

UPG MANAGEMENT SYSTEM

Visual Workflow Documentation

Complete Workflow & System Architecture Guide
Ultra-Poor Graduation Program

System Overview	
Purpose	Track households through 12-month graduation pathway
Target	Ultra-poor households in Kenya
Duration	12 months per cycle
Key Components	9 core modules, 7 user roles
Technology	Django 4.2, MySQL, Bootstrap 5

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1. SYSTEM ARCHITECTURE OVERVIEW

The UPG Management Information System is built on a modular architecture with 9 core modules that interact to support the complete 12-month graduation pathway. Each module has specific responsibilities and data models that work together seamlessly.

Module	Primary Function	Key Models
Core	Foundation & shared services	Mentor, Village, BM Cycle, Program, Audit Log, SMS Log
Accounts	User authentication & roles	User (7 roles), UserProfile, UserSettings
Households	Beneficiary management	Household, Members, PPI, Surveys, Programs, Milestones
Business Groups	Enterprise management	BusinessGroup, Members, SB/PR Grants, Progress Surveys
Savings Groups	Community savings	BSG, Members, Savings Records, Progress Surveys
Training	Capacity building	Training, Attendance, Visits, Phone Nudges, Reports
UPG Grants	Grant management	HouseholdGrant, SBGrant, PRGrant, Disbursements
Programs	Program enrollment	Program, Applications, Beneficiaries
Reports	Analytics & monitoring	Dashboards, Custom Reports, Exports

Technology Stack

Component	Technology	Purpose
Backend Framework	Django 4.2	Web application framework
Database	MySQL (Production), SQLite (Dev)	Data persistence
Frontend	Bootstrap 5, HTML5, JavaScript	User interface
SMS Integration	Africa's Talking, Twilio	Notifications
Data Collection	KoboToolbox API	Survey data import
Reports	ReportLab, Excel export	Document generation

2. USER ROLES & PERMISSIONS MATRIX

The system implements 7 distinct user roles, each with specific permissions and access levels. This ensures data security and appropriate access control.

Role	Primary Responsibilities	Access Level
County Executive (CECM/Governor)	<ul style="list-style-type: none">• High-level oversight• Reports viewing• Strategic decisions	Read-only (All data)
County Assembly Member	<ul style="list-style-type: none">• Ward-specific monitoring• Constituency oversight• Progress tracking	Read-only (Ward data)
ICT Administrator	<ul style="list-style-type: none">• Full system access• User management• System configuration• Technical support	Full access (All modules)
M&E Staff	<ul style="list-style-type: none">• Data collection• Survey management• Report generation• Quality monitoring	Full data access (No system config)
Field Associate/ Mentor Supervisor	<ul style="list-style-type: none">• Mentor oversight• Village management• Training coordination• Performance review	Regional access (Assigned areas)
Mentor	<ul style="list-style-type: none">• Household registration• Training delivery• Field data collection• Grant applications	Village access (Assigned villages)
Beneficiary	<ul style="list-style-type: none">• View own data• Update contact info• Submit reports	Personal data only

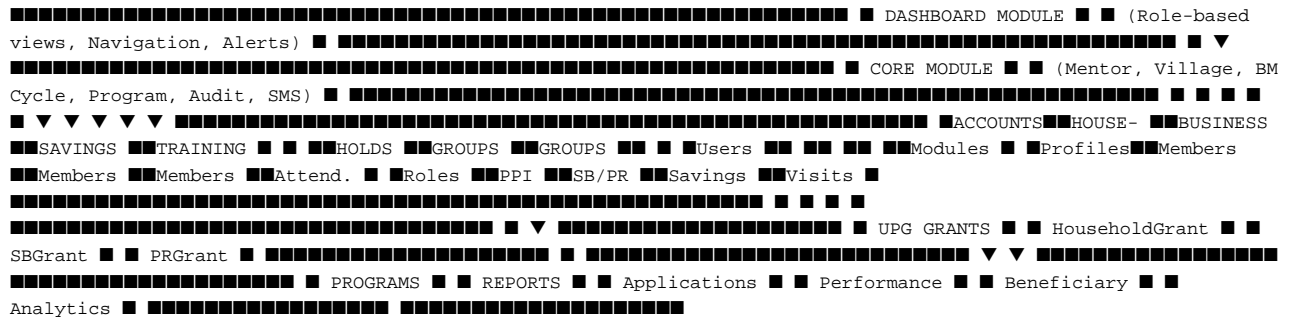
Detailed Permissions Matrix

Action	ICT Admin	M&E Staff	Field Assoc.	Mentor	County Officials
Create Households	✓	✓	✓	✓	✗
Edit Households	✓	✓	✓	✓ (assigned)	✗
Delete Households	✓	✗	✗	✗	✗
Create Training	✓	✓	✓	✗	✗

