

FAAM User Application Guide

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1. Introduction

This document is intended to provide guidance to potential users of the FAAM BAe146 research aircraft and associated ground-based facilities, and outlines the routes and mechanisms governing access to the facility.

Users planning a project which could involve FAAM should contact the Facility at early as possible in the planning process. FAAM will provide help and guidance to users in order that they can understand the costs involved, submit funding applications (if appropriate), and tailor FAAM's service provision. A list of appropriate contacts is given in Section 5.

FAAM typically supports around 400 hours of research flying per year. Where applications in a given year greatly exceed this level the FAAM Operations Committee will prioritise activity, taking advice from PIs and the FAAM Strategy Committee.

A guide for the lead-time between initial contact and ultimate access to the facility is 18 months, but is very dependent on the type of user and complexity of the work. See the user-specific parts of Section 3 for more accurate estimates.

2. Resources

The award of FAAM hours to an individual is typically made alongside access to supporting infrastructure and assistance from the FAAM team, in making best use of the hours and in deriving data and other products in pursuit of the user's goals. Commercial users aside, the award of flight hours is made without attaching monetary equivalent to flying hours or staff time, and as such these

commodities are not ‘tradeable’ against other marginal costs. This is a direct consequence of the FAAM Business model

Users will be expected to resource the costs, typically via grant or other funding, of additional services, such as taking the aircraft on detachment, operation at Cranfield out of normal working hours, or installing new instrumentation on the aircraft.

FAAM’s services comprise FAAM flying hours, aircraft access, laboratory facilities, office space, FAAM staff time, core instrumentation provision, instrument configuration, engineering support for new installations, operational support, flight crew and operations staff, project and detachment planning. The provision of the ultimate ‘core’ data products is made using a standard format, data being archived at the Centre for Environmental Data Analysis (CEDA).

3. Access Routes

User access to the FAAM BAe146 research aircraft is supported via five routes:

1. By NERC under the terms relating to Standard and Large Grants, Strategic Research and National Capability (long term science)
2. By Met Office funding for Observational Based Research and collaborative science research
3. By means of user-payment for flight hours and support services funded by another public body such as a UK Research Council/ European equivalent, or the European Commission
4. By direct payment for either dedicated flying hours, or “ridealong” equipment testing on board the aircraft.
5. By mutually-beneficial deployment of FAAM testing hours with FAAM’s existing flying programme (typically only appropriate for projects making use of one or two flights)

These routes are fully discussed in subsequent sections, and users wishing to find information should skip to the section that best describes their proposal. Procedures, timescales and costs vary depending on the access route, but in general the structures by which FAAM conducts its operations and manages access to the facility, including technical installations, remain common no matter how the work is funded.

3.1 NERC-Funded Research Projects

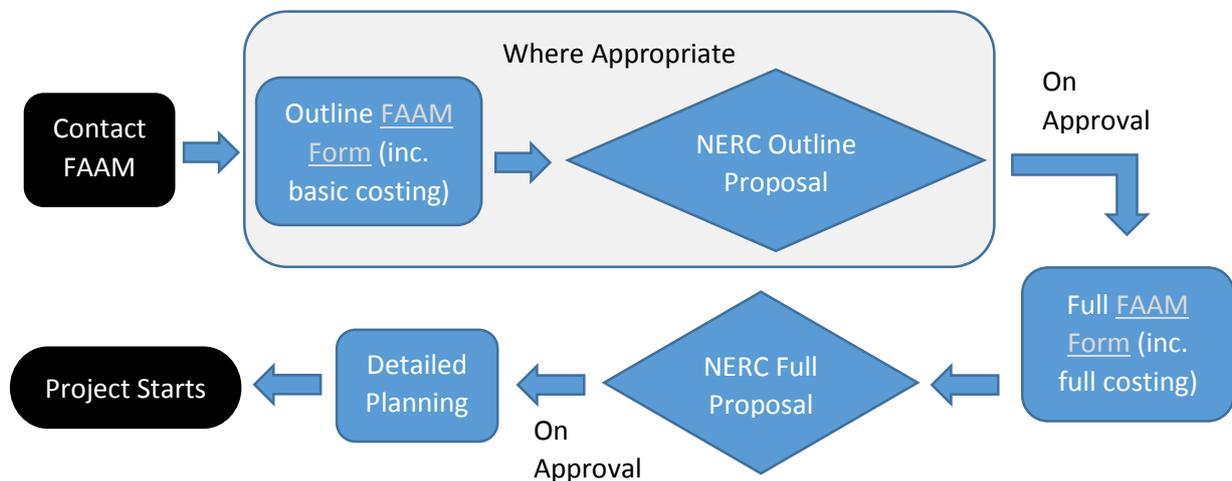
Process

NERC research proposals are subject to processes outlined in the [NERC Research Grants Handbook](#).

