

Online Monitoring System for Mapping Assets in Gram Panchayat

T.Karthik

*Masters in Computer Science and Technology,
VR Siddhartha Engineering College, Vijayawada, Andhra Pradesh, India*

Dr.A.Srisaila

*Assistant Professor, VR Siddhartha Engineering College,
Vijayawada, Andhra Pradesh, India*

A.Vijaya Banu

*Scientist/Engineering-Sf, Manager, BTIO,
National remote sensing centre, isro, hyderabad*

Abstract - The Asset Directory is the comprehensive compilation of different types of assets/resources available in various parts of the country which are being created under several schemes of Government of India, States and communities by themselves to facilitate the local population. Every asset type is identifiable with a unique code. A unique symbol is associated with each asset group and every category is presented in a unique color. Using this module, user can select an area of interest and navigate, based on administrative unit (State, District, Block, Panchayat and village), Hydro-logical unit (Basin, Sub-basin and Watershed), and Constituency unit (Parliamentary and Assembly) or using a 'general search' of the interested place name. The objective of the project is to implement a flexible dash board for monitoring Asset Mapping. Which is not available in the existing system. It will be used to monitor the number of users registered and the users who have started asset mapping, assets mapped per day per month etc, assets validator etc.

Keywords – Administrative unit, Asset mapping, User registered, Area wise

I. INTRODUCTION

Planning is an integral part of the functioning of any government, at the local level it is social decision making which changes lives and future of the society. Planning for well-being of the people requires proper understanding of the local context including the resources, economic activities, social and cultural environment of the area and this helps in harnessing the manner[1]. The basic idea of decentralization is sharing the power of decision-making with lower levels in the organization, as people living there, their issues need to be solved and they plan best in teams; hence it is decision making for common cause, creative and structured problem solving process.

Spatial planning involves making decisions based on the spatial patterns and processes such as distance, location, neighborhood and proximity of various natural resources, infrastructural facilities, human activities and welfare activities in a set of terrain conditions [1].

Remote sensing plays a key role in community driven management and acquires special importance in the context of the process of participatory, integrated decentralized planning. Now with the availability of one meter spatial resolution satellite data in public domain in India, Remote Sensing and GIS technologies are capable of creating various detailed natural developmental potential and improve the living conditions of the people, particularly the disadvantaged sections. In other words, it is social or organizational activity of developing an optimal strategy for solving problems and reaching the desired goal [1]. In decentralized planning, local organizations formulate, adopt, execute actions and supervise the plan in participatory resources information layers on large scale in short time. The synoptic view provided by satellite imagery offers technologically the most appropriate method for quick and reliable mapping and monitoring of various natural resources both in space and time domain. It depicts the terrain, natural resources and human activities along with infrastructure facilities as an integrated view, which is the base for spatial thinking and further decides on intervention required and forming planning strategy. It helps to make an informed decision at the Panchayat level for effective and transparent planning, implementation & monitoring of centrally or state sponsored schemes, governance and finally spatially enabling the Nation.

National Remote Sensing Centre has developed a Geo-Portal called Bhuvan Panchayat Portal (url: <http://www.bhuvan-panchayat.nrsc.gov.in>) This has been designed and developed to help in Panchayat Level Planning and Governance. This Portal comprises High Resolution Datasets and Thematic Maps to enable Panchayat Level Planning. Besides high resolution spatial data it provides enabling environment for asset mapping, activity planning, implementation, monitoring and interactively report generation up to Panchayat level. Asset Mapping Module helps in mapping the assets and creating the Assets Directory.

A. Asset Directory:

The Asset Directory is the comprehensive compilation of different types of assets/resources available in various parts of the country which are being created under several schemes of Government of India, States and communities by themselves to facilitate the local population. Every asset type is identifiable with a unique code. A unique symbol is associated with each asset group and every category is presented in a unique color. An Android based Mobile application is also available in this portal using which the assets can be mapped.

The Asset Directory is made on community based and village based assets in a Panchayat. The compilation and categorization of assets/resources is in reference to the Space based Information Support for Decentralized Planning (SIS-DP) Project. To add assets and attributes not available in the asset inventory, there is a provision to add these under 'other asset' and 'other attribute'. This provision is kept under each major category and subclass [1][2].

The Asset Directory consists of three major categories of assets as follows:

1. Civic Amenities/Infrastructure: 226 Assets
2. Governance Assets: 35 Assets
3. Productive Assets: 10 Assets

Standard codes and symbols are assigned to each asset groups. Unique codes with symbols for asset groups are summarized.












Major Category, Subclass, Asset Group	Code	Symbol	Major Category, Subclass, Asset Group	Code	Symbol
1. Civic Amenities / Infrastructure			Electric Assets	CA0502	
1.1. Education Facilities			Power Generation Plant	CA0503	
School	CA0101		1.6. Sanitation and Sewerage Facilities		
College/University	CA0102		Public Toilet	CA0601	
Training Institutions/Centres	CA0103		Garbage Disposal Site and Treatment Unit	CA0602	
Public Library	CA0104		Garbage Treatment Unit	CA0604	
Other Educational Assets	CA0105		Drains/Naala	CA0605	
1.2. Medical and Health Facilities					

Figure 1. Big data Analytics for Health Care Data[2]

II. PROPOSED WORK

To develop online system for monitoring the assets mapped under Bhuvan Panchayat portal. The application is divided into four major modules.

