



Continually improving business performance and resilience for the aerospace industry

**bsi.**

...making excellence a habit.™

# Continued growth in global aviation, space and defence brings new challenges

The aerospace industry continues to expand year on year, and in 2017 sector revenues are expected to grow 2 per cent\*. Typically a sector that has planned for the long-term, with production cycles spanning decades, the industry needs to be more agile than ever as a result of disruptors such as cyber-attacks, increased digitisation, and seismic political events.

Global defence spending rose in 2016 to \$1.57 trillion and is forecast to continue to increase over the next decade according to the annual Jane's Defence Budgets Report.

Commercial aviation was strong in 2016, with 3.8 billion air travellers<sup>1</sup>, new more fuel-efficient airliners entering service, and a global agreement on Carbon Offset and Reduction Scheme for International Aviation (CORSIA). But despite order books for Boeing and Airbus looking strong, and the

maiden flight of the first Chinese-built passenger jet, the C919, it is anticipated that commercial aerospace revenues will stay relatively flat.

Organizations need to ensure they are resilient and forward thinking. Costs must be sustainably reduced without compromising on safety, and supply chains need to be more responsive.

## Trends transforming the aerospace industry

Tighter safety, regulatory, and environmental requirements



Since 2009, airlines have spent **\$1 trillion** on new fuel efficient aircraft to help comply with CO2 emission regulations.<sup>1</sup>

New technologies including additive manufacturing, the Internet of Things, and increased use of drones.



Global aerospace and defence research and development exceeds **\$30 billion** annually and is set to increase.<sup>3</sup>

Complex supply chains with constant pressure to remain lean and cut costs without compromising on safety or quality.



Boeing's spending with the UK supply chain in 2015 was **£1.8 billion**<sup>4</sup>

The need to demonstrate good governance and step up reputation-management efforts especially in light of recent scandals.



There has been a **16% increase** in incidents of bribery and corruption in aerospace between 2014 and 2016<sup>5</sup>

Increased demand from emerging markets.



Aircraft deliveries to China are **forecast to increase** from 2,570 units in 2014 to 7,210 units in 2034<sup>6</sup>

The need to attract, retain, and train the right people with the right skills.



**53% of UK aerospace companies** reported experiencing difficulty with recruiting people trained in the disciplines they need<sup>7</sup>

Never has the need to be a resilient organization and adapt in order to stand the test of time been so important. The ability to produce safe and quality products, whilst protecting your people and the environment remains at

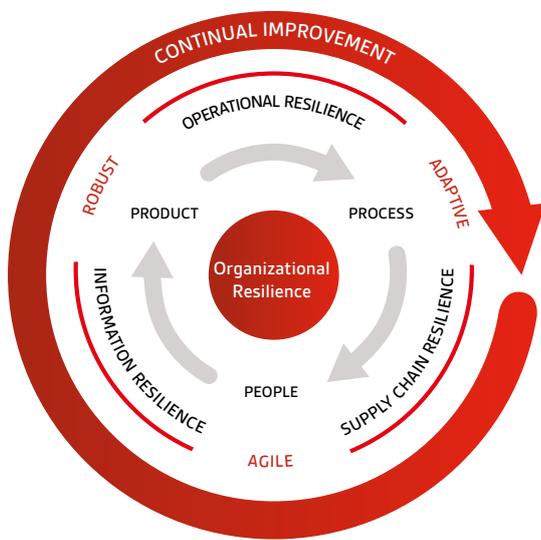
the heart of this. In this brochure we use our Organizational Resilience model to show how to increase resilience, face these challenges, and thrive.

**Organizational Resilience** is the ability of an organization to anticipate, prepare for, respond and adapt to incremental change and sudden disruptions in order to survive and prosper.<sup>1</sup>

## Three essential elements of Organizational Resilience

BSI's model for Organizational Resilience can be distilled into three fundamental elements: product excellence, process reliability and people behaviours.

We work with organizations around the globe to help them become more resilient by embedding habits of excellence in each of these three elements.



### Product excellence

No matter where you are along supply chain, do your products /services meet market requirements and customer needs? Do they comply with the relevant market regulations? To be truly resilient and ensure customer satisfaction you need to be agile, continually innovate, and differentiate your offering.

