Creating Sustainable Businesses in the Knowledge Economy

Mobile Applications Laboratories Business Plan

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MINISTRY FOR FOREIGN
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Foreword

It is my pleasure to present the newly completed toolkit for regional mobile application laboratories (mLabs), which was funded by the Government of Finland. *info*Dev's efforts to drive mobile innovation in emerging markets are aligned with our broader agenda of creating sustainable, inclusive growth by fostering competitiveness and promoting employment.

This activity has been carried out as part of a joint Finland / *info*Dev / Nokia program on *Creating Sustainable Businesses in the Knowledge Economy* (see www.infodev.org/CSB). Initially, the primary users of the toolkit will be the first five mLabs, located in Africa, Asia, and Eastern Europe and Central Asia. However, the great interest in and demand for mLabs and similar initiatives from throughout the developing world imply that this toolkit will be beneficial to all those seeking to support innovation and entrepreneurship, in the ICT sector.

There is no substitute for understanding local markets and designing feasible business models to meet the needs of local clients and stakeholders. Business Plans have to be tailored to local needs and no two mLabs will follow the same template. Nevertheless, this toolkit provides a useful baseline that can accelerate the planning and establishment of successful and sustainable mLabs and is an analytical tool for those in the early stages of mLab planning. For example, the financial workbook provides methods for necessary growth figure analysis using case study examples as a guide to achieve sustainability.

*info*Dev is pleased to make available the mLab Business Plan, both as a resource and as a starting point for future collaboration. I look forward to the wide range of locally grown mobile applications and business synergies that will result from the establishment and continued sustainability of our mLabs.

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Executive Summary

Worldwide, mobile phones are becoming the most widely available communcation platforms. Particularly in the developing world, where conventional telecom infrastructure is often lacking, operators are rapidly building out their wireless networks to reach potential mobile phone customers even in the most rural areas.

This brisk adoption of the mobile phone is being driven by the countless applications now available that allow users to communicate, access real-time data, and perform everyday transactions. But who creates these applications? Surprisingly, it is not always the large mobile operators or global technology companies that create many of these end-user services. Instead, these services are often developed by startups and entreprenuers, who bring a passion for innovation to solve the social issues and address the market needs of their local areas through mobile technology.

But passion is not always enough to get a new business off the ground. To succeed, these entrepreneurs will need tangible resources like funding, training and important business connections with the entire ecosystem of market players in their area. They often find these resources in the business incubation programs set up by local governments, development agencies, or multinational corporations.

The concept of business incubation has existed for quite some time, and considerable literature exists providing practical guidance on how to start, operate and maintain these programs. However, only recently have some programs started to focus specifically on mobile applications and services, so far less material exists to inform these programs. The purpose of this business plan is to help fill that gap.

Business Plan Overview

This Mobile Application Laboratories Business Plan is sponsored by *info*Dev, a World Bank agency, working in cooperation with The Ministry of Foreign Affairs of Finland and Nokia. Specifically, the goal of the plan is to inform *info*Dev-supported mobile application labs in Africa, Asia, and Eastern Europe and Central Asia (ECA) – and other mobile application laboratory initiatives globally – to develop sustainable business models and transition from a donor-funded start-up phase to a self-financing, sustainable phase over a three-year period.

The plan's six chapters cover the following topics:

- **Landscape Analysis** describes mobile applications labs and similar organizations, including success factors and challenges across these labs.

- **Segmentation Analysis** offers a typology of mLabs based on relevant defining characteristics and explores examples from parallel fields (e.g., software development,

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business incubation, technology transfer) to identify the characteristics of labs that function most effectively.

- **Offering & Promotional Strategies** examines the services that best support sustainability for the mLab, and offers strategies for driving branding and awareness.

- **Business Model and Pricing Strategies** defines potential revenue streams for the services that the labs offer, including potential price lists and menus of options that are tailored to regional markets via the companion **Business Model Workbook Tool**.

- **Operating Model** provides recommendations on resource requirements (e.g., equipment, staffing, skills) and the phased rollout of services and functions over time.

- **Customer and Partner Strategies** including the identification of intermediate clients (e.g., mobile applications developers, SMEs), end clients (e.g., app stores, network operators, equipment manufacturers, governments) as well as potential partners, investors and donors.

Key Findings from Business Plan Research and Analysis

Incubators that focus solely on the development of mobile application businesses are a relatively recent phenomenon. This means that there is a tremendous opportunity to develop mLabs, but at the same time, information on the successful operation of these labs is scarce. This suggests that mLab managers must remain flexible and adaptable to lessons learned in real time. There is no one right model for operating these labs. Public or private organizations or a consortium of public and private entities working in partnership can be equally well suited. Most importantly, mLabs will require that stakeholders' incentives be aligned via a localized business model to ensure that laboratories will be successful in accelerating entrepreneurial growth.

A broad spectrum of technology incubators exists throughout the developing and developed world. Socially oriented incubators occupy one end of this spectrum. They rely primarily on grants and contributions to sustain operations and provide products and services that assist non-governmental organizations (NGOs) and local governments to deliver public services. On the other end of this spectrum are private, profit-oriented incubators that seek entrepreneurs to develop applications for commercial sale locally and internationally. mLabs that can combine aspects of both segments will enjoy the widest possible range of earned revenue opportunities. Also, this hybrid model aligns with the aspirations of a majority of entrepreneurs who want to earn a profit while achieving positive social change.

Entrepreneurs who develop mobile applications have a wide variety of needs, and so a tiered membership scheme allows the lab to adopt service offerings for different end-user segments. In general, mLab users identify their greatest needs as startup capital and opportunities to network with mobile ecosystem players and other technology entrepreneurs. In addition, many mobile application

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entrepreneurs will need specialized business training to understand the mobile ecosystem or market demand. And because mobile application development is different than other forms for technology development, many application developers will require technical training as well. Mentorship by local business professionals can greatly enhance the incubation experience, as it provides entrepreneurs with highly personalized interactions that can foster personal and professional growth.

While there are a multitude of services that the mLab can offer, it is important to note that not all services are essential to the success of the lab or the entrepreneurs it is incubating. The service offerings implemented by any given mLab will need to be responsive to the environment and characteristics of the region where it is located. These characteristics will dictate the services that can be offered and the most strategic mix of revenue streams. The companion Business Model Workbook Tool is designed to assist mLab managers to evaluate these trade-offs.

mLabs can be formed as either non-profit organizations, for-profit companies (if they will not receive grant funding) or foundations. The business model and legal codes of a given country will dictate the most advantageous arrangement. Regardless, partners are essential to the ultimate success of the mLab through their support of the organizations' development and distribution efforts. The mLab sits at the center of the value chain for mobile content creation. In its role as an integrator, the mLab is well positioned to broker these essential partnerships with all key mServices ecosystem players.

About the Business Model Workbook Tool

An Excel-based Workbook Tool accompanies this report. It offers a pro-forma, three-year business case offering realistic assumptions and monetary values for costs and revenues. It is designed to enable local mLab managers in any corner of the world to conduct scenario analyses and localize the model to fit their needs.

About the Research Sponsors

The Ministry of Foreign Affairs of Finland, Nokia, and *info*Dev have partnered to deliver a program known as "Creating Sustainable Businesses in the Knowledge Economy" to foster the adoption of ICT technologies and innovative, technology-driven business models in developing countries.

Specifically, the program seeks to employ the use of the mobile communications platform to grow content, services and applications for developing countries. Track 1A of the program includes the establishment of five mobile application laboratories (mLabs) in Africa, Asia, and Europe and Central Asia (ECA). Phase 1 of Track 1A is to develop a business plan that may serve as a technical resource for the mLabs as well as the partner organizations. Vital Wave Consulting was selected by the partners to deliver this Mobile Applications Laboratories Business Plan.

A Note on Methodology

The content of the research is based on both primary and secondary sources. Vital Wave Consulting performed an extensive review of secondary research sources such as academic, NGO and governmental reports as well as articles from business and local news sources. In addition, Vital Wave Consulting conducted 35 in-depth interviews with subject-matter experts, incubation labs, entrepreneurs who have used incubation services and potential lab partners including NGOs, universities and multinational corporations. Interviews were conducted from September 1 – October 31, 2010. Vital Wave Consulting based its analysis on the data gathered through these primary and secondary sources as well as the firm's experience in mobile technology, business incubation and ICT4D issues in developing countries.

Introduction

Mobile applications allow users to access services on-the-go

Mobile applications allow people to perform specific tasks such as accessing real-time information, performing transactions, playing games, or sending and receiving messages. Users can access mobile applications through a variety of portable handheld devices, such as mobile telephones, smart phones or handheld computers. The underlying software that enables the application can either reside on the mobile device (client-side), or on a web server or SMS gateway (server side). In some cases, the software necessary to support an application may reside on both the client side and server side.

mLabs incubate new businesses to deliver mobile services

A 'Mobile Application Laboratory' (mLab) is a physical space where mobile technology entrepreneurs can access the tools, expertise and support network necessary to develop solutions and build new businesses. mLabs carefully vet entrepreneurs and select those with the most potential to receive a host of targeted services like business and technical training, mentoring and access to capital. Young companies are particularly vulnerable during the start-up phase of operations, especially in emerging markets where critical services may be scarce or prohibitively expensive. The incubator model is a proven strategy to accelerate the maturation of technology entrepreneurs and increase the likelihood that their ventures will be profitable.

Market demand for mobile services is growing

Worldwide, the penetration of mobile devices and demand for mobile services is rapidly increasing in scale and scope. Mobile application revenue reached nearly US$3 billion[1] in 2009. An April 2010 presentation published by Frost & Sullivan on slideshare titled "Applications Bring Subscribers; Revenue Brings Developers", estimated that by 2014, the total application market is expected to reach $15 billion in revenue, with over $10 billion going directly to mobile application developers[2].

Those organizations that start mLabs will be able to participate in this rapidly growing market, particularly in developing regions. For example, Africa, Asia and Eastern Europe are now the fastest growing mobile phone markets with subscription rates growing at 278%, 218% and 119% respectively between 2005 and 2010[3]. Research conducted by Morgan Stanley in 2009 found that in Asia alone, 2.6 million mobile applications were downloaded, more than in any other region in the world[4].

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[1] All subsequent monetary amounts will be marked with the $ symbol and refer to US dollars, unless otherwise noted
[2] Todd, "Applications Bring Subscribers; Revenue Brings Developers"
[3] International Telecommunications Union, "The World in 2010: ICT Facts and Figures"
[4] Morgan Stanley, "The Mobile Internet Report Setup"

mLabs involve a consortium of stakeholders

Public or private organizations, or a consortium of public and private entities working in partnership, operate mobile application laboratories. All labs require that stakeholders' incentives are aligned via a localized business model to ensure the lab's success and to accelerate entrepreneurial growth. mLab stakeholders are listed in Figure 1 below.

Figure 1. Table of mLabs Stakeholders

Public	Non-Profit	Private
• National Ministries • Local Government Agencies • Public Universities • Regional Development Associations	• Non-Profit Development Organizations • Philanthropic Foundations • Multi-lateral Organizations • Business Mentors • Platform and Application Developers • Non-Profit Universities • Other Non-governmental Organizations	• Multinational Corporations • Network Operators • Device Manufacturers • SMS Gateway Operators • Investors (i.e. VCs) • Business Mentors • Private Universities • Platform and Application Developers • Other Non-governmental Organizations

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Part 1: Landscape Analysis

While the practice of business incubation has existed for several decades and has been instrumental in the successful launch of new technology companies, the emergence of mobile application incubators is more recent. Currently, very few technology incubation labs are focused solely on mobile applications, and the space is still evolving. Existing mLabs typically offer three services that distinguish them from other technology incubators:

- Technical training on the latest mobile platforms;

- Business training to address the revenue and deployment models unique to mobile service enterprises; and

- A partner ecosystem that includes stakeholders unique to the mobile application value chain, such as mobile operators, device manufacturers and SMS gateway operators.

Landscape Analysis of Technology Incubation Laboratories

Incubators that focus solely on the development of mobile application businesses are a relatively recent phenomenon. Therefore, technology business incubators that include mobile services (mServices) are also included in this analysis. Note also that many of the organizations hosting incubation programs engage in other business activities, for example offering co-working spaces or operating software consultancies. The following analysis is derived from a sample of 30 technology incubation programs that focus on:

- Addressing local social issues through the use of technology and mobile services;

- Local economic development through the creation of sustainable small and medium-sized technology enterprises including mServices; or

- Other business activities in addition to providing access to training, events and investors to help support local technology business entrepreneurs.

Organizations with the following characteristics were excluded from the landscape analysis:

- An exclusive focus on training and technology skill development without any incubation services;

- A sole focus on research and development with no business development services;

- A singular focus on one-off or temporary "camps" or competitions; or

- Programs offered solely online with no physical locations.

Figure 2 maps the incubation laboratories covered in this study. These labs are organized into two main groups: 1) technology incubators that include mServices and 2) incubators that focus solely on

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mServices. This list is not meant to be exhaustive. Instead the labs were chosen to provide regional representations as well as examples of best practices.

