MVNO in Africa
Landscape, Challenges and Opportunities Thought Study
January 2013

— Select Slides—
For a full copy of this report or to discuss potential areas of support, please contact mike.greening@cartesian.com
In 2012, Cartesian conducted research and analysis to understand the state, current and future trends, and likely evolution of the MVNO market in Africa.

**Scope of Thought Study**

**Thought Leadership**
- Cartesian drew on its knowledge base and experience from over 40 MVNO projects
- We hypothesised trends and validated with research

**Interviews**
- Cartesian interviewed a number of key individuals within the MVNO space, including MVNOs, MNO wholesale teams and MVNEs

**Secondary Research**
- Cartesian conducted secondary web research to capture details on recent MVNO launches, failures and success stories

**Outputs**
- The research and analysis was conducted throughout 2012
- Findings were presented at the an MVNO Conference in Cape Town on 1st October, 2012
- This presentation contains the results of our analysis of Africa, and focuses on 10 key trends in MVNO: 5 challenges and 5 opportunities present in the market
Throughout this Thought Study, we address the following key questions:

- What is the state of the MVNO market in Africa today?
- What are the main barriers, challenges and opportunities?
- What should be the key considerations for MNOs?
- What are the critical success factors for an MVNO launch?
• Introduction to Cartesian
• MVNO Market Landscape
• MNO Considerations
• Critical Success Factors and Conclusions
Cartesian™ is a leading provider of professional services and managed solutions in the global communications, technology and digital media sector.

**Industry Focus**
- Industry specialists, focusing exclusively on communications, technology and digital media
- Expert operational know-how and project management skills, with proven methodologies across content areas
- Several hundred consultants, averaging 15 years of sector-specific experience

**Capabilities**
- Proven understanding of business strategy and client issues
- Expert assessments of operations, platforms, and business processes to support corporate strategies
- Award-winning technology platform and 20+ years experience deploying solutions for CSPs

**Global Reach**
- Onsite and offsite delivery models to suit client needs; partner network of ICs, technology providers and SIs
- Clients across six continents include communications service providers, technology vendors/OEMs, digital media, financial companies and regulators
Our clients are the global leaders in the communications, digital media, technology and financial services sectors.

<table>
<thead>
<tr>
<th>Service Providers</th>
<th>Technology</th>
<th>Influencers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile • Fixed • Cable/MSO • Satellite • Cloud &amp; Hosting</td>
<td>Consumer Electronics • Enterprise • Software &amp; Apps Components • Infrastructure • Intermediaries • Integrators</td>
<td>Government • Regulators • Industry Groups • Foundations</td>
</tr>
</tbody>
</table>

- Verizon
- AT&T
- Vodafone
- Time Warner Cable
- Comcast
- Optus
- Sky
- Tele2
- Vonage
- NTT DoCoMo
- Virgin Media
- Telefonica
- Unitymedia
- Sprint
- Orange
- Ziggo
- Alcatel-Lucent
- Cisco
- Neustar
- Ericsson
- Amdocs
- Ofcom
- FTTH Council
- Bill & Melinda Gates Foundation
- CTAM
- Massachusetts Technology Collaborative

<table>
<thead>
<tr>
<th>Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Equity &amp; Venture • Funds • Commercial Lenders</td>
</tr>
</tbody>
</table>

- The Carlyle Group
- KKR
- TDR Capital
- GTCR
- Silver Lake
- Bank of America
- THL
- Best Buy
- Thomson Reuters
- LoJack
- Volkswagen
- Black & Veatch
- Disney Interactive

<table>
<thead>
<tr>
<th>Media &amp; Verticals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Media • Automotive • Energy • Hospitality • Health • Insurance • Retail</td>
</tr>
</tbody>
</table>

Confidential and Proprietary — Copyright © 2014 Cartesian Ltd. All rights reserved.
Cartesian and its team has worked on 40+ MVNO projects throughout the US, Europe, Middle East and Asia

**MVNOs**
- **Strategy and business case support** including detailed cost and revenue modelling
- **Negotiation support** for contracts and commercial terms
- **Vendor evaluation and selection**, including architecture design
- **Securing funding**
- **End to End support**, including PMO and launch support (e.g. proposition development, distribution, platform deployment)

