

# Writing Research Grant Applications

## Programme

### Things you Need to Know

- [Where to get a handout](#)
- [Do you have a fundable project](#)
- [The Sales Pitch](#)
- [Why You Need a Magic Formula](#)
- [The Magic Formula](#)
- [Sub-projects](#)
- [Aims and Objectives](#)
- [Application-Writing Strategy](#)
- [Writing Guidelines](#)
- [Recipe to Create the Magic Formula](#)

### Exercises

- [Goal Sentence Exercise](#)
- [Write the Detailed Sales Pitch](#)
- [Write the Project & Concluding Sentences](#)
- [Write the Global Sales Pitch](#)
- [Review Exercise](#)

## Introduction

This workshop is designed to start you working on a 'recipe' for an application for a research project grant, such as a research council standard grant. In the morning session we discuss the things you need to know and do before you start writing. In afternoon session you start writing and get feedback. Follow-on consultations may be available for you to seek further feedback or advice on any topic.

The things you need to know include the following:-

- Writing a grant application is very difficult unless you design a fundable project before you start. We will discuss how you can assess whether you have a fundable project.
- We will discuss how the case for support in a grant application can work as a sales pitch.
- We will discuss the way funding decisions are made and the unacknowledged requirements that the decision process imposes on the case for support in a grant application.
- We will discuss a 'magic formula' for a case for support that meets all these requirements.
- We will discuss a 'recipe', a step-by-step guide to constructing a case for support that conforms to the 'magic formula'.
- We will discuss how the requirements of a grant application dictate writing style, and some common academic writing habits that you need to eliminate from your grant applications.

- We will discuss how you can compose a set of aims and objectives that deliver your sales pitch.

If you have a fundable project in mind at the start of the day, you should have a rough draft of the skeleton of the case for support by the end of the day. If you don't have a suitable project in mind at the start of the day you can practise the skills of writing the 10 key sentences with a dummy project, or maybe you will be able to formulate something to work with in the morning.

There are two things you need to do to prepare for the workshop.

- First, it is essential for the exercises in the afternoon that you are prepared to write about a research project. Ideally this will be a project for which you intend to write a grant application but you can use a piece of research that you have already done. You can work with a previous grant application - even if it was awarded it will still provide you with suitable material for the workshop, but if it was rejected, even better.
- The workshop is aimed at mainstream UK project funders like the research councils (AHRC, BBSRC, EPSRC, ESRC, MRC, NERC), the Leverhulme Trust and the Wellcome Trust. It will help if you can identify your target funder before the workshop.
- It's not essential but it will help if you bring a laptop, tablet or smartphone on which you can type.

My delivery style is interactive, so feel free to ask questions throughout the day. On the day I will show you where you can download a handout that contains all the visual material to be used during the day, with clickable links to the main sections in the programme and to the full contents of my presentation, slide-by-slide.

Andrew Derrington

## Contents

Programme . . . . .	1
Introduction . . . . .	1
Do you have a fundable project? . . . . .	5
Strategy . . . . .	5
Should I use a successful application as an example to copy? . . . . .	6
Writing Guidelines . . . . .	6
Nominalisations . . . . .	7
Case for Support as a Sales Pitch . . . . .	8
Sub-projects . . . . .	8
<b>AIMS &amp; OBJECTIVES</b> . . . . .	9
Why you need a Magic Formula . . . . .	9
The Case for Support must persuade the funder to fund your project. . . . .	10
Grant Funders have Four Questions about the Project . . . . .	10
Answers to Funders' Questions . . . . .	10
Which question do you start with? . . . . .	11
That's how you write a zombie grant... . . . . .	11
The Decision . . . . .	11
The Decision: what information do they have? . . . . .	12
The Decision: what is the process? . . . . .	12
Implications of the decision process? . . . . .	13
The Magic Formula . . . . .	13
The Key Sentence Technique . . . . .	13
The Key Sentences . . . . .	14
Use Layout to Communicate with Skimmers and Speed-Readers . . . . .	15
Teach Terminology with Tag Phrases . . . . .	15
Tag Phrases in Use . . . . .	16
Re-cycle Text From Case for Support . . . . .	16
Resources . . . . .	17
The Recipe . . . . .	17
Sub-project Sentences . . . . .	17
<b>Sub-goal</b> Sentences . . . . .	18
Project & Concluding Sentences . . . . .	18
<b>Goal &amp; Importance</b> . . . . .	18
Build the Structure . . . . .	19
Standard Structure . . . . .	19
Alternative Structures . . . . .	19
ESRC Aims and Research Questions . . . . .	20
EPSRC Guidance . . . . .	20
Use Composite Titles to Comply with EPSRC Guidance . . . . .	21
Example Key Sentences . . . . .	21
Example Aims and Objectives . . . . .	21
Example Tag Phrases . . . . .	22
How the Structure Works . . . . .	22
Write a Grant in 10 Steps . . . . .	23
Goal Sentence Exercise . . . . .	23
The Perfect <b>Goal</b> Sentence . . . . .	24
The Exercise . . . . .	24
Review Exercise . . . . .	24
Goal sentence elements . . . . .	25
Importance sentence elements . . . . .	25
Sub-goals . . . . .	25
Sub-projects . . . . .	25

Project Sentence . . . . . 25  
Concluding sentence . . . . . 25  
Summaries . . . . . 26

## Do you have a fundable project?

- What is the overall goal of your project; what is it going to achieve?

...

- Split the project's overall goal into three sub-goals and split the project into three sub-projects, each of which will achieve a sub-goal. It may be easier to do this if you split the project before you split the goal, or even if you build the project from three sub-projects.

...

- For each sub-goal:-
  - State the sub-goal clearly (ideally as something we need to know).
  - Describe the research you will do to achieve the sub-goal.
  - Say what makes it important to achieve the sub-goal in the context of the project.

...

- What have you done that would convince a sceptic that you can do the project?

...

- What is the evidence that your project is of interest to your chosen funder?

...

- State the overall goal of your project in terms intelligible outside your research discipline.

...

- – Often this is a goal you will contribute to, rather than achieve completely.

...

- Who will benefit most from your research?

...

- How will they benefit?
  - What will you do to ensure that they benefit?
  - What is their involvement in the development of the project?

...

