

Costing research for industry

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This workshop aimed to transfer new knowledge generated by an Engineering & Physical Sciences Research Council research project entitled *Costing for Avionics Through-life Availability (CATA)* to relevant industrial partners.

The interpretation of results generated by traditional ways of modelling the availability of technical systems (aircraft, trains etc) can easily foster tension between suppliers, manufacturers, and customers / end users, since the focus is inherently placed on potential undesirable outcomes from breaches in contract terms and conditions, which can in turn lead to litigation. The CATA project has resulted in an innovative system that uses both qualitative and quantitative data as a basis on which different stakeholders can build, through collaboration, the agreement required to underpin the successful execution of an availability contract.

PROJECT SUMMARY

Our workshop aimed to challenge industry's understanding of engineering research as 'data-driven' and centred on knowledge about well-defined pieces of hardware. Amongst other things, we looked to guide delegates on how to employ a multi-disciplinary approach, integrating methods from the social sciences to provide context to, and support, quantitative modelling.

Key principles underpinning this modelling approach have proved successful in other fields, such as aviation safety. One example is that acceptable outcomes (successful service delivery) and unacceptable outcomes (product failures) are rooted in everyday performance adjustments within a system which is socio-technical. Advantageous insight can only be obtained if such a system is subject to careful investigation.

Our interactive workshop (entitled *Costing for Availability*) was delivered as part of a larger event on 'Costing Research at Bath' held at Bailbrook House on the outskirts of Bath. The venue was chosen as it was accessible to the M4 and offered reasonably priced, quality facilities and refreshments.

The event was advertised through a leaflet circulated online to potential interested delegates via professional social networks. The leaflet highlighted that the event was aimed at industry rather than academics, and that the topics in discussion would be of great relevance across industrial sectors.

Our workshop was one of two parallel sessions offered and we had 15 attendees. To promote interaction, attendees' opinions were surveyed through a series of open questions before key insight underpinning the CATA research was presented. Groups were formed, and allocated a question to discuss before a representative from each group summarised their view. Key ideas were captured on flip-chart before researchers then responded to the ideas, highlighting potential overlaps and divergences from the CATA research.



A flyer was produced to promote the workshop to industrial partners

WHO WAS INVOLVED?

The 'Costing Research at Bath' event had 34 participants representing 19 different industrial partners. The majority of representatives came from the aerospace, defence, design & engineering, energy, and manufacturing sectors.

If you would like to discuss how you might engage publics in or with your research, please contact the University's Public Engagement Unit at: public-engagement@bath.ac.uk

WHAT DID YOU GET FROM THE EXPERIENCE?

During the project, much of my effort was towards thorough analysis of a vast literature, as well as the theoretical refining of mathematical and qualitative models in order to best prepare for the workshop. I felt this necessary due to controversial aspects of the research. However, such a focus limited my ability to figure out the practical implications of my research.

As an early career researcher, I was determined to challenge myself to learn how to translate my academic work into a style accessible for a non-academic audience.

By taking part in the workshop, I had the chance to redress this. The workshop: took me outside of my comfort zone; helped me to explore novel ways of defending my research; and provided 'first-hand' insight into what industry actually values. I came away with a much better understanding of the practical repercussions of my research.

Through the workshop, I also learnt from one of the invited speakers—Dr Daniel Bumblauskas, Assistant Professor and Jeff & Julie Hamilton / ESP International Fellow for Supply Chain at University of Northern Iowa. Daniel has vast experience in both academia and industry and introduced real-life examples from across industrial sectors and different geographic contexts in order to highlight his points, a technique that appeared to enhance the credibility of his work amongst the industrial partners.

WHAT DID YOUR PARTNERS GAIN FROM THE EXPERIENCE?

The workshop introduced industrialists to innovative approaches that may become common practice in the future. They received a booklet following the workshop which consists of six core sections ranging from the definition of main concepts to a top-level conceptual outline of our proposed systems-based approach to costing availability.

The booklet did require significant writing and editorial work but the effort was worth it; the booklet acts as a reminder of the event and contains researchers' contact details for any follow-up discussions.

We were pleased that some attendees acknowledged the top-level rationale and intent of our research project – the need to assist organisations in avoiding missing out what the socio-technical system of interest is, before rushing headlong into quantitative modelling. Most respondents were positive about the workshop itself:

- 70% found it relevant, of adequate duration and effective;
- 80% found it engaging;
- 90% desired to learn more about the subject.

WHAT WOULD YOU DO DIFFERENTLY?

If I were to run the workshop again, I'd introduce more breakout sessions for delegates to discuss questions raised by researchers in order to enhance the interactive nature of the event.

I would also try to improve my time management and to avoid being carried away by algorithmic / mathematical aspects that I am prone to getting excited about!

TOP TIPS

I think that if I'd got more acquainted with the 'language of industry' prior to the event I would have avoided situations in which I found myself thinking that my audience were disagreeing with me whilst in fact, they were on the same page. In terms of getting industry to buy into your core ideas, using the right language may make a significant difference.