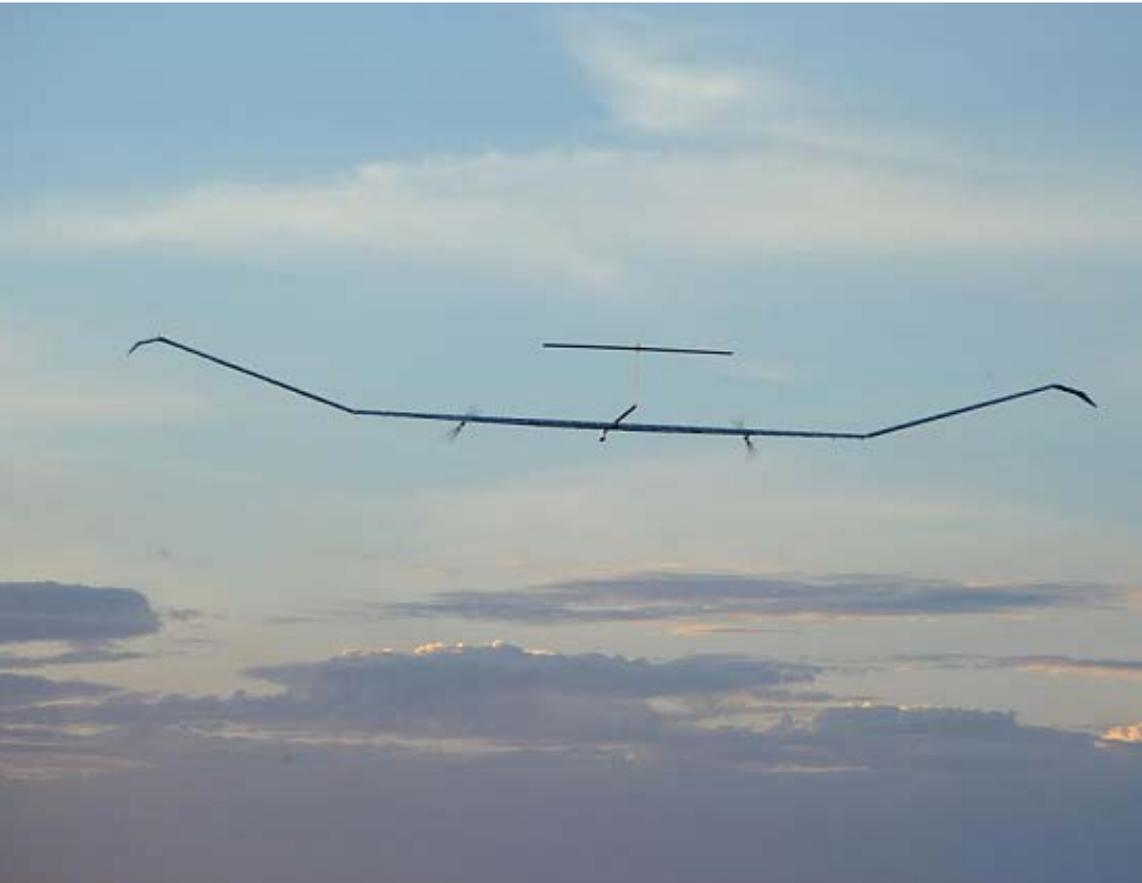




Ministry
of Defence



Defence Equipment & Support
Innovation Strategy



Equipping and Supporting our Armed Forces

Contents



	Page
The strategic direction for innovation is explored and the relationship between Innovation and Technology defined.	2 - 3
The relationship between innovation and the strategic need is explained developing a view of how this document fits with wider strategy and policy.	4 - 7
An outline of how DE&S fits with wider enterprise perspectives for innovation and technology showing the lines of communications internally and externally.	8 - 9
The Benefits of innovation are described. These are the 'Ends', those things against which the success of the implementation of this strategy will be measured.	10 - 11
The principles required to enable successful innovation are described, derived from best practice. These are the 'Ways' in which DE&S must respond across its business to realise the benefits described.	12
The key actions required by the organisation through Transformation are described. These are the "Means" by which innovation will be embedded and measured within the business.	13

Part 2 – 'Ways' Explained and Charter

14 - 21

Part 1

The DE&S Innovation Strategy

Enabling Innovation: Realising the Benefits of Technology



“Innovation is essential if we are to realise the opportunities offered by technology and respond to the threat it can pose in the hands of our adversaries. I am delighted to see DE&S on the front foot with the Defence Innovation Initiative, addressing the key enablers of innovation across its business and supply chain”

*Harriett Baldwin
(Minister for Defence Procurement, Oct 2016)*

Innovation – DE&S Corporate Direction

“I am delighted to be leading the team and supporting our people to drive progress and innovation across the DE&S programme of work and our transformation activities”. Page 3, Tony Douglas

“We recognise the need to make more of the opportunities offered by emerging technologies and to adopt more of the innovation seen in other sectors to reduce the costs and increase the agility and flexibility of our military equipment and capability. In particular, we will continue to work via the Defence Suppliers Forum and its sub groups to ensure that defence is effectively positioning its current solutions as well as its future skills and capabilities to maximise the opportunities from new and non defence technologies”. Page 14

“We will incentivise our workforce to strive for excellence and innovation in everything they do, both individually and collectively”. Page 28

DE&S Corporate Plan 2016

The **2015 DE&S Corporate Plan** began to emphasise the importance of effectively enabled innovation to our business; Innovation is a continued theme for the **2016 DE&S Corporate Plan** and this strategy builds on the vision that it lays out.

DE&S recognises **innovation** as the **exploitation of ideas** in order to implement a new or significantly improved product, service or process. Innovation both changes the way we consider “**value**” in our own business and offers us the ability to increase the **value we offer our customers**, for example by reducing costs or increasing our ability to react quickly to deliver them an operational edge through **technological advantage**.

