Science and Technology Facilities Council

The STFC Project Management Framework

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Change History

Version no.	Date	Details of change	Author(s)
6	Sept-21	Structure aligning with GovS 002; new life-cycle; artefacts table; UKRI references; Agile guidance; PD governance; M&E guidance; Finance, Risk, Commercial, Insurance, Health and Safety, Sustainability sections (new or updated)	Andy Sawko Leon Cassidy David Macaree

Approval History

Name	Role	Date approved	Version approved
National Labs Operating Board	Approver for STFC	September 2021	6

This framework contains both mandatory and advisory elements, described in consistent language (see the table below).

Term	Definition
shall	Denotes a requirement: a mandatory element
should	Denotes a recommendation: an advisory element.
may	Denotes approval.
might	Denotes a possibility.
can	Denotes both capability and possibility.
is/are	Denotes a description.

Contents

1 About this framework

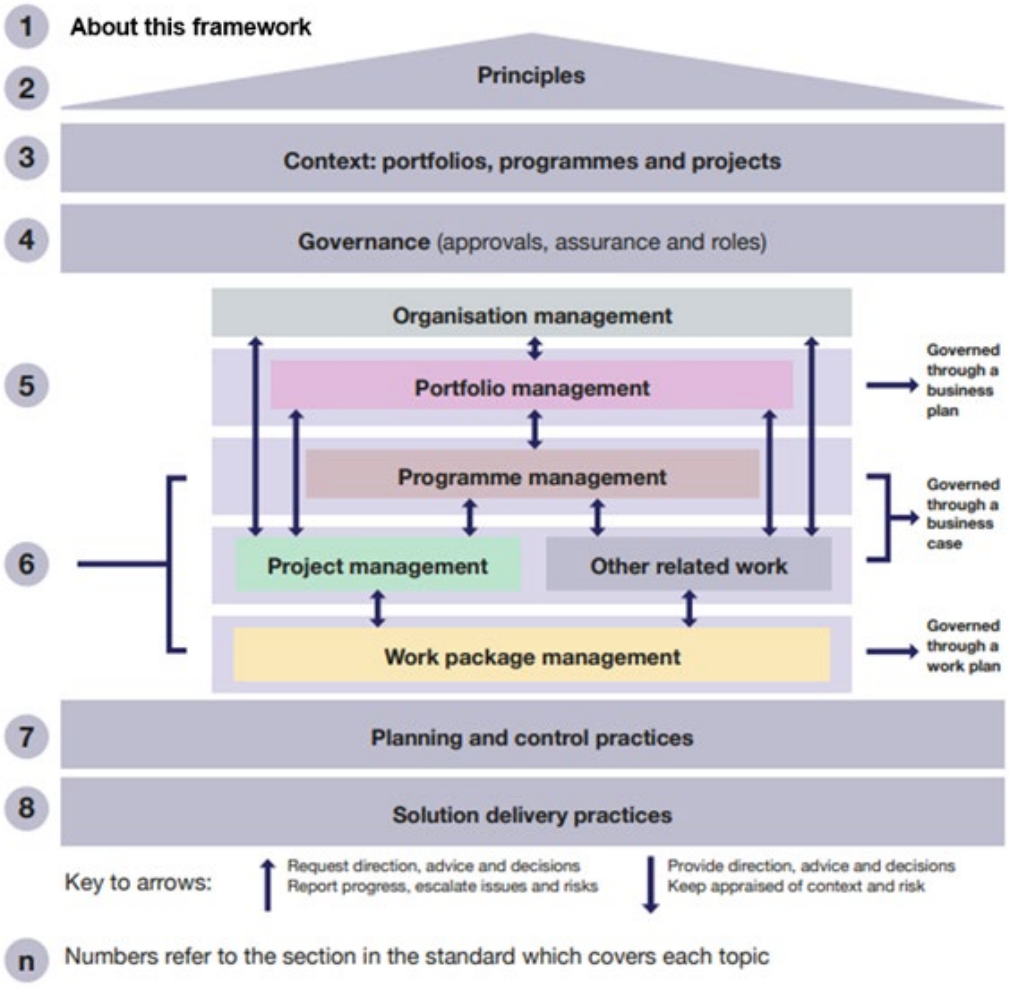


Figure 1 Overview of the Project Management Framework

1.1 Purpose

The purpose of this framework is to set expectations for the direction, management and running of STFC's projects and programmes ensuring their value for money and successful, timely and cost-effective delivery. It is consistent with best practice across UKRI and UK Gov research. It is jointly owned by the Project Review Committee (PRC) and the Strategic Portfolio Management Office (SPMO) and has been approved by National Labs Operations Board (OB) and the Programmes Directorate (PD).

The framework provides direction and guidance for:

- Senior responsible owners and sponsors
- owners of departmental methodologies, developing processes and techniques
- programme and project offices, managers and their teams
- assurance and audit bodies
- applicants for STFC project funding

1.2 Scope

This framework covers all STFC projects and programmes -

- in all departments
- encompassing digital, infrastructure transformation, service delivery, property, regulatory compliance or other purposes.
- regardless of delivery or methodology or technique used

Some sectors e.g. property projects are subject to a mandatory regulatory environment. This framework is intended to accompany and not supplant these requirements.

The framework contains specific guidance for some types of projects. For projects not specifically covered, this framework should be applied proportionately in combination with good project management practices.

1.3 Standards/References

The following reference materials are useful when following this framework:

• Government Functional Standard GovS 002: Project Delivery Contains public sector information licensed under the Open Government Licence v3.0. Open Government Licence (nationalarchives.gov.uk)

• STFC Bid process - STFC Bid Guidance Link

• Government Project Delivery Capability Framework (PDCF)

• The Construction Playbook

• The Green Book 2020

• Managing Public Money

• Government Functional Standard GovS 006: Finance

• Government Functional Standard GovS 008: Commercial

