June 2022

Interdisciplinary Research Advisory Panel: final report

REF 2021 Research Excellence Framework

Contents

Executive summary

Purpose

1. This document:
    - Sets out the Interdisciplinary Research Advisory Panel's (IDAP's) reflections and conclusions on the assessment of interdisciplinary research (IDR) in REF 2021
    - Provides IDAP's recommendations for measures to support the submission and assessment of IDR in future research assessment
    - Outlines the structures and processes that were in place to support the assessment of IDR
    - Summarises the background to, and work of, IDAP for REF 2021 through the criteria and assessment phases

Key points

2. An underpinning principle of the REF is that all types of research and all forms of research output across all disciplines shall be assessed on a fair and equal basis, including interdisciplinary research. A number of measures were introduced into REF 2021 to support the submission and equitable assessment of IDR in the assessment framework.

3. Processes and structures in place in REF 2021 have in the main helped ensure visibility of IDR and to support equity in the assessment process. These are felt to have supported the increased visibility of IDR during the assessment process and it is clear that the panels were able to identify and assess IDR with full rigour and expertise. The value of both the new interdisciplinary roles on the main and sub-panels has also been clearly demonstrated.

4. There were also key challenges: the IDR flag had been used inconsistently by HEIs, limiting the extent to which a reliable picture of IDR can be drawn based on these data alone; there was not always a clear alignment between the environment submissions and the output submissions in respect of IDR; and the IDR advisers' network was impacted adversely by Covid and the changes to working practice this required. This suggests

that some elements in place for REF 2021 may benefit from further consideration for any future assessment

Action

5. This document is for information, to summarise key findings on the assessment of IDR in REF 2021, and to provide its recommendations for the four UK higher Education funding bodies.

Further information

6. For further information about REF 2021, please see www.ref.ac.uk.

Interdisciplinary Research Advisory Panel: final report

Foreword by the Panel Chair

The results are out, and everyone will be mulling over what they mean. That also means that it is time to reflect on how well the work of the Interdisciplinary Research Advisory Panel succeeded in its aims: to ensure the community felt confidence that, where interdisciplinary outputs were submitted, they were judged fairly and to consider overall the state of interdisciplinary research in our system.

I believe that the additional criteria we introduced for assessing outputs were the right ones, to stress that originality and significance should be judged across the whole and not required individually in component parts as judged by disciplinary boundaries. We spent a long time working out the criteria to be used for IDR; the wording was carefully considered and at length. I believe, whenever judging IDR in whatever sphere, such thought should be given. It was encouraging to hear from sub-panels and main panels that they had confidence IDR could be fairly judged. This position arose not least because the membership of panels had been chosen with breadth of expertise in mind. As Chair of IDAP, I worked closely with the main and sub-panel leads, and at every stage of the process IDR it seemed that was kept firmly in sight. I hope the community does come away from the exercise heartened not only that REF 2021 saw IDR treated fairly, but also that such research is in a healthy place across the research landscape.

Nevertheless, there is no doubt that some things did not go as well as we had hoped. Firstly, we had hoped that the use of a 'flag' would help identify IDR outputs. If this had been successful it would have been an easy matter to analyse the health of this type of research and to check that it was neither advantaged nor disadvantaged. For whatever reason, the use of the flag seemed somewhat random. Sub-panels ended up ignoring them because it was plain that many outputs that fitted into the IDR category weren't flagged, and others that had been identified as IDR really did not fit into that category. As a result, detailed quantitative analysis of IDR will not be possible, although sub-panels were asked to comment on how they perceived its strength in their reports. In any future similar exercise, I hope some refined procedure will allow better analysis.

The second issue arose as a result of the pandemic. The intention behind setting up the interdisciplinary advisors' network was to provide a forum for

quiet chats when comparisons of working methods could be made, and discussion over common worrying issues across sub-panels could be facilitated. Since almost all the network meetings were conducted virtually this really was not possible and the water-cooler moments were lost. It was probably also the case the network was set up later in the process than was desirable.

It has been an enjoyable if, at times, quite demanding task to chair IDAP. The members – some of whom rotated on and off between the criteria-setting and assessment phases – were a joy to work with. They were all committed and very wise and experienced in IDR. I am deeply grateful to them and the REF secretariat for all their hard work, the details of which follow in this report.

Professor Dame Athene Donald

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Introduction

1. An underpinning principle of the REF is that all types of research and all forms of research output across all disciplines shall be assessed on a fair and equal basis, including interdisciplinary research. A number of measures were introduced into REF 2021 to support the submission and equitable assessment of interdisciplinary research (IDR) in the assessment framework. These measures included the appointment of members to both the main and sub-panels, with specific responsibility for providing guidance on the assessment of interdisciplinary research, the provision of additional guidance for the assessment of IDR outputs, and assessment mechanisms for identifying and jointly assessing IDR with other sub-panels.

2. These measures were developed in response to the findings and recommendations of the independent review of the previous REF led by Lord Stern in 20161. The review noted that while there was little evidence of discrimination against IDR by the REF 2014 panels, higher education institutions (HEIs) may have been risk averse in submitting or identifying IDR outputs due to perceptions that it might have been disadvantaged in the assessment. The review identified a number of actions aimed at improving confidence in IDR assessment in the REF. The measures therefore sought to ensure that HEIs and the research community more widely, could be confident that IDR submitted for REF assessment would be considered equitably and with no advantage or disadvantage, in terms of its originality, significance and rigour. Annex A provides more detail on the structures and mechnisms in place to support submission and assessment of IDR, and on our role in developing these.

3. The Interdisciplinary Research Advisory Panel (IDAP) was established to advise the REF team, the panels and the funding bodies on the development and implementation of measures to support the submission and assessment of IDR in REF 2021. The underpinning aim of IDAP has been to ensure that IDR is assessed equitably through the REF and is neither advantaged nor disadvantaged. We have aimed to provide support and guidance to the assessment panels, to build confidence and enable assessment of IDR fully and equitably. Annex B provides an overview of IDAP's membership and working methods

[1] Available at: https://www.gov.uk/government/publications/research-excellence-framework-review.

across the main phases of REF 2021. Annex C sets out our schedule of meetings and key agenda items considered across the criteria-setting and assessment phases.

