National Audit Office

Digital transformation in government

Opportunities and challenges

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Opportunities and challenges

User services

- Large remaining opportunity
- Some challenging new areas
- Focus on managing channel shift effectively

Data

- Demand management opportunity
- Recurrent challenge of data projects
- Focus on better governance of data

Ways of working

- Need to embed and integrate services
- Challenges for approaches, capabilities and contracts
- Focus on strengthening understanding of systems

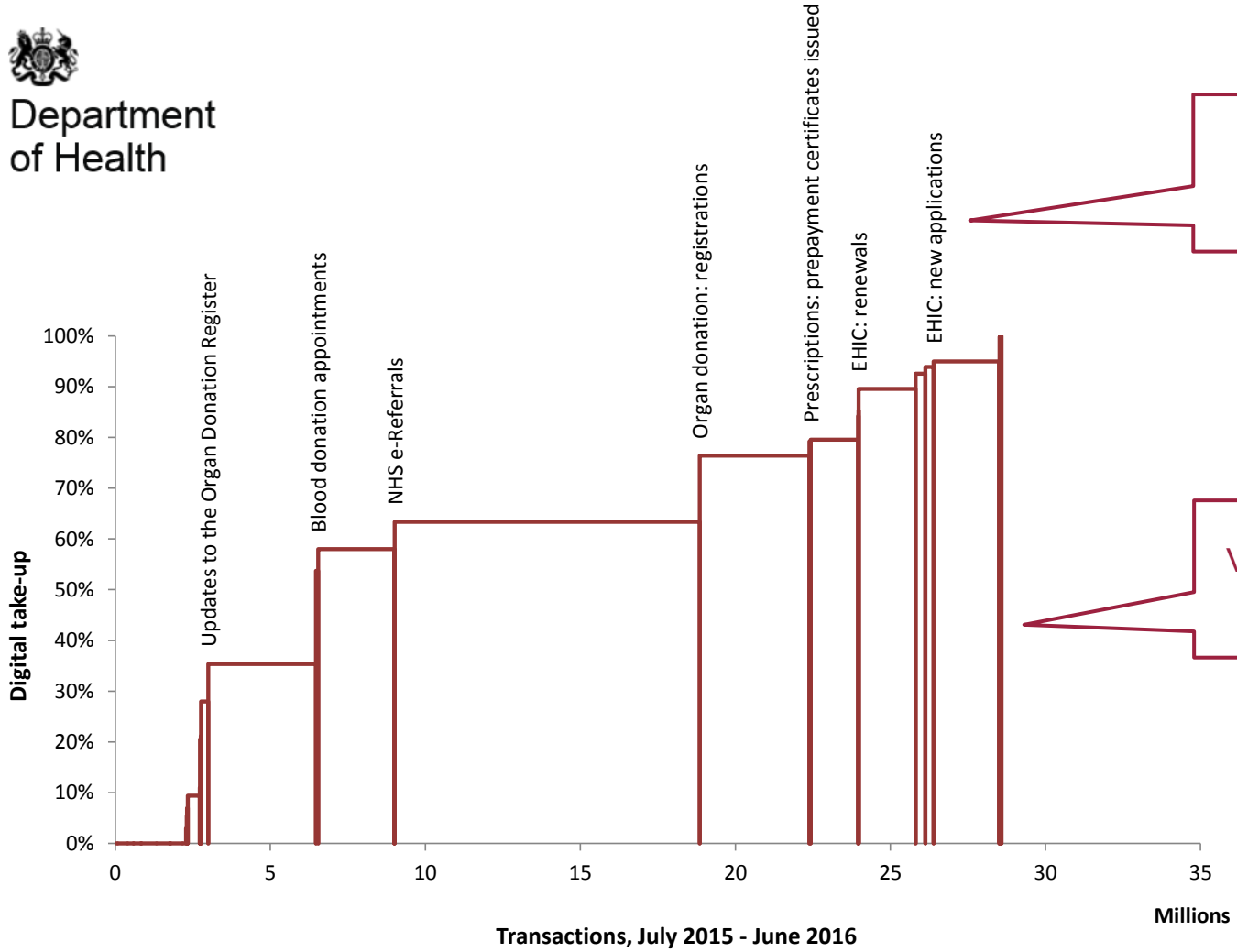
Security

- Growing threats and need to strengthen response
- Challenge of governance and responsibilities
- Focus on understanding and managing risks

Brexit

- Many organisations affected
- Uncertainty and new challenges
- Focus on clear prioritisation and risk management

