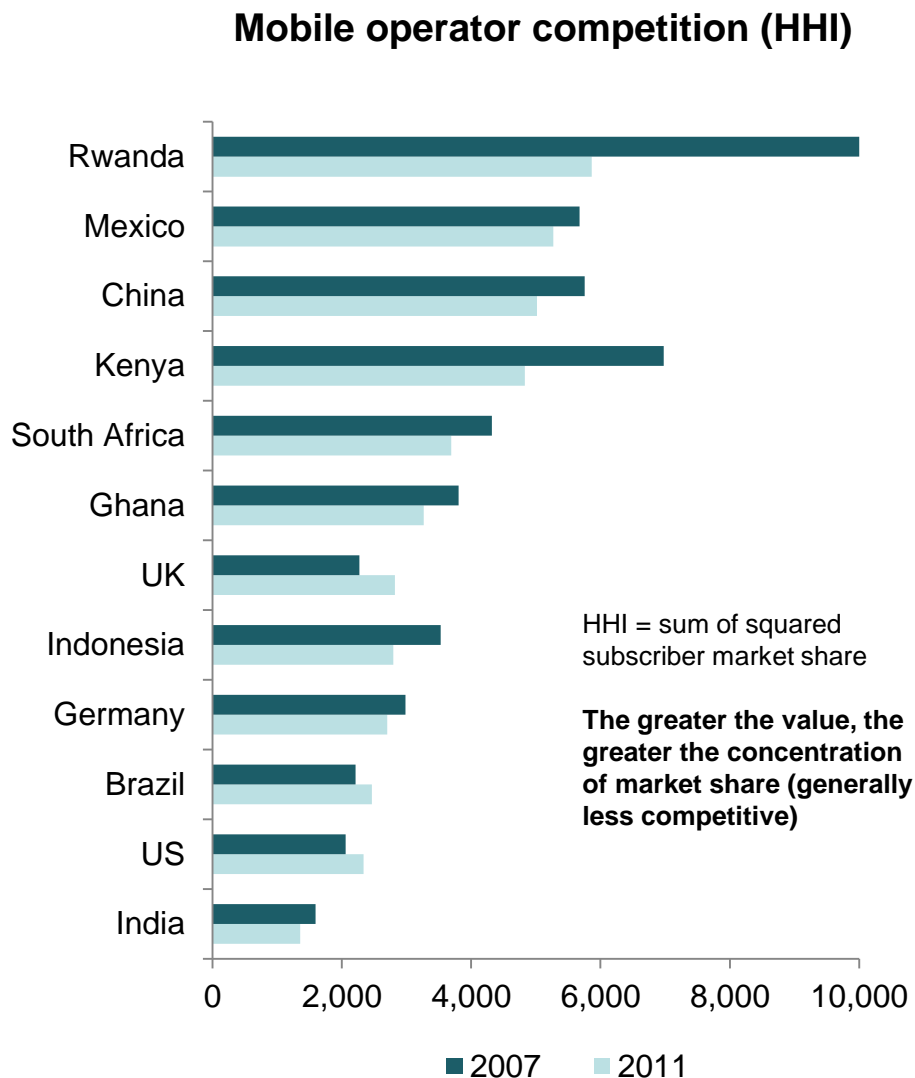


Mobile ARPU, \$



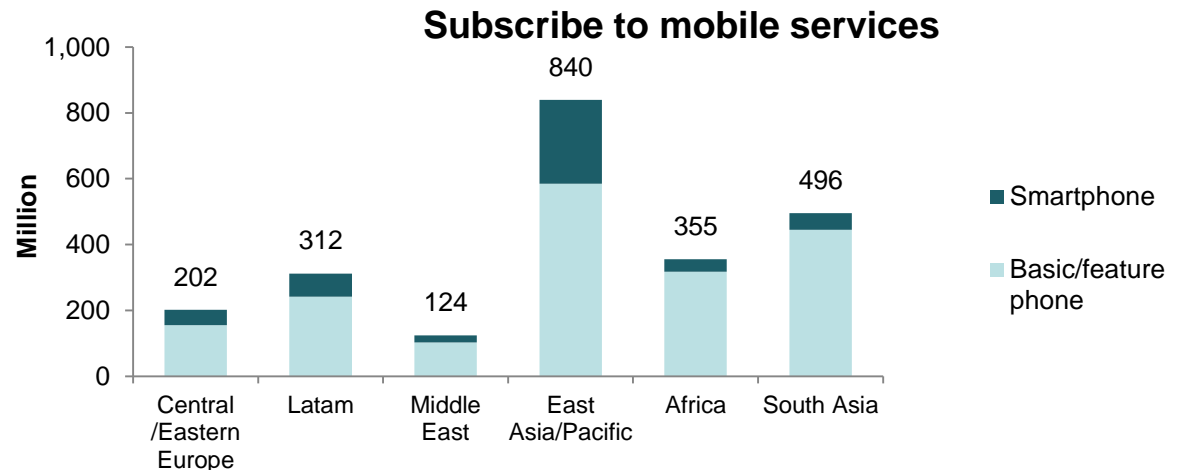
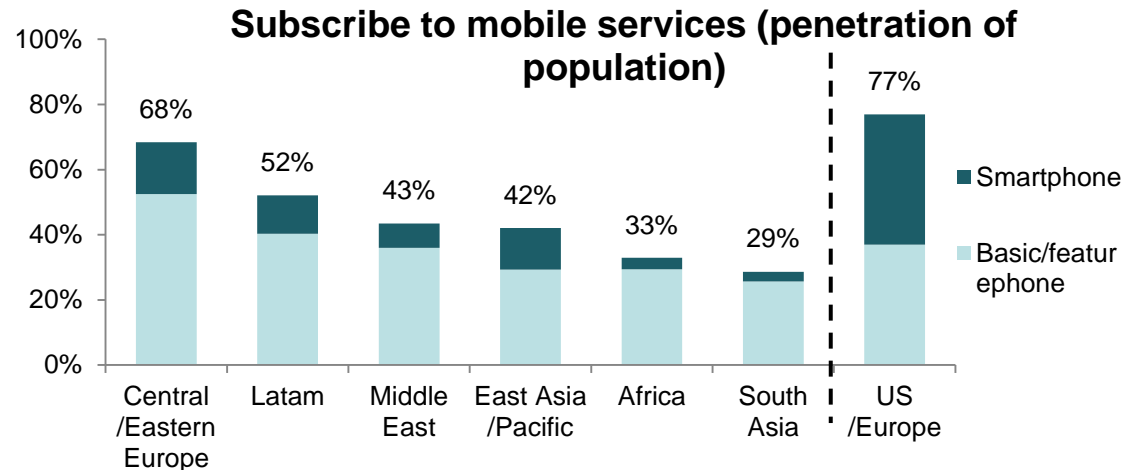
Healthier competition helps prices

- There is a higher concentration of market share in developing relative to developed markets
- However, this has mitigated in many developing markets over the last few years (the opposite has occurred in some notable developed markets such as the US and UK)
- Lower concentration generally translates into a more competitive marketplace, particularly by reducing prices
- In combination with several other factors (e.g. increased network coverage, lower handset prices), this has helped drive an increase in mobile penetration in the developing world
- Key for governments to understand this virtuous circle to promote healthy competition

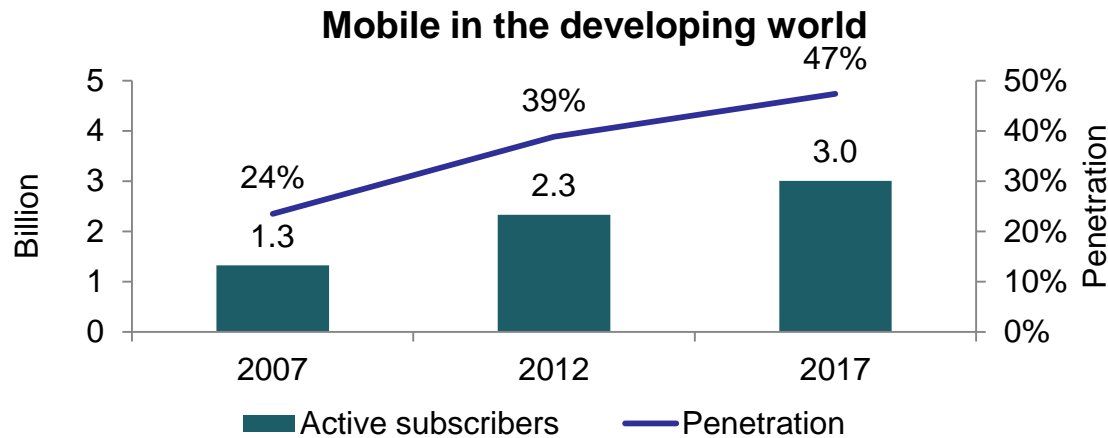


Smartphones and featurephones

- We estimate still less than 10% of people have a smartphone in the developing world (nearing 50% in US/Europe)
- Smartphone penetration will rise, but less for low income segments
- Regional variation, especially for smartphones
 - Higher in Latam
 - Lower in Africa (where the smartphone may serve more of a community role (e.g. community health worker, agricultural co-op's) for the time being)
- By sheer size, East Asia (dominated by China), Africa and South Asian regions have the most mobile subscribers



Outlook



Key influencing factors

1. Networks and coverage

Investment
Coverage expansion (urban to rural)

2. Handset utility and access to data

Handset range
Handset price
Innovation in access to data
Subsidies

3. Income growth

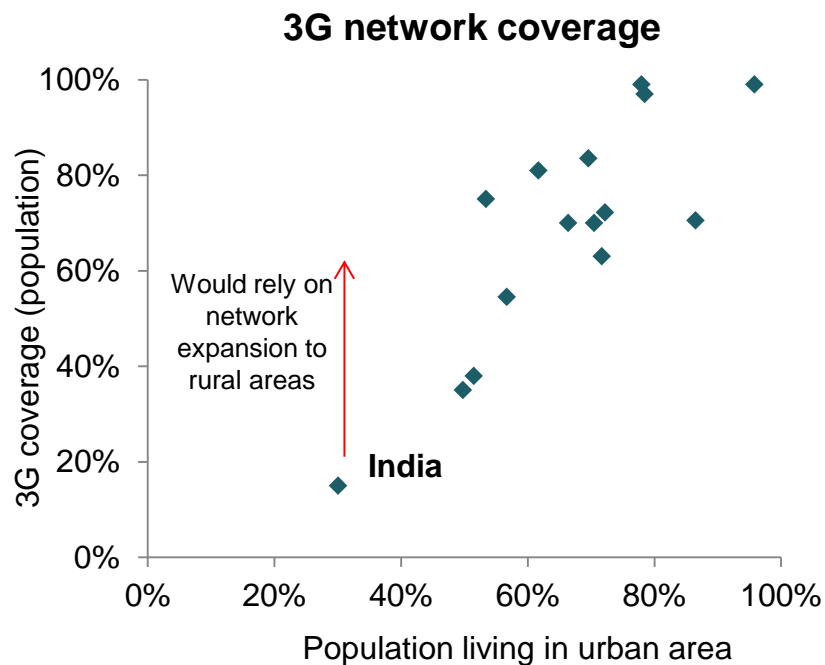
GDP growth
Growth in GDP per capita

Mobile penetration will continue to inexorably rise, but...

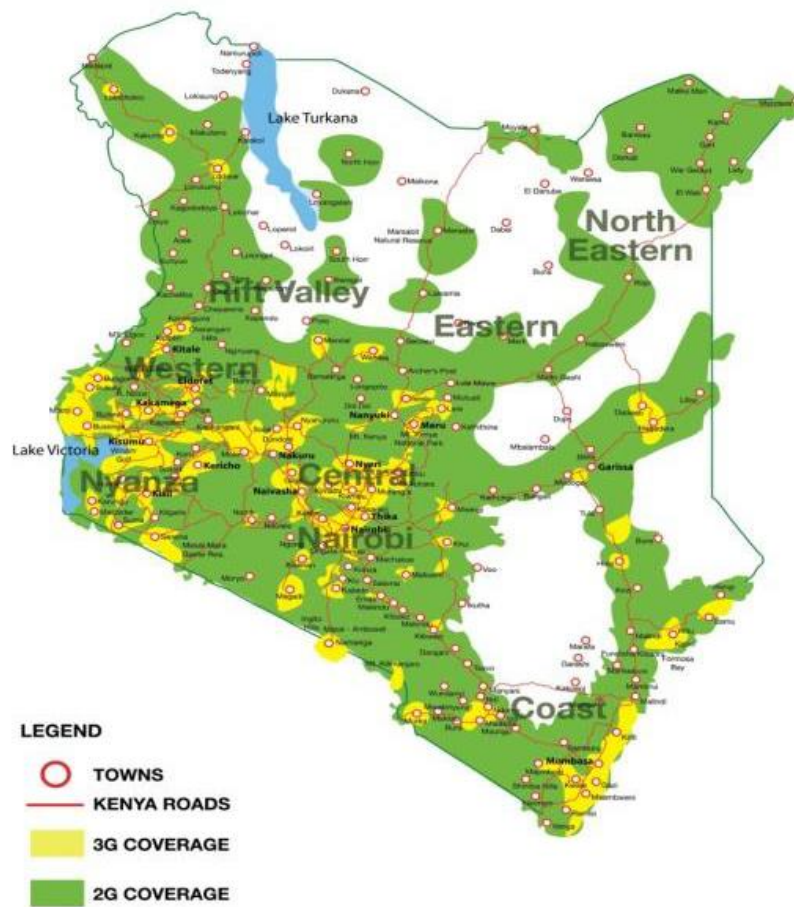
The shape and dynamics are more fluid, particularly in terms of the impact on lives of the base of pyramid versus the mass market

Networks and coverage: roll out so far

- 2G coverage is generally much more widespread than 3G in developing markets (average 2G coverage is around 95% of population, with 3G often below 70%)
- 3G coverage is growing, but there remains a sizeable urban-rural coverage gap due to roll out costs



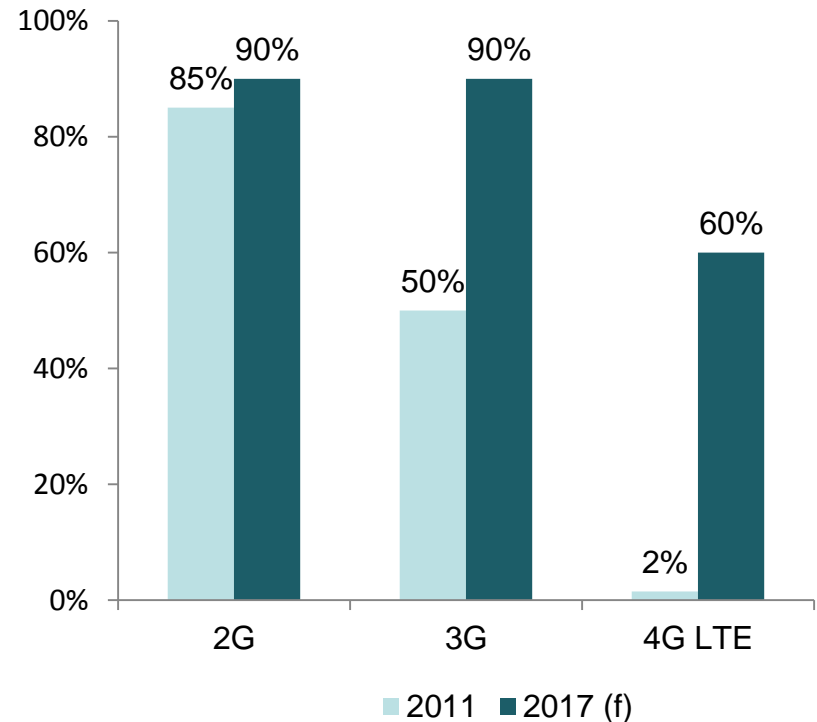
Network coverage, Kenya (Safaricom)



Networks and coverage: roll out to come

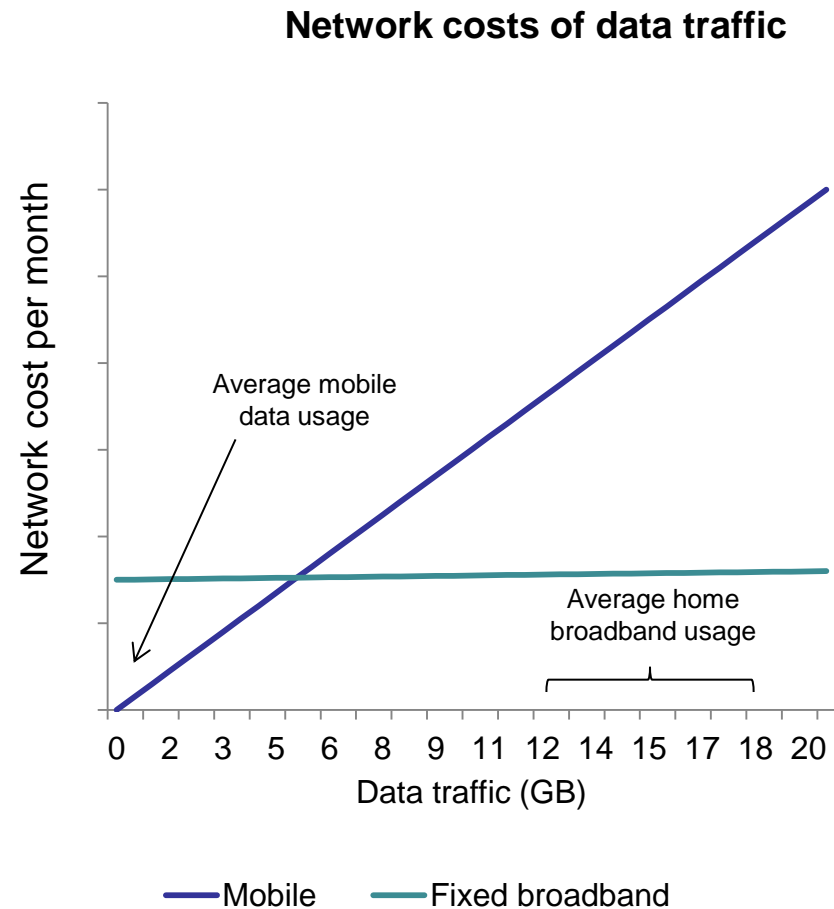
- Coverage will continue to increase, especially for 3G
- But what does this really mean?
- Handsets can access data on 2G networks (via GPRS), but the capacity (e.g. number of people using data) is less than 3G
- For the Base of Pyramid and other lower income segments, 2G coverage is sufficient to enable further rises in mobile penetration and even data use
- 3G coverage is a leading factor for higher intensity smartphone penetration (e.g. watching video) – in other words, *what* people do on a phone, not supporting whether they can *own* a phone

Network coverage - APAC



Networks and coverage: challenging economics in the pipeline?

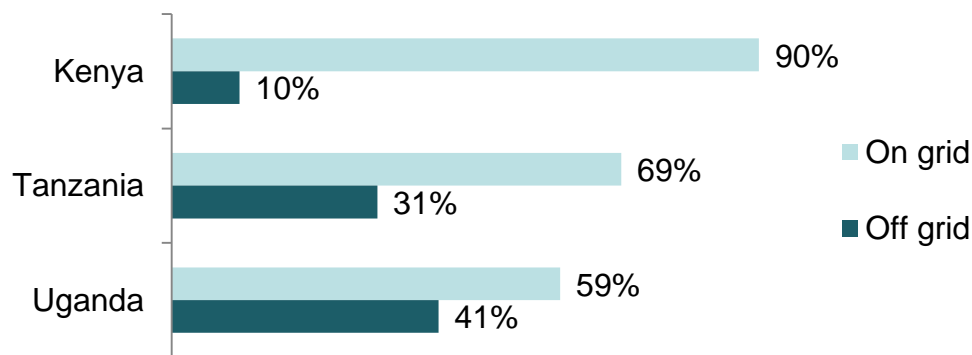
- Mobile networks transfer data over radio spectrum, while fixed broadband networks transfer data via copper or fibre optic
- This means the data economics are more challenging using mobile
- Currently, this is not a problem because most people in developing markets use featurephones, which use less data than smartphones, and much less than a home broadband connection
- However, as more people use data that networks have to absorb, the cost of data to consumers may rise, with more stringent usage caps also a possibility
- Usage caps are more likely to impact mid and high end users, with price rises impacting mid and lower income segments



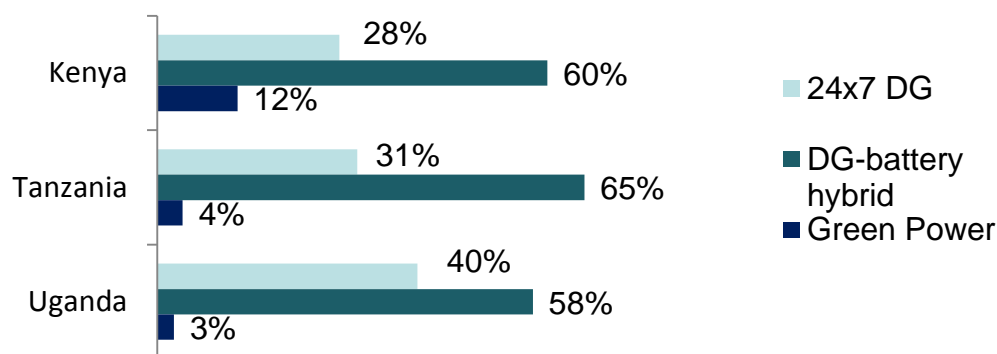
Networks and coverage: Green Power and alternatives

- Lack of reliable coverage in rural areas is partly because many network sites are off the electricity grid
- For these areas, mobile operators can either power sites using a diesel generator or alternative means
- **Green Power** increasingly used in sub Saharan Africa (e.g. Kenya)
 - Requires capex commitment from the MNO, but is a cheaper power source than diesel in the long run (ROI 2-3years)
 - Number of green sites steadily increasing
 - Infill solution to increase rural coverage
- Smaller, but more limited, infill possibilities include IP-based connections (e.g. Range Networks)

Network sites on the electricity grid



Power solution for off grid sites



Note: DG = diesel generator. Data as of September 2012
Source: GSMA Green Power for Mobile, Range Networks, MDI Analysis

Networks and coverage: utility access through mobile

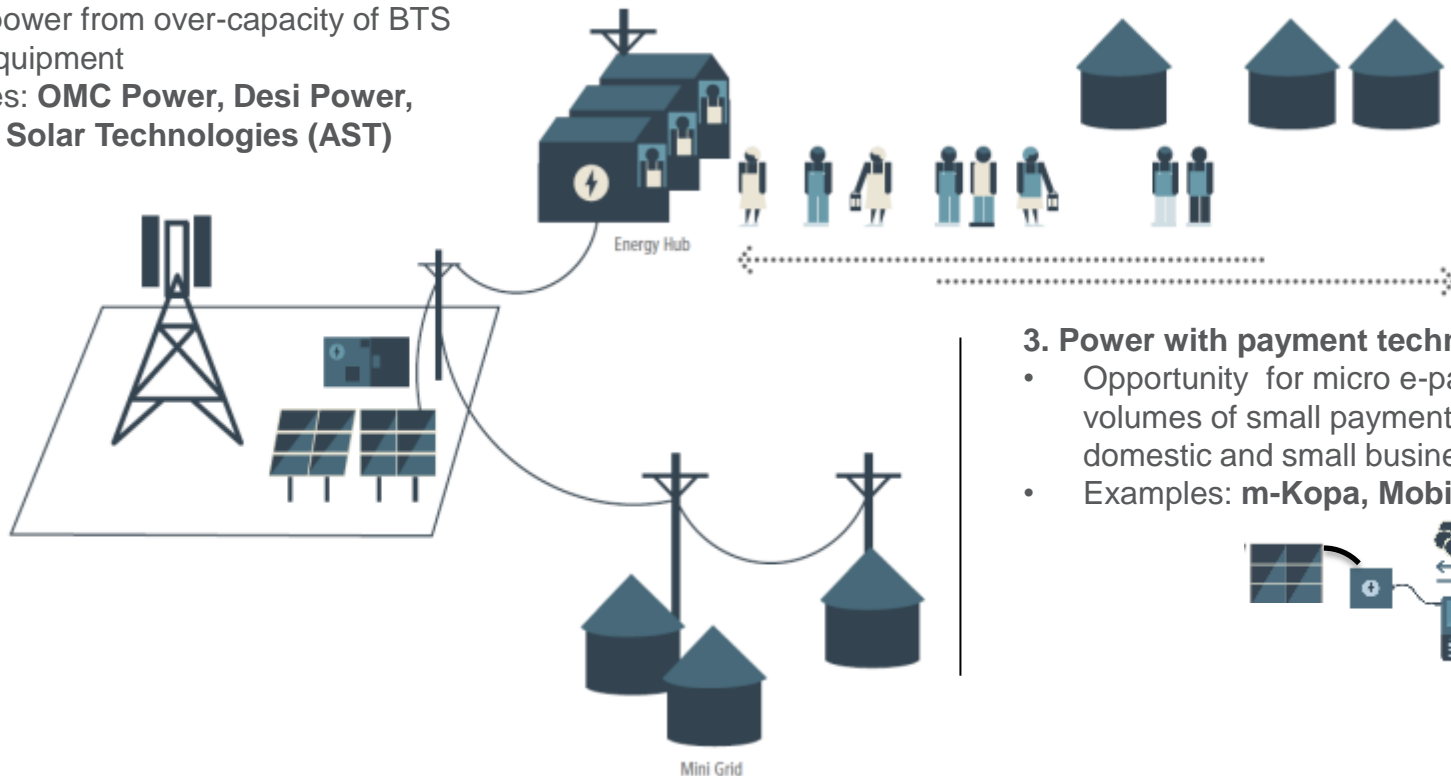
Potential impact on mobile ARPU for off-grid customers is 14%+

1. Power from BTS infrastructure

- (i) Outsource power solution to ESCo who sells community energy services or
- (ii) Sell power from over-capacity of BTS power equipment
- Examples: **OMC Power, Desi Power, Applied Solar Technologies (AST)**

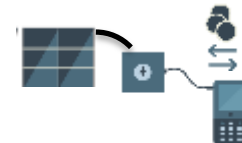
2. CPM from retail distribution network

- Leveraging extensive rural sales dealer/ retail network for distribution or sale of charging/ lighting devices through commercial partnerships
- Examples: **Fenix International and MTN Uganda, Nokero, Azuri Technologies**



3. Power with payment technology

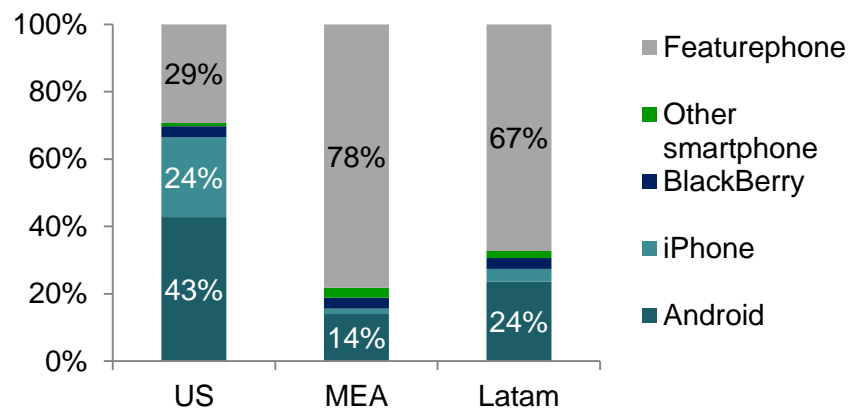
- Opportunity for micro e-payments: high volumes of small payments for off-grid domestic and small business energy
- Examples: **m-Kopa, Mobisol**



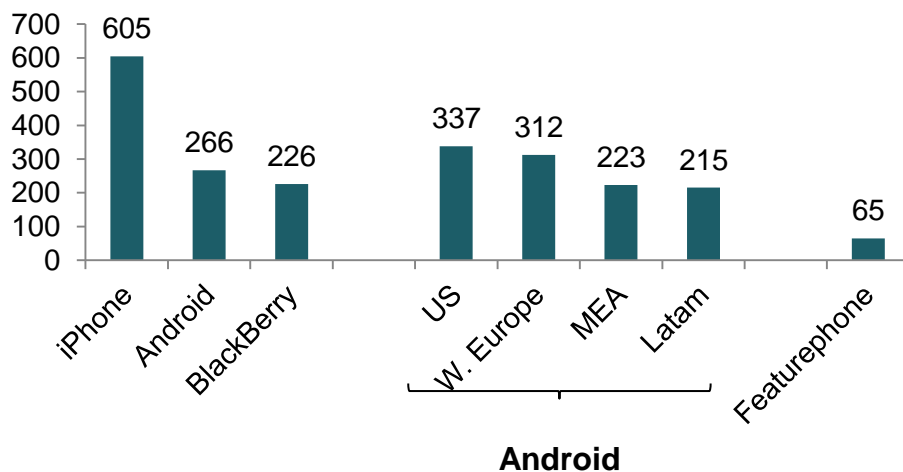
Handsets and data: featurephones and Android

- Smartphones are still less than a third of handset sales in most emerging markets, with featurephones (e.g. Nokia, Samsung models) dominant
- Android is by far the largest smartphone platform; it now takes a quarter of all handset sales in Latin America and nearly 15% in the Middle East and Africa
- Android has particular advantages for developers compared to other platforms
 - Lower cost devices in the ecosystem
 - Larger audience
 - Open source (more flexible)
- Convergence: Android with featurephones

Handset sales share



Handset ASP (\$, wholesale)



Note: ASP (Average Selling Price) and sales share for Q3 2012
 Source: Strategy Analytics, company websites, MDI Analysis

Handsets and data: smartphones blurring with featurephones

- There is now a convergence between smartphones at the low end and featurephones at the high end on price and functionality
- Important implications:
 - As prices fall, smartphones open to wider audience, with potential for richer experience
 - However, cheaper smartphones may compromise on quality (e.g. build, battery power – problematic for rural areas)
 - In time, smartphone adoption will rise even among lower income segments
 - Over short to medium term, featurephones likely to remain the dominant handset type in most developing countries
 - Reliable phones for voice calls and SMS
 - **Potential for enhanced experience using data**

	iPhone 4S (smartphone)	X100 (China) (smartphone)	Nokia Asha 305 (featurephone)
OS	iOS 5	Android 2.3	Series 40
Screen	Touch	Touch	Touch
Price (\$, wholesale)	>\$500	\$99	\$60-90
Camera (MP)	8	5	2
Processing power (MHz)	1,000	650	1,000

