



STFC Town Meeting

Speakers:

Nigel Glover

Particle Physics Advisory Panel

Ruth Gregory

PPAN

John Womersley

Director Science Programmes



The STFC Science Programme 2010 – 15

John Womersley

Director, Science Programmes

December 2009

Prioritisation Process

- Started with Advisory Panels and community consultation
- PPAN and PALS prioritised the projects in their areas in October, using advisory panel inputs
- in October Science Board defined target funding envelopes for each panel:

	10/11	11/12	12/13	13/14	14/15
PALS	£94M	£112M	£116M	£118M	£118M
PPAN	£375M	£373M	£347M	£350M	£348M

- Each panel was also asked to explore \pm £10M scenarios



Recommendations from Science Board

- PPAN and PALS met in November and developed prioritised programmes
 - PPAN felt programme balance would suffer within the base envelope, and requested +£10M
- Science Board met December 7th/8th
 - Discussed the budget envelopes and plans for each area
 - SB recommended a combined programme within the baseline envelopes it had set at the October meeting

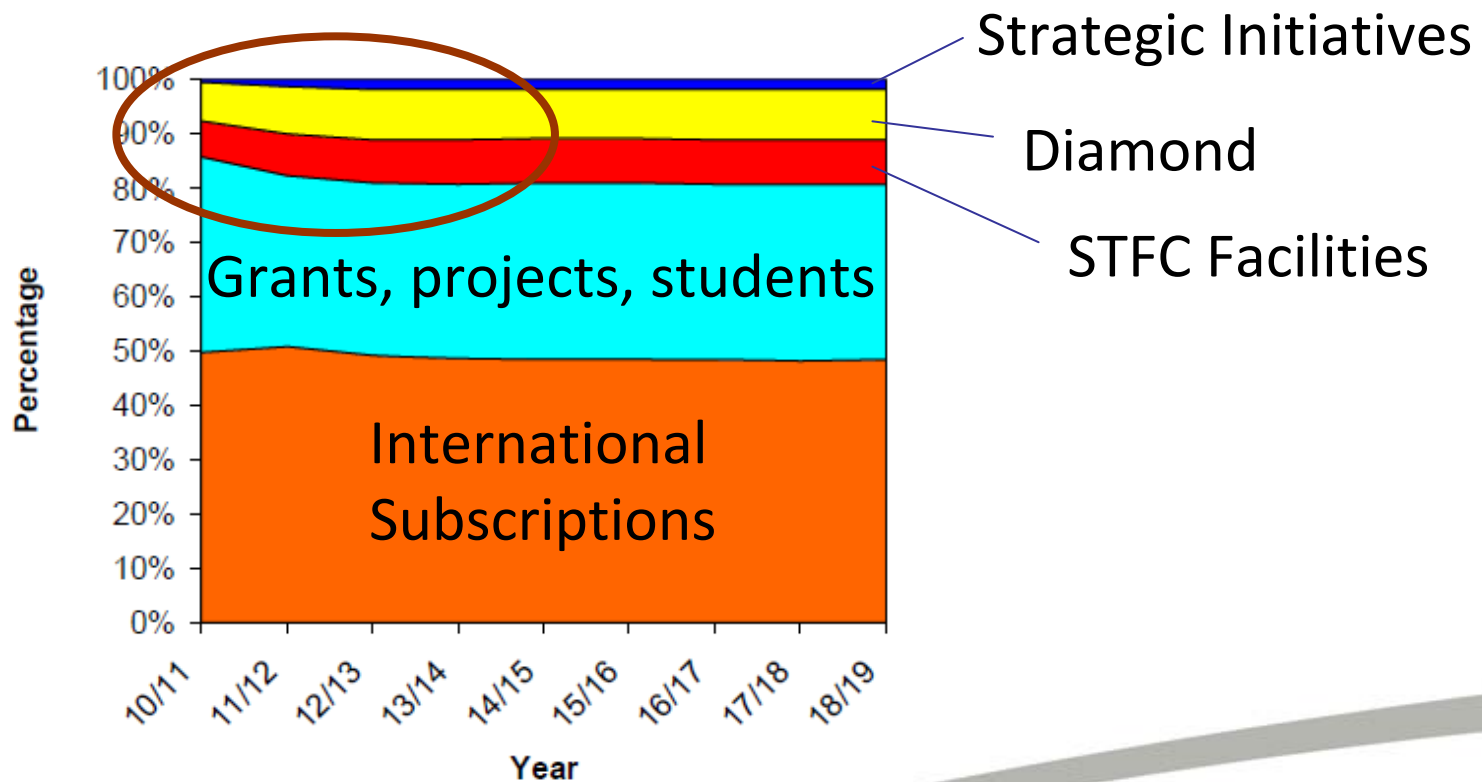


SB recommended programme

- Balances the budget from 11/12 onwards (flat cash)
- Supports campuses and gateway centres
- Supports new accelerator centre at DL
 - also Cockcroft Institute and MICE
- Assumes international subscriptions all held to flat cash
 - except ESRF ↓ (2016) as Diamond ↑
 - any ESO subscription growth for ELT will need to be found within the astronomy programme
- Reduces new studentships and fellowships by 25% across the board



- Includes a small strategic shift of resources, driven by the goal of supporting the fuller exploitation of our facilities
 - *maximising the impact of our investments*



SB recommended programme

Focuses support on highest priorities within each area

Support (at reduced funding levels) the following projects:

- Particle Physics
 - ATLAS + upgrade, CMS + upgrade, and LHCb at LHC, GridPP, T2K, SuperNEMO, neutron EDM, IPPP at Durham
- Nuclear physics
 - NUSTAR at FAIR



SB recommended programme

- Astronomy
 - ESO telescopes (VLT, VISTA and ALMA), R&D for ELT and SKA; KMOS, Dark Energy Survey, SuperWASP, operation of ING, and JCMT (SCUBA2) to 2012
- Space
 - Aurora, Cosmic Vision (including LISA, LISA Pathfinder and Solar Orbiter missions), GAIA, Rosetta, Bepi-Colombo, Herschel, Planck and JWST (MIRI) missions, post-launch support for Swift, Stereo and Hinode
- Particle Astrophysics
 - Gravitational wave searches



Understanding the Universe

In the next decade:

- Our new ground and space-based astronomical observatories will help to reveal the large scale structure of the Universe and better understand the nature of dark matter and dark energy
 - Our experiments at the LHC will reveal the basic laws of nature at energies where our current models fail
 - We expect to directly detect, for the first time, gravitational waves from distant cosmic phenomena
