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Executive summary

This IT Strategy outlines the technology approach that will enable HMRC’s long term vision and ensure our digital services and enterprise systems have a modern technological footing. We will ensure the next generation of services are first-rate through the delivery of a world-class architecture, driven by real business transformation.

Our future technology will support and adapt to changing customer and business needs. We will:

- re-engineer and rationalise the applications into standard reusable services, built around customers ‘subscribing’ to HMRC products
- standardise and rationalise business processes to support online, real time customer transactions
- implement industry standard financial accounting processes that support line of sight from individual transaction to HMRC’s core accounts
- develop world class data analytics capabilities to support customer service, reduce cost and increase yield
- exploit commodity software products that deliver best value for money and deploy, based on the business case, open source alternatives to proprietary products
- decommission outdated and inflexible legacy systems, removing the risk to our mission critical services and reliance on diminishing niche skills to support and develop them
- understand the cost drivers and, with business agreement, make balanced decisions on cost, speed, functionality, and risk, including impact of failure.

So that:

- we continue to run and maintain a daily IT service for our customers
- HMRC becomes a truly digital organisation
- HMRC can find secure ways to achieve its goals that balance risk management with business objectives
- we can transform the performance of the Department through exploitation of cloud infrastructure and technical services
- we run public services in a cost-effective way
- we deliver cost savings in line with the spending review.

In turn, the Chief Digital & Information Officer Group (CDIO) – HMRC’s IT and digital function - will support the Department in maximising revenue flows to the Treasury by:

- continuing to reduce IT downtime for internal and external services
- maintaining daily IT service standards
- delivering IT projects on-time and to quality standards.
Document purpose

This document sets out the HMRC IT Strategy for the Spending Review Period. It is a description of how HMRC’s Chief Digital & Information Officer (CDIO) will deliver the required IT capabilities to enable and support the delivery of the Departmental Business Strategy.

This document will be made available externally as part of HMRC’s obligation and commitment to transparency in government. It will give the public, suppliers and other interested parties insight into how HMRC will address Information Technology issues and its choice of solutions now and in the near future.

This document will be reviewed annually to ensure it remains valid and relevant.

HMRC strategic context

We are the UK’s tax, payments and customs authority. We collect taxes and duties from 45 million individuals and 5.2 million businesses, support trade and growth through customs and pay tax credits to 4.6 million household and Child Benefit to 7.5 million families. We are also one of the country’s largest employers.

Our work contributes to the country’s economic and social wellbeing and supports growth. The United Kingdom is the world’s seventh largest economy and the second largest in the European Union and we play our part by making it as easy as possible for industry and business to trade, helping businesses to access reliefs that encourage investment, employment and growth.

We also work with a number of other government departments to help deliver their objectives; for example, collecting student loans.

Our core role is to administer the tax system efficiently and ensure that the right people pay the right amount of tax at the right time. We believe that by designing our products, processes and services around our customer needs we will maximise their compliance with the least cost to us while providing the best service for them. We have always focused on three core objectives:

- maximise compliance
- increase efficiency
- improve customer experience.

The vast majority of our customers willingly comply with their tax obligations. We will seek the highest possible level of voluntary compliance and maintain our position as a trusted and professional tax authority by:

- being seen to act fairly and treating customers with the respect they are due
- making it as simple and low-cost as possible for those who try to comply and offering comprehensive support where most needed
- minimising the opportunities for error, evasion and avoidance
- encouraging people to take care with their tax affairs/meet their obligations and providing compliant customers with certainty when they do so
- detecting and tackling those who try to evade tax
- preventing and disrupting organised criminal attacks on the Exchequer.
We also include and involve our people in how we meet these objectives and ensure that we invest in their skills, capability and the experience they have of working in HMRC.

Making tax digital

The government’s vision for making tax digital is about much more than simply adding digital tools to the current system; it’s about transforming the UK tax system into something that feels completely different. Transforming our tax system has four foundations.

- **Tax Simplified**
  Taxpayers should not have to give HMRC information that is already has or should be able to get from elsewhere – for instance, from employers, banks, building societies and other government departments. Taxpayers will see the information that HMRC holds through their digital tax accounts, be able to check at any time that their details are complete and correct. We will use this information to tailor the service we provide, according to each taxpayer’s individual circumstances.

- **Tax in One Place**
  Taxpayers will be able to see their complete financial picture in their digital account, just like they do in their online banking. They will be able to set an over-payment of one tax against the under-payment of another; it will feel like paying a single tax.

- **Making tax digital for business**
  Businesses should not have to wait until the end of the tax year or even longer before knowing how much tax they should pay. HMRC will collect and process information affecting tax in as close to real time as possible, to stop tax due or repayments owed from building up.

- **Making tax digital for individual taxpayers**
  Individual taxpayers will interact with HMRC digitally and at any time to suit them. Every individual and small business will have access to a digital tax account. These accounts will present individual taxpayers with a personalised picture of their tax affairs, along with prompts, advice and support through webchat and secure messaging.
IT contribution to HMRC transformation

HMRC has a very complex IT landscape with nearly 600 different IT applications. Some of these were built at a time when data was entered into mainframe computers using punched cards. Our core tax systems were designed to manage products not customers. The 2005 merger of Inland Revenue with Customs & Excise resulted in duplicate systems, especially around financial accounting, that still persist today.

