

Project Management

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Abstract

As part of the IAT Higher Education Level 6 qualification delivered by the College of Laboratory Animal Science and Technology (CLAST), students are required to undertake a project using planning and managerial skills and submit a final dissertation describing the processes involved. This article is based on the author's dissertation and describes a project to provide suitable facilities for a research team moving into *in vivo* studies involving adaption of accommodation including the relocation of *in vivo* imaging equipment from another location. The project required the author to effectively plan, budget and manage the relocation whilst carrying out their everyday responsibilities. Successful candidates are then eligible to apply for the IAT Fellowship (FIAT) and to progress onto a master's degree programme.

Keywords: management, budgets, stakeholder engagement, training

Introduction

Project aim

To provide a Research group that needs to undertake *in vivo* work in rodents with pathogen-free accommodation including animal accommodation and access to an *In Vivo* Imaging System (IVIS).

The Unit

The Biomedical Research Facility (BRF) is managed by Bioresearch and Veterinary Services (BVS) and benefits from a collaboration with a larger team.

The facilities (BRF and Central Transgenic Core (CTC)) are maintained at a high health status and strict rules apply to maintain this status. Entry of staff, mice,

equipment, pathogens and biological materials are strictly controlled. Before any member of staff can enter the unit they must first read the Code of Practice and then contact the Unit Manager who will introduce them to the unit and outline in detail the procedures that must be followed when entering and using the facilities. The BRF has the ability to house mice, rats and hamsters. Animals can be accommodated in open top or individual ventilated cages (IVCs) and if required can be contained within flexible film isolators.

BVS staff are highly trained and can offer a wide range of services including:

- breeding and maintenance of rodent lines
- production and maintenance of Transgenic rodents
- management and monitoring of Transmissible Spongiform Encephalopathy (TSE) infected mice
- conducting a range of other specialised procedures

The units also house a range of specialised facilities,¹ that include:

- micro-injection facilities
- surgical facilities
- derogated category 3 containment facility
- post-mortem facilities
- embryo culture
- behavioural suites
- imaging equipment

Scoping

It is during this stage of a project that you must ask all of the relevant questions to try to ensure that you know exactly what is required by them. This is also when you can ascertain if you will be able to fulfil their requirements or if adjustment would need to be made.

Setting this out in a spreadsheet or a Gantt chart will allow you to see if you are keeping to timescales and targets.

Context

A Research group has been working on campus for the last 10 years. Their work involves incorporating promoters and enhancers into viruses. They now had 3-4 disease models identified and were now ready to start *in vivo* work.

To allow them to begin working with animals they required a pathogen free area, local to their laboratories. They required lone use of a stock holding room and access to an In Vivo Imaging System (IVIS).

The overall aim of the work to be performed is to develop improved gene therapies. In doing so they wanted to develop, screen and evaluate novel tissue-specific and regulatable systems, for testing in small rodent models and to develop and administer novel gene expression tools.

This project needed to address various issues for the unit and research.

- Provide a consistent workload for the technical staff.
- Increase the skills base of all staff.
- Enable new research which will benefit all.
- Produce external income.
- Provide a suitable area for this new research to take place.

All of these would help to maintain the unit in a working position as a drop in workload could result in closure of a unit. This project will benefit the department, research and staff morale.

Synopsis

This research group is part of a new commercial company. Although most of the team having been working on this campus for the last 10 years, the new company were now at a stage that they needed to start working with live animals to validate their work. As a department we were approached to see if we could accommodate them in one of our units. They do have some special requirements that we need to see if we can put in place.

- They would require the use of an IVIS imaging system.
- Want sole use of a stock holding room.
- They intend to carry out most of their research by their group but will also require technical assistance from unit staff.
- Require a very high level of biosecurity for their research.

This new research will come in line with the type of research already being carried out within the BRF. It may lead to collaboration with other groups and enhance the use of the unit for others.

We initially had to ensure that the research group would be happy with the space and facilities we could provide.

To facilitate this, we provided floor plans of the unit and then carried out a video tour on TEAMS (Microsoft Windows programme) to allow them to see what space and areas they could use. The group identified two areas that they would prefer to use.

Once the areas had been agreed it was necessary to adapt the rooms and move in equipment. The most vital part of this project was to provide the new research group with access to the IVIS imaging machine.

Risks factors that could derail the project:

- lack of space
- equipment relocation
- equipment failure
- time allocation/timescale
- additional expense
- staffing issues

Goals of the Project

SMART – Specific, Measurable, Achievable, Realistic, Time-related

S: To incorporate the New Research group into the unit and facilitate their research goals.

M: Increased research and income for the unit.

A: The space has been allocated and the research team are ready to move in.

R: The unit can accommodate more animals and provide space for more research.

T: We had a 6-month window to make this happen.

Organisational

Stakeholders

To enable the project to be completed these were the stakeholders that needed to be involved.