 - We will explore the origins of the elements at FAIR
 - We will land a rover on the surface of Mars and search for evidence of life
- ... and much more



SB recommended programme

- Increased support for Diamond
 - though not as much as the full aspiration
- ISIS
 - though not as much as the full aspiration
- ILL
 - Flat cash
- ESRF
 - Reduced UK share after 2016
- Vulcan – 10 PW upgrade
HiPER – 2010 fusion review



STFC Executive and Programme Boards

- met for a full day discussion of this programme on December 11th
 - Chair of Science Board also participated by teleconference
- noted and appreciated the large amount of hard work that has gone into the development of these recommendations.
- Thanks are due to the advisory panels for their consultation inputs, to the PPAN and PALS committees and the Science Board for carrying out a thorough and careful job in extremely difficult circumstances, and to the office staff who have supported this process.



STFC Council

- Met on December 15th
- Reviewed in detail and accepted the recommended programme
- These priorities give us a firm basis for prudent planning in tough times.
- They show that STFC can present an affordable, sustainable plan within a constrained budget.
- Given the financial envelope, the plan does imply painful reductions in support in all the areas of science supported by STFC.



Studentships and Fellowships

- STFC Council agreed that the proposed reduction in the number of new studentships and fellowships was regrettable but unavoidable in the circumstances
- Note that this reduction is a roll-back of previous increases and matches the overall volume reduction in the programme.
- We hope that it may be possible to restore studentships and fellowship funding to higher levels once the economic situation improves, given the strategic importance of the STEM skills agenda



Implementation Plan

Plan will be developed by the Programme Board

- respecting the priorities set by Science Board and the overall funding envelope
- aim to support managed withdrawal from those projects that we seek to terminate, working with our UK and international partners. This may in some cases mean allowing existing commitments to roll out.
- explore where it may be important to continue to fund some areas that might otherwise lose support, on the basis of their strategic importance and potential impact



Implementation: New Light Source

- We have decided not to proceed with the New Light Source project at the present time, despite its potential scientific importance and transformative capability, because of the impossibility in the current climate of funding the necessary R&D (£20M) nor the eventual operations costs of such a large facility (~ £50M p.a.?)

As part of the implementation plan we will retain and redirect staff effort towards the new accelerator centre.



