Vital Wave Consulting
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San Jose, Costa Rica
Cabrera, Dominican Republic
Mexico City, Mexico

Asia
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Beijing, China
Phnom Penh, Cambodia

Eastern Europe
Tallinn, Estonia

Africa
Cairo, Egypt
Johannesburg, South Africa
Lagos, Nigeria

United States
Palo Alto, California (Headquarters)

mHealth for Development
Mobile communications for Health
March 6, 2009

Karen Coppock
VP of Consulting Services
Palo Alto, California (Headquarters)
Urgent Need

Improve Health in Developing World

- 1 million die from effects of malaria each year
- 25% of children in developing countries are underweight and undernourished
- 1 woman dies each minute from pregnancy-related causes
- 2.5 Million people newly infected with HIV/AIDS in 2007
- 57 countries have critical shortages in health care workers (Total deficit of 2.4 million health professionals worldwide)
**Mobile Health (mHealth) Defined**

mHealth *(n)* - the delivery of health care services via mobile communication devices

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Photo: UN, UN Foundation, and Praekelt Foundation
mHealth is also a subset of mServices, which includes mBanking, mEducation, mGovernment...
Opportunity - New Health Delivery Platform

Explosion of Mobile Phones in Developing World

Technologies and Health-Related Statistics for Developing Countries (Millions)

- Hospital Beds
- Computers
- Mobile Phones
- Population

Sources: Vital Wave Consulting, Business Monitor International (BMI), International Telecommunications Union and the World Bank’s World Development Indicators.

Photos: DataDyne

Mobile Phones reach further into developing countries than other technology and health infrastructures

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Meeting Health Needs

Broad Array of mHealth Applications

Education & Awareness
SMS/text messaging in support of public health and behavioral change campaigns.

Diagnostic & Treatment Support
Use the mobile phone as point-of-care device.

Disease & Epidemic Outbreak Tracking
Use mobile devices to send and receive data on disease incidence, outbreaks and public health emergencies.

Remote Data Collection
Applications using mobile devices to collect real-time patient data, often where patients live.

Remote Monitoring
Maintain care giver appointments or ensure medication regime adherence via one-way or two-way communications on mobile devices.

Communication & Training For Health Care Workers

Programs by Application Area
Distribution of mHealth Programs

- Education & Awareness
- Remote Data Collection
- Remote monitoring
- Communication & Training for Health Care Workers
- Disease & Epidemic Outbreak Tracking
- Diagnostic & Treatment Support
Impact of mHealth

**Uganda**
Text to Change’s SMS-based HIV/AIDS awareness quiz led to an increase of nearly 40% in the number of people coming in for free HIV/AIDS testing.

**Peru**
Cell-Preven health workers use mobile phones to send SMS messages with real-time data on symptoms experienced by clinical trial participants. Enables immediate response to adverse symptoms.

**South Africa**
Project Masiluleke’s SMS message campaign promoting HIV/AIDS awareness resulted in nearly a tripling of call volume to a local HIV/AIDS helpline.

**Thailand**
Phoned Pill Reminders for TB Treatment. TB patients were given mobile phones and called daily with reminder to take their TB medication—90% did.

“When talking about efficiency versus health impact, it shouldn’t be about either/or. Improving efficiencies can ensure that more people receive life-saving interventions.”
—John Stephenson, Dalberg Global Development Advisors
# Shifting Health Needs in Developing Word

**mHealth Addresses Current and Future Health Needs**

<table>
<thead>
<tr>
<th>Current Health Care Picture</th>
<th>Global &amp; Demographic Changes</th>
<th>Tomorrow’s Healthcare Picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Communicable diseases.</td>
<td>• GDP growth increases spending on healthcare.</td>
<td>• Current healthcare picture issues continued.</td>
</tr>
<tr>
<td>• Lack of immunizations.</td>
<td>• Traditional diseases controlled (TB, smallpox) and new diseases appear (SARS, avian flu).</td>
<td>• Shift from “late stage” treatments to prevention and early detection.</td>
</tr>
<tr>
<td>• Lack of safe water sources.</td>
<td>• Aging populations means increase in death from non-communicable causes.</td>
<td>• Increased focus on health issues of elderly.</td>
</tr>
<tr>
<td></td>
<td>• Declining birth rate and climbing life expectancy.</td>
<td>• Continued health worker shortages and distribution inequities.</td>
</tr>
<tr>
<td></td>
<td>• Adoption of “developed country” behaviors.</td>
<td></td>
</tr>
</tbody>
</table>

**Evolution toward chronic diseases - diabetes, heart disease and strokes**

By 2025, 80% of all new diabetes cases will originate in developing countries

Diabetes, heard disease and strokes will cost approximately:

- $556 billion in lost national income in China
- $300+ billion in Russia and India
- $49 billion in Brazil
Case Study

Project Masiluleke

Disease Awareness

Impact

- 365 Million text messages - one per day - being sent (2008-2009)
- Encourage people to be tested and treated for HIV/AIDS and TB

Health Objective

Build awareness of HIV status, encourage HIV/AIDS testing and treatment and halt the disease’s spread