**If you start writing a grant application without answering these questions, you might never finish.**

## Strategy

**Your strategy must accommodate the likelihood of rejection**

**Your strategy must accommodate the likelihood of rejection**

- Most well-written grant applications get rejected.
- Rejection can be a devastating experience

...

- If you need a grant, you should plan to write 5 or 6 based on the same set of ideas
- Never get down to your last rejection.
- If you get 6 rejections, it's time to develop a new set of ideas.

...

- You need to be able to turn a small number of ideas into a large number of grant applications
  - Different Outcomes?
  - Different Datasets?
  - Different collaborators/consortia to allow your central skill to contribute to different questions.
    - \* Learn to deal with freeloaders.
  - Different Approaches to Answer the same Question?
  - Different Combinations of Sub-Projects

[Back to Programme](#)

### Should I use a successful application as an example to copy?

- The majority of successful applications are very badly written
  - Especially those from senior academics.

...

- Apply the following test

...

- Can you find single-sentence answers to the following questions in 10 minutes:-
  1. What is the overall goal of the project?
  2. What makes the goal important?
  3. What are the overall research methods?
  4. For each sub-goal (there should be 3 or 4):-
    1. What is the sub-goal?
    2. What pieces of research will answer this question or meet this aim.
    3. What makes it important to answer this question or meet this aim in the context of the project.

...

- If you can't answer these questions very quickly, it's not well-written.

[Back to Programme](#)

### Writing Guidelines

- No Synonyms: [pick the best term and use it repeatedly.](#)

...

- – Create [tag phrases](#)

...

- No Homonyms: ambiguity is your enemy.

...

- [Assert, then justify](#): make a statement, then explain it

...

- – [Key sentence](#) at the start of every section
- Start every paragraph with the '[Topic Sentence](#)'

...

- **Short paragraphs** (~6 paras per page)

...

- Short Sentences (easier if you avoid adverbs, adjectives and **nominalisations**)

...

- – And **know when to use the passive** (e.g. “Rules were made to be broken.”)

...

- Use similar structures for sentences with similar function.

...

- Use Headings and Sub-Headings
  - **Re-use phrases from the key sentences**

...

- Avoid value claims (state evidence instead)

...

- Bullet lists good, lists inside paragraphs bad.

...

- NIUTEIISPOU is one of the **seven deadly sins**

...

- – No initialisations unless the expansion is in the same paragraph (or unnecessary)

...

- Useful Software (if you don't like the tools in MS Word)
  - **The Writers' Diet**
  - **HemingwayApp** also available as a text editor.

## Nominalisations

- A nominalisation is a noun phrase constructed from a verb,

...

- which can be used with a general purpose verb to create a flabby, pompous, long-winded way of saying something simple.

...

- We will investigate X
  - We will carry out an investigation into X
- We will analyse
  - We will undertake an analysis of

...

- You can make it more pompous and long-winded by using a few adjectives to describe the nominalisation:-
  - We will undertake a detailed, rigorous and searching analysis of ...

## Case for Support as a Sales Pitch

### The Sales Pitch for a Project has Two Components: Importance and Success

- Global Sales Pitch: **“The Project is Important”**

...

- – Introduction - Tell them the overall research goal & convince them you can deliver it.
  - \* Tell them what makes the overall research goal important.

...

- Detailed Sales Pitch **“The Project will be Successful”**

...

- – Background/Literature review/Motivation
  - \* Break the goal into 3 sub-goals;
  - \* Convince the reader that the sub-goals are really important.
  - \* Sub-goals can be expressed as RESEARCH QUESTIONS, AIMS or HYPOTHESES.

...

- – Description of Project/Methods/Research Plan
  - \* Describes the research activities in each of 3 [sub-projects](#) and makes it clear that they will achieve the sub-goals.
  - \* Sub-projects can be referred to as “OBJECTIVES” or “WORK PACKAGES”.

...

- Matching the background to the description of the project creates a detailed sales pitch

...

- You should always match the background to the description of the project, even when they are entries on a form.

The Sales Pitch is delivered by the [Magic Formula](#)

## Sub-projects

### What is a sub-project?

- You break your project into components (sub-projects) to make it easier to explain.
  - The sub-projects can be sequential
  - Or parallel
  - Or even different analyses of the same data
  - The main requirement is they produce different, important outcomes.

...

- Each sub-project produces an important outcome
  - Sub-project outcomes match research sub-goals exactly.
    - \* You use the research sub-goals to structure the background of the case for support.

...

- – That way the explainer will give your sales pitch.
  - Because they will have read the background before the description of the project.

...



- The perfect number of sub-projects is 3, but 4 is OK.

...

- Don't create a hostage situation.

...

- – A sub-project that cannot be done unless a previous sub-project produces a result that it is not certain to produce.

## AIMS & OBJECTIVES

...

- Nobody is sure what Aims & Objectives mean, so you can write anything that helps your case as your aims and objectives.
  - What would you write?

...

- Use the sub-goal sentences as the AIMS
- Use the sub-project sentences as the OBJECTIVES.

...

- – That way the AIMS and OBJECTIVES deliver the detailed sales pitch.

...

- Always try and give both AIMS and OBJECTIVES, even if you are only asked for one of them.

...

- Can you deliver the global sales pitch as well?

...

- – Make the overall project goal the overall AIM, that way you can give the global sales pitch by justifying the overall aim (use the same words as in the IMPORTANCE key sentence).

...

- Be careful not to confuse the reader with multiple ways of breaking down your project and its motivation.

...

- – If your funder asks you to write about research questions (AHRC, ESRC) or hypotheses (EPSRC), make it clear that the research questions or hypotheses match the AIMS.)
- If your funder asks you to write about Work Packages, make it clear that the Work Packages match the OBJECTIVES.