4. In March 2019, we published our report on IDR and our work through the criteria phase2. That report summarised our work in advising on the definition, submission and assessment of IDR for REF 2021, the IDR roles on the expert panels, the IDR Network and IDAP's future role through the assessment phase.

5. Following completion of the assessment phase of the REF, IDAP met to reflect on the effectiveness of the panel roles and mechanisms for supporting IDR in practice. In addition to formal reports to IDAP on the assessment and our considerations as a panel in developing advice to the panels, we are also drawing on:

    - feedback from the sub-panels, both through the IDR network and through the main panel lead members' work with their sub-panel groups
    - survey responses from sub-panel IDR advisers and sub-panel executive members
    - the main and sub-panel overview reports
    - analyses of assessment progress and outcomes provided by the panel secretariat.

6. This report sets out our review of the measures in place to support IDR submission and assessment, including the benefits and challenges of their implementation and the extent to which they supported the equitable assessment of IDR. In the final section of this report, we summarise our findings and make recommendations for supporting IDR in future research assessment.

[2] 'REF 2021 Interdisciplinary research advisory Panel: Review of criteria-setting phase', available at: www.ref.acuk under 'Publications and reports'.

Assessment of IDR

Identifying IDR outputs

7. One of the key mechanisms in place to support IDR was the IDR identifier for submitted outputs. This enabled HEIs to flag outputs across their submissions that met the definition of interdisciplinary research in place for REF 2021. It was intended that sub-panels would be able then to consider this information in determining the most appropriate means of assessing the output. In addition, the flag had been intended to provide a basis for quantitative analysis of IDR in order to understand the effectiveness of the IDR measures that were introduced into the exercise.

8. To further support the assessment of IDR, we developed additional guidance iteratively with the panels, which was set out in the 'Panel criteria and working methods' (REF 2019/02)3. It is of course central to REF assessment that the common REF criteria of originality, significance and rigour should be applied to the assessment of all outputs irrespective of flagging or route of assessment. However, this should also recognise that for IDR the first two of these criteria may be achieved as a consequence of novel application of existing methodologies.

9. From the early stages of output assessment, it was recognised that the IDR flag had been used inconsistently by HEIs, with subsequent feedback from the sub-panels highlighting that there was wide variation across submissions. Flagging ranged from no outputs identified as IDR within some submissions, to a significant majority flagged within others, to the extent that this was not seen as a fully reliable marker for IDR, either by the sub-panels, or by IDAP. This presented challenges to the assessing panels, into the extent to which they could rely on this marker, and also to IDAP as this could not provide a robust basis to inform our analysis through the assessment and of the final REF outcomes.

10. In order to address the need to assess effectiveness of IDR measures and equity in assessment, we advised the panels and the steering

[3] 'Panel criteria and working methods' (REF 2019/02) available at www.ref.ac.uk, under 'Publications and reports'.

group that any quantitative analysis based on the flagging should be treated with caution, and that greater reliability would be achieved through feedback from the sub-panels and main panels themselves. Our guidance suggested that they highlight, as relevant, any notable characteristics of IDR, changes evident since 2014 and, the extent to which IDR was reflected in HEI flagging.

11. Drawing both on this feedback, as well as evidence gathered through our survey of IDR advisers and sub-panel chairs, it is clear that the panels felt able to identify and assess IDR with full rigour and expertise. This is further supported through analyses of scoring during the process which showed a high degree of consistency for outputs whether flagged or unflagged, and given the variability noted in the use of flagging strongly supports the conclusion that there is essentially no advantage or disadvantage associated with flagging an output as IDR. This provides confidence that there has been a robust and through process of assessment, which was supported by robust mechanisms for the assessment of IDR. Practice across panels is understood to have been guided by, and in-step with, the guidance and definition for assessment of IDR as communicated to the sub-panels.

12. We noted that there was a clear view in the feedback we received from panels that the processes and structures in place to support IDR had supported its increased visibility during the assessment process, including at the calibration and allocation stage, as well as during processes for agreeing and recording scores. It is incredibly positive to see the way in which IDR has been integrated into the assessment work of the disciplinary focused panels to a significant degree, although guarding against complacency on this front will be essential in any future exercises.

13. Many of the sub-panels also noted the extent to which they and the disciplinary areas they covered had become increasingly interdisciplinary. This was seen both in panel composition (for instance as compared to RAE exercises, with a smaller number of more broadly-based assessing panels) and panel focus, with a broader base of research - including IDR - within the sub-panels' disciplinary "mainstream".

Assessment routes

14. For outputs meeting the definition of IDR (whether flagged or unflagged), sub-panels determined the most appropriate means of

assessment. Key to these considerations was the extent to which the panel had the required breadth of knowledge and expertise to reach a robust judgement of the submitted output. The potential approaches for assessment were:

- Assessment undertaken wholly within the panel to which it was submitted, where the panel considers it has sufficient expertise to do so within its membership.
- Joint assessment, where the sub-panel identifies the need for additional expertise from another sub-panel to assess the output in full.
- Cross-referral to another sub-panel, where the panel does not consider that it has the required expertise, in line with existing cross-referral arrangements.

15. Feedback from sub-panels showed that where IDR had been identified, either through flagging or through the panel having identified it as such, most IDR outputs were able to be assessed wholly within the panel to which they were submitted. This reflects the breadth of expertise available within the membership of sub-panels, following an appointment process in which chairs had actively sought to appoint a membership with wide ranging expertise, within and to an extent beyond the disciplinary boundaries of their UOA.

