

**'Working Together'. Keynote speech by Mike Steeden to Day 2 of Defence Research 2010 Conference. Birmingham 24 March 2010.**

**[chart 1]**

I did ask for a different intro....but this being the Ministry of Defence we got rather bogged down in a problem over Intellectual Property Rights. However, with my Chief Executives brief allusion to her 'rock chick' background yesterday in mind – and for those of you old enough to believe you **do** remember the '60's.... (or was it the 70's?) I offer the lyrics that I had in mind

**[chart 2]**

Well – good morning ladies and gentlemen. Happy budget day. What do I propose to cover this morning? These are the key 'headlines'

**[chart 3]**

To start at the top

**Why work together?**

Working together isn't new. Not only isn't it new, its not exceptional. It's what we as a community do and have, sometimes well; sometimes not so well - always done. So why 'working together' as the title for a keynote at this conference? What is there to say that hasn't already been said, here or elsewhere? What is there to do differently to what we are doing now?

**Dstl's perspective**

Well for my organisation, the Defence Science and Technology Laboratory, working together with industry, the universities, other parts of the MoD, other government departments and international collaborative partners has since Dstl was launched been a fundamental aspect of our work. Our Framework document, essentially our 'Mems & Arts', refers to the lab linking *'through its technical networks with industry and academia, .... into world class teams, both nationally and internationally.'* It's worth re-iterating what our Framework Document says about our role:

**[chart 4]**

*Dstl exists to provide independent, high quality scientific and technological services to MOD, the UK Armed Forces and Government, in those areas inappropriate for the private sector. Its primary purpose is to meet the requirements of its defence customers in the most efficient and cost effective manner. It will transfer knowledge to defence industries, spin off knowledge for civil application and undertake collaborative research with other institutions in accordance with MOD policies. Dstl will not directly compete with industry for the provision of services to MOD.*

Well, what has been said by both Frances Saunders and Jonathan Lyle is, effectively that this hasn't changed and be reassured... it hasn't. But perhaps it is worth picking up more specifically on the points they made.

Frances had a whole section on 'working together'. She said in particular that *'At the heart of our agenda is for us to create and sustain even better connections between all the different parts of MOD that are engaged in using and exploiting technology and forming even better links with industry and the wider science and technology base'*. She went on to say that *'We must make it easier for small and medium sized businesses, academia and even individual inventors to understand MOD's requirements, to approach us with their solutions and to receive help, advice and funding to develop their ideas and bring them into service'*

Jonathan naturally focused on the central role to be played by the new Programme Office – in essence as something of a 'one stop shop' for those wanting to be involved in the delivery of, or access to, UK defence science and technology. He stressed that the programme would be delivered *'with the help of a wide range of suppliers and partners'*, also that he aimed at *coherence* as well as real improvements in efficiency and effectiveness.

The bottom line is the need to work together yet more efficiently and effectively to increase the impact that the S&T community in the defence industry can make to the UK's defence and security. We want to find yet more ways to work with you to achieve the best results – and to focus on those ways of working that do just that. In the best of all possible worlds that means increased security for us all, saving lives and at the same time offering business opportunities that create value in your businesses and the wider economy. No pressure then!

#### [chart 5]

#### **But what do we need to do differently?**

Let's go back to the questions I posed at the beginning...what is there to say that hasn't already been said? What is there to do differently?