Potential users must initially contact the FAAM Operations Manager for guidance, typically 18 months before the proposed project start date, on available access periods, technical issues, potential costs, and issue of a FAAM Application Form. All applications to NERC must be accompanied within the Je-S system by a FAAM Technical Assessment (and cost estimate) signed by the Head of FAAM, which will be produced following approval of a [FAAM form](#). The FAAM form evaluates costs and project feasibility, and typically takes at least 2 weeks from receipt to approve, though users should be aware that this may take longer if staff are on deployment at the time of receipt.

For NERC Outline Proposals, FAAM will initially request completion of a cut-down Overview Form that enables FAAM to provide a faster, less detailed initial response including more generalised outline costs/feasibility. Completion of the full form will follow when the applicant is invited by NERC to submit a full proposal, and will involve more operational, technical and financial detail to produce an accurate estimates of the costs that will need to be included in the final grant proposal.

Assuming the proposal is approved, up to 6 months after submission, FAAM will proceed to the Detailed Planning phase (**Section 4**), typically 12-24 months before the start of a measurement deployment or campaign depending on its scope and complexity. Within this 12 months, operational and technical planning will be done by FAAM, closely involving the Principal Investigator and aircraft operator (Directflight Ltd), including any engineering work required by the proposal.



Costs

NERC-funded user costs are now limited to marginal costs - those over-and-above the ongoing NERC/Met Office investment in providing the aircraft in a 'ready-to-go' state at Cranfield. Fuel and other similar costs no longer need to be considered as they are included in this ready-to-go reckoning. However, the concept of 'flying hours' still serves a purpose in assessing the overall cost and resources needed by a proposal, and is still required to be entered within a [FAAM form](#).

NERC-funded users of FAAM need to include operating costs within a grant application to cover activities over and above operating the same flying schedule in normal hours out of its Cranfield Home base. These costs are often referred to as ‘superstructure’. Examples of these on detachment would be hotel costs, staff transit and transport, communications, hangarage, subsistence, operating staff overheads, drop-sondes etc. Examples of extra costs for Cranfield-based flying would be out-of-hours operational support, handling fees associated with refuelling elsewhere, missed-approach fees, etc. FAAM can provide estimates, and also past examples of project costs for similar projects, two of which are included in Section 7 of this document.

Cranfield-based flying can be supported by NERC for very modest grant costs since the marginal costs are much reduced when operating from FAAM’s home base.

Paragraph 15 of the [NERC Research Grants Handbook](#) provides an exception to the limit on standard grant funding. Where FAAM facility costs take the proposal budget above the standard limit, there is a mechanism whereby this can be accommodated without putting the application above the cost limit for a standard grant. See the handbook for further details.

Timing details

Indicative Timing	Brief Description	Interested Parties	Notes
6+ months before Proposal Submission to NERC	Initial contact	Ops Manager, PI	Convey initial idea Discuss timings, constraints, feasibility, instrument fit Outline form (if appropriate)
1-6 months before submission	Outline discussion and issue of form	Ops Manager, Tech Manager, PI	PI starts to complete FAAM form Allocation of a provisional flying window. Progressive levels of detail explored Outline Risk assessment may be appropriate Technical feasibility
2+ weeks before submission	Form received by FAAM	FAAM, PI, DFL	Form signed off by FAAM and DFL. Head of FAAM produces a signed Technical Feasibility Assessment to accompany application.
Submission deadline	Submission	PI	PI includes FAAM form and Technical Assessment in JeS
6 months after submission	Award	PI	PI informs FAAM Operations Manager of award, including any conditions.
Campaign Startup Meeting	Formal Startup	Ops Manager, DFL, PI, Co-I(s)	Provide FAAM and DFL with detailed understanding of campaign requirements and any changes from application
0-12 months after Formal Startup (monthly Campaign Meetings)	Detailed planning	Ops Manager, Tech Manager, PI, DFL, Detachment Manager	Logistical, operational, technical, scientific provisions. Confirmation of dates/locations. FAAM generates Statement of Requirement (SOR) based on FAAM form to define DFL’s service provision
3-6 months before deployment	Reconnaissance visit to operating base	Ops/Detachment Manager, DFL, PI, Avalon Engineer	Scope and timing depend on the scale of the project and whether FAAM has worked at the location previously.
1 month before deployment	Briefing	PI, FAAM team, DFL, External Groups	Presentation by PI and science team to FAAM team. Major outcomes, modes of working, flight plans, key instruments. FAAM Detachment manager presents logistics, H&S information.
<i>Deployment</i>	Deployment	<i>FAAM, DFL, PIs, Scientific Team</i>	<i>FAAM deploys – campaign within agreed schedule</i>

