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Introduction

GIS integrated user friendly MIS which will be best suitable for the monitoring and complete management with utmost reliability and data security. Developed MIS can be efficiently deployed as Enterprise Information System (EIS) leading to administrative convenience at all levels. Once implemented, this MIS of Forest department will be an exemplary model to emulate for other states in India. With the help of GPS enabled smart phones the location of forest protection related events, like forest offences, fires, encroachment, man-animal conflict, animal injury and the planned works, can be authored in real time by the front line staff themselves.

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Background

The department envisages that all offices of the department viz Head office, division, district and ranges are networked with each other so that the information flow is prompt and information related to decision making is available without unnecessary delays. The department also envisages that head office and field offices are connected to treasury so that electronic submission of documents and flow of funds can be facilitated.

In realizing the vision of providing services efficiently and promptly from each office of the Department, it looks forward to percolate the IT/e-Governance initiatives up to all ranges. The basis of providing ICT up to this level is that the paper work is mostly handled by them, and by automating the services up to this level of department, e-Government services can be provided efficiently to the citizens.

Objective

Gujarat Forest Department (GFD) is making continuous efforts to improve and enhance the service delivery as well as internal efficiency and effectiveness in operations by adopting latest Information and Communication Technologies (ICT). One of the integral parts of this initiative is the proliferation of e-governance through IT/ITeS solutions. The focus is slowly shifting towards giving self-service process improvements through online web based applications. Leveraging the power of IT/ITeS, Higher Authorities and the concerned field/division/range officials can achieve optimum results as monitoring & evaluation, overall managerial and technical assistance of departmental activities becomes systematic.

Need of MIS with GIS Integration

GFD is in the process of getting a GIS integrated MIS. With the help of GPS enabled smart phones the location of forest protection related events, like forest offences, fires, encroachment, man-animal conflict, animal injury and the planned works, can be authored in real time by the front line staff themselves.

The areas to be patrolled or covered under surveillance on a day-to-day basis are decided at the Range and subordinate levels for the Beat Guards and Foresters.

Situation before the Initiative:-

- Some standalone modules have been developed but could not be rolled out
- LAN at HO and other offices statewide needs to be scaled up
- WAN for the Department does not exist
- Existence of Website need to updated regularly
- Digitization needed
- Department would need to train staff in IT and relevant area

Technology:-

This is a GIS & web based system with interactive Decision support system (DSS) in the form of Geo-Spatial Information. It is enabled by Internet Gateway to access the geo spatial data. It is enabled with facility to query, identify and publish the useful information for Forest management. User can access as well as able to make query based on various needs of departments. This system maintains the process, store,

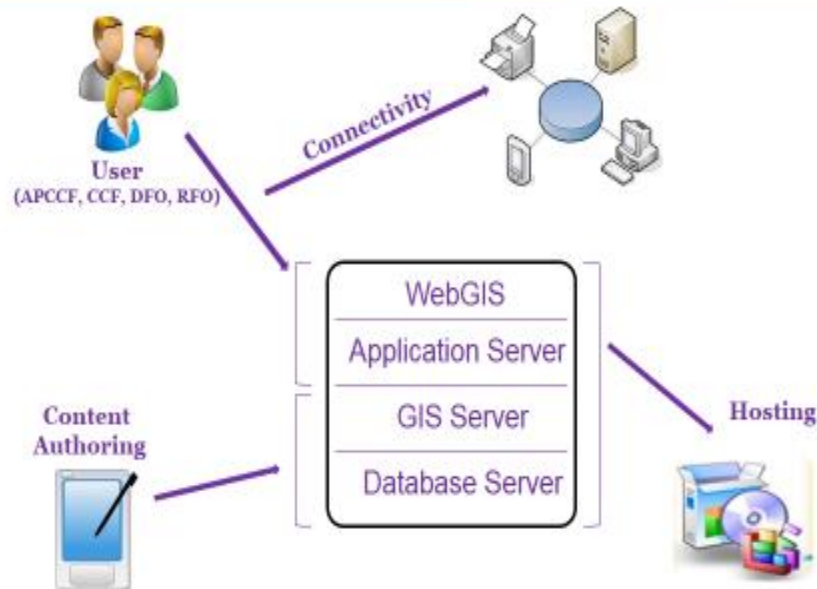


distribute and improve the utilization of geo-spatial data for decision makers, responders & other stake holders. This application is web enabled with centralized inventory of resources established to minimize response time in any emergencies & also useful to develop mechanism to facilitate the inter-disciplinary approach, involving mitigation preparedness and response functions developed at the administrative level. GIS application uses SQL Server to store data electronically.

