The digital skills gap in government

Survey findings

Introduction: Digital skills survey

Government's austerity and reform agenda means delivering the same or better with less resource. Civil service headcount is down nearly one-fifth since 2010.

Further cost reductions will be difficult without major service redesign, and significant contribution is expected from digitally-enabled business transformation.

To improve data about the availability of the digital skills needed to achieve this transformation, we undertook a survey of central government digital leaders in August 2015.

This document sets out:

- The survey findings and digital leaders' views on current position on digital skills and how needs are being addressed
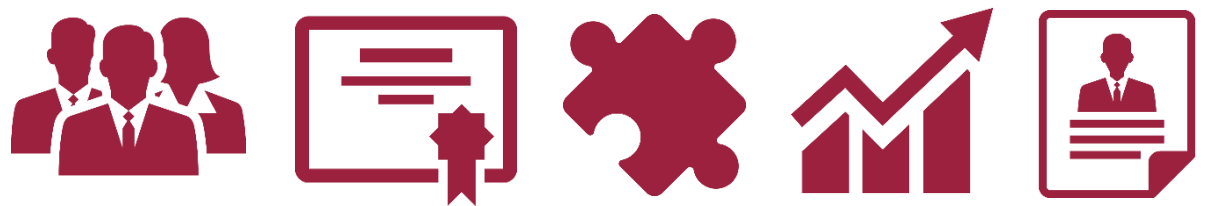
- Thoughts on future areas for consideration

Part One: Overview Sets out the context and summarises the survey findings
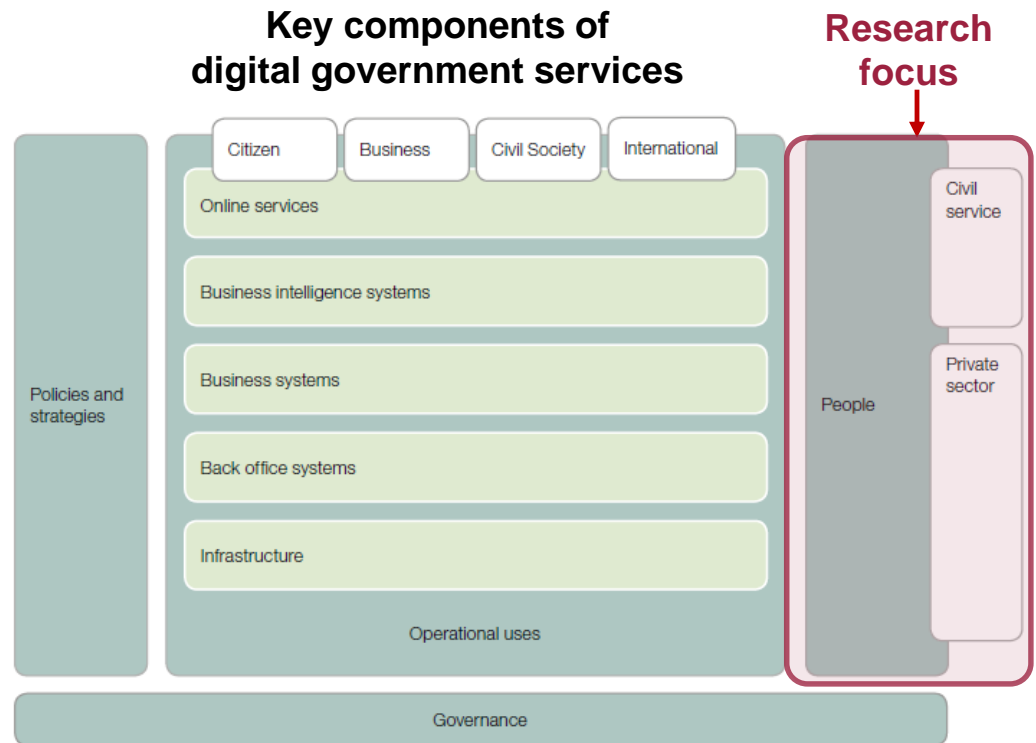
Part Two: Survey results

Part One

# Overview

Importance of digital skills for government

- "Digital" is more than just technology, websites, internet – it requires radical, flexible operating models, designed around users and data; with a much lower cost base.

- UK digital skills gap across all industries exacerbates the government's situation, even before considering demands of transformation.

- There is a risk of unsustainable cost reduction or service deterioration if government is unable to deliver transformation to any significant degree over next 5 years.

- Major transformation programmes are underway in most departments, with some digital service successes. But the focus to date has been mainly on the "front end".

- The change required is complex. The civil service needs to secure different skills and capabilities.

Key components of digital government services

Research focus

Policies and strategies	Citizen	Business	Civil Society	International	People	Civil service
	Online services					
	Business intelligence systems					Private sector
	Business systems					
	Back office systems					
	Infrastructure					
	Operational uses					
Governance						

Source: NAO, *ICT in government Landscape review,* 2011

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Summary of survey findings

- Widespread acknowledgement of skills gap.

- Range of initiatives introduced, with some success.
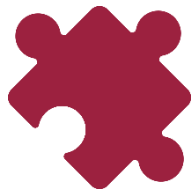
  - An ongoing perception gap: Digital and Technology (DaT) professionals have a wider perception of DaT, recognising the importance of business change, while others in their organisations have a more limited focus on IT and technology. This has implications for planning of reform and transformation programmes.

- Recruitment, market conditions and procurement processes remain significant challenges.

  - Funding, cultural issues, career paths and cross-government competition are all perceived to have a negative impact on developing staff and improving capability and capacity.

  - Pay seen as a problem for recruiting specialist, experienced people skilled in integrating and transitioning from ICT to digital.

- Possible need for more focus on specialist capability below senior civil service.

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Respondent views on constraints

78% External market conditions

67% Limited supply

58% Procurement constraints

56% Business disengagement

50% Organisation culture
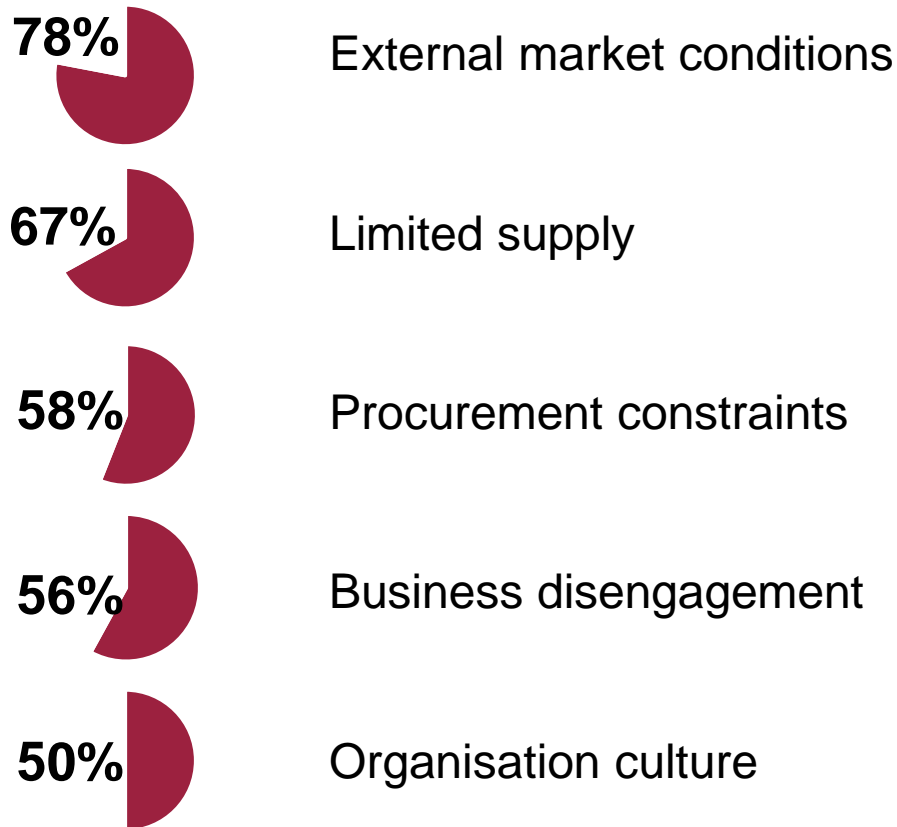
Percentages of respondents saying these factors impact negatively on efforts to recruit, retain and develop staff or acquire temporary resources with the needed digital skills.

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Future areas for consideration

Current initiatives go some way to delivering the needed skills, but there are broader, systemic issues to tackle.

Embedding digital within overall business strategies; building the required capability	Is there realism about the scale and pace of transformation achievable within available resources and skills?
Aligning the digital and commercial operating models	How can flexibility be improved for recruitment and procurement processes?
Insourcing	Consider central guidance to support the structure, roles and standards required to move from outsourcing to insourcing.
Clarity over role of HR	The NAO does not generally see HR driving change enablement skills, but few people commented on this.
Responding to market conditions and external environment	Consider more radical alternatives, such as partnerships.
Addressing loss of talent to other sectors	Prioritisation to draw in needed skills, especially for cyber security and data analytics.

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Part Two

Survey results
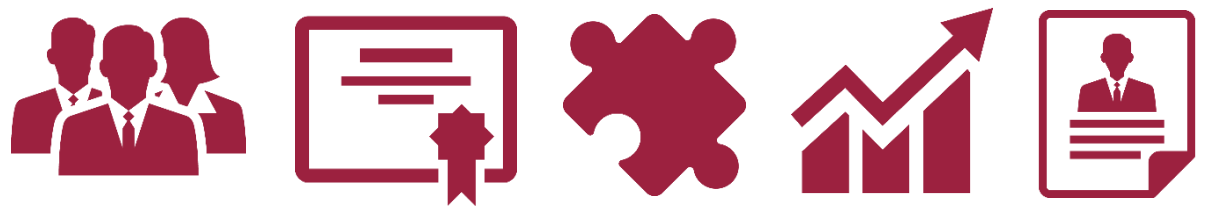
About our survey

Leadership

The emerging profession

Skills gaps

Barriers and challenges

Central initiatives and guidance

- To improve data about digital skills across government, in August 2015 we undertook a survey of digital leaders in departments and agencies.

- We sought to elicit views on their perceptions of the current position, how it is being addressed and whether the current efforts are sufficient to mitigate the risks to transformation.

- Our questions were framed around 5 themes (left).

- We asked 72 digital and technology leaders across 45 departments, agencies and arm's length bodies (ALBs) and received a 50% response rate, covering 14 major departments and 15 agencies / ALBs / non-ministerial departments. See details.

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About: surveyed views in 5 key areas

The buttons at the top allow you to navigate between these five sections.

Leadership

The emerging profession

Skills gaps

Barriers and challenges

Central initiatives and guidance

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Leadership: key findings

- There are not many DaT leaders in place.

- Most of those in place have not been long in post.

- A significant proportion have good private sector experience, but do not have public sector experience.

- There is reasonable penetration on boards, less at main board.

- DaT is typically a small proportion of overall workforce.