Implementation: Nuclear Physics

- The EPSRC/STFC review of nuclear physics and engineering (chaired by Dr. Sue Ion) was concerned that further reductions in nuclear physics support might leave the programme subcritical
- Science Board discussed and did not support this view, since the NP projects are international collaborations
 - SB recommended support for NUSTAR only
(Plus ALICE at CERN also supported through grants to 2012)
- We will investigate whether it makes sense to support a combination of the instrumentation-focused AGATA project as well as NUSTAR, within the same overall envelope



Implementation plan: Telescope facilities

- We will continue a phased withdrawal from the Hawaii and Canary Islands telescope sites, as already foreseen when the UK joined ESO.
- This will include managed withdrawal from the UKIRT telescope
 - UKIDSS survey
 - We will not be able to support the UKIRT Planet-Finder instrument
- We endorse UK withdrawal from the Gemini telescope partnership effective on December 31, 2012.
 - Northern hemisphere access needs examining



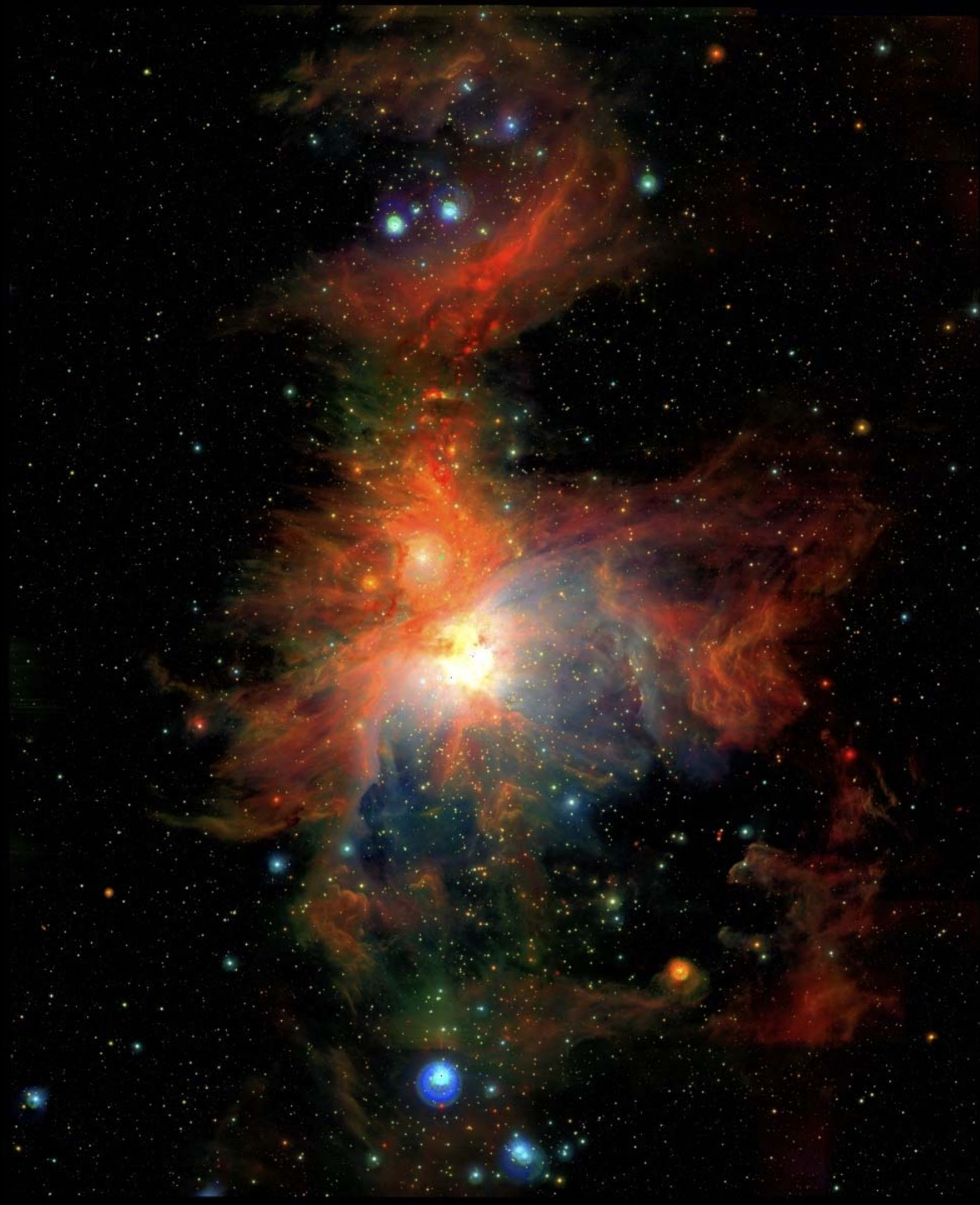


VISTA telescope
Accepted by ESO December 2009

VISTA
Telescope
2009

M42 nebula

ZJKs – 600 sec



Implementation: PPAN projects

- projects where we will negotiate towards a managed withdrawal, in many cases by allowing existing commitments or grants to roll out over the next 1-2 years:
ALMA Regional Centre, AGATA, ALICE (CERN), AUGER, Boulby Laboratory, Cassini, CDF, Cluster, DØ, electron EDM, Inverse Square Law test, JIVE, LCABD (support for key ILC people), Liverpool Telescope, LOFAR, MINOS, PANDA, ROSA, SOHO, Venus Express, XMM
- Some projects may continue to be supported for strategic reasons
e-MERLIN (because of SKA); ...



New PPAN projects unable to support

- This does not mean we rule out participation for all time, but where there are SOI's or proposals in the system, we cannot see how to support them at present:

ANITA, Accelerator R&D for CLIC, Clover Follow-On, CCAT, COMET, CTA, Detector R&D, ELENA, Einstein Telescope, ISOL at SPIRAL2, JPARC neutrino upgrades, LHCb upgrades, LHeC, UK involvement in LSST, NUSTAR additional contributions, MoonLITE, MROI, NA62 at CERN, Next Generation Dark Matter experiment, NG1df, SNO+, Super B factory



Particle Physics advisory panel

- Highest Priority: **ATLAS, CMS exploitation and upgrades; LHCb exploitation; nEDM, eEDM, T2K, theory**
- Involvement essential: Direct dark-matter search experiments; LHCb upgrade; Linear Collider **accelerator and detector R&D**; neutrino detector R&D/ **neutrino factory accelerator R&D**; **Neutrinoless double-beta decay; Tevatron experiments**