### Process reliability

Consistent, reliable, and robust processes are crucial for an organization to remain resilient. Business critical processes in areas such as, quality, health and safety, environmental management, business continuity management, and information security must be robust and compliant both within the organization and throughout its supply chain.

### People behaviours

Organizations must manage interactions with customers and supply chain partners on ethical and social responsibility issues and when managed well there's a positive effect on the brand's reputation.

People must be trained and have the right skills. Workers must understand the needs of the customer, be motivated to make continual improvements, and innovation encouraged. This helps keep morale, wellbeing, and retention high.

Whether you're in commercial aviation, defence, or in Maintenance Repair and Overhaul (MRO) services, BSI identifies three domains today that are critically important in achieving Organizational Resilience:

#### Operational Resilience

Delivers improvements across your products/services and processes to meet the evolving needs of your customers as well as improving how you govern your business and value your people.

#### Information Resilience

Enhances your information security and protects your critical infrastructure from cybersecurity threats and information risks, so your stakeholders can trust that their sensitive data is secure.

#### Supply Chain Resilience

Protects your customers, your reputation, and your bottom line by ensuring you're using suppliers you can trust to help deliver safe products to market.

<sup>1</sup> Source: BS 65000:2014 Guidance on Organizational Resilience, BSI

# BSI solutions

Our range of integrated services can be structured to your specific needs and help you address quality, supply chain, sustainability and build resilience within your organization:

## Standards and subscription services

– provide access to an enviable source of knowledge through standards and publications. Our BSOL (British Standards Online) catalogue includes than 6,000 standards for the Aerospace industry and the key end-of-life standards so you can maintain compliance and keep constantly up-to-date.

## BSI Training Academy

– introduces you to standards, including how to implement and audit them. We also deliver training course the latest versions of the AS/EN/JISQ 9100 series of standards. Our expert tutors will make sure you complete the course feeling confident that you can apply the knowledge you've gained as soon as you step back inside your organization.

“The course was very informative and enjoyable and I can't recommend the BSI trainer enough as a tutor and an AS 9100 expert.”

– iPRO Solutions Ltd, UK-based Global Sourcing and Manufacturing Solutions provider

## Independent and impartial certification and verification

– proves to your stakeholders that you are compliant and your systems are effective. Many of the worlds' most widely adopted management system standards were originally shaped by us including ISO 9001, ISO 14001, and ISO/IEC 27001.

“We find BSI friendly and approachable, but also professional, ensuring confidence”

– UFC Aerospace Europe Ltd, UK-based supplier of aerospace components and hardware

## 2nd party verification audits,

– including the supply chain tool BSI VerifEye, helps protect and improve your suppliers' performance.

“With BSI Supply Chain Solutions, [we have] a partner known for experience, confidentiality, and quality. BSI's risk-based approach to auditing will enhance effectiveness and supply chain security.”

## BSI Entropy™ software

– helps you effectively manage your systems and processes to drive performance.

Using our decades of experience and innovative development in this field, our expert teams can work with you to identify and share the key standards which address your concerns. Best practice is underpinned by embedding the right disciplines within your organization, which can be achieved through management systems training, certification and verification.

The BSI services outlined in this brochure address the fundamental issues facing organizations involved in aviation, space, and defence, or in MRO services today and into the foreseeable future.

# Operational Resilience

## Aerospace quality management and process improvement

The aerospace sector has always needed to demonstrate high levels of safety and quality. With increasingly complex supply chains that span the world, it's important that you can demonstrate your commitment to quality and on-time delivery. Certification and training to globally recognized standards will help mitigate the risks of failure in the supply chain, boost customer satisfaction and make your organization resilient.

### The AS/EN/JISQ 9100 series of standards

The AS/EN/JISQ 9100 series of internationally-adopted Quality Management System (QMS) standards for the aerospace is operated by the International Aerospace Quality Group (IAQG). Most major aerospace manufacturers and suppliers worldwide require certification to the AS/EN/JISQ 9100 series as a condition of doing business with them, and organizations who achieve certification will be listed on the Online Aerospace Supplier Information System (OASIS) database.