Joint assessment

16. As set out in the IDR protocol published in November 2020[4],we were clear that many sub-panels would have sufficient breadth of expertise within their membership to assess much of the IDR outputs they received. However, recognising that for some, submissions may be partially outside of a sub-panel's ability to assess, we proposed a model for joint assessment of IDR outputs across different panels. Where a sub-panel considered that it had some but not sufficient expertise to assess an IDR output, it could request joint assessment with other relevant sub-panels. In undertaking a joint assessment, the output was allocated to panellists on the original panel and other sub-panel(s) involved. The allocated panellists then worked together to provide a recommendation to the original sub-panel, drawing on the additional guidance for assessing IDR outputs.

17. While across the exercise as a whole, use of joint assessment was limited with around 0.3 per cent of outputs in total requested for joint assessment, feedback from sub-panels using this mechanism showed that the majority found it to be of value. We noted some variation in approaches across sub-panels and the main panel groups to the use of joint assessment; further detail can be found in the panels'

[4] https://www.ref.ac.uk/about/interdisciplinary-research/

overview reports. There was concern that the timeline for requesting such joint assessment was sometimes too tight as to be useful. The variation in use was recognised as reflecting the differing requirements of the different panels/disciplines and the breadth of appropriate expertise available within panels. Feedback also indicated that joint assessment should be retained for future exercises, in addition to the existing route of cross-referral, with recommendations for fuller guidance and improved supporting systems to enable optimum use to be made of this option.

Cross-referral

18. While the primary purpose for cross-referral in REF 2021 was not as a mechanism for IDR, as set out in the IDR protocol, cross-referral remained an option for IDR outputs in accordance with the wider working methods of the sub-panels: in cases where a sub-panel considered it did not have the required expertise to assess specific parts of submissions (including an IDR output), it could cross-refer these to another sub-panel for advice in accordance with the wider cross-referral process described in the 'Panel criteria and working methods'. In line with the feedback for joint assessment above, panel feedback suggests further guidance on the use of cross-referral, both generally and more specifically for IDR outputs, would be welcomed for the future.

IDR and the environment

19. As part of the measures introduced into REF 2021 to support IDR, HEIs were invited to provide information about their approach to supporting IDR in both the institutional and unit-level environment templates.

20. An issue identified in feedback from assessing panels is that, across submissions, there is not always a clear alignment between the environment submissions (at unit-level and/or institutional-level) and the output submissions in respect of IDR. In some submissions, panels had noted a good supporting evidence base through other aspects of the submission, which was able to provide confidence and support the narrative and claims around support for IDR in the environment submissions. However, this was not always the case, and while this was not a requirement for REF 2021, it might be anticipated that there would be some discernible consistency across the submissions with claims made within the environment. It would be useful to consider in future exercises whether a more formal link between the environment statement and outputs should be required.

Panel IDR roles

IDR advisers and main panel IDR leads

21. A major strength of the IDR measures in place, as highlighted by many of the sub-panels, was the appointment of the IDR advisers and main panel IDR leads. This gave clear visibility to IDR within main and sub-panels through the exercise and provided a clear route for raising questions and/or seeking guidance for panel members in reviewing IDR.

22. The IDR adviser role was a key one in sub-panels, in helping to inform allocation and coordinate assessment of IDR outputs, particularly where joint assessment had been requested. It was noted that IDR advisers played a central role in advising on and supporting IDR assessment across the sub-panels.

23. We would like to make a particular note regarding the role of the main panel IDR leads, and recognise the value in the relationship between them and the sub-panel IDR advisers within their group, in helping to lead and coordinate activities more widely than within individual sub-panels. It is our view that this role became more crucial as a consequence of virtual working, and the relative isolation of sub-panel working that this engendered. This way of working lead to the IDR leads taking an ambassadorial role and acting as a conduit of information between main panels, sub-panels and IDAP.

24. A key role of main panel IDR leads was in providing support and advice for both IDR advisers and main panel executives, ensuring that IDR was an agenda item and considered in each main panel meeting. For sub-panels this role ensured representation of shared concerns and enabled a consistent approach to querying procedure, helping to iteratively develop and inform practice within sub-panels across each main panel group. The main panel IDR leads were able to provide IDAP with intelligence on activities and concerns at main and sub-panel level in a more timely way, and more directly, than would have been the case were they not an overlapping part of both structures.

25. We consider that the value of both of these roles has been demonstrated clearly and would recommend their retention for the

future exercises. It is crucial that dialogue such as this is maintained so that any issues can be picked up and resolved speedily.

IDR network

26. The IDR network was in inception intended to be a primarily member-led open forum for panel members to engage with each other, to exchange information and good practice, and to seek support. This was also envisaged to have been a forum for direct communication between IDAP and the IDR advisers, with plenary sessions to consider overarching issues and smaller groups for more informal cross-panel working, within and across main panel groups. The working of this forum was impacted adversely by Covid and the changes to working practice this required.

27. The more open structure of these meetings was not particularly suited to the wholly virtual format that they were required to take and the effectiveness of this forum was hampered in consequence, with some attendees feeling it did not help them as much as had been expected. We noted some mixed views in response to the survey, regarding the value of the network meetings. Some felt that our engagement with panels during the assessment phase, and the work of the network itself, had started too late, and did not align well with sequencing of main and sub-panel meetings. However, feedback also indicated that others did find a value in these collective meetings, and the opportunities for discussion and consideration of IDR in the REF and the processes for its assessment.

28. Recognising the above, we do consider that the principle of a network is a valuable one and such a group would be important to have as part of future research assessment. As with other elements of IDR activities it would be important to start engaging with this group at an earlier stage, to develop group identity and engagement in advance of the process of assessment.

29. Some feedback from the sub-panels suggested further value might have been achieved through planning and undertaking an exercise for cross sub-panel calibration of IDR outputs, possibly with cross-main panel engagement through the IDR network, in addition to the calibration exercises involving main panels which did so. It was felt that this could have helped to further support consistency in IDR assessment.