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DaT people in leadership roles

Q4: **How many people would you estimate are in DaT leadership roles in your organisation?**
(Percent of responses, n = 36)

Over 20 — **19%**
0-1 — **14%**
2-5 — **31%**
6-10 — **25%**
11-20 — **11%**

Most organisations have a small group of digital leaders – around 70% have 10 or fewer

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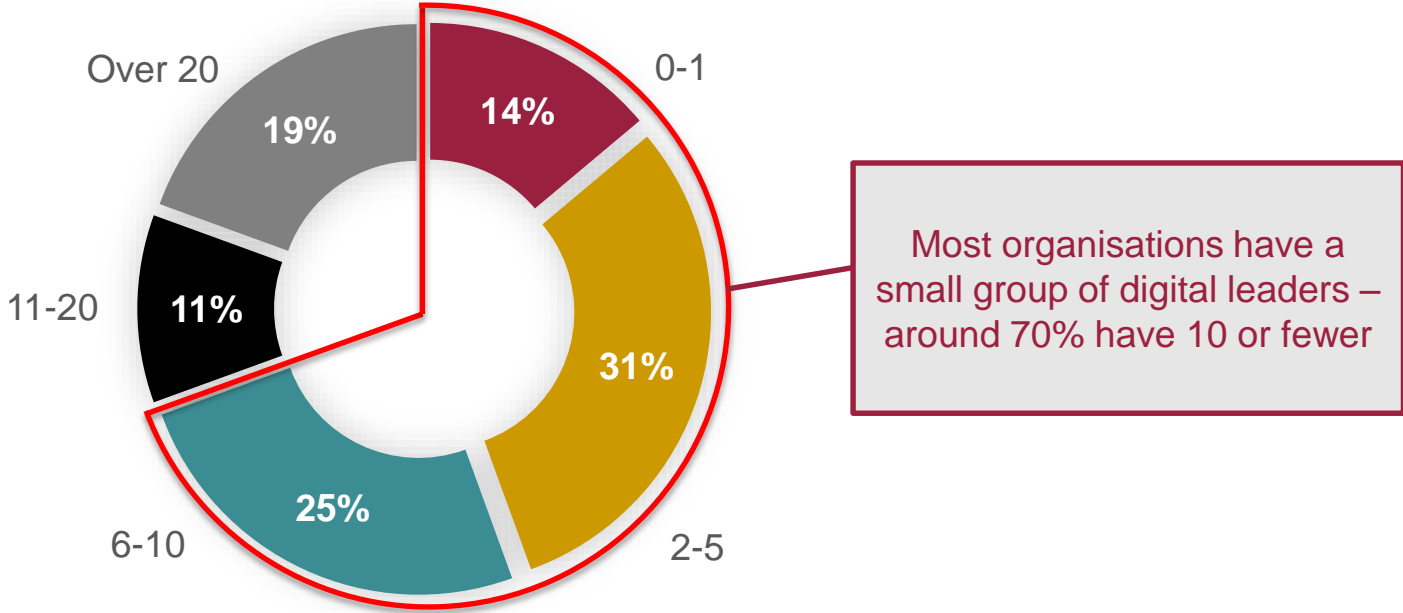
Length and experience of DaT leadership

Q1b: When did you take up your current position?
Q1c: Was your last role a DaT one and if so, in what sector?
(Number of responses, n = 36)

Length of time in position

Over 5 years

2, 5%

8, 22% — 2-5 years

15, 42% — Less than 1 year

11, 31% — 1-2 years
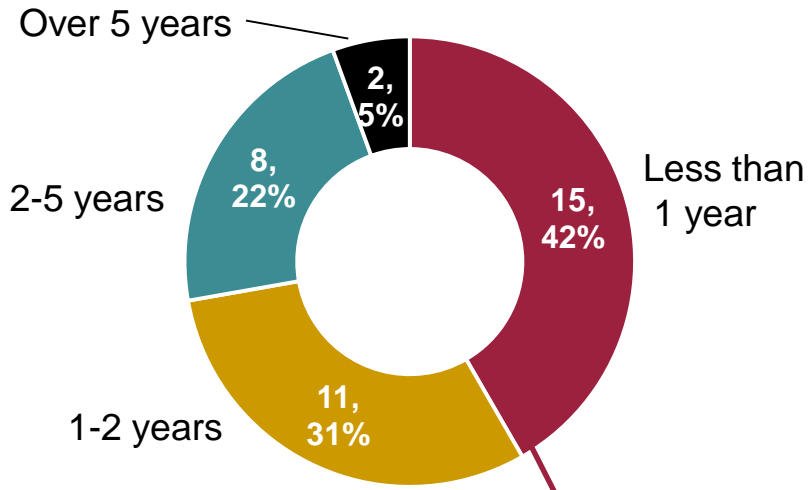
26 (73%) have been in post for under 2 years

Previous role

No

2, 5%

11, 31% — Yes, central government

15, 42% — Yes, elsewhere

8, 22% — Yes, wider public sector
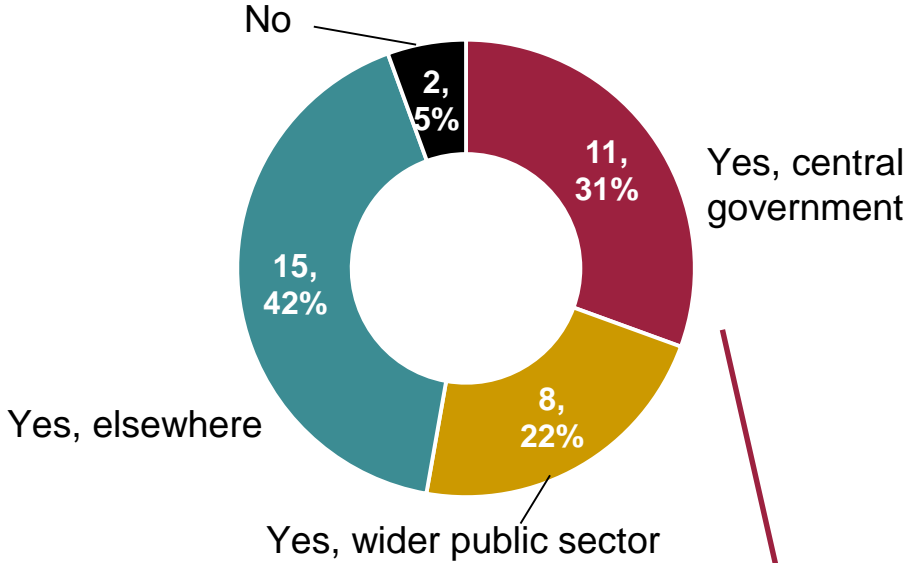
Just over half (53%) said their previous role was related to DaT in the public sector

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DaT leaders at board level

Q1a: Do you sit on the main board or an operational (or other) board below the main board in your organisation?
(Most senior respondent from each organisation shown; number of organisations, n = 29)

Most digital leaders in departments are not on the Main Board

Legend: ■ Ministerial Departments ■ Other

Main Board — Ministerial Departments: 4, Other: 8
Operational Board — Ministerial Departments: 7, Other: 4
Other — Ministerial Departments: 3, Other: 2
None — Ministerial Departments: 0, Other: 1
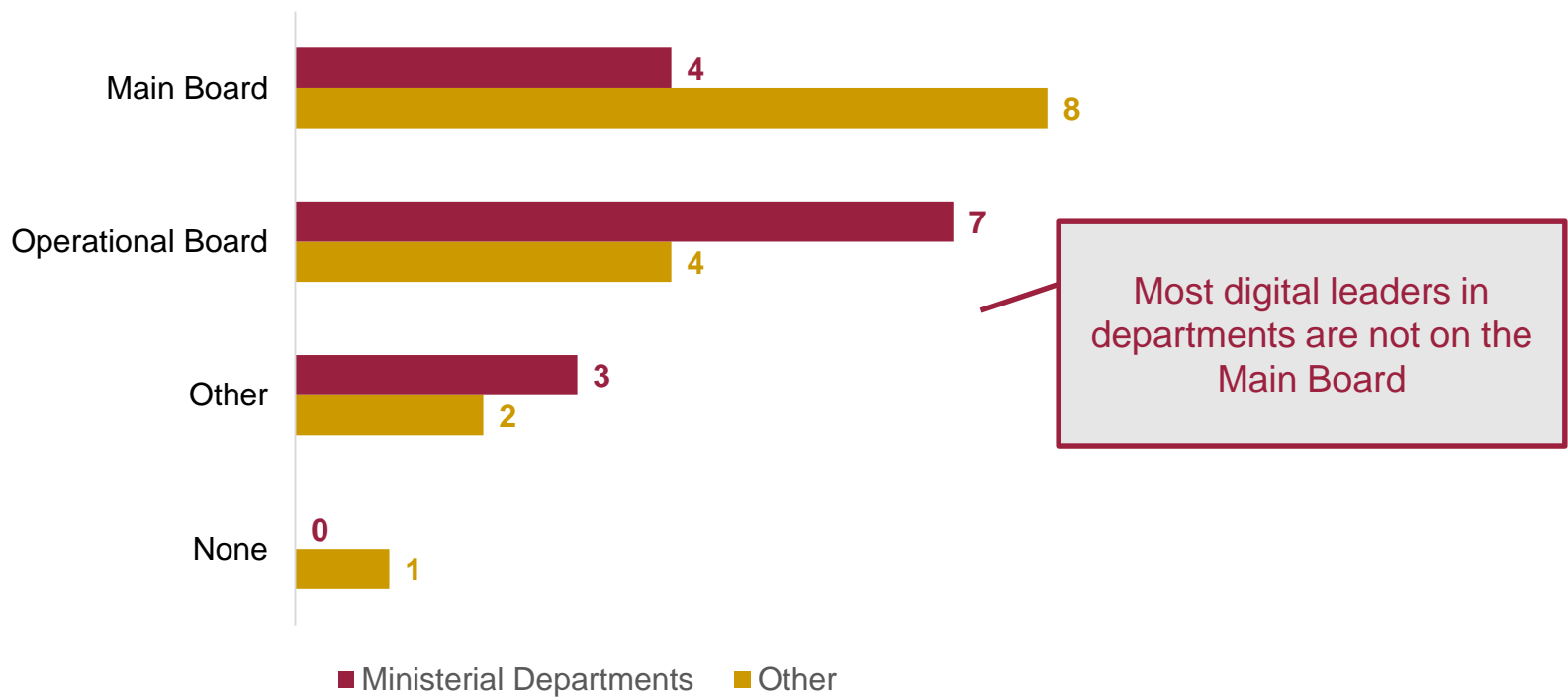
Note: For the purposes of this question, HMRC is included within Ministerial Departments because of its size

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Board experience of DaT

Q3: **How many people on the main board of your organisation have DaT experience?**
(Number of responses, n = 36)

No DaT or change experience on some main boards

Horizontal stacked bar chart showing:

Category	None	1 to 3 years	Over 3 years	Don't know
Digital or IT strategy	5	21	3	7
Digital or IT operations	5	19	5	7
IT enabled change	4	16	9	7
Business transformation	1	15	16	4
Other	4	2	2	3

