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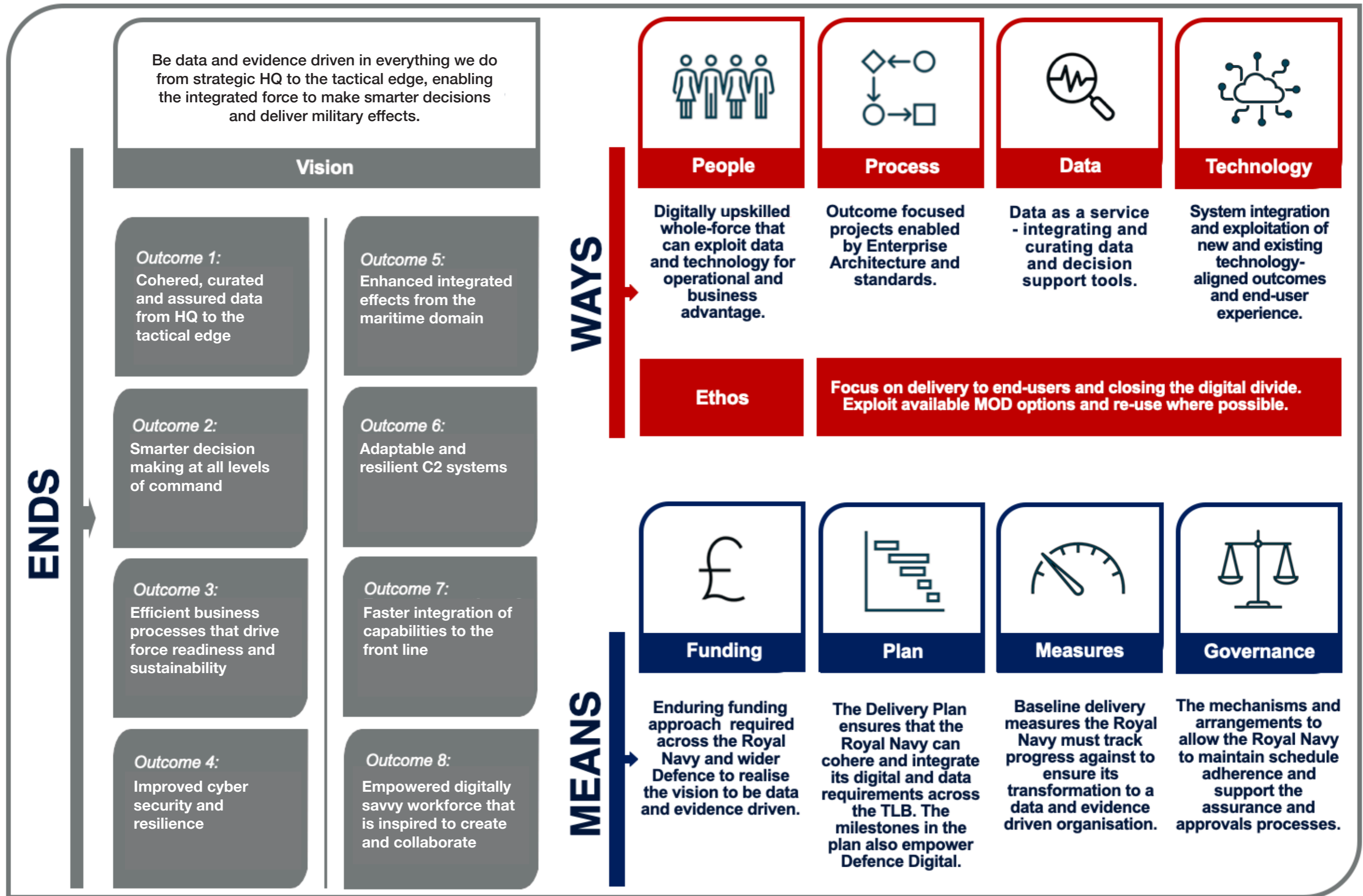


Digital and Data Plan 2022-2025

Implementing the digital backbone to unlock
insight and deliver towards the Navy's 2030
digital vision



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Vice Admiral Martin Connell
CBE, Second Sea Lord

Our ambition is to engage and empower everyone across the naval enterprise: our service personnel, civil service, contracted workforce and delivery partners, in building a truly data driven organisation that unlocks the full potential of our data. This plan outlines how we will move closer to this vision over the next three years, by instilling a digital ethos and focusing on the delivery of a series of key enablers that enhance our operational effectiveness, add value, support strategic priorities and allow us to develop our cyber awareness.

This Digital and Data Plan is our response to both the MOD's Digital Strategy for Defence and Data Strategy for Defence. It sets out the transformation activities that must be undertaken up until 2025 to ensure that the Royal Navy seizes the opportunity to enable a decade of delivery and realise our digital vision by 2030. We have established a Maritime Digital and Data Framework that focuses on the specific needs of the maritime component of the Integrated Force and its shore-based support.



Vice Admiral Andrew Burns CB
OBE, Fleet Commander

The framework sets out the Royal Navy's vision and the delivery of eight specific outcomes necessary to realise the vision. It responds to the prevailing digital and technological trends and remains consistent with the intentions to deliver operational advantage through Multi Domain Integration and greater interchangeability. Critically, it also identifies the five enabling capabilities that must be developed to successfully achieve this change. We will not be able to deliver these outcomes or develop our digital and data capabilities by working alone. Collective action and co-creation with our wider defence colleagues, PAG, academia, industry and our allies will be vitally important. We will need to continue to adopt agile practices to make best use of finite resources and embrace a system of systems philosophy if we are to deliver, at pace, the required operational, availability and cost benefits that we seek.

As a foundational guide to action, this plan explains key concepts and provides a framework to drive change. It will shape our behaviours and our relationships inside and outside the organisation, and we strongly commend it to you and your teams.

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The Maritime Digital and Data Framework

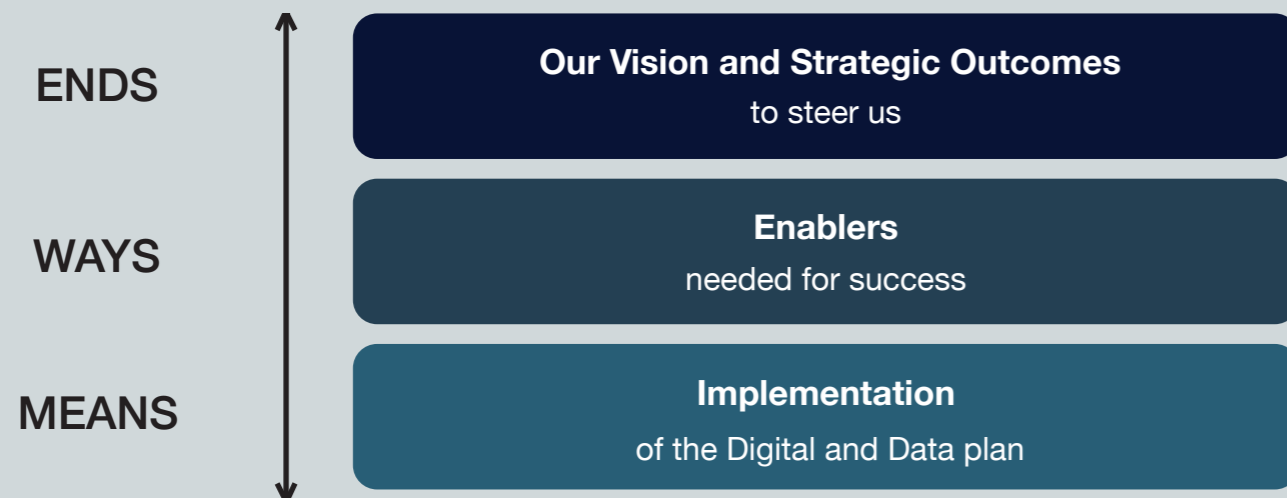
The Maritime Digital and Data Framework provides the structure to overcome the digital and data challenges that confront the Royal Navy. Supported by our colleagues from Defence Digital and other delivery agencies, it establishes a unified strategic direction for TLB personnel to align to and play a proactive role in building the digital and data capabilities that are needed now, and in the future. Navy Digital will be the cohering point for the directorates and enabling functions to deliver against this framework.

The Maritime Digital and Data Framework comprises of:

Vision and Strategic Outcomes – A clear digital and data vision for the Royal Navy, key outcomes and capability direction for the future.

Enablers – Required to transform the Royal Navy into an enduring data driven enterprise, empowering our people with the skills and technology to make smarter decisions.

Implementation – The supporting mechanisms required to co-ordinate and facilitate the execution of this plan by establishing and embedding the Enablers. These include the funding, delivery plan, measures and governance.



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Figure 1 - The Maritime Digital and Data Framework to transform the Royal Navy to become a data and evidence driven organisation

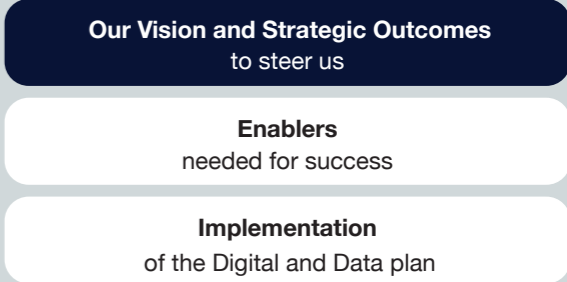


01 ENDS

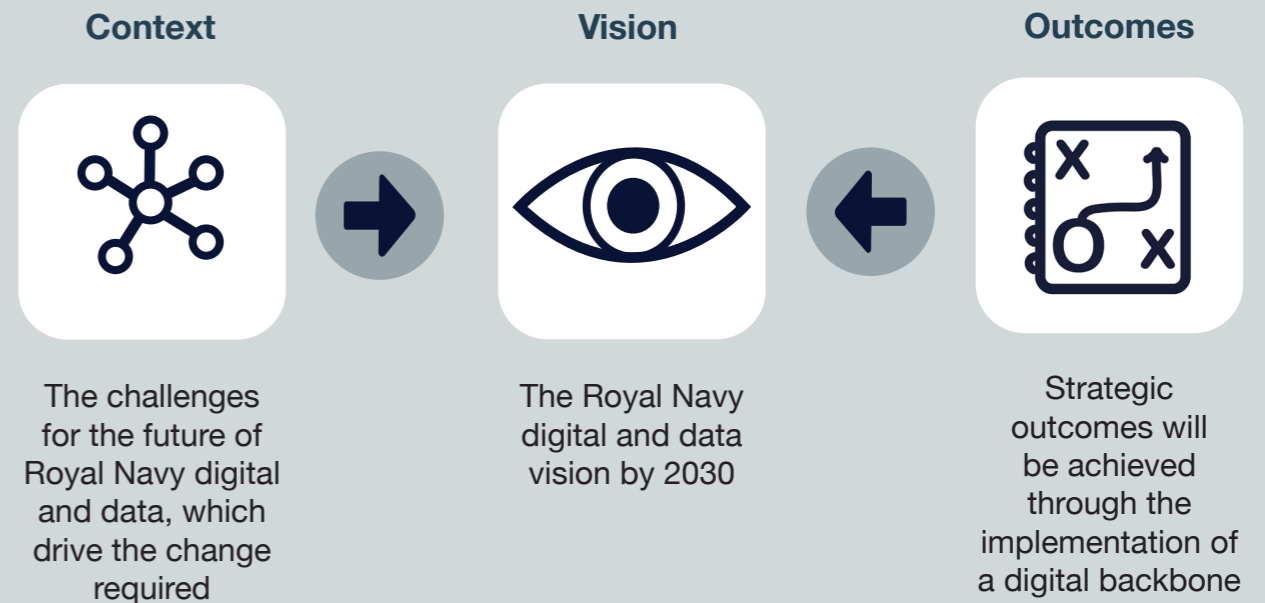
ENDS - Navy Data and Digital

The Ends within the Maritime Digital and Data Framework are set against the strategic drivers for change. To overcome these strategic challenges, a clear Navy digital and data vision for 2030 has been articulated. This vision codifies the collective aspiration to exploit the potential of the Royal Navy's data to enable smarter decision making and deliver maritime effects through information exploitation and advantage.

In pursuit of this vision, eight outcomes have been identified that articulate the long term change that is sought by the Royal Navy, its partners across government and its allies. These outcomes provide the focus and priority for all the enabling digital and data projects and programmes.



The Strategic Ends



The UK is in an era of constant competition with state and non-state actors against the backdrop of the fourth industrial revolution^[1]. This is characterised by an exponential growth in the pace of technological change, where it can no longer be assumed that the RN holds the technological edge, and cyberspace becomes yet more contested and critical^[2]. Along with others in Defence, the Royal Navy needs to move away from episodic responses to crises and must deliver a significant shift in approach to better face this era, where information exploitation and advantage, underpinned by digitalisation, will be key^[3].