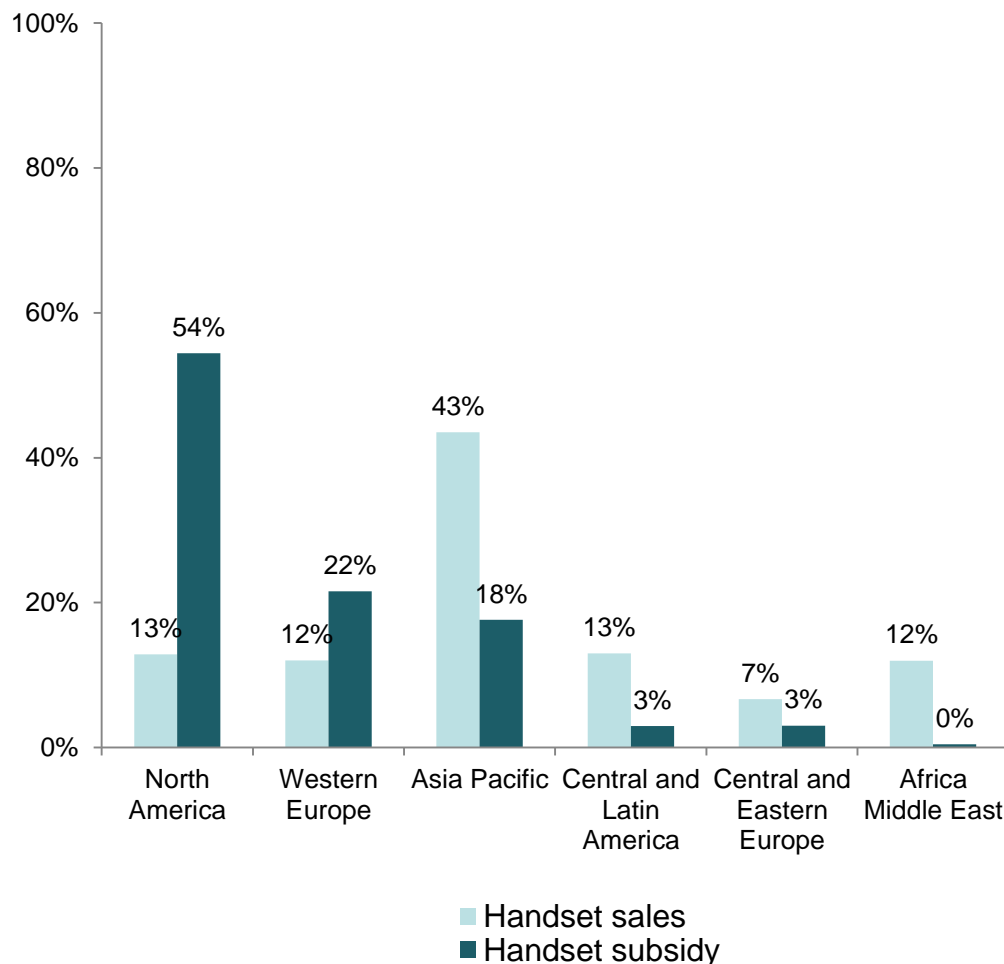
Note: prices indicative, as of January 2013

Source: Strategy Analytics, company websites, MDI Analysis

Handsets and data: the subsidy divide

- The developing world accounts for a majority of handset sales but a minority of subsidy (portion of handset cost paid for by mobile operator)
- This is because most people using a mobile phone in the developing world do so on a prepaid plan (which operators generally do not subsidise)
- The economics governing customer lifetime value mean that this is unlikely to change over the next 2-3 years
- This means that the mobile community (operators and others) are looking at new ways of enhancing the experience of lower income users, such as through innovative access to data

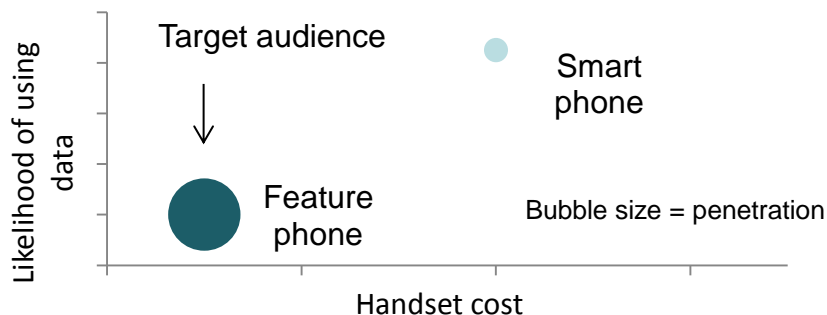
Global share of handset subsidies



Handsets and data: democratising data

Internet (OTT) players

- Google
- Opera Mini
- Mozilla



Mobile operators

- Hybrid data plans
 - Prepay element: customer caps spend on data each month
 - Contract element: commitment term
 - Avoids barriers to contract (e.g. proof of identity)
 - Operators more willing to subsidise handsets (featurephones or smartphones)

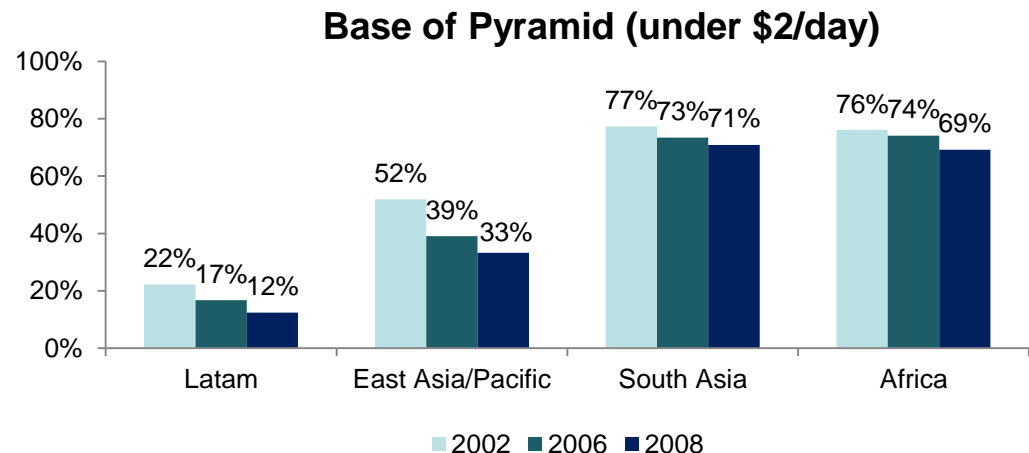
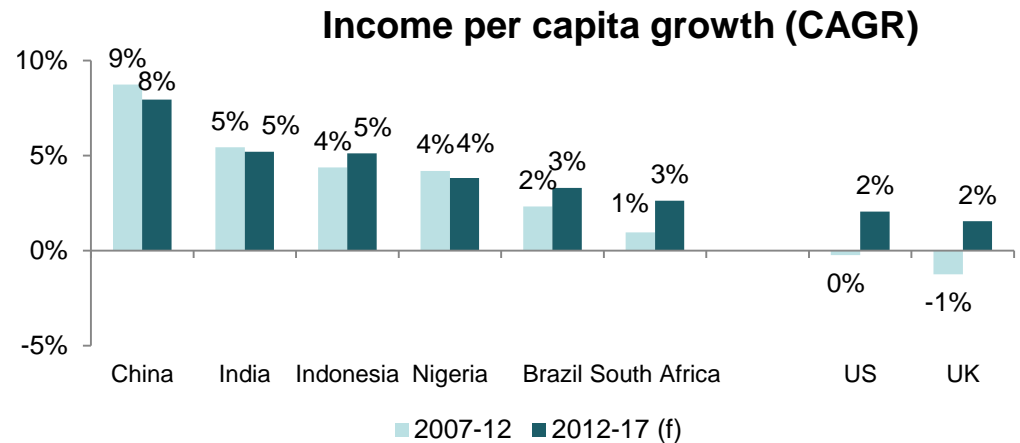
- **Google Free Zone**
- Free internet access for Google search, Gmail, Google+. Further browsing is charged
- **Trials in Philippines, South Africa, Indonesia from November 2012**, full roll-out pending success of trials
- **Facebook Zero, Wikipedia Zero**
- Free access to these sites on mobile internet
- **Key implications:**
- Designed for basic and featurephones (e.g. majority of mobile users in emerging markets)
- Data into the hands of lower income groups
- Content creation (see slide 31, 'Implications for user engagement')



WIKIPEDIA

Income growth

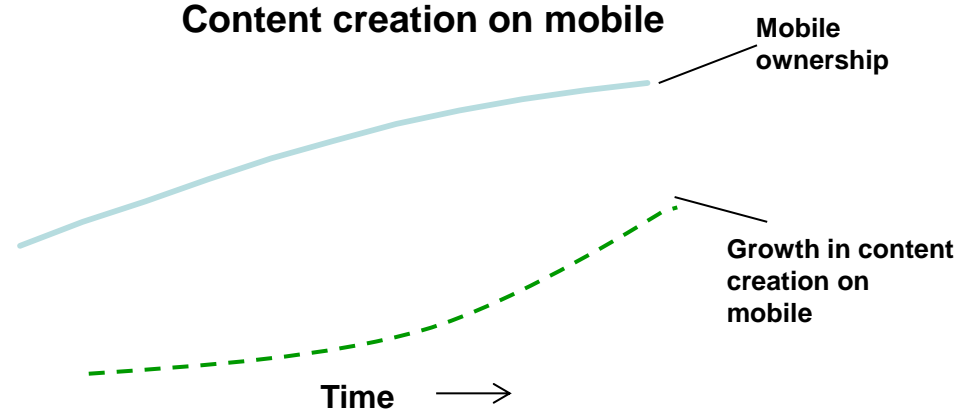
- The last 5 years have brought about significant growth in the income per capita in many emerging markets, while this has broadly stagnated in developed countries
- We must caution the likely skew from higher income groups
- The proportion of the population in the BoP has been falling (and will likely have continued falling since 2008), although there is significant regional variation
- To the extent this decline continues, combined with declines in the cost of mobile ownership, this will be an additional driver for mobile penetration and, in middle income groups, upgrades to smartphones



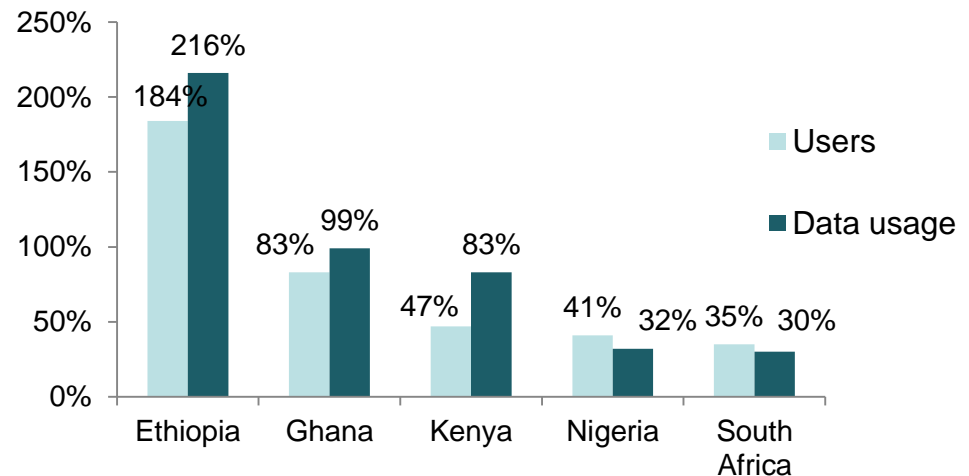
Implications for user engagement

- As mobile penetration rises, we expect growth in user generated content to follow
- This is already being seen with mobile activity on **Wikipedia**...
 - Orange Kenya: 87% growth in mobile Wikipedia page views in 4 months to October 2012, following launch of Wikipedia Zero (growth for rest of Kenya of -7%)
 - Orange Niger: 77% growth on the same basis (6% growth for the rest of Niger)
- ...and **Twitter**
 - 57% of tweets from Africa come from a mobile
 - Local content is key: 68% of twitter users get news through the platform, 22% search for jobs
- ...and high growth in use of the mobile version of the **Opera Mini** browser in Africa (mainly featurephones)

Content creation on mobile



Growth in Opera Mini use in Africa



Note: Opera Mini figures are for the 12 months to March 2012
Source: Opera Software, Wikimedia, Portland Communications, MDI Analysis

-
1. Executive summary
 2. Key takeaways: a stakeholder guide
 3. Market landscape: current and outlook
 4. Impact of mobile on development sectors
 5. Platforms, multiplicity and the drive for scale
 6. User-centric innovation
 7. Role of government
 8. Appendix

What you need to know

Key findings

M4D is growing: there are now over 800 live mobile-enabled products and services in the developing world, with growth having accelerated over the last 3 years. There are also interesting geographic distributions: mobile money in Africa, learning/education in Asia, with health and agriculture more balanced

Emergence of new business models: as new sectors in the M4D space have emerged since 2009, so too have new business models. Donor funding remains the most common model in mHealth, but others drawing revenue from consumers or business (e.g. using B2C, B2B and B2B2C) are used in the money, learning and entrepreneurship sectors in particular

SMS remains dominant, but new technologies are emerging: 67% of M4D services use SMS as an access medium, its popularity having *increased* since 2009. USSD also remains popular, with the use of the mobile web and apps on the rise

Key implications

The need for scale: while the number of M4D services continues to rise, there remains a general lack of scale achieved (with some exceptions, such as in the mobile money sector). The drive for social impact must be balanced by the need for scale (social impact is desirable, but must be sustainable)

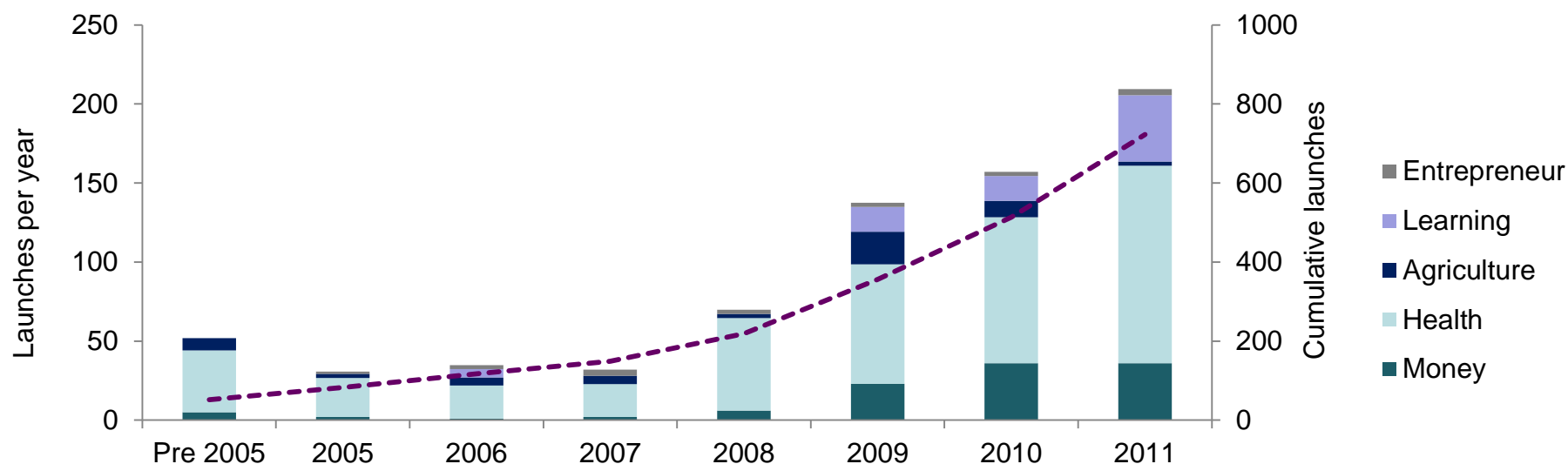
Diversification likely to continue: while some sectors have established clearly defined business models that are unlikely to change (e.g. mobile money, where mobile operators make money on transaction volume), others are still evolving (e.g. an increasing focus on B2B in the mobile entrepreneurship sector)

Balance basic functionality with growing data adoption: SMS likely to remain a ubiquitous delivery medium given its ease of use, but M4D services designed to run via the mobile internet, through apps, or be hosted in the cloud are likely to increase, particularly in sectors focused on interactive content and P2P (e.g. mLearning and entrepreneurship)

Evolution

- Strong growth in the number of M4D services launched over the last 3 years
- Crucial to consider scale of each sector, not just the number of services or projects

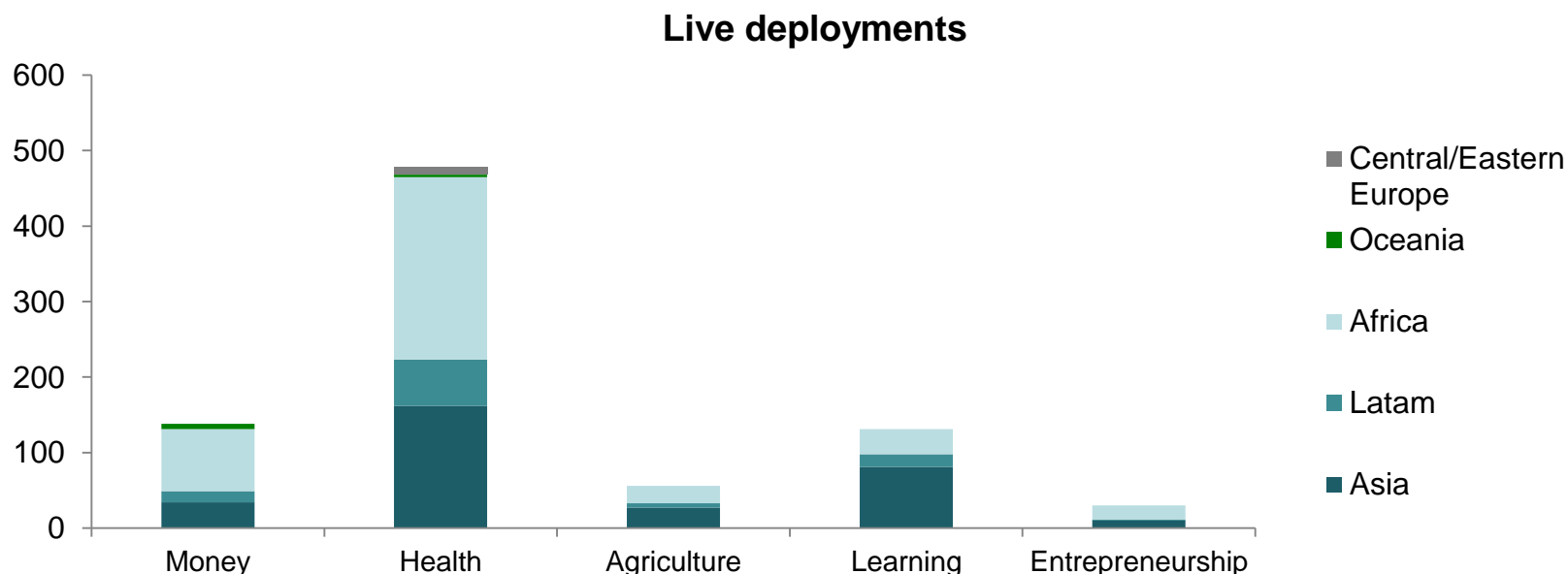
Timeline of launches



Note: figures based only on mobile-enabled products and services in developing world tracked by GSMA (including those merged/closed)

Mobile for Development landscape

- We show below the geographical distribution of live M4D services in the developing world tracked by the GSMA
- Mobile money has a concentration in Africa, learning and education in Asia, while health and agriculture are more evenly split between these two regions



Note: figures based only on mobile-enabled products and services in developing world tracked by GSMA
As of September 2012; excludes services in pipeline with an impending launch

Definitions for analysis and methodology

Our work so far...

Current GSMA resources

Further research & definitions

Analysis & initial findings

Over
800 M4D
services
tracked

Augmenting
research

Analysis

Findings

Business model

• **Where will the service generate revenue from?**

- Consumer
- Donor
- Business
- Open Source
- Government
- Advertising

Device

• **What type of device is the service aimed at?**

- Basic phone (e.g.,
- Feature phone (e.g.,
- Smart phone (e.g.,
- PC/ laptop
- Tablet
- Other

Delivery technology

• **What mobile delivery technology will the service utilise?**

- Native Voice
- IVR
- SMS
- USSD
- Text-to-Audio
- Web
- Apps
- WAP

Enablers

• **What kind of products and services are being offered?**

- Interactive content
- Push content
- Payments
- Peer to Peer
- Data Collection
- Call Centre
- Inventory management

Business model

Product/service type

Consumer (MNO led)	<ul style="list-style-type: none">• Rolled out as a value added service (VAS) by an MNO• While it may not earn revenue from customer directly, VAS designed to drive new customer uptake/ reduce customer churn.	Call Centre	<ul style="list-style-type: none">• Simple voice call to a trained human content provider
Consumer (non MNO led)	<ul style="list-style-type: none">• Revenue generated directly by end user• e.g. subscription, one off mobile money payment	Interactive content	<ul style="list-style-type: none">• Content based services that users can access by querying a central database• May be delivered via IVR, SMS, USSD, app, WAP, etc.
Business	<ul style="list-style-type: none">• Businesses targeted by service to generate revenue• Generally supports internal business processes (e.g. Inventory management), or core business services (e.g., recruitment)	Peer to peer content	<ul style="list-style-type: none">• Social networks and posting systems, users create and access content• Wide range of delivery mechanisms, even including voice
Advertising	<ul style="list-style-type: none">• Revenue generated from advertising delivered through service itself	Push content	<ul style="list-style-type: none">• Content pushed out (one way) via voice message or SMS• May be “broadcast” or “narrowcast” (customised by location / user profile)
Government	<ul style="list-style-type: none">• Primary funding comes from government	Data collection	<ul style="list-style-type: none">• Create customised surveys and send them to fieldworkers’ mobiles
Open Source	<ul style="list-style-type: none">• Service based around open source software/framework• Value derived from external parties adopting service	Inventory management	<ul style="list-style-type: none">• Supply chain management and stock ordering tools• Product security / validation tools
Donor	<ul style="list-style-type: none">• Primary funding comes from donor organisations, usually in a lump sum grant	Payments	<ul style="list-style-type: none">• Mobile wallets, payment gateways and a wide range of payment based services

Spotlight: use cases of mobile by sector

Financial inclusion

- Money transfer
- Airtime and prepaid services
- Bill payment
- Bank account management
- Micro-credit
- Micro-savings
- Micro-insurance
- Corporate payments
- Mobile commerce
- Social payments

Health

- Health education and promotion
- Reminders for patients to take medicines
- Remote patient monitoring and diagnosis
- Healthcare micro-payments
- Data collection tools for health workers
- Health worker training and capacity building
- Medical supply chain optimisation
- Drug verification
- Specialised medical devices

Agriculture

- Helplines for advice and trading assistance
- Broadcast and narrowcast advice and weather updates
- Crop insurance and agricultural financial services
- Fair trade compliance tools
- Weather monitoring on base stations
- Agricultural supply chain management tools

Learning

- Literacy and numeracy
- Financial literacy
- Technology literacy
- Language learning
- Workforce training
- Entrepreneurial skills and career development
- Job advice and connection
- Teacher training and support
- Classroom tools and resources

Entrepreneurship

- Business advice helplines
- Job posting and trading platforms
- Training and skills development
- Store / SME management tools
- Inventory ordering and management tools

Corporate & NGO use

- Prepaid airtime vending systems
- Surveying tools
- Fieldworker communications tools
- Crisis monitoring tools
- Supply chain management tools
- ICT training resources for small organisations

Delivery technology

Basic phone

- Offers basic voice services (telephony/voice mail), SMS and USSD based services.

Feature phone

- Basic phone features plus...
- Internet enabled, supports transmission of picture messages downloading music, built-in camera

Smart phone

- Feature phone features plus...
- graphical interfaces and touchscreen capability, built-in Wi-Fi, and GPS (global positioning system)

PC/laptop

- Personal desktop computer, or laptop. Typically running Windows, or maybe Linux OS.

Tablet

- Smart phone features plus...
- Larger screen, increased computing power, front and rear facing cameras, extra ports (e.g., USB)

Other

- A “catch all” for devices not included in the above
- E.g., modems, Personal digital assistance (PDA), etc.

Voice

- Basic telephony services, with voice delivered over a mobile network

IVR

- **Interactive voice response**, allows a computer to interact with humans through & voice recognition navigation and DTMF tones via keypad

SMS

- Short Messaging Service, allows exchange of short text messages between mobile phone devices

USSD

- **Unstructured Supplementary Service Data**. A synchronous message service creating a real-time M2P connection allowing a two-way exchange of data, mostly through menu structures

Text-to-Speech

- Computer or handset based service that generates speech using text input

Web

- A system of interlinked hypertext documents accessed via the Internet; also accessible via enabled mobile devices

Apps

- a software application designed to run on mobile devices. (typically smartphones, and tablet computers)

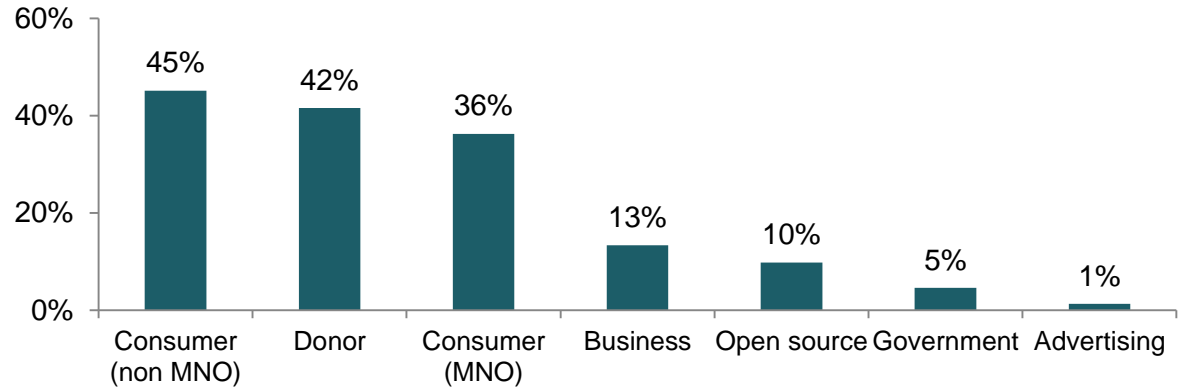
WAP

- **Wireless Application Protocol** for accessing information over mobile network. WAP browsers typically found on older feature phones.

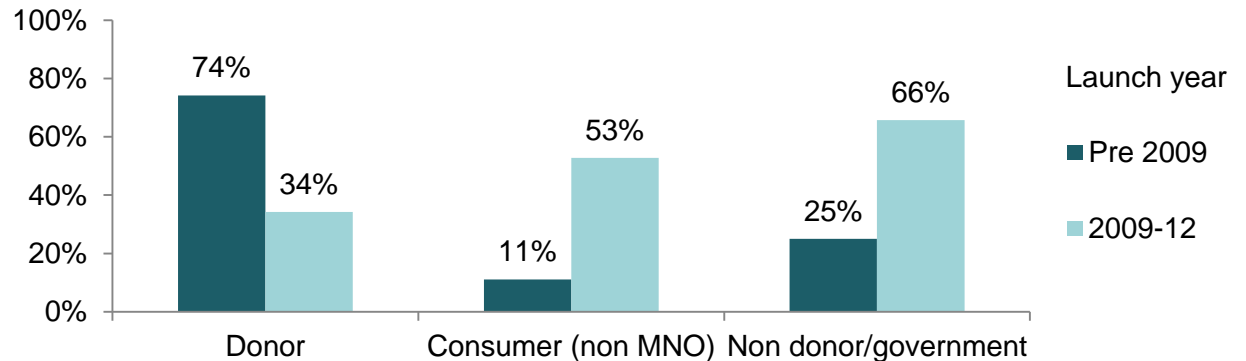
Business model: shifting to consumer revenue

- Just under half of m-services across all sectors sell a product or service to consumers
- Donor-based funding accounts for a similar share, but this is heavily skewed by the mHealth sector
- This has changed over the last 3 years, with newer projects less reliant on donor funding and more on a consumer-based business model

Business model of mobile services

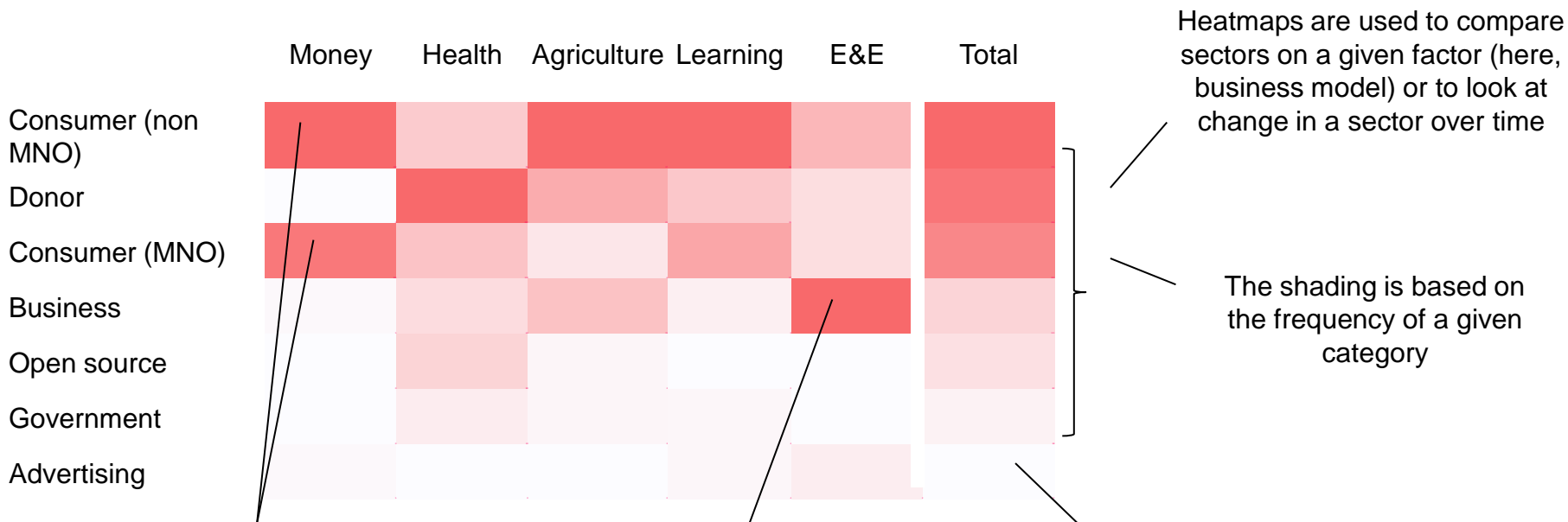


How m-services are funded



Note: services often use more than one funding model, so percentages will add up to more than 100%

Business model heatmap



Heatmaps are used to compare sectors on a given factor (here, business model) or to look at change in a sector over time

The shading is based on the frequency of a given category

Mobile **money** services are most likely to be funded at least partly through consumer revenue

Emerging **entrepreneurship** services have a B2B focus, with applications in e-commerce, logistics and inventory management

Advertising is not yet widely used

- Developing market MNOs and VAS suppliers do not yet have advertising capability built in to their networks
- Not yet defined end user market



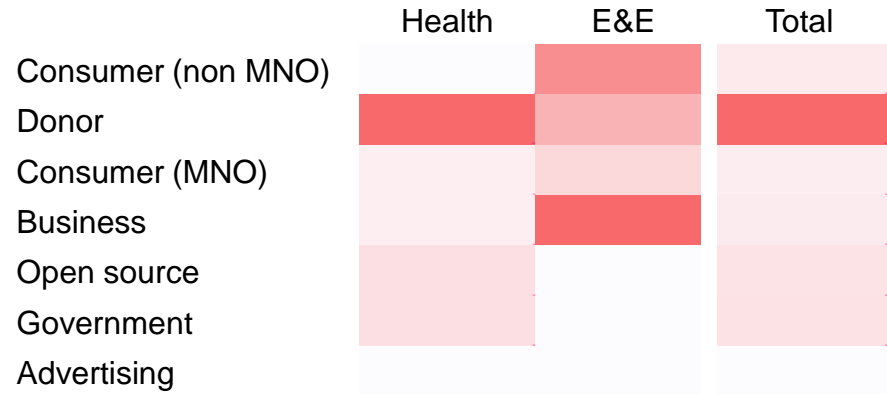
Business model evolution

- Here we look at the popularity of different business models for M4D services that launched before 2009 vs. after 2009
- There has been a shift to use different business models M4D sector over the last 3 years (evident in health sector)
 - Increase in end-user pay
 - Increase in m-services offered as part of wider suite of services from a mobile operator
 - On average, less reliance on donor funding
- On the other hand, m-services focused on entrepreneurship have consolidated around a B2B model (e.g. job advertising platforms, e-commerce)

