

Summary: January Workshops

SPACE PARTNERSHIP SUMMARY

Space Workforce Action Plan: January Workshops

The Space Partnership facilitated, alongside the Department for Science, Innovation and Technology, UK Space Agency and Satellite Applications Catapult, 4 workshops (London, Manchester, Harwell and virtual) to support the development of the Space Workforce Action Plan. Each workshop started with a reminder of the Space Sector Skills Survey results, the proposed structure for the Action Plan and the thinking to date (see slides in Annexe).

General Points

The 70 attendees from 60 organisations contributed a wide range of considered views and potential actions. Generally, the proposed structure of the Space Workforce Action Plan and the draft content presented was accepted. The wider discussion highlighted:

- *Lack of awareness of the sector and career paths:* This extended from the general public, through schools and beyond. There is already a lot of activity going on to address this, perhaps more coordination across stakeholders could have a greater impact.
- *Impact of sector structure:* The long tail of smaller companies in the space sector was viewed as part of the challenge, due to their scale meaning less available resource (cash and staff time) to develop (especially Early Career) staff and their need for experience.
- *Broader sector challenges impact skills:* General sector issues like clarity of long-term investment, short term funding, etc are exacerbating the skills challenges.
- *Different challenges at different career stages:* To ensure that there are sufficient experienced staff in 5+ years' time, more investment in Early Career places is required (where the limiting factor is the number of places available rather than supply). It is hard to encourage this whilst the current pain point for companies is mid-career.
- *Consider other sectors:* There may be lessons learnt from different skills initiatives in other (particularly emerging) sectors, as the challenges and skills required are similar.
- *Need for improved data:* The value of the Space Sector Skills Survey was widely noted. The Space Workforce Action Plan will require more collated data that is trusted by government, academia and industry to deliver the actions and track progress.
- *Equality, Diversity and Inclusion to be embedded in all actions:* Government has a clear role to increase volume and diversity of STEM (and broader) skillsets throughout the education system. Industry and academia actively support through a range of initiatives.

Delivering Action to overcome Barriers

The space sector specific skills discussion can be summarised under 4 headings:

1. Increased workforce planning

At a sector level, improved data on future skills requirements will allow plans to be put in place today for 5 years' time. There are a range of barriers to delivering this in practice:

- Short term contracts and unclear long-term public-sector investment plans make future revenue streams uncertain, which limits accurate long-term planning.
- Investing in future workforce has a cost both in terms of salaries and the resource to train people, which is incurred before the skills requirements (ie contracts) are confirmed.
- There are competitive concerns about sharing even top-level workforce planning data.

Specific Actions could be:

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- Collate the workforce planning data under NDA and only share the analysed (to avoid double counting) data, perhaps through the Space Sector Skills Survey if a high response rate can be achieved. [Responsibility: Industry to share information with government or an independent third-party]
- Standardising job descriptions across the sector to enable skills requirements to be collated. (Note: there were mixed views as to whether this would be feasible and/or effective). [Responsibility: Industry to consider]

2. Improving recruitment practices

There was a general sense across the workshops that recruitment practices could be improved across the sector with a range of suggestions provided (captured, but not detailed here). Consideration should be given to easing international recruitment challenges. Recruitment consultants pointed out that they can be part of the solution, but they need 'actual' demand (committed roles rather than those desired).

Specific Actions could be:

- Sharing best practice in areas such as clarifying the skills required for the role rather than relying on years of direct experience. [Responsibility: industry to share what works, government could support with collation / convening]
- Build a greater collective understanding of the role of international talent in the space sector. [Responsibility: Government, with industry and academia support]
- Coordinated sector campaign to increase diversity and attract specific groups eg veterans. [Responsibility: Industry led with others supporting]
- Mapping career pathways to reflect the breadth and variety of space careers at various stages. [Responsibility: industry, with close academic and government support]

3. Improving retention practices

There was a reluctant acceptance that people tend to move jobs more frequently than in the past (space is no longer a 'job for life'). As salaries are unlikely to compete with sectors such as finance and tech, other mechanisms are needed to complement the inspirational value of space. This could include developing skills within the existing workforce through training.