2 Principles

At all times, those directing and managing portfolios, programmes and projects should ensure:

1. Delivery objectives are aligned to government policy, UKRI policies and organisational objectives.

2. Continuing business justification to confirm benefits can be realised and risks managed within the organisation's risk appetite, and that unapproved work is terminated.

3. Governance, management frameworks and controls are proportionate and appropriate to the work and the level of prevailing risk.

4. Accountabilities and responsibilities are defined, mutually consistent and traceable across all levels of management including the engagement and management amongst international partners.

5. Experience and lessons learned are captured, shared and used to promote future performance improvement.

6. Work is appropriately defined, planned, monitored and controlled. Quality is actively managed to maximise the likelihood of success and defined working methodologies are tailored for use accordingly.

7. Outcomes and enabling outputs will meet the needs of and be validated by stakeholders.

8. Work is assigned to people who have the required capability and capacity.

9. The capability of the organisation to manage the project's outputs is prepared, the transition of capabilities to operations and the programme or project closure is managed, with ongoing operational responsibilities agreed and accepted.

10. Public service codes of conduct and ethics and those of associated professions are upheld

3 Portfolio, programme and project management

Portfolio, programme and project management is an integrated way of meeting an organisation's ambitions, driving better decisions and increasing the likelihood of successful outcomes. Collectively, portfolio, programme and project management are referred to in government as project delivery.

A **portfolio** comprises part or all of an organisation's investment required to achieve its objectives. Governed through its portfolio (or business) plan, a portfolio comprises work components, such as other portfolios, programmes, projects, other work and work packages.

A **programme** is a temporary, flexible organisation created to co-ordinate, direct and oversee the implementation of a set of projects and other work components to deliver outcomes and benefits related to a set of strategic objectives. Programmes can be undertaken in one or more tranches (phases), each of which is structured around distinct step-changes in capability and benefit realisation.

Note that "programmes" within STFC can also mean projects undertaken by the Programmes Directorate.

A **project** is a temporary management environment, undertaken in stages, created for the purpose of delivering one or more business products or outcomes. A project might be standalone within a portfolio or part of a programme.

A **work package** exists to provide a set of information relevant to the creation of one or more deliverables or outputs. It comprises a description of the outputs required, work plan and details of any constraints.

