

Review of Business Development Activities in Government and Private Sector Research Institutes in the UK and Holland

EXECUTIVE SUMMARY

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In order to assist in the design and development of a business development activity in a Canadian government R&D-based department, a review of business development activities of government and private sector research institutes in the United Kingdom and Holland was undertaken.

The four organizations examined were:

- The Defence Evaluation and Research Agency (DERA) of the UK Ministry of Defence (MOD)
- The Laboratory of the Government Chemist (recently privatized from the Department of Trade and Industry (DTI))
- The National Physical Laboratory (NPL) (government owned, company operated)
- The TNO Defence Research Institutes

DERA and the TNO Defence Research Institutes exist primarily to service the R&D requirements of their military clients. The other two organizations sell their expertise mainly to civilian customers in their own countries and abroad.

ORGANIZATIONAL DESCRIPTIONS

Defence Evaluation and Research Agency (DERA)

DERA was launched as a commercial operation on April 1st, 1995. It was formed by bringing together the four principal MOD non-nuclear research establishments into a single coherent organization. One of these establishments, the Defence Research Agency (DRA), was itself created in 1991 from several large and small MOD research establishments. DERA's mission is "to ensure that the advances of science and technology are harnessed to the needs of its customers so as to provide the best solutions to both military and wider technical problems at the lowest possible cost".

DERA is set up as a "trading fund" agency which means that all its income has to be earned from customers. Even though approximately 90% of its sales are to the MOD, DERA still has to persuade MOD personnel that "the DERA product is worth purchasing and offers value for money".

In July of 2001, DERA was split into two new organizations:

QinetiQ Group plc, a commercial firm, which took approximately 75% of the former DERA staff (www.qinetiq.com); and

the Defence Science and Technology Laboratory, a trading fund, which handles more inhouse military R&D. (www.gov.uk/government/organisations/defence-science-and-technology-laboratory)

QinetiQ employs approximately 10,000 people in laboratories not only in the U.K., but also in Australia, Europe and the U.S.

"Sales" of DERA s expertise, use of facilities, and technologies etc. exceeds £1 billion and, with a total staff of 14,000, of whom 3130 are scientific staff, DERA is the largest single scientific organization in Western Europe. Of the £1 billion in sales, 25% comes from test and evaluation projects. Approximately 10% of DERA s income is from what it considers as "commercial sources" in that DERA had to compete for it. Commercial sources include the private sector, other government departments, foreign government military clients, plus MOD projects for which they had to compete. Only about 5% of their business comes from the private sector.

DERA is organized in a matrix structure with "Resource Managers" (Functional Managers) and "Project Managers". It is divided into four divisions, consisting of 16 technical sectors, each of which has its own business development activity. Sectors are further subdivided into departments or "profit centres".

The focus of this review was on the business development activities of the largest unit of DERA, the Defence Research Agency (DRA) which is divided into seven business sectors that correspond to their principal market segments. DRA employs approximately 6,500 people and has sales revenues of £600 million.

Under its present mandate, DERA is not allowed to compete with UK industry and cannot manufacture anything that can be supplied by a UK supplier. In addition, DERA is not allowed to take equity in a firm in lieu of payments for services/technologies rendered.

Each of the 16 business sectors has its own sales and marketing personnel supported by a headquarters marketing, intellectual property and contract administration group.

DERA personnel were unanimous in their belief that the move from a government research and development organization to a more commercially directed trading firm would not have been

possible with a CEO drawn from the public service. As one senior official stated, "It is critical to have the right person at the top who can secure the administrative freedoms necessary, and doesn't see the bureaucratic impediments that are not really there". Insiders carry too much baggage.

National Physical Laboratory (NPL)

Located in Teddington, Middlesex, the National Physical Laboratory became a government owned, contractor operated facility in July of 1995. As the UK's national standards laboratory, NPL's mission is to satisfy the nation's current and future needs for physical measurement standards; to seek new ways in which the improved use of measurement can contribute to UK competitiveness; and to serve customers world-wide with an expanding range of high quality scientific services.

