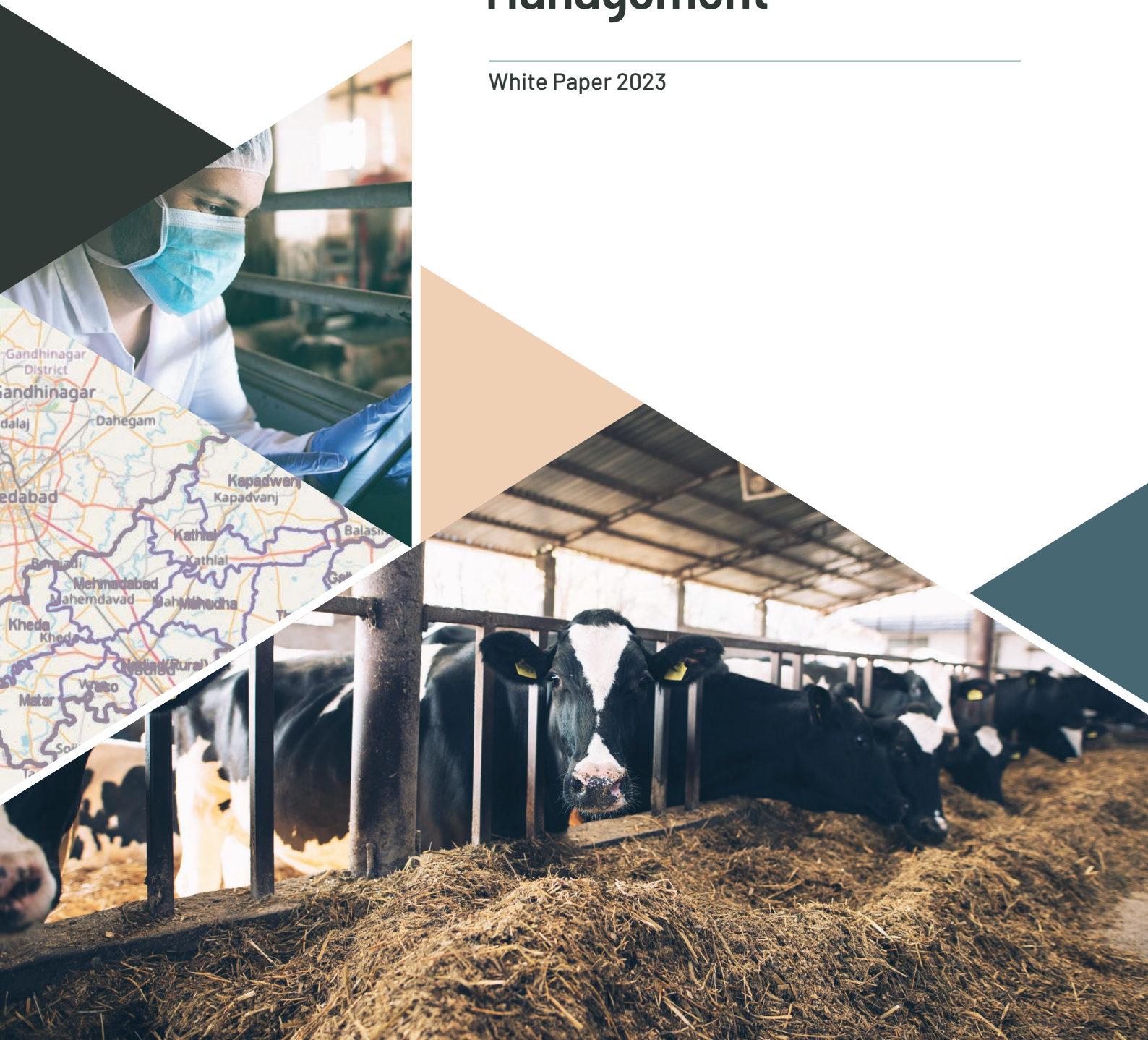


GIS in Animal Husbandry Management

White Paper 2023



INTRODUCTION

Animal health, animal welfare, and food safety have gained significant global recognition as crucial factors in safeguarding livestock and the livelihoods of farmers. In the past decade, several noteworthy animal health and food safety issues have emerged, such as epizootics of Foot and Mouth disease, Classical Swine Fever, Bluetongue Highly Pathogenic Avian Influenza Bovine spongiform encephalopathy, etc.