Figure 2 shows the hierarchical relationship between work components, with each higher level component comprising the sum of all connected lower level components.

Work components might cross organisational and departmental boundaries. In addition, waterfall and agile can be used at different levels in the hierarchy depending on the context and any portfolio, programme or project might have a mix of these two approaches.

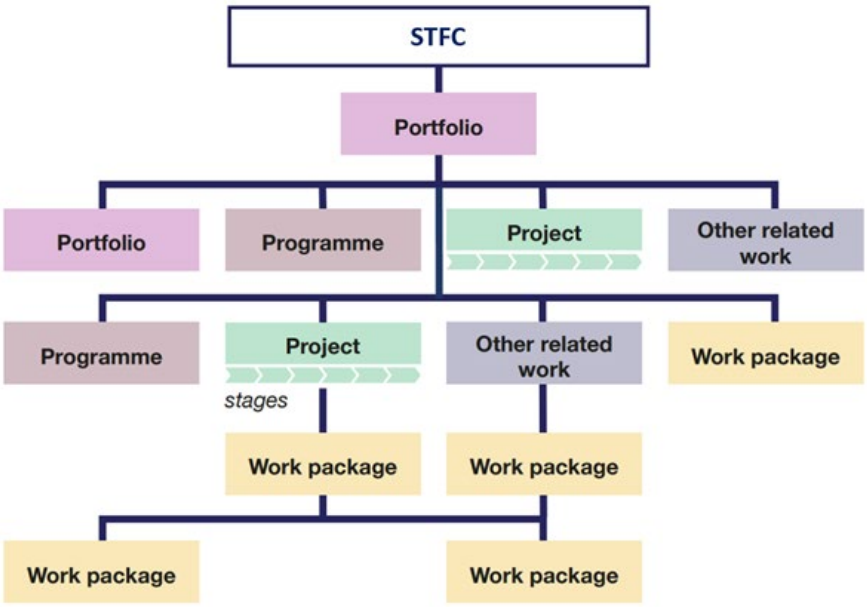


Figure 2: Example of a hierarchy of work components, adapted from GovS 002

4 Governance

4.1 Governance framework

Governance comprises authorising, directing, empowering and overseeing management. The governance of portfolios, programmes and projects is an integrated part of STFC's overall governance.

STFC is responsible for all the projects undertaken on its behalf and has to be able to demonstrate good value for money for its government funded work. STFC has put in place this governance framework to provide the necessary oversight and control to enable it to meet its responsibilities. Effective oversight is particularly critical where the overall project management is undertaken jointly with other bodies or by external organisations or is contracted-out.

This Framework is designed to establish robust monitoring and control measures over the project to ensure its delivery to the defined schedule, cost and performance parameters, and provide assurance to management, customers and funding agencies that projects are being well managed. Following this Framework ensures that:

- The project operates a robust project control environment;
- Project issues/risks are mitigated effectively; and
- Senior STFC management and Council are kept aware of progress and performance.

The STFC Project Sponsor has responsibility for the success of the project and this role is assigned to the appropriate level in STFC. For smaller projects, typically <£100K, the Division Head will typically be the Project Sponsor, for the larger projects it will normally be the relevant Director or Associate Director supported by a Project Board or Oversight Committee.

The project governance arrangements should be determined early in the project lifecycle, during the Appraise and Select stage, and should be captured in the Project Management Plan (PMP) or Project Initiation Document (PID).

Some typical structures are set out below.

