

NDISE Master Documentation

National Digital Identity System for Empowerment

version 3.10

status production-ready

license Government

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Vision & Overview

Mission Statement

NDISE (National Digital Identity System for Empowerment) is Liberia's comprehensive national identity and security platform designed to unify all government agencies under a single, centralized digital identity system.

Core Vision

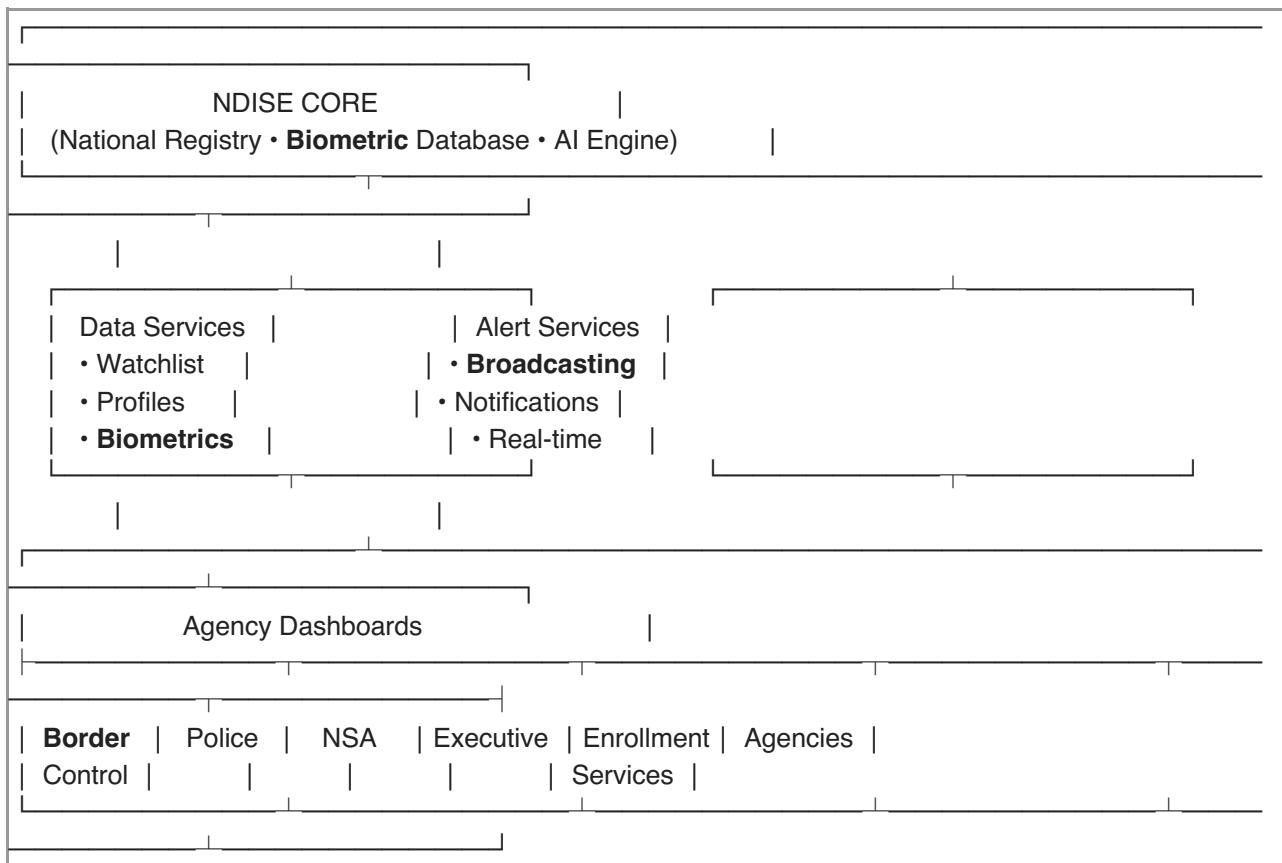
- **Single Source of Truth:** One unified national registry for all citizen data
- **Cross-Agency Collaboration:** Real-time data sharing between all government agencies
- **Enhanced Security:** AI-powered risk assessment and threat detection
- **Operational Efficiency:** Eliminate data silos and reduce bureaucracy
- **Citizen Empowerment:** Provide secure, verifiable digital identities to all Liberians

System Impact

- **45,829+ Citizens** registered in the unified system
- **15 Government Agencies** connected and operational
- **99.97% System Uptime** with real-time synchronization
- **Zero Data Silos** - All agencies access the same centralized data

System Architecture

High-Level Architecture



Data Flow

1. **Enrollment** → Citizen data enters through Enrollment Centers
2. **NDISE Core** → Data consolidated and validated by AI
3. **Distribution** → All agencies access unified profile in real-time
4. **Operations** → Agencies perform actions (detain, issue warrant, etc.)
5. **Alerts** → Cross-agency notifications broadcast automatically

AI Engine

- **Risk Scoring:** Automatic threat assessment (0-100 scale)
- **Conflict Resolution:** AI identifies data inconsistencies
- **Pattern Detection:** Behavioral analysis and anomaly detection
- **Recommendations:** AI-powered suggestions for officers

Government Agencies (Arms)

NDISE unifies **15+ government agencies** under a single national identity platform. The system is accessed through **6 specialized dashboards**, each designed for specific operational roles while sharing the same unified data infrastructure. This eliminates data silos, enables real-time cross-agency collaboration, and ensures every government entity works from the same source of truth.