The Role of IDAP

30. In developing our initial recommendations there were a variety of views we took into account both within and beyond the REF as to how best to achieve an approach to IDR which would meet the purpose of what we as IDAP members were setting out to achieve. This included views that IDR had already become significantly established within the mainstream of research, particularly in some disciplinary areas, and that some sub-panels would not require special measures to be able to undertake their role and ensure equity in assessment. While REF sub-panels remain disciplinary-based, it will always be important to have mechanisms, including external to the sub-panel, to ensure that outputs that do not conveniently sit under any label are fairly and appropriately handled.

31. However, while 'The metric tide' report had highlighted the impactfulness of IDR, it had also highlighted the risk that research assessment can militate against its assessment on an equal basis with more single-disciplinary research. We considered that the disciplinary underpinnings of REF, and the wider academic world, meant that there remained a clear rationale to ensure visibility of IDR in the exercise, and to address any remaining perception within the wider community that IDR would be unfairly treated.

32. We considered that it would be important to have a single group to take an overview of the activities around IDR through the assessment phase, and we also consider that IDAP has in practice provided an important forum for consideration of key issues in relation to IDR within the assessment. As a panel we were able to respond to issues impacting IDR assessment as they arose and, through the chair and main panel IDR leads, to feed into wider discussions.

33. The work of IDAP, the IDR network and IDR assessment in the REF 2021, in common with all other aspects of the REF, was subject to disruption caused by the emergence of widespread Covid-19 infection from late 2019 and subsequent pandemic. This had an impact on activities from the early stages of the assessment phase and included, in addition to the overall delay in timetable, the need to move to a fully virtual format for meetings throughout the majority of the assessment period.

34. This had implications for the work of IDAP, and the IDR network. Some aspects of our work were rendered more difficult as a consequence of the pandemic, and several of us felt that our level of engagement with

sub-panel members, through the IDR Network and more directly, was less close and more constrained than we would have wished.

35. However, our work was able to inform the assessment at all levels, with IDR and IDAP guidance included as standing agenda items for sub-panels, main panels and the main and advisory panel chairs group. The strengthened set of measures supporting the submission and assessment of IDR sends a strong signal about the value that is recognised in interdisciplinary research and its valuable role across all areas of academia.

36. This strong signal regarding IDR is vital in building confidence among HEIs that all types and forms of research will be assessed on an equitable basis. As a panel we consider that it will be important for future exercises to learn the lessons of and build upon our work, including the implementation of a body, such as IDAP to maintain an overview and co-ordinate policy and measures regarding IDR through all phases of the exercise. We consider that work around IDR should be built into future exercises from an early stage involving closer engagement with other advisory and decision-making structures in place.

Recommendations for future research assessment:

Key findings

37. We are pleased to note that the processes and structures in place in REF 2021 have in the main helped ensure visibility of IDR and to support equity in the assessment process. However, some elements may benefit from further consideration for any future assessment. We also note the forthcoming analysis, commissioned by the four UK higher education funding bodies, which will aim to offer an additional insight into the overall volume of IDR submitted using bibliometric approaches. While we are supportive of developing a wide evidence base to inform evaluation of REF, from our engagement with the emerging findings of this work, we also note the continued limitations inherent in seeking to categorise outputs algorithmically as IDR.

38. Below we have set out a number of recommendations on IDR for consideration by those involved in developing the shape and format of any future exercise.

39. The equitable inclusion of IDR in future exercises is vital to achieve a full understanding of the quality and importance of research undertaken in the UK, and to enable this to happen there needs to be confidence on both sides of the assessment: HEIs submitting and the panels assessing their submissions. We consider that it is important, therefore, that there should be a body such as IDAP in place to ensure consideration and equitability through the exercise, in addition to the signalling of value of IDR within the exercise.

40. It remains important that differences in approach to research can be recognised and supported, recognising that innovative forms of research as represented within IDR drive change and moves the boundaries within and across disciplines. It is therefore also important to sustain a plurality of approaches for assessment rather than to consider that the existing panel structures alone will be able to fully support IDR, particularly where this falls outside of what may become a new interdisciplinary normal. This suggests there is a need to retain structures for oversight and to support assessment of IDR. While, for instance, the use of joint assessment may have been relatively low, where used it was significant and valued, indicating the need for a flexible mechanism of this sort for sharing expertise across panels.

41. It is our view that if an IDR identifier for future research assessment is retained, it would require work in further and better developing this mechanism. This would perhaps be more closely aligned to specific guidance on its use and with greater clarity on expectations and implications for submitting HEIs. This will need to be based on closer engagement with the research community and HEIs to more fully understand their requirements and internal decision-making processes.

IDAP's Recommendations for the future

42. Drawing on our key findings across both the criteria and assessment phases of REF 2021, IDAP's recommendations are:

Structure and timing

- Establish a central body, such as IDAP, to maintain an overview of IDR
- Retain and build on the IDR definition and guidance from REF 2021

- Commence IDR work as early as possible in the development of future exercises, integrating progress and lessons from REF 2021
- Ensure closer engagement with steering group and main panel chairs around initial decisions and development of detailed guidance
- Retain appointment of main panel and sub-panel IDR members
- Ensure earlier engagement with panels at both criteria and assessment phases to develop a shared understanding and approach, which had been more directly shaped by the panels themselves
  Coordinate development of processes and supporting mechanisms in collaboration with HEIs and panels.

IDR Network

- Ensure earlier implementation and engagement of the IDR network as a distinct piece of work. Engage more fully with the network in development of role, criteria and process. Actively support this as a forum for cross panel engagement for IDR.
- Schedule IDR Network meetings through the criteria and assessment phases to more closely coordinate with IDAP or equivalent body meetings, with a clear interrelationship between the two bodies.
- IDR/IDAP observers to regularly observe sub-panel discussions and be available to provide advice on process.

Guidance and flexibility in approach

- Build in flexibility in approach, with the potential to work with different main/sub-panels to identify and address any disciplinary specific requirements ahead of the assessment phase.
- Ensure greater visibility of IDR within development of future exercises with a role for the IDR body in direct engagement and consultation with HEIs and the research community on IDR
- Provide early, clear guidance around IDR in the exercise to submitting institutions
- Design processes that provide a more explicit consideration of equality issues and interrelationship with IDR.