DE&S understands that Defence business is complex and delivering innovation can require significant change, whether **incremental**, **evolutionary**, or **disruptive**. Often the necessary change will require **joint working** across organisational stovepipes both internally and externally to DE&S, challenging a range of decisions as well as cultural and behavioural norms. It may, for example, challenge us to move away from stove-piped delivery within tightly bounded, Domain-centric, projects.

All functions and teams within our organisation have a role in setting the conditions for successful innovation and must be empowered to do so. As such, the **innovation culture** we strive for is intended to be **enabling rather than controlling** and fully aligned with the current Transformation objectives.

The DE&S direction is clear and this strategy identifies barriers for removal and the key enablers necessary to realise the corporate vision for innovation that has already been set.

Realising the Benefits of Technology

When **technology** is discussed in an innovation context, it is not just **new technologies** that are sought, but it can equally be **existing technologies** used in different ways, including technologies that are new to Defence but are already inspiring innovation in other sectors.

Technologies alone do not deliver innovation.

Although the majority of the goods, services and processes provided by DE&S to our customers are ultimately technology based, this Strategy is not just for technologists or engineers. The context in which Defence operates requires **affordable** and **effective Capability** that has the ability to **evolve** over time, sometimes **rapidly**. While technology can be a major innovation driver, the benefits of innovation can also come through **business processes improvements** that enhance DE&S' delivery flexibility or responsiveness to unexpected changes.

Delivering innovation requires a concerted effort from **all functions in the transformed DE&S** to ensure that we are intelligent in our estimating, commercial approaches, project and programme management, and more, and that we holistically manage our overall delivery portfolio to take the **risks and opportunities** that may generate successful innovation.

Where new technologies are developed for Defence we must ensure that they are implemented cognisant of the full delivery and operational context. This requires the many distinct perspectives, both inward looking and outward reaching, to be considered and accommodated from an early stage. These are explored further in later sections and include operational, technical, contractual, industrial, political and financial viewpoints.



“Gentlemen, we have run out of money. Now we must think.”

Winston Churchill
(First Lord of the Admiralty, Prime Minister and Fellow of the Royal Society)

The Challenge

Wider Government and Departmental policy and strategy defines the freedoms and constraints within which we deliver. These range from Government agendas on security and the economy, through Departmental and international direction and commitments and the regulatory environment, to DE&S' own Trading Entity structures, processes and culture.

“The global availability of technology combined with an ever-increasing pace of change means that, in delivering the UK’s defence and security, we face an increasingly capable and diverse range of threats.”

National Security Through Technology White Paper, February 2012

“To secure operational advantage and control our costs into the future, we need to recognise and respond quickly to transformative ideas and technologies. These will come from outside the traditional national security field, as well as from our allies and in response to our adversaries.”

Strategic Defence and Security Review, November 2015

“As the threats we face grow, it is vital that we harness innovation. By using our rising defence budget to create a new fund backed by £800 million of new investment, we will ensure that we stay ahead of our enemies.”

Michael Fallon, Secretary of State for Defence, December 2015

“Our equipment should be as interoperable and widely useable as possible because it is very difficult to predict where, when, with whom, or against whom, future operations will be conducted.”

Defence Joint Operating Concept 1/14, March 2014

The context is complex and there is no single solution to being more innovative; it needs to be considered in much of what we all do, right across DE&S as well as across our customer, supplier and wider relationships. We must not approach this challenge thinking that it is simple or that we know all the answers. Innovation, and the continuous change it demands from us has to become business as usual.



“The new international security context looks to be one defined by uncertainty, instability and threats which are more diverse, less existential and less symmetric than hitherto.”

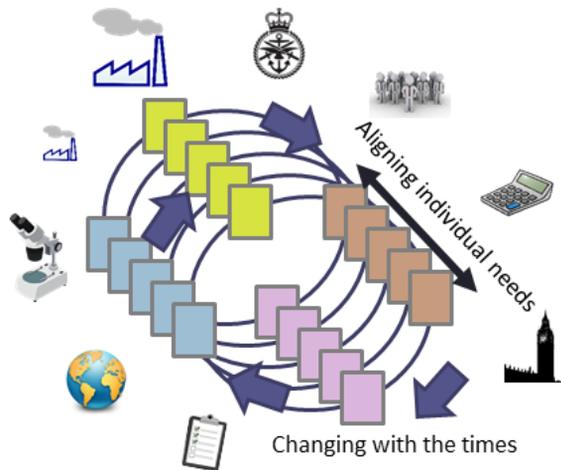
General Sir Nicholas Houghton
(Former Chief of the Defence Staff)

Innovation is an Enterprise Endeavour

Great **inventions** can be made by individuals but to achieve their potential and, thus, successful **innovation**, it often takes **collaboration** and agreement across a number of different organisations. From a technology perspective, these stakeholders and collaborators are holistically referred to as the **Defence Technology Enterprise**.

Only when we understand, align and progress towards satisfaction of each other's needs as well as our own will we realise the intended benefit and secure overall Enterprise success. This is a significant task with the stakeholder landscape often changing and individual stakeholder needs often radically different, as illustrated below and explored further in the next section.

- **Customers** – Set requirements for technological solutions to integrate within Capability Management. Fundamentally interested in delivering cost effective operational advantage
- **DE&S** – Delivers customer technology requirements by developing requirements and managing industry to deliver equipment and support. Fundamentally interested in delivering time, cost and performance required by the customer.
- **Regulators** – Are in place to ensure that policy and regulation is adhered to for varying reasons including safety. Fundamentally have a clear interpretation of what is allowable and what is not
- **Industry** – This is not one category but is made up of a wide range of sizes of enterprises with varying business models. Industry collectively deliver our technological products and are fundamentally interested in current and future profitability.
- **Science & Technology** – Various organisations that are interested in understanding and developing the science and technology to fulfil future needs and emerging opportunities.
- **Wider Government** – Interested in balancing a wide number of issues including national security, economy, prosperity, international relations and political perception. A current priority is to grow the economy through invigoration of small and medium sized businesses.