Managing availability, a persistent global presence, and legacy technology.

By 2030, the RN will have 50% more tonnage compared to today, including several new complex platforms. Managing the capability transition between legacy and future platforms, whilst maintaining a capable persistent global presence will be challenging. Existing financial pressures will continue and the necessary development of the digital backbone (coherent, accessible data and secure, resilient and effective hosting), at sea on our ships and submarines and in the littoral with the Commando Force will challenge decision makers to make careful investment decisions. Much will depend on our ability to proactively influence the development and delivery of complex defence-wide C4ISR capability and equipment projects and programmes, especially those aimed at overcoming known technical obsolescence issues, improving connectivity or enabling the denied or disadvantaged user.

“If you don’t know where you are going, any road will take you there.”

Lewis Carroll, Alice in Wonderland

1.MOD Intergrated Operating Concept [updated], 2 Sep 21
2.Digital Strategy for Defence, 27 May 21
3.RN Strategy [Draft], accessed, 20 May 22

Be data and evidence driven in everything we do from the strategic HQ to the tactical edge, enabling the integrated force to make smarter decisions and deliver maritime effects.

What this means...

The digital vision outlines an ambition to engage everyone across the naval enterprise, from service personnel, to civil service and delivery partners, in building a truly data driven organisation that helps avoid cognitive biases and unlocks the full potential of our data. It is not about data [and technology] for its own sake, but to enable effective decisions and connect to there sources needed to deliver integrated maritime effects (fires, information, manoeuvre and outreach), reliably delivering insight and impact at a time and place of our choosing.

This plan outlines how the RN will move closer to this vision over the next three years, by focusing on the delivery of requirements that add value, enable strategic priorities and allow us to learn.

Strategic Outcomes

In pursuit of our vision, there will be a focus on the delivery of eight outcomes by 2030. Efforts will be cohered and changes made to the way the RN currently operates, so the necessary action is taken to deliver the change to digital and data that the organisation, its partners and allies seek.

Strategic Outcomes by 2030

Outcome 1:

Cohered, curated and assured data from the HQ to the tactical edge

Outcome 2:

Smarter decision making at all levels of command

Outcome 3:

Efficient business processes that drive force readiness and sustainability

Outcome 4:

Improved cyber security and resilience

Outcome 5:

Enhanced integrated effects from the maritime domain

Outcome 6:

Adaptable and resilient C2 systems

Outcome 7:

Faster integration of capabilities to the front line

Outcome 8:

Empowered digitally savvy workforce that is inspired to create and collaborate

These strategic outcomes will be achieved through the implementation of a digital backbone that will then be exploited to unlock insight, build capacity and add value for stakeholders. The Maritime Digital and Data Framework provides the structure to overcome the digital and data challenges that confront the Royal Navy.

Outcome 1: Cohered, curated and assured data from the HQ to the tactical edge

What does the future look like?

The ability of the workforce and its machines to receive, process and transmit assured data and information, both in the home base, and when deployed is critical to achieving Information Advantage^[1] and providing the requisite level of situational awareness to enable decision making, deliver effective integrated action, and maintain efficient business operations.

The current model, whereby defined information requirements rely on managing systems, with capabilities expressed in operational terms, needs to change. There needs to be a pivot to an assured service-based model, aligned to a recognised taxonomy, that enables defined operational and business decision making processes.

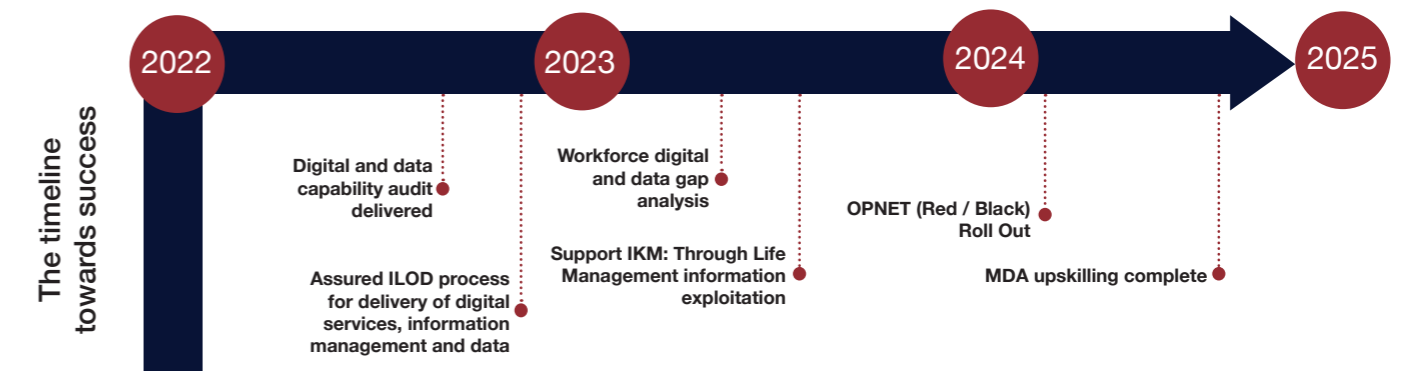
Future delivery will utilise a configuration of objects: systems, applications, datasets, networks, bearers, correctly skilled people and, in some cases, bespoke on-board infrastructure. These different configurations will be used to deliver operational services, that are tailored to the mission and enterprise business services that are interoperable with our allies; both types of service will be able to adapt to change without affecting the service itself. There will be stricter adherence to the MOD data rules^[2] to ensure that data is treated in a way that enables the Royal Navy to become a more

connected enterprise. Data lifecycle literacy will be improved through greater understanding of policies and procedures defined by Defence's digital function. Creation and consumption are the most critical points in the lifecycle; the organisation must learn to acknowledge the costs of producing data and recognise that it is only valuable when it is consumed or applied.



Data being treated as a strategic asset like other resources

1. JCN2/18 Information Advantage
2. Data Strategy for Defence, 27 Sept 21



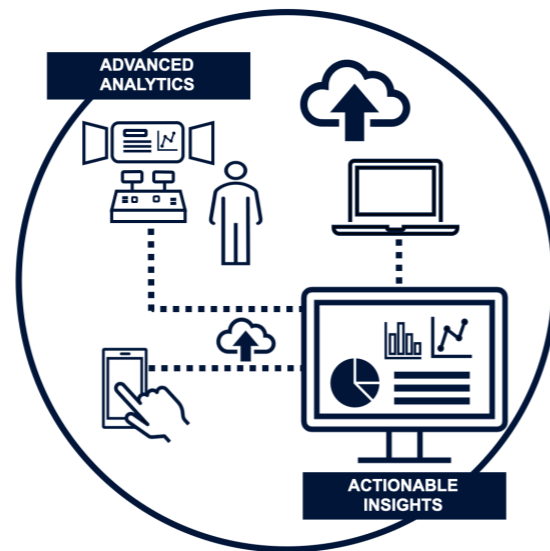
Outcome 2: Smarter decision making at all levels of command

What does the future look like?

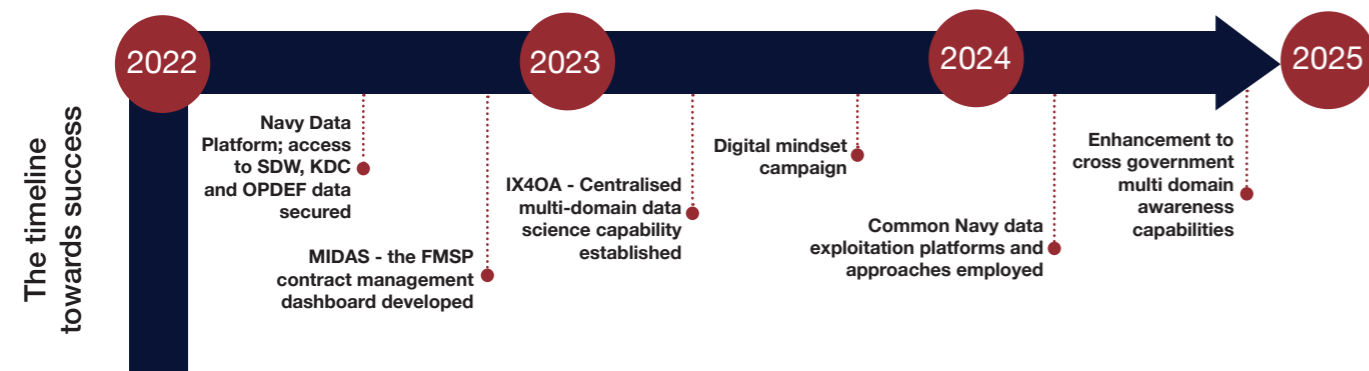
To unlock the potential of the Royal Navy's data, analytics must focus on use cases that support organisational priorities, drive smarter decision making, and have a tangible impact on operational and business performance. There are many recent examples of stove-piped, data science projects that have been developed without effective governance to prioritise their development. Moreover, less complex Business Intelligence (BI) implementations are everywhere, in every corner of every directorate and function. They range from personal spreadsheets to financial and operational reports to executive dashboards. They have become a significant cost sink, in many instances with unmeasured business benefits. Few of the BI implementations allow for better decision making or connect the dots between different initiatives.

Therefore, projects and developments to introduce advanced analytical capabilities which generate actionable insights, predictions, or explicit recommendations need to become more visible to senior leadership and the digital champions that attend the Navy Digital Board (NDB). This will provide focus, and allow dependencies and risk factors to be understood, thereby supporting prioritisation of resources to those areas that will deliver the most meaningful and impactful changes to operational and business performance. A roadmap that reflects an intended digital and data maturity for the Royal Navy and the realities of hosting and

connectivity at the edge, will be developed and owned by the NDB. The roadmap will bring these more advanced analytical capabilities that either supplement or supplant human decision making within reach by 2030. It will reflect that these capabilities can be not only challenging to implement, but also difficult to articulate and coordinate. NDB membership will be conversant and experienced as well as informed to ensure that the right projects are prioritised and the pace of change is maintained. Outside of the meeting, decision making structures will become more agile in support of this empowered board.



A spirit of cooperation underpinned by common standards and patterns



Outcome 3: Efficient business processes that drive force readiness and sustainability

What does the future look like?

The Navy Command operating model reflects the core and supporting value streams required to deliver a navy that is persistently deployed and globally engaged. These value streams are underpinned by organisational capabilities that comprise the people who do the work, the processes that describe how they get the work done and the technology that they need to help them.

In an organisation as complex as the Royal Navy which has a top-down mandate to modernise and evolve, there are clear opportunities to enhance, create, maintain, or remove capabilities to assure the successful delivery of force-level outputs and to optimise the overall value being delivered to the UK taxpayer.

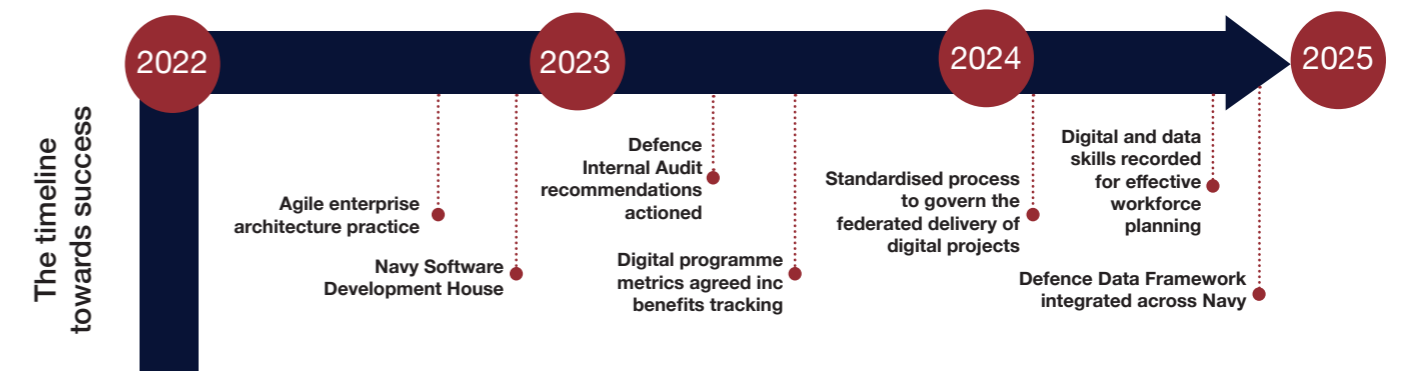
Using a taxonomy that is agreed across directorates and with Defence functional owners, business capabilities and corporate services will be evaluated to identify those that are most important to achieving our organisational priorities. There will be a focus on ways to improve the generation of maritime capabilities for current and future operational taskings. There will be an examination of where digital and data are being applied today and opportunities to deliver further operational and economic benefits through automation, cloud adoption and the application of emerging technologies.



