SPARC
Igniting innovations
Enterprise Solution
Forest land
Decision Support System

Outline

An introduction to Forest Land Decision Support System

01. **Background**
Genesis of Forest Land Decision Support system

02. **Forest Land DSS**
Decision Support System Features & Functionalities

03. **Advantages**
Effectiveness of Forest DSS in decision making

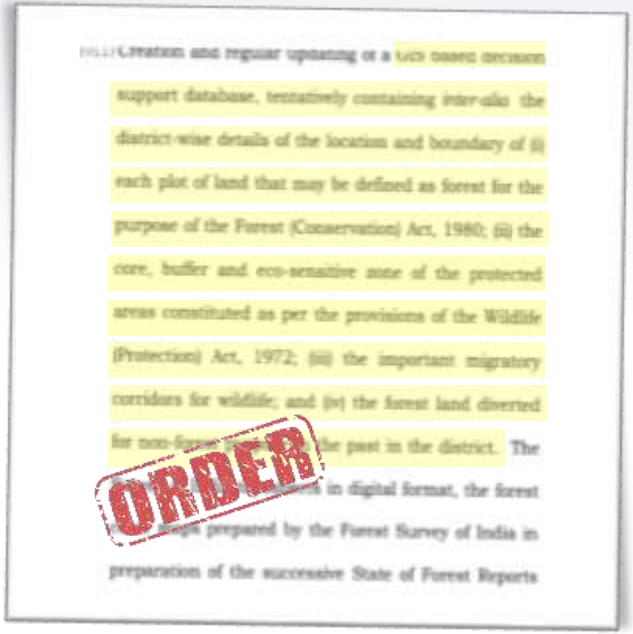
04. **Forest Geodatabase**
Approach & methodology for Forest Geodatabase

05. **Odisha Case Study**
Implementation of Forest DSS in Odisha

06. **Q&A**
Inviting Questions & remarks from the guests

Background

- Forests: lifeline of earth
- Protection of Forests is imperative for survival of life
- Forest Conservation Act, 1980
- Hon'ble Supreme Court of India - decision dated 6th July 2011



DSS Modules

Forest Boundary Decisions
Decision on Forest Boundary through analysis of forest boundary data from different sources

Forest Intervention Progress Monitoring
GRFL Lifecycle (JV/ DGPS/ FSO/ GeoDB)
MRV based forest intervention monitoring

Query & Reporting
GUI Query interface for Spatial Query and Report Generation

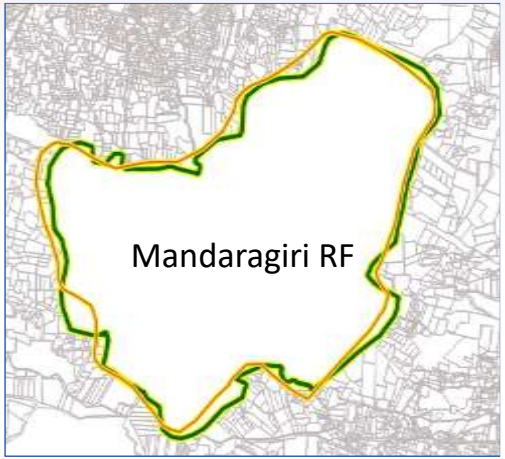
Integrated Dashboard
Forest land statistics, Data Visualization, Analytics & Metrices, Trend Analysis, Forest Land Diversions/ Compensations
System Utilization

Forest Land Analysis
Forest Density Change Analysis, Forest Land Proximity Analysis, Identification of Ground Developments

Data Catalogue
Data Search & Discovery, Metadata Standards
Metadata Management, Version Control
Data Preview, API data services
Data Life Cycle Management

Forest Land Information
Notified Forest Blocks, DLC/ Revenue Forest Diverted/ CAF Forest Land.
Forest Boundary/ Pillar details

