Local Market Enhancement

Plenty of farmers share a **simple but manmade difficulty**: They regionally seed and harvest certain agricultural products at nearly the same time. This problem is not specific to Colombia, but it exists all over the world. It leads to a peak of the same agricultural products in the local markets with the effect of prices dropping and a lot of food waste for products with short lifecycle or limited storage capabilities: A lose-lose situation for everyone. These "peak" harvests might be due to traditional, climatic and seasonal reasons, but also simply due to a lack of information and communication between the farmers. That is where we come in.

Let's offer a platform with location based information on when and where which products are sown and harvested. **Imagine you are a tomato farmer, receiving an individual doodle-like calendar with notifications on how many farmers in your region plan to harvest tomatoes in this week and what amounts are to be expected. If there are already too many, you might want to postpone seeding or harvesting your own tomatoes, resulting in better overall planning.** The goal is to avoid temporal overflows of local markets with certain goods and ensure a more continuous and balanced flow of seeding and harvesting throughout the year.

So far agriculture data was mostly provided in a centralized way, very often from a top down viewpoint. For a single farmer, to find data he might be interested in was maybe not totally impossible, but extremely cumbersome and time consuming with very moderate outcomes. Our **innovative approach** favors a crowd sourcing approach, combining state of the art technology and volunteered geographic information worldwide. We want to drive forward self-organization, not hierarchical structures and dependencies, allowing also small farmers to act together and compete as a collective with the big players.

We believe in the **success of the project**, as it is simple and has a clear focus. A lot of ambitious projects fail because they grow out of bounds and want to include everything at the same time while losing focus on their main aspect. This one is however dedicated only to a single principle: as simplistic as possible, as complex as necessary. Furthermore, the data collected is immediately put into use but also allows plenty of future analysis. As the data is supposed to be open source, an interface for external commercial applications is thinkable, to connect the farmers with traders and markets. This is where our partner Agronet comes into play. As it is in the farmers very own interest to participate with a clear view on the advantages, we expect a high participation with proper publicity.

Regarding the implementation, simple is best – PWA (progressive web apps) are trending in the recent years. This allows a single code base for a responsive web page as for multiplatform mobile apps, resulting in low developing and maintenance costs. The Ionic team announced this month to bring support for their – meanwhile extremely capable and powerful – platform also for PWAs. Our main focus would be an interface for the farmers on both, web and mobile, collecting and pushing real time information. The server architecture could be very straight forward, consisting mainly of a basic user management and an efficient database system. This could be achieved by a backend-as-a-service platform like firebase, reducing developing times and maintenance costs while ensuring security, flexibility and providing a standardized API for all kind of platforms.
From a technical point of view, it is mostly about combining open source state of the art tools, which can be rapidly done. A rough estimation on pure development time would result in an estimation of 4-6 months for a ready to use prototype, 9-12 months for an officially published product. As a small team consisting of 1-2 developers and a coordinator/seller is capable of implementing the idea within the named timeframes, 100.000$ would be definitely sufficient for a first release, where most of the money would be spent in developing costs. Using the already existing communication ways between CIAT, Agronet and the farmers, also some initial starting regions with high participation would be easy achieved before going on a global scale. After the initial 12 month period the developed open-source platform and provided open-data-standards can be used by Agronet and any other farmers advisory service working in the pilot area, but also for ICT startups working in agriculture and other geographical regions.

Data directly collected from the farmers would be especially: The famers location, what products he is growing, what amounts are to be expected and when he is seeding, when harvesting. Additional data might be brought into action based on the farmers site-specific location, like what other crops are suitable in his farm based on crop model outputs rom CIAT, regional market prices from Agronet or other local statistics ministries, weather forecast, climate trend data from the CGIAR climate data portal, soil data and so on. The main focus remains providing this information, maybe directly as is or with the help of **fused indicators**, not as recommendations but as a tool of additional knowledge for the farmers. The Department of Geoinformatics at the University of Salzburg will provide its expertise in developing valid indicators and provide knowledge on geospatial near-real time analyses such as pattern analysis, fine-grained geostatistical analysis both on sparsely sampled data as well as on large amounts of environmental and other auxiliary data. The near-real time prediction of trends based on spatio-temporal correlations will be of great use for CIATs current or future projects.

After some first (regional) pilots, there are many ways for growth, both in quantity and quality.
An important step is to get the platform on a (financially) sustainable level. The idea is to allow third parties to access the data with their custom applications through a standardized interface. If they, as commercial traders for example, are interested in doing business with the farmers directly, we could ask for a small percentage of the share to maintain the upkeep costs.