Safeguard Engineering

Service
Definition Document

System Safety

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System Safety

About Safeguard Engineering

Safeguard Engineering Limited is an independent, employee-owned engineering consultancy delivering impartial safety, environmental and engineering expertise across Defence, Maritime, Land, Aviation, and Commercial sectors. We integrate best practices and foster innovation, building enduring collaborative relationships with our customers and enabling them to reduce risks, increase sustainability and make informed decisions.

Service summary

System-based risk management for complex systems within the digital and cloud based landscape. Our expertise spans across civil and government sectors across maritime, land, aviation, nuclear and high-hazard facilities. Our proactive approach to rapidly emerging legislation supports continued assurance and compliance of safety management systems and effectiveness of safety assessments.

Service features

- Assurance of safety management systems and products throughout the lifecycle.
- Independent and objective review of assurance processes and procedures.
- Provide safety integrity level (SIL) assessment and verification.
- Provide safety documentation and management that is auditable and traceable.
- Early risk identification through STPA and FHA frameworks.
- Demonstrate functional safety capability in complex systems and platforms.
- Grounded, robust lifecycle assurance aligned to defence and safety governance.
- Application of DefStan 00-056, IEC 61508 and IEC TR 5469.
- Functional hazard analysis of software integrated systems across defence domains.
- Applies lessons learned from previous maritime and defence programmes.

Service benefits

- Cost effective and proportionate solutions tailored to the defence environment.
- Safety documentation that is tailored, accurate, and maintainable.
- Enables credible engagement with regulators and authorities.
- Reduce safety risk of systems to acceptable levels.
- Provides independent, authoritative assurance for complex systems.

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- Support with defence compliance without compromising innovation and operational effectiveness.
- Clear pathway to regulatory compliance throughout the lifecycle.
- Builds confidence in system safety for novel and complex technology.
- Informed decision making through an understanding of risk aggregation.
- Reduces programme and certification risk through proven methods.

Value proposition

Safeguard Engineering provides independent assurance that complex systems are safe, reliable and trustworthy. We address the gap between safety engineering and advancements in technologies through the integration of traditional functional safety standards and other proven methods in Cyber Security and AI. Our experts are proactive and understand the latest developments in standards, legislation and regulations to ensure continued compliance of projects and safety management systems. Our strategy to engage with clients throughout the process provides evidence-based, effective solutions that meet our clients' requirements.

Detailed service definition

Safeguard Engineering Limited provides independent system safety assurance demonstrating that systems are safe to operate. Safeguard Engineering provides confidence to clients and regulators through the application of proven standards of practice such as IEC 61508. Developments in technologies have created a gap in system safety that Safeguard Engineering addresses through the integration of other software standards to provide effective functional safety assessments, proportionate to the complexity of the system.

Regulations, legislation and standards are emerging in response to novel technologies. We proactively seek out novel standards to integrate them into our approach. Therefore, our clients are confident that assessments and Safety Management Plans are developed in accordance with latest regulations / legislation and apply the best standards of practice.

Our team are highly experienced in applying standards such as DEF STAN 00-56, IEC 61508 and IEC TR 5469 across maritime, land and aviation. Traditional techniques such as HAZOP and FTA that focus primarily on hardware, are becoming less effective in system safety, due to the development of more complex systems with software integration. We tailor our solution to the complexity and operational context of each system to ensure the applied techniques are effective. We provide a clear, traceable, evidence-based approach through systems-theoretic techniques such as STPA and FHA. We provide continued risk management to reduce risk to an acceptable level, throughout the lifecycle. Our collaboration with clients throughout the process, ensures the accuracy and trustworthiness of the functional safety assessments.

Our team brings together experienced engineers and former Defence professionals with expertise spanning safety engineering, marine and aviation systems, explosives safety, nuclear power, digital technologies, air traffic management, artificial

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intelligence, and autonomy. This extensive cross domain Defence background enables us to combine practical, hands-on experience with deep technical and regulatory insight. We apply this extensive expertise with a multi-disciplinary approach, integrating best practices and lessons learned across different sectors to deliver a truly comprehensive service. We work collaboratively with stakeholders to align assurance with programme objectives, supporting compliance without hindering innovation and operational capability. This results in greater assurance, informed decision-making, reduced risks, increased sustainability, and efficient cost-effective delivery.

Why Safeguard Engineering?

Safeguard Engineering Limited is an independent safety and environmental engineering consultancy providing specialist engineering advice and cloud consultancy services across Defence, Maritime, Land, Aviation, and Commercial sectors. We are completely impartial, cost effective and always operate with integrity and trust.

We employ a dedicated team of over 60 consultants consisting of highly experienced data scientists, engineers, environmentalists and ex-defence personnel from diverse disciplines, including safety engineering, marine engineering, aviation safety, weapons and explosives safety, nuclear power systems, digital systems, Air Traffic Management, Artificial Intelligence, Autonomy, and environmental sciences.

The vast majority of our staff are security cleared to at least SC, with a number holding DV clearance. Our processes enable us to handle sensitive and classified information, and to separate teams as necessary to ensure compliance with security and any potential conflict of interest requirements. Our IT systems are certified to Cyber Essentials Plus.

Our capability

Our capabilities span the full project lifecycle, from early-stage concept and feasibility studies through to design, assessment, operation, and eventual decommissioning and disposal. We deliver systems safety and environmental management, including specialism in assurance of autonomous systems and other systems with complex digital requirements. We also provide expertise in a wide range of related services, including cyber risk assessment, data cleansing and migration, data governance and AI assurance, and independent safety audits. Our consultants possess deep knowledge of relevant standards, regulations, and best practices, ensuring that our clients achieve compliance while not compromising on innovation and operational effectiveness. We are independent of any solution or hardware provider, ensuring that our advice is always impartial.

In addition to our core staff, we are able to reach back into our network of trusted associates and specialist partners, ensuring that we can scale our services and bring in additional niche expertise as required to meet any client challenge

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Our experience

Safeguard's expertise includes supporting complex Defence acquisition, upgrade and in-service projects for land, sea, and air platforms. We have a proven track record in delivering support for military vehicles, ships, submarines, aircraft, weapon systems, unmanned systems, and a range of Defence facilities. Our consultants are adept at navigating MOD and international defence standards, supporting equipment certification, and working closely with both government and industry stakeholders. We provide specialist assurance support for digital and software-intensive systems, addressing emerging risks associated with automation, autonomy, cyber security, and system integration.

Our delivery

It is of utmost importance to us that we always keep our commitments and ensure that customer expectations are met - and wherever possible, exceeded. Every project has an assigned project manager who takes responsibility for delivery, supported by senior members of our team who ensure that quality processes are being followed and that the delivery approach is appropriate. Our blend of expertise and experience enables us to bring a practicable but forward-thinking approach to all of our work, underpinned by highly motivated team. Our quality management system is certified to ISO 9001. Our high rates of repeat work and continued strong rate of growth as a business stand testament to the quality of our output.

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