

# **A Review of the AHRC Technical Appendix and Recommendations for a Technical Plan**

**Compiled by the Humanities Research Institute, University of Sheffield  
on behalf of the Network of Expert Centres TA Working Group**

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## Executive Summary

The purpose of this consultation has been to identify problems relating to the scope, purpose, interpretation and use of the AHRC's existing Technical Appendix and to make recommendations for improvement. The consultation has taken the form of online surveys directed at technical reviewers and successful AHRC applicants, interviews and a stakeholder workshop.

The surveys showed that there is widespread support for the need to provide a Technical Appendix but the document is problematic for the following broad reasons:

- Its current structure is only appropriate for certain types of projects and does not account for the full range of digital outputs and digital technologies which are possible in today's research environment.
- The meaning of the section headings are unclear to many people and there is widespread confusion about what information the Technical Appendix is asking applicants to provide.
- The terminology of the Technical Appendix is alien to certain disciplines and research practices, such as the performing arts.
- There is uncertainty as to when a Technical Appendix is required.
- Applicants have a tendency to treat the Technical Appendix as an afterthought or minor document within the research application and do not fully engage with its issues.
- There is very little guidance for applicants, creating the feeling that the Technical Appendix is a test.
- Applicants have a poor understanding as to what the terms 'preservation' and 'sustainability' actually mean, with many believing that the two are interchangeable.

In order to address these issues, we propose the following recommendations:

1. That the Technical Appendix be renamed 'Technical Plan', and should be supplied by all project grant applications where digital outputs or digital technologies are essential to the planned research outcomes.
2. That the Technical Plan be a prose document which is uploaded to Je-S as an attachment. It should be fully integrated with the Case for Support and Impact Plan, and assessed by Technical Reviewers in conjunction with these.
3. That the Technical Plan be limited by an overall word count of 2000 (approx. 4 sides of A4) and the applicant be provided with comprehensive guidance as to the types of headings and sections that he or she should consider addressing.
4. That the Technical Plan constitute the following sections and the applicant encouraged to produce a level of detail as appropriate for the nature and value for the project of the digital output or digital technology being proposed:

Section 1: Summary of Digital Outputs and Digital Technologies

Section 2: Technical Methodology

Section 2.a: Standards and Formats

Section 2.b: Hardware and Software

Section 2.c: Data Acquisition, Processing, Analysis and Use

Section 3: Technical Support and Relevant Experience

Section 4: Preservation, Sustainability and Use

Section 4.a: Preserving Your Data

Section 4.b: Ensuring Continued Access and Use of Your Digital Outputs

5. That information concerning project management, timetabling, monitoring, risk, IP and copyright issues for the technical components of a project be subsumed within the Case for Support.
6. That a section called 'Technical Summary' be introduced to the Case for Support in which a summary of the project's technical component can be given, or a
7. That the Technical Summary should enable applicants to justify where they believe that digital outputs or technologies in their proposed project do not warrant the inclusion of a Technical Plan.
8. That applicants should be encouraged as a matter of good practice to preserve data outputs essential to their project's research outcomes after the end of the project period, and where appropriate make them accessible to the research community and beyond; but the resource devoted to this should be proportionate to the value of the data and its position in their Impact Plan.
9. That there be considerable online guidance and recommendations of best practice provided for the applicant, tailored to the perspectives of different disciplines and research techniques.

## 1. Introduction

- 1.1 The purpose of this consultation has been to identify problems relating to the scope, purpose, interpretation and use of the AHRC's existing Technical Appendix and to make recommendations for improvement. The consultation has been conducted by the Humanities Research Institute at the University of Sheffield on behalf of a Technical Appendix Workroup of the Network of Expert Centres (<http://www.arts-humanities.net/noc>).
- 1.2 The consultation began in October 2009 with an online survey which was made available to the college of technical reviewers, followed by an online survey which was made available to successful AHRC applicants whose projects had required them to complete a Technical Appendix. Survey responses were received from 21 out of 40 technical reviewers and 65 out of approximately 500 successful AHRC applicants. The majority of applicants did not appear to possess a detailed knowledge of technical issues. The surveys were then supplemented with a series of detailed interviews by telephone and face-to-face meetings. We interviewed technical reviewers, successful applicants and technical practitioners who had raised issues in their survey responses which we felt would benefit from more detail and those who had been unable to complete the survey in time. During the consultation process we held a workshop at King's College London on 21st January 2010. The purpose of the workshop was to bring together technical reviewers, AHRC panel members, successful applicants and policy representatives from organisations such as the JISC and the Digital Curation Centre in order to explore the requirements of a revised Technical Appendix and register any continuing concerns within the community.
- 1.3 A summary of the community's views relating to the existing Technical Appendix constitutes the first part of this document. The views expressed here are not necessarily those held by the authors or the Network of Expert Centres. The second part of this document makes recommendations for a revised Technical Appendix, which includes renaming the document to 'Technical Plan'. These recommendations have taken on board all the views which have been expressed throughout the consultation period and we feel that the result is a revised Technical Appendix which reflects the entire range of digital outputs and digital technologies which are now possible within arts and humanities research in a way which is intelligible and flexible.
- 1.4 The authors of this document: Jamie McLaughlin, Michael Meredith, Michael Pidd, Katherine Rogers.
- 1.5 The Technical Appendix Workroup of the Network of Expert Centres: Daisy Abbott, Ian Broadbridge, Richard Deswarte, Alastair Dunning, Jennifer Edmond, Paul Ell, Leigh Garrett, Gareth Knight, Ian Gregory, Catherine Hardman, Lorna Hughes, Christopher Pressler, David Robey (chair), Torsten Reimer, Julian Richards, Amy Robinson, Susan Schreibman, Martin Wynne. The present version of this document incorporates revisions agreed at the most recent meeting of this Workroup.

## 2. Review of the Existing Technical Appendix

### 2.1 General

- 2.1.1 Overall there is very strong support for the principle of the TA and both technical reviewers and the majority of applicants feel that a document which conveys the technical aspects of a project should remain a requirement. Some applicants noted that the process of completing a TA encouraged them to think about the practicalities of their project in a way which is not necessarily encouraged by the Application Form or Case for Support, whilst others commented that the TA made them think about their project as a whole. In particular, a few applicants stated that they had benefited from the requirement to think about the timetable and milestones of a project in relation to the stated deliverables.
- 2.1.2 However, the majority of people surveyed also feel that the TA's function has become unclear and that its role within the AHRC application process has changed over the years without there being a clear shift in AHRC instructions. The suggestion here is that the AHRC requires the applicant to provide a TA which was originally conceived for the Resource Enhancement programme in support of the work of the AHDS and which is not necessarily relevant to today's types of digital outputs and technology-based research methodologies.
- 2.1.3 Both technical reviewers and applicants feel that the current TA is only appropriate for certain types of projects: typically text and image-based datasets which are created as digital surrogates of real objects such as manuscripts which are held by third parties such as libraries, museums and archives. Applicants in particular complain about having to shoe horn their description of technical aspects to fit a TA whose questions are not entirely relevant to them. Crucially, it was noted that the TA fails to capture the necessary information for the entire range of outputs which are now 'born digital', such as digital art, software and user-generated content.
- 2.1.4 It has been noticeable that applicants in the visual and performing arts, including the practice-led arts, are particularly unhappy with the TA. The TA asks questions which are not relevant to their discipline using terminology which is often alien to them.
- 2.1.5 There is considerable confusion about determining when a TA is necessary. The majority of people surveyed agree that a TA is necessary for a digital output or research methodology which includes the creation of a dataset, and most agree that a TA should not be necessary for an informational project website. However, there is uncertainty regarding the many grey areas which lie between. Again, this can be seen to be borne of the fact that there are now many different types of digital output and uses of technology than was envisaged when the TA was originally conceived. When there is uncertainty the majority of applicants provide a TA for good measure, whilst technical reviewers are frustrated by the demands which these place on their time, seeing them as unnecessary.
- 2.1.6 Virtually all technical reviewers complain that the TA is treated by many applicants as an afterthought and that there is little connection between the TA and the Case for Support. Many feel that the term 'appendix' is particularly unhelpful in this regard. These views are borne out by responses from some of the applicants, who refer to the TA being a document which they ask their technician to complete, saying that they do not become involved. A few applicants also felt that that the TA was simply unnecessary. However, all technical reviewers, when interviewed, said that they could identify cases in which the applicant had treated the TA as an afterthought and that this attitude generally resulted in a poor explication of the proposed project's technical elements.

