



## Project Research and Development (PRD) scheme – Guidance for Applicants

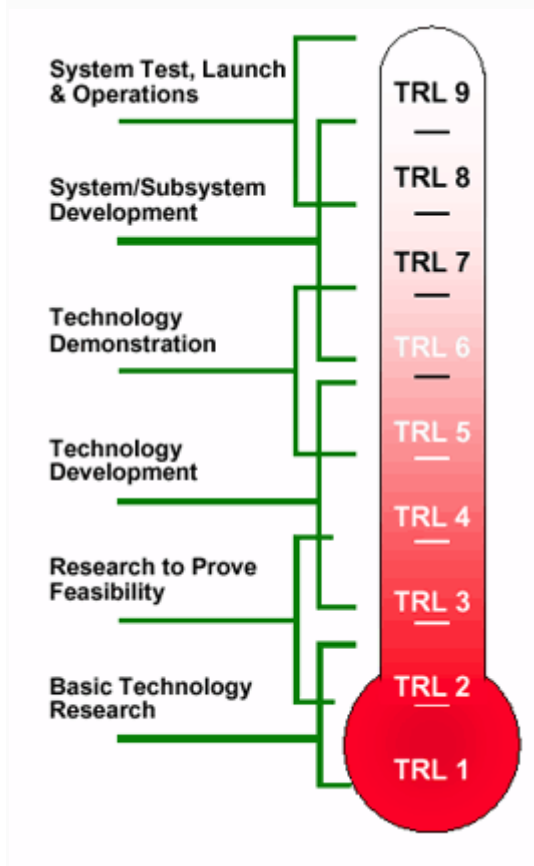
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### Definition

1. This funding scheme is intended to develop the capabilities needed to underpin UK science and technology leadership in future Science and Technology Facility Council projects and gives industry the opportunity, in collaboration with approved research organisations, to apply directly to the Research Councils for funding for research and development.
2. The PRD scheme provides funding for research and development projects which enable STFC to deliver the science programme objectives in the areas of particle physics, particle astrophysics, nuclear physics and astronomy. Please note that proposals for project specific R&D or small upgrades for space instruments and missions fall within the remit of the [UK Space Agency](#).
3. PRD funding is available for projects which develop technology beyond that of laboratory experimentation or modelling and show that the technology can be deployed in a future project; or for demonstration projects which prove the design concept of new equipment (including software) that can then be implemented in a full scale project. The scheme funds projects that are between the Technology Readiness Levels of 3 and 6. Definitions of Technology Readiness Levels are shown in the diagram below.

#### 4. Technology Readiness Levels:



5. Proposals are welcome from consortia comprising industrial and academic collaborations or from individual UK institutions. Resources are aimed towards:
  - Developing novel technologies, beyond the concept stage, to underpin the science programme and to place UK scientists in leading positions in future projects;
  - Supporting applications that lead towards the exploitation of STFC technology infrastructure for high priority scientific projects;
  - Exploratory technology development work prior to starting or joining a new project;
  - R&D initiatives and small upgrades to existing projects.
6. The PRD scheme applies to the pre-construction phase of projects and seeks to pave the way for more:
  - UK intellectual leadership in key work packages in international projects;
  - UK industrial return on construction phase contracts;
  - Knowledge transfer through collaborative developments, spin-out formation, skills transfer and intellectual property licensing;
  - Flexibility and responsiveness to new initiatives from astronomy, particle astrophysics, particle physics and nuclear physics.
7. Proposals to support scientific exploitation of existing projects should be made to the appropriate grants panel (Astronomy Grants Panel, Particle Physics Grants Panel, Nuclear Physics Grants Panel) and not via the PRD scheme.

#### Process

8. A flow chart of the review processes for PRD can be found [here](#).

9. PPRP meetings are scheduled in advance and STFC makes every attempt to ensure that the PRD review process is carried out in a timely way. Should STFC need to cancel any meetings, applicants will be informed as soon as possible with an explanation of any delays. Accordingly, STFC requires applicants to meet any specified deadlines so that an efficient and effective review process can take place.

