contracts. The Iridium and Earth observation hardware business alone is >£1B for the build of satellites and sensors and the 12 launches. In addition to this is the delivery of the second level ground segment in terms of data retrieval, calibration, quality control and dissemination.

The Government has a key role to play in the support of not only the UK space industry, where it may provide the mainstay of a national space focus at the top level of government[5], but also the science community, in the provision of data for the development of climate models in which the UK is a world leader through the efforts of NERC and Met Office scientists. The development of business around value added products for the maritime and service industries should be encouraged. Then there is the kudos of taking a lead on the international stage. With the benefits comes the responsibility of Government to commit to the opportunity on a timescale consistent with deployment of the commercial venture (Figure 1).

Moreover, there is a higher purpose for the support of this programme. Unlike the "one giant leap for mankind" that was motivated by the Cold War, the objective here is to bring to fruition a vision that really will touch all of mankind – every man, woman and child on the planet – in being proactive to the effects of global climate change, with an outreach that transcends geo-political boundaries. "These are extraordinary times. And we face an extraordinary challenge." – Kennedy's words from the address that announced the Apollo programme[6]. These too are extraordinary times and this is a unique chance to meet the challenges of global climate change.

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"A cross-disciplinary think tank, very cool!"

The Royal Academy of Engineering, The Engineering and Physical Sciences Research Council, The Institution of Engineering and Technology and The British Computer Society co-hosted a ground-breaking forum in July for some of the UK's most exciting engineers to network with documentary film-makers at the BRITDOC 07 festival in Oxford. The idea was to introduce those at the cutting edge of shaping society to those with the 'power' to engage society so they could exchange ideas.

Bringing together 15 of the UK's leading innovators with 16 film-makers, this year's *Would like to Meet the Innovators (WLTM)* provided a rare opportunity for film-makers and innovators to share their experiences of working in two creative, yet radically different, industries. Adopting a "speed dating" format, the sessions enabled each innovator to spend five minutes with every film-maker, to offer an insight into their research or design work, hopefully paving the way for future collaborations. From nanotechnology to climate change, the discussions were designed to act as a catalyst for future documentaries between film-maker and innovator.

"Innovators might think we want to make films ABOUT them, WITH THEM would be a better mind-set," said one film-maker after the event.

Christo Hird, Managing Director and Executive Producer at Fulcrum TV and Chair of WLTM, says "WLTM is an essential, effective and entertaining way for film-makers to meet those with great stories to tell. Every specialist with a passion believes there is a documentary in it; every film-maker wants to find the subject that no-one else has spotted. But today it is

harder and harder for these two parts of the documentary-making process to meet. WLTM is a fast way for specialists to meet lots of different film-makers. People understand how they can collaborate. No time is wasted but valuable contacts are made."

Overwhelmingly, film-makers' perceptions of innovators (and engineering) were changed positively. Many of them felt they had realised for the first time the broad scope of engineering and how fascinating it was as a subject. Over half the film-makers said the session would change the way they worked with innovators in the future; they will be more likely to go to them for inspiration and ideas rather than as an afterthought as a comment or 'talking head' in a documentary. There is potential to work more on this area in the future, in terms of setting up a bespoke, mediated brain-storm with interested film-makers and innovators. Several innovators said afterwards that they would like to be sounding boards for programmes and ideas at an early stage, not necessarily with a view to being involved in the production process itself.

Speed is king

Edinburgh University PhD student Iain Roberts is passionate about applying engineering principles to improve his understanding of his sport – skeleton bobsleigh. His PhD is on the mechanics of skeleton bobsleigh and ice friction. It involves F1 style instrumentation and data-logging to measure sled performance and ultimately build a new tailored sled.

Protected only by a lycra body suit, skeleton bobsleigh involves sliding head-first down an ice track at up to 85 miles an hour on a sled steered by the slider shifting their weight. "It all depends on weight transference and actual bending of the sled. The better you understand how the sled interacts with the ice and how your movements transfer through the sled to the track, the better you can perform." says Iain. He started sliding three years ago and competes at an international level. "Medals are won and lost by 0.01 seconds, a sled tailored to the individual could be the advantage that wins a gold medal." Iain's plan is to build up track knowledge and advance the sled design, aiming for success at the 2010 Winter Olympics in Vancouver.

Skeleton bobsleigh designer/Olympic hopeful Iain Roberts was among the engineers meeting film-makers at BritDoc 07.

Life in the canopy

Dr Graham Dorrington's research bridges aeronautical engineering and biological sciences, allowing him to study one of the most fascinating but inaccessible places on the planet – the tropical rainforest canopy. Graham, based at Queen Mary, University of London, hopes to design, manufacture and fly a new type of airship (dirigible) over the northern Amazon. This will not only capture the outstanding natural beauty of the canopy but enable him to discover new species of insects, arboreal fungi and possibly even new trees.

Given the rate of tropical forest destruction, Graham's research is not only timely but of paramount importance. He has worked with the late Survival Anglia cinematographer, Dieter Plage, and has already been the protagonist in a film called 'The White Diamond' directed by Werner Herzog (2004). The airship used in this film proved to be a good, stable filming platform, but was technically limited. Graham's new airship will be more capable although there are still many engineering challenges to tackle.

Bubble, bubble

Dr Eleanor Stride is RAEng/EPSRC Research Fellow and Lecturer in Ultrasonics at University College London. She works on ultrasound imaging, at the interface between engineering and medicine, developing miniature diagnostic tools (in the form of tiny bubbles injected into the blood stream) for cancer, heart problems and arthritis.

The microbubbles are first coated with a substance to form a "shell" which acts as a contrast agent to provide strong ultrasound echoes and give much better images. The flow of blood, containing these coated bubbles, can be traced throughout the body and anomalies, such as cancer or poor functioning of the heart, can be observed. The microbubbles can be used for targeted drug delivery and gene therapy by incorporating drugs or DNA. The bubbles can be tracked through the body using low intensity ultrasound and then destroyed with high intensity ultrasound to release the drug in a specific region, for example at the site of a tumour. By localising the treatment in this way, the harmful side effects associated with many forms of chemotherapy can be greatly reduced – dramatically improving patients' lives.