



Project Proposals

Monday, September 8, 2008



Project Proposals



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NextLab Projects: Fall 2008

[OCW Note: This is the complete list of proposals considered]

Economic Empowerment

- Giving Farmers a Fighting Chance (Monterrey Tec, Mexico/Nicaragua)
- Multilevel marketing for microfinance (COBIS, Ecuador)
- Mobile pre-screening for microfinance (PlaNet Finance, Argentina)
- M-commerce interface (United Villages, India)

Health

- Mobile diagnostics for cervical cancer (CIDRZ, Zambia)
- Ultrasound Outreach to Rural Villages (GE Healthcare, Belize)
- Real-time Mobile Network for Mid-Wives to Reduce Maternal, Neonatal Mortality (Vaatsalya, India)

Education

- Mobile social network for students in low-income communities (Telmex, Mexico)
- M-learning for rural literacy instructors (Monterrey Tec, Mexico)

Environment and Community

- Disaster Management (CRS, India)
- Mobile Sensors and GPS Mapping for Farmers (InnovGreen, Vietnam)

Next Billion in Our Neighborhood

- Thrive in Five Baby Blog (Mayor's Office, Boston)



Following is a selection of project proposals reviewed during this class session.



Project Proposals



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Economic Empowerment

Advisors:

Elisabeth Megally

Esmeralda Megally



Project Proposals



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Giving Farmers a Fighting Chance: **Transforming the Rural Economy in Zacatecas** **through Mobile Technology**

Instituto Tecnológico y de Estudios Superiores de Monterrey
Campus Zacatecas

MEXICO

Monday, September 1, 2008



6 Slides - 6 minutes



Need or Problem Identified

Much of Zacatecas State –one of the most beautiful and traditional in Mexico - has semi-desert terrain, coupled with low per capita income. Despite its dry climate, agriculture is a key economic driver. Zacatecas produces more beans, chili peppers and nopales than any other state, and is a major producer of agave, grapes, jicama, peaches, and tomatoes.

Farmers lack communication between their rural communities and cannot establish equitable pricing, let alone distribution or storage centers. As a result, they are at the mercy of middlemen who pay next to nothing for produce, and these communities remain locked in a poverty cycle.



6 Slides - 6 minutes



Project Objective and Description

- The objective is to enable farmers to communicate (and thus present a united front) that will enable them to escape the endless cycle of rural poverty that in turn accelerates the de-population of the countryside (Zacatecas sends more immigrants to the US than any other Mexican state).
- The description is to use peer-to-peer mobile technologies - easily adopted, understood, replicated, and maintained - in a rural area, whose deployment will enable farmers to communicate and collaborate such that they – not the middlemen – can determine fair prices for their crops and ensure a marginally better economic (and socially cohesive) future.

Expected Results, Impact on Community

- The expected results are radically transformational. The ability to communicate and collaborate between rural communities would have immediate and long-term beneficial results. It is no stretch to say it would transform the rural economy from one of dependence on middlemen to one of self-sustainability. This model would be adopted by other states with similar demographic and economic profiles.
- The impact on these communities would have two immediate effects: retardation of immigration and improved ability to attract social programs that otherwise would never be implemented. These two factors often spell life or death for these communities.

Technology Guidelines

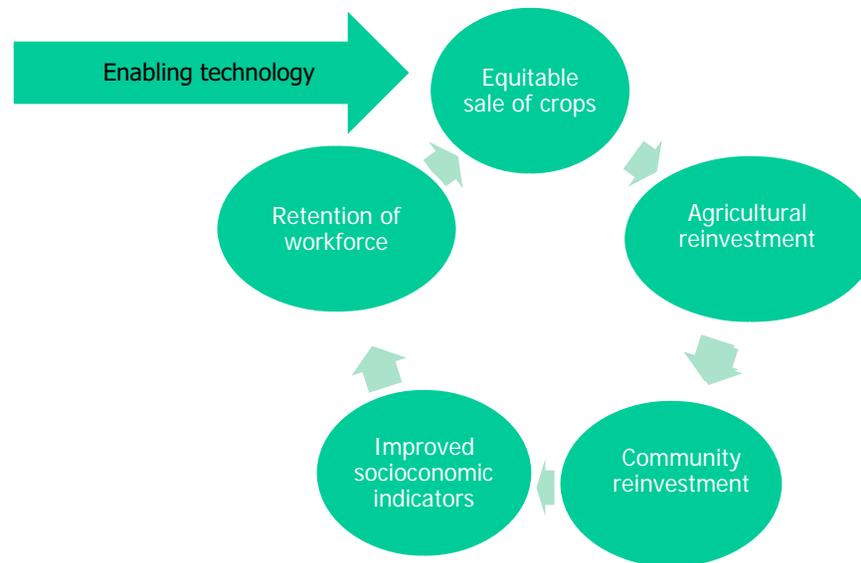
- Technology guidelines for this project are predicated on four factors:
 - ✓ Ease of adoption (implementation)
 - ✓ Ease of understanding (usage)
 - ✓ Ease of replication (across different locales)
 - ✓ Ease of maintenance (using continued functionality)
- Technology should be portable as opposed to stationary, and scalable (capable of data expansion/storage over time)



Map: Wikipedia.

