




# SIMON EMMS

Senior Software Engineer, DevOps, Solutions Designer

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 MrSimonEmms

## Languages and Frameworks

NodeJs            TypeScript

PHP                Python

Go                 Express

Restify            Vue

Angular            React

## DevOps

Docker             Kubernetes

Ansible            Terraform

Git/SVN            CI/CD

Semantic Release

## Cloud Providers

AWS                Azure

DigitalOcean      Google Cloud

## Data Stores

MySQL             PostgreSQL

MongoDB           Elasticsearch

Cassandra          RabbitMQ

## Principles

Design patterns    SOLID

12 Factor App      MicroServices

Agile (Scrum/Kanban)

## Other

IoT                 OpenFAAS

Mentoring          Leadership

## PROFILE

An experienced and motivated engineer with skills spanning a multitude of disciplines and a proven ability to deliver high quality systems under the tightest of deadlines. With over a decade of experience in different systems, companies and languages, I have an ability to quickly grasp even the most-poorly documented software and communicate solutions to appropriate stakeholders.

## SELECTED WORK EXPERIENCE

### Jun 20 to Present

#### DevOps Consultant (contract) | British Red Cross

Azure, Terraform, Kubernetes, Helm, GitOps, Automation, GitHub, CircleCI

#### Provided DevOps consultancy services to help the Red Cross manage their Covid-19 response

- Working within the Voluntary and Community Sector Emergencies Partnership (VCSEP), I developed an Azure architectural pipeline to receive data from multiple sources, validate and normalise the data and make it available to the data scientists for analysis
- Established processes to ensure the infrastructure would survive after I left, including providing extensive documentation, upskilling the existing team and being involved in the process to hire replacement engineers

### Apr 20 to Jun 20

#### DevOps Consultant (contract) | GreenShoot Labs

Google Cloud Platform, Terraform, Kubernetes, Helm, GitOps, Automation, GitHub, CircleCI

#### Provided DevOps consultancy services for a chatbot startup looking for a secure, reliable and low-maintenance deployment workflow

- Working closely with the Lead Developer, I developed the architecture for a repeatable deployment pipeline that fitted in with their existing development workflow. The main focus on this was to be something that would require limited long-term maintenance as the existing team's knowledge of DevOps tools was limited
- Using Terraform and CircleCI, built a standard 3-stage deployment. For speed, security and ease-of-maintenance used the GitOps pattern to automate the deployments based upon configurable rules
- The solution developed exceeded their key performance indicators on both speed and security

- Documented the entire system and trained their engineers to maintain the system once I leave

### Feb 20 to Apr 20

#### Lead DevOps Engineer (contract) | Ofgem

Azure, Terraform, RBAC, Ansible, GitLab, Serverless, Automation

**Worked with a small team to deliver a confidential fraud reporting system that complied with the NCSC standards handling for sensitive data.**

- Under an incredibly tight deadline, I worked to develop an architecture that met the business and legal requirements. As part of this, a decision was taken to use as many Azure services as possible for cost and speed reasons. The resultant system was a series of data flows, with appropriate notifications, checks and validations at each stage.
- As the data involved would likely be used as evidence in legal proceedings, it was integral to ensure proper chain of custody, access auditing and immutability of received data. To this end, I defined and implemented a role-based access control system on the Azure resources and appropriate use of non-repudiation and immutable data storage.
- The deployment was achieved using Terraform in the self-hosted GitLab environment, with appropriate usage of Key Vault to ensure secure storage of credentials and data. One key driver was for the system to be able to be administered by the team after development has stopped, which meant that automation was key.
- After observing various planning deficiencies in the team's Agile implementation, I worked with the Project Lead and Chief Technical Officer to reduce the impact and work at ways of eliminating the problem areas.

### Nov 16 to Aug 19

#### Platform Engineer (contract) | Energy Systems Catapult

NodeJS, Angular, Python, R, MongoDB, PostgreSQL, GraphDB, Docker, Kubernetes, Spark, Kafka, IoT, Hardware, AWS, Automation, MicroServices

**Inherited an undocumented codebase from a third-party, including an unsupported proprietary graph database and worked to achieve a stable platform to provide domestic heating for trials involving 30 and 100 homes.**

- Working within tight constraints I developed key components for the system that would ensure a standard of reliability to safeguard all users, particularly those vulnerable to downtime.
- Developed strong working relationships with key members of different teams to fully understand real-world issues with the applications and established proposals to address them.
- Worked with the data science team to provide an additional software resource especially with R, Spark and Cassandra, technologies I was previously unfamiliar with.
- Took responsibilities as interim scrum master when the need arose and managed interactions with third-party development partners.
- Encouraged use of best practice, especially amongst junior developers mentored.