Mark Attendance	✓	✓	✓	✓	✗
Create Grants	✓	✓	✓	✓	✗
Review Grants	✓	✓	✓	✗	✗
Approve Grants	✓	✓	✗	✗	✗
Disburse Grants	✓	✗	✗	✗	✗
View Reports	✓	✓	✓	✓ (limited)	✓
Export Data	✓	✓	✗	✗	✗
User Management	✓	✗	✗	✗	✗
System Config	✓	✗	✗	✗	✗

3. MODULE INTERACTION DIAGRAM

The diagram below shows how different modules interact with each other. Arrows indicate data flow and dependencies between modules.



Key Module Dependencies

- **Core** → **All Modules**: Provides foundation data (villages, mentors, programs)
- **Accounts** → **All Modules**: Authentication and role-based access control
- **Households** → **Business Groups**: Households join to form business groups
- **Households** → **Savings Groups**: Households participate in savings groups
- **Business Groups** → **UPG Grants**: Groups apply for SB and PR grants
- **Training** → **Households**: Households enroll in training modules
- **Programs** → **All**: Enrollment and tracking across all activities
- **Reports** → **All**: Aggregates data from all modules for analytics

4. WORKFLOW A: HOUSEHOLD TARGETING & ENROLLMENT

[illegible]

Eligibility Scoring Levels

Score Range	Level	Action
80 - 100	Highly Eligible	Priority enrollment
60 - 79	Eligible	Standard enrollment
40 - 59	Marginally Eligible	Case-by-case review
0 - 39	Not Eligible	Refer to other programs

5. WORKFLOW B: BUSINESS GROUP & GRANT CYCLE

12-Month Business Development Process

MONTHS 1-3: TRAINING PHASE ■ ■ ■ ■ Training Setup (Field Associate) ■ ■ ■ ■ Create BM Cycle & Training Modules ■ ■ ■ ■ Training Delivery (Mentor) ■ ■ ■ ■ Enroll households (max 25) ■ ■ ■ ■ Conduct sessions ■ ■ ■ ■ Record daily attendance ■ ■ ■ ■ Submit weekly reports ■ ■ ■ ■ Business Group Formation (Month 2) ■ ■ ■ ■ Form groups of 2-3 households ■ ■ ■ ■ Assign roles: Leader, Treasurer, Secretary MONTHS 4-5: SB GRANT PHASE ■ ■ ■ ■ Grant Application (Mentor) ■ ■ ■ ■ Create business plan ■ ■ ■ ■ Project income/expenses ■ ■ ■ ■ Submit application (Status: pending) ■ ■ ■ ■ Review Process (M&E; Staff) ■ ■ ■ ■ Review business viability ■ ■ ■ ■ Score application (0-100) ■ ■ ■ ■ Status: pending → under_review ■ ■ ■ ■ Approval (Program Manager) ■ ■ ■ ■ Approve/reject decision ■ ■ ■ ■ Status: under_review → approved ■ ■ ■ ■ Disbursement (Finance) ■ ■ ■ ■ Process payment (Bank/Mobile/Cash) ■ ■ ■ ■ Record transaction ■ ■ ■ ■ Status: approved → disbursed ■ ■ ■ ■ GRANT AMOUNT: KES 10,000 - 25,000 Base: KES 15,000 + Group size bonus (10-20%) + Business type bonus (15%) + Location bonus (5%) + Performance bonus (10%) MONTHS 6-8: BUSINESS OPERATIONS ■ ■ ■ ■ Business Launch ■ ■ ■ ■ Purchase inventory/assets ■ ■ ■ ■ Begin revenue generation ■ ■ ■ ■ Progress Monitoring (Mentor) ■ ■ ■ ■ Monthly BusinessProgressSurvey ■ ■ ■ ■ Track: Grant usage, Profit, Inventory ■ ■ ■ ■ Health Status: Red / Yellow / Green ■ ■ ■ ■ BSG Formation (Month 8) ■ ■ ■ ■ Create Business Savings Group ■ ■ ■ ■ Target: 25 members ■ ■ ■ ■ Set meeting schedule ■ ■ ■ ■ Record savings transactions MONTHS 9-10: PR GRANT PHASE ■ ■ ■ ■ Eligibility Assessment (System + Mentor) ■ ■ ■ ■ SB grant disbursed ✓ ■ ■ ■ ■ Utilization report submitted ✓ ■ ■ ■ ■ Good business performance ■ ■ ■ ■ Performance: excellent/good/satisfactory ■ ■ ■ ■ PR Grant Application (Mentor) ■ ■ ■ ■ Document business metrics ■ ■ ■ ■ Revenue, jobs created, savings ■ ■ ■ ■ Growth plans (Base: KES 10,000) ■ ■ ■ ■ Review & Approval (Same as SB Grant) ■ ■ ■ ■ Disbursement → Status: disbursed MONTHS 11-12: GRADUATION ■ ■ ■ ■ Business Assessment (Month 11) ■ ■ ■ ■ Financial sustainability check ■ ■ ■ ■ Savings verification ■ ■ ■ ■ Group cohesion assessment ■ ■ ■ ■ Graduation Assessment (Month 12) ■ ■ ■ ■ Conduct endline PPI ■ ■ ■ ■ Compare baseline vs endline ■ ■ ■ ■ Verify graduation criteria: ■ ■ ■ ■ Stable income source ■ ■ ■ ■ Regular savings ■ ■ ■ ■ Improved living conditions ■ ■ ■ ■ Reduced vulnerability ■ ■ ■ ■ Status: active → GRADUATED ✓