Figure 2. Distribution of Technology Incubation Programs

Technology Incubators that Include mServices

Appfrica Labs (Uganda)
Bandwidth Barn (South Africa)
Bantalabs (Senegal)
Belarus Hi-Tech Park (Belarus)
Bios Business Incubator Osijek (Croatia)
CIIE (India)
Emerging Technology Centers (USA)
Hive Collab (Uganda)
Hong Kong Science Park (Hong Kong)
Horizon (Scotland)
iAxil (Singapore)
iHub Nairobi (Kenya)
Innovation Hub (South Africa)
InSTEDD iLab (Cambodia)

Limbe Labs (Cameroon)
MEST (Ghana)
Octantis (Chile)
PICTI (Palestine)
RTBI (India)
SHBI (Vietnam)
SoftStartBti (South Africa)
Techhub (UK)
Technology Incubation Centre (Pakistan)
Ungana-Afrika (South Africa)
White Bear Yard (UK)
Yes Incubator (Macedonia)

mServices Incubators

EPROM (Kenya, Uganda, Ghana, Ethiopia, Rwanda)
Grameen AppLabs (Uganda, Indonesia,Ghana)
Mobile Experience Innovation Centre (Canada)
Mobile-Empowered Entrepreneurs in Africa (Ghana)
Wavefront (Canada)

The growth of mServices-focused incubation programs mirrors the global trends in increasing mobile penetration. This may explain the proliferation of application development and of incubation programs in Sub-Saharan Africa, which is experiencing a rapid increase in mobile penetration rates. For example, mobile phone use in Africa, led by Kenya, has increased at an annual rate of 65% each of the past five years[5]. This is nearly twice the global average.

[5] Jack, Suri, and Townsend. "Mobile Banking: Lessons from Kenyan Experience" 83-122

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Incubation Laboratory Characteristics

Incubators operate differently depending on the economic and social conditions of the countries and regions in which they are located. The variances in local conditions create different markets for technical solutions. For example, regions with high aid flows may experience high demand for applications that address social issues or deliver public services, while more developed regions may have a higher demand for commercial applications. These conditions will also dictate the types of services offered to entrepreneurs by the incubator and its stakeholders. The segmentation analysis presented in Part 2 explores similarities and defining characteristics of two primary sub-groups of incubators. The following sections offer a more general overview of characteristics that are common across incubation laboratories.

Local demand drives lab location

Secondary research indicates technology incubators are often found in proximity to complementary physical entities, such as other technology startups, universities or technology/commercial districts. These technology clusters offer synergies in education, employment and government support that facilitate growth within the sector. In addition, labs tend to locate where there is a local customer base for their technology. Either the public or private sector, or both, drive local demand for technology services and mobile applications. Sector demand is determined by the demographics of the region or country where the lab is located. One lab manager in Africa stated, "Location is key – we are located an hour from [the commercial capital of the country], 3 million people, lots of multinationals, so there is a demand for services. This might not work in more remote areas."

Funding and earned revenue are mission driven

In response to the demographics of the region or country, the mission of the incubator will dictate funding and earned revenue sources. Models exist across a wide spectrum. At one end are incubators focused on addressing social issues whose operations may be entirely dependent on grant funding. At the other end of the spectrum, commercially focused labs may rely solely on earned revenue from the private sector. Most organizations included in this analysis fall somewhere between these ends and support their activities through a mix of funding sources and revenue models. For example, although some incubators may operate as non-profit organizations, it is common that they complement grant funding with revenues earned through lab operations or contract work for the public or non-profit sectors. Seed capital, operational support and earned revenue may originate from any of the lab's stakeholders (e.g., government agencies, universities, multinational corporations, local device manufacturers, operators, donors or NGOs). Common sources of earned revenue include:

- Membership fees for use of lab facilities such as desk space, Internet access, administrative and office support;

- Tuition fees for training programs;

- Lab fees for testing and certifying mobile applications on various platforms;

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- Admission fees for special events;

- Returns on seed investments made by the lab in incubated companies, which occur when the company is acquired or goes public (IPO);

- Profit sharing with investors who work with incubated companies;

- Revenue sharing with incubated businesses for a defined period; and

- Software consulting fees charged to outside industry firms for services and software development carried out by lab participants.

Labs tenants are often young and may not always be technologists

The business environment of the region or country where the lab is located as well as the business model of the lab itself will dictate the characteristics of the lab tenants. For example, labs located in more developed high-technology areas or able to provide employment opportunities through consulting will attract more mature tenants. However, many labs surveyed indicated that they serve a mostly young, male population (18 to 22-years of age) and that often tenants may be unemployed. This implies that in many cases tenants do not have disposable income to purchase services from the labs. In addition, while many labs seek to attract and cultivate top-notch developers and technologists, some have found success attracting entrepreneurs who may not be application developers. Entrepreneurs from business, agricultural or health communities may bring ideas for solutions to address market opportunities. Labs then match entrepreneurs with developers and incubate a team of tenants to launch the new program or service.

Performance measures are also mission driven

Each lab uses different indicators for measuring success depending on the unique mission and goals of the organization. Metrics are often output-based (e.g., the number of applications developed, or the number of entrepreneurs graduated each year). However, some labs also attempt to measure their impact over time in order to better quantify the outcome of their work. Outcome-based success metrics tie much more directly to the goals of the organization. For example, organizations such as EPROM and InSTEDD that seek to develop a capable regional technology sector are often more focused on technical training. As such, they may monitor the number of graduates that go on to take technology jobs or create their own technology firms. At the other end of the spectrum, organizations such as Octantis seek more traditional financial returns and evaluation will focus on deal flow, profitability of incubated companies and overall return on investment. Examples of typical performance indicators are as follows:

Output-based metrics for success include:

- Number of applications developed in the lab;

- Number of attendees at events held by the lab;

- Incubator occupancy rates and turnover;

- Number of businesses launched by graduates of the lab;

- Number and type of leads and opportunities in the sales pipeline;

- Measures of operational efficiency; and

- Number and type of incubator personnel (e.g., number of management staff, ratio of staff to tenants, percentage of manager's time advising clients).

Outcome-based metrics for success:

- The ROI (return on investment) through acquisitions of the successful startups or IPOs;

- Tenant performance (e.g., number of firms incubated and their survival rate over a three-year period);

- Creation of success stories and role models by the lab;

- Breadth of ecosystem created (e.g., number and quality of stakeholders engaged);

- The scalability or quality of applications produced;

- The social return to the community (e.g., cost benefit analysis);

- Job and wealth creation (e.g., number of jobs generated over a three-year period, jobs created, average jobs created per tenant company, cost per job); and

- Value added from incubator operations (e.g., wealth taxes and other social contributions attributable to the incubator).

Labs define clear entry criteria for entrepreneurs

Applicants to the incubation program are typically evaluated and selected based on carefully defined admittance criteria. This process ensures that the significant investment labs make in entrepreneurs is warranted. Admittance criteria are typically developed and adapted in alignment with the success metrics, goals and objectives, or even the market research findings specific to the organization and respective of the local business environment. Entry criteria can include the evaluation of the following characteristics:

- Quality of the entrepreneurial team (e.g., ability to "think big," passion, sophistication, management experience, and business acumen);

- Validity of the business case (e.g., uniqueness of idea, scalability, international and local market size, interoperability, product versus service orientation, existence of a clear exit strategy, and competitive advantage);

- Existence and quality of partner relationships; and

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- Maturity of the business venture (e.g., pre-production, prototype completed).

For example, a lab that has the mission to produce a single "big success story" will evaluate applicants differently than a lab that has the mission to support the broad-based development of a local technology community. Labs that focus more on business training rather than technical training will also prioritize business competence and experience in the selection process. One of the labs included in the research stated, "We look closely at the team – their business plan and investor pitch – to see what market they are going after. We look at their prototype to see if they can actually execute this idea from a technical standpoint. We also look for business ideas that will go beyond our borders. We require international focus, whether it is in other parts of the developing world or in developed markets like [the] US, Europe. And it has to be web or mobile."

Some labs organize around a specific market demand or social issue, such as mobile banking or mobile health, and will only enroll entrepreneurs developing applications in that space.

Cultural values include creativity, inclusivity and responsibility
The organizational culture of labs varies greatly according to the regional demographics, cultural norms of the country and the dynamics engendered by the business model itself. However, many incubators included in the analysis reported that they strive to encourage environments that value creativity, inclusivity, responsibility and the protection of intellectual property.

Networking opportunities are structured as well as informal
Labs place an emphasis on face-to-face events for networking. These events are hosted by the labs themselves and often conducted in partnership with networking initiatives, such as Mobile Monday, which has over 100 chapters worldwide where people involved in the mobile industry can meet in person at monthly events. These regular social gatherings build communities of interest, draw new members and bring together all of the players in the local technology ecosystem.

Many labs also support online forums that allow participants to stay connected to social networking resources, such as the "Online Community of Practice" created by *info*Dev, to supplement these face-to-face events. "Co-working" has also become a popular concept in startup incubation environments to encourage informal networking. A shared working environment that brings together like-minded technology entrepreneurs can address the isolation faced by some startups and provide a casual networking environment where entrepreneurs are able to learn from and support one another.

Physical resources include affordable bandwidth and desk space
At a minimum, labs offer desk space, offices, shared meeting rooms, lounges or coffee bars and access to affordable high-speed Internet and other communication technologies. Some labs also offer current test equipment, which is frequently provided by the lab's corporate or academic partners. Labs may also provide online resources such as access to development and testing tools and online networking and collaboration opportunities.

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One successful graduate of an incubation program described the benefits of an open lab environment: "They've developed an amazing enabling infrastructure and environment – with very fast Internet connections – and they also host lots of functions, events which I found very helpful. I also very much liked the open floor plan and co-working environment. There are no cubes, just desks around the walls and a nice coffee shop in the middle. They have a nice carpeted place where you can hang out like a lounging place in your home. There is nothing 'school room' about it. It's a mixture of like being in someone's home and a lab. You can sit with people or not. This encourages creativity and collaboration. They are open all hours so you can work late. Every day they have the latest of three daily newspapers."

Events and social media are the most common promotion strategies

Promotional strategies employed by labs range from posting flyers and advertisements in universities and training centers to advertising in local business magazines and reaching out to business communities through chambers of commerce. Social media channels such as Facebook and Twitter were reported as highly successful vehicles for triggering word of mouth promotions for labs and their services. Many labs reported that hosting events has also been a particularly effective means to raise awareness of their services.

Summary and Matrix of Services

The services matrix below (Figure 3) defines the services offered by the majority of the labs. However, it is important to note that not all labs offer all services because the service may not be applicable to a local environment or may be more challenging to provide and is therefore still under development.

Some services can be provided by lab partners and may not be developed by the labs themselves. For example, a partner university can offer business or technical training with the lab acting as coordinator of those resources. Access to investment is another example of a service often provided by lab partners.

The challenges to providing services and the identification of those that are most critical for success are explored in greater detail in Part 2.

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Figure 3. Matrix of Services

Service	Description
Physical Workspace	A comfortable place to work with affordable, fast Internet access. Usually features shared or private office space and meeting rooms. May also include computers and phone lines and a central social space, like a coffee bar.
Business Training	Business skills including presentation development and delivery, critical thinking and teamwork, project management, equity versus debt financing, marketing, sales and partnership strategies, legal and accounting and English language courses.
Technical Training	Technical skills in mobile application development across relevant platforms like Symbian, Android, Java, Meego, iPhone, Windows Mobile 7 and Bada. Training may be conducted in a classroom or applied environment.
Testing & Certification	Quality assurance testing of applications on predetermined platforms using simulators, and a review of code and end user documentation. Labs provide environments to test applications and offer a service to ensure that the applications are certified and authenticated according to international standards.
Business Mentoring	Mentors work one-to-one with the entrepreneurs to develop their business plans, connect them to investors and support the overall growth and professional development of the entrepreneur.
Market Intelligence	Market analysis, consumer research, usability studies, and general social science research required to inform demand driven application development. This includes maintaining an ICT4D repository of knowledge.
Competitions	Managing and launching application development and business plan competitions to foster interest in mobile application development. Top applications receive funding and access to experts and thought leaders.
Funding	Labs may maintain their own seed capital fund for investment in incubated companies or they may work through investment partners, like VCs, to match high potential startups with funding.
Professional Services	Shared professional services including financial management, accounting, legal services, human resources, marketing, contract development and IP protection.
Technical Outsourcing	Labs can employ lab tenants and entrepreneurs on projects to develop new mServices or to localize applications to replicate implementation of successful mServices for clients including local and international businesses, NGOs, government agencies that are seeking to outsource technical functions.
Code Repository	Code repository within the lab and distributed freely under an open source license agreement.
Due Diligence and Capital Readiness	Conducting technical and financial analysis to ensure the soundness of potential investments. Support to entrepreneurs to identify the right source and scope of funding needed and to develop a clear message that will appeal to the right investors.
Job Placement	Job board accessible to all members online. Employers pay to post for the benefit of recruiting from a vetted community of members. Members can access and view posts for free.
Content and Distribution	Brokering relationships to provide access to content required for successful operation of applications (e.g., health services data, agricultural prices, weather reports) and linkages to support entrepreneurs to distribute applications (e.g., mobile operators, application stores, government ministries).
Networking Events	Hosting of in-person or online networking opportunities, such as Mobile Monday (MoMo) meetings, guest lectures, or discussion forums.