## Why you need a Magic Formula

### What a Grant Application has to Achieve

**Andrew Derrington**

## The Case for Support must persuade the funder to fund your project.

1. What do funders want?
  - This tells you what information the Case for Support must include.
2. How do funders make decisions
  - This tells you the requirements for the Case for Support.
    - It needs a magic formula.
  - The Magic Formula

[Back to Programme](#)

## Grant Funders have Four Questions about the Project

1. **IS THE PROJECT IMPORTANT** (to Them)?
  - Direct Outcomes (discoveries)
  - Indirect Outcomes (training, career development, mobility...)
2. WILL THE PROJECT BE SUCCESSFUL?
  - Will it produce the direct outcomes?
    - Will they be put to use?
  - Will it produce the indirect outcomes?
3. ARE THE APPLICANTS COMPETENT?
  - Can they carry out the project?
  - Can their institution support it?
4. WOULD A GRANT BE WORTH FOR MONEY?
  - Are the resources requested Necessary, Sufficient, and Proportionate (for the project)

[Back to Programme](#)

## Answers to Funders' Questions

- IMPORTANCE (evidence)
  - [Evidence about direct outcomes in literature review](#)
  - Evidence about indirect outcomes in details of project, institutions, & investigators
- SUCCESS (project details)
  - [Research activities in relation to outcomes?](#)
  - Impact and dissemination plans.
- COMPETENCE (evidence)
  - Evidence that the team has the necessary skills in publications (quality and authorship).
  - Evidence that PI and institution can deliver the project in track record & facilities.
- VALUE for MONEY (project details)
  - Mention how grant resources will be used in the project.
  - Mention institutional resources needed for the project.

[Back to Programme](#)

## Which question do you start with?

- IMPORTANCE?
  - Pick an important question
    - \* Start the literature review
    - \* .....

[Back to Programme](#)

## That's how you write a zombie grant...



- If the description of the research is less than 50% of the case for support it is probably a 'zombie'.

## The Decision

...

- Who decides?

...

- Committee of successful researchers
  - Very busy people
  - Very successful
    - \* Have their own grants
    - \* And research groups
    - \* And jobs
  - Not knowledgeable about your particular research area.
- May have 'user' representation
- Supported by secretariat

### The Decision: what information do they have?

- Applications
  - Usually a set of 50-100 per meeting.
  - Arrive 3-6 weeks before meeting.
  - Everybody delays reading them as long as possible.

...

- Expert referees' reports
  - Written reports with evaluation and score.
  - Usually 2-5 per application
  - Usually arrive before the meeting but often after the applications
  - Often conflicting

...

- Designated members' reports
  - Oral report by 2 or 3 members who have read the application.
  - Usually lasts < 5 minutes

### The Decision: what is the process?

- Designated members report on the proposal
  - Usually less than 5 minutes
  - Who, what, why, how, outcomes, strengths, weaknesses, summary of referees, how important and exciting, suggested score
  - One person may have to do this for 10 or more grants in a day.
  - Probably based on 30-60 minutes preparation.

...

- Discussion by all members of the committee.
  - Even though some of them may be reading it for the first time during the discussion.
    - \* They will probably have read the summary beforehand.

...

- All members in the discussion can influence the score.

- No matter how little they know.
- And how little time they have spent reading your proposal.

### Implications of the decision process?

- Referees will analyse your case for support in detail but:-
  - Most of the committee won't read it.
  - The ones who do read it probably won't understand it.
  - There will be about 100 other applications.
  - This imposes requirements on the case for support.

...

- 
- It must make it very clear that your project
  - is important, and
  - will be successful
- 
- and it must be easy:-
  - To analyse it at a deep level (Referee).
  - To know what's in it by skimming it (Committee Member).
  - For an outsider to understand its importance (Committee Member).
  - To grasp the big picture and remember the details (Designated Member).

...

- 
- To endow your case for support with these properties you may need a [Magic Formula](#)

### The Magic Formula

- The Key Sentence Technique
- Key Sentences
- Layout
- Tag Phrases
- Repetition

### The Key Sentence Technique

...

- Create a skeleton of about ten '*key sentences*' that state the main points of the Case for Support.

...

- - the overall research goal,
  - what makes the goal important,
  - the sub-goals
  - the sub-projects that deliver the sub-goals

- [Here's a full list](#)

...

- 
- Use the key sentences as an organising framework for writing the Case for Support,

...

- – Each key sentence is the first sentence of a subsection of the Case for Support
  - \* Rest of the subsection develops the point

...

- Use the key sentences as the [Summary](#)

...

- and as the [Introduction](#).

...

- 
- Every Reader gets the same picture, no matter what they read

...

- – Summary only

...

- – First few lines of the case for support

...

- – Every word of the case for support.

### The Magic Formula

## The Key Sentences

### Ten Key Sentences to Make the Case for a Project

1. **Goal:** States overall goal of project (AIM, Research Question, Hypothesis)

...

2. **Importance** Says what makes the overall goal important

...

3. **Sub-goal-1:** States  $G_1$  (& why it is important)
4. **Sub-goal-2:** States  $G_2$  (& why it is important)
5. **Sub-goal-3:** States  $G_3$  (& why it is important)

...

6. **Project:** Introduces the project.

...

7. **Sub-project-1:** Says how sub-project 1 will deliver  $G_1$
8. **Sub-project-2:** Says how sub-project 2 will deliver  $G_2$
9. **Sub-project-3:** Says how sub-project 3 will deliver  $G_3$

. . .

10. **Concluding:** Says what happens after the project. - Depends on funder & **Importance**.
  - **Examples** . . .
11. Some funders require section on track record & environment
  - Add a key sentence saying what achievement demonstrates each important skill
  - And a key sentence describing each major component of infrastructure

### The Magic Formula

## Use Layout to Communicate with Skimmers and Speed-Readers

- Message on first line of paragraph (ASSERT then JUSTIFY)
  - First sentence of para ASSERTS (topic sentence)
  - Remainder of para JUSTIFIES
    - \* This is where you cite literature
    - \* This is how you avoid citing too much literature.

. . .

- White space above each paragraph

. . .

- Readers' eye movements land on blank lines.
  - Speed-readers will read first line of every paragraph.
  - Browsers will only read first lines.
  - Detail readers will know what to expect in each para

### Programme

## Teach Terminology with Tag Phrases

. . .

Re-use a phrase from the sub-goal sentence in the sub-project sentence to emphasise that the sub-project will achieve the sub-goal.

. . .

### Sub-goal-1, Sub-goal-2 & Sub-goal-3 Key Sentences

- 'We need to know' + tag phrase because...
- We need to know the relationship between the performance of single neurons and the performance of the whole visual system in order to establish the likely contribution of single neurons to perception.

. . .

### Sub-project-1, Sub-project-2 & Sub-project-3 Key Sentences

- 'We will do this sub-project in order to discover' + tag phrase

- We will record single neurons during perceptual tasks and calculate sensitivity functions for neural responses and for task performance in order to characterise the relationship between the performance of single neurons and the performance of the whole visual system.

...

