

Program for Advanced Numerical Irrigation (PANI)

Mobile Application for Irrigation Schedule

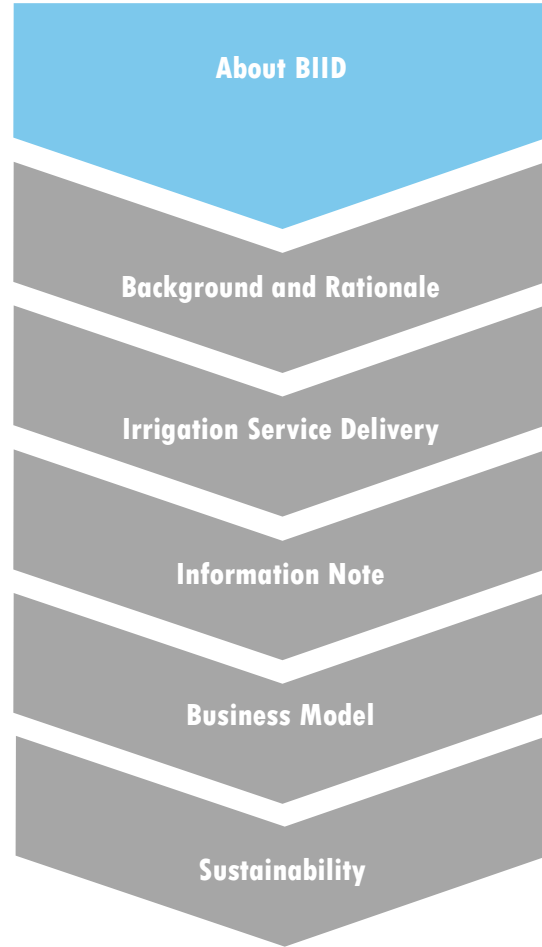
18 October, 2016



Bangladesh Institute of ICT in Development (BIID)



Outline



- ✓ **Introduction**
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- ✓ **Background**
- ✓ **Steps to Irrigation Recommendation**
- ✓ **Calculation of Irrigation Recommendation**
- ✓ **Landing page**
- ✓ **Farmer Interface**
- ✓ **LSP Interface**
- ✓ **Dashboard**
- ✓ **Information Note**
- ✓ **Business Model**
- ✓ **Proposed Business Model**
- ✓ **Company Address**
- ✓ **Contact Number**
- ✓ **Mail and Web Address**





ABOUT US



About BIID

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BIID is a private sector initiative that offers a range of services aimed at development and promotion of ICT based information and services in Bangladesh

It's distinction lies in clear understanding of issues & opportunities to benefit the poor with use of ICTs considering local dynamics

Inclusive Business

BIID envisions in becoming a leading enterprise offering strategic planning, implementation assistance and consulting services to public, private and other initiatives in ICT based services in Bangladesh and in other developing countries

BIID's key strategy is to ensure *Making ICT work for poor* as an effective tool & cross cutting issue and build on the existing system as well as emerging technologies and potential users



Partners and Services of BIID

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AccessAgriculture



USAID
FROM THE AMERICAN PEOPLE



Farmbook



shikor



ICT4D Journal

www.sme.com.bd



Market Linkage Program



innova



BACKGROUND AND RATIONALE

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Remote sensing data can be translated as advice to farmers on the ground to help inform their decisions about farming methods which leads to better crop yields, higher quality produce and possibly more sustainable practices for the farming communities



Irrigation in Bangladesh is still managed in a very traditional manner without considering scientific data on soil and weather which increase cost of farming and also lower productivity



International Maize and Wheat Improvement Center (CIMMYT) and BIID collaborated to integrate a mobile application to make the service more easy to access by the relevant actors (LSP, Farmers etc.) since access to mobile phone is very high

