

### === SYSTEM OVERVIEW ===

TARANG is a digital platform for managing Forest Rights Act (FRA) claims with:

- FRA Claims Management - End-to-end IFR/CR/CFR claim processing
- Asset Mapping - AI-powered satellite imagery analysis (Google Earth Engine/Sentinel-2)
- Decision Support System (DSS) - Gemini AI scheme recommendations (PM-KISAN, PMAY-G, MGNREGA, etc.)
- OCR and NER - Multilingual document extraction (Hindi, Odia, Telugu, Bengali, English)
- Field Visits - GPS-tagged digital verification
- Budget Management - State/District/Block allocation
- Analytics - Real-time dashboards and reports

Tech Stack: Node.js, React, MongoDB, Python, FastAPI, Mapbox GL, Google Earth Engine

### === USER ROLES AND WORKFLOW ===

HIERARCHY: FRC → Block Officer → District Officer → District Collector → State Government

FRC Officer: Create claims, upload docs, draw polygons, conduct field visits, respond to corrections

Block Officer: Review claims, schedule field visits, request corrections, manage FRC officers

District Officer: Verify claims, approve/return, manage DSS, access asset mapping

District Collector: Final approval authority

State Officer: State-wide oversight, analytics, policy management

### === CLAIM TYPES AND DOCUMENTS ===

IFR (Individual, 0.1-5 hectares): Form-A, Aadhaar/Voter ID, Residence Proof, Gram Sabha Minutes

CR (Community, 1-10 hectares): Form-B, Evidence of Rights, Community Map

CFR (Community Forest, greater than 10 hectares): Form-C, Management Plan, Gram Sabha Resolution, Mapping Document

File limits: Maximum 10MB, formats PDF/JPG/PNG

### === KEY WORKFLOWS ===

CREATE NEW CLAIM (FRC):

1. Dashboard → FRA Claims → New Claim
2. Fill: Claimant Info → Upload Docs → Land Details → Draw Polygon → Submit
3. Save as draft anytime

RESPOND TO CORRECTIONS:

1. FRA Claims → Returned tab
2. Review issues identified
3. Fix: Re-upload docs/redraw polygon/correct data
4. Click "Resubmit Corrected Claim"

ASSET MAPPING (District):

1. District Analytics → Asset Mapping
2. Draw bounding box or select claim polygon
3. Click "Run Asset Scan" (30-60 seconds processing)
4. View detected: Water, Forest, Cropland, Buildings, Roads
5. Toggle layers, export GeoJSON

FIELD VISIT SCHEDULE (Block):

1. Claim Details → Schedule Field Visit
2. Select date, assign FRC officer, add instructions
3. Submit - FRC receives notification

FIELD VISIT CONDUCT (FRC):

1. Field Visits → Scheduled
2. Start Visit → Capture GPS photos → Record observations
3. Submit report, mark Completed

#### === CLAIM STATUSES ===

Draft → Submitted → Under Review (Block) → Under Review (District) → Pending Approval (DC) → Approved

Return flow: Any level can return to FRC for corrections

Processing time: 25-35 days (standard), 45-60 days (complex)

#### === ASSET MAPPING DETAILS ===

Uses Sentinel-2 satellite imagery (10-20m resolution)

Detects: Water (NDWI), Forest (NDVI), Cropland (EVI), Buildings (NDBI), Roads

Classification hierarchy: Water → Buildings → Roads → Forest → Cropland → Barren

Best results: Less than 10% cloud coverage, areas less than 50 sq km

FRA Land Prediction classifies potential FRA lands:

- IFR: 0.1-5 hectares, near settlements, moderate vegetation
- CR: 1-10 hectares, water/grazing access
- CFR: Greater than 10 hectares, high canopy density

#### === OCR AND DOCUMENT PROCESSING ===

Auto-extracts data from scanned documents using Google Vision API and Gemini NER

Supports: Hindi, Odia, Telugu, Bengali, English (auto-translates regional to English)

Best quality: 300+ DPI scans, clear text

Always verify auto-filled data before proceeding

#### === DECISION SUPPORT SYSTEM (DSS) ===

Auto-recommends schemes when claim approved (or manual trigger by District Officer)

Access: Claim Details → Scheme Recommendations

100+ schemes including:

- Central: PM-KISAN (₹6k/year), PMAY-G (housing), Jal Jeevan Mission, MGNREGA, PM-KUSUM
- Odisha: KALIA (₹25k/year), Madhu Babu Pension (₹1k/month), Biju Swasthya Kalyan
- Madhya Pradesh: CM Kisan Kalyan (₹4k/year), Solar Pump (90% subsidy)
- Telangana and Tripura state schemes

#### === BUDGET MANAGEMENT ===

Block Officers create budget requests:

1. Budget Management → Create Request
2. Fill: Title, Category, Amount, Priority, Justification
3. Submit to District Officer

Categories: FRA Implementation, Capacity Building, Administrative, Digital Infrastructure, Field Operations, Welfare Schemes

#### === NAVIGATION ===

FRC: Dashboard → FRA Claims (tabs: All, Drafts, Submitted, Returned, Approved)

Block: Block Analytics, Field Visits, FRC Management

District: District Analytics, Asset Mapping, DSS Management

Forms Download: Documents and Resources → Download Templates

Training: Help and Support → Tutorials

#### === BEST PRACTICES ===

Claims: Upload clear 300+ DPI scans, verify OCR data, save drafts frequently, draw precise polygons

Asset Mapping: Process less than 50 sq km areas, use polygon masking, verify AI results visually

Processing: Use bulk operations, schedule multiple field visits in same area, run DSS early