DRAFT FOR REVIEW AND ONCE OK TO BE USED FOR BUILDING WIREFRAMES FOR API

MVP WORKFLOW DETAILS FOR THE APPS
BluePrint 2

Following the team discussion on 15th Aug and the main pain points highlighted by Mr. Opi, it is evider
clear what are the 3 major concerns/value points that Indian farmers are looking to address. Below
the points in the decreasing value order (as per Mr. Opi):

(i) **Improvement in the Productivity and Quality of the Crops i.e. Increase yield by using ag technology and Improve operational efficiencies by being software driven**

(ii) **Creation of Market place where BUYER and SELLER can be connected effortlessly**

(iii) **Infrastructure and financial support (like Equipment support, preparation of soil) ap from the fourth one which is the transportation**

App workflow down structure for the First Point (i.e. Improvement in the Productivity and Qual of the Crops):

This Blue-Print is a continuation of the initial work done and presented by Arun and Alex on 1st Aug 2020 as the Platform Functional Diagram. It is also based on the initial inputs provided by Alexander the ExactFarming capabilities that they can provide not only Planning and Management of the Farms instead can also provide relevant information (after analysing the pictures) on the soil, crop health a hence able to support in increasing the productivity and/or quality of the crops (Alexander will furt check what inputs will be required for this services). As an alternative we can contact the Airbus ba Farmstart (if need be) to provide this precise/smart farming capability in the defined area/field.

1/ **Simplified database** for an identified VILLAGE including individual FARMER and individual BUY Here we need to take the picture of the total farm land of the village and provide it as an input to Analytic company like ExF. Hence, 3 wireframe needed one for FARMER inputs, second for BUYER a third one for the ExF to have the basic information related to the field (not at individual FARMER Le but at the VILLAGE Level) i.e.

VILLAGE: Name of the village, GPS Coordinates, Size of the Total Farm land (should be considered as consolidated farm land as registered in the Tehsil administration), Image of the Farmland in this vill (e..g every indian Village usually consists of an avg. population of around 5000 people so easily we say 5000 x 80% x 2 acre = 8000 acre of consolidated Farm Land), Quality of image required (other gene information if requested by the analytic company about past years production like soil information, cr cultivation can be extracted from the FARMER wireframe)

FARMER: Name, Place, DoB, Bank Details, Field Size, Crop Cultivation, Quality (usually produced in past), Quantity available and Expected Price/kg (remain to be hidden only known to us/our app).

BUYER: Name, Place, DoB, Bank Details (not at the time of registration but when do the first transactic Quantity requested, Quality required and Place of Delivery

Question (not to answer in MVP but in the scalable app at later stage): Farmer information related to gr even the crop available, places etc. to be hidden and ask BUYER to place order of any type of grain a quality etc. so that our app will give the BUYER answer if available then on what price **OR** should we sh in our app what is available with us so that BUYER can buy/order what is available with us (someth like Amazon way).

2/ **First algorithm** of the app (through API run the analysis on the Image - Image Processing): T app's algorithm should be able to run analysis on our DIGITAL Platform (A-AGRO) based on the inp

Commented [1]: This seems to be the greatest pain. Let us ensure that 2 farmers can consume the productivity technique we propose. It could be ExF or Verde or Farmstar or any other precision technique.

At the moment, in my view we dont know which technique actually solves the max value.

Commented [2R1]: Not sure whether it is for 2 farmers or 20 farmers but for MVP we need to work on the ... [1]

Commented [3]: The relevant services offered by Exact Farming that I would see applicable here are ... [2]

Commented [4R3]: Not exactly, Resource mgmt/mgmt of field are just side services (considered not so ... [3]

Commented [5R3]: Isn´t this what I listed in the NDVI feature?

Commented [6]: This capability would be more relevant for the small indian farmers to improve the ... [4]

Commented [7R6]: Yes but this capability apply in general to small or middle or large farmers as in ge ... [5]

Commented [8R6]: Agree, it applies to all types of farmers, my point was an attempt to rank the most ... [6]

Commented [9]: We could leverage Google Maps for this. In India because of relaxed privacy laws, the I ... [7]

Commented [10R9]: Need more than Google maps may be need to bring Sentinel satellites of Airbus v ... [8]

Commented [11]: We could get this data from sites like https://worldpostalcode.com/india/

Commented [12R11]: We need to have exact field contour /borders per farmer assuming mono crop ... [9]

Commented [13R11]: Agree need to have exact field contour/borders but not per farmer but per village ... [10]

Commented [14R11]: Sure we need that Mohit and Alexander, I´m thinking from a product perspectiv ... [11]

Commented [15]: Airbus Verde?