Modern day business computing seeks to integrate line-of-business financial transactions with back office organisation financial systems and the associated operational reporting. We face an ageing ICT estate where data fragmentation allied to manual processing interventions will struggle or fail to support the demands of the digital age.

We have achieved cost reductions through major contract re-negotiation, however the IT estate is still costly to manage due to a dangerous dependency on legacy mainframe operating systems and is difficult to change and keep pace with the increased and evolving IT demand.

The key to transforming our IT estate is re-engineering what we have so that the majority of our IT applications can run on virtualised infrastructure environments with as much as possible hosted on commodity cloud services. As we modify our approach to application, database and infrastructure engineering, we will move with the market as it develops, as opposed to lagging behind it.

Technology is enabling a much wider programme of change, with the HMRC Spending Review commitments at its heart. Our individual transformation programmes are supported by joint business and IT pillars to ensure alignment and a clear means to achieve the Department’s business objectives. The foundation elements are led by technology; infrastructure (network, desktop), the contract replacement (operating model, commercial & supplier) and people capabilities (culture, ways of working, career pathways) are fundamental to everything we want to achieve.
This transformation is built around a converged business model and there are some critical interdependent IT enablers we have identified.

There will be three core tax administration platforms.

- **Individuals Tax management platform (ITMP)**
  Will be based on the National Insurance and PAYE Service (NPS) and will be the home for personal taxes.

- **Enterprise Tax Management Platform (ETMP)**
  Will provide a single, cohesive environment where core tax management and financial accounting processes can be effectively and efficiently hosted. Based on SAP it is the home of business taxes and duties, as well as our corporate HR and finance systems.

- **Customs Declaration Services (CDS)**
  Replacement for Customs Handling of Import and Export Freight (CHIEF) will rationalise and transform the asset base into a modernised, simplified, streamlined and more integrated suite of systems that are easier and more cost effective to maintain, and which also enable HMRC to comply with EU legal mandates.
And five cross-cutting platforms:

- **Case management**
  A single case management system for compliance and exception processing, enabling faster, cheaper workflow with common service use for escalations and exceptions. Digitisation of white mail through our new Digital Mail Service, enabling scanned mail to be retained on the single customer record.

- **Data and risk analytics**
  New generation of upstream risk analytics tools spearheaded by an Enterprise Data Hub (EDH) that intrinsically links digital services and data analytics; consolidating our existing data warehouses into a single instance which will be updated in real time by new transactions received from customers, enterprise systems and external sources. We will have improved data quality to deliver a ‘Golden Customer Record’; removing duplication of information and rationalising existing data sets further to reduce storage costs; with improved confidence and validation in our entire data lifecycle by using identity assurance, date, time, and source verification.

- **Debt management**
  Removing costly legacy applications and migrating the functionality to developed shared services for debt management.

- **Finance**
  Improving the efficiency, timeliness, and accuracy of financial reporting through the use of a single financial reporting platform.

- **HR**
  Updating HR to improve user experience, providing better strategic workforce planning and analytics.

Our Multi-Channel Digital Tax Platform (MDTP) is about designing services around customer segments with different requirements that need different kinds of help, and which everyone will access via one of the digital tax accounts or via an API. It will be centred on providing a secure, reliable, flexible and scalable platform (100% API) for HMRC’s new or enhanced digital services, enabling them to be developed quickly and easily, based on customer needs.
We will also need a Contact Management (CM) component that not only meets and improves existing CM functionality in the telephony channel, but is also extensible to manage contact through a range of other channels (webchat, SMS, secure email). We will support our workforce dealing with queries by having improved call handling and queue management capabilities with a holistic, truly ‘multi-channel view’ of customer contact across all available channels; increasing customer and end user satisfaction.

Virtualisation technology brokered from multiple vendors, moving to a disaster tolerant environment with less focus on disaster recovery will help HMRC transform our data centre hosting platforms from traditionally dedicated physical resources to virtual cloud based services.
Cloud will offer:

- on demand service – self-service delivering capacity quickly from a number of Cloud providers
- broad network access – widely accessible, from a variety of devices / platforms
- resource pooling – shared capacity allocated according to demand
- rapid elasticity – scale rapidly up as well as down
- measured service – transparent, pay-per-use.

This will deliver:

- better value for money
- greater flexibility
- faster provisioning
- improved options for resilience
- reduced running costs across our IT estate.

We will protect customer information from cyber criminals, improving customer trust, confidence and use of digital services. We will continue to enhance the range of activities that the HMRC Cyber Security Command Centre will undertake to provide assurance and real time event and incident management across our online services, systems and computer networks, to guard against the risk of attack, malware, and insider threats.

In addition to the core IT elements we will:

- implement workforce transformation to equip our people with the right tools to increase their productivity and encourage collaboration
- put in place a flexible IT sourcing strategy to acquire the capabilities we need and ensure that we get best value for our investments
- have an agile IT change delivery capability to enable the collaborative design and delivery of both bespoke and packaged solutions in an environment of multiple design, and multiple delivery locations and partners.