Accelerate the shift to 'integrated' activities and more closely align across domains and with our allies

"The secret of change is to focus all your energy not on fighting the old but on building the new"

Dan Millman, *The Way of the Peaceful Warrior*



Outcome 4: Improved cyber security and resilience

What does the future look like?

The Royal Navy is becoming ever more reliant on the cyber and electromagnetic domain to conduct operations and support activities – there is a need to defend our freedom of action within it. This freedom is achieved through the coordinated application of Defensive Cyber Operations (DCO) and Offensive Cyber Operations (OCO) but the first line of defence is our people, whether they are civilian, serving, reservist or contractor – the whole workforce is on the cyber frontline.

UK StratCom leads the development and operation of offensive capability as part of a national venture and leads defensive capability through Defence Digital. The Cyber Joint User teams ensure new capability meets the needs of the centre and single Services, and that personnel and training factors are considered. The RN must remain aligned with all of these organisations to mainstream cyber across the maritime domain but also inform them of the unique contribution that the RN can make to cyber operations and provide the demand signal for cutting-edge and resilient cyber systems.

Defence Digital's Global Operations and Security Control Centre (GOSCC) and the Maritime C5ISR Support Unit (MCSU) work in concert to defend the RN's digital systems and infrastructure. The threat is ever increasing, and the workforce must ensure that it has the necessary tools, tactics and procedures to

identify, protect, detect, respond, and recover from a cyber attack. Systems must be resilient so that they can “take a punch” and fall-back to reversionary modes if needed whilst maintaining operational output.

Conscious of this increasing and ever-present cyber threat, cyber risk must be driven down to an acceptable level. To achieve this, there is a need to continue to understand the threat to our systems, develop the MCSU's cyber capabilities and improve the collective resilience of our systems, ensuring future systems are secure by design.



Reduce single point of failure, use of mesh networks, distributed services, granular data access and zero-trust architectures



Outcome 5: Enhanced integrated effects from the maritime domain

What does the future look like?

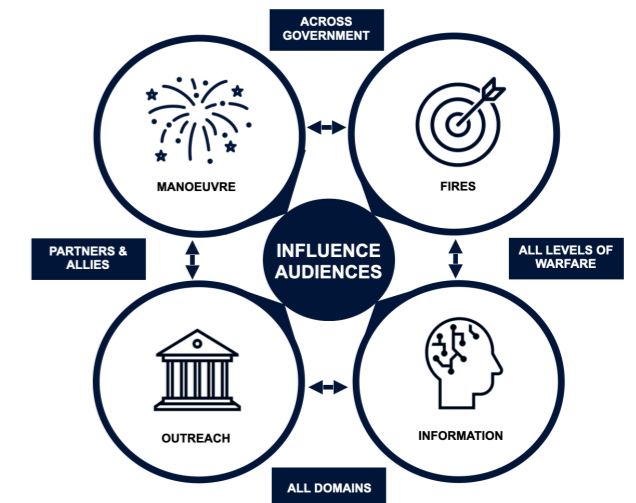
The RN's C4ISR processes and capabilities enable the delivery of the maritime effectors: fires, information, manoeuvre and outreach. Through the full spectrum targeting process they can be integrated and synchronised with our allies, across government and with non-government and private sector partners; they are also capable of operating cross-domain (with land, air, space and cyber) so the impact they have adds up to far more than simply the sum of the parts – this underpins the Multi-Domain Integration (MDI) concept.

This act of integration and synchronisation is referred to as Integrated Action^[1], which enables an audience-centric approach (activities to influence behaviours of adversaries and populations to achieve a successful outcome).

Key to delivering lethal or non-lethal effects are intelligence and a common operating picture, which itself is derived from battlespace management activities and the amalgamation of common tactical pictures and other information, set against a common geospatial and temporal reference, ie a Single Intelligence Environment.

To enhance maritime effectors, there will be a focus on the development of information capabilities, such as cyber and social media, that seek to degrade adversary understanding, decision making, Command and Control and will. Moreover, the RN will seek to improve its

decision making with cohered information that is in the right place at the right time, and supported with digital tools and synthetic environments, underpinned by appropriate use of autonomy and Artificial Intelligence (AI).

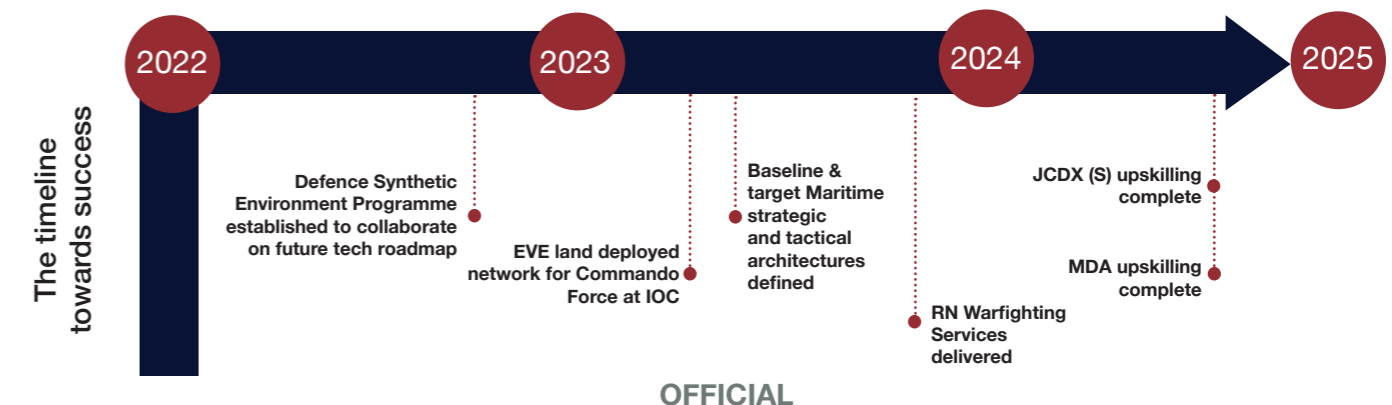


Accelerate the shift to 'integrated' activities and more closely align across domains and with our allies

“War is the last of all things to go according to programme”

Thucydides

1. JTTP 3.81 Intergrated Action - An Operational Level Guide



Outcome 6: Adaptable and resilient C2 systems

What does the future look like?

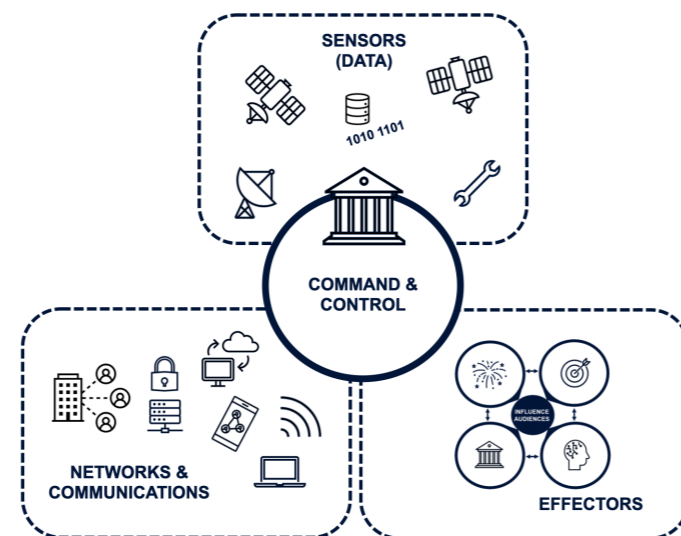
Command and control (C2) is an institutional, compound and contested term. In this document it is defined as a dynamic and adaptive socio-technical system configured to design and execute Integrated Action (the integrated and synchronised delivery of fires, information, manoeuvre and outreach to influence audiences to achieve a successful outcome).

The system, which encompasses behaviours, tools and techniques, enabled by the interactions between people, structures, technology and processes must be capable of adapting to meet the requirements of changing environment, context and mission – it must be ‘agile’.

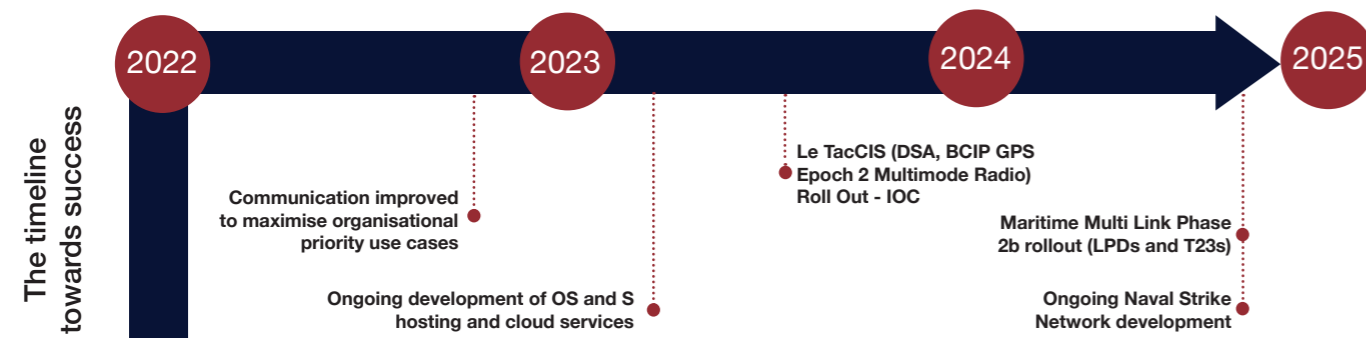
To be successful in the future operating environment and exploit the rapid technical advances being made in the development of information technologies, sensors, artificial intelligence and automation, the RN will need to change its approach. It will need to develop information and communication services that can connect to unanticipated partners, as well as established allies.

These services will need to support connections at different classifications and, with varying levels of trust, facilitate ‘need to share’ and ‘need to collaborate’, as well as requirements to protect information. They will need to be flexible, capable of veering between centralised

and decentralised styles of control. Innovating at pace brings risk; the organisation will become susceptible to new vulnerabilities and additional threats, because of hostile action or technical failure. Degradation, loss or denial of C2 systems must be survivable. The RN must also be able to operate without access to assured space-based services i.e. in a command and control in a denied or degraded environment (C2D2E).



Enable staff to submit innovation ideas and create the appropriate decision making structure to assess and move ideas forward



Outcome 7: Faster integration of capabilities to the front line

What does the future look like?

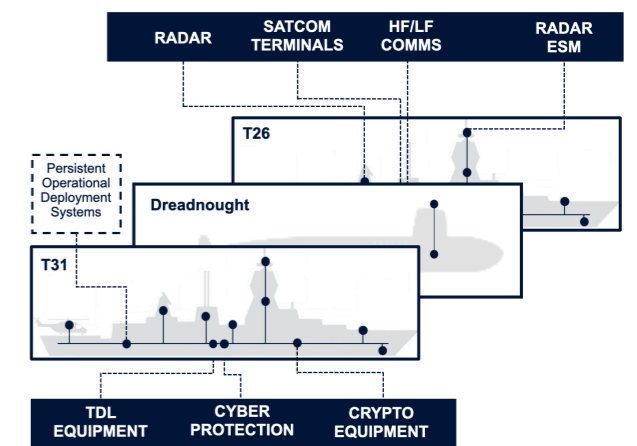
Over the next 10 years, the number of projects and programmes in the Navy Command, Defence and Government portfolios that are providing the naval service with future operational capability represent a significant integration challenge. Multiple ships, submarines, surface manoeuvre platforms and vehicles are being introduced to enable Homeland and OANA, Littoral Strike, Persistent Engagement and Carrier Strike. In parallel, mission system component programmes such as Next Generation Maritime Terminal (NGMT) and the Maritime Network Evolution (MNE) baseband will replace SCOT 5. Link 22 will replace the existing Link 11, and Bowman radios and/or its successor (Morpheus) need to be integrated, to name but a few.

Ensuring these programmes deliver coherently across all DLODs, so the necessary capability enhancements are realised to schedule and to cost, necessitates a new approach to integration. There needs to be a transition away from propriety and bespoke architectures controlled by the OEMs, and greater adherence to the principle of common standards and patterns.

