

OLIVER ERNSTER BSc (Hons)

Principal Python Engineer & Software Architect - APIs, Integration & Platform Modernisation

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PROFILE

Software engineer and architect with 28+ years spent, above all, at the seams of systems: designing APIs and protocols, integrating platforms and joining legacy estates to modern ones without breaking the consumers that depend on them. The most recent 13+ years centre on Python backend, API and platform engineering across defence, fintech, telecoms, cloud and startup environments. I work hands-on while owning backend architecture and deployment, making the structural decisions early so the right ones compound over time; a theme I have developed formally as the author of the four-book *Decision Architecture* series on how decision flow and authority boundaries connect organisational design to engineering outcomes. I designed and specified the open protocol MMSP and have repeatedly been brought into unfamiliar codebases to modernise, integrate and hand over cleanly. I work fluently with advanced AI tooling (RAG, agentic workflows, multiple LLMs) through a professionally designed harness, keeping design decisions and production behaviour firmly my own. Following a series of short, intensive delivery engagements across consultancies, startups and enterprise clients, I am now seeking a permanent Staff/Principal engineering, integration/solutions architecture or modernisation-lead role with long-term ownership of architecture and technical direction.

Security: open to SC-cleared roles; eligible for UK SC clearance (not currently held), with prior defence-sector delivery at DERA, Northrop Grumman, Thales and Hewlett Packard.

CORE SKILLS

- **APIs, interfaces & integration (28+ yrs):** designing, consuming and integrating software interfaces across Python, C/C++, JavaScript/TypeScript and other stacks; author of the MMSP open protocol specification; API replacement and platform-to-platform integration with continuity preserved for downstream consumers.
- **Architecture & modernisation:** legacy migration (Python 2 → 3, MuleSoft → FastAPI), dependency rationalisation, re-platforming, idempotent deployment and production hardening; owning system structure from first principles through to handover.
- **Python (most recent 13+ yrs):** APIs, backend services, automation and production tooling; strong object-oriented and functional design-pattern experience.
- **Cloud & platform:** AWS (Lambda, CDK, Zappa), Terraform, Docker, CI/CD, deployment automation; serverless architecture defined from first principles.
- **Frameworks & data:** FastAPI, Flask and Django/DRF; SQL across PostgreSQL, MySQL, MariaDB, SQLite and MS SQL Server; NoSQL with Redis, MongoDB and Cassandra.
- **Full-stack & cross-platform:** end-to-end delivery from Python services through React/TypeScript front ends; extensive development on Windows, macOS and Linux, with packaged releases (Flatpak, signed .dmg, .exe installers).
- **Leadership:** technical direction, stakeholder alignment and delivery planning; multidisciplinary teams of up to 17; comfortable as the bridge between engineering, product and customer.
- **Foundations:** 15 yrs C++ and 4 yrs C across multithreaded, multi-process, protocol-oriented and cross-network systems.
- **Go (Golang) via AI-assisted workflows:** several working cross-platform applications delivered with Wails and React front ends on macOS, Linux and Windows 10/11 including 11 Pro; a public example is PigeonPost. Built through my professionally designed AI harness with architecture, quality and production behaviour owned by me; I direct AI through Go effectively while making no claim to unaided Go fluency.

PUBLISHED WORK: DECISION ARCHITECTURE

Author of the four-book *Decision Architecture* series (available on Amazon and referenced at ernster.dev) on how decision flow, authority boundaries and organisational design shape engineering outcomes; the series makes ownership explicit, reduces decision latency and aligns architecture with the authority needed to operate it. The model is made operational in *Fulcrum*, a deterministic decision-architecture simulation tool that scores an organisation's structure from 0 to 100 and plans the moves that strengthen it.

PORTFOLIO: ERNSTER.DEV

Public projects include *Meridian* (the reference client for MMSP, an open protocol I designed and specified) and *ClearBudget* (a local, day-by-day personal-solvency model), plus *NarrateX*, *LatencyLab*, *Calendrier* (Home Assistant integration) and *PigeonPost* (a Go/Wails cross-platform desktop application), spanning cross-OS desktop apps, protocols, web systems and operational tooling. Full portfolio at ernster.dev.

CAREER HISTORY

Cisco, Senior Python Developer (Consultancy)

2025

- Brought a legacy Python codebase up to a current, maintainable standard: migrated Python 2 → 3 and re-platformed services onto FastAPI while keeping production accountable and running.
- Improved release predictability via platform upgrades, dependency rationalisation and idempotent deployment; established a modern React/TypeScript interface onto the modernised backend.
- Accelerated modernisation and architectural iteration through agentic AI-assisted workflows under professional control.