**Supporting directorate business plans**

The aforementioned IT contribution is playing a significant role in HMRC’s transformation and how the different directorates will operate in the future, however CDIO has also has an important part to play in designing and delivering other elements of HMRC’s Business Strategy and directorate business plans and we are supporting these areas in different ways.

**Enforcement & Compliance (E&C) – we are:**

- investing in data and intelligence systems to make more use of the customer information we collect; by joining up and analysing our data, HMRC will deepen our understanding and be able to tailor compliance activity accordingly
- significantly improving our evasion targeting capability and maximising our civil and criminal intervention opportunities through an improved Connect 2 system, and the introduction of 2-Factor Authentication and Verify
• moving analytics, planning and performance reporting functionality to the EDH, enabling us to progress our data-driven approach, in line with HMRC’s Promote, Prevent, Respond strategy for Debt Management & Banking
• implementing predictive analytics functionality for early debt management interventions
• introducing electronic presentation of evidence for enforcement and a Digital Evidence Capability to handle litigation cases more effectively
• Improving our Criminal Case Management System

Benefits & Credits (B&C) – we are:
• launching an iteration of online Child Benefit platform
• introducing online Tax-Free Childcare platform to support parents for their childcare costs
• exploiting our real time information to identify potential impacts to entitlements and, with available prompts (such as SMS), inviting responses from customers to avoid overpayments
• enhancing pre-payment checks to prevent error and fraud in the systems
• enhancing the Tax Credits digital service allowing more customers to ‘self-serve’.

Personal Tax (PT) – we are:
• preventing non-compliance through initiatives such as pre population of returns
• reducing the number of work management items through automating clearance
• making it easier for international customers and professional agents to deal with HMRC by using shared workspace and secure messaging
• replacing interim iForms with digital services so customers can see changes immediately.

Business Tax (BT) – we are:
• reducing call volumes by providing guidance and advice upfront through webinar capabilities
• providing customer relationship managers with data analytics to identify risks in real time
• working with third party software developers to increase the potential of software products that will improve the accuracy of business record keeping
• contributing to UK growth agenda through customs transformation operating as One Government at the Border
• transforming the Customs Declarations Service; bringing in Union Custom Code and enabling trade to operate more effectively and legally.

People and finance (corporate functions) – we are:
• improving Online HR, making it more intuitive and enabling staff to customise it to meet their needs when self-serving
• creating a single digital portal through which managers can access all management-related learning opportunities as part of the Management Academy
• creating new working environments, with modern facilities and equipment:
  - deploying a flexible device strategy across the Department
  - delivering Wi-Fi to HMRC buildings – enabling everyone to access their applications easily and at any time
  - encouraging greater networking and cross-HMRC working, by making full use of collaboration tools.
IT principles and standards

The provision of principles is an aid to solution design: the principles, their relative priority, rationale and implications will help to refine IT solutions and to decide between alternatives. They help to make implicit conditions explicit and set the boundaries and context within which a solution should sit as distinct from specific requirements that will also be established.

Our IT principles are derived from and consistent with:

- the strategic vision for HMRC
- the benefits the Department must deliver
- documentation describing existing models, technology, processes that are utilised by HMRC
- any internal and/or external standards/regulations that apply
- innovation and research studies
- wider government principles and standards.

These principles are consistent with departmental guidance and reflect government, HMRC strategic, and IT plans allowing for HMRC’s IT to abide with legislation, policies, and regulations. These will not preclude business process improvements that lead to changes in legislation, policies and regulations. Our architecture principles are flexible, consistent and simple, enabling HMRC to achieve its goals by supporting architectural decision making. In addition to the strategic objectives, our principles have technology ambition at the core, this includes:

- greater IT functional excellence
- reducing IT complexity
- reduce carbon footprint.

Given HMRC’s scale and ambition, our principles are grouped by the architecture domains and are mapped to the strategic drivers of both the business and technology to ensure they give direction and add value.
The full list of IT principles is in Annex A.

In addition to adhering to the Government Digital Strategy all HMRC digital services will align to the Government Digital Service standard\(^1\).

All HMRC IT services will commit to the actions set out in the Government Digital Strategy\(^2\) which supports the Civil Service Reform plan to develop services that allow straightforward access to information and services in times and in ways that are convenient to the users rather than the providers, and are more efficient and cost-effective to develop and run.

**IT accessibility**

IT Accessibility has to be looked at from two perspectives: standards for developing systems and support for users of customer and staff-facing systems. We will design, build and procure our IT systems so that they can be used by any user – disabled or not – and we will provide all appropriate support to our staff and customers to allow them to do so. Our aim is to be an exemplar in this field, and not merely deliver the legal minimum.

In conjunction with the HMRC Disability Plan, we will address IT accessibility issues by:

- aiming to build our staff and customer-facing systems to international standards, principally the World Web Consortium’s Web Content Accessibility Guidelines (W3C WCAG) AA standard, in addition to the standards for all aspects of customer facing systems development are set centrally by the Cabinet Office
- applying W3C\(^3\) standards in our IT procurement exercises
- embedding accessibility principles into the software development life-cycle and associated governance processes
- providing dedicated support and testing on all supplier/in-house built systems and associated upgrades; ensuring accessibility champions are embedded into the developer community
- producing upon request departmental documents in a variety of formats including large print, braille and MP3
- striving for continuous improvement through monthly feedback from customers on the accessibility of our systems, gathered by our digital services team
- maintaining a catalogue of tested and approved specialist products and assistive technology that can be deployed quickly to our staff
- working closely with the Disability Network, providing generic software training for our assistive technology to be used with corporate systems.