“The enterprise that does not innovate ages and declines. And in a period of rapid change such as the present, the decline will be fast.”

Peter Drucker
(Management consultant, educator and author, “the founder of modern management”)

Enabling Innovation in DE&S: Internal Perspectives

Financial & Commercial Management

Business functions can be either enablers of or barriers to innovation. Innovation will need all DE&S functions to operate coherently, and to make professional judgements in balancing commercial, financial and technical risk to take opportunities and secure value for money. Innovation requires a degree of speculation or risk, which can be stifled by existing business processes and those that do not anticipate, value, or adequately accommodate or incentivise downstream flexibility.



Organisation & Information

DE&S is strongly customer focused and oriented, aligned with the Defence Operating Model and aiming to be world class at delivering what our customers need, safely and professionally. However, organisational flexibility is key to driving efficiency and value in what we do, for example by removing duplication in managing cross-cutting risks and opportunities. Transformation to a balanced matrix model will be key to this, with consideration of delivery portfolio management information that can identify and minimise the demands for scarce specialist resources, or consolidate demands for critical but vulnerable suppliers.



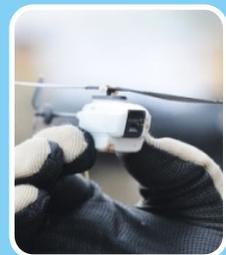
Our People

People and their intellectual capital are DE&S' main resource. They are fundamental to achieving our objectives and continuously improving. Responsibility and accountability for delivery is being increased, and the diversity of professional specialisms better valued. Adding value to Defence through innovation will require new approaches to empower and support appropriate risk tasking as well as working across functions to responsibly balance risk and opportunity across functional perspectives.



Technology – Internal Viewpoint

New and 'disruptive' technologies could be game-changing in what we deliver to our customers by offering cost savings or operational advantage. Defence now rarely leads development, and the pace of change is increasing, often faster than acquisition can traditionally respond, but expectant customers are increasingly technology-aware, and adversaries more responsive. DE&S needs to develop its internal capabilities to acquire and support new technologies and strongly represent the acquisition and support requirements into the MOD's research programme, both supporting and challenging exploitation plans for realism.



Enabling Innovation in DE&S: External Perspectives

Our Customers



Customers will hold DE&S to account for delivery to performance, time and cost. They expect innovation, value for money and flexible solutions to maintain affordable technology advantage, through life. Customers may require DE&S services: to understand the marketplace; for experimentation; and to help to develop better requirements that allow value adding acquisition, including through export. The 'PlayStation generation' users have greater expectations about the flexibility of what we deliver, so evolutionary thinking is vital.

Our Suppliers



Suppliers compete in an increasingly global market and with Defence budgets under pressure they are having to assess their business models. Sales to UK MOD provide export kudos, but volumes are less viable without internationally competitive products. Government looks to departments to support exports, and to support prosperity, growth, and competitive advantage through innovative SMEs. Critical components of Technology Advantage often lie in sub-systems, whose suppliers are at various levels in the supply chain. Thus the DE&S focus on key suppliers is changing to accommodate this and we need to tailor our processes accordingly.

International



MOD's strength in technology and cost-effective innovation is a strong lever in building mutually beneficial relationships; allowing us access to partner programmes and/or facilities thus adding value through leverage of international investment. UK policy relies increasingly on coalitions and key international partners, including keeping NATO at the heart of our defence, which makes interoperability key. By promoting common standards across partner nations we can also improve the environment for competitive export products. DE&S has a significant role to play in enabling these opportunities whilst ensuring the protection of national operational advantage and freedom of action.