- 2.1.7 Many technical reviewers feel that the guidance for applicants is wholly inadequate and that the section headings are obscure. Many report that the TA gives the impression of being a test for applicants, and those reviewers who also support or advise applicants on their own applications report that the applicant is often baffled by the document and feels overwhelmed. Further, technical reviewers feel that, at a very minimum, if applicants were directed to the guidance which is available for technical reviewers they would have a much better understanding of what is being required of them from each section of the TA. Overall, there is a strong feeling amongst technical reviewers and applicants that considerably more guidance is required in a format which is accessible to both parties, including information about best practice, with a view to using the TA as a process of education and information rather than its current reputation as a test.
- 2.1.8 Some applicants feel that the TA duplicates some of its questions, reinforcing the view that the subjects which the TA wishes the applicant to address are poorly understood by the community at large and that the guidance is inadequate. Many of these misunderstandings can be seen in the subsequent sections of this chapter.
- 2.1.9 Many applicants believe that a response is required of every section of the TA. This is particularly problematic for disciplines or activities which do not meet the TA's implied assumptions as to what constitutes a digital output, such as the practice-led arts and software development.
- 2.1.10 When asked if they read the entire application in addition to the TA, all technical reviewers answered positively. Yet, despite this, the majority of technical reviewers feel that it is difficult for them to obtain the information which they need in order to make an accurate judgement about the applicant's technical provisions within the project. Many report having to read between the lines and piece together information which is scattered across the Application Form, Case for Support and TA. The single, commonest issue reported is the failure of applicants to identify, clearly and unambiguously, the scope, content and purpose of their digital output.
- 2.1.11 A number of applicants feel that their institution provides insufficient technical support and that they have difficulty identifying a suitable person to assist them with the TA. Some applicants even express concern that they are very much at the mercy of IT people with no guarantee that they are being provided with the right guidance, although this perhaps points to a lack of engagement with technical issues on the applicant's part. Some pointed out that the former AHDS had created a level playing field which was of particular benefit to applicants whose institutions had poor provision for projects with a technical component. There is some concern that applicants within institutions which have poor IT provision are now at a disadvantage.
- 2.1.12 Both technical reviewers and applicants identified usability problems with the TA form, available through Je-S, and there was general consent that the character limits for each section (noted to be almost random) leaves many applicants with insufficient space to provide the level of technical detail required in order to satisfy the technical reviewer. Technical reviewers observe that applicants who provide a TA as a separate attachment generally provide a higher quality explication of their project's technical components due to the absence of a character count and the ability to provide typographical layout and formatting. Interestingly, very few applicants seem to be aware that one is permitted to upload a TA as a separate attachment.

- 2.1.13 It was noted by applicants and technical reviewers alike that, often, applications which present a very good Case for Support will sometimes fail due to an abysmal TA, reinforcing the need for a culture change in the way in which applicants view the role and purpose of the TA.
- 2.1.14 One applicant questioned the expertise of the technical reviewers themselves, describing a scenario in which a TA was failed due to the technical reviewer having what he or she believed to be a poor understanding of the technology or technical methodology being proposed. We raise this because many technical reviewers feel that the process of technical review lacks guidance as a whole. Technical reviewers would like to be given more confidence that their judgements are consistent with their peers and in line with AHRC policy on technical issues. Some suggest that they would benefit by being given access to statistical data, including pass and fail rates, plus a knowledge base which is agreed by all technical reviewers and available as guidance to applicants. Yet, in spite of this desire for more certainty, all the reviewers who either responded to the survey or participated in an interview demonstrated parity with their peers in terms of articulating what constituted appropriate technical provision on a project.

## **2.2 Project Management of Technical Aspects (TA, Section 1)**

- 2.2.1 The majority of technical reviewers and applicants feel that section 1 'Project Management of Technical Aspects' is confusing for applicants in terms of its relationship to the requirement to document project management in the Case for Support. Some applicants feel that this section is for the management of technical components only, some feel that it simply warrants a duplication of what is written in the Case for Support whilst many others - reviewers and applicants alike - feel that the distinction is artificial.
- 2.2.2 The majority of technical reviewers feel that applicants have an extremely poor understanding of basic concepts and good practice in project management, such as the setting of milestones. The cause of this is felt to be poor knowledge through inadequate guidance and the tendency to treat the TA as an afterthought. Yet many technical reviewers note that section 1 of the TA is a key section for instilling confidence in them that the applicant is capable of delivering the proposed digital outputs (irrespective of the question as to whether section 1 should be in the TA at all).
- 2.2.3 Technical reviewers feel that section 1.b 'Project Timetable' is particularly problematic in that applicants do not provide timetables which demonstrate careful planning and that, often, the technical timetable contradicts or fails to accord with the overall project timetable given in the Case for Support. Reviewers also complain about timetables often being impenetrable in terms of layout and the level of detail, and comment that more guidance is needed here.
- 2.2.4 Technical reviewers note that the individuals responsible for the technical delivery of a project are not always clearly identified.
- 2.2.5 The chief concern for many technical reviewers is that applicants fail to provide a clear, unambiguous description of the project deliverables in section 1.c and reviewers comment that they often have to deduce the type, scope and purpose of the intended deliverable by reading between the lines across the entire application.



- 2.2.6 Technical reviewers proposed a number of solutions for improving the rigour of section 1, such as workflow diagrams, gantt charts and an assessment of risk in line with other funding bodies.