- Geo-Visualisation of the Assets
- Area Selection and Visualisation
- Use wise Assets Statistics
- Area wise Assets Statistics

A Geo-Visualisation Module

- The top most level of the application is the user interface. The main function of the interface to translate tasks and results to something the user can understand.

- In this project HTML 5, Openlayers 3 and Leaflet are used to develop the presentation Tier.
- Based on the user request the WMS will be called and displayed in the application.
- The Geo Server generates the map using the data stored in POSTGRESQL.
- This Web Map Service is displayed in the viewer as overlay.

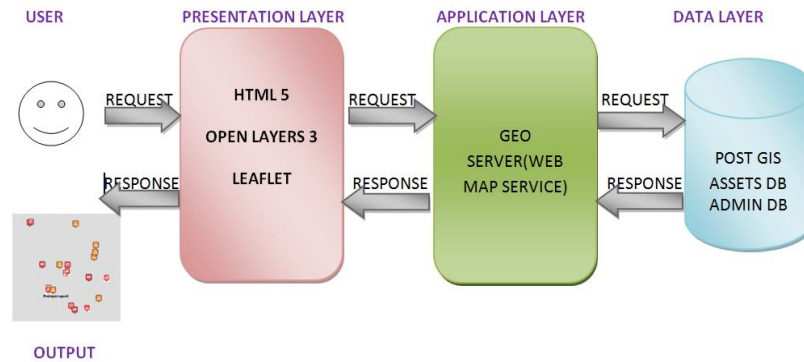


Figure 2. Geo-visualisation Module

B Area Selection Module

In the Area Selection Module, a html page passes the parameter namely State / District / Block / Panchayat / Village name to the PHP based Web Service and the user is navigated to the selected region.

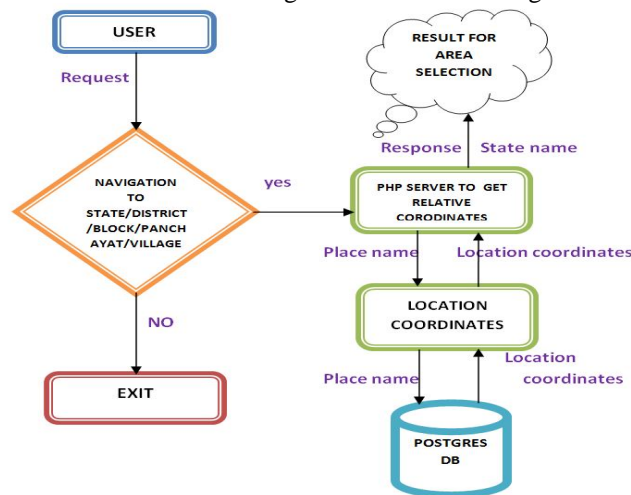


Figure 3. Area Selection Module

• State:

- The State Name chosen by the user is selected and passed to the PHP Service and all the districts which are part of the selected state is presented to the user application as JSON service.
- If the user is interested to view a state then the location coordinates of the selected state is presented to the user application as JSON service.

• District:

- The District Name chosen by the user is selected and passed to the PHP Service and all the blocks which are part of the selected district is presented to the user application as JSON service.
- If the user is interested to view a district then the location coordinates of the selected district is presented to

the user application as JSON service.

• Block:

- The Block Name chosen by the user is selected and passed to the PHP Service and all the Panchayats, which are part of the selected Block is presented to the user application as JSON service.
- If the user is interested to view a block then the location coordinates of the selected Block is presented to the user application as JSON service.

• Panchayat:

- The Panchayat Name chosen by the user is selected and passed to the PHP Service and all the Villages which are part of the selected Panchayat is presented to the user application as JSON service.
- If the user is interested to view a gram Panchayat then the location coordinates of the selected Panchayat is presented to the user application as JSON service.

• Village:

- The Village Name chosen by the user is selected and passed to the PHP Service and the location coordinates of the selected Village is presented to the user application as JSON service.

C User Wise Asset Statistics Module

The User name chosen by the user is selected and passed to the PHP Service and the all the assets mapped by the user is presented to the user application as JSON service.

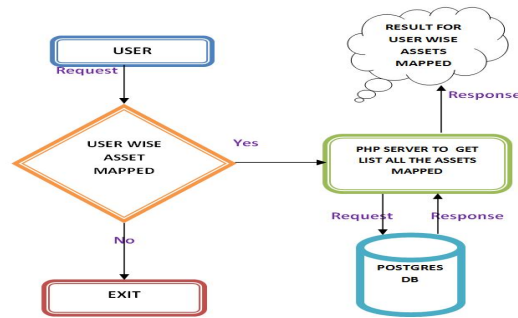


Figure 4. User Wise Asset Statistics Module

D Area Wise Asset Statistics

The state / district / block / panchayat / village name chosen by the user is selected and passed to the PHP Service and the all the assets mapped in this region is presented to the user application as JSON service.

