What is your idea?

Title: Crowdsourcing information system for rapid response against pest and disease outbreaks (CRISP)

Viamo and IRRI propose to design and implement a crowd sourced IVR (Interactive Voice Response) pest and disease surveillance system, allowing all community members, no matter their literacy level and language, to report crop pest and disease incidence through their phone, no matter how basic a phone they own. The data will be populated into a customized map, giving the local government and research institutions the means to monitor, track, and research these incidents.

Viamo will create a surveillance system with the following goals 1) increased access to pest and disease information; and 2) improved monitoring of pest and diseases. To reach these goals the surveillance system will gather information from value chain actors (farmers, input suppliers, cooperatives, etc.) and frontline workers (agriculture extension agents, IRRI development specialists, etc.). Value chain actors can call a toll free line to access information on the identification, treatment, and prevention of common pests and diseases and/or to report a suspected case. They will also be given the option to opt-in and register for future warnings and treatment tips. Frontline workers will receive an automated "weekly engagement call" and be prompted to report any suspected cases of a disease or pest in their region. The system collects data on several key indicators and sends an SMS acknowledging the report to the frontline worker.

Incidents would be populated onto a **customized map** to highlight particular hotspot areas where authorities should focus their attention to and investigate claims. If authorities confirm a hotspot exists, the system will trigger an automated IVR/SMS warning to registered users in the area alerting stakeholders on the problem, identification, treatment, and prevention.

Pests and diseases can have devastating effects on smallholder farmers as well as whole value chains especially in food insecure countries such as Cambodia if not addressed immediately. An IRRI rice health survey in Cambodia (2016) showed that 20-30% of rice planting in the country was affected by common diseases and pests such as rice blast and rats. A desegregated, informal value chain impedes access to timely, reliable information on pest and disease management. Under-resourced extension services and the Cambodian terrain make it difficult and costly for extension agents to serve farmers in a timely manner. Using community members to crowd source surveillance not only helps authorities monitor larger areas of land, but also promotes community ownership of the project and sustainability of these protection measures. In addition, the toll free number ensures all value chain actors have access to the information to prevent occurrences and treat incidences when they occur. Furthermore, the alert system empowers value chain actors to prepare for the potential risks of pest outbreak. Farmers receive information on identification, management and prevention methods. Input suppliers can anticipate the needs of farmers and can give farmers reliable treatment information. Millers can disseminate the information to their producers, ensuring they have the needed supply come harvest. The government can deploy resources to the most affected regions and anticipate needs.

Hypothesis: The surveillance system will reduce occurrences of pests and diseases and catch outbreaks sooner, minimizing crop loss/damage.

How will you pilot it?

The 12 month pilot will focus on Cambodia, and be implemented in the following phases:

1. Research & Design (3 months, $45,000)- Viamo will work with IRRI development specialists to conduct IVR surveys, field interviews, and focus groups to identify current information sources, barriers to information, and information needs of value chain actors and frontline workers. The information will be used to design an IVR surveillance system that meets the information needs of stakeholders while being engaging and enjoyable to users. Viamo Technical Team will build the tech to power the system including the customized map. The main cost for this phase is the man hours needed to create the technology. Additional costs include airtime for the IVR survey and field visits for the interviews and focus group discussions.
2. Content Development & Testing (3 months, $10,000)- IRRI has conducted a workshop with agricultural stakeholders in Cambodia on current information needs and started to develop contents based on IRRI Rice Knowledge Bank (http://www.knowledgebank.irri.org/). Viamo will optimize IRRI content for mobile engagement. The created mobile content will be translated and recorded in agreed upon priority languages. Viamo will conduct A/B Testing on the created messages to ensure the information is understood, enjoyable to listeners, and accessible to underserved populations (women, youth, illiterate, etc). Viamo will work with IRRI to ensure the finalized content is approved by the appropriate government bodies. The costs in this phase include translation & recording of content, and airtime for A/B testing.
3. Pilot Live (6 months, $45,000)- The optimal content, identified in Phase 2, will be uploaded onto the IVR surveillance system and the toll free number will go live. IRRI will advertise the surveillance number in collaboration with national research and extension partners. Viamo and IRRI will work together to sensitize frontline workers to the system to ensure they understand the weekly engagement calls and how to respond. Sensitization focus groups will also be conducted with farmer groups and input suppliers, ensuring value chain actors are engage in the system. In collaboration with national research and extension system, IRRI will monitor the incidence data and conduct verification of hotspots by field sampling, laboratory diagnostics and remote sensing imagery. Viamo will continually monitor passive data from the platform (the number of calls, call length, content accessed, and frontline workers engagement) to improve the system and content. In addition, Viamo will conduct monthly feedback surveys of registered users and make necessary changes. Costs incurred in this phase include sensitization workshops, platform management, hotspot verification and airtime.

Once the 12 month pilot is concluded, Viamo and IRRI will use the lessons learned to scale out the system and move to a sustainable model. To scale out the system the focus area may be expanded to include additional target crops (maize, vegetables, lentils, etc) and livestock. To make the system sustainable Viamo will explore an MNO partnership to continue the toll-free phone line. A subscription model will be explored for value chain actors to continue to receive pest and disease alerts. Finally, buy-in from the government will be explored to ensure the data is monitored and acted upon.