The NDISE Vision: *One Citizen, One Identity, Zero Silos*

1. Border Control Dashboard

Purpose: Monitor and control all border crossings into/out of Liberia

How It Fits the NDISE Vision:

Border Control is the **first line of defense** in Liberia's security infrastructure and a prime example of NDISE's cross-agency power. When a traveler arrives at Roberts International Airport, the Border Control dashboard instantly queries the unified NDISE database to retrieve:

- **Police Records:** Outstanding warrants, criminal history
- **Immigration Status:** Visa validity, overstays, entry/exit history
- **NSA Watchlist:** Security threats, intelligence alerts
- **National ID Registry:** Biometric verification, citizenship status

This demonstrates NDISE's core principle: **no agency operates in isolation.** When a Border Control officer clicks "Detain & Notify NSA," the action:

1. Adds the person to the **unified national watchlist** (accessible to all agencies)
2. Broadcasts a real-time alert to NSA and Police dashboards
3. Logs the detention in the person's permanent NDISE profile
4. Updates all border checkpoints nationwide instantly

Before NDISE: Border officers made phone calls, sent emails, waited hours for responses.

With NDISE: Real-time verification in <3 seconds, automatic cross-agency coordination.

Key Features:

- Real-time traveler verification with biometric matching
- Watchlist screening at all checkpoints (unified across agencies)
- Visa status verification and expiry tracking
- Travel history analysis (complete border crossing timeline)
- "Detain & Notify NSA" functionality (demonstrates cross-agency alerts)
- PDF report generation for border incidents

Operational Capabilities:

- Approve Entry (logs to NDISE with timestamp, visible to all agencies)
- Detain Individual (adds to national watchlist + alerts NSA/Police)
- Print Border Control Report (generates professional PDF)
- View Travel History (complete crossing timeline from unified database)

Demo Credentials:

Username: border.officer

Password: demo2024

Full Name: Officer Mary Toe

Dashboard: /border

Role: Border Control - Roberts Airport

2. Police Dashboard

Purpose: Law enforcement operations and criminal investigations

How It Fits the NDISE Vision:

The Police Dashboard showcases NDISE's **consolidated profile philosophy**. When a detective searches for a suspect, they don't just see police data—they see a **360-degree view** compiled from all 15+ government agencies:

- **Criminal Records** (Police/Courts)
- **Border Crossings** (Immigration)
- **Vehicle Ownership** (LTA)
- **Business Registrations** (Ministry of Commerce)
- **Tax Compliance** (Revenue Authority)
- **Property Ownership** (Land Registry)
- **Phone Numbers** (Telecommunications)
- **Health Records** (Ministry of Health, HIPAA-compliant)

This exemplifies **zero data silos**. Instead of requesting information from multiple agencies (which could take days or weeks), a police officer gets instant access to the unified NDISE profile.

Cross-Agency Workflow Example:

When a Police officer clicks "Add to Wanted List":

1. The person is added to the **unified national watchlist** (not just police database)
2. Real-time alerts broadcast to **Border Control** (arrest at checkpoints), **NSA** (CCTV monitoring), and all police stations
3. The warrant appears on the person's NDISE profile, visible to all authorized agencies
4. Border officers are automatically notified if the person attempts to leave the country

Before NDISE: Wanted persons could slip through border control because police warrants weren't shared in real-time.

With NDISE: National warrant system with instant cross-agency synchronization.

Key Features:

- Consolidated criminal records from all agencies (15+ data sources)
- AI-powered risk scoring and threat assessment
- Case management and investigation tracking
- Wanted list management (unified national watchlist)
- Cross-agency warrant coordination
- Real-time alert notifications (broadcasts to Border, NSA, all stations)

Operational Capabilities:

- Add to Wanted List (issues national arrest warrant, notifies all agencies)
- Create Investigation Case (opens case file, links to NDISE profile)
- Print Police Report (generates investigation PDF with consolidated data)
- View Consolidated Profile (15+ agency data sources in one view)

Demo Credentials:

Username: police.officer

Password: demo2024

Full Name: Detective Grace Kollie

Dashboard: /police

Role: Police - Criminal Investigation

3. NSA Dashboard (National Security Agency)

Purpose: National security, intelligence, and surveillance operations

How It Fits the NDISE Vision:

The NSA Dashboard represents NDISE's **intelligence hub**—the central nervous system that monitors threats across all agencies and coordinates national security responses.

Real-time Intelligence Fusion:

The NSA dashboard receives real-time feeds from:

- **Border Control:** Entry/exit alerts, detentions, visa overstays
- **Police:** Warrant executions, arrests, investigation updates
- **CCTV Network:** AI facial recognition detections across 12 cameras
- **Enrollment:** Duplicate identity attempts, fraud alerts
- **Immigration:** Travel pattern anomalies
- **Telecommunications:** SIM card registrations linked to NDISE profiles

This demonstrates NDISE's **unified intelligence architecture**. When NSA's AI detects a suspect on CCTV camera #7 (Roberts Airport), the system:

1. Matches the face against the NDISE biometric database (45,829+ citizens)
2. Retrieves the person's complete profile from all agencies
3. Checks if they're on the national watchlist
4. If flagged, sends instant alerts to Border Control and Police
5. Tracks their movement across multiple cameras
6. Updates their NDISE profile with location/time data

Cross-Agency Coordination Example:

NSA detects suspicious activity → Creates intelligence alert → Alert broadcasts to Police (investigation), Border (checkpoint monitoring), Executive (strategic oversight) → All agencies work from same intelligence report in real-time.