3.2 NERC National Capability Users

NERC is currently commissioning National Capability (NC) research from its Centres through submission of competitive proposals for long-term science work plans. An element of these long-term work plans may be Facility use, including FAAM. Prospective FAAM users preparing bids under the NC commissioning process should follow the same timeline as above. Because of the nature of NC research however there may be repeated planned deployments of the facility over a number of years, and users should discuss these requirements fully with FAAM so that the Operations Committee may schedule them appropriately.

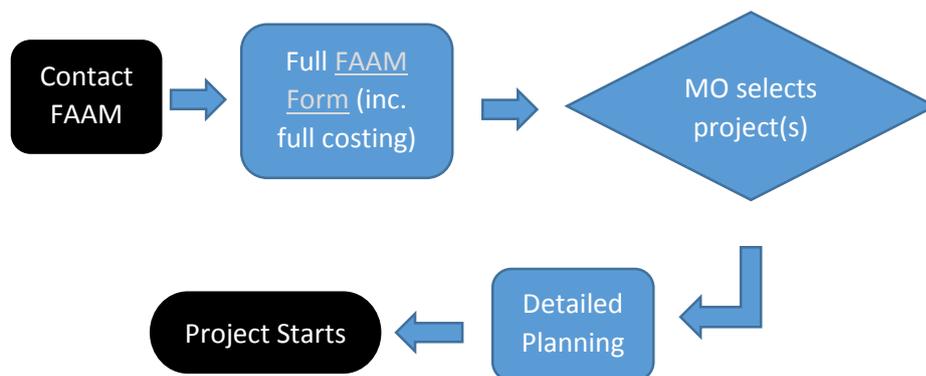
3.3 Met Office-Funded Users

Process

Contract reference MO/L1225 describes the consortium agreement between NERC and the Met Office for provision of FAAM. The split of hours that are available to Met-Office users will change from year to year depending on the overall flying, but for a typical year representing 400 total flying hours for FAAM, a guide to the Met Office allocation would be 134 hours (after the Met Office contribution to FAAM training hours have been deducted).

Potential users must initially contact the FAAM Operations Manager at least 18 months before the project start date for guidance on available access periods, technical issues, potential costs, and issue of a [FAAM Application Form](#). Approval of a FAAM form, evaluating costs and project feasibility, typically takes at least 2 weeks from receipt, though users should be aware that this may take longer if staff are on deployment and the time of receipt.

FAAM awaits a summary of the internal MO procedure and process for inclusion here, including indicative timescales



Costs

The NERC/Met Office agreement dictates that Met Office users (like NERC users) are subject to any additional marginal user costs associated with a project. Met Office-sponsored users of FAAM need to meet facility costs for their science that would not have been borne by the aircraft operating the same flying schedule in normal hours out of its Cranfield Home base. These costs are often referred to as 'superstructure'. Examples of these on detachment would be hotel costs, staff transit and transport, communications, hangarage, subsistence, operating staff overheads etc. Examples of extra costs for Cranfield-based flying would be out-of-hours operational support, handling fees associated with refuelling elsewhere, missed-approach fees, drop-sondes, etc. FAAM can provide estimates, and also past examples of project costs for similar projects, two of which are included in Section 7 of this document.

Cranfield-based flying can be supported by NERC for very modest grant costs since the marginal costs are much reduced when operating from FAAM's home base.

