

Greening Government: ICT Strategy

A sub strategy of the Government ICT Strategy
March 2011

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Introduction

The Greening Government ICT Vision :

A cost effective and energy efficient ICT estate, which is fully exploited, with reduced environmental impacts to enable new and sustainable ways of working for the public sector.

Together with tackling cost of public services, the green agenda sits at the heart of Government. In response to the challenge to be the “Greenest Government ever”¹, the Greening Government Commitments were published in March 2011. This ‘Greening Government: ICT strategy’ describes how government ICT will contribute to those commitments and deliver financial savings in addition to efficient, green practices. It sets out the green ICT commitments and actions that central government departments, their agencies and arms length bodies, will take over the next four years. Aligning with the Government’s transparency and efficiency agenda, it recognises the importance of clear reporting against them and sets out how government will measure progress by departments, and aggregating this to give a whole of government report on an annual basis.

The strategy recognises that across central government there are many similarities between departments, and describes approaches to deliver a greener government. However it also recognises that there are many differences and that tightly prescribed actions could be inappropriate, restrictive and drive unwanted behaviours. Instead it challenges government to think broadly and to adopt and exploit ICT to achieve the overarching Greening Government Commitments, giving guidance on how, while allowing departments to adopt their own, detailed implementation plans that are aligned to Government strategy.

The approach taken recognises the dual role of ICT in respect of environmental issues. On the one hand, ICT is part of the problem with the resources and energy it consumes generating significant greenhouse gas emissions. On the other, ICT is an enabler to change the way government operates and provides services, and thus to realise efficiency and environmental improvements on a much wider and a larger scale.

The first part of the strategy sets out the approach government will take in greening the ICT across the lifecycle; from manufacture and design through to disposal, grasping the opportunities arising from new strategies and programmes of work being led by the Government CIO Delivery Board, such as data centre consolidation and hosting services, the Public Services Network (PSN) and End User Device Strategy.

¹ Prime Minister David Cameron, May 2010 speech at DECC

The second part of the strategy examines the role that ICT can play to support the greening of government operations. Enabling new and more efficient ways of working within organisations and transforming the way public services are delivered. The strategy is supported by a suite of documents that give more detailed tools and guidance to departments:

- a Maturity Model that will be used to understand progress across government
- a Roadmap of 14 Key outcomes which describes potential paths to successful delivery
- a Workbook of best practice actions to support the Maturity Model and Roadmap
- a set of case studies describing successful initiatives.

Commitments and principles

The Greening Government Commitments were launched in March 2011 to ensure that by 2015 the government will have made substantial reductions in waste generation, water use and greenhouse gas emissions. Under the commitments, Ministers have agreed an approach which will embed sustainable development in the procurement and operation of all central government departments and related organisations. These commitments will ensure that government will:

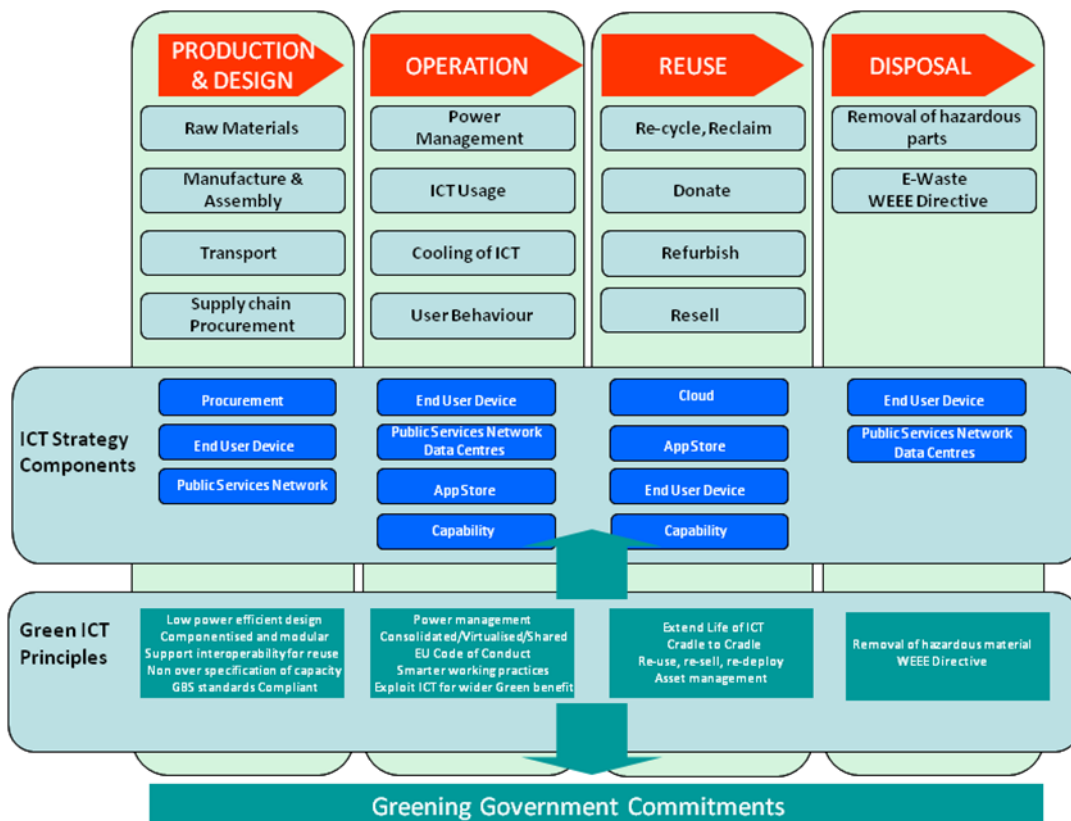
- engage with its suppliers to reduce the impact of supply chains. Government will strive to purchase sustainable, efficient products and services
- proactively manage and reduce greenhouse gas emissions across government estates by 25% from a 09/10 baseline
- ensure that redundant ICT is reused within government or the wider public sector whenever practical and where not, is always responsibly recycled.