The NPL employs approximately 690 (**now 500**) people and has annual sales of £40 million of which £28 million comes in the form of a five year contract from the Department of Trade and Industry.

On January 1, 2015, NPL ownership was transferred to the Department of Business, Innovation & Skills, to be operated as a government company.

NPL is divided into nine scientific divisions or centres. The marketing activities in the centres are supported by a headquarters unit of marketing, public relations and contracts personnel.

Laboratory of the Government Chemist (LGC)

On March 31, 1996, the Department of Trade and Industry sold LGC to LGC (Holdings) Ltd., a company formed by a consortium of LGC directors and staff, The Royal Society of Chemistry, and 3i Group plc.

In February of 2010, it was acquired by a private equity company, Bridgeport, but is still owned by the employees. LGC is the largest independent analytical laboratory in Europe, employing, in 2014, 2000 staff, in both Europe and the U.S.

LGC employs approximately 300 people on an eight acre site next to the National Physical Laboratory in Teddington, Middlesex.

LGC's mission statement is, "To be a champion of quality and innovation in chemical measurement, adding value in serving industry, government and the wider community". In 1996, they had sales of £15 million.

The business development activities are handled in a headquarters unit consisting of business development, marketing, public relations, and administrative personnel.

TNO Defence Research(TNO)

TNO Defence Research is a significant part of the research and development activities of The Netherlands Organization for Applied Scientific Research (TNO). TNO Defence Research consists of three laboratories dedicated to military research under contract to the Dutch government. TNO receives 25% of its funding in the form of a block grant from the government.

TNO Defence Research's annual sales are approximately 140 million guilders which constitutes about 20% of TNO's overall business.

TNO employs approximately 4000-4500 (**now 3,000**) people of whom about 1000 work in TNO Defence. The TNO organizational structure is institutes (laboratories), divisions, and then groups. The divisions are the budget units or profit centres.

The business development activity is decentralized to the three laboratories or institutes, with support from a headquarters group. In every institute there is a marketing and programme person. In some of the institutes, there are also personnel designated as "Account Managers" or "Account Coordinators". The former look after various technical theme areas such as law enforcement and security, space, communications, etc., while the latter look after business matters with the three military services and the Dutch Ministry of Defence. Some of these personnel are not full-time managers or coordinators.

TNO Defence is not allowed to compete with the Dutch private sector nor with other TNO divisions in the civilian side of TNO. Like DERA, the civilian projects they undertake should result in increasing their capability to service their military clients.

LESSONS FOR ESTABLISHING BUSINESS DEVELOPMENT OFFICES

The "lessons" that can be learned from the business development activities of the research organizations examined are summarized below.

Leadership

A significant feature of the organizations reviewed was that they all had people from the private sector occupying their CEO and senior management, especially marketing, positions. It appears that they did not believe they would be very successful in changing the direction of their organizations and improving/expanding their dealings with the private sector if their own organization did not have people at senior levels who had private sector experience and attitudes. If an R&D organization is going to market itself aggressively to the private sector in order to maintain and enhance its capability to service its primary internal client, serious consideration must be given to hiring people from the private sector to occupy some of the senior management positions in the R&D organization.

Organization of the Business Development/Marketing Activity

Based on what was observed in the other organizations, the business development/marketing activity in the R&D organization should be as follows:

- Headquarters unit of 3-4 people, plus some IP management and contracts people. The head of the unit should be responsible for corporate marketing, and contract administration and negotiation and should report to the CEO of the R&D organization;
- At least two business development/marketing people in each research establishment, who report to the head of the establishment on day to-day activities, but to the head of the headquarters business development unit on long-term marketing issues and anything that would affect the corporate image; and
- Intellectual property management should be centrally managed and funded, and report to the head of business development. IP experts should be provided locally (employees or contractors) so they are physically close to the laboratory.

Accounting System

The R&D organization should adopt a private sector project-oriented accounting system which prices their efforts at their real cost. This project system should also be applied to the government R&D organization's internal clients so that projects are defined by budget and time.

