

AHRC Technical Plan Workshop

General comments:

1. The AHRC has some very clear and really useful guidelines for writing a technical plan, which can be found here:
<http://www.ahrc.ac.uk/funding/research/researchfundingguide/attachments/technicalplan>
2. When writing a plan always have this page open and consult it regularly. Ensure that you include everything that they say you need to include. The technical reviewer will also likely be referring to this page when reviewing your plan.
3. The AHRC changed the structure of the plan (then called a 'technical appendix') a few years ago so make sure you are following the current structure. I've still occasionally seen plans submitted that use the old structure for certain sections and this reflects badly on the bid
4. The plan must not be more than 4 pages long, which includes any diagrams – if it is longer than 4 pages it will be rejected.
5. Ensure that you discuss technical aspects in the correct section – for example backups should be discussed in Section 2.c. not in Section 4. A technical reviewer should still take into consideration content that appears in the wrong section but it gives a bad impression about the technical competence of the project.
6. Adapting a plan that was previously submitted for a different project is absolutely fine so long as you ensure that you properly shape it to fit the current project. I have reviewed several technical plans where the content of certain sections has obviously been copied and pasted from other bids and has no real relevance to the current project. This most frequently occurs in Section 4.
7. If a technical plan does not include content that appears to be irrelevant for the current project the technical reviewer will comment on this and will ask for clarification in the PI Response but the plan won't necessarily be marked down if it does still include all the necessary relevant information.
8. Try to avoid peppering the plan with hyperbole and buzzwords. Statements like "the tool will be developed using a highly innovative approach and will represent a step-change in how humanities research is managed" have no value for the reviewer: the reviewer should be able to make their own decision about how innovative the approach is themselves by reading the plan.
9. Remember that the technical reviewer is not reading the technical plan in isolation but will also be reading the rest of the bid documentation. Ensure that the technical outputs that are discussed in the rest of the bid align with the technical plan. For example, if an interactive map interface is mentioned in the Case for Support but any mention of this is omitted from the Technical Plan the reviewer will query this.
10. It is very useful to include technical milestones and developer effort in the Project Management section of the Case for Support. Plotting these on a Gantt chart a very good thing.
11. Avoid being vague when discussing technical matters as a technical reviewer will assume that you don't really know what you're talking about. For example, when talking about standards

and formats if you say “we will use suitable formats to ensure that our data can be preserved and sustained over the long term” you haven’t really told the reviewer anything – what you need to make clear is what exact formats you intend to use, why you consider them suitable and how they will ensure data can be preserved and sustained.

Section 1: Summary of Digital Outputs and Digital Technologies

- This section isn’t actually commented on by the technical reviewers, although reviewers should take into consideration anything found here when reviewing the other sections.
- Ensure anything that is mentioned in this section is more fully explained in the following sections – for example if you mention in passing that your online resource will also be made available as an app but then no further details are provided about the development of the app then the reviewer will pick up on this
- In many bids I’ve reviewed this section has been very similar to the ‘Technical Summary’ part of the Case for Support, often representing a slightly expanded version of it. This is absolutely fine as both sections are supposed to contain similar information.
- Some bids I’ve seen have contained nothing but a table summarising each digital output in this section, featuring very brief and dry data about file types and formats but I would recommend writing this section in full sentences instead and treating it as an introduction to your planned digital outputs; section 2a is where you should be including more detail about standards and formats and other statistics about your data such as size and duration. Section 1, on the other hand, should give the reviewer an overall feel for your outputs and how they will function.
- It’s important to state the type of access to your resource that will be offered in this section. Your resource should ideally be freely available unless there is a compelling reason as to why it shouldn’t be. For example if your resource includes non-anonymised audio clips of speakers who have given their permission for the clips to be used offline by approved phonetics researchers then such clips should not be made freely available to everyone online. You should however be careful not to restrict access to your resource without a good reason. For example, stating that “the digital outputs and data produced by the project will be made available upon request to bona fide medieval historians” is very restrictive and exclusive. While the AHRC does not currently require project outputs to be open access it is very keen on them being so where possible. AHRC projects are after all publicly funded so why shouldn’t the outputs be publicly accessible? The AHRC is also keen on the reuse of data, especially for purposes that the original researchers may not have even considered, so in the above example limiting access to ‘bona fide medieval historians’ might prevent the data being reused in a novel way in the future, for example by a group of sociologists who wish to incorporate the data into their project.