Within the realm of animal husbandry, GIS plays a central role as an integrated technology for collecting, transforming, and generating information from spatial and non-spatial databases. It offers spatial analysis and mapping capabilities that are highly beneficial in various aspects of livestock management. Additionally, it aids in veterinary surveillance, mapping disease patterns, and facilitating early intervention. GIS also helps with location-based management, identifying veterinary resources and enabling targeted interventions during outbreaks. When integrated with GPS, it provides real-time location data for efficient livestock management, optimizing grazing and improving overall productivity.

Some of the major innovative solutions of IGis Technology in animal husbandry management are as follows:

Spatial Analysis and
Mapping of Assets

Site Selection for Pasture
Land / Department Assets

Fodder Development

Animal Health Tracking and
Disease Management

Real time Monitoring of
Vaccinations of Animals

Location Tracking of
Department Personnel

Cattle Insurance

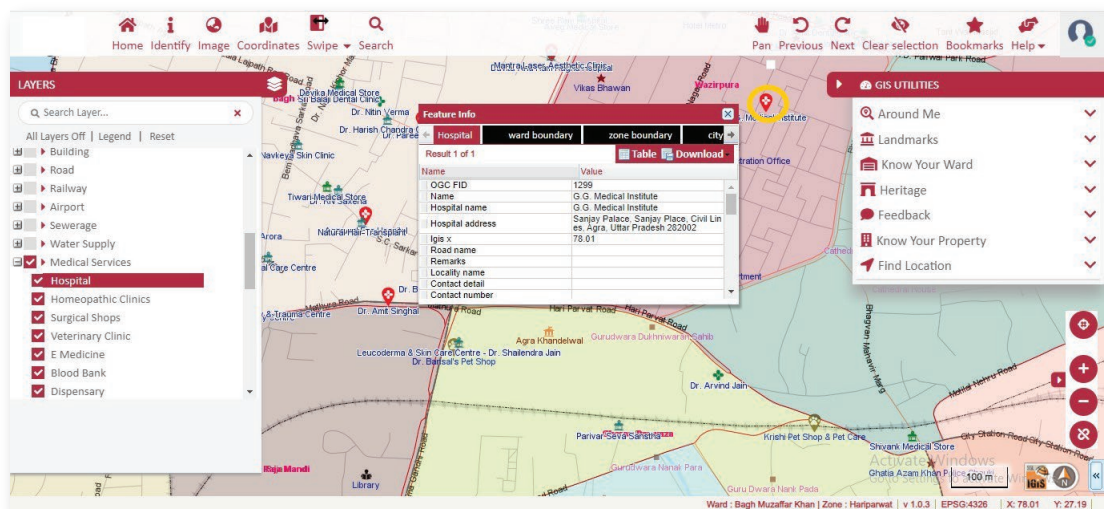
Development of Web based
Information Management System

Integration with
Command Control Centre

Spatial Analysis and Mapping of Assets

Spatial analysis and asset mapping play a crucial role in animal husbandry by providing insights into optimal land use, resource allocation, and infrastructure planning. By understanding spatial patterns and relationships, farmers can enhance productivity, ensure efficient resource utilization, and improve animal welfare in their operations.

