Humanitarian Hackathon 2019 Challenges

Smallholder Farmers - Feeding the World
School Feeding - Decentralized procurement platforms for school feeding sourcing
Climate Change - Move from information to action
Emergency Response/Humanitarian Aid
Beneficiary Data Management - Digitally empowering the people we serve

Title: Smallholder Farmers - Feeding the World

Subtitle: How might we empower smallholder farmers to access markets and new business opportunities so that they can break the cycle of poverty for good?

Context: Worldwide, there are more than 500 million smallholders. Smallholder farmers are the backbone of agricultural production in developing countries. Despite producing most of the world's food, smallholder farmers tend to be food insecure themselves: globally, they form the majority of people living in poverty. Helping raise their incomes and improve their livelihoods holds the key to building sustainable food systems, advancing food security and achieving Zero Hunger.

The World Food Programme (WFP) is well placed to contribute to this process. Thanks to our large demand for staple foods, farmer-directed procurement processes and locally-geared supply chains, many smallholders gain an entry point into formal markets. Encouraged to form associations, they are able to negotiate better, sell more, lower their transaction costs and extend their customer base.

But smallholders continue to face serious constraints. Some are unable to produce enough to last through the lean season. Others may generate a small surplus, yet struggle to make a profit. They struggle to access local and international markets with fair prices for their crops that could lift them out of poverty. When smallholder farmers find a buyer, they rarely have any power to negotiate terms and improve their lot. Overall, smallholders lack access to productive inputs and financing. Post-harvest management, including storage, is often inadequate: crops are exposed to mold, rot and pests. All the while, increasingly extreme weather events add to the challenge: often reliant on rain-fed agriculture, smallholders are powerless in the face of climate hazards.

For smallholder farmers, new technologies offer radical opportunities to grow their agricultural output, gain access to new markets and improve profit margins.

Challenge Statement: How might we empower smallholder farmers to access markets and new business opportunities so that they can break the cycle of poverty for good?

Title: School Feeding - Decentralized procurement platforms for school feeding sourcing

Subtitle:
How might we ensure efficient, transparent, local procurement processes in school feeding?

Context: Every day, countless children across the globe turn up for school on an empty stomach, which makes it hard to focus on lessons. Particularly in times of crisis, having access to food at school can make all the difference. Research shows that school feeding improves access to education, reduces poverty, results in increased school enrolment, as well as improving gender equality and learning.

While the WFP has been operating school feeding programmes in developing countries for almost 50 years, there is still need for more sustainable solutions that support local economies, including smallholder farmers. Providing school feeding is a potentially significant market opportunity for local farmers and traders, but in many regions is largely unexplored. Key obstacles include the difficulty to control the procurement for

food purchasing at school level. With thousands of schools doing dozens of transactions every month, it is currently not feasible to efficiently monitor the process. This translates into miss management of funds and lack of data on what school are actually purchasing; while it is virtually impossible to identify and avoid corruption.

Challenge Statement:
How might we create an efficient, transparent, user-friendly procurement platform for schools to source their school feeding programme?

Title: Climate Change - Move from information to action

Subtitle: How do we mainstream information from climate and food security analyses to inform WFP operational programming?

Context: Climate change is one of the leading causes of hunger. More than 80 percent of the world's food-insecure people live in countries prone to natural hazards in degraded environments. For them, climate change means more frequent and intense extreme weather events which increase food insecurity and malnutrition by destroying land, livestock, crops and food supplies. This can intensify conflicts over scarce resources, leading to new humanitarian crises, migration and displacement.

If we do not act now to help people cope and build their resilience, climate change could increase both the risk of hunger and child malnutrition by 20 percent each by 2050. It is projected that in a 2°C warmer world 189 million people could experience levels of vulnerability to food insecurity greater than in the present day.

Despite the attention climate change receives, there is still limited research on the impact it will have on people's food security and nutrition, making it challenging for governments to prioritize climate policies and finance to adequately address hunger. To help address these gaps, thanks to the Government of Sweden under the **Climate Adaptation Management and Innovation Initiative (C-ADAPT)**, WFP produced 19 climate analyses in 14 countries across the globe to enhance knowledge about climate change impacts on food security and nutrition. The results of these analyses can identify and guide the development of effective adaptation plans and measures.