Alan Macklin yesterday drew heavily on the latest issue of the excellent Defence Development, Concepts & Doctrine Centre publication 'Global Strategic Trends' in highlighting the ever increasing pace and proliferation of defence relevant knowledge, innovation and technological development. He argued that the majority of technological breakthroughs are likely to be driven by the commercial sector, that more R&D will take place outside established centres of research and that our focus should therefore be on **transforming non defence technologies into military advantage**. He also acknowledged that *'while investment in R&D pays dividends..... it is increasingly likely that defence and government budgets will be unable to service the totality of the defence and security R&D need'* thus making the case that *'novel approaches to address the shortfall [must] be sought.'*

There are of course difficult political and economic decisions to be made by those well above my pay grade about the right balance between direct investment in defence research and in other pressing calls on the public purse – and indeed on the defence budget. But one thing we might usefully do differently is to recognise that *there is in all probability no realistically achievable level of investment in UK defence research given our relative size and economic muscle that will in the long term redress the diverging imbalance between the UK's investment in this area and that of either potential adversaries or the global commercial sector*. You only have to look at the level of UK investment in defence R&D, something in excess of £2 Bn per annum when I last looked, and compare it to the £20Bn per annum plus invested by you and your colleagues in industry **in the UK** to get the point.

So we really do have to work together, to operate more coherently, efficiently and effectively, to look for 'novel approaches' and to focus yet more on transforming non-defence technologies into military advantage – whatever the budgetary realities or outlook. But again, what needs to be done differently? Were these issues not recognised in the 2006 Defence Industrial Strategy? Haven't we progressed significantly with the subsequent publication of our Defence Technology and Innovation Strategies, the Defence Technology Plan, Defence Technology Centres and, of course, the Centre for Defence Enterprise in relation to which you heard of considerable achievement to date from Helen Almey and her colleagues yesterday?

### **Managing relationships**

My own personal view is that a great deal has been achieved. In particular we've continued to learn much about how to **manage the relationships** that underpin successful engagement between on the one hand the MOD (and of course in particular the MoD Research community including Dstl) and both industry and academia. **Transparency** of course works for all of us, and **can** be balanced against the need for security and commercial sensitivities **inclusive** of intellectual property rights. **Incentives and gain sharing** work. **Challenge** generates novel ideas, attracts new entrants and stimulates innovation. **Insight into the military context and requirement**, especially that based on direct interaction with our colleagues in the Armed Services is always invaluable. Above all **there is no 'one size fits all' solution** for instance as to how we construct research consortia, structure contracts, form partnerships or engage in any other joint enterprise.

### **A more strategic approach**

But there is still room for guiding principles and shared objectives and agreement on how to **measure success** - in fact for a more **strategic** approach to defence research community **relations**. It's on this concept that I'd now like to focus. You shouldn't be surprised...you may have noticed that my role in Dstl is to lead on **Strategic Relations** for the Agency. This **is** a new Executive level post, established on 1 December last year. It's been given added weight, though, by the need to support Dstl's new role and to complement the work of the new Programme Office. But it was conceived prior to CSA's Critical Interface Study and has its roots in the clear recognition that a more strategic approach to relations with industry, the universities and others is needed.

### **External engagement by Dstl**

When I joined Dstl in 2006 as Technical Director I was struck by just how extensive and prolific the Agency's relationships were with industry, academia, other government departments and international research collaborative partners.

## Universities

Typically Dstl has been placing around 150 to 200 purchase orders with academic institutions in any given year for EMR either with the Universities directly or indirectly through the Research Councils (previously via the Joint Grant Scheme (JGS), latterly through the Joint Applied Research Programme for Defence, JARPD). Up to 60 separate institutions have been funded by Dstl in this way but the majority of our spend has been with a far smaller number of organisations. Over 60% of our total spend has been with just ten Universities. The total value of the contracts placed has varied from year to year but has typically been between £7m to £10m per annum.

In terms of collaborative mechanisms, six Co-operative Research Centres<sup>1</sup> (CRCs) have been established with formal agreements signed with key universities. In practice these agreements cover the intent to meet regularly, share views/plans, exchange staff and collaborate on research.

Of course many of our interactions with universities have existed through personal contacts, visiting professorships and fellows, part-time teaching roles and supervision of students. We have some 15 or so Dstl staff with Visiting Professor status at 10 universities while some 35 of our technical professionals hold visiting fellowships at various academic establishments. Of course Universities have always provided a significant recruiting ground for both graduate and post-graduates, and to a lesser extent senior staff. Secondments and sabbaticals to and from universities have also occurred. They have typically been *ad-hoc* and based around individuals' specialisms.

