Jonathan Mitchell

Mechatronics Engineer | Systems Engineer | Solution Architect | Engineering Manager | Leader

Results oriented and highly motivated multidisciplined Professional Engineer and Leader with 13+ years of experience in delivering complex solutions for Defence. Strengths in Software, Information & Communication Technology, Simulation and Modelling. Passionate about Innovation with proven results in the ideation and delivery of creative and effective solutions to complex problems whilst successfully managing technical risk. Established and proven engineering leader managing high performance multidisciplinary engineering teams under a Systems Engineering approach successfully delivering complex solutions in a highly regulated, high consequence industry. Significantly experienced in Bids having oriented and costed numerous competitive Solution Proposals for complex capabilities.

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AREAS OF EXPERTISE

- Systems Engineering Management
- Requirements Management
- Mandated System Reviews
- Integration, Verification, Validation and Qualification
- Configuration Management & Baselining
- Architecture & Design for Complex Systems
- Real-time Software Design & Development
- Solution Safety Management
- Cyberworthiness Compliance

- Innovation
- Maturing Technology Readiness Level
- Work Package Management
- Leadership
- Technical Writing
- Bids (Solution Orientation, Design Validation, Estimation, Scheduling)
- Risk Management
- Technology / Export Control
- SecDevOps

PROFESSIONAL EXPERIENCE

PROJECT DESIGN AUTHORITY

Training & Simulation, Thales Australia, Sydney
OCT 2023 - PRESENT

- Product Owner of an innovation initiative to develop a Mixed-Reality Head Mounted Display Flight Certified Trainer Product to deliver flight certified training outcomes for civil helicopter pilots. Responsibilities included: Collaborating with the Product Line Manager (PLM) on the conduct of customer and end user workshops to elicit feedback on customer needs and their perceptions on Mixed-Reality and the future of Flight Simulation Training Devices; Coordinating with the PLM on the Customer Profiles and identifying the customer needs for the product; Establishing and managing the product de-risking technical work packages required to mature low TRL solution components/concepts required for the identified product value proposition; Co-author, with the PLM, the Market and Customer Requirements Definition for the product; Coordinate, in collaboration with the Product Line Architect, across the Training & Simulation Global Business Line for input from technical expertise into the Solution Orientation of the product; Established a high-level design concept for a hybrid cloud simulation architecture leveraging cloud native technologies and which enables the provision of digital cloud-based services; Establishing the cloud-based tooling required for the product innovation initiative to enable the globally distributed team to work collaboratively, efficiently and transparently on the product development;
- Project Design Authority for a competitive tender for a Land Mobility Tactical Training System utilising Mixed-Reality Head Mounted Displays delivering collective training outcomes for the Australian Army. Responsibilities included: collaborating with solution architects to orient the solution; communicating the technical solution and contributing to the systems engineering process tailoring with the Engineering Delivery Manager (EDM); collaborating on project schedule and milestones with Project

Manager and EDM; collaborating with solution architects on the technical estimates for the solution; ensuring compliance with the technical requirements; ensuring solution compliance against Product Policy, Solution Safety, Cybersecurity, Eco-Design requirements; engaging the supply chain for the identified Buy and Team solution elements; ensuring Technology Readiness Level and Reuse is identified and managed; production of bid artefacts on the technical solution to support the submitted tender proposal; review of technical risks and ensuring adequate mitigations and project contingencies.

SOLUTION ENGINEERING MANAGER

Training & Simulation, Thales Australia, Sydney
JAN 2015 – SEP 2023

- Grew, developed and led a high performing team of multidisciplined engineers delivering concurrent complex engineering changes to the Wedgetail Operational Flight Trainer (OFT). Achieved through coaching for performance to get the best out of individuals, leveraging their strengths and growing their aspirations and competencies.
- Ideated, developed and successfully delivered an innovative approach for significantly improving Air-to-Air Refuelling training fidelity for the Wedgetail OFT using a computational physics model for Tanker Wake effects. This project was delivered in collaboration with the University of Sydney, where I managed the design, development, integration, technical risk and Information Security concerns. The success of this solution was recognised through the award of the 2022 Thales Gala award for Innovation.
- Led the design, development and successful delivery of a virtualised solution for the non-real-time compute on the Wedgetail OFT, resolving hardware obsolescence and providing a hardware abstraction to alleviate software obsolescence risks long term for the project.
- Maintained certification of the Wedgetail OFT against the Manual of Criteria for the Qualification of Flight Simulators (MCQFS).
- Identified the need and led the migration of the Wedgetail OFT legacy software development tooling to a modern SecDevOps approach. This involved coordinating with numerous stakeholders across the organisation including navigating and negotiating intracompany Intellectual Property constraints for the legacy software architecture.
- Led the design, development and delivery of numerous capability upgrades to the Wedgetail OFT as the Work Package Manager, using a Systems Engineering approach, verifying the Simulator's fidelity match to the latest Aircraft baseline and reaccrediting against MCQFS.
- Oriented a solution delivering Cyberworthiness compliant to the Australian Cyber Security Centre Information Security Manual for the Wedgetail OFT.
- Authored and maintained numerous Systems Engineering Plans and Processes for the Wedgetail OFT. This included tailoring the Systems Engineering against solution complexity to ensure the required engineering activities are optimised against cost, schedule and risk.
- Managed the Technology Control for the Wedgetail OFT ensuring compliance against Export Control constraints (e.g. ITAR, ECCN, DSGL).
- Managed the Solution Safety for the Wedgetail OFT ensuring solutions were safely designed and developed So Far As Is Reasonably Practicable (SFAIRP).
- Extensive experience in the production of competitive Solution Proposals for complex systems and capabilities. This involved Solution Orientation, Design Validation, Engineering Estimation and Scheduling and the identification of risks, their mitigations and the required factored cost exposure provisions.
- Led numerous Customer Needs elicitation workshops, working with end users and key stakeholders to quantify capability needs and ensuring derived requirements appropriately capture these needs.