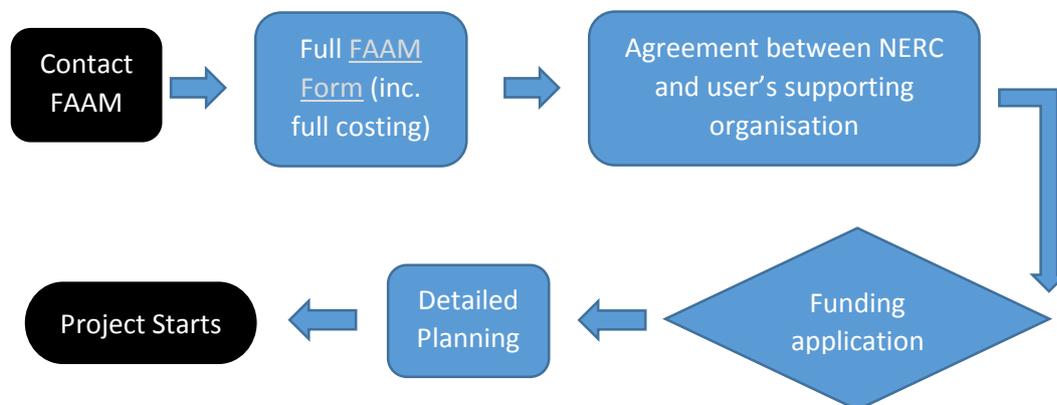
3.4 Other Publicly-funded Research Users

Process

Potential users must initially contact the FAAM Operations Manager at least 18 months before the proposed campaign start date for guidance on available access periods, technical issues, potential costs, and issue of a FAAM Application Form. Application processes within external research councils or other public bodies will vary, but an agreement will need to be reached between the external organisation and NERC in regards of terms and pricing of the facility, which FAAM will facilitate.

FAAM will request completion of a [FAAM Form](#) which will capture operational, technical and financial details associated with the campaign. This will allow FAAM to evaluate the project feasibility and produce an accurate estimates of the costs that will need to be included in the proposal. Approval of a [FAAM form](#), evaluating costs and project feasibility, typically takes at least 2 weeks from receipt, though users should be aware that this may take longer if staff are on deployment ant the time of receipt.

Assuming the proposal is approved, up to 6 months after submission, FAAM will proceed to the Detailed Planning phase (**Section 5**), typically 12 months before the start of a measurement deployment or campaign. Within this 12 months, operational and technical planning will be done by FAAM, closely involving the Principal Investigator and aircraft operator (Directflight Ltd), including any engineering work required by the proposal.



Costs

According to FAAM's Business model, costs passed on to other publicly-funded users (Eg EUFAR, other UK government departments) include **both** a contribution to FAAM's baseline 'ready-to-go costs', defined annually in proportion to the number of flights undertaken, **and** marginal costs associated with the deployment of the aircraft on a specific project.

The annual ready-to-go costs can be requested from FAAM's Operations manager.

The marginal costs are often referred to as 'superstructure'. Examples of these on detachment would be hotel costs, staff transit and transport, communications, hangarage, subsistence, operating staff overheads, drop-sondes etc. Examples of extra costs for Cranfield-based flying would be out-of-hours operational support, handling fees associated with refuelling elsewhere, missed-

approach fees, drop-sondes, etc. FAAM can provide estimates, and also past examples of project costs for similar projects, two of which are included in Section 7 of this document.

Cranfield-based flying can be supported for an external user for very modest grant costs since the marginal costs are much reduced when operating from FAAM’s home base.

Timing details

Timings for other UK or EU funding bids are only indicative. FAAM seek here to highlight the phased approach of their response and the timeline over which they would expect to help in preparing such bids, including costing and feasibility of a project.