We will of course want to continue and where appropriate to enhance such interchanges and interactions but I suspect our approach to date would probably fail Jonathan Lyle's test of coherence. It has certainly not been strategic in terms of the way in which we've managed these relationships. So overall it is probably true to say that activity has been mostly individually-inspired or locally-executed, and benefits have not been widely shared. Thus our engagement has tended to be less coherent across the organisation and has probably not delivered all the value potentially on offer. We therefore agreed about this time last year that scope exists to "move up a gear" by better orchestrating and focussing our efforts. The termination of the Joint Grant Scheme and the decision not to enter into any further commitment against the Joint Applied Research Programme for Defence has served yet further to emphasise the need to explore those '*novel approaches to address the shortfall*' to which Alan Macklin referred.

Faced with this challenge we have therefore embarked on a strategic review of university and research council engagement. We've already visited over a dozen of those universities in receipt of the largest amounts of support from the defence research budget, and engaged with both the EPSRC and STFC on future 'strategic partnering' arrangements. We've noted from our initial discussions that the universities, the EPSRC and the STFC are all keen to re-establish momentum, co-operation and strategic alignment with key strategic partners. We've therefore already concluded that a real opportunity currently exists to examine new ways to align and leverage different sources of research investment and to compare and contrast approaches to technology exploitation (there's another area of interest concerning ways of engaging with, for instance, venture capital to aid commercial exploitation of taxpayer-funded intellectual property in defence, but I won't be covering it in this talk)

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<sup>1</sup> Current CRCs are with Bristol, Cambridge, Cranfield, Imperial College, Oxford and Southampton

Discussions on how to take forward what we've learned from our interactions with this first tranche of universities and research councils are already in progress. We're analysing current EPSRC defence-related grants and have already proposed a review of the Dstl-STFC Concordat signed last year. Both the Research Councils and the Universities are grappling with the implications of a renewed emphasis on 'impact' in assessing the quality of academic research. This can only be an opportunity for the defence community in working with them to demonstrate how their investment in research can be more directly aligned with and pulled through into, defence benefit. How we **measure success** is therefore a key feature of another area in which we might wish to do things differently to which I will return later.

## Industry

Now to industry. Since its formation Dstl has signed "Strategic Partnership" agreements with some 5 or 6 defence majors<sup>2</sup>. Similar strategic relationships do, however, exist with other organisations without formal agreement in place. There have been and continue to be some very worthwhile staff exchanges with companies, but on the whole the agreements have tended not to be as successful as might have been hoped at initiating new co-operative activities. Senior Points of Contact have been identified for some of the major industrial institutions but implementation has been mixed, with limited communication of pertinent activities, coupled with the lack of formal agreement of the role.

Our commercial engagement with industry at the project/contract level is extensive, but the nature of the interaction is highly variable, ranging from manpower substitution in the systems areas through to accessing niche capabilities in support of UoRs etc. Extra Mural Research (EMR) investment in industry has been of order £40M per annum with 20 Small to Medium Enterprises (SMEs) receiving 25% of this. In all we have had in excess of 3600 companies on our supplier list. We also of course have extensive and diverse interactions with wider MOD/industry collaborations and industrial consortia, inclusive of Defence Technology Centres, Towers of Excellence (ToEs), Niteworks, TeamCW, TeamCBRN, SEIC, Defence Systems Partnerships, Defence Aerospace Research Partnerships (DARPS) and most recently the Armour and Protection and Cyber and Influence CDTs. And we are heavily committed to support of DE&S in our advice roles and to the Centre for Defence Enterprise is assisting with bid assessment etc.