Commented [16R15]: Yes either through Farmstar or Verde or companies like this

Commented [17R15]: Let's see whether existing technology used by ExF today (50m resolution im ... [12]

Commented [18R15]: Yes today we have the technology or satellites or drones for VHR (very h ... [13]

Commented [19]: So, we rely on the tech development by partner company (their algorithm). For this we ... [14]

Commented [20R19]: Yes this is the core of ExF they took some years to develop these expertise and ... [15]

Commented [21]: I suggest we should validate how ExF will add value to the Indian wheat farmer in M ... [16]

Commented [22R21]: We just need the information what is required by ExF and they will not do for 1 ... [17]

Commented [23R21]: Am I right to understand that Exact Farming feature for this is called NDVI?

Commented [24R21]: I dont know whether they use this tech NDVI. But from what i learn NDVI is mos ... [18]

provided. Our Digital platform is connected with the ExF/Analytical company's proprietary software/algorithm through the API and able to select or recommend (to us in the app)

3/ **Second algorithm** of the app (pushing the qualitative information to Individual farmers registered our platform plus some value added services like on Climatic conditions and Forecast)
This app's algorithm will extract the global information (like Soil condition, need of which fertilizers, a specific agri technique etc) as provided by the Analytical company (ExF) at Village Level and splitted i the individual farmers only for those FARMERS who are registered with us on our app (or to b registered or unregistered?). A-Agro platform will also extract the other freely available information fr the 3rd party platforms on e.g. Climatic conditions/Weather Forecast. Finally our Digital Platform v combine the Analytical Company information + 3rd party value added information and push to Farr either once a week or twice a week (to check if can provide daily - as it can be done through automat and to see if cost is minimal or none for this services)
NOTE: We need to make this algorithm dynamic and scalable (meaning interactive), that is it can receive on a daily basis some feedback or request information from FARMER. Our platform either provides answers (to the farmer questions) or value added information through our existing analytical tools. In this process sometimes we need to use on an adhoc basis certain DRONES to fly on short notice and take the picture for us in order to analyse particular information with the help of an Analytical company.

4/ **Third algorithm** of the app (transaction creation for the Image Processing and Individual Farmer)
As soon as FARMER is registered on our platform he needs to pay a yearly fee of $1 (around Rs.70) conditioned that his farm is lower than 10 acre. So if in a village, 5000 farmers are living and 80% having their farm land i.e. 4000 farmers x $1 = $4000 per village (so around INR 300,000 per village per year) Need to identify the pricing mechanism with the Analytical company - is it based on a unlimited yearly services or is it based on per village per month etc. Here, we need to make a request to get access to the Digital Payment Gateway. Found out that anything which involves money we need to have a legal entity, which owns the IBAN number in order to execute the efficient transaction.

5/ **Fourth algorithm** of the app (Quality **monitoring** during the development of the Crop)
Quality monitoring is one of the important subjects to materialize. It is usually based on the feedb received by the Farmers + Analysis of the image captured by Satellites or Drones and then validating Soil Quality Index and Crop Quality in development. Here, we need to use the agronomists (in limi numbers) to recommend or benchmark the projected quality that can be produced by the available and certain use of Fertilizers/Waters/AgriTechniques etc. **Our algorithm either every week or o monthly basis, will update itself to forecast what quality certain farmers are able to produce that we can forecast to ourselves as well as to our buyer (Much in advance) the quality we expect.** Finally quality can be verified physically, as per our app's index of grain quality during the p up of the grain from the farmer with the help of locally hired Agronomists.

Important: Other value added services (as highlighted below) to be added in our app to develop robust ECOSYSTEM, when we next scale the product depending on funding round by govt. or invest But this all information must be used in our 1,5,50 slide pack or story line to support what is our visio

- Risk Cover of the Harvesting for the farmers (Insurance)
- Supporting the availability of Seeds and Pesticides or Fertilizers or even recommend Bio-Fertilize
- Partnership discussions with transport start-up like UBER or OLA to be done at next level
- Partnership discussion to provide smartphones to FARMER for free
- Alternate revenue model for our app through licensing the FARMER by providing its data to mol operators in order to get FARMER free wi-fi
- Next major scalability is to link SATELLITE technologies mainly linked to IoT which support quality tracking of the crop.

Commented [25]: We need to understand how the farmer will interact with this solution. Mr. Opi menitoned most do not have a smartphone, just old school mobiles. Maybe that is the platform we have to develop for

Commented [26R25]: This is for the next step in the scalability solution how to bring smart mobiles and internet connectivity to the farmers if there is a success of the prototype. Mentioned in the vision Chart as well as in the value added services.

Commented [27]: This is a commercial topic, unrelated to the features of the product

Commented [28R27]: Here just provided pricing as an example main highlight that you need an algorithm to create the work order as well as the payment gateway

Commented [29]: It could be a good idea to bring another partner onboard so that we could use their tech to assess quality based on pictures taken by the farmer.

Commented [30R29]: can be a good approach need to do the market research and the right partner analysis - not sure we have to include in the MVP unless available readily like ExF, Airbus Verde, Farmstar etc.

Commented [31R29]: Quality monitoring should be an integrated function of ExF

Commented [32R29]: Need to ANALYSE what all quality parameters ExF can provide and in terms of frequency as well on a daily basis or weekly basis?