However, funding and additional support are needed to mainstream such results into WFP operations at country level.

Challenge Statement: How do we mainstream information from climate and food security analyses for adaptation actions which address the impacts of climate change on food security and nutrition?

Title: Emergency Response/Humanitarian Support

How can we maximize the information potential of drones and high resolution satellite data over refugee and displaced population camp settlements?

Subtitle: Earth Observation for Population Monitoring

Context: The number of people displaced by conflict have increased over the last ten years, including both refugees and internally displaced persons (IDPs). At the end of 2017, 68.5 million people were forcibly displaced due to persecution, conflict, generalized violence or human rights violations. In 2007, the total number of forcibly displaced people by violence or conflict was 37.5 million. This increase in the number of conflict-displaced people is related to the current nature of crises, including six conflict-related WFP Level 3 emergencies that the Organization is responded to in 2018.

Very high-resolution (VHR) and high-frequency satellite imagery is routinely acquired and analysed to monitor conflict affected populations within WFP Level 3 emergencies, observing displacement of populations and the creation of post-displacement settlements. The availability of very high-resolution satellite imagery provides WFP's Vulnerability Analysis and Mapping service (VAM) an additional capacity that helps the Organization better monitor changes in food security on the ground remotely, without the risk and investment of time and resources of a field visit. Access to this imagery improves the quality of information available on remote and inaccessible areas and enables WFP to be better informed of, and to validate changes in food security situation on the ground.

Expert image analysts in VAM exploit the high level of detail in VHR image data to manually identify features of interest. Identifying the number of shelters in a newly formed spontaneous camp provides WFP an estimate of how many people may need food assistance. Or, identifying new tracks and vehicle activity in an abandoned area previously thought to be abandoned indicate people have returned and may need assistance.

However, the technique of recognizing a feature to be a house, shelter, vehicle or pathway, describing its characteristics, and extracting information about it from satellite imagery is limited

as it is manual. An innovative approach is needed to automate the detection of features and to unlock the scalability of high resolution satellite images as a source of information to monitor displacement settlements.

Challenge Statement: How can humanitarian response planning for refugees and displaced people feed off the information contained in high resolution satellite images?
Title: Beneficiary Data Management - Digitally empowering the people we serve.

Subtitle: How might we empower the people we serve and the humanitarian community to collect, manage, store and use beneficiary data in a manner that facilitates interoperability, while ensuring the empowerment and protection of the most vulnerable?

Context: Large-scale humanitarian action is concerned with understanding the needs of the most vulnerable and implementing humanitarian solutions to address those needs. To accomplish this, humanitarian actors are establishing or using operational platforms to provide assistance. A critical component to these platforms and to the delivery of benefits and services is being able to identify people. For the people we serve, this endorses the fact that their identification is both a fundamental right and it unlocks their access to entitlements and services, enabling them to get the assistance they need and participate in the formal economy, underlining a critical element of stability.

As humanitarian actors typically focus on the most vulnerable, the registration of identities for those most left behind are being increasingly performed, and vulnerability data acquired and consolidated. However, as more platforms are developed, and more data is collected, it has become clear that there are no defined data standards for humanitarian assistance, highlighting concerns about the potential for interoperability between humanitarian actors and the need for more accurate and real-time data. By focusing on the collection, management, use and storage of beneficiary data, we can not only empower the people we serve with their data but also facilitate the creation of interoperable systems. We will enable more efficient operating assistance models that provide a foundation for joint multi-actor action and deliver insights that can improve the effectiveness of service delivery and assistance programming all at the same time. Managing and protecting this data ensures we are serving those in need, while also providing enhanced methods for crisis response, crisis prevention and longer-term recovery and stabilization mechanisms.

Challenge Statement: How might we automate the registration and processing of beneficiary data to empower and protect the people we serve while also facilitating interoperability in humanitarian assistance?