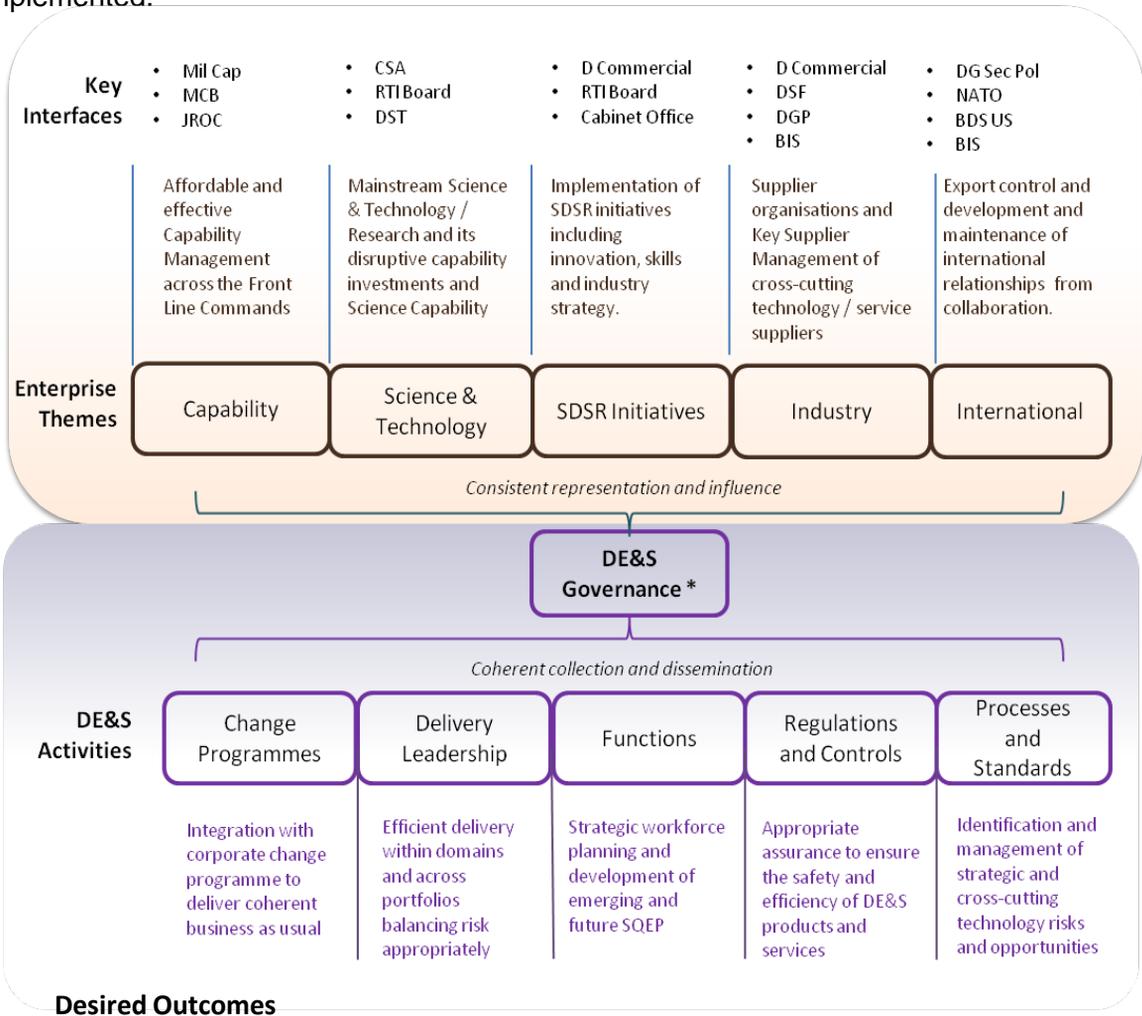
Technology – External Viewpoint



The 'Valley of Death' for research exploitation is a big issue for our smaller and more innovative suppliers. DE&S needs to play its part in managing the risk that industry is not incentivised to invest in new technology or innovation. DE&S needs to ensure it is involved in channelling the right investment into its supply chain as well as leveraging civil investment by regularly refreshing its supply networks. Defence no longer leads development of a broad range of dual use technologies so we need to be open and supportive of civil developments and revisit our own specialist standards and regulations to ensure any restrictions are appropriate. As provider of the Defence Standardization service, DE&S can ensure Defence is continually challenged to be "as civil as possible, as military as necessary".

Enterprise Engagement

Both the Defence Enterprise and innovation landscapes are evolving rapidly post SDSR and as a key stakeholder in both, with real policy implementation challenges and needs, it is essential DE&S maintains strong and consistent lines into the related activities and interfaces. Equally, it is important to provide coherent dissemination of requirements and expectations internally and build aggregated evidence of the impact of policy changes as they are implemented.



1. Recognised, coherent and effective representation into external governance related to Technology and Innovation for cross-cutting technology issues, risks and opportunities.
2. Efficient co-ordination of Key Supplier Management of corporate cross-cutting suppliers .
3. Measurement, reporting and management of Innovation and Technology Strategy implementation including DE&S contribution to MOD targets.



“Great discoveries and improvements invariably involve the cooperation of many minds. I may be given credit for having blazed the trail, but when I look at the subsequent developments I feel the credit is due to others rather than to myself.”

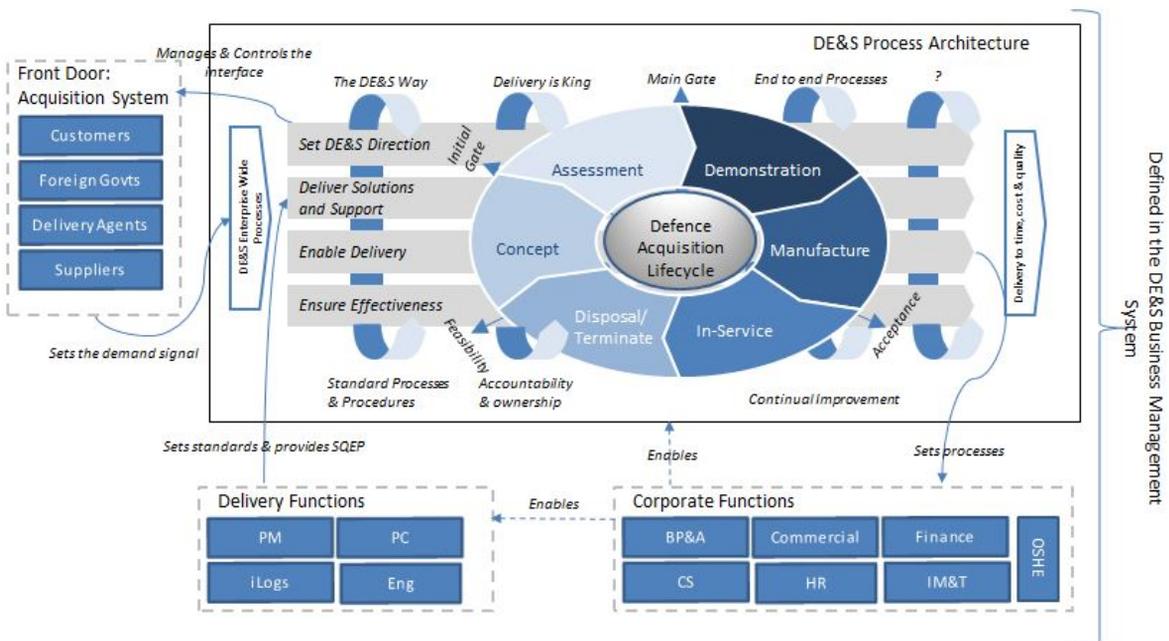
Alexander Graham Bell
(Inventor and innovator in science and engineering)

* The DE&S Innovation and Prosperity Committee is supported by the D Tech Technology & Innovation Committee

DE&S Engagement

The top level Business Management System for DE&S is defined in the Business Process and Assurance process document as the **Level 0 Operating Model**. This comprises 3 major elements:

- **Manage DE&S Strategic Interfaces** - interacting with all the stakeholders in DE&S' wider environment including the Defence Technology Enterprise;
- **Delivering Equipment & Services** - the core business including pre-Concept requirements definition services and,
- **Manage the Business** - which includes activities such as corporate governance, continuous improvement, and creating the conditions for DE&S to attract, retain and develop staff.