### **2.3 Data Development Methods (TA, Section 2)**

- 2.3.1 Both technical reviewers and applicants agree that section 2 'Data Development Methods' is a critical section in the entire TA but that the requirements of sections 2.a 'Content Selection' and 2.b 'Data/file formats' for different types of digital outputs and research methodologies is not clear, particularly given the range of outputs which are now possible, such as digital art, software and user-generated content. These sections appear to be particularly confusing for applicants in the practice-led arts for whom the concept of creating a dataset is not always applicable. It is generally agreed that these sections reflect an earlier, humanities-centric notion of what constitutes a digital output or research methodology.
- 2.3.2 Technical reviewers note that, although this section is called 'Data Development Methods', the emphasis is on content selection and file formats with no opportunity to provide information about data development process. Many reviewers agree that describing data development process is important so that the applicant can demonstrate an understanding of how content creation takes place in practice and how the different data types relate to one another. At present this information can only be obtained from a well-articulated timetable. One should also note that, for the practice-led arts, process is often a more central part of a project's research methodology than data.
- 2.3.3 There is widespread confusion amongst applicants regarding the meaning of section 2.c 'Documenting the Resource'. This section is interpreted in a variety of ways, including internal documentation of the technical work, metadata and user guidance.
- 2.3.4 Applicants are generally confused by the distinction between sections 2.d 'Advice Sought on Planning Your Proposed Project' and 2.e 'Consultation with Projects Using Similar Methods' and information is often repeated. Some technical reviewers note that there is a tendency for applicants to identify a public resource similar to the one which they envisage and say "ours will be like that one" whilst others note that these sections encourage applicants simply to go through the motions of seeking advice for the sake of filling in the boxes. All agree that the purpose of these two sections is unclear since the demise of the AHDS.
- 2.3.5 Some applicants complain that sections 2.d and 2.e assume that a project requires expertise from outside the project team and that there is no allowance for the fact that members of the project team, including the PI, might have sufficient experience and expertise to make the need for outside consultation unnecessary. Most applicants feel that their application will be marked down if they have been unable to demonstrate that they have sought advice, whereas most technical reviewers feel that external advice is unnecessary if the project team is able to demonstrate a thorough understanding of technical issues throughout the rest of the TA.
- 2.3.6 Most technical reviewers feel that the focus of sections 2.d and 2.e solely on outside consultation is unhelpful and there should be more emphasis on the experience and expertise of the project team itself, particularly the individuals or organisation who will be responsible for the technical work. One technical reviewer noted that, when the technical components of a project do not go according to plan, the experience and expertise of the technician or developer in resolving the problem is vital. If a technical reviewer is able to see that the

technician or developer has appropriate expertise then the reviewer's assessment of risk in the project will be influenced.

## **2.4 Infrastructural Support (TA, Section 3)**

- 2.4.1 The majority of technical reviewers feel that section 3. 'Infrastructural Support' is rarely treated in any detail and that, if an applicant says that their institution will provide all necessary hardware, software and backup procedures, then it is difficult to argue with this.
- 2.4.2 Some applicants note that section 3 invites institutions to promise infrastructural support but that this support is not necessarily forthcoming when the project is funded. It was suggested that this section could be used to reinforce institutional commitment to a project by requiring institutions to sign off this section. Others note that institutional sign-off of infrastructural support is implicit in the overall sign-off of an application and that a failure to honour these commitments can be highlighted during project reporting (although this would be difficult where institutions have final sign-off of the reports themselves).

## **2.5 Data Preservation and Sustainability (TA, Section 4)**

- 2.5.1 There is widespread confusion amongst applicants as to the meaning of the terms 'preservation' and 'sustainability' when completing section 4. 'Data Preservation and Sustainability'. The majority of applicants believe that the two terms are interchangeable and, as such, will often repeat information in all three subsections. There is a clear need to educate applicants through the provision of better guidance and transparent definitions. Some technical reviewers suggest that more use should be made of the guidance which is already available via the Digital Curation Centre.
- 2.5.2 In the absence of the AHDS, some technical reviewers feel that the AHRC should provide clearer policy on preservation and sustainability so that reviewers understand what rules, if any, they should be applying when judging an applicant's provisions for preservation and sustainability. There is a sense that technical reviewers are continuing to apply former AHDS policy but there needs to be guidance as to whether this policy is still applicable in today's environment and assurances that it is being applied consistently across the college.
- 2.5.3 There is disagreement amongst applicants as to whether or not data preservation and resource sustainability should be a requirement. This is particularly so for the practice-led arts in which the technological emphasis is on process rather than data and so the notion of creating a dataset which needs to be preserved, or a resource which needs to be sustained, is not necessarily applicable. This is not helped by the applicant's belief that provisions for preservation and sustainability are mandatory, irrespective of the nature of the project's technical component.
- 2.5.4 A number of applicants feel that academics should not be responsible for the sustainability of their research data and that it is odd to make business planning a requirement of a research funding application. These applicants point to the need for a solution to be provided at a national level.
- 2.5.5 Applicants also note that the costs associated in data preservation and resource sustainability are unlikely to come from HEIs given the current economic climate and that one can expect to

see institutions withdrawing investment in these areas. One applicant suggested that the costs of data preservation and resource sustainability should be permitted within an institution's fEC.

## **2.6 Access (TA, Section 5)**

- 2.6.1 There is widespread confusion amongst applicants as to the meaning of section 5. 'Access'. Accessibility is generally interpreted to mean either the need to make a resource publicly available for free or the need to make a resource comply with W3C accessibility guidelines.
- 2.6.2 As with many sections of the TA, applicants in the practice-led arts do not always feel that section 5 is relevant to their project, especially when technology is being used to study process rather than create an enduring dataset. Yet many take the view that a failure to make process-based data publicly available will prejudice their application. Technical reviewers report that this situation results in applicants proposing digital outputs which, in the reviewer's opinion, are of little value to the wider community.
- 2.6.3 Technical reviewers suggest that applicants should be encouraged to consider data interoperability, re-use and the relationship of their proposed resource to existing resources when considering accessibility.

## **2.7 Copyright and Intellectual Property Issues (TA, Section 6)**

- 2.7.1 The majority of technical reviewers and applicants feel that section 6. 'Copyright and Intellectual Issues' should not be a part of the TA and that it should be subsumed within the application's overall requirement to consider IP and ethical issues.
- 2.7.2 Most agree that section 6 represents an older humanities-centric view of digital resources and research methodologies in which the applicant typically proposes to create a digital surrogate of a real object, such as a manuscript located within a museum, and that there is a requirement to gain consent from the owner. This requirement remains true today but copyright and IP has generally become more complicated due to the diverse range of digital outputs which are now possible. For example, many digital outputs are now 'born digital' such as digital art, software and user-generated content and, as such, represent IP which has been created by individuals on the project team or within the community at large. Many agree that the scope of this section needs to be enlarged and accompanied by guidance which reflects the range of IP and copyright scenarios now possible.
- 2.7.3 Technical reviewers note that section 6 tends to invite a positive answer only, with assurances given by the applicant that their institution will ensure conformance with the law. In addition to the fact that most technical reviewers believe that section 6 should not be present in the TA, reviewers also feel that instructions to the applicant should be changed from the current emphasis on demonstrating that they have sought advice to a requirement that they explicitly identify issues of copyright, IP and ethics and the manner by which they will be addressed.
- 2.7.4 The majority of technical reviewers feel that section 6 is concerned with the law rather than technology and that they are not necessarily qualified to judge the applicant's response.