Legend: ■ None ■ 1 to 3 years ■ Over 3 years ■ Don't know

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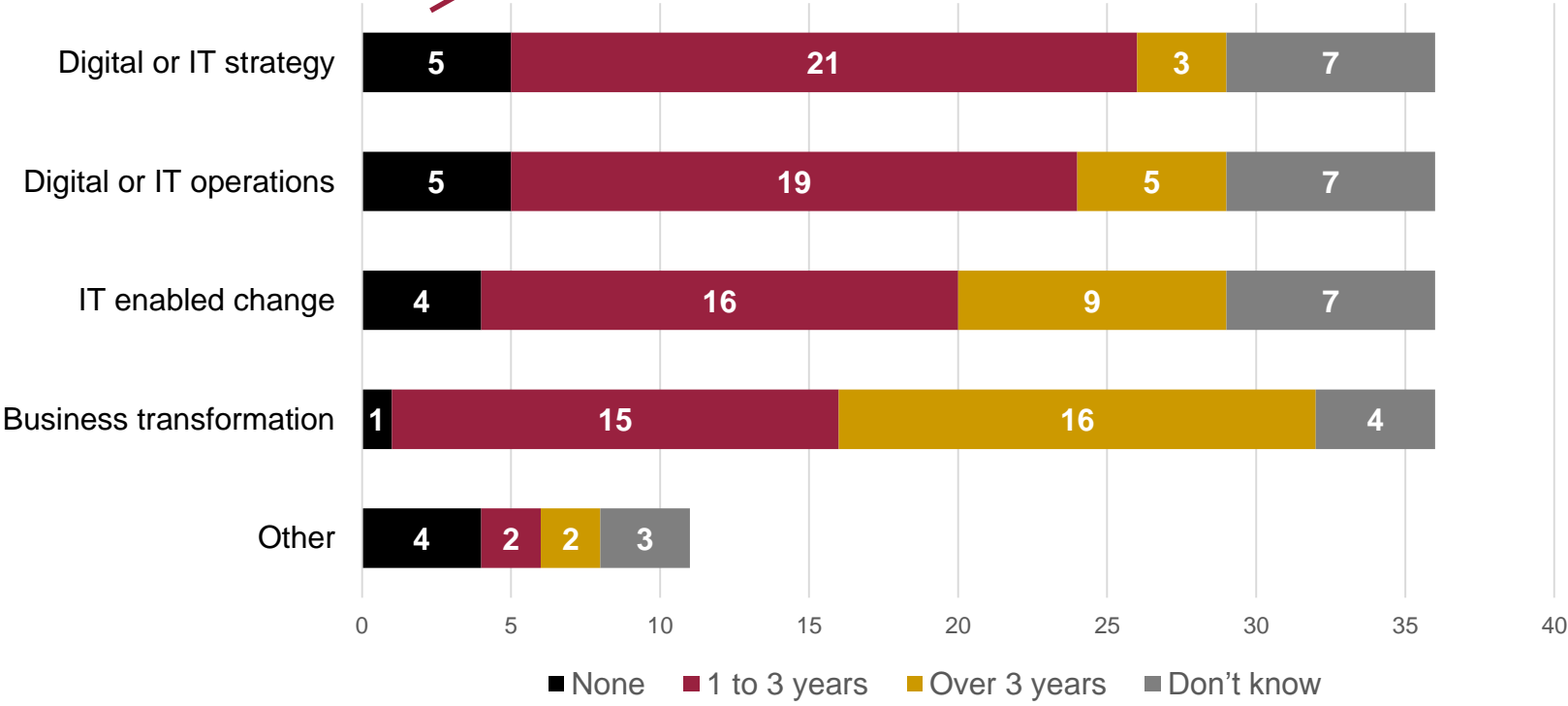
Wider resources and expertise

Q2: Approximately how many people are there in your organisation overall and roughly how many do DaT jobs?

Proportion of DaT resource to overall workforce in organisations surveyed is low (6%) based on estimates from DaT leaders, but higher than ONS actual data for the IT profession in 2015 (2%). This needs further investigation.

DaT resource

6%

DaT leader estimates

Overall workforce

IT profession

2%

**Official statistics
(ONS Civil Service Stats 2015)**

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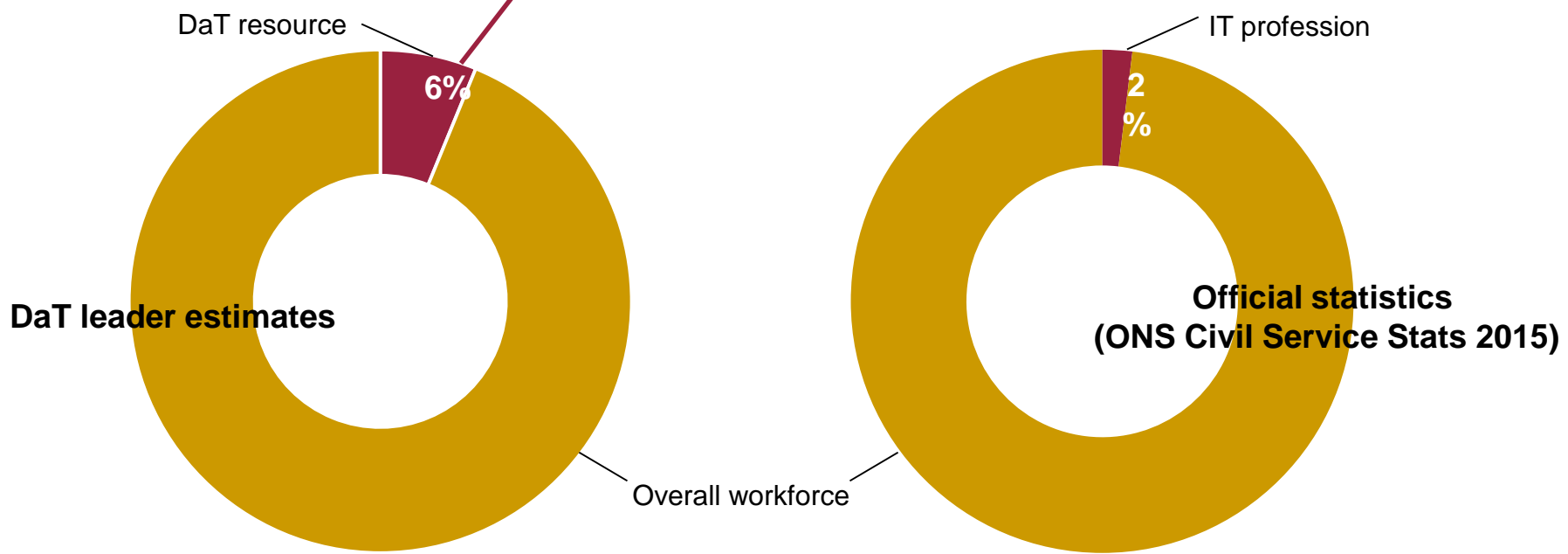
Emerging profession: key findings

- Most digital leaders feel that DaT is about business change and transformation.

- Most organisations see DaT as mostly about IT – differing perceptions leads to an understatement of its importance.

- The main way organisations recognise DaT professionals is by job titles rather than pay differentials or career paths.

- Previously mandated Skills Framework for the Information Age (SFIA) is no longer the approved standard framework in government.

- Most organisations recognise a skills framework, at least in part.

- DaT leaders feel they are breaking down the barriers between IT and business.

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Perception of digital and technology

Q7: **In your view, which of the following statements reflects the way digital and technology is viewed in your organisation?** (Number of responses, n = 36)

Business change/transition and IT chart:

- Business change/transformation: 27 (Best reflects my view), 8 (Best reflects the views of my organisation)
- Marketing/social media: 1, 2
- New technology: 1, 4
- Web front ends: 0, 2
- IT: 2, 16
- Something else: 5, 4

Continuing gap in perceptions between DaT professionals and rest of organisation

■ Best reflects my view

■ Best reflects the views of my organisation

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Breaking down IT and business barriers

Q5: **Do you feel that the new digital leader roles are breaking down the barriers between the business and IT in government organisations?**
(Number of responses, n = 36)

New digital roles are breaking down barriers between business and IT

Yes — **27**

No — **8**

Don't know — **1**

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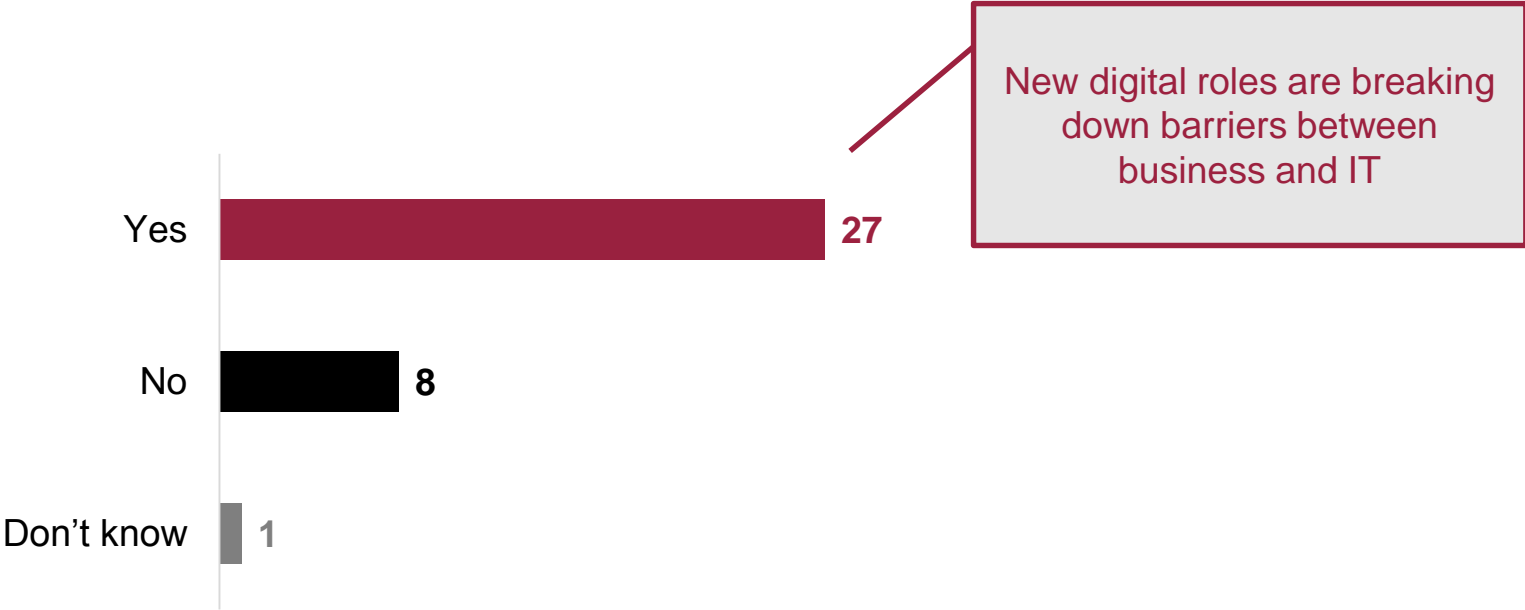
Recognition of DaT skills

Q8: Does your organisation recognise DaT skills in any of the following ways?
(Number of responses, n = 36)

Category	Yes	No	Don't know
Having a separate functional head	30	5	1
Use of specific job titles	29	5	2
Use of pay differentials for people with DaT skills	14	18	4
Provision of a specialist career path	12	21	3

Most recognition by appointing separate functional heads and use of job titles

Less recognition in terms of pay differentials or specialist career paths

■ Yes   ■ No   ■ Don't know

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Use of skills frameworks

Q9: **Do you have a skills framework for DaT staff in your organisation?**

Q11: **Have you experienced any issues when applying a framework within your organisation?**
(Number of responses, n = 36)

Framework(s) used with no issues

No frameworks used

13 (36%)

10 (28%)

13 (36%)