IDR Flag

- To retain the IDR indicator; however, to consider:
- Clearer guidance on the use and implications of the flag for HEIs
- Ensure flagging is undertaken closer to the point of research production rather than as a separate and later administrative function - HEIs should note that, ideally, flagging would be undertaken by those undertaking the research.

Consistency of outputs, impact and environment

- Consider mechanisms to assess the evidence base presented in unit-level and institutional environment submissions, and the extent to which this is reflected in other aspects of the submission, including impact case studies and in outputs submitted.

Joint assessment and cross referral

- Retain the option of joint assessment for use where panels consider appropriate
- Further guidance for HEIs and sub-panels around the use of joint assessment and cross-referral
- Guidance and support for cross-panel assessment, including a cross sub-panel calibration exercise for IDR, and with more intuitive systems and processes

43. A general recommendation is noted in respect of introducing any new elements to the exercise in future, recognising that this will always be difficult for an established process such as REF. The rationale for any changes should be backed with an underpinning evidence base setting out key issues and why the changes are required and what they aim to achieve. There should then be a focus on developing broad community engagement from an early stage, to build support and to help drive and integrate any changes agreed.

Annex A Background and structures to support IDR in REF 2021

IDR in REF 2021

1. A key context for the work of IDAP, and the assessment of interdisciplinary research (IDR) within REF 2021, comes from the findings and recommendations of the independent review of the previous REF led by Lord Stern in 2016[5]. The review noted that while there was little evidence of discrimination against IDR by the REF 2014 panels, higher education institutions (HEIs) may have been risk averse in submitting or identifying IDR outputs due to perceptions that it may be disadvantaged in the assessment. The review identified a number of actions aimed at improving confidence in IDR assessment in the REF.

2. A central theme was that such confidence could best be achieved through the development of a clear and consistent approach to the assessment of IDR outputs, underpinned by supporting structures within and across panels. The review also recommended the inclusion of institutional-level information on impact and environment relevant to IDR to provide wider context for submissions into units of assessment (UOAs).

3. Analysis carried out by HEFCE's Analytical Services Group of submissions to REF 2014 identified that there was parity of assessment by the panels and no indication of more or less favourable treatment for outputs identified as IDR[6]. Additionally, a significant proportion of the impact case studies submitted (circa 87%) were underpinned by some level of multidisciplinary work[7]. The significant impact of IDR case studies was highlighted in the report of the independent review of metrics in research assessment undertaken in 2015[8].

4. However, a citation-based analysis of REF 2014 submissions suggested a proportional underrepresentation of IDR outputs in REF

[5] Available at: https://www.gov.uk/government/publications/research-excellence-framework-review.
[6] See https://www.ref.ac.uk/2014/results/analysis/outputprofilesanddiversity/.
[7] The nature, scale and beneficiaries of research impact: An initial analysis of Research Excellence Framework
(REF) 2014 impact case studies (King's College London and Digital Science 2015). Available at: https://www.kcl.ac.uk/policy-institute/assets/ref-impact.pdf
[8] The Metric Tide: Report of the Independent Review of the Role of Metrics in Research Assessment and Management This is available at: https://responsiblemetrics.org/the-metric-tide/

submissions[9], indicating a confidence issue with submitting IDR outputs in REF. This was supported by the responses to the call for evidence as part of the Stern review, which identified the disciplinary UOA structure of the REF as a potential barrier to submission of IDR.

5. The Stern review took into account a range of evidence10 and recognised that IDR has a significant role to play in addressing 'grand challenges' for the future, and that it enhances both academic and socio-economic creativity. The review set out a number of actions to build community confidence in submitting IDR outputs and to further embed IDR within the REF, including the appointment of interdisciplinary 'champions' on the expert panels, and explicit encouragement for the submission and identification of IDR in the REF[11].

6. Proposals for implementing these recommendations were included by the funding bodies in the 2016 'Consultation on the Second Research Excellence Framework', with the final measures and guidance to support IDR set out across the 'Guidance on submissions' (REF 2019/01) and 'Panel criteria and working methods' (REF 2019/02). We commenced our work following the funding bodies' consultation, providing advice and guidance to inform the final guidance and criteria – our work during this period is described in brief below. On reflection, we believe that beginning this work earlier would have been of value to the development of the early proposals and their earlier feed in to the work of the main panels.

IDR definition and criteria for assessment

7. As set out in more detail in IDAP's report of 2019, a key element of our work in the criteria phase was in reaching a definition of IDR for the purposes of the REF. This was needed to guide HEIs in applying the

[9] A review of the UK's interdisciplinary research using a citation-based approach (Elsevier 2015). Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20160702150014/http://www.hefce.ac.uk/pubs/rereports/Year/2015/interdisc/Title,104883,en.html

[10] Key documents included:

- A review of the UK's interdisciplinary research using a citation-based approach (Elsevier 2015)
- Report on the Landscape of IDR in the UK (Technopolis 2016)
- The interdisciplinarity survey report for the Global Research Council (DJS Research 2016)
- Crossing Paths: Interdisciplinary institutions, careers, education and applications. (British Academy for the Humanities and Social Sciences 2016)
- Evaluating Interdisciplinary Research: a practical guide. (Strang and McLeish 2015)
- Call for Evidence Independent review of the Research Excellence Framework (REF): Synthesis of responses (Technopolis 2016)

[11] See page 28. Available at: https://www.gov.uk/government/publications/research-excellence-framework-review.

IDR identifier to outputs in their submissions, and to inform development of supplementary guidance on the criteria for assessment to be considered by the sub-panels. We developed this definition and the criteria iteratively throughout our criteria-setting work.

8. We were clear that the REF required a definition that would ensure sufficient clarity to support HEIs in their identification of IDR and give them confidence to use the flag. It was also important for us to recognise and consider the variety of related concepts, terms and definitions for research undertaken using theories and methodologies associated with two or more differing disciplines, or that is outside of established disciplinary approaches.