This strategy sets out how ICT can be exploited to assist government in achieving these Greening Government Commitments, in a set of Green ICT commitments. It defines how these commitments can be met through the adoption of green ICT principles and practices across the Government ICT Strategy and in its design, delivery and implementation phases.

Strategy

Greening the ICT infrastructure

The business of modern government is extensive and underpinned by ICT. Consequently government's ICT estate is considerable, consisting of hundreds of data centres, thousands of applications and a great many end user devices. Such a large ICT estate offers great potential to contribute to greening government by reducing waste and improving efficiency. The environmental impact of ICT is more than just the energy it uses in operation, it spans from design, manufacture and procurement, through operation to eventual reuse, recycling or disposal. It is essential that the government ICT infrastructure is operated in a green and cost effective manner, but also designed, procured, and reused in a way that embeds green ICT principles across the life-cycle, a model for this is presented below:



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Operation

Government will operate equipment efficiently, reducing waste, and the need for refresh and enhancing utilisation through re-use and sharing. The ICT estate is to be rationalised to reduce surplus or redundant ICT and take-up opportunities to do so through sharing applications and infrastructure beyond organisational boundaries. Already departments are looking to share services such as human resources and commercial functions. Sharing services and using one integrated suite of applications on a single ICT infrastructure will deliver savings and green improvements. Many government departments and public sector organisations are already leading in this space by sharing ICT resources through adoption of the Public Services Network (PSN). Other opportunities for rationalisation include:

- creating an ICT Asset and Service Knowledge Base (ASK) (ICT Strategy Action 1). This will enable government to identify surplus and redundant ICT equipment and applications that can be switched off and removed
- sharing and reusing infrastructure and services across government through programmes like PSN and Cloud (ICT Strategy actions 17 and 20).and video conferencing (VTC)
- removing duplication, by consolidating, and rationalising servers and data centres where possible across the ICT estate (ICT Strategy Action 16).

Government will embed green principles and standards across other components of the ICT strategy, as listed at Annex B and detailed below.

Applications and Applications Store

In any mature ICT environment, there are likely to be applications that are either partially or completely redundant. Government will be encouraged to hold a detailed view of their application landscape and how this maps to the delivery of business requirements. This will drive the process of application consolidation and decommissioning. Government should investigate the profile of application usage, identifying applications that can potentially share hardware resources and be virtualised. Being able to identify these applications and remove duplication will lead to a corresponding reduction in unnecessary data and servers, and hence energy, cooling and space requirements.

Work is already underway to create a fully operational online Applications Store for Government. This catalogue of web based applications for procurers will enable the reuse and sharing of business applications, services and components across public sector organisations. Government will ensure that all applications created for the Applications Store reuse pre-existing components where possible and consume minimal resources depending on demand when in operation. It will also ensure that the App Store resilience and fault tolerance requirements are not over specified.

Data Centres and cloud computing

The Data Centre consolidation programme is working to reduce the number of government data centres through a programme of virtualisation, consolidation and rationalisation. This will provide the opportunity to maximise server and storage utilisation and reduce the number of devices required, saving energy and costs.

Where constraints around legislation and security permit, government should seek to use cloud services as a way of reducing the energy required to deliver services. Cloud can allow further consolidation through tiering based on common access, security and availability requirements, thus achieving additional energy and cost savings. At the same time it will be important to ensure that the data centre facilities used for hosting the cloud service(s) are energy efficient in accordance with best practices set out in the EU Code of Conduct.

Across government many ICT systems have been designed to be highly resilient, which often requires operating redundant equipment in multiple physical locations. Departments will be encouraged to consider the level of resilience that is actually justified by the business, as each layer of resilience will have an associated cost in terms of cost, space and energy.

