Call for Application
Design-a-thon for Climate Information Application Development using the Internet of Things

Kick off Workshop : 20th-22nd February 2018
Final Presentation : 20th March 2018
@Kigali (Venue TBD)

1 Project Background

Rwanda is a country highly prone to disaster, including landslides, flash floods, droughts, windstorm, lightning and earthquakes. Over 157,000 people are vulnerable to drought, 7,431 are vulnerable to landslide and over 5,000 houses are vulnerable to windstorm, while forest and landscape degradation and climate change increase the risk and severity of disaster affecting most the vulnerable population such as female-headed households and rain dependent farmers with less access to education in rural areas. Climate data is critical for disaster risk management, early warning and for fast response to disaster, however micro level data is very difficult to collect with traditional meteorological stations. Presently, climate related data is collected and analyzed by Rwanda Meteorology Agency (Meteo) under the Ministry of Environment. A large part of data collection is done manually, involving volunteer observers, with data being sent monthly by phone and paper forms. This can delay the early warning mechanism and in the face of large scale disaster, inefficient to provide first-hand scoping information and moreover lead to loss of data.

Kayonza is one of the districts identified as most vulnerable to drought in the National Risk Atlas (MIDIMAR), with 26% of the district land exposed to severe drought and agriculture at high risk. Part of Akagera National Park lies in the district, and it is within the so-called “Cattle Corridor”, an extremely dry area stretching from south to north of the eastern side of the Province. Major challenges related to climate issues identified in the District Plan (2013-2017) are; agriculture based on weather, large number of vulnerable groups (41634 people / 11196 households); limited access to socio-economic infrastructure (eg. Electricity) and environment issues such as drought and soil erosion. In order to pilot new and innovative methods to effectively collect and disseminate micro-climate data that matches the needs of the people, Meteo, with the support of UNDP has been implementing the pilot project ‘Internet of Things (IoT) for Water Management and Climate Change’. The project has been testing an open source Internet of Things (IoT) technology since August 2017. The project has identified sites and set up 12 sensors (temperature and soil moisture) through multiple workshops and consultation with the local stakeholders in 3 sectors; Murundi, Ndego and Rwinkwavu, which are especially drought prone areas within the district. The sensors are now collecting data every 15 minutes.

As the final stage, UNDP with Rwanda Meteorology Agency and the University of Tokyo will conduct a Design-a-thon that aims to convert this real time data into usable and accessible information
through a collective designing process, bringing together national and local stakeholders with young programmers and technology experts. The Design-a-thon will be in three steps; 1) 3 days workshop, including one day optional field visit 2) 20 days of app development 3) Final presentation and award ceremony.

2 ABOUT THE DESIGN-A-THON

2.1 PROBLEM STATEMENT

Final deliverables (Prototypes) are expected to provide solution to the problem: “How can we build a system to deliver timely climate related information and predictions to address pressing needs of farmers and vulnerable populations in climate disaster prone areas?”

3.1 DESIGN-A-THON STRUCTURE:

1. Design-a-thon kickoff workshop (3 days) - participants are introduced to the design challenges, formed into teams, and make an initial pitch of the type of app they want to develop. Up to six winning teams of the pitch competition will receive transport fees worth 200,000 Frw. The intention is that this money will help cover transport and small costs for the team to continue to meet and seriously develop the app over the next month.

2. App Development (20 days) - All shortlisted teams have 20 days to flesh out a functional app that addresses the challenges proposed by the stakeholders. During this time, the Application Development Manager at IHK will be checking in with teams at regular intervals to see their progress and make sure they are on track with what the stakeholders need. Applicants are also invited to work together at IHK co-working space for free.

3. Final App Selection and Awards - The final apps will be presented at the partnership workshop with stakeholders on 20th March. Apps will be judged by how well they meet the stakeholder needs and the quality of the code and software architecture and winners will be awarded prizes.

3.2 PRIZES

First Prize- $5,000 (one team)
Second Prize- $1,000 (one team)
Inspiration Prizes - $500 (up to four teams)

The award is provided in exchange to the deliverable, which is the prototype of the defined climate information system. There are no limitation to the usage and its distribution among team members. The intellectual property of the winning prototypes will stay with the project.

3.3 WHO CAN APPLY

Application is open to individuals, companies, academia, initiative groups and NGOs. Individuals are eligible to apply, although team applications are encouraged. All Applicants must be able to physically attend Day1 and afternoon of Day 3 of the workshop and the final Presentation.
3.4 APPLICATION
Apply by registering with email to offers.rw@undp.org no later than Sunday 18th February 11:59PM. Applicants must submit a simple resume or CV (maximum 2 pages) upon application.

Note that by applying to the Design-a-thon, the applicant will accept the conditions written in the concept note. Maximum 50 candidate will be invited to the Kick off Workshop, selected based on the following criteria. Teams are encouraged to apply together, particularly if they include both coding and climate science/smallholder farmer experience. If a team wishes to apply together, such that no one on the team is excluded from selection, the CVs of all team members must be attached to the same email.

However, individuals may also apply, they will be mixed into teams during the Design-a-thon kickoff workshop.