**IT delivery and sourcing**

The Aspire contract (a major outsourcing contract to primarily Capgemini and Fujitsu) will end in 2017. We have already started to plan and execute the transition away from this replacing it with a model with more in house skills and a wider range of suppliers.


\(^{3}\) World Wide Web Consortium (W3C) - [http://www.w3.org/](http://www.w3.org/)
We are maximising further opportunities for cost savings by aligning our architecture domains and delivery methodology with the supplier model and new service delivery model and supporting increased leverage of our internal IT function.

We will support the government-wide ambition to re-invigorate the small and medium enterprise (SME) community by utilising competition to deliver new solutions and services, within the constraints of the existing contract, to increase our procurement spend with SMEs.

We will continue to utilise government framework contracts including G-Cloud and Digital Marketplace, whilst making use of the innovative services provided by SMEs through existing and emerging government procurement frameworks.

We have moved away from the traditional biannual waterfall delivery model, to a monthly release process that combines both agile and waterfall delivery methodologies, which requires significant process, skills, organisation, and behavioural change.

To support the new delivery methodology we have created delivery centres. These will bring together all the skills required to develop and operate key services. They will be staffed by a combination of HMRC staff and partners, and led by HMRC. The final mix of HMRC and partner staff will evolve as we gain more experience. This will enable the collaborative design and delivery of both bespoke and packaged solutions in an environment of multiple design locations, multiple delivery locations and partners.

All IT projects will operate in an agile, iterative manner, unless this is not appropriate. As a result, we anticipate faster, slicker, quicker IT solutions, greater focus on delivery and customer service whilst supporting the government’s SME growth agenda.

**IT governance**

We have a mature approach to change governance and a skilled in-house IT team. The CDIO is accountable for all IT developments, with all spend subject to HMRC and Cabinet Office spending controls. Where decisions require investment greater than the departments delegated authority, we will seek early engagement with the Cabinet Office / Government Digital Service to discuss the initiatives, although the final decisions may rest with ministers.

CDIO Group operates an Architecture Review Board (ARB) to ensure that all new and modified platforms are appropriately designed and conform to agreed principles and standards. Any deviation from these standards must be approved by the CDIO. There is also a Technical Design Authority (TDA) to approve new technology being integrated to the IT estate, ratify product selection (software or hardware) and changes in the direction of architecture blueprints.

When deploying services into the live environment, CDIO work closely with all stakeholders to ensure they are satisfied the new services or modifications are fit for purpose, the business is ready for change and any potential risks or operational impact is acceptable.

**IT people and skills**

In line with HMRC’s wider transformation as part of Building our Future (HMRC’s national conversation about the Department’s future), CDIO Group will be a smaller, more efficient workforce, with a smaller
footprint located across a model of regional centres (and a smaller number of specialist sites). Through this investment in the future location strategy of HMRC’s workforce, we will work together to transform the way we work in CDIO, building the digital, data, leadership and other skills we need in order to enable new ways of working in the workplaces of the future.

CDIO Group will identify the future skills, behaviours and culture that will create an environment that involves, motivates and develops our people, strengthens leadership, enables them to be innovative and creative whilst improving professionalism;

CDIO Group will have leaders at all levels who show passion and commitment, and who understand, own and promote what we want to achieve. Our leaders and managers will be at the forefront of helping us transform HMRC.

By aligning our people to the changing business needs, we can monitor and track our workforce demographics to ensure that issues are addressed in a timely manner, developing scenario based workforce plans to fully inform the requirements for recruitment, moves and redeployments.

We will give our people the opportunity to learn, develop and progress in their careers, so we will invest in the skills and knowledge that are critical to the future delivery of our business. We will analyse any skills gaps that arise, plan development to plug these whilst supporting individuals to develop their careers using the CDIO career pathway.

We will create a more engaged workforce by communicating with our people more openly and honestly; changing the way it feels to work within CDIO Group, allowing people to feel empowered to take decisions that they are best placed to make.

To ensure we remain a high-performing IT organisation, we will set clear objectives around what we expect from our people. CDIO Group will continue to:

- commit to meaningful actions to tackle those factors within our control which drive engagement
- utilising the Skills for the Information Age (SFIA) framework to measure our internal skills and identify gaps and areas for development
- promote use of cross government development programmes (e.g. positive action pathways)
- work with universities to pilot IT industrial business placements whilst also working with Tech Partnership UK to trial the new IT honours degree apprenticeships
- work with Civil Service Digital & Technology graduate schemes to nurture the next generation of technology leaders
- embed an ethos of volunteering in the local community with our people, sharing our skills and building the digital skills of our local communities.