Specific Actions could be:

- Focus on the whole package (work-life balance, exciting projects, supportive work environment, etc) at an organisation level. Consider if there are opportunities to support this and increase ED&I at a sector level. [Responsibility: Industry, government could convene the consideration of sector-level retention activities.]
- Improved central collation of demand for specific courses/training needs, to support development of useful, financially viable training options. [Responsibility: Industry supported by academia, convened by government or neutral third-party. Government to raise awareness of apprenticeships and Lifelong Learning funding, particularly to SMEs.]

4. Clear signalling from key contracting organisations

Across the workshops a range of commercial policies were noted that exacerbate the skills challenges, for example ESA contracts emphasise experienced personnel over upskilling new staff; contract timelines limit time for recruitment/training; ISO and SC requirements, etc.

Specific Actions could be:

- Review funding practices to see if investment in workforce development can be better incentivised. [Responsibility: Government, Industry for supply chains]

Workshops to develop the Space Workforce Action Plan

January 2024



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Aim for today: Develop the Space Workforce Action Plan

Space Workforce Action Plan:

- Builds on the findings from the Space Sector Skills Survey (published Sep 23)
- Referenced in the NSS In Action (July 23)

We will contribute to development of a shared Space Workforce Action Plan with the sector. Through the Space Skills Advisory Panel and Space Partnership, we will support the development of a long-term action plan focused on resolving the challenges facing the sector, clarifying the roles of government, industry, and academia in tackling these together. We will publish this action plan in 2024.

Requires government, industry and academia to come together => today's workshop

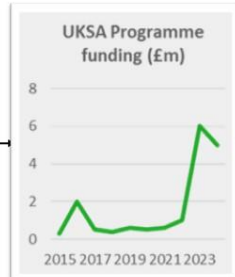
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Taking Action on Space Workforce and Skills Issues



National Space Strategy
Sept 2021



UKSA Inspiration
Programme
= £11m



National Space
Strategy in Action
July 2023



Space Sector Skills
Survey
Sept 2023

**Space
Workforce
Action Plan
TBD 2024**

National Space Strategy in Action (July 2023, gov.uk)

Through the Space Skills Advisory Panel and Space Partnership, we will support the development of a long-term action plan focused on resolving the challenges facing the sector, clarifying the roles of government, industry, and academia in tackling these together.

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Space Sector Skills Challenges

Space faces the same challenges as other S&T sectors.

- Broad skillsets in electronics, systems and software engineering are lacking in the current workforce, in high demand and hard to recruit;
- 83% of space organisations hiring from abroad faced difficulties;
- The space workforce is 23.7% female;
- 45% of organisations reported difficulties retaining space staff due to poaching (within and outside the sector) and low pay.

But space-sector specific skillsets should not be overlooked.

- Varying degrees of space specialisation are required on top of broader qualifications in engineering;
- Whilst there is less demand for more niche roles in spacecraft operations, these are very difficult to replace once vacant. The sector has raised anecdotal concerns for a retirement wave in the coming 5-10 years.

Skill/Role theme	% reporting existing workforce skills gap	Recruitment Demand (current vacancies)	Recruitment Difficulty (current vacancies)
Electronics design	43	High	Very High
Systems engineering	39	Very High	Very High
Spacecraft operations	23	Medium	Very High
Software & data	72	Very High	High
Maintenance, manuf. etc.	24	Medium	High
Aero/mechanical design	21	Medium	Medium
Sector support	43	High	Medium
Commercial operations	51	High	Medium

High-level summary of current workforce skills gaps and recruitment gaps in the space sector.

Data drawn from: Space Sector Skills Survey 2023; Size & Health of the UK Space Industry 2022

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Space Workforce Action Plan - Structure

1. Demand

What are the skills needed to deliver national space capability and long-term sector growth?

2. Supply

How are people joining and staying in the sector, and to what extent is this mismatched with demand?

3. Barriers

What specifically is stopping supply from matching demand?

4. Responsibilities

Who is responsible or capable of removing barriers to workforce growth?