### 3. Recommendations for a Technical Plan

#### 3.1 General

- 3.3.1 We recommend that the Technical Appendix be renamed the Technical Plan (TP) in order to remove the implication that it is an afterthought or subsidiary document and bring its status in relation to the Case for Support in line with the AHRC's Impact Plan. We recommend that a TP should be supplied by all project grant applications where digital outputs or digital technologies are essential to the planned research outcomes. We consider a digital output or digital technology to be an activity which involves the creation, gathering, collecting and/or processing of digital information in support of a project's research methodology and/or dissemination and impact plans. Such an activity requires the completion of a Technical Plan.
- 3.3.2 In framing the requirements of the TP we have sought to increase and emphasise its relationship with the Case for Support and the Impact Plan with a view to raising the applicant's awareness of the need to integrate technical components more closely into the programme of research and justify how technical components support the research questions, the research methodology and the plans for academic as well as wider societal and economic impact. Further, we have sought to frame a TP which cannot be completed without reference to the Case for Support and Impact Plan, and vice versa, with a view to ensuring that research and technology are considered in the round and, in particular, promoting the need for both applicants and technical personnel to engage with each other's roles and knowledge base (where the roles are carried out by separate individuals).
- 3.1.1 Throughout our review of the Technical Appendix it has been clear that the absence of guidance and a shared knowledge base for both applicants and technical reviewers has been a significant factor in the applicant's misunderstanding of both the document and the expectations of the technical reviewers. The proposed TP will only be successful if it is supported by guidance which is comprehensive, unambiguous, regularly updated, available online, accessible from a single place and clearly signposted to the applicant. Further, this guidance and its supporting materials must consider each component of the TP from the perspective of different disciplines, different research methodologies and the entire range of digital outputs and processes which are now possible in order to minimise the presence of grey areas, but within the practical constraints of what is achievable and useful. The guidance must explain to the applicant the meaning of each component of the TP, summarise the technical reviewer's expectations, provide a knowledge base similar to the information once provided by the AHDS Centres and, ideally, supply recommendations as to where an applicant can gain dedicated technical support if their institution is unable to provide the necessary expertise. The guidance must include clear definitions of terminology. This guidance should be carefully balanced, with the intention of educating applicants rather than testing them, but ensuring that applicants are not simply told what to write. Some of this guidance will be developed by the Network of Expert Centres under its present contract with the AHRC, but there will be significant cost to the AHRC in maintaining it and keeping it up to date.
- 3.1.2 We recommend that the TP be written as a single prose document, to be uploaded to Je-S as an attachment. There should be recommended section headings and the applicant should be given detailed guidance as to what is required under each heading, emphasising to them that only the sections which are relevant to their project need to be supplied. Again, the applicant should be given guidance as to which section headings the technical reviewer will expect to see present, depending on the digital output or digital technology proposed. Further, we

recommend that the TP be restricted by an overall word count of 2,000 (approx. 4 sides of A4) rather than a word or character count per section, similar to the Case for Support, so that the applicant can provide levels of detail for each section which are appropriate to the type and scope of digital output or digital technology being proposed. We believe that these proposals will overcome two commonly stated problems with the Technical Appendix: its restrictive assumptions about the type of digital output or digital technology being proposed, and the applicant's belief that they will be penalised for not providing information under all section headings.

3.1.3 During the consultation process we explored the possibility of a 'TA Full' and a 'TA Light'. Virtually all technical reviewers and half of applicants felt that this would lead to confusion. We are however recommending that applicants should provide a degree of detail in their TP that is proportionate to the value and importance of the proposed data outputs or technologies to their research outcomes and for the larger research community.

3.1.4 We recommend the following section headings as the framework for the TP:

Section 1: Summary of Digital Outputs and Digital Technologies

Section 2: Technical Methodology

Section 2.a: Standards and Formats

Section 2.b: Hardware and Software

Section 2.c: Data Acquisition, Processing, Analysis and Use

Section 3: Technical Support and Relevant Experience

Section 4: Preservation, Sustainability and Use

Section 4.a: Preserving Your Data

Section 4.b: Ensuring Continued Access and Use of Your Digital Outputs

3.1.5 The rationale which underlies this framework can be summarised as follows:

Section 1: What is being proposed?

Section 2: How is it going to be achieved?

Section 3: Who is going to do the work?

Section 4: What are the plans for the future?

## **3.2 Project Management, Copyright and Intellectual Property Issues**

3.2.1 We recommend that the TP does not include sections relating to project management, including timetabling and monitoring, and that these items be part of the requirements of the Case for Support. The intention here is twofold: to remove the confusion caused by having a

project management section in two different parts of the application and to integrate the research programme and the technical work more closely.

- 3.2.2 The guidance for the Case for Support should inform the applicant that project management, including timetabling and monitoring, should take into consideration the technical aspects of the project if a digital output or digital technology is proposed, that the technical reviewer will assess this part of the application as part of his or her review of the TP, and that the applicant should supply a level of detail which is appropriate to the project.
- 3.2.3 Irrespective of whether a project has a technical component or not, the AHRC should consider requiring applicants to use a standard template when providing a timetable in the Case for Support (eg. a Microsoft Word table) in the same way that the EU and JISC make templates available for use in their proposals. Such a template will allow applicants to provide information about project planning much more quickly than at present, and in a structured and consistent format which is legible to reviewers. The template should include the following columns: intended deliverable (i.e. objective), item of work, start date, end date, person responsible, milestone.
- 3.2.4 The project management section of the Case for Support should include a requirement to provide an assessment of risk when the applicant is proposing a digital output or digital technology in order to demonstrate that they have considered the impact of technical aspects going wrong. As with the timetable, the AHRC should consider making the provision of a risk assessment a requirement for all applications with a view to educating the sector about the importance of understanding risk, irrespective of whether or not a digital output or digital technology is proposed.
- 3.2.5 We recommend that the word limit for the Case for Support be increased when the applicant is providing a TP in order to accommodate the additional information which is required of the project management section.
- 3.2.6 We recommend that the guidance for filling in the TP be supplemented by supporting materials which includes descriptions of best practice for project management with a view to improving the applicant's knowledge and confidence.
- 3.2.7 We recommend that the TP does not include a section on copyright, intellectual property and ethical issues and that this item be included as part of the requirements of the Ethical Issues section of the Application Form to improve the likelihood that the PI will consider these issues at an early stage. The applicant should be instructed to consider issues of ownership relating to the reproduction of data, the creation of data and the re-use of data by the public and other third parties when the project involves a technical component, providing a level of detail which is appropriate to the project. The applicant should be informed that the technical reviewer will assess this part of the application as part of his or her review of the TP.

### **3.3 The Technical Summary**

- 3.3.3 We recommend that the Case for Support include the provision for a Technical Summary, similar to the existing Impact Summary. Ideally the Technical Summary should appear in the Application Form alongside the Impact Plan, facilitating easier availability to the public, but for pragmatic reasons relating to Je-S the Technical Summary would need to be included in

the Case for Support. The Technical Summary should be a brief description of the project's proposed digital output or digital technology whereas the TP should provide greater detail.