Context: growing range of online services



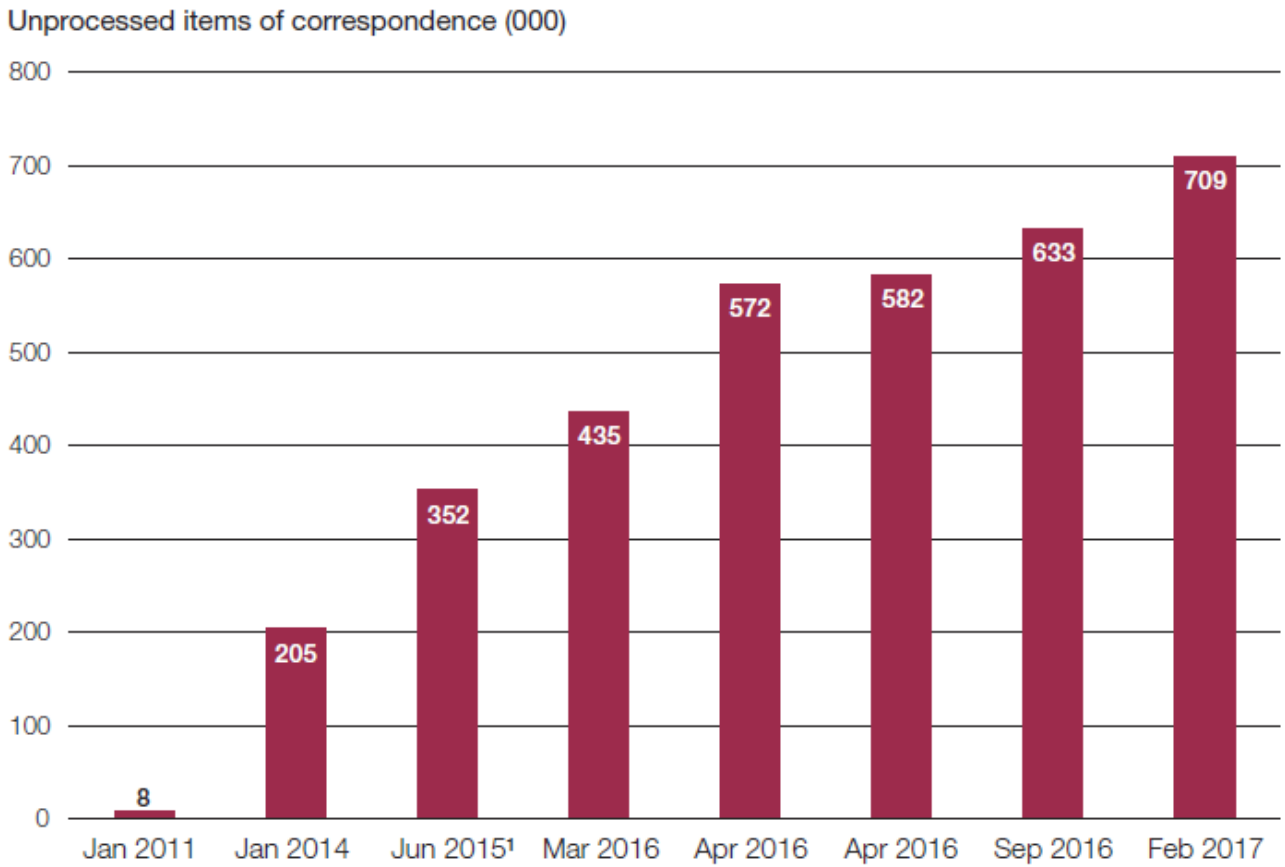
Many services now available online

Varying levels of digital take-up

Source: GOV.UK/performance; selected services

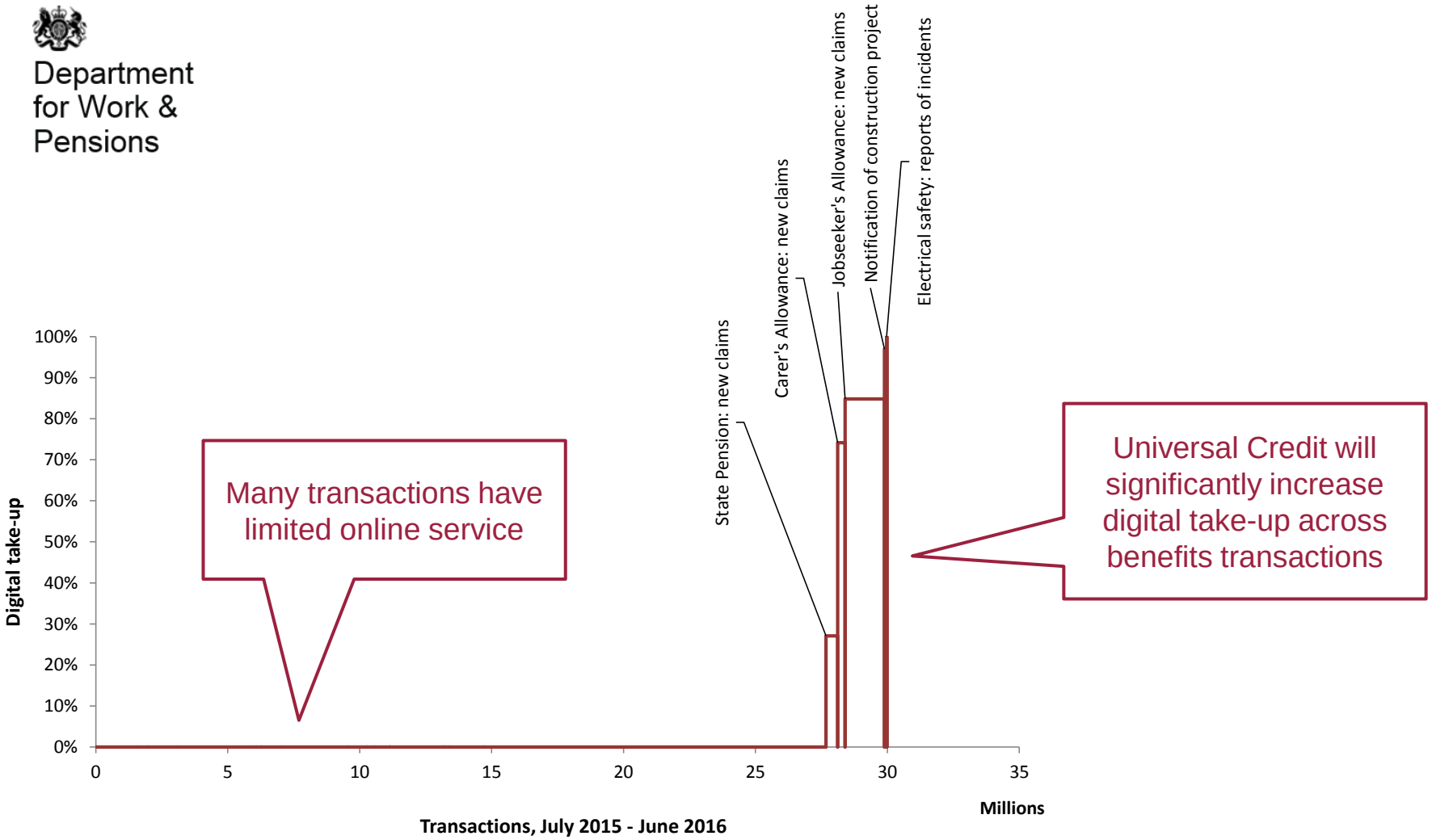
Opportunity: not just costs and convenience

Growth in the backlog of unprocessed correspondence



Source: NAO, Investigation: clinical correspondence handling at NHS Shared Business Services, June 2017

