Jim Cresswell

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UNDERSTANDING SYSTEMS, SHAPING CHANGE

I'm drawn to problems that don't have shape yet — in digital-first public services, AI-mediated access to trusted knowledge, community-driven systems change, and the structure of the early Universe. My work is to find the underlying structure: the frame that turns ambiguity into something that can be confidently delivered against. Shaping the problem is my creative act.

My background spans digital product creation, software engineering, research, and building national-scale public services — the common thread is origination: zero-to-one work, before problems have operational form. I set direction early, decide what should and should not be built, and hold that so others can build with confidence. Part of the work is recognising when the existing system is the wrong starting point and shaping what replaces it. The impact I care about is long-term and structural: changing constraints in large-scale systems so that the natural paths lead to different, better outcomes, lasting far beyond my direct involvement.

Capabilities

- Zero-to-one technical leadership — I set architectural direction at national scale and hold the early decisions that shape long-term innovation and reach.
- Designing and building AI-first interfaces — I conceived, prototyped, and delivered Oak's SDK and MCP server end-to-end, making curriculum data released under the Open Government Licence accessible as public digital infrastructure in AI-mediated environments.
- Research-trained reasoning and systems understanding — computational modelling and published research in astrophysics. I carry this rigour; I deploy it where it creates the most leverage.
- Strategy and technical leadership at scale — I helped shape Oak's Engineering function from four contractors into six product squads and three platform groups. I hold the long-term technical vision, translate direction for non-technical stakeholders, and coach engineers through ambiguity.
- System-level impact through public services — at Oak, I create infrastructure that lowers the cost of innovation for others, enabling lasting change in education quality and teacher wellbeing in the UK and beyond.

Experience

Oak National Academy

Exploratory Leadership in Digital-First Public Services · 2020–present

At Oak National Academy, I lead on complex, high-impact problems by setting foundational technical and product direction inside a live national public service, giving teams a clear frame to build against with confidence. Over five years, I have helped shape the Engineering function from four contractors into six product squads and three platform groups — designing structure, coaching engineers, and translating technical options for non-technical leadership. I work in early and unstructured contexts where problem spaces are not yet defined, and decisions about what should and should not be built have direct consequences for teachers' workload, educational quality, and pupil safeguarding.

At a critical point, I argued for a deeper intervention to address structural delivery risk that was compounding over time, and stood behind that decision as it was taken forward. Change complexity was increasing non-linearly, delivery pace was slowing, and meaningful innovation was becoming increasingly constrained. Rather than pursuing incremental optimisation, I backed a rebuild, accepting and managing near-term delivery and reputational risk. Four years on, the platform continues to sustain active development and innovation.

More recently, I conceived and built an SDK and MCP server for Oak's fully sequenced, pedagogically rigorous curriculum data, released under the Open Government Licence and now directly accessible to AI-powered services on the open web. Teachers are already using AI to reduce their workloads; edtech developers are already building in this space. Reliable access to trusted curriculum material at this quality lowers the cost of innovation for everyone — the lasting impact is in what others will build. The live challenge is product safety: ensuring AI services that consume this data are reliable, accurate, and safe.

Before Oak

Research & Sense-Making in Unknown Systems

My academic background trained me to work deep into the unknown: forming and testing models, reasoning about complex systems at scale, and reframing problems where existing assumptions break down.

My published research in cosmology and large-scale structure focused on fitting parametric and non-parametric models to large galaxy surveys. I was among the first to combine traditional survey statistics with morphological classifications from Galaxy Zoo, the pioneering citizen science project.

I turned a theoretical question about cosmic microwave background topology into an observational test — the question had been asked, but no one had looked. The galaxy survey work showed the prevailing colour-age approximation was wrong in roughly one in ten galaxies — in precision cosmology, enough to force the field to change approach.

This period also included independent research into systems change and leverage points: how shifts in constraints, defaults, and access pathways alter outcomes over time, and how to create and hold the conditions for new states to emerge.

Applied Exploration in Complex Technical Contexts

Before Oak, I worked across technical environments in the public and private sectors, including the Financial Times Labs, HMPO the UK Passport Service, British Airways, and early-career roles at HP Labs.

At HMPO I normalised specification workshops, establishing shared understanding through whole-team example creation and reducing rework.

Across other roles, I repeatedly shifted technical context rather than optimising within it: instigating the move from bespoke version control to Git and GitHub at British Airways; helping build the award-winning FT Web App at FT Labs — a full application experience delivered entirely on the open web, among the first of its kind; and automating manual testing at HP Labs while teaching others to adopt the same systems.

Across these roles, the consistent thread was clarifying intent, surfacing hidden assumptions, and shaping systems that could evolve stably under real-world pressure.

Grounded Practice

My undergraduate thesis was on the design and construction of a Theremin — an early interest in building at the intersection of physics, craft, and play.

I previously volunteered as a market gardener with Growing Communities, an organic local-food initiative. I keep an allotment, and breed runner beans and sunflowers, selecting for resilience and genetic diversity.

I'm interested in ecology-informed food growing, and how perennial systems shift resilience and yield stability in food and materials supply systems.

Education

PhD, Astrophysics & Cosmology
University of Portsmouth

MSc, Cosmology
University of Sussex

MPhys, Physics
University of Bath

For the latest version of this CV see www.jimcresswell.net/cv.