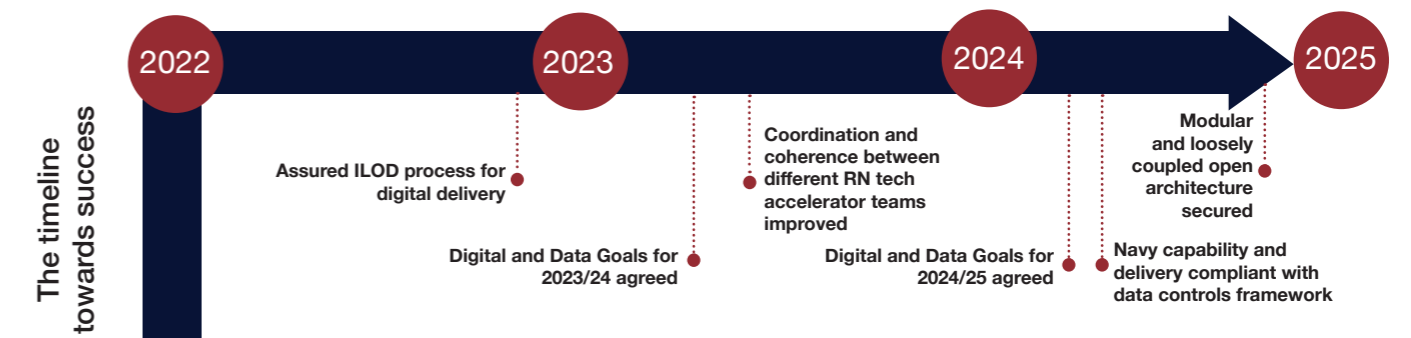
Integration needs to be instinctively considered at the design stage and capabilities need to be delivered against mandated open technology and data architecture standards. Only then

will the RN achieve the agility and adaptability demanded by the Integrated Review and recent Maritime Operating Concept (MarOpC) that seek to deliver on Defence’s Integrated Operating Concept and Multi-Domain Integration aspirations.

There will be increasing leverage of existing approval gates such as the NROC, JROC, NEC and IAC to ensure open, key user requirements and capability designs have been included for our future capabilities. An assessment of all in-flight projects will be made to determine the need for and readiness to implement compliant open solution architectures and mandated standards.



Navy Digital Lessons Learnt focused on satisfying the end user



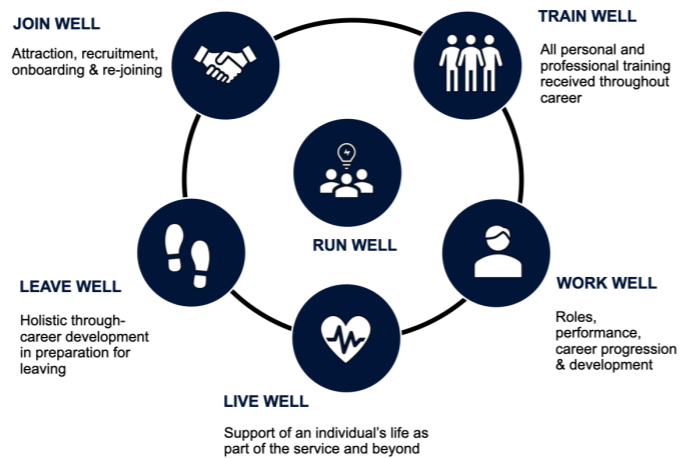
Outcome 8: Digitally empowered workforce that is inspired to create and collaborate

What does the future look like?

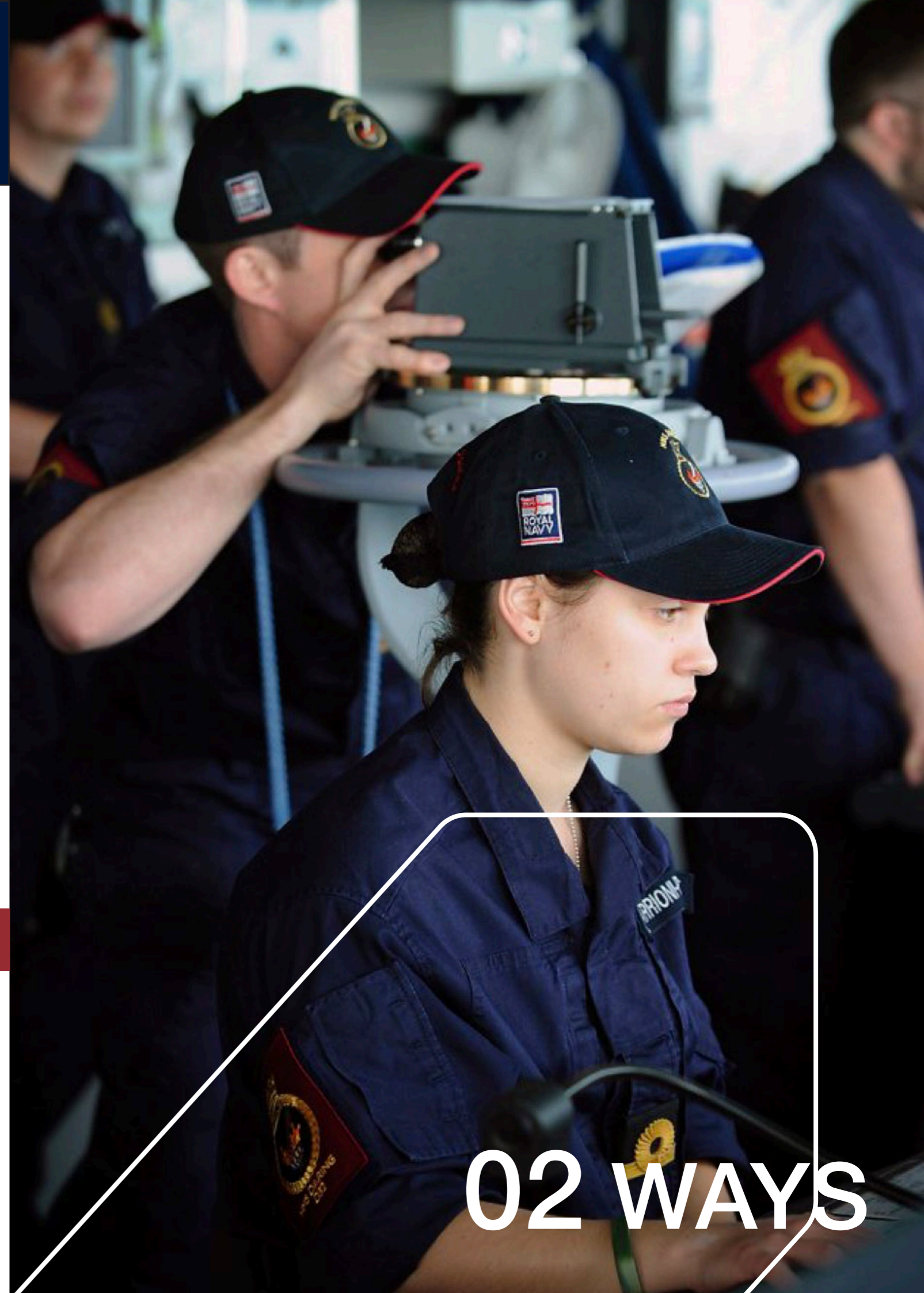
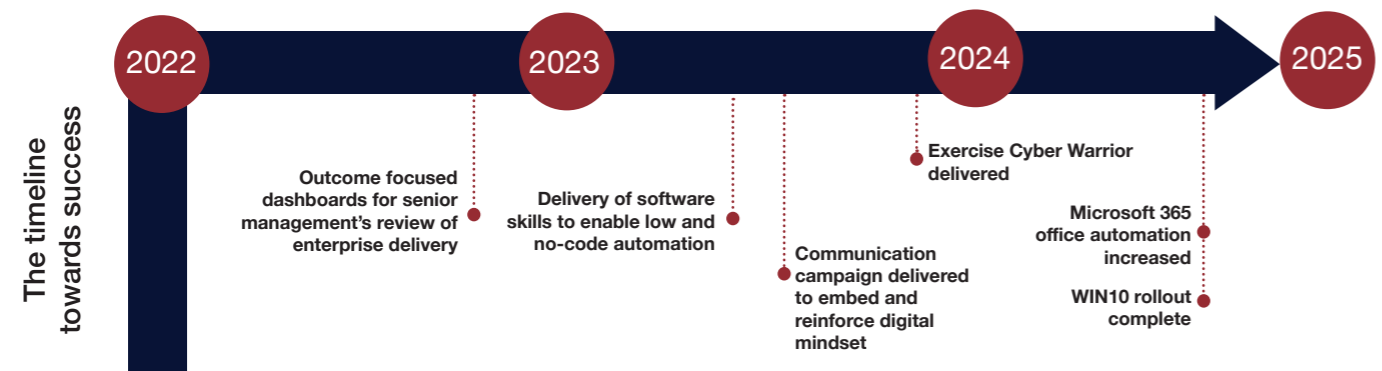
Managing, using, and sharing data to enable smarter decision making will be integral to the Royal Navy's future success in both the battlespace and back-office. The digital and data ambitions in these different environments will not be achieved by working alone; the workforce will need to be empowered and inspired to bring about the change that the organisation wants and needs to see. Currently, the organisation is not technically equipped to treat data as a shared strategic asset and maximise its value. It requires greater capacity, a shift in mindset and new skills to overcome the uneven data culture and current frustration in accessing and exploiting data. There needs to be laser like focus on breaking down single use data siloes that currently exist across the directorates and functions in order that individuals can train, work and live well.

Getting to the stage to unlock insight and deliver towards the 2030 vision will not happen overnight. The organisation will mature through stages, including better attraction and recruitment to support 'Join Well' principles. From non-defined digital and data roles, there will be a move to exploit the Defence Foundry centres of excellence in Data, Automation and AI, the resources provided by the Digital Skills Academy and Navy TLB digital training to develop federated digital and data practices across the organisation. The technology environment will be developed to close the digital divide.

Training will be provided throughout careers for individuals to match development to roles and performance. Starting with the basic and centralised infrastructure, skills and capabilities will be matured so the workforce can instinctively operate collaboration tools such as MS Teams, knowledge management platforms such as MS SharePoint and productivity applications such as Project Online and JIRA. Concurrently, there will be a move towards more diverse tool sets that support data analytics and governance, fully tailored to user needs and use cases. First focused on descriptive analytics, the organisation will then learn to master the full spectrum of analytics with advanced technologies, including AI.



Establish a Royal Navy online digital and data knowledge Hub

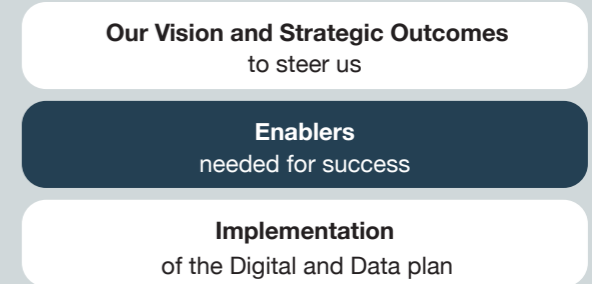


02 WAYS

Enablers - Needed for Success

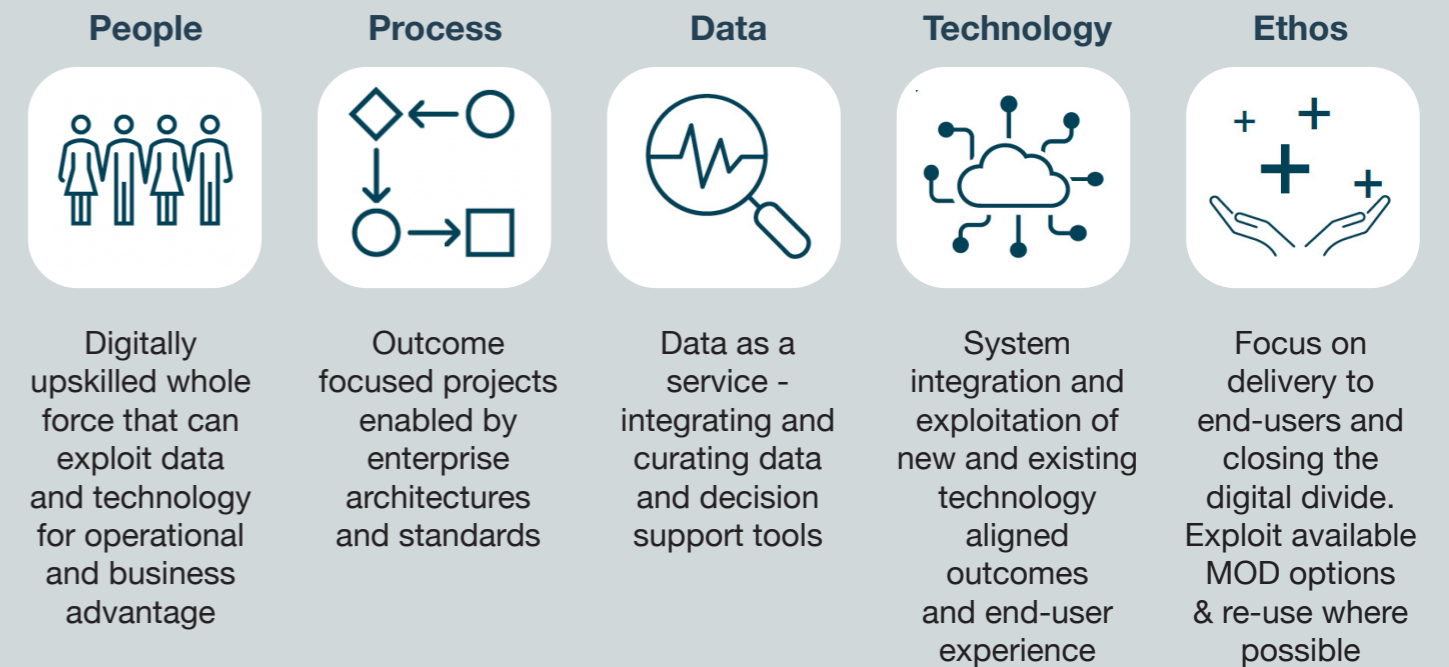
Within the Maritime Digital and Data Framework, the Enablers are People, Process, Data, Technology and Ethos. These are required to transform the Royal Navy into an enduring data driven enterprise, empowering our people with the skills and technology to make smarter decisions. This allows the reorganisation to adapt coherently to the fast-moving and complex data ecosystem that it is part of, and for exploitation activity to deliver operational and business advantage.