Project Team involved:

- 1) Director of BVS
- 2) Deputy Director (Business)
- 3) Facility Manager (Myself)

Interested Bodies:

- 4) New Research group
 - 5) Existing Researchers
- 1) The Director – was to decide whether to try and incorporate a new research group into BVS. Then identify which Animal Facility would be the most suitable for them to carry out their research in.
 - 2) Deputy Director – will deal with the logistics and financial side of this project.
 - 3) Facility Manager – worked with all of the above as well as the new research group and existing researchers to facilitate the smooth introduction of the new group, keeping communication open for all.

- 4) New Research group – laid out their requirements and liaise closely with the Facility Manager.
- 5) Existing Researchers – kept informed and provided input where possible.

Prior to considering the implementation of this project we asked ourselves:

- Could we accommodate their requirements for space?
- Could the IVIS Spectrum be moved into available space (equipment)?
- What were the cost implications?
- Was there space elsewhere in another unit?
- Was BVS biosecurity level high enough for their research requirements?
- What impact would this have on existing researchers?
- Did we have sufficient staff?
- Did we have the skills base to assist with this research?

Stakeholder Mapping

Potential Change Agents	Key Players
New Research Group – if they cannot acquire all of their needs.	Director – making the decision to provide space. New Research Group – identifying their needs. They will be in a position to carry out their research. Facility Manager – managing the expectations of all.
Indifferent	Back-Yarders
Director – Once the decision is made to bring the new group in there will be minimal input.	Existing Researchers – will have an interest but it will not affect their work. Technicians – will need to be kept informed regarding any new work.

Stakeholder Engagement

Task Name	Duration	Start	Finish	Predecessors	Resource Names
Identify Space	30 days	Tue 01/09/20	Mon 12/10/20		Building Space
Arrange Equipment Transfer	60 days	Thu 01/10/20	Wed 23/12/20	Space Allocation	Equipment
Inform Current Research Groups	7 days	Mon 12/10/20	Tue 20/10/20	Agreement	Communications
Inductions	7 days	Mon 11/01/21	Tue 19/01/21	Identification of Researchers	Inductions
Staff Training	30 days	Tue 05/01/21	Mon 15/02/21	Identification of protocols	Training

Gantt chart for Project Communications



Communication with stakeholders varied depending on the level of engagement they had. The main stakeholders were the new research group. They had the most interest in the project. Communication with the group needed to be weekly initially until confirmation received that all is going to plan. For this project initially by email or a TEAMS call. TEAMS calls were preferred as it is often easier to communicate with someone if you can see them to gauge their reaction and sometimes emails can be misread.

Other stakeholders only required an update if there are changes to the project or timescale.

Management Theory

There are a number of management theories that can be used. It is important to select one that will work for the project you are undertaking. Different management theories include: 5 Cs of Decision making (Consider,

Consult, Crunch, Communicate and Check), Kolb’s Cycle of Experiential Learning and Belbin’s Team Roles Chart.

I chose to use PESTEL **which incorporated** the **Political, Economic, Social, Technological, Environmental and Legal** aspects of the project.

I will use this at the start of the project as justification for the project as a whole.

Political – Utilisation of current units and space within them. Re-use of existing equipment. Working within HO regulations in a designated establishment.

Economic – Utilising existing units saves the need for another purpose built unit. Creates more income for the Establishment and saves the researcher additional cost.

Social – Encourage collaboration within the scientific community, assisting others in achieving their goals. This will benefit society in the future.

Technological – New ways of using the animal unit. New skills and procedures to learn.

Environmental – It is ethical to try and work collaboratively within research. Working within the 3Rs and sharing building space. The Institute has incorporated a large number of building factors to improve our sustainability and reduce our carbon footprint.

Legal – As the unit is already up and running it will be much easier to incorporate the new research into our current Code of Practice and our CARE values. This will cover Health and Safety (H&S), Equality and Diversity.

Costs

Incorporating a new Research group into Unit	
	£
Transport / Relocation Class II	600
Transport / Relocation IVIS	6800
Commissioning of IVIS with new Computer	14,500
Relocation of CatWalk (2x2 hours Tech time)	58
Total cost	21,958

Implementation

The implementation began by confirming to the new research group that we could accommodate their requirements. As most of this project has been carried out during the COVID-19 Pandemic and lockdown, it was not always possible to meet people face to face. We began by sending a copy of the unit floor plans to the new team and then established a virtual tour of the unit using TEAMS and one of the unit Laptops. This would allow the new group to identify spaces they may like to use. The group identified two areas that they would prefer to use.

Once the areas had been agreed it was necessary to adapt the rooms and move in equipment.

The most vital part of this project is to provide the new research group with access to the IVIS imaging machine.