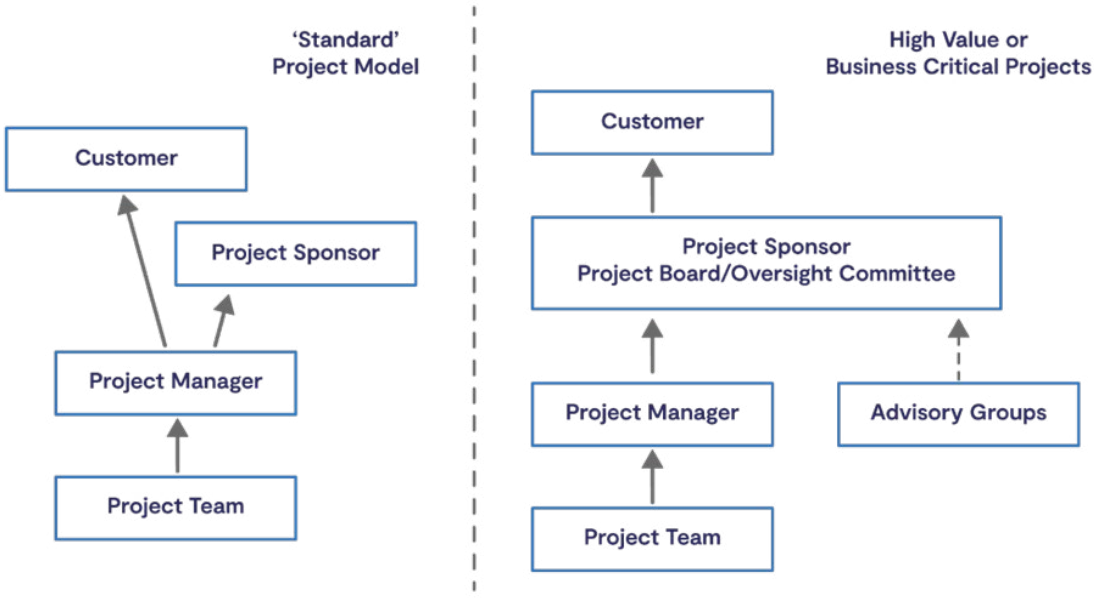


Figure 3: Examples of governance structures

In the simplest projects the Project Manager deals directly with the Customer and reports to the Project Sponsor. In some cases, the Project Sponsor is the Customer.

More complex projects have a Project Board (or Programme Board) chaired by the Project Sponsor, or their nominee. The Project Manager reports to the Project Board. The Project Board may set up Advisory Boards where required. The more complex the project the more layers are likely to be needed. Complex international projects might provide this function via an inter-agency board. Oversight bodies normally take one of two forms:

• Project Boards, which are responsible for overseeing the delivery of the project, perform both an oversight and top-level management function on behalf of STFC or its partners. The board is chaired by the STFC Project Sponsor or their delegate, and therefore has authority to make cost, scope and schedule decisions. Project Boards will often be used where a STFC laboratory has lead responsibility for project delivery.

• Oversight Committees (OsCs), which provide independent scientific, technical and management advice to the STFC, and report to the Project Sponsor responsible for overseeing the delivery of the project. This mechanism is often used by the Programmes Directorate for collaborative or international projects where lead responsibility might lie elsewhere.

Commercial projects typically follow the pattern of complex international projects where oversight is provided through formal project gateway reviews by the customer chain with participation from the STFC project team. The Project Sponsor should participate in this oversight process.

In some cases the role, operation and membership of STFC oversight bodies might be mandated, in others they will be determined based on an assessment of the risks and complexity of the project and will be considered on a case-by-case basis by the STFC Project Sponsor. They are expected to have Terms of Reference. These bodies will normally meet at least every six months, but often more frequently, and will receive a defined suite of information and reports from the Project Manager. The membership should provide

the Sponsor with the appropriate technical, financial, and managerial advice. Note that projects will require either a Project Board or Oversight Committee but typically do not have both. However, extremely large programmes might require a Board with an Oversight Committee (Advisory Groups in Figure 3) reporting to it for distinct components of the programme (e.g. a major new infrastructure which includes distinct instruments or modules).

For major projects, typically over £10M, the Project Board must have an element of independence from the directorate or department that owns the project. Oversight Committees are independent as they are made up of external experts. Examples of good practice are:

• Including a representative of the funding body or bodies

• Appointing a Board member(s) from a directorate, department or management position that is independent of the project

• Including an independent Project Management specialist

• Support functions – Finance, Commercial

For major projects (>£20M) an Integrated Assurance and Approval Plan (IAAP) is required.

https://www.gov.uk/government/publications/implementing-integrated-assurance-for-major-projects

Project Registers

The STFC Project Review Committee maintains the corporate Project Register of high-risk projects which it regularly reviews and reports on to Operations Board (monthly) and Executive Board (quarterly). This is one route by which project risks may be escalated to the Corporate Risk Register.