It is through these Ways that the Maritime contribution to the delivery of the singular Digital Backbone will be enabled.



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The Enablers



What is changing?

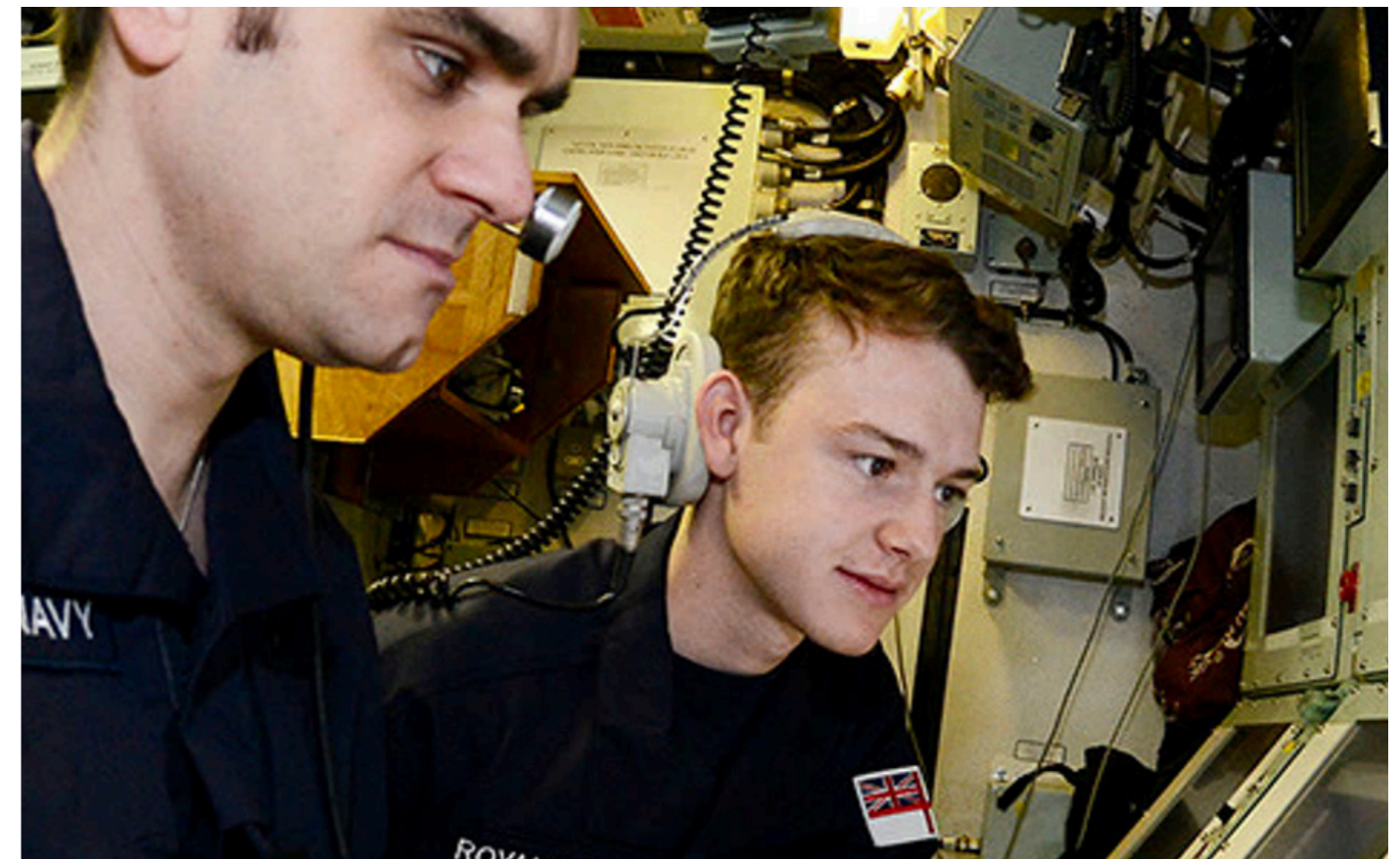
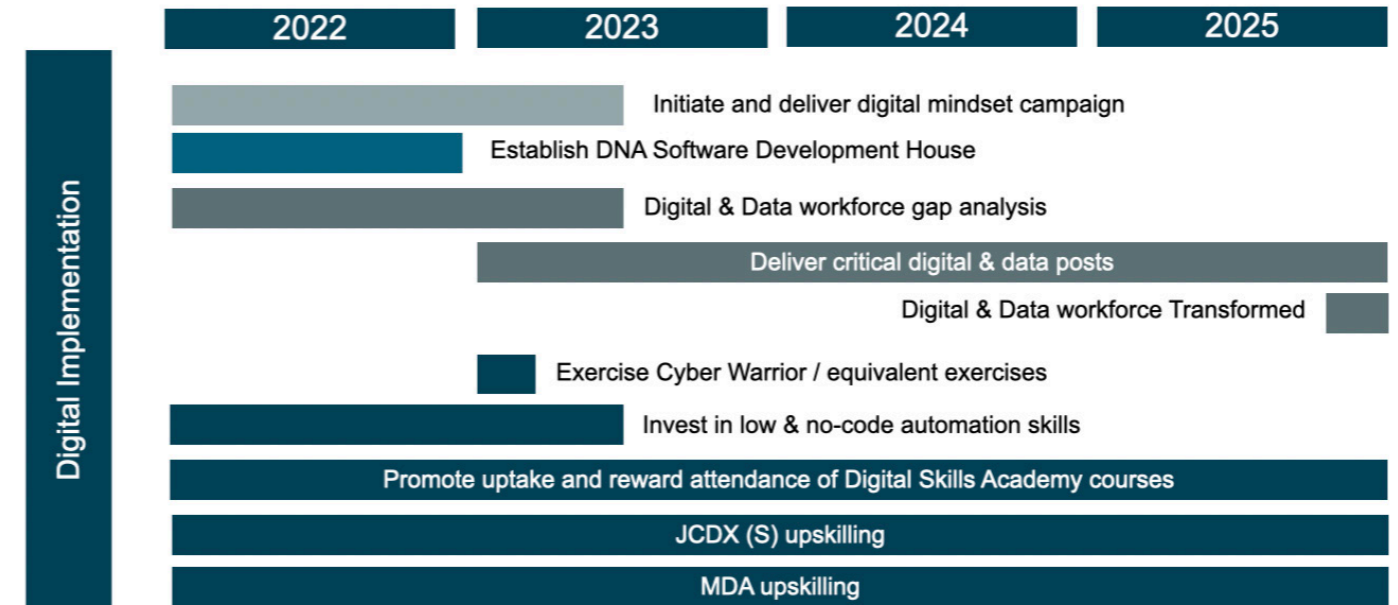
There must be a drive in investment for a digitally upskilled whole force that can exploit data and technology for operational and business advantage. This will empower our people to make smarter decisions focussing on what matters, and understanding the art of the possible. The core of our approach is to build our own expertise, and networks of agile delivery and data experts, developers and cyber specialists through unique learning experiences. We will also attract rich talent by embodying an increasingly innovative and agile way of working for digital leaders to excel.

What is needed to deliver?

In transformation of our workforce, we must collaborate across the whole force to integrate and optimise across military, civil servant and industry so that individuals can train, work and live well. Getting the most from our investment in digital and data will require that our people understand how best to leverage digital capabilities. This will be achieved by valuing our existing expertise of digital leaders, and by shaping opportunities for authoritative roles, whilst cultivating and empowering a new generation of thought leadership.

- Leadership and Culture**
 - Develop a culture where data and evidence are valued.
 - Invest in learning platforms for the digital community to keep pace with technological changes.
 - Campaigns to embed and reinforce a 'Digital First' mindset across the workforce.
- Organisational Design**
 - Optimise the business model and delivery approach, to reduce silos.
 - Simplify governance for clarity of accountability and responsibility at all levels, to enforce the Maritime Digital and Data Framework and delivery outcomes.
 - Maintain collaboration and representation of SQEP roles to interact and partner with Digital Functional Directorates to deliver and fulfil the Digital vision.
- Workforce Planning**
 - Talent management planning to identify how to attract and retain talent.
 - Encourage innovation employing a diverse mix of skills and multi-disciplined teams.
 - Drive forward resourcing across a prioritised range of roles.
- Capability and Skills**
 - Align with the Defence-wide Digital and Information professions to exploit common professional development frameworks.
 - Our recruiting and career paths, and partnerships with academia and industry will strengthen the talent pipeline to grow the full range of digital skills.

Delivery timescales for enablers



What is changing?

To achieve our vision for the singular Digital Backbone, the RN must strengthen and cohere all digital efforts and initiatives with measurable contribution and connection to Maritime objectives. Our delivery of initiatives for enabling services and solutions must start and end with an understanding of the data use case the organisation is addressing and the benefit to maritime. Moving at pace will require greater leadership, breaking down silos and championing the build of an architectural roadmap. This includes the planning and monitoring necessary for adherence to standards and processes, such as cyber security accreditation and combat systems integration.

What is needed to deliver?

Navy Digital will re-engineer business processes under a construct of agreed taxonomy and evaluate the business capabilities that are most important to achieving our organisational priorities. The RN must cohere and integrate a number of areas:

- Strategy and Digital Governance

 - A well governed portfolio of assured, user focused digital investments.
 - Rigorous prioritisation and wise-pivot of sensible divest in legacy systems.
 - Re-alignment of the road map for digital investment to deliver our Vision.
 - Improved communications with, and involvement of business functions and end users, ensuring the value and quality of delivery.
- Service Planning and Architecture