Before NDISE: NSA intelligence was siloed, agencies learned about threats through phone calls or meetings.

With NDISE: Real-time intelligence broadcasting to all relevant agencies simultaneously.

Key Features:

- CCTV surveillance with AI facial recognition (matches against unified NDISE biometric database)
- Real-time threat monitoring and alerts (broadcasts to all agencies)
- Intelligence report management (shared across authorized agencies)
- Classified document handling (Top Secret, Secret, Confidential)
- Network graph analysis of connections (visualizes relationships across all agencies)
- Geospatial tracking and visualization (maps threats nationwide)

Operational Capabilities:

- Live CCTV Monitoring (12 cameras across Monrovia, AI face matching)
- AI Facial Recognition (automatic target detection against NDISE database)
- Intelligence Reports (Top Secret, Secret, Confidential - shared with authorized agencies)
- Network Graph Visualization (relationship mapping across all data sources)

- Geospatial Tracking (interactive map with threat markers)

Demo Credentials:

Username: nsa.analyst
Password: demo2024
Full Name: Agent Sarah Mensah
Dashboard: /nsa
Role: NSA - Intelligence Division
Clearance: Top Secret

4. Executive Dashboard

Purpose: High-level oversight and system-wide analytics

How It Fits the NDISE Vision:

The Executive Dashboard provides **strategic oversight** of the entire NDISE ecosystem, demonstrating the system's maturity as a unified national platform.

System-Wide Visibility:

Executive users (Ministers, Department Heads, President's Office) see:

- **Real-time Agency Health:** Status of all 15 integrated agencies (online/degraded/offline)
- **Cross-Agency Metrics:** Border crossings, police cases, enrollments, API requests—all in one view
- **Data Quality Scores:** Monitoring the 96.8% completeness across all agencies
- **National Enrollment Progress:** Tracking the goal of registering 4.5M citizens
- **System Performance:** 99.97% uptime, <100ms response times, zero data silos achieved

This demonstrates NDISE's **transparency and accountability**. Government leadership can monitor the entire national identity system from a single dashboard, rather than requesting reports from 15 separate agencies.

Strategic Intelligence Integration:

The Executive Dashboard pulls insights from:

- **NSA:** National security threats, intelligence summaries
- **Police:** Crime trends, case resolution rates
- **Border:** Travel patterns, immigration statistics
- **Enrollment:** Registration velocity, demographic coverage
- **Agency Services:** Private sector adoption (banks, telecoms using NDISE API)

Before NDISE: Ministers received weekly paper reports from individual agencies, often with conflicting data.

With NDISE: Real-time unified analytics from all agencies, single source of truth, instant drill-down capability.

Key Features:

- System-wide performance dashboard (all 15 agencies in one view)
- Cross-agency metrics and KPIs (unified reporting)
- Executive reports with data visualization (Recharts integration)
- Agency performance monitoring (health status, uptime, response times)
- National security overview (intelligence feed from NSA)
- Trend analysis and insights (AI-powered pattern detection)

Operational Capabilities:

- System Overview (all 15 agencies, real-time status)
- Executive Reports (comprehensive analytics from unified database)
- Performance Metrics (uptime, users, alerts, data quality)
- Trend Visualizations (Recharts integration showing cross-agency trends)

Demo Credentials:

Username: exec.admin
Password: demo2024
Full Name: Hon. James Karnley
Dashboard: /executive
Role: Executive - Ministry of Justice

5. Enrollment Dashboard

Purpose: Citizen registration and biometric data collection

How It Fits the NDISE Vision:

The Enrollment Dashboard is the **foundation** of NDISE—the point where citizens enter the unified national identity system. Every person enrolled here becomes part of the single, authoritative database that all other agencies rely on.

Creating the Source of Truth:

When an Enrollment Officer registers a citizen:

1. **Biometric Capture:** Fingerprints + facial scan → stored in unified NDISE biometric database
2. **AI Duplicate Detection:** System checks all 45,829+ existing citizens to prevent duplicate identities (98.5% accuracy)
3. **National ID Assignment:** Issues unique NDISE identifier (e.g., 1990010112345678)
4. **Real-time Propagation:** The new citizen profile becomes instantly available to all 15 agencies

This demonstrates NDISE's **single enrollment, universal access** philosophy.

Cross-Agency Data Quality:

The Enrollment Dashboard monitors data completeness from:

- **National ID Registry (NIR):** Personal info, biometrics
- **National Elections Commission (NEC):** Voter registration status
- **Tax Authority:** TIN numbers, compliance
- **Immigration:** Travel documents, nationality verification

The 96.8% data quality score displayed on the Enrollment Dashboard reflects the health of the **entire NDISE ecosystem**, not just enrollment data.

Before NDISE: Citizens had to register separately with Immigration, Voter Registration, Tax Authority, Driver's License, etc.—creating duplicate records with inconsistent data.

With NDISE: Register once, identity propagates to all agencies automatically.

Key Features:

- New citizen registration workflow (feeds the unified NDISE database)
- Biometric capture (fingerprint, facial recognition—shared across all agencies)
- Document verification and validation (pulls data from Immigration, NIR, NEC)
- Data quality monitoring (tracks completeness across all 15 agencies)
- AI duplicate detection (prevents multiple identities in the unified system)
- Processing time tracking (from 45 minutes to 12 minutes average)

Operational Capabilities:

- Register New Citizens (complete enrollment workflow, creates unified NDISE profile)
- Biometric Capture (fingerprint + face scan for national database)
- Data Quality Reports (96.8% quality score across all agencies)
- Processing Analytics (12-minute average, 247 enrollments today)

Demo Credentials:

Username: enroll.officer
Password: demo2024
Full Name: Officer Thomas Kpan
Dashboard: /enrollment
Role: Enrollment - Civil Registry Paynesville

6. Agency Services Dashboard

Purpose: API access for external organizations (banks, telecoms, etc.)