- Limited involvement: High-precision muon experiments; **MINOS**; NA62
- Future opportunities: High-luminosity flavour factory; Future high-precision kaon experiments; LHeC; Muon collider
- Involvement not foreseen: CNGS; Precision charm experiments; $g - 2$; Belle; MEG; Nova; Precision neutrino mass experiments; Reactor neutrino experiments.

Projects supported

Managed withdrawal or roll-out of commitments



Science & Technology
Facilities Council

Astroparticle Physics advisory panel

- Essential:
Gamma rays, **Neutrinos**, Dark Matter, **Gravitational Waves**
- Essential for exploitation of current facilities:
CMB-Polarisation, **Cosmic rays**
- Encourage innovative ideas and support for small projects:
Inverse Square Law test, eEDM

Projects supported

Managed withdrawal or roll-out of commitments



Implementation: Universities and Grants

- Research Councils UK has agreed that the other Research Councils will make up to £14M available to STFC from within the Science and Research Budget in FY2010-11.
- This exceptional action will assist STFC to move to a sustainable new strategy in line with the level of resource already provided to STFC by Government in CSR07.
- In particular it will remove the risk that STFC's existing research grants to universities for scientific exploitation activities would need to be terminated early.

This is good news



Implementation: Universities

- By the end of any transition period, there will still have been a significant reduction in grants and projects support for universities
 - In addition to the 25% grant reductions from CSR 07
- We will work with the universities, Funding Councils, EPSRC and other stakeholders, to understand the impact on physics departments and ensure that physics in the UK remains vibrant
- Continued Support for Science in Society Programme at current level



Internal savings

- 20% of savings in 2010-11 will come from internal cuts to STFC operational budgets and staffing costs (£11M)
 - RAL, Daresbury, Swindon, UKATC
- The plan includes ongoing savings each year to re-invest in science
- The reductions in project support described earlier will also affect staff within STFC departments who are funded as part of project grants (or through PPGP)



Where do we stand?

- We now have clear priorities and direction
- We have a five-year forward-look programme that is affordable and sustainable
- We have made some clear decisions
 - NLS, UKIRT, Gemini, XFEL, ...
- We still have many areas where the implementation plan needs to be fleshed out
 - Will be done in conjunction with our partners





Move from discussing our priorities
to
Discussing how to implement them