Decision Support for Forest boundary interpretation



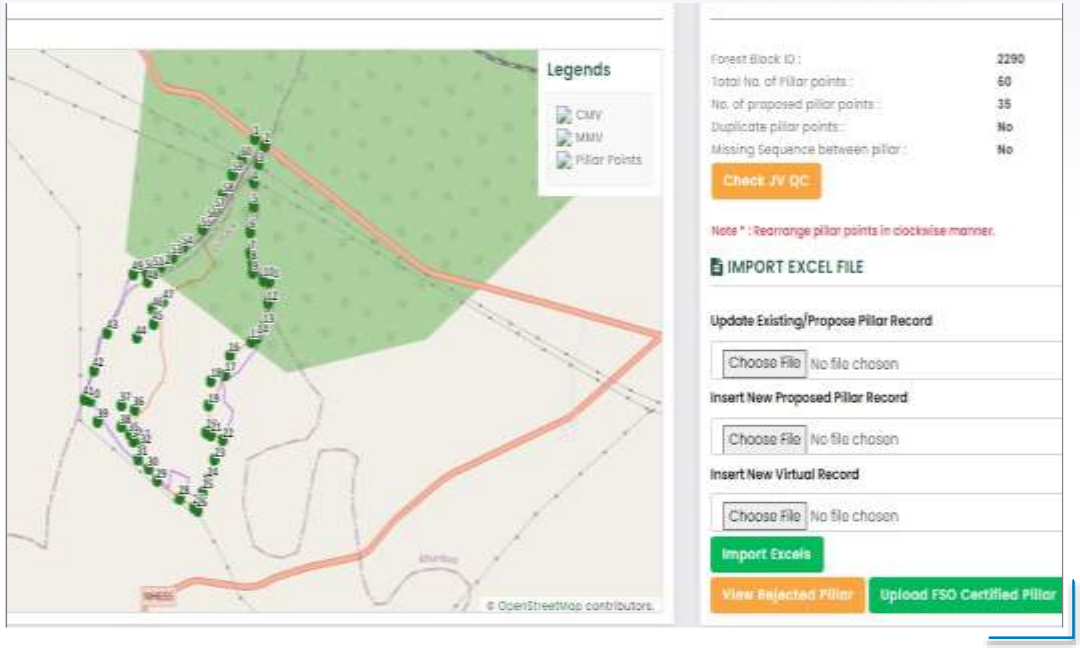
Notified area: 586.73 Ha
WP area in GIS (MMV): 607.68 Ha
GIS area from Cadastrals: 604.46 Ha

Working plan boundary
Cadastral boundary

- Village Cadastral maps
- Forest Working Plan Maps
- SoI Toposheets
- HRSI

Verification of Forest boundary demarcation

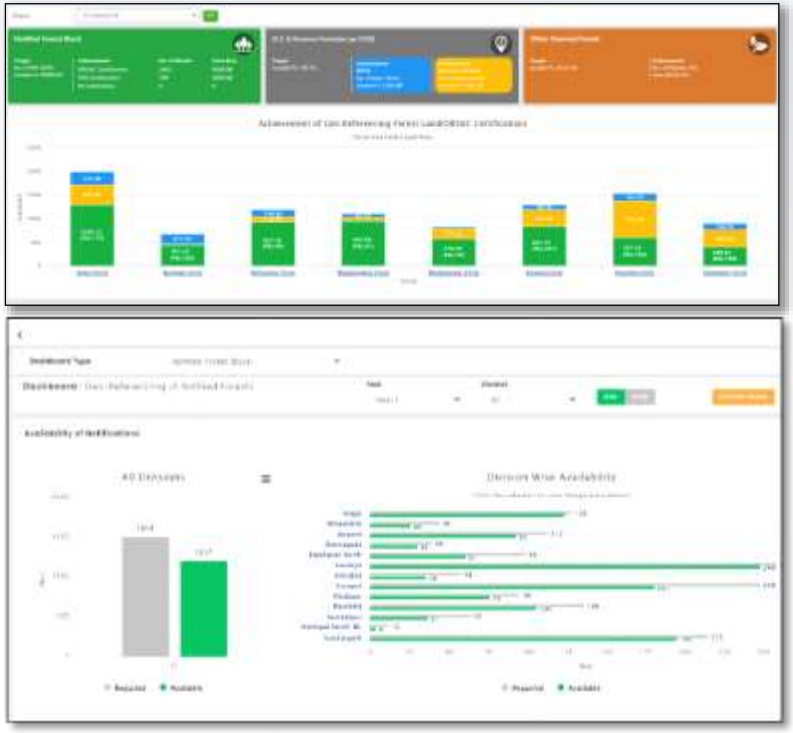
Mobile UI for demarcation of Forest boundary