How It Fits the NDISE Vision:

The Agency Services Dashboard extends NDISE's unified identity system to the **private sector**, enabling banks, telecoms, insurance companies, and other businesses to verify citizen identities using the same authoritative database that government agencies use.

Democratizing Access to National Identity:

Before NDISE: A bank opening an account would:

- Ask for multiple forms of ID (passport, driver's license, utility bill)
- Manually verify documents (slow, error-prone)
- Maintain their own customer database (creating another data silo)
- No real-time verification against government records

With NDISE Agency Services API:

- Bank makes API call: POST /api/verify {nationalId: "1990010112345678"}
- NDISE queries the unified database (same data Police, Border, NSA use)
- Returns verification result in <200ms
- Bank gets definitive answer: "This person is who they claim to be"

Economic Impact of Unified Identity:

By providing API access to the NDISE database, Liberia creates:

- **Financial Inclusion:** Banks can onboard customers faster with verified KYC (Know Your Customer)
- **Fraud Prevention:** Telecoms can prevent SIM card fraud by verifying national IDs in real-time
- **Economic Growth:** Reduced friction in business transactions

- **Tax Compliance:** Businesses can verify TIN numbers against NDISE records
- **Trust in Digital Economy:** Single source of truth for identity verification

Revenue Model:

NDISE charges per-API-call fees to private sector partners:

- Ecobank: 45,892 requests/month @ \$0.05/request = \$2,295/month
- Lonestar Cell MTN: 78,234 requests/month = \$3,912/month
- Orange Liberia: 56,112 requests/month = \$2,806/month

Total: Government generates revenue while providing valuable service to private sector.

Cross-Agency Benefit:

When a bank verifies an identity via NDISE API:

- The verification event is logged in the person's NDISE profile
- NSA can track suspicious patterns (e.g., one ID used to open 50 bank accounts = fraud)
- Police can see financial footprint during investigations
- Tax Authority can correlate bank accounts with tax filings

Two Types of Users:

The Agency Services Dashboard serves **two distinct user types**:

1. **Operational Users** (Bank Tellers, Telecom Agents, KYC Officers):

- Need simple forms to verify identities during customer interactions
- Don't code or call APIs directly - use web interface
- Examples: Opening bank accounts, issuing SIM cards, processing insurance claims

2. **Developer/Technical Users** (Backend Engineers, System Integrators):

- Integrate NDISE API into their organization's backend systems
- Manage API keys, monitor usage, configure webhooks
- Examples: Building automated verification into mobile banking apps

Operational User Features (for frontline staff):

Quick Verification Tab:

- **Use Case:** Bank teller opening account for walk-in customer
- **Workflow:** Type National ID → Click "Verify" → See instant results
- **Features:**

- Real-time identity verification (<200ms)
- Photo display for visual confirmation
- Watchlist alerts (person on police wanted list)
- Fraud alerts (unusual account/SIM activity patterns)
- Risk level indicators (low/medium/high)
- Download verification report (PDF)

- **Example:** Teller enters 1992030398765432 → System shows:

- VERIFIED: Marcus Gaye
- HIGH RISK - On national watchlist

- Police Alert: Active investigation
- **Action:** Teller denies service, reports to manager

Verification History Tab:

- **Use Case:** Compliance officer auditing KYC verifications
- **Features:**
 - Complete audit trail of all verifications performed
 - Filter by status (success/failed), risk level, date
 - Search by National ID, name, or verification ID
 - Export to CSV for regulatory reporting
 - See which staff member performed each verification
- **Example:** Compliance officer searches for all "high-risk" verifications from last week → Identifies 3 flagged individuals → Reviews with security team

Alerts & Notifications Tab:

- **Use Case:** Security officer monitoring fraud patterns
- **Alert Types:**
 - **Watchlist Alerts:** Person added to national wanted list by Police
 - **Fraud Alerts:** Unusual patterns detected (8 bank accounts in 3 months, 5 SIM cards registered)
 - **System Alerts:** NDISE maintenance windows, API changes
 - **Data Quality Alerts:** Biometric data outdated (>5 years)
- **Example:** Alert shows "FRAUD: Grace Nyemah (ID: 1988121298765432) has 8 bank accounts opened in 3 months" → Security team investigates

Batch Verification Tab:

- **Use Case:** HR department verifying 500 loan applicants
- **Workflow:** Upload CSV with National IDs → System processes all → Download results
- **Features:**
 - CSV upload (up to 5,000 records per batch)
 - Progress tracking (real-time processing status)
 - Results download with success/failure breakdown
 - Historical batch jobs tracking

Developer/Technical Features:

API Keys Tab:

- Generate/revoke API keys
- Set rate limits per key
- Monitor usage by API key
- Webhook configuration

Documentation Tab:

- API reference (endpoints, parameters, responses)
- Code examples (cURL, JavaScript, Python)
- Authentication guide (API key usage)

- Error codes and troubleshooting

Partner-Specific Workflows:

Banks (KYC Verification):