## Guidelines for writing a PRD Proposal

10. Applicants must also refer to the [Science Programme Office Project Handbook](#)

### *Programme Manager*

11. Before writing a PRD proposal for submission, you must first contact the appropriate Programme Manager to discuss your proposal. Programme Managers will be able to provide guidance on the proposal, the fit with the STFC strategy and programme, and whether the PRD scheme is the most appropriate route for funding. Contact details for Programme Managers can be found [here](#).

### *Proposal*

12. Your proposal needs to include a case for support and Pathways to Impact information. Applicants should be mindful of both clarity and brevity when preparing a proposal and present all information in such a way that it is easy for the peer review panel to follow. It is important to bear in mind that not all members of the panel will be equally familiar with the research topic.
13. The length of the case for support should be proportional to the size of the request and must not exceed 20 pages (in 11pt type) including figures and appendices. Proposers can refer to supporting information in their case for support and this may be requested by the PPRP if deemed necessary. The supporting information should not be submitted in the first instance. The case for support should stand alone in case the supporting information is not requested.
14. Please be aware that any case for support document longer than 20 pages will be returned to the proposer on submission and will need to be re-submitted before the deadline. The deadline is fixed and cannot be negotiated. Any case for support (including those re-submitted to fit the page limit) received after the deadline will not be accepted.
15. If relevant, it is the responsibility of the principal applicant to ensure that any information is worded in such a way to protect commercially confidential or sensitive areas.
16. The following points should be addressed briefly within the body of the proposal:
  - a. Objectives
  - b. Project description
  - c. Awareness & context
  - d. Competing experiments
  - e. STFC science
  - f. Long term objectives and implications
  - g. Participants
  - h. Track record
  - i. Collaborative projects
  - j. Key Stakeholders/Cross-Council Involvement
  - k. Timescale
  - l. Costs
  - m. Strategy

- n. Risks
- o. Other funding
- a. **Objectives** - A description of the intended end result of the project should be given. This should be clearly stated so that the success or failure of the project can easily be determined at the end of the funded period. Any intermediate results upon which the final result depends should be identified.
- b. **Project description** - A description of the applicants proposed contribution to the project should be given. The document should highlight any unique contributions and technology innovation developed by the proposing institutes for this project (including any past R&D work). It should identify those elements of equipment that will be industrially procured, and those elements that will be built in the proposing institutes. Any aspects of UK leadership should be specified.
- c. **Awareness & context** - Describe the present status of related technology research and development worldwide? Where is this research field likely to be in 10 years time? What is the current state of play? When will technology involved in this project mature?
- d. **Competing research** - A summary of any competing research or techniques should be provided. There should be some analysis of the benefits of this particular research against similar past and current research worldwide.
- e. **STFC science** - What specific STFC science opportunities does this project address? How does this project relate to STFC priorities as set out by the STFC Advisory Panels?
- f. **Long term objectives and implications** - The long term goals of the project should be given. In the case of R&D dedicated to a new experiment or instrument, state what the scientific results of the final project would be; what will be measured; why it should be measured; why the project is timely. An outline of how the proponents hope to proceed from a research and development project to the final project should be given, with approximate timescales and milestones. In the case of technology development, is it required for a one-off project? Does it provide underpinning capability for future STFC scientific projects? Does it provide underpinning technology for inter-disciplinary projects?
- g. **Participants** - A list of all UK participants should be provided. The list should specify their role in the project, and a justification of the costs. Where appropriate, key individuals, such as the UK Spokesperson and Project Manager(s) responsible for ensuring that the project and its constituent parts are kept on schedule and budget should be identified.
- h. **Track record** - Explain your track record in this R&D field. Why do you consider your group the best or most appropriate to carry out this programme? How can the assessors be confident that you would be able to deliver the project? What is the competency of your group to perform this work? List the related publications, grants, spinout companies, patents, Intellectual Property Rights (IPR) etc.
- i. **Collaborative projects** - What linkages and/or collaborations do you have with external key players in this area? Include a description of how responsibilities are to be shared among the collaborators, both within the UK and internationally. For international collaborations, the membership of the international collaboration, a brief breakdown of responsibilities within it, and how the significance of the UK contribution to the project fits relative to those from other countries, should be given. The status of approval and funding of the international experiment should be

provided. Collaborations between commercial and academic partners must have a Collaboration Agreement in place before funds are released.

