Call for Code Challenge: 3/31/21

TEAM: NEXT STEP GLOBAL FARM HAND

OBJECTIVE: Provide resources and information to subsistence farmers in remote parts of the world to aid in crop selection and improve crop yield. These subsistence farmers generally do not have access to modern farming equipment or techniques, and often face harsh growing environments. Many of these regions have poor soil; limited water and other impediments to a good crop yield. By increasing the crop yield, the farmers are able to sell or trade excess crop to others in their community. This not only aids in feeding people, but also frees up members of the community to take on other trades creating a trade economy.

OUR PROJECT: The plan is to create a GIS database which will contain extensive environmental information on regions and specific farms, including soil, weather, water conditions, pests and other site conditions. Information will be assembled through publicly available data and supplemented through data collection by drones to be operated by trained NGO partners. Drone flights will survey the land, including hyperspectral analysis which can identify various soil conditions. Drones can also assist in taking specific soil samples which can be analyzed by spectroscopy. All facets of the Project utilize existing technology.

The GIS database will compile the various information in layers that can be placed onto a GIS regional map. Each layer will contain one of the data sets being collected (i.e. soil conditions, water, weather, etc). Data analytics will also match up all of the data conditions for each farm specific location on the GIS map and pair it up with recommendations for crop selection, fertilizer, pest control options and specific farming techniques to maximize yield.

Data interface will be achieved either through the internet or wireless communications (as available). Farmers will be able to access this information through NGO partners who will lend tablets or other devices for the use of the farmers. In addition to collecting information and sharing it with farmers, the internet link will provide access to educational training on farming techniques in the local language via videos and potentially also using live consultation with farming consultants familiar with the local conditions and with modern farming techniques.

The plan is also to utilize drones to deliver seeds and fertilizer compounds to farmers in remote villages who are otherwise difficult to reach and outside of ordinary supply chains. Strategic partners will also be brought in to provide microfinance to assist the farmers in purchasing seed and fertilizer products. The data base and communication lines will also be expanded to allow communications to other villages in these remote areas to assist farmers to find purchasers for their excess crops and to allow villages to locate sellers of such crops. Links will be provided to allow farmers to network to equipment sharing arrangements to be funded by microfinance. Greater specifics are set out in our accompanying Power Point.