6. WORKFLOW C: TRAINING DELIVERY PROCESS

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STAGE 1: TRAINING SETUP
Field Associate:
1. Create BusinessMentorCycle (e.g., FY25C1)
2. Create Training Module
  • Assign mentor
  • Set dates & location
  • Max: 25 households
  • Status: planned
STAGE 2: HOUSEHOLD ENROLLMENT
Mentor:
1. Select households from assigned villages
2. System enforces:
  • Max 25 per training
  • 1 household = 1 training at a time
3. Create HouseholdTrainingEnrollment
  • Status: enrolled
4. Optional: Send SMS reminders
STAGE 3: TRAINING DELIVERY
Mentor:
1. Start Training (Status: planned → active)
2. Conduct training sessions
3. Record Daily Attendance:
  • Select date
  • Mark present/absent for each household
  • System records: mentor, timestamp
4. Multi-day support:
  • Separate attendance per date
STAGE 4: MENTORING SUPPORT
Mentor logs:
  • On-site visits (MentoringVisit)
    - Visit type, topics, detailed notes
    - Phone nudges (PhoneNudge)
    - Types: reminder, follow-up, support
    - Duration, success status
  • Weekly/Monthly reports (MentoringReport)
    - Activities, challenges, successes, plans
STAGE 5: COMPLETION
Mentor:
1. Complete Training
  • Status: active → completed
2. System calculates:
  • Overall attendance rate
  • Households who completed (>80% attend.)
3. Update HouseholdTrainingEnrollment
  • Status: enrolled → completed
4. Optional: Generate certificates

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Training Metrics Tracked

- **Real-time Statistics:** Total enrolled, present count, absent count, attendance rate %
- **Recent Activity Log:** Last 10 attendance changes with household, date, status, marked by
- **Attendance History:** Per-household attendance across all training dates
- **Completion Rate:** Percentage of households completing training (>80% attendance)
- **Performance Bonus:** High attendance rates increase SB grant amount by up to 10%