Along with a new accounting system, the unit cost of the scientific work should be reduced through more effective use of personnel and facilities. Waste and inefficiencies should be identified and eliminated. This was a major factor in getting DERA's costs under control.

The need to track costs by project would also reinforce a change in culture. Tracking project costs should be done in a way that does not discourage the researchers from spending time thinking and exploring. For example, time control should not be so tight that it discourages spending time browsing in a library or surfing the internet.

Human Resources

The organizations reviewed were careful to have a critical mass of marketing effort associated with their civilian commercialization activities. It worked out roughly to one marketing or business development person (not including, IP, or contract or headquarters marketing personnel) for every 50-60 scientists. The R&D organization must also have a critical mass of effort, otherwise, as in science, the money spent will be wasted on a subcritical activity.

The business development office (headquarters and research establishments) should hire people from the private sector, especially in the areas of sales and marketing. Each research establishment should have at least two people working full-time on marketing and business development.

Headquarters should have two to three people responsible for developing the corporate image of the R&D organization. This would include activities such as providing promotional material that emphasizes a corporate logo, developing a user-friendly web-site, providing exhibits at conferences or symposia that attract potential clients, and meeting with major clients.

Within the business development office (consisting of the HQ and Research Establishment activities), there should be people who have the following skills or knowledge:

- technical knowledge of the field/technology being promoted;
- the skill to persuade the scientists to pay attention to commercial opportunities and to prepare proposals and bid on prospective projects, i.e., people who can connect with the scientists;
- the skill to identify commercial opportunities, for example, to conduct market analyses;
- good listening and interpersonal skills (everyone);
- marketing and sales skills, and experience dealing with the private sector;
- negotiation skills;
- understanding of the customer (people who know the market);
- entrepreneurial attitude/ self-starter;
- ability to build long-term relationships with a client;
- ability to prepare effective technical proposals or bids;
- awareness of the corporate image and how actions by the organization will be perceived by existing and potential clients;
- public relations skills/knowledge (able to organize visits, exhibitions, promotional material etc.); and
- broad commercial skills such as:
 - IP management skills and knowledge,

- commercial risk management skills,
- contract administration skills.

Many respondents emphasized that marketing/business development people need to be able to work with the bench scientists to gain their cooperation and enthusiastic support for working on civilian projects, under tighter time and budget pressures than the scientists may be used to.

Intensive courses on high technology marketing and sales, negotiation, project management, IP management, bid proposal and preparation, and interpersonal communications should be available to the marketing and business development managers. The R&D organization's personnel who are being considered for a move into business development/marketing should have this training **before** taking up their new posts. In-house personnel should only be selected if they have the ability and attitudes needed in a business development position.

Culture Change

It is vital that the culture be shifted from one of working for government with relatively stable, albeit declining budgets, to one of aggressively seeking new business opportunities in other parts of its parent department or agency (e.g., procurement activities), from foreign governments or from the private sector, both nationally and internationally.

Instilling in older employees the necessity of breaking the psychological contract they made when they first joined the government will be an important feature of the culture change program. Newly hired employees should be informed about the new approach before they join so that they know what they are getting into.

A clear signal that the culture has changed would be the creation of a new position of Commercial or Business Development Director at the Director General level. In the establishments reviewed, the "head of business development" for the headquarters operation reported directly to the CEO. This shows the staff the importance of the marketing activity. The Commercial or Business Development Director would be responsible for the long-range marketing strategy.

Consideration should be given to changing the titles of the present establishment Director Generals to simply Director (or to Vice President if the R&D organization becomes a separate agency). The title "Director General" implies government bureaucracy. In line with DERA's approach, the titles of the senior research managers reporting to the Director should be "Technical Area" Manager. These managers would take on more duties associated with marketing the expertise of their groups.

Reward and recognition systems were not specifically covered during this review. However, R&D organization's present reward and recognition system must be modified to reflect a more business orientation. Working with industry should be a valued activity.