- j. **Key Stakeholders/Cross-Council involvement** - Does this technology have relevance to other (non-STFC) research council or research establishment (Department of Business, Innovation and Skills; Ministry of Defence; Department of Health etc) work?
- k. **Timescale** - The timescale of the project should be clearly specified. A list of key milestones and deliverables must be given along with dates against which the progress of the project can be assessed (a Gantt chart showing the major milestones of the project is desirable).
- l. **Costs** - The overall cost to STFC of the project should be shown (at 80% fEC (full economic costs) apart from exceptions). Where appropriate two total costs should be given:
  - The total cost to STFC of the project. This includes all equipment, travel, any common fund contributions to experiments, any new staff requests, and the costs of any STFC staff at RAL (Rutherford Appleton Laboratory) or Daresbury and existing STFC funded staff (e.g. rolling grant staff) at the participating institutions who will work on the project (accounting appropriately for fractional posts). Staff overheads (including estate and indirect costs) should be included. Costs for other non-STFC staff, STFC Fellows and students should not be included. The funds requested should not be indexed for inflation.
  - The amount of money which is requested from the PRD fund i.e. as above, but excluding any STFC-funded staff who are already funded through a grants line.

Guidance on internal costs for STFC applicants can be found on the [STFC intranet](#).

All costs associated with the research proposal should be fully justified. Further information on justifying resources can be found in the [Research Grants Handbook](#).

Templates for finance tables - please use the finance table templates provided as Annex 1.

- m. **Strategy** – If a specific technology is being developed, describe the particular strategy adopted and the pathways to be followed for long-term evolution of this technology. Explain why your proposed technology strategy is the optimum route to deliver the project.
- n. **Risks** - Evaluate all risks associated with the project and explain how they will be controlled and managed. What are the factors that influence likely success? A guide to risk assessment and a useful tool for carrying out a risk assessment is provided in Annex 2.
- o. **Other funding** - What, if any, other sources of funding do you currently hold, or are presently applying for, for this project?

## Pathways to Impact

17. Proposers are required to identify how the economic and societal impact of the proposal will be realised. Within the Je-S application process, there are several areas where applicants have the opportunity to add to their Case for Support by detailing the potential economic and societal impacts of their work and pathways towards realising those impacts.

18. Impact Summary: should cover potential economic and societal impacts and pathways towards realising this impact. The Impact Summary may be published to demonstrate potential impacts of Research Council funded research. Please ensure confidential information is not included in this section. Proposers need to address the following questions:
  - Who (outside the academic community e.g. public, schools, industry, government etc.) might benefit from this research?
  - How might they benefit from this research?
19. Pathways to Impact: is primarily for detailing the activities which will help develop potential economic and societal impacts, addressing the following question:
  - What will be done to ensure that potential beneficiaries have the opportunity to engage with this research?
20. Plans for engaging with academic audiences may be included but only where these form part of the critical pathway towards economic and societal impacts. This pathway must be clearly articulated.
21. The Pathways to Impact attachment should be submitted to JeS as a separate document, not exceeding 1000 words (or 2 sides of A4 in 11pt type). This will be assessed by both PPRP in the context of the whole proposal and separately by STFC Innovations and Science and Society staff without sight of the whole application. Therefore each submitted document should be stand-alone with a brief summary of the application.
22. Further general guidance on Pathways to Impact can be found here:
  - RCUK Pathways to Impact (<http://impacts.rcuk.ac.uk/default.htm>)
  - STFC Research Grants Handbook (<http://www.stfc.ac.uk/rgh/rghDisplay2.aspx?m=s&s=166>)
23. When considering Pathways to Impact for PRD proposals you will need to highlight any identified technology transfer and development. Detail should be given of any new generic technological developments arising from the project. Specific benefits of the development to future STFC projects should be clearly specified. Possible industrial links and benefits should be outlined, e.g. spin-off developments or technology transfer. If no such opportunities are available the reasons for this should be explained. You will need to consider intellectual property (IP) rights and patent protection issues. Details should also be provided on existing IP as well as opportunities for pushing IP.