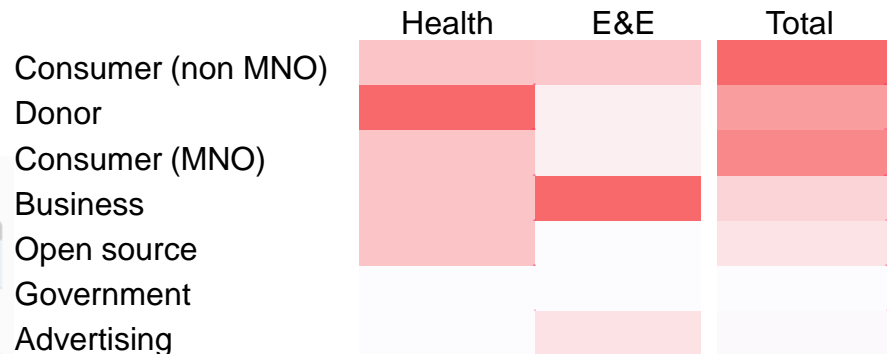
	CommCare BASIC	CommCare PLUS	CommCare FULL
COST			
CommCare CHW User Fee up to 20 users	Free	Free	Free
CommCare CHW User Fee after 20 users	\$0.75 per user / month	\$0.75 per user / month	\$0.75 per user / month
Implementation	Free	\$25,000	\$100,000



Pre 2009

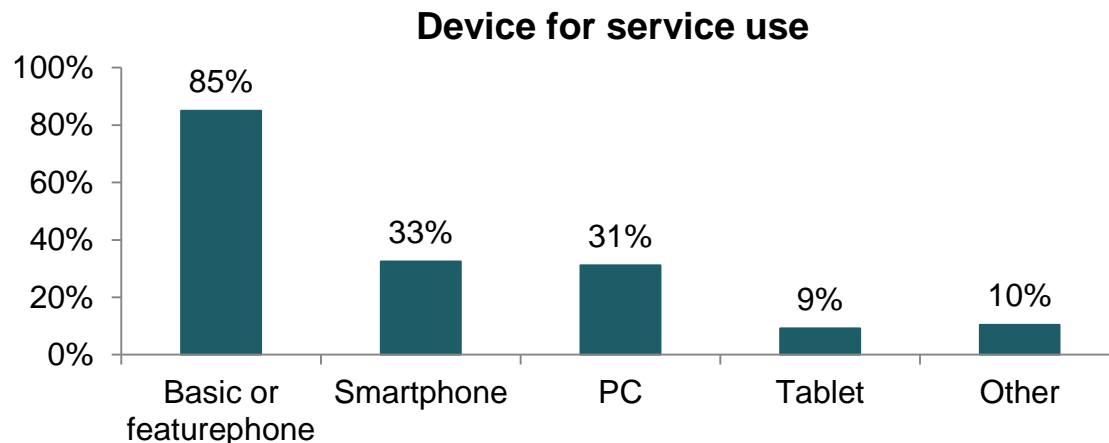


2009-12

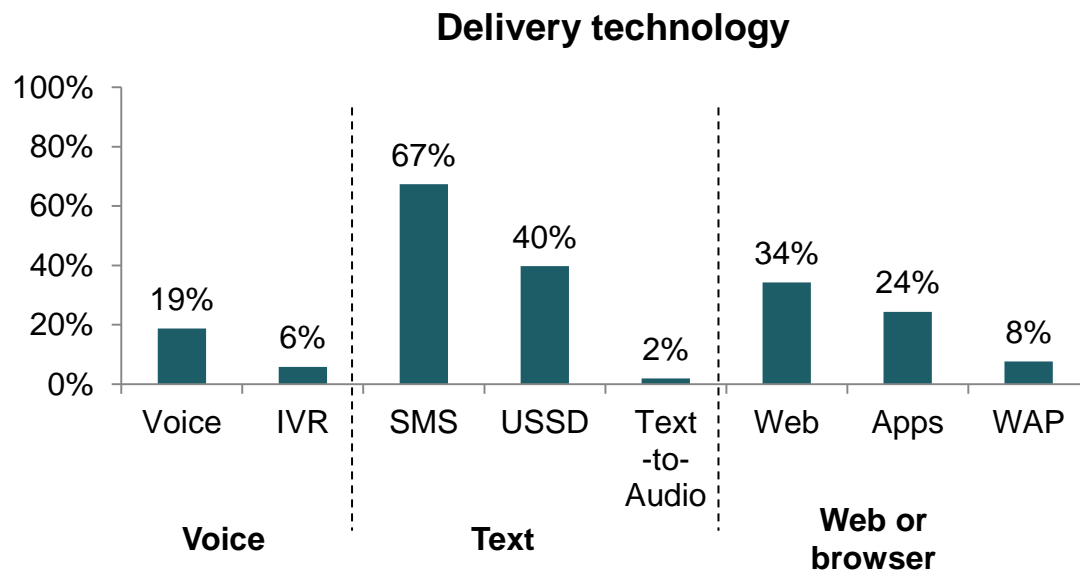


Technology

- Basic and featurephones remain by far the most common devices for m-services use
- Smartphones are targeted by a third of m-services – most popular in mLearning and mEntrepreneurship

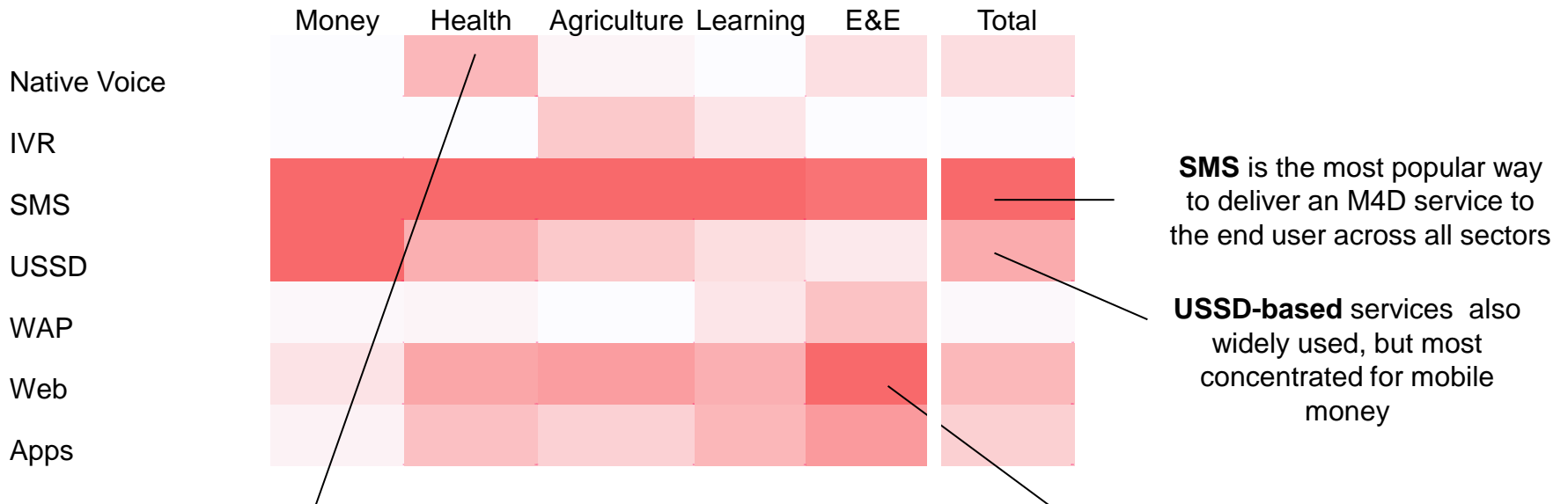


- SMS and its text-based cousin, USSD, are the most popular delivery modes
- This owes to their nature of being ubiquitous technologies in the mobile world (making them cheap to deploy and available on any handset) and ease of use



Note: services can be designed for multiple devices or technologies, so percentages will add up to more than 100%

Technology heatmap



SMS is the most popular way to deliver an M4D service to the end user across all sectors

USSD-based services also widely used, but most concentrated for mobile money

Services using the mobile web popular in the entrepreneurship sector (e.g. location-based services)

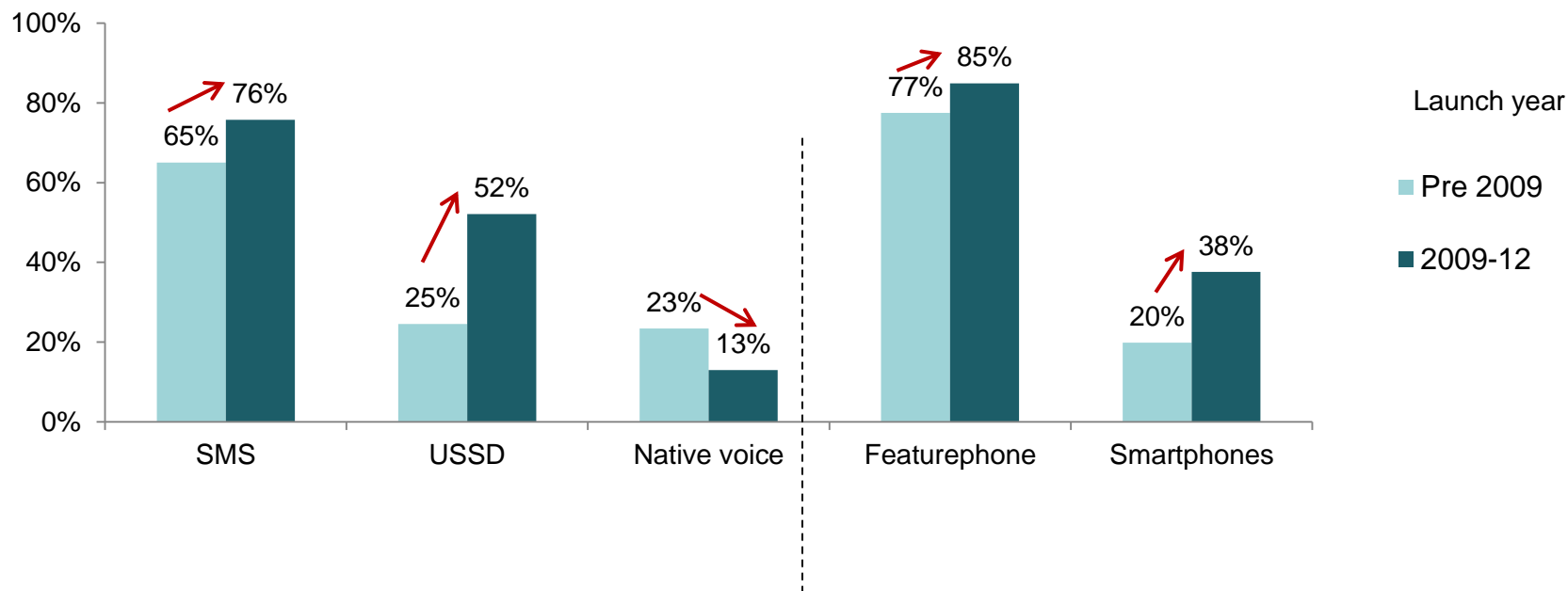
Traditional voice calls still used in mHealth (e.g. to seek medical advice), though not in other sectors



The enduring power of SMS

- More m-services are now being designed for use on a smartphone (health, learning and entrepreneurship services in particular), although SMS remains the most commonly used mobile technology to deliver m-services despite this
- On the other hand, fewer services are launching using traditional voice, although this is likely due to the complexity and cost of such services rather than its effectiveness

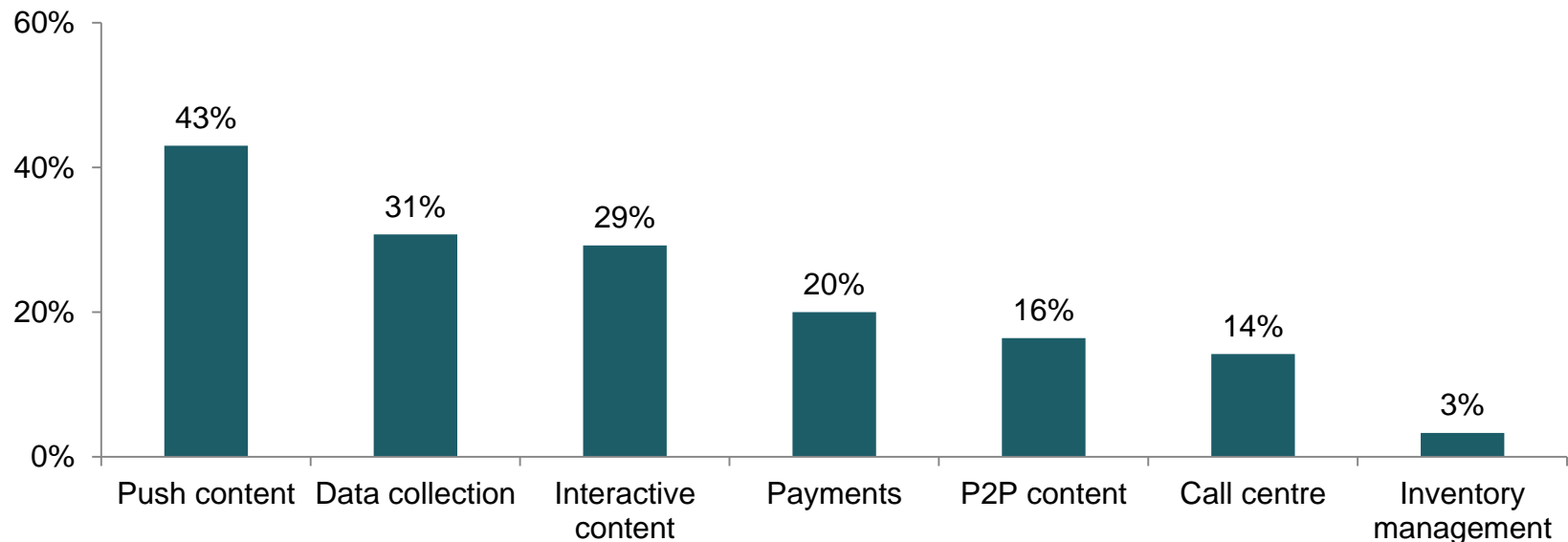
m-services delivered via...



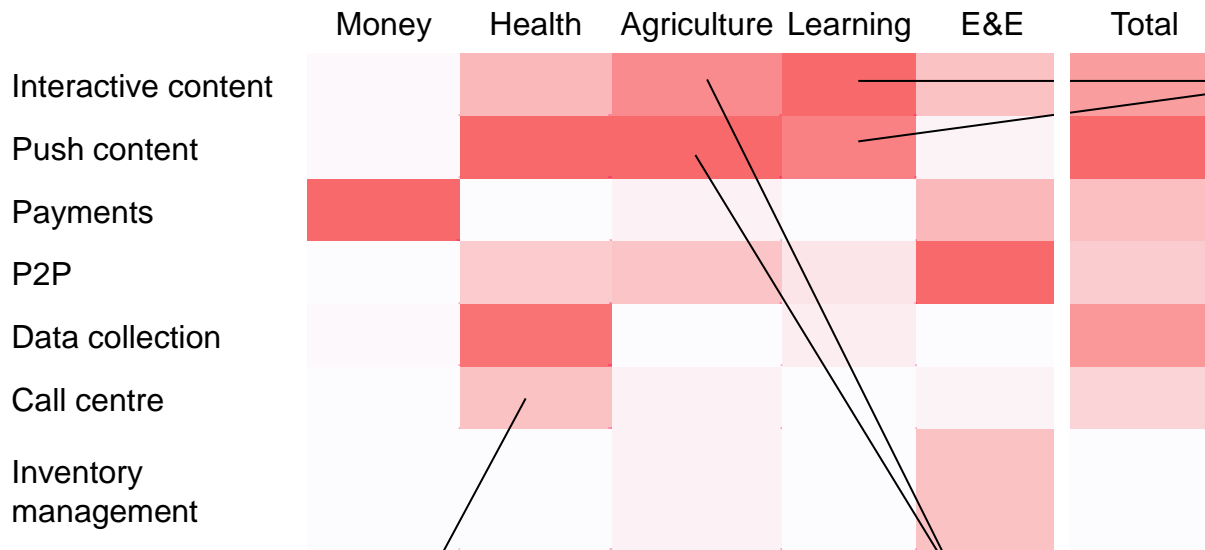
Product and service function (enabler)

- The product/service type (enabler) looks at the function the service is actually performing regardless of the vertical sector – in this way, it is a *horizontal* way of looking at M4D
- The wide use of push content is mainly driven by SMS-based services in the health, agriculture and learning sectors
- Other horizontals are more specific (e.g. data collection for mHealth services, payments in mobile money, inventory management in entrepreneurship services)

M4D service function



Enabler heatmap



Interactive content plays well into languages (often English) and other educational materials



Call centre generally found in the health sector (as with traditional voice)

Intuitively it would also suit mobile agriculture services, though cost and complexity may reduce its popularity in this vertical

Push and interactive content (mainly through SMS, USSD) can be used to deliver weather alerts, soil agronomy information and crop prices



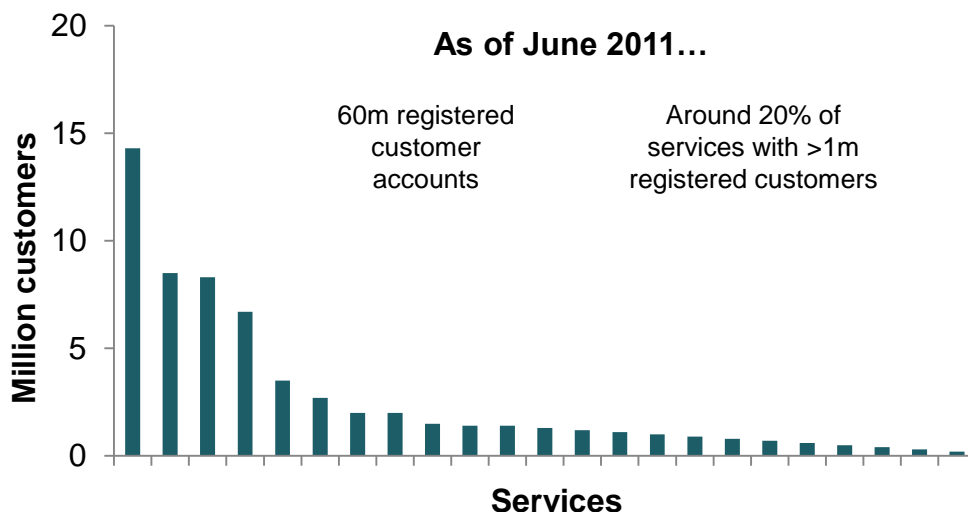
Grameen Intel Social Business Ltd.



Mobile money

- Most scaled of all mobile for development verticals
- Polarised: few big players, long tail
- Concentration of activity in East Africa
 - Even excluding industry champion m-Pesa, region accounts for around 50% of m-money transactions worldwide*
- Opportunity for increased scale
 - Emerging presence of large equipment vendors (Ericsson, Huawei)
 - 2.5bn unbanked, of which 1bn have mobile
- Potential for re-use
 - Payment as the common denominator
 - e.g. [m-Kopa](#) (solar lighting)

Mobile money – registered customers



Challenges

Operational hurdles

- Distribution, including agent liquidity
- Market segmentation
- Customer activation
- Fraud & risk management

Regulatory barriers

- Onerous customer registration / KYC
- Licensing requirements
- E-money
- Agent regulation

Inadequate investment

- Margin pressures on core business
- Lack of proof points

Learning gaps

- New products i.e. Savings
- Greater efficiency to reduce cost

Note: registered customers exclude Safaricom (m-Pesa)

*June 2011, excludes Globe

Mobile money: East Africa is the hub

	Global ^a	East Africa	West Africa	Asia Pacific	Central Asia and the Middle East
Sample size (number of respondents)	52	11	13	15	8
Customer accounts					
Registered customer accounts, June 2011	60.4m	35.9m	6.4m	12.6m	1.9m
Annualised growth rate of registered customer accounts, December 2010 to June 2011	33%	29%	66%	43%	103%
Functional transactions					
P2P transfers per active customer, June 2011	0.69 ^{bcd}	0.84 ^{bc}	0.15 ^e	0.20 ^{cd}	0.07 ^e
Bill payments per active customer, June 2011	0.28 ^{bcd}	0.06 ^{bc}	0.03 ^e	1.10 ^{cd}	0.09 ^e
Bulk payments per active customer, June 2011	0.03 ^{bcd}	0.02 ^{bc}	0.06 ^e	0.19 ^{cd}	0.13 ^e
Airtime topups per active customer, June 2011	2.07 ^{bcd}	2.26 ^{bc}	2.68 ^e	1.94 ^{cd}	0.44 ^e
Cash-conversion transactions					
Cash ins per active customer account, June 2011	1.85 ^{bcd}	2.18 ^{bc}	1.03 ^e	0.57 ^{cd}	0.27 ^e
Cash outs per active customer account, June 2011	1.57 ^{bcd}	1.98 ^{bc}	0.31 ^e	0.06 ^{cd}	0.19 ^e

Mobile money: illustrative examples

bKash Limited



Launched: **2011**

Backed by: **BRAC Bank**

Target markets: **Bangladesh**

- Canonical mobile money payment system: send, receive, pay
- Largely rural Bangladeshi market presents opportunity: 15% formal banking penetration, over 50% mobile penetration
- Service seeing high growth
- Available through over 28,000 agents

Wallet Activation Process



M-KOPA

Launched: **2011**

Backed by: **Various donors and investors**

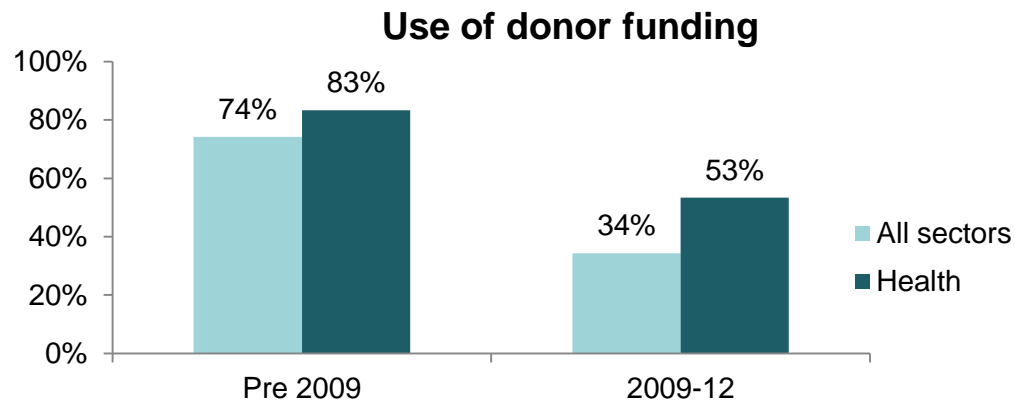
Target markets: **Kenya**

- Provides Pay-as-you-go solar solution, allowing users to pay KES40 per day via their m-Pesa account to use system for lighting and mobile charging.
- Partnered with Safaricom, leveraging its 45,000 agent network in Kenya
- Available at more than 80 locations in Kenya.



Mobile health

- Largest development vertical by number of organisations
- High multiplicity and lack of scale identified as key challenges
 - Surplus of pilots ('pilotitis') and local impact
 - Lack of exit strategy for donors
 - MNO's not used effectively
- Opportunities
 - Move to a linear value chain
 - Demonstrable value drivers for MNOs (e.g. ROI, churn reduction) and health industry
 - Advocate policy and legislative support (e.g. ITU/WHO Oct 2012 – build on current projects, form public/private/NGO partnerships)
 - Facilitate/broker public private partnerships and secure long term investment
 - Drive down cost through tax and other incentives for MNOs



Challenges

Fragmentation

- Reduces sustainability (recent GSMA study of almost 700 services showed multiple overlap of services in countries and regions)

Scale

- Not achieved in >95% of solutions – limited reach of services
- MNO assets not being leveraged effectively

Replication

- Without adequate proof points/data, replication is not happening

No linear value chain

- No “shared value proposition” being demonstrated by either mobile or health sector with clear understanding of each-other’s value drivers (impact indicators)

Mobile health: illustrative examples

Motech



- Open source mHealth software project
- Provides underlying application framework for a diverse range of mHealth solutions
- Enables solutions to be developed more quickly and cost-effectively with fewer technical resources
- Allows data sharing across different deployments of the

Launched: **2010**

Backed by: **Grameen Foundation**

Target markets: **Health initiatives anywhere in developing world (e.g., Africa, India)**

Feature	Status	Ananya	Chana	TAMA	WHP	Ethiopia	World Vision Zambia
Demand Generation							
via IVR	Supported	✓	✓	✓			✓
via SMS	Supported	✓	✓	✓			✓
Scheduled messages to patients	Supported	✓	✓	✓			
Scheduled messages to patients based on their medical record	Supported	✓	✓	✓			
Appointment Reminders to patients	Supported			✓			
Registration							
via IVR	Supported	✓					
via simple mobile form	Supported		✓				
via CommCare	Supported	✓				✓	✓

Etisalat Mobile Baby



- Uses mobile to monitor pregnancy using ultrasound, identify danger signs, pay for emergency transportation, and communicate with the referral facility
 - Brings together healthcare professionals, NGOs, pharmaceutical/insurance companies, state government
- Over 500 birth attendants trained, over 20,000 pregnant women registered

Launched: **2011**

Backed by: **Etisalat, Qualcomm, D-Tree International and Great Connection Inc.**

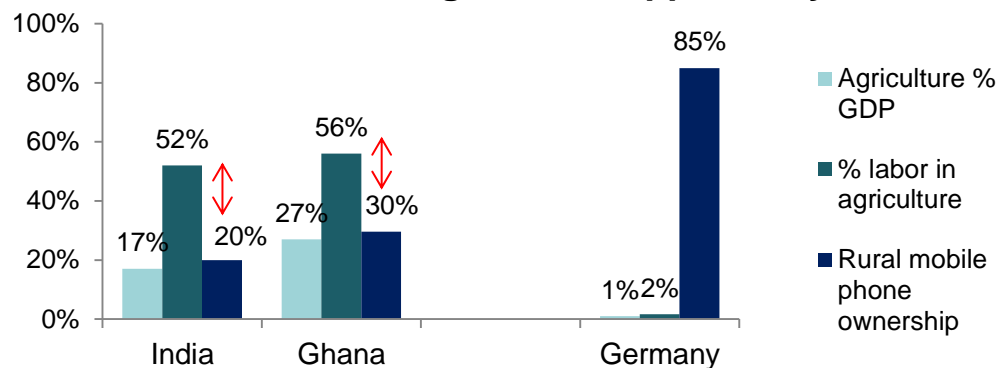
Target markets: **Africa**



Mobile agriculture

- Polarised sector – few services with large base (>1m users), long tail
- Opportunities for scale
 - Penetrate untapped rural market and ‘unconnected’ rural customers
 - Identifiable business case for mobile operators: MNOs are keen to launch services for rural sector to increase customers and brand loyalty while reducing churn
 - Strong focus from international community to invest in agriculture via ICT: food security, climate change, large addressable market
- Strong potential for overlap with other sectors
 - Financial services for rural sector (loans, insurance and savings)
 - Learning – training, advisory
 - Health – delivery of content via mobile shares elements
 - Utilities & M2M (e.g. irrigation pumps controlled by mobile tech)

Mobile agriculture opportunity



Challenges

Business model

- Price sensitive customers (majority smallholder farmers)
- Proof points
- Many services, few with scale

Mobile operators

- Few MNO-led mAgri services

Content

- Lack of content providers
- Illiteracy, technical illiteracy
- Consumer education

Mobile agriculture: illustrative examples

Farmforce



- Penetrates untapped rural markets by integrating thousands of smallholder farmers with exporters in larger markets

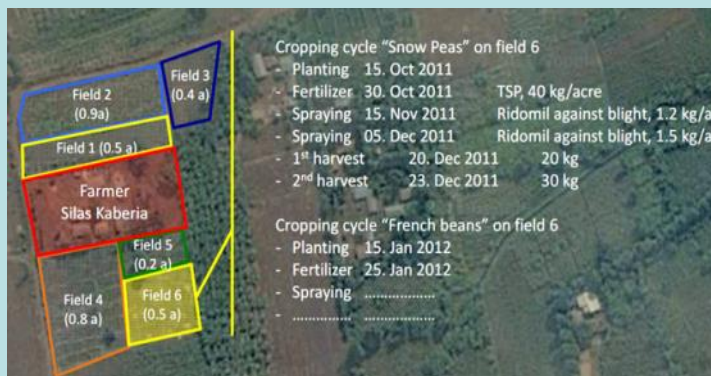
Launched: **2012**

Backed by: **Syngenta Foundation**

Target markets:

Africa, Asia, Latam

- Focuses on international regulatory environment by aiding farmers compliance with food standards, traceability of goods, etc.
- Uses sophisticated 'virtual farm' concept, linking farmers to exporters via database.