- Tag phrases provide meaning - link between aims and objectives
- Use them in headings (make them short enough)
- Key sentences and tag phrases start off messy and long-winded, like these.

...

- You have to edit them to make them effective.

## Tag Phrases in Use

### The perceptual capabilities of single neurons in cortical area V1

We need to know the perceptual capabilities of single neurons in cortical area V1 in order to establish the potential contribution of V1 to perception. The potential contribution can be assessed using a range of perceptual tasks, such as visual pattern discrimination, object discrimination, and motion-detection. For any such task, we can infer the contribution of cortical area V1 to that task from the relationship between the perceptual capabilities of single neurons and the perceptual capabilities of the individual.

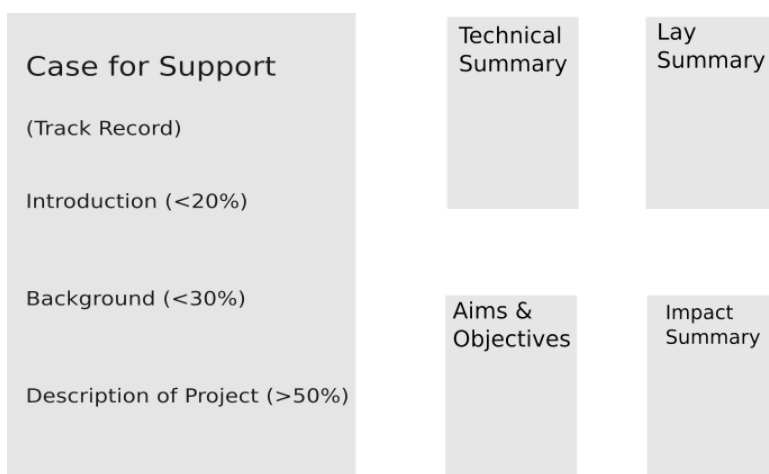
This is the start of a sub-section of the background. There will be a couple of pages of text (at least 3 subsections, each with its own heading) between it and the start of the corresponding sub-section of the description of the project, which follows here.

### Measuring the perceptual capabilities of single neurons in cortical area V1

We will measure neural responses as functions of stimulus strength during perceptual tasks in order to calculate the perceptual capabilities of single neurons in cortical area V1. Stimuli from a set that covers a range of strengths will be presented repeatedly in random sequences under computer control. The computer will record responses during the presentations, and during equivalent periods when no stimulus is presented, for off-line spike sorting and analysis.....

## Magic Formula

## Re-cycle Text From Case for Support



- Repeat key sentences and tag phrases



- to provide common structure, and
- to link
- Maintain structure and order

Programme

## Resources

What's been funded?

- [Research Council Project Summaries](#)
  - <http://gtr.rcuk.ac.uk>
- [ERC Summaries](#)
- [Leverhulme Awards 2016](#)

Advice on writing:- [www.parkerderrington.com/blog](http://www.parkerderrington.com/blog)

- [How to construct a project](#)
- [The key sentences](#)
- [Catalogue](#)

Magic Formula

[Back to Top](#)

## The Recipe

- Make sure you have a fundable project
- Prepare your Ingredients
  - Write the Detailed Sales Pitch
    - \* Sub-goals
  - Write the Project & Concluding Sentences
  - Write the Global Sales Pitch
- Assemble the Case for Support
- Write a Grant in 10 Steps

## Sub-project Sentences

- **Sub-project:** Sentences “This will tell us” (One per Subproject)
  - Says how a sub-project will achieve a SUB-GOAL.
  - “We will do the sub-project and it will achieve the SUB-GOAL”

We will measure neural responses as functions of stimulus strength during perceptual tasks in order to calculate the perceptual capabilities of single neurons in cortical area V1.

- Rookie mistakes
  - Failing to mention research activities
  - Changing the syntactic structure unnecessarily.

## Sub-goal Sentences

- **Sub-goal** Sentences: “We need to know” (One per subproject)
  - Say what a SUB-GOAL consists of (& why it’s important)
  - “We need to achieve a SUB-GOAL for whatever reason”
  - Sub-Goal can be expressed in terms of Aim, Research Question, and/or Hypothesis
    - \* Use the funder’s terminology.

We need to know the perceptual capabilities of single neurons in cortical area V1 in order to establish the potential contribution of V1 to perception.

- Rookie mistakes
  - Different wording for the sub-goal in **sub-goal** and **sub-project** sentences
  - Describing the research activities instead of outcomes in **sub-goal** Sentences
  - Changing the syntactic structure unnecessarily.

Example

## Project & Concluding Sentences

### Project

- **Project** sentence summarises the project in whatever way is appropriate
  - If they only read 1 sentence about your project, it will be this one. What do you want it to say?

### Concluding Sentence

- Introduces your discussion of what will happen after the research is complete
- It will depend to a certain extent on whether the importance is academic or practical or both.
  - e.g. State in about 40 words what you will do to maximise the benefit from the project.

## Goal & Importance

### The Elevator Pitch (Makes the Importance Proposition)

1. **Goal** Sentence should have 3 parts:-

1. What the project will achieve, in ‘big picture’ terms.
2. How it will achieve it (a more specific statement of the overall goal).
3. An reference to your achievements using similar methods, to show you are competent.

...

This project aims to identify a potential treatment for stroke, using an in vitro brain slice model to optimise synthetic metabolic inhibitors discovered in my laboratory.

...

2. **Importance** sentence says what it is that makes the outcome important. For example...

1. Quantify the real-world problem it will help to solve.
2. Say what it will allow us to do that we can’t do now.
3. Prepare to say which named priorities of your funder it contributes to, and how?

...

Caring for the 1.2 million UK stroke survivors costs over £1.7 billion a year.

## Build the Structure

- [Standard Structure: Key sentences as Introduction and Skeleton](#)
- [Variations](#)
- [ESRC Aims and Research Questions](#)
- [EPSRC Guidance](#)
- [Suggested Structure for EPSRC](#)

## Standard Structure

1. Introduction - Key Sentences 1-10, (Write this Last) - May express **Sub-goal** key sentences as research questions, aims or hypotheses - May express **sub-project** key sentences (& **Project** and **Concluding**) as Objectives.
  - 2. Background - 4 subsections - sells the project outcomes. (Write this after Methods)
    - **Importance** Say what makes the overall outcome important.
      - \* Then justify in detail
    - **Sub-goal-1-Sub-goal-3** Say why we need each research outcome (AIMS) & add detail after each
  - 3. Methods. Describes the Project (Write this First)
    - **Project** Summarise the project. Then add detail.
    - **sub-project-1-sub-project-3** Summarise each sub-project (OBJECTIVE) & the AIM it achieves. Add detail after each.
    - **Concluding** Say what happens after the project (impact?). Then add detail.
  -
4. A separate section on track record is required by some funders (e.g. MRC, BBSRC, EPSRC, NERC) Write this anytime.