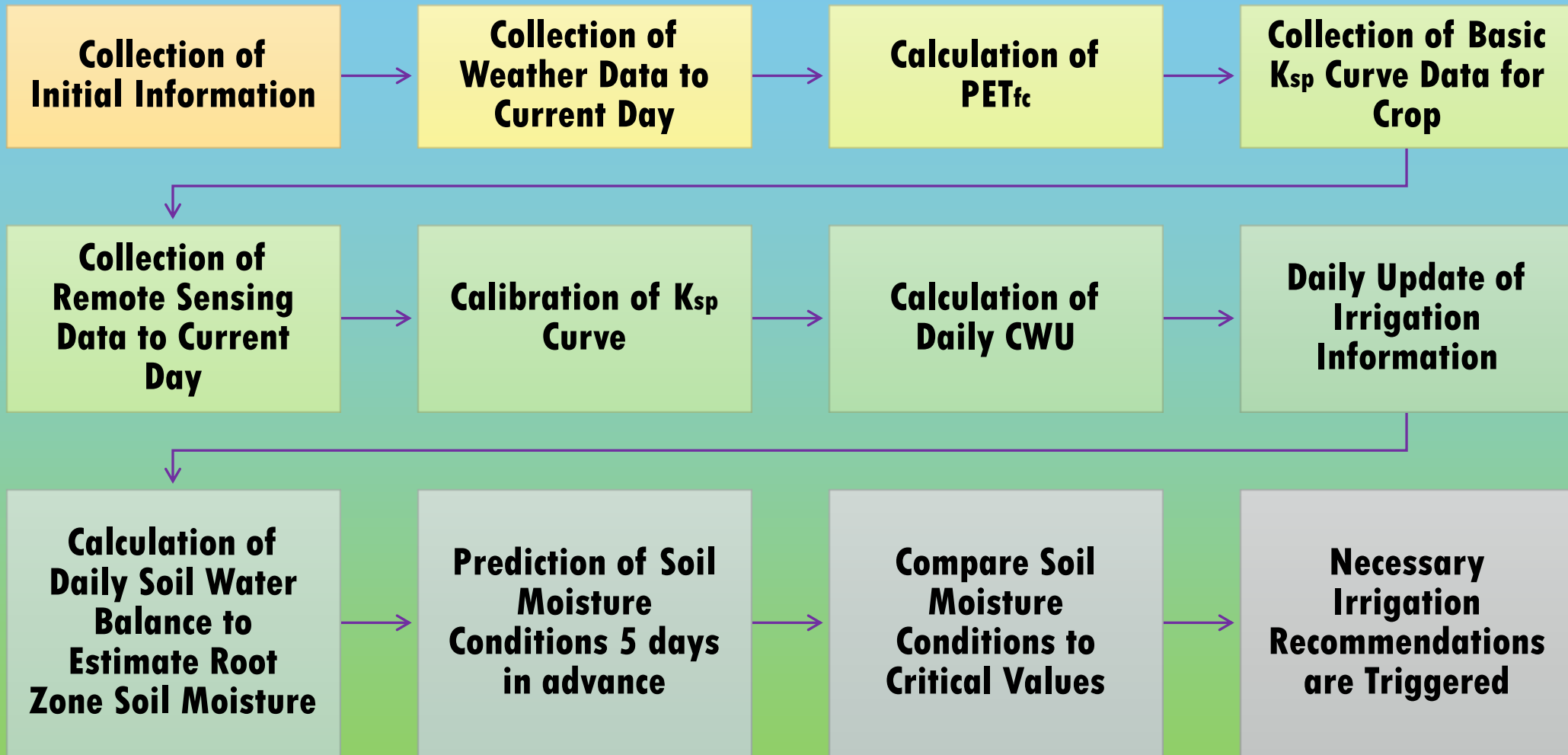


Transformation from research to extension at field



Steps followed in Irrigation Advisory Service

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Necessary Information

08

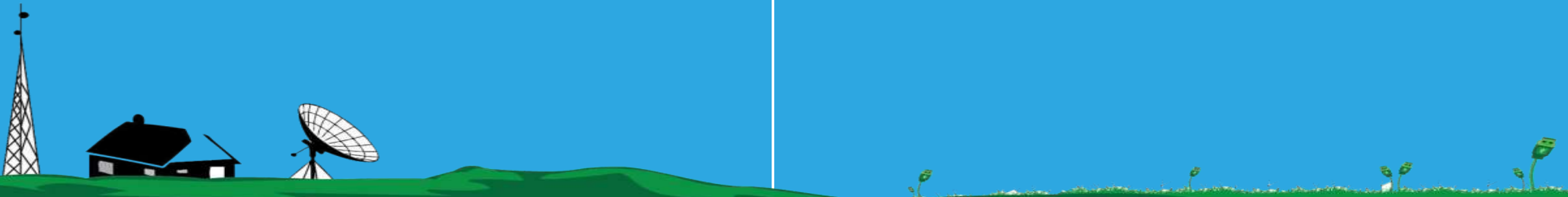
Initial Information:

- Type of Crop
- Date of Planting
- Type of Irrigation
- Soil Type



Weather Data:

- Temperature
- Wind Speed
- Net Radiation
- Humidity
- Precipitation



Calculation Procedure

Spectral Crop Coefficient Approach:

