

AUDIT & INSPECTION TECHNOLOGY

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From Paper Trails to Real-Time Assurance

Engineering a scalable, offline-first audit platform out of a fragmented, paper-and-spreadsheet operation — without simplifying away the complexity that made it hard.

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Executive Summary

Audits and inspections are where operational risk gets tested in the real world — on remote sites, with patchy connectivity, and under scrutiny from regulators, customers and internal stakeholders alike. Our client's audit process still lived on paper and in spreadsheets, which meant slow reporting, inconsistent data and very little visibility into what was actually happening in the field.

We were engaged to turn that operational problem into a robust, production-grade business application: a configurable digital audit platform that lets field teams work offline on low-cost Android devices, capture evidence at the point of inspection, and synchronise everything into a secure central system the moment connectivity returns.

The brief wasn't to digitise a form. It was to encode an entire operating model — scoring logic, risk rules, customer hierarchies and equipment tracking — into software that has to work first time, every time, in the field.

This case study is less about one client and more about a repeatable capability: our ability to take deep, sometimes messy operational knowledge and translate it into a platform that is scalable, configurable and genuinely used — not just built.

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integrated platforms:
web, mobile & client
portal

100%

offline-capable field
audits

1

configurable engine
powering many
industries

End-to-End

delivery: strategy
through to production

The Business Problem

The client needed to modernise a complex, field-based audit process that depended on manual data capture, spreadsheet consolidation and delayed back-office validation. That made it difficult to hold a consistent audit standard, prove findings with real evidence, or give decision-makers timely insight into risk.

Underneath the surface-level ask of “digitise our audits” sat a harder set of constraints that any workable solution would have to absorb:

- Auditors/assessors working in genuinely offline locations, on low-spec Android devices, with no tolerance for lost data.
- Multiple customers, each with its own site structure, reporting hierarchy and audit templates.
- Configurable scoring, validation and risk-calculation rules rather than a single fixed workflow.
- A need for defensible evidence — photos, video, notes, sample references — tied to specific audit items, not a generic attachment.
- Management and client stakeholders who each needed a different lens on the same underlying data.

This is the point where many digitisation projects stall: the requirements look simple as a bullet list, but they interact in ways that punish a shortcut architecture. Getting it right required real understanding of the audit domain, not just a form builder.

Why This Was a Hard Problem to Solve Well

A basic digital checklist app is not difficult to build. A platform that stays configurable to support all scenarios, auditable and fast across dozens of customers, industries and device conditions is a different order of problem — and that difference is exactly where we add value.

Operating at the intersection of constraints

Every major design decision had to satisfy several competing requirements simultaneously. Offline execution had to coexist with real-time-feeling dashboards once synced. Deep configurability had to coexist with consistent, comparable scoring and risk logic across customers. Open evidence capture had to coexist with strict role-based data separation between customers who must never see each other's information.

Domain logic, not just data entry

Scoring models, validation rules, risk heat maps and corrective-action workflows all had to be built as configurable engines rather than hard-coded features — so that onboarding a new industry, customer or audit type is a configuration exercise, not a development project.

Integration into a wider operational ecosystem

The platform had to talk to laboratory systems, barcode- and QR-linked equipment records, and Bluetooth/NFC-enabled measurement devices, and guarantee delivery of field data even when an import needed manual resolution in the portal. This is systems engineering as much as application development.

Understanding the problem deeply enough to know which parts of the process must never change — and which parts must be infinitely configurable — is the difference between a tool people tolerate and a platform people trust.

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Our Role: From Problem to Platform

We owned delivery end-to-end — from business analysis and solution architecture through design, development, testing, deployment and stakeholder engagement — so that the same team that understood the operational problem also built and shipped the answer to it.

- Translated stakeholder requirements into an agreed solution scope and delivery plan.
- Designed the web portal, mobile application, API layer, data model, security model and integration approach as one coherent system.
- Developed the web and mobile applications in close alignment with business analysts, architects and client stakeholders.
- Implemented configurable templates, scoring models, workflows, reporting structures and role-based access control.
- Validated functionality through structured testing before user acceptance and production deployment.
- Managed delivery against agreed scope, budget, timelines, risks and dependencies.

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The Solution We Delivered

The result is a secure web platform paired with an offline-capable mobile application, covering the full audit lifecycle from template configuration and scheduling through to field execution, evidence capture, validation, reporting and corrective action management.

Business Portal

A secure administrative platform for managing customers, sites, templates, users, workflows, scoring models, risk structures, dashboards and reporting.