Nong Xin Tong



- Agricultural web and mobile based service for market prices, advisory, jobs, and more

Launched: **2010**

Backed by: **China Mobile**

Target markets: **China**

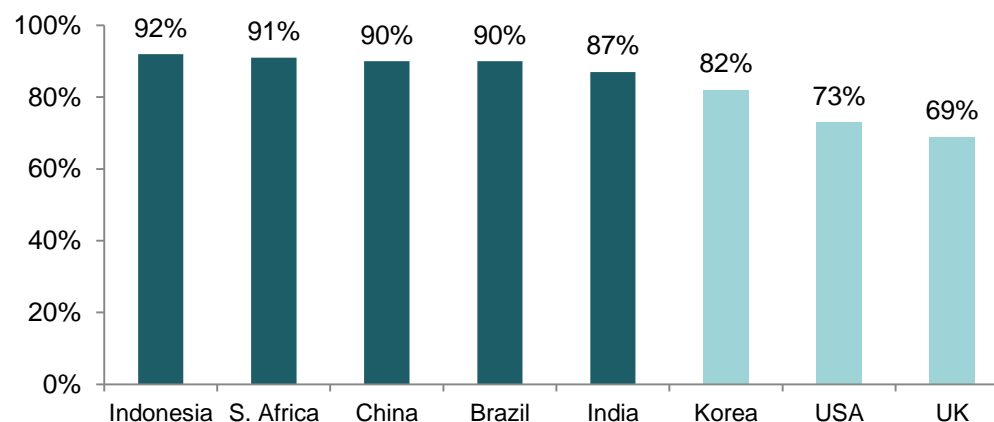
- Agriculture ministry uses service for policy announcements
- Long term investment for China Mobile: focus on financial viability for farmers, not pure profit for MNO (service only USD 6 a year for farmers)
- Over 40 million users



Mobile learning

- Interactive content is primary form of product/service for this vertical
- Business models hard to prove and make sustainable
- Needs more government regulatory support
- Opportunities for scale
 - Highly desirable service in emerging markets, which currently consumes around ¼ of family income in many low income households
 - Strong focus from international community to invest in education access (e.g., MDG2)
- Strong potential for overlap with other sectors
 - In terms of strategic knowledge partnerships, disseminating knowledge from other sectors
 - Content management systems and other interactive content services in other verticals

Believe mobile technology important to learning and education



Challenges

Regulatory

- Education and ICT policies to distinguish educational content from other VAS
- Policies required to accelerate ICT enhanced learning/training

Mobile operators

- Proving/pitching business case of educational content to MNOs
- Appropriate revenue share agreements with MNOs

Content and training

- Generating content to suit diversity of end-users (language diversity, literacy levels, etc)
- Human resource capacity
- Appropriate training lacking

Mobile learning: illustrative examples

Nokia Life Tools



- Provides a range services covering Agriculture, Education and Entertainment targeted at both urban and rural consumers

Launched: **2008**

Backed by: **Nokia**

Target markets: **India, Indonesia, China, Nigeria**

- Established over 90 knowledge partnerships across the four active countries

- Offered in 12 of India's official languages alone

- Over 90 million users



Yoza Cellphone Stories



Launched: **2010**

Backed by: **Shuttleworth Foundation**

Target markets: **South Africa, Kenya**

- Short stories and classic literature are published on mobile phones (MXit and on a mobsite)

- Users can comment, enter writing competitions, review stories

- Stories found in English, Afrikaans and isiXhosa

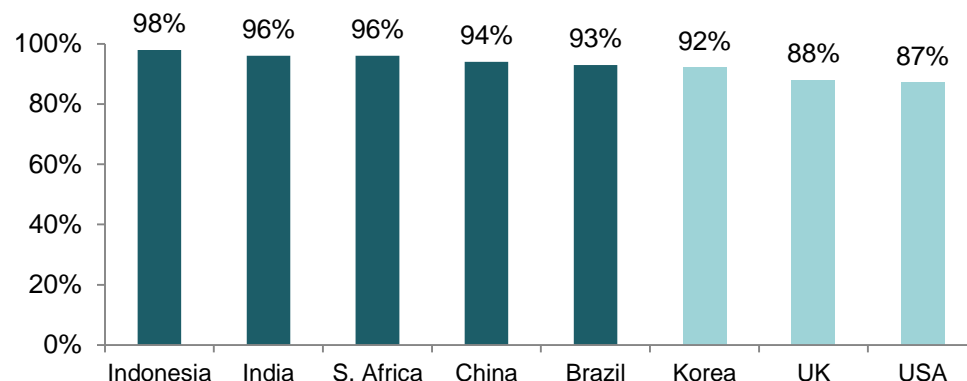
- 470,000 complete reads of stories and poems; 47,000 comments



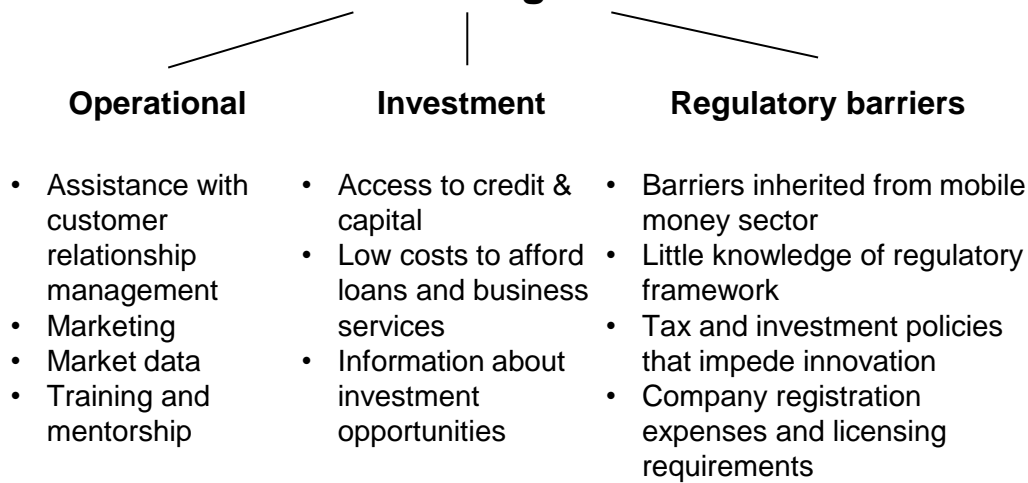
Mobile entrepreneurship

- An up-and-coming vertical, with many new services emerging
- Mobile money is a critical enabler to many services
- Services tracked by GSMA are more likely to be delivered using mobile web, and offer B2B services
- High impact potential; in places such as Nigeria, Egypt, and Indonesia, micro-entrepreneurs estimated to generate up to 38 % of GDP*
- Opportunity for increased scale
 - Maturing mobile money markets
 - Strong focus from international community on job creation in emerging markets
 - Supporting businesses in multiple sectors (e.g. agriculture, education, health)
 - Well positioned to benefit from natural 'willingness to pay' from businesses

Believe mobile technology important to entrepreneurship



Challenges



Mobile entrepreneurship: illustrative examples

Souktel



- Service connecting job-seekers with employers via mobile

Launched: **2006**

Backed by: **The Synergos Institute, The King Abdullah II Fund for Development**

Target markets: **Africa, Asia, Latam, Caribbean**

- Over 20 leading aid agencies actively use AidLink services to get key information to and from communities in crisis
- In Palestine currently serves close to 10,000 job seekers in a given month



Tiendatek



- A tablet and barcode scanner system for shopkeepers: can register transactions, get useful metrics, charge credit cards

Launched: **2008**

Backed by: **Frogtek**

Target markets: **Mexico, Colombia**

- Data fuels Tiendatek Data: a marketing analytics tool used by companies like Unilever and Bimbo
- System integrates with payment providers, mobile operators, hardware providers, integrators, banks, consumer-goods companies and shopkeeper associations



-
1. Executive summary
 2. Key takeaways: a stakeholder guide
 3. Market landscape: current and outlook
 4. Impact of mobile on development sectors
 5. Platforms, multiplicity and the drive for scale
 6. User-centric innovation
 7. Role of government
 8. Appendix

What you need to know

Key findings

Barriers to scale are multi faceted: scale is driven by a number of factors related both to an organisation and the wider sector. Across the M4D sector, the most important are the presence of defined value chains, sustainable business models, and market visibility

An important distinction: it is important to distinguish between a true platform, a framework and a bespoke service. Platforms (e.g. Linux, iOS, Android) are generic and can accommodate a range of applications or services. Frameworks (e.g. Fundamo, Frontline SMS) are less generic than platforms, but provide many re-usable tools for others to use in M4D services. Bespoke M4D services are the least generic and are generally designed for one sector in one country

In the M4D sector, bespoke services are most common, followed by frameworks, with true platforms generally controlled by global TMT firms (with or without direct interests in M4D). We believe frameworks present the best route to scale, and warrant investment

Mobile money stands out: the mobile money sector has the most defined value chain, including a layer for vendors (e.g. Fundamo, Comviva) providing the underlying frameworks the services are built on

Key implications

It takes an industry: there is growing recognition among service providers, donors and impact investors of these barriers and the need to collaborate as a sector to overcome them. Partnerships with mobile operators have and will continue to play a key role

Re-use of frameworks: the potential to re-use a service or the infrastructure underpinning it is a trade-off between how generic it is, technical complexity and cost to intervene. In general, the more generic and less costly/complex, the greater the potential for re-use

Platforms are most generic but they are also most expensive and complex. Bespoke services are more accessible but also less generic. Frameworks strike a balance, and it is here where we see examples both of services being directly re-used across sectors and countries (e.g. Ushahidi, Motech) and of services connecting to an existing framework originally designed for a different sector (e.g. m-Kopa) happening in the field today

Fewer players, larger scale: most mobile money services sit on top of a framework developed and owned by one of a relatively small number of vendors (e.g. 5-10 worldwide). In general, services in other M4D sectors are bespoke, and often duplicate other services in the same country

In theory, platforms exist on several levels

Operating system	Delivery	Product/service (what does it do?)	Functional nature
<ul style="list-style-type: none">• Smartphone<ul style="list-style-type: none">– iOS– Android– BlackBerry– Windows– Symbian• Featurephone<ul style="list-style-type: none">– Nokia Series 40– Samsung/LG proprietary– Other• Basic handsets<ul style="list-style-type: none">– Many– Proprietary OS	<ul style="list-style-type: none">• Text-based<ul style="list-style-type: none">– SMS– USSD• STK• Voice (e.g. IVR)• Data• Combination of these modes	<ul style="list-style-type: none">• Application level<ul style="list-style-type: none">– Call centre– Interactive content– Peer-to-peer– Push content– Data collection– Inventory management– Payments	<ul style="list-style-type: none">• Temporal• Communication type• Transactional• Public• Community vs. individual• Location-based• Identity-based

The “platform” problem

- In the mobile space the term “platform” can currently be used to mean:
 - iOS, Android, Linux,...
 - pieces of open source software with public APIs...
 - or simply mobile services that scale to reach a large user base...
- This distinction will better enable us to landscape existing M4D services with respect to their reuse potential

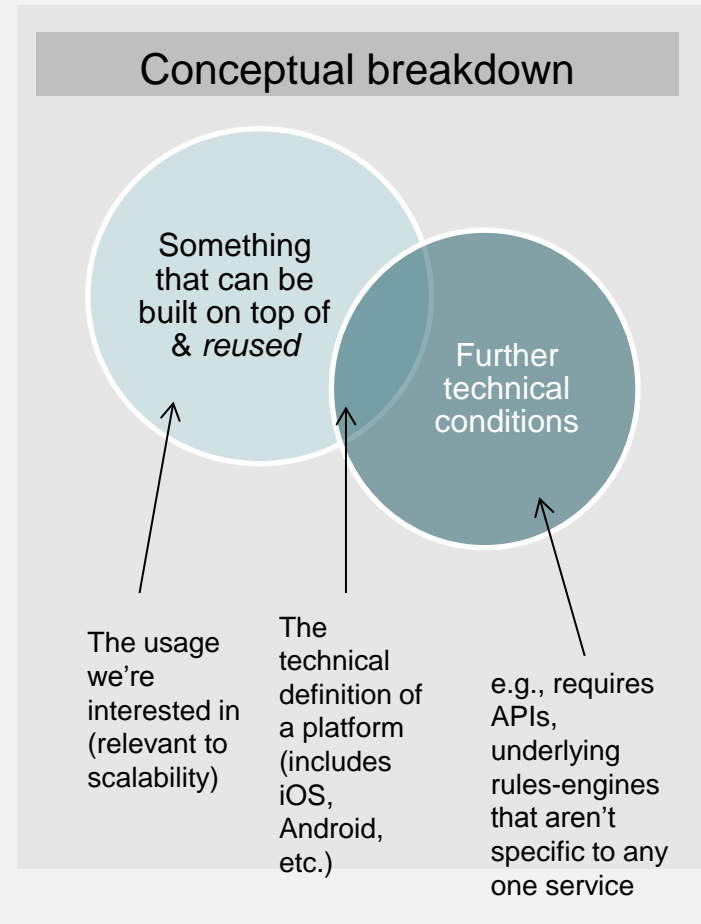
Problem

- This use of the term doesn't sufficiently indicate what can be *reused*, and in what sorts of ways

Solution

- We propose to make the issue of reuse more transparent by drawing a clear distinction between platforms, frameworks, and M4D applications

The mobile space...



A more helpful view

Our classification...

Platform

Generic in nature, could be used in a multitude of different services. An operating system, cloud, etc.

Framework

A set of re-usable software tools and interfaces for developing applications

- Generic/novelty
- Longevity/evolutionary
- Enabler/developer focus

M4D application

Foundation

Application built on top of a vendor framework

Bespoke

“One off” application built from the “ground up”

Open

Closed

- Development tools **open/closed** to external developers

iOS

Nokia Series40

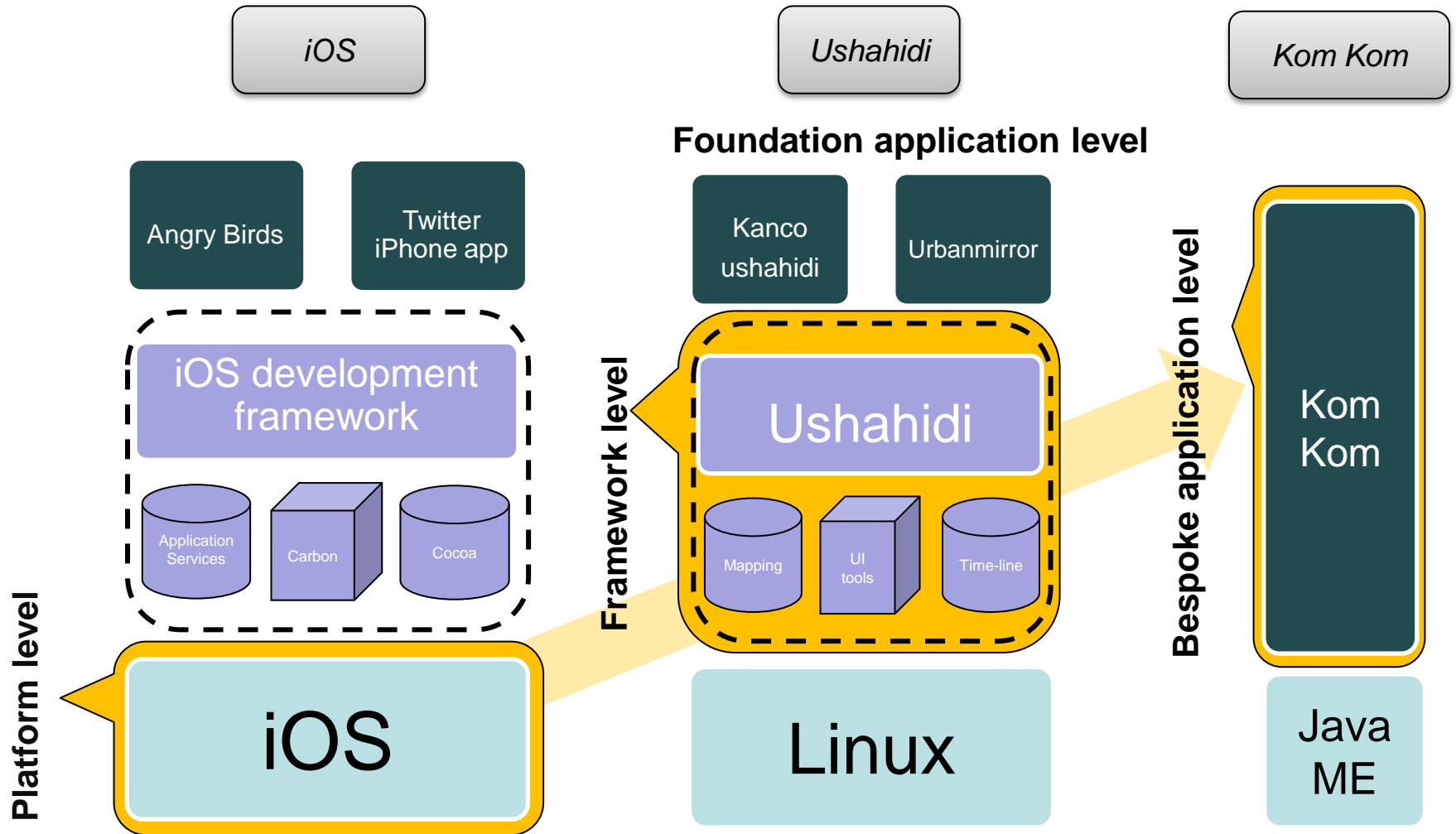
Ushahidi

Fundamo

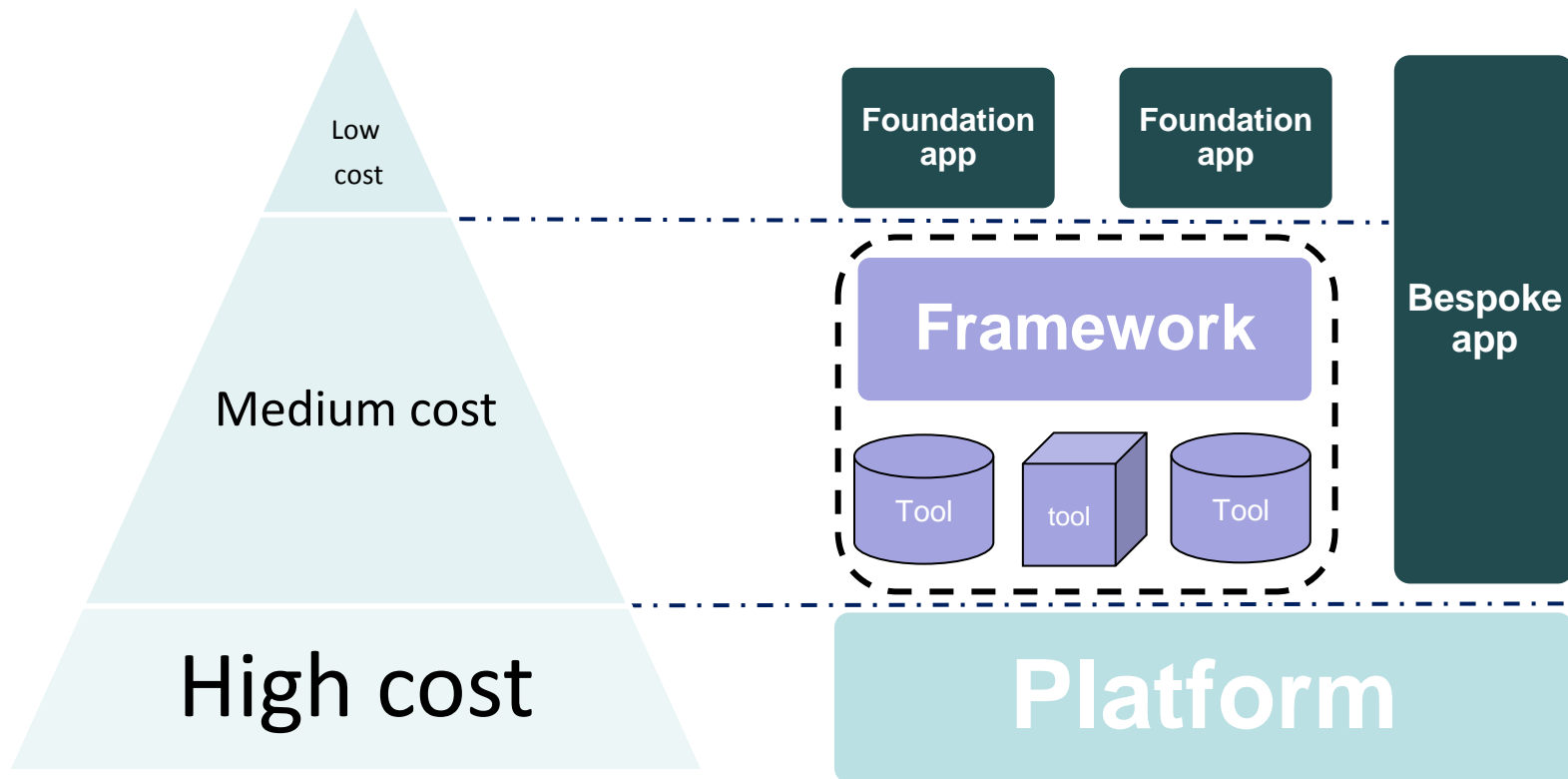
Orange Money

Kom Kom

Examples of this classification

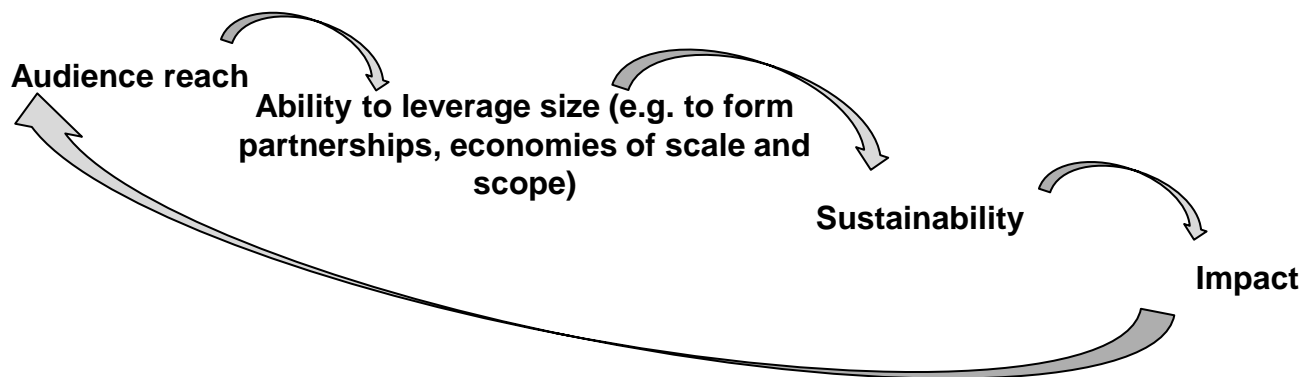


The cost of development



Why is achieving impact *with scale* important?

With increasing scale, there is increasing...

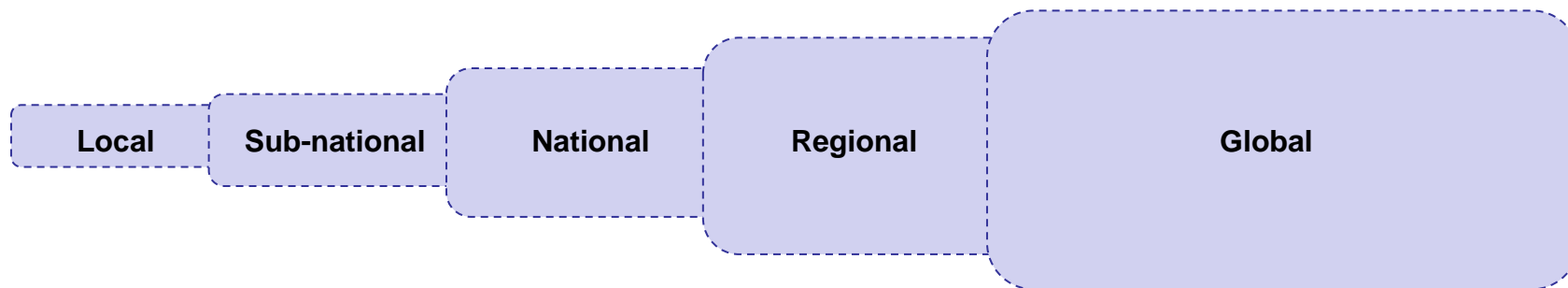


Impact in M4D can and has been achieved by small (e.g. local) and large (e.g. regional) scale organisations

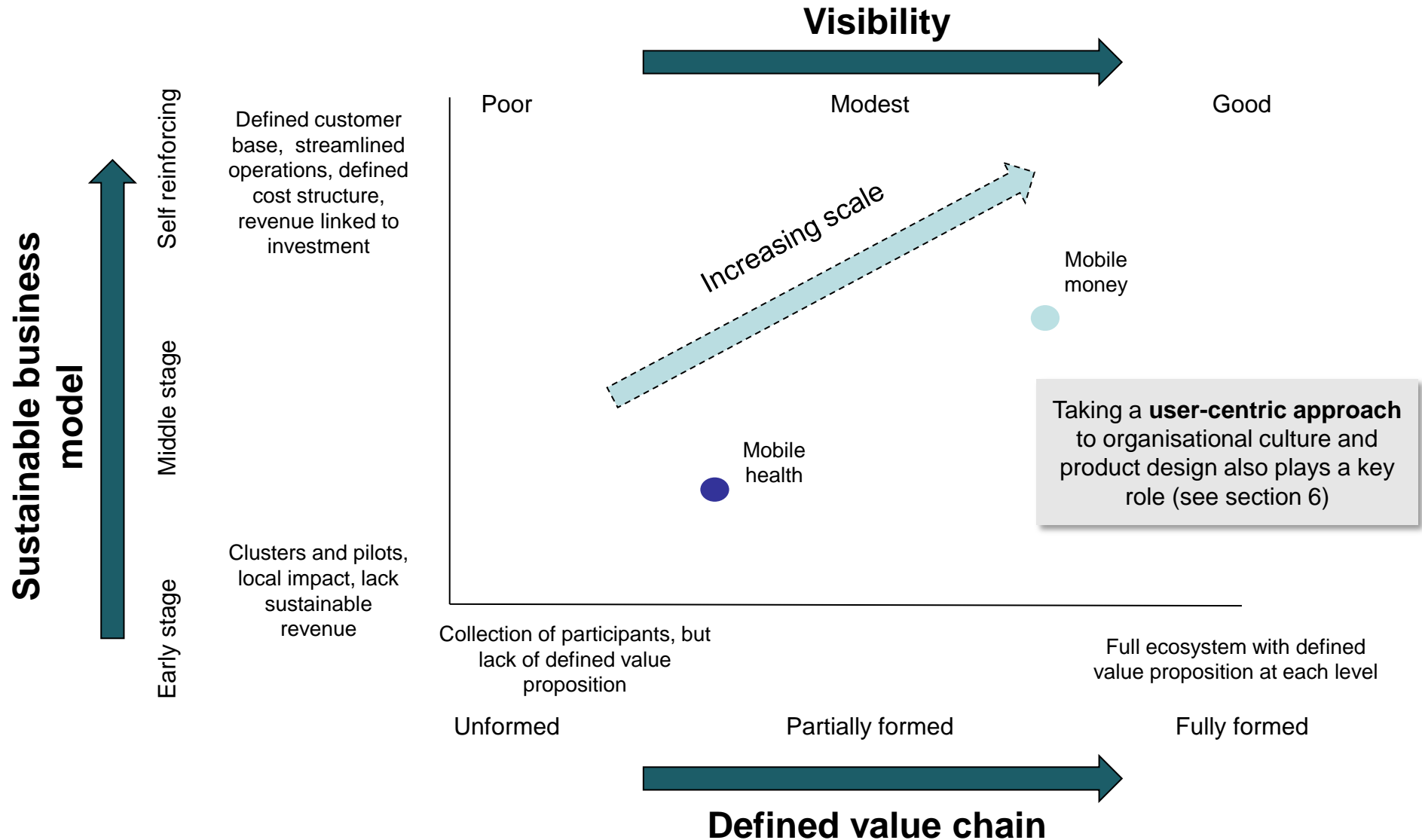
However, relatively few have achieved sustainable impact

“We think [our impact is] probably around a \$100 a farmer a year, which is maybe 10-20% of their annual revenue.
However, the fact that impact equals scale doesn’t necessarily follow”

Mark Davies, CEO, Esoko



Achieving scale is multi faceted



Barriers to scale in M4D

- We show below key barriers to scale in M4D
- These will be felt more by some sectors than others

The need for...

Defined value chains with scalable infrastructure

Proven value proposition for participants at each stage of the value chain (e.g. M4D service provider, vendors, mobile operators)

Sustainable business models

Services with potential to become self sufficient or to have funding underpinned on long term basis

Visibility across markets and sectors

Knowledge of adjacent participants in the sector and ability to partner in areas that expand reach or value of the service

Current barriers

Lack, as opposed to multiplicity, of frameworks underpinning M4D services

Impact without scale

Funding models (silos, pilotitis)

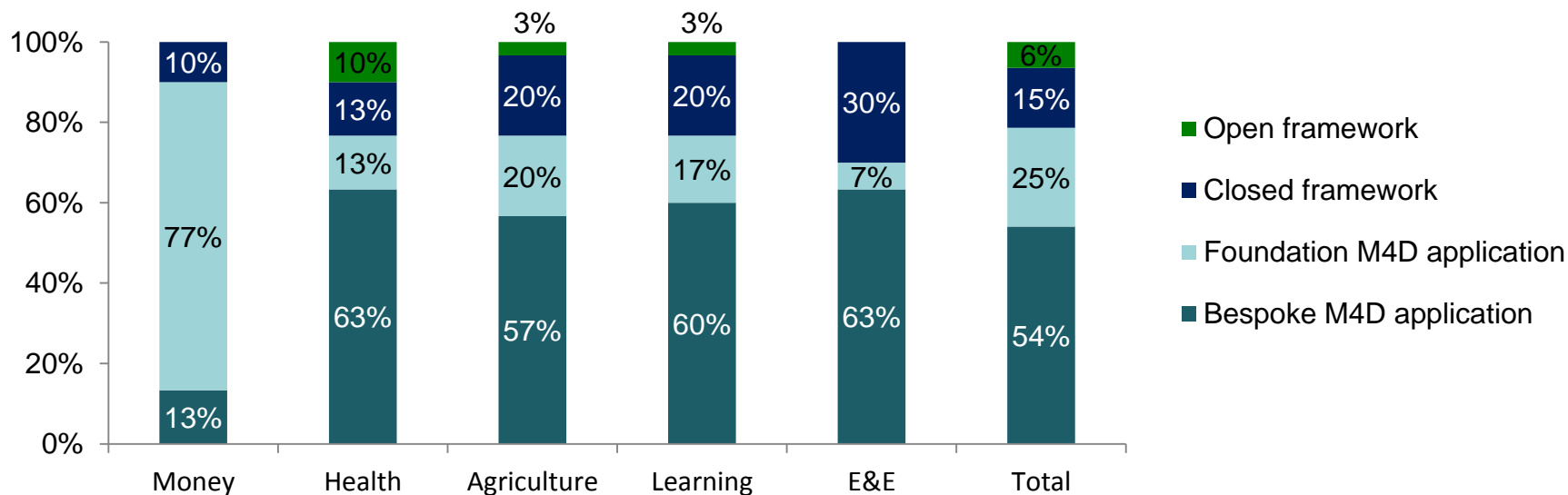
Inability to harness scale of mobile operators

Partnerships

Defined value chains: the framework landscape

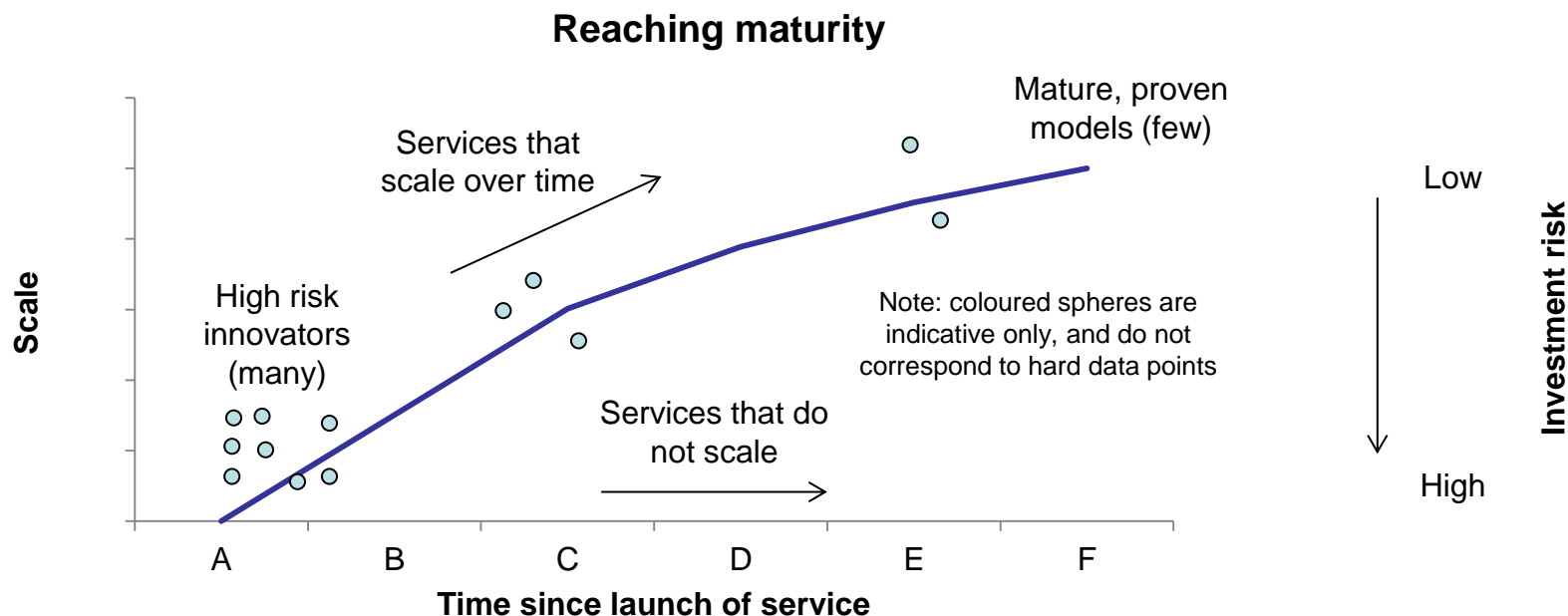
- The mobile money sector has the most defined value chain in M4D, helped by the presence of vendors whose business is to design and deploy frameworks (e.g. Fundamo, Comviva, Utiba)
- The majority of mobile money services sit on a framework owned by one of a few providers (who have relatively large scale)
- In contrast, the majority of M4D services in other sectors are bespoke, which reduces the potential for re-use

Does the mobile service use a framework?