5. Actions

What specific actions can be taken and by who to begin resolving workforce challenges?

Focus of today's workshop

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Objectives and Scope for Today's Discussion

Objectives:

1. **Understand the 'Barriers'** that are stopping space skills supply matching demand by career stage
2. **Agree the 'Responsibilities'** by stakeholder group and career stage
3. **Consider the 'Actions':** including how industry and academia can contribute alongside government

Scope:

- Focused on **space workforce (16+)** **development** only; inspiration and educational outreach activities will be handled separately.
- This is to ensure today's session can tackle specific space workforce challenges in detail.
- If you have reflections on pre-16 skills, please contact jenny.turvey@dsit.gov.uk and/or peter.trussell@ukspaceagency.gov.uk.

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Sector Demand by Career Stage

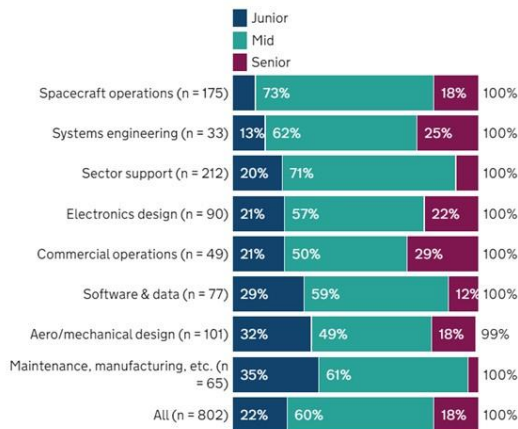


Figure 8: Demand for roles by seniority and theme in the past 12 months. This table excludes apprenticeships, internships, and roles without a theme classification. Data comes from Q17.

Role seniority level	% of vacancies n = 833	Median time to hire (weeks)	Mean recruitment difficulty score (1-5)
Senior	17%	13	4.2
Mid level	58%	10	3.8
Junior	22%	8	3.4
Internship	1%	6	2.8
Apprenticeship	1%	4	2.7
All	100%	10	3.8

Table 5: Proportion of vacancies, time to hire, and difficulty by seniority level. Data comes from Q17.

Data from 2023 Space Sector Skills Survey

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Early Career roles

Supply (based on the 2023 Space Sector Skills Survey)	Volume is recognised as not sufficient in STEM areas, particularly computing and engineering (ref Royal Academy of Engineering). There is high competition between STEM-based sectors for recruitment of new staff. Diversity, particularly in STEM qualifications, remains a limiting factor on growth. There appears to be less of a challenge at Early Career as roles are typically oversubscribed	
Demand (based on the 2023 Space Sector Skills Survey)	Organisations note some skills are lacking in graduates, particularly specific technical knowledge (varies by sub-sector), along with business awareness and practical experience. Hiring is less time intensive and more likely to be successful than later stages.	
Barriers (based on inputs from the Space Skills Advisory Panel)	Employee perspective <ul style="list-style-type: none"> May not 'see themselves' in the current workforce (lack of diverse role models) Sector isn't visible: <ul style="list-style-type: none"> Lack of clear entry routes to the sector Limited public awareness of the long-term career trajectories available in space; Lack of accessible opportunities (location, etc) Space sector job adverts and packages are not as attractive as other sectors Awareness that early career opportunities are very competitive 	Employer perspective <ul style="list-style-type: none"> Lack of diverse applicants to choose from due to diversity falling at every level Increasing number of Early Career opportunities is hard due to resource required to supervise and number of companies with sufficient scale Worry that as soon as people are trained they will leave to other space (or non-space) companies