Verification of field demarcated Forest Boundary

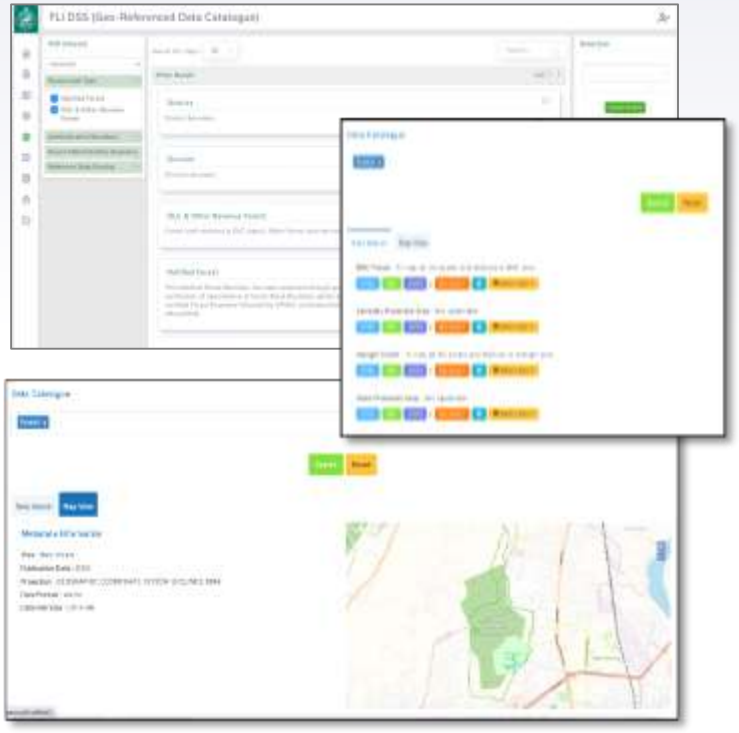
Integrated Dashboard

- Forest Summary and Metrices (Forest Land, Forest Cover, Diversions, CAF)
- Spatial Data Visualization (Forest land use, Forest Density hotspots, Vulnerable locations)
- Progress Monitoring (Forestry interventions, Georeferencing of Forest lands)
- Forest Land Diversion/ Compensation
- Step wise drilldown of summarized information
- System Utilization Insights (System Utilization at different levels of operational hierarchy)