But again I would argue that we have lacked coherence in our approach, tending perhaps to pursue 'targets of opportunity' rather than to adopt a genuinely strategic approach to relationship management. We've therefore concluded in favour of an early review of our existing 'Strategic Partnership' portfolio and the specific agreements that it currently contains. We'll be asking ourselves and our partners what's worked, what hasn't? To what extent are these agreements genuinely aligned with and focused on, for instance R&D Board priorities, innovation, systems engineering, open architectures – to what extent do they exhibit agreed ways of **measuring success** – and how do they 'benchmark' against established 'best practice' in strategic relationship management? Several reviews are already in prospect.

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<sup>2</sup> Strategic Partnerships have been established with BAE Systems, MBDA, QinetiQ, Thales and Roke Manor.

## Industrial networks

At the same time we are exploring the potential of closer engagement with industrial networks. The National Defence Industries Council (NDIC) and its various working groups are particularly critical in the strategic relations context. The Defence Industries Council, the industrial partner to the MOD in the NDIC, has been closely engaged in the consultations preceding the decision to implement CSA's Critical Interface Study Recommendations. The joint MoD/Industry NDIC R&D Group now co-chaired by Frances Saunders and by Steve Wadey of MBDA leads on S&T matters and has also contributed to the consultation process. The RDG is continuing with a work-plan aimed at updating its *'Technology Partnerships in Defence'* report, something that I'll return to at the end. Dstl is already fully engaged with the work of the NDIC RDG having in particular contributed substantially to the work of the sub-group on Systems Engineering and Open Architectures. We have also had a strong presence on the NDIC HR working group. But we have been perhaps less well connected into other working groups and into the NDIC (and DIC) themselves. I'm not for a moment suggesting here that there is a role for Dstl in encroaching on relationships and areas of policy that are for others within the MoD. But there is more that we can do to establish strategic relationships with key industrial players in these fora in order better to understand their issues and aspirations in relation to engagement with the MoD S&T programme, and with our Programme Team - but at one step removed from those responsible for making the programme decisions, and from account and supplier management.

Its especially timely to be thinking about our aspirations in terms of strategic engagement with the NDIC/DIC framework not simply because of the wider role that Dstl is now to play in the formulation and delivery of the MoD's S&T programme but also because **first** the NDIC framework has been under review, **second** industry representation on the DIC has recently been subject to elections which have resulted in significant changes and **finally** all of the above will undoubtedly have roles to play in the upcoming Strategic Defence Review debate and in any associated or subsequent refresh of the Defence Industrial Strategy.

At this point I should mention the national trade associations. I have a possibly natural personal bias here in that I had the privilege personally to work in the Society of British Aerospace Companies or SBAC, for a number of years. During my time in the SBAC I saw how effective a good Trade Association could be in at once engaging with government at national and regional level and with the devolved administrations on matters of national and regional policy while at the same time creating and exploiting membership networks spanning complex supply chains both horizontally and vertically. I remember in particular initiatives like SCRIA – or Supply Chain Relationships in Aerospace and SC21.

Dstl, and the MoD as a whole, faces a real challenge in terms of engaging effectively with small to medium sized enterprises. This issue was touched on several times yesterday and featured particularly heavily in Helen Almey's comments on the considerable achievements of the Centre for Defence Enterprise in creating opportunities for SMEs, often those with little or no previous involvement in Defence. Well, if I remember the figures correctly there are a million of so SMEs (including sole traders) operating in the UK, with perhaps 9000 or so already engaging from time to time in the defence supply chain. With some 2700 technical professionals in Dstl the question of how best to offer help and opportunity to even part of such a large and diverse community without creating an unmanageable overhead invites some careful thought.

