Proposal For GeoPortal – Soil Survey & Soil Conservation Directorate

Soil is essential to human survival. We rely on it for the production of food, fibre, timber and energy crops. Together with climate, the soil determines which crops can be grown, where, and how much they will yield. In addition to supporting our agricultural needs, we rely on the soil to regulate the flow of rainwater and to act as a filter for drinking water. With such a tremendously important role, it is imperative that we manage our soils for their long-term productivity, sustainability and health.

Soil survey is an inventory of the properties of the soil (such as texture, internal drainage, parent material, depth to groundwater, topography, degree of erosion, stoniness, pH, and salinity) and their spatial distribution over a landscape. Soils are grouped into similar types and their boundaries are delineated on a map. Each soil type has a unique set of physical, chemical and mineralogical characteristics and has similar reactions to use and management. The information assembled in a soil survey can be used to predict or estimate the potentials and limitations of the soils' behaviour under different uses. As such, soil surveys can be used to plan the development of new lands or to evaluate the conversion of land to new uses. Soil surveys also provide insight into the kind and intensity of land management that will be needed.

About Department

The Department of Soil Survey & Soil Conservation is the nodal department for the conservation and management of the precious soil and water resources of Kerala. The department not only provides scientific databases on the soil and land resources of the state for developing suitable soil and land management practices but also implements a variety of projects aimed at conserving and managing these natural resources which is vital for ensuring sustainable development and food security of the state. . While the Soil Survey wing plays a vital role in inventorising the soil and land resources and in the prioritization and delineation of various watershed based programmes in the State, the Soil Conservation wing executes these programmes across the State to check soil erosion, regulate surface flow of water, promote institute water conservation, control saline intrusion, all aimed to improve agricultural production and productivity.
The Department is vested with the responsibility of inventorisation of the soil and land resources, implementation of various soil and water conservation measures and to synergise the agriculture sector through enhancing productivity for a better future.

Scope of Work

- The development and operationalization of 'Soil Digital Portal' with the objective of capturing, storing, analysing, sharing and managing all kinds of soil resource information
- A complete resource portal for the all soil varieties in kerala
- Generate a detailed soil map of kerala to view the various soil features .
- Generate Soil Health cards for farmers , based on the lab results issued from accredited labs of the agriculture department.
- State level Dashboard
- User Specific dashboard (to understand the soil health of their land) .
- Perform data validation during various stages of the application.
- Front & back end mobile applications for data generation

USER INTERFACE

SOIL DIGITAL PORTAL

 The portal shall provide users with access to geospatial data and information from multiple sources. It serves as a gateway to various geospatial datasets, maps, and tools, allowing users to search, view, analyze, and download geospatial data and related information.

It offers a variety of data including satellite imagery, aerial photography, terrain data, weather data, land use data, demographic data, and much more.

Major soil features shall include the following:

- Admin boundary
- 1:50000 Toposheet data
- Land Type
- Present Land Use
- Soil Unit
- Soil Taxonomy

- Soil texture
- Soil depth
- Slope
- Erosion
- Soil physical properties
- soil nutrient status
- SHC(Soil Health Card)
- Soil engineering properties
- Soil Profile properties
- Interpretative classes
- Decision support System
- Watershed details
- Soil Conservation works
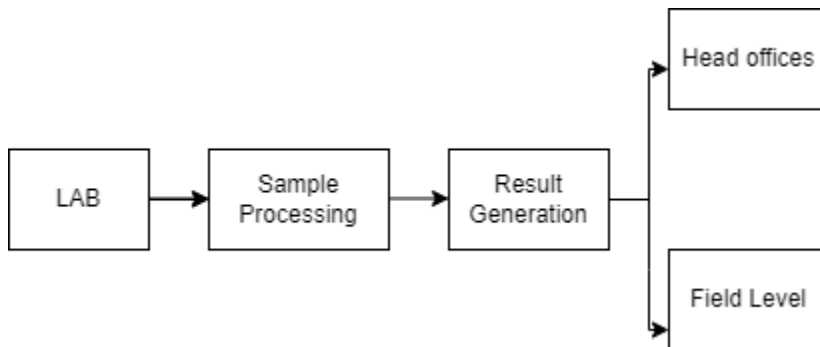- Land degradation
- Soil loss