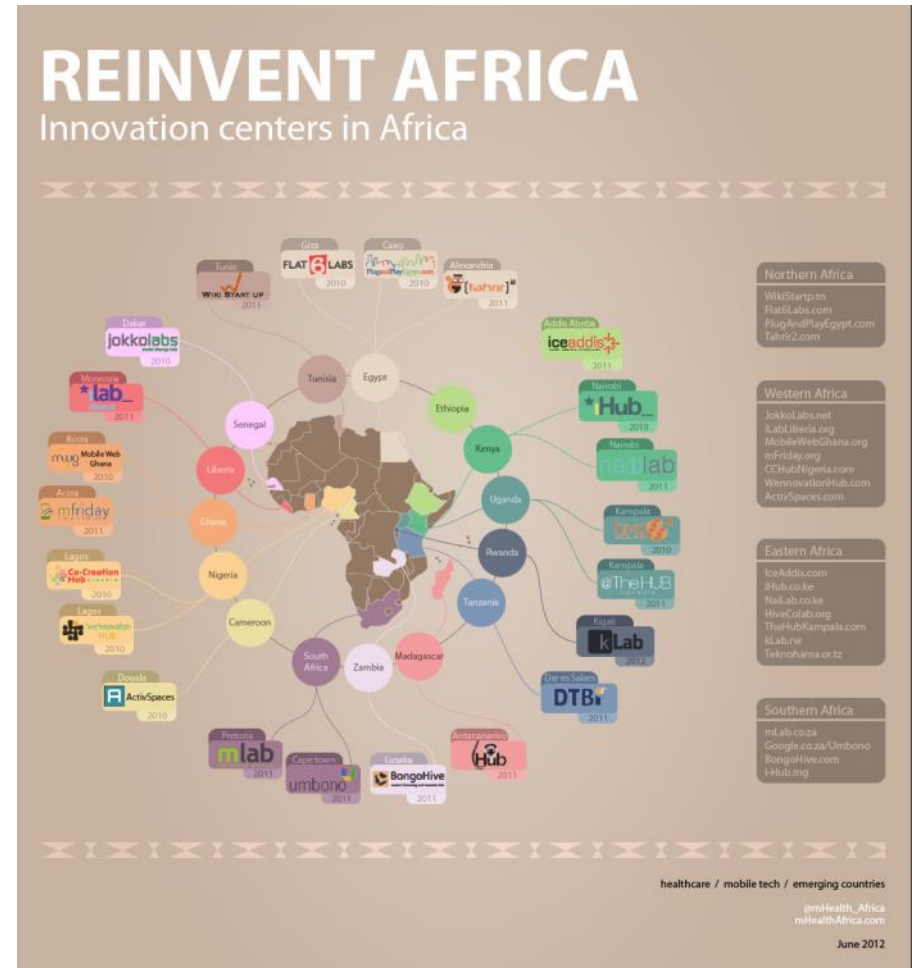
Sustainable business models: the investors view

- Criteria for impact investors moving to focus more on ensuring scalability, sustainability and innovation as opposed to solely impact
- Willingness to accept risk provided an identifiable problem can be solved by the proposed solution, and that potential for long term scale exists (e.g. hundreds of thousands or millions of users)
- “We don’t mind if the investment opportunity has a 90% risk of failing, if the 10% chance of success has a disruptive impact capable of changing the market” – investor in M4D (anonymised)



Sustainable business models: funding silos and pilotitis

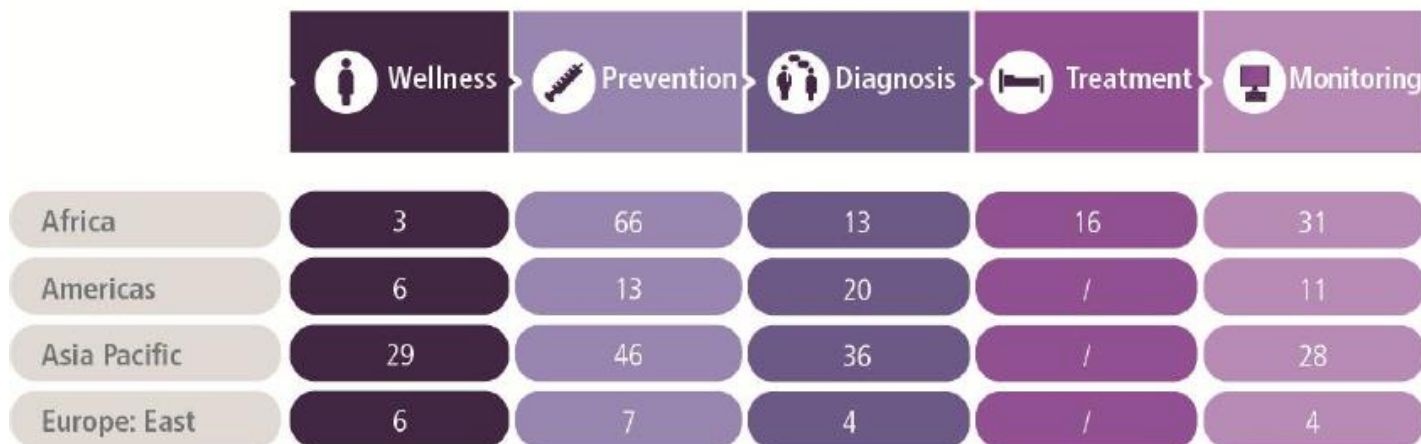
- Funding silos can result in duplication of services in different markets
- This is exacerbated with small pilot projects that prioritise impact in the local area over the short to medium term
- The result is a lack of sustainable business models with visibility to be used across markets or sectors, limiting scale
- Most common in mobile health sector, but also seen in others (e.g. agriculture)



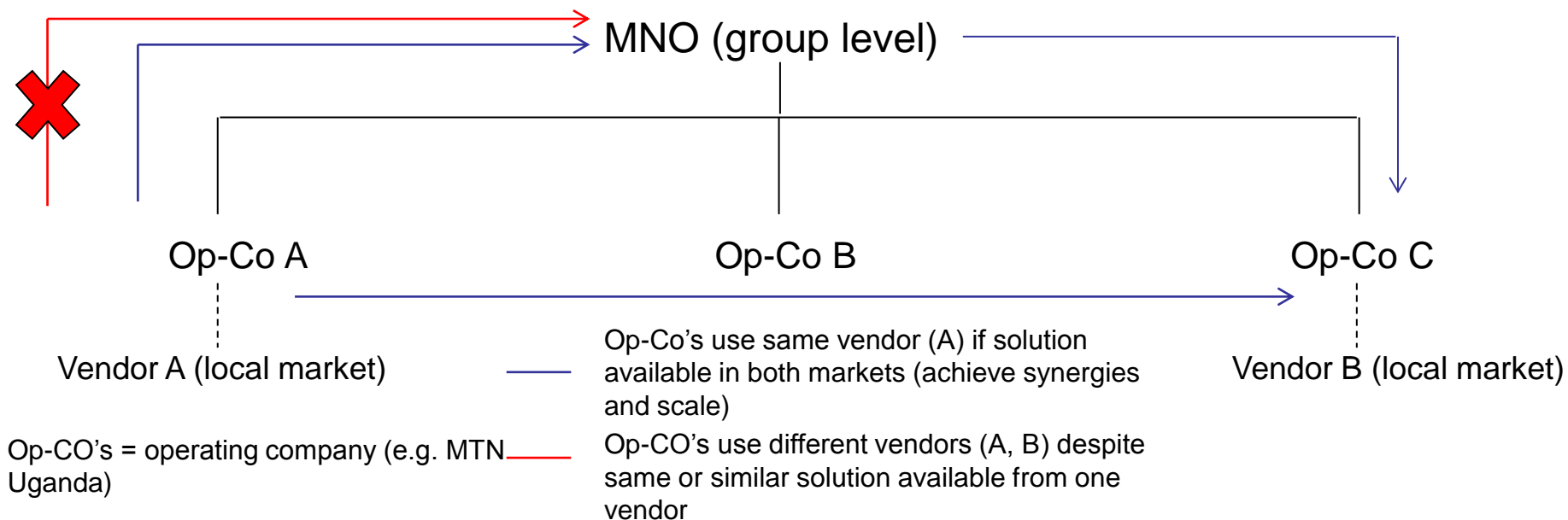
Sustainable business models: overlap of services

- As an example, the GSMA has tracked the number of mHealth services by type (e.g. wellness, prevention etc)
 - Africa alone has around 130 services, of which 66 are centered around prevention; we believe there are around 30 countries in the region with at least one mHealth service, equating to over 4 per country
 - Multiplicity of services is even higher in specific segments of the health market in some countries
 - For example, the GSMA tracks 18 mHealth services focused on HIV/AIDS in South Africa run by 14 separate organisations; 8 health prevention services in Uganda run by 6 separate organisations
- In some sense, this can be related to objectives – the WHO defines mHealth as the “use of mobile and wireless technologies to support the achievement of health objectives”

mHealth services by region



Visibility: matching vendors with mobile operators



- Use of different vendors may increase cost for mobile operator, limiting roll out and slowing down service deployment (ultimately limiting scale)
- Other difficulties can arise if...
 - Need Value Added Service (VAS) provider with equipment embedded within network of the local MNO (this holds even if the MNO is a multi-national, as often need to hold separate negotiations with country op-co's to launch a service in local markets)
 - Use multiple VAS providers (e.g. IVR VAS and a content VAS)
 - Negotiating with MNO on a business model
 - If M4D service provider wants revenue share or to charge a subscription for service, must have relationship with local MNO

Visibility: geographic fragmentation

Smartphone OS providers

Number Few (5 majors)

Scale International

Ecosystem Integrated

Microsoft (Redmond, WA)

Apple (Cupertino, CA)

Google (Mountainview, CA)

BlackBerry (Waterloo, Canada)

Nokia/Symbian (Espoo, Finland)



M4D deployments (e.g. m-health services led by MNO)

Number Many (hundreds)

Scale Local or national

Ecosystem Fragmented (also hit by funding silos)



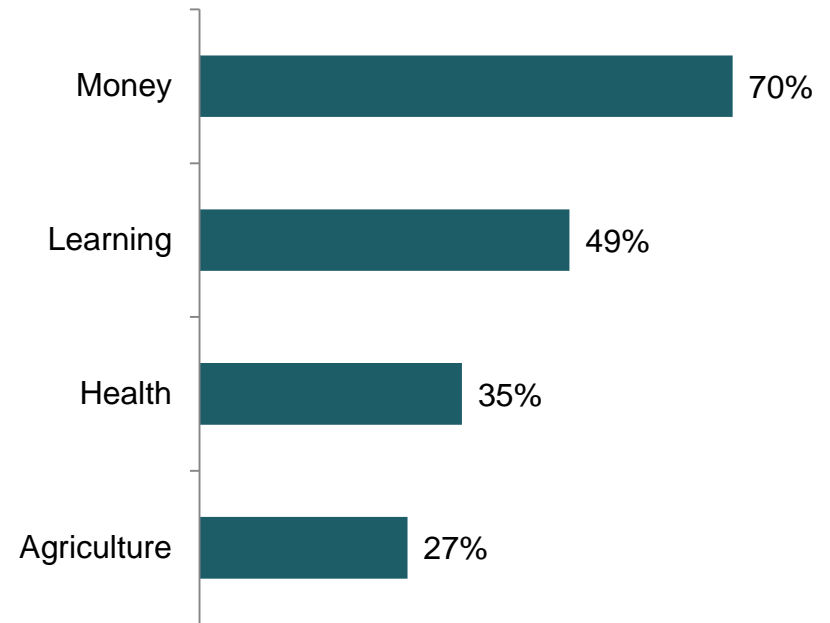
Visibility: forming partnerships

- Important for M4D organisations to form range of partnerships (e.g. MNO, vendor, content)
- Mobile operators are key partners both for connectivity and reach to the end user
- MNO-led M4D services appear most common in sectors with more of a proven value proposition
- There is an opportunity in other sectors to develop this
- Discussions with stakeholders suggest it is key to understand motivations – e.g. balancing the need for a return with the goal of social impact

“It’s not a sector [mAgriculture] that’s represented real value to them [MNOs] in the past. You need to approach them in such a way as meets their business objectives”

– **Mark Davies, CEO, Esoko**

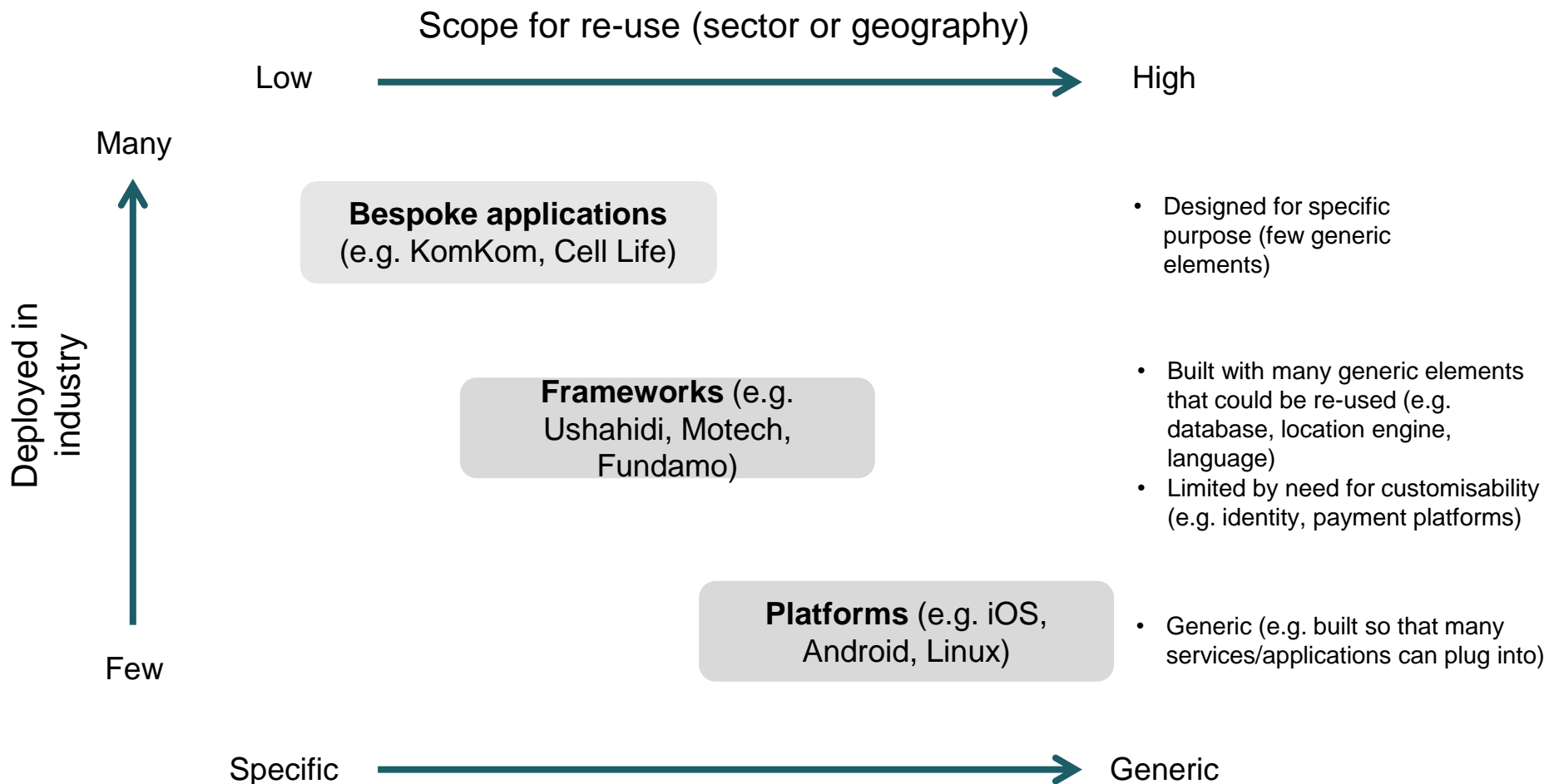
M4D services led by MNOs



“Very quickly we realised that positioning the product straight up as a business benefit made better sense. Until now we haven’t been proven wrong on this”

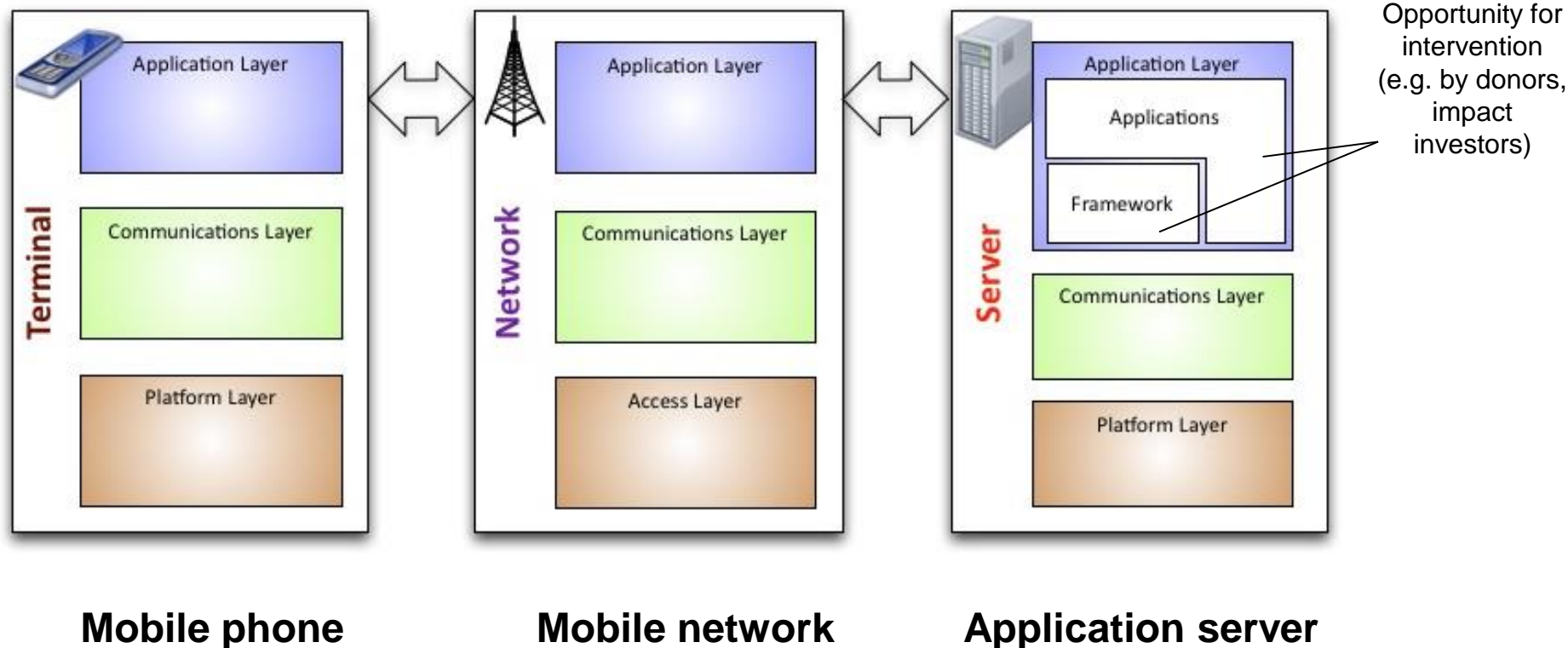
– **Bhanu Potta, Nokia Life Tools**

Re-use: a continuum of opportunity



To understand re-use, we must understand technology

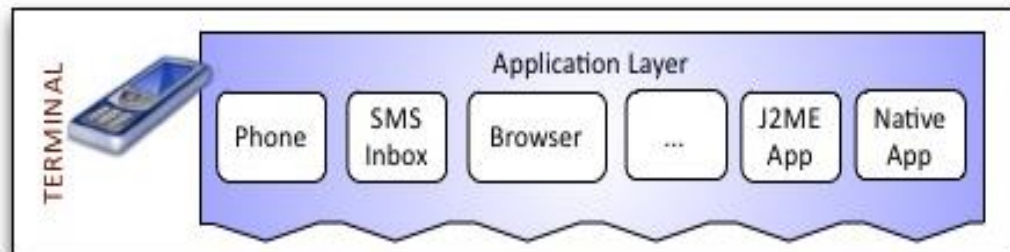
- High level view of key components in a phone, network and server (e.g. where an M4D service is hosted)
- The area we are interested most in is the application layers which give a functional view of the services being represented



Under the hood: handsets and networks

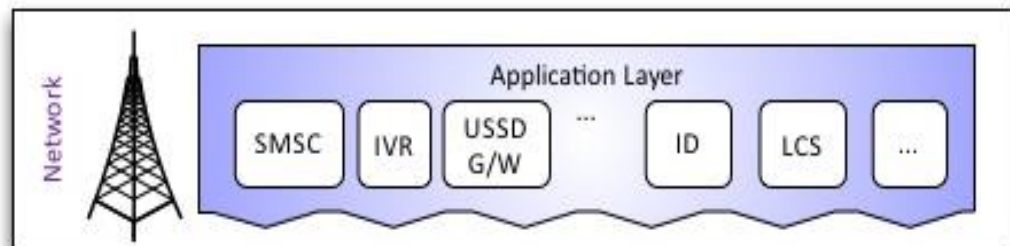
Handset application layer

- The terminal represents the mobile device – e.g. phone, tablet, etc
- Hosts the applications principally used by the user
- Built in apps (e.g. SMS inbox, browser)
 - mAgri service sending push SMS to the phone
- Applications downloaded by someone after they buy a phone (e.g. BlackBerry apps)
 - Diagnostic app for child illnesses used by frontline health workers



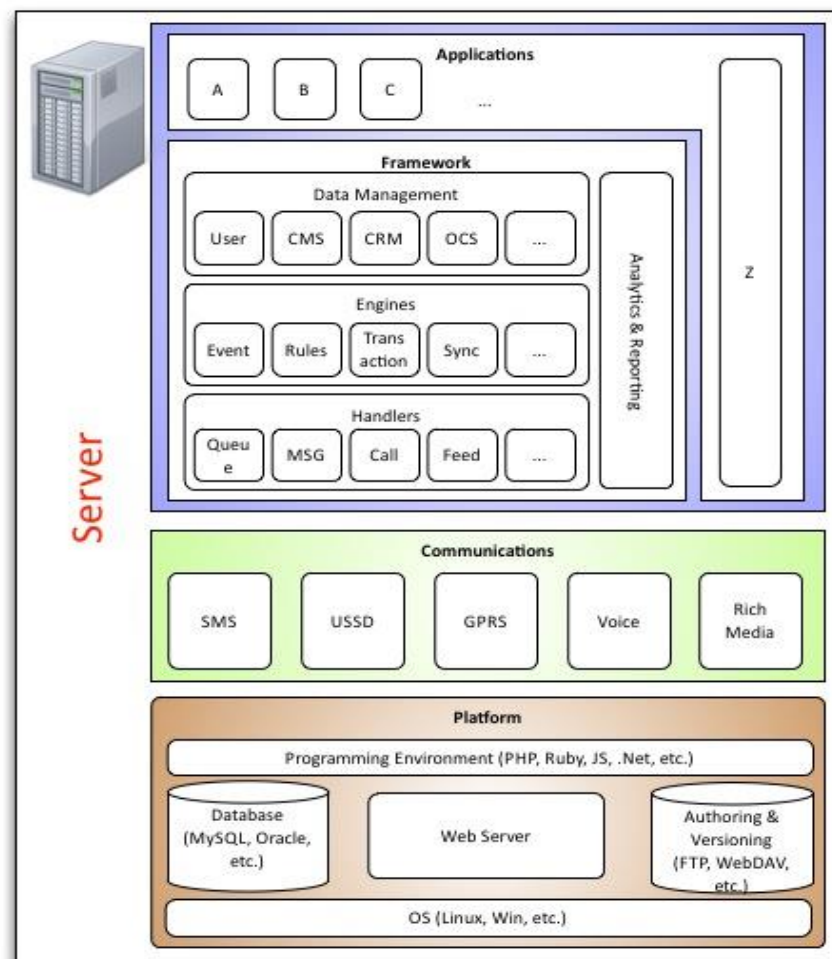
Network application layer

- The network represents the mobile network – e.g. base stations, communications
- The application layer in the network hosts services used by the handsets
- These applications include messaging, voice, identity and location



Under the hood: server




- Application layer
 - Backend infrastructure that defines and realises the mobile service
 - Two parts: **application** and **framework**
 - Application
 - single self-contained application (bespoke - e.g. Z on right), OR
 - As an application built upon shared resources collected in a framework (e.g. A/B/C on right)
 - Framework
 - collection of resources and repositories that can be used by multiple applications in order function as a coherent service
- Communications
- Platform
 - Underpins the entire mobile service
- Caveats
 - Generic system shown, not specific to any one M4D service
 - Most frameworks themed to match a particular need (e.g. transactional in mobile money, identity in mobile health)



Service overlap

- This diagram shows the touch points in the architecture of two example mobile services.

Key:

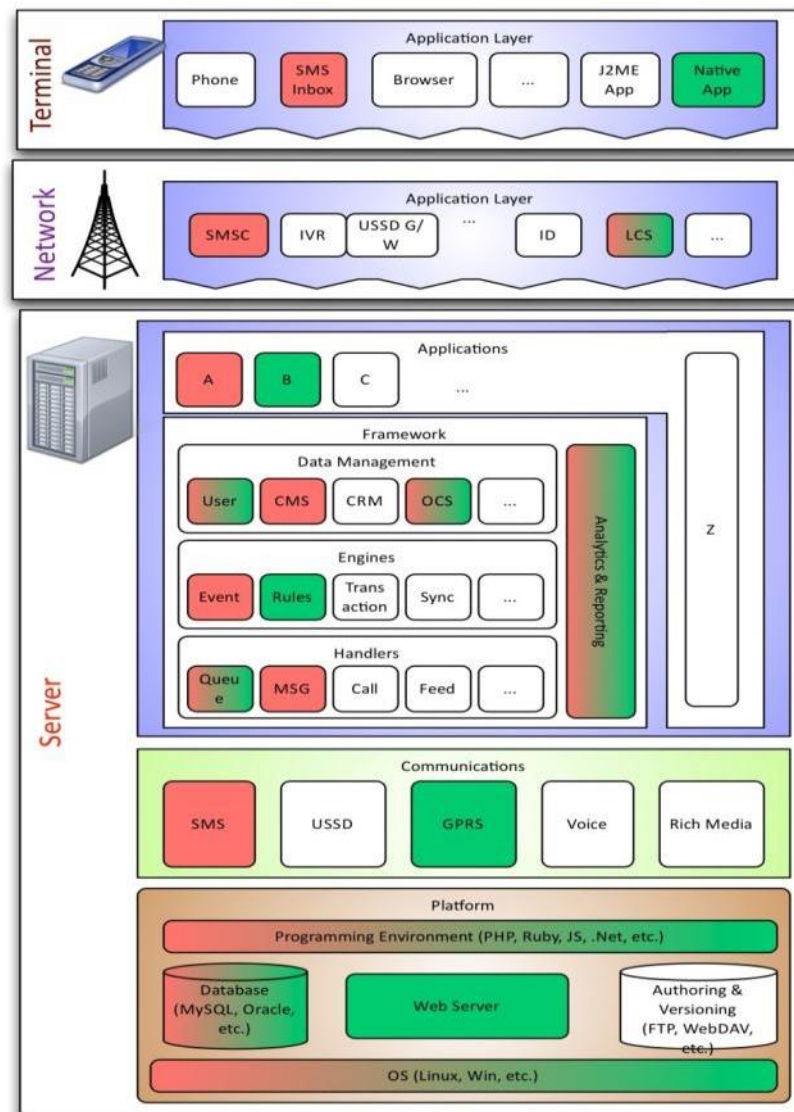
-  Items used by an agricultural SMS tip service (A)
-  Items used by a diagnosis app for Health Workers (B)
-  Items used by both

Scenario A - agricultural SMS tip service

- This is a service where a farmer would subscribe to receiving a periodic agricultural tip over SMS which is relevant to the crops they grow and the location their farm is located, according to the crop calendar/cycle

Scenario B – diagnosis app for health workers

- This is a service where frontline health workers are issued with mobile phones capable of running a downloaded diagnosis app on the phone. This works with a back end server to allow the health worker to step through a basic diagnosis tree for infant health and recommend relevant courses of action



Re-use in practice

- **Genuine re-use**

- Open frameworks (e.g. Ushahidi, Motech)
 - Less resource (e.g. coding, money) to deploy an application based on an existing framework than to create an application from scratch (e.g. weeks instead of months)
 - APIs open to developers. Cost to use framework often low or zero, but may have licensing restrictions for commercial use

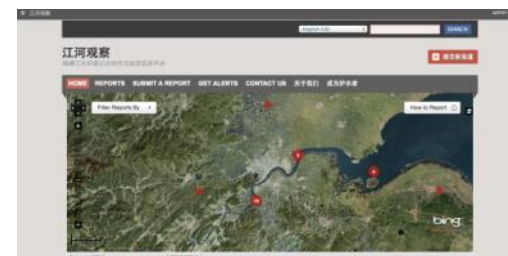
Biorefinery initiatives
Biorrefinaria, Brazil
(industry/environmental)



Restaurant recommendations
FoodieFinds, South Africa
(entertainment)



River pollution
Qiantangriver, China
(environmental)



- **Integration**

- Use of other frameworks (e.g. m-Pesa)
 - Connect M4D service to a payment solution (the need to transact is a 'common denominator' that can be integrated with other services)
 - Utility access for rural or remote communities (see spotlight overleaf)

Spotlight: enhanced utility solutions

- Leveraging connectivity and mobile money to support Community Services
- GSM connectivity integrated to micro-utility systems can increase their resilience
 - Remote monitoring of units (e.g. photovoltaic energy production, battery voltage) and early detection of failure
 - User's consumption patterns
- Micropayments can support energy access initiatives:
 - The “Pay As You Go” model allows for flexibility of payments and remote transaction
 - Provides consumer financing, eliminating the prohibitively high upfront costs needed to acquire equipment
 - Allows to send remittances wirelessly to the mobile money account of the individuals using the micro-utility system