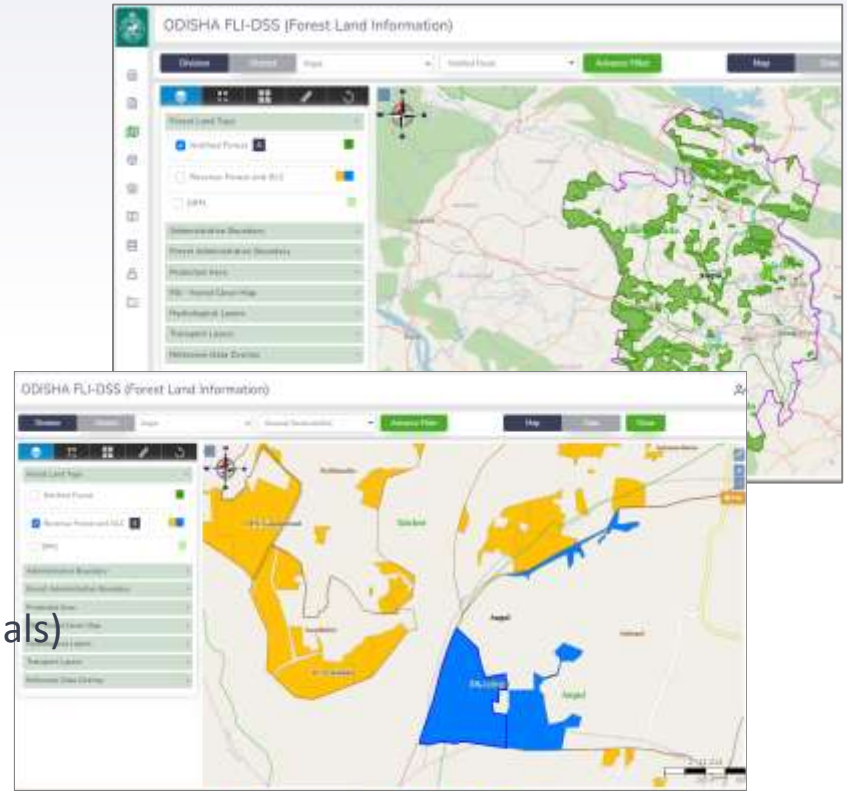
Forest Land Catalogue

- Metadata Standards (Data Integrity, Data Interoperability, Search & Discovery)
- Search & Discovery of Forest Land Records/ Data Layers (multiparameter search, data preview)
- API Services (connectivity and data interoperability)
- Data/ Service preview
- Version Control & Lifecycle Management (versioning & relevancy of data)



Forest Land Information

- Forest Administrative boundaries
- Forest Land
  - Notified Forest Lands
  - Revenue Forest Lands
  - Protected Area/ Sanctuary/ ESZ/
  - Wildlife Corridors
- Forest Boundary/ Pillar information
- Forest Land Georeferencing
  - Forest Land Notification/ Maps
  - Joint Verification (Forest & Revenue officials)
  - DGPS survey
  - Technical verification
  - FSO Certification

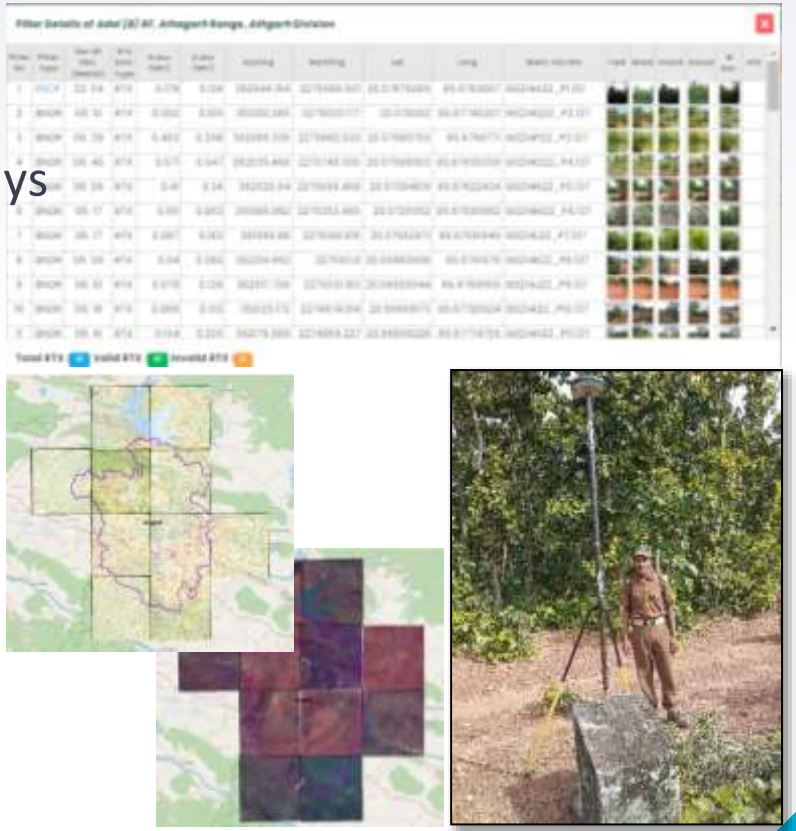


Forest Land Analytics

- Time series analysis of Forest Land Use/ Land Cover
  - FSI-SFR/ HRSI
- Comparative information on extent of Forest land
  - FSI/ SoI/ Working Plan/ HRSI/ Ground Survey
- Involvement of Forest Land within AoI & generation of Land Schedule (strategic decision-making, site selection for developmental projects)
- Identification of Trends/ Patterns/ Corelations