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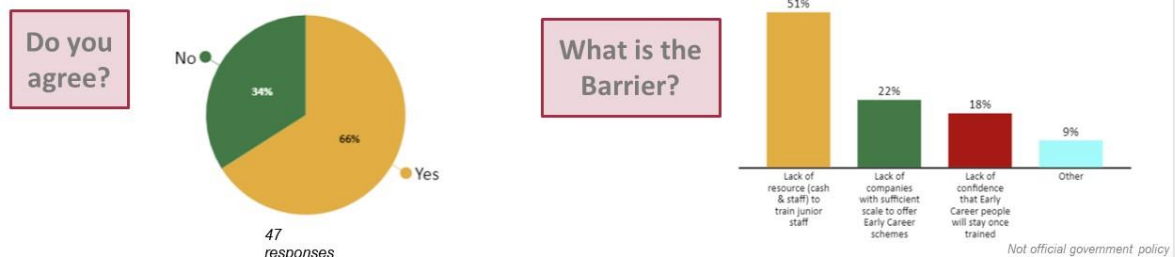
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Considering the Barriers @ UK Space Conference

For Early Career skills:

- Space Skills Survey: **24%** of demand from employers = junior positions
- SPINternship and many graduate/apprenticeship programmes report 20+ applicants per place...

Suggests the key barrier is: **lack of Early Career places available**



Mid-level Roles

Supply (based on the 2023 Space Sector Skills Survey)	Survey data suggests mid-level is the key challenge, possibly due to emphasis on space-specific experience and qualifications which rules out new entrants to the sector. Recruiting from overseas is expensive and time-consuming, potentially due to global competition. Diversity persists as a limiting factor from earlier career stages. Retention is also a major limiting factor on supply (45% of businesses reporting challenges due to uncompetitive salaries, poaching and lack of development opportunities).
Demand (based on the 2023 Space Sector Skills Survey)	Organisations struggle to replace or recruit experienced staff, increasing demand across the sector and lowering retention rates. Mid-career is by far the most in-demand career stage and difficult/time-consuming to recruit for <u>across all areas</u> , with notable concentrations in particular concentration in spacecraft operations and sector support.
Barriers (based on inputs from the Space Skills Advisory Panel)	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><i>Employee perspective</i></p> <ul style="list-style-type: none"> • Recruitment processes (sometimes unnecessarily) emphasise space-specific experience: <ul style="list-style-type: none"> • Limited access/recognition of conversion courses for joining space at mid-career stage • Limited opportunities for entry-level staff to gain sufficient experience for promotion • Uncompetitive pay compared to other S&T sectors </div> <div style="width: 48%;"> <p><i>Employer perspective</i></p> <ul style="list-style-type: none"> • Insufficient experienced staff across the space sector to choose from. • Cost (time & money) required to train people up. • Lack of suitable short courses to provide the 'right' training • Challenges hiring international talent. </div> </div>

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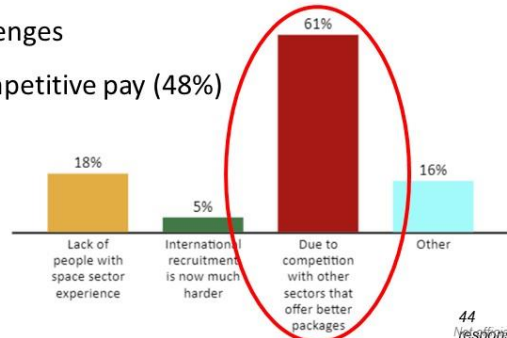
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Mid-career Opportunities

Skills Survey highlighted mid-career as biggest challenge for employers:

- **58%** of the demand for roles and takes 10 weeks to recruit
- Competition for experienced staff is affecting retention:
 - **45%** of companies reporting challenges
 - Including poaching (57%) and competitive pay (48%)

What is the Barrier to
mid-career recruitment?



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responses
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Senior Roles

Supply (based on the 2023 Space Sector Skills Survey)	As with mid-career, this career stage sees a major emphasis on space-specific experience and qualifications which could rule out new entrants to the sector. Retention is a major limiting factor (45% of businesses report challenges due to uncompetitive salaries, poaching and lack of development opportunities). Recruiting from overseas is expensive and time-consuming, and diversity persists as a limiting factor.	
Demand (based on the 2023 Space Sector Skills Survey)	Whilst demand for senior staff is less extensive, the difficulty in hiring qualified and experienced staff is by far the hardest. Commercial operations is the most significant area of challenge.	
Barriers	Employee perspective <ul style="list-style-type: none"> • Recruitment focusses on experience rather than skills • Whole offering is not as attractive as other sectors (pay/benefits/training opportunities/promotion outlook) 	Employer perspective <ul style="list-style-type: none"> • Insufficient direct experience in the space sector • Challenges hiring international talent.