Indicative Timing	Brief Description	Interested Parties	Notes
6+ months before Proposal Submission	Initial contact	Ops Manager, PI	Convey initial idea Discuss timings, constraints, feasibility, instrument fit Outline form (if appropriate)
1-6 months before submission	Outline discussion and issue of form	Ops Manager, Tech Manager, PI	PI starts to complete FAAM form Allocation of a provisional flying window. Progressive levels of detail explored Outline Risk assessment may be appropriate Technical feasibility
2+ weeks before submission	Form received by FAAM	FAAM, PI, DFL	Form signed off by FAAM and DFL. Head of FAAM produces a signed Technical Feasibility Assessment to accompany application.
Submission deadline	Submission	PI	
Eg 6 months after submission	Award	PI	PI informs FAAM Operations Manager of award, including any conditions.
Campaign Startup Meeting	Formal Startup	Ops Manager, DFL, PI, Co-I(s)	Provide FAAM and DFL with detailed understanding of campaign requirements and any changes from application
0-12 months after Formal Startup (monthly Campaign Meetings)	Detailed planning	Ops Manager, Tech Manager, PI, DFL, Detachment Manager	Logistical, operational, technical, scientific provisions. Confirmation of dates/locations. FAAM generates Statement of Requirement (SOR) based on FAAM form to define DFL’s service provision
3-6 months before deployment	Reconnaissance visit to operating base	Ops/Detachment Manager, DFL, PI, Avalon Engineer	Scope and timing depend on the scale of the project and whether FAAM has worked at the location previously.
1 month before deployment	Briefing	PI, FAAM team, DFL, External Groups	Presentation by PI and science team to FAAM team. Major outcomes, modes of working, flight plans, key instruments. FAAM Detachment manager presents logistics, H&S information.
<i>Deployment</i>	Deployment	<i>FAAM, DFL, PIs, Scientific Team</i>	<i>FAAM deploys – campaign within agreed schedule</i>

3.5 Commercial Users

FAAM's capability is potentially available for commercial users, to both install instrumentation and conduct flights for their own purposes. Potential users must initially contact NCAS Head of Airborne Science and Technology for guidance on available access periods, technical issues, and potential costs. This also enables FAAM to schedule the work alongside existing commitments, which will be approved by the FAAM Operations Committee. "Commercial" in this context is work which is not UK public sector funded science.

There are no absolute limitations as to what can be done, but experience shows the following as in some combination constituting most typical commercial tasks:-

Dedicated flying

This is likely to use a mixture of existing FAAM instrumentation and customer equipment, and will be managed similarly to any normal science programme. Meetings will establish the feasibility of the campaign, and the costs of operation and equipment installation. It is likely that the user will be required to complete a [FAAM Form](#), declaring the detail of their planned programme, so that feasibility and costs may be fully established.

Ride-along testing

FAAM can provide the capability for organisations who wish to test equipment for a period of time on board an instrumented large aircraft. The BAe-146-301 ARA does provide a particularly good capability for this, as FAAM and its stakeholders are very used to getting new equipment regularly onto the aircraft, and there is also a wealth of data available from the primary flight instrumentation, and both core and non-core science instrumentation which can be used as a baseline for evaluating the data from new equipment.

Commercial customers may require signature of a *Non Disclosure Agreement* before sharing technical information with FAAM. In such cases, the NDA will initially be signed by an officer of the Natural Environment Research Council (NERC), and information will initially be restricted to a small core of suitably cleared personnel at FAAM. If a task goes ahead subsequently, then NERC will put derivative NDAs in place with its internal partners to ensure task delivery with suitable data confidentiality. Those partners are likely to include the Met Office (which employs a number of the staff at FAAM), University of Leeds (ditto), BAE Systems [who hold the engineering support contract for the ARA], Directflight Ltd [who operate the aircraft] and Avalon Aero Ltd [who maintain the aircraft and install and remove equipment.] If any of these may present problems, please discuss this with the NCAS Head of Airborne Science and Technology, who will aim to resolve any difficulties.

Costs will be determined based upon actual costs, plus a percentage loading determined by the NERC Council, which reflects the use of the facility for work which isn't UK public sector science. That loading, equivalent to a commercial profit margin, will be re-invested in facility capability. Costs typically will be quoted as an estimate in the first instance, with a fixed price quote available if required. Approximate breakdowns will be made available, but detailed breakdowns will not.

If costs are required for inclusion in a grant application (e.g. a non-UK applicant for a Horizon 2020 grant), an estimate can be provided for a defined timescale. Please allow an absolute minimum of 3 months, preferably longer, to produce this.

FAAM will require detailed technical information, including engineering schematics, mass, size, and CG data, power requirements, data requirements and whether (and how many) any customer staff will need to be on board the aircraft in order to cost any carriage of equipment on board the aircraft.

Costs will be primarily based upon the certification costs, plus installed mass multiplied by an agreed minimum number of hours which will be flown. This obviously means that ensuring that equipment is lightweight, with minimum requirements to modify the aircraft, will keep the price down.

