Roofing Warranty Management Platform

Automating warranty registration, certificates and ownership transfers for a multi-trade home-improvement contractor

Hugo · October 2026 · Case study

Summary

A major roofing, siding, windows, gutters and solar contractor offers tiered workmanship warranties on every roof it installs. Certificates were produced by hand, records were scattered, and ownership transfers ran on emails and phone calls.

I designed, built and run a warranty platform that covers a warranty's whole life: registration, certificate delivery with tier-specific legal terms, and ownership transfer with finance approval. It has been in production since May 2025 and is used daily by the office, marketing and finance teams.

At a glance

Client	Major US home-improvement contractor (roofing, siding, windows, gutters, solar)
My role	Sole developer, end to end
Status	In production since May 2025; used daily by office, marketing and finance
Stack	Python, Flask, SQLAlchemy, PostgreSQL, HTMX, Alpine.js, Tailwind
Services	ReportLab (PDF), SMTP2GO (email), DigitalOcean App Platform and Spaces, Cloudflare, GitHub Actions

Key results

- **Certificates automated.** Each registration generates a branded PDF with the right legal terms and emails it to the homeowner automatically.
- **Transfers reduced to one decision.** The customer enters the data, the system verifies it, and finance makes a single approval.
- **One source of truth.** Every warranty and transfer lives in one searchable database with full history.
- **Staff run it without a developer.** Products, branches, email templates and legal documents are all edited in the admin.
- **Built to handle volume.** Bulk downloads and bulk email were re-engineered to work past hosting and Cloudflare timeouts.

The challenge

The client offers Gold, Silver and Platinum workmanship warranties. Registering them, producing certificates and handling transfers were manual and disconnected.

Manual certificates. Each certificate was produced by hand, which was slow and inconsistent, with no standard legal terms attached.

No central record. Warranty data was not kept in one searchable place, so finding a homeowner's warranty or checking its tier took time.

Ad-hoc transfers. When a home sold, moving the warranty to the new owner meant emails, phone calls and manual follow-up between the customer, the office and finance.

No visibility. Management could not see how many warranties were issued each week, month or year, or how they split across tiers.

The solution

How an ownership transfer works

The transfer workflow shows the core design: the customer does the data entry, the system checks it, and staff make one decision.

1. **Verify.** The customer enters the warranty number, and the system checks it exists.
2. **Confirm owner.** The current owner's details are confirmed.
3. **Collect buyer.** The new owner's details are captured.
4. **Approve.** Finance approves the transfer once the fee is paid.
5. **Update and reissue.** The record is updated and a new certificate is issued to the new owner.
6. **Notify.** Both parties are notified automatically.

What it includes

Warranty registration. Staff record the homeowner, address, job, branch and product details. The platform generates a branded PDF certificate and emails it to the homeowner.

Tier-specific legal terms. Gold, Silver and Platinum each carry their own legal document, appended to the certificate. A legacy contract option covers older warranties.

Admin dashboard. Registration counts by week, month, year and tier, plus searchable, paginated lists of warranties and transfers with notes and full history.

Bulk operations. Download any number of certificates as ZIP files, export records to Excel-ready CSV, and email or re-email certificates in bulk, with live progress, stop and resume, and a delivery report.

Self-managed configuration. Staff edit branches, products, shingle colors, coverage types, email templates and legal documents without a developer.

Safety and accountability. Role-based access for admins, finance and staff. Every action is audit-logged, deleted records go to a recovery bin, and team alerts go to a configurable recipient list.

Results

Area	Before	After
Certificates	Produced by hand	Generated and emailed automatically, with tier-specific legal terms
Warranty records	Scattered, hard to search	One searchable database with full history
Ownership transfers	Emails, calls and manual follow-up	Guided self-serve form, finance approval, automatic reissue
Re-sending and exports	One at a time	Bulk download, CSV export and bulk email in a few clicks
Reporting	None	Live dashboard of registrations by period and tier
Changes to products or terms	Needed a developer	Staff edit them in the admin

What this means for the business

- **Faster turnaround.** Homeowners receive their certificate as soon as the warranty is registered.
- **Fewer errors.** Transfers start from a verified warranty number and a confirmed owner, so a request can't target the wrong warranty.
- **Less admin work.** Finance makes one status change to complete a transfer; records, certificates and emails update automatically.
- **Reliable records.** Certificates are stored permanently in cloud storage, and every action is audit-logged.

Engineering highlights

Certificate engine. Branded PDF certificates are built with ReportLab, with the right legal document for each coverage tier merged in.

Durable storage.
Problem: Certificates were being lost whenever the container restarted.
Fix: I moved all PDFs to permanent object storage and added regeneration for older records.

Bulk operations that scale.
Problem: Bulk email failed against a 30-second server timeout and Cloudflare's 120-second limit.
Fix: Email now sends in small batches driven by the browser, with accurate per-email results. Certificate downloads stream as ZIP files with 10 parallel fetches, in batches of 300.

Fail-safe notifications. Team alerts go through a dispatch service that logs failures without ever blocking a customer's transfer.

Security. CSRF protection, hashed passwords, role-based access, and a full security audit of the repository and its git history.

Safe delivery. Separate staging and production environments, GitHub Actions deployments with manual approval for production, versioned database migrations, and backups before every release.

My role

I was the sole developer, responsible from first commit to production support, from May 2025 to June 2026.

- **Product and requirements.** Worked with the office, marketing and finance teams to design the registration and transfer workflows, including finance's approval step.
- **Build.** Delivered about 210 commits: 13 data models, 57 routes, 35 page and email templates, and the PDF certificate engine.
- **Infrastructure.** Set up staging and production on DigitalOcean with managed PostgreSQL, object storage, Cloudflare DNS and GitHub Actions deployments.
- **Production operations.** Diagnosed and fixed live incidents, ran a full repository security audit, and kept backups, rollback plans and session-by-session documentation.

Appendix: Glossary

- **Workmanship warranty:** the contractor's guarantee on the quality of its installation, separate from the manufacturer's product warranty.
- **Object storage:** cloud file storage (here, DigitalOcean Spaces) that keeps files permanently, independent of the application server.
- **CSRF protection:** a safeguard that stops other websites from submitting actions on a logged-in user's behalf.
- **Role-based access:** each user sees and does only what their role (admin, finance or staff) allows.
- **Staging environment:** a copy of the live system used to test changes before they reach real users.