Data Centres are heavy users of energy and cooling resources. Government must examine the cooling and energy requirement closely and act to address it. The EU Code of Conduct for Data Centres² aims to proactively manage the energy requirement of data centres by applying a series of “Best Practices” to the physical design of the facility as well as the devices and software that operate within it. Government will seek to apply this code across all data centres with metering in place to provide the required PUE and DCIE environmental metrics for assessing cooling power as a proportion of total power used by a data centre.

End User Devices and peripherals

End user devices and peripherals include, amongst others, desktop PCs and laptops, mobile and smart phones, tablets, printers, scanners, copiers and fax machines. Government is developing the End User Device strategy, covering data and application access devices, which will set out an implementation plan for delivering a set of common standards across government which will have green considerations at its heart. There will however be a continuing need in the short term to employ Green ICT principles and Government Buying Standards in the purchase, management and disposal of all their devices, including peripherals by government organisations.

Government should carefully consider the whole life environmental cost of devices before replacing them. High environmental cost in production must be weighed against low energy consumption in use. Extending the service life of existing devices may be more favourable than purchasing new devices. For example, desktop PCs reaching the end of their normal service life may be re-

² http://re.jrc.ec.europa.eu/energyefficiency/html/standby_initiative_main.htm

configured as thin clients or utilised in low use environments. Device rationalisation and optimisation policies should be adopted. Opportunities will be sought to reduce the device to staff ratio, subject to satisfying business needs.

Government will apply energy saving settings to devices. Many departments have already successfully implemented software that shuts down PCs when they are not in use. This software has proved extremely effective at reducing the overall amount of energy used to run a PC. Government will enforce green settings on printers, copiers and multi-function devices. Managed printing services can also reduce unnecessary printing and will be appropriately adopted more widely across government.

Networks, including the Public Services Network

The Public Services Network (PSN) is a “network of networks” serving voice and data requirements for the UK public sector and joining up disparate silo networks. It will be an enabling layer for the Government ICT Strategy and also allow sharing and collaborative working and procurement across the public sector. Migrating onto this common network infrastructure will release many environmental savings, including those from removal of equipment supporting duplicated circuits and surplus bandwidth.

Design and manufacture

The government must work with all its suppliers, large and small, and also with its external partners to succeed. In turn, government expects suppliers to join in deploying ICT responsibly and appropriately, be more transparent about whole life costs, the impacts of supply chains, and release savings for tax-payers. In working with our suppliers and external partners to green our ICT, government must engage with Higher Education, Universities and research groups to foster, promote and share the benefits from innovative green ideas, which reduce waste, maximise energy efficiency, productivity and improve performance.

Procurement

Government must encourage and incentivise green practices from its suppliers, awarding contracts that appropriately encompass green solutions. To do this government will build on current procurement practices by:

- considering both financial and green “total costs of ownership” when comparing tenders, including energy, disposal and service delivery approaches
- embedding Government Buying Standards (GBS)³ in all government ICT procurements and seeking a minimum set of standards for accounting for environmental impact costs throughout the life of a product or service (including energy use) and ensuring assessment of opportunities to extend the life of current and future ICT investments.

³ <http://sd.defra.gov.uk/advice/public/buying/products/>

Reuse and disposal

Once ICT equipment or services are considered surplus to requirements, or in need of replacement, adoption of a clear “waste hierarchy” will ensure that it is possible to:

- reuse or refurbish surplus equipment to avoid unnecessary procurement of new equipment within the public sector
- donate surplus equipment to benefit “Big Society” initiatives ⁴in the UK or overseas, subject to security and full traceability requirements being met
- recycle and reuse components of ICT equipment.

If equipment is genuinely waste, new mandatory policy and standards for disposal of ICT equipment will ensure that government is environmentally and socially responsible. Government will strive to eliminate waste sent to landfill and seek the use of “energy from waste” schemes for disposal of any residual materials from unwanted ICT equipment.

Capability

To deliver all this, government needs staff equipped with appropriate ICT and green skills. In accordance with the government ICT Capability Strategy, government will use the Skills Framework for the Information Age (SFIA)⁵ as a reference to conduct skill audits, plan future skill requirements, standardise job titles and functions, and allocate resource, including those required to support implementation of the Green ICT.

⁴ <http://www.cabinetoffice.gov.uk/content/big-society-overview>

⁵ <http://www.sfia.org.uk/>

Exploiting ICT to Green Government operations

Whilst the direct impact of ICT contributes globally to only 2-3% of emissions⁶; it has a key role to play in reducing the impacts of wider business operations. The Government needs to exploit its ICT more effectively. Green savings can be delivered with more streamlined operations, reduced business travel and government estate, more effective processes and improved customer engagement, all of these enabled by embracing new technologies. If government is to enable “the greenest Government ever”, working practices and behaviours must also change, so that the culture becomes one that thinks and behaves in a green and sustainable manner as part of everyday business.