Framework(s) used with some issues

Most people used some skills frameworks; but half of those found issues such as:
- Frameworks too big and complex
- Inflexibility and poor fit to job roles
- Lack of take-up and understanding
- Lack of mandate to enforce
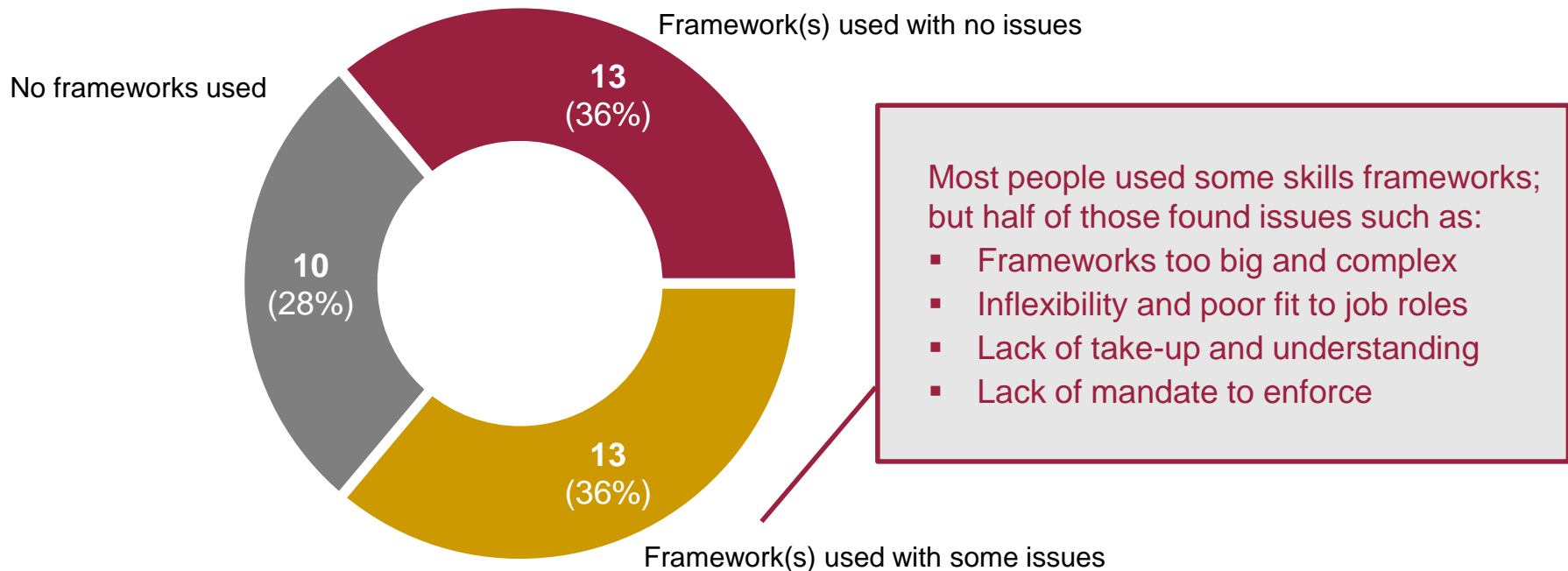
Note: the figure combines results from Q9 and Q11 of the survey

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Nature of skills frameworks

Q10: Which of the following skills frameworks do you use within your organisation?
(Number of responses, n = 26, excludes not used and no answer)

BCS Skills Framework for the Information Age (SFIA)
- Used in full: 8
- Used in part: 14

GDS DaT Skills matrix
- Used in full: 3
- Used in part: 16

Other external framework
- Used in full: 1
- Used in part: 2

Framework developed in-house
- Used in full: 1
- Used in part: 7
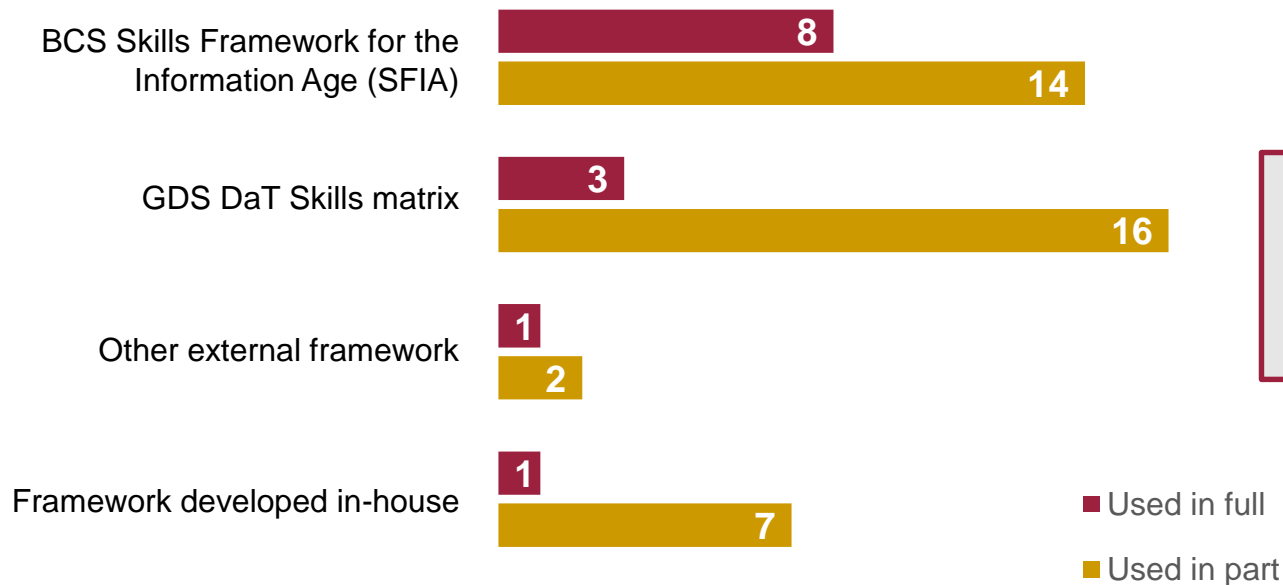
Range of different frameworks used with no clear standard

■ Used in full
■ Used in part

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Skills gaps: key findings
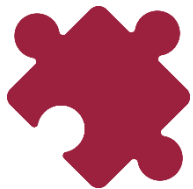
- Estimates of the gap show shortfalls across all areas.

- Most organisations need to improve capacity and capability in key technical specialisms.

- Mixed response to effectiveness of approaches to developing capability – learning from colleagues preferred to formal training.

- Use of consultants and systems integrators expected to decline in the next 5 years – with more use of partnering .

- Design and development, organisational awareness and skills frameworks are most commonly cited as initiatives taken.

- Few believe current initiatives will fully close the gap.

- Most organisations measure the benefits of skills initiatives - capability assessment method is the one mostly used.

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DaT skills needed and available for change

Q12, Q13: **Please estimate your strength in numbers of people available to do DaT enabled current change projects (Q12) and needed to do change/transformation over the next 5 years (Q13)**

Strategic skills
- Business Strategy & Planning
- Technical Strategy, Architecture & Planning
- Digital Leadership
- Digital PPM & Change Management

Change skills
- Business Modelling & Organisation Design
- Agile Delivery
- Commercial & Procurement
- Design & Development

Technical skills
- Information Security
- Data Analytics
- Cyber Security
- Digital Forensics

Legend:
- ■ Needed
- ■ Available

X-axis: Estimated numbers of people (0, 500, 1000, 1500, 2000, 2500)

Estimate of current DaT resources against future needs shows shortfalls across all skills areas

Capacity & capability for DaT technical skills

Q14: For the following technical skills, indicate whether you feel that your organisation needs to improve its capacity (numbers) or capability (skills) or the way these roles are supported (Number of responses, n = 36, excluding responses stating no need or don't know)

Improvement

Digital Forensics specialists	15 (capacity), 16 (capability)
Cyber Security specialists	16 (capacity), 18 (capability)
Data Analytics specialists	19 (capacity), 23 (capability)
Information Security specialists	18 (capacity), 21 (capability)

■ Need to improve capacity
■ Need to improve capability

Support

Digital Forensics specialists	10 (centre), 13 (external)
Cyber Security specialists	11 (centre), 8 (external)
Data Analytics specialists	7 (centre), 7 (external)
Information Security specialists	12 (centre), 9 (external)

■ Need support from the centre
■ Need support from external organisations

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Effectiveness of development approaches

Q15: In your view, how effective have the following approaches been in developing your organisation's DaT capability?
(Number of responses, n = 36, excludes nil answers)

On-the-job learning is the biggest driver of skills growth

Approach	Very ineffective	Ineffective	Neutral effect	Effective	Very effective
Learning from colleagues/ on the job learning		1	4	19	11
Externally provided classroom training			4	24	3
Mentoring			8	16	7
Internally provided classroom training		2	9	18	1
Externally provided self guided training or e-learning		2	13	16	
Internally provided self guided training or e-learning	1	3	12	14	1
Apprenticeships		3	6	8	8
Digital Academy		1	5	5	5
Other			2	1	1

Despite stating some approaches were ineffective, no respondents offered further specific comment

■ Very ineffective ■ Ineffective ■ Neutral effect ■ Effective ■ Very effective

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Initiatives to address the skills gap

Q18: In regard to the 3 broad skills categories below how much will applying the initiatives you have identified close the skills gap?
(Number of responses, n = 36)

> Only 8% believed their initiatives would fully address the gaps

Technical skills
- Completely: 3
- Mostly: 19
- Partly: 11
- Not applicable / No view: 3

Change skills
- Completely: 3
- Mostly: 18
- Partly: 11
- Not applicable / No view: 4

Strategic skills
- Completely: 3
- Mostly: 15
- Partly: 13
- Not applicable / No view: 5

Legend: ■ Completely ■ Mostly ■ Partly ■ Not applicable / No view

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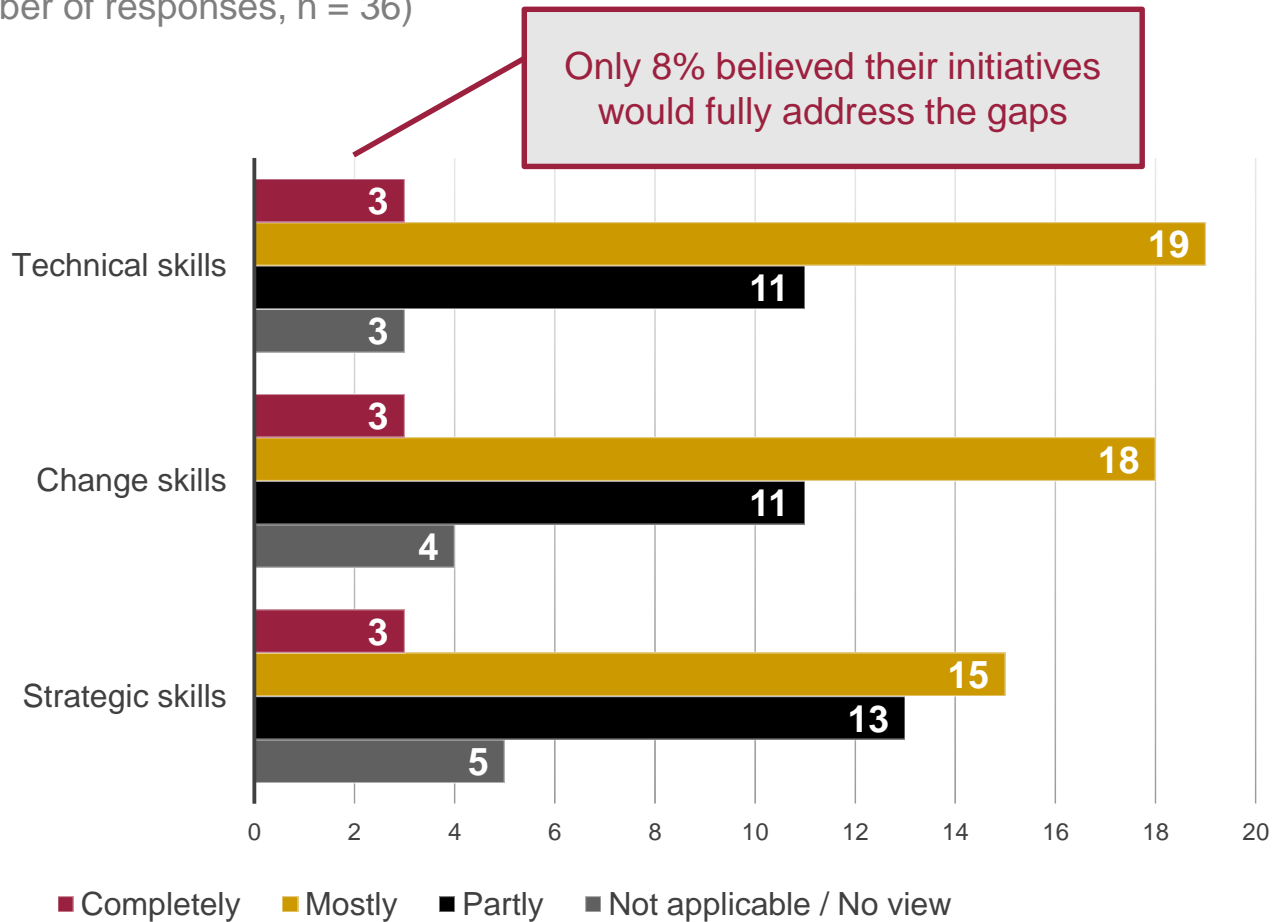
Measuring the benefits of initiatives