How is the Project Sustainable?

- The project is self-sustaining. The farmers and others with access to this technology will have the ability to command more equitable prices, in turn reinvesting their profits in a virtuous circle. This project (and its underlying technology) will act as an economic lever, giving them the ability to directly invest not only in the next season's crops but also their communities, sustaining them and in many cases averting abandonment.



Describe your Organization and its Role

- ITESM Zacatecas, part of the ITESM system, was founded by an MIT graduate and attempts to model itself closely on MIT's commitment to solving the world's biggest problems. It is the link between the rural communities of Zacatecas State, and technology and other assistance providers, acting as a consultant and bridge between these communities and those entities that can provide support. The communities themselves have no voice, individually or collectively, and are often overlooked by traditional support mechanisms (e.g., government, NGOs).
- ITESM Zacatecas neither asks for nor receives any funds or remuneration of any kind for its role as advisor and intermediary. It sees its role as providing a much-needed service to the people of rural Mexico as well as giving its students and faculty an opportunity to participate in a work of economic and social justice with tangible results.



6 Slides - 6 minutes



Cobis MLM
Macosa SA
Ecuador



Problem: Inefficient Microfinance

- Experts agree that the biggest challenge facing microfinance is operational efficiency.
- Microfinance in most current incarnations is **labor-intensive**.



Outsourced Loan Prospecting

- Ever heard of Mary Kay?
- Cobis MLM is the multi-level sales business model applied to microfinance.
- Commissions are based on the final profit-per-customer going to the MFI.
 - Discourages volume-based blitzing
 - Encourages sustainable partnerships



Expanding Access

- Independent entrepreneurs drive expansion of the MFI.
- Communities become integrated around the idea of responsible saving and borrowing.
- Think of it as linear, dynamic village-banking.



How is the Project Sustainable?

- Portable methodology
 - Any MFI willing to invest in their IT can adopt the techniques we will be testing in the Cobis MLM project.
- Constantly expanding operations in each MFI
 - MFI must only respond to exponentially increasing demand.

Technology Guidelines

- All interaction between the MLM Agent (independent loan prospector) and the MFI can be done remotely, using handheld devices.
- This is where you come in.
 - We need to modify our existing mobile software.
 - Integrate with the new MLM modules.
 - Tags on each transaction for commission purposes.
 - Upload “on-the-spot credit scoring” results to the MFI in 2 modes:
 - Online (wireless)
 - Offline (periodic database syncs)
 - We plan to use .NET Compact Framework developer tools



Our Role

- **Macosa SA** is the Ecuadorian arm of the banking software company **Cobiscorp**.
- We have years of experience in:
 - developing and implementing core systems for MFIs and cooperatives.
 - ASP offering: outsourced IT for microfinance.
- In the Cobis MLM project, Macosa will be developing the MLM software modules to integrate with the pilot-site MFI's core banking system.
- For more info about the company, see www.cobiscorp.com/en

To download and read the Cobis MLM Project Overview, go to [www.cobiscorp.com/Portals/0/IADB_Application_Cobis MLM.pdf](http://www.cobiscorp.com/Portals/0/IADB_Application_Cobis_MLM.pdf)



Mobile Pre-Screening for MFIs

PlaNNet Finance Argentina

Argentina



Need or Problem Identified

Microfinance is a powerful tool to fight against poverty. However, **technological improvements** remain a key issue for the sector

- Very high operative costs of MFIs mostly due to extensive use of HR. Among principal identified issues, MFIs suffer an inefficient pre-screening process of microentrepreneurs

Loss of valuable time that increase the cost of credit for microentrepreneurs and prevents higher penetration of Microfinance in the market

And our response...

