

Update from Science Board

- **What we do**
- **(Computing related) updates + current issues**

Tara Shears, for Science Board.

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Science Board terms of reference:

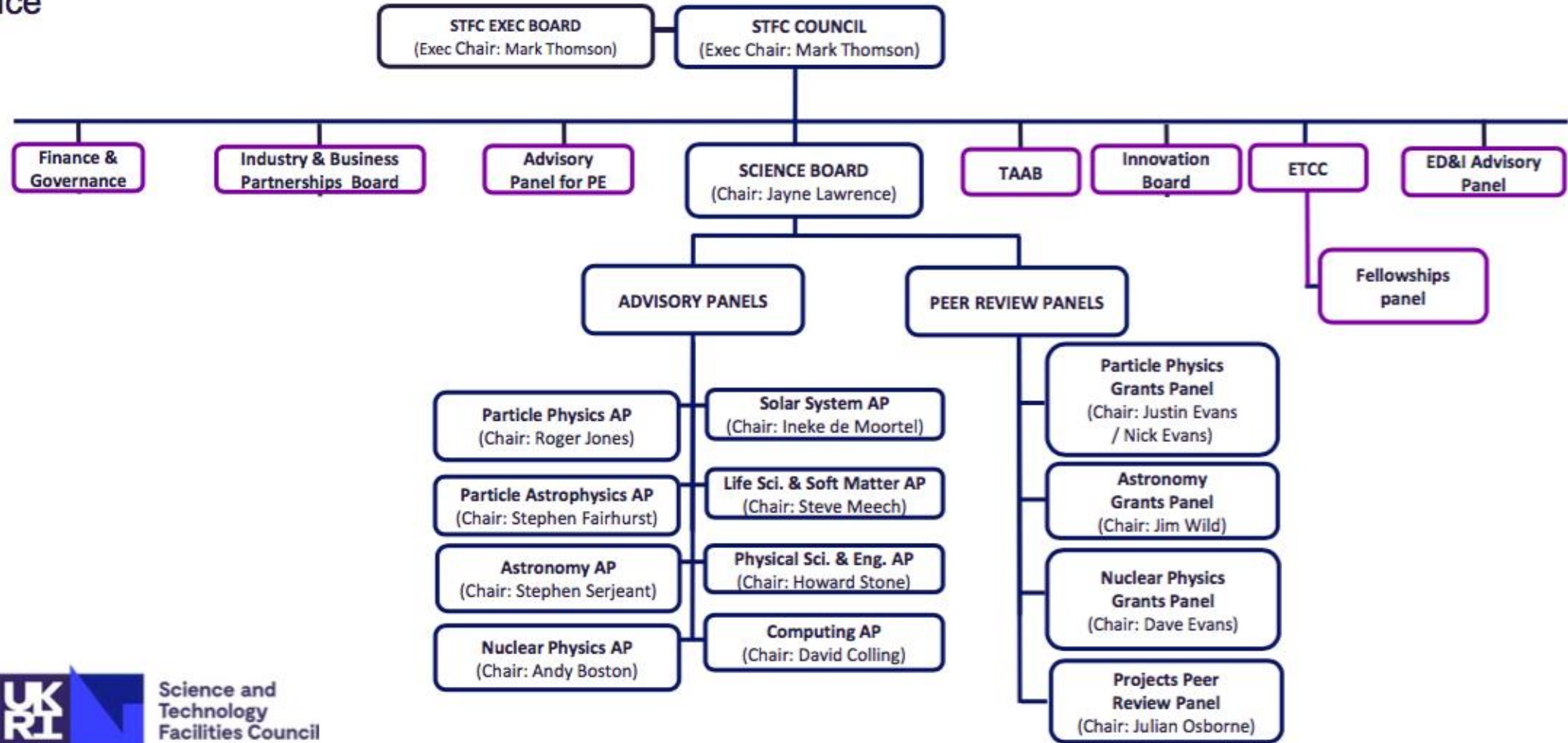
“...to provide the STFC with a strategic scientific overview and assessment of, and science advice on, **all** of the programmes STFC supports.”

Reliant on:

- Advisory panels
- Peer review panels
- Other (expert) review committees
- You, the community.