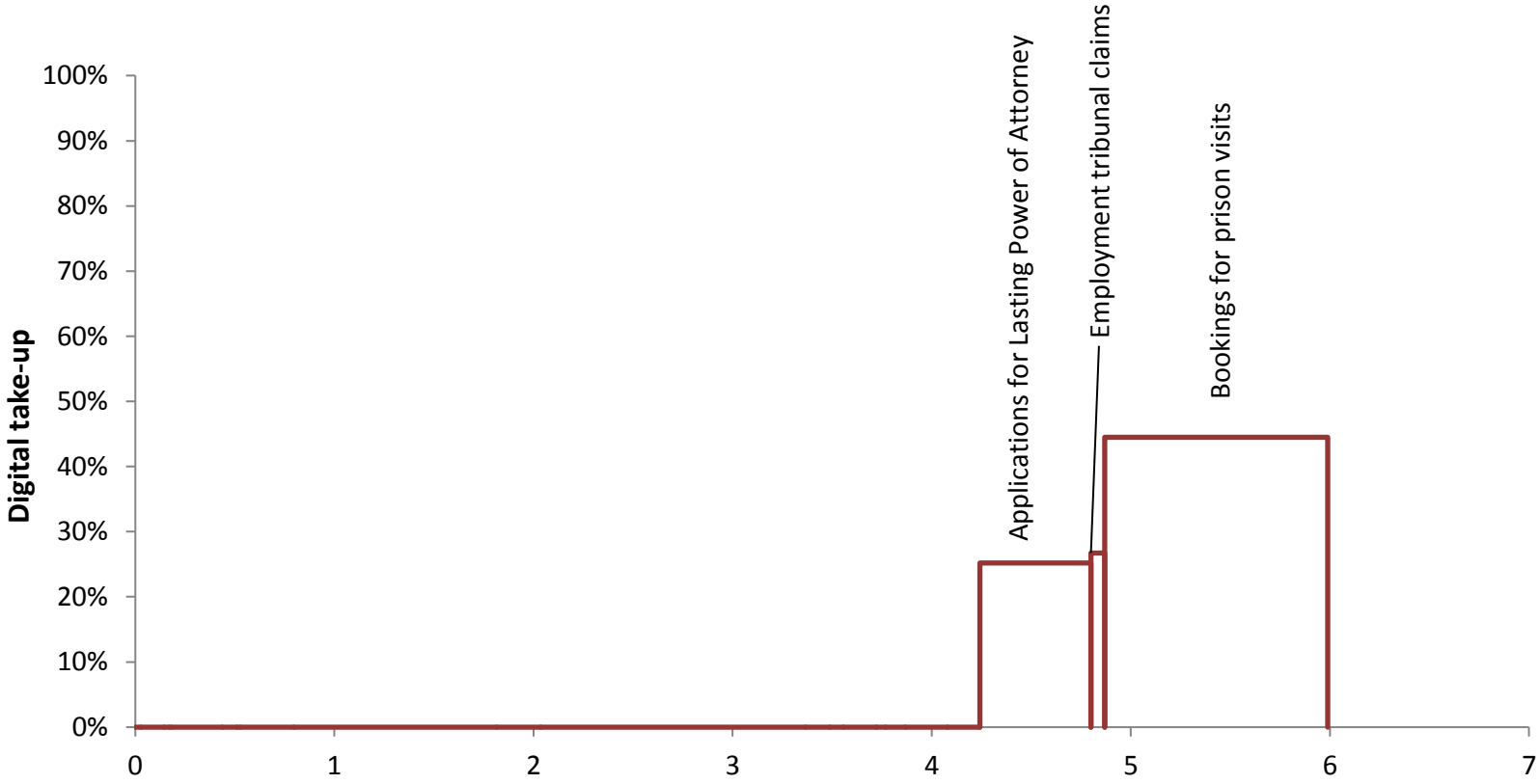
Opportunity: still some way to go



Source: GOV.UK/performance; selected services

Challenge: new areas for digital services

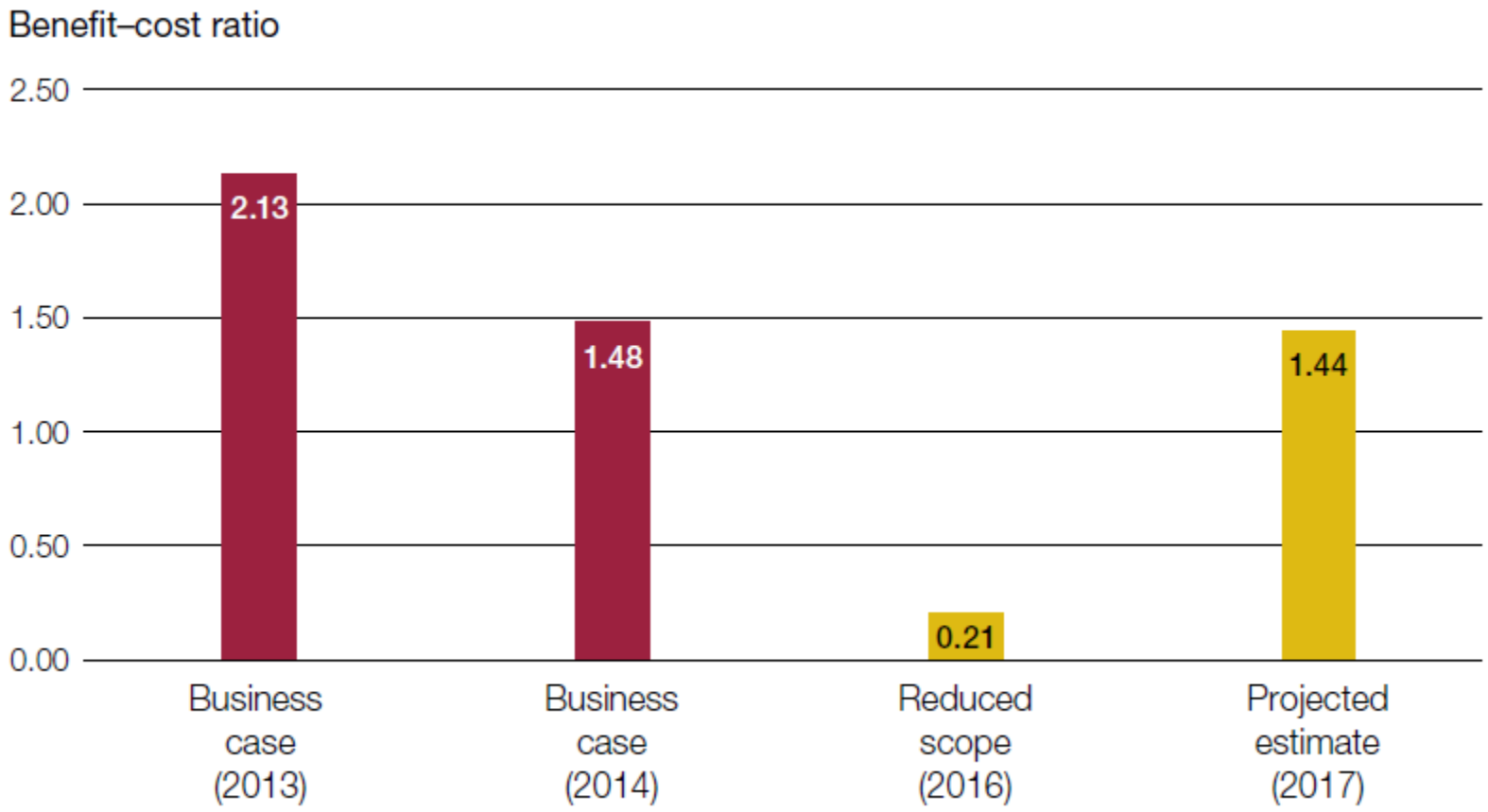
Ministry of Justice



Source: GOV.UK/performance; selected services

Focus: achieving channel shift

South East trains flexible ticketing business case benefits



Source: NAO, Investigation into the South East Flexible Ticketing Programme, April 2017

Context: increasing recognition of opportunity

Country register

British English-language names and descriptive terms for countries

View Register

The Country register contains 199 records and includes the following fields:

Country:	The country's 2-letter ISO 3166-2 alpha2 code.
Name:	The commonly-used name of a record.
Official-name:	The official or technical name of a record.

GOV.UK Service Manual

Search

BETA This is new guidance. Complete our quick 5-question survey to help us improve it.

Service manual > Technology > Application programming interfaces (APIs)

Technology

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Application programming interfaces (APIs)

Published by: Technology community (technical architecture)
Last updated: 6 months ago

Page contents:

- Build using your API
- Use standards
- Give each resource a bookmarkable URL
- Use HTTP methods
- Representations are for the consumer
- Use names to reinforce conventions
- Document your API
- Be open by default
- Practice service evolution
- Consuming and using APIs
- Related guides

Application programming interfaces (APIs) expose some of a program's internal functions to the outside world. This allows applications to share data without requiring developers to share all of their software's code.

You should follow these guidelines when exposing a digital service as an API.

Build using your API

The simplest way to make sure your API is useful and consumable for your users is to build a website using your own API.

This will help you to:

- model content and data in terms of bookmarkable resources
- make sure you present data in a human-readable representation, as well as machine-readable representation

Digital Economy Act 2017

CHAPTER 30

Explanatory Notes have been produced to assist in the understanding of this Act and are available separately

Source: Hansard; GOV.UK

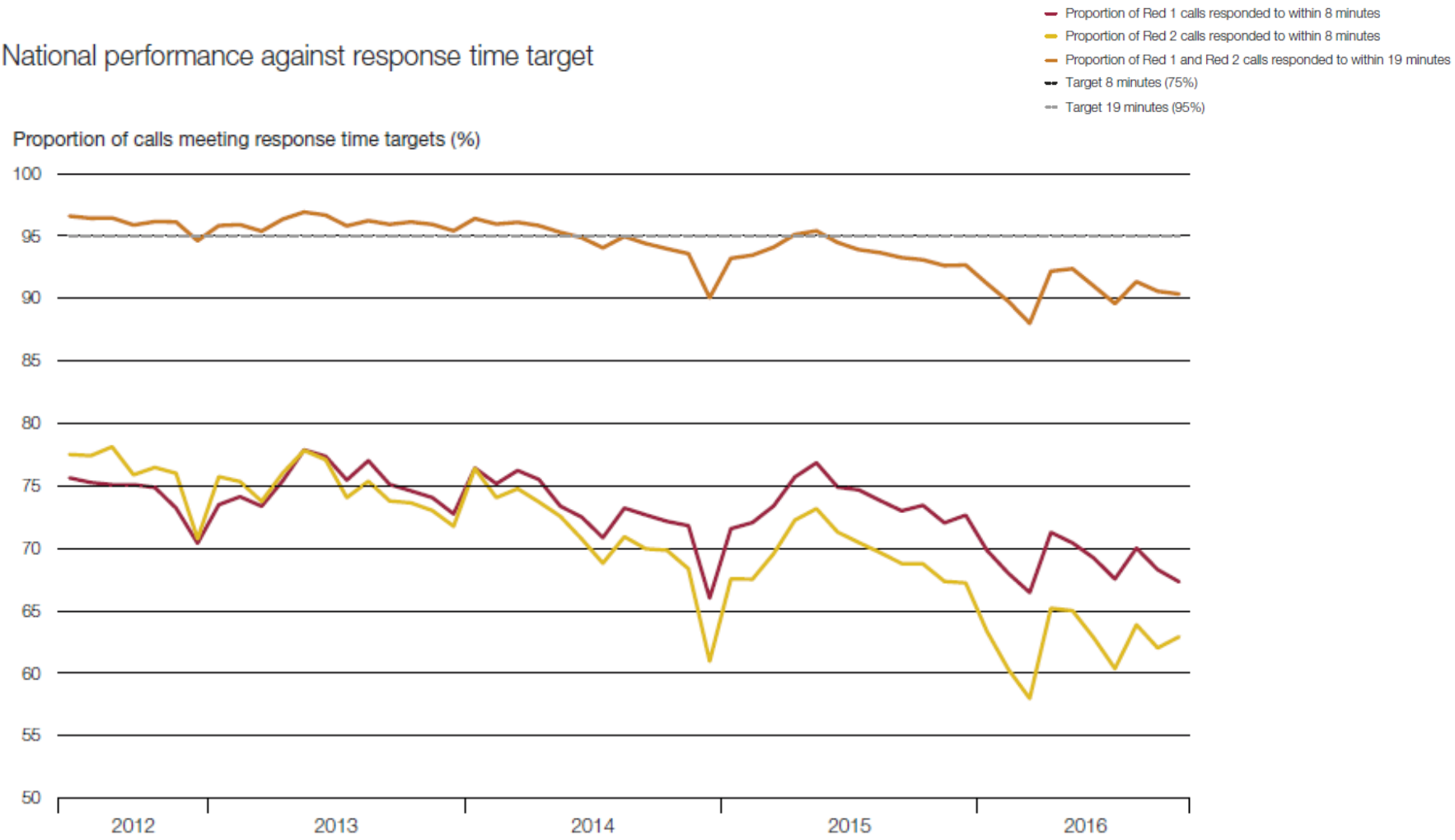
Opportunity: data-led decisions

Examples of recent NAO studies where better data identified as a key issue

- Benefit sanctions, November 2016
- NHS ambulance services, January 2017
- Improving patient access to general practice, January 2017
- Health and social care integration, February 2017
- Vulnerable consumers in regulated industries, March 2017
- Planning for 100% local retention of business rates, March 2017
- Local support for people with a learning disability, March 2017
- Mental health in prisons, June 2017
- Investigation into NHS continuing healthcare funding, July 2017