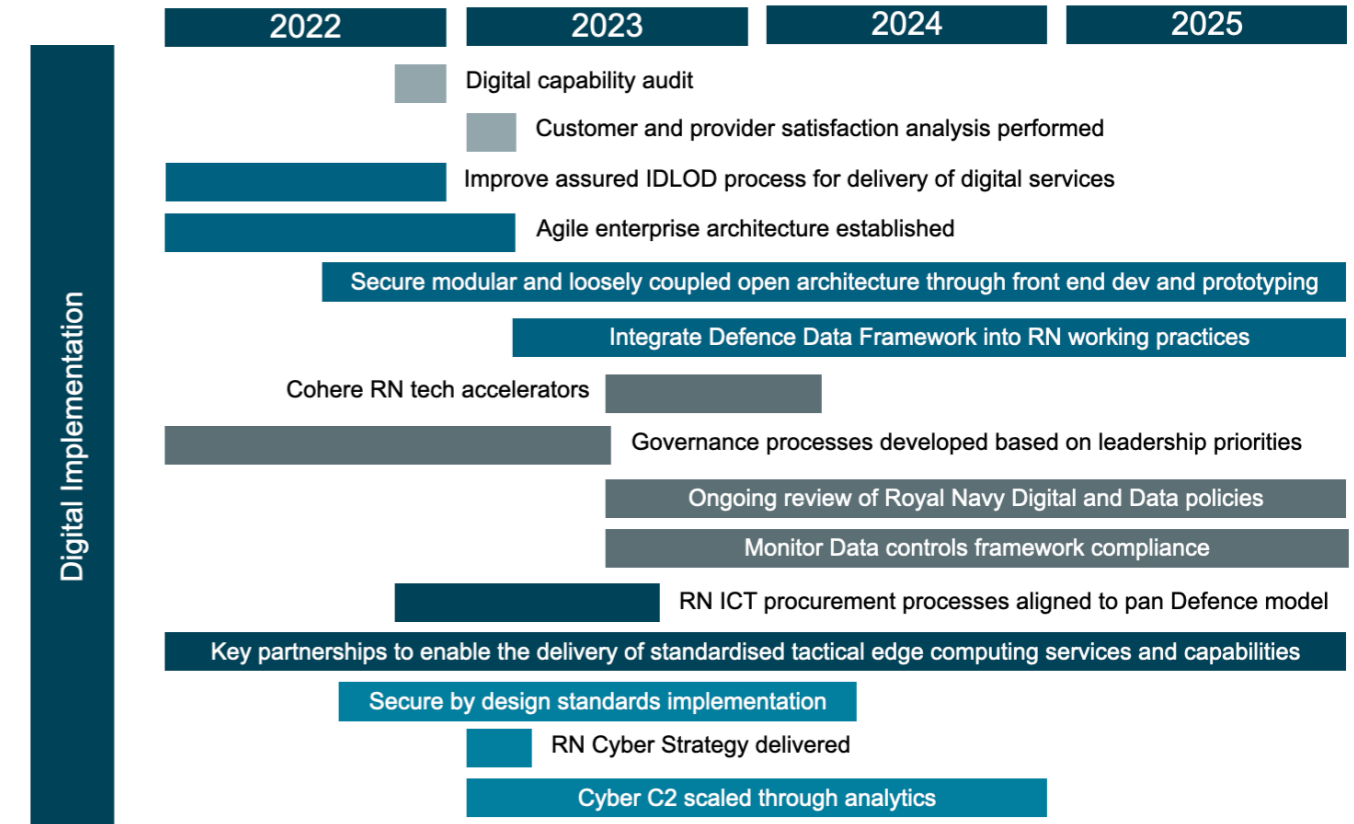
 - Collaborate on the architectural roadmap to ensure adherence to standards and existing processes.
 - Rationalise business systems to remove legacy applications that are no longer effective or duplicate existing capabilities.
- Digital Programme Delivery

 - Transparency at all phases; delivery planning, build and implementation.
 - Drive transformation with a portfolio office focused on strategic alignment and dependency management across the Royal Navy and Defence teams.
 - Agree portfolio success measures and leading indicator metrics via enhanced analytics.
- Procurement and Commercial Partners

 - Commercial efficiency through the use of more 'agile' practices, arrangements and contractual clauses that enable us to access data, technology and innovation with industry.
 - A joint approach to data and architecture standards for integration, interoperability and to minimise lock in with suppliers.
- Security and Risk

 - A strategy for cyber maturity and the information security management system to ensure compliance and provide continued assurance.
 - Expand and scale the use of analytics to identify potential risks and issues in execution of the digital investments.

Delivery timescales for enablers



What is changing?

The Data Strategy for Defence sets the framework and “rules of the road” to ensure the right people can discover, access, integrate and share the data they need. It highlights that improving the management of the ‘data life cycle’^[1] is a critical priority for the Royal Navy and no longer the responsibility of ‘IT experts’ alone, but a competency for everyone. Our approach to data analytics will need to be tailored depending on the organisational priority that needs to be enabled. By employing well documented data standards, practices and policies, the organisation will move along the data analytics continuum. This begins with the simple static reports of historical data that exist today, that deliver results to eyeballs to predictive or prescriptive analytics. They use complex interactive simulations that deliver real time insights directly into our operational and business processes.

What is needed to deliver?

The RN will continue on its journey to provide Data as a Service (DaaS) model under Project Kraken, but will also seek to provide users with access to low/no code data analytics tools to improve decision making. The organisation will also continue to evolve our data governance and establish an instinctive set of decision rights and responsibilities. To achieve this there is a requirement to:

Understand Data Use and Requirements

- Establish eligibility criteria to underpin investment in new business and operational data requirements as part of key governance mechanisms.
- Develop a Data Catalogue of assets and users.
- Ensure data requirements are explicit in commercial contracts to retain control of re-use and increase machine-ready data availability.

Optimise Our Data

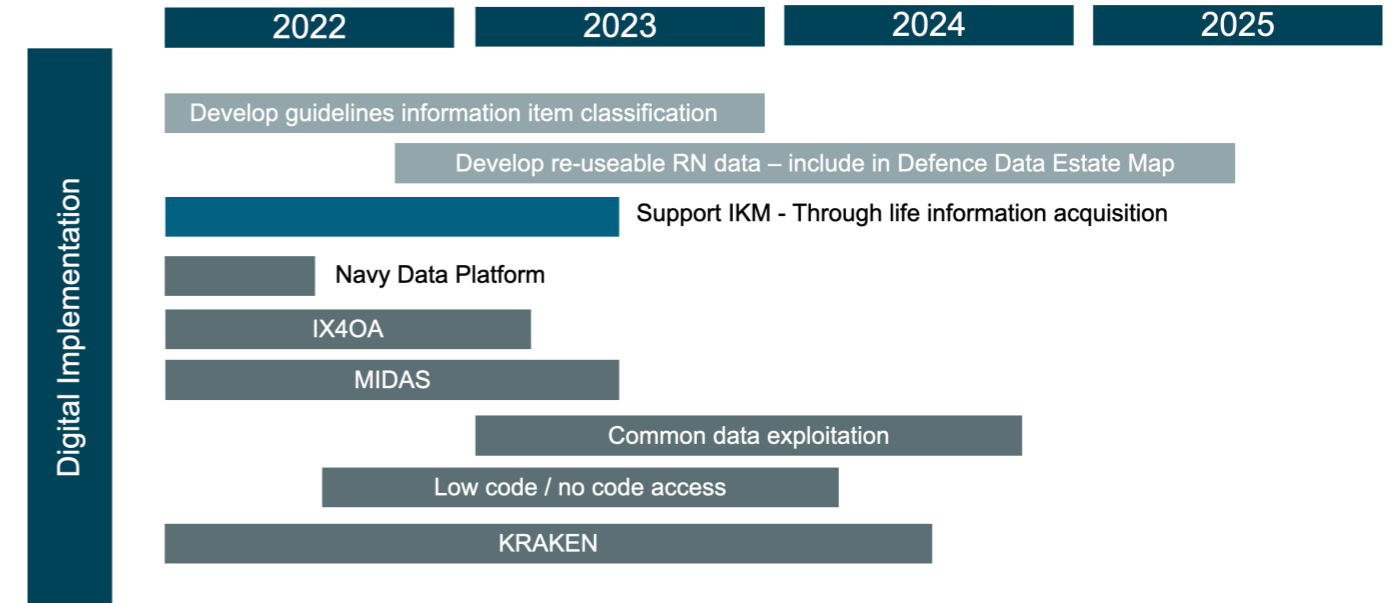
- Manage data consistently throughout all stages of its lifecycle ensuring adherence to standards, availability and accessibility.
- Drive commonality and treat data as an enduring strategic asset to be sustainably maintained and curated efficiently.
- Establish data working groups to address data gaps and issues across the organisation.
- Collaborate enterprise-wide to establish master and metadata management.

Drive Exploitation

- Adopt modern solutions including cloud services working towards storing critical data on a single platform.
- Identification of emerging advanced analytics techniques to support decision making.
- Drive exploitation with modern data analytics and data science capabilities.

1. The Data Strategy for Defence 2021 defines the data life cycle in four phases: creation, curation, consumption and exploitation.

Delivery timescales for enablers



What is changing?

Our technology serves a wide variety of user needs. These range from ‘core’ business services to the maritime domain specific services that are used ashore, and are also embedded into deployed maritime platforms. The core technical building blocks to the services that deliver information products to the end user are networks, systems and applications. To accelerate change and improve the quality of the information to the end user, the RN must replace siloed, tightly coupled technology. This will enable the organisation to be agile and keep pace with market developments.

What is needed to deliver?

Technology will be underpinned by a Common Technology Architecture with use of externally recognised standards across Maritime and Defence. This will be governed to deliver efficiencies through technology rationalisation, future-proofing designs and by building solutions with re-use as a core principle.

Mandates for new technology solutions will be driven by robust user requirements and agreed prioritisation criteria. The RN will invest in new capabilities that are intuitive, secure and serve as a core enabler for multi-domain integration and the MarOpC. Delivery will improve components and capabilities across the technology stack including:

- Networks & Gateways

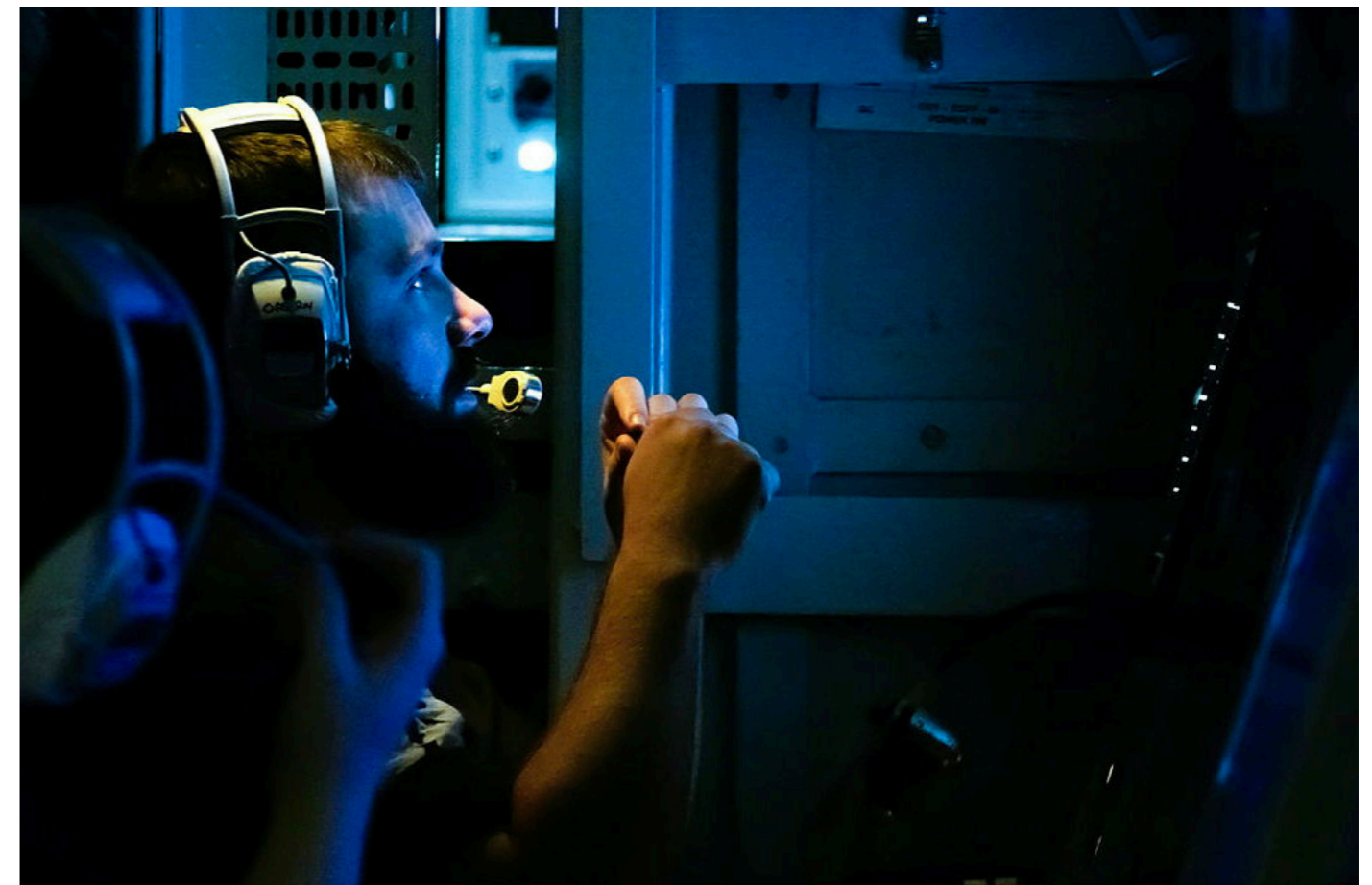
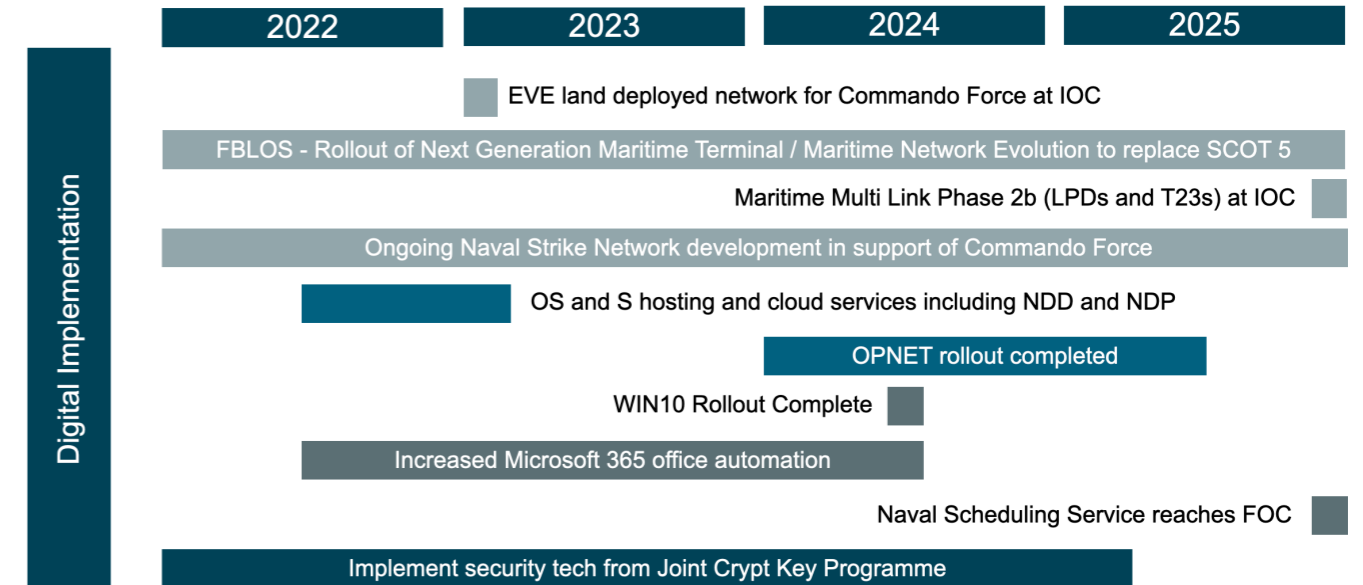
 - Next Generation Networks will provide end to end, seamless access to data and enable multi-domain integration. This must be improved from the base (modernised core network) to the deployed tactical e.g. LeTACIS, Future BLOS and Maritime Multi Links.
- Hosting & Migration