User Hierarchy
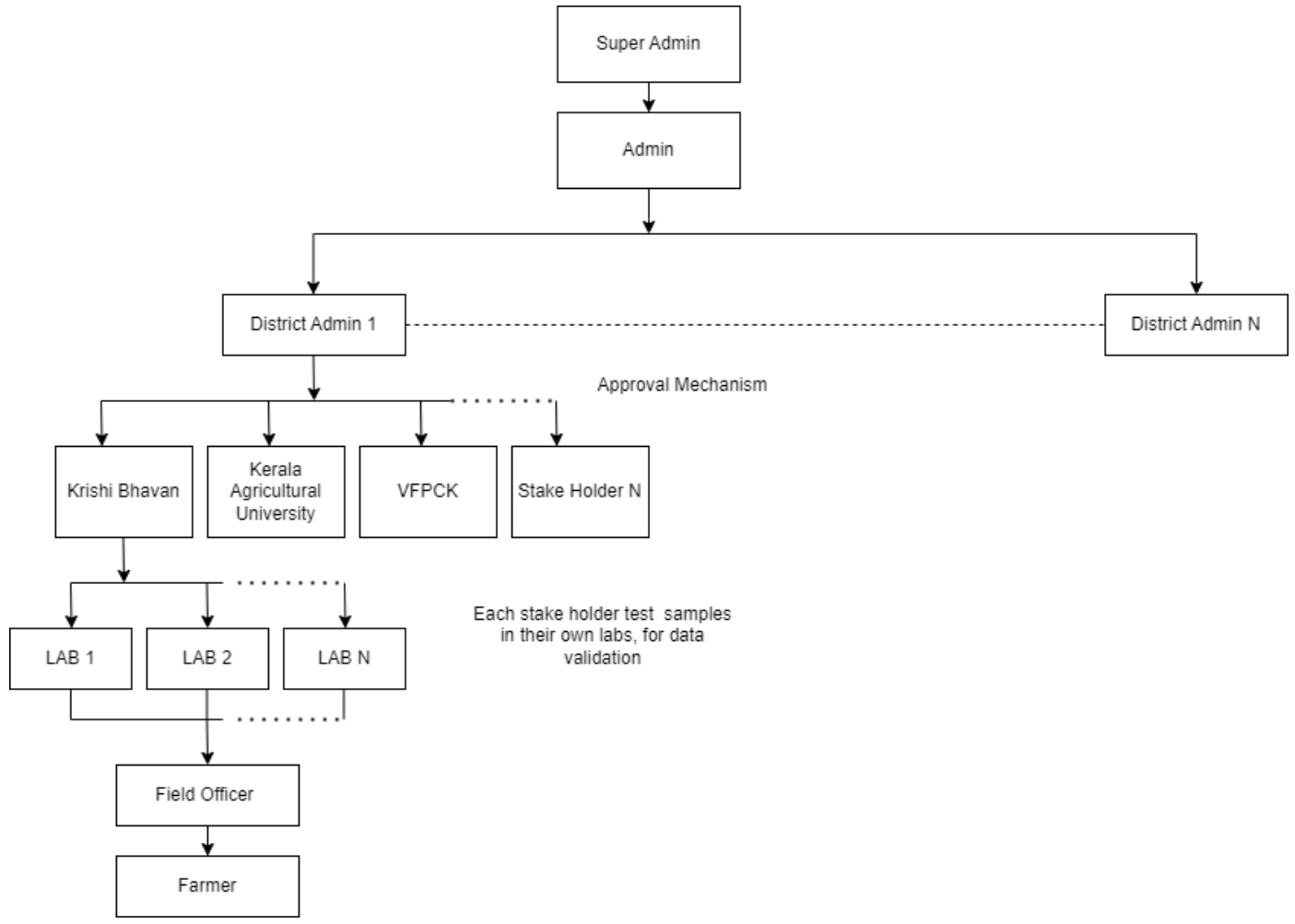
The type of users and respective workflow is given below

1. **Field Officer**
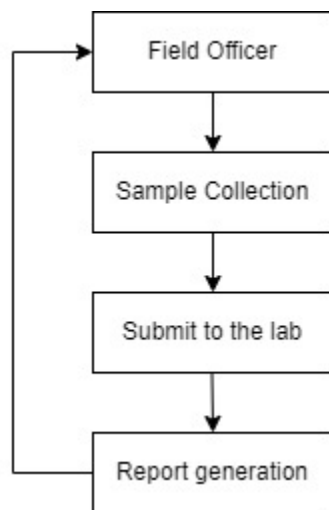
- Field level officers collects the soil samples from the farmer using mobile application
- Submit the samples in their respective labs .
- Sample report status to be made available .