Based on ISO 9001 there are three main standards in the series, each one relevant to organizations delivering certain activities.

- **AS/EN/JISQ 9100** Quality Management Systems – Requirements for Aviation, Space and Defence Organizations. This covers activities including, design, development and manufacture. It can also cover repair but only of an organization's own product.
- **AS/EN/JISQ 9110** Quality Management Systems – Requirements for Aviation Maintenance Organizations. This covers MRO activities of whole aircraft, components, and systems.

- **AS/EN/JISQ 9120** Quality Management Systems – Requirements for Aviation, Space and Defence Distributors This has been developed to apply to stockists and distributors of aerospace and/or defence parts.

### ISO 9001 - Quality management

The world's most widely adopted QMS standard, used by organizations from all sectors and of all sizes to boost customer satisfaction. This powerful business improvement tool forms the basis of AS/EN/JISQ 9100 series.

### Lean Six Sigma

This is a systematic approach to process improvement that focuses on the customer. It can be applied to organizations delivering a service, or involved in manufacturing and design and can help you to remain efficient and competitive. Using statistical tools and techniques to analyse and improve processes it is a relentless effort to reduce process and product variation and build resilience.



## Environmental, and health and safety solutions

A responsible organization looks after the environment and their people. With increased environmental legislation such as the need for many organizations in the aerospace industry to report on greenhouse gas (GHG) emissions and reduce their carbon footprint, managing your environmental impact and ensuring your organization is sustainable is key to maintaining operational resilience.

As many workers in the aerospace industry operate heavy equipment, work at height, in high-risk environments and confined spaces, or do physically demanding work, creating a safer workplace and reducing the levels of work-related injuries is a high priority.

Our comprehensive range of strategic, management and technical consulting solutions – assessment, compliance, risk management, reporting, training, communication and more – help clients to achieve their environmental, health, safety and sustainability short-term needs and long-term goals. Management system certification can help an organization to fully evaluate its environmental performance and demonstrate compliance and credibility to its stakeholders.

### **ISO 14001 – Environmental Management**

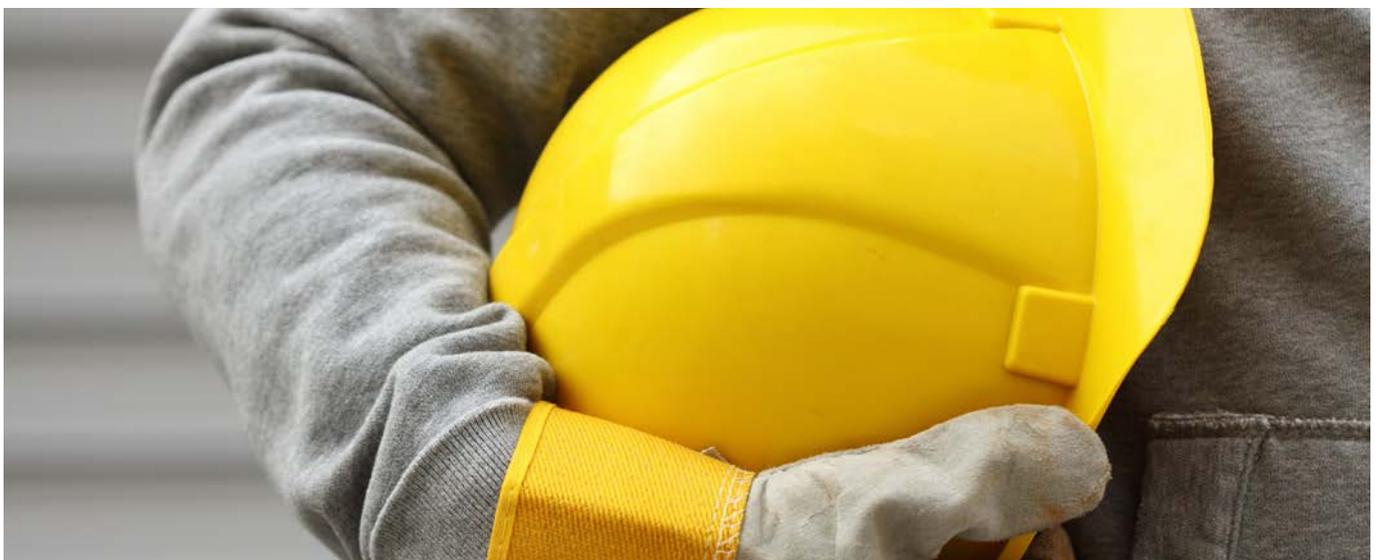
The most established international environmental management system, and originally developed by BSI. It will help you to reduce environmental risks, improve environmental performance, and give evidence to stakeholders that regulatory requirements have been met.