STFC Advisory Structure

advice



Science Board Membership:

Jayne Lawrence (Manchester) (Chair)

Tara Shears (Liverpool) (Deputy Chair)

Martin Bauer (Durham)

Andrew Beale (UCL)

Stewart Boogert (Royal Holloway)

Bill Chaplin (Birmingham)

Andrew Coates (UCL/Mullard)

Gavin Davies (Imperial)

Karen Edler (Bath)

Keith Grainge (Manchester)

Stephen Hayden (Bristol)

David Ireland (Glasgow)

Martin King (Royal Holloway)

Paul McKenna (Strathclyde)

Alex Murphy (Edinburgh)

Robin Perutz (York)

+ 14 **non-core** members

STFC Office: Karen Clifford

(new / changed)

Updates and current issues

Advisory panel interactions:

- CAP (+IRIS) in October

Strategic reports:

- Programme evaluations
- (Upcoming) Balance of Programmes 2

Projects:

- GridPP 2020-24 (funded) - **concerns** about meeting capital costs
- Dirac operations 2019-22 (funded) – **concerns** about electricity costs being met by government capital funding (STFC has insufficient funds).
 - (both funded at the level permitted by programme funds)
- Priority projects exercise

CAP (+IRIS) reports:

Conclusions

- Well, these should be obvious...
- Computing is ubiquitous and needed for everything that we do.
- We need the right level of the right sort of hardware - high throughput and high performance. **We are looking at potentially serious shortfalls in both.**
- We need the right infrastructure between the hardware.
- We need the right, well trained, highly skilled people ... **they are key.**

(from CAP report)

- **We have raised the impending significant shortfall in computing resources with Council**
- **These points are also picked up in the programme evaluations**

Programme evaluations:

Three year rolling programme to “define a balanced programme of excellent science within a realistic financial planning envelope” in each PPAN area, followed by a balance of programmes exercise:

- Accelerator Science, Astronomy, Computing, Nuclear Physics, Particle Physics and Particle Astrophysics have been evaluated
- **All evaluation reports were made public in December 2019**

Findings:

Recommendations:

- **Projects:** ensure adequate computing provision for projects throughout lifespan, include costings at conception; improve DIRAC funding mechanism; encourage projects with common computing requirements to collaborate and share best practice
- **Partnerships:** should enhance collaboration within discipline and UKRI; link with industry to improve skills development
- **Careers:** Invest in more CDTs, early career fellowships, improve diversity and returner support
- + pay attention to hardware developments, effect of Brexit, support outreach

(All 16) recommendations fully supported by CAP.

Findings:

Particle Physics:

- Recommendation 6: STFC should consider how it should **provide resources to address the long term software and computing needs of the programme**, especially in the context of the challenge of the HL-LHC and other large experiments.
- Recommendation 7: STFC should examine the need and justification for **a new initiative in computing efficiency and advanced techniques**, focussed in the first instance on the needs of HL-LHC, and complementary to national projects in computing infrastructure

Findings:

Astronomy:

- Recommendation 12: Large-scale computing is an integral part of modern-day astronomy, both for modelling and data analysis and should be funded as such. **Large-scale computing needs a substantial uplift** if we are to retain (or regain!) our international competitiveness as current provision is a long way below requirements. Support would have to be multi-tiered with local, regional and national facilities. Such a multi-scale structure would allow the most efficient use of computing facilities at each level. **Hardware infrastructure needs to be accompanied by sufficient staff provision** to give local support e.g. for data access issues, software compatibility etc. In addition, the Panel strongly recommends that **STFC continues and preferably increases its support for DIRAC.**
- Recommendation 13: There is a growing need for **more money to fund data and analysis needs that go hand in hand with being part of “Big Data” facilities such as LSST and SKA.** This plan needs to be put in place early.
- Recommendation 14: **A clear career structure for astronomical software engineers** should be established.

Balance of Programmes 2

Balance of Programmes 2 will take place in first half of 2020

- Panel = Science Board + programme evaluation chairs will be invited
- Financial scenarios to be defined (depends on future funding levels...)
- Final report to be made public.

We need:

- (Any) Updates in community priorities since the evaluation
- (Any) Updates in activities and future opportunities since the evaluation
- Comments on evaluation findings welcome
- Please give info to CAP (to give to us), or **raise here**
- (request to advisory panels imminent)

Developing a World Class Research Programme / “Priority projects”

CAP, along with other AP/similar bodies, submitted ideas for the Priority Projects/WCRP scheme.

Update process:

- Major review of the ‘Developing a World Class Research Programme’ priority list every three years; next review in 2021;
- Annual process for the advisory panels to consider any urgent developments; constant overall length of list

Science Board input; commenting on scientific case

Some projects have been submitted to UKRI funding calls (see Mark’s talk)

Developing a World Class Research Programme / “Priority projects”

Should the process evolve further?

Some issues have been identified:

- Other Councils approach this a little differently (eg EPSRC Big Ideas scheme)
- Priority project/WCRP list may not be the same as community roadmaps; tension
- WCRP exercise has generated projects (by design)
- Can we generate ideas for grand challenges as well as projects?

We are discussing the approach in Science Board.

Your views and input are welcome (here or email us).

Summary of current issues:

Funding level – what will it be?

Considering Priority Projects approach

Main short term business: Balance of programmes 2