$$CWU = PET_{fc} * K_{sp} * F_{stress}$$

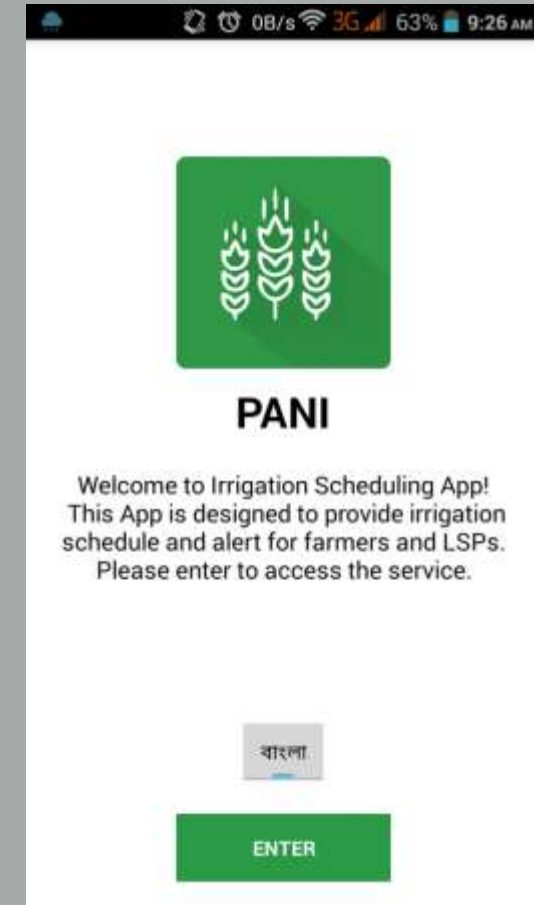
- PET_{fc} is Potential Evapotranspiration and can be calculated from standard weather data using Penman-Montheith Equation.
- K_{sp} is Spectral Crop Coefficient and can be calculated from multispectral remote sensing observations.
- F_{stress} is a stress factor with value ranging from 1 (no water stress) to 0 (Fully stressed, non-transpiring plants)

Satellite to be used for Remote Sensing: WorldView 3, LandSat 8 etc.



Landing Page

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Select User Type

There are two types of users:

1. Farmer
2. LSP (Local service Provider)

Select the user type



Farmer Interface

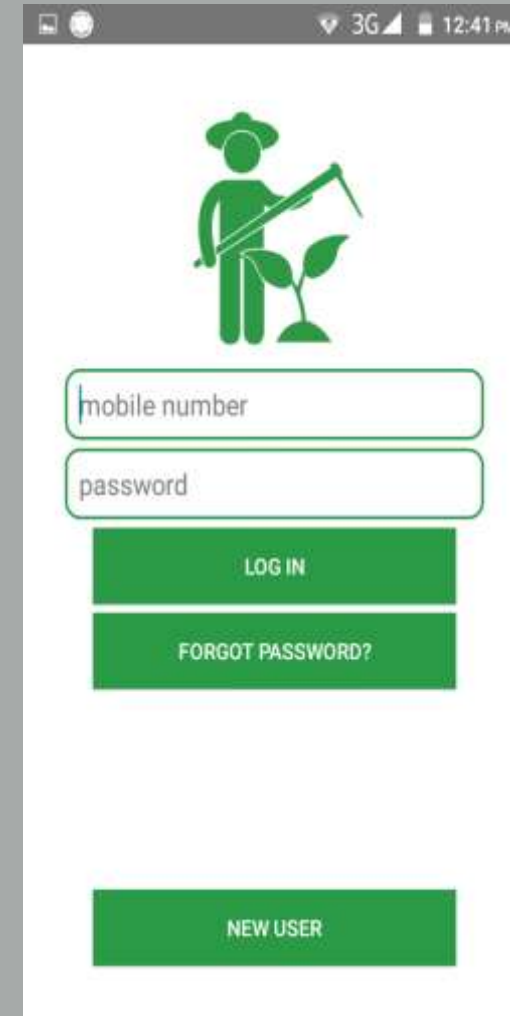
This is the Login page for registered farmers.

They can login here by using their mobile number and require password.

For New User, farmer need to register (Next Slide)

N.B. Internet connection is required for this process.

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The image shows a mobile application interface for farmers. At the top, there is a status bar with icons for signal strength, 3G network, and battery level, along with the time 12:41 PM. Below the status bar is a green icon of a farmer holding a hoe and a plant. Underneath the icon are two input fields: the first is labeled 'mobile number' and the second is labeled 'password'. Below these fields are two green buttons: 'LOG IN' and 'FORGOT PASSWORD?'. At the bottom of the screen is a green button labeled 'NEW USER'.

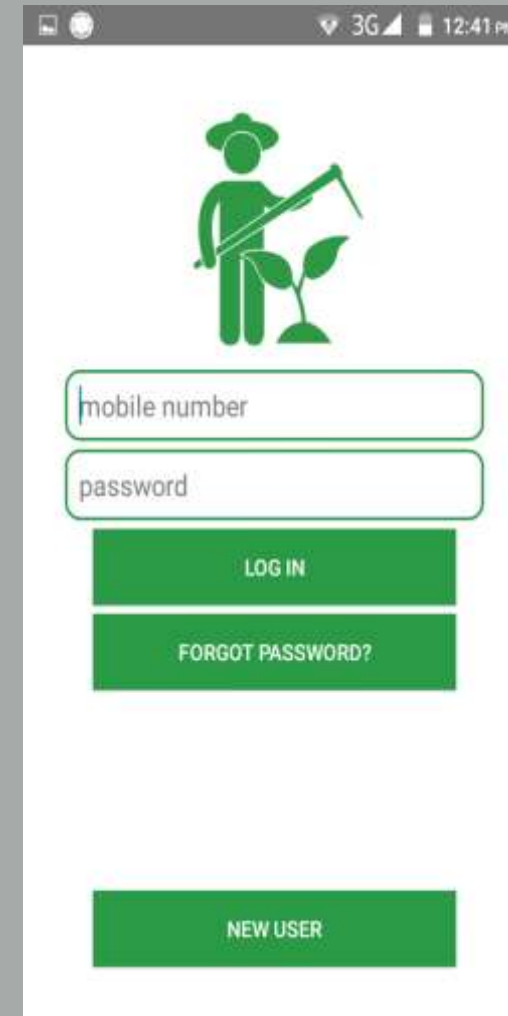
Farmer Registration (New User)