Features of MIS with GIS Integration

- Display Map & Perform queries in Mobile (both online & offline)
- Record PDA locations using Mobile GIS application
- Record Events in Mobile GIS application
- Online tracking of Forest Personnel in Web GIS application
- Track log of forest personnel movement
- Standard and Custom queries
- Analysis (Tree cutting, Animal Sighting, Trauma, Encroachment, Fire etc...)
- GIS data editing and synchronization with MIS
- Standard navigation tools, Identify, print etc....

System Architecture of GIS Integrated FMIS



Benefits of MIS with GIS Integration

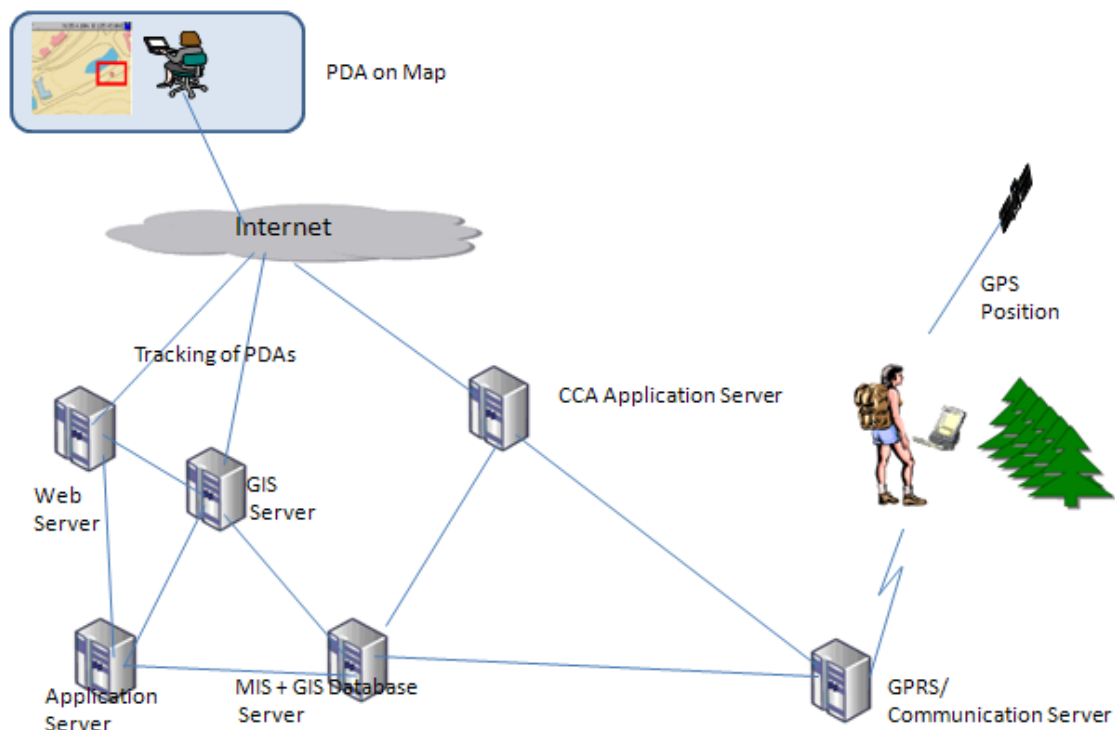
PDA Application for GFD

- GFD is in the process of getting a GIS integrated MIS. With the help of GPS enabled smart phones the location of forest protection related events, like forest offences, fires, encroachment, man-animal conflict, animal injury and the planned works, can be authored in real time by the front line staff themselves.
- The areas to be patrolled or covered under surveillance on a day-to-day basis are decided at the Range and subordinate levels for the Beat Guards and Foresters. The senior officers do not have any overall picture of the area being covered (and area not being covered) under patrolling and

surveillance over any given time period. Therefore, senior officers are unable to make any real time interventions in surveillance schedules on a day-to-day basis.