Tech: Python 2/3, FastAPI, React/TypeScript, CI/CD, AI-assisted workflows.

- Harrier, Lead Python Developer (Startup)** **2024-2025**
- Owned architecture end-to-end under startup constraints: delivered a serverless Python/FastAPI backend for ingestion, processing and reporting with no standing application infrastructure.
 - Defined the AWS estate in Terraform from first principles and owned reliability and system behaviour in production.
- Tech: Python, FastAPI, AWS (serverless/Lambda), Terraform, SQL.*
- LTI Mindtree, Senior Data Analyst (Consultancy)** **2023**
- Replaced a MuleSoft API with a maintainable FastAPI Python 3 platform, reducing operational complexity and cost while preserving continuity for every downstream consumer through the switchover.
 - Improved architecture, coding standards and documentation to leave a clean, operable handover.
- Tech: Python 3, FastAPI, AWS, SQL, git.*
- EPAM, Lead Developer (Consultancy)** **2022**
- Prototyped a cloud-based flood-insurance API in a regulated environment, de-risking the architecture across FastAPI, Lambda, PostgreSQL, SQLAlchemy and AWS CDK and giving stakeholders a concrete route for decision-making.
- Tech: Python, FastAPI, AWS Lambda/CDK, PostgreSQL, SQLAlchemy, TypeScript.*
- MDRxTech, Senior Developer (Consultancy)** **2022**
- Delivered Python/FastAPI backend work across Docker, serverless/Lambda and SQL-backed systems for music-technology services.
- Tech: Python, FastAPI, Docker, AWS Lambda, SQL.*
- Thales, Senior Developer (Cyber Resilience & Defence Research, Consultancy)** **2021**
- Enabled cyber-resilience modelling and visualisation for research users through a multithreaded socket-based backend joined to a Flask front end.
 - Built a targeting web tool with variable range handling communicating with an encrypted backend API.
- Tech: Python, Flask, React, sockets/multithreading, SQLite.*
- Unilink, Senior Developer** **2021**
- Delivered reliable Django/DRF software supporting secure family communication under operational and regulatory constraints.
- Tech: Python 3, Django, Django REST Framework, Docker, MySQL.*
- Validus Risk Management, Senior Developer (FinTech)** **2020-2021**
- Enhanced a regulated wealth-management and risk-analysis platform in line with analytical requirements and business objectives.
- Tech: Python 3, Django/DRF, AWS, React/TypeScript, Docker, SQL, Linux.*
- Memset, Senior Developer (Cloud Platform)** **2019-2020**
- Strengthened a core Python/Django cloud platform and contributed to platform-level architecture in a pure cloud-engineering team.
- Tech: Python 2/3, Django, Linux, SQL, git.*

EARLIER CAREER (1997-2019): SELECTED ROLES

- Fintech (2016-2018):** Bink, GlintPay and Duologi - Python/Django systems across loyalty, payments and lending startups.
- Media & broadcast (2012-2019):** MPC Advertising, Forbidden and EditShare - Python/Django, C++, Qt and Objective-C in production media workflows.
- Defence & research:** Hewlett Packard (2012-2014), technical lead / Scrum Master for a 17-person multidisciplinary team; Northrop Grumman (2009-2010) and DERA (1997-1998) - C/C++, multithreaded and protocol-oriented systems.
- Telecoms:** Anite (1998-2008), progressing from integration and support to development, project management and team lead over 10 years; Semafone (2010-2011) and Malden (2010) - C/C++/Python and SIP/ISDN.
- Security, IoT & other:** Armour Communications (secure comms, 2015-2016), PhotonStar (IoT, 2014), Artfinder (2012), Electric Motor Works (EV, 2008-2009) and a Home Office NGO (search/Django, 2010).

EDUCATION

BSc (Hons) Physics, University of Manchester. Final-year project: infra-red reconnaissance satellite design.

INTERESTS

- Self-directed postgraduate-level physics study, for enjoyment rather than a formal qualification.
- Authoring books: the Decision Architecture series so far, with more planned.
- Open-source software development in my spare time.
- 3D printing (8 years): hardware, electronics, firmware and software across multiple printers, now on my tenth, from bed-slingers to CoreXY designs.
- Flight simulation and space MMO gaming with a full HOTAS and rudder pedals setup.
- Foundation amateur radio (ham) licence holder; Grade 7 piano (ABRSM); voracious reader of science-fiction, fantasy and popular science.