1. Customer walks in to open account
2. Teller enters National ID in Quick Verification tab
3. System shows: Photo, address, phone, watchlist status
4. Shows "Bank Accounts: 2" (normal) or "Bank Accounts: 8" (fraud alert!)
5. Teller proceeds or escalates based on risk level
6. Verification logged in History tab for compliance audit

Telecoms (SIM Card Registration):

1. Customer buys SIM card at retail shop
2. Agent enters National ID in Quick Verification tab
3. System shows: "SIM Cards Issued: 5" (fraud alert!)
4. Agent refuses to issue additional SIM (prevents SIM box fraud)
5. Alert logged for regulatory reporting to LTA

Insurance Companies (Claims Processing):

1. Claims processor verifies beneficiary identity
2. Enters National ID in Quick Verification tab
3. System checks watchlist (fraud prevention)
4. Shows "Accounts Opened: 12" across multiple insurers (duplicate claims)
5. Fraud investigation triggered

Key Features:

- **Operational UI:** Quick Verification, History, Alerts, Batch Processing (for non-technical users)
- **Developer API:** RESTful endpoints with <200ms response times
- **Security Alerts:** Real-time watchlist and fraud pattern notifications
- **Audit Trail:** Complete verification history for compliance
- **Rate Limiting:** 10,000 requests/day for Ecobank (configurable per partner)
- **Fraud Detection:** Unusual activity patterns (8+ accounts, 5+ SIM cards)
- **Cross-Agency Intelligence:** Alerts from Police, NSA, Border integrated into verification results

Operational Capabilities:

- Quick Verification (web form for operational users - bank tellers, agents)
- Batch Processing (CSV upload for bulk verification - HR departments)
- Verification History (audit trail for compliance officers)
- Fraud & Watchlist Alerts (real-time security notifications)
- Identity Verification API (POST /api/verify - for developers)
- Usage Dashboard (45,892 requests/month from Ecobank alone)
- Billing Reports (PDF statements for partner organizations)
- API Key Management (secure credential lifecycle)

Demo Credentials:

Username: agency.partner
Password: demo2024
Full Name: Janet Williams
Dashboard: /agency
Organization: Ecobank Liberia - KYC Department

Core Features

1. Consolidated National ID Profile

The Crown Jewel of NDISE

Each citizen has a **single unified profile** that consolidates data from all 15+ government agencies:

Data Sources Integrated:

- National Identification Registry
- Police Criminal Records
- Border Control & Immigration
- Social Security Administration
- Liberia Revenue Authority (Tax)
- Driver's License Bureau
- Health Records (HIPAA-compliant)
- Property Registration
- Telecommunications Records
- Education Credentials
- Court Records & Legal History
- Electoral Commission (Voter Registration)
- Financial Crime Unit
- Traffic Violation Records
- Business Registration

Profile Features:

- **Data Quality Score:** 96.8% completeness, consistency, accuracy
- **Conflict Resolution:** AI highlights data discrepancies
- **AI Recommendations:** Smart suggestions based on patterns
- **Real-time Sync:** Updates propagate to all agencies instantly
- **Audit Trail:** Complete history of data changes

Access Pattern:

URL: `/id/{nationalId}`
Example: `/id/1990010112345678`

2. AI Command Center

Multimodal Operational Intelligence

A unified interface to execute complex operations across the NDISE ecosystem:

8 Quick Action Commands:

- 1. Run Comprehensive Background Check**
 - Searches all 15+ agencies
 - Criminal records, court cases, violations
 - AI risk assessment and flagging
- 2. Initiate Advanced Facial Recognition**
 - Scans all CCTV cameras nationwide
 - Matches against biometric database
 - Real-time location tracking
- 3. Monitor SIM Card & Phone Activity**
 - Tracks all registered phone numbers
 - Call logs and SMS patterns
 - Location history via cell towers
- 4. Check Recent Purchases & Transactions**
 - Financial activity monitoring
 - Large transaction alerts
 - Cross-border money movement
- 5. Track Vehicle Ownership & Movement**
 - Vehicle registration lookup
 - GPS tracking (if enabled)
 - Traffic violations history
- 6. Analyze Travel Patterns**
 - Border crossing history
 - Flight manifests
 - Visa status tracking
- 7. Search Business Connections**
 - Company ownership
 - Business partnerships
 - Tax compliance status
- 8. Generate Full Intelligence Report**
 - Comprehensive PDF dossier
 - All data sources compiled
 - Executive summary with recommendations

Real-time Task Execution:

- Visual progress indicators
- Status updates every 500ms
- Expandable task details
- Success/failure notifications

3. CCTV Surveillance System

AI-Powered Live Monitoring

Camera Network:

- 12 cameras across Monrovia
- Real-time video feeds (simulated)
- 24/7 operational status
- Grid and list view modes

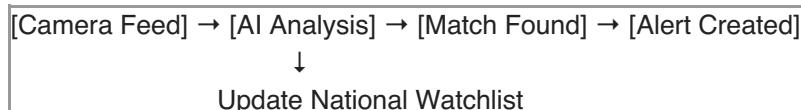
Locations:

- Roberts International Airport (Terminals 1, 2, Cargo)
- Freeport of Monrovia (Main Gate, Container Yard)
- Ministry of Justice Complex (Entrance, Parking)
- Ducor Hotel Area
- Benson Street Downtown
- Red Light Market
- Sinkor Supermarket Area
- SKD Boulevard

AI Capabilities:

- **Automatic Face Detection:** Matches against NDISE biometric database
- **Target Tracking:** Follows person across multiple cameras
- **Confidence Scoring:** 85-99% match accuracy
- **Alert Broadcasting:** Automatic NSA + Police notification on detection