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Part 2: Segmentation Analysis

Given the diversity of labs found around the world, this segmentation analysis serves to identify meaningful sub-groups that capture the labs' varying missions, market drivers, financing models and inhibitors of success. The segmentation framework that results from this analysis provides a foundation for the value chain analysis described in Part 3, which in turn informs the recommendations for core business activities, service offerings, branding and awareness activities, business model, and pricing strategies outlined in Parts 4-6.

Labs can be organized into two segmentation categories

A broad spectrum of incubators exists throughout the developing and developed world. Socially oriented incubators occupy one end of this spectrum. They rely primarily on grants and contributions to sustain operations and provide products and services that assist NGOs and local governments to deliver public services. On the other end of this spectrum are private, profit-oriented incubators. They seek entrepreneurs to develop applications for commercial sale locally and internationally.

Therefore, for the purposes of this discussion, labs have been organized into two main segmentation categories: Development for Development and Innovation for Commercialization (Figure 4). The table below describes the main features of these different types of labs including their lead organizations, environmental characteristics, market drivers, organization and mission, and distinguishing features. This categorization presents lab models which are useful for this analysis, but the reader is encouraged to keep in mind that most labs will fall somewhere between these models and possess features of both.

Figure 4. Lab Segmentation

Lab Groups	Development for Development	Innovation for Commercialization
Primary Organization Driver	• NGOs are primary drivers • May also be hosted by government, foundation/NGO, university, corporate/private	• Corporate/private are primary drivers • May also be hosted by government, foundation/NGO, university, corporate/private entities
Financing	• May receive grant funding and donations • Contract with NGOs and public sector • May earn revenue from lab services	• Seed capital from private or public sector • Contract with MNCs and public sector • May earn revenue from lab services
Environmental Characteristics	• Located in countries that tend to invest less in technology and innovation • Home countries tend to receive more support from the international development community, on average • Often located in poorer cities, regions, or countries	• Located in countries that tend to invest more in technology and innovation • Home countries tend to receive less support from the international development community, on average • Often located in wealthier cities, regions, countries
Market Forces	• Nascent or less developed venture capital ecosystem • Social or economic concerns that may inhibit business growth • Lacking infrastructure and educational resources	• More robust venture capital ecosystem, with attention of foreign backers • Demonstrated government support for tech and entrepreneurial growth • Flagship universities and educational institutions
Organizational Mission	• Benefit underserved communities • Create content relevant to developing countries • Offer training and mentoring for job creation	• Benefit the mobile ecosystem • Create the "next big app" in the global market • Incubate start-ups for commercial viability
Distinctions Between Lab Groups	• Focused on social development • Target market tends to be local • Often located in less developed economies • Challenged by lack of educational resources, at the regional level	• Focused on commercial development • Target market is international (and local) • Often located in more developed economies • Empowered by availability of educational resources, at the regional level

The Development for Development (DforD) Segment is comprised of organizations located in countries that receive a large amount of support from the international development community. Consequently, the mission of these organizations is to benefit underserved communities through social interventions. Often these countries invest less in technology and innovation, while services offered by the lab may focus more heavily on capacity building through technical skill enhancement and business mentoring. Labs may be challenged by a lack of infrastructure and educational resources and a nascent or less-developed investment ecosystem. Therefore, DforD labs may receive grant funding and donations as well as contract with non-governmental organizations and the public sector. Although a consortium of cross-sector partners may run these labs, non-profit organizations are often the primary organizational drivers.

At the other end of the spectrum, organizations included in the Innovation for Commercialization (INforC) segment include profit-oriented incubators run by private consultancies or investment groups that aim to build sustainable small businesses and maximize financial return on investment. In addition to business skill training, INforC lab services are more focused on access to investment capital and markets. These organizations tend to be located in countries that offer stable business environments (i.e., political stability and property rights protection) and invest relatively more in technology and innovation. Government support for technology development and educational institutions may allow for labs to be more heavily focused on business skills training and on

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incubating products and services for international sale and distribution. INforC labs may be challenged by competition from other entities to hire talented local developers. Therefore, these labs often use capital and connections with investors and corporate sponsors to offer contract work to promising developers and seed funding to select entrepreneurs[6]. Within this segment, the primary organizational drivers are corporate or private organizations.

As mentioned previously, while pure examples exist at each end of this spectrum, most incubators fall somewhere in between, forming a public-private partnership and relying on a hybrid success metric and a mix of revenue streams (i.e., grants and revenue from ongoing operations).

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[6] ActivSpaces, profiled on the next page, provides an example.

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Segment Profiles

The organizations profiled in Figure 5 offer representative examples of each of the segments. In addition, these organizations were selected based on their reputation and operating status. Although many mLabs are still in the concept or startup phase, the two organizations selected have proven their ability to sustain operations over a multi-year period.

Figure 5. Segment Profiles

Development for Development (DforD)	Innovation for Commercialization (INforC)
Grameen AppLab – Uganda	**ActivSpaces – Cameroon**
The Grameen Application Laboratory (AppLab) is an initiative of the Grameen Foundation (a global non-profit) that uses mobile technology to improve the lives of the poor. The AppLab currently operates in Uganda, Ghana and Indonesia. Supported primarily by grants from the Grameen Foundation, the AppLab also partners with local governments, NGOs, large multinationals and local mobile operators to create impactful and scalable mobile services to address social issues in the areas of health, information and agriculture. The AppLab "incubates" these services and then spins them off to be supported by local partners. For example, the AppLab, using a Google platform and content provided by NGOs, developed a Google SMS application that was recently launched in Uganda. This application is now offered through the country's leading mobile provider (MTN). It provides mobile services that allow farmers to receive timely information (such as weather forecasts) and a platform for buyers and sellers to trade agricultural products. In Uganda, the AppLab also provides employment opportunities for 34 individuals in areas like field management, operations, research and development and application development. Contact details: http://www.grameenfoundation.applab.org/section/index	Started in 2008, ActivSpaces (formerly Limbe Labs) in southwest Cameroon operates as both a software consultancy and incubation lab for promising startups. The "Solutions" side of ActivSpaces provides for-profit consulting and development services for local and international clients. Revenues from these services cover many of the physical resources provided to the "Ventures" side of the business, which focuses on incubating early-stage web and mobile startups by providing seed funding and business mentoring. Many of the entrepreneurs in the Ventures program also work on development projects for the Solutions side of the lab. This allows them to earn income and seed capital while developing their business ideas and also teaches them valuable project management skills. ActivSpaces carefully screens applicants for the Ventures program, analyzing their business model, the market need and competitive landscape. To promote success, ActivSpaces works individually with each venture to provide mentors and business contacts suited to each venture's needs. ActivSpaces will invest in the early stages of many of their incubated companies, earning returns if the venture is acquired or goes public. They have also built a network of local and outside investors. Contact details: http://activspaces.com

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Challenges to Success

The secondary research and expert interviews conducted across all types of labs revealed five common challenges that impede successful lab operations.

Challenge 1: Investor network is poorly formed

Depending on the region and country, investors may not be connected in a recognizable community that is accessible to labs and entrepreneurs. While local investors do exist, they may not be familiar with the equity and debt-financing models promoted by the labs, or may require unreasonably high equity shares. The absence of highly visible success stories may also compound the difficulty of attracting investors.

Some labs have started to engage experienced technology investors from more developed countries. These investors have discovered that relatively small investments in emerging market startups have the potential for big impact and large returns. One subject matter expert noted, "I can think of a half-dozen projects which are really good ideas and the guys can really execute, but they can't get off the ground because they don't have the funding. Connection to western capital is the biggest gap. $100,000 goes a long way in emerging markets and is very little money for western VCs. Local capital rarely has this type of money. It's good to have local advisors, but local capital is insufficient. I'd much prefer local advisors to local capital."

Other strategies to stimulate funding, relevant to a particular situation, are also being employed. For instance, some laboratories are focusing on cultivating big wins in order to prove the case that investing in entrepreneurs in emerging markets can be profitable. Others have invested in building programs that connect local entrepreneurs with a mentor in the developed world to facilitate professional linkages, which may transition to monetary investment. Some laboratories are building their own venture fund and prioritizing the cultivation of angel investors abroad. The opportunity to engage in contract work for private companies or NGOs, through an incubator-led project, has also allowed some entrepreneurs to earn seed capital while gaining valuable on-the-job training and building relationships. Still other types of funding can be provided through incubation scholarships and competitions.

Challenge 2: Lack of critical thinking skills and inexperienced talent pool

People eager to start small businesses in the developing world are not hard to find. However, it can be less common to find individuals who are able or willing to navigate the complexities of building a more substantial business venture. The education system may be a contributing factor if it does not emphasize critical thinking, an important skill for harnessing innovative potential to scale and grow a business.

Many fledgling entrepreneurs in emerging markets are also quite young (18 to 22-years of age). Although they may have ample creative skills, they may also lack the maturity, self-discipline and life

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skills to actually launch and maintain a business. Therefore, there is an opportunity to offer seminars or courses that teach critical thinking skills as part of core business training programs, and to match mentors with young entrepreneurs. One venture capitalist focused on East African markets noted, "I think what you find is the people who are very technology savvy and have the good ideas are often also quite young. So, the companies are likely to be started by very young people and you have real maturity and focus issues."

Challenge 3: Misaligned incentives

People with technical skills in some transition economies may lack the incentive to risk starting their own business because good, stable government jobs are readily available. In other regions of the world, much of the population may be content with the status quo and may not desire greater personal success. In markets with stronger economies and better educational resources, well-trained developers may be readily hired by large companies. These developers might be unwilling to accept the loss of steady wages to start their own venture. They may lack the benefit of financial safety nets (e.g., family wealth, parents, social welfare), or it may be extremely difficult to find a replacement job if the venture fails.

Therefore, in risk-adverse environments entrepreneurs may prefer to start a new venture on the side, while holding onto their day jobs. In societies where many individuals are content with the status quo, innovation laboratories may screen for individuals with big aspirations (i.e., if the goal of the lab is to create a big success story). And, in markets where developers have high opportunity costs, laboratories must find ways to provide opportunities for earned income through compelling consulting opportunities while tenants start their own businesses.

Challenge 4: Partnerships are challenging and unpredictable

While almost every initiative or program in emerging markets will require the involvement of multiple stakeholders to succeed, partnership management can be very challenging. Some labs are even run as a consortium, further complicating stakeholder interaction. Additionally, every partnership requires legal documents, negotiations and coordination.

Successful partnerships articulate the value each player contributes to and receives from the venture (i.e., what each party "gives" and "gets" from the partnership). The contributions of all parties are clearly defined and well documented from the beginning.

However, projects that are embedded too far within a particular organization or company seem to start to reflect the interests of the owners, rather than the collective interest of all partners. In an effort to address this challenge, some labs have positioned themselves as a collaborative, neutral ground where all partners become members of a broader "technology community."

Challenge 5: IP protection is poorly defined

Intellectual Property (IP) protection is a common concern in many emerging markets. Mobile application laboratories must be able to ensure a safe and motivating environment for their

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developers in order to succeed. However, this can be challenging in transitioning economies or environments where property rights are not strictly enforced. In some instances the inability to come to agreement regarding which individual or entity will hold IP rights has led to the failure of incubation laboratories.

Open source environments can also add further complications by reducing the financial incentives of developing a new application. To address this challenge, some labs have adopted the practice of writing contracts to ensure a clear assignment of IP rights. In regions marked by inefficient government institutions, subject matter experts suggest that the formation of an independent organization may be preferable to housing a lab within a university or government ministry. Independent labs have found that they are able to define their own rules allowing them to circumvent counter-productive legacy practices that would otherwise stifle innovation.

The other side of the IP challenge is that overly strict protection can limit the entrepreneur's ability to adapt foreign innovations to the local context, which can be a valuable business model in some instances. Furthermore, stringent IP approaches limit experimentation, a key part of the education process. The lab will need to find the balance between these competing needs to best serve its mission.

Critical Success Factors

Labs from both segments identified the following elements as being particularly important to ensure successful operations. Below are the top five Critical Success Factors identified from the in-depth interviews.

Factor 1: Local market need and market data

For those labs focused primarily on incubating commercial applications, the most successful examples are located where there is both local demand for new applications from either the public or private sector, and a supply of local programming talent. Although some labs and entrepreneurs also rely heavily on international contracts and the sale of products and services to global markets, a strong local market remains an important factor for ensuring financial stability. To move beyond innovation and ensure that the applications developed will actually be used, developers will need local market data.

For labs focused on building applications to address local social issues, success comes from precisely identifying the problem being addressed by the mobile application. Applications that address the most pressing needs and are likewise designed for maximum usability by the local population are most likely to reach large-scale acceptance and to attract ongoing funding. Understanding the nuances of the user experience is critical. Mobile applications are a much more personal experience for the user, and market segments will vary greatly in their interaction with products and services.