Departments have already demonstrated progress in this; on May 14, 2010, the Prime Minister committed government to reducing its carbon emissions by 10% in 12 months. This was an ambitious and challenging commitment, spanning 3,000 central government office buildings and 300,000 civil servants. In response many departments reduced their energy consumption through initiatives that encouraged decision makers and staff to be more aware of their personal impact on the environment and to adopt the opportunities to work in a smarter, greener way. A final saving by government of 13.8% was achieved over the 12 month period. These best practices must be shared across government to maximise the benefits achieved. The rest of this chapter sets out in more detail some of the best practices where technology can be used to enable change using ICT:

- more efficiently - the end users
- to reduce travel
- to reduce consumables
- to streamline business operations
- to promote smarter ways of working (joining up with HR, Finance and Estates)
- to drive behaviour and change.

Using ICT more efficiently - the end users

Government will make efficiency savings on existing ICT equipment by encouraging behaviour changes, such as turning off equipment at night, printing less, reducing email traffic and archiving data as advised by local green policies. Where possible, ‘dematerialization’ of activities; swapping high for low carbon options, should be encouraged. For example: teleconferencing, e-publishing instead of printing.

Using ICT to reduce travel

Much of government operations involve cross-departmental working; collaborative ICT tools will therefore increase productivity and the efficiency of government. Government will be encouraged to use collaboration tools, allowing staff to view and edit the same documents when they are not in the same location. The Government

⁶ http://www.smart2020.org/_assets/files/02_Smart2020Report.pdf

will use ICT to reduce the need for travel by deploying and actively promoting use of audio, video and web conferencing facilities. Natural England has valued the productivity benefits resulting from less time wasted in travel (where audio conferences can be held) at £600K annually. Adding this to the direct annual cost saving of £1.5M made on travel expenses, gives an overall annual saving of £2.1m for the 2,500 travelling officers in NE, or £840 per staff member per year.

Using ICT to reduce consumables

Advances in technology make it easier to use electronic documents without printing them. These reduce running costs and environmental impacts. Government will reduce its paper printing requirements by providing electronic methods of working, such as collaborative tools which can minimize the need for multiple copies, attendant printing and paper consumption. Electronic archiving of documents needs less space than paper ones, reducing the size of the government estate. Government will improve its Information Management (IM) practices to minimise data and its storage and archiving requirements.

Using ICT to streamline business operations

Government is examining many of its end to end business processes and will exploit ICT where appropriate to cut unnecessary steps, data retention or transfer. This will reduce cost, greenhouse gas emissions, waste, paper, travel and office space, maximising contributions to the Greening Government Commitments.

Exploiting ICT to work smarter

In support of the developing strategies on the future government workforce and estates management, advances in ICT will enable more efficient working patterns, whilst retaining and improving productivity. Flexible and remote working can decrease travel costs, downtime and enable office space rationalisation to occur. These offer the potential for efficiency savings, by reducing estate running costs and environmental impacts. These forms of smarter working and the more agile office spaces that accompany them are only enabled by appropriate ICT i.e. collaboration tools, the cloud, unified communications and other remote access technologies.

Drive behaviour and change

To achieve these efficiencies using ICT, staff must actively engage with the wider Greening Government Commitments and be challenged to address sustainability in their day-to-day activities. A proactive campaign will be needed to inform and encourage the right behaviours.

It is important to motivate and encourage engagement in the workplace. Government will champion the change throughout their organisation, promote and share best practice across government. Green ICT idea generation will be captured, and implemented where possible. Internal organisational efforts undertaken by employees will be recognised.

Exploiting ICT to Green public services

The Government believes it is vital to transform public services and how they are delivered as set out in the Open Public Services White Paper⁷, which will mean a fundamental shift in the way services are delivered both by central and local government.

Central and local government are transforming public services through innovative use of ICT. These services must be designed, delivered and available to the public in forms which minimise carbon impact and actively support the green agenda. The Government is committed to the delivery of a Digital by Default Agenda, which will drive public services online and offer customer services and experiences that are rich in information and join up traditionally separate services. Driving public services and communications online will help secure cost effective service, reduce paper handling, processing and storage, and will also reduce transportation and travel costs for citizens and organisations alike. Under the digital and transformation agenda, government has made great strides:

- individuals can now pay their council taxes online, avoiding the need for paperwork, travel and postage
- citizens can access local information, such as bus and train timetables, via information texts and information maps, sometimes in real-time, pushed to mobile devices, avoiding the production and distribution costs incurred by hard copies
- hospital and doctor's surgery appointments can now be made using the internet, avoiding travel, paperwork and post handling
- Universal Credit is being designed to allow at least 80% of citizens to access the service through online methods.