**MNOs**
- **MVNO and sub-branding strategy** including scenario analysis
- **Cost modelling** to determine wholesale pricing
- **Identification and recruitment of wholesale / MVNO partners**
- Development of optimal **operational and technical architecture**
- **Internal segmentation analysis**
- **Vendor short-list, assessment and selection**

**Regulators**
- **Assessment of MVNO policy, regulation** and market impact
- **International regulatory benchmarking** and support with preparation of NRA’s **regulatory licensing framework**
- Preparing the **MVNO business case**, drivers and alternative operational and commercial models
- **Detailed cost and revenue modelling** to calculate MVNO / wholesale commercial terms
• Introduction to Cartesian
• MVNO Market Landscape
• MNO Considerations
• Critical Success Factors and Conclusions
Globally many MVNOs have launched in the last few years to serve both mass and niche market segments.
The MVNO model is established and mature in a variety of markets worldwide

**Sources:** Cartesian, Nereo, company websites, press releases

**US**
- Total: ~10%
- Tracfone (21m)

**South America**
- <1%

**Europe (representative sample, not exhaustive)**
- Germany, 20%
- Netherlands, 14%
- Norway, 16%
- UK, 13%
- France, 10%
- Finland, 2.5%
- Czech Republic, 0%

**Africa**
- <1%

**Oman**
- ~11%

**Japan**
- Total: 2%
- JCI (largest MVNO)

**Hong Kong**
- Total: 8%

**Australia**
- Total: 4%
- Virgin Mobile
- Boost Mobile

Virgin recently acquired by Sprint (was second largest MVNO with ~2% market share)
The MVNO market in Africa is still in its infancy – however several MVNOs have rolled out or announced launch over the last five years with some degree of success.

**South Africa**
- Launched in 2006 as a JV between Virgin Group and Cell C
- Uses Cell C network
- 400k subscribers as of August 2012 (80% prepaid)

**Senegal**
- Launched in February 2011
- Uses Cell C network
- Owned by the energy drink manufacturer

**Cameroon**
- Launched in 2009
- Uses Cell C network
- Prepaid SIM offering discounted calls to Lesotho and Zimbabwe – ExPat offering
- 500k SIMs sold as of September 2010

**Morocco**
- In February 2012, state-owned postal service, Poste Maroc, announced plans to launch an MVNO – but has not yet done so

**Senegal**
- Launched March 2011
- Sub-brand of Expresso

**Cameroon**
- “SET’ Mobile” was signing on subscribers since December 2011, and went live in July 2012
- 200,000 subscribers
- Uses Orange Cameroon network

**SMS Mobility**
- Launched December 2012
- Uses Camtel’s Network and positions itself as a data MVNO

**Madagascar**
- Primarily an ISP, blueline recently launched a mobile service as an MVNO

*Note: Senegal and Cameroon has MVNOs operating as sub-brand and resellers respectively, however a full MVNO license is still not on offer from the regulators*

Sources: PrepaidMVNO.com, TeleGeography, MVNODirectory.com, Company Releases, Cartesian
We see a number of major challenges and opportunities for the launch of MVNOs in Africa.

**Challenges**

1. NRAs
2. Low ARPU & Price Volatility
3. MVNE Infrastructure
4. Distribution
5. Other Barriers

**Opportunities**

6. Lack of Competition
7. Big Brands
8. Key Segments
9. Smartphones and Data
10. Technology Platform Play (M2M)
Barriers to Launch of MVNO in Africa

Regulatory issues, low ARPU and high interconnect rates are viewed as the main barriers to launch of MVNO in Africa.

- Low ARPU is considered a significant barrier to MVNO in Africa.
- Regulatory issues are also perceived to be holding back the emergence of MVNO.
- High interconnect rates can prevent MVNOs from offering competitive off-net calling, especially as call volumes are unpredictable.
- Resistance by MNOs may be due to competing strategic priorities or simple fear over competition.