As elsewhere I'm pretty sure that there is no 'one size fits all solution'. There is clearly a place for building on the success of the CDE. CDE's portal and the web-based Defence Technology Plan extend the reach of the department into the wider industrial and academic community particularly effectively but are intrinsically passive. Visibility and engagement depend almost entirely on action by the potential supplier. I am interested in establishing strategic relationships with the larger trade associations that among other things allow us to explore how they and we might be able to exploit their access to extended supply chain networks to provide other, perhaps more pro-active, channels of help, support and communication. The recent merger of the SBAC, the Defence Manufacturers' Association and the Association of Police and Public Security Suppliers to form ADS (Aerospace Defence and Security) presents a particular opportunity that we have already begun to follow up. ADS also

- a) provides the Secretariat to the Defence Industries Council,
- b) together with Intellect covers the full range of industrial defence and security interests through their respective defence and security boards and
- c) hosts the Aerospace and Defence Knowledge Transfer network.

Finally, it's worth highlighting the way in which ADS and Intellect have been instrumental in creating the environment for a more coherent offering in the previously less than fully joined up security domain. A key feature of the work in progress is the agenda being developed by the UK Security and Resilience Industry Suppliers Community (RISC). This aims first at bringing coherence to the industrial input to HMG on issues of security and counter-terrorism and second at realising the business potential (inclusive of export), of the sector. We've already begun to engage with RISC, again initially to understand the issues and aspirations of this particular industrial grouping with the aim of determining what kind of strategic relationship, if any, might be appropriate

### **Measuring success**

I've referred several times to the need to be able to **measure the success** of relationships between the MoD S&T community and industry, the universities and other partners and suppliers. Obviously the 'bottom line' is these relationships should be **productive** – from the MoD perspective productive (ie efficient and effective) in generating solutions to military requirements. You saw a number of relevant case studies yesterday which featured, by and large, direct, visible, relatively short duration low to moderate capital investment innovation pathways. It's perhaps rather easier to be persuaded of the productivity of the relationships or engagement mechanisms that yield direct novel technology push or focused demand pull innovation pathways than it is of the often longer-term, more structured and intensely bureaucratic relationships that often underpin complex capital intensive safety critical systems innovation and development.

### **Dstl's Critical Success Factor on Productive External Networks**

Nonetheless we have set ourselves the challenge in Dstl of an Agency Critical Success Factor on Productive External Networks. One of my personal challenges in leading on strategic relations for the lab is to develop measures, metrics and targets by which we might, in concert with our key strategic partners and stakeholders review and evaluate progress towards its achievement and maintenance. Perhaps unsurprisingly I'm looking for help on this.

Targets, measures and metrics tend, perhaps justifiably to get a bad press these days but as Frances commented yesterday we are spending tax-payers money and she does have to help make the case for the work you do. And the real importance of finding ways to measure the success of our key relationships lies in being able to focus our - that is the S&T community's - limited resource on building and sustaining those with the best prospect of yielding defence benefit, providing a worthwhile return on investment and developing and exploiting S&T capability where it really matters. In any event this is by no means a challenge for the defence S&T community in isolation.

### **Relationship management in the *Defence Strategy for Acquisition Reform***

The *Defence Strategy for Acquisition Reform* just published alongside the Defence Green Paper perhaps unsurprisingly boasts a full chapter on an *Improved Relationship with Industry*. The document commits to 'examine where we are maximising the benefits of our relationship with industry', also to 'investigate whether we have the right relationships with industry'. In essence I am suggesting that this element of the Department's acquisition reform strategy applies just as much to relationships in the defence S&T community as it does to those in the equipment and support community.

### **PAS 11000:2006**

Relationship management in the mainstream defence acquisition community has, of course, been the subject of much work already under the leadership of the Director General of Defence Contracts on Commercial Policy matters. The 'Partnering Handbook' was published some time ago. The Partnering Implementation Group has provided the focus for activity on relationship management and has in particular had work in hand to identify standard 'relationship measurement tools'. Some of you may be familiar with 'Publicly Available Specification' (PAS) 11000:2006 '*Collaborative business relationships: a framework specification*'. I understand this to be the world's 'first relationship management standard'. Does this sort of approach to best practice have a role to play in measuring the success of our key relationships – particularly those less amenable to more immediate demonstrations of impact and technology pull-through?

