

PRD — Himachal Homestay Portal (Revamp for 2025 & Beyond)

A mobile-first, bilingual (English/Hindi) portal that streamlines homestay registration, renewals, compliance, and insights—built to delight citizens, empower officials, and give the CM a real-time pulse of the sector.

1) Vision & Objectives

Vision

Transform the legacy homestay system into a world-class, single-window, data-driven platform that: - gets owners from **apply** → **live approval** in **≤ 72 hours**, - makes field work **paperless and GPS-verified**, - exposes **transparent, real-time dashboards** to leadership, and - drives tourism growth with **trust, compliance, and great UX**.

Primary Objectives (2025 targets)

- **Mobile completion** ≥ 80% for all owner workflows.
 - **Median approval time** ≤ 3 days; **renewals** in ≤ 1 day.
 - **100% online payments & refunds** with automated reconciliation.
 - **Zero dark data**: every file, step, and delay is visible on dashboards.
 - **Gov-grade security & privacy** aligned to current standards.
-

2) Users & Roles

1) **Property Owner (Citizen)** - Register / renew homestay, upload documents from phone, pay fees, track status. 2) **DTDO / Case Officer** - Scrutinize, raise deficiencies, schedule & record inspections, recommend approvals. 3) **Field Inspector (Mobile)** - Route plan, on-site checklist, geo-tagged photos/video, e-signed reports. 4) **Department Admin / Approver** - Queues, SLAs, escalations, configuration (fees, checklists, holidays). 5) **Finance & Audit** - Payment reports, refunds, chargebacks, ledger export, audit trails. 6) **Public / Tourist (Read-only)** - Verify homestay authenticity, view license/QR, grievance tip-off. 7) **Leadership (CM, Principal Secy, Director)** - Real-time KPIs, district comparisons, heatmaps, bottleneck alerts.

3) Scope (What's In / Out)

In-Scope

- New registration, renewals, amendments (capacity, address, owner details).

- Digital inspections with GPS, time-stamps, and offline capture.
- Automated deficiency & re-submission loop with SLA timers.
- Payments (application/renewal/penalties), refunds, and reconciliation.
- Document services: DigiLocker pull, OCR, quality checks, and eSign.
- Inter-department verifications (e.g., police NOC, local body certificate) via APIs or managed uploads when APIs unavailable.
- Public verification: license QR, validity dates, and status.
- Analytics: end-to-end funnel, SLA compliance, geo heatmaps, staffing load.
- Admin configurables: fees, dynamic checklists, form fields, holidays, SLAs.

Out-of-Scope (Phase-1)

- Full tourist booking marketplace (catalog can be added later).
- Heavy GIS parcel ownership validation (basic map & geo-tags are in).
- Deep revenue-share settlement with OTAs (consider in Phase-2).

4) Key Principles (2025 UX & Platform)

- **Mobile-first:** one-handed flows; <60-second first screen to OTP.
- **Plain-language UX:** Hindi/English, step counters, progress save.
- **No dead ends:** every rejection yields clear next steps and auto-reminders.
- **APIs before emails:** prefer system-to-system checks; fall back gracefully.
- **Audit by default:** immutable trails, versioned docs, and e-signatures.
- **Ops visibility:** queues, SLAs, WIP limits, and aging heatmaps.

5) End-to-End Flows

5.1 New Registration (Citizen)

1. **Login:** Mobile OTP; optional account linking to DigiLocker.
2. **Profile:** Owner KYC (name, address, photo). Aadhaar-based eKYC/eSign where allowed; PAN/GST (if applicable).
3. **Property Basics:** Address (maps autocomplete), geo-pin, photos, capacity, amenities, compliance declarations.
4. **Docs:** Pull from DigiLocker (ownership proof, ID) or upload. OCR + quality checks flag missing/ blurred pages.
5. **Fees:** Auto-calculated; pay via UPI/net-banking/cards/wallets.
6. **Scrutiny Queue:** DTDO views a compact case sheet with red/amber flags.
7. **Deficiencies** (if any): Owner gets push/SMS/WhatsApp; re-submits from phone.
8. **Inspection:** Assigned with SLA; field app guides checklist + geo-tagged photos/video; digital signature.
9. **Decision:** Approver signs digitally; certificate generated with QR and license ID; status public.
10. **Post-Approval Pack:** Downloadable certificate, QR poster (printable), "How to Stay Compliant" guide.

5.2 Renewal

- Pre-filled data; upload only changed docs.
- Self-declaration + selective inspection based on **risk score** (complaints, past delays).
- Instant fee payment → same-day auto/assisted approval path.

5.3 Amendments (Change Requests)

- Capacity / owner details / contact / address changes.
- Delta fee computation, targeted doc list, quick decision workflow.

5.4 Grievances & Tip-offs

- Public can scan QR and lodge a complaint linked to the license.
- Triage inbox with SLA; inspectors can convert to on-site checks.