- To develop a screening process implemented through mobile technology, in order to reduce the *dedicated time per evaluation* and increase outreach of Microfinance Services



Project Objective and Description

- To improve the pre-screening process technology for prospective microfinance clients through a **handheld electronic device**, in order to capture and approve basic data directly in the field and in real time (no need for the credit officer to go back to the office to process the information).
- The result of this **pre-screening** is communicated to the loan officer a few minutes later helping him to decide to continue or not with the credit request.
- This system allows:
 - To reduce time required in the credit awarding process and cut off operative costs
 - To allocate more time for new clients prospection and to allow credit officer reach the most excluded populations



Expected Results, Impact on Community

- This project will contribute to an economic and social development for the poor:
 - by increasing the penetration of microfinance services, and
 - by improving the development of microenterprise: through the obtaining of major financing, microentrepreneurs can expand their economic activities
- The benefits for the MFI:
 - greater efficiency of the loan officers
 - reduction of costs
 - greater geographic outreach of the product
 - first step which might be followed by mobile scoring and mobile banking



Technology Guidelines

- PlaNNet Finance Argentina, in collaboration with Experian (one of the three most important credit bureaus) and Compañía Financiera Argentina (CFA: one of the biggest suppliers of consumer loans in Argentina), will create a system to verify personal and commercial data as well as credit history, using mobile technology
- Experian will develop an Expert System of pre-screening prospects, using actual consumer data provided by CFA based on their historical lending portfolio
- PlaNNet Finance will develop a Web platform to implement the expert system and to allow CFA credit officers to make an online request about microentrepreneurs general data
- **Support is needed to develop and implement the required technology that will serve as a link between the Web platform and handheld electronic devices**



How is the Project Sustainable?

- Firstly, CFA will conduct a pilot test of the Microfinance product, and it is very important because it is the worldwide pilot project for the company
- After this pilot project, it is planned that 94 branches of CFA will implement the same microfinance product, reaching more than 150,000 microentrepreneurs
- Through its extensive network distribution and its knowledge of how to deal with low-income people, CFA will be the biggest supplier of microfinance products in Argentina
- In the future, this innovative platform may be implemented in other financial products helping the development of mobile banking and mobile credit scoring
- PlaNet Finance assumes the commitment to disseminate this new technology through seminars, web sites and/or publications



Describe your Organization and its Role

- PlaNet Finance is an International Solidarity Organization whose mission is to fight against poverty by developing microfinance
- Based in Paris, the PlaNet Finance Group is active in more than 60 countries with an international network of 28 offices around the world
- PlaNet Finance Argentina, based in Buenos Aires, is an independent office delivering its consulting services in the South Cone
- For nearly ten years, PlaNet Finance has been contributing to the development of microfinance by supporting a wide range of institutions in the sector



Education

Team Advisor:
Andrés Monroy-Hernández



Mobile Social Network for Low-Income Students

Telmex Foundation, Instituto Carso Educación

Mexico



Project Proposals



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Need or Problem Identified

- A **BIG COMMUNITY** of Telmex Fellows in Mexico
 - **Students** (high school, undergrads, grads) with an excellent academic record and notable extracurricular activities
 - Brilliant “**human capital**”
 - HUGE **potential** group that can impact the social development of their communities
- **PROBLEM:** this community (social network) is
 - **THEY haven't fully realized the EXTRAORDINARY value** they can generate and that they could have as a community
 - poorly communicated/networked/linked
 - “Sub-utilized”, “Wasted”, “Non-engaged”
 - No value created (at least not evident to them and to Mexico)

Project Objective and Description

- Objectives:
 - “Un-lock” the power that lies within this social network (academic and social)
 - Stimulate participation and collaboration
- Develop an innovative social network platform based on mobile and web technology in order to:
 - Support the academic aspirations
 - User generated value & content
 - Facilitate the collaboration between members in social and academic programs, actions, campaigns
 - Enable the establishment of programs/campaigns
 - Encourage the participation of students in other projects and initiatives generated by other students



Expected Results, Impact on Community

- To empower more than 100,000 “fellows”
- New platform that can be “replicable” to other student communities
- Generate new ways in which students can communicate, collaborate, and make a contribution to their communities
- Leverage the value of this community by means of mobile technology
- Enable the creation of many social developmental activities based on mobile collaboration
- New motivational model to promote the use of mobile as an instrument of social activism within the student community



Technology Guidelines

- PLATFORM can be complemented by:
 - Mobile
 - Web based
- Current portal for Telmex Fellows community
 - www.interactuando.org



How is the Project Sustainable?

