

A SCIENCE AND INNOVATION STRATEGY FOR THE BUSINESS COMMUNITY:
An end user perspective

October 2014

Anne Richards
Aberdeen Asset Management

Aberdeen

Today's teenagers are bilingual



But thankfully age appropriate translation services are provided!

SENIOR CITIZEN TEXTING CODE:

- | | |
|---|---|
| 1) ATD–At The Doctors | 10) OMSG– Oh My! Sorry Gas |
| 2) BFF–Best Friend Fell | 11) ROFLACGU–Rolling On Floor
And Can't Get Up |
| 3) BTW–Bring The Wheelchair | 12) TTYL–Talk To Ya Louder |
| 4) BYOT–Bring Your Own Teeth | |
| 5) FWIW–Forgot Where I Was | |
| 6) GGPBL–Gotta Go Pacemaker Battery Low | |
| 7) GHA–Got Heartburn Again | |
| 8) IMHO–Is My Hearing-aid On | |
| 9) OMMR–On My Massage Recliner | |

2

Aberdeen

We work in a global economy and must adapt to stay competitive

The digital revolution and globalisation

- We are using ever more technology in both business and our daily lives
- It is estimated that by 2020, 30 billion devices will be connected to the internet against a population estimate of 7.7 billion
- Google now processes 3.5 billion searches per day, demonstrating the potential for businesses to grow through ecommerce and digital marketing
- Technological advances mean businesses of any size or location can reach a global customer base – however it means competition is fierce

The UK is an attractive place to do business

- The UK is ranked as the 9th most competitive country in the world by the World Economic Forum, scoring highly on 'adopting technology to enhance productivity'
- In 2013, the UK had the 2nd greatest stock and flow of foreign direct investment (FDI) in the world, only second to the USA

We need a science and innovation strategy to help UK businesses of [all sizes](#) compete on a global playing field

3 Sources: WEF Survey – Global Competitiveness Report, 2014;
the Cambridge Satchel Company

Aberdeen

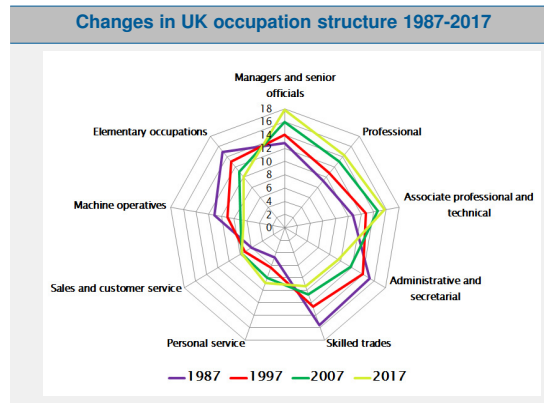
The structure of the UK is changing

We are becoming a knowledge economy

- A knowledge economy is driven by innovation and intellectual capital

Four key knowledge economy sectors for the UK have been identified as:

- Low Carbon
- Creative Industries
- Electronic manufacturing services
- Knowledge based business services



4 Source: <http://www.rsablogs.org.uk/2014/enterprise/owning-barriers-building-levers-upskilling-uk>

Aberdeen

Academic education isn't enough – we need skills

What skills are needed?

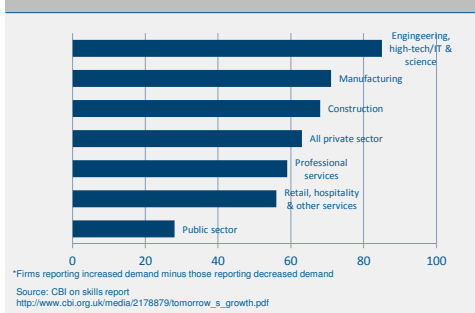
• Higher-skills

- Over the next 3-5 years there will be an increase in employer demand for higher skills.
- Changes to occupational structure mean that by 2020 nearly half of all employment will be for highly-skilled roles.
- According to the Royal Society of Chemistry (RSC) in ten years the chemical using industries will require employees to be more highly skilled, and technologically literate to enable them to work more flexibly.

• Digital skills

- The Science Council estimates that the ICT workforce alone will grow by 39% by 2030
- The Future Digital Skills Needs of the UK Economy, Q2 2013 report, estimated that 745,000 additional workers with digital skills would be needed to meet rising demand from employers between 2013 and 2017.

Increased employer demand for higher skills over next 3-5 years, by sector (%)*



5 Source: Royal Society of Chemistry; the Science Council; 2013 O2 report, The Future Digital Skills Needs of the UK Economy

Aberdeen

But it appears we have a shortage...

- **Faster growing organisations**

- According to 'The Skills Crunch' report published by the Princes Trust two-thirds of business leaders believe that faster growth in their organisation will lead to a shortage of necessary skills.
- Fifty-nine per cent say that faster growth is already leading to skills shortages in the UK economy



- **Digital skills**

- Microsoft reported that there were 100,000 unfilled vacancies in partner companies across the UK last year.
- Gender imbalance in tech is extremely damaging
- A recent survey by O2 found that 23% of parents believe digital skills to be irrelevant to their children's future career success, despite the fact that almost all jobs already require at least a basic level of digital skills.