- 3.3.4 If the project is proposing a digital output or digital technology which the applicant does not feel warrants the inclusion of a TP, he or she should justify this view and explain the rationale. Detailed guidance should inform the applicant of the types of digital outputs or digital technologies which do not warrant the inclusion of a TP, along with recommendations of best practice for each type. The most obvious example would be websites that provide information about the project but do not include other data resources. Applicants should be expected to demonstrate in the Technical Summary that they have read and understood the guidance.
- 3.3.5 If the project is proposing a digital output or digital technology which cannot be sustained beyond the period of funding, or which has no value in being sustained, the applicant should still be directed to complete a TP, considering issues of preservation but explaining the reasons for not sustaining his or her data. Overall, guidance should be given which informs the applicant of the value of preserving their data and making it available to the wider community. (See also Section 3.9 below.)
- 3.3.6 All other digital outputs or digital technologies described within the Technical Summary should be described more fully through the inclusion of a TP, using a level of detail and section headings appropriate to the project.
- 3.3.7 We recommend that the word count of the Case for Support be adjusted to accommodate the Technical Summary for applications in which a digital output or digital technology is proposed.

### **3.4 Summary of Digital Outputs and Digital Technologies (TP, Section 1)**

- 3.4.1 We recommend that the first section of the TP be called 'Summary of Digital Outputs and Digital Technologies' and that the applicant be instructed to provide a brief and clear description of the digital output or digital technology being proposed, considering the following aspects: purpose, source data, content, functionality, use and its relationship to the research questions. We would also expect the applicant to identify the type of access envisaged, if applicable, such as 'freely available online'.
- 3.4.2 The intention here is to provide the technical reviewer with a clear understanding of what the applicant intends to achieve technically so that the reviewer is then able to assess whether the proposals for realising this are appropriate. We would anticipate this section being completed by all applicants who are required to provide a TP. The applicant should provide a level of detail which is appropriate to the digital output or digital technology being proposed and its status within the project.

### **3.5 Technical Methodology: Standards and Formats (TP, Section 2.a)**

- 3.5.1 We recommend that the TP contain a section called 'Technical Methodology' and that the first subsection be called 'Standards and Formats' in which the applicant is required to provide information about his or her choice of data and file formats.

- 3.5.2 This section would be similar to section 2.b of the existing Technical Appendix but with the requirement that the applicant should also provide any relevant vital statistics relating to the data, such as size, quantity and duration. Although such statistics might need to rely on estimation (for example, it is often difficult to give precise detail about the final size and duration of edited video footage), the applicant should be encouraged to provide the reasoning behind their calculations.
- 3.5.3 Guidance should inform the applicant of the reasons for using commonly-agreed standards and formats in order to improve understanding within the sector.
- 3.5.4 The applicant should justify their reasons for using the standards or formats in order to discourage passive reproduction of guidance materials and encourage genuine understanding.
- 3.5.5 The applicant should be given clear guidance as to which elements of a project warrant justification in this section, since it is apparent that many applicants do not realise that certain research practices constitute the creation of a durable dataset, such as interviews, whilst other applicants will focus on the data and file formats relating to a dataset but will fail to provide information about a web interface and related server-based technology.
- 3.5.6 Similarly, the applicant should be given clear guidance as to which elements of a project do not require justification in this section, such as the use of conventional PC desktop software.

### **3.6 Technical Methodology: Hardware and Software (TP, Section 2.b)**

- 3.6.1 We recommend that the second subsection of ‘Technical Methodology’ be called ‘Hardware and Software’ in which the applicant is asked to provide information about any hardware or software which will be used to support the project’s research methodology which is additional or exceptional to conventional desk-based research and institutional provision. Examples might be digital cameras, audio recorders, specific server technology, software development tools, motion capture technology, database software, data analysis tools or data management and visualisation tools. The applicant should be expected to justify their use, where not obvious.
- 3.6.2 Technical reviewers would expect the items which appear in this section to be included in the Justification for Resources and cross-referenced if there is an associated budget line.
- 3.6.3 We would consider this subsection to be optional, depending on the type of digital output or digital technology proposed.

### **3.7 Technical Methodology: Data Acquisition, Processing, Analysis and Use (TP, Section 2.c)**

- 3.7.1 We recommend that the third subsection of ‘Technical Methodology’ be called ‘Data Acquisition, Processing, Analysis and Use’ in which the applicant is asked to give information about the actual process of technical development. Here we are looking for the applicant to articulate a workflow, showing how the standards and formats given in TP section 2.a and the hardware and software given in TP section 2.b relate to each other with a view to justifying that they have thought through how they will achieve their digital output or digital technology in practice. This section would be applicable to applicants with fairly



simple technical workflows, such as recording, transcribing and publishing interview transcripts through to the more complicated workflows which are required of major online resources.

- 3.7.2 This section should consider the technical development process from the point of data capture or data creation through to final delivery (in the case of a digital output) or analysis (in the case of a digital process). The applicant should be asked to consider issues such as backup, monitoring, quality control and internal documentation where relevant, identifying procedures which are appropriate to the research environment. For example, technical reviewers acknowledge that the backup procedures which are possible during fieldwork might be very different to those which are possible within an office environment. Supporting materials should assist applicants in understanding recommended practices within different research environments.
- 3.7.3 It should be emphasised to the applicant that this section needs to relate to the timetable and milestones given in the Case for Support as well as the project's overall research methodology and that the technical reviewer will be assessing the alignment of the technical development process with other project activities for logic and timeliness.
- 3.7.4 The level of detail required in this section should be appropriate to the digital output or digital technology being proposed.

### **3.8 Technical Support and Relevant Experience (TP, Section 3)**

- 3.8.1 We recommend that the TP contain a section called 'Technical Support' in which the applicant is asked to provide information about the individuals, facilities or institutions that will be responsible for the technical components of the project. The applicant should be encouraged to summarise expertise and cite similar examples of work which the individual, facility or institution has conducted in the past. Examples could be cited because they are similar to the proposed digital output or digital technology in terms of scope, content, objectives, technology or technique. The intention here is to enable the technical reviewer to obtain an insight into the skills and track record of the individuals, facilities or institutions involved in order to assess the knowledge base from which the project is drawing and identify the need for any additional expertise and training. Technical reviewers note that a project team which is able to demonstrate expertise and experience has a positive effect on the reviewer's assessment of risk.
- 3.8.2 The applicant should be asked to identify which aspects of the technical work will be undertaken by the individual, facility, institution or service, naming key individuals where possible. The applicant should consider the risks to the project if a key individual becomes unavailable, including the contingency plan for acquiring these skills from elsewhere. Further, the applicant should consider how the individual, facility, institution or service will support and sustain the project beyond the period of funding, where relevant, with reference to the project's sustainability plan (section 4.b).
- 3.8.3 When summarising technical expertise and experience, this can be with reference to the applicant's own skills in addition to those of third parties. Third parties might be individuals within the applicant's institution, an external HEI, other public organisations or non-public organisations such as SMEs and freelancers. However, only facilities, institutions and services which are dedicated to the type of work being proposed or which are not part of

conventional HEI IT infrastructure should be summarised. Examples of such facilities, institutions and services might be an e-Science infrastructure, a performing arts studio facility, a humanities computing centre or a server infrastructure which lies outside a HEI's standard provision. A HEI's computing services and institution-wide infrastructure would not be relevant here.