## Alternative Structures

Some funders specify requirements that appear to be incompatible with the standard structure, but these can usually be addressed by one of three approaches.

...

1. Renaming components - e.g. Methods may be called 'Research Plan & Methodology', 'Description of the Project' etc.

...

2. Moving sub-components around
  - e.g. BBSRC require you to introduce the 'Research Plan and Methodology' with the Overall Aim & Specific Objectives. Can do this by having separate introductions for the Background & Methods sections.

...

3. Using composite titles to avoid repetition

- e.g. ESRC ask both for aims and for research questions: [call each aim a research question](#).
- EPSRC ask for 4 sections covering same topic 'Background', 'National Importance', 'Academic Impact' and 'Research Hypotheses & Objectives' [solution here](#)

## ESRC Aims and Research Questions

- ESRC guidance suggests separate subsections for aims and research questions:-
  - “The introduction should set the aims and objectives of the study in context. It should briefly sketch .....
  - “The detailed research questions to be addressed should be clearly stated.”
- It is dangerous to give the impression that research questions and aims refer to different goals.
- This is a problem

...

- Readers will be confused if you give the impression that research questions and aims refer to different research goals.

...

- Make it clear that the research questions and the aims are the same; e.g.
  - “We have [three research aims which are expressed in our three research questions](#)”.

...

- From that point on, follow the [No Synonyms guideline](#)

...

- – Use one term or the other.

## EPSRC Guidance

- Previous Track Record (up to 2 sides)
- Description of proposed research and its context (6 sides)
  - Background
    - \* Introduce topic and explain academic and industrial context
    - \* Demonstrate understanding of related work
  - [National importance](#)
    - \* Contribution to other disciplines, economy & society.
    - \* Long term effects; relation to national strategic needs.
    - \* Fit with UK research & EPSRC's [portfolio, research areas & strategy](#).
  - Academic Impact
    - \* Describe academic impact
    - \* Explain collaborations; justify Visiting Researchers
  - Research Hypothesis and Objectives
    - \* Set out your research idea or hypothesis
    - \* Explain why the proposed project is novel and timely
    - \* Identify the overall aims of the project, and the measurable objectives
  - Programme and Methodology
    - \* Detail and justify research methodology
    - \* Describe the work programme & milestones for each member of the team,
    - \* Explain how the project will be managed.

## Use Composite Titles to Comply with EPSRC Guidance

1. Track Record
  - If you don't need 2 pages for your track record, put pilot data in the track record section.
2. Background
  - Aim, Research Hypothesis and Objectives. This is a standard introduction that uses all the key sentences in order. The only difference is that it appears as the first subsection of the background rather than as a section in its own right. It should use terms like 'hypothesis', 'aim' and 'objective' either in the key sentences or in linking text.
  - National Importance and Academic Impact Subsection. This and everything that follows is the same as the standard structure. It uses the **Importance** Sentence followed by details that meet EPSRC guidance.
  - **Sub-goal-1** sentence & subsection;
  - **Sub-goal-2** sentence & subsection;
  - **Sub-goal-3** sentence & subsection;
3. Programme and Methodology. Everything is exactly the same as the standard methods section.
  - **Project** sentence & subsection;
  - **Sub-project-1**
  - **Sub-project-2**
  - **Sub-project-3**
  - **Concluding**; Sentence & Subsection
    - Give milestones and explain how the project will be managed.

## Example Key Sentences

- **Goal** The project aims to enable improvements in training social workers by analysing the role of writing in social work practice using an integrated ethnographic and linguistic methodology that we have previously used to analyse nursing practice.[REF].
- **Importance** Social work practice is dominated by writing, from formal assessment reviews to informal notes, emails and text messages, but writing is not part of the social work curriculum. Social care costs 27 billion pounds annually in the UK and problems arising from errors in writing increase the risk of harm to service users.
- **Sub-goal 1** We need to know the writing practices of professional social workers.
- **Sub-goal 2** We need to know the institutional writing demands of contemporary social work.
- **Sub-goal 3** We need to understand how writing practices shape the nature of professional social work?
- **Project** The project uses an integrated language methodology, including ethnographic description, discourse analysis and tracking the production of texts.
- **Sub-project 1** We will carry out an ethnographic study, in order to characterise the writing practices of professional social workers
- **Sub-project 2** We will analyse texts and explore how writing is managed alongside other commitments to characterise the institutional writing demands of contemporary social work.
- **Sub-project 3** We will use discourse analysis and track texts relating to specific cases to understand how writing practices shape the nature of professional social work.
- **Concluding** We will develop effective writing practices that will significantly improve training and practice of social work.

## Example Aims and Objectives

Our project has three aims, (which can be expressed as research questions):-

1. What are the writing practices of professional social workers?
2. What are the institutional writing demands of contemporary social work?

### 3. How do writing practices shape the nature of professional social work?

...

- Our project will answer the three research questions by pursuing the following three objectives:-
  1. We will carry out an ethnographic study, in order to characterise the writing practices of professional social workers
  2. We will analyse and quantify texts and explore how writing is being managed alongside other commitments in order to characterise the institutional writing demands of contemporary social work.
  3. We will use discourse analysis and track the trajectories of texts relating to specific cases in order to understand how writing practices shape the nature of professional social work.

...

- The central aim of the project is to enable improvements in training and practice of social work by analysing the role of writing in social work practice using an integrated ethnographic and linguistic methodology.
- Every part of social work practice is dominated by writing, from formal assessment reviews to informal notes, emails and text messages, but writing is not part of the social work curriculum.
- [Check for Tag Phrases.](#)

### Example Tag Phrases

- Our three aims are to answer the following three research questions:-
  1. What are the writing practices of professional social workers?
  2. What are the institutional writing demands of contemporary social work?
  3. How do writing demands and practices shape the nature of professional social work?
- Our project will answer the three research questions by pursuing the following three objectives:-
  1. We will carry out an ethnographic study, in order to characterise the writing practices of professional social workers.
  2. We will analyse and quantify texts and explore how writing is being managed alongside other commitments in order to characterise the institutional writing demands of contemporary social work.
  3. We will use discourse analysis and track the trajectories of texts relating to specific cases in order to understand how writing demands and practices shape the nature of professional social work.