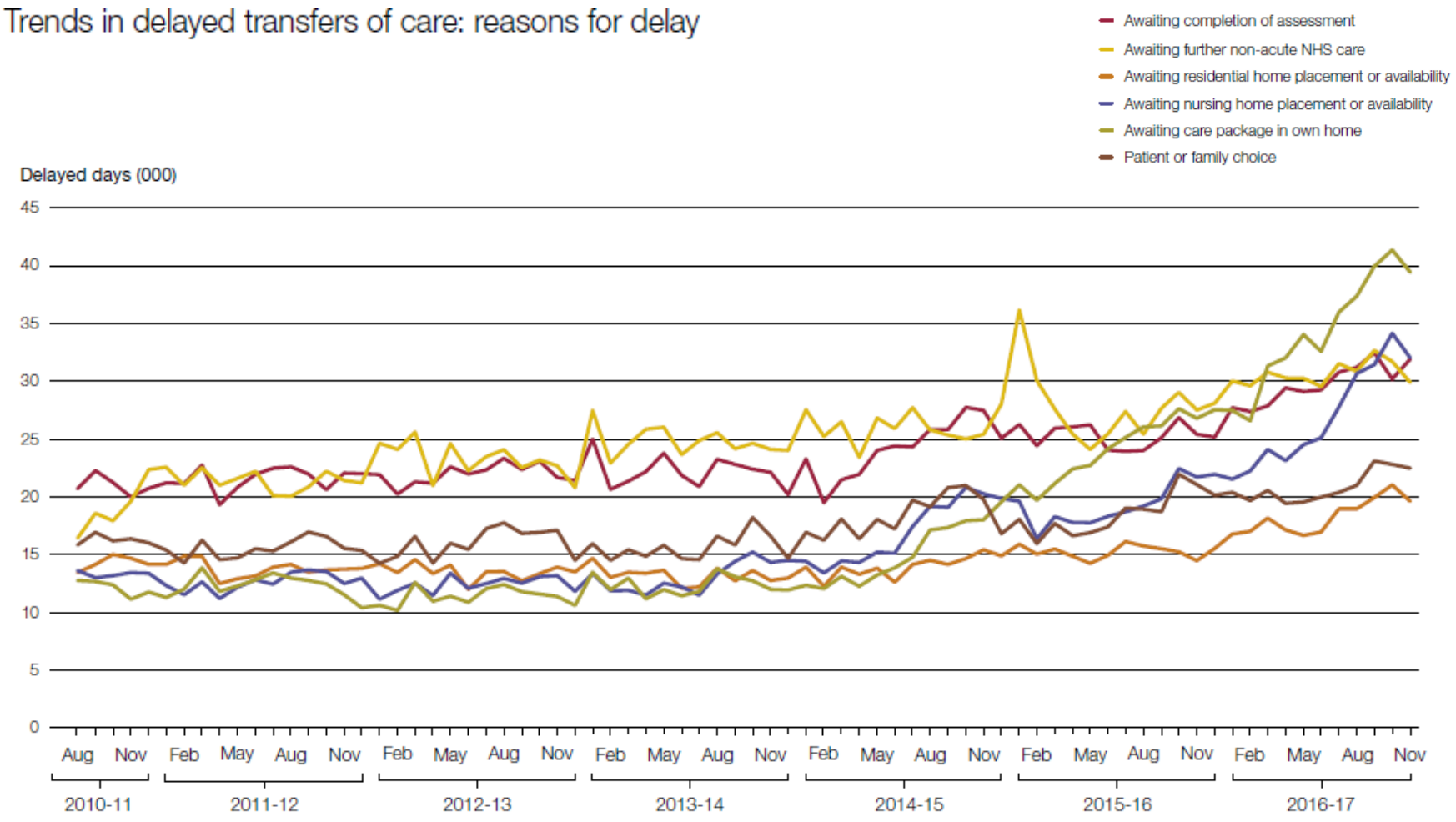
Opportunity: demand management (1/3)

National performance against response time target



Source: NAO, NHS ambulance services, January 2017

Opportunity: demand management (2/3)

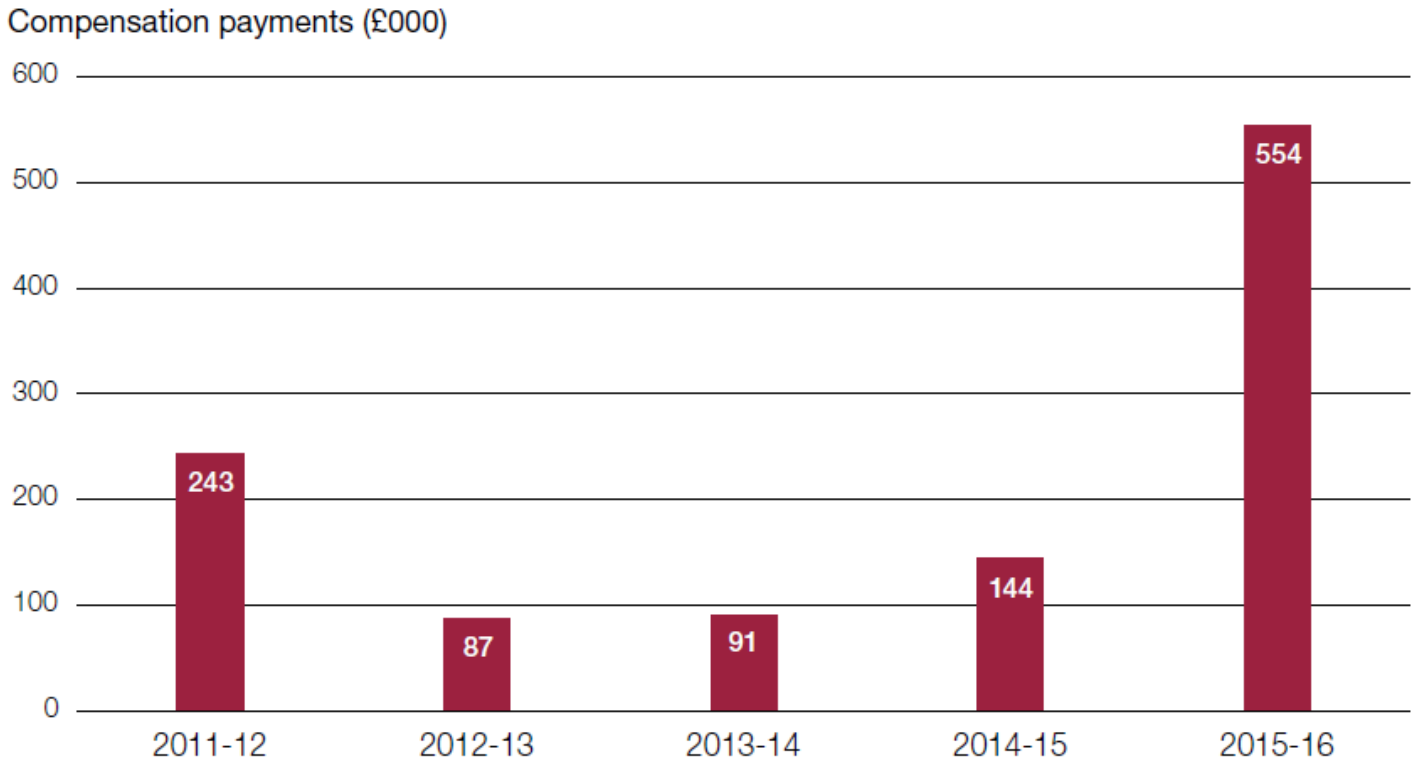


Source: NAO, Health and social care integration, February 2017

Opportunity: demand management (3/3)

Compensation payments to prisoners, 2011-12 to 2015-16

The Parole Board has paid out £1.1 million to prisoners since 2011-12 in compensation for delayed hearings



Source: NAO, Investigation into the Parole Board, February 2017

Challenge: data projects are hardest to deliver

Initiative	Delivered?
1 Building an open, transparent, agile culture	Yes
2 Forefront of joint policy decision-making	Yes
3 One Bank, Your Reward	Yes
4 Rewarding excellence and teamwork	Yes
5 Compelling talent strategy	Yes
6 One Bank, Research Agenda	Yes
7 New approach to data and analysis	Yes
8 One Bank, Data Architecture	No
9 One credible voice in international policy	Yes
10 Delivering supervision as One Bank	Yes
11 Execution in core markets	Yes
12 A safer Bank (cyber and risk)	Yes
13 Enhanced central bank transparency	Yes
14 Accountable	Yes
15 Engaged and approachable	Yes

Of 15 initiatives in the One Mission, One Bank programme only the data architecture initiative was not yet delivered by March 2017

Source: NAO, Progress delivering the 'One Mission, One Bank' strategy, June 2017

Focus: improving governance of data

Data strategy	Data architecture	No overall data strategy to provide clarity of overall purpose. Focus so far on open data, Personal Data Exchange and GOV.UK.
	Map of current data environment	Previous mapping attempts failed because of fragmented landscape and burden of detail.
	Map of future state	No overall view of future state for data for services, sharing, data security and privacy. Broad themes set out in 2017–2020 Transformation Strategy and also in September 2015 blog (for example, better use of data, modernising data infrastructure). Input on data-sharing provisions for the Digital Economy Bill.
	Roadmap to future	No overall roadmap setting out a planned approach to using, improving, consolidating and migrating of legacy systems leading to departments creating own solutions.
Governance	Compliance	New Chief Data Officer role and a Data Advisory Board proposed to lead and coordinate on data use. Builds on earlier Data Leaders Network. Work on national data 'registers' accessible to public sector and other users but no mandate to enforce compliance.
	Standards and interoperability	Data standards assurance limited to technology-related proposals from departments through spending controls.
	Maintenance of roadmap	
Guidance	Principles	Technology Code of Practice sets out principles for 'making things open' and 'making things secure' and includes guidance on 'open data principles'. Provision of some guidance on registers.
	Standards	Formats for service users for registers established. No standards for data handling, usage, quality, governance, data design, security, reuse and sharing.
	Good practice	The 2017 Transformation Strategy plans further guidance and assurance to public bodies on balancing use of data with protection of data and aims to further embed common security standards.