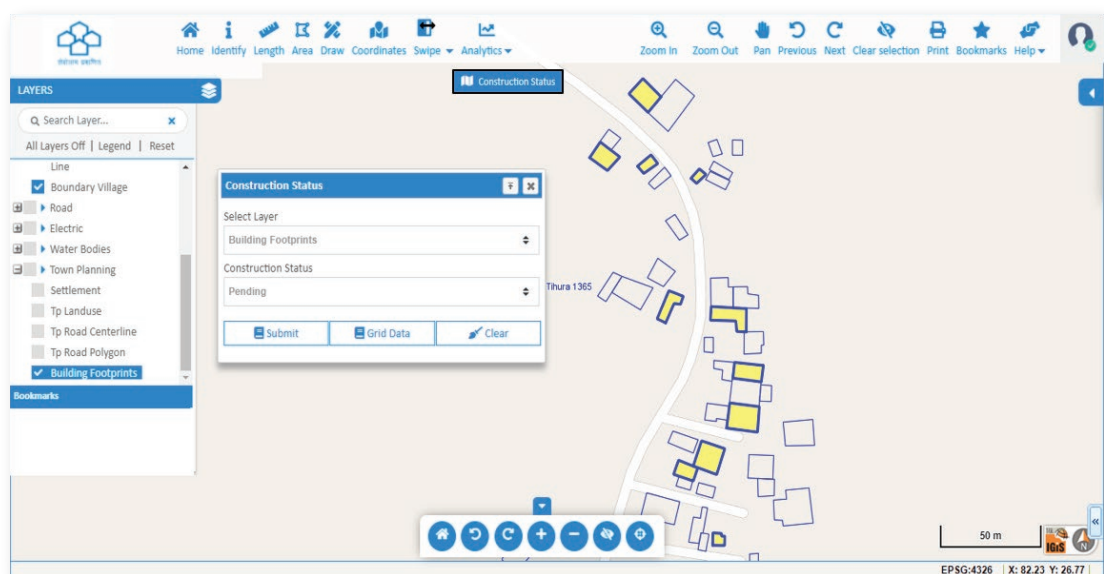
IGiS offers a comprehensive and reliable solution for generating precise and comprehensive maps of infrastructure in the Animal Husbandry department. This includes various departmental assets such as veterinary hospitals, animal breeding centers, artificial insemination centers or semen stations, distribution centers for fodder seeds, departmental pasture lands, livestock markets (mandis), cattle fairgrounds, and laboratories for feed analysis, quality control, and disease investigation. These maps serve the purpose of identifying the spatial distribution of infrastructures and identifying potential areas for expansion or enhancement. The mobile-based GIS application further provides an all-inclusive solution for asset surveying and monitoring, providing locational information, assets related attribute information, and geo-tagged photographs of assets.



Site Selection for Pasture Land / Departmental Assets

Site selection for pasture land in animal husbandry is vital for optimizing livestock production and ensuring animal welfare. Factors such as soil quality, water availability, vegetation type, topography, and climate must be considered. Proper site selection promotes adequate nutrition, reduces disease risk, and enhances grazing efficiency, leading to healthier and more productive livestock.

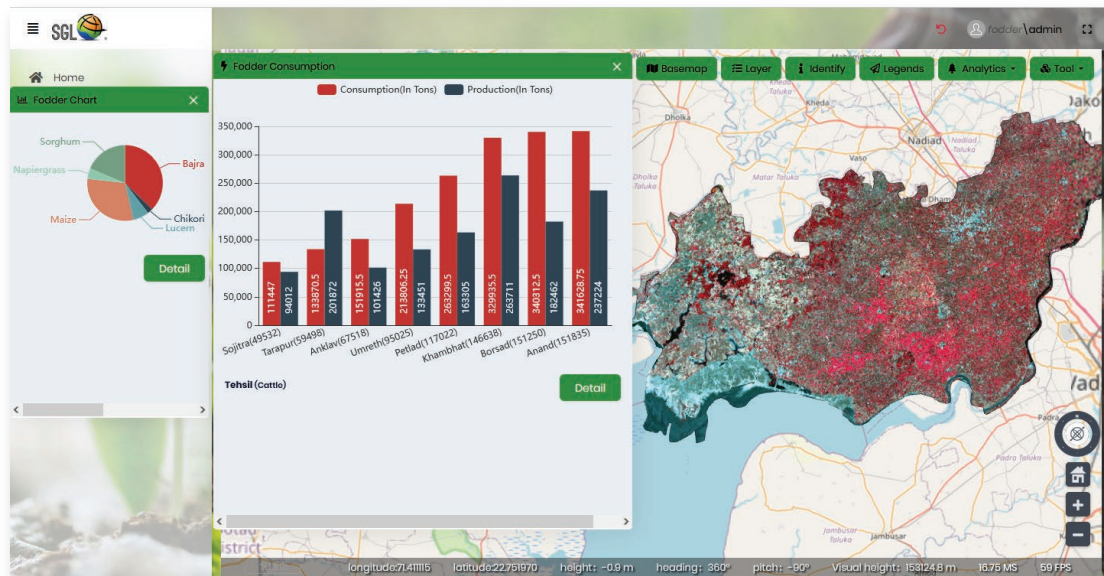
IGiS can help to identify suitable locations for livestock farms or grazing areas based on factors such as soil quality, topography, proximity to water sources, and environmental constraints. By overlaying diverse spatial datasets and employing spatial analysis tools, GIS enables the evaluation of these factors, facilitating the determination of optimal locations for animal production facilities. This approach contributes to the effective management and development of animal husbandry infrastructure, leading to successful outcomes in the industry.