- 3.8.4 The applicant should be asked to identify the need for any additional training or expertise and give information as to how this will be provided. Further, the applicant should be asked to provide information about any external advice which they have sought in order to supplement the existing knowledge base .
- 3.8.5 This section should not be used for 'name dropping' or for the inclusion of entire personal profiles. All accounts of expertise and experience should be relevant to the technical work being proposed, the research methodology and the project plan as appropriate. A TP which uses up most of its permitted word count for this section will not be viewed favourably by the technical reviewer. Our survey suggests that technical reviewers are more interested in the relationship between the skill set and the project's objectives than the name of the individual, facility or institution when this information has been given in the past.
- 3.8.6 It should be made clear to the applicant that the expertise and experience of the individual, facility, institution or service responsible for the project's technical components - whether internal or outsourced to a third party - should be self-evident within the quality of the TP as a whole. An applicant who claims to be able to draw upon considerable expertise but is unable to show that they have worked closely with the individual, facility or institution in completing the other sections of the TP will not be viewed favourably by the reviewer.
- 3.8.7 It should be made clear to the applicant how the technical reviewer will use this information in his or her judgement of the project's technical component, providing reassurance that the application will not be prejudiced if the applicant has had to seek external advice.

### **3.9 Preservation, Sustainability and Use: Preserving Your Data (TP, Section 4.a)**

- 3.9.1 We recommend that the TP contain a section called 'Preservation, Sustainability and Use' and that the first subsection be called 'Preserving Your Data' in which the applicant is asked to provide information about his or her plans for preserving the project's data beyond the period of funding.
- 3.9.2 It is very important that the applicant is given a clear definition of the term 'preservation' and informed that this is different from the meaning of the term 'sustainability'. We recommend that the term 'preservation' be used to mean the storage of project data beyond the period of funding , whilst the term 'sustainability' be used to mean the plans for ensuring that a digital output remains publicly accessible and usable. Preservation of data means that it is potentially usable, but not necessarily accessible or easy to use.
- 3.9.3 The applicant should be asked to state what, if any, data he or she intends to preserve beyond the period of funding and why there is value in preserving this data. If an applicant believes that none of his or her project's data should be preserved over the long term then this should require justification. As a matter of good practice projects should be encouraged to preserve data that is essential to their research findings for an appropriate period beyond the end of the funding period, with a view to supporting the research findings if necessary. They should also

consider the potential value of any data produced for other researchers. However the length and cost of preservation should be proportionate to the value and significance of the data. It should be open to applicants to make a case, where appropriate, for not preserving data outputs of the project at all, and if the case is a good one the application should not be prejudiced.

- 3.9.4 The applicant should be asked to consider the preservation of his or her data in four ways: what, where, how and for how long. The applicant should also consider any institutional support needed in order to carry out these plans.
- 3.9.5 The term ‘data’ should be seen to encapsulate primary research data (derived or ‘born digital’), programming code and documentation. The guidance should seek to educate the applicant and encourage them to think about the possibilities for re-use of their data in other contexts and by other users. Ideally the applicant would show an awareness of the importance of long-term storage to the community at large and specifically in relation to any impact plans which he or she has outlined in the Case for Support.
- 3.9.6 The applicant should be given clear guidance as to the circumstances when preservation might not be necessary and there should be an initiative to ensure parity of judgements across the technical review college.
- 3.9.7 The applicant should be asked to consider where his or her data will be stored over the long term, for how long, and who will be responsible for its survival in the future. The applicant will need to be provided with guidance relating to recommended data repositories, as well as information about what constitutes appropriate storage.
- 3.9.8 The applicant should be asked to consider how his or her data will be stored over the long term in the sense of describing how the data will be able to endure changes in the technological environment and remain usable in the future. Here the technical reviewer will be looking for the applicant to demonstrate that they understand the reasons for their choice of technical standards and formats in section 2.a ‘Technical Methodology: Standards and Formats’.
- 3.9.9 When considering how data will be stored over the long term, the applicant should be encouraged to describe the types of documentation which will accompany the data. Documentation in this sense means technical documentation rather than user documentation. It includes, for instance, technical description, code commenting, project-build guidelines, the documentation of technical decisions and resource metadata which is additional to the standards given in section 2.a. Not all types of documentation will be relevant to a project and the quantity of documentation proposed should be proportional to the envisaged value of the data.

### **3.10 Preservation, Sustainability and Use: Ensuring Continued Access and Use of Your Digital Outputs (TP, Section 4.b)**

- 3.10.1 We recommend that the second subsection of ‘Preservation, Sustainability and Use’ be called ‘Ensuring Continued Access and Use of Your Digital Outputs’ in which the applicant is asked to provide information about his or her plans for ensuring that outputs remain sustainable in the sense of accessible and usable beyond the period of funding. and the

- 3.10.2 It should be made clear to applicants that there are costs to ensuring sustainability in this sense over and above the costs of preservation. The project's sustainability plan should therefore be proportional to the envisaged longer-term value of the data for the research community. If the applicant believes that none of his or her digital outputs should be sustained beyond the period of funding then this should require justification. However, it is important that the applicant be made aware that it is not mandatory to sustain all digital outputs and that, given appropriate circumstances, his or her application will not be prejudiced. While both the applicant and the technical reviewer should be encouraged to consider the long term value of the digital outputs to the research community, where data is purely ancillary to a project's research outputs there may not be a case for sustaining it (though as proposed above there would probably be a case for preserving it). The applicant should be given clear guidance as to the circumstances when sustainability might not be a requirement.
- 3.10.3 Where sustainability plans are made applicants should be encouraged to plan for open, public access rather than closed access upon request only or access to a limited group. The applicant should provide justification if he or she does not envisage open, public access. A case can be made for charging for access, but the default expectation should be that access will be open.
- 3.10.4 The applicant should be asked to consider the sustainability of his or her digital output in five ways: what, where, how, for how long and at what cost. The applicant should also consider any institutional support needed in order to carry out these plans.
- 3.10.5 The applicant should be asked to consider the economics of how his or her digital output will remain publicly available in the future. They should be directed to consider issues relating to maintenance, infrastructure and upgrade (such as the need to modify aspects of a web interface or software application in order to account for changes in the technological environment), demonstrating how the type of delivery described in section 1 'Summary of Digital Outputs and Digital Technologies' can be sustained when the project's funding runs out.
- 3.10.6 The applicant should identify whether or not he or she envisages the academic content of the digital output being extended or updated beyond the period of funding, addressing the following issues: how this will be done, by who and at what cost. The applicant will need to show how the cost of this will be sustained after the period of funding runs out. We recommend that practical guidance be made available to assist applicants and their institutions.
- 3.10.7 There should be comprehensive guidance available to the applicant, providing example models of economic sustainability, with a view to educating the applicant and increasing his or her overall awareness of sustainability issues.
- 3.10.8 It will be important to emphasise to the applicant that a sustainability plan, although economic, does not necessarily mean a requirement to generate income or prevent resources from being freely available. Rather it is a requirement to consider the direct costs and expertise of maintaining their digital outputs for continued access by the public. Some applicants might be able to demonstrate that there are no significant sustainability issues with their digital output, some might be able to demonstrate that their facility or institution has satisfactory provisions in place already, and others might see the benefit of Open Source community development models. The applicant should provide reassurances of sustainability

which are appropriate to the digital output and its wider value to the arts and humanities community.

