Particle Physics Technology Advisory Panel and the Challenge to the UK

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Why a PPTAP?

- The European Strategy for Particle Physics Update identified an immediate need for active R&D programmes for future detectors and accelerators
- The European Committee for Future Accelerators (ECFA) called on to establish an R&D roadmap for detectors
- The European Laboratory Directors Group (ELDG) called on to establish an R&D roadmap for accelerators
- Work started in autumn 2020 and expected to report to CERN Council in December 2021
- UK input needed for these processes and to inform UK direction

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The UK Challenge…

- Identify where UK scientific interests and technological strengths lie
- Understand where the main technological challenges and opportunities are and how the UK can contribute
- Look for areas where there are commonalities with other UK science areas to boost this contribution
  - Not necessarily just STFC science
- Long-term projects need long-term plans – and we have to start early
- Get organised and get funded! (and not if not…)

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- Aims
  - overview of the emerging R&D roadmaps
  - understand the case for investment in R&D
- Need to look at current programme and landscape
- Gather evidence
- Look for strengths and synergies
- Explore routes forward
- Output - report autumn 2021

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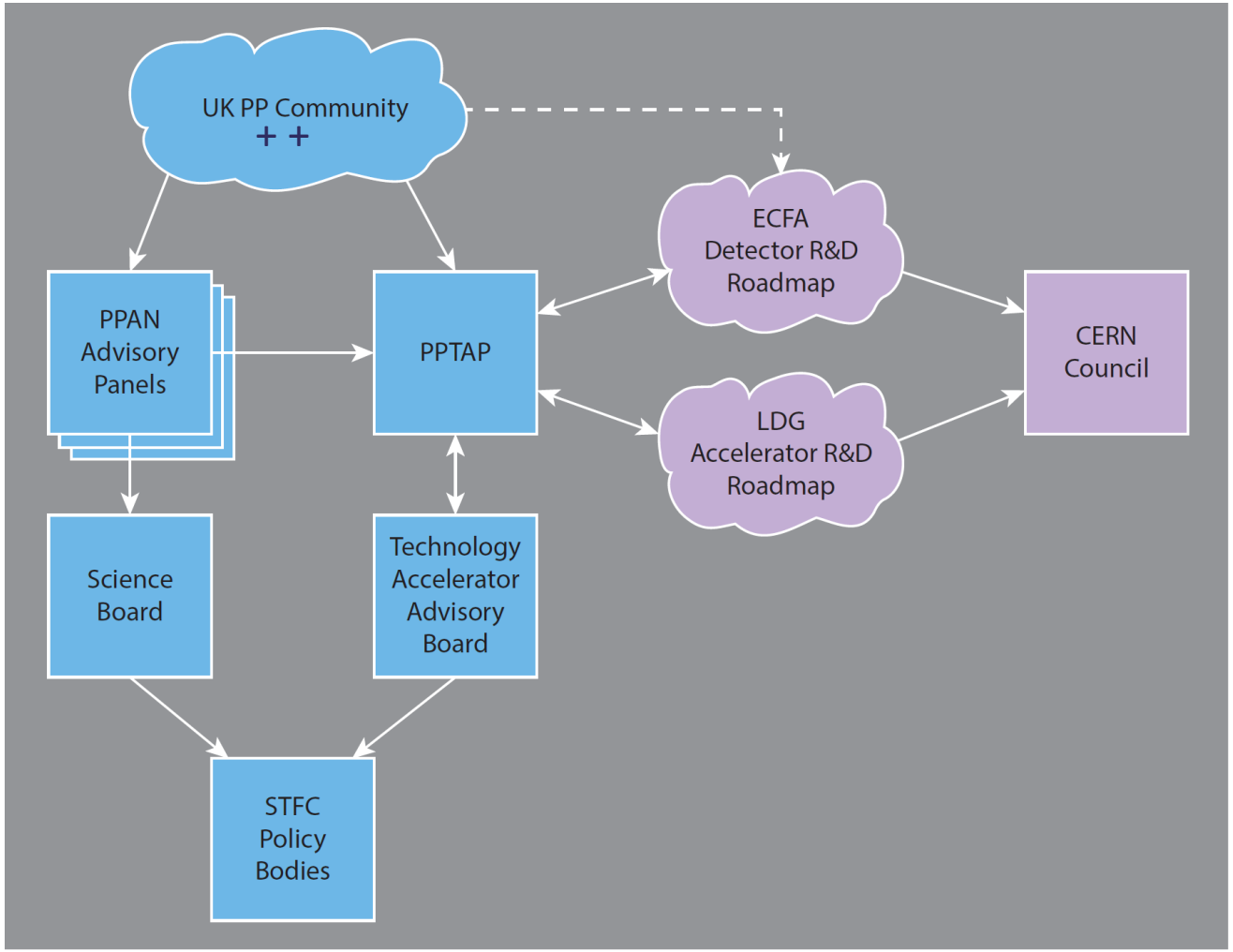
Roadmap activities



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This may look a tiny bit familiar…!