- **Longer and multiple careers**

- The reality of longer and multiple careers over a lifetime means older individuals will have to re-skill and up-skill as technologies and ways of working change.
- Without continuing investment in their skills, individuals become much more vulnerable in the labour market and will not meet the high level skills demanded by organisations.

6 Source: <http://www.princes-trust.org.uk/pdf/SkillsCrunch.pdf>

Aberdeen

Upskilling is the answer – but how can this be achieved?

- **Vocational courses and apprenticeships**

- 'Learn-while-you-earn' schemes can ensure work ready graduates.
- Countries that place greater value on vocational education report lower levels of youth unemployment
- In Germany, more than half choose vocational routes. In Austria and the Netherlands, the figure is even higher, at 67% and 71% respectively. But in the UK it is just 32%.
- As part of an integrated training and development strategy, implementing an apprenticeship scheme is an ideal way for organisations to develop their talent pipelines.

- **Businesses need to take responsibility for the retraining of their staff**

- Emphasis on the importance of personal development
- Provide financing for external training courses
- MOOCs as a way of developing skills
- Tech skills for non techies

- **Stress the importance of digital skills**

- We must correct the gender imbalance in technology
- We must start in schools – new ways of teaching
- We need more post graduate computer science students



7 Source: Source: CBI on skills report
http://www.cbi.org.uk/media/2178879/tomorrow_s_growth.pdf

Aberdeen

Is Scotland any different?



8

Aberdeen

Scotland has unique advantages

- **High density of academic institutions**
 - Scotland has five of the top 200 universities in the world
 - Globally, in fields such as biotechnology, optoelectronics, artificial intelligence, computing and many other disciplines, Scotland has a world class reputation.
- **Fossil fuel industry**
 - Capability to be a leader in the development of new technologies
- **Scotland's legacy of scientific and medical research**
- **Early entrants into the field of informatics and data science**
 - Research Assessment Exercises (RAE) results confirmed Edinburgh's position as the largest and best Informatics research centre in the UK
 - Informatics at Edinburgh delivers more world-leading (4*) research than anyone else in the UK
- **Autonomy in education – perhaps easier to experiment with novel approaches**

⁹ Source: <http://www.bbc.co.uk/news/uk-scotland-24370331>

Aberdeen

Scotland offers innovation and entrepreneurship

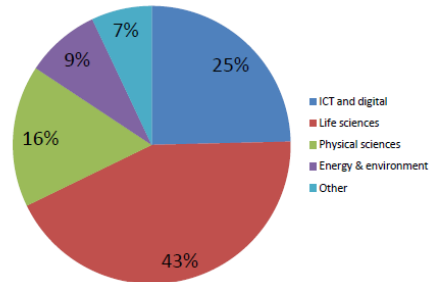
- **Vast number of spin out and new start-up companies**

- The University of Edinburgh is ranked 2nd in the UK in terms of volume of spin-out company formation.
- Strathclyde was ranked 2nd in Scotland and 5th in the UK in terms of spin-out formation between 2003 and 2012.
- The University of Dundee has now spun out over 25 companies, many of these reflecting strengths in life-sciences, medical device and engineering
- With five universities in the top 10, Scotland was the best performing region

New Spinouts			
	2011/12	2012/13	change
England	125	101	-19%
Wales	17	15	-12%
Scotland	27	26	-4%
N Ireland	6	8	33%
	175	150	

New Start-ups			
	2011/12	2012/13	change
England	2,415	3,146	30%
Wales	256	246	-4%
Scotland	142	172	21%
N Ireland	0	0	-
	2,813	3,564	

UK's Current Active Spinouts, by sector



10 Sources: The Spin Out Survey UK - http://www.spinoutsuk.co.uk/Downloads/Spinouts_UK_Quarterly_Journal_April_2014.pdf; HESA (the Higher Education Statistics Agency) published the results of the 2012/13 HE Business and Community Interaction survey (HE-BCI); The PraxisUnico Spinouts UK Survey - <http://www.praxisunico.org.uk/uploads/2/1/2/0/2120Jonathan%20Harris%20-%20Spinouts%20UK%20Annual%20Report%202013%20summary.pdf> **Aberdeen**

Scotland has the potential for growth

- **Scotland has a strong life science sector**

- Scotland has one of the highest number of life science graduates per capita in Europe
- For the last 20 years there has been a growing relationship between big pharmaceuticals and the biotech industry. This has reinforced the importance of academia in driving innovation in this space
- Despite the lack of current investment, most investors acknowledge that there is still huge potential in the biotech and pharmaceutical market

UK Distribution of Life Science Start-up Investment



UK Distribution of Academic Life Science Research Power



11 Source: <http://www.scottish-enterprise.com/knowledge-hub/articles/insight/scottish-life-sciences-research-base>

Aberdeen

Conclusion

A Successful Science and Innovation Strategy from a Business Perspective would include:

- A cradle to grave approach to skills and education
- A breaking down of the silos between business and academia
- A recognition that many non STEM industries require many STEM skilled employees
- A way to bridge the capital gap from concept through to production
- An international strategy which acknowledges the global nature of STEM