Tomorrow’s Digital World: The Future of African Broadband

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Senior Research Analyst
ICT Africa
Who is Frost & Sullivan

- Growth consulting and market intelligence firm
- Founded in 1961
- Over 1,800 Consultants / Analysts across 40 global locations
- 10,000+ clients worldwide including:
  - The global 1,000
  - Emerging companies
  - The investment community
  - Public sector and NGOs
- African office based in Cape Town
  - Staff compliment of 55 focused on Sub-Saharan Africa
- Offer an exclusive Growth System including;
  - Growth Partnership Services (generate)
  - Growth Consulting (evaluate)
  - Growth Team Membership (implement)
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Introduction

- Additional undersea fibre cables a critical driver for broadband
- Major challenge to intra-connect Africa
- African broadband penetration rates are below 10%
- Operators and ISPs to focus on internet connectivity for data services
- Mobile broadband to ride on the penetration of mobile voice services
- Network backhaul the main challenge
- Broadband to spur economic growth based on intellectual property
Impact of undersea cables

- International bandwidth capacity was 340Gbps before Seacom
  - This will increase to 18.38 Tbps by end of 2012
  - Decline in wholesale and retail bandwidth prices
- Interconnecting cities and landlocked countries to remain a challenge
  - Monopolies by incumbents, e.g. Zamtel in Zambia
  - Expensive satellite to dominate

Source: Frost & Sullivan

International Bandwidth Growth (Sub Saharan Africa), 2009

Source: Frost & Sullivan

Selected Undersea Cables (Sub Saharan Africa), 2009

Source: Frost & Sullivan
Broadband in Sub-Saharan Africa

- South Africa broadband subscribers at 1.5 million in 2009 – 3% penetration rate
  - Expected growth rate of 36.3% until 2015
- Kenya broadband subscribers at 0.2 million and penetration rate at 0.7%
- Broadband prices still high, but are expected to decline steadily in the next 7 years
- The proportion of mobile and wireless subscribers to increase from 86% to 94%

**Broadband Market: Subscriber Forecasts (South Africa), 2006-2015**

<table>
<thead>
<tr>
<th>Years</th>
<th>Subscribers (Thousands)</th>
<th>Subscriber Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2,000.0</td>
<td>70.0%</td>
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<tr>
<td>2007</td>
<td>4,000.0</td>
<td>60.0%</td>
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<tr>
<td>2008</td>
<td>6,000.0</td>
<td>50.0%</td>
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<tr>
<td>2009</td>
<td>8,000.0</td>
<td>40.0%</td>
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<tr>
<td>2010</td>
<td>10,000.0</td>
<td>30.0%</td>
</tr>
<tr>
<td>2011</td>
<td>12,000.0</td>
<td>20.0%</td>
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<tr>
<td>2012</td>
<td></td>
<td>10.0%</td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td>0.0%</td>
</tr>
<tr>
<td>2014</td>
<td></td>
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<tr>
<td>2015</td>
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</tbody>
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**Broadband Market: Market Statistics (Kenya), 2009**

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<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Internet Subscribers</td>
<td>2.0 Million</td>
</tr>
<tr>
<td>Internet Penetration Rate</td>
<td>5.0%</td>
</tr>
<tr>
<td>Broadband Subscribers</td>
<td>262,277</td>
</tr>
<tr>
<td>Broadband Penetration Rate</td>
<td>0.7%</td>
</tr>
<tr>
<td>Fixed-line Penetration Rate</td>
<td>1.3%</td>
</tr>
<tr>
<td>Number of Participants</td>
<td>54</td>
</tr>
</tbody>
</table>

*Source: Frost & Sullivan*
Mobile Broadband

- Greater proportion of mobile and wireless broadband subscribers
- Low broadband penetration rates in countries without 3G
- Requires a combination of wireless solutions:
  - Tailored on spectrum usage
  - Coverage needs
  - Equipment cost
- ARPU:
  - Broadband in Nigeria $34
  - Voice ARPU in Kenya $6.2
  - South Africa broadband $85.4
Technical Challenges

- Large geographical area:
  - Reachable by expensive low capacity satellite and microwave
  - Low fixed line penetration
  - High capacity backhaul requirements

Mobile Network Backhaul Infrastructure Market: Simplified Mobile Network Architecture (SSA), 2009