Government is exploiting ICT to improve predictions and understanding (for example weather and road congestion), offering better services to green the wider UK economy.

Government will exploit new innovative ICT solutions to provide new and better services. Mobile devices and social media are already transforming services for the benefit of citizens and government and changing how we live and work. For example, enabling front line teams to spend more time, where needed, face to face with citizens and dealing with their enquiries. Government will maximise the exploitation of these and other technologies to continue this transformation, delivering more effective, customer centric services with reduced carbon impact and improved cost effectiveness.

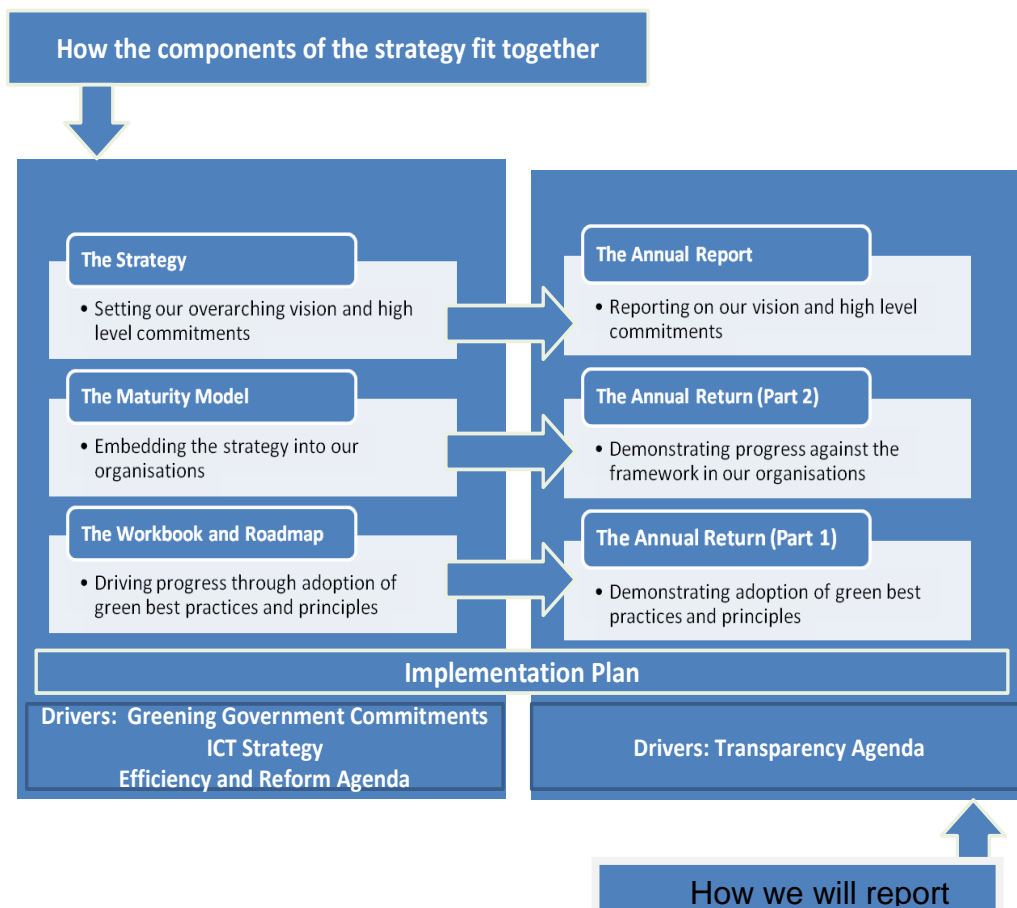
⁷ <http://www.cabinetoffice.gov.uk/resource-library/open-public-services-white-paper>

Delivery and implementation

Measurement and progress reporting

Effectively greening government means making informed changes. It is important to understand and balance the environmental impact of government, the ICT it operates, the processes it enables and the outcomes it delivers. Ultimately, government must understand the environmental impact of any change it makes. A good understanding will allow forward planning and achievement of aims within the time and resources available.

Government must demonstrate the embedding of green ICT principles into the ICT estate and its business processes, and show progress towards its commitments. It is vital therefore, that government accounts for and measures progress in a consistent way. It will do this through a stepped approach making use of the following models and tools:



Green ICT Maturity Assessment Model

The Green ICT Maturity Assessment Model provides a common framework to show progress across the whole of government. It provides a mechanism to embed green ICT impact assessments into government processes and practices, whilst recognising different starting points and opportunities. Each government department and office is required to track and report its maturity level.

The Model provides the means to assess sustainability across the whole ICT lifecycle and covers the following sections:

- Managing ICT Services
- Managing ICT Technology
- Managing ICT Change
- Exploiting ICT.