Section 2.a. Technical Methodology: Standards and Formats

- Don't just list the standards and formats your project will use. You also need to give reasons as to why you are using these standards. This is especially important if you are using a proprietary or not widely adopted format when other open and / or established formats are available. For example, if your project will be releasing video clips and you state these will be stored as WMV files the reason for using this format over other more open and more widely supported formats should be made very clear.
- Providing reasons for the choice of formats is also an important means of demonstrating you have a sufficient depth of knowledge about the technology and have considered other alternatives. For example, if your project will be gathering data about local government throughout history and you intend to store this data in an SQL database the reviewer will likely give you a favourable review if you state why this was deemed more appropriate for the project to use rather than other possible formats such as XML or NoSQL.
- Ensure that you provide details of the standards and formats of all the major types of data your project will deal with. For example, if recording interviews with people and making these available online is discussed in other parts of the bid but neither audio nor video formats are mentioned in this section then this will be picked up by the reviewer.
- You should always include statistics about your data – information about its size, quantity and duration. It's explicitly mentioned in the AHRC guidelines that such information should be provided but a surprising number of projects omit this.
- It is also a good idea to give an indication as to the interconnections and complexities inherent in your data as well as just giving information about the number of files and storage requirements. This is especially important for textual data. For example, stating that there will be 500Mb of textual data doesn't really give a clear picture of how simple or complex it might be to manage this data. Is it one solid block of plain text in a single file? Is it structured data consisting of 20 different types of record, each of which may be connected to any number of other records? Will the plain text be marked up with some kind of complex XML? These details can have big implications for your project.
- If you're producing an online resource then you should be using HTML5 for markup and CSS3 for styling. Other formats (e.g. XHTML) are no longer viewed as best practice.
- Responsive design is now important for web based resources.
- If you're producing online visualisations or making audio or video available you should aim to make these available without a browser plugin being required. Audio and Video should use the HTML5 audio and video tags and visualisations should be JavaScript and SVG based. The use of plugins such as Flash is seen as a bad thing as they are not supported by all devices.
- Using open standards and formats is considered a very good thing as they can help to ensure that data can continue to be accessed in the long term. However, the use of open standards and formats is not a mandatory requirement so long as it is possible to justify using a 'closed' standard or format. For example, MP3 is not an open format but it is the established and most widely supported format for disseminating audio files and for that reason should be chosen in preference over an open format such as OGG Vorbis.

- Depending on the focus of your project, you may need to consider archival formats as well as dissemination formats for images, audio and video. For example, if you intend to digitise previously unavailable manuscript pages you should probably consider making high-quality images using an uncompressed format such as TIFF so these images can be used by future researchers rather than just producing lower quality JPEG images for your own use.

Section 2.b. Technical Methodology: Hardware and Software

- There is some possible overlap between the section 2a and this section. For example, is a programming language considered software or a format? However, so long as formats and software are properly considered over the two sections this isn't a problem.
- If you're recording audio or video don't forget to think about what editing software you'll use. Also bear in mind that editing audio and video files can be a very time consuming process.
- Open source software is considered a good thing but isn't a mandatory requirement.
- If you do intend to use proprietary software that costs a lot of money, be sure to explain why it is required over free and open source alternatives. For example, Photoshop and Oxygen are the leading software packages for editing images and XML and both require licenses. If editing images or XML files is a fundamental part of your project's workflow such software purchases can be justified, but if you will only be editing a handful of images or engaging in a small amount of rudimentary XML editing then free alternatives may be more suitable.
- However, be sure you're using appropriate software for the job. For example, if your project will be producing broadcast quality video clips you will need access to professional video editing software such as Final Cut Pro and stating you will edit all footage using hobbyist software such as the iMovie software that comes free with all Macs may suggest that you haven't properly thought your software requirements through.
- Don't just list software without explaining how and why it will be used otherwise it can look like you're just throwing names in to look impressive. For example, some projects have listed several bits of software that do the same job without explaining why they are needed or how they will be used.
- If your digital output will be web based then be sure to include information about the hardware and software setup of your web server.
- Remember that the AHRC will not pay for standard computer hardware, including laptops, as they consider this to be something that your institution should supply. You can specify specialist hardware so long as it is properly justified, for example a rugged laptop for use in the field when surveying ancient tombs or tablet devices for testing an app you're developing.

