# Gareth Brown - Solution Architect

## .NET & Cloud Architecture | Mission-Critical Systems for Government & Regulated Sectors | Hands-On Delivery

App Software Ltd, Dilton Marsh, Westbury, Wiltshire, BA13

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## AVAILABILITY

**Based in:** Wiltshire, UK · **Working locations:** Remote / South West / London, UK

**Status:** Open to new outside-IR35 contracts - available with notice.

**Clearance:** Eligible for SC clearance (UK national). Prior UK central-government engagements (UKSBS, Forestry Commission).

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## CONTACT INFORMATION


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- **Website / Portfolio:** https://appsoftware.com/portfolio
- **GitHub:** https://github.com/appsoftwareltd | https://github.com/gbro3n


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## PROFILE

Hands-on Solution Architect with 18+ years delivering mission-critical .NET systems - and the cloud and platform infrastructure they run on - for UK government and regulated sectors (public sector, nuclear, rail safety-critical, fintech).

I design and build distributed, event-driven systems end-to-end: application architecture, microservices and messaging, AWS/Kubernetes infrastructure, CI/CD, secrets management and observability - then stay hands-on through delivery. Recognised by clients for owning critical deliverables, leading and mentoring teams through complex technical and organisational challenges, and consistent, pragmatic delivery of performant, reliable, maintainable software.

I make active use of AI-assisted development workflows with hands on experience of the integration of LLM/RAG capabilities.

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## CORE TECHNICAL SKILLS

**Solution & Systems Architecture:** Distributed systems, microservices, event-driven architecture, REST API design, domain/integration design, SOLID & design patterns, infrastructure-as-code, high-throughput/high-availability systems, performance optimisation, security hardening (CSP/HTTP headers, pen-test remediation)

**Cloud & Platform:** AWS (ECS/Fargate, S3, Athena, SQS/SNS, ECR), Microsoft Azure, GCP, Digital Ocean | Docker, Kubernetes (K8s), Flux CD | CI/CD: Azure DevOps, GitHub Actions, Jenkins | HashiCorp Vault (secrets &

configuration), blue/green deployment, GitFlow

**.NET & Backend:** C#, .NET (Core & Framework), ASP.NET MVC, Web APIs, Dapper ORM, Entity Framework, MassTransit, SignalR, Node.js, Blazor, MAUI/Xamarin

**Messaging & Data:** RabbitMQ, Kafka, AWS SQS/SNS, gRPC | PostgreSQL, SQL Server, MySQL/MariaDB, MongoDB, Redis, SQLite

**Frontend:** JavaScript, TypeScript | Vue.js, Angular, React, Svelte, Alpine.js, jQuery, Knockout.js | CSS, Sass, Tailwind, Bootstrap, Bulma, GOV.UK Design System (GDS)

**AI-Augmented Delivery:** AI-assisted development workflows, LLM/RAG integration into production applications, local inference (Ollama, LM Studio), prompt engineering (GPT, Claude, Gemini)

**Practices:** Agile/Scrum, TDD, unit/integration/load testing (XUnit, NUnit, Moq, JMeter), technical leadership, mentoring, requirements gathering, stakeholder communication, developer tooling & documentation

**Languages & Tooling:** C#, JavaScript, TypeScript, SQL, Bash, PowerShell, Python | Git, GitHub, Bitbucket, Azure DevOps, CodeCommit

**Additional Experience:** Dart, C++, Java, Flutter, VMware, Selenium, SEO, PPC

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## PORTFOLIO PROJECTS

Much of my client work for government and enterprise is under NDA and not publicly demonstrable. These are some public, self-built products - designed, developed, deployed and maintained end-to-end - that I use to stay current with new tools and patterns:

- https://www.etherpk.com - A markdown based knowledge base / notes app with wikilinking, E2E sync / encryption, AI Agent / MCP / RAG integration. Source available at https://github.com/appsoftwareltd/etherpk-client *(SvelteKit, TypeScript, Code Mirror, Claude Code, MCP, RAG, Postgres, k3s, Terraform)*
- https://www.agentkanban.io - Web application and VS Code extension for managing agentic software engineering workflows, integrating kanban boards with agent context capture and management tooling *(SvelteKit, TypeScript, Postgres, k3s, Terraform)*
- https://www.asnotes.io - A markdown / wikilink based personal knowledge-management and notes extension for VS Code with static site publishing *(SvelteKit, TypeScript, Postgres, k3s)*.
- https://www.asmusictheory.com - A music theory learning and web application with practice tools, including midi integration for score recording, presentation and playback *(SvelteKit, TypeScript, Postgres, k3s)*.
- https://www.numeromoney.com - Personal finance and spending management tools and analysis *(C#, ASP.NET, Postgres, k3s)*.

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## PROFESSIONAL PROJECT HISTORY

**January 2023 – October 2026 - Solution Architect / Application Development Technical Lead - Grants Finance System, UKSBS (Contract)**

**Sector:** UK Central Government | **Technologies:** C#, .NET Core, ASP.NET MVC, HashiCorp Vault, Swagger, Microservices, Okta, RabbitMQ, Redis, Dapper ORM, PostgreSQL, JavaScript, Alpine.js, Docker, Kubernetes (K8s), XUnit, JMeter, AWS (SQS, SNS, RDS, S3, Athena), Jira

Re-engaged by UKSBS to lead a major system upgrade for the Grants Finance System (GFS), collaborating with internal development, architecture and infrastructure teams alongside external contractors (IBM) to integrate Oracle cloud infrastructure as part of the wider 'SHARP' programme.

- Lead the development team on application architecture, developer tooling and version-control strategy supporting multiple concurrent work streams; co-ordinate with infrastructure teams on CI/CD and DevOps.
- Delivered multiple major upgrades to facilitate onboarding new business clients with unique workflows (new REST API development; upgrading systems to support new processes).
- Re-engineered the RabbitMQ messaging implementation for a 9× throughput increase.
- Designed and implemented an archive process migrating large volumes of audit data from PostgreSQL to AWS S3, integrated with AWS Athena, with a continuous transfer process for new data - keeping RDBMS volumes (and costs) to a minimum.
- Evaluated, designed and integrated HashiCorp Vault for configuration and secrets management: ease of use for developers and infrastructure, minimal code-base change, CLI and UI management, and hot-reload of configuration with zero downtime.
- Built a bespoke GUI client for managing Vault configuration across ~20 deployed test environments (each multiple microservices), solving the problem of keeping sensitive, non-version-controlled configuration in sync.
- Resolved database performance issues: index optimisation, connection optimisation, and a 'unit of work' factory pattern for controlling database connection lifetimes.
- Evaluated and implemented security remediations from external penetration testing (CSP and other HTTP headers, with associated script changes).
- Completed broad refactor to modernise and improve maintenance of code base.
- Implemented a GitFlow branching strategy with phased feature deployments, plus blue/green deployment and environment management.
- Designed an internal cron-based scheduler for background processes, and data-retention/archive processes maintaining compliance and database performance.
- Authored developer support documentation: processes, strategies and technical guides.

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**November 2022 – January 2023 - Senior Software Engineer - A.P. Moller Maersk**

**Sector:** Logistics / Customs | **Technologies:** C#, .NET Core, Web APIs, React, PostgreSQL, SQL Server, Entity Framework, XUnit, Moq, Azure

- Contributed to the Customs House Brokerage AppLite product - a phased rebuild of a legacy application onto Maersk's modern integrated platform.
- Resolved architectural issues in a problematic microservice design that was hindering project progress.
- Integrated Maersk APIs and automation platforms using .NET Core and Entity Framework.