7. WORKFLOW D: GRANT APPLICATION & APPROVAL

```

##### STEP 1: APPLICATION CREATION ##### Actor: Mentor /
Field Associate ##### 1. Select Grant Type: ##### • Seed
Business Grant ##### • Performance Recognition Grant ##### • Livelihood Grant ##### • Emergency Grant #####
Education Support ##### • Housing Improvement ##### • Other ##### 2. Select Applicant: ##### • Household #####
##### • Business Group ##### • Savings Group ##### 3. Fill Application: ##### • Title & purpose #####
Requested amount ##### • Expected outcomes ##### • Itemized budget ##### • Supporting documents ##### 4.
Submit ##### Status: draft → submitted ##### ▼
##### STEP 2: REVIEW PROCESS ##### Actor: M&E; Staff /
Program Manager ##### 1. Access Pending Reviews ##### 2.
Review application: ##### • Applicant eligibility ##### • Purpose & justification ##### • Budget
reasonableness ##### • Alignment with program goals ##### • Supporting documentation ##### 3. Enter
review notes & score (0-100) ##### Status: submitted → under_review ##### 4. Record review date &
reviewer ##### ▼
##### STEP 3: APPROVAL DECISION ##### Actor: Program
Manager / County Dir ##### / Executive ##### Review
comprehensive package: ##### • Review notes & score ##### • Budget alignment ##### • Program budget
availability ##### • Strategic priority ##### Make Decision: ##### APPROVE ##### • Set
approved_amount ##### • Enter approval notes ##### • Status: under_review→approved ##### • Record
approver & date ##### REJECT ##### • Enter rejection reasons ##### • Status:
under_review→rejected ##### REQUEST MORE INFO ##### • Add notes for applicant ##### • Status:
remains under_review ##### (if approved) ▼
##### STEP 4: DISBURSEMENT ##### Actor: Finance / ICT
Admin ##### 1. Access Approved Grants ##### 2. Select
grant for disbursement ##### 3. Enter disbursement details: ##### • Disbursement date ##### • Disbursement
amount ##### (full or partial) ##### • Method: ##### - Bank transfer ##### - Mobile money (M-Pesa) ##### - Cash
##### - Check ##### • Reference number (transaction) ##### 4. System updates: ##### • disbursed_amount
field ##### • remaining_amount calculated ##### • disbursement_percentage shown ##### • Status: approved →
disbursed ##### (when fully disbursed) ##### 5. Optional: Send SMS notification #####
##### ▼
##### STEP 5: UTILIZATION & FOLLOW-UP ##### Actor: Mentor
/ M&E; Staff ##### 1. Recipient uses grant funds #####
2. Mentor conducts follow-up visits ##### 3. Recipient submits utilization: ##### • How funds were used #####
• Outcomes achieved ##### • Challenges faced ##### 4. Mentor verifies & uploads report ##### 5. System
tracks utilization date ##### 6. M&E; generates impact reports #####
#####

```

8. WORKFLOW E: REPORTING & MONITORING (M&E;)

M&E; Staff have comprehensive dashboards and reporting tools to monitor program performance, mentor activities, and generate custom reports.

M&E; Dashboard Components

Component	Metrics Tracked	Purpose
Performance Metrics	<ul style="list-style-type: none">• Total mentoring reports• Pending reports (30 days)• Training completion rate• Household visits• Phone nudges• Total mentor activities	Real-time program monitoring
Recent Activities	<ul style="list-style-type: none">• Last 10 mentoring visits• Last 10 phone nudges• Sorted by recency	Track latest field activities
Mentor Activity Summary	<ul style="list-style-type: none">• Visits count (30 days)• Calls count (30 days)• Total activities per mentor• Sorted by activity level	Identify active/inactive mentors
Geographic Coverage	<ul style="list-style-type: none">• Villages by county• Household distribution• Saturation levels• Program area status	Ensure equitable coverage
Financial Tracking	<ul style="list-style-type: none">• Total grants disbursed• Business progress metrics• Savings accumulated• Income generation trends	Monitor financial outcomes

Standard Report Types

- **Household Graduation Pipeline:** Eligible → Enrolled → Active → Graduated (with dropout analysis)
- **Business Group Performance:** Health status distribution (Red/Yellow/Green), grant utilization, profit margins
- **Savings Group Financials:** Total savings by group, average per member, meeting attendance, sustainability
- **Training Effectiveness:** Attendance rates by module, completion rates, correlation with business performance
- **Mentor Performance:** Households assigned, visits conducted, phone nudges, training sessions, report compliance
- **County-Level Summaries:** Aggregated statistics by county, ward-level breakdowns, constituency comparisons