Where there is a desire for flying in a particular environment, FAAM will work with the potential customer to try and coincide this with existing science campaigns so as to reduce campaign costs. Obviously, the ability to do so, will be dependent upon the existing plans and whether such coincidence is possible.

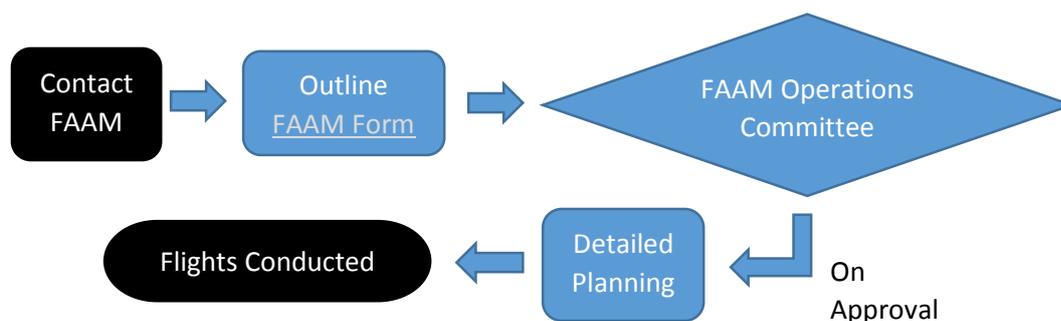
3.6 FAAM Testing Hours Users

FAAM maintains a small number of hours in support of both instrument testing and to ensure flight crew currency in support of funded projects. FAAM would seek to make best use of these flights, and therefore intends to offer access to unfunded users where a user is able to carry out scientific research at the same time as FAAM/Operator needs are met.

Process

Potential users must initially contact the FAAM Operations Manager for guidance on available access periods, technical issues, potential costs, and issue of a FAAM Outline Application Form. Completion of a full FAAM form may follow if the proposed testing work is of a more complex nature.

Feasibility of the proposal will be assessed and scheduled formally at the next most convenient meeting of the FAAM Operations Committee. Where the facility receives multiple proposals of this type then they will be accommodated in the first instance on a first-come, first-served basis. Successful users will be asked for proposed sortie details and other information, and will proceed to a vastly minimised detailed planning phase (section XX). Typically only one or two flights will be conducted



Costs

FAAM cannot typically provide funding to cover travel or deployment costs associated with use of testing hours. Users should expect flights within core 1100-1600 hours with no marginal cost burden unless they are able to identify their own sources of funding.

Timing details

Indicative Timing	Brief Description	Interested Parties	Notes
1-6 months before flight(s)	Initial contact	Ops Manager, PI	Convey initial idea Discuss timings, constraints, feasibility, instrument fit Outline form (if appropriate)
1-6 months before flight(s)	Outline discussion and issue of form	Ops Manager, Tech Manager, PI	PI starts to complete FAAM form Allocation of a provisional flying window. Progressive levels of detail explored Outline Risk assessment may be appropriate
1+months before flight (s)	FAAM Form submitted	FAAM, PI, DFL	Form signed off by FAAM and DFL.
5+ weeks before flight	Example sortie briefs prepared	PI	Reviewed and discussed with FAAM and DFL
<i>Deployment</i>	Deployment	<i>FAAM, DFL, PIs, Scientific Team</i>	<i>FAAM conducts flight(s) with PI involvement</i>