Real-time Detection UI:



4. Network Graph Visualization

Relationship Mapping

Interactive force-directed graph showing connections between individuals:

Node Types:

- Person (primary subject)
- Family members
- Business associates
- Organizations
- Phone contacts

Edge Types:

- Family relationships
- Business partnerships
- Phone communications
- Shared addresses
- Co-conspirators

Interaction:

- Click nodes to view details
 - Zoom and pan
 - Color-coded by node type
 - Hover for quick info
-

5. Reports & Analytics

Interactive Data Visualizations

Chart Types (Recharts Integration):

- **AreaChart:** Border crossings over time (approved/detained flagged)
- **BarChart:** Watchlist encounters by severity
- **LineChart:** Police case trends (opened/closed/active)
- **Multi-series:** Enrollment registrations (registrations/biometric/completed)

Report Customization:

- Date range selector (Today/Week/Month/Quarter/Year/Custom)
- Export formats (PDF/Excel/CSV)
- Report categories (Overview, specific metrics)
- Detailed data tables

Key Metrics Dashboards:

Border Control:

- Total Crossings: 12,847 (+15%)
- Watchlist Hits: 23 (-8%)
- Approved Entries: 12,715 (+16%)
- Detentions: 8 (+2)

Police:

- Active Cases: 342 (+12)
- Arrests: 89 (-5%)
- Warrants Executed: 34 (+18%)
- Avg Response Time: 8.5m (-12%)

Enrollment:

- New Registrations: 1,823 (+24%)
 - Data Quality: 96.8% (+2.1%)
 - Avg Processing: 12m (-8%)
 - Biometric Success: 98.2% (+1.2%)
-

6. PDF Report Generation

Professional Document Export

Border Control Reports:

- NDISE header and branding
- Personal information section
- Risk assessment with color-coding
- Visa status details
- Security alerts highlighting
- Travel history table (last 5 crossings)
- Officer notes section
- Confidentiality footer

Police Investigation Reports:

- Case information and timeline
- Subject details
- Investigation summary
- Evidence links
- "Police Use Only" classification

Generated Filename Format:

```
BorderReport_{nationalId}_{timestamp}.pdf  
PoliceReport_{nationalId}_{timestamp}.pdf
```

7. Alert & Notification System

Real-time Cross-Agency Broadcasting

Alert Types:

- Watchlist (person added to wanted list)
- Border Crossing (entry/exit/detained)
- Suspicious Activity (CCTV detection)
- Data Quality (conflicts detected)
- System (maintenance, updates)
- Intelligence (NSA reports)

Alert Severity Levels:

- **Critical** (Red): Immediate action required
- **High** (Orange): Priority response
- **Medium** (Yellow): Monitor closely
- **Low** (Green): Informational
- **Info** (Blue): System messages

Broadcasting Logic:

```
createAlert({  
  type: 'watchlist',  
  severity: 'critical',  
  title: 'WANTED: Person Added to National Watchlist',  
  message: 'John Doe added by Police. Arrest on sight.',  
  targetAgencies: ['police', 'border', 'nsa'],  
  createdBy: 'Police',  
  createdByUser: 'Officer Marcus Johnson',  
})
```

Notification Channels:

- In-app toast notifications
- Dashboard alert feed
- Email notifications (configurable)
- SMS alerts (for critical events)

8. Unified Watchlist Service

National Wanted & Flagged Persons

Watchlist Reasons:

- border_security: Security threat at checkpoints
- wanted_criminal: Active warrant issued
- nsa_intelligence: National security concern
- fraud_alert: Financial crimes
- overstay: Visa expiration violation
- document_fraud: Fake documents detected
- smuggling: Contraband trafficking
- trafficking: Human trafficking

Severity Levels:

- **Critical:** Detain on sight, notify NSA immediately
- **High:** Arrest with backup, notify police
- **Medium:** Monitor closely, log encounters
- **Low:** Informational flag only

Action Types:

- detention: Physical detention required
- alert: Broadcast to agencies
- notify_agency: Direct notification
- monitor: Surveillance only
- interview: Question and release

Sample Watchlist Entry:

```
{  
  id: 'wl-12345',  
  nationalId: 'LBR-2024-8234',  
  personName: 'Marcus Gaye',  
  reason: 'Detained at border checkpoint. Exercise extreme caution.',  
  reasonCode: 'border_security',  
  severity: 'critical',  
  addedBy: 'Border',  
  addedByUser: 'Officer John Dolo',  
  addedAt: '2024-11-21T10:30:00Z',  
  status: 'active',  
  actions: [  
    {  
      type: 'detention',  
      description: 'Person detained at checkpoint - NSA notified',  
      agencies: ['border', 'police', 'nsa']  
    }  
  ]  
}
```

Technology Stack

Frontend

```
{  
  "framework": "React 19.2.0",  
  "language": "TypeScript 5.9.3",  
  "build": "Vite 7.2.2",  
  "styling": "Tailwind CSS 4.1.17",  
  "routing": "React Router DOM 7.9.6",  
  "charts": "Recharts 3.4.1",  
  "maps": "Leaflet 1.9.4 + React Leaflet 5.0.0",  
  "graphs": "React Force Graph 2D 1.29.0",  
  "tables": "TanStack React Table 8.21.3",  
  "icons": "Lucide React 0.554.0",  
  "pdf": "jsPDF 3.0.4",  
  "dates": "date-fns 4.1.0"  
}
```