### Jan 16 to Apr 16

#### Lead Engineer (contract) | Cromwell Tools

NodeJS, ES6, TypeScript, MongoDB, AWS, Docker, RabbitMQ, Automation, Workshops, Leadership, Solutions Design

**Led the 6 person NodeJS development team on a replacement API for the main website, which had to maintain backwards compatibility with the existing website.**

- Established weekly workshops to educate the team on best practice in NodeJS and MongoDB.
- Managed the sprints and the whole agile process. The teams were spread across three different locations and, initially, the communication was poor. Improved this by tightening the agile disciplines.
- Encouraged the adoption of microservices for admin processes. Proposed an architectural design for this solution and implemented it.

### Oct 15 to Jan 16

#### Senior Software Engineer (contract) | CDG Group

NodeJS, JavaScript, ES6, AngularJS, D3, Automation, SocketIO

**Brought in to provide Angular and D3 expertise. As a pure Java house, they had limited knowledge of front-end JavaScript. Improved their usage to provide a more consistent and an easier development experience.**

- Rewrote the front-end for their main Lean Client product. Although marketed as a single application, in reality it was a suite of software. Configured this to build to a Docker image.
- Created a Yeoman generator for fast construction of new AngularJS modules. This was partly to enforce consistency, but to help the Java engineers gain familiarity in JavaScript.
- Developed a comprehensive form generator to enable the API to generate a schema that would display the user input in a consistent way.
- Provided training to the Java engineers on how to use JavaScript, Angular and their associated ecosystems and how to develop and deploy with the module framework I developed.

### Sep 14 to May 15

#### Senior Software Engineer (contract) | Wealth Wizards

NodeJS, PHP, AngularJS, D3, Automation, MongoDB

**Developed both front and back-end components as part of a team that created an automated pension advice system.**

- Collaborated to design and implement a Data Definition Language for the PHP back-end to publish a comprehensive question schema. This schema would be ingested by the Angular front-end to dynamically generate the form, which could be defined on a per-broker basis.
- Built a series of reusable Angular components to be used across the platform.
- Developed a PDF report generator for the broker's advice to be displayed with D3 infographics. Worked closely with the firm's pension advisers to ensure accurate and FCA compliant reports.

### Oct 12 to Aug 14

#### Senior Software Engineer | GeoPost (now DPD UK)

NodeJS, MongoDB, MySQL, Rocket UniVerse, Automation, Workshops

**Worked on the main DPD/Interlink RESTful API. Written in pure NodeJS, this business-critical service was responsible for handling requests for web users, depot operations and receiving batch data from senders.**

- Implemented continuous integration principles to the development workflow. Due to the company being a round-the-clock operation, worked with the SysOps team to reduce the time required for software upgrades.
- Principal engineer on the industry-leading Follow My Parcel service, which included being part of the team that designed the architecture. The primary problem was that the current system was not designed for real-time tracking as the central database was monolithic and unscalable. The design and implementation needed to encompass methods of achieving live updates without huge expense or causing service outage. This was the flagship project that year and a major USP for the company, whilst

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handling a large increase in daily requests - ~700,000 and ~900,000 on Xbox One and PS4 launch days respectively.

- Wrote a pure JavaScript driver for the Rocket UniVerse NoSQL database. As UniVerse is a proprietary piece of software with little public documentation available, this required reverse engineering the Java driver and translating into NodeJS. As a fundamental piece of the live tracking architecture, this reliably handles millions of requests per day.
- Ran training sessions to upskill non-JS developers to be proficient in the NodeJS platform.

**FULL CAREER HISTORY AVAILABLE ON REQUEST**

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## SELECTED PROJECTS

**BrowserSpy** | browserspy.io

NodeJS, TypeScript, Vue, MongoDB, SocketIO, Docker, Kubernetes, GitLab, Automation, MicroServices, Solutions Design

**A testing tool that records all website events for replaying at a later date with a simple, two-line installation that works cross-platform.**

- Designed a scalable microservice architecture that is able to work with third-party APIs for authentication and issue tracking. The API is flexible enough to implement additional third-party services at a later date by creation of an appropriate strategy. The service records large amounts of binary data so made use of cloud data buckets for optimal read/write capability.
  - Established a DevOps workflow using Kubernetes with feature-branch deployments. Configured a full CI/CD suite, made a series of reusable CI functions to ensure terse configuration files. Maintained a separation between processes that needed to be real-time and ones that could be batch-processed later to reduce costs.
  - Developed a recorder that is installed and configured in the user's browser that intercepts the relevant global DOM objects and pushes the events to a message queue for later processing into a playable timeline. Established metrics with automated tests to ensure that these adhere to appropriate performance criteria.
  - Built a playback service that processed the events into the correct order with all relevant bucket data pre-loaded. Implemented an iterator pattern to load the data in segments to give a smooth playback experience.
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