Factor 2: Professional team of managers

Many labs included in the analysis are run by professional managers who are accountable for lab performance. Lab Managers are typically skilled in program management and the logistics of managing multiple projects at once. One subject matter expert noted, "Running [an] incubator is a long-term commitment, and if you want to make it as your job, attracting, fostering, nurturing, taking to market and following up in early stage with startups, then it's a huge commitment. And you have to have a team of professionals – legal financial, marketing etc. – to guide this whole process."

Although technical training and testing are commonly valued service offerings, many labs indicated it is not important for their managers to be leading technologists or programmers. Instead, successful management teams seem to combine local market expertise and a network of business contacts. The labs' governing committees or partners are often comprised of engaged stakeholders as identified in Figure 1, above (e.g., local businesses, network operators, universities, NGOs and device manufacturers). A more thorough analysis of partners is included in the value chain discussion in Part 3.

Factor 3: Development of partner ecosystem

Partnerships are a requirement for success in emerging markets, especially for labs that touch so many different ecosystem players. Successful labs identified the importance of cultivating partnerships with all relevant stakeholders, which could include local universities, government agencies, the local business community, investors, multinational corporations, mobile device manufacturers and operators. Establishing a relationship with the regional network operator is particularly important. Network operators are key actors in the commercialization and scale of applications. Maintaining a relationship with operators, allows the labs to better identify local market needs and go-to-market strategies for applications once they are developed.

Factor 4: Strong mentorship program

Mentorship programs provide developers and entrepreneurs with a role model capable of offering one-to-one business training and advice on establishing working relationships with important partners. These mentors also sometimes help entrepreneurs gain access to funding and ensure that they are exposed to markets where they can find customers for their applications. In some instances, mentors themselves have taken an equity stake in the ventures of the entrepreneurs they are supporting. Mentors have also hosted entrepreneurs for on-the-job training in order to ensure that they are familiar with the most current software development tools and business practices. A majority of labs cited that connection to mentors is one of the most important services they provide to developers and entrepreneurs. However, it is important to note that good mentors are not a substitute for well-qualified, experienced and professional staff members that are capable of delivering services at the lab's physical location.

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Factor 5: Diversified funding model

Most of the labs surveyed began operations based on a foundation, NGO or government grant. But the programs that become sustainable develop ongoing revenue sources related to their operations. A subject matter expert commented, "It's healthy to have multiple funding streams, even if one of those is grants. There's nothing wrong where grant funding is a portion of funding. But over time, to sustain things, you want to develop multiple revenue streams."

Research participants most often mentioned returns on invested seed capital, revenue sharing with incubated companies and consulting fees as reliable, ongoing sources of revenue. Other revenue opportunities include membership fees, tuition fees, and admission fees for special events.

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Part 3: Offerings and Promotional Strategies

The "Offerings" section of Part 3 examines the "product" offered by mLabs. This includes identification of the needs of application developers and entrepreneurs, definition of membership categories (as well as services offered for each category), and a discussion of which services can produce ongoing revenues for mLab activities. Next, the "Promotional Strategies" section explores the important role that messaging and branding play in the overall solution. Further, the promotional strategies section describes the characteristics that generally define mLab entrepreneurs, and recommends branding strategies to capture the attention and interest of this demographic.

Offerings

### mLab entrepreneurs have a wide variety of needs

Application developer entrepreneurs report that their greatest needs are startup capital and opportunities to network with mobile ecosystem players and other technology entrepreneurs. Many also do not understand the mobile ecosystem or market demand and require business training. University training programs in many countries are often insufficient and, since mobile application development is different than other forms for technology development, many application developer entrepreneurs require technical training, as well. Mentorship provides entrepreneurs will highly personalized interactions that support personal and professional growth. However, mentors can be hard to reach and are often in high-demand. Therefore, application developer entrepreneurs need assistance with mentorship matchmaking.

Other types of matchmaking services are also needed by mLab entrepreneurs. For example, coders may need to be matched with business people (and vice versa) in order to bring ideas to market. In some markets retaining IP rights can be a challenge, depending on the level of property rights protection in the macro-business environment. Therefore, entrepreneurs need neutral spaces that foster innovation and value IP protection. Further, professional services such as legal and accounting services, while essential for the success of startups, are often prohibitively expensive. Office space and technical equipment, especially the variety of equipment required for testing and certification, are also often prohibitively expensive. However, in a lab environment entrepreneurs can frequently meet these needs by sharing available resources.

Tiered memberships accommodate differing needs

Many labs offer a variety of memberships in order to enable specific levels of engagement with entrepreneurs. Depending on the selection criteria and mission of the lab, members may only be required to have a good idea for an application or venture, or they may need a market ready product to be eligible for membership. Regardless, members at all levels are selected through a competitive application and due diligence process. This accomplishes a dual goal of supporting the formation of a thriving community around the lab while also providing a feeder stream for the selection of highly promising incubation program participants. Member categories can be segmented as illustrated in Figure 6.

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Figure 6. Membership Categories
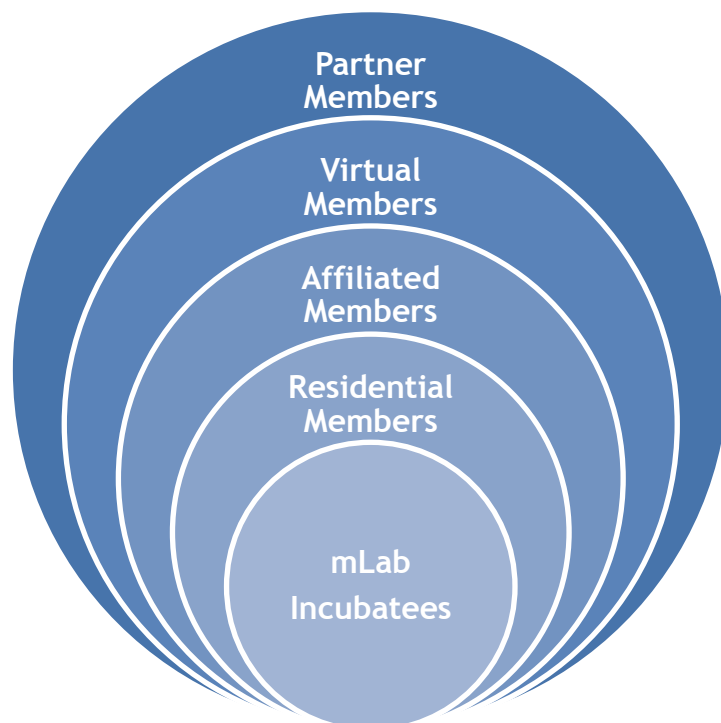
mLab Incubatees comprise the most elite level of membership. To be eligible for inclusion in this category, members must be pursuing a new business venture. Once offered status as an "Incubatee" they will be included as participants in the lab's incubation program. Some labs will charge these members a monthly membership fee, while others will offer free membership in exchange for an equity stake in the company. Other labs may also solicit scholarship funding from investors (like venture capitalists), corporate partners, government ministries or foundations to cover the costs of service provision for their members. Incubatees can be selected from Residential and Affiliated members, following a due-diligence process.

Inclusion in the lab's incubation program includes business and technical training at a free or reduced rate, access to funding, mentorship, office space, professional services and testing and certification services. Incubatees are also eligible to be hired to work on technical outsourcing projects, testing and certification and business intelligence engagements that outside clients have hired the lab to perform. This provides valuable, practical training, as well as a salary for the mLab entrepreneurs. Incubatees that participate in these activities may also be eligible for inclusion in initiatives such as the "earn your own seed capital" program pioneered by ActivSpaces. In such programs, a portion of the developer's salary is held in reserve and granted at the end of the contract as a lump sum payment earmarked for use as seed capital.

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Residential Members make up the second level of membership. Members included in this category may not yet be eligible for the incubation program, or they may not be interested in participating in the full extent of the formalized program. Instead, they are motivated by access to office space, value chain partners and networking opportunities. Being in-residence also allows access to certain other services, as determined by the lab management. These members are also eligible to be hired for staff consulting projects and participate in "earn your own seed capital" type programs. Residential Members can be selected from the pool of Virtual Members, if the lab chooses to implement a successive selection scheme.

Affiliated Members comprise the third membership tier. This category includes Members who do not need access to office space (i.e., they are working remotely). Similar to "Residential Members" they may not be interested in participating in the full extent of the formalized incubation program or they may not be eligible. Rather, they are primarily motivated by access to networking opportunities, either in-person or online, and by access to training. These members are also eligible to be hired to staff consulting projects and participate in "earn your own seed capital" type programs. Affiliated Members can also be selected from the pool of Virtual Members.

Virtual Members are the most broad-based tier of membership. Access to this tier can be provided at no charge or a modest membership fee. This category provides an initial point of entry for individuals interested in becoming affiliated with the lab and requires minimal vetting by lab management. Virtual membership benefits can include access to components of the mLab's website – such as the job postings section – and priority access to trainings or events. If the lab offers a coffee bar with free high-speed Internet access, Virtual Members may also have access to this temporary workspace on a first-come-first-serve basis. As stated previously, the lab may also select more elite membership categories from this base pool of members.

Partner Members are unique from all other membership tiers because they form a category that is not comprised of application developer entrepreneurs. Instead, this category is made up of stakeholders that are motivated by a desire to have access to the entrepreneurs themselves. Multinational corporations such as Nokia or Google, or mobile operators and large non-governmental organizations may be interested in obtaining workspace, access to training and networking events in order to stay close to the source of innovation in emerging markets. Many labs will charge a premium to Partner Members for the privileges of affiliation.

The mLab acts as an intermediary to deliver services to entrepreneurs

The mLab serves as an intermediary that brings together a bundle of essential services to address the needs of the lab's members. Figure 7 illustrates the complete list of services that are offered by the mLab. Figure 8 provides an example scenario of mLab service offerings by membership category.

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Figure 7. The mLab Value Chain

Complete list of services offered by the mLab:	
Venture Funding	Market Intelligence
Business Training	Physical Space
Mentoring	Technical Outsourcing
Technical Training	Professional Services
Testing & Certification	Competitions
Due Diligence & Capital Readiness	Networking Events
Value Chain Partners	Code Repository

mLab

Member Categories:
- Partner
- Virtual
- Affiliated
- Residential
- Incubates

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Figure 8. Example Scenario: mLab Service Offerings by Membership Category

Service	Incubatee	Residential	Affiliated	Virtual	Partners
Physical Workspace	Included	Eligible	N/A	N/A	Eligible
Business Training	Included	Eligible / For additional fee	Eligible / For additional fee	Eligible / For additional fee	Eligible / For additional fee
Technical Training	Included	Eligible / For additional fee	Eligible / For additional fee	Eligible / For additional fee	Eligible / For additional fee
Testing & Certification	Eligible / For additional fee	Eligible/ For additional fee	Eligible/ For additional fee	For additional fee	For additional fee
Business Mentoring	Included	Included	Included	Eligible	N/A
Market Intelligence	Eligible	Eligible	Eligible	N/A	N/A
Competitions	Eligible	Eligible	Eligible	Eligible	N/A
Venture Funding	Eligible	Eligible	Eligible	Eligible	N/A
Professional Services	For additional fee	For additional fee	For additional fee	N/A	N/A
Technical Outsourcing	Eligible	Eligible	Eligible	N/A	N/A
Code Repository	Included	Eligible	Eligible	Eligible	N/A
Due Diligence and Capital Readiness	Included	Eligible	Eligible	N/A	N/A
Access to Value Chain Partners	Included	Included	Included	Included	Included
Networking	Included	Included	Included	Included	Included

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Service Offered by the mLab

Lab members at the Incubatee, Residential, Affiliated, Virtual and Partners levels may have access to some or all of the following services, depending on the goals and resources of the lab. Figure 8, on the previous page, defines a single scenario for service offerings by membership category. The set of services offered will evolve over time and as the organization matures, local demand shifts and changes occur in the local business environment (i.e., the educational system improves or political stability devolves). Many labs may also find that they do not want nor can they afford to offer all of these services. Determining which services to offer is addressed in Parts 4 and 5 in greater detail. The full list of mLab services and the characteristics of each are as follows.

Funding

Some labs maintain their own investment fund which allows them to make direct seed investment in the companies they are incubating. Others attract third-party investors to provide funding to entrepreneurs. Equity agreements between the lab and entrepreneur can take the form of shares, options, or convertible notes. Returns occur when the company is acquired or goes public (IPO). Typical levels of ownership based on seed investments by the incubator range from 8% to 20%. In lieu of up-front admittance or training fees, many labs will reach an agreement to share revenues with the incubated company for a specified period if and when it launches a successful business. In this way, both the lab and the entrepreneur have a clear interest in the success of the venture. However, the equity model, as well as traditional revenue sharing contracts, can be operationally challenging as the lead time can be long before revenues are generated. Some organizations are beginning to test growth-based revenue sharing models, which could be an interesting discipline for mLabs to investigate in the future.

Business and Technical Training

Training in both mobile services development and basic business skills is essential for the success of mServices entrepreneurs. In many areas, graduates from traditional computer programming courses are not exposed to mobile platforms or development environments. Likewise, many programmers who may have strong technical skills are not familiar with basic business skills like developing business plans and investor pitches.