6) Functional Requirements

6.1 Citizen Portal

- OTP login, session continuity across devices.
- Bilingual UI (EN/HI); WCAG 2.2 AA contrast and accessible inputs.
- Draft autosave; resume from SMS “magic link.”
- Smart forms (show/hide, prefill from profile, validation).
- Document intake: camera capture, glare/blur detection, file size guidance.
- Payments: UPI/Netbanking/Card; auto-reconciliation & receipt.
- Status tracker with promised timelines and live step.

6.2 Case Management (Back Office)

- **Queues** by priority, aging, and SLA breach.
- **Case Sheet**: single page with all metadata, flags, and doc thumbnails.
- **Bulk actions**: assign, remind, approve when criteria met.
- **Deficiency templates** with merge fields; one-click send.
- **Inspection scheduling** with calendar view and route optimization.
- **E-sign** issuance for approvals; certificate versioning & revocation.

6.3 Field Inspection App (Android/iOS + Offline)

- Day plan, maps, and turn-by-turn to properties.
- Guided checklist (dynamic by property type/region).
- Geo-tagged photos/video; tamper detection; auto-timestamp.
- Notes, voice-to-text, and on-device redaction for PII.
- On-site e-sign (owner & inspector); auto-sync when online.

6.4 Public Verification & Transparency

- License lookup & QR scan page: status, validity, district.
- Downloadable QR poster for display at property.
- Publish anonymized stats (licenses by district, time to approve).

6.5 Admin & Config

- Fee tables, holidays, SLAs, routing rules, and checklists editable in UI.
- User/role management with least-privilege RBAC and maker-checker.
- Content management for help articles and SMS/email templates.

6.6 Integrations (API-first with graceful fallbacks)

- **Identity & Docs:** DigiLocker (pull), eSign 2.1, PAN/GST validation (when applicable).
- **Payments:** Aggregator (UPI, cards), webhooks for success/failure, refunds.
- **Police / Local Body / Utility:** API hooks or secure drop-boxes with turnaround SLAs.
- **Messaging:** SMS, email, WhatsApp (transactional templates).
- **Analytics:** Event stream to data warehouse (daily).

7) Non-Functional Requirements

- **Performance:** P95 page load < 2.5s on 3G-like networks; uploads resumable.
- **Reliability:** 99.9% monthly uptime; graceful degradation offline for field.
- **Security:** OWASP ASVS L2, ISO-27001 practices, TLS 1.3, HSTS, CSP; secrets in HSM/KMS; IP allow-lists for admin.
- **Privacy:** Data minimization, purpose limitation, role-based redaction; audit logs immutable ≥ 7 years.
- **Accessibility:** WCAG 2.2 AA, screen-reader tested, keyboard navigable.
- **Observability:** Tracing, structured logs, error budgets; alerting on SLAs.
- **Scalability:** 10x surge on seasonal peaks; stateless web nodes with autoscale.
- **i18n/L10n:** Text externalized; RTL-ready for future languages.

8) Data Model (High-level)

- **Owner**(id, name, mobile, email, addresses[], kyc_status, created_at)
- **Property**(id, owner_id, address, geo_latlng, capacity, amenities[], photos[], risk_score)
- **Application**(id, property_id, type: {new|renewal|amend}, status, submitted_at, decided_at, sla_due_at)
- **Document**(id, application_id, type, source: {upload|DigiLocker|api}, hash, version, verified)
- **Inspection**(id, application_id, scheduled_at, inspector_id, checklist[], media[], outcome, geo_trace)
- **Payment**(id, application_id, amount, fee_breakup, txn_ref, status, reconciled_at)
- **Certificate**(id, application_id, license_no, qr_hash, valid_from, valid_to, revoked_at)
- **Grievance**(id, license_no, reporter_contact?, category, severity, status)
- **AuditLog**(id, actor_id, action, entity_type, entity_id, diff, time)

9) Risk-Scoring (for Renewals & Surprise Checks)

Inputs: - Complaint count (weighted by severity) - Past SLA breaches (owner-side delays) - Inconsistent occupancy declarations vs. inspection history - Geo-anomalies (location mismatch from initial registration) - Payment reversals / penalties history

Outcome: - Low risk → auto-renewal with random 10% inspections - Medium → desk scrutiny + possible inspection - High → mandatory inspection before renewal

10) Dashboards

CM / Leadership “WOW” Dashboard

- **Today's pulse:** applications in, approvals out, median time (today vs 7-day).
- **District league table:** SLA compliance %, backlog aging, inspection productivity.
- **Heatmap:** geo distribution of active homestays & pending inspections.
- **Bottlenecks:** where & why (deficiency loops, pending inter-dept verifications).
- **Integrity:** % GPS-verified inspections, duplicate KYC flags, unusual patterns.