SYSTEMS/SOFTWARE ENGINEER

Training & Simulation, Thales Australia, Sydney
APR 2012 – DEC 2014

- Contributor to the development of a reduced fidelity aircraft procedural trainer for defence.
- Performed defect analysis and rectification for complex simulated systems.
- Stimulated aircraft fit equipment for integration into a high-fidelity simulator.
- Designed, developed & integrated simulated aircraft systems into a high-fidelity simulator validating fidelity against approved design data.
- Developed new system functionality in real-time operating environments ensuring mission critical functions were not impacted negatively.
- Developed test criteria for customer acceptance of delivered complex systems and functionality.
- Interfaced third party technologies and systems into a real-time operating environment without impacting system integrity.
- Conducted engineering activities under configuration change controls for complex systems, including documenting system configuration baselines.
- Authored technical documentation detailing system design, configuration and testing.

GRADUATE SYSTEMS ENGINEER

National Security & C4I, Thales Australia, Canberra
JAN 2011 – MAR 2012

- Performed System Administration duties for a hybrid virtualised system for a combined administrative, development and testing environment.
- Authored technical documentation detailing system configuration and design.
- Contributor to the development of a virtualised platform for rapid provisioning of development and testing environments for the Secret Defence e-Business Infrastructure Service-Orientated Architecture based C4I system solution.
- Planned, managed, built and presented a successful technical demonstration in Service-Orientated Architecture and Secure Cloud technology at the MILCIS 2011 technical conference.

EDUCATION

Master of Philosophy
2014 -2018
Nonlinear State Estimation Applications within Defence
School of Aerospace, Mechanical and Mechatronic Engineering
University of Sydney

Bachelor of Engineering (Mechatronics) (Honours)
2005 -2010
University of Melbourne

Bachelor of Computer Science
2005 -2010
University of Melbourne

MICRO-CREDENTIALS

Cyber Defence
TryHackMe

MongoDB Developer Learning Path
MongoDB University
[M001, M103, M121, M220, M201, M320]

PUBLICATIONS

- Fault detection for a switched battery system via constrained nonlinear state estimation
13th IEEE Conference on Industrial Electronics and Applications (ICIEA) · May 31, 2018
- Air-to-Air refuelling fidelity for training outcomes on the Wedgetail Operational Flight Trainer
Australasian Simulation Congress · Aug 30, 2017

PROGRAMMING LANGUAGES, FRAMEWORKS & TOOLS

- C
- Python
- Dart
- Rust
- Flutter
- Conan Package Manager
- CMake
- Mongo DB
- BitBucket, JIRA, Confluence
- GitLab & CICD Pipelines
- Git
- VMWare vSphere
- Docker

CERTIFICATIONS

- Chartered Professional Engineer (CPEng) – Engineers Australia
Areas of Practice: Mechatronics Engineering, Systems Engineering, Leadership and Management
- National Engineering Register (NER) – Engineers Australia
- Simulation Evaluation (SIMEVAL) - Civil Aviation Safety Authority

PROFESSIONAL MEMBERSHIPS

- Member of the Institution of Engineers Australia (MIEAust)

AWARDS & RECOGNITION

- Thales Gala Award – Innovation, 2022
- Early Career Innovator Award, Simulation Australasia, 2019
- Wedgetail AEW&C "Highly Commended" Recognition, 2017
- Body of Knowledge Award, Simulation Australasia, 2017
- Member of 'Young Professional Innovators' – Pitching innovation ideas directly to the Executive Leadership Team for Thales Australia, 2015-2016
- Australian Industry & Defence Network (AIDN) NSW Young Achievers Award Runner Up, 2013

INTERESTS

- Cooking
- Programming
- Gaming (Video Games & Board Games)
- Cybersecurity Capture The Flags (CTFs)
- Tinkering & Technology