Fodder Development

Fodder development refers to the process of cultivating and improving feed resources for livestock, particularly in the context of animal husbandry. It involves the deliberate cultivation and management of various crops, grasses, legumes, or other plant species that serve as food sources for animals.

IGiS technology plays a significant role in enhancing fodder development through its advanced capabilities. By leveraging GIS factors such as soil type, topography, climate, and land use can be analyzed to identify suitable areas for fodder production. This enables land suitability assessments, ensuring optimal locations for cultivating fodder and efficient resource allocation. IGiS can also be used for mapping yield potential by incorporating data on environmental conditions, nutrient availability, and crop growth models. This aids in identifying areas with higher productivity and provides valuable insights to decision-makers for fodder crop selection and management. Moreover, the utilization of a Web-based GIS portal facilitates the monitoring and mapping of fodder resources, enabling improved inventory planning and sustainable fodder production management.



Animal Health Tracking and Disease Management

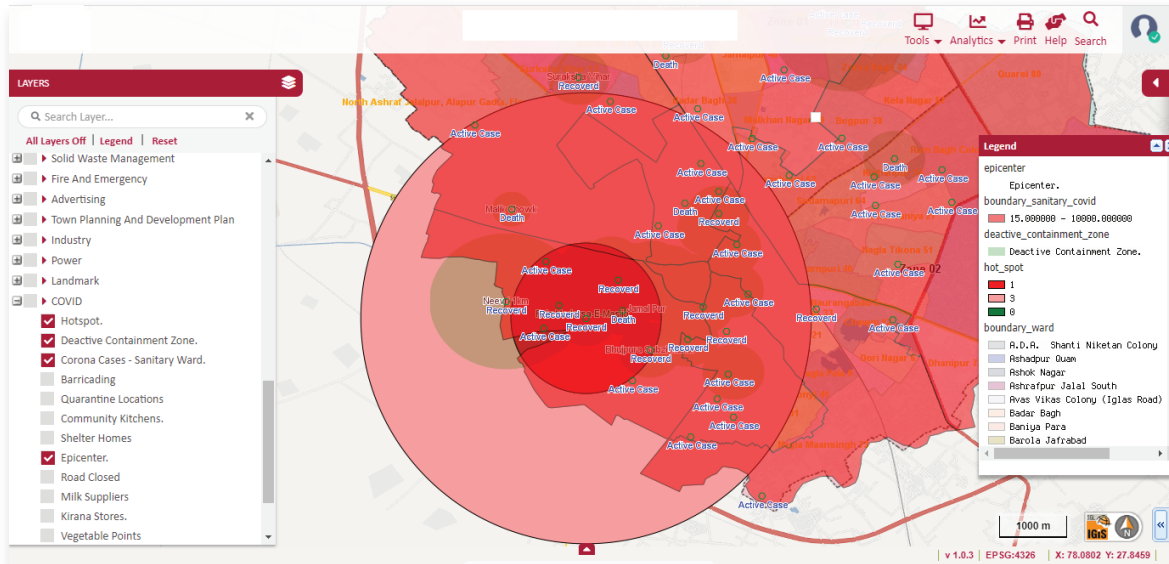
Animal health tracking and disease management are crucial for preventing and controlling outbreaks. The utilization of GIS in Animal health tracking and disease management is instrumental for identifying the precise location of farms or outbreak sites, as well as assessing areas that are potentially at risk in the event of an infectious disease. Through the integration of various spatial data pertaining to animal health, IGIS enables the visualization of disease patterns, analysis of transmission routes, and identification of high-risk areas using multiple analytical tools. This integration of data supports the creation of early warning systems, aids in the allocation of resources for targeted interventions, and enhances response planning in the face of disease outbreaks.