Q19: Does your organisation measure the benefits of its initiatives aimed at improving DaT skills?
(Percentage of responses, n=36)

Yes, all

3 (8%)

No
15 (42%)

18 (50%)

Yes, some
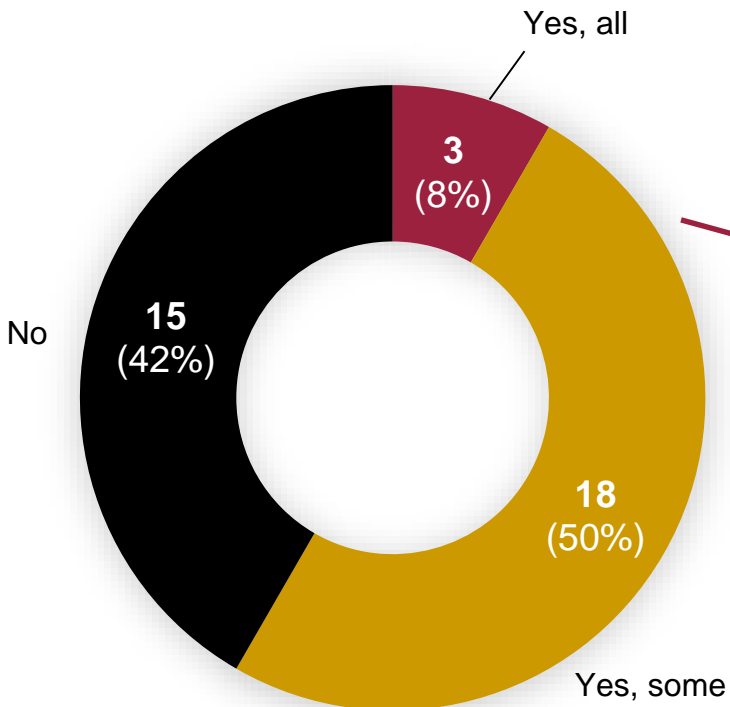
The most commonly cited methods were:
- Capability assessments
- Recruitment, retention, promotion statistics
- Via Skills Manager/ Head of role job
- Via project and benefits delivery
- Benchmarking and baselining

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Use of external specialists

Q16: **To achieve your transformation objectives over the next 5 years, do you plan to make more or less use of the following?**
(Number of responses, n = 29)

Legend:
- More
- About the same
- Less
- No view

Contractors
- More: 10
- About the same: 7
- Less: 11
- No view: 1

Consultants
- More: 5
- About the same: 10
- Less: 14
- No view: 0

Systems Integrators
- More: 7
- About the same: 6
- Less: 16
- No view: 0

Partner organisations
- More: 20
- About the same: 9
- Less: 0
- No view: 0

Over half of organisations plan to make less use of consultants and systems integrators

Two-thirds of organisations plan to make more use of third party partner organisations

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Barriers and challenges: key findings

- Financial position and budgets, cultural issues, career paths and competing priorities have largest negative impacts on developing existing staff.

- Market conditions, pay and recruiting processes have largest negative impacts on recruitment and retention.

- Procurement processes have largest negative impact on obtaining external resources.

- Funding and pay seen as biggest challenges to developing capability and capacity.

- Fewer than half of respondents were positive about their organisation's workforce plans.

- Most leaders feel that they have the capability to deliver transformation on the scale required.

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Barriers to developing existing staff

Q20a: What impact, if any, do you think that the following have had your organisation's ability to develop the DaT skills of those people you already have in your organisation?
(Number of responses, n = 36, excludes 'don't know' or no answer)

Category	Negative impact	No impact	Positive impact
Financial position / budget	22	9	5
Organisational culture	18	5	12
Career paths to senior levels for specialists	15	11	7
Priority of DaT relative to other issues	14	4	18
Senior management spending priorities	13	9	14
Competencies based performance management	10	16	10
Level of support from HR	8	10	18
Level of business area engagement	7	13	16
Staff allocation to jobs	4	20	8

■ Negative impact ■ No impact ■ Positive impact

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Barriers to recruitment and retention

Q20b: What impact, if any, do you think that the following have had your organisation's ability to recruit and retain the right people from elsewhere?
(Number of responses, n = 36, excludes 'don't know' or no answer)

The amount you are able to pay
- Positive impact: 2
- No impact: 4
- Negative impact: 29

Civil service recruitment processes
- Positive impact: 1
- No impact: 5
- Negative impact: 29

External market conditions (demand, scarcity and competition)
- Positive impact: 1
- No impact: 4
- Negative impact: 28

Number of people available with the required skills
- Positive impact: 1
- No impact: 9
- Negative impact: 24

Perceptions of working in the civil service
- Positive impact: 5
- No impact: 7
- Negative impact: 22

Internal market conditions (cross government competition & pay differentials)
- Positive impact: 2
- No impact: 10
- Negative impact: 20

Financial position/ budget
- Positive impact: 4
- No impact: 11
- Negative impact: 20

Promotion prospects for DaT staff
- Positive impact: 4
- No impact: 13
- Negative impact: 16

■ Negative impact   ■ No impact   ■ Positive impact

Note: the figure shows the top 8 negative impacts

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Barriers to effective resource procurement

Q21: **What impact, if any, do you think your organisation's procurement processes have had on the acquisition of temporary resources?**
(Number of responses, n = 36)

Procurement lead times
- 0
- 5
- 10
- 21

Usability of frameworks
- 0
- 7
- 12
- 17

Payment thresholds
- 0
- 10
- 10
- 16

Contract durations
- 5
- 12
- 10
- 9

Evaluation criteria
- 2
- 19
- 11
- 4

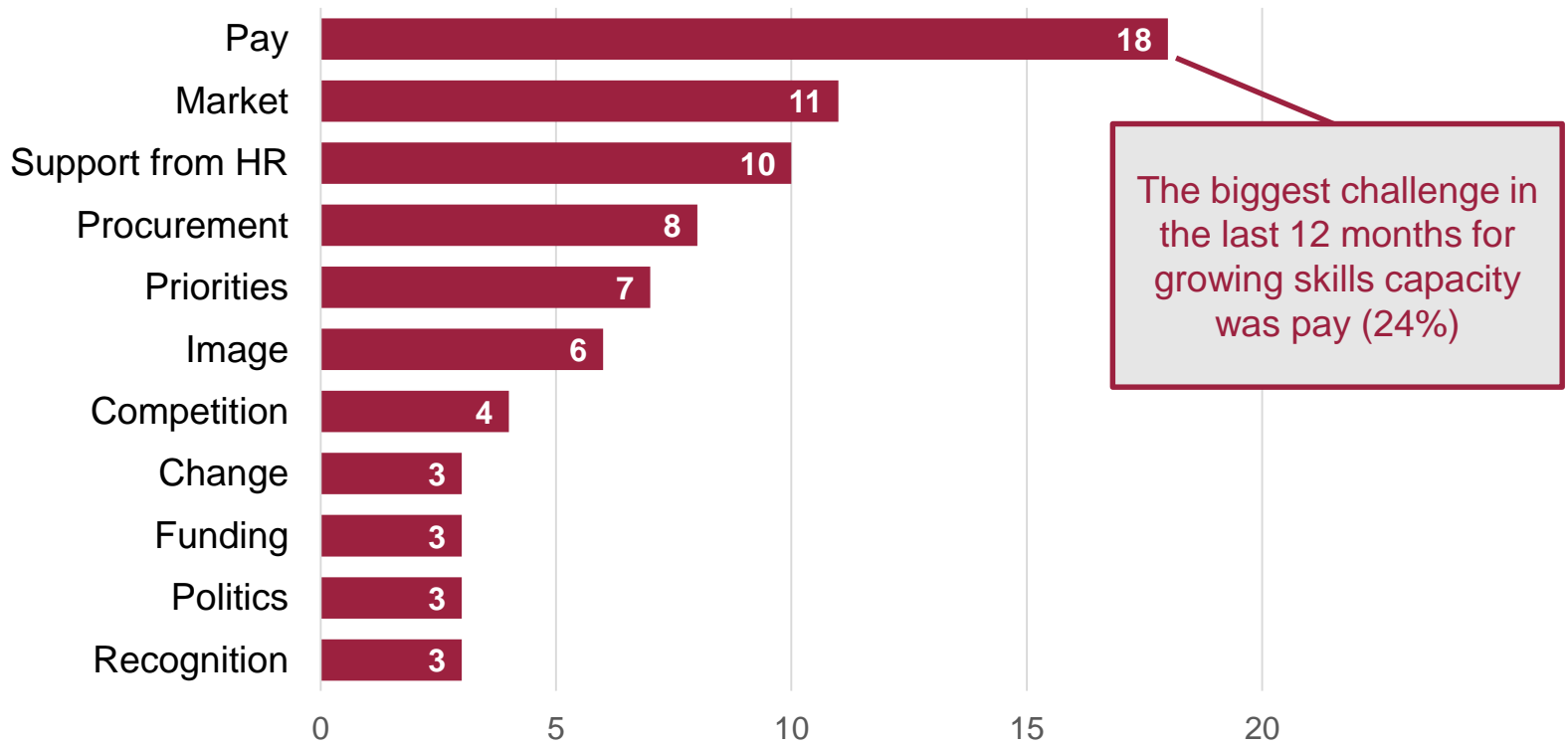**Local and central conditions**
- 3
- 15
- 15
- 3
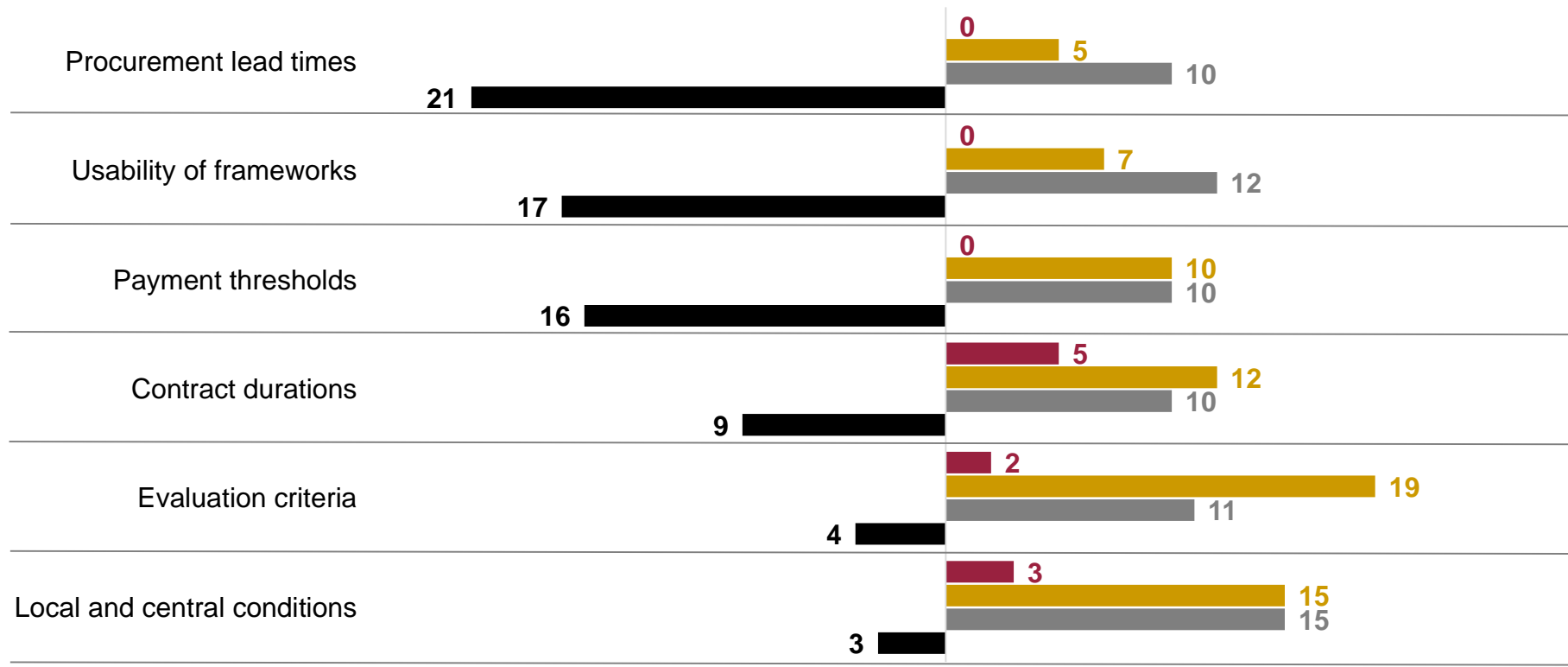
■ Negative impact ■ Don't know ■ No impact ■ Positive impact