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New users (farmers) need to register by filling up the following

- i) **Mobile number** field to enter mobile number in to this field.
- iii) **Password** field to enter password in this field.
- iv) **Confirm Password** field to retype the password.
- v) **Name** field to enter username in to this field.
- vi) **Current Address** field to enter address in this field.
- vii) Press **Register** button is for registration in this system.

Once registered, the farmer will be routed to the Log in interface



The image shows a mobile application interface for farmer registration. At the top, there is a status bar with icons for signal, 3G, and the time 12:41 PM. Below the status bar is a green icon of a farmer holding a hoe and a plant. Underneath the icon are two input fields: the first is labeled 'mobile number' and the second is labeled 'password'. Below these fields are two green buttons: 'LOG IN' and 'FORGOT PASSWORD?'. At the bottom of the interface is a green button labeled 'NEW USER'.



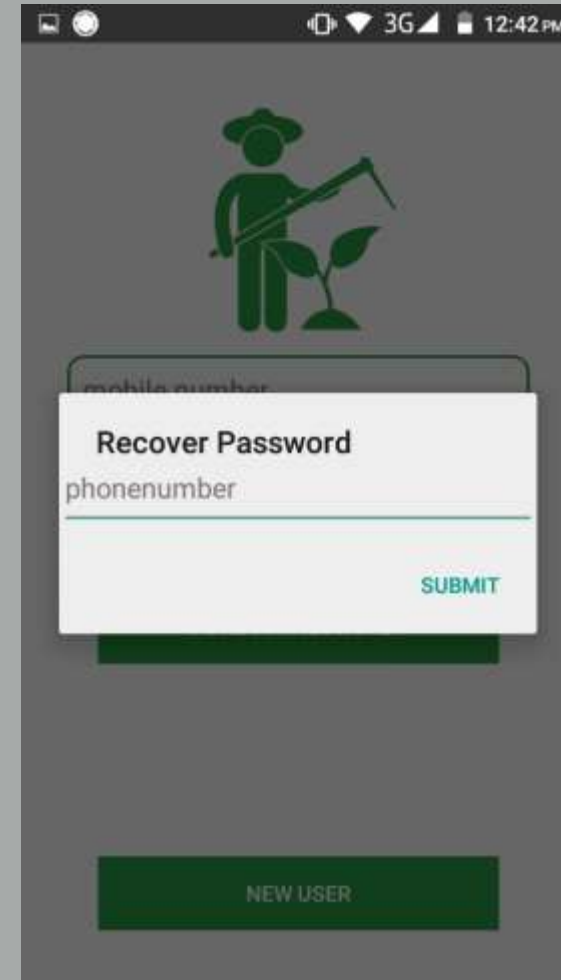
Forget Password (Farmer)

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In case, the farmer forget the password, s/he may recover the password through the following process –

- i) **Phone number field to enter Phone number.**
- ii) **Press Submit button**

Farmer will receive Password through an SMS (Text Message)



The screenshot shows a mobile application interface for password recovery. At the top, there is a status bar with icons for signal, Wi-Fi, 3G, and the time 12:42 PM. Below the status bar is a dark green header with a white icon of a farmer holding a hoe. The main content area is a light gray box with a white border. It contains a label 'mobile number' above a text input field. Below the input field is a white box with the title 'Recover Password' and a label 'phonenummer' above another text input field. A green 'SUBMIT' button is located to the right of the second input field. At the bottom of the gray box is a dark green button with the text 'NEW USER' in white.



Farmer (Home Page)