Data Quality Monitoring

- **Completeness Checks:** Households missing key information, incomplete PPI assessments, missing milestone updates
- **Validation Reports:** Households eligible but not enrolled, business groups without SB grant applications
- **Anomaly Detection:** Outlier grant amounts, unusual attendance patterns, data entry errors (duplicates, invalid dates)

9. WORKFLOW F: SYSTEM ADMINISTRATION (ICT ADMIN)

User Management

- **Create User Accounts:** Username, email, password, role (1 of 7 roles), contact info
- **Assign Village Access:** For Mentors/Field Associates, restrict to assigned villages only
- **Permission Review:** Test access levels, modify permissions as needed
- **Password Reset:** Admin direct reset or user self-service with 24-hour token validity

System Configuration

- **System Settings:** Key-value pairs (SMS_ENABLED, SMS_PROVIDER, DEFAULT_GRANT_AMOUNT, etc.)
- **System Alerts:** Create alerts (info/warning/error/maintenance/security) with scope and expiration
- **SMS Configuration:** Africa's Talking (primary) and Twilio (fallback) API setup and testing

Data Management

- **ESR Import:** Upload CSV/Excel from KoboToolbox, map columns, validate, process, review results
- **Backup & Restore:** Full/Incremental/Database/Media backups with file tracking and restore capability
- **Data Export:** Select model, filters, fields, format (Excel/CSV/JSON), generate and download (logged)

Geographic Setup

- **Administrative Units:** Add County → SubCounty → Village hierarchy
- **Village Details:** Distance to market, program area status, saturation level, qualified households capacity
- **BM Cycle Management:** Create/Edit/Delete cycles, assign mentors, link trainings

Security & Compliance

- **Audit Log Monitoring:** Review all system actions (login, data changes, exports) with filters
- **Session Management:** 1-hour timeout, expire at browser close, force logout inactive users
- **Password Policy:** Min 8 chars (uppercase, lowercase, number), optional expiration, 2FA support

10. 12-MONTH TIMELINE VISUALIZATION

Visual representation of the complete Ultra-Poor Graduation pathway over 12 months.

Month	Milestone	Key Activities	Status Checkpoints
1	PPI Assessment & Training Start	<ul style="list-style-type: none"> • Conduct baseline PPI • Enroll in training • Begin capacity building 	<ul style="list-style-type: none"> • Household active • Training enrolled
2	Business Group Formation	<ul style="list-style-type: none"> • Form groups of 2-3 • Assign roles • Team building 	<ul style="list-style-type: none"> • Group formed • Members active
3	Business Plan Development	<ul style="list-style-type: none"> • Develop business plan • Identify business idea • Estimate costs & income 	<ul style="list-style-type: none"> • Plan completed • Budget approved
4	SB Grant Application	<ul style="list-style-type: none"> • Submit SB grant application • Business plan review • Budget justification 	<ul style="list-style-type: none"> • Application submitted • Under review
5	SB Grant Disbursement	<ul style="list-style-type: none"> • Grant approval • Funds disbursement • KES 10K-25K received 	<ul style="list-style-type: none"> • Grant approved • Funds disbursed
6	Business Operations Start	<ul style="list-style-type: none"> • Purchase inventory • Setup business • Begin operations 	<ul style="list-style-type: none"> • Business launched • Revenue started
7	Mid-term Assessment	<ul style="list-style-type: none"> • Conduct midline PPI • Progress evaluation • Challenge identification 	<ul style="list-style-type: none"> • Midline completed • Performance scored
8	BSG Formation	<ul style="list-style-type: none"> • Create savings group • Recruit 25 members • Start savings 	<ul style="list-style-type: none"> • BSG formed • Savings initiated
9	PR Grant Eligibility	<ul style="list-style-type: none"> • Assess business performance • Review SB grant utilization • Performance scoring 	<ul style="list-style-type: none"> • Eligibility confirmed • Performance: good+
10	PR Grant Application	<ul style="list-style-type: none"> • Submit PR grant application • Document achievements • Growth plans 	<ul style="list-style-type: none"> • Application submitted • Under review
11	Final Business Assessment	<ul style="list-style-type: none"> • Financial sustainability • Savings verification • Group cohesion check 	<ul style="list-style-type: none"> • Business viable • Savings regular
12	Graduation Assessment	<ul style="list-style-type: none"> • Conduct endline PPI • Compare baseline vs endline • Graduation decision 	<ul style="list-style-type: none"> • Status: GRADUATED • Program completed

