

A Taxonomy of UK National Laboratories

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National laboratories play an important role in the UK economy. AIRTO – the Association of Innovation, Research & Technology Organisations AIRTO is seeking to improve the understanding and awareness of the UK’s national laboratories by making this taxonomy of selected laboratories (mostly AIRTO members) publicly available.

How are national laboratories defined?

AIRTO estimates that the UK has over 25 national laboratories, each delivering a public mission.

There are possibly two distinct reasons for being accorded the status of national laboratory. For some organisations both reasons may apply:

- A. Being the ‘go-to’ authority/facility for a given discipline, fulfilling a strategic national purpose, independent of, and distanced from, commercial vested interest, with an element of national (government) funding, direction and control.

And/or

- B. Being a facility/service that provides open access to all (i.e., to the public at large, usually corporate organisations rather than private individuals), assisted by public funding for the public good, and not duplicating or competing with specialisations that could be obtained from (private) wholly commercial enterprises. (This reason could apply to Catapults Centres¹ for their defined areas of specialisation).

Key roles of national laboratories:

- Governments and businesses turn to them for help in the event of a crisis;
- They provide government with expert advice at other times;
- They provide access for everyone (including the public) to important information and expertise, particularly for growing small and medium enterprises (sometimes at subsidised cost);
- They deliver a public service (e.g., disease surveillance and associated provision of data for research and decision-making support).

Background to AIRTO’s analysis of national laboratories

AIRTO considers that improved understanding and awareness of the UK’s national laboratories could help create a more ‘joined up’ approach by government to utilising these valuable assets, within the context of its plans for national resilience, and to support the growth of the UK economy.

National laboratories play an essential and enduring - but often hidden - role, keeping our citizens safe and secure, helping facilitate trade, looking after the environment, and more.

Often the role of national laboratories happens ‘out of sight’, and they are not fully represented in consideration of the UK’s science and technology ecosystem. National laboratories have a variety of governance models (some public and some private) and more. Through an inclusive and coordinated arrangement, government could make full use of the national laboratories and their unique capabilities in the UK’s innovation landscape. They are a national asset. Sometimes these organisations are not always ‘factored in’ to the government’s strategic planning for scientific, R&D and innovation or delivery programmes.

¹ Catapult Centres have been included in this taxonomy, but it is recognised that these organisations may not perceive themselves as national laboratories, rather as innovation centres. Catapults are not government owned but do have a national and public service delivery role (with some public funding) that is relevant.

Key characteristics of national laboratories:

National laboratories are all unique but share some of the following characteristics (although no individual laboratory will have all of these).

1. Statutory functions:

- a. Underpin UK safety and security;
- b. Being the 'go-to' authority/facility for a given discipline, fulfilling a strategic national purpose, independent of, and distanced from, commercial vested interest, with an element of national (government) funding, direction and control (e.g., NPL, PHE);
- c. Where research output or capacity/capability is so important for national requirement that we can't afford to let the research activity diminish and be determined by the market (e.g., weather forecasting and climate modelling, National Measurement Service).

2. Capability:

- a. Clear purpose for national laboratory capability;
- b. Host and operate expert scientific facilities, archives and programmes;
- c. Strategic capabilities including enduring scientific evidence-based capabilities, infrastructure and knowledge;
- d. Unique capabilities: each national laboratory is unique in its focus.

3. Role for government:

- a. Department sponsor;
- b. Ring fenced funding for national laboratory capability;
- c. Government Department customers;
- d. Organisational influence on policy;
- e. Departmental influence on organisation for accountability to government.

4. How progress and performance are measured:

- a. Key Performance Indicators (usually externally monitored);
- b. Government/independent review.

5. Engagement with business

- a. Facility/service providing open access to all (i.e., to the public at large, but in this sense by public we usually mean corporates rather than individuals);
- b. Assisted by public funding to offer access and services for the public good, without duplicating or competing with specialisations that could be offered by wholly commercial enterprises (this characteristic applies to Catapult Centres)
- c. Work independently across government, industry and academia.

6. International role

- a. International standing;
- b. Representational role on international bodies and initiatives;
- c. Facilitate international trade and collaboration.

7. Location

- a. National laboratories are distributed across the UK giving the opportunity to support local, regional and national growth.

8. Status.

Examples include:

- a. Public Sector Research Establishment (PSRE);
 - i. Executive agency
 - ii. Trading fund or 'Gov Co'
 - iii. Vote funded government laboratory (a historic model no longer in use)
- b. Charity with commercial subsidiaries;
- c. Membership organisation;
- d. Private sector owned e.g., private equity owned.

About AIRTO

AIRTO is the Association of Innovation, Research and Technology Organisations. Its membership comprises approximately sixty of the principal organisations operating in the UK's Innovation, Research and Technology (IRT) sector. The IRT sector has a combined turnover of £6.9Bn, employing over 57,000 scientific and technical staff (equivalent to the academic staffing of the Russell Group of universities) and, for comparison, it is significantly larger than the network of Fraunhofer Institutes in Germany both in size and its scope of activities. The sector contributes £34Bn to UK GDP. AIRTO's members work at the interface between academia and industry, for both private and public sector clients. Members include independent Research and Technology Organisations, Catapult Centres, Public Sector Research Establishments, National Laboratories, some university Technology Transfer Offices and some privately held innovation companies.

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