Lab / Lab Scientist

- Sample processing .
- Result Generation .
- Send the results to the Head office and also to the field level.

Government Wing / Research Institution workflow (Krishi Bhavan / Agricultural University / VFPCK)
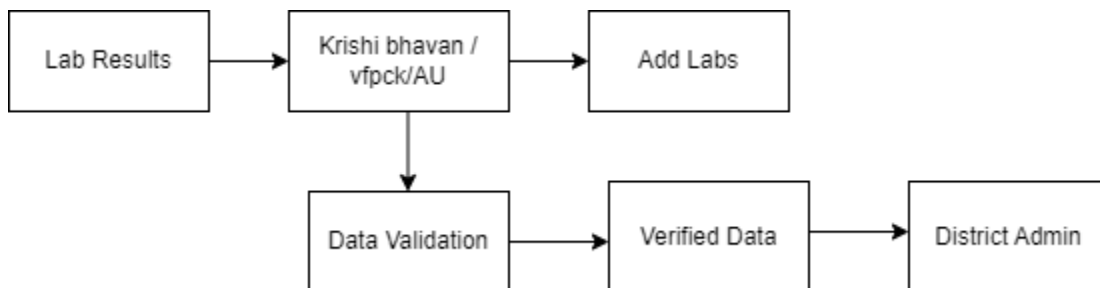
- Collect results from the labs and process the data for approval .
- Verification of the test results.
- Send the data for approval .
- Provision for error correction

District Admin
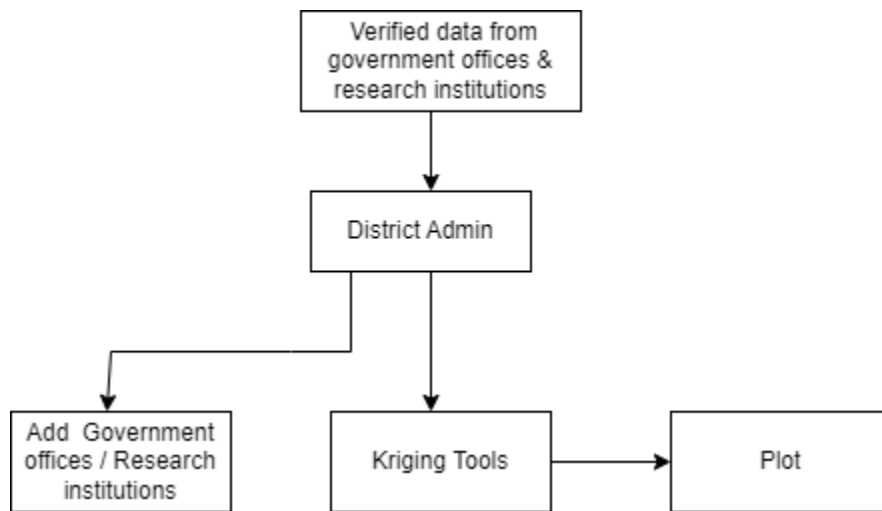
- Approval of data
- Option to add or remove user
- District admin can define user privileges for other users.
- Send the data for kriging .

For References :
 https://bhuvan-app1.nrsc.gov.in/sujala3/index.php
https://soilgrids.org/
http://nbsslup.in bhoomi

Selection process

Kerala Startup Mission is approached by various Government Departments for the development of mobile and web applications. These requests are met through a facilitation device by KSUM. Kerala Startup Mission facilitates the entire process by helping departments to finalize technical specifications, circulating the same among startups, initial technical assessment and shortlisting for the committee to take final decision.

Following are the steps involved:
1. Call for Expression of Interest among startups incubated/registered with KSUM
2. Submission of EOI

3. Technical Proposals are then obtained from startups who have submitted the interest.

4. Technical proposals are then evaluated.

5. Startups who qualify the technical evaluation are then asked to submit the financial proposal.

6. L1 among the startups is identified by the method of Quality and Cost Based Selection (QCBS) wherein 70% marks for the technical proposal and 30% for the financial proposal.

7. The L1 startup is then recommended to the Department after approval by the Technical committee headed by the IT Secretary.

8. KSUM ensures that the startup delivers the product to the Department and the Department is satisfied with the work.

9. The payment is made directly by the department to the startup after signing an agreement.