**Risks**

CDIO Group is under continual pressure to deliver cost savings year on year, at the same time as demand for IT services and digital transformation continues to rise. Whilst savings must be realised through existing initiatives, including supplier-contract novation (where appropriate and compatible with public contract procurement principles) and the decommissioning of unnecessary services, new opportunities to realise savings through digital transformation must also be continuously identified and capitalised. This puts considerable risk into delivering the budget in such a dynamic environment.
This move towards a digital service increases the risk to all of HMRC, government and UK Plc. The ambition to transform the IT delivery model, at the same time as develop services and the infrastructure required to deliver new digital services is a challenge and comes with significant levels of risk.

There is a large risk that CDIO Group in particular does not have and will not be able to resource sufficient staff with the necessary skills to deliver the IT Strategy. There are critical and ongoing dependencies on improvements to organisational agility, technical exploitation, strong leadership, professional skills and staff motivation in order to achieve the ambitions.

Operational risks are managed by the relevant departmental, project and programme boards, and CDIO Group will work to mitigate these risks on behalf of the Department.

**IT architecture**

To aid the re-engineering and rationalisation of the IT, we have broken the conceptual architecture into major IT platforms and developed detailed ‘IT Architecture Blueprints’ for each of them, focussing on reusable services that can be used holistically across HMRC.

This section of the strategy summarises each of these domains; the detailed blueprints are available and can be shared on request.
Digital

Our focus on this platform will include:

- architecting a platform that supports rapid development and deployment of customer centric digital services
- using web architecture based on RESTful API integration with loosely coupled stateless micro-services that can be released independently
- ensuring all Digital Tax Platforms web application and micro services execute on the Java Virtual Machine (JVM), a ubiquitous platform, providing portability and interoperability.
- Virtual machines (VMs) being based on open-source commodity compute and storage resources.
- developing services predominately Java and Scala, an Object Functional language, which executes on a Java Virtual Machine (JVM) and is interoperable with Java components and libraries
- developing a platform that is safe and secure and fully accredited to operate digital services
- providing the necessary connections to the HMRC Heads of Duty Systems
- reducing the infrastructure and licensing costs of the existing HMRC Portal platform by moving towards Infrastructure as a Service (Iaas) and open source software
- erosion of the existing ‘Portal RSA’ online environment
- providing a PSN gateway capability to handle asynchronous file-transfers
- customers having access HMRC’s ‘tax platform’ services through the Presentation Tier exposed via GOV.UK.

Contact

Our focus on this platform will include:

- replacing current Telephony Contact Management Application with a web based software application comprised of bespoke ‘apps’ which provide both CTI and multi-channel contact management services
- having a hosted virtual contact centre (and associated Intelligent Routing services) platform that provides unified communications and collaboration applications
- mastering contact history data in a new scalable database to support cross-channel, cross-enterprise requirements
- building a contact management (CM) component that not only meets and improves existing CM functionality in the telephony channel, but is also extensible to manage contact through a range of other channels; priority areas include contact event logging, webchat, campaign management, secure messaging and a common user interface to support the blending of front and back office activities
- improving call handling and queue management capabilities.

Identity Assurance

Our focus on this platform will include:

- that the HMRC solution for Individual and Business IDA is Government Gateway.
- building new functionality to support agent client authorisation, which will be hosted on MDTP
- building a new solution to enable our customers to authorise third party software to access their resources, which will ensure HMRC moves away from current process of embedding credentials into every API interaction
- migrating individuals to GOV.UK Verify when the service matures – the GOV.UK Verify service uses commercial identity providers (IDPs) who will undertake identity verification of our customers and
provide them with strong credentials that provide a suitably secure route in to HMRC’s online services.

**Tax & Customer**

Our focus on this platform will include:
- that HMRC’s future target architecture view is that most information will be migrated to two core technology platforms, ETMP and ITMP (see page 7)
- replacing the many legacy systems in use across the estate, with ETMP being the target system of use for all HMRC customers, except individual citizen PAYE, National Insurance data, CLAIMS cases and Child Benefit (NPS will be the target system of use for these)
- having a target architecture that places our customers at the centre of our business and creates a holistic picture of how each customer interacts with HMRC
- enabling all our customers to access/update system information 24/7
- migrating all debt management functions to ETMP
- migrating all non-employment income based taxes and duties to ETMP
- providing single registration and returns process digitally
- reducing human effort to maintain multiple validation rule sets
- supporting finance strategy to improve financial accreditation
- reducing exceptions and mismatches across channels and use of data within different forms, and fields (all use the same validation service)
- significant decommissioning of current IT systems
- having a standardised, automated and industrialised business processes that natively integrates all the individual tax transaction processes of a customer with HMRC’s financial accounts.

**Customs Declaration Services**

This comprises EU facing Customs, and trade statistics legacy DTS applications and Aspire-managed systems, including the Excise, Customs, International Trade with Europe (ExCITE) and Customs Handling Import, Export and Freight (CHIEF) systems.

Our focus on this platform will include:
- rationalising and transforming the asset base into a modernised, simplified, streamlined and more integrated suite of systems that are easier and more cost effective to maintain, and which also enable HMRC to comply with EU legal mandates
- mediating the trade interface to CHIEF by a set of APIs exposed on the Enterprise Service Bus
- adding new services to automate risk assessment and duty calculations for postal imports to this platform based on shared use of duty calculator and tariff components.