- 3.10.9 When completing this section, the applicant should be encouraged to consider the impact of sustainability issues on research in his or her field (if research in the discipline will be improved through the creation of the digital output, how will it be affected if the resource then disappears?) but also consider how his or her own plans for impact will be ensured and sustained. The applicant should also be encouraged to factor in the effects of any IP, copyright and ethical issues during the period in which the digital output will be publicly accessible.
- 3.10.10 Applicants should be required to make appropriate provision for user consultation and user testing in connection with their sustainability plans, and plan the development of suitable user documentation.
- 3.10.11 When completing this section, the applicant should be encouraged to consider the opportunities for re-use of his or her data by other resources and web services with a view to increasing its overall impact within the academic and non-academic communities. Guidance should emphasise that it is the use of recommended standards and formats along with the provision of appropriate documentation increase these opportunities. Examples of opportunities for re-use might include linked datasets for integrated searching across multiple research resources or ingestion into systems and services which are able to add further value and reach new audiences. Overall, in making sustainability plans the applicant should be encouraged to view his or her data as an asset which can be shared and re-used outside of the specific methods of access envisaged by the project.

## **4. Issues Relating to Web 2.0**

- 4.1 Throughout the consultation process we have been asking technical reviewers about their views regarding the use of third-party Web 2.0 services such as social networking sites, blogs and twitter since the use of these services by projects is becoming increasingly common. Originally these services were considered to be an add-on to a digital resource, enabling users to provide comments and tags to an academically-derived dataset. However, Web 2.0 services are used increasingly as part of project research methodologies, especially for research which focuses on specific communities or social trends in which user-generated content is the object of study. Funding programmes which respond to public policy issues, such as social cohesion, identity and wellbeing, will also bring about greater use of Web 2.0 services.
- 4.2 There are two issues with the use of third-party Web 2.0 services from a technical perspective: i) research data is being located on an infrastructure which is provided by a third party which usually resides outside the UK and whose services are not guaranteed to remain free of charge; ii) it is difficult for the applicant to preserve (i.e. harvest) copies of user-generated content (assuming that the data is gathered and stored with the user's consent) due to technical restrictions imposed by the services and the fact that the data will probably continue to grow beyond the period of funding.
- 4.3 In discussing the subject with our peers it has become apparent to us that the solution cannot be solved by requesting applicants to restrict their use of Web 2.0 services to those which are developed, hosted and supported by their own project or institution, since this would not

represent value for money and would remove the main value of using third-party Web 2.0 services: their popularity within the community.

- 4.4 Given the general consensus by the arts and humanities community that research data should be preserved in a durable form for use by others in the future, we believe that policy regarding the use of third-party Web 2.0 services within this context requires further study. In the absence of any policy, our own recommendations to the applicant would be that he or she should identify and justify the use of third-party Web 2.0 services in TP section 1 ‘Summary of Digital Outputs and Digital Technologies’ and consider an assessment of risk, including contingencies, within the ‘Project Management’ and the ‘IP, Copyright and Ethical Issues’ sections of the Case for Support. We would also recommend that guidance materials seek to increase the applicant’s awareness of some of the risks of using third-party Web 2.0 services.

# AHRC Technical Plan

## First draft of headings and related help pages

**Compiled by the Humanities Research Institute, University of Sheffield and the Network of Expert Centres Technical Appendix Working Group, on the basis of the Technical Appendix Review.**

### **A. General**

1. The Technical Plan (TP) should be supplied by all project grant applications where digital outputs or digital technologies are essential to the planned research outcomes. We consider a digital output or digital technology to be an activity which involves the creation, gathering, collecting and/or processing of digital information in support of a project's research methodology and/or dissemination and impact plans.
2. The TP should be closely integrated with the Case for Support and the Impact Plan.
3. It should be written as a single prose document, and uploaded to Je-S as an attachment, using the headings below, with a maximum overall word count of 2,000. The degree of detail provided under each heading should be proportionate to the value and importance of the proposed data outputs or technologies to the research outcomes and for the larger research community.
4. The section on project management in the Case for Support should take into consideration the technical aspects of the project if a digital output or digital technology is proposed, and should provide an assessment of risk. The Technical Reviewer (TR) will assess this part of the application as part of his or her review of the TP. Copyright, intellectual property and ethical issues relating to digital outputs and technologies should also be dealt with in the Case for Support.
5. Further supporting materials are available at XXXXXXXXXXXXXXXXXXXXXXXXX.

### **B. The Technical Summary**

6. Applications for projects involving digital outputs or technologies must include a Technical Summary in the case Case for Support, similar to the existing Impact Summary. The Technical Summary should be a brief description of the project's proposed digital outputs or digital technologies.
7. If you do not feel the inclusion of a TP is warranted, because the digital output or technologies are not essential to the planned research outcomes, you should justify this in the Technical Summary. The most obvious example would be websites that provide information about the project but do not include other data resources. You should also show in the Technical Summary that they you have read and understood the guidance provided for such outputs in the supporting materials. All other digital outputs or digital technologies described within the Technical Summary should be described more fully through the inclusion of a TP, using a level of detail appropriate to the project.
8. If the project is proposing a digital output or digital technology which are essential to the project's research outcomes but cannot or need not be preserved beyond the period of funding, you should still complete a TP, explaining the reasons for not preserving the data.

### **C. TP, Section 1: Summary of Digital Outputs and Digital Technologies**

9. This should provide a brief and clear description of the digital output or digital technology being proposed, considering the following aspects: purpose, source data, content, functionality, use and its relationship to the research questions. You should identify the type of access envisaged, if applicable, such as 'freely available online'.
10. The intention here is to provide the Technical Reviewer with a clear overview of what you intend to achieve technically, so that the Reviewer is then able to assess whether the proposals for realising this are appropriate. You should provide a level of detail which is appropriate to the digital output or digital technology being proposed and its status within the project.

### **D. TP, Section 2.a: Technical Methodology: Standards and Formats**

11. This should provide information about your choice of data and file formats. You should provide any relevant vital statistics relating to the data, such as size, quantity and duration. Although such statistics might need to rely on estimation, you should provide the reasoning behind your calculations.
12. Guidance is available in the supporting materials about commonly-agreed standards and formats. You should give your reasons for using the standards or formats chosen.

### **E. TP, Section 2.b: Technical Methodology: Hardware and Software**

13. You should provide information about any hardware or software which will be used to support the project's research methodology which is additional or exceptional to conventional desk-based research and institutional provision. They should be included in the Justification for Resources and cross-referenced if there is an associated budget line. Where necessary you should produce additional justification of the use of such items.
14. This subsection is optional, depending on the type of digital output or digital technology proposed.

### **F. TP, Section 2.c: Technical Methodology: Data Acquisition, Processing, Analysis and Use**

15. You should give information here about the process of technical development, articulating a workflow, and showing how the standards and formats given in section 2.a and the hardware and software given in section 2.b relate to each other. You should show that you have thought through how you will achieve your digital output or digital technology in practice.
16. This section should consider the technical development process from the point of data capture or data creation through to final delivery (in the case of a digital output) or analysis (in the case of a digital process). You should consider issues such as backup, monitoring, quality control and internal documentation where relevant, identifying procedures which are appropriate to the research environment. For example, technical reviewers acknowledge that the backup procedures which are possible during fieldwork might be very different to those which are possible within an office environment. Further guidance about recommended practices is available in the supporting materials.
17. This section needs to relate to the timetable and milestones given in the Case for Support as well as the project's overall research methodology. The Technical Reviewer will be assessing the



alignment of the technical development process with other project activities for logic and timeliness.