- Scholarships given by:
 - Telmex Foundation
- Operation and support by:
 - Telmex and Telmex Foundation
 - Instituto Carso Educacion
- Preferential fees for mobile services:
 - America Movil (largest mobile service provider in Mexico)

Describe your Organization and its Role

- Telmex –largest ISP in Mexico
 - 17 million customers
- Telmex Foundation
 - Philanthropic Institution established since 1986
 - Programs: education, health , justice, culture and human development
- Instituto Carso Educacion
 - To be focused only in major education programs in Mexico
- America Movil – Telcel
 - Largest mobile service provider in LatAm (120 million customers)
 - In Mexico, Telcel more than 50 million customers



M-LEARNING-Quintana Roo
**“Strategies for training community literacy
instructors, based on new educational
technologies and mobile devices”**

Instituto Tecnológico y de Estudios Superiores de Monterrey
México



Project Proposals



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Problem Identified

- Research and evaluation of educational services offered by Consejo Nacional de Fomento Educativo (CONAFE) in the state of Quintana Roo, detected improvement opportunities in the learning processes given out to rural literacy instructors, young mexicans between 14 and 24 years old, from rural environments, with a minimum of a middle school education.
- During the academic year of 2006-2007 a total of **34,978 rural literacy instructors** taught 300,698 boys and girls nationally.



Objective of the project

- Research ways in which mobile devices can be used to strengthen the strategies that the CONAFE uses to train rural literacy instructors, and to build a mobile prototype based on that research.

Expected Results

- A working mobile technology that is based on the results of that research.



Technology

- Cell phones
- Software needed for the field work and the training for rural literacy instructors

Sustainability

- CONAFE offers the infrastructure for the educational centers, as well as the educational content
- ITESM searches for alliances and advisory for better educational practices, as well as the participation of the community itself, through parent associations

Instituto Tecnológico y de Estudios Superiores de Monterrey

- The Tecnológico de Monterrey was founded in 1943 as a private university. Through an emphasis in high technology, it offers traditional academic programs, continual learning for professionals, NGOs and public administrators, programs for teachers of lower and middle school, as well as instruction for the development of rural environments



Environment and Community

Team Advisors:
Rich Fletcher



Project Proposals



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Mobile Phones for Disaster Management and Risk Reduction

Catholic Relief Services (CRS) India



Project Proposals



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Disaster Context

- India has been suffering over US\$ 1B/yr in disaster-related losses during the past 20 yrs
- From 1990-2000
 - an average of 4,344 people lost their lives each year
 - about 30 million people were directly affected by disasters each year
 - and 3 times as many indirectly affected
- Natural Hazards:
 - Flood, cyclone, drought and earthquake
- 80% of India's land mass vulnerable to at least one hazard
- 22 out of 28 states are multi-hazard