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

- Milestones for technical development should appear in the 'Timetable' section of the Case for Support along with non-technical milestones.

- Be sure that technical development fits in with the other parts of the project. For example, if researchers will begin using a content management system in month 2 of the project but the developer isn't scheduled to start work on the system until month 4 then something is wrong.
- A Gantt chart specifically relating to technical tasks could be included in this section but it probably makes more sense to include technical milestones on a project-wide Gantt chart in the Case for Support
- If you're developing a tool that will be used by project researchers to gather and process data it is useful in this section to present an overview of how the tool will fit into the project's workflow. This could be in the form of a diagram or a textual description.
- Be sure to include details of your backup strategy in this section. Note that backups are a different issue to preservation and sustainability, which are discussed in Section 4. Backups are about safeguarding your data over the course of the project rather than after it has finished. A surprisingly large number of projects fail to give adequate information about backups and get marked down because of this.
- If your project will involve researchers gathering data on a project laptop in the field (e.g. storing research discovered when visiting archives in the US) ensure you consider how this data will be backed up. Consider the possibility of a laptop being lost or stolen when on a research trip and what you can do to safeguard your data. Backing up data to a USB stick would not really help if the stick is stored in the same bag as the laptop, for example. Uploading data to a project server or using a service such as Dropbox would be a good thing to consider.
- Monitoring and quality control are areas that many projects fail to adequately address. For example, if you're employing 10 RAs who are gathering research data and they are uploading this into a content management system it may make sense for their data to be checked, edited and approved by the PI or another project member with the role of 'editor' before their data is added to the final dataset. A system should also note which researcher has created what data in case you realise later on that there are issues with the work of one RA.
- You should also consider documentation in this section. Good documentation is important both during the project and for long term preservation and sustainability. Any code that is written should include comments to enable another developer to understand what the code is supposed to do. Technical documentation covering how and what the system does should also be written. This is important during a project in the event of a developer leaving the project midway through and another developer taking over. It is also important for sustainability as your digital resource may need to be migrated to new technology in years to come and such documentation can make this process considerably more straightforward. Documentation for users of the content management system is also important to consider, both to make it easier for a new member of the project team to figure out how to use systems and to enable future researchers to maintain and augment your resource many years after the project has ended.
- Be sure also to factor in time for user testing and feedback sessions. It is also vital that you specify some developer time to act on the outcomes of such sessions. If you incorporate testing sessions into your timetable but these take place after all of the developer effort has been used up then the sessions aren't going to serve much purpose.

- API a good thing
- Releasing project code on github increasingly seen as a good thing