Labs may host training courses directly or work with a training partner, such as a local university or a specialized training program like EPROM, to provide instruction in business skills and mobile services development. Labs may charge tuition fees for these courses or seek sponsorship in order to subsidize training costs for high-potential members who may not otherwise be able to afford tuition fees. In some regions, Partner Members such as mobile operators may also be interested in paying tuition fees in order to train their employees.

Business Mentoring

Mentors provide guidance and make important connections for entrepreneurs in incubated startups, as well as at other levels of membership. Mentorship can cover a wide range of topics from basic leadership skills to advice on how to establish working relationships with MNOs and donors who

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may operate within complex business structures completely unfamiliar to small startup businesses. Labs may have personnel on staff that can provide this type of mentoring, but more commonly they will recruit professionals from the local business community or from multinational corporation partners to serve as mentors. Outside professionals who serve as mentors typically volunteer their time. They can be motivated by non-monetary gains like access to the entrepreneurial network, invitations to events, or visibility of their company. In some cases, mentors are paid for their time, either directly or through deferred forms of compensation such as equity, but this practice is less common.

Testing and Certification

Testing new mService applications and certifying that they perform on specific operating systems, platforms and networks is an important step in commercializing the mobile application product. Labs may offer these services to any member in order to ensure the applications can scale and are compatible with other systems. In addition to providing the test lab environment, mLabs may also train capable members to staff testing projects. In this way, more elite Members are both eligible to participate as a test engineer on projects and may use the test lab for an additional fee.

Supporting Digital Signing is a recommended best practice for labs. Digital Signing assures those who purchase an mService application that the content is safe for download. Code signing is a common practice for online content distributed to authenticate the code source and confirm its integrity. Testing, certification and signing can also be offered through a partner like a local university or a mobile network operator or subsidized by a multinational corporation.

Market Intelligence

The lab can provide market intelligence to members to help them to better understand the dynamics of the local market and identify the needs of mService end users. In addition, following a competitive landscape analysis, labs may find themselves to be well positioned to provide hard to find city, country and regional specific market intelligence to foreign companies trying to enter a local market, local research institutions lacking commercial capacity and start-ups once they have received funding. Market intelligence services are relevant for mLabs that are interested in engaging in consulting as part of their revenue generating service portfolio. Local universities, multinational corporations and non-governmental organizations may partner to provide basic information as an in-kind donation. Depending on local market conditions and the competitive landscape, labs may use a "freemium" model, whereby any resource heavy project specific work is conducted for an additional fee.

Physical Space

Labs can offset their costs for maintaining a physical space and infrastructure (e.g., rent, desks, equipment, broadband) by including office space as a component of Incubatee, Partner and Residential Membership. This allows labs to develop a "co-working" space that offers local technology entrepreneurs a shared working environment where they can also gain access to business support services and network with other like-minded individuals.

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Attracting the local technology community to the lab space helps promote the lab's role as a networking hub in the local business environment. Many from this community could be good candidates for the lab's consulting services team and may become prospects for Incubatee membership status. Some labs - like the iHub in Nairobi, Kenya - have structured their spaces to include a coffee bar and "drop-in" workspace environment with free Internet for Affiliated and Virtual Members.

Technical Outsourcing

As a locus of technical and programming expertise, mLabs are well positioned to offer outsourcing services and solutions development to clients. The lab environment brings together an excellent pool of qualified developers that can be used to staff projects. In addition, these projects also provide valuable on-the-job training to teach skills like effective client interaction and managing large-scale software development projects. Technical outsourcing projects also contribute to the bottom line by providing a source of ongoing revenue. Outsourced technology development projects can be staffed by current lab members or graduates. The recently launched "Coded in Country" initiative, which encourages programming revenue to be directed to local developers, has the potential to create a growing market for these type of services[7]. Clients that seek Technical Outsourcing may include:

- Local businesses;

- Government agencies;

- NGOs;

- Regional mobile network operators; and

- Extra-regional firms and multinational corporations.

To attract clients, mLabs can position their technical outsourcing services as a means of economic development and to provide job opportunities for local talent. Clients benefit by gaining a reputation as supporters of the local economy. The Coded in Country initiative is an excellent example of the growing emphasis on employing local coders whenever possible.

Further, mLabs can also offer "localization" services to replicate applications that have worked in one market but would need revision to become appropriate solutions for another. Applications addressing social development needs, rather than commercial needs, are generally more suitable targets.

Porting the application between markets involves making changes based on different local customs (especially concerning the use of technology), different operating systems, or different languages.

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[7] Dimagi "Coded in Country"

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Professional Services
Legal services, accounting and administrative support may be offered to Incubatee, Residential and Affiliated Members via the lab for an additional fee. Group discounts that are beneficial for all members may be achieved via this pooling mechanism.

Competitions
Technology labs commonly participate in competitions in a variety of areas including:

- Application development – best technology prototype;

- Creative solutions – new ideas to solve social issues; and

- Business plans – best ideas for new ventures.

Labs may host these competitions or partner to produce them. Competition participants may include local startups and winners may receive prizes of cash, goods, or in-kind services like 30 free days of lab space. Multilateral organizations, governments, universities and corporate partners are often sponsors for these types of competitions. Networking groups like Mobile Monday (MoMo) may be a good source for developing competitions.

Events
Special events and conferences bring together business leaders with the local technology community. Many labs will look to their partners, including mobile operators or multinational corporations such as Nokia, Google or Microsoft to sponsor and provide speakers for these events. Events can also be a source of revenue for the mLabs if they charge an additional fee to members and to attendees from outside the membership community.

Code and Knowledge Repository
As open-source tools and development become more widespread, developers may want to access open-source code repositories. This code repository could be particularly relevant during technical outsourcing projects. It is also recommended that labs establish a knowledge base to collect lessons learned from mobile application projects.

Due Diligence
mLabs can provide introductions for high-potential startups from their incubation program to outside investors. This requires the lab to design and implement a due diligence process that meets third-party requirements. Bid Network, a Dutch organization that pioneered matchmaking for entrepreneurs in developing markets, recommends that labs charge an average fee of 2% of the investment value for this service. This is also the average fee charged by most matchmakers who are members of the European Business Angels Network (EBAN). In some markets, government agencies have grants available for startups and small businesses. In these cases, the mLabs can serve as an administrator for these grants. The lab vets high potential startups for the government and receives payment for distributing funds, typically in the form of a percentage of the grant.

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Services as Revenue Streams

Some mLab services, such as technical outsourcing, provide value for members while also providing a revenue source for the lab. These revenues can then be used to fund the lab's operation and expansion. The reason for offering revenue-producing services is clear. Even labs with a primary focus on social objectives reported that institutional grant makers and individual donors increasingly require that the lab demonstrates its ability to supplement passive sources of income with earned revenue.

Revenue streams typically fit into the following categories, which apply to mLabs at either end of the segmentation spectrum – Development for Development (DforD) and Innovation for Commercialization (INforC):

- **Investments (Equity)** – The lab receives delayed compensation from partial ownership in an incubated company or payment for the ongoing use of a licensed application. Many applications will not generate income right away, and it can be difficult to anticipate at what point they are going to start generating revenue. Royalty agreements must be carefully negotiated to act as both an incentive and a fair exchange for the lab's services. Similarly, equity agreements will allow the lab to recoup its equity share (e.g., 5% of company's value) when a startup receives a substantial investment (or revenues), or to hold out for a potentially larger future payout.

- **Membership Dues** – The lab receives monthly payments from members for access to services described above.

- **Consulting Services** – The lab charges clients (e.g., multinational corporations, non-governmental organizations, local businesses, start-ups or government ministries) for the provision of technical outsourcing (software and application development services), testing and certification or business intelligence.

- **Training** – The lab charges fees to members, including Partners such as mobile operators, for technical and business training.

- **Institutional Grants** – The lab receives annual or periodic grants from institutions to underwrite operating costs, scholarships, special initiatives or programs.

- **Events** – The lab hosts events and charges a fee for attendance.

- **Income from Services to Members** – The lab receives monthly, annual or periodic income from members that opt to obtain services at an additional fee.

A more in-depth discussion of revenue and expenses associated with each service and "service evolution" is provided in Parts 4 and 5.

Branding and Promotional Strategies

Promotion is an integral part of the product being offered
The long-term financial sustainability of labs will depend greatly on their ability to market their services. As such, branding, messaging and promotion is recommended as a critical activity for the mLab. Gaining a superior understanding of members' needs will enable labs to deliver a more appropriate set of services. Delivering appropriate services in combinations with strategic promotion will lead to increased demand for the lab's services. Without strong local demand, it will be impossible for labs to drive the revenue they need to grow and operate sustainably.

mLab members are savvy global citizens
A lab's members are its single most important target segment. Application developer entrepreneurs can generally be characterized as young, tech-savvy global citizens. Given the more recent spread of technology to emerging markets, top developers are often young and online social networking comes as second nature for many. Thanks to increasing penetration rates of Internet and mobile telephony, these developers have become global citizens, aware of the challenges and opportunities both in their local communities and abroad.

Entrepreneurs see themselves as the new revolutionaries
In many developing countries, mLab members – and entrepreneurs in general – envision themselves on the cutting edge of change, operating outside government ministries or universities. As pioneers of this new wave of industry and commerce, many will aspire not only to become profitable, but to make a positive contribution as citizens of the world. Branding and promotional strategies will do well to address these aspirations to create positive change.

mLabs are differentiated by their neutrality and exclusive focus on mobile
mLabs are differentiated from other technology labs by their exclusive focus on mobile services. In many cases, the neutrality of the organization (i.e., the lack of controlling influence by any one partner) will also be a unique selling point. The quantity and quality of partnerships and affiliations with a diverse array of investors, corporate partners and non-governmental organizations in the mobile ecosystem may also differentiate mLabs from any competitors that may emerge in the future.

Focus branding on alignment of members' aspirations and labs' values
Branding that makes use of smart, cutting-edge digital humor to align the aspirations of entrepreneurs with the mLab's values of creativity, inclusivity and responsibility will be most successful.

Marketing is an ongoing activity
To ensure long-term sustainability, mLabs will benefit from making marketing an ongoing activity. Even when things are going well, the lab is encouraged to continue to market its program and to distinguish itself from the competition. Labs will not only compete for clients, but may also compete for funding and other forms of support. Ongoing marketing and promotion ensures the mLab will maintain its visibility in the community.

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Promotional Strategies

Once the lab has developed its unique brand and set of services, the next step is to promote that message through the appropriate channels. These include:

- The lab's website;

- mLabsWorld website;

- Social media (e.g., Facebook);

- Networking groups like Mobile Monday (MoMo);

- Events sponsored by the lab;

- Local business periodicals;

- Attendance at conferences;

- University technology programs;

- Consortiums with other regional incubators (e.g., AfriLabs); and

- Co-branding with partners and donors.

Lab Website

Websites can be used to reinforce the organization's branding efforts. Profiling successful clients or graduates and maintaining a lively, regularly-updated blog can offer real-time insight into the lab's activities. As labs accumulate a portfolio of success stories, they may want to include links to news articles and information about graduates and former clients. Each lab will also be able to create a profile to promote itself and share news with the broader community on mLabs World.

Labs surveyed typically included the following content on their website:

- A mission statement;

- The lab's history;

- Photographs and videos of the facility;

- A list of sponsors, partners, board of directors and advisors;

- A list of clients;

- Details about the services offered, including information about the program's impacts, measured as either economic or social returns;

- A schedule of upcoming events;

- Contact information, including names and titles of primary staff members, phone and fax numbers, e-mail addresses and the lab's physical and mailing addresses;

- Guidelines for the application process, including tips on preparing a business plan and the actual forms potential clients must complete and submit;

- Links to relevant resources on business incorporation, business planning, funding sources and regulatory agencies; and

- An archive of press releases, newsletters and brochures in PDF format.

Finally, mLab websites may also include a clients-only section where clients can exchange information and share ideas. This restricted part of the website may contain contact information for partners who offer services to incubator clients, business planning templates, tips, or downloadable software. Restricting access to this content may encourage some individuals to seek membership in order to access it.

Social Media
Creating a presence on popular social media platforms like Facebook, LinkedIn and Twitter is becoming a requirement for any credible business venture. mLabs can also send out SMS messages informing interested parties of the latest events and news.

Networking Events
Networking is one of the most powerful tools for building visibility. Every event is an opportunity for networking and raising awareness through word of mouth. Many communities where there is a concentration of technology enthusiasts already host networking events sponsored by a local university, government development agency or technology company like Nokia or Google. Additionally, the Mobile Monday networking initiative is dedicated to bringing together mobile technologists. As of November 2010, Mobile Monday has just over 100 chapters around the world.

mLabsWorld Website
The mLabsWorld website is an online platform for mobile social networking activities designed to help connect community of practice of developers, mLabs and important stakeholders. mLabs may highlight themselves as part of the www.mLabsWorld.com site. Figure 9 describes the content and services offered by mLabsWorld in detail.