## Submission

24. All applications should be submitted online using the Je-S system by 4pm on the day of the submission deadline. For any queries relating to Je-S, please contact the Je-S helpdesk directly by email at [JeSHelp@rcuk.ac.uk](mailto:JeSHelp@rcuk.ac.uk), or by phone on +44 (0)1793 44 4164. It is the responsibility of the Principal Investigator (PI) to ensure their institution's administration department submits the proposal before the submission deadline.
25. Details of all the requirements and the terms and conditions of research proposals under full economic costing (fEC) principles can be found in the fEC grants handbook: <http://www.so.stfc.ac.uk/rgh/>. Those involved in the preparation and submission of grant proposals must familiarise themselves with the handbook.

## Information for Commercial Applicants

26. A commercial organisation is eligible to submit an application in collaboration with an approved research organisation if it has a manufacturing and/or research facility within

the UK. The person making the application must be normally resident in the UK and hold a permanent appointment with the organisation, i.e. contractors or consultants may not make applications. Commercial applicants will need to apply using the Research in Industry funding mechanism. View [Research in Industry](#) for further information about eligibility for funding.

27. Commercial organisations should apply by submitting the Pre-Qualification Questionnaire (PQQ), the STFC Research in Industry (PRI) form, and a comprehensive case for support that sets out the justification for the requested level of support.
28. All proposals are required to show the total (100%) full economic cost (fEC) of the research proposed, as set out in the Research in Industry guidelines.
29. Applications should contain a clear statement of the scientific and technical need and relevance for the proposed development including the impact that the development will bring in terms of additional capability (e.g. scientific opportunity, increased throughput, new measurement capability, more efficient operation). Key points on why this is an innovative idea, what impact this R&D work is likely to have, how important it is and the rationale for efforts in this area should be contained within the first two pages. (See above PRD proposal guidelines).
30. Should the application be successful STFC will not release funds to a collaboration until it has received a signed copy of the 'Collaboration Agreement'. Model ([Lambert](#)) agreements can be found on the Intellectual Property Office website.
31. The Research in Industry forms can be found [here](#).

## Confidentiality

32. STFC will take all reasonable steps to ensure that the content of funding proposals is treated as confidential.

## Peer Review

### Criteria

33. The PRD proposal will be assessed by the PPRP using the following criteria:
  - Science Strategy  
*How does the proposal map onto STFC's high priority future programme?*
  - Feasibility  
*Competency and likelihood of group delivering stated goals*
  - Technological Impact  
*To what extent will the proposal enable future science by providing better / cheaper / novel technologies*
  - Impact Science  
*To what extent will a successful outcome contribute to increasing our understanding of STFC's key science questions?*
  - Timeliness  
*How important is it that we do this now?*

- Economic and Societal Impact

*To what extent does the proposal show applicants have identified the potential to deliver economic and societal impact and developed the means to achieve impact beyond the project.*

#### *Referees*

34. STFC will seek at least three referee reports for each proposal. Referees will be anonymous, and applicants must inform STFC if there is any referee who would be expressly unsuitable for the role. In such cases, adequate justification must be given, which will be treated by STFC in the strictest confidence. Applicants may also nominate one referee, which the STFC will take into consideration but the use of which is not guaranteed. Nominated referees must not be collaborators; neither should they be from the applicant's or collaborator's home organisation.

#### *Assessing Economic and Societal Impact*

35. The Pathways to Impact attachment will be assessed by the Innovations Directorate and Science in Society teams who will provide advice for the assessment by the PPRP. This will help PPRP build on their existing experience in assessing information on knowledge exchange and outreach.
36. An economic impact expert will attend the PPRP meeting to assist PPRP in their assessment of the proposal.
37. Please note that the STFC Economic Impact Advisory Board will be informed of all recommendations from PPRP.

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## Annex 1 – Finance Tables

Please note that downloadable versions of the finance template can be found on the STFC website.

### A summary of the overall cost to STFC of the project

1. Costs should be shown as costs to STFC (i.e. at 80% fEC apart from exceptions)
2. STFC Laboratory costs should be shown as 100%
3. Please do not include sums for inflation.
4. Please provide best estimate (pro rata split) of estate and indirect costs across FYs.
5. An estimate of the total Rolling Grant costs (including salary, estates and indirect costs) or other grant resource, should be provided in the row towards the bottom of the table.