Technology & Accelerator Advisory Board

- Advise STFC on the development and maintenance of long-term technology and accelerator strategies. This includes identifying and prioritising opportunities for its technology and accelerator programmes;
- Provide advice on underpinning technology and accelerator development to support large scale facilities;
- Consult with the appropriate communities via STFC's advisory panels to ensure that technology and accelerator strategies remain the most viable for the UK;
- Consider possible new areas of activity, new collaborations and partnerships, giving advice on their strategic importance and the level of resource required to deliver them;
- Identify areas of missing capacity or capability;
- Advise on prioritisation within STFC's technology and accelerator programme, through the STFC programme evaluation process and specific ad-hoc reviews, as required;
- Identify potential avenues for the exploitation of technology developed as part of STFC's programme.

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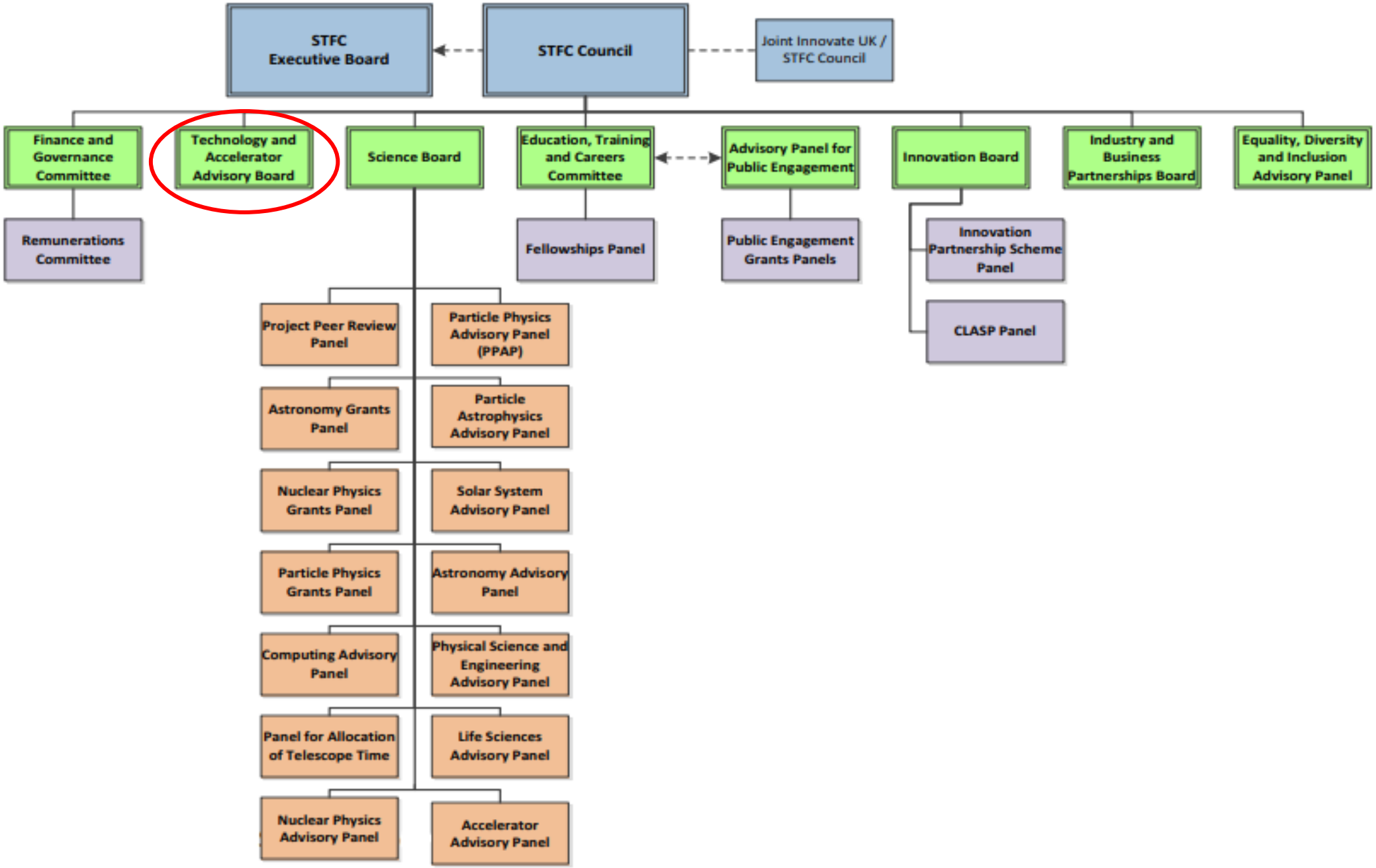
STFC Executive Board
STFC Council
Joint Innovate UK / STFC Council
Finance and Governance Committee
Technology and Accelerator Advisory Board
Science Board
Education, Training and Careers Committee
Advisory Panel for Public Engagement
Innovation Board
Industry and Business Partnerships Board
Equality, Diversity and Inclusion Advisory Panel
Remunerations Committee
Fellowships Panel
Public Engagement Grants Panels
Innovation Partnership Scheme Panel
CLASP Panel
Project Peer Review Panel
Particle Physics Advisory Panel (PPAP)
Astronomy Grants Panel
Particle Astrophysics Advisory Panel
Nuclear Physics Grants Panel
Solar System Advisory Panel
Particle Physics Grants Panel
Astronomy Advisory Panel
Computing Advisory Panel
Physical Science and Engineering Advisory Panel
Panel for Allocation of Telescope Time
Life Sciences Advisory Panel
Nuclear Physics Advisory Panel
Accelerator Advisory Panel