Energy Access



m-Kopa provides Pay-as-you-go solar solution, allowing users to pay KES40 per day (USD0.47) via their m-Pesa account to use system for lighting and mobile charging. They have a distribution partnership with Safaricom, leveraging its 45.000 agent network in Kenya

M-KOPA SOLAR

Clean Water Access



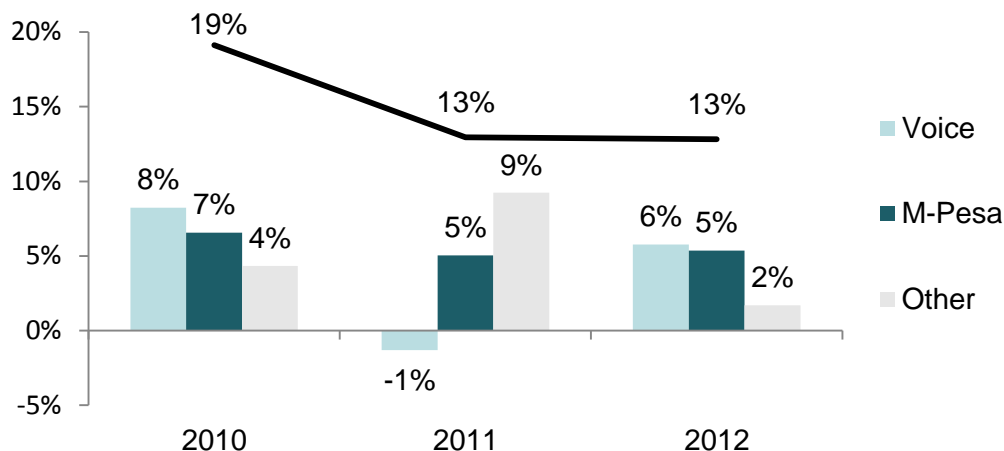
Grundfos Lifelink provides Pay-as-you-go purified water services in rural Kenya. The revenue management system allows water service providers to collect revenue via m-Pesa and monitor daily water consumption and revenue (close to 40 sites to date)

GRUNDFOS 
GRUNDFOS LIFELINK

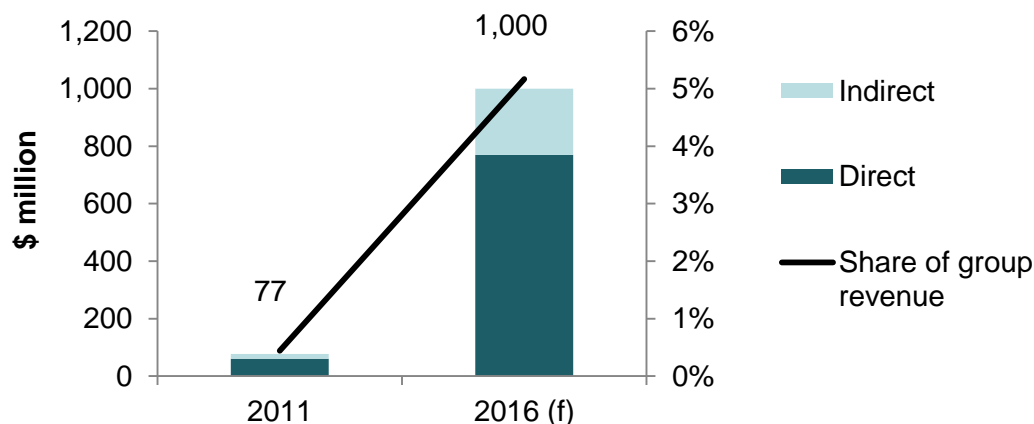
Mobile operator opportunity: early view

- Few operators have publicly disclosed results or guidance on mobile services beyond connectivity
- Estimates largely confined to mobile money
- Clear upside potential, even beyond the proven businesses
 - Safaricom's m-Pesa already 16% of group revenue (compared to 9% in 2010), and is a major driver of growth for the *overall* business
 - Telenor's mobile money business <1% of group revenue, but it expects this to grow to around 5% by 2016
- Direct benefits are obvious (e.g. transaction fees); less obvious (and more interesting) are indirect benefits, such as those arising from ARPU uplift and churn reduction

Contribution to revenue growth (Safaricom)



Mobile money revenue (Telenor)



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1. Executive summary
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 4. Impact of mobile on development sectors
 5. Platforms, multiplicity and the drive for scale
 6. User-centric innovation
 7. Role of government
 8. Appendix

What you need to know

Key findings

Organisations, not departments: developing user-centric innovation means the end user must be at the heart of all parts of an organisation, including management culture, product and service design, and marketing

Segmentation and personas are key: M4D service providers must define target end user segments and develop personas that clearly define the gaps and opportunities that could be met by a given service

Cost and communication are key barriers: high up-front costs and the fact many M4D organisations have partnerships where each party has a different background and set of objectives create barriers to effective implementation of user-centric innovation

Key implications

From theory to practice: user-centric innovation needs to be seen not as a theoretical concept, but a real modus operandi that permeates all parts of an organisation and is fundamental in the long term sustainability of an M4D service

Act early: these should be defined as part of the service planning, which means an upfront cost and time resource. While there are encouraging examples of organisations redefining a service and its marketing message after launch (e.g. Tigo Money in Paraguay), this can be even more costly and time consuming

These are surmountable: clear communication between stakeholders of a given service and a demonstrable link between investment in key tools (e.g. user research, segmentation and personas, and user feedback) and scale will drive acceptance and wider implementation of the user-centric concept

What does it mean to be user-centric?

User-centric

- All parts of the organisation oriented towards the user and their needs
 - Vision and strategy
 - Management approach
 - Organisational culture and rewards
 - User segmentation, targeting and positioning
 - Products/services developed
 - Marketing competencies and resources
 - Operational processes

Functional-centric

- Vision and strategy not oriented around customer needs
- Users not often voiced in management discussions
- User focus not a shared organisational norm
- No clearly defined target segments or positioning
- 'One-size-fits-all' products/services
- Inadequate marketing competencies and resources
- Processes not customer driven

Why be user centric focused?

Health

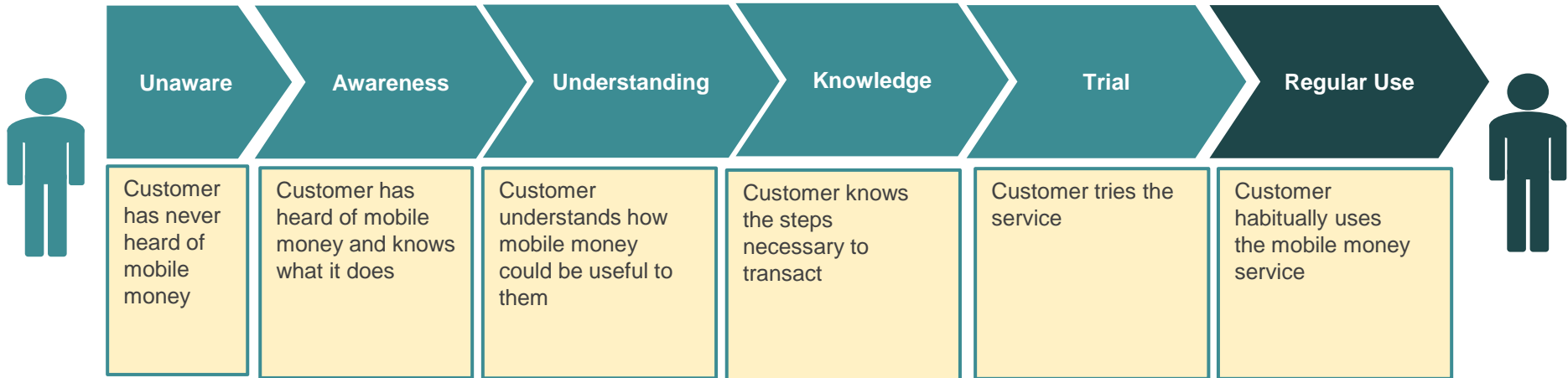
“shared phones”

In one project, an organisation tried to send personal HIV/AIDS test results to people over their mobile phones; they were surprised by the low pick-up rate until they realized that many people in the community share their mobiles with family and friends. A text message isn't personal when multiple people share one phone.

Lesson

need to understand user and community habits before designing services

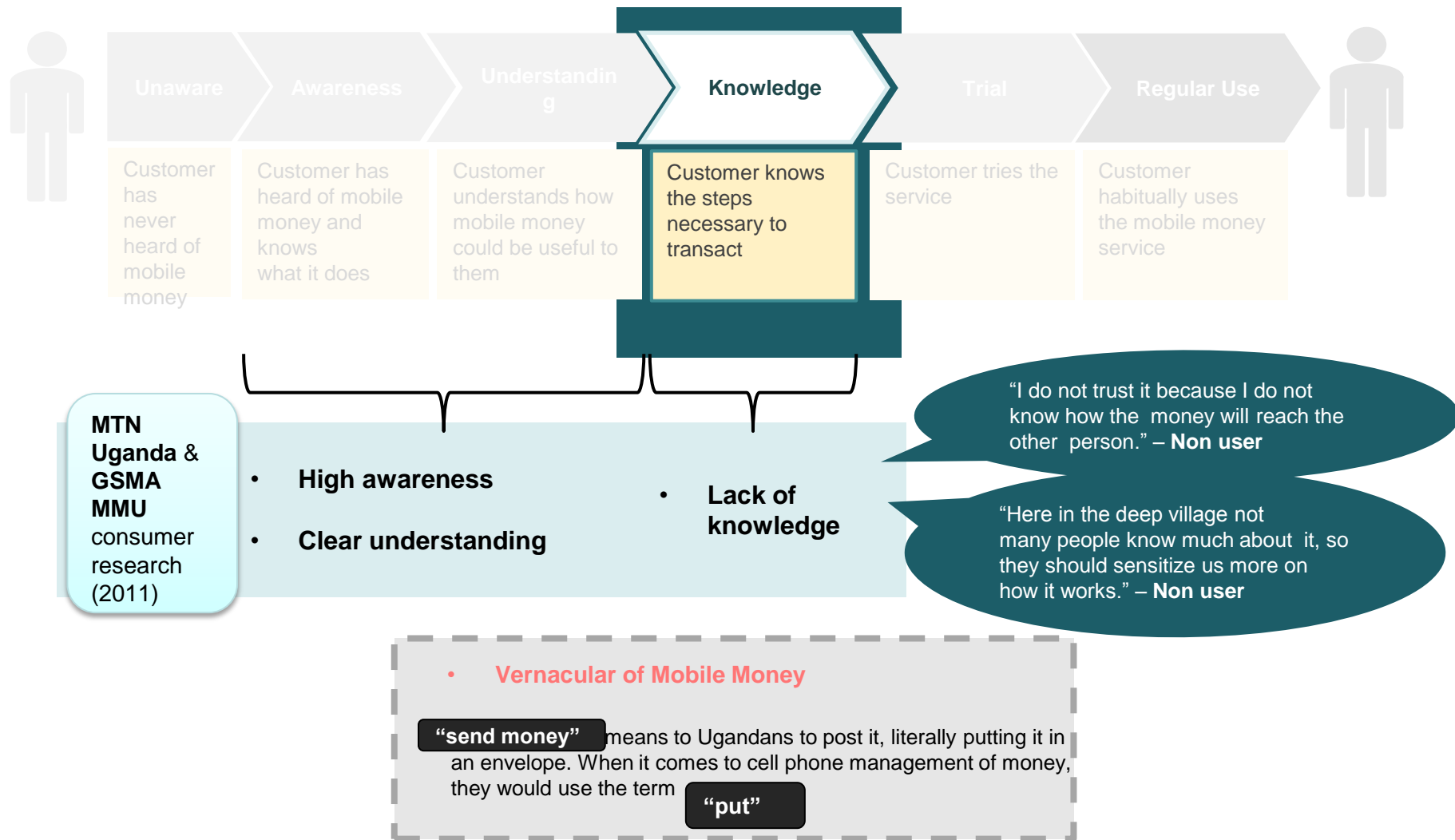
MNO perspective: the customer journey (mobile money)



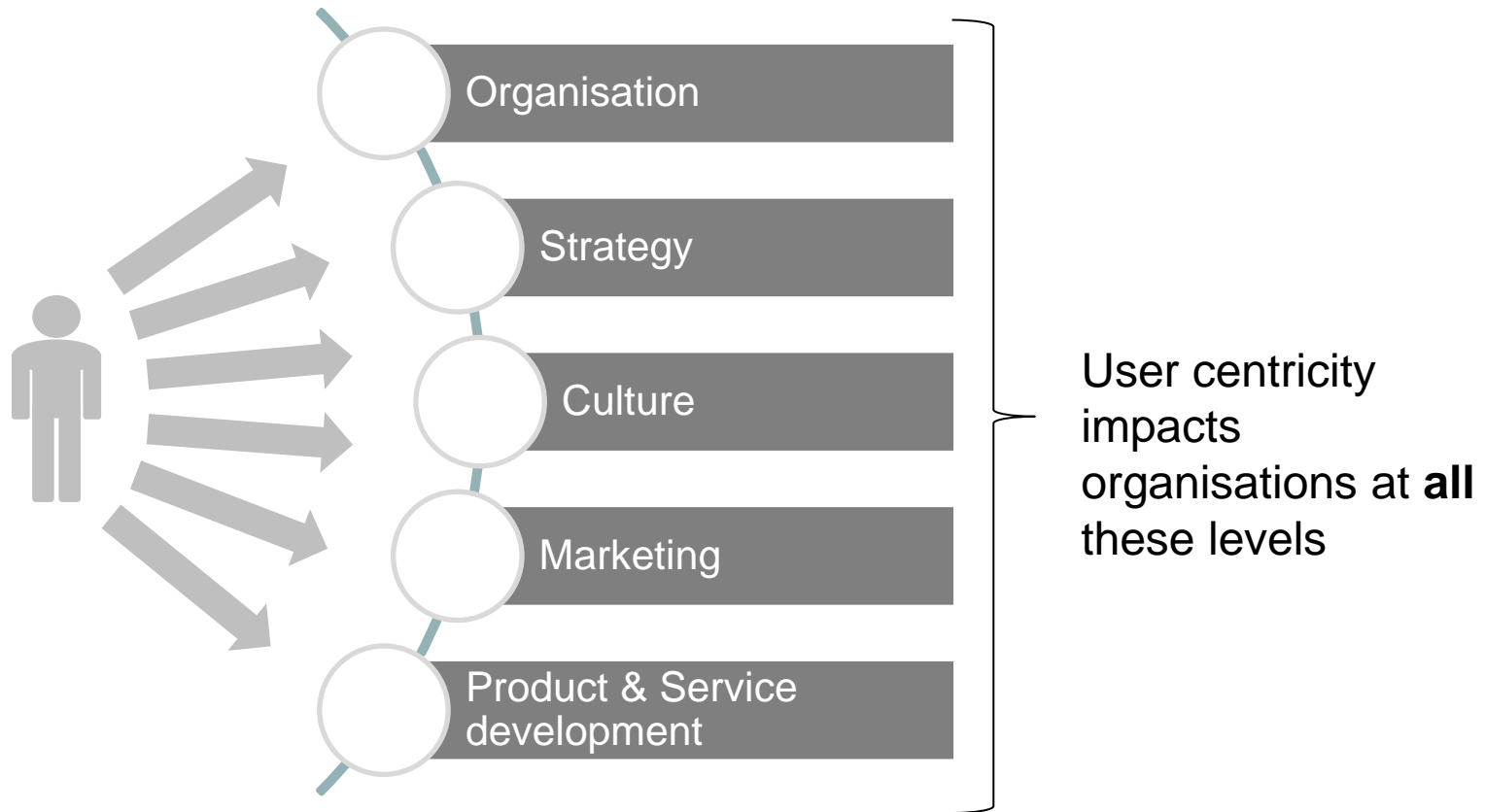
- The process of converting a customer who had never heard of mobile money to one that habitually uses the service
- In theory this is the way it works, but where can practical barriers spring up?

Note: adapted from “Marketing Mobile Money: Top 3 Challenges” - Yasmina McCarty, June 2012

Lack of user centricity as a barrier in the journey



Organisations and user centricity



Organisations and user centricity



Best practice for user-centric business – key questions

Organisation

- Are we integrated across functions and divisions (or even across organisations) to meet customer needs? Or do different business units serve the same customer segments independently?
- Are employees at every level rewarded based on customer metrics?
- Are frontline employees empowered to resolve user problems?
- Are systems in place to feedback user problems throughout the organisation?

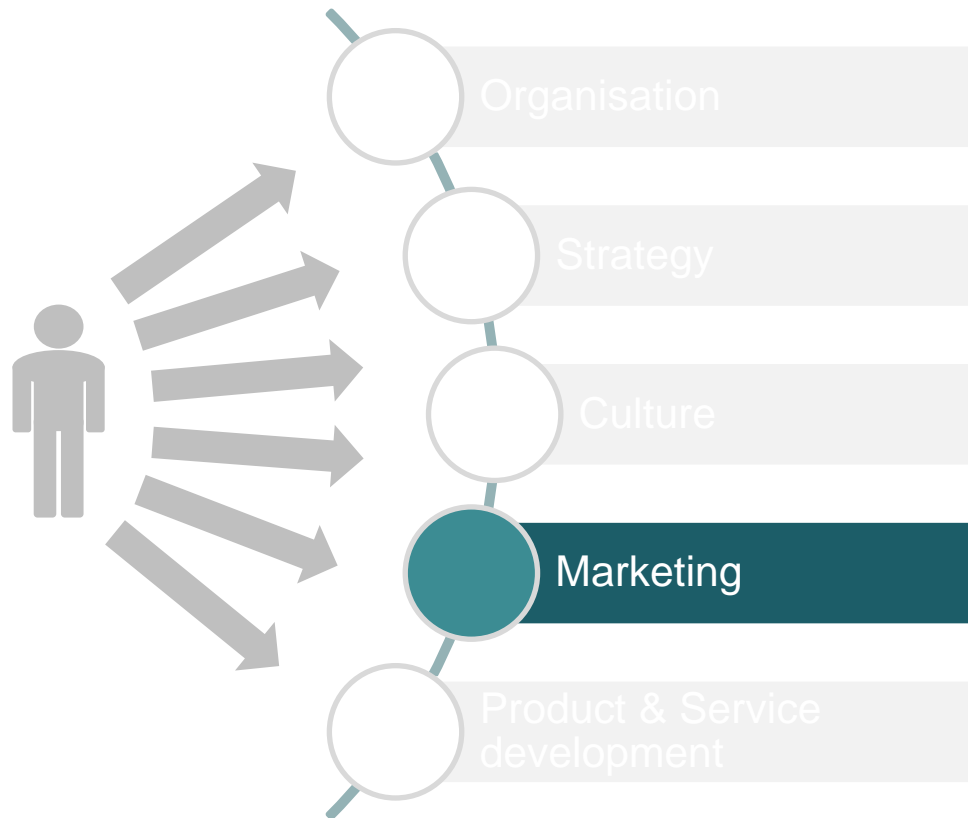
Strategy

- Do we have clearly defined target market segments? For each of these, do we have a clear differentiation versus existing products / services?

Culture

- Is our mission / vision customer focused?
- Is the customer's voice adequately represented in strategy conversations?
- Do top managers demonstrate a behavioural commitment to customers?
- Do our most powerful symbols or rituals reinforce the importance of customers?
- Is customer obsession a shared norm?

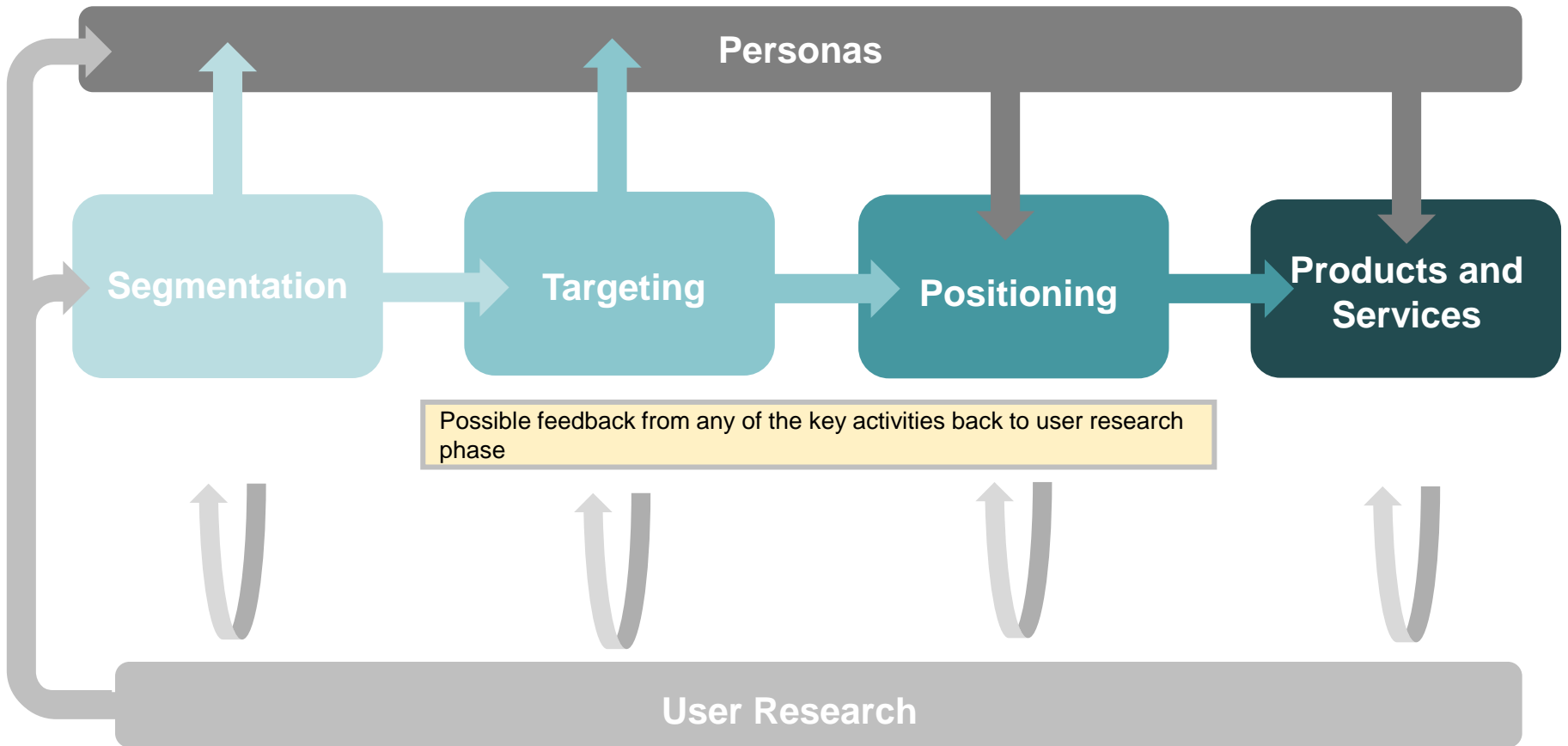
Organisations and user centricity



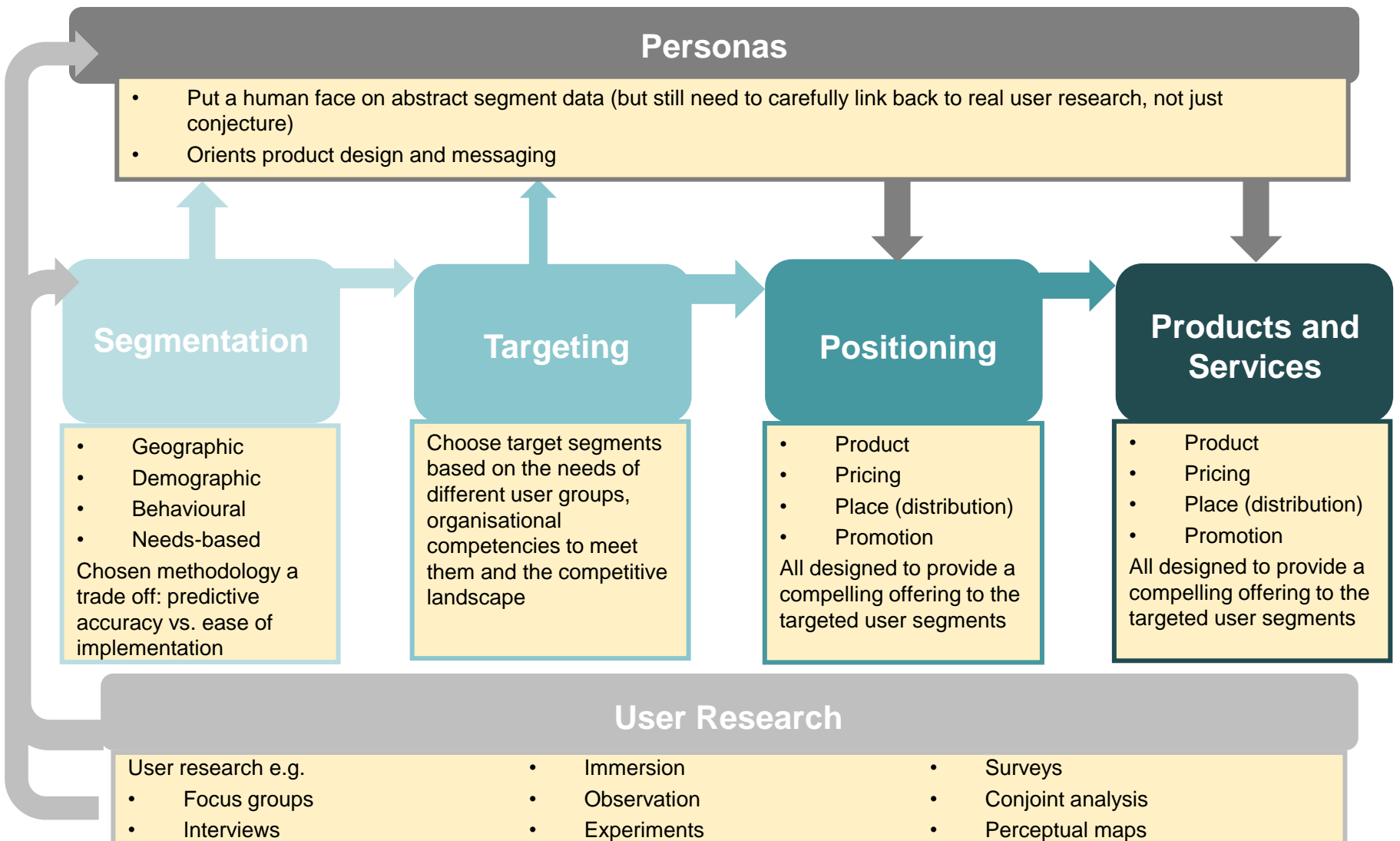
Marketing

- Do we continually invest in better understanding our users' needs?
- Have we benchmarked our marketing processes?
- Does our customer database actually help us to serve customers better?
- Are marketing metrics clearly defined and well understood? Can we show the link to ROI?
- Is our marketing mix based on robust customer research?

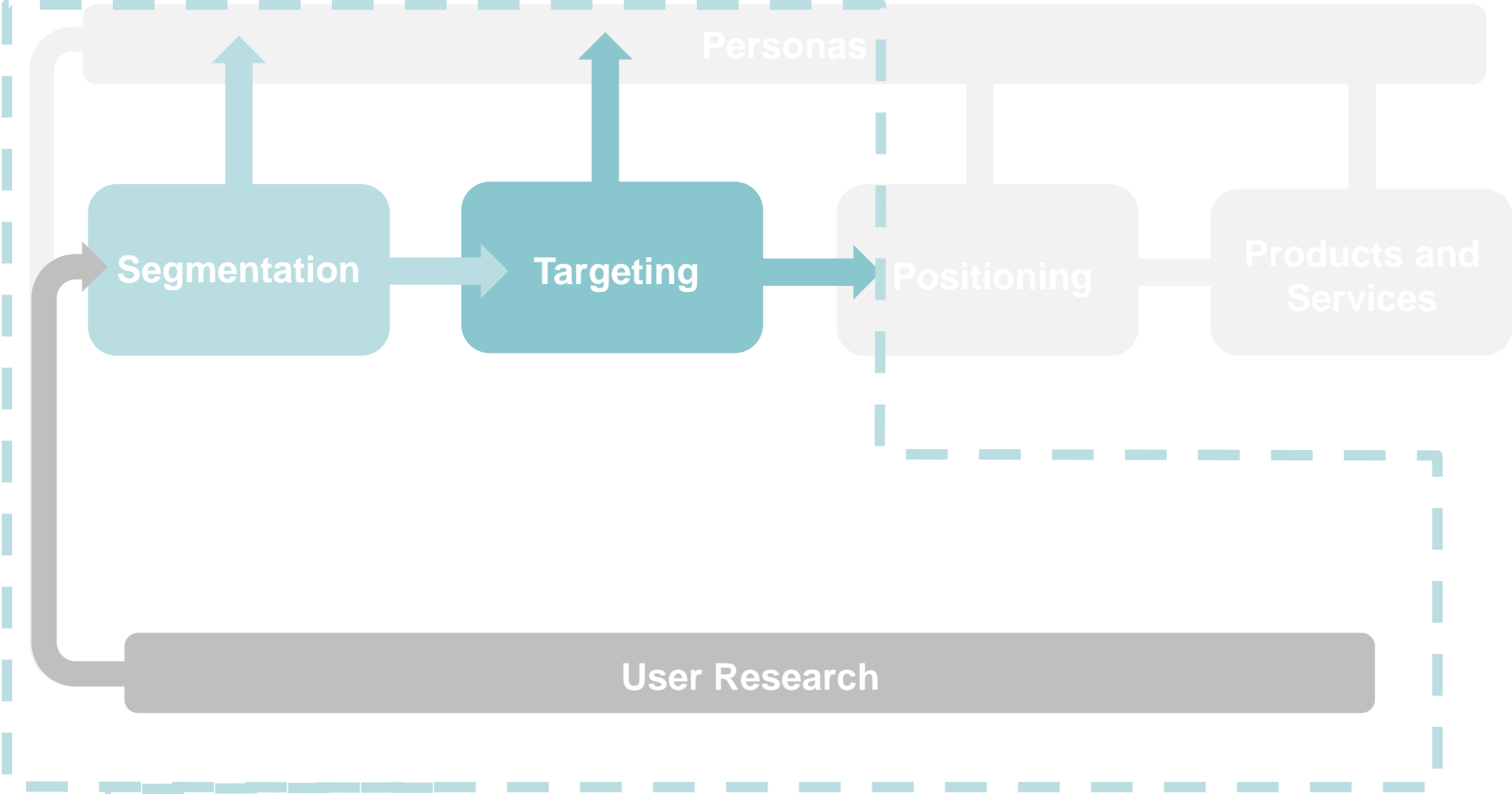
The 'user focused' marketing process



The 'user focused' marketing process

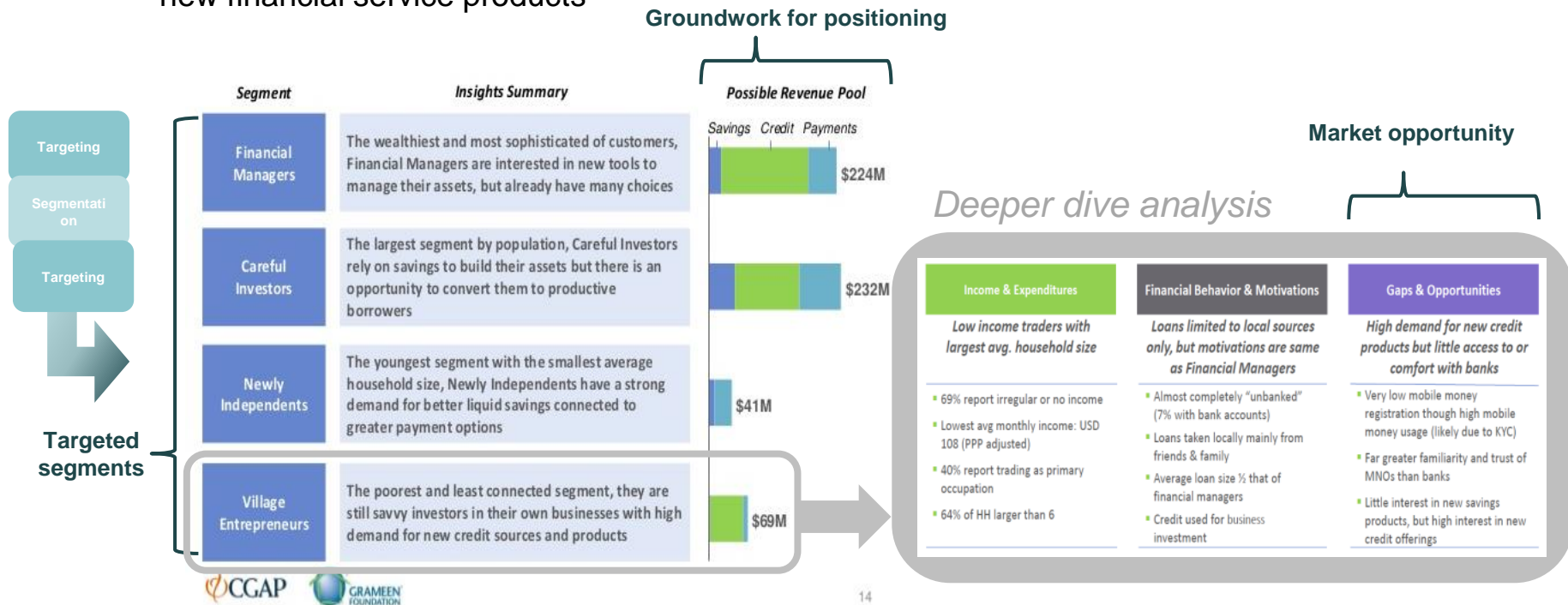


Examining the process in more detail...