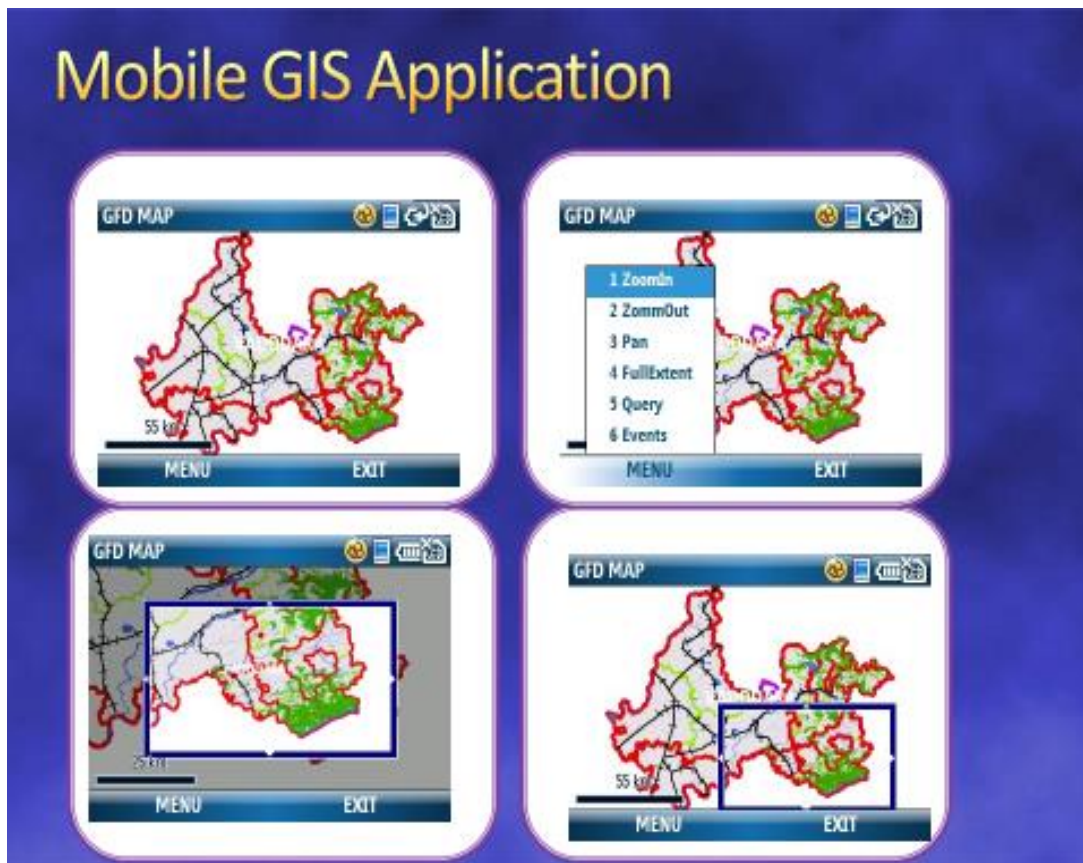
- By integrating the real time data generated from the PDA/Smartphone with the GIS/MIS applications it should be possible to generate trends and maps relating to offences, fires and any other desired parameters which would help in devising suitable management interventions.

Architecture of the PDA System



Windows mobile based PDA Application

Functionalities implemented in PDA Application are like Event Recording, Integrating different modules of GIS Integrated Forest MIS Application on PDA, Marking different Landmarks.



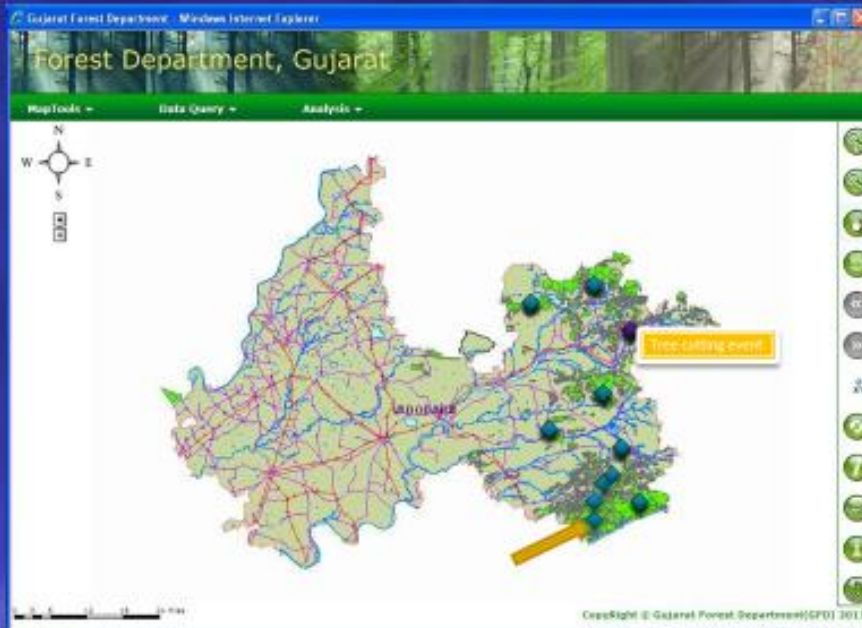


Different types of event reporting are as follows:-

Statutory Type

- ❖ Tree Cutting
- ❖ Encroachment
- ❖ Transit Offences
- ❖ Grazing
- ❖ Mining
- ❖ Boundary Alteration
- ❖ Hunting (WL)