4. Technical Modifications

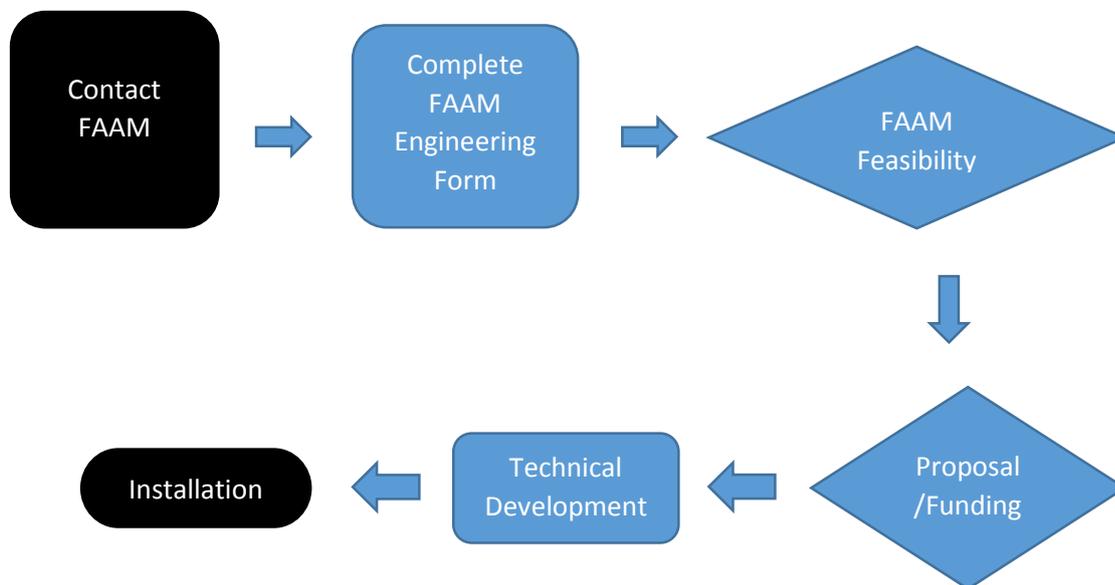
This section deals with users who may wish to install or modify instrumentation or other technical capability on the FAAM aircraft

Process

Users wishing to perform engineering work on the aircraft will initially contact [FAAM's Technical Manager](#) for initial guidance and the issue of a FAAM Engineering Application Form (in preparation).

In the same way as for projects involving science flying, FAAM will assess whether the proposal is feasible and will provide cost estimates. These can only be indicative, and users should accept some variability in the actual cost of work (suggest $\pm 20\%$). FAAM is not responsible for granting funding. FAAM will return its findings to the applicant, either for inclusion in a grant proposal for a new instrument, or as part of a flying application.

No engineering project will start until funding has been approved.



Approved Projects and Technical Development

The **Technical Manager** at FAAM will be responsible for an overview of the management of all engineering projects. A **Project Manager** (usually from FAAM, but not necessarily so) will be assigned for each task, or for a group of tasks if there are obvious connections e.g. in terms of timing, scope of the work. The Project Manager will be responsible for the organisation of the installation project, communicating with necessary engineering, design and instrumentation staff as necessary on relevant tasks and timings during the Technical Development phase. Conduct of installation projects will be overseen and co-ordinated with other engineering work by the FAAM engineering committee (Chair FAAM Technical Manager) which meets monthly

Costs

Not all projects are the same, and the breakdown of costs will be governed by the complexity and scope of the project. There are usually seven main elements to the cost of an engineering project:

- Feasibility Studies (usually by an engineering specialist, e.g. BAE Systems. This is not required for all projects)
- Design
- Manufacture
- Airworthiness clearance
- Installation
- Project Management
- Test and verification

There are also potential extra costs, such as travel and subsistence for FAAM staff to visit a particular institution to discuss a project.

For engineering projects involving UK or EU-sourced public funding, the cost of project management and the use of FAAM staff time for elements such as design will typically be considered to be part of FAAM's infrastructure and not charged for. The cost associated with all other elements, which are usually out-sourced, will be charged at cost. Private venture projects will potentially be charged for all the above elements and will be determined based upon actual costs, plus a percentage loading determined by NERC.

Test and verification costs are options that will need to be understood as part of the application process. In general, individual institutes perform their own testing. The engineering process does not cover applications for flying time to perform in-flight testing.

5. Detailed Planning

Once a proposal has been approved, received funding, and is scheduled into FAAM's flying programme, then detailed planning begins.

An important contractual process that FAAM has to meet is the production of a Statement Of Requirement document (SOR). At the start of the Detailed Planning phase the SOR will be based on the final [FAAM form](#) that a user would have submitted, but depending on the complexity of the project it is very likely that further work will be required, especially when the aircraft is operating away from home base.

When complete the SOR will contain all of the services that are needed to support the FAAM aircraft, and governs Directflight's operator provision of the aircraft. The [FAAM Operations Manager](#) will typically lead the generation of this, but will require input from a user, formally discussed and recorded at monthly progress meetings of the FAAM Campaign Committee at which Directflight and User representatives (where appropriate) will be present. Formally FAAM and Directflight expect an SOR to be issued (in draft form) 6 months before the start of any deployment away from home base, 12 weeks for work based at Cranfield.