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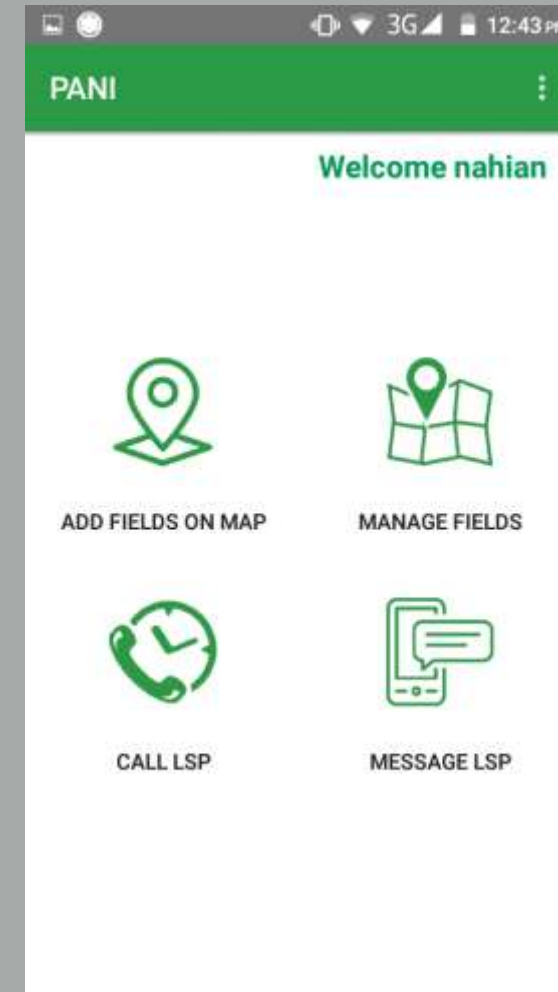
After log in, the farmers will be landed to this page.

Here the farmers can **ADD FIELDS ON MAP** , **MANAGE FIELDS**. (Details in Next Slide)

Field wise LSP will be selected by the farmers in the **Manage field** option.

By using **CALL LSP**, farmers can call specific (Selected) LSP.

By using **MESSAGE LSP** farmers can send message to the selected LSP.



Add Fields on Maps

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After clicking **ADD FIELDS ON MAP** farmers can see a map where they can set the location of their fields . They can also walk along their field boundary and select their land more accurately.

- i) Enter a name in the Field name field
- ii) Select a crop in the CROP List field
- iii) Select LSP from the LSP List field (Distance of the LSP will be shown)
- iv) Set the sowing date in the Sowing Date field

Press **SAVE** button to save the information.

Farmers can add multiple fields.



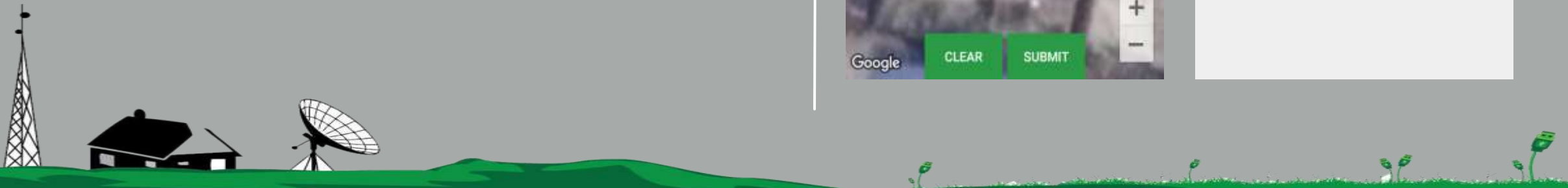
Field Name
enter name

CROP List
Select an item

LSP List
Please select a lsp

Select Sowing Date
SOWING DATE

SAVE



Manage Fields

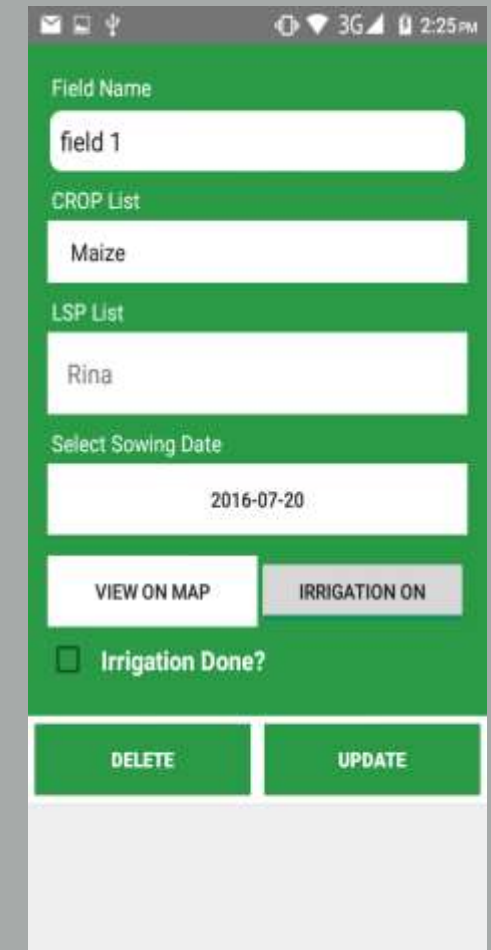
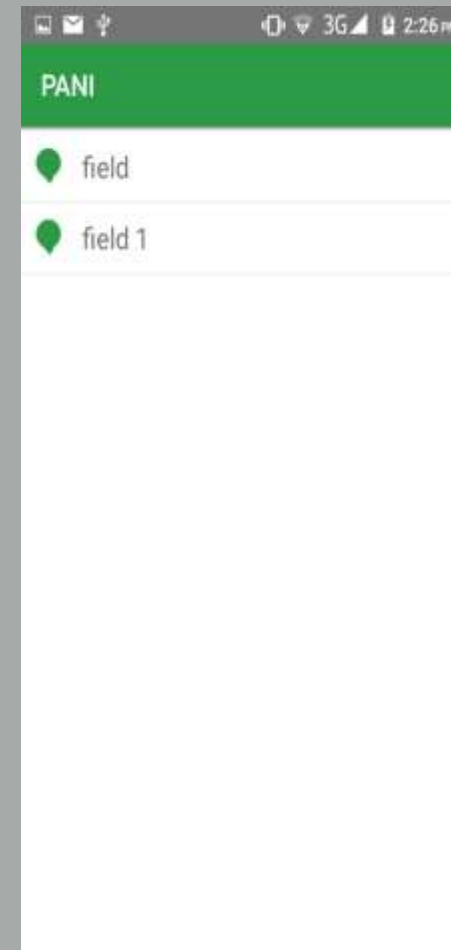
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In **Manage fields** option Farmers can see the number of fields in the screen.