Need for clearer overall approach to management of data

Weak enforcement of standards

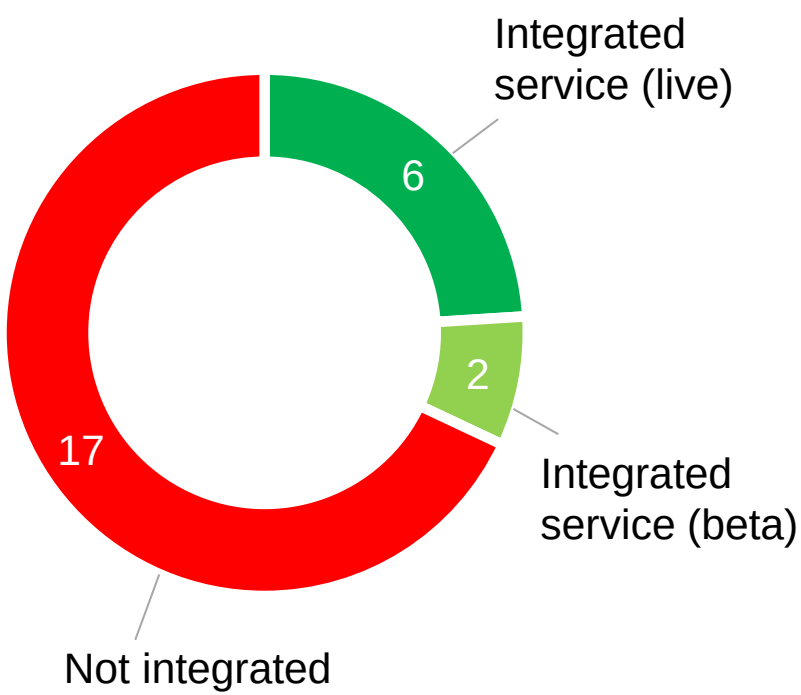
Need for more detail in standards and governance

Source: NAO, Digital transformation in government, March 2017

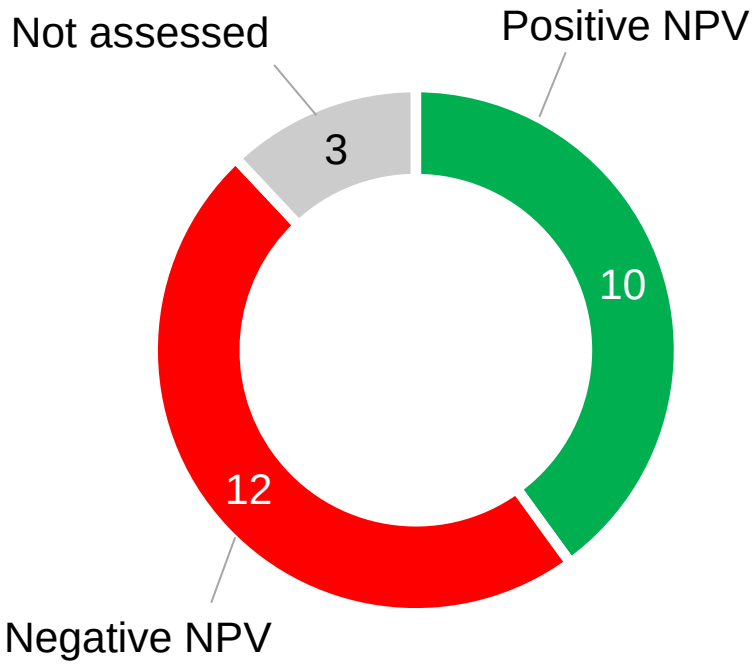
Context: need for better integration of change