Campaign Committee meetings are conducted monthly in the run-up to a campaign, and the Principal Investigator / project sponsor will be able to oversee and make decisions on the project organisation. Costs will be regularly reviewed as part of this process to capture changes and allow the project sponsor to make decisions regarding the deployment's best use of the available assets.

Recce visits will be planned to any detachment locations well in advance of final deployment, and full briefings will be given to all staff involved prior to departure and once in the field. A FAAM detachment manager will be appointed and they will assume responsibility for health and safety of staff on deployment as well as co-ordination of day-to-day activity.

6. Contacts

To obtain either an Outline or a full FAAM Form, please contact the FAAM Operations Manager in the first instance. Full contact details are available on the [FAAM website](#)

FAAM Operations Manager	Mo Smith	masmi@faam.ac.uk
Deputy Operations Manager	Doug Anderson	dougan@faam.ac.uk
Head of FAAM	(acting) Alan Woolley	alwo@faam.ac.uk
NCAS Head of Airborne Science and Technology	Dr Guy Gratton	guat@faam.ac.uk
FAAM Technical Manager	Steve Devereau	stde@faam.ac.uk
Met Office Hours and superstructure	Clare Lee	clare.lee@metoffice.gov.uk
NCAS Director Observations	Geraint Vaughan	geraint.vaughan@manchester.ac.uk

7. Typical cost models

Below are two scenarios of indicative costs for UK publicly-funded researchers (Access Routes 3.1-3.4) to deploy the facility, and includes only the marginal costs that are included on a research proposal. NERC and the UK Met Office underpin fuel and other costs that are needed to maintain the facility in a 'ready-to-go' state. Commercial users should contact FAAM for indicative information as the costing model is not the same.

Cranfield-based flying

The table below contains indicative marginal costs for 100 hours of science flying out of Cranfield under typical headings that would be assessed on a campaign-specific basis. These costs are based on three recent projects (2015).

Item	Value
Travel and Subsistence (FAAM, DFL, Avalon)	£12,000
Airport Operations	£19,000
Sondes (£525 per sonde)	£0
Engineering	£1000
Logistics	£200
Operator Overheads (non-core charges)	£2,000
Total	£34,200

Additional costs to consider would be travel and subsistence allowances for external staff, shipping of external (non-core) equipment, charges associated with landing away for refuels, etc.

Flights conducted away from the home base, UK

The table below contains indicative marginal costs for 100 hours of science flying on detachment within the UK. These should be treated with some caution owing to the highly bespoke nature of

detachment costs depending on proposed activity, but should still give a user some indication, having been based on two recent projects (2014/15).

Item	Value
Travel and Subsistence (FAAM, DFL, Avalon)	£75,000
Airport Operations	£40,000
Sondes (£525 per sonde)	£0
Engineering	£2,000
Logistics	£500
Operator Overheads (non-core charges)	£120,000
Total	£237,500

Flights conducted away from the home base, Overseas

The table below contains indicative marginal costs for 100 hours of science flying on detachment overseas. These should be treated with yet more caution owing to the highly bespoke nature of detachment costs depending on proposed activity, but should still give a user some indication, having been based on the average from two recent projects (2014/15).

Item	Value
Travel and Subsistence (FAAM, DFL, Avalon)	£78,000
Airport Operations	£110,000
Sondes (£525 per sonde)	£0
Engineering	£4,000
Logistics	£27,000
Operator Overheads (non-core charges)	£150,000
Total	£369,000

Appendix 1 - Glossary

Avalon – FAAM’s engineering support for aircraft operation – contracted via BAESystems

DFL – Directflight LTD, FAAM’s operator for the FAAM BAe146 aircraft – providing aircrew and operational support

FAAM – Facility for Airborne Atmospheric Measurements

MO - Met Office

NCAS – National Centre for Atmospheric Science

NERC – Natural Environment Research Council

Ops Manager – FAAM Operations Manager

PI – Principal Investigator

SOR – Statement of Requirement – the contractual agreement whereby FAAM requests operational support from DFL for every deployment

“Superstructure” – marginal costs associated with deploying the aircraft which are not covered centrally by NERC or the Met Office

Tech Manager – FAAM Technical Manager

Technical Feasibility Assessment – A letter from the Head of FAAM (or Deputy) outlining the feasibility of a proposal along with outline cost estimates. Required by the NERC JeS application system.