Project Proposals

Disaster Context

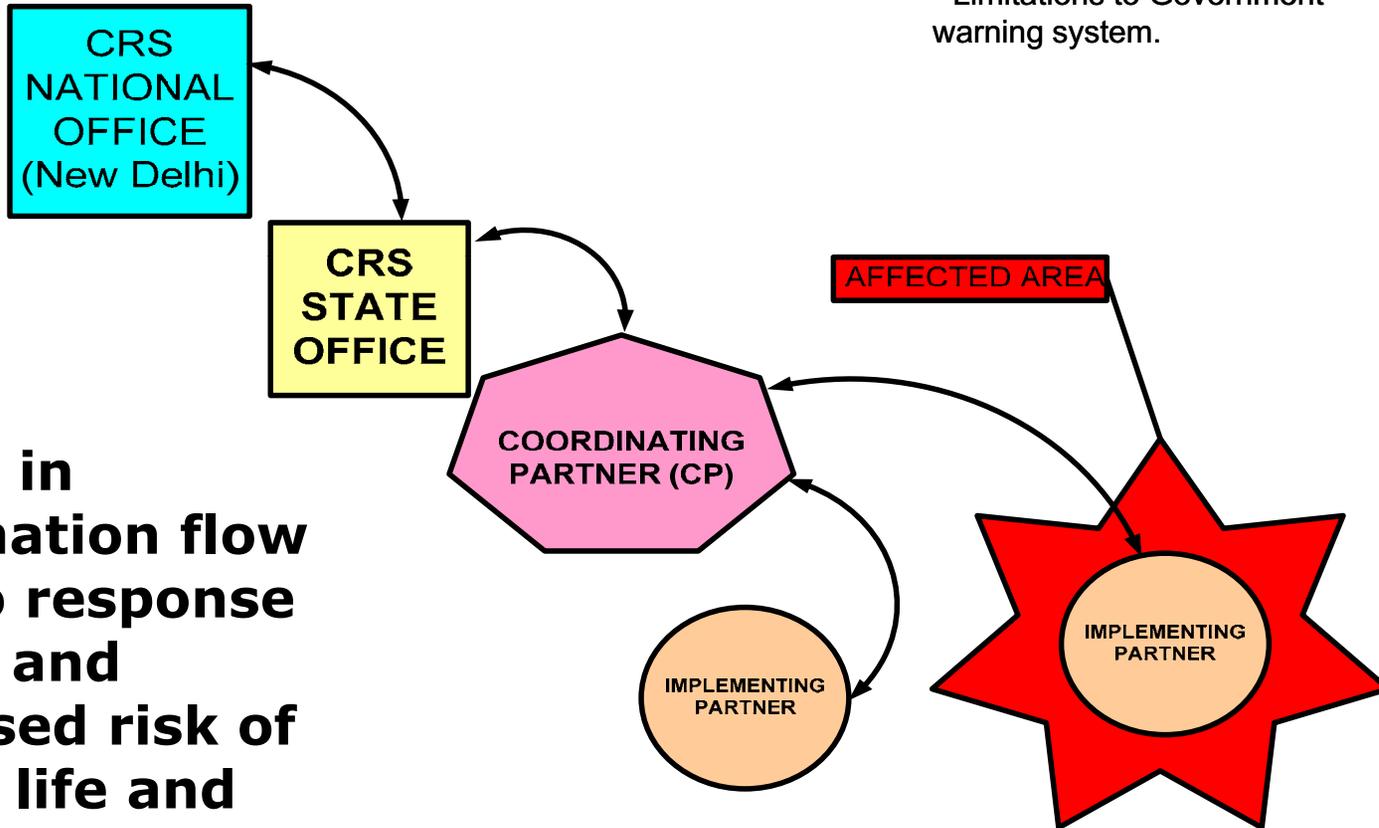


Figure by MIT OpenCourseWare.

The problem...



- Traditional EW system suffers from low reach and high transmission loss
- Limitations to Government early warning system.



Delays in Information flow lead to response delays and increased risk of loss of life and livelihoods.

Expected Results, Impact on Community

- This pilot expects to provide a replicable model –
 - To improve access to timely and accurate information for all stakeholders to inform decision making.
 - To support early warning systems (EWS) in providing timely information (from government and media) to communities in vulnerable locations for safe evacuation.
 - To support follow up monitoring of disaster situation and interventions to inform required changes based on feedbacks.
 - To map out hazards hit areas (or prone locations)
 - Locating relief camps, health camps, available services



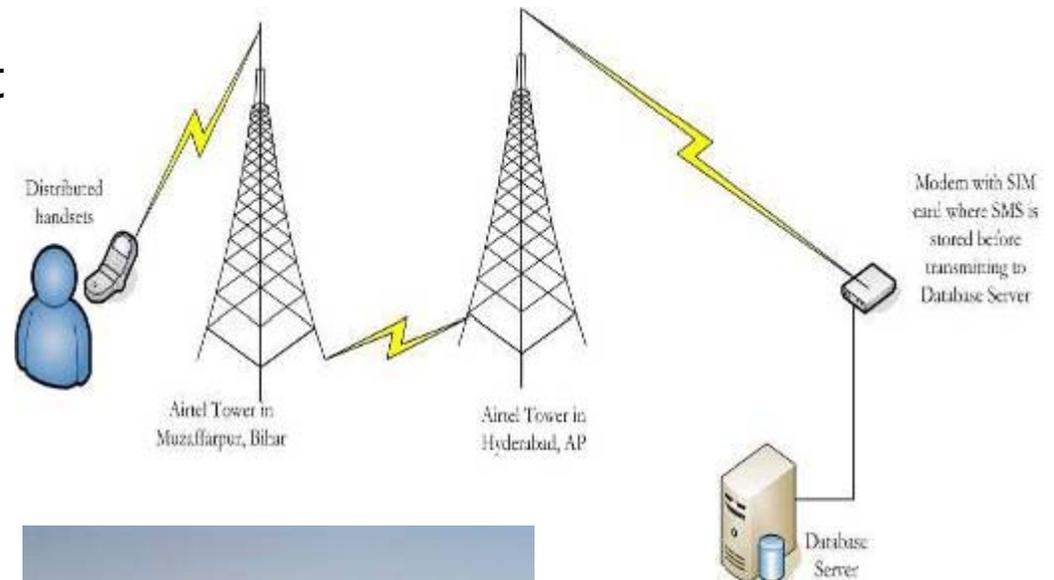
The technology is expected to increase the efficiency and speed in delivery of information, data and relief services both before and following a natural disaster.

Technology

- Priority
 - collection of rapid assessment (and other) forms via mobile
 - reporting via web to CRS and partner offices
 - provide early warning on a potential hazard to the communities in vulnerable locations
- Possible Extra Features
 - Multimedia reporting (e.g., pictures of disaster sites)
 - Use of Location info (e.g., via GPS)
 - Do more than just data collection
 - data access, computational tools, etc

Technical Challenges During the Pilot, Phase – I

- Problem: the gateway was not able to handle bulk SMS messages and would abruptly stop responding
- The design was not able to capture lost SMS, SMS delivery acknowledgement was having problems



The current pilot (Phase – II) is expected to take in to account of the lessons learned from the Phase - I





How is the Project Sustainable?