After clicking a single field they can see more details about it.

They can **UPDATE** or **DELETE** the information.

If they wish they can also **OFF /ON** the irrigation schedule.



LSP Interface


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LSPs need to register and use the Log in page to avail the service. Press New User for registration.

This is the Login page for registered LSP.

LSP can login here by using their **mobile number** and require **password**.

N.B. Internet connection is required for this process.



mobile number

password

LOG IN

FORGOT PASSWORD?

NEW USER

LSP Registration

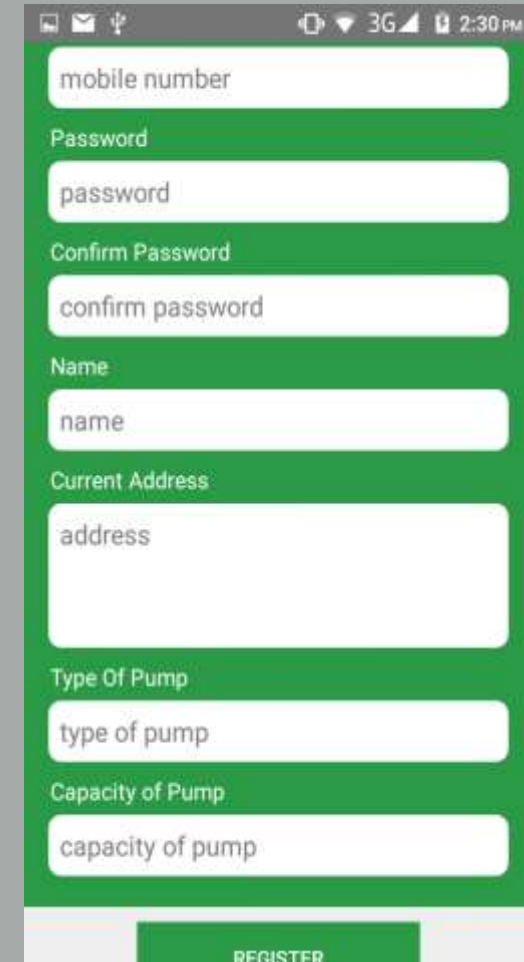
10

New LSP can register in this page by filling the form.

- i) **Mobile number** field to enter mobile number in to this field.
- ii) **Password** field to enter password in this field.
- iii) **Confirm Password** field to retype the password.
- iv) **Name** field to enter username in to this field.
- v) **Current Address** field to enter address in this field.
- vi) **Type of Pump** field to enter types pump the LSP has.
- vii) **Capacity of Pump** field to enter the capacity (In Cusec*) of pump the LSP has.

Press **Register** button for registration.

**1 Cusec=28.32 Liter*



mobile number

Password

password

Confirm Password

confirm password

Name

name

Current Address

address

Type Of Pump

type of pump

Capacity of Pump

capacity of pump

REGISTER



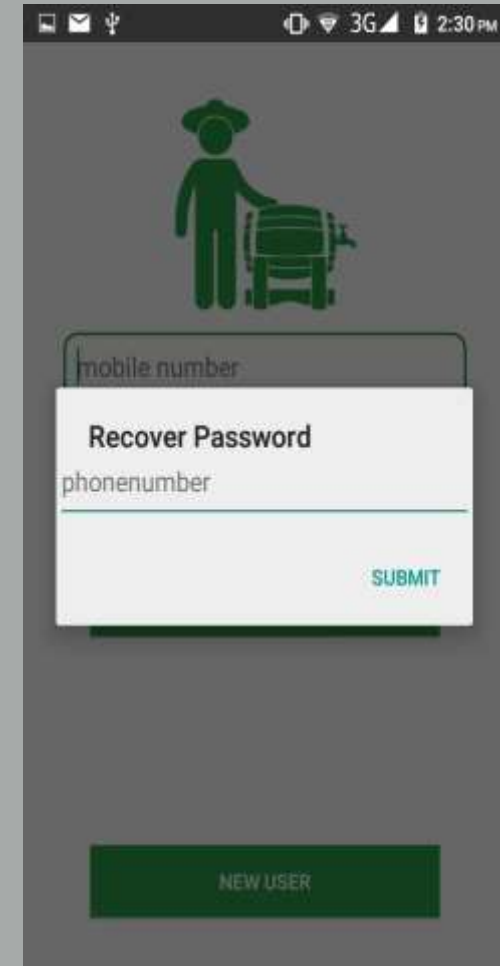
Forget Password (LSP)

