# Common Sense Net 2.0

# Minimizing uncertainty of rain-fed farmers in semi-arid India with sensor networks

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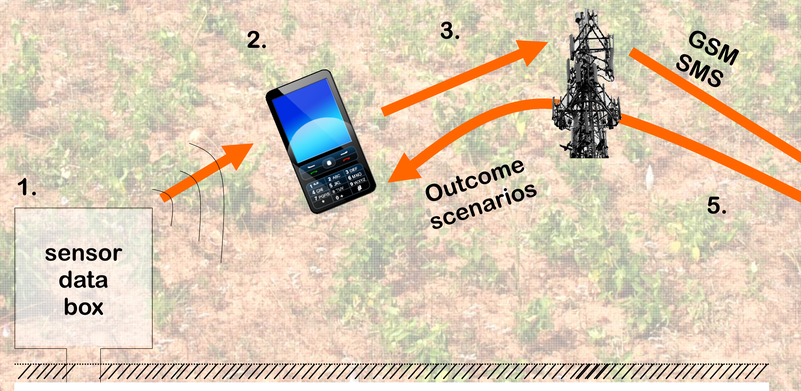
**Concerns of rain-fed farmers**
- uncertainty about amount of rainfall
- crop pest and disease
- crop yield
- prices of inputs
- availability of inputs
- unreliable availability of electricity
- hard to understand uncertain outcomes (rainfall, crop yield)

**Challenges for potentially illiterate users**
- pairing the sensor box with the mobile
- installation and calibration of sensor box
- data entry on the phone (crop, soil type)
- retrieving data from sensor box
- receive and review outcome scenarios
- re-installation of sensor box
- changing of batteries in sensor box
- mobile phone coverage outages
- navigation of application on mobile device through audio feedback

**Side benefits**
Availability of environmental data for other actors in the agricultural sector.
Goat herders and shepherds
Vendors of fertilizers and pesticides

1.
A low power sensor box in the field collects data on rain, soil moisture, humidity, soil temperature, ambient temperature, atmospheric pressure

2.
The farmer uses a mobile phone based application He needs to enter information about the crop being farmed, on what soil and the sowing date. The phone retrieves the sensor data e.g. via Bluetooth (or Wifi, IR) from the box.




Sensed data: rain-fall, humidity, soil moisture, soil temperature, ambient temperature, atmospheric pressure

3.
The phone sends off the sensor and manually entered data via the GSM network.
We are planning to use NOKIA's *life tools* service that is targeted at farmers in India. Their interactive information system is based on the exchange of SMS messages. Revenue sharing with the provider makes for a usage based business model.

4.
The sent data is fed into a crop simulation model along with weather forecast information.
From this the following scenarios can be computed
- best case,
- worst case and
- most probable case (of harvest in kg/hector)

Further suggestions about fertilizer, pesticide use and additional watering can be included.

5.
The scenarios are returned to the mobile phone. Possible delivery mechanisms include:
Text messages,
MMS,
Voice mail.
This allows the farmer to repeatedly review the scenarios.

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