Culture change can also be reinforced by senior management when they meet with their staff. Talking about the business aspects of seeking out new clients will be important.

Compulsory attendance by all staff at specially developed R&D management courses that deal with topics such as project management in an R&D environment, high technology marketing and sales, negotiations, IP management, and personnel management is a major signal of a change in culture. These courses would ensure that the bench scientists and their immediate managers have a full understanding of the business operation and would enable them to work more effectively with the business development and marketing managers. Avoidance of "over engineering", resisting "publishing" on the Internet, and the importance of delivering civilian projects on time and on budget would be important topics on these courses.

Corporate Image

Several of the respondents emphasized the importance of having a positive corporate image, and monitoring how existing and prospective clients perceive that image. Developing a positive corporate image would be a major responsibility of the headquarters director in cooperation with the heads of research establishments (e.g., Directors).

Because of the importance of corporate image, the Business Development Director in headquarters should be at the same level as the laboratory Directors (General). He or she must be able to deal with the laboratories on an equal level if a laboratory is conducting business in a way that would damage the corporate reputation.

Corporate image will be determined by how well the R&D organization conducts its business with its clients and contractors. Coming across in a very business-like manner will be very important to the image. Treating clients fairly and honestly will be vital. A bureaucratic approach to dealings with the private sector (e.g., delayed decisions, multiple approval levels, slow project delivery times, arrogance) will undermine an image of a desire to work with and for industry or other clients.

An important aspect of corporate image is the name of the R&D organization. The name should have few words, and its letters should be easy to say, e.g., DERA, TNO, NPL, LGC, CRC, NRC. In the case of the R&D Branch of DND, serious consideration should be given to a name such as the Defence Research Laboratory (DRL) or the Defence Research Centre (DRC). (**Now called Defence R&D Canada**)

On all publications, the name and a logo should appear. In smaller print, a statement such as, "DRC is an agency of the DND" could appear to give the home department affiliation.

A survey of the attitudes of the R&D organization's present internal and civilian customers, partners and contractors should be undertaken to obtain their current perceptions about dealing with the R&D organization.

ISO 9001

All of the organizations reviewed either had or were obtaining ISO 9001 certification. Serious consideration should be given to obtaining ISO 9001 certification for government R&D organizations. This is a stamp of approval which many organizations may look for when considering working with the government laboratories. It is also a major indicator of culture change.

Canadian government laboratories are going to be in competition with foreign government laboratories for work, possibly even for work in Canada, and having ISO 9001 certification will be an important selling feature as their competitors are obtaining such certification.

Key Activities

In addition to the key activities/actions mentioned above, the following are additional activities or actions which, based on the observations of the European organizations, are important in attracting civilian and other government business:

- Networking with prospective clients through sales meetings, attending conferences and joining industrial organizations whose membership comprises existing and/or potential clients in order to raise the business profile of the research organization as a source of cost effective technical advice or assistance;
- Pushing signing authorities as low as possible down the organization;
- Sensitizing scientists and engineers to their role as market identifiers. This role includes activities such as always looking out for business opportunities, listening to colleagues in other organizations talking about their technical problems and selling them on how their lab can help them and telling the business development manager about potential contacts for new business;
- Setting hard marketing targets (e.g., new revenues, number of partnerships, new contacts made, number of exhibits at conferences, etc.) so that progress towards objectives can be measured, and holding the establishment heads and the business development manager responsible for meeting those targets;
- Having designated and sufficient budgets to cover marketing expenses and travel of the business development/marketing managers in the research establishments;
- Removing the authority from administrators (e.g., personnel, IP advisors, contract administrators) to countermand and veto the proposed actions of line managers;
- Having a designated marketing studies budget that is provided by headquarters;

- Identification of specific markets to be targeted for penetration. This would involve identifying the expertise, technology, facilities, etc. in the research establishments that industry wants **and** will pay for;
- Monitoring trade journals to learn about industry-wide problems; and
- Providing marketing, bid preparation and IP management support to the bench scientists so that they are not burdened with administrative detail and red-tape.