In the Programmes Directorate the Associate Directors Finance Meeting maintains the project register and reports progress using a Traffic Light Report. Risks can be escalated by the Executive Director to the Executive Board and to the Corporate Risk Register.

STFC Project Review Committee

The Project Review Committee (PRC) receives regular reports on all business-critical projects or work packages which STFC's National Labs lead, or within which they have a major delivery role, typically on a monthly basis. PRC membership comprises senior project management experts from each STFC Directorate and relevant departments. It provides regular reports to the STFC's Operations Board on the status of the major projects within STFC summarising key issues or risks identified within each project and the proposed mitigation action being taken in a "Traffic Light" report format.

The Committee Terms of Reference are:

• To meet monthly and report to STFC's Operations Board

• To monitor STFC's major or business critical projects, and maintain the STFC

Project Register

• To maintain and develop the STFC Project Management Framework

A business-critical project is typically deemed to be a project >£1M per year in value (or >£5M total value) or where there is a high reputational or other risk to STFC. It is the responsibility of the Project Sponsor to assess the business criticality of the project based on its risk and complexity.

Programmes Directorate - Associate Directors Finance Meeting

Programmes Directorate projects are reviewed at the monthly Associate Directors Finance Meeting.

The projects are evaluated at defined intervals by OsCs who assess and give advice to programme managers who in turn report to the Associate Directors.

A Traffic Light Report is used by Associate Directors to capture, monitor and assess risks. Risks associated with a project supported by the Programmes Directorate can be identified through Project Assurance Reports, produced following an Oversight Committee meeting by the Programme Manager and submitted to the responsible Associate Director. The Traffic Light Report is assessed monthly at the Programmes Directorate's Associate Directors and Finance meeting.

Risks can be escalated by the Executive Director to the Executive Board and to the Corporate Risk Register.

Project Review and Escalation

Project Sponsors need to satisfy themselves that the project is on track to deliver its benefits within the Business Case operating parameters, the objectives set out in the PMP (or PID) or formal Approval and that the project remains aligned with the broader programme objectives of the organisation. If this is not the case then the project should be re-scoped, re-baselined or terminated.

The business case, or equivalent, might need to be revised and submitted for re-approval by the original approval body. The project management plan or even the science case might need to be re-reviewed and re-approved.

Problems identified should be investigated, particularly if they will mean a significant call on the project's working margin or contingency. An appropriate action plan should be put in place to mitigate the problem. The precise arrangements for accessing working margin/contingency must be agreed and defined within the PMP (or PID).

The Project Manager or Programme Manager can escalate issues or risks if required to the Project Sponsor, through the oversight body (e.g. project board) where appropriate; for example, where there is a significant change to the cost, scope or schedule. The Project Sponsor can further escalate through the line management chain, ultimately to the Executive Board. In this way issues/risks are also captured on the STFC Corporate Risk Register.

Although rare, a cancellation review might be triggered by financial or technical factors. Any decision will take account of the risk and complexity of the project. The final decision will be made by the original approvals body.

For a commercial project where STFC has made a contractual commitment to another party, any change in the scope of the project will need to be made through a formally negotiated contract change, supported by the UKRI Commercial and Legal teams. Where such a change increases the exposure of STFC to financial or other risks, approval may need to be obtained at an appropriate level within STFC.

4.2 Assurance

Assurance is the systematic set of actions necessary to provide confidence to senior leaders and stakeholders that work is controlled, on track to deliver, aligned with policy or the department's strategy and that risks and costs are being managed.

For major projects, the following approach is recommended as best practice. It comprises three lines of assurance, such as:

• First line: effective project operation ensuring that objectives are being met and risks managed through robust procedures and processes, carried out by, or on behalf of, the operational management that own and manage risk – typically undertaken within a project team. This type of assurance might lack independence and objectivity, but its value is that it comes from those who know the business, culture and day-to-day challenges.