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**July 2022 – October 2022 - Senior Software Engineer - Forestry Commission via Quicksilva (Contract)**

**Sector:** UK Central Government | **Technologies:** C#, .NET Core, MVC, PostgreSQL, Entity Framework, XUnit, Moq, GOV.UK Design System (GDS), Azure B2C, Azure Active Directory, Bitbucket

- Drove development against functional specifications to meet strict MVP milestones for the FLO redevelopment (Felling Licence Applications).
- Built an internally-facing administrative system with complex identity and authorisation requirements.

- Integrated Azure B2C with federated Active Directory tenants and implemented a roles/claims-based permissions system for Forestry Commission employees.

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**February 2022 – July 2022 - Lead Software Engineer - Zircon Software (Contract)**

Two projects for Zircon Software.

**Cavendish Nuclear Waste Management Automation (OptiSort) Sector:** Nuclear / Regulated | **Technologies:** C#, .NET Core, WPF, Python, gRPC, SQL Server, Entity Framework, XUnit, Moq, Stateless, Docker, UML, Enterprise Architect, Azure DevOps

- Designed and implemented prototype control software for a hazardous-waste automation system of robots and sensors ("OptiSort").
- Led a team of three developers and a test engineer: mentoring, sprint planning, story writing, client liaison.
- Owned the Enterprise Architect (Sparx) model - interface definitions and UML diagrams.
- Implemented robust state machines (3 machines, 50+ states) with custom observability and pause/resume/synchronisation via the Stateless .NET library.
- Delivered 300+ unit/integration tests; delivered ahead of schedule with high customer satisfaction.

**GPS Rail Asset Location Sector:** Rail / Safety-Critical (SIL) | **Technologies:** C#, .NET Core, Xamarin, ASP.NET MVC, PostgreSQL, NUnit, Docker, JSON APIs, Wireshark, PlantUML

- Extended a Xamarin mobile application to report connectivity status with GNSS receivers and web services.
- Reverse-engineered third-party GNSS receiver protocols with Wireshark; implemented Multicast DNS client functionality.
- Adhered to SIL (Safety Integrity Level) coding standards with detailed technical documentation.

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**April 2021 – January 2022 - Software Engineer / Architect - Home Buying & Conveyancing Platform, Veyco (Contract)**

**Sector:** FinTech / Regulated | **Technologies:** C#, .NET Core, ASP.NET MVC, XUnit, Swagger, Microservices, Angular, JavaScript, Okta, Docker, AWS (ECS/Fargate, ECR, SQS, SNS), JSON REST APIs, SOAP/XML, MassTransit, Dapper ORM, MariaDB, MongoDB, Azure DevOps

Investor-backed FinTech start-up building services for home buyers, sellers, estate agents, mortgage brokers, lenders and conveyancers.

- Designed infrastructure and application architecture for a multi-portal FinTech platform.
- Configured CI/CD via Azure DevOps to deploy containerised applications to AWS ECS (Fargate) with load balancing.
- Integrated Okta SSO and HM Land Registry (HMLR) APIs.
- Designed workflow and message-bus systems using MassTransit.
- Implemented data integration across RDBMS (MariaDB) and NoSQL (MongoDB) stores.

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**October 2018 – March 2021 - Senior Software Engineer - Grants Finance System, UKSBS (Contract)**

**Sector:** UK Central Government | **Technologies:** C#, .NET Core, ASP.NET MVC, HashiCorp Vault, Swagger, Microservices, Okta, RabbitMQ, Redis, Dapper ORM, PostgreSQL, JavaScript, Alpine.js, Docker, Kubernetes (K8s),

XUnit, JMeter, AWS (SQS, SNS, RDS, S3, Athena), Jira

Developed a replacement Grants Finance System (GFS) managing funding allocation for government-backed research projects - microservices on AWS / Kubernetes with full CI/CD. Successfully moved to production December 2020.