Summary of total costs		Cost £K			
		FY1	FY2	FY3 ...	Total
New Staff costs Including DI and DA staff and any staff costs under Exceptions	HEI 1				
	HEI 2				
	STFC Laboratory				
Equipment	DI and Exceptions				
Travel and Subsistence					
Other costs	Other DI				
	Other DA				
	Exceptions				
Indirect Costs					
Estate Costs					
Working allowance					
Contingency					
<b>Total “new costs” to STFC</b>					
Existing Grant resources					
<b>Grand Total</b>					

### Detailed costs for each Workpackage (one table for each workpackage)

1. Costs should be shown as costs to STFC (i.e. at 80% fEC apart from exceptions)
2. STFC Laboratory costs should be shown as 100%
3. Please do not include sums for inflation.
4. Please provide best estimate (pro rata split) of estate and indirect costs across FYs.
5. An estimate of the total Rolling Grant costs (including salary, estates and indirect costs) and other grant resource, should be provided in the row towards the bottom of the table.

List individual items/groups of items	Institution		Cost			
			FY1	FY2	FY3 ...	Total
<b>New Staff</b> <i>Include DI and DA staff, laboratory staff, and any staff costs under exceptions (e.g. project students), itemised by staff member.</i>	HEI 1	Prof A.N.Other (DA)				
	HEI 2	PDRA1 (DI) Project student 1 (Except) Pool staff technician (DA)				
	STFC Laboratory					
<b>Total New Staff</b>						
<b>Equipment</b> <i>Where possible an itemised list should be provided which should be easy to cross-check with the justification of resources, split by institution.</i>	HEI 1	Item 1				
	HEI 2 etc	Item 2 etc				
<b>Travel and subsistence</b> <i>Split by institution.</i>	HEI 1 HEI 2 etc.					
<b>Other costs</b> <i>Itemised where possible; split out the DI, DA and Exceptions costs; split by institution.</i>		Other DI				
		Other DA				
		Exceptions				
<b>Indirect Costs</b> <i>Split by institution.</i>	HEI 1 HEI 2 etc.					
<b>Estate Costs</b> <i>Split by institution.</i>	HEI 1 HEI 2 etc.					
Working Allowance						
<b>Total Non-staff</b>						
<b>Total 'new' cost</b>						

<b>Existing grant resources</b> <i>Split by institution.</i>	<b>HEI 1</b> <b>HEI 2</b> <b>etc.</b>					
<b>Grand Total</b>						

### Detailed costs per institute (one table for each institute)

1. Costs should be shown as costs to STFC (i.e. at 80% fEC apart from exceptions)
2. Please do not include sums for inflation.
3. STFC Laboratory costs should be shown as 100%
4. Please provide best estimate (pro rata split) of estate and indirect costs across FYs.
5. Please annotate staff as (R= Rolling grant or N=new). Rolling grant staff do not need to be individually costed in the top section of the table, but FTE estimates should be provided. An estimate of the total Rolling Grant costs, including salary, estates and indirect costs, and other grant resource should be provided in the row towards the bottom of the table.

Institute:			FY1		FY2		FY3 etc.		TOTAL	
Staff Name	WP	Staff type	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE
Total new posts										
Total RG posts <i>(FTEs only)</i>										
Equipment (DI and exceptions) <i>Split by WP if relevant</i>										
WP1										
WP2										
WP3 etc										
Travel and Subsistence <i>Split by WP if relevant</i>										
Other DI <i>Split by WP if relevant</i>										
Other DA <i>Split by WP if relevant</i>										
Other Exceptions <i>Split by WP if relevant</i>										
Indirect costs (best estimate)										
Estate costs (best estimate)										
Total 'new' costs <i>excl. RG costs</i>										
Total grant resource										
Grand total <i>incl. RG costs</i>										

## Annex 2 – Risk Guidance

### Science Programme Office Project Management Guidance on Risk Management

#### Introduction

Risk is any action or event that affects a project's ability to achieve its objectives. Risks can be seen as a threat to the success of a project because they have a negative impact on cost, schedule and technical performance. However, with appropriate procedures, risks can be managed and in so doing, present new opportunities with a positive impact. It is as much concerned with good things not happening as bad things happening.