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If the LSP forgets the password, s/he can recover the Password through the following process –

- i) Enter Phone number in the **mobile number** field.
- ii) Press **Submit** button to submit the mobile number

The LSP will receive the Password through text message (SMS).



The image shows a mobile application interface for password recovery. At the top, there is a status bar with icons for signal, Wi-Fi, and battery, and the time 2:30 PM. Below the status bar is a dark blue header with a white icon of a person pushing a cart. Underneath the header is a text input field labeled "mobile number". Below the input field is a white box with the title "Recover Password" and a text input field labeled "phonenumber". To the right of the "phonenumber" field is a blue "SUBMIT" button. At the bottom of the screen is a dark blue button labeled "NEW USER".



LSP (Home Page)

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This is the home page for the LSP.

LSP can **VIEW MAP, VIEW LIST, VIEW SCHEDULE** here.

By using **Support** button, they can also call or send **SMS**.

A dedicated number at BIID is set in this support system.



View Map

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In this option LSP can see the maps in which the fields are located.

They can see multiple fields which are assigned for him.

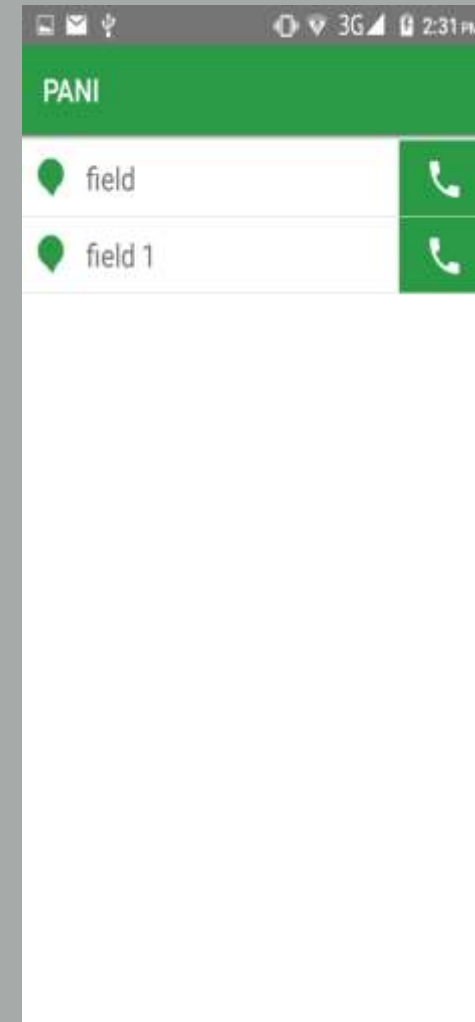


View List

In this **VIEW LIST** LSP can view the numbers of Fields .

They can also see recommended irrigation suggestion in details of field.

There is a calling option and LSP can call the Farmers and discuss about their schedules (Based on suggestions send by the system) using this option.

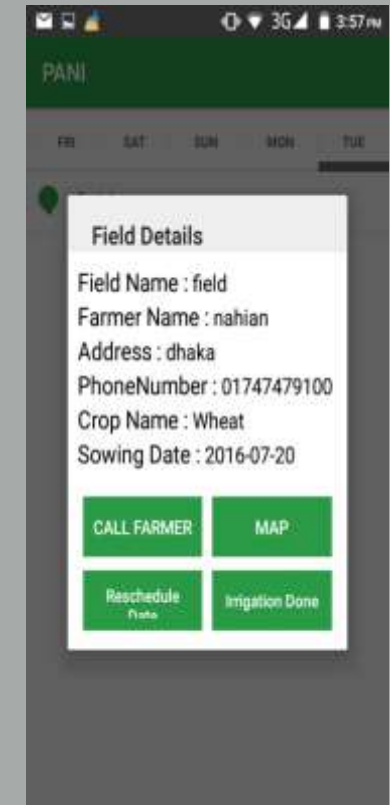
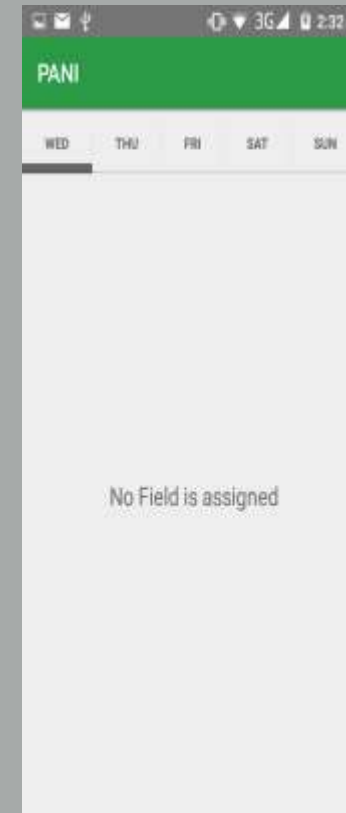


View Schedule

In this option LSP can see how many Farmers are assigned for them.