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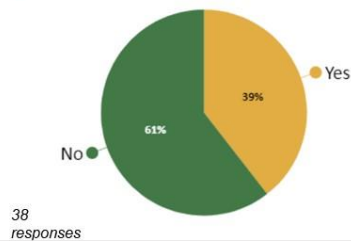
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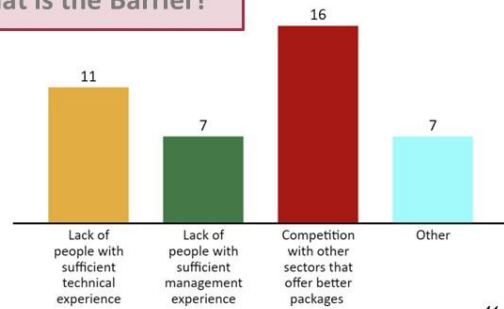
Senior level Opportunities

Skills Survey highlighted Senior (both in terms of leadership or highly skilled) is only 17% of roles available, yet it takes 13 weeks to recruit into.

Do you think there is a challenge recruiting at the senior levels?



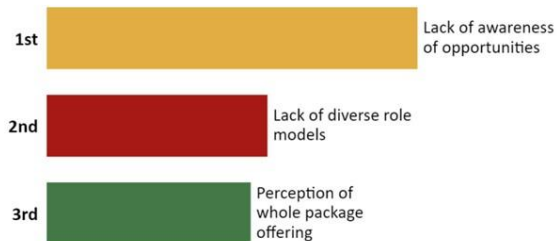
What is the Barrier?



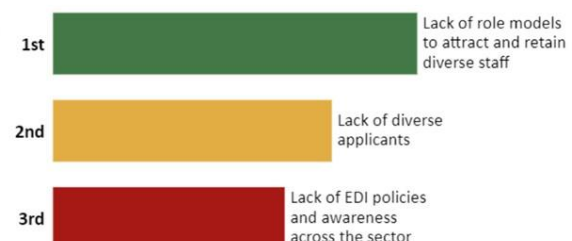
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UK Space Sector as a whole... eg Diversity

What is the key factor stopping people applying to join the UK space sector?



What is the key barrier to improving diversity in the sector?



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Stakeholders in the Space Skills Agenda

Before considering the actions to address the barriers it is important to understand who does what on skills, locally, nationally and internationally. This is summarised below:

Government	Responsible for <ul style="list-style-type: none"> National education policy [HMG] Policy on international talent attraction [HMG] Legislation & regulation [HMG] National space policy [HMG] Regional policy [DAs and LAs] 	<ul style="list-style-type: none"> Clusters convene local industry, academia and government to support local skills development, including join-up with local schools, colleges, universities and other sectors. Space Partnership convenes industry, academia and government to agree shared priorities and collective action. Skills is one area of this. Space Skills Advisory Panel brings together industry, academia and government to support the UK Space Agency to address space skills challenges Learned Societies, 3rd sector set standards for space relevant qualifications and support a wide range of skills initiatives.
Academia	<ul style="list-style-type: none"> Responsible for providing the foundation knowledge, skills & behaviours from Level 4 upwards through HEIs & FEIs. Can support government in its activities to encourage greater volume & diversity of STEM take up at all levels 	
Industry	<ul style="list-style-type: none"> Responsible for providing experience and ongoing training throughout career stages. Can support government in its activities to encourage greater volume & diversity of STEM take up at all levels Can provide feedback to academia on the course content where there is +100 demand for a certain skill per year. 	