GDS assessment of digital exemplar programmes, March 2015

Extent of integration



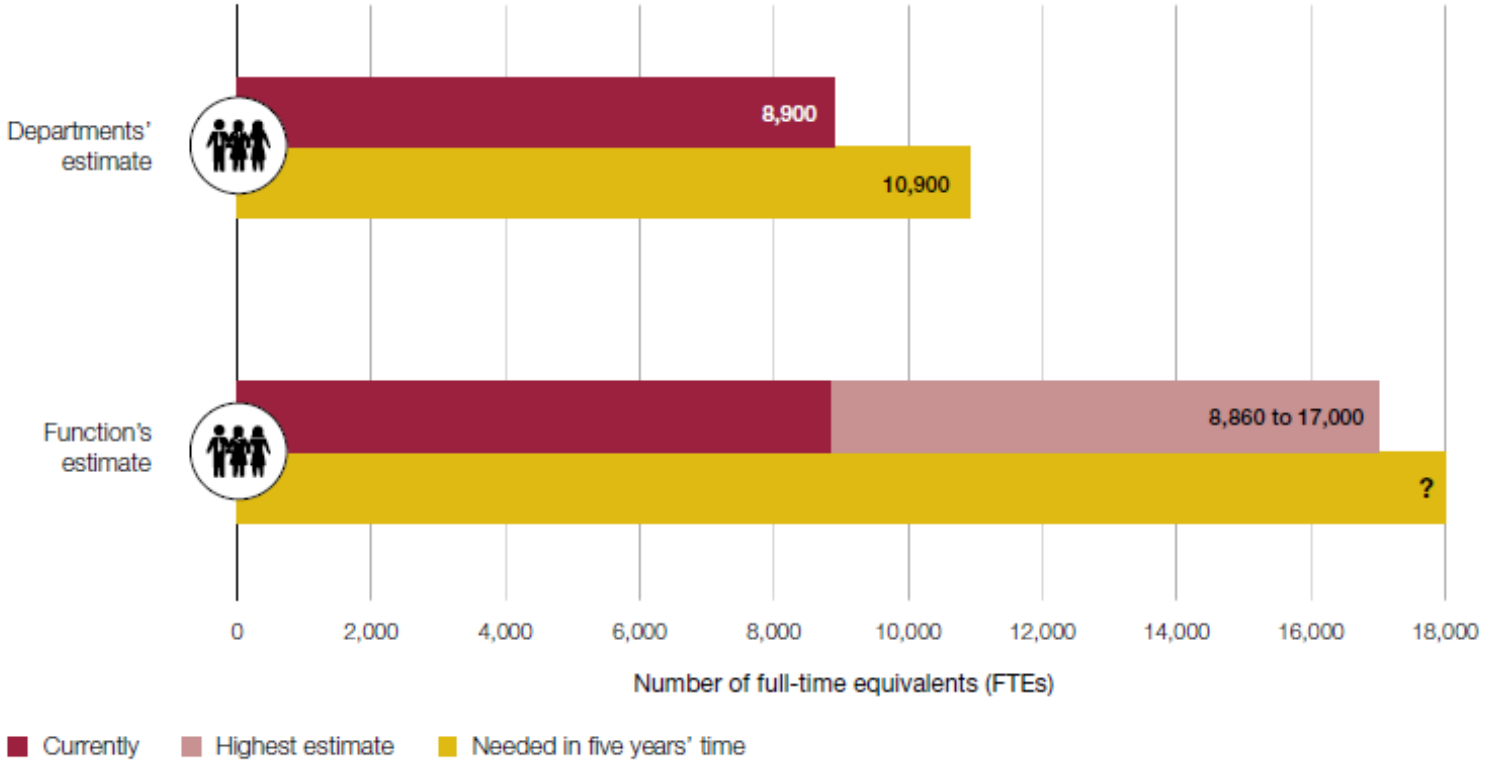
Savings and benefits



Source: NAO, Digital transformation in government, March 2017

Challenge: rising demands on capabilities

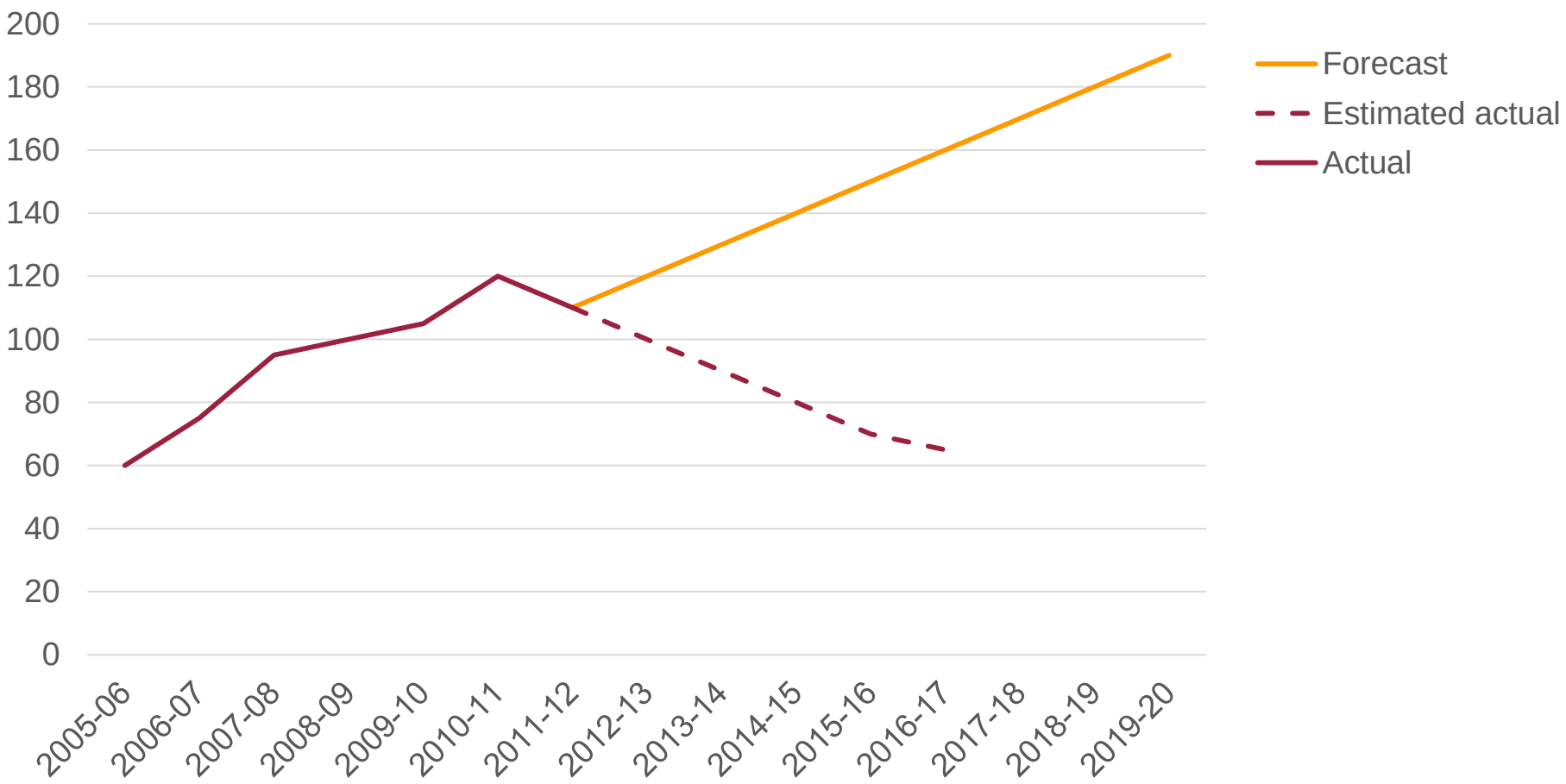
NAO survey of digital capability gap



Source: NAO, Civil service capability, March 2017

Challenge: working with contracts

New orders to tag offenders, thousands



Source: NAO, The new generation electronic monitoring programme, July 2017

Challenge: buy in to new approaches

GOV.UK Verify completion rate, %

The proportion of visits started on GOV.UK Verify that result in successfully accessing a service, following the creation or re-use of a verified account with a certified company

Source: GOV.UK; NAO, Digital transformation in government, March 2017

Focus: understanding technical roadmap

		Current arrangements
Strategic architecture	Reference architecture	No overall cross-government organising framework for developing and maintaining solutions, products and patterns.
	Map of current systems	No detailed map of IT systems (including legacy arrangements).
	Map of future state	No overall view of, or roadmap towards, a future state (taking account of legacy arrangements); but some new systems being built from the centre.
	Roadmap to future	
Governance	Compliance	Technology governance is substantially operated through the spend controls process but the absence of a documented target state and roadmap limits the criteria that GDS can use to assess departments' proposals.
	Standards and interoperability	
	Maintenance of roadmap	
Guidance	Principles	Guiding principles in the Technology Code of Practice.
	Standards	Some standards developed for open technical standards on GDS Standards Hub and blogs.
	Good practice 'patterns'	Some specific developments linked to Government as a Platform. But information on 'patterns' and 'technical positions' is otherwise limited (and a lack of detailed guidance on updating legacy systems).

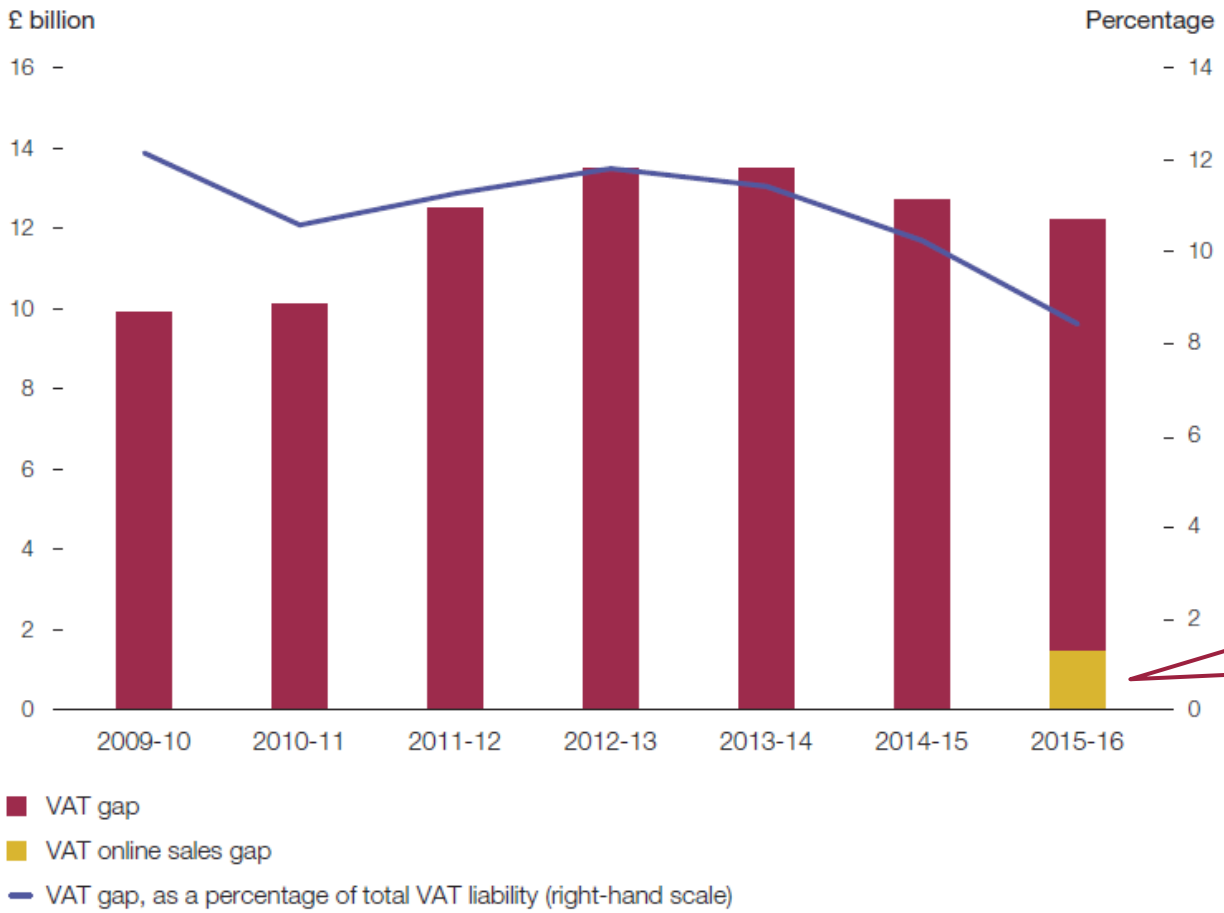
Limited understanding of current systems

Absence of clear target state to assess proposals

Need to develop information on patterns and technical positions

Context: growing range of risks

VAT tax gap, 2009-2016



Estimated online VAT tax gap of £1-1.5 billion

Source: NAO, Investigation into overseas sellers failing to charge VAT on online sales, April 2017