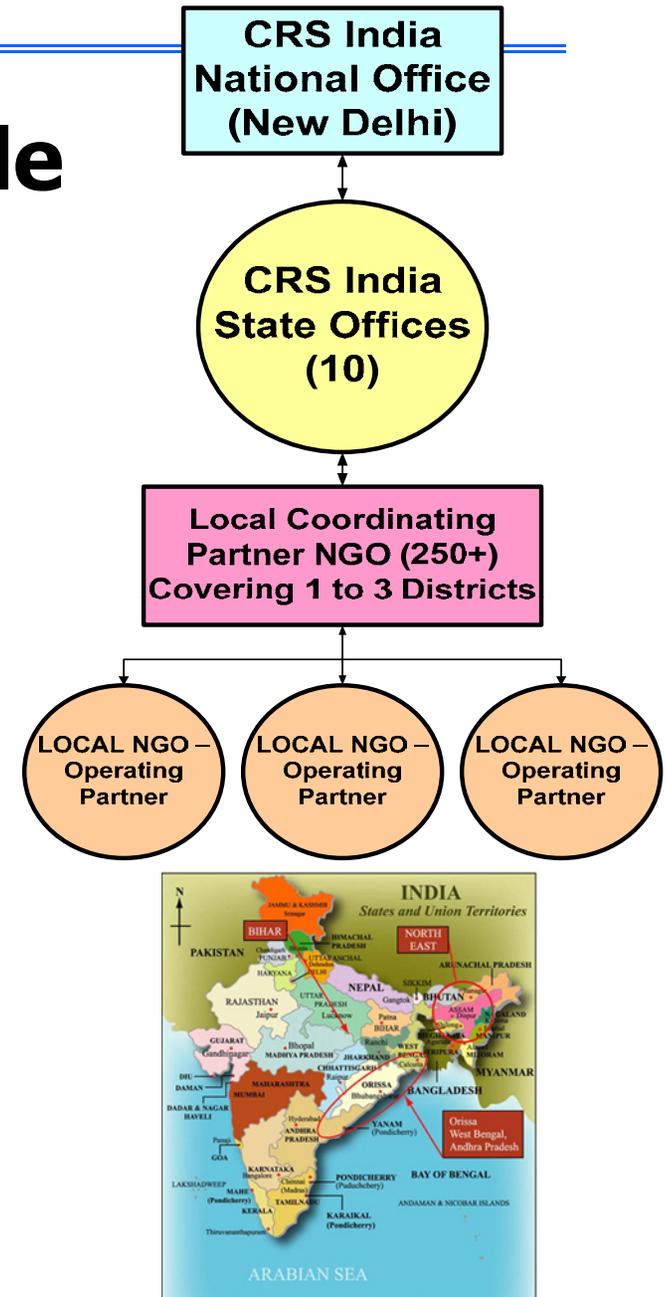
- The proposed technology is a low cost and community will be able to maintain with minimum inputs.
- Potential to link the communities with government early warning information sources.
- The existing infrastructures and capacities (from the first phase pilot) can be used.
- In hazard prone communities, at least one household has a mobile. So, system is not new to the communities/participants.
- There are opportunities for collaboration with government and private network providers.





Organization and Role

- CRS has been in India since 1946
 - one of 99 CRS country programs worldwide
- CRS supports a network of local partners
 - Indian NGOs, both faith and non-faith based
 - 2,400+ Operating Partner Organizations (Ops)
- Main Programming Areas:
 - Disaster Management, HIV, Livelihoods Security, Woman and Child Protection and Health
- More than 1.5 M program beneficiaries/year
- CRS and implementing partners will use their community experience to train groups
- CRS India IT and Programming Team to provide input



Project Proposals

Figure by MIT OpenCourseWare.
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Innovative Green Tech

Mobile Sensors and GPS Mapping for Farmers

NGO: InnovGreen, Vietnam

Sponsor: Flow Inc., Taiwan

Mobile Tech: MIT



Project Proposals



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Need or Problem Identified

Agent Orange in Vietnam War

Rainbow Deadly Chemicals,
Over 10 Million Gallons on the Vietnam,
Destroy 6M+ acres land and 4M+ victims of Dioxin.