Query & Reporting

- GUI based Spatial Query Builder
- Data Layer Attribute Filters/ Dynamic Overlays
- Temporal Data Filters/ Search Criteria
- Forest Land Diversions/ Compensations
- MRV Platform of Forestry Interventions
- Custom report builder/ export
- Composite report including Maps & Charts
- Notifications & Alerts



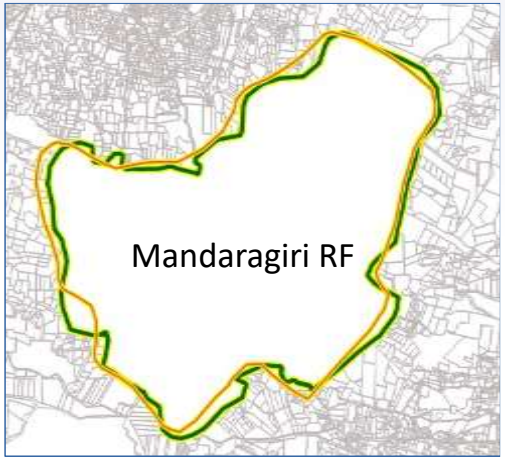
Advantages of Forest DSS

- Up-to-date forestland insights on Web/ Mobile platform
- Map based UI for assisting the Forest Operations
- Continuous remote monitoring for Boundary deviations
- Location based forest incidence Alerts & Notifications
- Timeseries analysis for trends / patterns insights
- Assessment of Forest Lands within proposed areas of interest
- Built on the SDI framework

Forest Land Geodatabase Development

- Generation of Reference Forest Boundary
- Joint Verification and Boundary demarcation
- Management of Control Points & Base Station
- System Integrated DGPS Survey
- Technical verification of data

Generation of Forest boundary references



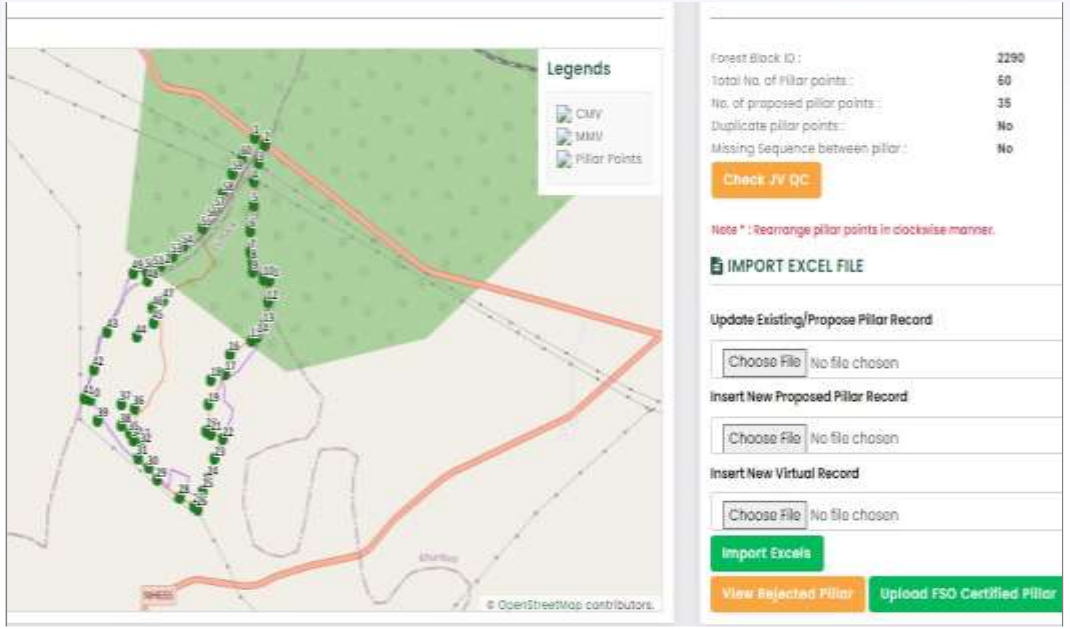
Notified area: 586.73 Ha
WP area in GIS (MMV): 607.68 Ha
GIS area from Cadastrals: 604.46 Ha