9. Our considerations therefore sought to emphasise recognition of research which draws on the theories, methods and/or traditions of differing disciplines innovatively and to make clear that IDR involves working beyond established disciplinary norms, and also includes research with no clear disciplinary origin. This recognises that practice within disciplines develops over time, including the adoption and use of approaches originating in or associated with other disciplines, and that these may become established research practice.

10. The definition and guideline criteria we developed were subject to a number of iterations and refinements. We sought feedback and input from the main and sub-panels, the main panel chairs forum and the REF steering group. Responses on IDR from the 'Consultation on the draft guidance and criteria' undertaken in summer 2018 were considered in reaching our final recommendations.

11. We aimed to ensure our recommendations, definition and guidance were broad and inclusive; and such that there should be no advantage or disadvantage for any research falling within the definition. This was to make clear that rigorous research, drawing on different disciplinary traditions and methods (or indeed moving beyond established disciplinary foundations) should not be required to demonstrate originality and significance in all contributing theoretical or methodological elements. Originality and significance can be demonstrated through one or more (rather than all) disciplinary elements, or through the interaction of these elements, to achieve something that would not be achieved within a single disciplinary framework.

12. The definition of IDR for the purposes of the REF, as set out in the 'Guidance on submissions'[12] and 'Panel criteria and working methods'[13], was agreed as:

> For the purposes of the REF, interdisciplinary research is understood to achieve outcomes (including new approaches) that could not be achieved within the framework of a single discipline. Interdisciplinary research features significant interaction between two or more disciplines and / or moves beyond established disciplinary foundations in applying or integrating research approaches from other disciplines.

13. Assessment of IDR would be undertaken against the generic criteria of originality, significance and rigour, with the following guidance on the application of these criteria for IDR:

- In applying the criteria of originality and significance to assess IDR outputs, the sub-panels will take into account that the criteria do not need to be demonstrated across all of the constituent parts brought together in the work, but may be identified in one or more parts, or in their integration.
- All elements of the research should demonstrate appropriate academic rigour with a clear rationale for their application to the question posed by the research.

Structures and mechanisms to support IDR in the REF

14. In our initial phase of work in 2017/2018, in addition to developing the definition of IDR and criteria for assessment, we were asked to advise on any additional measures to support the assessment of IDR, including structures and processes to be put in place in advance of the assessment phase.

15. While an initial starting point for our work was the recommendations arising from the Stern review and set out in the sector consultation, we engaged with and took further feedback from the main and sub-panels, and fed into the consultation on the guidance and criteria in 2018. We drew on responses from this feedback to refine and finalise our recommendations. A key early recommendation was that assessment of IDR should not be undertaken by a single 'specialist' IDR panel, but that this should be undertaken by the sub-panels to which IDR outputs were submitted.

[12] https://www.ref.ac.uk/publications-and-reports/guidance-on-submissions-201901/
[13] https://www.ref.ac.uk/publications-and-reports/panel-criteria-and-working-methods-201902/

16. Our recommendations are summarised below, and fuller details can be found in IDAP's criteria phase report.

Panel IDR roles:

17. **The role of IDAP:** We were asked to consider any ongoing role for IDAP though the assessment phase. We agreed that it would be important that there should be a body with oversight of IDR assessment procedures, which would be able to provide advice to the steering group and the main panels on assessment processes to support equity of assessment, and to report on IDR assessment at the end of the REF. Our recommendation was that IDAP should continue in this role through the assessment phase with changes to the membership to incorporate the main panel IDR lead members, as noted earlier.

18. **Sub-panel IDR Advisers:** We agreed with the proposal that there should be IDR-specific roles on each sub-panel; however, we concluded that role should be an advisory one (an IDR adviser) within each sub-panel, supporting and advising on IDR assessment, rather than a designated IDR assessor role. We further recommended that there should be at least (but not limited to) two IDR advisers, per sub-panel.

19. **Main panel IDR lead members:** We further recommended that there should also be at least one IDR Lead member role for each main panel. This role would be able to provide oversight of IDR assessment at the main panel level, to feed into each main panel's discussions. From the start of the assessment phase, the main panel IDR lead members would become members of IDAP in order to provide a link to the assessing panels, with a flow of information and consequent opportunity to consider practice and issues emerging across the panels more responsively.

20. **IDR network:** In addition to the main and sub-panel roles we also proposed that there should be a member-led forum for IDR advisers and main panel IDR leads (the IDR network) to engage across the main panel groups to share good practice. This was also intended to enable IDR advisers to identify shared issues and support consistency of approach. The network was also intended as a forum for IDAP to regularly engage directly with sub-panel members to provide guidance and advice for assessment.

Mechanisms to support assessment of IDR:

21. **IDR indicator for outputs:** We were supportive of retaining the IDR flag, which had first been used in REF 2014. However, we noted that

while there was support in the 2016 consultation for this being made mandatory, there were concerns that this would have implications of additional burden for submitting HEIs. We therefore considered that while the flag should be retained, it should remain optional. Further, we recommended that in addition to HEIs in their submissions, it would be valuable for the sub-panels themselves to be able to identify IDR whether submitted as flagged or not, and to identify where flagging had been applied incorrectly. Should it be appropriate, sub-panels should be able to change the flag status and/or apply IDAP's guidance on assessment.

22. **Joint assessment:** As set out in the IDR protocol published in November 2020[14],we were clear that many panels would have sufficient breadth of expertise within their membership to assess much of the IDR outputs they received. However, recognising that for some, submissions may be partially outside of a sub-panel's ability to assess, we proposed a model for joint assessment of IDR outputs across different panels. Where a sub-panel considered that it had some but not sufficient expertise to assess an IDR output, it could request joint assessment with other relevant sub-panels. In undertaking a joint assessment, the output was allocated to panellists on the original panel and other sub-panel(s) involved. The allocated panellists then worked together to provide a recommendation to the original sub-panel, drawing on the additional guidance for assessing IDR outputs.