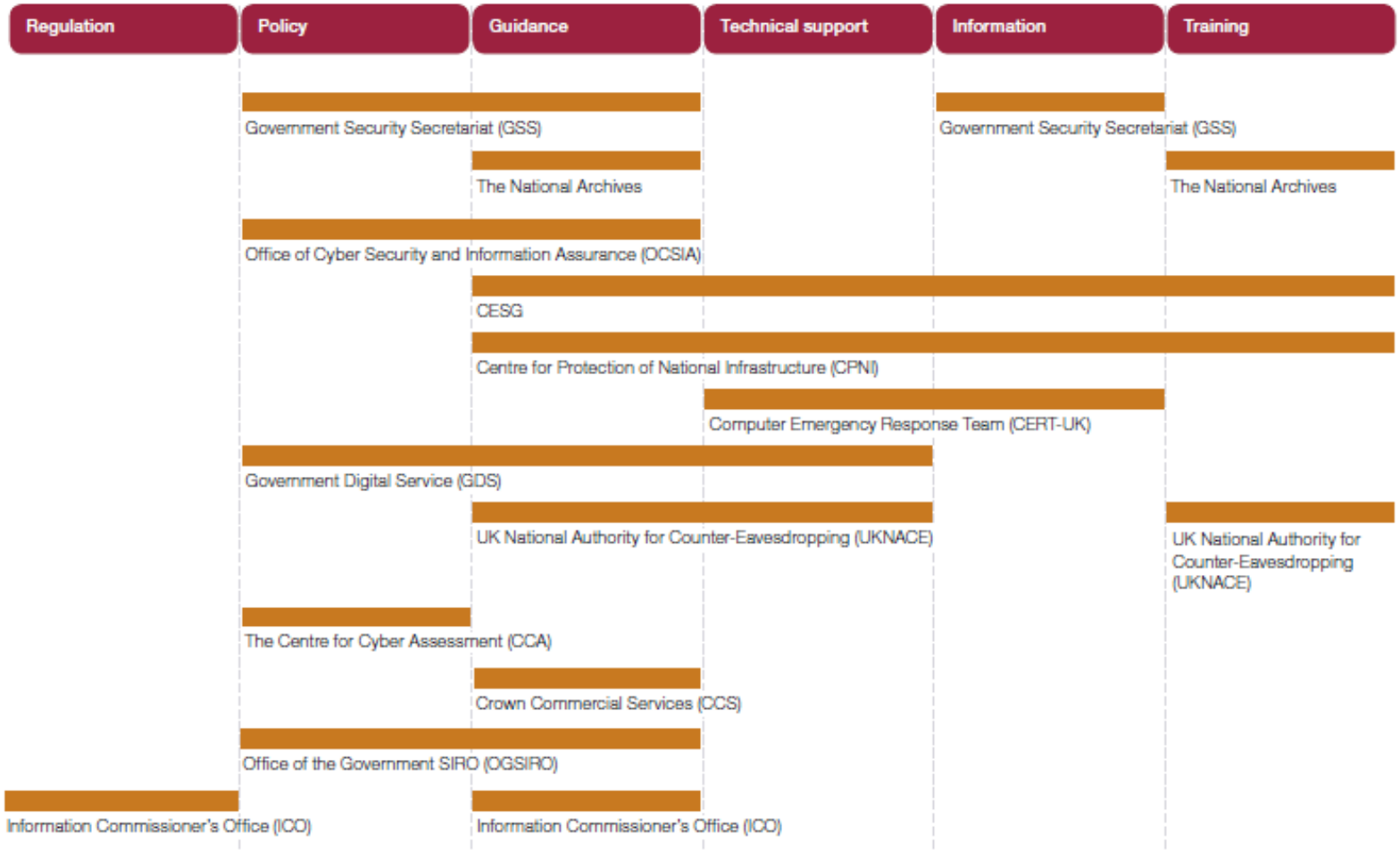
Opportunity: room to improve response

16%	Estimated share of cyber-related crime as a proportion of all crime incidents
1 in 150	Police officers whose main function in 2016 was economic crime
1 in 6	Police officers whose main function in 2016 was neighbourhood policing
27 of 41	Police and Crime Commissioners referring to online fraud in crime plans as at April 2017

Source: NAO, Online fraud, June 2017

Security and fraud

Challenge: need for clearer responsibilities



Source: NAO, Protecting information across government, September 2017

Focus: understanding risks and technical debt

- Understanding the extent and nature of risks
- Capacity to make informed decisions on risks
- Clear principles and guidance
- Balance between security and wider functionality
- Managing innovation and technical debt
- Assessing the business case for investment

Context: many systems affected to some extent

HMRC assessment of organisations involved in 'Government at the Border'

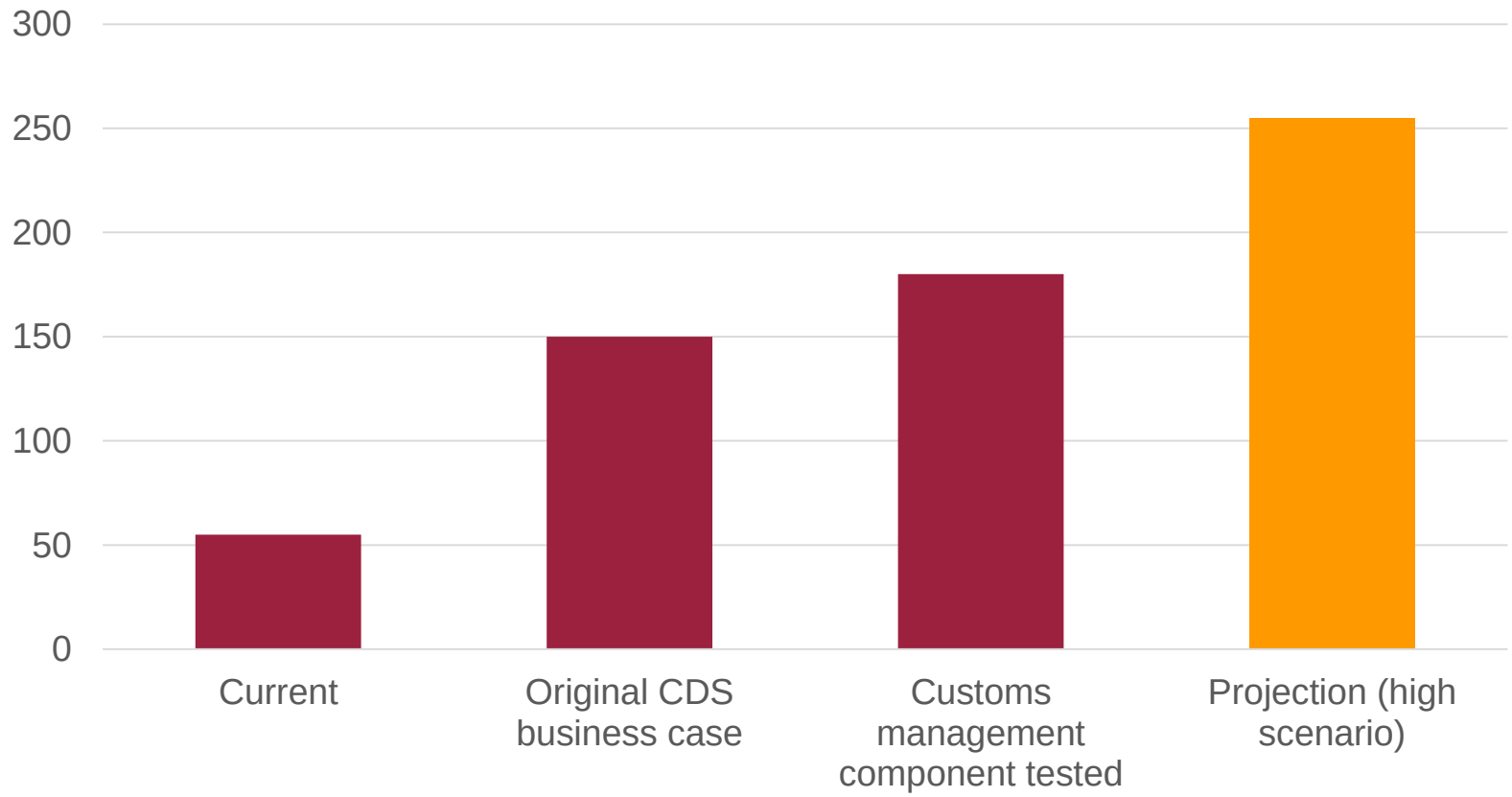
Operational	Policy owners	Operational Policy
Border Force	HMRC	Driver and Vehicle Standards Agency
HMRC *	Defra	Driver and Vehicle Licensing Agency
Port Health Authority	Food Standards Agency	Rural Payment Agency
Trading Standards	Department for International Trade	Marine Management Organisation
Local Force Special Branch	Department for Transport	Horticulture Marketing Inspectorate
Forestry Commission	Home Office	Health and Safety Executive
Animal and Plant Health Agency*	Department for International Development	Medicines and Healthcare Regulatory Authority
Environment Agency	Foreign and Commonwealth Office	Intellectual Property Office
Atomic Weapons Establishment	Department for Culture Media and Sport	Arts Council
Environmental Health	Animal and Plant Health Agency	Ministry of Defence
National Measurement Office	Department for Business, Energy and Industrial Strategy	Department for Communities and Local Government (Local Authorities)
Office for Nuclear Regulation		Government Diamond Office
Maritime and Coastguard Agency		
Medicines and Healthcare Regulatory Authority*		
Horticulture Marketing Inspectorate*		
Driver and Vehicle Standards Agency*		
National Crime Agency Border Policing Command		

*Denotes more than one accountability.

