Mercia Zaayman

Senior Software Engineer | Product-Minded Full-Stack | AgriTech & AI-Assisted Engineering

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PROFESSIONAL PROFILE

Senior Software Engineer with 25+ years of experience designing, building and supporting complex production systems, from large-scale telecommunications middleware to enterprise cloud platforms. A product engineer at heart: I start with the person who has to use the software and the problem they are trying to solve, then make the architectural calls and write the code to back them up.

Outside work, we run a small lifestyle block with a sheep flock. Farming at our scale doesn't bring the time-consuming demands of large-scale paddock rotation, but there is still plenty to keep track of: which animals are due for treatment and when, which ewes can go to the ram and at what stage, and how each animal is related to the rest of the flock. That is what led me to build **Paddock Pal**, a livestock management platform I designed as product owner and lead developer, and I am now building its companion mobile app for use in the paddock.

A heavy, disciplined user of AI tools, including Claude Code, Claude APIs, AI agents and MCP integrations, to lift delivery speed and quality while keeping engineering judgement and validation firmly in human hands. Experienced mentor who enjoys design conversations, code reviews and sharing context generously.

KEY STRENGTHS

Product & domain: product ownership, customer-centred design, livestock and farm-management workflows, hands-on farm experience

Industry experience: agriculture (personal), telecommunications, health and life insurance, regulatory, commercial services, industrial cleaning systems and vehicle registration

Engineering: end-to-end full-stack delivery, REST APIs, .NET, C#, Java, TypeScript, React, Python, Entity Framework Core, OutSystems

Data: relational (SQL Server, PostgreSQL with Row Level Security), auditability and data retention design

Mobile & field-ready design: offline-first thinking, low-connectivity sync

Cloud & platform: Azure (Files, Entra ID, RBAC), AWS (boto3 integrations), Supabase serverless, CI/CD with GitHub Actions, large automated test suites (1,000+ tests), Tailscale private networking

AI: AI-assisted engineering (Claude Code, Copilot, Playwright), agentic workflows (Microsoft Agent Framework, MCP), human-in-the-loop AI design

Leadership: mentoring, onboarding programmes, stakeholder engagement, working in ambiguous, fast-moving environments

PERSONAL EXPERIENCE

Featured Project: Paddock Pal – Livestock Management Platform – 2026 – Present

Born in the paddock, not in a browser tab. We managed our own sheep flock on spreadsheets, and they broke down exactly when it mattered: at lambing, at treatment time, and when choosing which ram goes with which ewes. So I designed and built a platform that turns scattered farm records into clear, timely decisions.

- **Product owner and lead developer:** shaped the product from first-hand farm experience, set the requirements, made the architectural and business-rule decisions, and took it from concept to a working system.
- **Modelling the physical world:** tracks each animal's history, breeding lines, treatments, lambing records, schedules and reminders, with pedigree-aware breeding controls to prevent inbreeding. The model is species-neutral, so cattle or alpacas can be added without a rewrite.
- **Farm rules built in, not guessed:** withholding periods, due dates and inbreeding coefficients are calculated by plain, unit-tested C#, never by an AI model. Soft deletes, temporal history and a full audit trail mean the system catches what a tired part-time farmer might miss.
- **AI with a human in the loop:** agents built with Microsoft Agent Framework research and propose recommendations, such as breeding and treatment plans. Every proposal waits for the farmer's approval, and agents appear in the audit trail as

separate actors from users, so every suggestion can be traced. Models can be swapped: Ollama locally during development, Claude when quality matters.