Source: http://en.wikipedia.org/wiki/Agent_orange;
http://en.wikipedia.org/wiki/Vietnam_war



InnovGreen are Doing

- Clean up land mines
- Detoxify deadly chemical
- Fertilize land
- Plant forest



Project Proposals



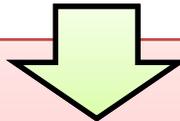
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Project Objective and Description

Objective: Mobile Environmental Sensors and Maps

Current Issues:

- Fertilizer bags are very heavy ; **thus farmers resell or dump fertilizer on the road**
- Fertilizer **costs 1/3** of total plantation cost, so cannot be wated
- Farmers scatter in deep mountain for 5 ~ 10 days **long fertilizing trip**
- Pay wages by every trip; but **see results at least 6 ~8 months later**



Preferred Solution:

- Create Traceable & trusted fertilization using photos with GPS location
- Saving on fertilizer by doing on-site soil analysis (sensors)
- Give GPS mapping tools to scattered farmers
- Monitor and evaluate quality of fertilizing process using sensors



Expected Results, Impact on Community

Expected Results

Success in Plantation Management

- Control trust and traceable quality of fertilizing process by low cost tool
- Create better managed incentives for farmers to be paid
- Create a system to track plantation trip, route, and results
- Collect various natural resource data such as soil, watershed, and bio-info.

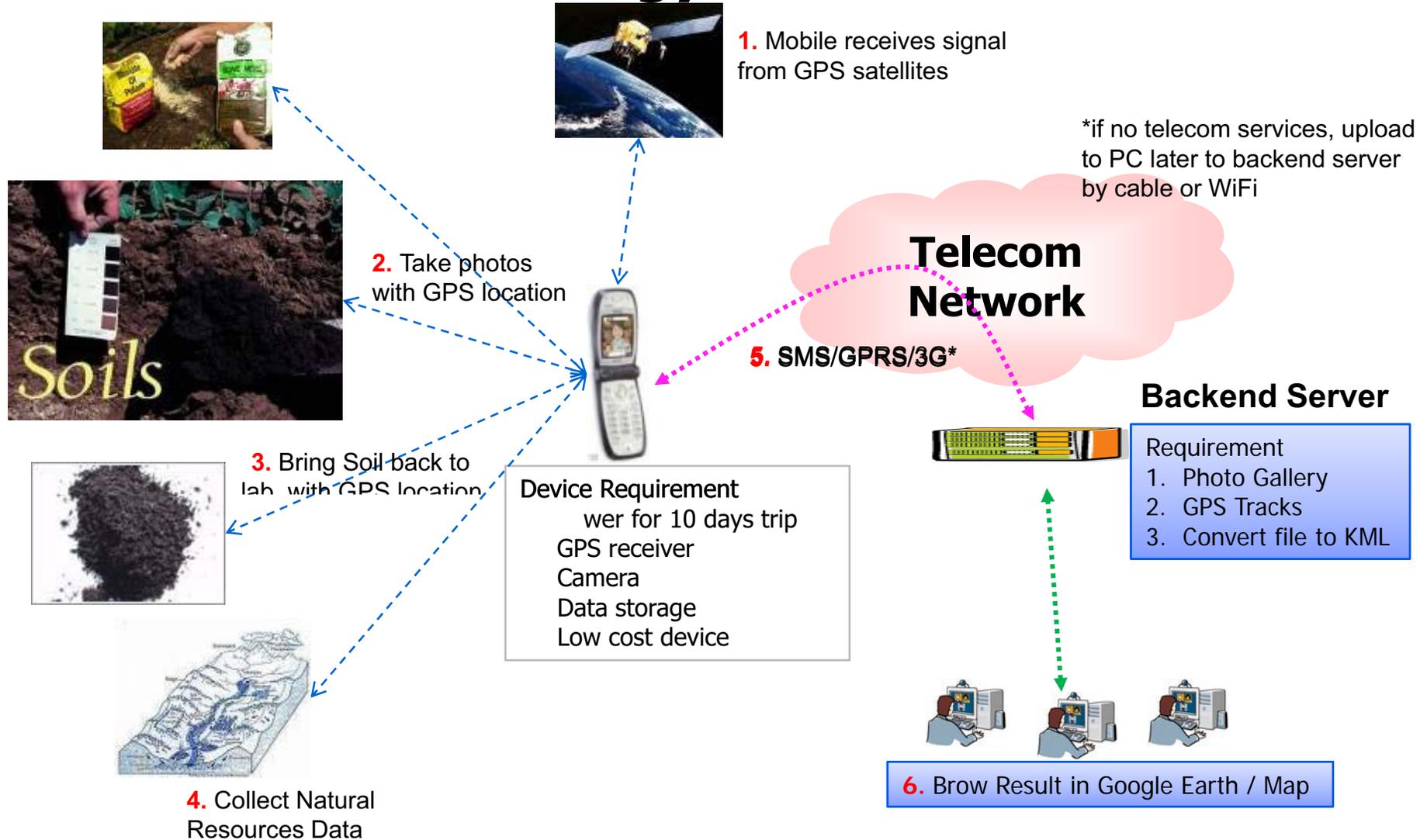
Impact on Community

Success in Community & Environment

- Establish long-term sustainable forest plantation
- Help local farmers financially independent
- Co-grow with local environment and community development