The process in action: CGAP

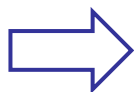
- User Research** • Quantitative survey covering 2,634 Ugandan households
- Segmentation** • Question topics covered: Demographics; Financial Service Behaviours; Mobile Usage
- User Research** • A process of prioritisation according to: Market opportunity; Customer accessibility; Willingness to try new financial service products



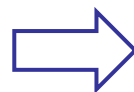
Coming full circle: Tigo mobile money (Paraguay)

Pre segmentation

- Multiple service offerings
- Marketed all services to all customer segments
- Failed to differentiate on key consumer purchasing criteria
- Low take-up and traction

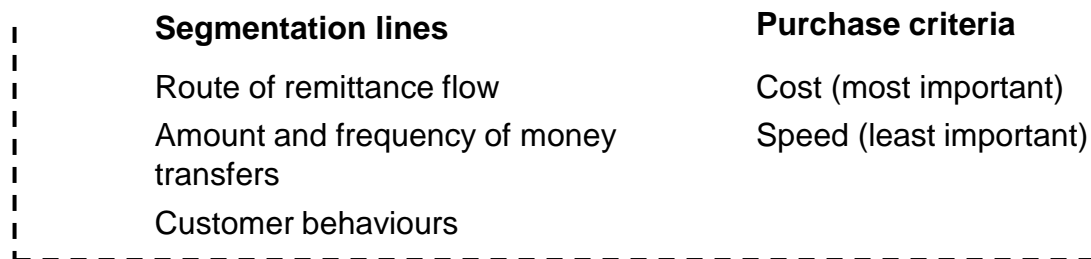


1. Customer research and segmentation
2. Reform product offering and marketing



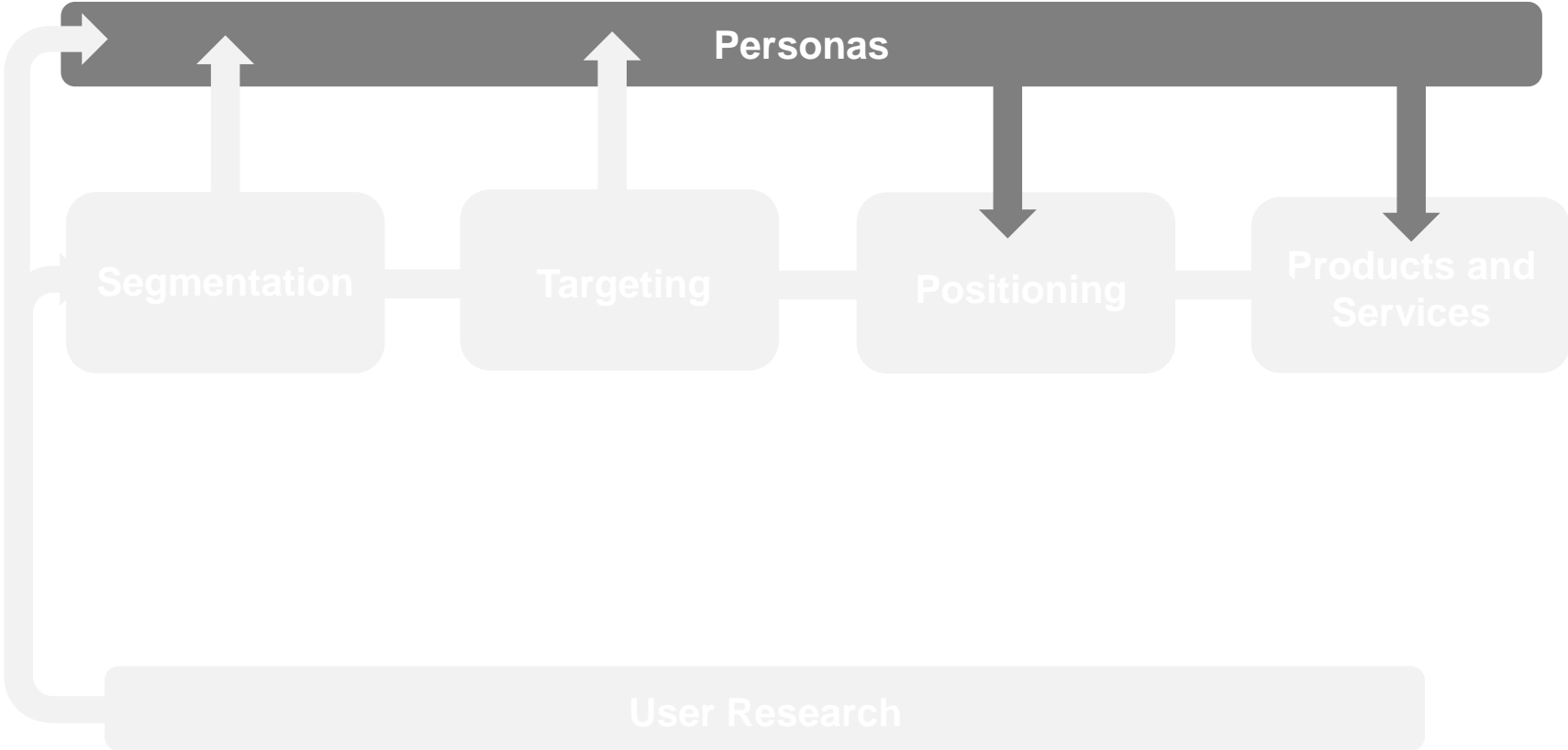
Post segmentation

- Consolidated service offerings
- Re-focused marketing with unified message around single, core consumer segment
- Improved uptake and volume
- Increased scale to other Tigo markets (Guatemala, Honduras)



	Tigo Cash	Giros Tigo
MNO	Tigo (2008)	Tigo (2010)
Services	e-Wallet, merchant payments, domestic remittances via P2P transfer, top ups	e-Wallet, merchant payments, domestic remittances via OTC withdrawal, top ups
Marketing focus	All services	Domestic remittances
Registration	Application and validation at agent point	USSD (approximately 45 seconds)

Creating Personas: further into the persona design process



Practical steps: creating a persona

Segmentation

Targeting

given a targeted market segment....

Then, a persona should:

Personas

- Be a representation of the goals and behaviour of a fictional individual
- Epitomise the (prioritised) market segment
- Follow the rough outline of the template opposite

Persona template elements

- ❑ **Name:** respectful fictitious label
- ❑ **Role:** within a given user group, e.g., family
- ❑ **Demographics:** Age, income and personal details
- ❑ **Knowledge, skills and abilities:** real but generalised capabilities of persona
- ❑ **Goals, motives, and concerns:** describe the real needs of the user
- ❑ **Usage Patterns:** how frequently do they use mobile, and in what way
- ❑ **Action statement:** opportunity to provide a specific product/service that meets user gaps and needs

Example of Persona: CGAP

Segmentation

Targeting

Personas

Matovu Simon

VILLAGE ENTREPRENEUR

Credit hungry, non-saver



Simon is a bike repairman in Fort Portal, Uganda. He needs small amounts of capital to invest in new parts that he can use in his bike repair business.

Currently he goes to friends, families, and sometimes SACCOs for small loans to invest in his business. The returns are good – over six months he makes a 100% ROI on any funds he puts into his business.

Simon doesn't feel a need to save; he covers his family's daily living costs with earnings from his business, and if he needs money for an emergency, he borrows more. He wishes he had access to more credit, however – he thinks he could grow his business with larger loans.

"I prefer getting money in one lump sum upfront and then paying down over time. If I can earn when I put money in my business, why save and not make anything?"

Name: Matovu Simon

Place: Fort Portal, Uganda

Primary occupation: Bike repair, farming

Marital status: Married with children

Monthly income: 80,000UGX

Insights & Observations

Money makes money when moving, makes nothing when stationary.

Some people have much higher appetites for risk.

Ideas

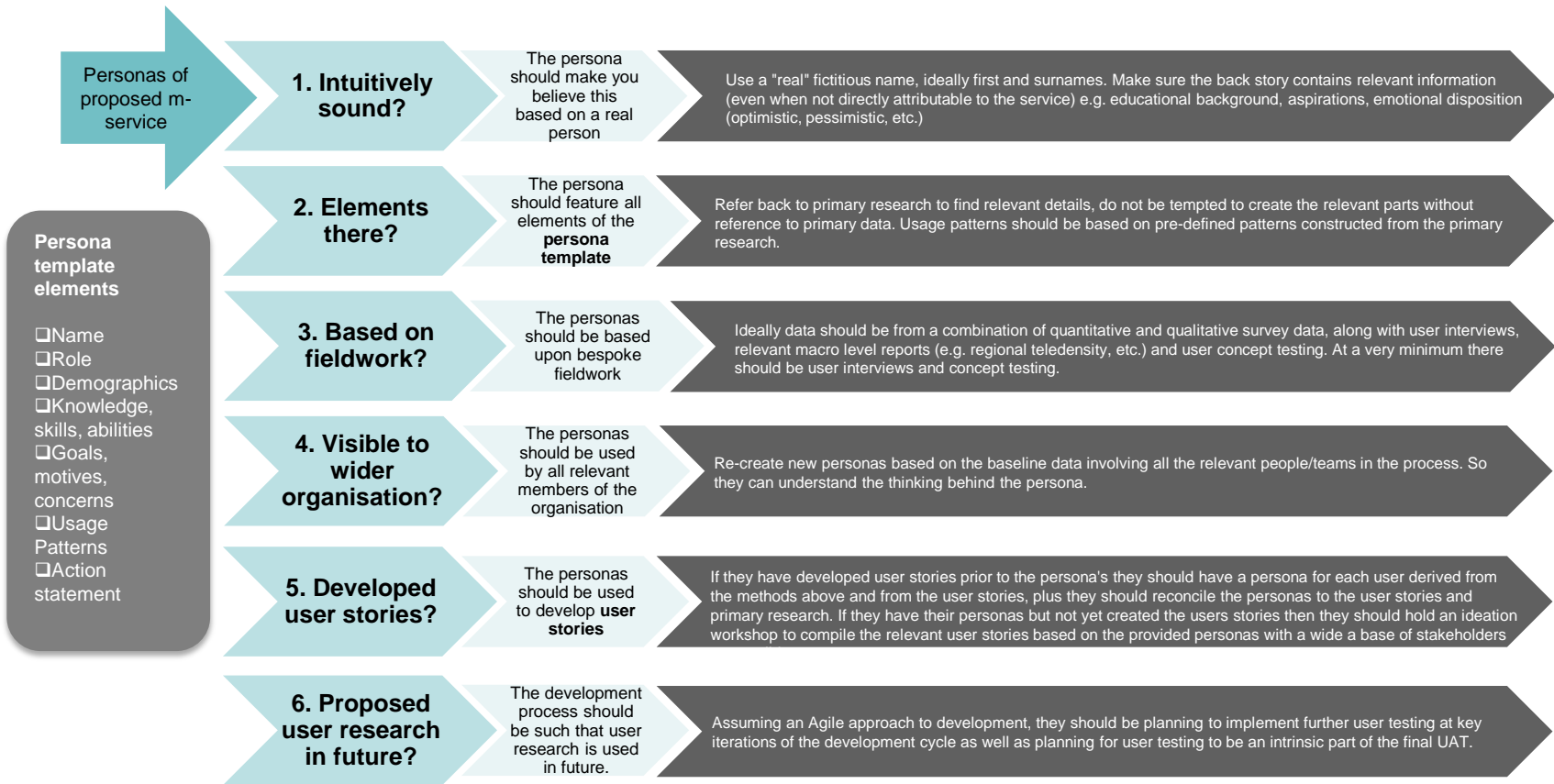
Idea #1: Additional lines of credit via mobile phone

Idea #2: Credit scoring for atypical borrowers

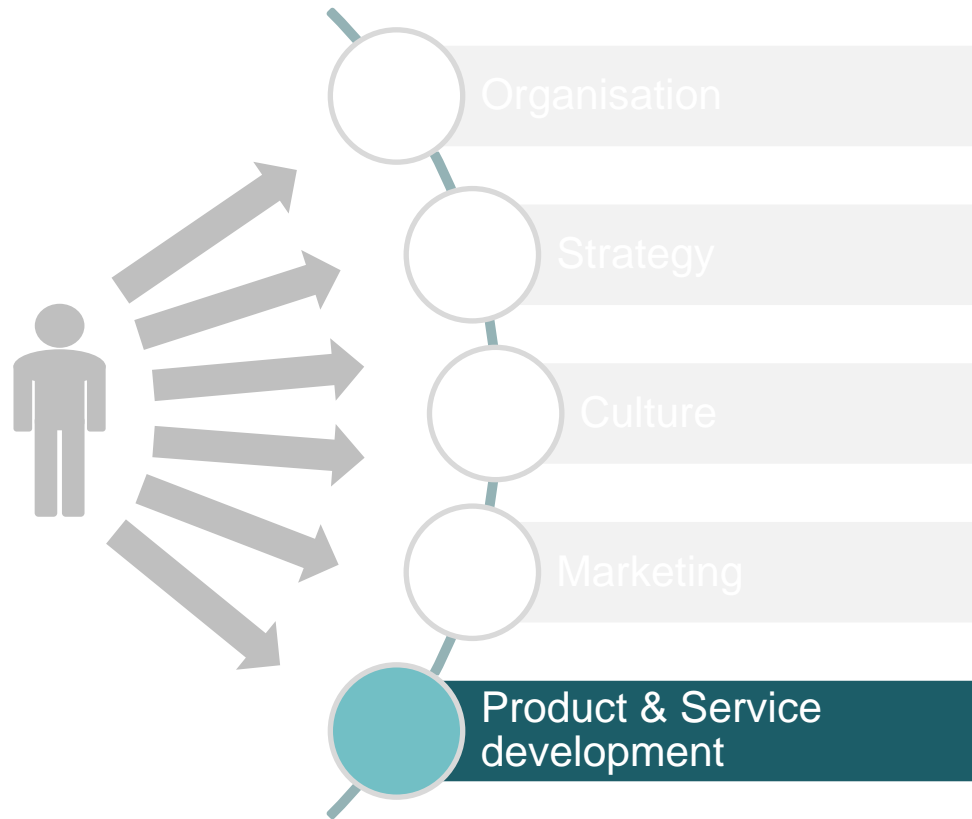


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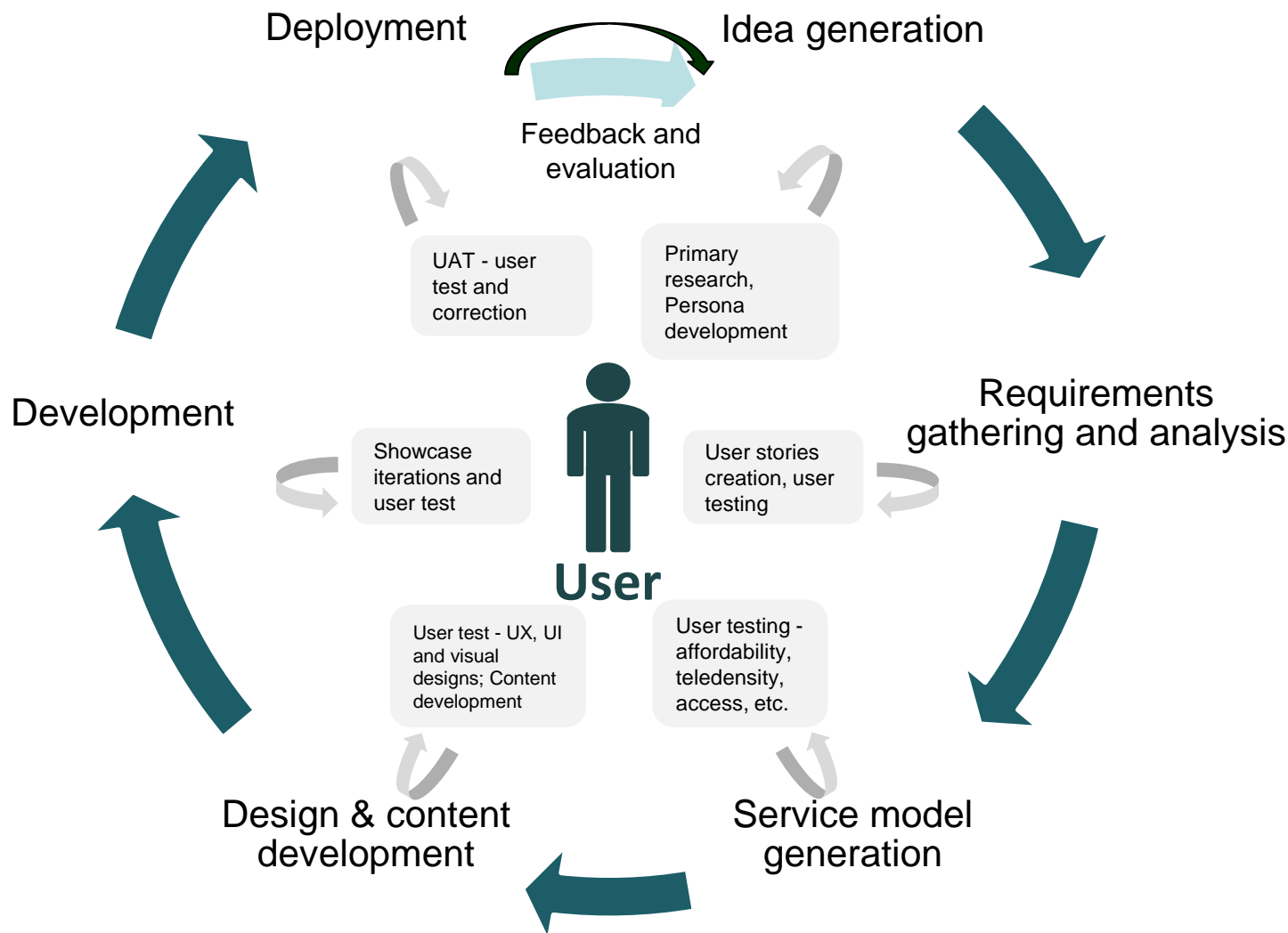
Best practice persona design and use



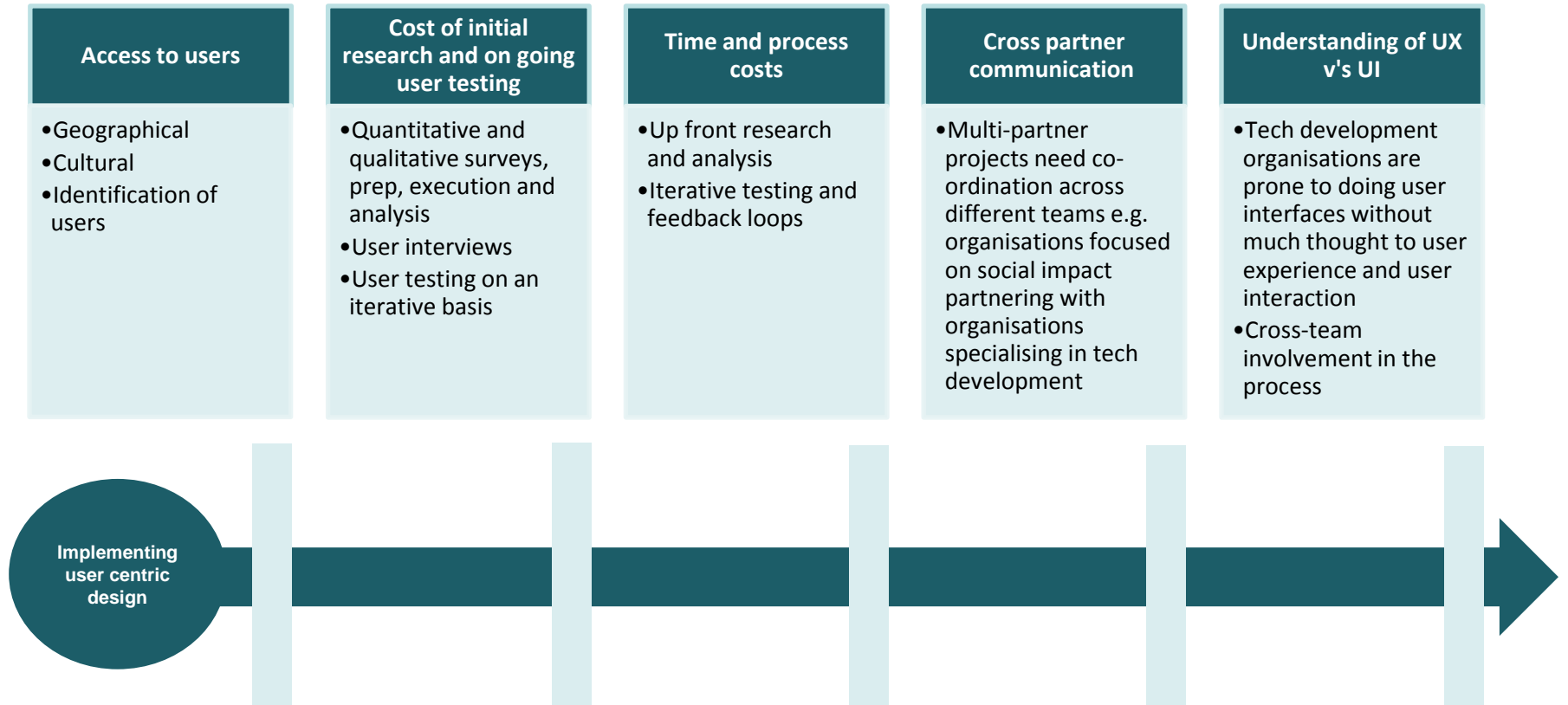
Organisations and user centricity



Product and service lifecycle



Barriers to implementing user-centric design in emerging markets



Calls to action

	Donors	Managers	Designers
Common Pitfalls	<ul style="list-style-type: none">• Focused on big picture, less on whether service meets user needs• Funding structures that don't allow for user research, testing, etc• Waste money on projects not targeting a real user segment	<ul style="list-style-type: none">• Mismatch in MNO incentives and long term nature of BoP solutions• Vendor/NGO managers minimise user testing due to upfront costs; rely instead on 3rd party reports• Marketing neglected	<ul style="list-style-type: none">• Use 'one size fits all' template over primary user research• Too much focus on visual design rather than whole experience• Pick up problems after service designed (expensive to change)
Call to Action	<ul style="list-style-type: none">• Understand the value of user centric design, and develop tools to test for it	<ul style="list-style-type: none">• Organise business practices around user centric principles	<ul style="list-style-type: none">• Integrate with end users as part of design process

-
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Key findings

A ubiquitous influence: the role of government on the mobile for development sector is mostly indirect through setting regulation and influencing the business environment. Direct investment in mobile-enabled services has so far been limited, with this mostly focused on the health sector

USFs strong in theory, weak in reality: Despite Universal Service Funds (USFs) offering a way of underpinning coverage expansion to rural areas, these have been largely mired by inefficiency. Around \$11 billion has been collected worldwide but not actually been put towards any projects, with 97% of this in the developing world

Good business opportunities, not always the best environments: while the culture for entrepreneurship has improved in many markets (e.g. parts of Asia, Latam), there are still developing regions languishing – 63% of markets in Africa and 33% in South Asia still fall into the bottom quartile worldwide in the ease of doing business

Key implications

Clear dialogue: frequent dialogue between stakeholders in the mobile sector (including operators, entrepreneurs and investors) and policy makers is crucial to recognise the shared opportunity in a more connected population (especially with mobile data) but also to be frank about the challenges and how partnership can help to overcome these

Opportunity cost: any failure so far to expand coverage as a result of USF inefficiency cannot be reversed, but there are increasingly visible economic (and social) opportunities in urban and rural regions by offering access to utilities like electricity and water (mobile-enabled community services). Given the potential for ARPU uplift, proof points of these businesses will be key in further incentivising coverage expansion

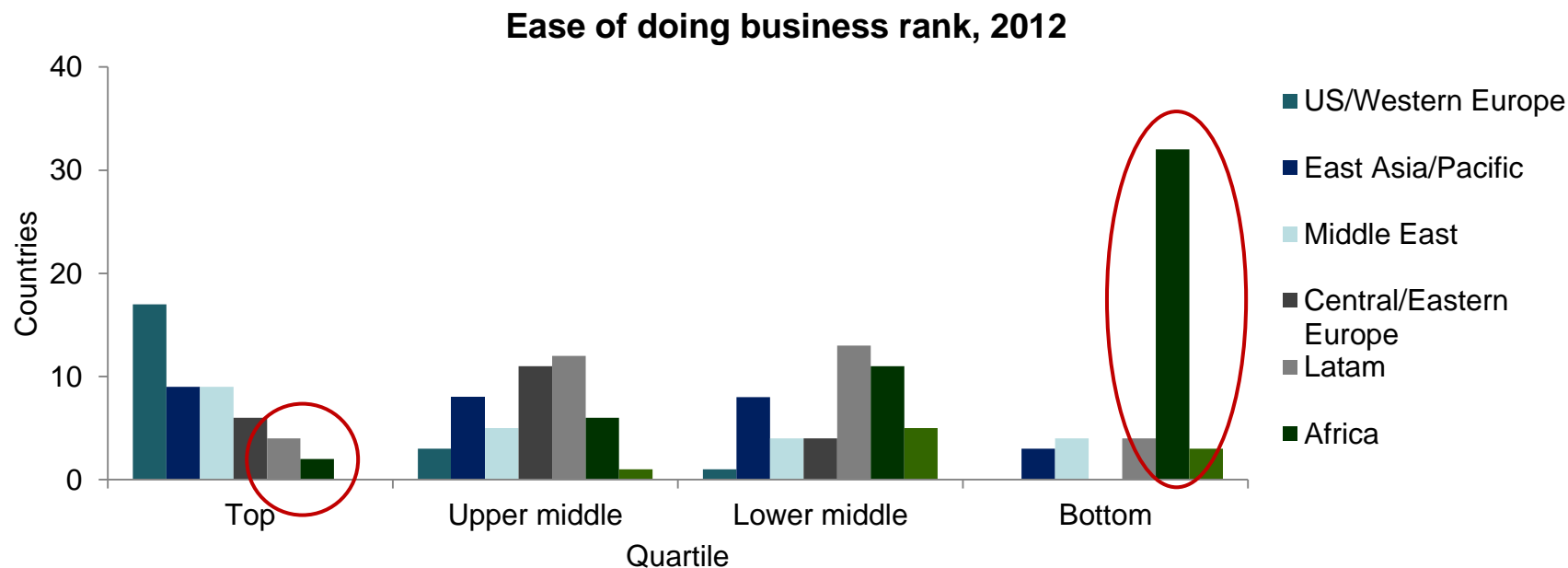
If you build it, they will come: Entrepreneurship is a key part of the growth story in mobile for development. Maintaining this means both improvements in the skills developed in country and the proportion of the population with those skills (a refilling talent pool), and promoting an investment friendly environment, particularly for small and medium size businesses

What is the role of government in M4D?