- **Stack:** .NET 10 Minimal APIs, Entity Framework Core, SQL Server / Azure SQL, React and TypeScript, .NET Aspire. Self-hosted and reached securely over Tailscale.
- **Quality at pace:** domain rule tests, API integration tests against a real SQL Server in a container, agent evaluations, and CI with GitHub Actions. I used Claude Code across planning, implementation, testing and documentation, and every technical decision stayed with me.
- **Now building the mobile companion app:** designed offline-first for patchy rural coverage. Changes are queued on the device and sync automatically when coverage or Wi-Fi returns. The goal is voice-driven recording: identify an animal, record a treatment, add notes and schedule follow-ups such as booster vaccinations, all without putting down the drench gun.
- **Where I see it going:** the same problems that drive Halter: turning lots of small, messy field events into one calm, trustworthy decision in the farmer's hand, with software that keeps working when the connectivity, weather and animals don't cooperate.

AI-Assisted Tutoring Platform – 2026 – Present

Designed, built, deployed and continue to support a booking and client-management platform for a live tutoring business as sole developer across the full software lifecycle. The platform remains in active production today.

- Backend services using TypeScript serverless functions on Supabase; automated booking requests, notifications and business workflows, with approval kept in human hands.
- Booking request workflow: when a client requests a session, the teacher automatically receives an email to approve the booking or get in touch with the client first, so every booking is confirmed by a person before it goes into the schedule.
- PostgreSQL database design and evolution, including Row Level Security controls.
- Scheduled automations with YAML-based GitHub Actions pipelines; Claude Code used throughout design, implementation, testing, debugging and optimisation.

PROFESSIONAL HIGHLIGHTS

- **Complex systems in production:** 20 years building and supporting large-scale telecommunications middleware at Altron, running under demanding service-level agreements, with the on-call experience (and scars) that come with it.
- **AI-powered reporting automation:** designed and built an automated client reporting solution using Claude APIs and a Python-based MCP service, using boto3 and cloud integrations to collect operational data, generate spreadsheets and client-ready reporting packs, and distribute monthly reports automatically, significantly reducing recurring manual effort.
- **Cloud transformation leadership:** led discovery, assessment and migration planning of an on-premises estate of 47 virtual machines.
- **Azure Files modernisation:** designed and delivered a cloud-native replacement for an ageing on-premises file server using Azure Files, Microsoft Entra ID Kerberos authentication, Azure RBAC and private connectivity through Tailscale.
- **Legacy platform retirement:** automated the migration of 84 Confluence spaces and around 2,270 pages with zero failures.
- **Full-stack solution development:** hands-on design, build and support of enterprise applications in OutSystems alongside .NET, cloud, integration and automation technologies.

PROFESSIONAL EXPERIENCE

Optimation Group | Senior Developer – 2020 – Present

Lead the design and delivery of enterprise software, cloud migration, automation and modernisation initiatives. Partner directly with customers to understand how their work actually happens, find improvement opportunities, and deliver solutions that improve operational outcomes.

- Design, build and support enterprise applications end to end using OutSystems and .NET across health insurance, regulatory and commercial services sectors.
- Embed AI-assisted engineering into day-to-day delivery with Claude Code, Playwright and OutSystems Agents, lifting team output and freeing time for the harder problems.
- Designed and delivered automated reporting capabilities using Python, MCP-based integrations, AWS (boto3) and AI services.

- Lead infrastructure discovery, migration planning and cloud modernisation, owning reliability concerns from design through to production support.
- Build trusted client relationships by understanding the business problem first and delivering practical solutions.

Altron | Developer – 1999 – 2019

Developed and maintained large-scale telecommunications middleware solutions using C# .NET and Java, built secure integration solutions, and supported enterprise systems operating within demanding service-level agreements.

- Mentored developers and created onboarding programmes that brought new engineers up to speed on complex, business-critical systems.
- Supported high-volume, always-on production systems, including incident response when things got tricky.

CERTIFICATIONS & EDUCATION

- Bachelor of Science – Mathematics, Applied Mathematics and Computer Science
- Azure Fundamentals (AZ-900) (2026)
- OutSystems Developer Cloud (ODC) (2025)
- OutSystems Tech Lead (2024)
- OutSystems Associate Reactive Developer (2021)