 - Resilient, secure and compliant hosting resources for applications. Delivering capabilities to allow users to rapidly-scale on accredited hosting services e.g. Navy Data Hosting.
 - Defence is also delivering the foundations for Hyperscale Cloud serving all classifications and enabling integration and data sharing internally and with our external partners.
- Workplace & End-User Services

 - Use of open standards for Application Programme Interfaces (APIs) that are necessary to exploit good data architectures.
 - Increased usage of business operations automation to unburden our people and drive efficiency as part of process digitisation using products such as the Microsoft Power Platform.
- Data Management & Security

 - Data architecture models for the standards, design principles and technology choices for programmes across Defence to adhere to and comply with.
 - Continual evolution of the Joint Crypt Key to ensure the future Crypt-Key capabilities meet MOD’s mission data requirements.

Delivery timescales for enablers



What does our ethos mean?

Our ethos forms the basis for making decisions about digital and data transformation. This puts the focus on delivery to end-users and the lived experience by closing the digital divide. It is our spirit of cooperation and is underpinned by common ways of working, standards and patterns. It is how the organisation puts a wrapper of integrity around the delivery of the Digital Backbone enablers (people, process, data, and technology). Our ethos is summarised by the 10 principles that need to be lived up to:

1

System of Systems approach - disaggregation of sensors, deciders and effectors, enabled by a coherent end-to-end architecture.

2

Data as a Strategic Asset - so that we can enable sustainable exploitation of data for modern warfare, from HQ to the edge.

3

Realise Interoperability - accelerate the shift to 'integrated' activities and more closely align cross domains and with our allies across all classifications and operational environments.

4

Re-use Before Buy, Before Build - derive value from what we have, share and scale the best innovations from across the organisation whilst delivering value for money.

5

Deployed user-focus - focus on rapid delivery of value to end-users. Capability at the edge is only as effective as the weakest link in the end-to-end chain.

6

Value for Money - enhancing taxpayer value through simplified, commoditised shared services, differentiating only to provide an economic or competitive advantage on the battlefield.

7

Common Standards and Patterns - to guide, support, and cohere technology solutions that enable scaling of solutions and re-use.

8

Cloud First from HQ to the edge - to grow our elastic, evergreen technology estate in which data can be effectively managed and seamlessly exploited across the organisation.

9

Secure & Resilient by Design - reduce single point of failure, use of mesh networks, distributed services, granular data access and zero-trust architectures.

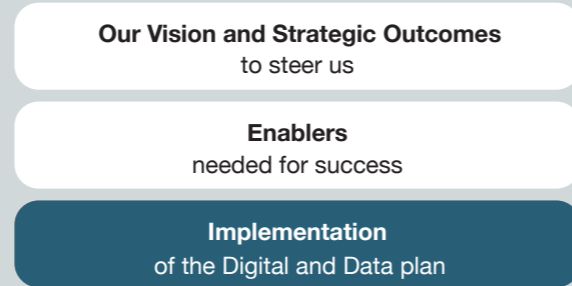
10

Autonomous by default - reduce the cognitive burden on the human, increase productivity operating 24/7.

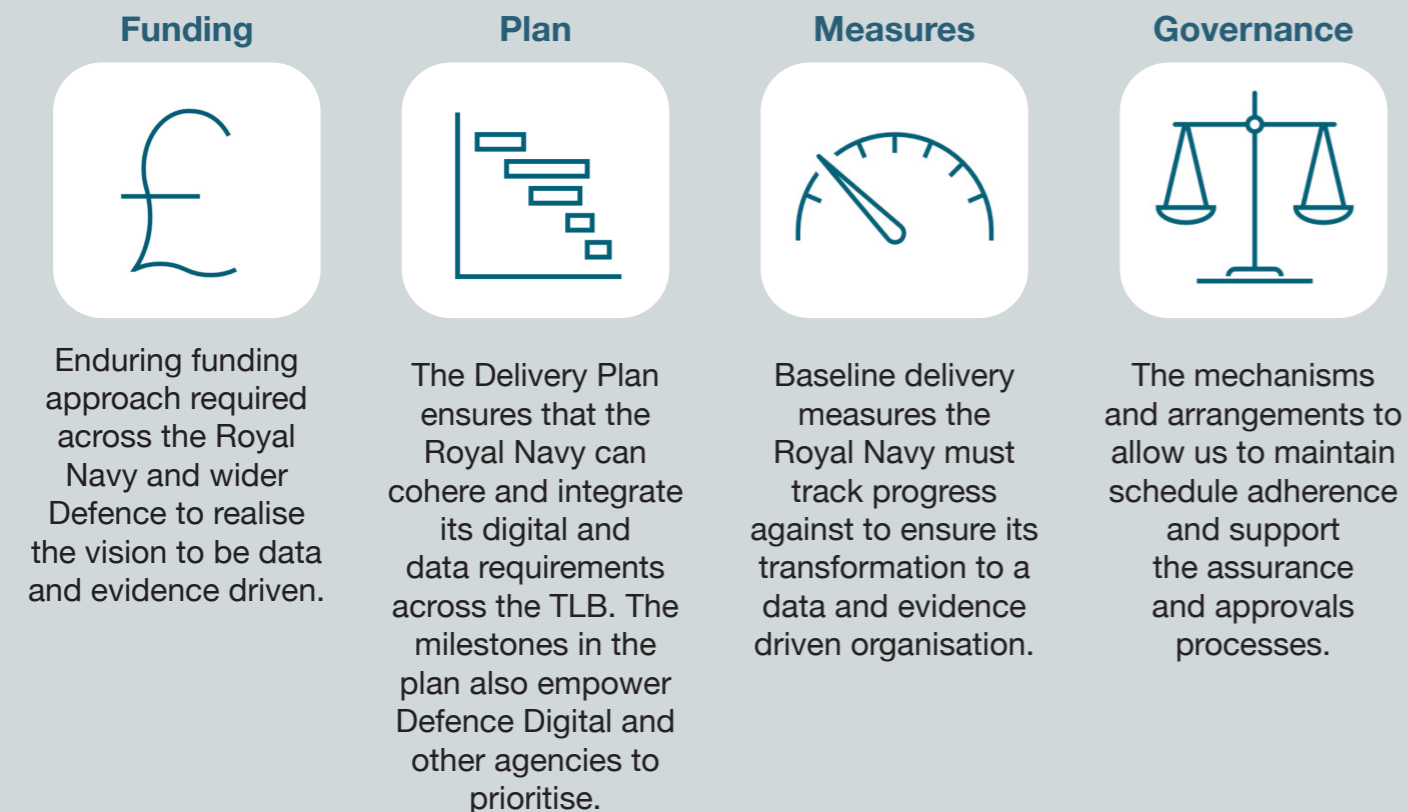
Implementation of the Digital and Data Plan

The 'Means', funding, plan, measures and governance, are the supporting mechanisms required to establish and embed the 'Enablers' needed for success. There is a need to ensure that there is clarity and transparency over the Navy's digital investment pipeline. We must ensure other TLBs are being influenced so that projects and programmes being delivered on behalf of the RN reflect the unique requirements of the maritime domain. This includes the integration of capabilities to a force that will be globally deployed. Our plan will be used to cohere and integrate the capabilities that we need. This will be supported by a series of measures to make sure that we remain on track to deliver the desired outcomes.

Key will be the governance arrangements that will maintain schedule adherence and support the assurance and approvals processes. The Governance process will also ensure that digital and data projects only enter the Navy's digital portfolio when they are funded, and have been assessed as supporting one of the eight outcomes that we are striving to deliver.



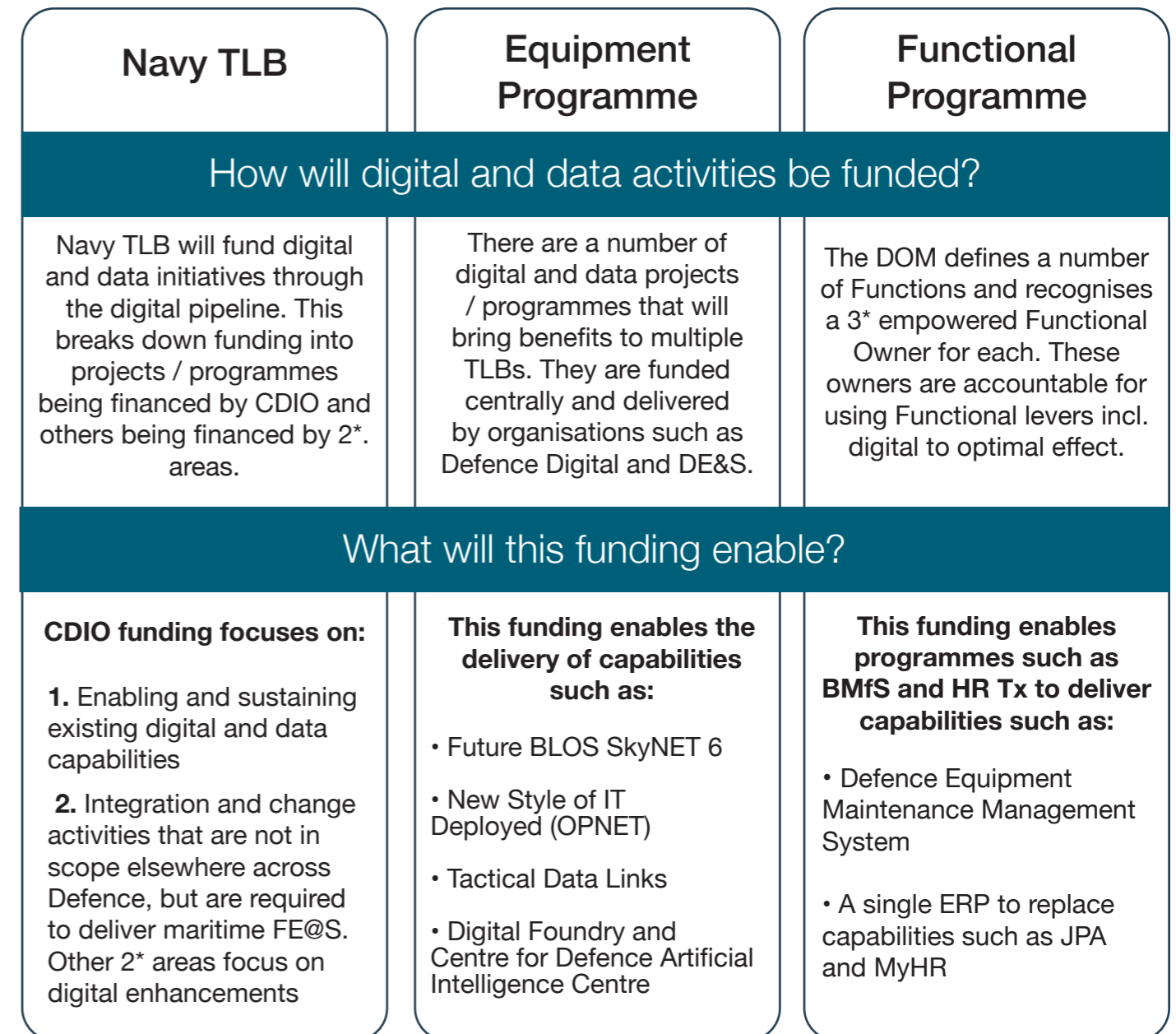
The Strategic Ends



Funding

Realising the vision to become data and evidence driven requires dedicated, consistent and enduring funding. Investment must be timely and prioritised.