• Second line: oversight functions – internal governance, policies and controls. Activity undertaken by, or on behalf of, those who have no first line responsibilities – e.g. internal project board. They ensure that the project manager's management arrangements are appropriate and proportionate, align with best practice, are operating as intended and comply with the necessary mandated standards.

• Third line: independent assurance. Assessment of the likelihood of success of the initiative. For the largest (£50M+) projects IPA Gateway Reviews are mandated. These provide the Senior Responsible Owner (SRO) or Sponsor and Accounting Officer (AO) with an objective opinion on the effectiveness of governance, risk management, and internal controls, including the effectiveness of the first and second lines of defence. For smaller projects an Oversight Committee with non-STFC membership or a project board with membership from across other directorates might be appropriate. For commercial projects there will typically be contractually-agreed reviews of the project managed by the customer chain.

Assurance reviews should be regular, with a frequency appropriate to the project/programme, scheduled prior to significant decisions (such as approval gates) to provide decision makers with an assessment of the status and outlook for the work. For government major projects these assurance, or Gateway, reviews should be undertaken by the Infrastructure and Projects Authority (IPA). The time lapse between assurance reviews should not be scheduled to exceed one year.

The IPA Assurance Review Process

Only STFC's largest projects require formal IPA reviews.

https://www.gov.uk/government/collections/infrastructure-and-projects-authority-assurance-review-toolkit

The IPA Assurance Review process examines programmes and projects at key decision points in their lifecycle and looks ahead to provide assurance that they can progress successfully to the next stage. The process is mandatory for projects that are proposed at BEIS Project Investment Committee and in central government for procurement, IT-enabled and construction programmes and projects.

This Framework shows how the principles of the process are already built into STFC's project review process (e.g. through the use of independent expert review panels at key decision points). Following this Framework should provide a sufficient degree of compliance for the majority of our projects.

Note that for Programmes requiring IPA reviews there is a modified Gateway structure. An additional Gateway 0 review is held to approve the programme and then repeated at key stages in the programme to confirm that the strategy is still appropriate and that the planned outcomes are being achieved.

4.3 Approvals and authorisation

A programme or project shall be governed through a business case or equivalent document.

The business case should be developed over a number of phases and should be updated to reflect changes and reviewed prior to every gate or decision point to justify continuing the work.

Annex 1 summarises the approvals required for projects that require authorisation outside of STFC (e.g. above STFC's delegated approvals limits or funded through cross-cutting funds).

There are different approvals and authorisation routes within STFC.

When bidding for external work or external funding the Bid Approval Process must be used. This applies to projects and any activities that seek external funding. The "Bid Manager" which is a defined role in the Bid Register process, responsible for entering and updating the Bid Register record and for preparing the project bid/proposal, may not necessarily be the person appointed as Project Manager, if/when the project progresses to the delivery phase.

Projects may be approved within directorates or departments if the budget is within their delegated authority limits. In this case the departmental process must be followed.

The Programmes Directorate have a specific approvals process. PD projects are frequently de-scoped between review of the proposal and formal approval, with the PMP capturing the approved baseline.

4.3.1 Bid Register process

For all STFC projects funded by third parties, applications for external funding (bids) must be entered into the STFC Bid Register SharePoint site by the Bid Manager responsible for the proposal.

Please see Annex 2 for information on the Bid Register process.

4.3.2 Programmes Directorate approvals

Please see Annex 3 for information on project approvals within the Programmes Directorate.

4.4 Roles and accountabilities

Roles and responsibilities for those working within a portfolio, programme, project or other work component should be defined, written down, agreed within the project team and governance hierarchy. These roles and responsibilities include, but are not limited to, who each is accountable to and for which activities, outputs or outcomes they are responsible. A selection of role definitions, for typical STFC Project Delivery roles, are described in this section. A more comprehensive set of role definitions can be found in the Government Project Delivery Capability Framework (PDCF)

Training is available for different project roles.