Commented [33]: This kind of Quality check is a key element as far it defines the price and has to be accepted by BUYERs for sure (how?) and maybe by government as far it should replace the existing APMC system

Commented [34R33]: https://www.researchgate.net/publication/309040309_Classification_of_Rice_Grains_Using_Image_Processing_And_Machine_Learning_Techniques

Commented [35R33]: Gonna have to id who are the players sucessfully applying this

Page 1: [1] Commented [2R1] **Mohit Sharma** **19/08/2020 12:33:00**

Not sure whether it is for 2 farmers or 20 farmers but for MVP we need to work on the Village level so atleast 1 village and may be 80% use it

Page 1: [2] Commented [3] **Alex Althuon** **18/08/2020 20:02:00**

The relevant services offered by Exact Farming that I would see applicable here are: Working with field; Resource Management; Smart Notification; Workflows (simplified); NDVI; Weather.

Page 1: [3] Commented [4R3] **Mohit Sharma** **18/08/2020 20:31:00**

Not exactly, Resource mgmt/mgmt of field are just side services (considered not so valuable in first stage) hence as checked with Alexander the main services of ExF (again to be confirmed) is the information about the soil quality, how to prepare the soil, fertilizers information etc. that can support in smart and productivity farming

Page 1: [4] Commented [6] **Alex Althuon** **18/08/2020 20:04:00**

This capability would be more relevant for the small indian farmers to improve their productivity, and could be focus of the MVP

Page 1: [5] Commented [7R6] **Mohit Sharma** **18/08/2020 20:32:00**

Yes but this capability apply in general to small or middle or large farmers as in general terms it seems they lack of information or high end agri-tech!

Page 1: [6] Commented [8R6] **Alex Althuon** **20/08/2020 20:23:00**

Agree, it applies to all types of farmers, my point was an attempt to rank the most important features to the least. And this seems to be at the top for me.

Page 1: [7] Commented [9] **Arun P C** **19/08/2020 10:00:00**

We could leverage Google Maps for this. In India because of relaxed privacy laws, the land perimeter is accurately tracked by Google Maps. If we could identify 3 farmers, they could fill in this data and picture.

Page 1: [8] Commented [10R9] **Mohit Sharma** **19/08/2020 12:34:00**

Need more than Google maps may be need to bring Sentinel satellites of Airbus what they provide to Google for free - need to find the alternate companies or may be to ask for the Drones to capture certain image of the filed of certain size. Should be very cheap

Page 1: [9] Commented [12R11] **ALEXANDER GAPONYUK** **19/08/2020 13:12:00**

We need to have exact field contour /borders per farmer assuming mono crop cultivation

Page 1: [10] Commented [13R11] **Mohit Sharma** **19/08/2020 14:37:00**

Agree need to have exact field contour/borders but not per farmer but per village (considering to a larger extent more or less same kind of crop) and the split per farmer need to be done by our algorithm in our own digital model

Page 1: [11] Commented [14R11] **Alex Althuon** **20/08/2020 20:27:00**

Sure we need that Mohit and Alexander, I´m thinking from a product perspective how to start building the solution. First a basic db of the whole country (like I linked or like Arun sugested), after that, inserting the GPS coordinates for every individial farm automatically plots them in the right village, city, state, etc.

Page 1: [12] Commented [17R15] **ALEXANDER GAPONYUK** **19/08/2020 13:32:00**

Let's see whether existing technology used by ExF today (50m resolution images) will be sufficient for our tasks or we need to go to 5m

Page 1: [13] Commented [18R15] **Mohit Sharma** **19/08/2020 14:35:00**

Yes today we have the technology or satellites or drones for VHR (very high resolutions) who can even capture image for 1cm accuracy and clarity.

Page 1: [14] Commented [19] **Alex Althuon** **18/08/2020 20:21:00**

So, we rely on the tech development by partner company (their algorithm). For this we may need to connect to this partner company and transfer some data, not necessarily develop an algorithm, just a connection.

Page 1: [15] Commented [20R19] **Mohit Sharma** **18/08/2020 20:36:00**

Yes this is the core of ExF they took some years to develop these expertise and we can transfer some information or data through API. Algorithm is our Digital platform that can run as back end to allow to run companies like ExF softwares in our platform with data centres located in India owned by us.

Page 1: [16] Commented [21] **Arun P C** **19/08/2020 10:06:00**

I suggest we should validate how ExF will add value to the Indian wheat farmer in MP with a land area less than 1 acre. Once we understand what exactly ExF needs to produce value, we are in good shape to develop this algorith.

Page 1: [17] Commented [22R21] **Mohit Sharma** **19/08/2020 12:36:00**

We just need the information what is required by ExF and they will not do for 1 acre but for 100 acre it is our algorithm that divide or split acre by acre.

Page 1: [18] Commented [24R21] **Arun P C** **21/08/2020 06:25:00**

I dont know whether they use this tech NDVI. But from what i learn NDVI is most beneficial for vast terrains with uniform crops. We could ask ExF whether this tech can be applied to 1 acre small wheat farmer in India.