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Figure 9. Overview of Content and Services Offered by mLabsWorld

mLabsWorld - an Online Platform for Mobile Social Networking Activities

*info*Dev is building an online space to help connect community of practice of developers, mLabs and important stakeholders. The primary users of the site will be mobile software developers, whether associated with one of the physical mLabs or working and contributing to the network independently. In addition, investors, academics, trainers, mentors and business partners will be actively involved, and provide site content.

mLabsWorld will directly contribute to capacity building of mobile entrepreneurs, as well as provide business and technical skills and increase opportunities to attract investment in their ventures. The site will have the following three components:

- **Fame - Social networking:** Member profiles and their services and product offerings, discussion forums, feature chats with prominent colleagues, organized offline meetings with groups like Mobile Monday, and mentorship opportunities.

- **Function - Business and technical skills development:** Tutorials, articles and practice materials, strategy and business planning resources, links to relevant code repositories.

- **Fortune - Investment/access to finance:** Business case competitions, a showcase of new and interesting apps, avenues for third parties to solicit new applications, advice on bringing apps to market and other investment and sales opportunities.

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Part 4: Business Model and Pricing Strategies

Building on the "Offerings" section of Part 3, The "Business Model" section of Part 4 takes a deeper dive to examine the mix of services offered by mLabs. This includes analyzing the service level value chains and identifying non-essential and priority services by evaluating the relative value of a given service to both members and the mLab itself. Next, strategies for customizing the "Business Model" and "Pricing Strategies" across varying emerging market regions is explored through the introduction of a companion Business Model Workbook Tool. Section 4b provides a user guide to support the use of this strategic planning tool.

The mLab Business Model is comprised of service level value chains

Each of the services identified in Part 3 can be analyzed as a value chain that explores the components of exchange – the "give" and "get" – for each player associated with a given service. This detail is an important input to determining the structure of a baseline business model.

For example, funding can be further divided into the actors that provide seed funding or venture capital as follows. Venture capitalists, local government and multinational corporations provide seed funding or capital, while multilateral and non-governmental organizations provide grants. In return, each actor will receive something. The VCs will receive equity stakes; multinational corporations may receive equity stakes or an increased user or subscriber base; local government receives economic development and multilateral organizations; and NGOs receive support meeting economic development or social development objectives.

Physical space provides another example of how a service level value chain can be a useful analysis for the business model. Universities or Non-profit Organizations may provide physical space to host labs, and in return receive fees (e.g., rent) or an in-kind donation to support their mission. In addition, local vendors may provide physical space, desks, computers and broadband in return for rent and other periodic fees.

Appendix A, offers additional examples of value chains for some of the services identified in Part 3. Thinking carefully about the services as applicable to the given local context, can be a useful tool when adapting proposed membership levels for implementation, determining a final mix of services and creating messaging to promote the mLab to specific partners and customers.

Not all services are essential

Typically, start up organizations will require a phased approach to operations. As mLabs seek to determine a locally appropriate suite of offerings, it is important to bear in mind that not all services are essential. The framework illustrated in Figure 10 offers a useful mechanism for identifying priority services. The placement of services on the matrix will vary according to local conditions (e.g., the ready availability of substitutes), and the type of entrepreneur and business that they are seeking to develop. As discussed in earlier sections, the services that are most valuable to a very early-stage start-up will vary from those of a mature team with a well-formed project. In addition, the needs of a consumer business are different from those of a corporate or government sector focused business. It is recommended that mLabs strive to deliver and tailor services that alleviate impediments to success in each specific context.

Figure 10. Framework to Evaluate Priority of Service Offerings
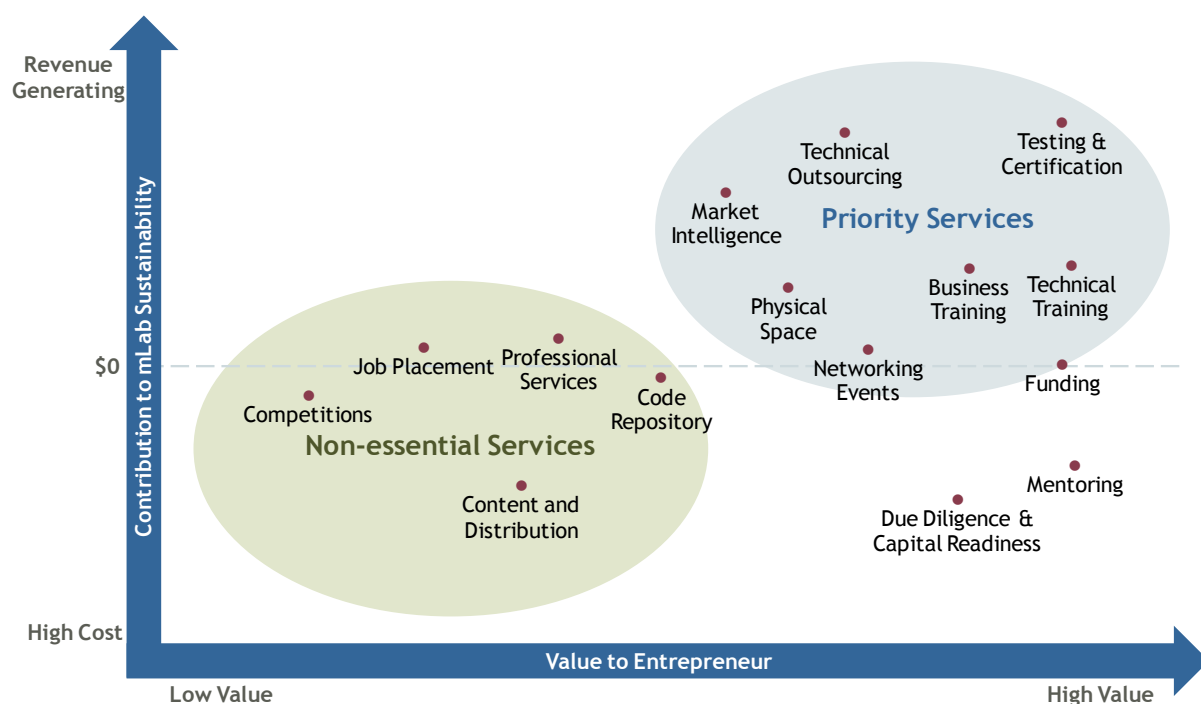
mLab Business Models will vary across geographic regions

The business model that is ultimately implemented by any given mLab will need to be responsive to the environment and characteristics of the region where it is located, as well as the mission of the lab. These characteristics will dictate the services that can be offered and the composition of viable revenue streams. Many labs may also find themselves attracting and supporting entrepreneurs/developers who have the potential to bring innovative applications to market, but lack the resources to pay for premium services. To support these entrepreneurs, the lab will need to consider other forms of compensation instead of service and membership fees.

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Regional fluctuations in input costs will also affect pricing strategies for mLabs. The most effective means to ensure that the business model proposed in this report can be adapted according to the requirements and constraints of any given location is through a customized planning tool. As such, Vital Wave Consulting has created a companion "Business Model Workbook" to complement this business plan.

Introducing the Business Model Workbook
The Business Model Workbook tool provides the budget for the mLabs as well as an interactive financial planning tool. The Excel-based Workbook Tool is designed to enable local mLab managers in any corner of the world to conduct scenario analysis and localize the model to fit their needs by modifying a series of predetermined variables.

The Workbook Tool does not suggest that this is what mLabs are expected to do, but rather it attempts to strike a balance between what's possible and what's necessary. By offering realistic assumptions and realistic numbers, the Workbook offers a scenario for mLabs to reach financial sustainability within a three-year time frame. In using the model, managers can ask: is the rate of growth that is necessary for sustainability also realistic? If not, what are the other factors that need to be changed? (e.g. the ramp time may need to be set at 4 or 5 years.) The three-year plan modeled in the Workbook can also be viewed as a realistic pro forma projection of what an mLab can do, but it's also a litmus test for what an mLab would have to do to become sustainable.

Ideally, the Business Model Workbook Tool will be used in an iterative way to allow lab managers to select programs and model their costs and also prioritize efforts toward income generation in a way that would be most strategically valuable, given the regional or local context.

Part 4b: Business Model Workbook Tool User Guide

How is the Business Model Workbook Tool organized?

The Business Model Workbook Tool helps the lab manager account for all fixed and variable costs, as well as various sources of income. Estimations were made to create cost and revenue assumptions as a starting point to allow lab managers to explore the best mix of services and revenue sources. These costs and revenues are first summarized on the *Business Model Summary Sheet*, and then broken out on successive tabs. Devoting an individual tab to each service or activity allows for a more precise assessment of variable costs and potential income sources.

Figure 11. Business Model Workbook Tool Overview
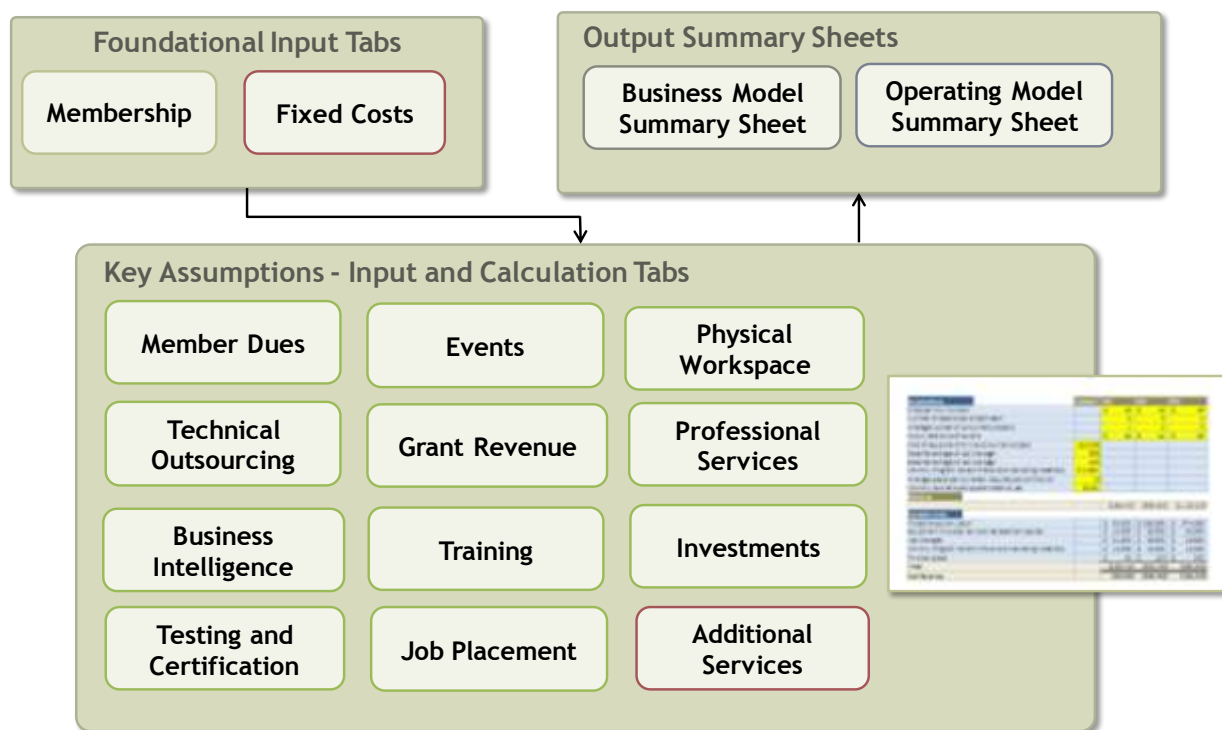
Note that the tool does not attempt to make strategic recommendations about which services are appropriate to match the lab's mission or the lab's local environment. But it can help the lab determine which services will best contribute to revenue generation and economic sustainability.

How can the mLab manager use the Workbook?

To start, the manager is encouraged to examine the lab's fixed costs, making sure to capture these costs accurately for the lab's local situation. These may be entered in the yellow boxes on the *Fixed Costs* tab. Secondly; the manager must decide which services will be offered and enter the variables for each service into the yellow boxes on each subsequent tab in order to see how they will affect the outcome on the *Summary Sheet*. For example, if a lab decides to offer testing and certification services, they will need to determine an appropriate price per hour to charge for these services, as well as who will pay this charge. Will this service be offered as part of the membership package or will it be an additional cost to all members except Incubatees? How much time will the lab manager need to devote to managing this activity? To maximize the accuracy of the tool, managers will make these types of decisions for each service.

What are the assumptions on each Workbook tab?

The Workbook has the following tabs:

Business Model Summary Sheet – summarizes all revenues and expenses and shows an estimated net income for the first three years of operation. The values on this sheet are linked to the calculations found on the individual tabs in the workbook.

The Workbook assumes the hypothetical lab being modeled here operates as a non-profit and is therefore not subject to taxes. Therefore, even though the Workbook shows a "net income," this does not take into account any taxes on income.

Operating Model Summary Sheet – summarizes the assumptions made for the types of membership, the required headcount to operate the lab and the rollout plan for the service offerings. Note that "Program Manager" is a generic title, which can be broken out as needed into roles for "Relationship Manger," "Training Manger," etc., as needed. This is discussed in further detail in Part 5.