### **G. TP, Section 3: Technical Support and Relevant Experience**

18. You should provide information about the individuals, facilities or institutions that will be responsible for the technical components of the project. You should summarise expertise and cite similar examples of work which the individual, facility or institution has conducted in the past, where they are similar to the proposed digital output or digital technology in terms of scope, content, objectives, technology or technique. The intention here is to enable the Technical Reviewer to obtain an insight into the skills and track record of the individuals, facilities or institutions involved in order to assess the knowledge base from which the project is drawing and identify the need for any additional expertise and training. Technical Reviewers will note that a project team which is able to demonstrate expertise and experience has a positive effect on the assessment of risk.
19. You should identify which aspects of the technical work will be undertaken by the individual, facility, institution or service, naming key individuals where possible. You should consider the risks to the project if a key individual becomes unavailable, including the contingency plan for acquiring these skills from elsewhere. Further, you should consider how the individual, facility, institution or service will support and sustain the project beyond the period of funding, where relevant, with reference to the project's sustainability plan (section 4.b).
20. When summarising technical expertise and experience, this can be with reference to your own skills in addition to those of third parties. Third parties might be individuals within your institution, an external HEI, other public organisations or non-public organisations such as SMEs and freelancers. Only facilities, institutions and services which are dedicated to the type of work being proposed or which are not part of conventional HEI IT infrastructure should be summarised. Examples of such facilities, institutions and services might be an e-Science infrastructure, a performing arts studio facility, a humanities computing centre or a server infrastructure which lies outside a HEI's standard provision.
21. You should identify the need for any additional training or expertise and give information as to how this will be provided. You should provide information about any external advice which you have sought in order to supplement the existing knowledge base.
22. All accounts of expertise and experience should be relevant to the technical work being proposed, the research methodology and the work and impact plans as appropriate.
23. The expertise and experience of the individual, facility, institution or service responsible for the project's technical components - whether internal or outsourced to a third party - should be self-evident within the quality of the TP as a whole. An applicant who claims to be able to draw upon considerable expertise but is unable to show that they have worked closely with the individual, facility or institution in completing the other sections of the TP will not be viewed favourably by the reviewer. The application will not be prejudiced if you have had to seek external advice.

### **H. TP, Section 4.a: Preservation, Sustainability and Use: Preserving Your Data**

24. 'Preservation' here means the storage of project data beyond the period of funding, whilst 'sustainability' refers to the plans for ensuring that a digital output remains publicly accessible and usable. Preservation of data means that it is potentially usable, but not necessarily accessible or easy to use. This sub-section is about preservation.

25. You should state what, if any, data you intend to preserve beyond the period of funding and why there is value in preserving this data. If you believe that none of the project's data should be preserved over the long term then this should be justified. As a matter of good practice, however, projects are encouraged to preserve data that is essential to their research findings for an appropriate period beyond the end of the funding period, with a view to supporting the research findings if necessary. They should also consider the potential value of any data produced for other researchers. However the length and cost of preservation should be proportionate to the value and significance of the data. It is open to applicants to make a case, where appropriate, for not preserving data outputs of the project at all, and if the case is a good one the application will not be prejudiced.
26. You should consider the preservation of data in four ways: what, where, how and for how long. You should also consider any institutional support needed in order to carry out these plans, if not covered under Section 3.
27. The term 'data' includes primary research data (derived or 'born digital'), programming code and documentation. You should think about the possibilities for re-use of your data in other contexts and by other users, and connect this as appropriate with your Impact Plan.
28. You should consider where your data will be preserved over the long term, for how long, and who will be responsible for its survival in the future. See the related supporting materials on recommended data repositories, as well as information about what constitutes appropriate storage. You should consider how the data will be able to endure changes in the technological environment and remain potentially usable in the future. The Technical Reviewer will be looking for evidence that you understand the reasons for your of technical standards and formats in section 2.a 'Technical Methodology: Standards and Formats'.
29. You should describe the types of documentation which will accompany the data. Documentation in this sense means technical documentation rather than user documentation. It includes, for instance, technical description, code commenting, project-build guidelines, the documentation of technical decisions and resource metadata which is additional to the standards given in Section 2.a. Not all types of documentation will be relevant to a project and the quantity of documentation proposed should be proportionate to the envisaged value of the data.

**I. TP, Section 4.b: Preservation, Sustainability and Use: Ensuring Continued Accessibility and Use of Your Digital Outputs**

30. You should provide information here about plans for ensuring that data outputs remain sustainable in the sense of accessible and usable beyond the period of funding.
31. There are costs to ensuring sustainability in this sense over and above the costs of preservation. The project's sustainability plan should therefore be proportionate to the envisaged longer-term value of the data for the research community and should be closely related to the Impact Plan. If you believe that none of the digital outputs should be sustained beyond the period of funding then this should be justified. However it is not mandatory to sustain all digital outputs. While you should consider the long-term value of the digital outputs to the research community, where data is purely ancillary to a project's research outputs there may not be a case for sustaining it (though there would probably be a case for preserving it). See the supporting materials for further information.

32. Where sustainability plans are made, you should provide justification if you do not envisage open, public access. A case can be made for charging for access, but the default expectation is that access will be open.
33. You should consider the sustainability of your digital outputs in five ways: what, where, how, for how long and at what cost. You should also consider any institutional support needed in order to carry out these plans, if not covered under Section 3. You should also consider the economics of keeping the digital output publicly available in the future, including issues relating to maintenance, infrastructure and upgrade (such as the need to modify aspects of a web interface or software application in order to account for changes in the technological environment).
34. You should identify whether or not you envisage the academic content of the digital output being extended or updated beyond the period of funding, addressing the following issues: how this will be done, by who and at what cost. You will need to show how the cost of this will be sustained after the period of funding ends. See the support materials for further guidance.
35. A sustainability plan does not necessarily mean a requirement to generate income or prevent resources from being freely available. Rather it is a requirement to consider the direct costs and expertise of maintaining digital outputs for continued access by the public. Some applicants might be able to demonstrate that there are no significant sustainability issues with their digital output; in some cases the university's computing services or library might provide a firm commitment to sustaining the resource for a specified period; others might see the benefit of Open Source community development models. The applicant should provide reassurances of sustainability which are appropriate to the digital output and its wider value to the arts and humanities community.
36. When completing this section, you should consider the potential impact of the data on research in your field (if research in the discipline will be improved through the creation of the digital output, how will it be affected if the resource then disappears?), and make the necessary connections with your Impact Plan. You should factor in the effects of any IP, copyright and ethical issues during the period in which the digital output will be publicly accessible, connecting what you say with the relevant part of your Case for Support.
37. You must make appropriate provision for user consultation and user testing in this connection, and plan the development of suitable user documentation.
38. When completing this section, you should consider the opportunities for re-use of the data by other resources and web services with a view to increasing its overall impact within the academic and non-academic communities. See the supporting materials for guidance on the use of recommended standards and formats along with the provision of appropriate user documentation to increase these opportunities. Examples of opportunities for re-use might include linked datasets for integrated searching across multiple research resources or ingestion into systems and services which are able to add further value and reach new audiences.

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26 March 2010