Technology Guidelines



Project Proposals



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Sustainability

Sustainable in Technology

- Leverage good enough technology to control quality of plantation process
- Collect and manage mass data of natural environment resources
- Scale out the same system to other area

Sustainable in Economic

- Provide incentive program to help local farmers financially independent
- Create long-term sustainable forest plantation
- Control damages from natural disasters such as flooding and landslides

Sustainable in Social

- Clean up mine, detoxify deadly chemical, and plant forest
- Co-grow with local environment and community development
- Reduce the impact of global warming, CO₂ emission and natural calamities



Work/Design Challenge – InnovGreen Team

Phase I

Design Network Architecture and Software

- Create phone interface (Windows Mobile ↘,
- Create server backend – L.A.M.P. tools → Google Maps
- Create process to annotate photos with GPS info. and browse data

Phase II

Create clever onboard sensors

- Machine vision software on phone
- Software app to measure height of trees
- other simple measurements?

Phase III

Design Interface to external sensors

- Bluetooth link
- Software service to parse and format data packets



The Next Billion in Our Neighborhood

A collaboration with the City of Boston
Teams Advisor:
Luis Sarmenta



Boston Baby Blog

Countdown to Kindergarten and ReadBoston

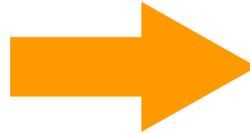
Boston, Massachusetts, United States



Boston Needs New Tools to Reach Parents

Parent Education Campaigns

with traditional tools to reach parent population (workshops, websites, guides, printed materials and giveaways)



Parents – low income and young parents especially – **want information through their cell phones**



Need new tools that use cell phone technology to effectively reach parents

Boston Baby Blog

Create a **Boston Baby Blog** that parents can access through their cell phones to:

- **Document and store child's growth and development** with pictures and short messages – online baby book
- **Receive information and tips** on child development and parenting using content already developed by campaigns
- **Stay informed** about upcoming events and opportunities in their neighborhood to better connect families to their communities
- **Communicate with providers** (pediatricians, child care providers, teachers) about child development and questions and concerns before any scheduled appointments to make better use of face-to-face time during visits and meetings (long term feature)



Increased Effectiveness through Technology

Boston Baby Blog will increase effectiveness of Boston's parent education campaigns, by

- Allowing campaigns to **communicate directly with parents on a regular basis** – reminders about activities, tips, events
- Providing parents with **age-appropriate information** about their child – all based on a child's birth date
- Reaching out to **"at-risk" low-income and younger parents** with technology they have access to and are comfortable with
- Reaching out to **non-English speaking parents** in their own language without the expense of printing new materials

Technology Guidelines

- **Simple and Accessible** – easy to use by both staff and parents
- **Automatic** – built in updates that parents receive automatically when their child reaches new development stages
- **Scalable** – need the ability to communicate with increasing numbers of parents over time – from 300 to 10,000
- **Secure** – need the ability to securely store individual child development information, particularly to meet long-term goal of improved communication with providers
- **Easy to Upgrade** – need the ability to layer on additional features over time
- **Low Cost** – limited resources for technology at Countdown and ReadBoston

Boston Baby Blog's Sustainability

- **Countdown and ReadBoston** are both stable, respected organizations in Boston with strong connections to parents and communities
 - Full-time **staff and resources** dedicated to implementing parent education campaigns
 - Will be able to **build on the Boston Baby Blog** over time with new information and resources from future campaigns
- **Thrive in 5**, new city-wide framework to support school readiness, will bring together other partners and providers who will expand use of the service and suggest additional features to add in over time
- **Baby Blog could be a marketable product/service** for family support and engagement organizations to increase their capacity to communicate with families

Partner Organizations/Project Managers

ReadBoston – Early Words

ReadBoston provides services through early childhood programs, schools, after school programs and other community-based partners to achieve the goal of having all children in Boston reading on grade level by the time they complete third grade.

Countdown to Kindergarten – Talk, Read, Play

Countdown to Kindergarten engages families, educators and the community in a citywide effort to enhance early learning opportunities and to support the transition into kindergarten.

Thrive in 5

Boston's city-wide framework to prevent the achievement gap in our next generation by promoting school readiness and ensuring healthy development of Boston's youngest children



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MAS.965 / 6.976 / EC.S06 NextLab I: Designing Mobile Technologies for the Next Billion Users
Fall 2008

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