### **Relationship Maturity Model**

My team is considering the possible application of a 'relationship maturity model' currently still in development. Is this a more useful or widely applicable approach?

### **[chart 6]**

This initial 'strawman' should give you some idea of our early thinking. The obvious challenge is to develop and agree useful indicators at each level of maturity. If we are going to be successful in measuring factoring in productivity and impact then we really do need to address the problem of output as opposed to input metrics. I'll leave these questions with you for comment. But the essential point remains there is real benefit in establishing a common perspective, common tools and common practice in measuring the success and /or productivity of defence S&T relationships and networks. ***We have to crack this one if we are to be able to make the case for the defence S&T investments we believe to be critical to the UK's defence capabilities.***

## The NDIC RDG Work Plan

I'll conclude by returning to the work of the National Defence Industries Council R&D Group, which I see as central to the network of key strategic relationships in the UK defence science and technology acquisition community and to the delivery of relevant action plans and objectives.

You heard in some detail yesterday from Frances Saunders about how Dstl will from 1 April take on the responsibility of leading, subject to R&D Board priorities, the defence science and technology (S&T) research programme - designing, formulating and commissioning programmes with industry (large and small), academia and other research organisations' but not taking over the programme in terms of doing it. Most of MOD's S&T will continue to be delivered by industry and the universities and it is increasingly to the products of investment and innovation in the wider community and in the commercial sector that defence will need to turn to have any chance of 'staying ahead of the game' in terms of technological edge. Jonathan Lyle introduced the new Dstl Programme Office as your primary point of contact for the commissioning of defence applied research contracts and for S&T supplier and account management (recognising CDE's particular focus on attracting new ideas and new entrants through open innovation and themed calls offering rapid turnaround on funding). However the NDIC RDG is currently the only forum in which representatives of the UK defence S&T industrial community engages with Dstl in taking defence S&T forward as a coherent enterprise, building on the *Defence Innovation Strategy* and *Technology Partnerships in Defence*.

The RDG work-plan already includes further work on Systems Engineering & Architectures, which as an aside I very much hope will see renewed emphasis on the promotion of the '*Charter for Adopting Open Architectures in Defence Acquisition*' without further delay. It also covers further work on R&D Business Models, Strategy and R&D for the Future Defence & Security Environment. Finally, the work plan addresses linking MOD R&T to Investment by OGDs and work on metrics to quantify innovation delivery. These last are areas strongly adjacent to the thoughts on strategic relations and on measuring success that I've outlined. So you will, I think, understand why I believe that there is much more that the RDG might yet be able to do not only in building on the opportunity of Dstl's new role and the more strategic approach to industrial and academic relations that we are adopting to take the defence S&T community together as a more coherent enterprise, but also in doing so to help find ways to address the real challenges we face operationally today, in the SDR tomorrow and in sustaining the UK's defence technological edge in the future.

### Strategic Relations and Relationships

I'll leave you with a couple of definitions:

#### [chart 7]

Strategic Relations are *the mutual dealings or connections or communications among persons or groups in a manner important or essential to a plan of action*. I see the plan of action at the moment as essentially that being pursued by the NDIC R&D Group.

Strategic Relationships are *agreements between two or more entities to conduct specific activities or processes to achieve specific objectives*. These objectives will be those agreed between Dstl and its key strategic partners in each case in the context

- a) first of the NDIC RDG action plan and
- b) second in terms of any relevant organisation specific objectives agreed to be in the mutual strategic S&T relationship interest

**[chart 8]**

The bottom line message here is that Strategic Relations and Strategic Relationships within our community are vital but ***only in support of our plans of action and our objectives in support of the Nation's defence.***

**[chart 9]**