

# STFC : STRUCTURAL OPTIONS PROPOSED BY THE ASTRONOMY FORUM \*

STFC has suffered from structural and financial difficulties which date back to its creation in April 2007. A number of issues involving oversight have been rectified as a result of implementation of recommendations from the RCUK Review of Physics and STFC Organisational Review. Over the past 2 years, ad hoc DIUS/BIS assistance with major international subscription costs resulting from exchange rate and Net National Income (NNI) changes is recognized in mitigating damage to STFC-led science.

Nevertheless, structural issues remain. The effects of a small shortfall in the STFC settlement have been disproportionate, resulting in a 25% cut to the volume of exploitation grants over CSR07, 25% cuts to education and training from 2010, major cuts to the current and future scientific facilities required by STFC's scientific user base, and the inability to maximise the return from large national facilities. The current outlook from the present budget is that grants will reduce even further so that the total cut planned is 45% to the 2007/08 level. These issues are set out in this document, together with proposed solutions.

## 1. International Subscriptions

### 1.1 PROBLEM

STFC subscriptions to major international organizations have increased by 29% between 2007 and 2009, largely as a result of exchange rate and NNI changes. These changes are almost entirely beyond the control of STFC, have so far been reimbursed from DIUS/BIS, but amount to ~50% of STFC's near-cash allocation in 2009/10, causing pressure upon scientific exploitation of these important international facilities.

### 1.2 SOLUTION

A system in which BIS or HM Treasury bears the risk for changes to exchange rate or NNI would enable greater certainty in forward planning. The exchange rate compensation should ultimately be cost-neutral, since BIS would benefit from positive fluctuations in exchange rates. International subscriptions to which STFC's user communities are the sole users should be tensioned against other components of their programmes, except for ESA subscriptions or bilateral agreements which are in the wider UK strategic interest.

## 2. National Facilities

### 2.1 PROBLEM

STFC remains an uncomfortable hybrid of two disparate organizations, with responsibility for (and thus active involvement in) *both* the science exploitation *and* the facilities provision on the PPAN side, but responsibility for only the facilities provision on the PALS side. Effectively, a small subset of the UK's science programme is tensioned against national laboratories serving communities primarily from other Research Councils. Coordination with grant funding for exploitation by the other research councils is poor, so that the UK does not receive an optimum return from its own facilities. This is a major structural imbalance that needs resolving.

### 2.2 SOLUTION

The scale and complexity of STFC argue for the two halves to be treated separately, at least financially. STFC would greatly benefit from a more transparent division between science and multi-disciplinary national facilities via separate Boards. Future science budget allocations in Astronomy, Space Science, Nuclear and Particle Physics and technology development thereof could be made explicitly for the Science Board within STFC, which would then gain a more executive role. Costs for the Facilities Board would be met at the time of the CSR by those Research Councils requiring the use of national facilities, in proportion to their proposed use. Membership of the Board running the national facilities should include representation across RCUK.

The action set out above would avoid the direct tensioning between national facilities and PPAN-scientific community. The national facilities would, of course, need to be tensioned against their user community. However, future STFC science budget allocations could still be distorted by (non-cash) costs associated with the depreciation of capital assets (e.g. Diamond, ISIS). A standalone National Laboratory, located on multiple sites

reporting to a stakeholder board, could provide large-scale engineering and computing facilities for both the public and private sectors. Innovation campuses sit naturally inside such an organisation, whereas ATC should remain with the technology division at STFC. The potential conflict of interest in deciding the balance between investments in its own establishments and in the support of university-based research would then no longer occur within STFC, which could refocus its efforts upon the delivery of scientific excellence.

### **3. Research grants**

#### **3.1 PROBLEM**

STFC research grant cuts, exceeding the 25% reduction in volume set out over CSR07, have been highly uneven across physics departments but have affected all of them. STFC funding typically accounts for anything between 25% and 80% of departmental grant income in a range of research areas such as astronomy, nuclear physics, particle physics, and applied mathematics. The consequences of cuts to grants include reduced effectiveness in the exploitation of current PPAN facilities and the design and build of new facilities, thus affecting STFC science, training, technology development and outreach. Astronomy and Space Science in the UK is currently world-leading, but this would cease, irreversibly, if cuts are implemented as currently planned.

#### **3.2 SOLUTION**

If proposed solutions 1.2 and 2.2 are implemented, stability to STFC's research grants line should be restored, so long as substantial future (non-exchange rate/NNI) increases in international subscriptions are avoided. In that case the level of exploitation grants would be balanced against solely PPAN domestic facilities and international subscriptions.

We stress that the long lead times for astronomy and particle physics projects, which can extend to a decade or more, is well-matched to the continuity provided by the Rolling Grant mechanism used successfully by the PPAN community. The combination of PPAN facilities, project grants and exploitation grants within one research council minimises fragmentation and maximises efficiency. Transfer of the PPAN grants line to another research council such as EPSRC is undesirable unless considerable changes are made to optimize timescales and support appropriate to the needs of the different scientific endeavours.

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\* The Astronomy Forum is an independent, authoritative group drawn from the UK community at professorial level to discuss issues and, as appropriate, present its views to STFC, BIS and other bodies. Forum members try to represent the views of all astronomers in their respective universities. The Forum complements the activities of the RAS, which has a broader remit.