Business Process and Assurance DE&S Level 0 Operating Model

Delivering this strategy through Transformation means embedding innovation into this operating model via the processes, systems and behaviours that comprise the **DE&S Way**. This approach will also ensure **continuous improvement** of the DE&S innovation model through the Chartered Quality Institute Framework also being adopted by DE&S.

The “**Ends, Ways and Means**” structure adopted in the next sections is therefore aligned with the 3 major elements of the Level 0 Operating Model above.

The “Ends”: Target Benefits

The direct benefits of innovation must be seen in the primary measures of DE&S delivery success; **Performance**, **Cost** and **Time**. The need for conscious understanding of the wider enterprise dynamics supports further benefits linked to the aims of Transformation; creating a more **business-minded**, match-fit organisation, which will further enhance our **reputation** for delivering added-value, and contribute to attracting and retaining high calibre staff. The same benefits can also accrue to wider stakeholders in the Enterprise, supporting the collaborative approach essential for success.

Technology Advantage

Successful Innovation enables DE&S to deliver to the customer Technology Advantage where it is needed. This includes delivering capability that provides the required battle-winning edge, and ensuring it can be operated and sustained independently. This requires innovation and expertise throughout the supply chain.

Enhanced Efficiency

Successful Innovation makes Defence budgets go further by identifying and realising cost savings from both radical and incremental efficiencies in acquisition, support, and DE&S running costs. This is achieved through better management of technology and supply chain risks and opportunities across the DE&S delivery portfolio. This in turn enables DE&S to optimise the use of scarce specialists.

Improved Agility and Capacity

Successful Innovation improves DE&S’ agility and flexibility in delivery by enabling solutions that make better use of COTS, rapidly developing technologies, and innovation from other industries and international partners. By working with our suppliers and customers in setting requirements, we can improve the conditions that enable more timely delivery, and anticipate and respond to changes and threats.

Improved Reputation

Successful Innovation supports DE&S’ reputation for effective delivery and customer satisfaction through demonstrable added value. Empowering and supporting staff to innovate is likely to improve staff engagement, recruitment and retention.

Business Minded Culture

Successful Innovation demonstrates DE&S’ understanding and ability to manage the wider Enterprise and its competing interests as well as working across the internal functions that underpin the Balanced Matrix business model. DE&S can demonstrate responsible, accountable, managed risk-taking, within an appropriate control framework.

Benefit Measurement

It is essential to measure the benefits realised from any investment in Innovation and Transformation in order to **learn, adjust and be accountable** for it. Accepting the higher risks and Enterprise dependencies associated with successful innovation there remain some key indicators and metrics that could be used to monitor and shape the successful implementation of this strategy. Targets and metrics in line with those emerging from DE&S Transformation, wider Departmental and/or Government objectives are necessary here.

	Indicator Area	Rationale
1	DE&S customer satisfaction	Indicates how customers perceive DE&S innovation culture
2	Reduced cost and time for upgrades and updates of in-service equipment.	Indicates increased architectural understanding, commercial and technical agility
3	Efficiencies from mitigation of cross-cutting technology risks	Indicates emphasis on delivering efficiencies across the delivery portfolio. Supports improved management of scarce resources.
4	Improved supply chain feedback on attractiveness of the defence market	Indicates quality of communication and tailoring under way to increase agility, especially for SMEs
5	Positive staff feedback on innovation with alignment to recruitment/retention/engagement	Indicates successful empowerment and support for ideas in business as usual and reputation improvements
6	Successful Innovation Fund proposals involving DE&S (SDSR £800M/10 years)	Indicates proactive engagement by DE&S in SDSR innovation initiatives and supports enhanced reputation

A benefits management and tracking methodology will be included in the Implementation Plan. The DE&S Innovation & Prosperity Committee oversees this strategy and will monitor benefit realisation.