Working plan boundary
Cadastral boundary

- Village Cadastral maps
- Forest Working Plan Maps
- SoI Toposheets
- HRSI

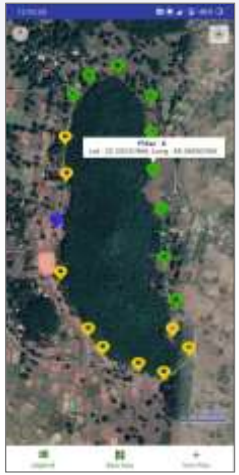
Verification of Forest boundary demarcation

Mobile UI for demarcation of Forest boundary



Verification of field demarcated Forest Boundary

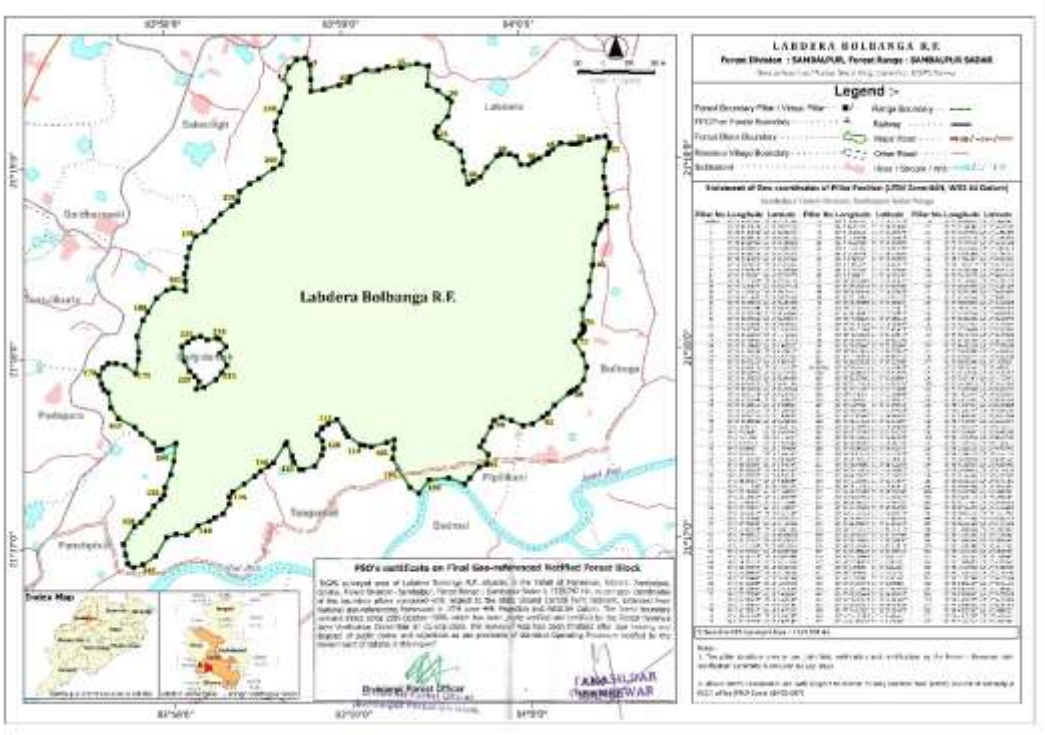
DGPS Survey of Forest boundary



Notified Forest boundary

- To the scale with precise boundary description
- Easy to corelate on ground and read with cadastral maps

- Approximate scale
- Not possible to corelate on ground
- Forestland boundary disputes cannot be resolved
- Cross-referencing with revenue cadastral difficult



Thank You!

info@sparcindia.com

(091) 674-662-9301/2/3

www.sparcindia.com