Green ICT Workbook and Green ICT Roadmap

The Green ICT Workbook⁸ provides a tool for driving progress. It contains a comprehensive set of green ICT best practice actions and principles to reduce the environmental impact of ICT across the Government estate. A set of 14 key outcomes have been identified from the Workbook, along with the variety of best practice actions that can be adopted by departments to achieve them. These actions and the 14 key outcomes have been extracted to form the Green ICT Roadmap⁹.

Measuring energy consumption by ICT

Government will work with industry and technology working parties to inform standard methodologies for the accounting, measuring and tracking of energy consumption due to ICT. Modelling from asset registers, particularly if backed by smart metering or other direct measurement, is a powerful technique for base lining and assessing the impact of changes to the carbon footprint of a business. Profiling departments' ICT carbon footprint by using consistent ICT categories is a key step, allowing identification and prioritisation of targeted greening opportunities and supporting the Government's transparency agenda.

Service levels and the wider economy

Simply measuring and striving to reduce carbon emissions from ICT is not enough. Government is responsible for delivering public services and has a role to play in enabling the greening of the wider economy. Service provision and outcomes achieved must be recognised and valued in conjunction with the total emissions from government. In some cases an increase in government emissions may be appropriate, if it enables new or improved services that lead to a greener UK economy and lower UK footprint. For example, in 2009 improved accuracy in

⁸ <http://www.cabinetoffice.gov.uk/resource-library/greening-government-ict>

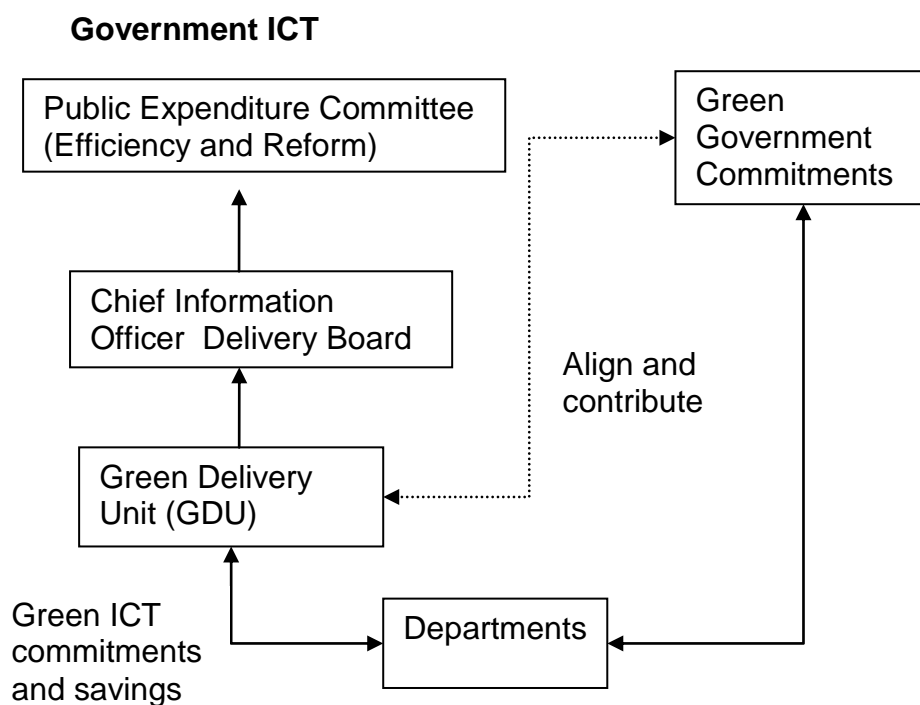
⁹ <http://www.cabinetoffice.gov.uk/resource-library/greening-government-ict>

weather forecasting from the Met Office's new supercomputer saved 370k Tonnes of CO2 emissions from the airline industry in Europe alone. The Green ICT Delivery Unit (GDU) will work with government to recognise improvements.

Change management and governance

Exemplary leadership, effective empowerment and strong governance will ensure successful delivery of this strategy. Everyone working within government must play their part. Ministers and permanent secretaries in central government departments, must demonstrate, and be held accountable for, their actions to deliver the “Greenest Government ever”, and targets should be cascaded down for empowered departmental leads to action. As with the Government ICT strategy, we will also look to the wider public sector to champion and adopt best practice.

The CIO Delivery Board (CIO DB) is accountable for ensuring that actions/targets set out in the strategy are delivered. The Green ICT Delivery Unit has been empowered to lead on the ongoing development of policies, best practices and practical tools and to monitor progress on behalf of the CIO DB. Progress against actions set out in the 4 year implementation plan will be reported on an annual basis. Each year, the GDU will also take the opportunity to review the strategy to ensure it continues to be consistent with other strategies and remains relevant to achieving a greener government, as illustrated below.