If there is no assigned field LSP will view the screen as in picture -1.

Or if there is any assigned field , after clicking the Field name LSP can see the Field details and call the Farmer. (Picture 2)





IRRIGATION SERVICE DELIVERY

Once the Farmer enters data (including location of land) and LSP is registered, the Server analyzes the data and sends a recommendation to LSP about the irrigation schedule with quantity of water.

After the recommendation (Water volume, Date / Timeline) of irrigation is received, the farmer and LSP will set the irrigation schedule and may agree for the timing and LSP will ensure irrigation for the selected farmers.

Farmers and LSP can reschedule the timing / date as convenient for them.



DASHBOARD

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BIID Admin Panel

Logout

Dashboard

Users

Fields

Reschedule

Manual Irrigation

Dashboard

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Farmers

View Details

5

LSPS

View Details

13

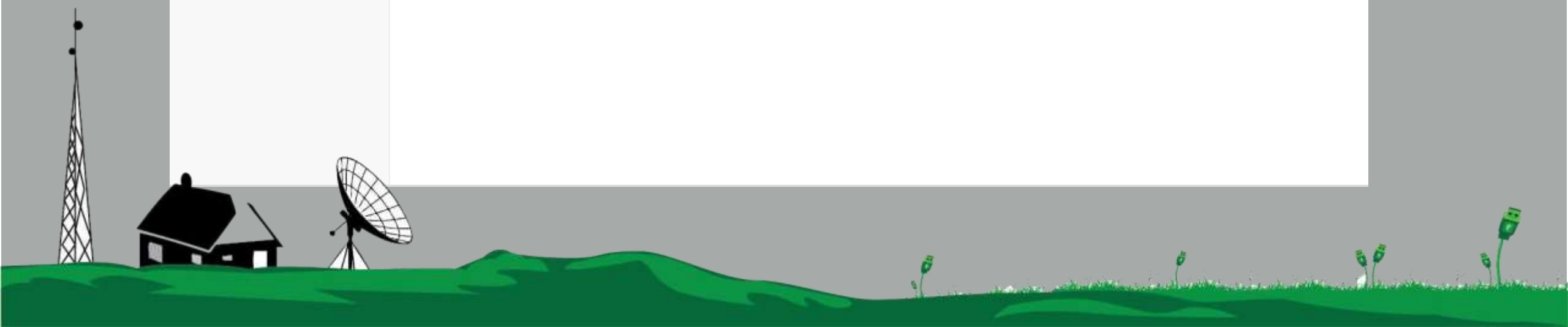
Fields

View Details

0

Reschedule Requests

View Details



INFORMATION NOTE

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- Field name, Field map, Crop name, LSP name, Sowing date all these information directly saved to the server.
- The Server will analyze the maps, weather and other information's for setting the irrigation date.
- Every request from farmers will be updated within 6 hours in the server and notification will be sent out once in a week to both farmers & LSP.
- In the notification SMS, Farmers and LSP can see the detail irrigation information.
- In any case if the irrigation date is canceled by Farmer or LSP, they can reschedule the irrigation date.
- A dashboard (LSP list, Farmer List, Schedule etc.) is available at the Admin panel of BIID



BUSINESS MODEL

There are high potential to develop a sustainable business model as well as there are challenges.

OPPORTUNITIES

MAJOR CHALLENGES

STRATEGY



There are high potential to develop a sustainable business model as well as there are challenges.

Opportunities

Water is getting scarce in many parts of the country

Willingness to pay for such services are always very high, already farmers pay for the services (Flat rate and crop sharing)

Major Challenges

Irrigation is subsidized heavily by government

Behavioral communication towards use of proper irrigation

Users' capacity to use advanced technology

Strategy

Partnership (PPP) will be the key strategy to promote PANI as a *Social Business Solution*

Bundling of service along with different facilities like credit, solar power



Proposed Business Model

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CIMMYT and BIID are considering multiple options for making the PANI solution (Irrigation Scheduling) to roll out and sustainable. These include:

- a. Partnering with the irrigation service provider at local level including other service providers like solar energy supplier for irrigation, pump manufacturing companies, farmer groups, NGOs.
- b. Introducing the service within the government agencies responsible for irrigation and adopt in their service basket
- c. Commercialization of PANI as VAS (Value Added Service) through telecom operators



Happy Face of Farmer



GET IN TOUCH



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THANK YOU VERY MUCH

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