**Academic** - At least a secondary school degree or TVET certificate related to engineering, ICT, environment, climate change or other related areas.

**Experience** - Knowledge in programming (mobile apps, systems, data management tools and others), climate science, disaster risk management, or practical hands-on experience working with smallholder farmers

**Knowledge** - Knowledge in IoT and/or development issues such as environmental issues, climate change and disaster risk management will be an advantage.

**Language** - English

4 DESIGN-A-THON 3 DAYS KICKOFF WORKSHOP

4.1 OUTLINE
TIME : 20-22 February 2018
VENUE : TBD, Kigali
PARTICIPANTS : Up to 50 persons
STAFF : Impact Hub Kigali, Technical advisors from Meteo, RAB, RWFA, MIDIMAR, UNDP, UoT will accompany the participants to guide the designing process and facilitate

Day 1: Design challenges presentation, team formation, design thinking training, teams work to flesh out concepts for their apps
Day 2 (Optional): Field visit to Kayonza to see IoT sensors installed in the field, and talk to end users. Teams may also choose to use the time to prepare their final presentation.
Day 3: Final presentations and first round of design-a-thon winners selected.

4.2 SCHEDULE

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<th>Day 1 - Design Thinking</th>
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<td>8:00 Registration, meet and greet</td>
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### Day 2 - Field visit (optional for participants)

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<tr>
<td>8:00</td>
<td>Participants meet in Kigali to join transport organized by UNDP</td>
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<td>8:30</td>
<td>Departure to Kayonza (Proposed site Rwinkwavu due to road condition, TBD)</td>
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<td>11:00</td>
<td>Arrival at IoT sensor station</td>
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<td>12:30</td>
<td>Lunch</td>
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<td>13:30</td>
<td>Participant conversations with farmers and other end users</td>
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<tr>
<td>15:30</td>
<td>Participants depart Kayonza</td>
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<tr>
<td>17:00</td>
<td>Arrival in Kigali</td>
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### Day 3 - Final presentations

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<td>Registration and mingling</td>
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<td>Finalize presentation</td>
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<td>12:00</td>
<td>Lunch</td>
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<td>13:00</td>
<td>Keynote speech (speaker TBA)</td>
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<td>13:30</td>
<td>Participant presentations</td>
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15:30 | Jury deliberation (Applicants fill in survey, IHK explain next steps)
16:00 | Announcement of winners
16:45 | Closing remarks (speaker TBA)
| End of workshop

4.3 Final results of Kick-off Workshop
By Day 3, we expect teams to make a 10 minute pitch of the app they intend to build. The presentation must include the following:
1. Clear problem statement and end-user understanding
2. Proposed solution
3. Wireframes or screenshots of the intended app
4. Detailed software architecture - what software components will be used to build the app?
5. Technical demos are optional

5 Final Presentation
The Final Presentation will take place on the afternoon of 20th March 2018. All teams will submit their final prototype by 15th March. The venue and time of presentation will be communicated.

6 Juries / Selection Criteria

6.1 Board of Evaluators
The Board of Evaluators for each stage will be consisted of 6 members in total, including 3 UNDP staff, Meteo Rwanda, the University of Tokyo and subject matter experts. The subject matter experts will provide technical advice to UNDP staff. Following the Innovation Challenge rules, the final decision in choosing the winning entry will rest and remain only with UNDP and made by UNDP staff.

6.2 Evaluation Criteria

6.2.1 First round selection
The first pitch will be evaluated based on the following criteria.

- Relevance and focus on the farmer (45 points) - The proposed solution demonstrates that it understands the problem from the farmer’s point of view, and it directly addresses the needs of farmers in a realistic and helpful way. The solution also directly addresses the complexity of working with different stakeholders to get actionable information to farmers.
• **Technology & Innovation (20 points)** - The proposed solution utilizes well established technologies in a novel way. Winning teams will incorporate secure, scalable technologies into their design, and offer to create a manageable project that fits within the timeframe.

• **Skills and Qualifications (20 points)** - The team possesses a diverse skill set that will help them achieve the solution. Team members have successfully utilized the proposed technologies in the past. While it is not necessary to have worked on the exact problem in question, successful team will have demonstrated a firm understanding of various technologies/strategies and how they fit together.

• **Growth Potential (15 points)** - This project demonstrates large potential to scale by providing a clear strategy for reaching new users and keeping them. It addresses technical scalability issues as well as any technology related limitations that might be encountered by end users.

### 6.2.2 Second round selection

The final winners will be graded along the following categories:

- **Implementation (35 points)** - The product addresses the problem and implements the proposed features.
- **Ease of use (30 points)** - The product is intuitive and easy to use. Farmers should like using the solution and new users should be able to learn most functionality within a few minutes.
- **Quality (25 points)** - The final app has been tested for technical bugs and performance issues. It performs as expected on a number of devices and in varying connectivity environments. It has appropriate software architecture.
- **Scalability (10 points)** - The product is scalable from a technical and logistical perspective. Additional users and data can easily be accommodated.

### 7 Logistics

UNDP will provide venue, lunch, coffee break for Day 1 & 3 and organize the field visit on Day 2. Participants are to prepare their own accommodation and transportation to and from the workshop facility in Kigali.