23. **Cross-referral**. It was also made clear in the IDR protocol that cross-referral remained an option for IDR outputs, in accordance with the working methods of the sub-panels. In cases where a sub-panel considered it did not have the required expertise to assess specific parts of submissions (including an IDR output), it could cross-refer these to another sub-panel for advice in accordance with the wider cross-referral process described in the 'Panel criteria and working methods'.

24. **Use of Indicators for IDR in the Environment submission:** We supported the inclusion of IDR within unit-level and institutional environment submissions. and provided advice on the use of metrics for IDR for the unit-level submission and for the institutional environment. We were fully supportive of principles developed by the Forum for Responsible Research Metrics regarding indicators for the research environment and considered that that there were clear benefits to the use of metrics to support this element of the

[14] https://www.ref.ac.uk/about/interdisciplinary-research/

submission. However, we also noted our concern over the potential burden that a ”standard” set of metrics for submission might represent for HEIs, particularly as suggested indicators may not have reflected data already held by HEIs. We also noted concerns over the robustness of particular indicators under consideration. On consideration, our view was that institutions should be free to identify suitable indicators as relevant for their own submission

Annex B: IDAP membership and working methods

Criteria phase (2017-18)	
Chair	
Professor Dame Athene Donald	Master of Churchill College Cambridge, University of Cambridge
Members	
Professor John Clarkson	Director, Cambridge Engineering Design Centre, University of Cambridge
Professor Bruce Brown	Visiting Professor, Royal College of Art
Professor Mark d'Inverno	Pro-Warden International, Goldsmiths, University of London
Professor Rick Delbridge	Dean of Research, Innovation and Engagement at Cardiff University, academic lead for the Social Science Research Park (SPARK), Cardiff University
Dr Tori Holmes	Lecturer in Brazilian Studies, Queen's University Belfast
Professor Hilary Lappin-Scott	Senior Pro Vice-Chancellor – Research and Innovation and Strategic Development, Swansea University
Professor Ursula Martin	Professor of Computer Science, University of Oxford
Professor Hugh Mckenna	Dean of Medical School Development, Ulster University
Dr Lisa Mooney	Pro Vice-Chancellor Research and Knowledge Exchange, University of East London
Professor Judith Phillips	Deputy Principal (Research), University of Stirling
Professor Barry Smith	Director of the Institute of Philosophy, School of Advanced Study
Professor Veronica Strang	Executive Director of Institute of Advanced Study, Durham University
Dr Sophie von Stumm	Associate Professor in Developmental Psychology, London School of Economics
Professor Joyce Tait	Director of the Innogen Institute, University of Edinburgh
Observers	
Professor Andrew Thompson	AHRC/UKRI
Professor Roger Kain	British Academy

Assessment phase (2020-21)	
Chair	
Professor Dame Athene Donald	Master of Churchill College Cambridge, University of Cambridge
Members	
*Professor Graeme Barker (Main panel C)	Director of the McDonald Institute for Archaeological Research, University of Cambridge
* Professor Felicity Callard (Main panel C)	Professor in Human Geography, University of Glasgow
*Professor Muffy Calder (Main panel B)	Vice Principal & Head of College of Science & Engineering, University of Glasgow
Professor Mark d'Inverno	Pro-Warden International, Goldsmiths, University of London
*Professor Dame Anna Dominiczak (Main panel A)	Vice-Principal and Head of College of Medical, Veterinary and Life Sciences, University of Glasgow
Dr Tori Holmes	Senior Lecturer in Brazilian Studies, Queen's University Belfast
Professor Ursula Martin	Professor of Computer Science, University of Oxford
*Professor Peter Morris (Main panel A)	Professor of Physics, School of Physics and Astronomy, University of Nottingham
Dr Lisa Mooney	Pro Vice-Chancellor Research, Sheffield Hallam University
*Professor Wen-chin Ouyang (Main panel D)	Professor of Arabic and Comparative Literature, SOAS University of London
Professor Barry Smith	Director of the Institute of Philosophy, School of Advanced Study, University of London
Professor Veronica Strang	Executive Director of Institute of Advanced Study, Durham University
Professor Sophie von Stumm	Professor of Psychology in Education, Director of the Hungry Mind Lab, University of York
Professor Roger Kain	Professor of Humanities, School of Advanced Study, University of London

* *Indicates main panel IDR member*

IDAP's Aims

1. IDAP was constituted to address the recommendations from the Stern review, as a group with expertise in IDR: to advise, make recommendations and work with the panels to support the development of mechanisms for submission and assessment of IDR in REF 2021.

2. The underpinning aim for IDAP has been to ensure that IDR is assessed equitably through the REF and is neither advantaged nor disadvantaged. This reflects the concerns identified through the Stern review and subsequent consultation. Initially we (IDAP) were established to advise through the criteria setting phase of REF. It was subsequently agreed that we should continue as a panel to advise on assessment of IDR through the assessment phase of the exercise.

Criteria phase

3. The aim of IDAP for the criteria-setting phase was to ensure that REF 2021 supported the submission and fair assessment of interdisciplinary research, and that this should be clearly demonstrated during the development and implementation of the exercise.

4. The Terms of Reference for this phase were to:

    - Provide advice to the HE Funding Bodies on the initial decisions for REF 2021 following formal sector consultation in 2017.
    - Support the development of interdisciplinary aspects of any REF 2021 pilot activity.
    - Provide advice and oversight on the assessment criteria with respect to IDR during the criteria setting phases of REF 2021.

Assessment phase

5. The role of IDAP though the assessment phase was to provide advice on the consistent application of processes supporting IDR assessment, including advice and support on any issues arising in the implementation of the 2021 IDR measures. In addition, IDAP would review the overall effectiveness of the measures in REF 2021.

6. IDAP's Terms of Reference for this phase of the exercise were to:

    - Provide advice to the REF team and funding bodies on the detailed working methods for the IDR network and assessment protocols.