Real time Monitoring of Vaccinations of Animals

Monitoring the vaccinations of animals is a critical aspect of animal health management. Regular monitoring ensures that animals receive timely and appropriate vaccinations, protecting them from various diseases and preventing the spread of infectious agents.

IGIS, with its in-house developed Integrated Survey Solution Application, enables real-time monitoring of animal vaccinations. The process entails collecting vaccination data in the field using IGIS's mobile application Q-PAD. The collected data is then mapped to visualize vaccination points and seamlessly integrated in real-time to update a centralized dashboard, providing an accurate assessment of vaccination coverage.

Further, GIS analysis allows for the identification of areas with low coverage, enabling targeted interventions and timely vaccination reminders. Overall, the integration of GIS in monitoring animal vaccinations enhances the efficiency and effectiveness of vaccination programs by ensuring accurate data capture, informed decision-making, and improved coverage rates.



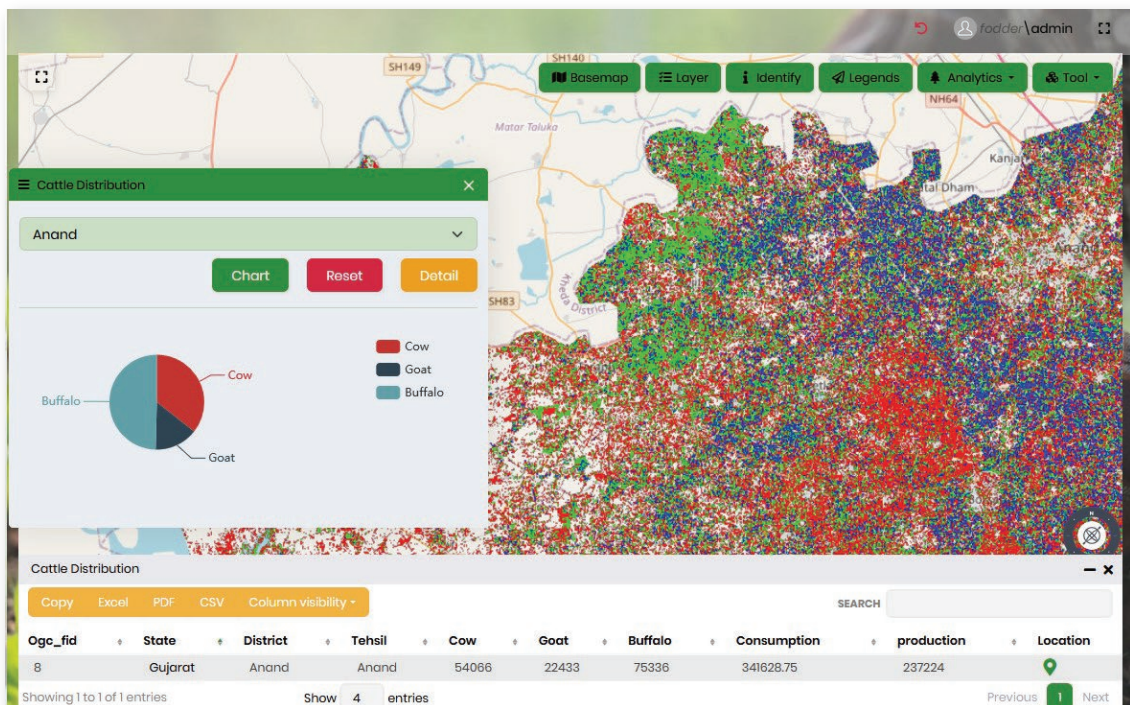
Location Tracking of Department Personnel

IGiS Q-PAD mobile application, offers location tracking services for monitoring departmental personnel (such as veterinary doctors, animal breeders, vaccination staff, or any other stakeholders) in real-time. It enables real-time access to specific information and simplifies the data collection process by facilitating the creation of pre-defined forms for efficient data capture. The application can operate both online and offline, ensuring uninterrupted data collection. In conjunction with the Survey Solution portal, the data collected using Q-PAD can be effectively monitored and managed. This includes near real-time updating of data on the web portal, access-based user management, geo-fencing, and QA/QC of surveyed data. These features collectively enable the real-time monitoring of departmental personnel activities, enhancing operational efficiency and data management processes.