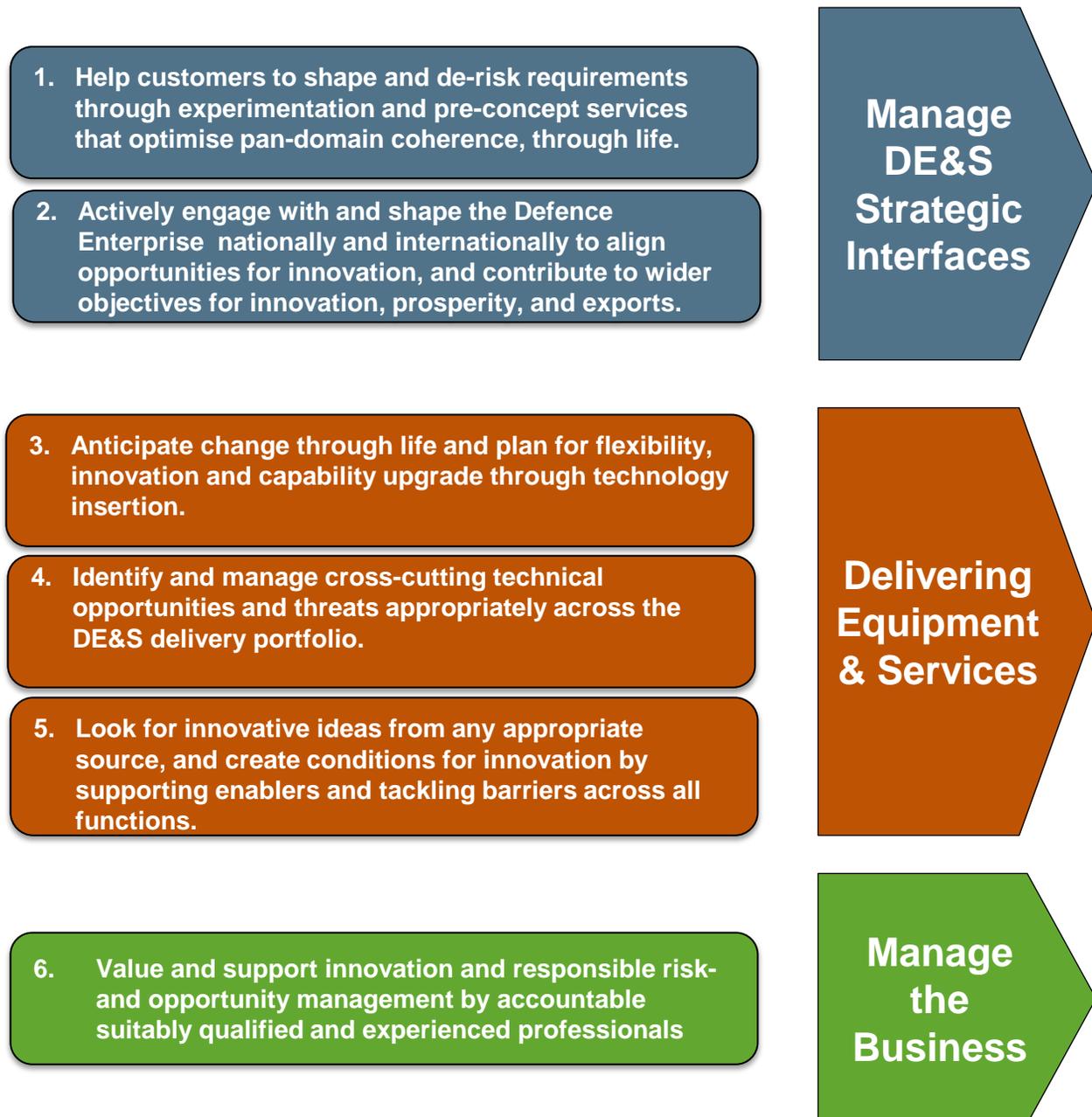
“However beautiful the strategy, you should occasionally look at the results.”

Winston Churchill
(First Lord of the Admiralty, Prime Minister and Fellow of the Royal Society)

The “Ways”: DE&S Innovation Principles

Successful Innovation in DE&S will be built around the following **six principles** that apply through the life of the systems we deliver and support. Through Transformation these will become part of the overall ‘DE&S Way’ and each aligns with one of the 3 major elements of the DE&S Operating Model as set out in the BP&A process documents: Manage Strategic Interfaces; Deliver Equipment & Services and Manage the Business.

These principles are expanded and illustrated in Part 2 of this Strategy document.



The “Means”: Implementation through Transformation

The Innovation principles drive action in the following “Level 0” areas. Some detailed actions have already been identified. These will be developed further and added to in a separate **Implementation Plan**, which will be led and discharged via the appropriate work streams in **Transformation** - and subsequently through continuous improvement in **business as usual**.

Level 0 Action areas

Actions

Manage DE&S Strategic Interfaces

- Support and advise our Customers
- Influence the Technical Enterprise
- Explore enablers and barriers with wider departmental business functions

- Engage with and shape the Defence Innovation Initiative to ensure DE&S is able to respond to the development of the IRIS and Accelerator
- Engage with Industry (large and small), Trade Associations and Other Government Departments to inform the processes being developed to rapidly get from idea/invention through to implementation
- Work with Front Line Commands and Head Office to ensure the requirement-setting process leaves space for innovation in acquisition

Delivering Equipment & Services

- Portfolio risk and opportunity management
- Create conditions for coherent and flexible Through Life Management
- Apply appropriate delivery models for innovation

- Develop a cross-cutting risk register to allow a holistic understanding and coherent approach to the management of risks which are currently held in many areas across the DE&S delivery portfolio
- Support the development and use of new delivery and commercial models which incentivise innovation
- Promote greater use of open architectures and standardisation to enable efficient and flexible through life technology refresh and export customisation

Manage the Business

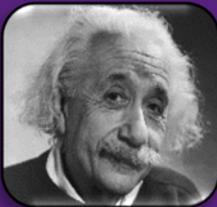
- Create environment to empower our people to innovate
- Establish Innovation skills within all functions
- Ensure functional processes integrate to deliver customer value

- Gather stories of different approaches taken (both “successes” and “failures”) and share the learning, incorporating it into DE&S processes
- Understand blockers to innovation for DE&S and provide constructive challenge seeking to determine “Could we do this differently/better?”
- Provide useful tools and environments to allow individuals and teams to connect, share and learn
- Catalyze creative thinking in the way DE&S approaches acquisition

Part 2

'Ways' Explained'

The following pages explain the Strategy's principles. Each principle is expanded onto a page with short case studies.



"If we do what we always did, we will get what we always got."

**"You can't solve a problem on the same level that it was created.
You have to rise above it to the next level."**

**"Insanity: doing the same thing over and over again and expecting
different results"**

Albert Einstein

1. Help customers to shape and de-risk requirements through experimentation and pre-concept services that optimise pan-domain coherence, through life.