Member levels divide into five categories. Incubatees receive lab services on a scholarship or in exchange for a small portion of the Incubatees' company (see the Investments tab). Residential Members attend the lab fulltime and have a reserved workspace, while Affiliated Members will "drop in" for hot-desk services or for special events. Virtual Members sign up online, participate in online forums, have access to various online resources, and may attend events at the lab. Virtual Members may also be located outside the lab's immediate geographic area. Partner Members include multinational corporations with a vested interest in the lab's activities and mission. This could include companies like Nokia, Google and the regional mobile operator.

As the lab strengthens its operations, it will add services to its portfolio and is likewise expected to add headcount.

Membership – makes an assumption about the number of members that will fall into each category. While the number of members will grow in parallel with the lab's growth, the Workbook assumes the lab can hold a maximum of 15 members (including Incubatees) and that total membership at any given time is 20. The Workbook further assumes members remain an average of three years at the lab.

Fixed Costs – breaks down these costs into Salaries, Equipment, and Overhead. Additional headcount can be added as needed to the Salaries section. Costs for equipment assumes the cost to purchase and provide ongoing maintenance.

Note that the calculations adjust for a 3% inflation rate over the three years.

Member Dues – shows an estimated monthly membership fee for each level. The Workbook assumes Incubatees will pay no member dues.

Technical Outsourcing Revenue – shows costs and revenues available for providing software development services to outside clients. Although this outsourcing may eventually prove to be a reliable source of income, the Workbook assumes the lab will focus its first year of operation on establishing its training curriculum and building its network of contacts.

Beginning in the second year, the Workbook assumes the lab will start to take on these projects and gradually charge slightly higher developer fees, taking on more projects and paying developers a higher rate each year. These developers or "contributors" may be Incubatees, Residential or Affiliated Members.

The revenue estimates assume there are development projects in house at all times, and consequently the Workbook uses a multiplier of 2080 hours (52 work weeks * 5 work days per week * 8 hours per day = 2080 hours).

The Workbook assumes the costs to provide these services will include dedicated equipment and lab space, as well as a portion of a staff member's time to manage these projects and interact with clients.

Market Intelligence – assumes many outside clients are willing to pay for market intelligence services. These types of services may be particularly attractive to foreign companies who are considering entering a local market but lack market intelligence.

Testing and Certification – shows costs and revenues for providing testing and certification services. Like the assumptions made for Technical Outsourcing, it is anticipated that as the lab ramps up and members become more skilled, the lab will be able to charge more for these services and take on more projects. As with Technical Outsourcing, lab members with technical skills are providing these services and being paid for their time on an hourly-wage basis.

Contributors will test the applications using software simulators, perform code reviews and evaluate end-user documentation for completeness and accuracy. Equipment required to provide QA testing would include computers, specialized software, and a variety of handsets to cover common platforms like Symbian, Android, iPhone, Windows, etc.

Potentially, developers not associated with the lab could pay a daily fee to use the test facilities. The lab will dedicate a portion of staff headcount to manage this process. These services can be offered to Incubatees at no charge.

Events – assumes that sponsoring special events will become an important activity of the lab, and the number of events and attendees will increase each year. This category also includes Bar Camps or Boot Camps. Fees to attend events will depend on the membership level. Non-members will be charged the highest fee. Costs associated with hosting an event will vary according to the number of events and attendees.

Grant Revenue – shows an initial *info*Dev grant of $200,000 in the first year, and an additional $150,000 grant in the second year. The cost associated with these grants, shown as $2000, would cover a project-specific audited financial statement which is required for compliance.

It is expected the labs will initially depend on grant money from other sources and therefore, the Workbook shows costs associated with generating grants as well as potential grant income. It is assumed that as the lab begins to generate revenue from its operations, grant money will decline.

Training – assumes the lab will at first incur more costs than revenues as it builds its capabilities to host training sessions. As the lab gains experience in this area, it will be able to host more trainings each year. Training fees will vary by membership level. In the baseline model the cost of training for Incubatees is subsidized. Some regional mLabs may find that it is more appropriate to seek additional grant funding and decrease training fees in order to subsidize members beyond the Incubatee level.

Job Placement – assumes the lab is able to charge local employers to place job advertisements. The lab will likely host the job board on its website, although the lab can also maintain a physical job board on its premises. In either case, this duty will require a portion of the lab manager's attention to maintain.

Physical Workspace – allocates space per member, which is estimated at 10 square meters. Revenues from membership dues (excluding Incubatees) will cover rental costs and provide a slight margin of profit. As membership grows, the lab may need to acquire additional space, which will result in additional costs but also additional revenues from membership fees.

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Professional Services – assumes the lab will serve as intermediary bringing together lab members with local business professionals who will provide legal, accounting and other types of services. Serving as the intermediary, the lab realizes a slight profit margin, although the lab may choose to cover these services for Incubatees as part of their scholarship program. Matching lab members with professional services will require a share of a lab manager's attention.

Investments – shows the long time horizon expected for lab investments to see returns. In the meantime, the lab will incur a cost to screen target companies and provide legal services. The Workbook further offers assumptions on an average equity stake (how much of the company will the lab own), an average monetization event (what is the average acquisition or IPO amount), the percentage of companies who will eventually reach monetization (acquisition or IPO), and how long (in years) this might take.

In this scenario, the lab receives ownership in the startup company in exchange for providing incubation services on "scholarship." The $2000 cost is not an investment, but instead an estimated cost for legal services associated with this ownership stake.

Additional Member Services – shows the various services that the lab can offer to its members as part of the membership dues they pay or to Incubatees as part of their scholarship program. Therefore, the Workbook shows no revenues for these services. Coordinating venture funding refers to the activities required to build and maintain an external network of VCs, while Due Diligence refers to the internal process of vetting high potential members to receive external funding.

Part 5: Operating Model

Part 5 provides recommendations on resource requirements (e.g., equipment, staffing and skills) as well as the phased rollout of services and functions, as implied by localized analysis conducted using the Business Model Workbook Tool.

Organizational structure will vary by region

mLabs can be formed as either non-profit organizations, for-profit companies (if they will not receive grant funding) or foundations. The mix of revenue services and legal codes of a given country will dictate the most advantageous arrangement.

Skills, knowledge and equipment will depend on the business model

The exact combination of skills, topical knowledge and equipment that is brought together within the lab will depend on the business model and the decisions that the mLab makes about when to introduce different services. The Business Model Workbook Tool provides mechanisms to iteratively explore various scenarios. The Operating Model Summary Sheet provides a count of required staff, by year.

Yet all mLabs share a base set of resource requirements

Despite the heavy emphasis on regional and local variation for each lab, all will share a base set of resource requirements. Figure 13 below provides an illustration of these fundamental requirements.

Figure 12. Fundamental mLab Resource Requirements

Skills	Topical Knowledge	Equipment
• Critical thinking • Lesson planning and curriculum design • Quality assurance testing • Business development • Special event production • Business operations • Client management • Program and project management • Application certification • Mentoring • Competence in latest software development tools • Security • IT Maintenance	• Financial and Technical evaluation of potential investments • ICT for Development (ICT4D) • Local market expertise • Market analysis and consumer research • Business mentoring • mServices: Agriculture, Health, Education, Governance, Entertainment, Identity • Mobile application platforms • Intellectual Property • Contracting / Subcontracting	• Servers • Computers • Phones • Lights • Printers • Copiers • Bandwidth • Handsets

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Staffing requirements will vary from year to year

The Business Model Workbook Tool provides a summary of the headcount required on the "Operating Model Summary Sheet." The term "Program Manager" is used as a generic placeholder for more specialized roles such as "Training Manger", "Relationships Manager" or "Administration Manager". In Year 1 a single Program Manager may suffice, but as the mLab programs and services scale dedicated professionals may need to be recruited to manage the training program or the earned revenue through consulting services. Figure 14 below illustrates the key players and the skills or areas of competence required for each type of manager.

Figure 13. Key Players and areas of competence

Skill	Key Players				
	Lab Manager	Technology Manager	Relationships Manager	Training Manager	Administration Manager
Business Development	●		◐		
Lesson planning and curriculum design	◐	◐		●	
Quality assurance testing	◐	●		◐	
Special event production	◐		◐		●
Marketing	◐		◐	●	
Business operations	●			●	◐
Client Management	●	◐	●	◐	
Program and project management	●	◐	◐	●	◐
Application Certification		●		◐	
Mentoring	◐	◐	●	●	
Competence in latest software development tools		●		◐	
Security					●
IT Maintenance		●		◐	◐

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Hybrid organizations capitalize on opportunities of both mLab segments

In addition to defining a set of service offerings, using the frameworks and tools discussed in Part 4, mLabs will benefit from defining a clear mission and vision for their organizations. This will enable managers to develop key performance indicators and an organizational strategy consistent with the ultimate goal of the mLab. Part 2 introduced a spectrum that included the identification of two lab segments – Innovation for Commercialization (INforC) and Development for Development (DforD). To maximize the potential opportunities offered by both segments, and to respond to developers' aspirations to make a profit while achieving social change, it is recommended that mLabs consider developing a hybrid organization that combines the social mission of the DforD segment with the commercial drive of the INforC segment. This intent will be best codified in the mLab's mission statement, where managers can develop strategic plans and performance indicators to help ensure success.

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Part 6: Customer and Partner Profiles

This part offers an in-depth description of customer and partner categories that comprise the mLab ecosystem as required by the proposed business model. Category descriptions are intended to be applicable across a variety of emerging-market environments; profiles of real-world examples are taken from the primary research completed for this report. mLab customers fall into two groups: those who develop mobile applications using mLab resources, and those who distribute the applications for commercial or social purposes. Lab partners are those members of the ecosystem who support development and distribution efforts by contributing knowledge, resources or investment.

The mLab is at the Center of the mServices Value Chain

The mobile services value chain is modeled in Figure 15 below. This model shows the mLab occupying the key position at the center of the value chain for mobile content creation. In its role as an integrator, the mLab will be required to broker partnerships will all key mServices stakeholders in the ecosystem.

Figure 14. The mLab position in the mServices Value Chain
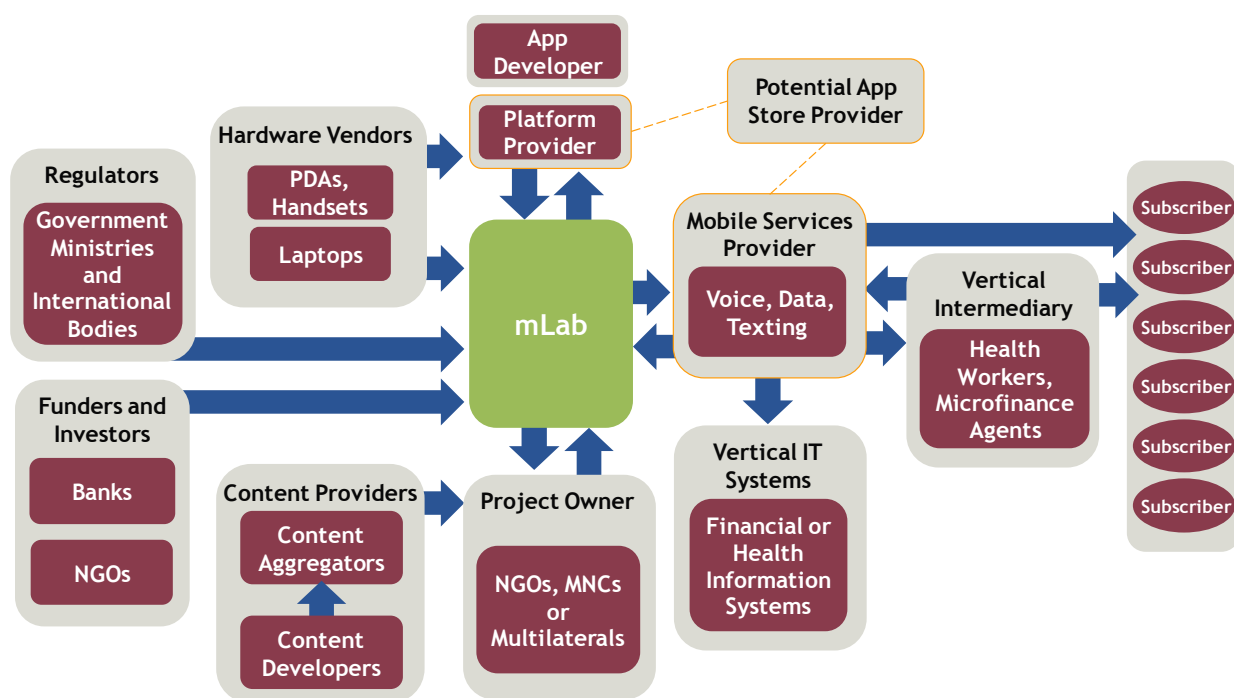
Customer Profiles

Mobile application services are transforming modern life in both developed and developing countries, allowing users to perform personal and work-related tasks from their mobile devices. This often starts with the development of a mobile application by an entrepreneur and ends when a "distributor" makes the application available through the mobile telephone network.

At times, the mobile application developer is refered to as an "intermediate client", in order to convey that they are not the end client in the broader mobile ecosystem. These are the members that use the mLab facilities. "End customer clients" are organizations like network operators that distribute the application for commercial or social impact. The eventual end users of the application, though critical to the process, form the end of the value chain and are not discussed here because they are not directly involved in mLab activities.