European Particle Physics Strategy Update

"Organised by ECFA, a roadmap should be developed by the community to balance the detector R&D efforts in Europe, taking into account progress with emerging technologies in adjacent fields."

"The roadmap should identify and describe a diversified detector R&D portfolio that has the largest potential to enhance the performance of the particle physics programme in the near and long term."

"Detector R&D activities require specialised infrastructures, tools and access to test facilities."

"**The community should define a global detector R&D roadmap that should be used to support proposals at the European and national levels**."

Extracted from the documents of 2020 EPPSU, https://europeanstrategyupdate.web.cern.ch/

For previous presentations on the Detector R&D Roadmap see Plenary ECFA: Jorgen D'Hondt (13/7/20) & Susanne Kuehn (20/11/20) (https://indico.cern.ch/event/933318/ & https://indico.cern.ch/event/966397/)

More roadmap process details at: https://indico.cern.ch/e/ECFADetectorRDRoadmap

PPTAP Membership

Accelerators
Prof Deepa Angal-Kalinin, ASTeC STFC
Prof Robert Appleby, Manchester
Dr Chris Rogers, ISIS STFC
Ben Shepherd, ASTeC STFC
Prof Matthew Wing, UCL

Computing
Dr Neil Chue Hong, Edinburgh
Dr Tim Scanlon, UCL

Observers
Prof Phil Burrows, JAI
Prof Jim Clarke, ASTeC STFC
Charlotte Jamieson, PD, STFC

Detectors
Prof Adrian Bevan, Queen Mary
Prof Kai Bongs, Birmingham
Rob Halsall, Technology STFC
Dr Kimberley Palladino, Oxford
Dr Angela Romano, Birmingham
Dr Craig Sawyer, STFC RAL
Dr Eva Vilella-Figueras, Liverpool
Prof Iacopo Vivarelli, Sussex

Prof Max Klein, Liverpool, RECFA
Prof Dave Newbold, PPD, STFC
Prof Peter Ratoff, CI

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- Webpage
- Meetings: monthly since December
- Gathering information
  - Community survey closed 12th March
    - Circulated via PPAP, PAAP and other professional networks
  - Circulating ECFA and ELDG questionnaires
  - Subject area community meetings/workshops