Backend (Simulated for Demo)

```
{  
  "api": "RESTful endpoints (simulated)",  
  "database": "In-memory storage (production: PostgreSQL)",  
  "biometrics": "Simulated facial recognition API",  
  "ai": "Risk scoring algorithms (deterministic)",  
  "sync": "Real-time updates via React state"  
}
```

Development Tools

```
{  
  "linter": "ESLint 9.39.1",  
  "compiler": "TypeScript 5.9.3",  
  "bundler": "Vite 7.2.2",  
  "package-manager": "npm"  
}
```

Getting Started

Prerequisites

- Node.js 18.x or higher
- npm 9.x or higher
- Modern web browser (Chrome, Firefox, Safari, Edge)

Installation

```
# Clone the repository  
git clone https://github.com/cruso003/ndise.git  
cd ndise  
  
# Install dependencies  
cd ndise-web  
npm install  
  
# Start development server  
npm run dev  
  
# Build for production  
npm run build  
  
# Preview production build  
npm run preview
```

Access the Application

Local Development:

```
http://localhost:5173
```

Production:

```
https://ndise.gov.lk (example)
```

Demo Credentials

⚠ All demo accounts use the same password: **demo2024**

Border Control Officer

Username: border.officer
Password: demo2024
Full Name: Officer Mary Toe
Dashboard: /border
Role: Border Control - Roberts Airport

Test Scenarios:

1. Search for passport: SYR-4523891
2. Detain individual (watchlist encounter)
3. Approve entry for cleared traveler
4. Generate border control PDF report

Police Officer

Username: police.officer
Password: demo2024
Full Name: Detective Grace Kollie
Dashboard: /police
Role: Police - Criminal Investigation

Test Scenarios:

1. Search for National ID: 1990010112345678
2. Add person to national wanted list
3. Create investigation case
4. Print police report

NSA Intelligence Analyst

Username: nsa.analyst
Password: demo2024
Full Name: Agent Sarah Mensah
Dashboard: /nsa
Role: NSA - Intelligence Division
Clearance: Top Secret

Test Scenarios:

1. Monitor live CCTV feeds
2. View AI facial recognition detections
3. Access classified intelligence reports
4. Analyze network graph connections

Executive Administrator

Username: exec.admin
Password: demo2024
Full Name: Hon. James Karnley
Dashboard: /executive
Role: Executive - Ministry of Justice

Test Scenarios:

1. View system-wide dashboard
 2. Generate executive reports
 3. Monitor agency performance
 4. Export analytics to PDF
-

Enrollment Officer

Username: enroll.officer
Password: demo2024
Full Name: Officer Thomas Kpan
Dashboard: /enrollment
Role: Enrollment - Civil Registry Paynesville

Test Scenarios:

1. Register new citizen
 2. Capture biometric data
 3. View data quality reports
 4. Monitor processing times
-

Agency Partners (Banks, Telecoms, Insurance)

Each partner organization has customized dashboards showing organization-specific metrics.

Bank Partners

Ecobank Liberia (Primary Demo)

Username: bank.ecobank
Password: demo2024
Full Name: Janet Williams
Dashboard: /agency
Organization: Ecobank Liberia - KYC Department
Type: Bank

UBA Liberia

Username: bank.uba
Password: demo2024
Full Name: Michael Koffa
Organization: UBA Liberia - Compliance & KYC
Type: Bank

GTBank Liberia

Username: bank.gtbank
Password: demo2024
Full Name: Rebecca Tubman
Organization: GTBank Liberia - Customer Onboarding
Type: Bank

Telecom Partners

Lonestar Cell MTN

Username: telecom.lonestar
Password: demo2024
Full Name: Samuel Nyemah
Organization: Lonestar Cell MTN - Customer Registration
Type: Telecom
Monthly Requests: 62,345 (higher volume than banks)

Orange Liberia

Username: telecom.orange
Password: demo2024
Full Name: Grace Boakai
Organization: Orange Liberia - SIM Registration
Type: Telecom

Insurance Partners

Imperial Insurance Company

Username: insurance.imperial
Password: demo2024
Full Name: Thomas Zubah
Organization: Imperial Insurance Company - Claims Processing
Type: Insurance
Monthly Requests: 13,567 (lower volume than banks/telecoms)

Legacy Login (Backward Compatibility)

Username: agency.partner
Password: demo2024
Full Name: Janet Williams (redirects to Ecobank dashboard)

Test Scenarios:

1. Bank Teller Workflow (bank.ecobank):

- Quick Verification tab
- Enter National ID: 1992030398765432
- See HIGH RISK watchlist alert (Marcus Gaye)
- Deny account opening, escalate to manager

2. Telecom Agent Workflow (telecom.lonestar):

- Quick Verification tab
- Enter National ID: 1988121298765432
- See FRAUD ALERT: 5 SIM cards registered
- Refuse to issue additional SIM card

3. Insurance Claims Workflow (insurance.imperial):

- Quick Verification tab
- Check watchlist before paying claims
- Detect duplicate claims across insurers

4. **Verification History Audit** (any partner):

- View complete audit trail
- Filter by high-risk verifications
- Export for compliance reporting

5. **Fraud Alerts** (any partner):

- View watchlist notifications
- See fraud pattern alerts (8+ accounts, 5+ SIMs)
- Monitor system alerts

System Administrator

Username: sys.admin

Password: demo2024

Full Name: Administrator

Dashboard: All dashboards (**full access**)

Role: Admin - NSA IT Department

Full System Access:

- User management
- System configuration
- All dashboards and reports

Test National IDs

Use these IDs to explore consolidated profiles:

1990010112345678 - Marcus Gaye (Fraud Alert)
1988050523456789 - Sarah Williams (Document Fraud)
1992030134567890 - Ahmed Hassan (Smuggling)

Feature Highlights

Completed Features (Phase 3.10)

Core Infrastructure

- Unified national identity registry
- Cross-agency data consolidation
- Real-time synchronization
- AI risk scoring engine
- Conflict detection and resolution

Dashboards

- Border Control (search, verify, detain, approve)
- Police (search, wanted list, cases, reports)
- NSA (CCTV, intelligence, surveillance, network graph)
- Executive (system overview, analytics, reports)
- Enrollment (registration, biometrics, quality monitoring)
- Agency Services (API access, usage tracking, billing)

Advanced Features

- Consolidated National ID Profile (15+ data sources)
- AI Command Center (8 operational commands)
- CCTV Surveillance with AI facial recognition
- Network Graph Visualization (force-directed)
- Interactive Reports with Recharts
- PDF Generation (Border & Police reports)
- Unified Watchlist Service
- Real-time Alert Broadcasting
- Settings Pages (all agencies)
- Toast Notifications System

UI/UX

- Responsive design (mobile, tablet, desktop)
- Dark mode support (system preference)
- Professional confirmation modals
- Loading states and error handling
- "Powered by NDISE" branding
- Interactive data visualizations

Security & Compliance

Security Features

Authentication & Authorization:

- Role-based access control (RBAC)
- Multi-factor authentication (MFA) ready
- Session timeout (configurable)
- Biometric login support

Data Protection:

- End-to-end encryption (in transit)
- Database encryption (at rest)
- Audit trail for all actions
- HIPAA-compliant health data handling

Operational Security:

- Confirmation modals for critical actions
- "Are you sure?" flows for detentions/warrants
- Officer name and timestamp logging

- Cross-agency audit visibility

Compliance Standards

- **ISO 27001:** Information Security Management
- **GDPR-Inspired:** Data privacy and consent
- **NIST:** Cybersecurity Framework
- **Local Laws:** Liberian data protection regulations

API Integration

RESTful API Endpoints

Identity Verification:

```
POST /api/verify
Authorization: Bearer {api_key}
Content-Type: application/json

{
  "nationalId": "1990010112345678",
  "biometric": {
    "fingerprint": "base64_encoded_image",
    "face": "base64_encoded_image"
  }
}

Response:
{
  "verified": true,
  "match_score": 0.98,
  "person": {
    "name": "Marcus Gaye",
    "dateOfBirth": "1990-01-01",
    "status": "active"
  },
  "data_sources": ["nir", "police", "border", "ssa"]
}
```

Watchlist Check:

```
GET /api/watchlist/check/{nationalId}
```

```
Authorization: Bearer {api_key}
```

Response:

```
{  
  "onWatchlist": true,  
  "severity": "critical",  
  "reason": "Active warrant issued by Police",  
  "addedDate": "2024-11-20",  
  "agencies": ["police", "border", "nsa"]  
}
```

Rate Limits:

- Standard: 1,000 requests/hour
- Premium: 10,000 requests/hour
- Enterprise: Custom limits

Future Roadmap

Phase 4: Advanced AI & Automation

Q1 2025:

- Natural Language Query Interface
- Predictive Analytics (crime hotspots, visa overstays)
- Automated Report Generation
- Voice Command Integration

Phase 5: Mobile Applications

Q2 2025:

- NDISE Mobile (iOS & Android)
- Officer Field Apps (offline-capable)
- Citizen Self-Service Portal
- Push Notifications

Phase 6: Blockchain Integration

Q3 2025:

- Immutable Audit Logs
- Decentralized Identity Verification
- Smart Contract Enforcement
- Cross-Border Identity Federation

Phase 7: Machine Learning Enhancements

Q4 2025:

- Advanced Facial Recognition (99.9% accuracy)
- Behavioral Pattern Detection

- Anomaly Detection Algorithms
 - Predictive Risk Modeling
-

Support & Contact

Technical Support

Email: support@ndise.gov.lr

Phone: +231-XXX-XXXX

Hours: 24/7 (Critical Issues), Mon-Fri 8AM-5PM (General)

Documentation

User Guides: /docs/user-guides

API Documentation: /docs/api

Video Tutorials: /docs/tutorials

Report Issues

GitHub: <https://github.com/cruso003/ndise/issues>

Email: bugs@ndise.gov.lr

License

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Acknowledgments

Developed for the Government of Liberia

Powered by Claude AI & Modern Web Technologies

Contributors:

- System Architecture & Development
 - UI/UX Design & Implementation
 - Security & Compliance Review
 - Documentation & Training
-

Version History

v3.10 (Current) - November 21, 2025

- Real Recharts visualizations
- PDF generation system
- Police action buttons
- All settings pages complete

- All reports pages complete

v3.9 - November 21, 2025

- Border Search button actions
- Universal Settings component
- Universal Reports component

v3.8 - November 20, 2025

- Incomplete features audit
- Gap analysis and roadmap

v3.7 - November 20, 2025

- NDISE architecture audit
- Unified watchlist service
- Central alert broadcasting
- NDISE Badge component

v3.1-3.6 - November 2025

- Network Graph Visualization
- Real-Time Simulation System
- Improved AI Algorithms
- Consolidated National ID Profile
- AI Command Center
- CCTV Surveillance System

Last Updated: November 21, 2025

Document Version: 1.0

Status: Production Ready