Intellectual Property Management

The intellectual property management activity must be located within and be under the control of the head of business development/marketing. Having IP management controlled from outside the R&D organization is not a good management practice.

In the organizations visited, none of the IP management activity was controlled by units outside the organization that generated the IP, e.g., the UK MOD is no longer responsible for IP.

A positive corporate image cannot be maintained if an important aspect of the business development activity is controlled and managed by another organization that may not be as sensitive to the business needs of the private sector partner or client as the unit that is dealing directly with the external client.

Management Practices to Avoid

The following is a compilation of the respondents' advice on management practices or strategies to avoid:

- Competing with the private sector. Companies in the private sector are potential partners or customers;
- Allowing scientists to sell only what they want to do; the scientists must also be receptive to what work the client wants done;
- Emphasizing technology push rather than market pull to trigger projects. However, managers should keep in mind that breakthrough technologies are usually the result of a technology push strategy. A balance is needed;
- Using existing employees, who have little or no recent private sector experience, to develop the new business practices, instead of hiring private sector experts;

- Keeping "rotten apples" around who may undermine the needed changes;
- Keeping administrative employees who have a "protection of the public purse" mentality rather than an "effective use of funds" mentality;
- Following the parent department's bureaucratic practices that constitute bad business practice;
- Setting the "profit centre" grouping at too small a size. The profit centre must be a commercially viable and technologically complete size;
- Failing to consider that test work might lead to more substantial projects;
- Establishing an evaluation system that encourages groups to meet their targets at the expense of other units in the organization, or at the expense of the corporate image;
- Hiring people who do not understand the R&D environment and cannot work with the scientists in a cooperative manner;
- Adopting the same marketing approach for both internal and private sector clients (e.g., same business card, promotional material, etc.). They are different markets and must be treated differently; and
- Allowing artificial barriers to form between the bench scientists and the marketing activity. Selling must be integrated into the technical groups.

Bureaucratic Freedoms

No government department can operate in a business-like, efficient manner and generate real revenues if it must conform to all the bureaucratic government red-tape and regulations. To work with the private sector or other external clients, the department must match the client in efficiency, effectiveness and timeliness in its internal procedures.

Respondents felt that they were able to be successful and grow because they had been granted the following freedoms from government bureaucracy:

- ability to move money and people around;
- ability to recruit the people they need;
- ability to adopt an industry-style accounting system using private sector people;
- ability to delegate signing authorities lower in the organization;
- freedom to let people explore opportunities, to be opportunistic;

- freedom to market their expertise/technologies where they wanted to, e.g., internationally; and
- freedom to adopt a marketing strategy and approach that fitted their situations.

CONCLUSION

The ability of a government R&D organization to respond both effectively and efficiently to the needs of internal clients is, in times of declining budgets, dependent on their ability to earn, retain and control external revenues. These revenues are needed to maintain the creativity and productivity of the laboratories, i.e., to hire new staff and obtain state-of-the-art equipment.

Generating these new revenues will only be accomplished if clients believe that the new "Business Oriented Research Centre" can deliver first rate technical advice or assistance on time and on budget. This cannot be accomplished under the confines of the present government bureaucratic structure found in most departments and agencies..

This report has outlined what some foreign organizations have done to generate new revenues and to grow. If an R&D organization is to be as successful, it must convince its senior departmental management to allow it to adopt most, if not all, of the processes or procedures used by these other successful foreign organizations. There will be a tendency to "cherry-pick" those actions and procedures which will fit comfortably into the present R&D organization's systems. This would be a mistake. The R&D organization has to undergo a complete change, as did DERA, if it wishes to both survive and to grow.

The status quo is not an option. Marginally changing the organizational structure and operational procedures are also not an option.

If Canadian government R&D-based departments and agencies fail to make the transition, and continue on their present course, inevitably some senior government official will ask the question, "do we need Canadian government laboratories when we can contract such work out to DERA, or another similar foreign government organization who have maintained their laboratories at the state-of-the-art, with creative, enthusiastic scientific personnel".

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