- Provide advice to the main panels on the consistent application of the process, including advice and support on any issues arising in the implementation of the IDR measures.
- Provide advice and support to the IDR network and sub-panels through attendance and observation at network and sub-panel meetings as required.
- Gather evidence to inform an assessment of the effectiveness, and consistency of application of, the IDR measures.
- Produce a summary report on the work and key recommendations of IDAP.

Composition of IDAP

7. IDAP is chaired by Professor Dame Athene Donald, and includes members from across the UK (see membership lists, above). As noted, there were two distinct stages to our work, covering the criteria-setting and then the assessment phases.

8. In 2017, IDAP members were appointed following a nominations process[15] to ensure a breadth of experience and viewpoints were represented. Appointees included researchers with extensive interdisciplinary expertise and research assessment experience, as well as members with interdisciplinary expertise at an earlier stage in their research career. Furthermore, appointees were selected in order to represent a broad range of interdisciplinary expertise across the disciplinary scope of the four main panels.

9. The composition of the panel changed following the criteria-setting phase and into the assessment phase. Members who had subsequently been appointed as sub-panel chairs or members stepped down from IDAP to ensure there was no conflict in their roles. From September 2020, the six main panel IDR leads (two from Main Panel A, one from Main Panel B, two from Main Panel C and one from Main Panel D) became part of the membership in addition to their main panel role.

IDAP's Working methods

10. As noted, there were two distinct phases of activity for IDAP across the REF exercise. Annex C sets out meetings and main items of business for these across criteria and assessment phases:

[15] Details of the nominations process can be found at: https://re.ukri.org/documents/hefce-documents/idr-ap-recruitment/

Criteria phase

11. We met four times during the criteria development phase between May 2017 and November 2018. A summary of IDR-relevant aspects of the guidance and criteria, as set out in the 'Guidance on submissions' and 'Panel criteria and working methods', was published in February 2019[16].

12. In March 2019, we published our report on IDR and our work through the criteria phase[17], summarising our recommendations for the definition, submission and assessment of IDR for REF 2021, the IDR roles on the expert panels, the IDR Network and IDAP's future role through the assessment phase.

13. At this stage we also made a number of interim recommendations for future research assessment, to be reviewed following completion of the assessment phase:

    - Earlier appointment of an IDR panel, for input into consultation and initial decisions
    - Earlier engagement with main panel chairs following appointment. This will allow a period for building a common agreement of goals before the main and sub-panels start work on criteria development
    - Briefing/induction process for IDR advisers and main panel members, to inform of background, expectations and opportunities for input and involvement
    - Direct engagement with sub-panel members at an early stage in criteria development, to enable an open dialogue with panel representatives to test and inform assessment principles
    - Ongoing engagement with panel members throughout criteria development, including meetings of the IDR network as forum for dialogue and information sharing.

Assessment phase

14. We met six times between September 2020 and March 2022, with a further meeting in April 2022 to review the revised draft of this report. All meetings through this period were held virtually, other than the meeting in March 2022 which was held as hybrid with some members attending in person and some remotely.

15. Throughout the period leading up to the start of the assessment we also worked with the four main panels to agree the IDR assessment protocol, published in November 2020, and to help develop the model

[16] https://www.ref.ac.uk/media/1114/idr-overview-document.pdf
[17] https://www.ref.ac.uk/publications-and-reports/idap-review-of-criteria-setting-phase/

for the joint assessment process to be applied in REF systems and develop explanatory guidance and workflows for panel members. In our work through the assessment phase IDAP has sought to be responsive to emerging situations and provide advice to address emerging issues.

16. We applied the following working methods:
    - We were provided with data analysis and written reports on the assessment process. Our assessment advice was provided to the main and sub-panels and IDR network.
    - The cross-panel membership of the main panel IDR leads with IDAP provided a route for issues identified within main panels and / or the network to be raised for discussion, and for our advice to be communicated back to the panels in a consistent way.
    - We participated in IDR network discussions to provide a route for issues arising from the assessing panels to be identified, to obtain direct input from sub-panel members to feed into our review of the assessment process.
    - We conducted a survey of IDR advisers and sub-panel executives on IDR in the REF and considered feedback from the main and sub-panel overview reports.
17. Our chair was an attendee at meetings of the Main, Advisory and Pilot Panel (MAP) chair meetings, with the main panel, the Equality and Diversity Advisory Panel (EDAP) and the Institutional-level Environment Pilot Panel (ILEPP) chairs, the main panel advisers and the REF director. This group had responsibility for reporting overall progress and provided a forum for coordinating panel activities across the REF.

Annex C: IDAP panel meetings through criteria and assessment phases

1. Phase of REF	Meeting number	Meeting format	Purpose
Criteria phase (2017-18)	1	In person	Agree Terms of Reference Consider consultation responses on IDR IDR; Outputs; IDR and institutional level assessment IDR and Impact IDR and Environment
	2	In person	Advise on: Definition of IDR Role of the IDR Advisor Assessing IDR Environment Underlying bodies of work The role of IDAP
	3	In person	Advise on: IDAP's advice to the panels IDR definition and criteria IDAP's role in the assessment phase
	4	In person	Interdisciplinary consultation responses Further advice on REF guidance and criteria Future IDR working methods IDAP Criteria phase report IDR network briefing

Assessment phase (2020-21)	1	Virtual	IDR protocol IDAP and IDR network meeting schedule Panel working methods and liaison with IDR network Calibration advice Panel appointments
	2	Virtual	Review and agree workplan for assessment Agree advice on calibration Consider any issues and feedback from network meeting
	3	Virtual	Review calibration issues emerging Review emerging scoring and any issues arising for output assessment. Advice on ongoing assessment.
	4	Virtual	Review issues emerging for outputs and impact Consider emerging data output scoring. Provide advice on ongoing assessment. Advise on environment calibration.
	5	Virtual	Final advice to MPs Reflections and reporting
	6	Hybrid (in person/virtual)	Review IDR assessment IDAP final report
	Additional meeting	Virtual	Review draft report