### How the Structure Works

(Key Sentence Names are **Bold Font**)

...

1. **Introduction** (summarises whole case for support using all key sentences)
  - **Goal, Importance, 3 Sub-goals, Project, 3 Sub-projects & Concluding**

...

2. **Background** (Literature review=> GOAL is Important; Subgoals are criteria for success)
  - **Importance:** Sells GOAL => *IMPORTANCE PROPOSITION*
  - **Sub-goal-1:** Explains & Sells G<sub>1</sub>
  - **Sub-goal-2:** Explains & Sells G<sub>2</sub>
  - **Sub-goal-3:** Explains & Sells G<sub>3</sub>

...

3. Methods / Research Programme (Project is value for money & will be successful)
  - **Project:** Introduces the project.
  - **Sub-project-1:** How sub-project 1 will deliver  $G_1$
  - **Sub-project-2:** How sub-project 2 will deliver  $G_2$
  - **Sub-project-3:** How sub-project 3 will deliver  $G_3$ 
    - Mention resources used in research => *VALUE for MONEY PROPOSITION*
    - Explain how Project delivers Subgoals => *SUCCESS PROPOSITION*
  - **Concluding:** Says what happens after the project.
    - Expectations depend on funder & on importance proposition.

...

4. Some funders require section on track record & environment
  - Track record demonstrates all necessary skills
  - Environment describes all necessary infrastructure & support
    - => *COMPETENCE PROPOSITION*

## Write a Grant in 10 Steps

1. You can start as soon as you have thought of a viable project.
2. Check that the project is suitable for your chosen funder and funding scheme.
3. Divide the project into sub-projects and assemble the information you need to describe what you will do in each subproject and to explain what makes it important to do it.
4. At this stage you should be able to initiate the costing process & institutional approvals in parallel with the writing.
5. Draft your Key sentences in this order:-
  - i. *Sub-project* sentences.
  - ii. *Sub-goal* sentences.
  - iii. *Project* and *Concluding* Sentences
  - iv. *Importance* sentence.
  - v. *Goal* sentence

If you will need a summary for a lay audience you should begin working to prepare and test it at this stage.
6. Use the key sentences as the skeleton and write the subsections of the case for support.
7. Add any funder-specific information or sections to the case for support.
8. Draft any required information on the project timetable and project management.
9. Assemble the budget and write the Justification of Resources
10. Finalise any attachments and summaries you need to submit.

## Goal Sentence Exercise

### Why is the first sentence important?

...

- It has to be good enough to make the reader read on
- They will have 99 other applications.
  - They know most of them are headed for the shredder.
- They also have a TV.
- What will make them want to read your application?

...

1. A project that is likely to advance an important area of knowledge.
2. A project that is likely to be successful.
3. Evidence that you are competent to carry out the project.

## The Perfect Goal Sentence

### Three Elements

...

1. What the project will achieve, in 'big picture' terms.
  - A project that is likely to advance an important area of knowledge.

...

2. How it will achieve it (a more specific and detailed statement of the goal).
  - A project that is likely to be successful.

...

3. A reference your achievements using similar methods.
  - Evidence that you are competent to carry out the project.

### The Exercise

1. Interview your neighbour (3 mins)
2. Swap roles and interview again (3 mins)
3. Write a sentence for your neighbour's project (2 mins)
4. Write a Sentence for your own Project (2 mins)
5. Optimise and discuss.

...

### Interview to get information for the sentence that you want to write:-

1. What the project will achieve, in 'big picture' terms.
2. How it will achieve it (a more specific and detailed statement of the goal).
3. An example of your achievements using that approach.

### Review Exercise

- Take a summary from <https://erc.europa.eu/projects-and-results/erc-funded-projects>
- Find the goal sentence.
  - Can you improve it?
- Find the importance sentence.
  - Can it be improved?
- Identify or write a set of sub-project and sub-goal sentences for the project.



## Goal sentence elements

### Cities in Global Financial Networks: Financial and Business Services and Development in the 21st Century

- The project will provide a robust evidence base crucial in shaping future rounds of investment by and in financial and business services, and policies towards financial and business services by governments and other organisations.
- In doing so, we will develop a new theoretical framework, called the Global Financial Networks, which positions financial and business services and their networks in the broader economy.

## Importance sentence elements

- Financial and business services, including law, accounting, and business consulting, have been one of the most dynamic sectors of the world economy, with a fivefold rise in real value added since 1980.
- Although financial and business services are central to the processes of globalisation, financialisation, urbanisation and development, our understanding of the sector in the context of tumultuous changes of the early 21st century is partial.
- We urgently need groundbreaking frontier research to better understand the nature and dynamics of financial and business services, and their implications.

## Sub-goals

1. How have the financial and business services firms and centres been affected by the global financial crisis and the Eurozone crisis?
2. How are they changing in response to new financial regulation, the expected shift of economic activity to the Asia-Pacific region, and the digital revolution?
3. What are the impacts of financial and business services on urban, regional, and global development?

## Sub-projects

This project is designed to address this challenge by focusing on three objectives:

1. mapping the financial and business services sector and its transactional networks worldwide;
2. analysing strategies of financial and business services firms, as well as policies towards financial and business services and their institutional environments in cities;
3. explaining the impacts of financial and business services, their strategies, and place-specific factors on growth, stability, and inequality at urban, regional, national and global level.

## Project Sentence

Using a mixed-methods approach, we will document the development of financial and business services and their consequences, cutting through the hype of financial centre indices, and through the fog of ideologically charged debates on the virtues and vices of the financial sector.

## Concluding sentence

One of the outcomes of the project will be the world's first ever atlas of finance.