Mobile Application

An offline-capable field application, built in Flutter, allowing auditors and assessors to complete inspections, capture evidence, run validations and synchronise results the moment connectivity returns.

Client Portal

A customer-facing portal giving clients direct access to audit results, certificates, non-conformances, equipment maintenance information and corrective action plans.

Platform capabilities at a glance

- Role-based security with configurable access controls for internal and external users.
- Centralised customer, site, personnel and user management.
- Corporate reporting structures that mirror each customer's own operating model and management hierarchy.
- Configurable audit templates with flexible forms, questions, scoring rules, validations and reusable question libraries.
- Equipment tracking via barcode and QR identification, status feedback creating maintenance actions.
- Recurring scheduling — daily, weekly, monthly or custom — with clear ownership.
- Offline field execution with reliable, later synchronisation.
- Evidence capture with photos, video, notes, sample references and equipment readings attached to the specific audit item.
- Automated scoring with risk calculation and heat maps are applied consistently across inspected items and structures.
- Corrective action management that converts non-conformances into tracked, business user owned tasks.
- Operational dashboards surfacing status, bottlenecks, site performance and customer-level trends.
- Management dashboards an status with visible audit/inspection results, risk reports and non-conformance resolution status.
- A secure token-based API engine with guaranteed data acceptance, retaining data for instances when an import needs manual resolution.
- Integration with laboratory systems, external devices and Bluetooth/NFC-enabled measurement equipment.

Technology Stack

Web Portal & API	LAMP stack, Laravel, MySQL and Laravel Sanctum, with a responsive front-end framework.
Mobile App	Flutter, purpose-built for low-spec Android devices and offline field use.
Security	Role-based access control, customer-level data separation, MFA/2FA/OTP authentication and managed SSL/TLS encryption.
Hosting	Managed hosting in South Africa, with deployment options across customer infrastructure and AWS.
Third-Party Services	Push notifications, bulk email, SMS, location services and Google Maps.
Integration	Custom APIs, laboratory system integration, Bluetooth/NFC device integration and external data exchange.

Delivery Approach

Delivery ran as coordinated workstreams across the internal web portal, client portal, API layer and mobile application, so design, development, integration and testing could progress in parallel without stakeholders losing sight of scope, priorities or dependencies.

Regular planning sessions, structured requirements validation and iterative demonstrations kept decision-making fast and ensured the final solution stayed aligned to operational needs, technical constraints and implementation timelines — rather than drifting from the problem it was built to solve.

Business Value Delivered

Improved Operational Control

- Stronger control over audit templates, versioning, user access, data capture and evidence management.
- Reduced reliance on manual interpretation and improved consistency across sites.
- More consistent, higher-quality audit outcomes and certificates.

Faster, More Reliable Field Audits

- Auditors and assessors always have the latest approved templates on their devices.
- Offline functionality keeps audits moving in areas with limited or no connectivity.
- Automated validations and calculations cut rework and lift data quality.
- Built-in evidence capture makes it far easier to substantiate findings and validate non-conformances.

Greater Management Visibility

- Dashboards show audit status, results, bottlenecks and trends as they happen.
- Management can view performance by site, customer, region, structure or audit category.
- Automated reporting improves access to certificates, outcomes and supporting data.

Lower Administrative Effort

- Manual data capture and spreadsheet consolidation are significantly reduced.
- Back-office teams validate and approve audit data through structured workflows.
- Corrective actions are generated automatically from non-conformances and assigned to owners.
- Clients access results and action plans directly through a secure portal.

A Scalable Foundation for Growth

- The configurable platform makes it straightforward to onboard new customers, sites and audit types.
- Reusable question libraries and template structures cut setup effort for future deployments.
- The result is a repeatable model for digital audit management across multiple industries.

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Why It Matters

This project is a working example of what we do best: take a business problem that is genuinely complex — operationally, technically and organisationally — and turn it into a robust application that real people rely on every day, in the field, offline, under pressure.

- Offline capability is non-negotiable for field-based operations, and designing for it from day one avoids costly rework later.
- Template and scoring flexibility is what turns a single build into a platform that scales across industries and customers.
- Evidence tied directly to audit items is what makes results defensible, not just digital.
- Reporting has to mirror how the customer actually manages their business, or dashboards go unused.
- Early usability testing with real field users is the cheapest risk-reduction available on a project like this.

If your organisation is sitting on a similarly complex, paper-bound or spreadsheet-bound process, this is the kind of transformation we build: understood deeply, engineered properly, and delivered as a platform your teams will actually use.

EMAIL

info@isolvemobility.co.za

PHONE

+27 82 775 2932

WEB

isolvemobility.co.za

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