

Exponent®
Engineering & Scientific Consulting

Tom Watt

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Professional Profile

Tom Watt is a Principal in Exponent's Computer, Data & Security Sciences practice, providing consulting on safety in complex and novel systems, AI assurance, and the systems engineering of cyber-physical systems. With over 30 years of experience across defence and security, medical devices and surgical robotics, mass transport, and consumer healthcare, he specialises in independent technical review, programme audit, innovation programme design, and the rapid, safe delivery of new-to-world technologies.

Mr. Watt has led and delivered exceptionally complex R&D and systems engineering programmes across the full development lifecycle — from unmet need and requirements capture, through hazard analysis, risk reduction, verification and validation, and safety case development, to final operational fielding. His work encompasses innovation programme design, equipment development, technology demonstrator systems, and the rapid establishment of new organisational capabilities. He has served as Design Authority on programmes valued at up to £100M, coordinating multi-industry consortia and managing all aspects of technical delivery under demanding time and cost constraints.

He has served clients and organisations across the defence, consumer healthcare, mass transport, diagnostic systems, manufacturing, and start-up sectors, addressing challenges including the rapid development of safety-critical and regulated systems, the integration of novel technologies into operational environments, regulatory compliance, and the scaling of new-to-world products into viable commercial businesses. His consulting experience spans technology exploitation strategy, data and IoT strategy, complex project audit, and the creation of new business groups within large organisations.

Mr. Watt's approach integrates rigorous systems engineering practice, solution architecture, and innovation management frameworks to identify the most critical questions and risks in complex programmes and develop targeted approaches to address them. As a Solution Architect, he leads multi-disciplinary teams to evaluate multiple options and select the most effective path to delivery. He holds a First Class BSc (Hons) in Laser Physics and Optoelectronic Engineering from the University of St Andrews and is a member of INCOSE, the IET, the IEEE, and the Institute of Physics.

Before joining Exponent, Mr. Watt was a senior staff member at TTP Group, responsible for building work, shaping programmes, and technical quality on complex development projects in advanced surgical systems and defence; he also set up the company's systems engineering community of practice. Previously, he was R&D Director for the NEXT Group within GSK Consumer Healthcare (now Haleon) and, before that, was seconded from PA Consulting as Acting VP of Safety Engineering, Quality and Regulatory Compliance at Virgin Hyperloop One. Earlier in his career, he spent 13 years at PA Consulting as a Managing Consultant and Design Authority on high-priority defence and government programmes, and five years as Technical Director of a university spin-out commercialising biomechanics technology. He began his career as a scientist at the UK MoD's Defence Research Agency, specialising in individual and platform signatures, sensing systems, and data acquisition. "His career has been built on rapidly

mastering new technical domains; his current focus is AI assurance and the safety of cyber-physical systems."

Academic Credentials & Professional Honors

B.Sc., Laser Physics and Optoelectronics, University of St. Andrews, Scotland, 1994

MCA Award — Most Innovative Client Engagement, Management Consultancies Association (MCA)

MCA Award — Most Impactful Client Engagement, Management Consultancies Association (MCA)

UK Government Commendation Award, UK Ministry of Defence

Prior Experience

Programme Lead / Consultant, TTP Group, 2024–2026

R&D Director, Haleon, 2022–2024

R&D Director, GSK, 2019–2022

Acting VP of Safety Engineering, Quality and Regulatory Compliance, Virgin Hyperloop One (secondment from PA Consulting), 2017–2019

Consultant / Principal Consultant / Managing Consultant, PA Consulting, 2006–2019

Technical Director, MARRC (University of Worcester), 2002–2006

Principal Scientist, QinetiQ, 2001–2002

Higher / Senior Scientific Officer, DERA (Defence Evaluation and Research Agency), 1995–2001

Scientific Officer, DRA (Defence Research Agency), 1995

Professional Affiliations

INCOSE (International Council on Systems Engineering) — Member

Institution of Engineering and Technology (IET) — Member

Institute of Electrical and Electronics Engineers (IEEE) — Member

Institute of Physics — Member

University of Cambridge — Industrial Fellow (honorary title)

Project Experience

Defence Systems Engineering & Rapid Capability Delivery

- Served as Design Authority on PANAMA, a build-from-scratch programme to deliver a remotely operated IED (roadside bomb) detection vehicle for UK forces in Afghanistan; spending at around £60M per year, the programme went from unmet need to fully deployed military capability in

under 18 months. Coordinated technical delivery across a multi-industry consortium from initial concept through hazard analysis, safety case development, operational fielding, and logistic support, earning two MCA awards for innovation and best overall project in 2012.