### **ISO 50001 – Energy Management**

Energy management can help organizations in the aerospace industry to reduce energy costs and save money. This international standard provides a framework to help manage the energy supply and consumption in an organization. It applies to all aspects of energy use and enables you to help your organization and your suppliers take a systematic approach to achieving continual improvement of energy performance.

### **OHSAS 18001 – Occupational Health & Safety Management**

Ensuring employee safety is critical and OHSAS 18001 (likely to be replaced by ISO 45001), provides an occupational health and safety framework that will help identify and mitigate risk as well as defend and protect your workforce, reputation and brand.





## Operational integrity and excellence

The quality of the products and services an organization provides to its customers is most often tied to the quality of its processes. Maintaining customer loyalty in today's online world — where events and opinions can be shared in seconds and go viral just as quickly — can be a puzzle with many complex pieces. Not only does how you deliver your product or service matter, all of the pieces supporting that production also have to be taken into consideration to avoid damaging your reputation.

### **ISO 37001 - Anti-bribery**

This is a best practice framework to manage bribery risks and help put adequate procedures in place to protect your organization and help fulfil regulatory requirements. Working in overseas markets, especially when an organisation is entering a new market may increase the risk of bribery and corruption. Certification to this standard sends a clear message to stakeholders and could help demonstrate your policies and procedures around this subject are robust.

### **ISO 55001 – Asset management**

An international standard which focuses on the effective and efficient management of assets including usage and return from an asset while potentially lowering the overall cost of ownership or management.

### **ISO 22301 – Business continuity management**

This international standard enables organizations to identify potential threats to their business and make sure they have the capacity to deal with unexpected disruption. It can help you put in place contingency plans and build resilience to protect an organization from events such as natural disasters, equipment failures, or labour shortages. An effective business continuity management system can show your organization is reliable and instils confidence from stakeholders.

### **ISO 44001 - Collaborative business relationships**

A framework for collaborative business relationships to help companies develop and manage their interactions with other organizations for maximum benefit to all.

# Information Resilience

With new technologies and trends such as the Internet of Thing (IoT), increased connectivity, and the predicted growth in use of Unmanned Aerial Vehicles (UAV's), safeguarding information is crucial. A resilient organization has to manage its information— physical, digital and intellectual property— throughout its lifecycle; from source to destruction.

By adopting information-security-minded practices, your staff and stakeholders are still able to gather, store or access the information they need securely and effectively. You also need to protect your security infrastructure.

## ISO/IEC 27001 Information Security Management

An excellent framework to help organizations manage and protect information assets so they remain safe and secure. ISO/IEC 27001 helps organizations continually review and refine how this is done, not only for today, but also for the future.

## ISO/IEC 27017 Information Security in the Cloud

Extending many of the controls established and implemented with ISO/IEC 27001 as well as some additional ones, ISO/IEC 27017 protects the information stored and/or shared via cloud-based services.

## ISO/IEC 20000

IT services need to be cost effective, reliable, consistent and efficient. This balance can be achieved with ISO/IEC 20000 whether IT service management is internal or outsourced. It brings organizations up to ITIL standard so that IT services deliver exactly what's needed.

