

Project Summary

Homecare agencies often manage state-specific compliance, caregiver onboarding, and signed documentation through fragmented manual processes. For Home Helpers, smartData designed a compliance and automation platform centered on New Jersey regulations and built to scale across U.S. states. The solution streamlines client and caregiver lifecycle workflows, automates form generation and tracking, supports multiple signature capture methods, and stores signed PDFs with audit metadata. It also adds role-based access, automated alerts, and API-ready integration points for existing homecare systems. Built with a HIPAA-aware baseline and a modular rules engine, the platform reduces documentation overhead, improves audit readiness, and creates a scalable foundation for future expansion.

Problem Statement

It faced significant challenges integrating with multiple EMR systems because each vendor exposed different APIs, authentication mechanisms, and data structures. Building separate integrations for every EMR increased development complexity, maintenance overhead, and onboarding timelines. Healthcare data received from EMRs followed varying FHIR structures, creating inconsistencies in downstream workflows and reporting. OAuth authentication flows for Epic and eClinicalWorks introduced additional complexity around token management, redirects, and session handling. The client needed a secure and scalable interoperability platform that could standardize EMR communication, automate healthcare workflows, and simplify future EMR integrations without rebuilding core integration logic each time.

Approach / Solution

- ★ smartData used a modular compliance engine with JSON-based rules, OCR-assisted form ingestion, e-sign microservices, and audit-stamped PDF storage on AWS.
- ★ The architecture separates the web client / mobile PWA, API gateway/auth, form service, rules evaluator, notification queue, and admin dashboard.
- ★ HIPAA-aware infrastructure uses encrypted storage, role-based access, and auditable logging to protect sensitive records.
- ★ The MVP is intentionally lean and testable, with AI-assisted scaffolding for non-sensitive artifacts and human-reviewed security and signature logic.
- ★ This approach supports rapid validation of the core workflows while keeping the platform extensible for more states and integrations.

Technical Challenges

- Challenges

- ★ Multi-state regulatory compliance with different form and checkpoint requirements.
- ★ Secure, auditable e-sign and PDF generation for signed homecare documents.
- ★ OCR / scanned document ingestion accuracy and audibility.

- How We Solved It

- ★ Built configurable JSON rule sets and state-specific workflow parameters so each agency can follow local compliance logic without code changes.
- ★ Implemented a dedicated e-sign microservice with hash/timestamp metadata, signer evidence, KMS-encrypted S3 storage, and a verification endpoint.
- ★ Used human-in-loop review, confidence thresholds, and append-only audit logs to keep extracted data reliable and traceable.

Learning

- ★ Early legal and compliance validation should happen before feature build.
- ★ Signature capture needs multiple fallback methods for low-tech users.
- ★ Auditability and idempotency should be treated as core primitives, not add-ons.
- ★ Starting with New Jersey keeps scope concrete while preserving reusable patterns for future states.

Screenshots