Note: the figure excludes categories where respondents answered there was no significant positive or negative impact

Challenges to growth of DaT skills capacity

Q22: Please list the biggest challenges to the growth of DaT skills capacity in your organisation has faced over the last 12 months

Challenge	Value
Pay	18
Market	11
Support from HR	10
Procurement	8
Priorities	7
Image	6
Competition	4
Change	3
Funding	3
Politics	3
Recognition	3

The biggest challenge in the last 12 months for growing skills capacity was pay (24%)
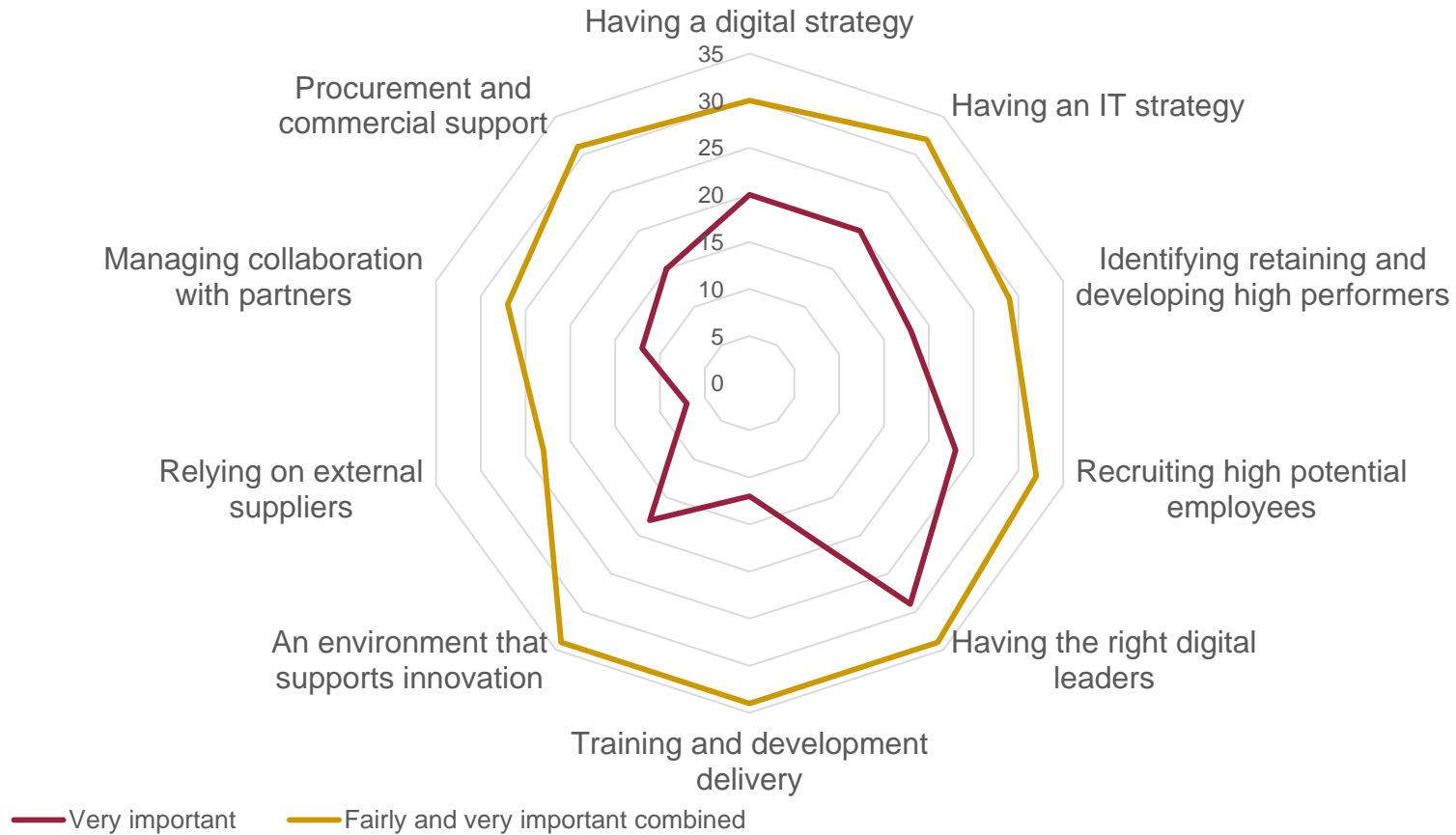
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Challenges to growth of DaT skills capability

Q23: Please list the biggest challenges to the development of DaT skills capability within your own business unit over the last 12 months

Challenge	Value
Funding and budgetary problems	10
Pay	9
Other priorities	8
Organisational change & culture	6
Poor external skills transfer	5
Leadership issues	4
Market conditions	3
Lack of recognition	3
Poor image of government	3
Coaching & Training	2
Capacity	2
Interrnal Competition	2
HR issues	2
Central support	1
Procurement process	1

The biggest challenges in the last 12 months for growing skills capability internally were, again, funding and pay

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Factors supporting skills development

Q24: How important have the following been to the development of DaT in your organisation?
(Number of responses stating 'very important' or 'fairly important')

Radar chart with axes: Having a digital strategy, Having an IT strategy, Identifying retaining and developing high performers, Recruiting high potential employees, Having the right digital leaders, Training and development delivery, An environment that supports innovation, Relying on external suppliers, Managing collaboration with partners, Procurement and commercial support. Scale 0 to 35.

— Very important   — Fairly and very important combined

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Training and development spend

**Q25: Roughly what proportion of your organisation's training and development spend is on DaT related skills?**
(Number of responses, n = 36)
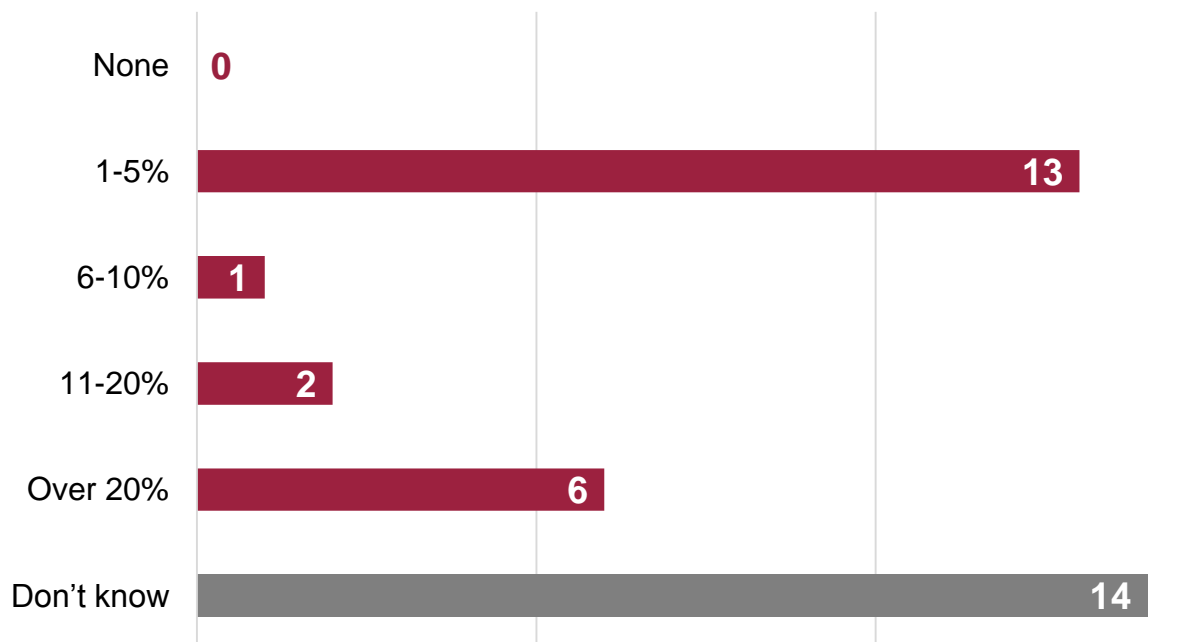
Sufficiency to deliver transformation