Section 3. Technical Support and Relevant Experience

- The people who will undertake the development work should ideally write the Technical Plan, or at least be closely involved in its creation. If the person writing the plan does not have detailed knowledge of the technology it is generally easy for a reviewer to pick up on this and it is likely that the plan will not contain sufficient detail.
- Make sure that you include information about the developers and any organisations that will be undertaking any technical work.
- This should include information about the people who will manage servers, backup procedures etc as well as any actual developers. For example, if your project is developing online training exercises that will be produced by a commercial company and then hosted within your University's infrastructure and you only provide information about the commercial company then the reviewer is going to wonder what arrangement or agreement you have made with your University's IT people.
- Ensure that the people and organisations mentioned here match up with those mentioned elsewhere in the bid. For example, if you state that in the Project Management section that one developer will carry out the work full time for 24 months but then in this section you state that two developers will be employed, one at 60% and the other at 40% then the reviewer is going to question why this is the case.
- It is good to be able to include named individuals in this section and to be able to link through to previous examples of their work. However, such examples should be of relevance to your project. For example, if your project aims to produce an online audio archive of people's accents and your developer appears to only have experience of online learning packages then the reviewer may question the suitability of the developer and the likelihood of him/her being able to complete the required work.
- The AHRC guidance states that 'You are encouraged, wherever appropriate, to seek partners from outside your institution to cover the technical elements of the project' but in my experience your project will not be 'marked down' for not using external partners, so long as you have access to people within your institution who have the relevant skills and available time to carry out the work.
- There are benefits of using external partners as you can potentially gain access to people with more suitable skills and better knowledge of potential technologies and you may establish working relationships that could prove beneficial for future projects.
- There are also potential drawbacks too. It can be difficult and time consuming to find suitable external partners. If your potential partner is a commercial company they may be expensive. As there may be many months between a company agreeing to do the work and a funded project actually starting there is a risk that the company's priorities may have shifted or they become unavailable due to commitments to other projects.

- You need to weigh up the benefits and risks of using external partners and choose a safe solution that meets the needs of your project.
- Even if you do use an external partner to cover technical elements it is still useful to have some level of support within your institution as well. For example, if an external partner is developing and also hosting an online resource for you but you will still be carrying out a lot of research and collating data before it gets uploaded to the resource you need to consider where this data will be stored. If your institution will provide you with a project folder on a shared network drive for this purpose together with technical support for this (e.g. backups) then you should mention this.
- You need to demonstrate that you have given consideration to the risks associated with technical support. The biggest risk to consider is the unavailability of key technical staff. Are there other potential developers that could take over if your named developer becomes unavailable? For example, if your development work is to be carried out by an external individual who appears to be a one-person company with no professional connections to other organisations and no other technical support is included in your documentation then a reviewer may consider this to be a very risky setup.
- Ideally what you want to have, and to make clear in this section, is one or more named developers who are part of a wider organisation that includes other developers that could take over in the event of a named developer becoming unavailable.
- Ensuring you have budgeted for a realistic amount of developer effort can be a very tricky thing and the technical reviewer will be taking this into consideration.
- In the 'Summary of Resources' in the main bid you can either list a developer as project staff, stating exactly how many months s/he will be employed, or for external contractors you can specify a total amount to be charged for development work in the 'Other Directly Incurred Costs' section. If the latter is more applicable to your project ensure that you state how many days of effort this figure is actually paying for. For example, if you state in the 'Other' section that 'Online resource development' will cost £21,000 and it is unclear from the Project Management section of the Case for Support or from the Technical Plan exactly how many days of developer effort this actually corresponds to it is very difficult for a reviewer to tell whether the online resource represents good value for money and whether it would even be feasible for a developer to complete the required resource. It is far better instead to include the daily amount, e.g. 'Online resource development, 60 days at £350'
- You must rely on the developers to give you a realistic idea of how much developer effort would be required for your project. If possible you should ask a third party to read your plan and to comment on its suitability before submission.
- If your estimate of developer effort is considerably more than the technical reviewer thinks is appropriate then this will be noted in the review. For example, creating a Drupal based content management system that will be used to collate the data from a project team consisting of 4 researchers and then building a public interface where this can be accessed through text based searching and some visualisations should not require a developer to be employed on a project full time for 4 years.

- If your estimate of developer effort appears to be insufficient for your proposed digital outputs the technical reviewer will note this too. For example, if your project intends to plot historical tour journals via a historical maps interface, to provide detailed search and browse facilities and also to release an app version of the interface but you only include 10 days of developer effort then a technical reviewer may question the validity of your technical plan.
- Mention people you have received advice from too

4a: Preserving Your Data

- Must state at least 3 years from the end of the project

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

- Must state at least 3 years from the end of the project
- API for data reuse
- Creative commons license a good thing