Phase Legend

Phase	Months	Focus
Training Phase	1-3	Capacity building & group formation
SB Grant Phase	4-5	Seed capital acquisition
Operations Phase	6-8	Business launch & BSG formation
PR Grant Phase	9-10	Performance recognition & growth
Graduation Phase	11-12	Final assessment & exit

11. DATABASE RELATIONSHIPS

Entity Relationship Diagram showing core data models and their connections.

```

===== USER (Accounts) ===== 1:1 ===== MENTOR
(Core) assigned to ▼ BUSINESS MENTOR
CYCLE (Core) has many ▼ TRAINING
(Training) attendance ▼ 1:1
USER PROFILE (Accounts) assigned villages (M:M) ▼
VILLAGE (Core) has many ▼ HOUSEHOLD
(Households) ▼ ▼
===== HOUSEHOLD PPI HOUSEHOLD MEMBER
(Baseline/ PROGRAM (Households) Midline/ (Households) Endline)
(Households) has 12 ▼ UPG MILESTONE
(Households) (Month 1-12) HOUSEHOLD
BUSINESS GROUP (member of) MEMBER (Business Groups)
belongs to ▼ BUSINESS GROUP (Business
Groups)
SB GRANT PR GRANT BUSINESS (UPG (UPG PROGRESS
Grants) Grants) SURVEY (Business) 1:1
(PR requires SB) BSG MEMBER (member of)
(Savings Groups) belongs to ▼ BUSINESS SAVINGS GROUP
(Savings Groups) ▼ ▼
SAVINGS BSG BUSINESS RECORD PROGRESS GROUP (Savings)
SURVEY (M:M) (Savings) GRANT APPLICATION HIERARCHY:
HOUSEHOLD GRANT APPLICATION (UPG Grants)
can be for (nullable FKs): Household Business Group
Savings Group linked to: Program (optional) Submitted By (User) Reviewed By (User)
Approved By (User)

```


12. INTEGRATION POINTS & EXTERNAL SYSTEMS

The UPG system integrates with several external services to enhance functionality.

System	Purpose	Integration Type	Data Flow
KoboToolbox	Mobile survey data collection	API (REST)	Import survey responses → Create/update households → ESRImport tracking
Africa's Talking	SMS notifications (Primary)	API (REST)	Send SMS to households ← Delivery reports → SMS log tracking
Twilio	SMS notifications (Fallback)	API (REST)	Send SMS when AT fails ← Delivery status → SMS log tracking
MySQL Database	Production data storage	Direct connection	All application data ↔ CRUD operations → Backup/restore
Excel/CSV	Data import/export	File-based	Import ESR lists → Export reports ↔ Bulk operations
Email (SMTP)	User notifications	SMTP protocol	Password resets → System alerts → Report delivery

Security & Data Protection

- **API Authentication:** All external API calls use API keys/tokens stored securely
- **Data Encryption:** HTTPS for all web traffic, encrypted database connections
- **PII Protection:** Personal Identifiable Information (phone numbers, IDs) encrypted at rest
- **Access Logging:** All API calls logged in SystemAuditLog with timestamps and user attribution
- **Rate Limiting:** API requests rate-limited to prevent abuse and ensure fair usage
- **Backup Security:** Database backups encrypted and stored securely with access controls

Mobile Data Collection Features

- **Responsive Design:** Works on smartphones and tablets (iOS, Android)
- **GPS Capture:** Automatic location tagging for households and field activities
- **Offline Mode:** (Planned) Local data storage with sync when online
- **Photo Upload:** Support for uploading supporting documents and photos

- **QR Code Scanning:** Quick household lookup via QR codes
- **Voice Input:** (Planned) Voice-to-text for notes and observations

UPG Management Information System

Visual Workflow Documentation

Developed for: Village Enterprise

Program: Ultra-Poor Graduation (UPG)

Location: Kenya

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Version: 1.0

Technology Stack: Django 4.2, MySQL, Bootstrap 5

Mobile-Responsive | SMS-Enabled | API-Integrated

*This document provides a comprehensive visual overview of the UPG system workflows, architecture, and processes.
For technical documentation and API details, please refer to the system's README.md and code documentation.*