## Research Goals

## Summaries

### **Cities in Global Financial Networks: Financial and Business Services and Development in the 21st Century**

Financial and business services (FABS), including law, accounting, and business consulting, have been one of the most dynamic sectors of the world economy, with a fivefold rise in real value added since 1980. Although FABS are central to the processes of globalisation, financialisation, urbanisation and development, our understanding of the sector in the context of tumultuous changes of the early 21st century is partial. How have the FABS firms and centres been affected by the global financial crisis and the Eurozone crisis? How are they changing in response to new financial regulation, the expected shift of economic activity to the Asia-Pacific region, and the digital revolution? What are the impacts of FABS on urban, regional, and global development? We urgently need groundbreaking frontier research to better understand the nature and dynamics of FABS, and their implications. This project is designed to address this challenge by focusing on three objectives: mapping the FABS sector and its transactional networks worldwide; analysing strategies of FABS firms, as well as policies towards FABS and their institutional environments in cities; explaining the impacts of FABS, their strategies, and place-specific factors on growth, stability, and inequality at urban, regional, national and global level. In doing so, we will develop a new theoretical framework, called the Global Financial Networks, which positions FABS and their networks in the broader economy. Using a mixed-methods approach, we will document the development of FABS and their consequences, cutting through the hype of financial centre indices, and through the fog of ideologically charged debates on the virtues and vices of the financial sector. One of the outcomes of the project will be the world's first ever atlas of finance. The project will provide a robust evidence base crucial in shaping future rounds of investment by and in FABS, and policies towards FABS by governments and other organisations.

- Search for a summary that suits you better at <https://erc.europa.eu/projects-and-results/erc-funded-projects>

### **Context, Identity and Choice: Understanding the constraints on women's career decisions**

There has been vast improvement in workplace gender equality, but there remain marked differences in the roles in which women and men work. Explanations for this inequality have focused on the barriers women face. However, as women begin to enter male-dominated roles, a new explanation has arisen: that remaining gender inequality must reflect fundamental differences between women and men, including differences in (a) ambition and desire for power, (b) needs for work-life balance, and (c) willingness to take career risks. Central to this analysis is the assumption that the glass ceiling is broken and thus inequality must be due to women's active choices. This explanation downplays the fact that social context continues to be a barrier to women's success and places responsibility for gender inequality on women themselves. Indeed, there has arisen the suggestion that gender equality necessitates women overcoming 'internal obstacles', 'leaning-in' and altering their choices (Sandberg, 2013), rather than challenging the status quo. I argue that diametrically contrasting structural barriers with women's choices is unhelpful. Instead, I suggest that women's choices are shaped and constrained by the gendered nature of organisational and social contexts and how women see themselves within these contexts. I propose a programme of research, across 3 integrated streams, that investigates how social and organisational structures define identities and constrain women's choices in relation to ambition, work-life balance, and career risk-taking. I have four key objectives: (1) to clarify how organisational and social contexts define identity and constrain women's choices, (2) to use an interdisciplinary, multi-methodological approach, to produce innovative theory and data, (3) to work collaboratively with stakeholders, and (4) to inform practical interventions designed to facilitate the increase of women's participation in hitherto male-dominated roles.

### **Crosslocations in the Mediterranean: rethinking the socio-cultural dynamics of relative positioning**

The Mediterranean, a key socio-cultural, economic and political crossroads, has shifted its relative position recently, with profound effects for relations between the peoples associated with its diverse parts. Crosslocations is a groundbreaking theoretical approach that goes beyond current borders research to analyse the significance of the changes in relations between places and peoples that this involves. It does this through explaining shifts in the relative positioning of the Mediterranean's many locations – i.e. the changing values of where people are rather than who they are. Approaches focusing on people's identities, statecraft or networks do not provide a way to research how the relative value of 'being somewhere in particular' is changing and diversifying. The approach builds on the idea that in socio-cultural terms, location is a form of political, social, economic, and technical relative positioning, involving diverse scales that calibrate relative values (here called 'locating regimes'). This means locations are both multiple and historically variable, so different types of location may overlap in the same geographical space, particularly in crossroads regions such as the Mediterranean. The dynamics between them alter relations between places, significantly affecting people's daily lives, including their life chances, wellbeing, environmental, social and political conditions and status. The project will first research the locating regimes crossing the Mediterranean region (border regimes, infrastructures; digital technologies; fiscal, financial and trading systems; environmental policies; and social and religious structures); then intensively ethnographically study the socio-cultural dynamics of relative positioning that these regimes generate in selected parts of the Mediterranean region. Through explaining the dynamics of relative location, Crosslocations will transform our understanding of trans-local, socio-cultural relations and separations.

## **Democratic Secrecy: A Philosophical Study of the Role of Secrecy in Democratic Politics**

Transparency in politics is the mantra of democratic governance. Should state secrecy, such as classified intelligence programs or closed-door political bargaining be abolished? Despite its revered status, many feel that complete transparency would undermine effective functioning of governments. Take the public responses to the Wikileaks disclosures: many of the disclosures were assessed favorably, but few people defended the idea of total transparency that inspired them. If both complete secrecy and complete transparency are to be rejected, what ratio of secrecy and transparency in politics should we seek? Democratic theory leaves this question unanswered: no systematic assessment of the role of secrecy in a democracy is available. This project solves this problem. By employing the tools of analytic political philosophy, social choice and game theory, we develop a theory of democratic secrecy centred around three theses: 1. Secrecy in exercising executive and legislative power can be democratically authorized; 2. Secrecy protects the integrity of democratic decision-making processes; 3. Balancing secrecy and transparency is an exercise in balancing the values underlying democratic authority and democratic decision-making mechanisms. The results of this philosophical study set a new course in democratic theory by demonstrating that democratic governance requires less openness than traditionally assumed. To complement the theory, criteria for political accountability for wielding political secrets and criteria for assessing responsibility for their unauthorized disclosure are designed. Our results have practical relevance: understanding when and why secrecy is morally acceptable may change the policy approach to transparency provisions, and provide a better fit between the “public right to know” and the needs of governments. Scholars from Poland and the Netherlands assess the use of governmental secrecy in these two, respectively old and new, EU member states.