- Shaped and managed the full systems engineering design structure for a high-risk, high-speed defence programme; oversaw all aspects of development including concept definition, risk reduction, commercial partner selection, business case development, and final system acceptance.
- Led a team conducting an independent technical and project audit of a complex defence programme under delivery to the MoD by a third-party provider; assembled a multi-disciplinary team and executed a focused one-month investigation engaging suppliers, customers, and users to assess technical capability, project management performance, and outstanding risks, including creation of Monte Carlo modelling for forward project analysis.
- Acted as Managing Systems Engineer on the upgrade of a highly secure, safety-critical manufacturing capability for a government agency; reverse-engineered requirements from obsolete equipment and created a future-proof design definition encompassing electromechanical systems, software, and human process controls, maintaining strict time and cost targets throughout.
- Served as Design Authority and Project Lead for the rapid development of a novel remote monitoring network; established the commercial and supply chain framework, defined the safety and acceptance criteria, and led a multi-disciplinary team to deliver custom hardware and software integrated onto an existing secure network within a challenging timescale.

Defence Research & Technology Programmes

- Led a £3M technology demonstration programme for the Defence Technology Innovation Centre (DTIC); managed a 45-person team across government, industry, and specialist consultants to develop and test defence logistics technologies with clear exploitation pathways, with programme conclusions informing an update to UK Defence Logistics Doctrine.
- Directed a consortium research programme supporting a government project team managing over £3Bn of circulating assets; coordinated the engagement and backing of four government organisations and communicated clear development opportunities with viable routes to implementation.
- Conducted Blue Sky research as part of major international collaborations at the MoD's Defence Research Agency; specialised in individual and platform signatures, signature reduction, and the design and build of data acquisition systems, including development of algorithms for operation in very low signal-to-noise environments.
- Developed and led a wide range of defence research programmes from theoretical and lab-based studies through to large operational trials with deployed forces; modelled and specified a range of sensing and effector systems, from marine electromagnetics to complex electro-optics.

Consumer Healthcare & Digital Health Product Development

- Led R&D activities for an innovation group within a major global consumer healthcare company; bridged the gap between traditional FMCG product development and direct-to-consumer digital healthcare, with the objective of identifying and scaling new business propositions to c.£400M revenue within 5–7 years.

- Identified and addressed organisational and process barriers preventing a large consumer healthcare organisation from effectively developing and scaling novel digital health propositions; redesigned the quality and regulatory process and prioritised new ways of working to accelerate innovation and commercial delivery.
- Built and led R&D teams to deliver consumer healthcare products and systems, launching three new businesses; ran a £1.5M research collaboration with the University of Cambridge and oversaw development from early technology exploration through product qualification and commercialisation across regulated and consumer market environments.

Mass Transport & Safety-Critical Systems Engineering

- Developed and led the systems engineering capability for a rapidly growing transport technology company; established engineering structures, staffing frameworks, and technical resources to support the organisation's rapid scale-up and delivery ambitions.
- Served as Acting VP of Safety Engineering, Quality and Regulatory Compliance; oversaw engineering activities across a team of 150 designers and engineers, built the safety engineering function from the ground up, and created company-wide safety policy, translating it into practical operating procedures, including hazard analysis and regulatory compliance processes, embedded across all engineering teams.

Medical Devices & Surgical Robotics

- Served as Senior Responsible Owner for large and complex consulting assignments within a healthcare technology practice; built organisational capability to deliver across a greater range of development lifecycle stages and more complex integrated systems.
- Shaped and led development work on advanced surgical systems, including multi-arm surgical robots, electromagnetic wireless tracking inside the body, and cardiac and endoluminal surgical tools; held responsibility for technical quality, including verification and validation, across complex, regulated medical device development projects.
- Established a systems engineering community of practice to strengthen engineering rigour and share best practice across multi-disciplinary development teams working on medical and defence programmes.

Technology Commercialisation & Start-ups

- Directed the technical activities of a university spin-out commercialising biomechanics technology; established company operating procedures, service and product specifications, laboratory operations, and stakeholder engagement strategies to build a viable commercial business serving the sports, military, and rehabilitation sectors.