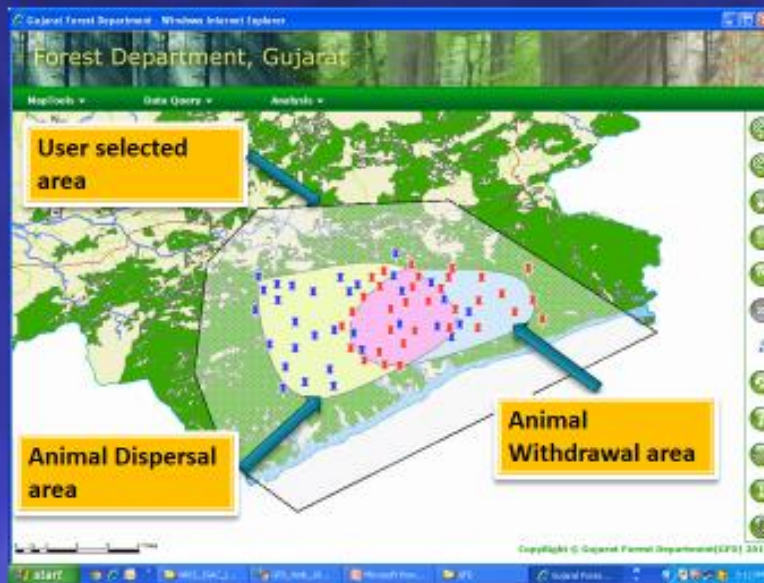
Online tracking of Forest Personnel



Management Type

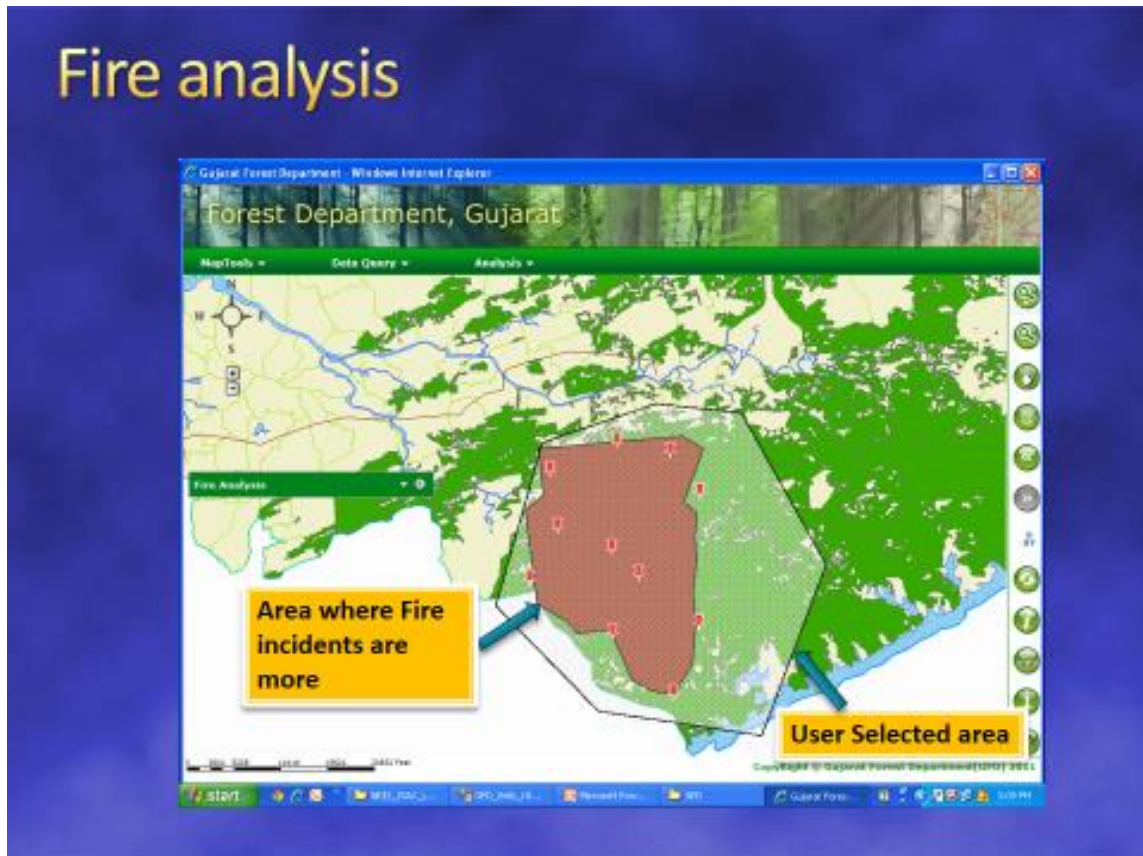
- ❖ *Sending of own location at pre-defined intervals (Default Event)*
- ❖ *Animal siting (Which animal, no, behavior, etc) Rescue*
- ❖ *Release*
- ❖ *Conflict*
- ❖ *Animal Trauma (Injury, Death, etc.)*