ICT cannot deliver this strategy alone. To be most effective ICT must be considered as an integrated part of how government works and the services it uses and delivers. Therefore implementation of this strategy will take into consideration and align with other initiatives which have elements of greening government, such as the Government Estates Strategy , Government Digital by Default Strategy and workforce reform.

Commitments and actions

Commitments and actions			Delivery timescale	Owner
Measurement and Progress Reporting				
Commitment	1	Government to reach level 3 (practiced and moving forward) of Green ICT Maturity Assessment Model	April 2015	
Actions	1.1	Green ICT Maturity Model fully adopted by government, self assessed and peer reviewed	April 2012	All Government departments
	1.2	Government to have improvement plans in place where below level 3	April 2013	All Government departments
Commitment	2	Government to adopt at least 10 of the 14 key areas set out in the Roadmap for improving its Green ICT practices.	April 2015	
Commitment	2.1	Government to develop the Roadmap for adopting key areas of best practice from the Green ICT Workbook, and report progress	April 2012 + annually	All Government departments
Actions	2.2	Government will implement at least 10 of the 14 actions from the Green ICT Roadmap for each of its departments/agencies	April 2015	All Government departments
Commitment	3	Government to report on operational ICT energy consumption using agreed standards for products and services	April 2013 +annually	
Actions	3.1	Government to establish a programme of work to measure or estimate operational ICT energy consumption, including energy consumed by data centres and services delivered through the Cloud	July 2012	All Government departments + GDU
	3.2	Government to measure or estimate operational ICT energy consumption and provide a trajectory of expected consumption out to March 2015	April 2013 +annually	All Government departments

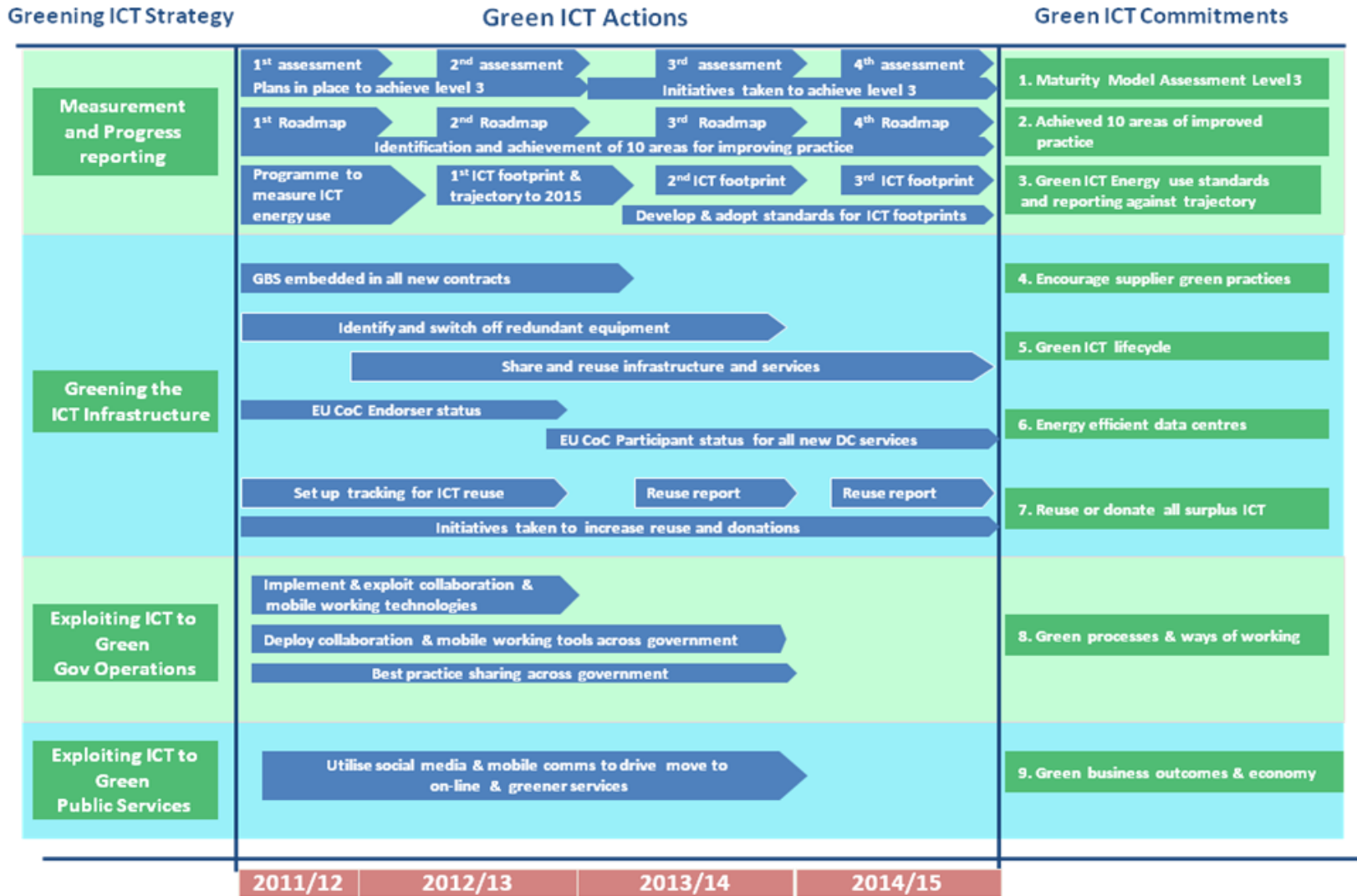
Commitments and actions			Delivery timescale	Owner
	3.3	The Government to standardise on operational ICT energy consumption measurement and estimation reporting methods.	April 2015	GDU
Greening the ICT Infrastructure				
Commitment	4	The Government will work with suppliers and technology industry groups to encourage green practices	April 2015	
Actions	4.1	Government will ensure Government Buying Standards (GBS) are embedded in all new contracts, awarding contracts that appropriately encompass green solutions.	July 2013	All Government departments + GPS
Commitment	5	Government will operate a greener ICT lifecycle, purchasing and using less ICT by appropriate sharing and re-use.	April 2015	
Actions	5.1	Government will identify the surplus and redundant ICT equipment and applications that can be switched off and removed	April 2014	All Government departments
	5.2	Government will share and re-use infrastructure and services through programmes like PSN and Cloud	April 2015	All Government departments
Commitment	6	Government to adopt the EU Code of Conduct for energy efficient Data centres	April 2012	
Action	6.1	Government to be registered as endorsers of EU code of conduct for energy efficient data centres and server rooms	April 2013	All Government departments
	6.2	Government to require any data centre or cooled server room used in delivering a new ICT service to be registered as Participants under the EU Code of Conduct for energy efficient data centres	April 2014 onwards	

