

**Consultations on the panel criteria and working methods (2018/02) and draft guidance on submissions (2018/01)**

Research England

Submission from the Royal Academy of Engineering

October 2018



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*As the UK's national academy for engineering, we bring together the most successful and talented engineers for a shared purpose: to advance and promote excellence in engineering.*

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### **Introduction**

1. The Royal Academy of Engineering welcomes the opportunity to submit evidence to the consultation on the second Research Excellence Framework (REF). The Academy's Fellowship represents the nation's best engineering researchers, innovators, entrepreneurs, and business and industry leaders.
2. The Academy has engaged in extensive consultation with the UK's engineering community throughout the development of REF 2021 to date. In early 2017 the Academy held consultation events in London, Cardiff and Edinburgh, to inform the technical consultation on the second Research Excellence Framework. This was followed by a further workshop with the REF team and the engineering community in June 2017, focused specifically on the structure of the units of assessment (UOA) for engineering.
3. The announcement in September 2017 that there would be a single UOA for engineering in 2021, rather than the four for REF 2014, was a very significant change for the engineering community. In response, the Academy acknowledged that continued discussion between the engineering community, the funding councils and the engineering sub-panel would be critical to ensure the proposed change is successful. Consequently, on Monday 8 October 2018, the Academy convened a town hall meeting to discuss how the proposed panel criteria and working methods for REF2021 will affect engineering submissions. The meeting was attended by over 70 engineering researchers who will be involved in REF 2021 engineering submissions from a wide range of institutions. The event was held in partnership with the REF team, with Professor John Clarkson FEng, Chair of sub-panel 12, Professor David Price, Chair of Main Panel B and Dr Kim Hackett, REF Director in attendance to hear the views of the engineering community and where appropriate to respond to them. The event was Chaired by the Academy's President Professor Dame Ann Dowling OM DBE FEng FRS and former Chair of Main Panel B for REF 2014.
4. The town hall elicited a wide-ranging discussion, focussed on engineering within REF 2021. This note draws directly from the town hall event, capturing the key points made and is the Academy's response to the consultations on the panel criteria and working methods, and draft guidance on submissions.

### **Sub-panel membership**

5. The amalgamation of engineering into a single UOA will result in the largest sub-panel in terms of submissions by a significant margin. Consequently, the sub-panel will need to have sufficient membership not only to deal with the volume of outputs and impact case studies that will need assessing, but also to ensure there is sufficient expertise to cover the full breadth of engineering. It was suggested that increases in sub-panel membership will be necessary and should give specific consideration to international experience, 'research users' and representatives from post-1992 institutions. With regard to the assessment of impact case studies, it was highlighted that engineering impact goes beyond the domain of 'industry' and may include impacts to education or

policy; hence it is important to ensure availability of a broad range of suitable 'research users' for assessment.

6. It was noted by the REF team that there will be further rounds of recruitment to the engineering sub-panel, both for output assessors and 'research users'. Additional recruitment will be used to address any gaps in expertise as well as to ensure sufficient numbers to undertake the anticipated volume of assessment. The survey of submission intentions will help to inform further sub-panel membership recruitment.
7. For REF 2014, it was noted that the volume of submissions to the 'General Engineering' sub-panel meant that each output was assigned to two reviewers, while other engineering sub-panels had three reviewers. As yet, it is unclear how this will operate for REF 2021, although there was a clear desire for a consistent approach from the engineering community. The REF team noted that information on the estimated number of submissions provided by the survey of intentions should assist in reaching a final decision.

### **Output tags**

8. For Sub-panel 12, there are multiple ways in which outputs can be tagged, (topic, research group and output sub-profile). Considerable time was dedicated to discuss this by the engineering community at the town hall event. In summary: The 'topic' tag for each output will be used to allocate appropriate reviewers; the 'research group' tag will be used to assist in the identification of strengths in the feedback; the 'output sub-profile' tag will be used to assign each output to one of the output sub-profiles. Further discussion is given below.

#### *Taxonomy based on UOA descriptor*

9. Each output submitted to sub-panel 12 will require mandatory tagging for its 'topic' with up to three of the UOA descriptors drafted for sub-panel 12. The intention is that the taxonomy will assist with allocating outputs to suitable reviewers. It was noted that there may need to be some degree of flexibility and Prof Clarkson invited those present to suggest additional descriptors via their institutional responses. At the meeting, it was suggested that pedagogy should be included.
10. There was discussion about whether the alignment of the sub-panel members to their particular areas of expertise by UOA descriptors should be made public. While such transparency should allow for increasing confidence in the engineering community that the sub-panel has expertise across the whole breadth of engineering, there would be risks associated with individual reviewers being identified for assessing specific outputs.