Source: African Telecoms News Survey, Blycroft 2012
Price volatility is also big problem for MVNOs, which typically do not have the financial reserves to engage in price wars

**Price Changes in Selected Africa Markets (07-11)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Average ARPU (S)</th>
<th>2007</th>
<th>2011</th>
<th>% CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudan</td>
<td>19.08</td>
<td>7.63</td>
<td>5.45</td>
<td>-21%</td>
</tr>
<tr>
<td>Ghana</td>
<td>15.51</td>
<td>7.00</td>
<td>4.00</td>
<td>-21%</td>
</tr>
<tr>
<td>Cameroon</td>
<td>14.00</td>
<td>7.77</td>
<td>4.52</td>
<td>-21%</td>
</tr>
<tr>
<td>Rwanda</td>
<td>13.00</td>
<td>4.00</td>
<td>4.00</td>
<td>-22%</td>
</tr>
<tr>
<td>Algeria</td>
<td>11.94</td>
<td>8.67</td>
<td>5.45</td>
<td>-22%</td>
</tr>
<tr>
<td>Egypt</td>
<td>11.92</td>
<td>10.35</td>
<td>5.45</td>
<td>-22%</td>
</tr>
<tr>
<td>Uganda</td>
<td>11.94</td>
<td>10.35</td>
<td>5.45</td>
<td>-22%</td>
</tr>
<tr>
<td>Kenya</td>
<td>11.92</td>
<td>10.35</td>
<td>5.45</td>
<td>-22%</td>
</tr>
</tbody>
</table>

Prices in South Africa have also seen a very sharp decline over the last two months

- Prices have fallen by as much as 26% per year in some markets
- MVNO margins are usually very finely balanced – a decrease in revenue of as little as 12% (Kenya) can completely destroy the business case
- One way an MVNO can protect against this is to have wholesale prices linked to a retail price index in the contract
- Nevertheless, MVNOs do not typically have the financial reserves to engage in price wars
- Some level of pricing stability will be required for long term success of MVNO
MNOs need to assess the potential risk (and wholesale reward) from MVNOs entering the market

1. **Impact to Operator Existing Business of MVNO Launching**
   - Which customer segments are at risk from each MVNO?
   - If the operator lost their expected share in the target segment what would the impact be on:
     - Customers
     - Revenue
     - EBITDA

2. **Potential Impact to Wholesale Business of Hosting MVNO**
   - What wholesale impact would the MVNO have on:
     - Revenue
     - EBITDA
     - Churn and subscriber volumes
   - If the operator hosted the MVNO would it gain additional wholesale business?

3. **Overall Net Impact for Each MVNO Entrant**
   - What is the net impact of each MVNO on customers, revenue and EBITDA?
   - Which partnering strategy would give the optimal return for the operator?
   - What operational model would best support its MVNO strategy?

**Potential MVNO Entrants**
- Who are most likely entrants?
- Which customers are they going to target?
- Which would be their preferred host operator?
When considering investing, MVNO entrants in Africa should be realistic about the prospects of success and be aware of the key success factors

<table>
<thead>
<tr>
<th>MVNO Investment KSFs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ensure regulatory approval / sign-off before committing significant investment</td>
</tr>
<tr>
<td>2. Develop a compelling MNO pitch to increase chances of securing a deal</td>
</tr>
<tr>
<td>3. Develop points of differentiation that cannot easily be replicated (e.g. customer service)</td>
</tr>
<tr>
<td>4. Understanding mobile economics to negotiate a win-win commercial contract</td>
</tr>
<tr>
<td>5. Build in pricing re-negotiation and exit clauses into the contract</td>
</tr>
<tr>
<td>6. Keep the operations lean (minimise the cost base)</td>
</tr>
<tr>
<td>7. Avoid high customer acquisition costs (e.g. subsidies, giveaways, etc.)</td>
</tr>
<tr>
<td>8. Do not over invest in CAPEX intensive assets and ensure pay as you grow payment models are in place for MVNE partners</td>
</tr>
<tr>
<td>9. Use existing and / or innovative distribution channels</td>
</tr>
</tbody>
</table>
For a full copy of this report or to discuss potential areas of support, please contact:

Mike Greening
Vice President
mike.greening@cartesian.com
+44 (0) 7739 570829

www.cartesian.com