

Technology and Growth – the Innovation challenge Presentation to the ATI, 5 January 2017

Taking key themes from the Aerospace Technology Institute and the Aerospace Growth Partnership, this presentation challenges some of the conventional wisdom around developing a technology strategy and identifies some of the emerging factors in developing technology and growth strategies for the aerospace sector.

Industry reports suggest that the UK aerospace is a powerhouse of advanced manufacturing with over 3000 companies and annual turnover of over £30 billion employing 26,000 people in research, design and engineering. Forecasts for passenger traffic growth over the next 20 years are significant, for example, tripling in India/Asia. Having said that, there are some concerns on the horizon – with some programmes being delayed with more emphasis on derivatives, limiting the pull through of new systems. Uncertainty over Brexit, America First policy and the UK Industrial strategy are other factors leading to the result in the latest McKinsey Global survey (December 2016) which shows 48% of respondents expect a slowdown in global trade (compared to 28% in September 2016).

The ATI report, *Raising Ambition*, defined innovation as “*Innovation is a process starting with the generation of ideas, evolving through embedding those ideas in technology and culminating bringing those ideas to market*”. This is the classic push model of how new products and services are developed and even with Chesbrough’s open innovation enhancements, carries high risks. By the same token the ATI mission, “*to facilitate connections between researchers and across disciplines bringing together academics and industrialists acting as the natural broker of high performing research programmes*” needs to take a new approach to what has been carried out this century. Over the last fourteen years there have been fourteen reviews on Business/University collaboration which suggests that the ATI will need to do something different if we are to exploit the full potential of the aerospace market space.

An alternative view of the academia/industry relationship was put forward many years ago by Sir John Fairclough (former Government Chief Scientific Advisor). This is important because it recognises that industry can and does innovate and create wealth independently of academe but that this can be enhanced by identifying ‘*areas of common purpose*’ between academia and industry. This is most clearly demonstrated by the inspired idea of Phil Ruffles at Rolls Royce in setting up the UTCs and appears to be the aim of the ATI/AGP alliance. The challenge though is to identify the key technologies which will enable and accelerate commercial success. I believe that this can be achieved by focusing on ‘pull’ factors rather than traditional ‘push’ factors. The presentation suggests how a focus on Customers and Growth can achieve that.

Traditional thinking on the voice of the customer has looked at approaches like Quality Function deployment (QFD) or requirements management. The practical difficulty with these approaches is firstly that the ambiguity of what customers say they want from a product and secondly the complexity of managing hundreds of requirements. Anthony Ulwick has led the way in new thinking about what customers want with his radical Outcome Driven Innovation™ approach which recognises that people buy products and services to help them get a 'job' done. The method analyses the process steps in getting a job done and defines the 'required outcomes'. By assessing the importance and satisfaction of current offerings related to these outcomes, it is possible to identify new product/market opportunities. These can then be played back into the new product development creative process and to find the technologies required. Some examples of where this process might be applied in the aerospace sector are Ground Handling and Aircraft on Ground maintenance.

But even having identified the opportunities, successful growth is not guaranteed. The presentation outlines some new thinking on commercialising technology based on extensive research by Phadke and Vyakarnam in a new book to be published in Spring 2017. This has identified three 'chasms' which companies have to cross to achieve full growth potential. Factors related to crossing these chasms are identified and include commercialisation strategy and business model development.

To complete the technology strategy, three further assessments have to be made. For each of the technology areas identified the competitive position, maturity and pace of change need to be understood as this then determines the extent of collaboration and resource required to take a leadership position. How to manage the technology development, obtain resources and de-risk projects is perhaps a discussion for another time!

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