Country

South Africa

Techniques Used

‘Please Call Me’ service - free text messages

Partners

Praekelt Foundation, iTeach, National Geographic, Nokia Siemens Networks, MTN, Ghetto Ruff, Children of South African Legacies, Aricent, PopTech!, frog design and National AIDS Helpline
Case Study
Text to Change

Disease Awareness

Impact

• 15,000 mobile phone subscribers in rural Uganda sent the quiz in the three month pilot test

• 40% increase in the number of patients who came in for HIV/AIDS testing

• Actionable insight: Many quiz takers did not think AIDS testing was accurate nor anonymous

Health Objective
Improving HIV/AIDS education with anonymity

Country
Uganda

Techniques Used
HIV/AIDS awareness via an SMS-based multiple choice quiz in exchange for free airtime; correct answers provided; participants encouraged to come in for testing (fee waived for participants)

Partners
Celtel, AIDS Information Centre (AIC), Merck, and the Dutch Ministry of Foreign Affairs
Case Study
Data Gathering

Health Objective
Containing the spread of the Dengue virus

Country
Brazil

Techniques Used
Customized questionnaires distributed to field health agents’ mobile phones. Health data and GPS location information are integrated to enable immediate analysis and identification of areas with high infection levels.

Partners
Nokia, Amazonas State Health Ministry
Building Blocks
Sustainable & Scalable mHealth Programs

• Forge strong partnerships
• Be accessible
• Design with the end user in mind and maintain a focus on usability
• Build a long-term funding plan
• Set measurable goals
• Collaborate with other mHealth organizations

Photo: UN Foundation/Nothing But Nets
## Value Chain Models for mHealth

### Players and Incentives

<table>
<thead>
<tr>
<th>Player</th>
<th>Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient or Citizen (Mobile Subscriber)</td>
<td>Improved health outcomes</td>
</tr>
<tr>
<td>Health Care Provider</td>
<td>More efficient and effective delivery of health services</td>
</tr>
<tr>
<td>NGO</td>
<td>Advance organizational mission, attract funding</td>
</tr>
<tr>
<td>Foundations</td>
<td>Advance organizational mission</td>
</tr>
<tr>
<td>Government</td>
<td>More efficient health care provision, effective government</td>
</tr>
<tr>
<td>Equipment Provider</td>
<td>Device revenue generation, improved brand recognition</td>
</tr>
<tr>
<td>Service Provider</td>
<td>Revenue from service fees, increased subscriber base</td>
</tr>
<tr>
<td>Application Solutions Provider</td>
<td>Revenue from additional applications license fees</td>
</tr>
<tr>
<td>Content Management</td>
<td>Increase in volume of readership or revenue</td>
</tr>
<tr>
<td>Platform Provider</td>
<td>Revenue from sales</td>
</tr>
</tbody>
</table>

A solid understanding of the needs and incentives of the multiple players involved in the mHealth value chain is required in order to marshal their energy and resources.
Value Chain Models for mHealth

One-way mHealth Applications

- **Equipment Vendor**: Revenue (short- and long-term), brand and business development, opportunities for network expansion projects.
- **Application/Solution Developer**: Revenue (short- and long-term).
- **Platform Operator**: Revenue (short- and long-term).
- **Mobile Service Provider**: Revenue (short- and long-term), expanded user base.
- **Mobile Subscriber**: Revenue (short- and long-term), expanded user base.
- **Home Monitoring Device**: Operational efficiencies, healthcare.
- **Doctor/Health Provider**: Delivery of services, operational efficiencies, program expansion, achieving mission.

Scale Required for Sustainability

- **High**
- **Medium**
- **Low**

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Call to Action

Operators

• Combine mHealth with delivery of other mServices
• Leverage handset maker relationships
• Be pro-active in developing joint solutions
• Enhance mHealth infrastructure

NGOs

• For best results, think big and join forces
• Partner
• Provide proof of concept by using the simplest available technology

Policy Makers

• Define an mHealth policy and provide incentives

Funders

• Ensure project sustainability
• Provide resources for impact assessment
mHealth Report

Report available at:
http://www.vitalwaveconsulting.com/insights/mHealth.htm

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Thank You
Progress on health-related MDGs less than encouraging

- Children's mortality rate is not improving
- 27 countries made no progress in reducing childhood deaths (1990-2006)
- Maternal health statistics are poor
- Half a million women died during pregnancy, childbirth or in the six weeks after delivery - 99% of these in the developing regions

Source: 2008 Global Monitoring Report

Photo: UN/Marie Frechon
Building Blocks
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• Set measurable goals
• Collaborate with other mHealth organizations

Photo: Mobiles for Malawi
mHealth Improves Outcomes
Benefits in Patient Health & Health Systems Outcomes

Patient Health Outcomes

*Effectiveness Gains*

- Improved disease management
- Improved public awareness of communicable diseases
- Improved medication compliance

Health Systems Outcomes

*Efficiency Gains*

- Services delivered at reduced cost, increased speed and accuracy

Photo: DataDyne

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