This principle is about helping our customers get the right requirement, through life, to allow us to deliver to them in the most effective and efficient way we can.

We **add real value** to the customer and the taxpayer by helping the customer to ensure that their requirements demand the right characteristics, through life, from the start. This allows us not only to deliver **coherent and interoperable Capability**, but also to select equipment and support solutions and architectures that deliver the optimum combination of **cost-effective performance** with the appropriate **technology advantage**.

Helping get the requirement right at the earliest stage is particularly important for novel or disruptive capabilities. Pre-concept activities also give DE&S a **forward look** at what enablers (such as Test & Evaluation), skills and expertise we may need to generate for our future delivery programmes and allows us to **de-risk new technology early**.

Did you know?

DE&S already offers our customers constructive experimentation services to aid their Capability development. Examples include the 5-eyes Enterprise Challenge series, URBEX demonstrations and Niteworks services, that have informed requirements and interventions to deliver in-service C4ISR improvements. We also evaluate concepts for how to employ 'new to Defence' technologies. A notable success was the Black Hornet nano-UAV.

Our customer approached various parts of DE&S to cost a new capability for Influence Operations based on new social media capabilities. No current Delivery Team had the ability to respond to the requirement so D Tech created a project to address the need. This weakness in how we respond to emerging technology areas, where we have no legacy delivery experience, is being exposed more frequently.



Elon Musk
(Founder of SpaceX and a co-founder of Zip2, Paypal and Tesla Motors)

“Failure is an option here. If things are not failing, you are not innovating enough.”

2. Actively engage with and shape the Defence Enterprise nationally and internationally to align opportunities for innovation, and contribute to wider objectives for innovation, prosperity, and exports.

This principle is about DE&S looking beyond itself and proactively reaching out across and beyond Defence, to maximise opportunities for broadening supplier bases, increasing access to technology and innovation, while reducing costs and enhancing supply chain control.

DE&S cannot deliver successfully to our customers alone; we must understand and work with our supply chains, especially the civil suppliers and those outside the UK, in order that we can manage the risks within. We must look beyond ourselves and reach out across and beyond Defence to maximise opportunities for **broadening supplier bases**, including non-traditional suppliers and **SMEs**, to increase access to technology and innovation.

DE&S exists to enable pull through of technology into mature products. To do this we must co-operate and collaborate across the enterprise and help to create the conditions that enable innovation through exploitation of technology into effective and profitable products. Whilst DE&S is transforming into a more business-like trading entity, to do the best for our customers and support departmental objectives, we must play our part in ensuring the enterprise works. This includes **managing relationships** at all levels with customers, suppliers, the Science and Technology community, Head Office, and international partners. It includes joined-up plans to undertake and **exploit research**, to cross the technology “**Valley of Death**”, understanding customer perspectives, supply chains and market sectors, and the influence of standards and commercial models.

Did you know?

DE&S are involved in the development of the National Additive Manufacturing Strategy to ensure Defence’s views are fully considered. The idea is that Defence leverages investment across sectors and puts our procurement needs at the forefront of the strategy.

SDSR 2015 tells us to work closely with our allies and partners with innovation initiatives . The US Third Offset Strategy, and French technology innovation programmes in aerospace, maritime and space capabilities are key examples.



“We must co-ordinate and collaborate, avoid duplication, leverage unique capabilities, and push our establishments to innovate in technology, concepts, experimentation and wargames”

Bob Work

(32nd United States Deputy Secretary of Defense)

3. Anticipate change through life and plan for flexibility, innovation and capability upgrade through technology insertion.

This principle is about being prepared for an uncertain future and changing customer demands.

DE&S manages a large number of **discrete projects** that operate within local boundaries creating integration challenges both **technically and programmatically** across **internal boundaries**. This is often driven by segmented budgets. On the **changeable and uncertain** battlefield, however, products must be **integrated, interoperable, scalable and flexible**. The increasing speed of technological developments also demands more flexibility and “**design for change**”.

The use of **common, standardized interfaces** across our product range reduces the costs of interfaces and change through life and reduces the risk presented by internal boundaries if adopted from the start. The use of common standards and interfaces can further enable interoperability with international partners as well as customised export products. Civil industry, such as automotive and communications, has embraced design and manufacturing approaches that are **open, modular and scalable**, with clear strategies on their **architectures** and responsibilities as Design Authority. Customers are more able to manage and request upgrades to meet their changing needs.

Did you know?

For Air there is no unifying architecture or technical authority, although a range of potentially valuable R&D is taking place with multiple sponsors and suppliers, for example, relating to upgrading countermeasures. Exploitation currently risks being piecemeal, incoherent, and inefficient.

DE&S established a Land Technical Authority, on behalf of the Army, to ensure the adoption of an Open Architecture to deliver a framework that enables improved integration and interoperability of equipment through life. This is a significant step for the MOD and the supply chain, providing opportunity to improve equipment and support coherence, integration agility and more affordable through-life capability insertion. This is a world leading approach that originated within our organisation.



“...efficient won't be enough. We also need to innovate. We're determined to take the opportunity offered by the SDSR to build a culture more ready to take risks and more open to change. We want to do everything we can to augment our force structure, speed up the integration of new technologies, adopt new operating concepts and incentivise modern working practice.

Michael Fallon
(Secretary of State for Defence, 22 Sept 2015)

4. Identify and manage cross-cutting technical opportunities and threats appropriately across the DE&S delivery portfolio.

This principle is about managing technologies across DE&S in order to more efficiently deliver value to our customers.

To do this we need to promote **common solutions to common problems** in order to create greater **coherence** and guard against increased costs due to **inflated inventory** and multiple support arrangements including training solutions. This is especially important now due to the reductions in Defence's ability to generate economies of scale in individual products and the need to reduce pressure on **rare specialist expertise**.