#### *Output sub-profiles*

11. For Sub-panel 12, the draft guidance proposes the creation of output sub-profiles for institutions that may wish to receive feedback for distinct areas of engineering covered in their submission. Institutions have the option of assigning each output to one of seven categories, which broadly align with the engineering UOAs for 2014. These categories will be used to provide output sub-profiles, in confidence, to the head of institution where requested.
12. At the meeting, it was suggested by the REF team that institutions could use the sub-profiles to categorise their outputs into up to seven categories of their own choice, irrespective of the name of the category. Such flexibility would allow institutions to match sub-profiles to their internal institutional structure. This approach may give

institutions useful feedback at a level that is more granular than the overall output profile to support performance management. However, it would not allow for output sub-profiles that in some way retain visibility for distinct engineering disciplinary areas, such as the seven categories proposed.

13. The draft guidance states that output sub-profiles will be shared in confidence with heads of institutions. However, it remains unclear whether that confidentiality will be maintained once the information has been shared with institutions. There is still a risk of attempts to build unofficial rankings by engineering disciplines based on these output sub-profiles.
14. Given the potential complexity of optional sub-profiles, the final guidance will need to be very clear about the implementation of sub-profiles and also the rationale for their use. Clarification is also needed about how the output sub-profiles will be developed. Will they just be the summation of the individual tagged output scores, or will there be an assessment that the output matches the tagged area? It may also be valuable to consider the possibility for institutions to tag outputs for more than one sub-profile.

### **Outputs beyond engineering**

15. Given the breadth of engineering, it is possible that there may not be sufficient expertise within the sub-panel for the assessment of certain outputs submitted to sub-panel 12, such as outputs covering economics. While further recruitment to sub-panel 12 should address significant gaps in the panel's expertise, it was noted that these concerns should also be addressed by the introduction of interdisciplinary advisors, the interdisciplinary identifier and the ability of the sub-panel and the submitting institutions to request cross-referrals.
16. Based on the draft panel criteria, it was suggested it may be challenging for institutions to determine if submissions should be made to UOA 12, engineering or UOA 11, computer science and informatics. It was noted that it is possible for the same output to receive different scores depending on which UOA it was submitted to and the criteria laid out by each sub-panel.

### **Use of citation data**

17. Citation data and impact factors will not be used in assessment of engineering outputs. For engineering, the most common and developed form of metrics, bibliometric indicators, including journal name, have not been found to provide a robust indication of research quality.

### **Output narrative**

18. As for engineering in REF 2014, each output submitted to sub-panel 12 can be supported by a 100-word statement to provide additional context on its significance which may not be evident in the output itself. Clarity in the guidance of what constitutes 'verifiable evidence' would be welcomed. It should be noted that this does not include a synopsis of the output.
19. There is hesitancy in the community about submitting 'pure science' outputs to the engineering UOA, with concerns that they may be penalised and receive lower scores, especially if they do not include a 100-word statement. The REF team were clear that this should not be a concern and it was overcome in REF 2014 in the case of materials

science, for example. Furthermore, measures for cross-referral and the additional appointments to the sub-panel 12 should also alleviate these concerns.

### **Output selection**

20. While the closing date for submissions is November 2020, concerns were raised that there could be a bunching of outputs produced from 2014 to 2018, as these may have been through internal institutional quality control processes for practice exercises. Furthermore, it was suggested that significance of an output can take time to develop and this could also lead to proportionally more outputs from early on within the assessment period. While the REF team were clear that when the output was produced has no bearing on the assessment, as long as it is within the assessment period, a retrospective analysis of the dates when the submitted outputs were produced could be useful.
21. Concerns were raised that the changes to output selection could result in bias, for example by favouring senior staff and underrepresenting early career researchers. It was suggested that the sub-panel could have a role looking for correlation between the description of the workforce provided in the environment and the individuals associated with each output. However, there was agreement that institutions are responsible for ensuring implementation of a robust and fair output selection process.

### **Impact case studies**

22. REF 2021 will allow submission of impact case studies that were submitted in REF 2014. Questions were raised on whether such case studies will be considered differently to 'new' ones, on the need to indicate if case studies were submitted in the previous exercise, and whether reviewers may look back at previous submissions to compare the submissions. The REF team confirmed that 'resubmitted' impact case studies will be treated in the same way as 'new' ones and that no information on how such a case study has improved since REF 2014 will be necessary. Institutions should give priority to submitting the very best impact case studies.
23. 'Research users' are critical for the assessment of impact case studies. For REF 2014, at least two of the six impact assessors who read each case study were 'research users'. It was agreed that more 'research users' need to be appointed to sub-panel 12.

### **Staff submissions**

24. Further clarification is needed over what constitutes 'significant responsibility for research' and how to classify staff who may play key roles in research but do not directly perform it, or for whom research does not constitute their main activity, such as clinical practitioners, architects, project managers or commercial advisors. HEIs have an important role in establishing robust and fair staff selection processes.