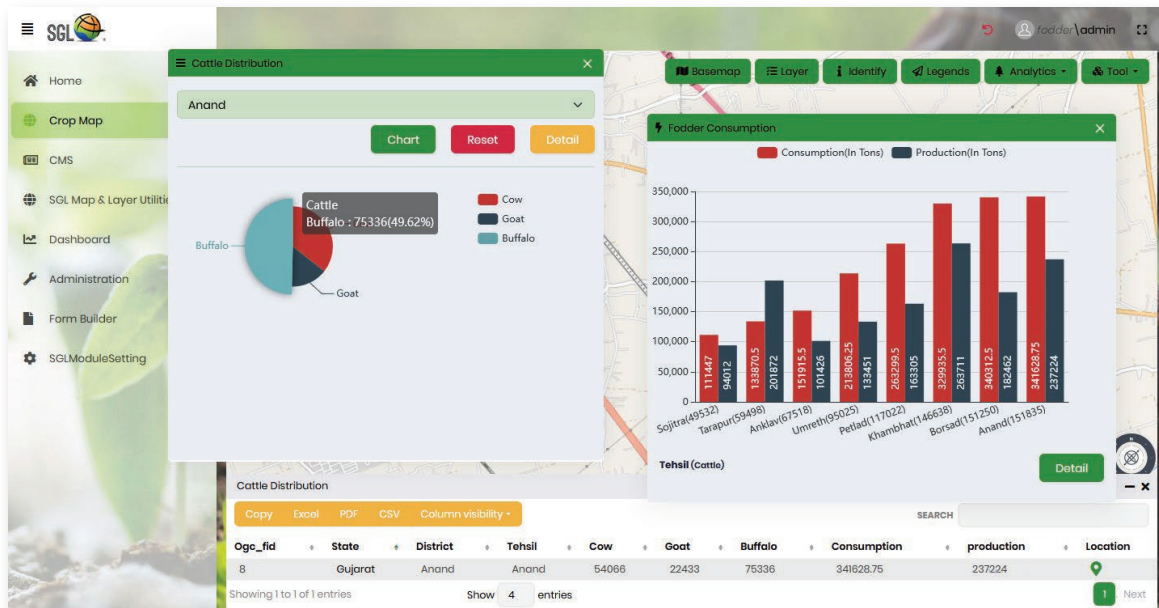
Cattle Insurance

Cattle insurance mapping involves the application of Geographic Information System (GIS) technology to visualize and analyse spatial data relevant to cattle insurance. GIS integrates data such as livestock population, disease prevalence, veterinary services, and historical loss information. By mapping these data layers, insurers can identify high-risk areas and assess the spatial distribution of cattle and associated risks. This helps in making informed underwriting decisions, pricing policies accurately, and estimating potential losses. Furthermore, GIS facilitates efficient claims management by verifying losses using spatial information and enables insurers to monitor and analyse the performance of their cattle insurance portfolios. Overall, cattle insurance mapping enhances risk assessment, decision-making, and the management of cattle insurance operations.