We recognise that there is a case for maximising **commonality, modularity and reuse** as widely as possible across Defence, particularly in areas where capabilities offer specific **operational advantage** for customers or where **freedom of action** needs to be sustained. This is about not just delivering a specific set of requirements but delivering it by **leveraging further value** from the scale we have across our business.

Did you know?

Research into a common Thermal Imaging (TI) capability resulted in a technology demonstrator that potentially offered the opportunity to deliver Technology Advantage in a class-leading and ITAR-free TI module. It promised to secure a sustainable UK industrial capability. However locally-optimised decisions on individual projects significantly limited its take-up, denying economies of scale in procurement and support. In hindsight perspectives differ, but this was either due to poorly aligned research, or a missed exploitation opportunity – both of which are unacceptable.

The GPS team (in Air Support) is developing robust and common Position, Navigation and Timing solutions for dependable Technology Advantage across the delivery portfolio. This exploits R&D and innovation, makes best use of SQEP, and offers potential for economies of scale and logistic efficiency.



“If you have fifty different plug types, appliances wouldn't be available and would be very expensive. But once an electric outlet becomes standardized, many companies can design appliances, and competition ensues, creating variety and better prices for consumers.”

Bill Gates
(Co-founder of Microsoft)

5. Look for innovative ideas from any appropriate source, and create conditions for innovation by supporting enablers and tackling barriers across all functions.

This principle is about DE&S opening itself up to new ways of working to deliver greater efficiency for our customers.

Innovation has been a major theme in 2015 even before becoming a focus in the **Strategic Defence and Security Review**. As such, it forms a fundamental expectation of Defence's strategy for the current parliament, alongside supporting prosperity by exploiting the strength of the UK's world class science and technology base. Whilst the Defence budget has been protected, efficiencies will still be sought, like-for-like replacement capabilities will not be affordable, and technologies will continue to develop at pace and be available to adversaries. There is now both an **opportunity**, and a **need**, to do more with Defence's resources, and our customers will increasingly expect it.

DE&S Transformation, and changes in the wider department, provide an opportunity for DE&S to demonstrate its capabilities as a world class acquisition organisation, using the combined skills of all staff to deliver what our customers need, and to take pride in the value we can add through innovation. A rich source of this innovation for Defence is through exploitation of '**new to Defence**' technologies in our products and services. SDSR stated "we must find, listen to and work effectively with new partners. We must test unconventional ideas rigorously against traditional ones, and be prepared to take risks." and "and foster a culture of innovation that takes a different approach to risk"

Did you know?

Three Small Business Research Initiative (SBRI) challenges run by DE&S received more than 200 proposals, 70% of which were from suppliers that were new to the MOD

The 3 Challenges attracted 157 total bids of which 101 came from Micro/Small/Medium Enterprises from across 12 different industry sectors and 29 different academic institutions.



Tim Berners-Lee
(Inventor of the World Wide Web)

"We need diversity of thought in the world to face the new challenges."

"Innovation is serendipity, so you don't know what people will make."

[Serendipity: 'the faculty or phenomenon of finding valuable or agreeable things not sought for']

6. Value and support innovation and responsible risk- and opportunity management by accountable suitably qualified and experienced professionals

This principle is about using the skills and expertise available within our enterprise, and encouraging the development of new practitioners, to deliver more effective outputs, whilst allowing for the development of creative and novel solutions.

DE&S has a large body of **highly skilled resource**, including nationally and internationally recognised **subject matter experts** (SMEs). We can amplify the output of this resource by encouraging project teams to engage with **specialists** within the functions, **DE&S Fellows** and **Dstl Science Gateways**. This knowledge diffusion can increase the capability of the entire organisation, encouraging the development of future domain experts. Such focal points will aid project teams' **risk and opportunity management** through guidance on current and future domain trends, encouraging interoperability and future technology upgrade and flexibility.

To successfully realise innovation within our **business as usual** we must understand and enable the ability to manage and reward different risk/opportunity profiles and strategies. Our people and projects exist within a wider **portfolio** that should be balanced, allowing the opportunity to increase the potential rewards by removing **stifling and unnecessary barriers**. To do this a culture of acceptance of innovation and **continuous corporate learning** is required across all functions.

Did you know?

About 50 DE&S Fellows have been recognised by the organisation for subject matter expertise in their specialist field. They are available to support projects and programmes in the delivery of cutting-edge outputs.

DE&S was tasked to cost more than 10 ABC16 options for space-based capability in support of SDSR proposals. These came separately from different FLCs, and there is minimal corporate capability to offer coherent, informed specialist input to capability planning based on emerging or disruptive technologies.



"Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while."

Steve Jobs
(Technology Entrepreneur, Co-founder of Apple Inc.)



In striving to realise the benefits of technology in what we deliver now and in the future we will work through our Transformation to set the conditions for Innovation.

We will work openly with our Customers, Suppliers, Other Government and International stakeholders to remove our traditional barriers and promote pan-acquisition enablers for innovation.

The DE&S Executive Committee expect all staff to:

- Constructively **challenge barriers** to better ways of doing things
- Appropriately **share knowledge and information** widely inside and outside DE&S
- Work with our external stakeholders by **acting first and facilitating communication**
- Take **good ideas** from wherever they come and try **new ways of doing things** when the old way is no longer appropriate
- **Think holistically** and deliver our part of the portfolio coherently by **thinking inside and outside our individual project boundary to promote 'Interoperability'** with other projects and equipment



"I am really looking forward to next year and the opportunities it will bring to get better at getting better and improve our performance and delivery for our Armed Forces Customers but most importantly, taking steps to put our people first."

Tony Douglas, December 15
(Chief Executive Officer, Defence Equipment & Support)

DE&S Innovation Strategy
Enabling Innovation: Realising the
Benefits of Technology

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Ministry
of Defence