## CSA Star

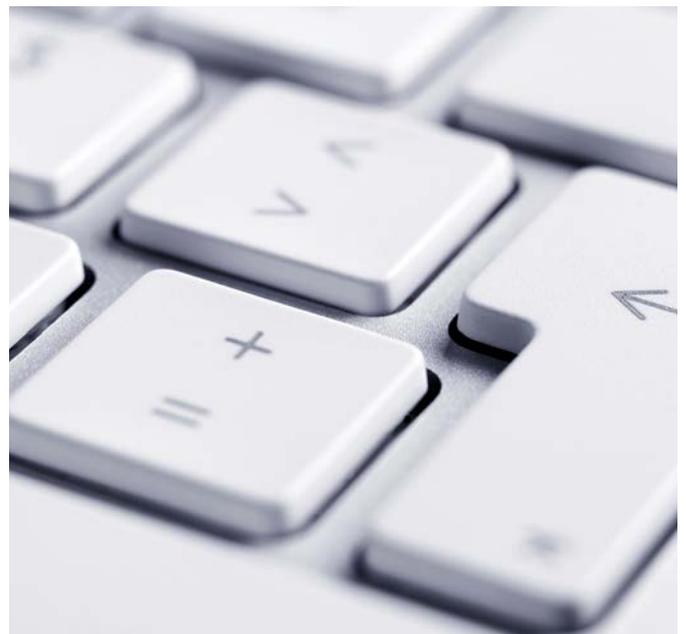
The implementation of CSA STAR, in addition to a compliant ISO/IEC 27001 information security management system allows organizations to put controls in place to protect business critical information.

## Penetration Testing

This is the practice of testing a computer system, network or web application to find vulnerabilities that an attacker could exploit, simulating an attack against an organization's IT assets. Our penetration testing services cover aspects of organizational security, such as infrastructure and web applications.

## Wombat Security

Wombat Security Technologies, is a security awareness assessment and training solution and can be used to train the people in your organization how to recognize and avoid cyber-attacks. Organizations have used the Wombat methodology to build resilience and reduce successful external phishing attacks and malware infections by up to 90%.



# Supply Chain Resilience

The complexity and geographical spread of supply chains in the aerospace industry can be huge. With the supply chain of an airliner typically consisting of over seven thousand organizations around the world, risk needs to be carefully managed. The rise in composite materials, an increased use of sophisticated software products, and greater compliance requirements are all shaping the aerospace industry. Coupled with the dangers of counterfeit products, protecting your supply chain has never been so important.

Delivered by BSI Professional Services, our supply chain solutions can help protect your business, your brand and your customers.

## Supply Chain Solutions – Suppliers Verification and Risk Assessment

An intelligence based approach from BSI can help an organization manage its supply chain risk and protect its brand reputation. It leverages standards, risk evaluation tools, verification and supply chain tools to help clients identify and manage their supply chain and thus mitigate risks.

### BSI Supplier Verification Audits

On-site profile validation and verification audits based on BSI or client requirements.

### SCREEN Intelligence

A comprehensive supply chain intelligence tool including living country heat maps covering security, Corporate Social Responsibility, and Business Continuity intelligence to measure country level risk factors. SCREEN helps organizations to identify and understand their supply chain threats.

## BSI VerifEye™ Profile

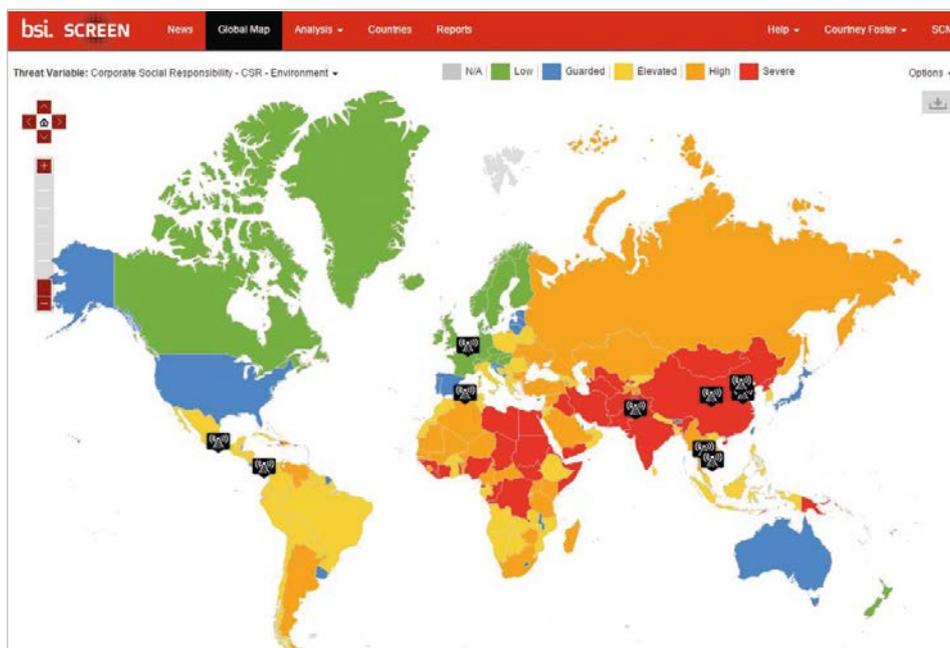
Providing greater visibility and traceability, a trusted BSI VerifEye profile turns certifications, site photos, and business credentials into a positive marketing tool, providing trust and confidence.