The objective of risk management is to identify, assess, reduce, accept and control risk in a systematic and proactive way, while at the same time taking into account the project's technical and programmatic constraints (e.g. costs, timescales, and specification).

To achieve this, risk needs to be captured effectively so that appropriate management attention can be directed to the essential issues. The various stakeholders can then agree on the best course of action for mitigating the risk. This approach underpins the key objective of risk management.

#### Basic Principles and Process

STFC's risk management policy requires well structured information about the nature of risk so that the information can facilitate communication and the management decision making process. Certain activities must be implemented as part of a risk management plan and risk management must be seen as part of the normal project management structure and internal reporting within the STFC's Science Programme Office (SPO) through its project assurance process.

An outline of the steps used in the risk management process is shown below. Generally trade-offs are made among the different, and often competing, project goals. Undesired events are assessed for severity/impact and likelihood. In the assessment of mitigating risk and devising an action plan, risk is considered tradable against known project resources within the management (e.g. cost and schedule) and technical domains (e.g. specification). Key steps comprise:

- Identifying the full spectrum of potential risks through appropriate techniques (e.g. engineering analysis, project team meetings etc)
- Analysing and assessing the risks to determine the most serious and rank them through a risk index scheme (see below)
- Capturing and tracking risks on a standard risk register. This should distinguish between inherent and residual risk. The former is the risk present before taking any mitigation action, while the latter is what remains after mitigation
- Devising action plans to mitigate risks either by avoiding the risk, transferring the risk, reducing the probability/impact or accepting the risk.
  - This step will require an understanding of the cost and schedule impact of the risk as part of determining an appropriate level of working margin and contingency. Some types of risk lend themselves to a numerical diagnosis – particularly financial or technical risk. For other risks - for example reputational risk - a more subjective view is all that is possible.
- Implementing action and control plans and taking appropriate actions when unforeseen risks occur. This will include monitoring, communicating and accepting risks as well as alerting the management team of new risks

### Suggested Risk Index Scheme

A risk index scheme should be used to score or measure the magnitude of the each risk scenario. It is a combination of the likelihood of occurrence and the impact or severity of the consequence of the risk materialising. Scores are used to measure the likelihood and impact.

It is important that periodic assessment and review of all identified risks and up-dating of results takes place as part of the project management reporting. For this reason, risks should be captured and tracked using a Risk Register (suggested template attached below).

#### Likelihood

#### Risk Index: Combination of Impact and Likelihood

0.8-1.0	Medium	Medium	High	High	High	
0.6-0.8	Low	Medium	Medium	High	High	
0.4-0.6	Low	Low	Medium	Medium	High	
0.2-0.4	Low	Low	Low	Medium	Medium	
0.0-0.2	Low	Low	Low	Low	Medium	
	0-20	21-40	41-60	61-80	81-100	<b>Impact</b>

Risk index	Risk severity or magnitude	Proposed actions
50 - 100	High risk	Unacceptable risk: implement new mitigation process or change baseline (e.g. de-scope, re-schedule) – seek high level project management intervention as defined in the risk management plan.
25 – 50	Medium risk	Unacceptable risk: actively manage, consider alternative mitigation process or baseline (e.g. de-scope) – seek attention at appropriate management level as defined in the risk management plan.
0 – 25	Low risk	Acceptable risk: control, monitor – seek responsible work package management attention.

NB. For further information please contact the relevant SPO programme manager.

**RISK REGISTER**

Total risk is product of  
Likelihood and Impact

0 - 25	low
25 - 50	medium
50 - 100	high

**Project Title:**  
**Project**  
**Manager:**

**Last Update:**

Ref.	Risk Description	Potential impact on project	Owner	Inherent Risk			Existing Controls	Current/ Proposed mitigation	Residual Risk			Risk Exposure		Action Required
				Likelihood	Impact	Total			Likelihood	Impact	Total	description	Cost (£k)	
						0					0			
						0					0			
						0					0			
						0					0			
						0					0			
						0					0			
						0					0			

**Notes**

Likelihood scale of 0.1 to 1 where  
0.1 is low.  
Impact scale of 1 -100 where 1 is  
low.