Animal sighting analysis



SOS Type

- ❖ *Naka –Bundi*
- ❖ *Hot-Pursuit*
- ❖ *Re-Inforcement*
- ❖ *Fire*



- **Finance module** will cover Submission and Passing of Vouchers role wise.
- **Physical module** will cover most of the part of the nursery operations.
- **In Participatory module** details about no of people attended training / meeting
- **In FCA module** Date of Inspection of FCA Application is entered through PDA from field.
- **In Malki module** Date of Verification of Malki Application is entered through PDA from field.

Way Forward

❖ G2G (Government to Government – Forest Internal)

- Enhancement of FMIS
- Enhancement of PDA to Tablet based application
- Integration with IFMS & IWDMS
- Digitize Complete GIS Data like forest land diversion cases
- Online Money Flow Management (Financial Module)
- Up gradation of application
- Digitize complete Working plan data
- Document Management System(DMS) with Digital Signature authentication
- Asset Management System (including IT and Non-IT related products)
- HRMS (Payroll, Leave Management & Increment Process)
- Biometric Attendance System (Using Thumb Verification)
- Remote Device/PDA/Table Management System
- LED Alarm System (African model implementation)

❖ G2C (Government to Citizen – between Forest & people)

- Easier communication provision for Citizens to contact a forest official in cases of damage/offence to their land/wildlife – Call Center / Toll Free Number
- Reverse Auctioning
- Centralized Forest Zoo Management



- Centralized Forest Guest House Management
- Permissions (Entry in Forest Area, online application for forest research, etc.) and Grievance System
- Online RTI Management System
- Donation including Micro-Donation for environment saving - (5 Rs. per SMS) by sending a SMS to one dedicated number.
- Gift A Tree – (more than 100 Rs. with payment gateway integration)
- All Nurseries shall be linked with private nurseries , so that people can make a request online

Sustainability

1. Networking/Connectivity (sustainably)

- GSWAN
- Increase in Bandwidth (depending on the Link Utilization at the office for ex. No of users uses FMIS) - input Required from forest department
- Internet Bandwidth (depending upon the higher management official's count to whom internet is to be provided) - input Required from forest department
- New proposed forest office LAN
- Dedicated VLAN - will be providing by DST through GSWAN.
- Maintenance & hand holding of Aranya Bhavan's WiFi Network



2. Data Center

- Enhance the data storage facilities
- New Server Management (like forest's officer's daily work on single server, Firewall & Server – Client antivirus solution)

3. Training

- Normal IT related training (MS-Office and other daily useful software)
- FMIS & PDA Application specific Training
- Common IT practices
- Train the officials to be friendly with commonly used equipments like Pen drives, CD/DVD, etc.
- Provide them knowledge about security measures important to keep their PC safe from Viruses and hackers

4. Capacity Building

- Create an IT cell which would comprise of:
 - Project Manager
 - Team Leader
 - IT Support engineers
 - GIS Analyst
 - Dedicated Person for social media account handling for forest's Facebook, twitter, YouTube account. etc.
 - Data entry operators
- BPR (Business Process Reengineering resources)

e-Governance News

❖ Department of Administrative Reforms & Public Grievances (DARPG) and Department of Electronics and Information Technology (DeitY), Govt. of India in association with one of the State Governments have been organizing the National Conference on e-Governance every year since 1997. Seventeen such Conferences have been organized so far and the last one was held in January, 2014 in Kochi, Kerala. Now the Department is preparing for the eighteenth edition of the same.



❖ The Conference will be of a two day's duration from 30th January, 2015 to 31st January, 2015 and includes four plenary sessions on selected Themes and Sub-themes, exhibition, cultural function and other related activities. During the Conference,



the National Awards on e-Governance are also presented by the Chief Guest. The Conference is expected to be attended by more than 1000 delegates from Government of India, State Governments, Industry, Academia and private sector as well.



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