## **We are all Ayotzinapa: The role of Digital Media in the Shaping of Transnational Memories on Disappearance**

The project seeks to study the role of digital media in the shaping of transnational memories on disappearance. It investigates a novel case that is in process of shaping: the disappearance of 43 students in Mexico in September 2014. The role of the new media in getting citizens’ attention and in marking a “turning point” was crucial to the upsurge of a counter-movement against the Mexican government and qualifies the event as significant for the transnational arena. The groundbreaking aspect of the project consists in proposing a double approach: a) a theoretical approach in which “disappearance” is considered as a particular crime that becomes a model for analyzing digital memory. Disappearance is a technology that produces a subject with a new ontological status: the disappeared are non-beings, because they are neither alive nor dead. This ontological status transgresses the clear boundaries separating life and death, past, present and future, materiality and immateriality, personal and collective spheres. “Digital memory”, i.e. a memory mediated by digital technology, is also determined by the transgression of the boundaries of given categories b) a multidisciplinary approach situating Mexico’s case in a long transnational history of disappearance in the Hispanic World, including Argentina and Spain. This longer history seeks to compare disappearance as a mnemonic object developed in the global sphere –in social network sites as blogs, Facebook, Twitter and YouTube– in Mexico and the social performances and artistic representations –literature, photo exhibitions, and films– developed in Spain and Argentina. The Mexican case represents a paradigm for the redefinition of the relationship between media and memory. The main output of the project will consist in constructing a theoretical model for analyzing digital mnemonic objects in the rise of networked social movements with a transnational scope.

## How elephants grow old

The ageing population structure of most European countries has major health, economic and social consequences that lead to a need to better understand both the evolutionary limitations of deferring ageing, as well as the mechanisms involved in growing old. Ageing involves reduced fertility, mobility and ability to combat disease, but some individuals cope with growing old better than others. Improving the quality of life at old age and predicting future changes in longevity patterns of societies might depend on our ability to develop indicators of how old we really are and how many healthy years we have ahead, and how those indicators depend on our health history across several decades. Yet, most model species used in biology are short-lived and provide a poor comparison to long-lived mammals such as humans. Further, they do not often inform on the mechanisms of ageing alongside its fitness consequences in natural populations of long-lived mammals. This project integrates different ageing mechanisms with unique data on lifelong disease and reproductive history in the most long-lived non-human mammal studied so far, the Asian elephant. I will examine how different mechanisms of ageing (telomere dynamics, oxidative stress and telomerase activity) interact with lifelong disease and reproductive history, and current endocrinological measures of stress and reproductive status. This will help us to better understand both the mechanisms of ageing and their consequences on senescence rates. To do so, I will combine the most comprehensive demographic data (N~10.000) on Asian elephants in the world with bi-monthly health assessments and disease records across life (N~2500) and with longitudinal markers of ageing and hormonal correlates of stress and reproductive potential (N~240). Understanding changes in health across life and its links to ageing rates, stress levels and life-history in a species as long-lived as humans will be relevant to a large range of end-users.

## Leveraging Binary Analysis to Secure the Internet of Things

We are in the midst of the shift towards the Internet of Things (IoT), where more and more (legacy) devices are connected to the Internet and communicate with each other. This paradigm shift brings new security challenges and unfortunately many current security solutions are not applicable anymore, e.g., because of a lack of clear network boundaries or resource-constrained devices. However, security plays a central role: In addition to its classical function in protecting against manipulation and fraud, it also enables novel applications and innovative business models. We propose a research program that leverages binary analysis techniques to improve the security within the IoT. We concentrate on the software level since this enables us to both analyze a given device for potential security vulnerabilities and add security features to harden the device against future attacks. More specifically, we concentrate on the firmware (i.e., the combination of persistent memory together with program code and data that powers such devices) and develop novel mechanism for binary analysis of such software. We design an intermediate language to abstract away from the concrete assembly level and this enables an analysis of many different platforms within a unified analysis framework. We transfer and extend program analysis techniques such as control-/data-flow analysis or symbolic execution and apply them to our IL. Given this novel toolset, we can analyze security properties of a given firmware image (e.g., uncovering undocumented functionality and detecting memory corruption or logical vulnerabilities). We also explore how to harden a firmware by retrofitting security mechanisms (e.g., adding control-flow integrity or automatically eliminating unnecessary functionality). This research will deepen our fundamental understanding of binary analysis methods and apply it to a novel area as it lays the foundations of performing this analysis on the level of intermediate languages.

## Presenter



Andrew Derrington has in-depth experience of the research funding process. He obtained his first research grant, a Beit Memorial Fellowship for Medical Research, while he was writing his PhD. His research was continuously funded by fellowships, project and programme grants for the next 30 years. He served on research grant committees for The Science and Engineering Research Council, the Medical Research Council and the Wellcome Trust. His book, *The Research Funding Toolkit*, which he co-wrote with Jacqueline Aldridge, research and enterprise associate in the School of Psychology at the University of Kent, is the definitive guide to grant writing for early career academics and research professionals. It is based on Andrew's analysis of how grants committees make funding decisions.

Andrew has worked in eight Universities including two in the world top ten.

He has also worked as a journalist. Over several years he wrote two successful columns in the Financial Times. *The Nature of Things* covered science - from astrophysics to zoology. *Psych Yourself Up* was a guide to the different psychotherapies available in the UK.

Andrew set up [Parker Derrington Ltd](#) in 2013. He now works as a consultant, writing research grant applications and providing strategic advice and training to individuals and organizations.

## Testimonials

*I had a fantastically useful time attending your recent workshop at Leicester University. Writing the 10 key sentences was a very useful exercise and I have, since, worked on them to discover they are a fab tool for any kind of writing really.*

Dr Ranjana Das, University of Leicester

*Andrew blends easy authority and extensive experience with humour and approachability. The result is a workshop full of practical, memorable advice on how to compete more successfully for research funding.*

Professor Peter Clegg, Institute of Ageing and Chronic Disease, University of Liverpool

*I attended one of Andrew's workshops when I was a senior lecturer. The hands on advice about how to structure my applications in a really appealing fashion enabled me to win a grant of nearly →£600K the next year. I still implement the advice that I received in that workshop, and pass it down to junior colleagues. I find that Andrew's advice has a high success rate!*

Prof Theresa Gannon, University of Kent

*I still use the tips you gave me for my successful Wellcome SRF application. Your advice on "12 key sentences" is spot-on and helps people focus on the aspects of the proposal that are critical to success instead of getting bogged down in reams of text.*

Prof Mark Baxter, Mount Sinai School of Medicine

*Andrew's grant-writing workshops teach you how to convince the world that it needs your research. They are the most useful training events I have ever attended. His advice about how to sell the big idea without compromising on the science was critical to the success of our →£9.3 million ESRC application.*

Prof Julian Pine, University of Liverpool