Mobile Broadband Market Challenges (Sub Saharan Africa), 2009

- Low disposable income
- Expensive end user devices
- Limited range of services
- Spectrum regulations
- High CAPEX & OPEX

Source: Frost & Sullivan
Inevitable Wave

- Broadband will overhaul approach to business:
  - Digitisation of government procedures
  - Policing
  - E-education
  - Healthcare
  - Borderless communications & collaboration
    - Video conferencing
  - Marketing and advertisement
  - Job creation:
    - Business process outsourcing
    - Managed services
- Social media:
  - A major driver for internet usage
  - Smart phones to dominate device market
- Entertainment revolution:
  - Media rich IPTV and video on demand
- Maturity of VoIP - end of TDM telephony

Broadband Market: Market Share by Vertical Sectors (South Africa), 2008

- Financial 18.0%
- Retail 12.0%
- Healthcare 9.0%
- Tourism 12.0%
- Other 27.0%
- Government 22.0%

Source: Frost & Sullivan

Broadband Market: Revenue Forecasts (South Africa), 2004-2014

- Years
- Revenues ($ Million)
- Revenue Growth Rate (%)

Source: Frost & Sullivan
A Global Company

2,000 Analysts in 45 global locations. Close global teamwork. Local presence, global perspective.
Frost & Sullivan publish over 30 research titles annually as the leading Telecommunications Market Intel partner in Africa

**Sub-Saharan Africa**
- CEO 360 Degree Report on Telecommunications
- Markets for Mobile Payment Services Backhaul Network Infrastructure Markets
- Markets for Converged Networks

**Annual Tracker Studies**
- Mobile Telecommunications
- Broadband

**Nigeria**
- Contact Centre Market
- Call Centre Market
- IT Infrastructure Outsourcing
- Network Management Services Markets

**Mauritius**
- Mobile Telecommunications Market
- BPO Market

**Angola**
- Mobile Market
- Broadband Market

**Kenya**
- Unified Communications
- Channel Partner Analysis
- Carrier Ethernet Market
- IT Infrastructure Outsourcing
- Call Centre Market

**South Africa**
- Government ICT Expenditure
- BPO Markets
- Managed Services Markets
- Hosted Contact Centre Services Markets
- Network Management Services Markets
- Unified Communications Markets

**Mozambique**
- Mobile Market
- Broadband Market

**Analyst expertise in:**
- Mobile Telecommunications
- Unified Communications
- Fixed Communications
- Telecommunications Infrastructure
- Next Generation Networks
- Business Process Outsourcing
- Broadband
- Data Centres
- CDMA
- WiMAX

**Completed ME studies**
- Planned ME studies
- Completed mobile telecommunications studies
- Completed fixed telecommunications studies
- Annual Tracker Studies
Working with the CEO’s executive team to implement best in class strategies to grow their business

Client-specific research and strategy that provides relevant information to reduce risk and ensure better decision making

Growth opportunity generation through technical, econometric, and market analysis available “off-the-shelf”
Vitalis Gavole Ozianyi

Senior Research Analyst

Frost & Sullivan
Africa
Cape Town
South Africa

Functional Expertise
• 7 years of research and development expertise, which include more than 20 international conference presentations in the telecommunications industry. Particular expertise in:
  - Pricing and billing of telecommunications services
  - Network infrastructure and resource sharing
  - Broadband networks
  - IP Multimedia Subsystems

Industry Expertise
• Experience in analysis of the African telecommunications infrastructure landscape, convergence and broadband penetration strategies taking advantage of a sound working relationship with engineers in leading telecommunication companies.
  - Network equipment and solution vendors
  - Fixed line operators
  - Mobile operators

What I bring to the Team
• Thorough understanding and knowledge of telecommunication systems
• Conference speaking and client engagement skills
• A growing network of dynamic engineers and experts in the telecommunications industry

Career Highlights
• Extensive expertise in telecommunications prototype development and the use of open source software for ICT systems development and integration
  - Institute of Telecommunications, Aveiro, Portugal
  - Centre of Excellence in Broadband Networks and Applications Research, University of Cape Town, South Africa

Education
• MSc Electrical Engineering from the University of Cape Town, Cape Town, South Africa
• BTech Electrical and Telecommunications Engineering from Moi University, Eldoret, Kenya