Q26: **Do you believe that your organisation's approach to DaT capability development will be sufficient to deliver transformation on the scale envisaged?**
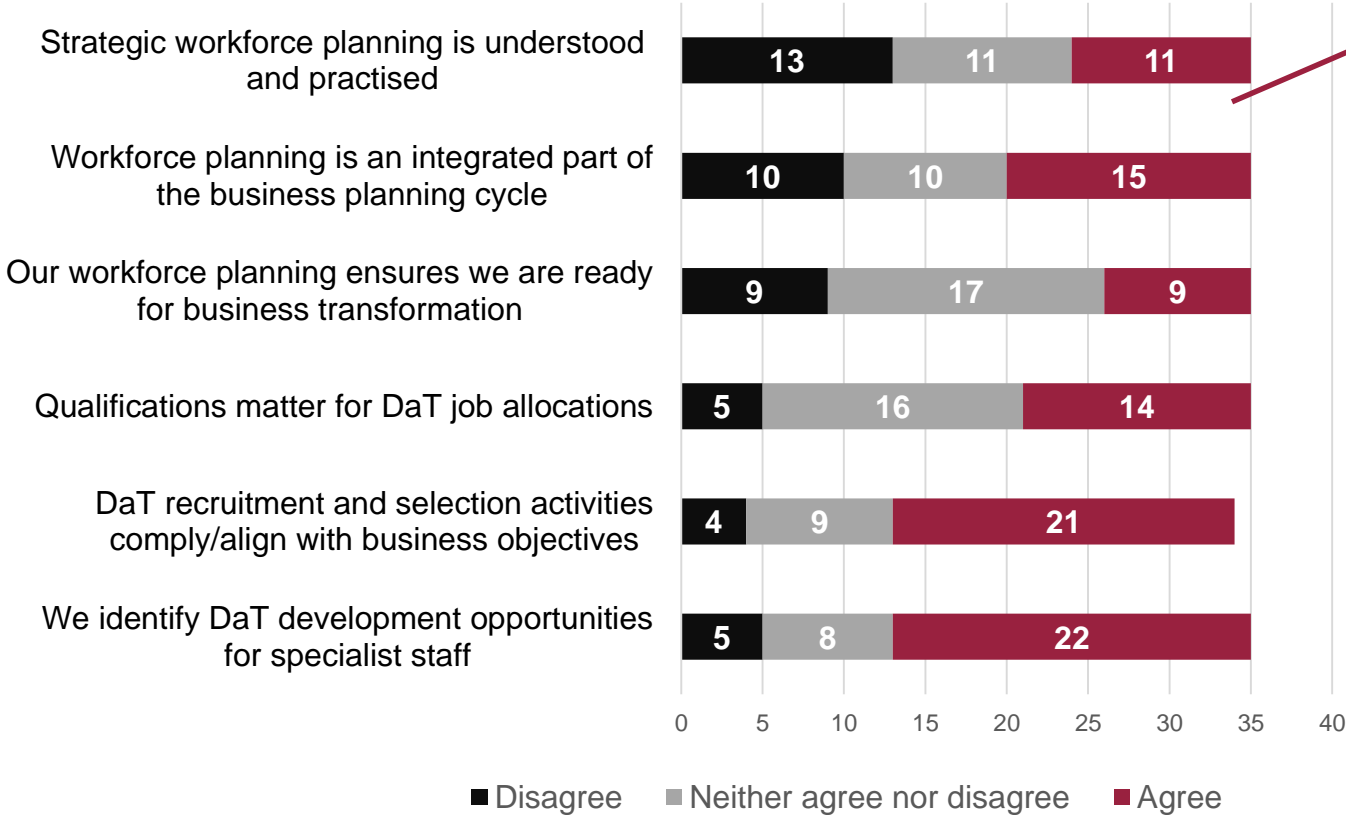(Number of responses, n = 36)

Yes — **23**

No — **13**
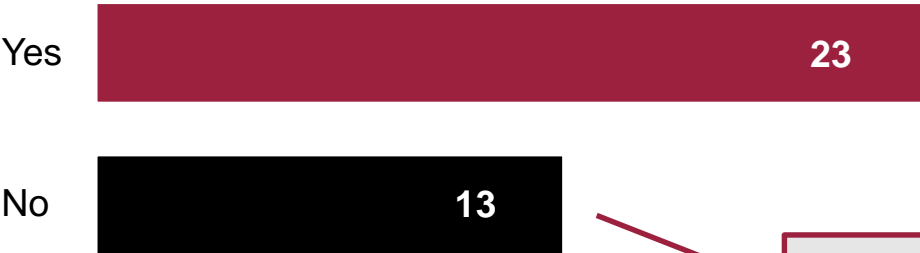
Of those answering NO the main reasons given were:
- Capability
- Capacity
- Leadership

Workforce planning

Q27: How much do you agree or disagree with the following statements about workforce planning in your organisation?
(Number of responses, n = 36, excludes nil responses)

> Understanding, practice and integration of workforce planning with the business cycle are the areas where good practice is being followed the least

Statement	Disagree	Neither agree nor disagree	Agree
Strategic workforce planning is understood and practised	13	11	11
Workforce planning is an integrated part of the business planning cycle	10	10	15
Our workforce planning ensures we are ready for business transformation	9	17	9
Qualifications matter for DaT job allocations	5	16	14
DaT recruitment and selection activities comply/align with business objectives	4	9	21
We identify DaT development opportunities for specialist staff	5	8	22

■ Disagree   ■ Neither agree nor disagree   ■ Agree

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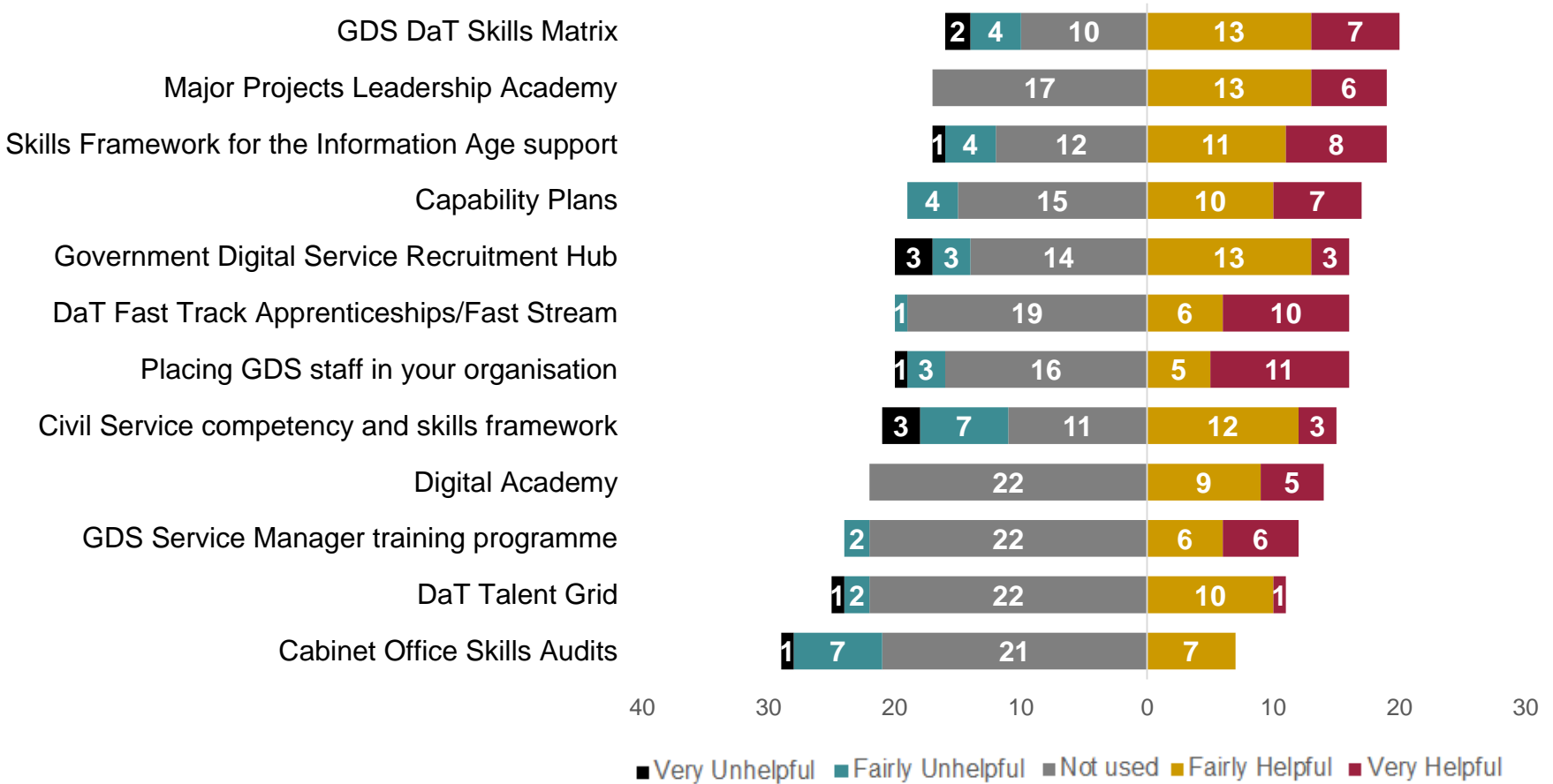
Central initiatives: key findings

- Most initiatives by the strategic centre of government are regarded as helpful or very helpful.

- A greater role for the centre is envisaged in co-ordinating and facilitating as well as supporting skills development.

- Central guidance is mostly considered to be relevant and mostly adhered to.

- Organisations want to see more practical best practice guidance from Cabinet Office.

- Respondents feel the centre focuses too little on developing lower level positions and somewhat too much on higher levels.

- Departmental awareness of capacity and capability in ALBs was generally felt to be low.

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Helpfulness of central initiatives

Q28: How helpful, if at all, have you found the following central initiatives and services for DaT skills building in your organisation?
(Number of responses, n = 36)

Initiative	Very Unhelpful	Fairly Unhelpful	Not used	Fairly Helpful	Very Helpful
GDS DaT Skills Matrix	2	4	10	13	7
Major Projects Leadership Academy			17	13	6
Skills Framework for the Information Age support	1	4	12	11	8
Capability Plans		4	15	10	7
Government Digital Service Recruitment Hub	3	3	14	13	3
DaT Fast Track Apprenticeships/Fast Stream		1	19	6	10
Placing GDS staff in your organisation	1	3	16	5	11
Civil Service competency and skills framework	3	7	11	12	3
Digital Academy			22	9	5
GDS Service Manager training programme		2	22	6	6
DaT Talent Grid	1	2	22	10	1
Cabinet Office Skills Audits	1	7	21	7	

Legend: ■ Very Unhelpful ■ Fairly Unhelpful ■ Not used ■ Fairly Helpful ■ Very Helpful

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Central support for future development

Q29: What role if any do you think Cabinet Office should have in DaT skills development for government in the future?

We asked respondents to answer in their own words

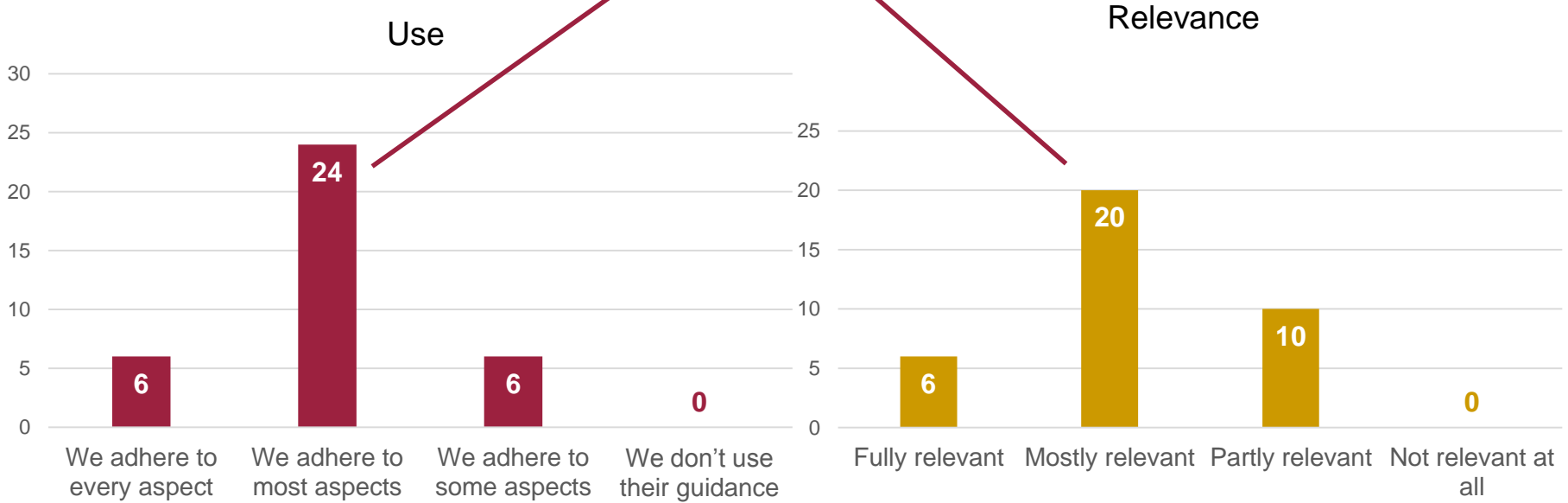The most commonly cited roles related to co-ordination, facilitation and support