Development of Web based Information System

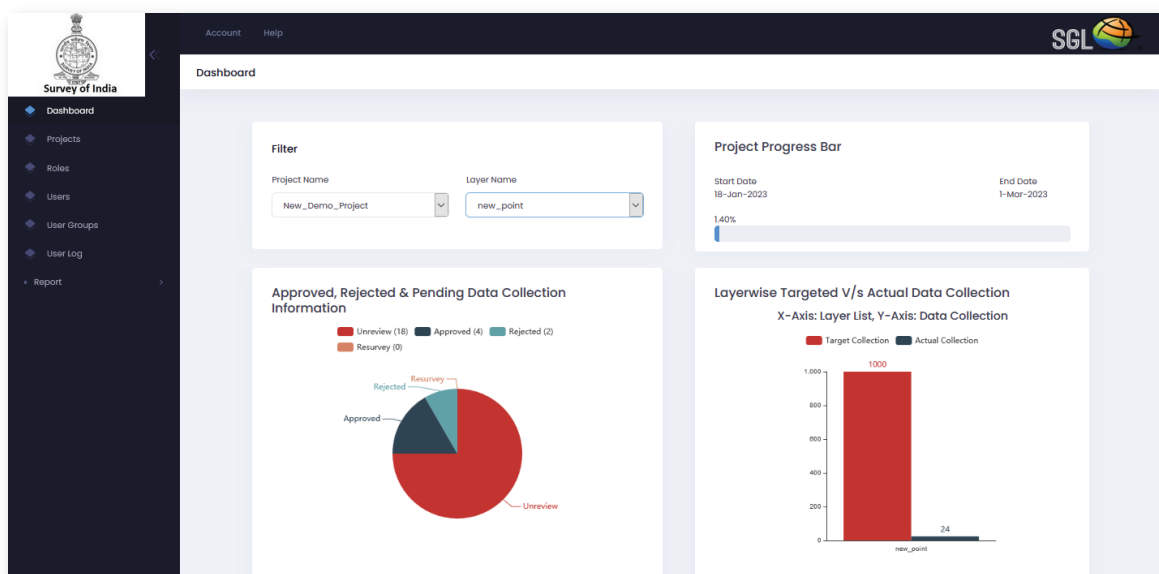
A web-based Information System will be a comprehensive platform designed to streamline and centralize information related to animal husbandry. This system will provide a user-friendly interface, allowing stakeholders such as farmers, veterinarians, and government agencies to efficiently manage and retrieve critical data. The system will also facilitate various functionalities, including livestock registration, health records, breeding information, vaccination schedules, and livestock inventory management, as per the department requirement and available data. It will also enable the monitoring and analysis of animal health indicators, disease surveillance, and outbreak management. Additionally, the system may incorporate features like data visualization, reporting tools, and integration with geographic information systems (GIS) for enhanced spatial analysis. By providing a centralized platform for data management and decision-making, the web-based Animal Husbandry Information Management System will contribute to improved productivity, animal welfare, disease control, and overall efficiency in the field of animal husbandry.



Integration with Command Control Centre

It is a centralized facility that serves as a command center for managing and coordinating operations, resources, and communications during critical events, emergencies, or day-to-day operations.

This integration enables users to leverage all spatial and non-spatial data within their familiar software environment, without the need for separate GIS software. It enhances the application's ability to work with spatial data, perform spatial queries, display geospatial information on maps, and incorporate geospatial analysis into existing workflows.





Conclusion

Thus animal husbandry is one of the sector that presents significant growth potential and plays a pivotal role in providing sustainable employment, reducing urban migration, and fostering economic development. Exploiting this potential requires leveraging advanced technologies like GIS, GPS, and remote sensing.

IGiS (Integrated GIS & Image Processing Software) offers a comprehensive solution to harness these technologies, delivering not only time and cost efficiencies but also enabling a holistic approach for managing and restoring affected areas. By utilizing IGiS, the animal husbandry sector can unlock its full potential, driving sustainable growth, improved productivity, and enhanced livelihoods for farmers and rural communities.

ABOUT

Scanpoint Geomatics Limited

Scanpoint Geomatics Ltd. is the leader in the Indian Geomatics Industry. We pioneer the nation's geospatial domain through IGiS. An indigenous technology that brings GIS, Image Processing, and Photogrammetry together on the same platform under the Make in India Initiative. We are proud of our partnership with the Indian Space Research Organisation (ISRO). With an innovative approach and over two decades of rigorous research and development, the duo developed the IGiS platform. Backed by ISRO's domain expertise, we aim to push forth innovation and uplift the global geospatial domain.