**Case Management**

Our focus on this platform will include:
- refactoring current case management applications to support a shared layer of functionality that can be used across current and future case management applications
- integrating case and content management applications with the ‘golden customer record’ and customer contact history platform
- improving internal case management and workflow platforms enabling faster, cheaper workflow implementations
exploiting a strategic solution for complex workflow (rules-based cross-system orchestration) and investment in additional modules

implementing standardised access security across Case systems through exploitation of ERP data to reflect management organisation structures

having a single eDiscovery solution for both criminal prosecution and civil litigation cases enabled by the government security classification changes

decommissioning of multiple case tools and electronic folder systems, reducing support line and complexity of estate.

Enterprise Content Management

Our focus on this platform will include:

- merging or federating all Documentum content management repositories and introducing a single information management architecture
- ensuring content management tools (full text search, annotation, redaction etc.) are available across case/content management tools as necessary
- improving records management and information lifecycle management for electronic and residual non-electronic records, which will provide improvements in information management and compliance with legislative and other regulatory requirements
- a greater digitisation of paper and microfiche, leading to cost savings in storage and transport and enabling work to be moved to staff and more efficient processing
- creating a new enterprise search solution, based on an open source product, accessing a wider range of data sources and providing improved access to information for staff.

Enterprise Operations

Our focus on this platform will include:

- HMRC’s Enterprise Operations Platform (EOP) and associated integrated modules to service our Enterprise Resource Planning (ERP) requirements
- financials (resource accounting and controlling)
- supplier relationship management (SRM)
- customer relationship management (CRM, and also known as ERM)
- Human Resources (HR) including Payroll, Learning & Development and recruiting
- self-service (manager and employee)
- introducing new technology and optimise HMRC’s ERP platform
- moving to in-memory computing technology for real time fast analytics capability promoting the professional management of HMRC’s resources and financial matters for both business planning and operational reporting purposes
- re-alignment/exploitation of ERP configuration against a clear data archiving model and business intelligence.

Data Analytics, Risk and Reporting

Our focus on this platform will include:

- developing the core Enterprise Data Hub (EDH) platform, which is supplemented by a large and growing eco-system of analytical products, many of which are also open source
- data analytics, which will sit alongside digital at the core of the Department’s business transformation
- Developing an IL5 environment to match and filter real time data from customers, Head of Duty systems and selected external sources, creating a single source of customer data
- A new analytics environment to manage operational reporting and downstream risking
- New real time risking environment providing 24/7 analytics; with links to/from EDH, existing analytic environments and the enterprise service bus for viewing and risk response (e.g. immediate feedback to the customer)
- Using deep data analysis to allow us to predict and personalise our customer service; anticipating the services that customers will need
- Validation of data using identity assurance, date, time, and source verification.
- A data quality centre of excellence managing and controlling use of our new critical assets for HMRC
- Reducing latency of data, improving performance, accuracy and simplifying scalability.

**Infrastructure – Workplace Services**

Our focus on this platform will include:
- A single sign solution for all online services available to staff via the HMRC Intranet
- A re-engineered Intranet solution, based on an open source product, presenting a wider range of content and services, and providing a more engaging and social experience for staff
- Moving to a single collaboration solution for both internal and external/customer collaboration
- Moving software delivery to the person, not the desktop
- Introducing configured devices, rely more on software and hardware supplier builds and updates
- Introducing more devices to support estates transformation, allowing people to work anywhere and enhanced “hot-desking”; desktops, laptops, tablets, thin client, smart phones and any other hardware that an end user can use to interact with their data and applications
- Applications being abstracted from the operating system and isolated from other applications where appropriate, so that changes made by one application do not impact others, allowing applications to be upgraded independently
- Centralising device management for software updates, asset management and application delivery.

**Infrastructure – Cloud, Data Centre and Operations**

Our focus on this platform will include:
- Transforming our data centre hosting platforms from traditionally dedicated physical resources to virtual cloud based services
- Building a multi-cloud open source cloud control/operations platform that will be able to dynamically and transparently manage multiple VM IaaS ecosystems
- Increasing use of virtualisation technology, providing the right blend of enterprise class hosting services for HMRC; ensuring HMRC pays a fair price and only pays for what we use
- Increasing flexibility, and more efficient use of hosting resources with faster deployment of resources, to deliver faster change
- Reducing HMRC’s carbon footprint
- Moving to a disaster-tolerant environment with less focus on disaster recovery
- Cloud based environments for the development, testing and deploying to live operations for software products for use by both HMRC staff internally within the HMRC corporate boundaries as well as IT service for consumption by external customers via HMRC web services on GOV.UK as well as via API.
Infrastructure – Connectivity

Our focus on this platform will include:

- remove network dependency on any physical location
- that HMRC is now an ISP – member of RIPE and soon to become a member of the London Internet Exchange (LINX) which will allow us to provide direct peering arrangements with other LINX members and Internet transit to other organisations cost-effectively
- reducing the dependency on PSN circuits and migrate the majority of our circuits to commodity network services with a secure PSN gateway being hosted in HMRC dedicated cabinets
- aligning with HMRC Building our Future accommodation strategy, which involves the creation of a small number of large regional centres that will considerably reduce the size and simplify our network
- a combined wired and wireless LAN Infrastructure to replace the end-of-life switches
- a software as a service (SaaS) web gateway service to remove the need to trombone internet traffic via our data centres.