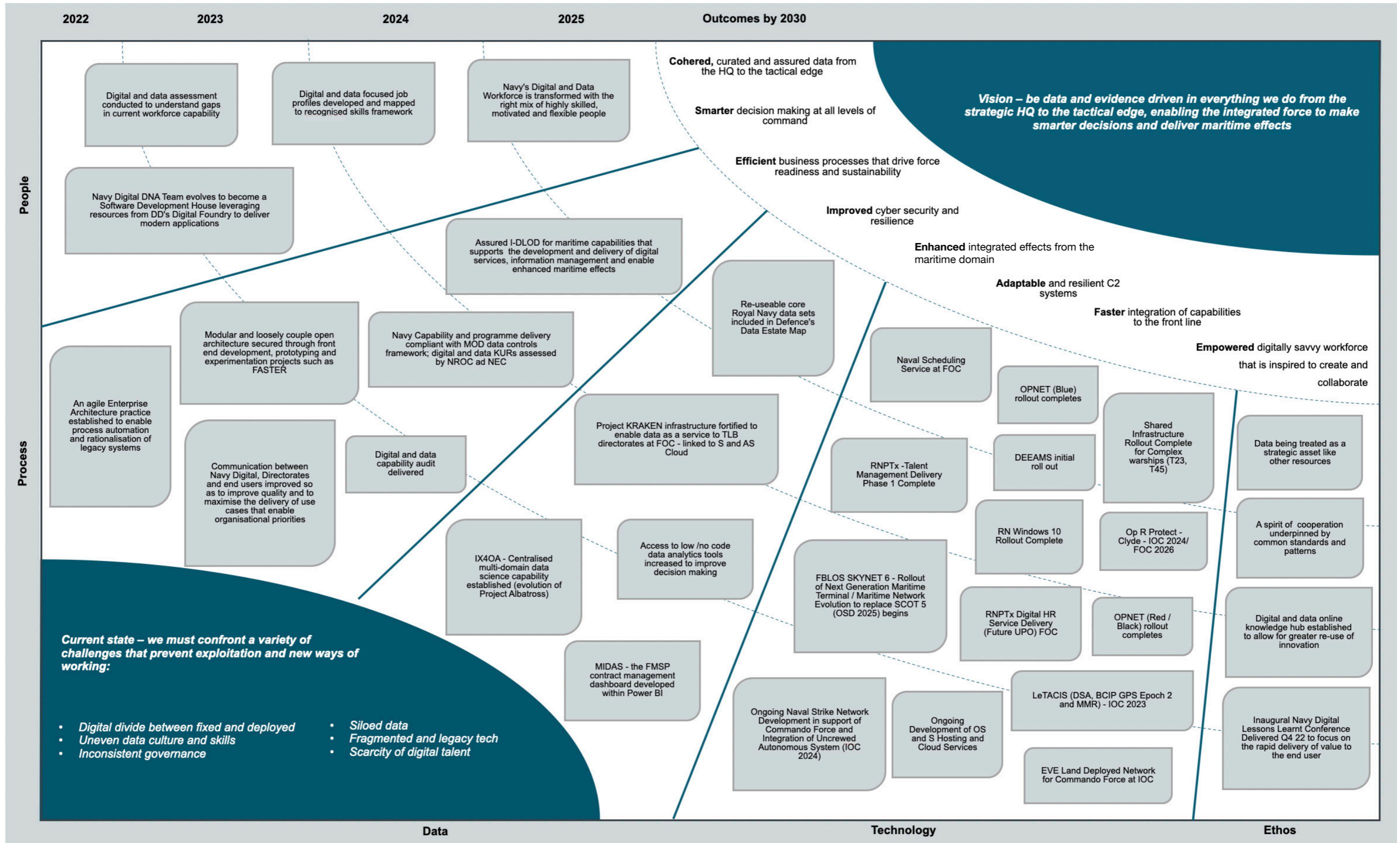
The diagram below shows the different funding streams that contribute to the delivery of the Royal Navy's digital and data capabilities.



Current economic pressures and budgetary challenges faced by the Royal Navy and Defence overall, require prioritised investment in digital and data initiatives. This requires clarity and transparency on digital and data spend across the TLB. The Navy Digital Portfolio Office will take the lead with 2* directorates and other delivery organisations to achieve spend transparency and develop a coherent process for making investment decisions. This ensures funding is prioritised against strategic benefits.

Delivery Plan

The Delivery Plan ensures that the Royal Navy can cohere and integrate its digital and data requirements across the TLB so that the organisation can realise its vision. The milestones in the plan also empower Defence Digital and other agencies to prioritise and coordinate investment and efforts towards their delivery.



To ensure that the RN remains on track to deliver the future vision and deliver the changes being sought, a series of initial success measures have been developed. These measures have been designed to track the successful implementation of the enablers required to transform the Royal Navy into an enduring data driven enterprise. They will need to be refined and socialised across the HQ and beyond, but the intention is that they will be used as the primary means in which to assess and improve digital and data performance.

Enabler	What does success look like?	How to start measuring success? (Examples – to be fully defined)
People	Digitally capable whole-force, with a culture of openness and collaboration, that can exploit data and technology for operational and business advantage. A hybrid of centralised and distributed collaboration across the Royal Navy, supported by sustainable access to data experts, developers, analysts, cyber experts and centres of excellence such as the Defence Digital Foundry	<ul style="list-style-type: none"> Achievement of priority workforce gap resolution Common Digital and data focused job profiles aligned to recognised skills framework Increase in digital SQEP across Royal Navy Digital Professionals have access to the DDaT framework Increase in Digital professionals pursuing career progression pathways
Process	Well governed delivery portfolio of data use cases that align to operational and business needs. Supported by strong programme management, more agile commercial and financial practices	<ul style="list-style-type: none"> Measure of programme delivery compliance with MOD data controls framework SROs are able to demonstrate Information KURs for all capability development within the Information DLOD and are clearly defined, budgeted for and delivered upon
Data	The goal is to ensure that the right people can discover, access, integrate and share the data they need so we can enable the strategic priorities of the organisation	<ul style="list-style-type: none"> Targeted Data Maturity levels. Maritime elements of the Defence Data Catalogue are fully operational with adoption and integration across all organisations
Technology	Focus on building and maintaining infrastructure, systems and applications that enable the delivery of end-user needs. Successful data life cycle management, analytics and governance require sound decisions about technology.	<ul style="list-style-type: none"> Measures of the reduction of unnecessary, duplicative end-user services. Navy are leveraging the Common Technical Architecture resulting in timely and cost-effective solutions. Measures for adoption of data technologies Cyber maturity target levels achieved
Ethos	The highest priority is to satisfy the user through early and continuous delivery of valuable outputs. Welcome changing requirements, re-use where possible, utilising agile processes to harness change for the user's operational and business advantage.	<ul style="list-style-type: none"> Increase in customer satisfaction Target timescales achieved for integration of new capability Digital and data hub established with target engagement levels achieved

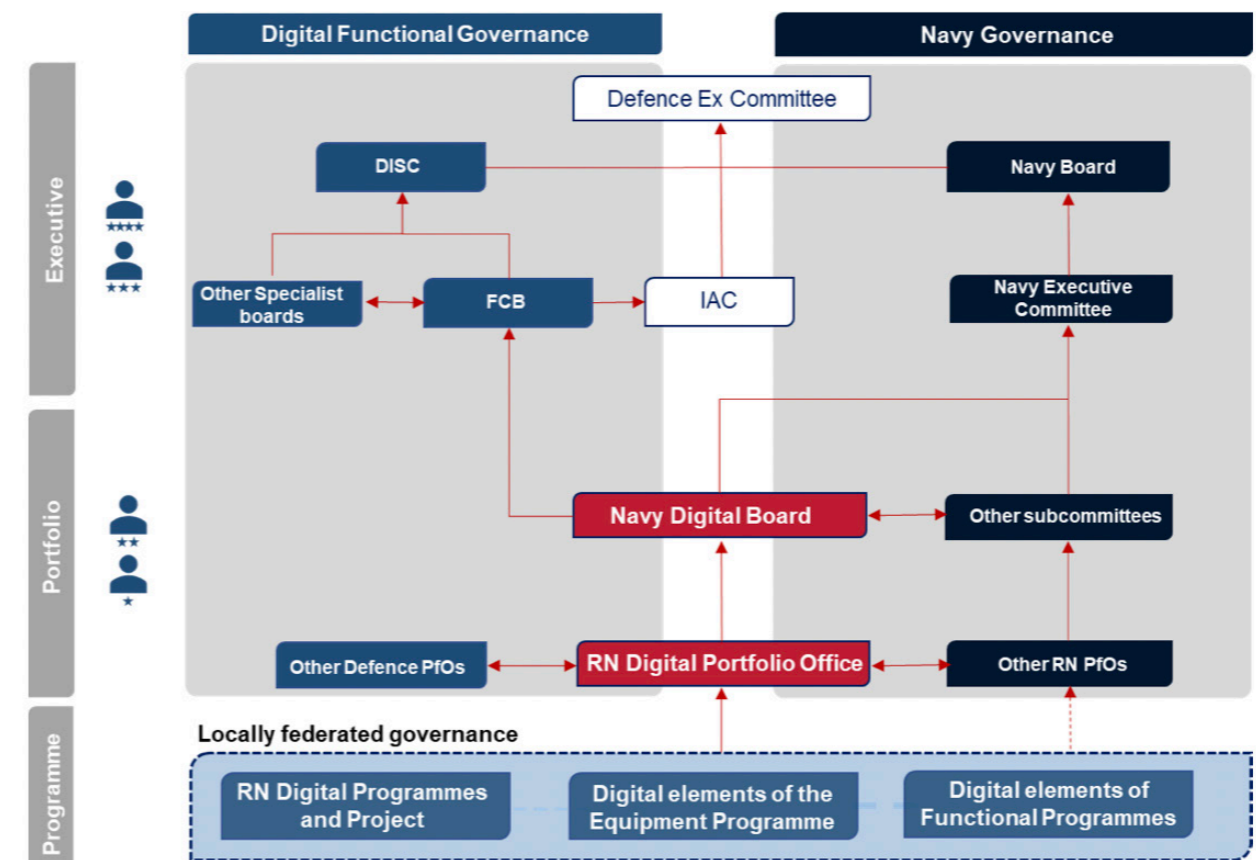
The governance mechanisms and arrangements to allow us to maintain schedule adherence and support the assurance and approvals processes are key to this plan. We will invest in the right amount of governance for critical areas of design, investment planning, programme delivery and how we manage the information environment to ensure operational integrity and the free, resilient flow of data.

Empowering the Navy Digital Board

A Navy Digital Board has been established to provide the Digital and Data Plan with a forum for pan-Defence influence, accountability and oversight. Chaired by the Navy Chief Digital and Information Officer (CDIO), this board escalates to the NEC or FCB when necessary, informed by 3-month sprints of delivery activity.

Strategic alignment and increasing delivery confidence

Underpinning the governance of this plan sits a portfolio approach with a pipeline of digital initiatives for delivery across programme funding streams. A portfolio office supports the strategic delivery, providing advice and guidance, to ensure digital and data projects only enter the Navy's Digital portfolio when they are funded, and have been assessed as supporting one of the eight outcomes.



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