- Led core design choices within an agile team of 15, setting technical precedent for future UKSBS projects.
- Integrated Okta SSO (OAuth/OpenID Connect); designed inter-process communication via REST APIs and RabbitMQ messaging.
- Implemented concurrency handling, internal code libraries and the UI framework.
- Mentored junior team members; led requirements gathering with end users and stakeholders.
- Transitioned to training permanent staff and application maintenance post-launch.

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**February 2018 – September 2018 - Senior Software Engineer - IMI Social / O2 Netflix API / PayForIt, IMImobile (Contract)**

**Sector:** Telecoms / Media | **Technologies:** C#, ASP.NET MVC, Dapper ORM, SQL Server, SignalR, JavaScript, jQuery, AWS, NUnit

- Developed upgrades for IMISocial, a social-media aggregation product used by major clients including the BBC.
- Extended API consumption modules and UI features for high-volume message streams (Twitter, Facebook, Instagram).
- Developed Netflix partner API integration for O2 customer-promotion workflows.

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**December 2017 – January 2018 - Software Engineer - Plumbing & Heating Retail Web Application, House of Radiators (Contract)**

**Sector:** Retail / E-commerce | **Technologies:** C#, ASP.NET MVC, Entity Framework, Dapper ORM, SQL Server, SignalR, JavaScript, jQuery, AWS

- Redesigned an ASP.NET MVC e-commerce site for responsive design and improved image management.
- Integrated a new payment processor; built a solution for managing a large, specialised product catalogue.
- Sole developer: designed and delivered cost-effective solutions across all technical challenges.

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**July 2016 – November 2017 - Senior Software Engineer - O2 Tariff Management, IMImobile (Contract)**

**Sector:** Telecoms | **Technologies:** C#, ASP.NET MVC, Dapper ORM, SQL Server, JavaScript, jQuery, Knockout.js, mustache.js, AWS

- Developed an O2 tariff-management portal for creating and maintaining tariffs and special offers.
- Built a JavaScript-driven ASP.NET MVC portal with complex state management, business-logic validation and enterprise-grade security.
- Assisted on additional web projects for major UK telecommunications providers.

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**January 2016 – July 2016 - Senior Software Engineer - International CRM System, Dyson (Contract)**

**Sector:** Consumer Electronics / IoT | **Technologies:** C#, ASP.NET MVC, Entity Framework, MSMQ, JavaScript, jQuery, SQL Server, AWS

- Extended CRM systems to support Dyson's expansion into the China and Europe markets.
- Implemented high-availability APIs on AWS for device diagnostics and IoT devices.
- Developed Web API 2 endpoints and a JavaScript test client; performed stress testing with full documentation.

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## EARLIER EXPERIENCE (2007 – 2015)

**Senior Software Engineer - Clever Digit Media & contract clients (2009 – 2015).** Full-stack delivery across multiple contracts: an armed-forces community social network, a headless content management/distribution platform, secure offline media browsing (C++/SQLite), back-end processing systems (Windows Services), an email-marketing platform, a genealogy website redevelopment, and a SaaS price-monitoring service. *Technologies:* C#, ASP.NET MVC, AngularJS, Entity Framework, SQL Server, MySQL, MongoDB, SignalR, NServiceBus, AWS EC2/S3.

**Software Engineer - multiple contracts (2007 – 2011).** Financial services systems (Richmond Group), point-of-sale (House of Radiators), and rail infrastructure testing (WRSL/Zircon). *Technologies:* C#, ASP.NET, SQL Server, Windows Forms.

*Earlier project experience (pre-2007) available on request.*

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## EDUCATION & PROFESSIONAL QUALIFICATIONS

- **Stanford Online / DeepLearning.AI** - Supervised Machine Learning: Regression and Classification
- **Microsoft Certified Technology Specialist** - ASP.NET
- **APM** - Project Management (Professional Qualification)
- **Open University** - Web Applications Design, Development & Management; Object-Oriented Programming with Java