Integration

Our focus on this platform will include:

- an API Gateway that hosts the APIs and is responsible for API management, throttling, abstraction and caching
- that APIs will be stateless and built around the corporate data models they are exposing, rather than being functionally based
- the use of JSON and/or XML data transfer/exchange language (including XBRL financial data taxonomy), i.e. one size doesn’t fit all
- creating a ‘service wrapper’ around the legacy system therefore encapsulating the legacy logic and providing adaptation from the legacy interface to the new interface exposed to the consumers
- a messaging channel that can be used to record the batch file and use a message queue to transport the file.
- increasing agility through reuse and building of composite services
- more competition between more suppliers enabled by file exchange capabilities
- reducing complexity and interdependencies between systems and platforms
- enabling modernisation of individual loosely-coupled systems.

Security

Our focus on this platform will include:

- applying security domains or zones make security simpler by isolating different classes of users, systems and data (appropriate controls can therefore be utilised within each security zone and the entry/exit points to these zones)
- transaction monitoring to support and deliver key controls to reduce HMRC’s risk of fraudulent and cybercrime attacks on our services
- cyber security technology to support HMRC’s Cyber Security Command Centre
- increasing our distributed denial-of-service (DDoS) protection.

Operational Support Services
Our focus on this platform will include:

- Monitoring the entire HMRC IT estate at both IT and business service layers, alerting support staff when predefined thresholds have been exceeded or specific error messages generated, and various levels of analytics to support ongoing service optimisation from both a cost and performance perspective.
### Annex A – IT principles full list

<table>
<thead>
<tr>
<th>Principle</th>
<th>Rationale</th>
<th>Maximize Compliance</th>
<th>Improve Efficiency</th>
<th>Improve Customer Experience</th>
<th>Greater IT Functional Excellence</th>
<th>Reduce IT Complexity</th>
<th>Reduce Carbon Footprint</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic</strong></td>
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<tr>
<td>Information systems must derive from strategic business objectives</td>
<td>In order to assist the department meet its Target Operating State</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>The Department will aim to implement information systems based on open industry standards</td>
<td>To minimise single-vendor dependencies and to facilitate interoperability with data partners and customers</td>
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<tr>
<td>We will make the cost of IT visible; providing a menu of standard service levels and cost</td>
<td>To deliver solutions with maximum return on investment (ROI) and the business will understand the cost drivers and implications of IT decisions</td>
<td>✓</td>
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</tr>
<tr>
<td>HMRC information system access, processes and data management must comply with relevant legislation and government regulations and standards</td>
<td>To ensure we meet the legal requirement and standards expected of government services, providing customers with confidence in our services</td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td>Innovate for competitive advantage through differentiation and productivity</td>
<td>Helps realise competitive advantage and drives improvements in efficiency and productivity</td>
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<td>✓</td>
</tr>
<tr>
<td>Improve IT Effectiveness through delivery of strategic incremental change programmes</td>
<td>We will not implement technology for its own sake; only where there is a business reason for doing so. We will evolve our major IT assets to meet business objectives not target wholesale replacement</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>Channels</strong></td>
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<tr>
<td>All systems will be designed to meet customer availability requirements</td>
<td>Accessible for all users</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>We will design, build and procure our IT systems so that they can be used by any user – disabled or not</td>
<td>Meet the legal requirements, international accessibility standards and become exemplars in the field</td>
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<td>✓</td>
</tr>
<tr>
<td>We will adopt the government approach to open standards and service design</td>
<td>Where open source solutions are available we will use them in preference to proprietary software and we make services so good that people prefer to use them</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Deliver information where and when needed, via multiple channels, to maximize its value as an asset</td>
<td>HMRC should not be limited or constrained by lack of available information wherever and whenever needed</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Application</td>
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<tr>
<td>We build IT Solutions that support business functions and are not constrained by organisational boundaries</td>
<td>Support transformation to common/shared IT solutions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>We will meet new business requirements from a core set of IT solutions</td>
<td>IT solutions will be built as reusable components, where Business logic will be shared rather than replicated</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>We will drive decommissioning where multiple systems are supporting single business functions</td>
<td>Reduces the net complexity of HMRC IT estate and overhead of managing complexity.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>We will increase efficiency and agility of our applications</td>
<td>Maximise Process Automation and allowing Real Time responsiveness to information requests</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Maximise reuse by designing services that are useful to the largest possible number of consumers.</td>
<td>Reusing existing services and systems reduces the change required to implement new services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td></td>
</tr>
<tr>
<td>Actively managed application services throughout their entire life-cycle, including the ‘end of life’ phase</td>
<td>Extract maximum benefit for lowest cost</td>
<td>✓</td>
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</tr>
<tr>
<td>Ensure services are coherent and comprehensible in their own right</td>
<td>Distinct and well-defined function services are easy to combine, use and get value from</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Data is defined consistently throughout the department</td>
<td>Definitions are understandable and available to all users; manage authoritative data as a single source of truth for others</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>We will minimise data replication and improve data consistency</td>
<td>Ensure that we only provide one point of capture for information, that we verify and cleanse that data as early as possible and that we then seek to maximise use of this data; minimising latency and links between the source data and the consuming services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Data is shared across HMRC and government (where required)</td>
<td>Timely access to accurate data is essential to improving the quality and efficiency of enterprise decision-making. It is less costly to maintain timely, accurate data in a single application, and then share it, than it is to maintain duplicative data in multiple applications</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>All core business data will be captured or entered once at the point of creation</td>
<td>Reduce duplication and make accurate information available to all processes that have a business requirement for it</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Standard archiving and retention policies will be applied across the estate</td>
<td>Customer and other HMRC held data is safe stored appropriate to its sensitivity; building trust through proficient management of customer</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information and Meeting the Security and Legal Minimum</td>
<td>Ensure that all information assets have an identified business owner who is accountable for HMRC and track and record all actions and events that lead to access or changes in information</td>
<td>Those with the most knowledge of the data are best placed to make rational and coherent decisions</td>
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<tr>
<td>------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Prevent or Detect and Repair Unwanted Changes to Information</td>
<td>Data quality is a major factor in preserving and enhancing the business value of information assets</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Infrastructure**