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Community Survey

Text at the top of this page reads: **When answering the questions, responses should not be constrained by known funding pressures, but should reflect affordable propositions.**			
2	**Focussing on the field in which you work, but also considering the broader accelerator, detector and computing ecosystem, what do you see as the UK's main strengths and weaknesses in technology R&D? (200 words)**	Text	Max 250 words
3	**Focussing on the field in which you work, and thinking about technology and R&D needs, what do you view as the major technical challenges in your field at the moment? (200 words)**	Text	Max 250 words
4	**What do you see as the biggest barrier to achieving the aims of your field in the next 10-20 years? (200 words)**	Text	Max 250 words
5	**What problems do you foresee in achieving the aims of your field from 2040? (200 words)**	Text	
6	**What will be the impact of not addressing these problems outlined in question 5? (200 words)**		

21 questions in total – included the option for respondents to agree to further contact – we had 63 detailed responses

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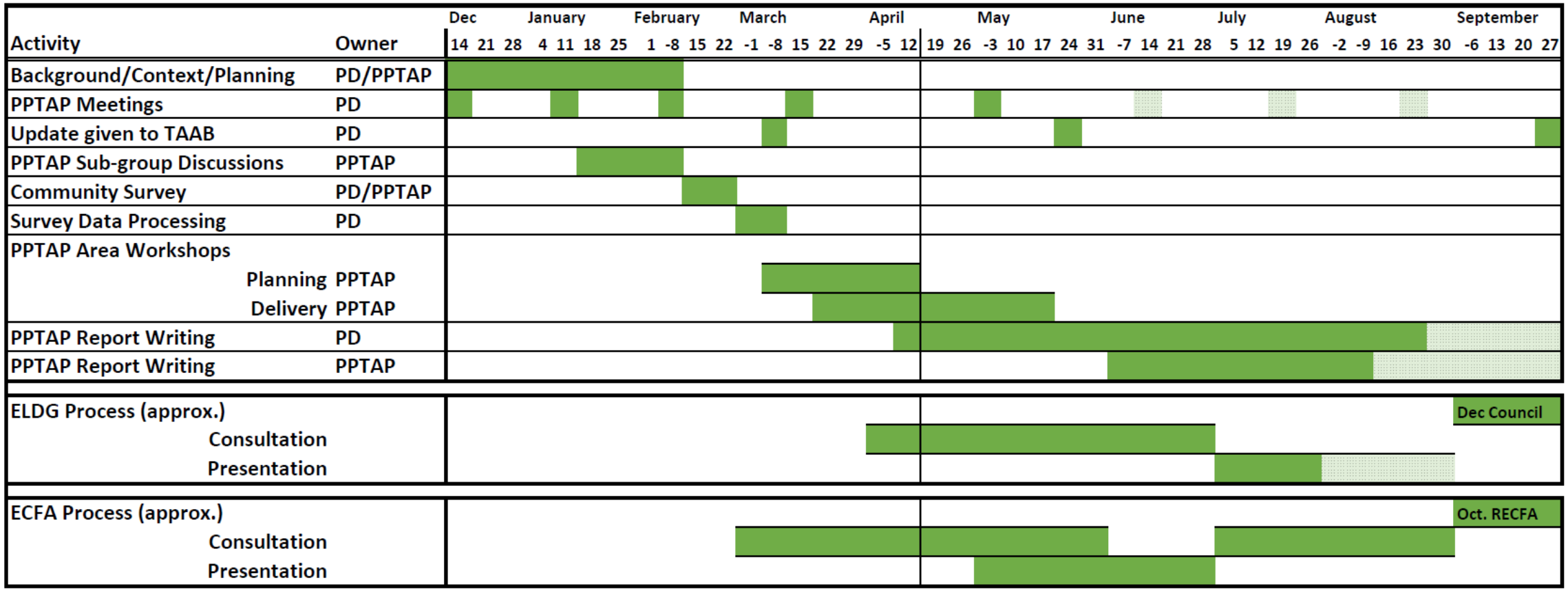
Community Workshops/Meetings

- Envisaged over April/May/June
- Focus on specific sub-areas e.g. accelerators, calorimetry etc.
- These aim to fill in any gaps, provide context to questionnaire responses etc.

Community Meetings (so far)

- Accelerators
  - Preliminary meeting on March 31st
  - Further meetings in due course
- Computing
  - Specific community survey in May
  - Workshop in June
- Detectors
  - This workshop!
- Particle Astrophysics
  - Series of short, informal meetings, most of which have happened – DM, GWs, neutrino astrophysics, gamma-ray astrophysics

The Timetable



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Thank you

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