Source: HMRC, letter to Treasury Select Committee Chair, March 2017

Challenge: preparing for different scenarios

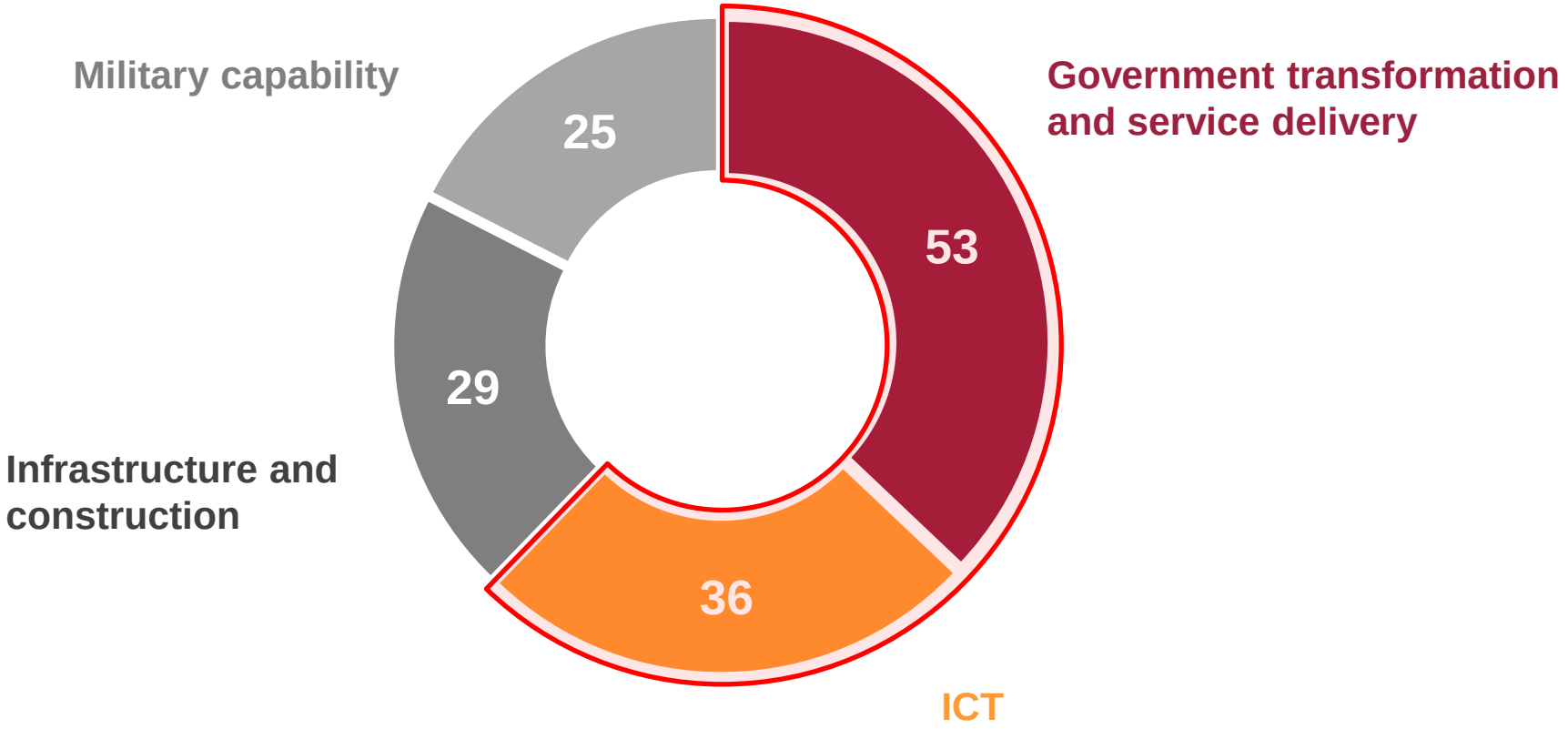
Annual customs declarations, millions



Source: NAO, Customer Declaration Service, July 2017

Focus: portfolio management and prioritisation

Number of projects in government major projects portfolio, September 2015



Source: IPA, Major Projects report, 2015-16

Opportunities and challenges

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Thank you

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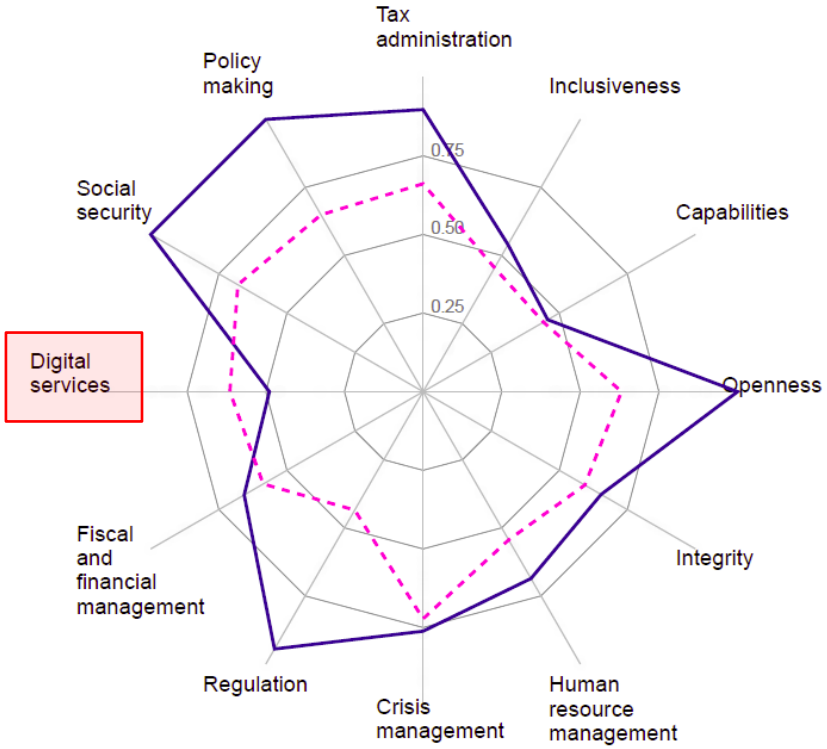
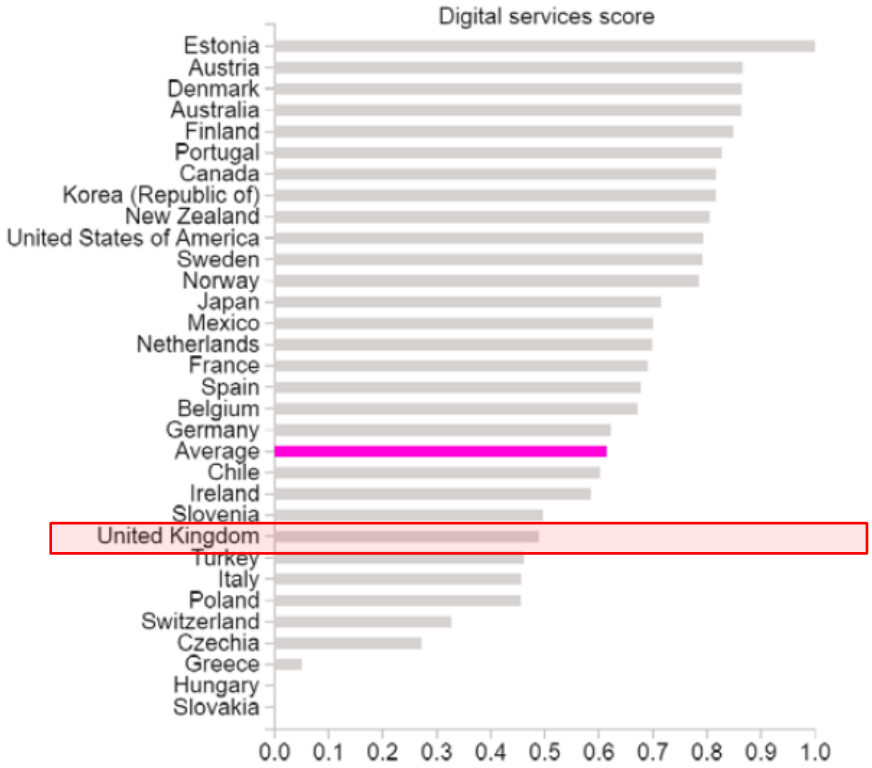
Context: digital services effectiveness

IFG INCISE, UK assessment





Source: IFG, INCISE indicators, July 2017