## Supplier Compliance Manager (SCM) Platform

A web-based tool designed to facilitate and automate mandatory supplier risk assessments. Manage supplier self-assessment and on-site supplier qualification and verification programmes including on-boarding, scheduling, reporting, corrective and preventive action management and benchmarking.

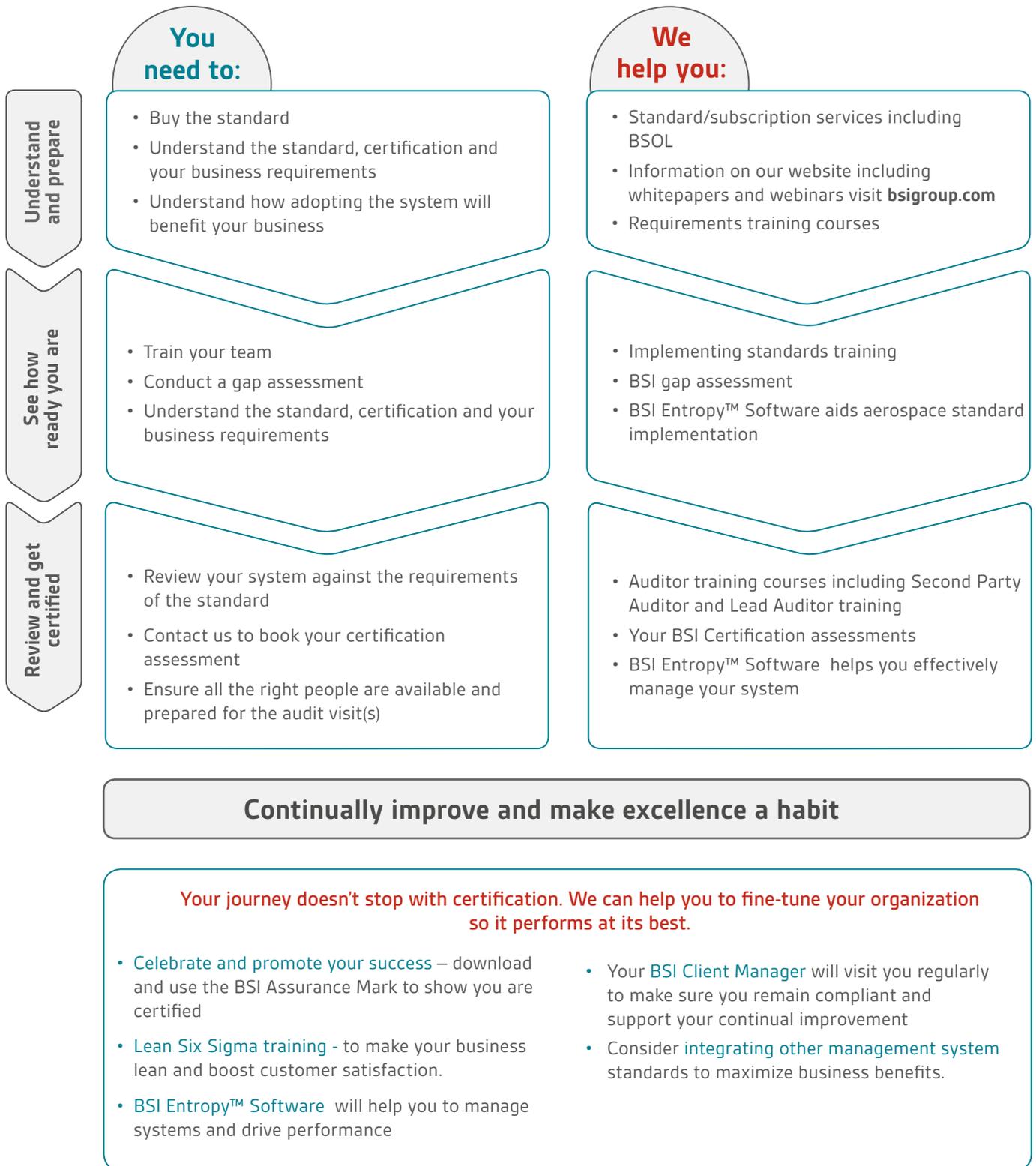
## Supplier Advisory Services

Offering technical advice and information on supply chain risk, programme set-up and design.



# The customer journey to Resilience

Adopting standards can seem intimidating, but it doesn't have to be. We help our clients on every step of the journey.



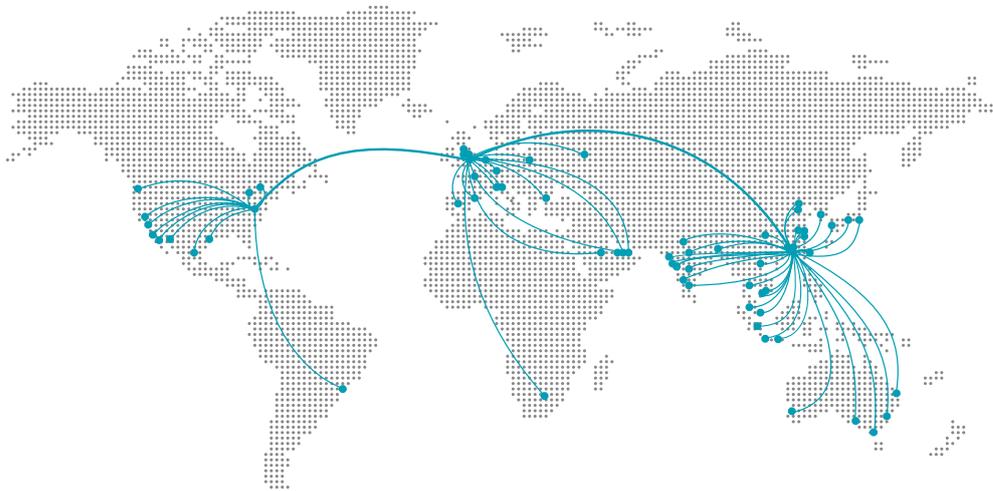
# About BSI



By Royal Charter

BSI, by Royal Charter is the business standards company that helps organizations all over the world make excellence a habit through standards creation, system certification, supplier verification and training activities that help organizations manage risk, reduce costs and ensure sustainability.

As the world's most experienced Standards Body and founding member of ISO, BSI leads the way in originating many of the world's most recognized standards, including ISO 9001 - Quality Management, ISO 14001 - Environmental Management, BS OHSAS 18001 - Health & Safety Management, ISO 22301 - Business Continuity Management, ISO 27001 - Information Security, ISO 50001 - Energy Management, ISO 14046 - Water Footprinting, and ISO 37001 - Anti-bribery.



**11,500**

Industry experts dedicated to your success



**81,000**

Customers worldwide operating in 180 countries



## Training

Last year we provided training to 134,000 people



## Standards

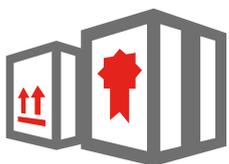
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## Certification

**191,000** audit days delivered last year

Attendees score our tutors **9.25/10** in our Global Client Satisfaction Survey



## Product certification

A Notified body for CE marking against 14 European Directives/Regulations to access global markets.



## Together our clients account for

**75%** of the FTSE 100,

**51%** of the Fortune 500 and

**68%** of the Nikkei listed companies



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