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Responsibilities by stakeholder group

Career stage	Aim	Government	Academia (HEI & FEI)	Industry
General Public	Increase public awareness of space to encourage greater supply	UKSA responsible for delivering inspiration activities.	Support campaigns	Support awareness campaigns, provide case studies
Pre-16 years old	Increase volume and diversity of STEM take up at various qualification stages.	National & local government responsible for increasing volume and diversity of STEM skills. UKSA delivering inspiration activities.	Support initiatives	Support initiatives at all levels
16-18+ years	Increase volume and diversity of STEM take up at university and apprenticeship levels. Provide valuable work experience.	Responsible for setting educational and apprenticeship standards. Can encourage further education apprenticeships & work experience.	Actively encourage STEM course take-up. FEIs responsible for TLevel and apprenticeship course provision. HEIs responsible for providing education and training for undergraduates, masters & post graduates	Responsible for providing TLevel placements and apprenticeships in collaboration with FEIs. Opportunity to increase awareness of careers by providing work experience.
Early Career roles	Increase Early Career opportunities (apprenticeships, internships, graduate schemes). Provide training from FEIs, HEIs and short courses.	R&D funding can support industry & academia to deliver strong foundation skills and provide early career experience. UKSA can lead specific initiatives as needed.	Employ early career researchers and apprentices in technical lab roles, depending on R&D funding.	Responsible for providing Early Career opportunities (inc internships, apprenticeships, graduate schemes)
Mid-level roles	Improve workforce planning, retention & recruitment. Provide short term training to allow non-space specialists to enter the market. Support international recruitment	Can encourage and support initiatives to enable a fluid labour market. Responsible for legislating general workplace standards, taxes, immigration routes, etc.	Can provide training at different levels to address skills gaps where there is a clear demand signal to ensure financially viable.	Responsible for own workforce planning to ensure appropriate Early Career recruitment. Responsible for improving their own recruitment & retention practices
Senior roles	Identify key skills gaps and plan to address them.	Responsible for planning to ensure that critical national skills are in place.	Can support research & training to retain and develop critical national skills when financially viable.	Can highlight critical national skills gaps.

Draft: for discussion

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Draft actions by stakeholder group & career stage

Career stage	Aim	Government	Academia (HEI & FEI)	Industry
16-18 years	Increase volume and diversity of STEM take up at university and apprenticeship levels. Provide valuable work experience.	<ul style="list-style-type: none"> Ensure appropriate standards are in place (IfATE), mediate to support demand collation. Encourage apprenticeships, work experience and TLevel placements. 	<ul style="list-style-type: none"> Support initiatives at all levels. FEIs provide consistent high quality Level 3-4 training where demand is confirmed. HEIs to work to attract increased diversity to STEM courses. 	<ul style="list-style-type: none"> Commit to increasing apprenticeships, contribute to standards development and confirm demand. Agree to encourage increased work experience and TLevel placements.
Early Career roles	Increase Early Career opportunities (apprenticeships, internships, graduate schemes). Provide training from FEIs, HEIs and short courses.	Support industry & academia to deliver strong foundation training and early experience through UKRI and UKSA, including continued support for SPIN programme.	<ul style="list-style-type: none"> Agree to encourage space as a career to a wider pool of degree courses. Provide consistent high quality education, courses and training. 	Commit to increase Early Career opportunities (inc internships, apprenticeships, graduate schemes)
Mid-level roles	<ul style="list-style-type: none"> Improve workforce planning, retention & recruitment. Provide short term training to allow non-space specialists to enter the market. Support international recruitment 	<ul style="list-style-type: none"> Support industry collate intra and inter sector demand for core skills. Mediate with academia to support the development of appropriate training. Listen to the concerns of industry regarding international recruitment through the SSAP(?) 	Provide training to address gaps when clear demand is signalled.	<ul style="list-style-type: none"> Commit to improved workforce planning and sharing top level information. Commit to sharing best practice across sector on recruitment & retention practices Commit to providing actual demand for training courses to academia.
Senior roles	Identify key skills gaps and plan to address them.	Ensure sufficient planning in place to address critical national skills requirements.	Support plans to retain and develop skills for critical national requirements	Highlight critical national skills gaps

Draft actions to kick off the discussion

Please use the post-its provided if you have views on actions regarding the [general public](#) or pre-16.

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