Steve Welch. Space Policy Workshop. 10-11-21

Thank you.

So I work a lot in the space between companies and universities, and I think it is helpful to bring in some wider thoughts and experiences.

I have very little time, and too much to say obviously, so I am going to try and divide my talk into two (asymmetric) sections.

The first section is called: **"Electronics engineers hardly ever work in electronics companies"**

Last year the National Skills Academy for Rail (NSAR) published research showing that the Rail industry will need 120,000 additional technical people (i.e. engineers of all types) by 2030

In aerospace and aviation, 42% of the industry is already citing serious labour shortage issues. Making it easy to get visas won't solve this: According to research from the Oliver Wyman consultancy and others, Global demand for aviation skills is set to overtake supply by 2027.

All cite lack of interest in younger talent pools.

Why is this relevant? If you are going to build a spacecraft, or a spacecraft instrument or if you want to build and operate a ground-station you are going to need software engineers, mechanical engineers and of course electronics engineers, hence the title of this section. If you're in engineering like this, you will be in a department of a company that is doing something else – like building cars or trains or aeroplane— or spacecraft.

Our space industry is fishing in the same water don't forget: shortages of the right people will be everywhere.

Some of this is ironic: 23% of young people in the 'Voices of Young People' survey 2019 thought they had no chance of getting an engineering job in their topic: mainly because they don't understand the breadth of opportunities that exist — and how they're hidden away. If you ask young people about careers in aviation – you'll get high awareness of the roles of pilot or cabin crew; I can tell you that not even 10% of your answers will think about any technical roles. How good do you suppose the awareness is of the different roles in the space industry?

Also interesting If you haven't seen it, is the OECD's Programme for International Student Assessment (PISA) In 2018 they surveyed over half a million 15-year-old students in 79 countries and economic areas, including questions about where they expected to be working at the age of 30. [Actually on most of the OECD markers the UK is doing ok, so no need to be gloomy there:] but interest in STEM careers is very low.

Important finding in the report— First-hand exposure to the STEM world and Effective career guidance had made a massive impact on the students planning on following a STEM career somewhere.

My section 2 is about growing our own market further: **"There are companies that could be space companies but just don't know it yet"**

I've used most of my time talking about the upstream and technology based aspects, but arguably the downstream value of the space sector is bigger — but also more diffuse. Here I am talking about 'space-enabled' companies such as Uber. You'd expect a university space spin-out to be pretty clued up — but what about Start-ups that could be exploiting space-generated or enabled assets such as geo-spatial data?

Education is also important here, and I am thinking more about options such as Knowledge Transfer Partnerships. By the way, we're running a live portfolio of about 850 at the moment, but signals from BEIS are they want to grow back to nearer 1000 or more.

Also in KTN we are talking to Innovate UK about some new potential small scale interventions to facilitate companies to work with universities: think £40K and 4 – 6 months and nimble response time. Universities involved in space ought to want a piece of this in my view obviously.

Quick Conclusion

I see real Opportunity for leadership from the space sector in taking a holistic view of the whole educational and inspirational pipeline, and working across all of it.

1. Stimulating interest in space subjects and the roles in the space industry – in primary and secondary schools, [including through talks, career fairs, talks and experience opportunities]
2. Inspiring and addressing diversity across groups: attracting a wider range of diverse young people and making sure the industry is welcoming to them in turn (e.g., young disabled people) through representation physical disabilities – also Microsoft have been doing interesting work with non-neurotypicals
3. Signposting to employment and routes into careers in space: fishing where the fish are – social and other non-classical routes will matter here
4. Working richly with schools and FE colleges to solve the people shortage: possibly learning from other countries that are better integrated.