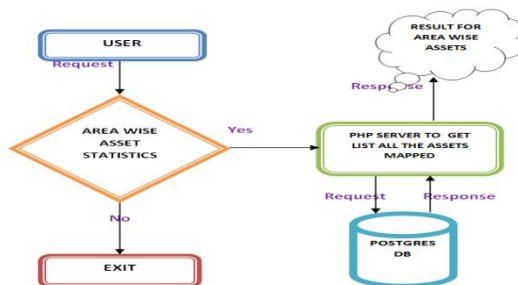


Figure 5. Area Wise Asset Statistics

I. RESULTS AND OBSERVATIONS



Fig 6. Geo-visualisation of Assets Mapped with Satellite Imaginary

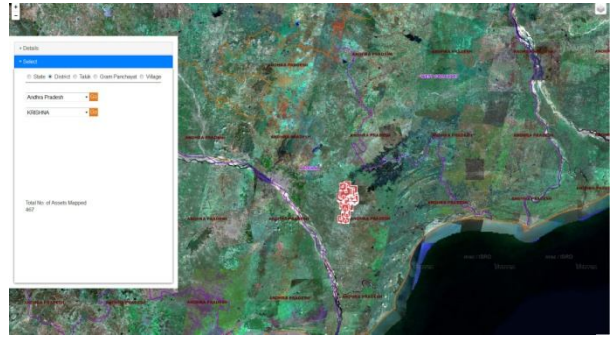


Fig 10. Area Selection By State/District Total Number Of Assets Mapped By These Many



Fig 7. Details of Assets Mapped for Roads



Fig 11. Area Selection By State/District/Village Total Number Of Assets Mapped By These Many



Fig 8. Details of Assets Mapped for Medical Facilities

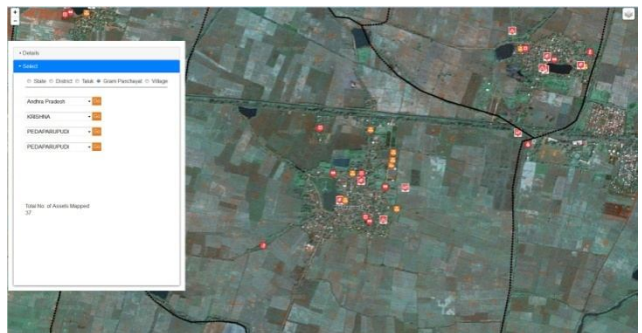


Fig 12. Area Selection By State/District/Village/Panchayat Total Number Of Assets Mapped By These Many

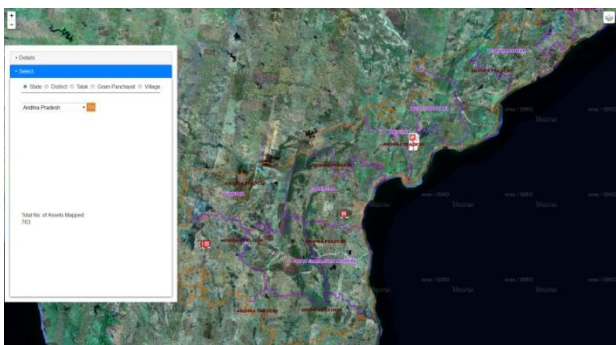


Fig 9. Area Selection By State Total Number Of Assets Mapped By Total These Many

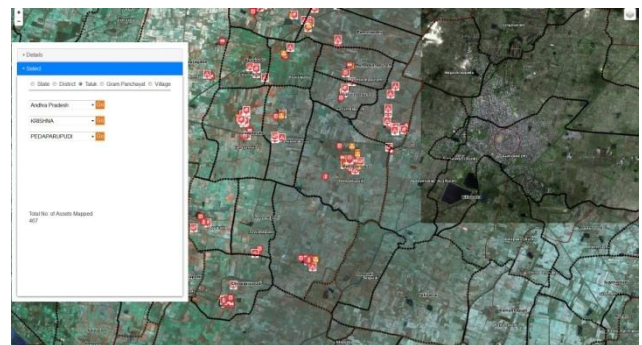


Fig 13. Area Selection By State/District/Village/Panchayat/Taluk Number Of Assets Mapped By These Many

II. CONCLUSION

1. This Asset Statistics Module can be implemented for the following parameters:
 - Date of Mapping
 - Updated Statistics
 - Functional Status and other attributes of the assets
2. Dashboard can be enriched with Rich User Interfaces and Bar Charts / Pie Charts etc.
3. Comparative analysis between various parameters can be done

V. FUTURE ENHANCEMENT

An open source solution for the Asset Monitoring System is to be implemented, which will help us to know the status of the assets mapping process in various gram panchayat.

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