Risk ID	Date Identified	Category	Risk	The risk is caused by	Impact Level	Final Impact Level
1	At the beginning of the project	Health status compatibility	Level of Biosecurity within the Unit not sufficient	Pathogens in the facility would affect their research	High	
2	During the project	Equipment provision	Can the IVIS be moved/ commissioned for use?	Transport and Servicing company	High	
3	During the project	Performance risk	Staffing	Staff absence Insufficient skills base	Medium	
4	During the project	Financial risk	Finance-increased costs	Additional costs due to failure to scope correctly	Medium	

Table 1. Risk Register.

This is where the real work begins. To create the space that the new research group has requested, some minor works in the holding room and procedure room would be needed.

It was necessary to remove a ducted Micro-Biological Safety Cabinet (MSC) from one of the rooms to accommodate the IVIS. This was a planned move to provide the required space and had been budgeted for.

We firstly consulted the other units to see if any of them used this MSC before its removal went ahead.

As we would need to bring in a commercial company to move the MSC it would be more cost effective to have them remove, transport and commission in the new unit rather than pay three separate contractors.

Once the MSC was removed we had to arrange the specialist transfer of the IVIS Spectrum from the main hospital into the selected unit.

Implementation and communication of the project

- Researchers agreed what space they would like.
- Communicate the plan to existing Research groups.
- Clearing the space to accommodate their equipment and animals.
- Arranging specialist transportation of IVIS.
- Arranging Commissioning of IVIS once on site.
- Inductions and unit tour of new research staff.
- Unit Staff Training.
- Implementation of new procedures.

Project Evaluation

Methodology

My methodology analysis for this project is that it worked very well considering that we were in the middle of lockdown for the pandemic. All milestones were achieved within the allocated timescale and the new research group are now based in BVS and their work is progressing well.

1. Identification of a suitable space for the research was completed quickly using a video link to provide views of the various spaces available.
2. We arranged transport and commissioning of the IVIS imaging system from Royal Infirmary Edinburgh (RIE) to the BVS. Even with the need to acquire a new computer to run this was still carried out within the time allocated.
3. Communications were maintained throughout to keep all stakeholders up to speed with where we were in the project.
4. Although we had to make amendments to our induction process these were carried out in a timely fashion.

5. Training of both unit technical staff and new research group was carried out in order to allow the research to begin.

Considering everything, the project went well. Everyone concerned appears to be happy with the conclusion and research is going ahead.

We have had to make adjustments to our induction process, this research group are not members of the University staff and do not come under our Occupational Health Department. Their COSHH and Risk Assessment processes are robust but cannot be recorded on our H&S system. This is a minor issue that we have been able to overcome.

There was a delay in the new research group occupying their rooms. This was due to the pandemic and the research group undergoing change of controlling company.

Project Timing: In hindsight this was not the best time to undertake this project.

Not being able to sit down around a table to discuss requirements was difficult. Good communication was vital and use of TEAMS provided a good practical platform. Although communication on TEAMS was very useful, the research group was fragmented and not always contactable. The main contact was in London during lockdown for most of the project.

Not having hands on access to the IVIS sitting at RIE created a potential threat to the success of the project. As, when it was collected by the transport company not all of the required equipment was available to accompany it. It was then essential to source a new computer to run the IVIS adding to the cost at the beginning of the project. If we had not managed to get this equipment in place and functioning as required this could have stopped the project.

Stakeholder Feedback

To assess stakeholder feedback it was important to communicate directly with the main stakeholders, the new research group.

1. Have we managed to provide adequate space for your research?
2. Have we completed this project to your satisfaction?
3. Is there anything that we could have done differently/better?

Their answers to these questions would influence the way we dealt with future projects of this kind. Although every project is slightly different getting the basics right is the most important part. Most is based around good communication and feedback from all parties.

The main project team then sat down to discuss if we thought this could have been handled differently.

Project Team involved:

Director of BVS

Deputy Director (Business)

Facility Manager (Myself)

It was agreed that initial contact should have been managed more formally with all of the stakeholders involved at the same time. Hearing the requirements and providing feedback at this stage would have been more beneficial to the overall project. Having people on the ground and not working from home due to lockdown would have allowed us to see where there may be complications and would have allowed us to deal with them face to face.

Budget analysis

Fortunately we had a reasonable amount of leeway regarding the budget for this project. We had factored in that we may have to carry out some additional building works within the unit to provide suitable accommodation for the new group's animals. As it turned out this was not necessary and the redundant fund allocation covered the additional cost generated by needing a new computer for the IVIS.

On Reflection

I would be inclined to gather more information at the scoping phase by speaking directly to the main stakeholders.

Increased communication throughout would be beneficial. Organising this during the pandemic may have led to some of the problems incurred. Having contact with people on the ground would have made the project much easier to carry out.

Being able to have prior access to the equipment that we planned to transfer would have enabled us see if there were any parts missing in advance of transporting.

Not all of the information was passed down from the Project Team. This is crucial to the overall project plan. Even with the problems that we encountered the project went well. It was completed within the timescales and the new research group are very happy with the space and equipment that we have provided. Unit staff are learning new procedures which can only benefit the staff, the unit and the research.

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