Department Ops

- Workload by officer, assignment suggestions, re-balancing.
 - SLA drill-downs: by stage, reason, and officer.
 - Payment reconciliation and refund queue.
-

11) SLA Policy (System-Enforced)

- Scrutiny assignment: **within 4 business hours** of submission.
 - First scrutiny outcome (approve/deficiency): **within 24 hours**.
 - Citizen re-submission auto-reminder: **D+3 and D+7**.
 - Inspection scheduling: **within 48 hours** post-ready.
 - Final decision: **within 24 hours** of inspection report.
 - Escalations auto-trigger on breaches (email/SMS + dashboard alerts).
-

12) Tech Architecture (Target)

- **Frontend:** React (SPA + PWAs), TypeScript, form schema engine, offline field app; Tailwind/UI kit; Web-Vitals monitoring.
- **Backend:** Node.js (NestJS) or Java (Spring Boot) microservices; GraphQL/REST gateway; message bus for events.
- **Storage:** Postgres (OLTP), S3-compatible object store for media, Redis for queues/sessions.

- **Search & Analytics:** OpenSearch for case search; nightly ETL to warehouse (BigQuery/Redshift) + Metabase/Looker dashboards.
 - **Identity & Auth:** OIDC/OAuth2, JWT; RBAC with scopes; SSO for govt users.
 - **Integrations:** API gateway with signed webhooks; retry & dead-letter queues.
 - **DevOps:** Containers, Kubernetes, IaC (Terraform), canary deploys, blue/green for major releases.
 - **Observability:** OpenTelemetry traces, structured logs, uptime probes, RUM.
-

13) Forms & Checklists (Configurable)

- Admin UI to manage **Form Schemas:** fields, validations, dependencies.
 - **Checklists** by property type/region; versioned; tied to certificate template.
 - **Deficiency Templates** with localization and merge tags.
-

14) Content & Communications

- Transactional SMS/Email/WhatsApp for each milestone (submitted, deficiency, inspection, decision).
 - Multilingual help center with GIFs for mobile capture, doc clarity.
 - Proactive nudges for renewals: T-30, T-7, T-1 days before expiry.
-

15) Compliance & Legal

- Clear ToS & Privacy Policy; consent receipts for KYC/doc pulls.
 - Records retention policy; lawful disclosure workflows.
 - PII tagging & masking in non-privileged views; data export on request.
 - Digitally signed certificates; public QR verification.
-

16) Migration & Rollout

- **Data migration:** legacy licenses, owners, and documents (with mapping & dedupe).
 - **Parallel run:** 2-week overlap; soft-close old portal after parity checks.
 - **Phased rollout:** pilot 2 districts → state-wide within 4–6 weeks.
 - **Training:** role-based modules; sandbox with synthetic data.
 - **Feedback loops:** in-app surveys; weekly triage with product/ops.
-

17) KPIs & North-Star Metrics

- T→A (submit→approve) median time; % within SLA.
- First-time-right submissions (% with 0 deficiencies).
- Inspection productivity (per inspector/day) & GPS-verified rate.

- Renewal auto-approval rate (by risk band).
 - Citizen NPS / CSAT; abandonment rate by step.
 - Payment success %, T+1 reconciliation rate.
 - Complaint closure time & recurrence.
-

18) Acceptance Criteria (Sample)

- **Mobile doc capture** rejects blurred images and suggests retake within 2s.
 - **Status tracker** updates within 5s of stage change (websocket or long-poll).
 - **QR verification** shows license state, validity dates, and last inspection date.
 - **Inspection app** works fully offline and syncs within 60s on reconnection.
 - **Dashboard** loads $\leq 3s$ with 50k active licenses dataset.
 - **Audit log** shows who did what, when, and before/after diffs for any record.
-

19) Open Questions (to finalize with stakeholders)

- Precise fee slabs & concessions (e.g., women/tribal/minority entrepreneurs).
 - Final list of API-available verifications this year vs. file uploads.
 - WhatsApp template approvals & sending limits for transactional flows.
 - Archival timelines for large media (e.g., down-res after 1 year?).
-

20) Release Plan (Indicative)

- **R1 (8–10 weeks):** Core registration, payments, basic scrutiny, certificate + QR, leadership dashboard v1.
 - **R2 (6–8 weeks):** Renewals + risk engine, mobile inspection app, grievances.
 - **R3 (6–8 weeks):** Inter-dept APIs, advanced analytics, public stats, performance hardening.
 - **Continuous:** Accessibility audits, security pentests, UX polish, localization.
-

Appendices

- **A. Sample Certificate Template:** QR (SHA-256 of license + validity), signer name/role, revocation endpoint.
- **B. Data Dictionary:** field names, types, validations (to be shared as JSON schema).
- **C. API Endpoints:** Auth, Applications, Documents, Payments, Inspections, Certificates, Search, Admin Config (to be versioned at `/v1`).