Figure 15. The Development and Distribution Process

Intermediate Clients - Innovation and Development

Mobile application innovators, those people with the ideas and motivation to launch small businesses, can fall into two categories. Some may be trained and proficient in software development and programming, while others may have more of a business focus with limited technical skills. mLabs must be careful to accommodate the needs of both groups. Motivated technologists can generally be taught business skills, while those with a business focus can be teamed with programmers to help design and develop their applications. Indeed, this is a foundational notion for technology labs.

Of the mLabs interviewed for this research, most reported no shortage of applicants, relying on a screening process to identify the highest-potential prospects. This screening commonly included an evaluation of:

- The team – Are the people mature, motivated, organized and capable?

- The business plan – Is the plan realistic, achievable?

- The target market – Is there a need for the application?

- The technology – Is the application technically feasible?

- The scale – Is this an idea that can go beyond regional borders?

End Customer Clients - Distribution and Commercialization

Mobile network operators are key actors in the commercializing and scaling of applications developed in the incubation program. mLabs are encouraged to build relationships with the prominent mobile operators in their regions. Mobile operators can also provide testing and promotion for the applications. Application stores are also an increasingly popular means of distributing mobile applications. To illustrate the point, The Ovi Store, Nokia's online application store is also featured as part of an example later in this section. The profiles below illustrate the relationship between these two customer groups.

Intermediate Client Profile	End Client Profile
Su Kahumbu-Stephanou	**Safaricom**
Su Kahumbu-Stephanou founded Green Dreams Ltd. in 2000. Green Dreams is an organic farm in Tigoni, Kenya, which now works with Kenyan farmers to achieve organic certification and to connect to local markets. Working with developers at Nairobi's iHub, Su has launched iCow, a voice-based mobile application that will help farmers manage the breeding cycles of their cattle. Farmers update the system with known dates within the livestock calendar and the system sends voice and SMS alerts to the farmer during the year, helping them to make informed decisions. The iCow application won first place at the inaugural 2010 Apps4Africa competition.	Safaricom, Kenya's largest mobile network operator, has already achieved success with mobile services like M-PESA, an innovative mobile banking service that enables customers to transfer money using their mobile phones. Safaricom has also signed on to distribute the iCow application over its mobile network. When launched, farmers will pay a small fee in incremental installments based on how often the application sends voice or SMS prompts to the farmer. The application is initially designed to send 24 prompts a year, two each month with a yearly cost of about US$3 to the farmer.

Partner Profiles

The types of partners who comprise the mLab's ecosystem will depend on the mission of the lab and the needs of the members in the incubation program. The lab would be wise to choose partners carefully from the relevant stakeholders to ensure alignment between the lab's mission and the partner's agenda. These stakeholders could include investors, local universities, government agencies, multinational corporations, mobile device manufacturers and platform providers, non-profit organizations and local businesses. Besides helping to build capacity, these ecosystem partners facilitate the most critical challenge of scaling applications: taking the application from the lab with five to ten users and scaling it to reach tens of thousands of users.

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Investors and Funders

Among the most pressing challenges faced by tech startups is obtaining funding to sustain their operations while they work to attain profitability. mLabs hosting incubation programs will benefit from first deciding if they will offer their own seed capital, partner with investors like venture capitalists, or adopt a combination of both.

Labs looking to work with external funders are encouraged to identify both local investor networks as well as investors outside their local areas - especially from more developed regions where investor networks are better formed and are more knowledgeable about investing in tech startups.

Labs may also want to also explore opportunities to serve as an administrator of funds from government agencies, non-profit organizations, NGOs or other mission-driven funding organizations.

Venture Capital Investor Profile
Chembe Ventures
Chembe Ventures provides seed capital to web and mobile application developers in Eastern and Southern Africa. They also run investment competitions, sponsor tech events and organize workshops for mobile developers in several African cities.

Chembe Ventures may also subsidize the incubation program membership fees for entrepreneurs with whom they are working, essentially providing a scholarship as part of their investment.

In October 2010, Chembe Ventures signed a funding and sponsorship agreement with Austrian NGO, ICT4D.at, to finance an incubation program as part of the NGO's *Zanzicode Training Project*. |

Universities

Local universities and academic institutions are key partners in providing technical and business training, business mentoring, market research data and usability information to assist developers in creating applications that meet an identified market need and function according to local cultural requirements. Understanding market needs helps prevent the common mistake of innovating for innovation's sake alone. Creating an application is easy; deploying an application for practical purposes to serve larger segments of the population is much more challenging.

Universities can also offer training and mentorship programs that help entrepreneurs with business and product development, marketing strategy and company direction.

University Profile
University of Nairobi
The University of Nairobi School of Computing and Informatics is now part of a consortium mounting a mobile application incubation program in Kenya.

The primary role for the University will be to provide intelligence on current consumer behavior to the participants in the incubation program.

The University will also provide inroads into the local developer and tech entrepreneur community, as well as serve as the primary knowledge repository for the program. |

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mLabs would be wise to make connections with the computing departments of local universities, and look for opportunities to participate in career fairs and other university activities that promote local entrepreneurship.

The local university can also provide a good source of potential lab members or interns who can assist with various lab activities. Many universities also offer physical space for classroom training.

Government Agencies

Most countries have created agencies at every level of government (federal, regional, and local) to promote entrepreneurship and accelerate the growth of the Small-to-Medium Enterprise (SME) sector as a means of economic development.

Some government programs are focused specifically on the ICT and mobile services area. The local Ministry of Information, Technology or Research commonly sponsors these types of programs. Other government programs may be focused on topics related to health, education or agriculture and likely based in these corresponding ministries.

> **Government Agency Profile**
>
> **Chilean Economic Development Agency**
>
> The *Corporación de Fomento de la Producción* (Corfo) is an economic development agency of the Chilean government that promotes investment, innovation and entrepreneurship in Chile.
>
> The agency provides aspiring entrepreneurs with seed capital, which is administered through programs like *Octantis*, a business incubation program based in Santiago. *Octantis* works with startups in the areas of ICT, life sciences, biotech, agriculture, and mobile tech.

mLabs will benefit from making connections with these agencies, as they can offer support in the area of funding, research, mentorship and technology transfer.

Governments may also control content sources that are key to the functioning of particular applications. In the case of healthcare applications, most countries have health information policies that limit open access to confidential patient data. Partnering with the appropriate government agency will be required to meet regulatory and security restrictions.

Labs are also encouraged to look outside the region in which they operate to partner with government agencies from more developed countries. For example, the Austrian Government's Ministry of Information provides support for ICT4D.at, an NGO that is currently developing an incubation program in Zanzibar.

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MNCs - Device Manufacturers and Platform Providers

Multinational corporations, particularly those in the technology area, have an interest in the ongoing expansion of technology uptake in developing countries. Besides supporting the growth of basic ICT infrastructure and platforms, these MNCs often focus on application development, recognizing that the technology is only as useful as the meaningful services it can provide.

It is recommended that mLabs focus on building relationships with MNCs that offer mobile devices, platforms, and development environments.

MNCs can provide tools, resources, training, certification and mentorship. Underwriting and providing speakers for events, as well as sponsoring competitions, are other common activities supported by MNC partners.

MNCs that have an interest in particular outcomes such as improving health standards, increasing access to banking services, or modernizing agricultural practices may also be potential partners, as many of these services are now delivered via mobile phones.

Non-Profit Organizations

Non-profit organizations and NGOs now depend on ICT technology (including mobile services) for the success of many initiatives. Many of these non-profit organizations, though, lack the internal capacity to develop these services and will look to partner with technology labs to build and scale applications.

As most non-profit organizations and NGOs are mission-focused, they are well positioned to help lab developers understand broad social impact areas. In return, the lab can offer more specific local knowledge to ensure applications achieve the greatest impact.

Multinational Corporation (MNC) Profile

Forum Nokia

Forum Nokia is an online resource that provides tools and support for developers to help them design, build, test, certify and distribute mobile applications for Nokia devices.

The Ovi Store, Nokia's online application store, allows developers to commercialize their applications and reach a worldwide market. Developers can also share ideas, challenges and solutions in the online discussion forums.

Nokia also provides support on the ground, for example through their support for Mobile Monday networking events in many regions.

Non-Profit Profile

Millennium Villages Profile

The Millennium Village Project (MVP) is based on the goals of the UN Millennium Project. The MVP aims to apply advances in science and technology to develop community-led action plans that lift rural African villages out of poverty. The project focuses on improving practices in agriculture, health and education.

One of MVP's projects currently employs mobile technology to address public health issues. MVP does not develop its own application, but instead prefers to partner with in-country programs to develop and scale its applications. Most of these are based on SMS, Java and Android. Interactive Voice Response (IVR) applications are deployed where SMS is not appropriate.

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Many mLabs will turn to non-profit foundations to provide initial seed funding for their incubation program. As the lab becomes operational, it will likely develop other sources of income. Though most labs will require some level of grant funding to sustain operations over the long term, many granting agencies now require applicants to detail how they plan to generate ongoing revenues.

Local Businesses

Becoming an active member of the local business and technology communities will be essential for the ongoing success of the mLab. Professionals from the local business community – especially those who have been successful in starting their own businesses – make excellent mentors for mLab members. Mentorship offers these professionals a means to give back by sharing what they have learned. It also helps business professionals expand and nurture their professional networks.

Local business professionals may also offer free or fee-based services such as legal, financial and accounting support to the mLab members. In turn, the lab can view local businesses as potential clients for its consulting and development services. When promoting these services, the lab may want to consider highlighting the coded in country aspect of working with local developers. This will provide a positive brand attribute for the business as a supporter of the local economy.

Appendix A - Service Level Value Chains

Figure 16. Venture Funding Service Value Chain

Give

- Venture capitalist provides seed funding
- Local Government provides capital
- Multinationals (MNCs) provide seed funding or capital
- Multilateral organizations and Non-governmental Organizations (NGOs) provide grants

Venture Funding → **Lab** → **Developer**

Get

- Venture capitalist receives equity stake
- Local Government receives economic development
- Multinationals receive equity stake or increased user or subscriber base
- Multilateral organizations and NGOs receive support meeting economic development or social development objectives

Figure 17. Business Training Service Value Chain

Give

- Universities provide in-person or online instruction
- Non-governmental Organizations provide in-person or online instruction
- MNCs provide in-person or online instruction

Business Training → **Lab** → **Developer**

Get

- Universities receive payment in training fees
- Non-governmental Organizations receive fees or advancement of economic or social development objectives
- MNCs receive equity stake or advancement of business objective (e.g., increased user or subscriber base)

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Figure 18. Mentoring Service Value Chain

Give
- MNCs provide on the job training and mentoring
- Local Businesses provide peer-based support and advice
- Venture Capitalists (VCs) provide one-on-one business mentoring

Mentoring → **Lab** → **Developer** →

Get
- MNCs receive equity stake or consulting services
- Local Businesses receive business networking
- VCs receive equity stake

Figure 19. Technical Training Service Value Chain

Give
- Universities provide technical training
- Mobile Operators provide technical training
- MNCs provide technical training

Technical Training → **Lab** → **Developer** →

Get
- Universities receive payment in enrollment fees
- Mobile Operators receive fees or increased subscriber base
- MNCs receive fees or increased user base

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Figure 20. Testing and Certification Service Value Chain

Give
- Mobile Operators provide test bed and other resources
- MNCs, such as Nokia, provide test beds and other resources

Testing and Certification → Lab → Developer

Get
- Mobile Operators receive fees and/or increased subscriber base
- MNCs receive fees and/or increased user base

Figure 21. Market Intelligence Service Value Chain

Give
- Universities provide market demand and usability data
- MNCs provide market demand and usability data
- NGOs provide market demand and usability data

Market Intelligence → Lab → Developer

Get
- Universities receive fees
- MNCs receive new applications to offer to user base
- NGOs receive support meeting economic development or social development objectives

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Figure 22. Physical Space Service Value Chain

Give
- Universities provide physical space to host labs
- Non-profit Organizations provide physical space to host labs
- Local Vendors provide physical space, desks, computers, broadband

Physical Space → **Lab** → **Developer**

Get
- Universities receive fees or support meeting mission
- Non-profits receive fees or support meeting mission
- Local Vendors receive rent and other periodic fees

Figure 23. Content and Distribution Service Value Chain

Give
- Mobile Operators provide commercialization and distribution channel
- MNCs and Non-profits provide content (e.g., agriculture data)
- Local Government provide content (e.g., health data)

Content and Distribution → **Lab** → **Developer**

Get
- Mobile Operators receive ongoing revenues
- MNCs and Non-profits receives ongoing revenues or achievement of mission
- Local Government receives channel to distribute public services

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Figure 24. Professional Services Service Value Chain

Give
- Local Lawyers provide contracts to protect IP
- Local Government provide governance and regulatory environment
- Multilateral organizations provide international standards for IP protection

Professional Services → Lab → Developer

Get
- Local Lawyers receive fees
- Local Government receives a stable business environment
- Multilateral organizations receive support achieving economic and social objectives

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