<table>
<thead>
<tr>
<th>Must be capable of supporting multiple versions of operating systems, databases, development tools and applications</th>
<th>To support HMRC’s business systems in a controlled, cost-effective manner</th>
<th>✓ ✓ ✓ ✓ ✓ ✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical requirements are set at the correct level</td>
<td>To provide the desired performance without building in excessive headroom in terms of processing power or capacity</td>
<td>✓</td>
</tr>
<tr>
<td>Adopt a tiered infrastructure for greater security, resilience and efficiency</td>
<td>Separation of concerns between infrastructure tiers improves security and allows greater efficiency and flexibility</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Reduce dependency on hardware and promote flexibility, agility and sharing of resources through virtualisation</td>
<td>Virtualisation promotes flexibility, allows more efficient use of hardware resources and reduces energy consumption</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Use capacity planning to optimize the sizing of infrastructure and ensure there is enough headroom for planned growth</td>
<td>Oversized infrastructure wastes money and increases energy consumption</td>
<td>✓ ✓</td>
</tr>
</tbody>
</table>

**Service Management**

<table>
<thead>
<tr>
<th>All IT systems must be bound by published operational Service Level Agreements</th>
<th>Transparency to Customers on availability of business critical systems</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce power consumption, heat and carbon footprint where possible. Get carbon accounts from suppliers and work to reduce</td>
<td>Reduces immediate costs</td>
<td>✓</td>
</tr>
<tr>
<td>Deploy automatic monitoring tools that cover application and data services as well as the underlying infrastructure</td>
<td>Real-time monitoring allows immediate action to resolve failures and incidents with minimal cost and disruption to the business</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>We will minimise the number of tools used for alerting and monitoring</td>
<td>Reduces the amount of integration, potential for duplication and simplify the IT landscape to minimise cost</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Monitoring data will be available to all users based upon need</td>
<td>Greater transparency in HMRC operations enabling holistic, faster, and more accurate decision making creating broader acceptance of operational decisions</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Business Status Information</td>
<td>We will empower users with business status information</td>
<td>Business leaders will become more IT-conversant, enabling improved business decision making, and thereby more efficient and relevant services, through the availability of more accurate and relevant information</td>
</tr>
<tr>
<td>Integration</td>
<td>Maximise interoperability by using common standards and mechanisms for the exposure and use of services</td>
<td>Enables systems and services to communicate and work together for greater synergy and efficiency</td>
</tr>
<tr>
<td>Integration</td>
<td>We will use synchronous Integration as a preference</td>
<td>A synchronous approach ensures that failure of data submission, for whatever reason, is transparent to the customer in as short a time frame as possible</td>
</tr>
<tr>
<td>Security</td>
<td>Treat Security as part of the design</td>
<td>We will design our security needs to accommodate all potential user groups/situations</td>
</tr>
<tr>
<td>Security</td>
<td>Implement layered security</td>
<td>Security designs should consider a layered approach to address or protect against a specific threat or to reduce vulnerability</td>
</tr>
<tr>
<td>Security</td>
<td>Our security controls are always consistently applied</td>
<td>Improve our professionalism in dealing with the security of our customers' information; our stakeholders and our external impact</td>
</tr>
<tr>
<td>Security</td>
<td>We set access rules to provide minimum required permissions</td>
<td>Protect confidentiality and integrity through access controls and deployment of products with recognised level of security efficiency</td>
</tr>
<tr>
<td>Security</td>
<td>Minimise the system elements to be trusted</td>
<td>Hardware, firmware, and software should be designed and implemented so that a minimum number of system elements need to be trusted in order to maintain protection</td>
</tr>
<tr>
<td>Security</td>
<td>Reduce risk to an acceptable level</td>
<td>Elimination of risk is not always cost effective. Risks and mitigating controls should be analysed to understand the cost benefit</td>
</tr>
<tr>
<td>Security</td>
<td>Design systems to limit, contain vulnerabilities and be resilient</td>
<td>Information systems should be resistant to attack, should limit damage, and should recover rapidly when attacks do occur</td>
</tr>
</tbody>
</table>
Contacts

For further information on any aspect of this document please contact:

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