National Audit Office

Use and relevance of central guidance

Q30: Which statement best describes how you use Cabinet office guidance?
**Q31: How relevant do you find Cabinet office guidance on DaT matters?**
(Number of responses, n = 36)

> Organisations overall find Cabinet Office guidance to be "mostly relevant", and adhere to most aspects of it

Use

We adhere to every aspect	We adhere to most aspects	We adhere to some aspects	We don't use their guidance
6	24	6	0

Relevance

Fully relevant	Mostly relevant	Partly relevant	Not relevant at all
6	20	10	0

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Central engagement

Q32: To what extent is Cabinet Office engaging with you and using its influence over your organisation in order to improve DaT skills?
(Number of responses, n = 36)

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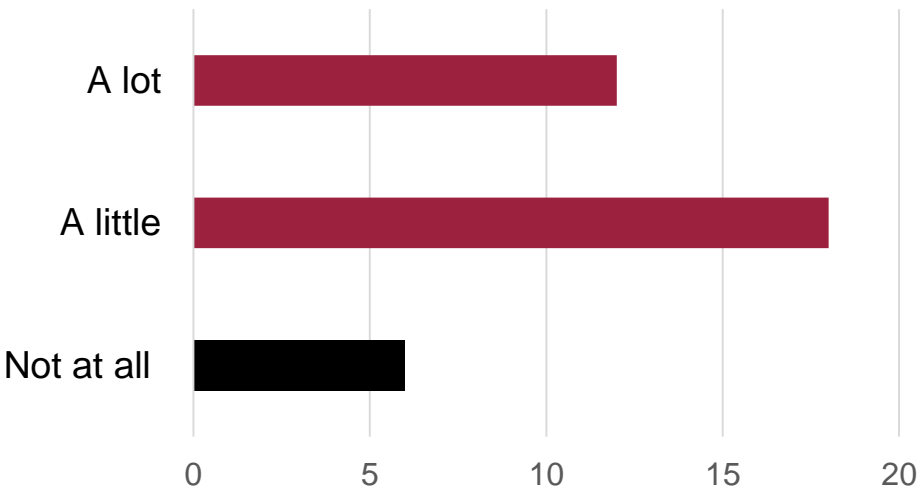
Enhancing central guidance

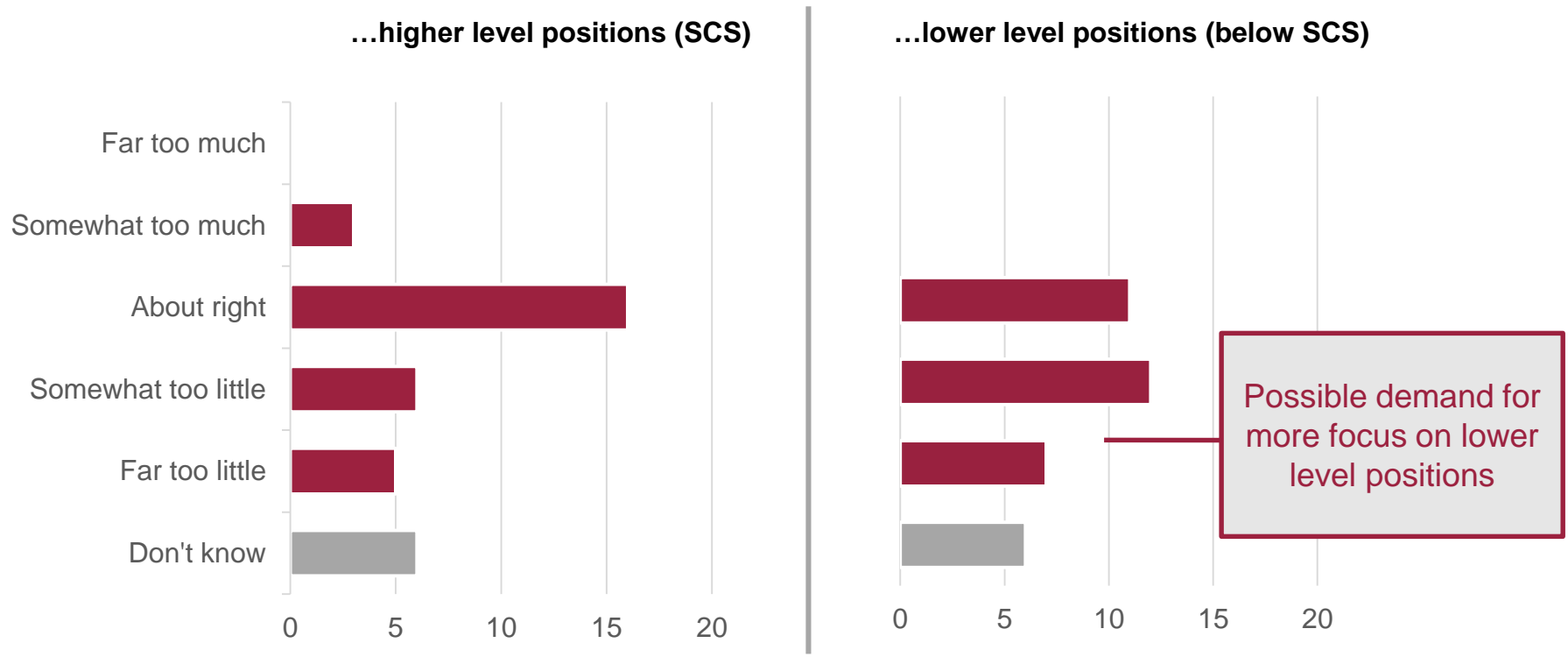**Q33: What could Cabinet Office provide that would help you to improve DaT skills in your organisation?**

(Number of responses, n = 36)

Greatest demand is for more sharing of best practice

Legend:
- We already use this provided by Cabinet Office
- We would use this if it was provided by the Cabinet Office
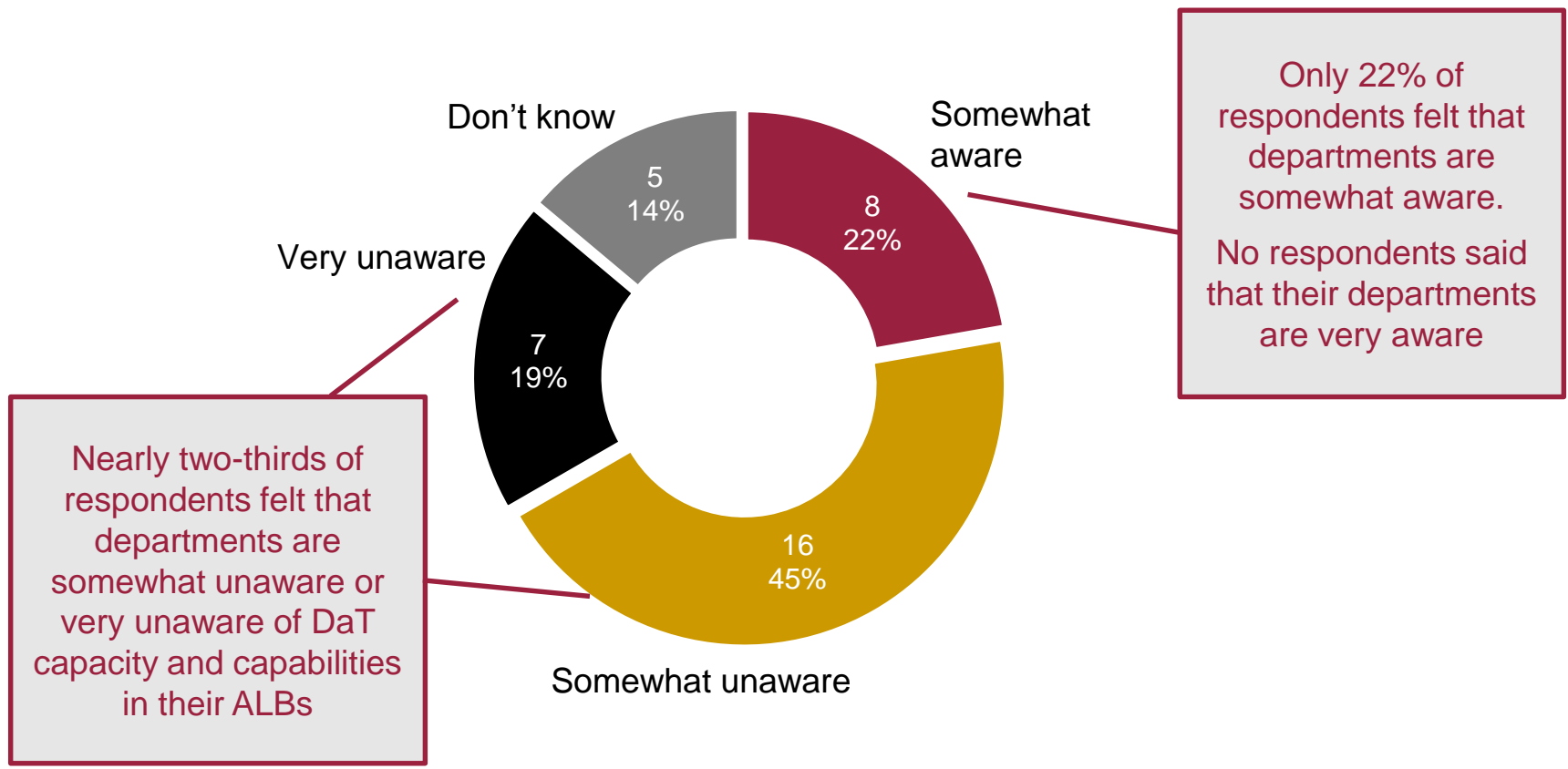- This would not be useful to us
- Don't Know / No View

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Focus on different seniority levels

Q34: To what extent do you think that Cabinet Office focuses on each of the following?
(Number of responses, n = 36)

…higher level positions (SCS)

…lower level positions (below SCS)

Possible demand for more focus on lower level positions

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Departmental awareness of DaT capacity and capability in their agencies and ALBs

Q35: How aware do you feel that central government departments are about their Arm's Length Bodies or Local Offices in terms of their DaT skills capacity and capability?
(Number of responses, n = 36)

Only 22% of respondents felt that departments are somewhat aware.

No respondents said that their departments are very aware

Nearly two-thirds of respondents felt that departments are somewhat unaware or very unaware of DaT capacity and capabilities in their ALBs

Don't know — 5 / 14%
Somewhat aware — 8 / 22%
Very unaware — 7 / 19%
Somewhat unaware — 16 / 45%

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About: surveyed views of digital leaders

The survey

- Online questionnaire in August 2015.

- CDO, CIO, CTO or equivalent in central departments and arm's length bodies (ALBs).

- 36 people responded (50% of 72 people asked).

- Quantitative questions asked for information about skills levels and resources, and the services provided.

- Qualitative questions asked for opinions on initiatives and guidance to support skills management, and the key skills requirements challenges.

Respondents

- BIS
- Cabinet Office
- DCLG
- DECC
- Defra
- DfE
- DWP
- DH
- DfT
- FCO
- HMRC
- Home Office
- MOD
- MOJ
- 15 agencies/ALBs/non-ministerial departments

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