

INSTAFIX

Problem Statement

HomeServe Pro is an innovative, role-based web platform that streamlines the entire ecosystem—from customer booking to vendor operations and admin management—using modern AI and secure workflows. Built for scalability and trust, it enforces "edit-only" policies with audit trails (no deletions), automated pincode-based intelligence, and a "Smart Signature Vault" for blockchain-hashed digital signatures. A key enhancement is the customer-mandated digital signature for service satisfaction: For every completed service, the vendor must obtain a digital signature from the customer confirming satisfaction before payment release, ensuring accountability and reducing disputes.

This hackathon challenge invites you to build an MVP of HomeServe Pro, focusing on a secure, multi-role dashboard that empowers users, vendors, and admins to deliver seamless services with verified outcomes.

- ### The Problem
- Customer Pain Points:** Difficulty finding verified pros nearby, unpredictable pricing based on location/demand, lack of real-time availability, and no easy way to verify service quality (e.g., before/after proof) or formally confirm satisfaction post-service, leading to unresolved complaints.
 - Vendor Challenges:** Manual scheduling leading to overlaps/burnout, uneven job distribution across pincodes, delayed payouts (especially manual/cash), and no streamlined way to obtain customer-verified satisfaction signatures, which are essential for fair compensation and dispute resolution.
 - Business/Operational Gaps:** Fragmented admin roles (e.g., no separation for onboarding vs. operations), vulnerability to data tampering, inefficient scaling in low-density areas, and absence of automated alerts/chat support, resulting in 30-40% operational inefficiency and frequent payment holds due to unverified satisfaction.
 - Broader Impact:** In emerging markets, this leads to economic losses (\$ billions annually in India alone) and erodes trust in on-demand services, hindering gig economy growth. Without mandatory satisfaction verification, vendors face unfair blame, and customers lack recourse for subpar work.

- ### The Solution: HomeServe Pro Platform
- Develop a full-stack web application that acts as a secure marketplace for in-home services. The platform features distinct portals for **Users (Customers)**, **Vendors**, **Admins (2 specialized managers: Onboard Manager for vendor recruitment, Ops Manager for service monitoring)**, and **Super-Admin** for master control. Key innovations include AI-powered pincode scaling (dynamic job/pricing adjustments based on location density), automated buffering (smart scheduling gaps to prevent overlaps), and the enhanced Smart Signature Vault for blockchain-hashed digital signatures—now with a focus on customer-initiated satisfaction confirmation.
- The MVP should demonstrate end-to-end flows:** Customer books a service → Vendor accepts/manages with buffering → Post-job update with photos → Vendor requests digital signature from customer for satisfaction → Customer signs to confirm → Payment releases automatically or manually. Emphasize security (RBAC, no deletions), real-time features (WebSockets for availability), and AI integrations (chatbot for queries, ML for predictions). The digital signature flow ensures vendors cannot proceed to payout without explicit customer approval, fostering trust and accountability.

- ### Key Features to Implement
- Prioritize core MVP; stretch for uniqueness:**
- Role-Based Access:**
- User (Customer):** Search/book services with pincode personalization, dashboard for bookings/profile, post-job rating/signature approval (mandatory digital sign-off for satisfaction, e.g., "I confirm the service met my expectations" via e-sign link).
 - Vendor:** Dashboard with availability toggle (available/not), calendar with auto-buffering (15-60min gaps via ML/Google Maps), job queue, post-job uploads (before/after photos), earnings with manual payment requests. New: Post-job signature request—vendor initiates e-sign request to customer after uploads; awaits approval to unlock payment.
 - Onboard Manager:** Vendor onboarding queue (review/edit profiles/docs, approve with AI flags), limited history view (including signature logs).
 - Ops Manager:** Booking monitoring (status edits, pincode scaling map), manual payment queue (flagged if no signature), operations alerts (e.g., "Pending satisfaction signature").
 - Super-Admin:** Master dashboard (role assignments, full analytics, cache clearing, payment approvals), global edit history (diff viewer, including signature audits).
- Core Workflows:**
- Separate logins (e.g., OTP for vendors, MFA for admins).
 - Automated pincode messaging (e.g., SMS/Email: "Pro available in 110001, 20% bonus for high demand"; post-job: "Sign to confirm satisfaction and release payment").
 - AI Chatbot (persistent overlay: role-aware queries like "How do I approve a service signature?" or "Request signature from customer").
 - Enhanced Digital Signatures for Satisfaction (Core New Feature):
 - **Vendor Side:** After job completion and photo uploads (before/after with AI comparison), vendor clicks "Request Satisfaction Signature" → System sends automated notification (email/SMS with secure link) to customer via DocuSign API.
 - **Customer Side:** Receives link/modal in dashboard or email → Reviews photos/details → Checks "Service completed to my satisfaction" (optional rating/comments) → Digitally signs (e-signature with timestamp/hash).
 - **Verification & Impact:** Signature hashes to Smart Signature Vault (SHA-256 for tamper-proof); Confirms satisfaction → Triggers payment release (auto/manual), updates booking status to "Verified Complete", and logs to audit trail. Without signature (e.g., 48h timeout), payment holds and alerts ops manager for mediation.
 - **Uniqueness:** Ties satisfaction to incentives (e.g., vendor bonus for 90%+ signed jobs); Customer can dispute pre-signature (escalate to admin).
 - Before/After Updates (mandatory photo uploads with AI quality comparison; prerequisite for signature request).
 - Edit-Only Mode (inline edits with confirmation; immutable audit logs for all changes—no deletions; signatures are non-editable post-submission).

- Unique Innovations:**
- **Pincode Pulse Engine:** ML-driven scaling (cluster pincodes for demand forecasting; auto-adjust pricing/assignments).
 - **Smart Buffering:** Predict travel times (Google Maps + TensorFlow.js) to add gaps, reducing no-shows by 30%.
 - **Cache Management:** Admin tool to clear stale data (e.g., search results).
 - **Payments:** Automated (Stripe) + Manual (escrow with proof upload/admin approval; gated by satisfaction signature).
 - **Global Elements:** Responsive UI (mobile-first), real-time updates (WebSockets for availability/signature status), SEO-friendly public pages (home/services/search).