Commitments and actions			Delivery timescale	Owner
Commitment	7	All redundant ICT to be recycled in whole or component parts or materials, or donated to charities and voluntary organisations as part of the Big Society. Reductions in line with the Government Waste Strategy and Hierarchy ¹⁰	April 2015	
Action	7.1	Government to account and track redundant ICT recycled, donated or disposed	April 2013	All Government departments
Exploiting the ICT to Green Government				
Commitment	8	The Government will use ICT to make its processes more effective and efficient and promote new ways of working	April 2015	
Actions	8.1	Government will make available (to staff appropriate to location and type of work) and exploit collaboration tools, (e.g. audio/video/web conferencing services) and mobile working technologies to avoid unnecessary travel	April 2013	All Government departments
	8.2	Government will deploy collaboration services locally and across Government to support cross-Government joined up working	April 2014	All Government departments
	8.3	The Government will capture, promote and share best practice, to maximise the benefits delivered	April 2014	GDU
Exploiting the ICT to Green Public Services				
Commitment	9	The Government will seek to improve public service provision, to achieve reductions in greenhouse gas emissions, energy use, waste, travel, paper/print, office space and procurement; to increase agility and capability; to support business outcomes and a UK green economy	April 2014	

¹⁰ <http://wastehierarchy.wrap.org.uk/> & <http://www.defra.gov.uk/environment/waste/>

Commitments and actions			Delivery timescale	Owner
Actions	9.1	Government will exploit technologies such as social media and mobile working to drive Public Services on-line and deliver green benefits	April 2014	All Government departments

Annex A - Green ICT 4 year Implementation Plan



Appendix

Alignment with other Government ICT Strategy components

ICT Strategy Component	Green ICT Standard and Principle
Applications and App Store	Use and populate an Application asset register enabling reuse and identification of duplication where applications may be decommissioned
	App Store will hold open source code and solutions for reuse
	New apps created from pre-existing components where and whenever possible in line with open source and open standards
Data Centre and Cloud	Data centres comply with EU Code of Conduct. Ensure best practice energy efficient initiatives are carried out
	Consolidate number of Data Centres and migrate services to Cloud
Networks/PSN	Ensure IP enabled and supports interoperability, reduce bespoke proprietary interfaces
	Allows user access to open standards based services
	Redundant circuits are responsibly decommissioned and ensure network resilience and fault tolerance is not over specified
End user Devices	Apply low power energy settings to devices
	New desktops to conform to Government Buying standards, promoting equipment with power management capabilities
	Improve device: employee ratios
	Reuse and share devices across public sector
Open Source and Open Standards	Ensure technical standards support interoperability to facilitate integration and shared services

Procurement	Adoption of Government Buying Standards for ICT products and Standards
Capability	Need for Green ICT skilled people to operate ICT Services and inform change programmes

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