- Governments are a somewhat unique stakeholder – they control vast amounts of resources, but often act ‘behind the scenes’, as such playing more of an influencer as opposed to direct actor role in M4D
- This influence is broadly separated into two areas
 - Regulatory environment (excluding direct regulation on pricing)
 - Ease of doing business
 - Promoting network coverage (via USFs)
 - SIM registration
 - Investment
 - Direct (or through partnerships)
 - Promoting a business-friendly investment environment

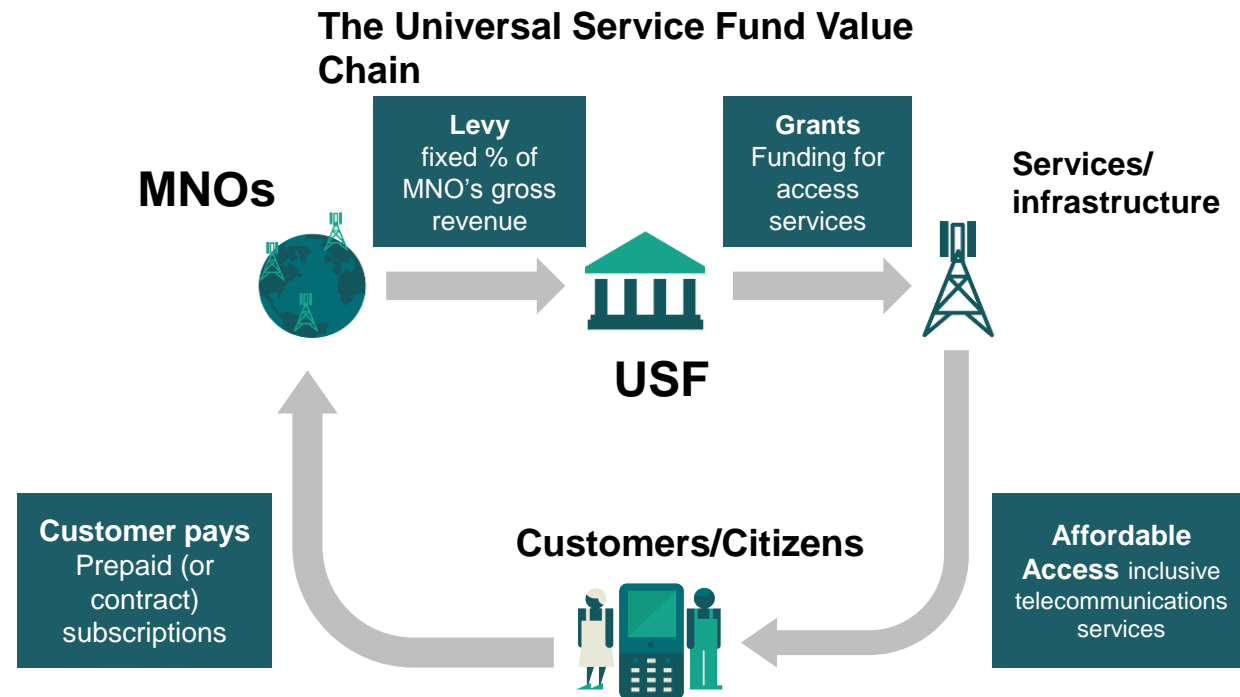
The ease of doing business

- Regardless of sector (telecoms, pharmaceuticals etc), government has a role in fostering new business
- Some of this will come through the use of fiscal levers to encourage large scale investment
- However, equally important are the factors that go into setting up a small or medium-sized business (e.g. taxation, ease of company formation, accessing credit, enforcing contracts)
- While progress has been made, many developing countries in Africa and South Asia still languish relative to regional peers and mature markets, placing an (unnecessary) impediment to entrepreneurship



Mechanism of Universal Service Funds (USF)

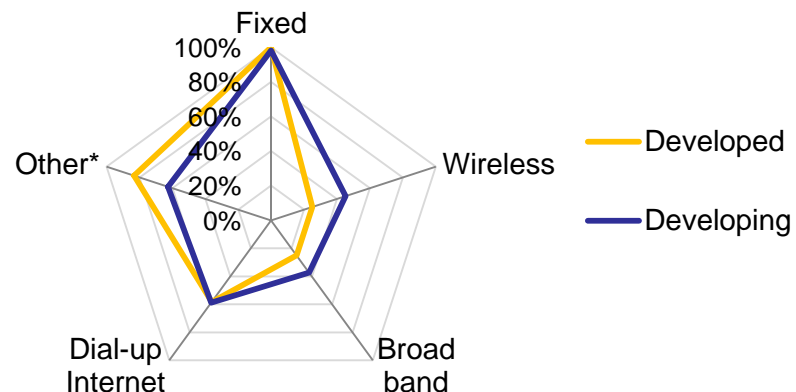
- Universal Service Funds (USFs) were created mostly over the last 10 years with the aim of extending access to telecommunications services at affordable prices
- They are intended, in effect, to ensure communications operators provide coverage irrespective of the economic rationale for doing so (particularly in rural areas)
- USFs have historically funded a range of communication services in addition to mobile:
 - Fixed line
 - Broadband and dial-up
 - Other services



Prospects for USFs as funding for M4D

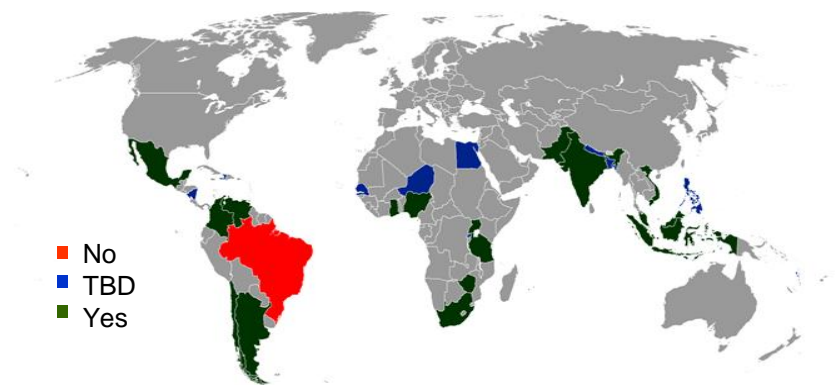
- The main target of USF funding in mobile is network rollout to rural areas
- The impact on M4D services is therefore mainly indirect – enhanced coverage is a requisite for mobile access, which increases the addressable audience for mobile-enabled services
- There is also potential for direct funding of M4D services in some markets, such as water and electricity access
- However, this potential has largely gone unfulfilled

What do USFs fund?



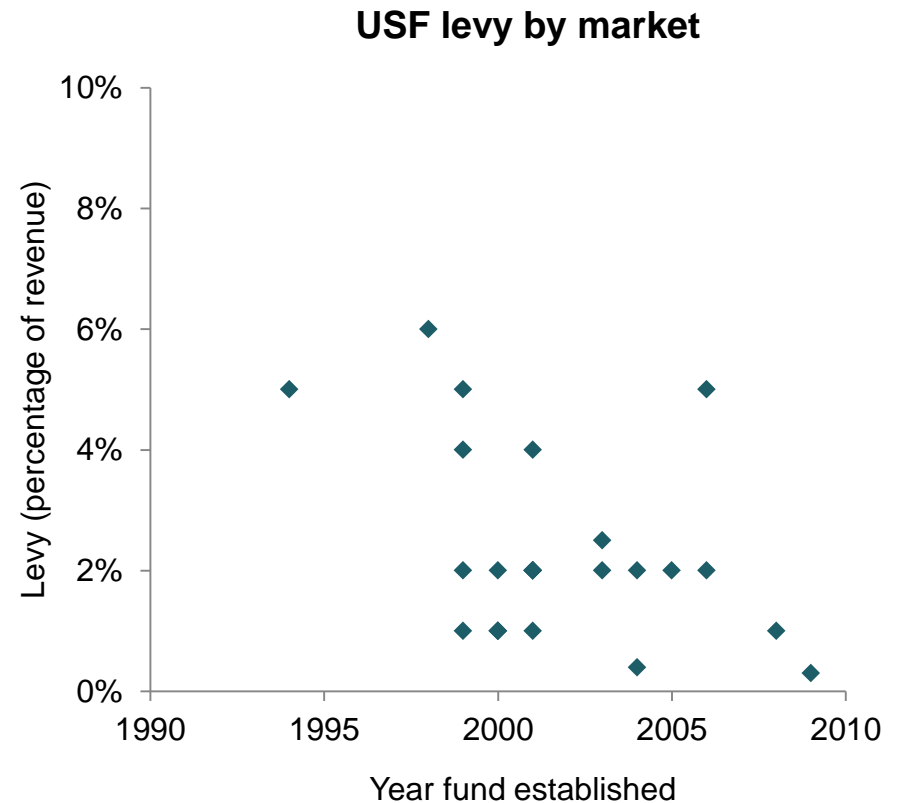
* 'Other' has many different definitions but generally refers to telecentres, community access centres and similar concepts

Can USFs be explored as a fund component for Mobile Enabled Community Services?*



Financing of USFs – in theory, a solution to a market failure

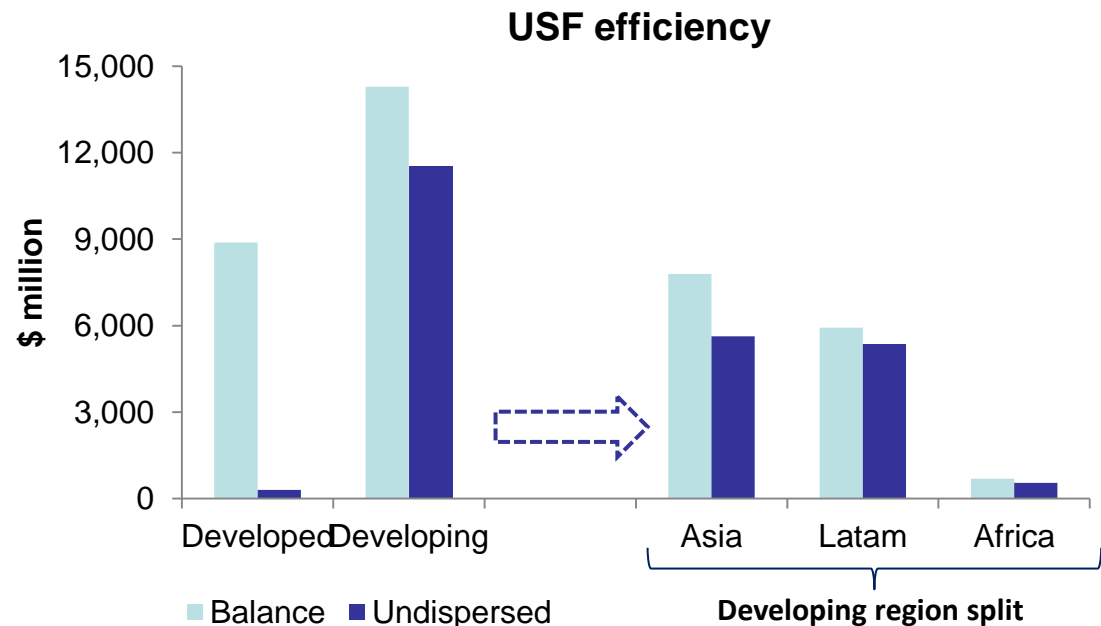
- Funds in the developing world are generally financed through a contribution mechanism from telecommunications service providers (usually calculated as a percentage of revenues – e.g. 5% in India)
- These started out around 5-6%, but for countries that have introduced USFs more recently, the levies have come down to around 2-3%
- *In theory*, this makes sense because governments have an in-built way of linking the incentives of mobile operators (acquiring spectrum) with governments (connecting as many people as possible)



...but inefficient in practice

- Nearly a third of USFs in the developing world are inactive, compared to under 10% in mature markets
- Worldwide, we believe there to be around \$11 billion accrued by governments through USF mechanisms, but not yet spent on actual telecom projects
- The vast majority of inefficiency is in the developing world, predominantly in Asia and Latin America, with around 70-80% of funds unspent in several markets

of the
\$11 billion
waiting to be
disbursed,
97% is in
developing world



Source: GSMA Universal Fund Study (2013), MDI analysis

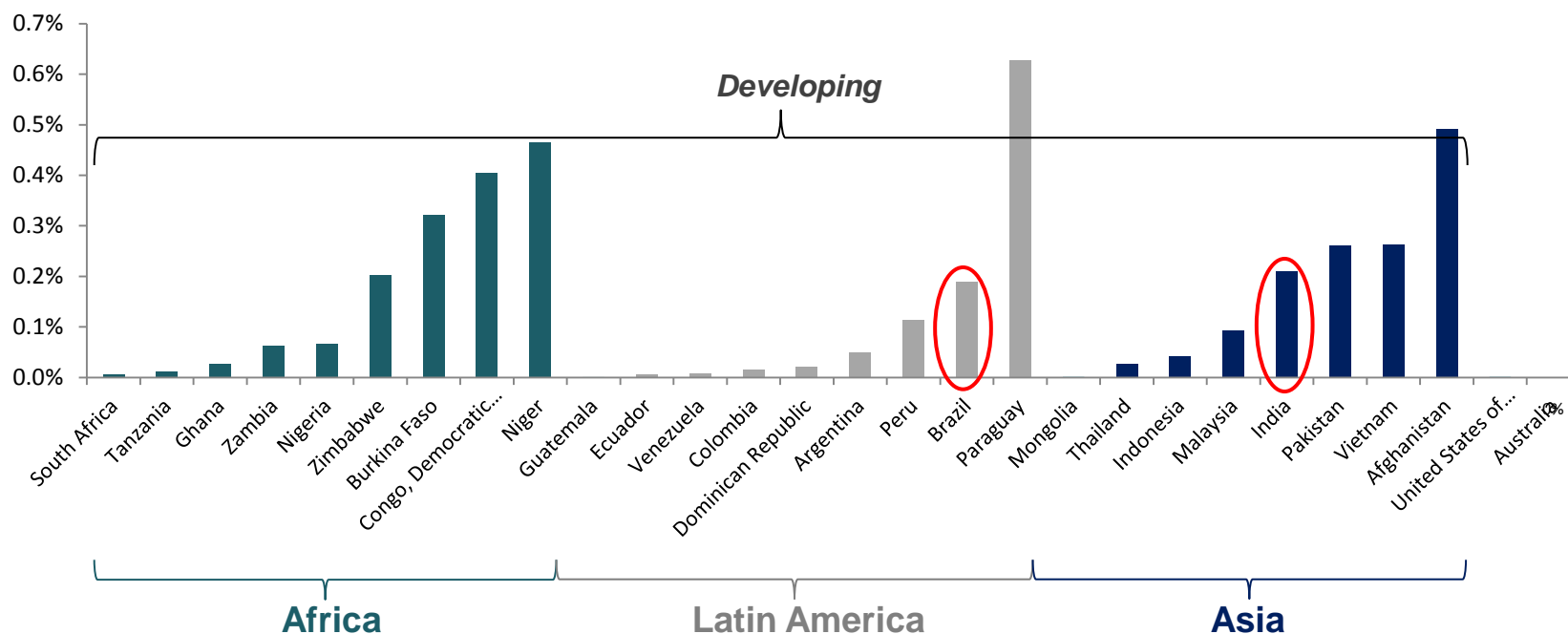
* Inactive funds were identified through attempting to contact/find a fund administering body, where no such body could be found

Note: figures on undisbursed funds reflect the information available/reasonably estimable concerning the financials of USFs. The actual figure for total undisbursed funds is likely to be much higher, as details of many fund's financials are often unobtainable

Rural economies feel the hit

- Although the greatest proportion of undispersed funds come from India and Brazil, other countries fair poorly when their undispersed funds are seen as a percentage of GDP
- These amounts are far from negligible, particularly for small, largely rural economies, where the opportunity cost of mobile network rollout is likely to be highest

Undisbursed funds as % of GDP

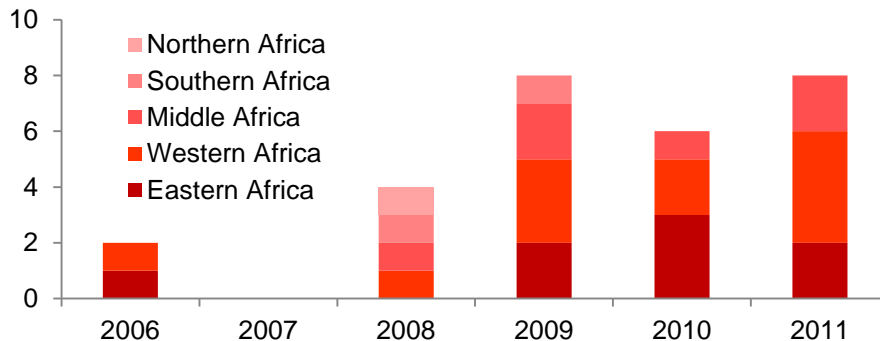


Source: GSMA Universal Fund Study (2013), World Bank, MDI Analysis

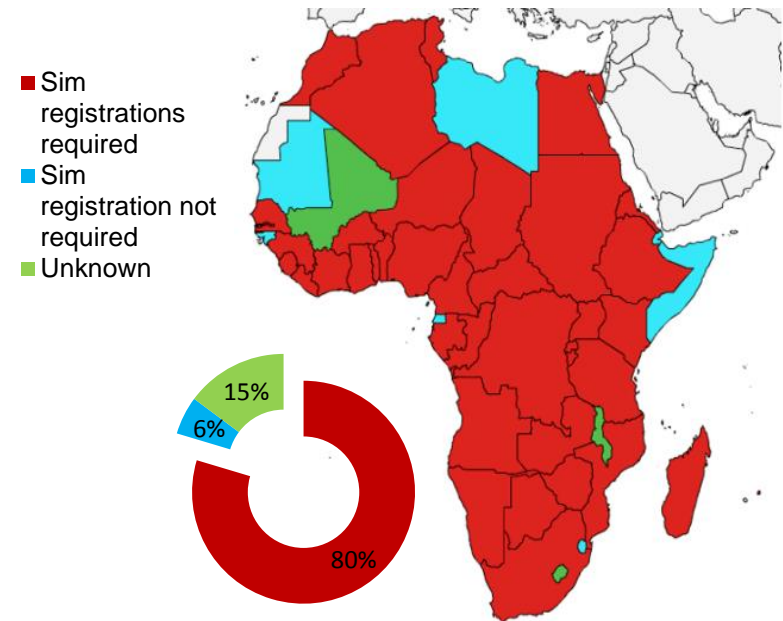
SIM registration

- In the last 10 years 80% of countries in Africa have started requiring registration in order to activate a prepaid SIM card (mostly as a counter-terrorism effort)
- While this gives operators more details on their customers (to offer more tailored services), it also can have unintended consequences
- Customers unable to get to an operator store or distribution point in the specified time frame may simply be cut off from service
- This can favour operators with larger distribution networks, with a resulting risk to competition

Mandatory SIM registration

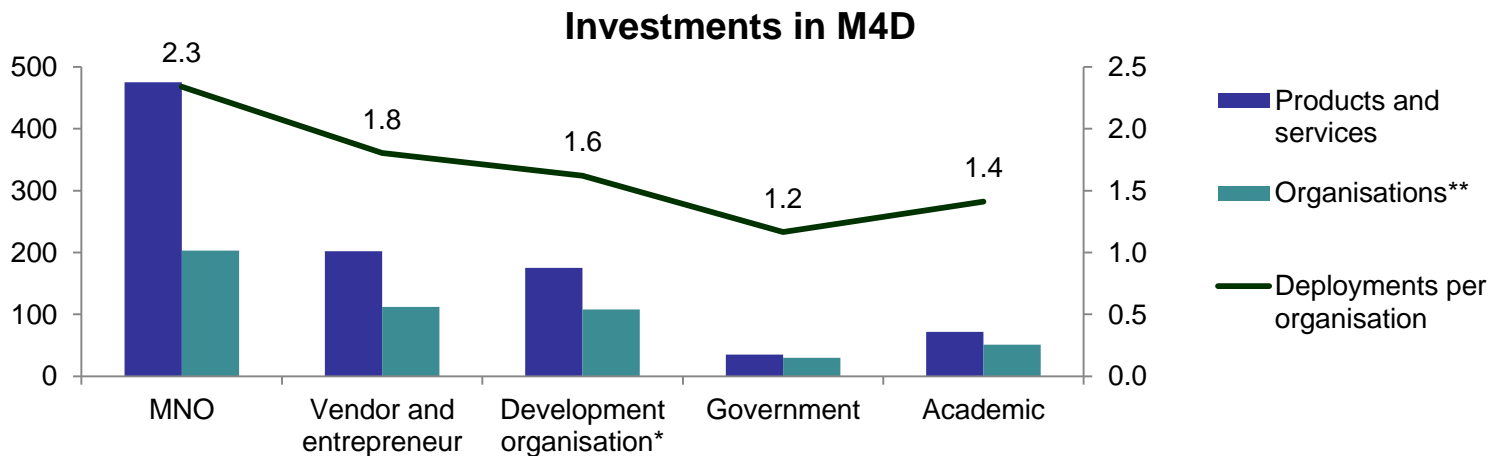
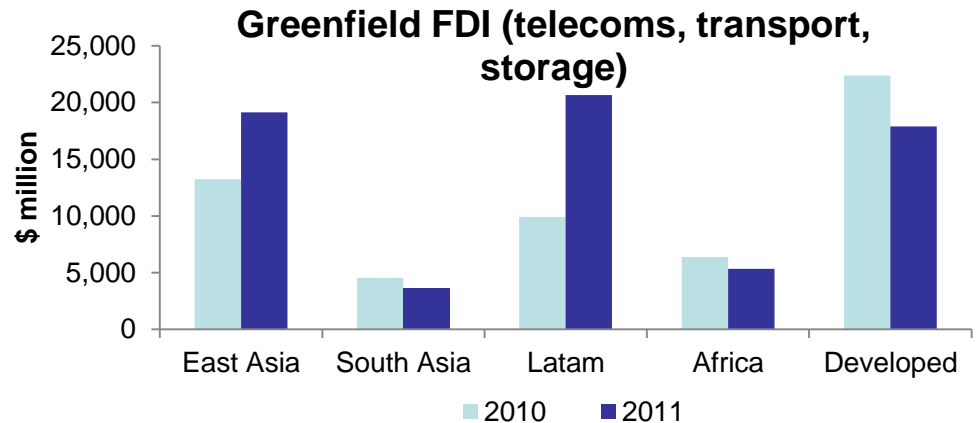


Most of Africa Requires SIM registration (2012)



Investment

- Governments can invest directly or indirectly in mobile
- Direct investments (or partnerships) are currently limited, and mainly targeted towards mobile health services
- The indirect role is to promote a friendly investment environment (e.g. use of tax incentives) – FDI is a reasonable proxy, with East Asia and Latam the largest and fastest growing destinations



*Includes donors, NGOs and other development groups

**Number of unique organisations (country operating companies of MNOs each count as a unique organisation)

-
1. Executive summary
 2. Key takeaways: a stakeholder guide
 3. Market landscape: current and outlook
 4. Impact of mobile on development sectors
 5. Platforms, multiplicity and the drive for scale
 6. User-centric innovation
 7. Role of government
 8. Appendix

Glossary

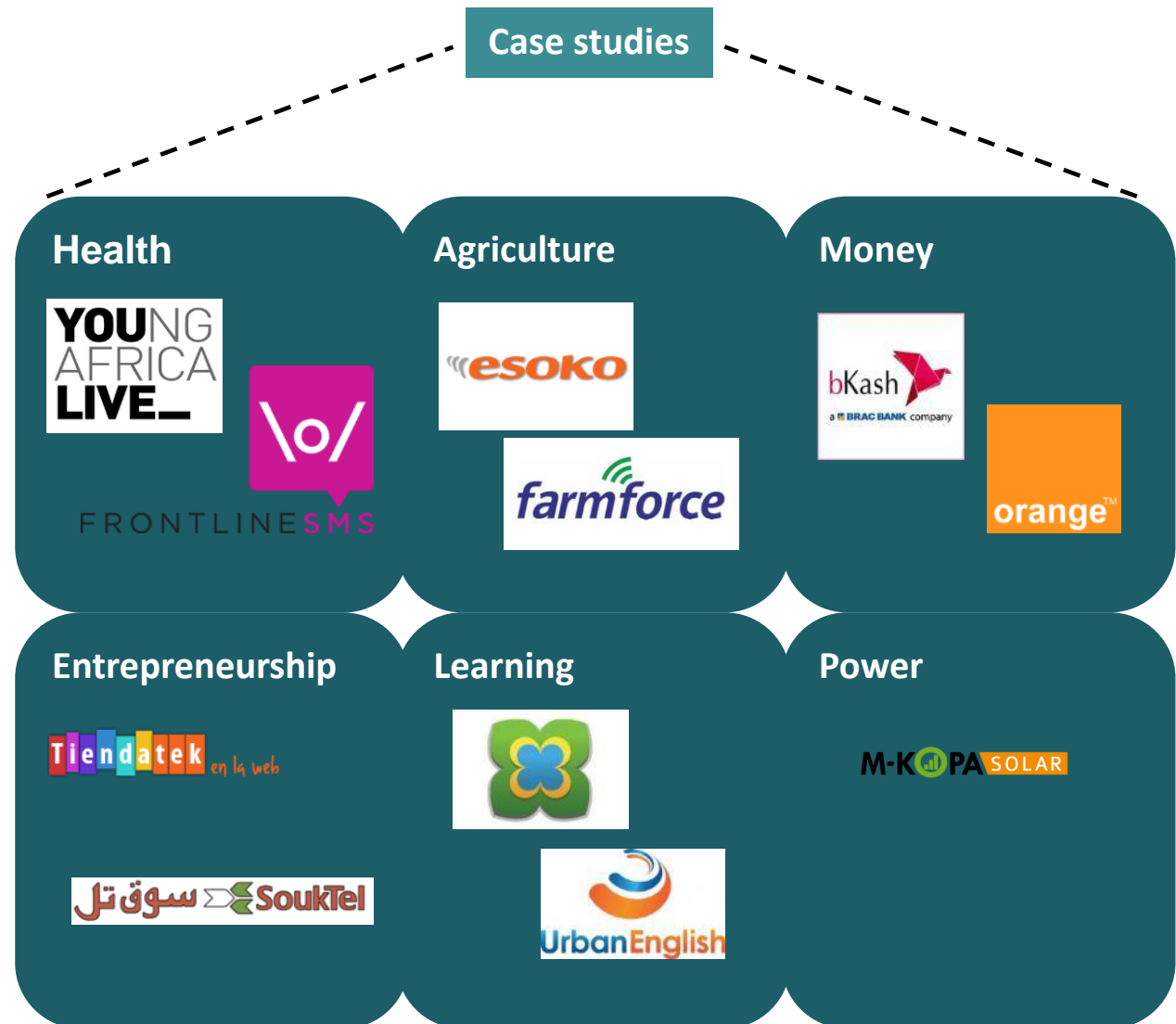
2G	The second generation of digital mobile phone technologies including GSM, CDMA IS-95 and D-AMPS IS-136
3G	The third generation of mobile phone technologies covered by the ITU IMT-2000 family
Active Mobile Connections	Active unique SIM cards (or phone numbers, where SIM cards are not used), excluding M2M, that have been used for voice, messaging or data activity on the mobile network over the operator's activity period, which can range from one to 13 months.
Advertising	Revenue generated from advertising delivered through service itself
API	An application programming interface is a protocol intended to be used as an interface by software components to communicate with each other.
Framework	A set of re-usable software tools and interfaces for developing applications
Apps	A software application designed to run on mobile devices. (typically smartphones, and tablet computers)
ARPU	Average Revenue Per User
Basic phone	Offers basic voice services (telephony/voice mail), SMS and USSD based services.
Business	Businesses targeted by service to generate revenue. Generally supports internal business processes (e.g. Inventory management), or core business services (e.g., recruitment)
Call Centre	Simple voice call to a trained human content provider
Consumer (MNO led)	Rolled out as a value added service (VAS) by an MNO. While it may not earn revenue from customer directly, VAS designed to drive new customer uptake/ reduce customer churn.
Consumer (non MNO led)	Revenue generated directly by end user. e.g. subscription, one off mobile money payment
Data collection	Create customised surveys and send them to fieldworkers' mobiles
Donor	Primary funding comes from donor organisations, usually in a lump sum grant
Feature phone	Basic phone features plus... Internet enabled, supports transmission of picture messages downloading music, built-in camera
Foundation M4D application	Application that is designed to sit on top of a framework owned by another vendor
Government	Primary funding comes from government
GSM	Global System for Mobile communications, the second generation digital technology originally developed for Europe but which now has in excess of 71 per cent of the world market. Initially developed for operation in the 900MHz band and subsequently modified for the 850, 1800 and 1900MHz bands. GSM originally stood for Groupe Speciale Mobile, the CEPT committee which began the GSM standardisation process
HHI	Herfindahl-Hirschman Index, A commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers
Interactive content	Content based services that users can access by querying a central database. May be delivered via IVR, SMS, USSD, app, WAP, etc.
Internet	A loose confederation of autonomous databases and networks. Originally developed for academic use the Internet is now a global structure of millions of sites accessible by anyone
Inventory management	Supply chain management and stock ordering tools. Product security / validation tools
IP	Internet Protocol
IVR	Interactive voice response, allows a computer to interact with humans through & voice recognition navigation and DTMF tones via keypad
Java	A programming language developed by Sun Microsystems Java is characterised by the fact that programs written in Java do not rely on an operating system
M2M	Machine-to-machine is a broad label that can be used to describe any technology that enables automated wired or wireless communication between mechanical or electronic device

Glossary

MNO	Mobile Network Operator
Active mobile subscriber penetration	Unless otherwise specified, this is the total active subscribers in the market divided by the total population, expressed as a percentage. (It is not the more often cited penetration of total mobile connections, which will always be higher)
Bespoke M4D application	A “one off” application built from the “ground up
Open Source	Service based around open source software/framework. Value derived from external parties adopting service
Other	A “catch all” for devices not included in the above. E.g., modems, Personal digital assistance (PDA), etc.
OTT	Over the Top refers to video, television and other services provided over the internet rather than via a service provider’s own dedicated, managed IPTV network
Payments	Mobile wallets, payment gateways and a wide range of payment based services
PC/laptop	Personal desktop computer, or laptop. Typically running Windows, or maybe Linux OS.
Peer to peer content	Social networks and posting systems, users create and access content. Wide range of delivery mechanisms, even including voice
Platform	Generic in nature, could be used in a multitude of different services. An operating system, cloud, etc.
Push content	Content pushed out (one way) via voice message or SMS. May be “broadcast” or “narrowcast” (customised by location / user profile)
SIM	Subscriber Identity Module; A smart card containing the telephone number of the subscriber, encoded network identification details, the PIN and other user data such as the phone book. A user’s SIM card can be moved from phone to phone as it contains all the key information required to activate the phone
Smart phone	Feature phone features plus... graphical interfaces and touchscreen capability, built-in Wi-Fi, and GPS (global positioning system)
SMS	Short Messaging Service, allows exchange of short text messages between mobile phone devices
STK	SIM Toolkit: specified within the GSM standard, this allows operators to add additional functions to the phone menu in order to provide new services such as mobile banking or email
Tablet	Smart phone features plus... Larger screen, increased computing power, front and rear facing cameras, extra ports (e.g., USB)
TCO	Total cost of ownership
Text-to-Speech	Computer or handset based service that generates speech using text input
Total Mobile Connections	Total unique SIM cards (or phone numbers, where SIM cards are not used) that have been registered on the mobile network at the end of the period. Connections differ from subscribers such that a unique subscriber can have multiple connections.
USSD	Unstructured Supplementary Service Data. A synchronous message service creating a real-time M2P connection allowing a two-way exchange of data, mostly through menu structures
Voice	Basic telephony services, with voice delivered over a mobile network
WAP	Wireless Application Protocol for accessing information over mobile network. WAP browsers typically found on older feature phones.
WAP	Wireless Application Protocol for accessing information over mobile network. WAP browsers typically found on older feature phones.
Web	A system of interlinked hypertext documents accessed via the Internet; also accessible via enabled mobile devices

Case Study work

- CEOs and high level executives from organisations the GSMA regards as leading in their sector were interviewed.
 - Interviews were 1-to-1 and lasted around an hour
 - We asked questions specifically tailored to issues of scalability and user centric attitudes
- Interviews revealed that for these leading organisations:
 - Success depended upon building to scale from the outset
 - Reaching out to users on a regular basis to test products was essential
 - There was a strong desire to clarify social impact of work
 - Sustainable business models were essential, but tough to prove
 - Partnerships were essential
 - MNO partnerships were fruitful but hard to set up



About the authors



Tim Hatt — Senior Analyst

Tim is the head of research at Mobile for Development Intelligence at the GSMA, having joined the group in October 2012. In this capacity, Tim has responsibility for the team producing research reports and presenting externally at conferences and public speaking engagements. Prior to joining the GSMA, Tim spent 6 years in London as an analyst covering telecoms and a variety of other sectors.



Corina Gardner — Senior Manager

Corina manages the Mobile for Development Intelligence programme. Building on ten years of international development experience across Africa and Central Asia, Corina brings a breadth of first-hand experience to the team. She joined GSMA in 2010 after completing an MBA from Cambridge University focused on Energy and Environment.



Adam Wills — Analyst

Adam joined GSMA in November 2012. His responsibilities on 'Scaling Mobile' included leading on multiple report sections, presenting work to external stakeholders in Africa, and conducting interviews to generate a range of supporting case studies. Prior to GSMA Adam conducted policy research in an MP's parliamentary office, with a focus on environment and international development.



Martin Harris — Director of Technology, GSMA Mobile for Development

Martin has been involved with the GSMA over the last three years working on various implementations in mHealth, mAgri and related programs, alongside carrying out research for the sector into the use of mobile technologies in the M4D space. Martin is also involved with a number of external companies focused around technology incubators and start-ups.

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