The roles that are found in all projects are:

- Customer
- SRO / Project Sponsor
- Project (or Programme) Manager
- Team Member

There is sometimes a role of Principal Investigator (PI) in the STFC research environment.

4.4.1 Overview

Roles and accountabilities shall be assigned to people with appropriate seniority, skills and experience. This should include, but is not limited to, the activities, outputs or outcomes they are responsible for, and the person they are accountable to. Each role holder should act as a role model for the behaviours expected when working on project delivery.

4.4.2 Accounting Officer

The Chief Executive of UKRI is the Accounting Officer. An organisation's Accounting Officer is accountable to Parliament and the public for the stewardship of public resources, ensuring they are used effectively and to high standards of probity

4.4.3 Sponsoring Body

The sponsoring body acts as the higher level authority for a programme or project and is accountable to a defined higher-level authority. For major projects the higher level authority is the Accounting Officer (see 4.4.2). The sponsoring body acts as the driving force for a programme or project providing:

- top-level endorsement for the programme's or project's rationale and objectives
- direction to the senior responsible owner, addressing escalated risks and issues
- making or referring decisions that are above the senior responsible owner's delegated authority

4.4.4 Senior responsible owner (SRO) or Sponsor

The role of the SRO / Sponsor is to ensure the project delivers the agreed benefits, outcomes and deliverables as defined in the Business Case or Case for Support. The SRO is the person ultimately held to account for the successful delivery and the resulting benefits of a project. Therefore the role extends past the end of the project, although for commercial work the retained benefits distinct from the external deliverables might be better monitored in the longer term by someone other than the project Sponsor. An SRO/Sponsor provides strategic guidance to the Project Manager and sets key project parameters. In some departments the term 'Sponsor' is used to describe a role that is similar to an SRO to describe the SRO of smaller project. It can be someone acting as the SRO for a significant work-stream or a discrete part of a very large complex project. In these circumstances the Sponsor acts on behalf of the SRO who retains ultimate accountability for the project. In all cases the typical role responsibilities and skills requirements are similar. Those in an SRO/ Sponsor role will generally come from a leadership role within the business area into which the project outcomes and benefits are being delivered, or have responsibility for that and other business areas.

4.4.5 Programme Manager

The Programme Manager is responsible for leading a defined set of interdependent projects and may be responsible for any associated business change activities. They have primary responsibility for successful delivery of the required outcomes, including the establishment of appropriate governance and assurance, monitoring progress, managing risks and issues and ensuring the business readiness for change.

4.4.6 Project Manager

The role of the Project Manager is to lead/ manage the project and the project team on a day-to-day basis. The Project Manager is responsible for driving and overseeing the delivery of the project to ensure that the objectives are clearly defined and achieved within the agreed time, cost and quality constraints. The Project Manager also has a key role in project governance, working with stakeholders and in managing risk to ensure the agreed project outputs are delivered to enable benefits to be realised.

4.4.7 Principal Investigator (PI)

The Principal Investigator (PI) is a member of the scientific community who leads the science team and is essentially responsible for the scientific success of the project. The PI might take the role of Project Manager, although this is no longer a preferred option as there should be some level of professional project management.

Larger projects or those reporting to a Project Board may appoint a Project Director (or sponsor) who will have overall responsibility for all aspects of a project's performance and delivery. Particle Physics projects might have a UK Spokesperson who will fill the PI role for the purposes of project oversight.

4.4.8 Other roles (not exhaustive, implementation might vary)

4.4.8.1 *Project Management Office (PMO) Manager*

The role of the PMO Manager is to define and maintain the standards for project management within their department or organisation. This includes the implementation and sharing of best practice as well as the development and application of project procedures, tools and techniques in order to standardise methodologies and realise economies. These will be appropriate for the department in question and aligned with this Project Management Framework.

The PMO Manager may provide expert guidance, support and insight on the project, and is a source of project information and metrics.

4.4.8.2 *Resource Manager*

The role of the Resource Manager is to define the people resources required for a project at different stages, and to identify, recruit, deploy, flex and develop those resources to support successful delivery. The resource manager works closely with the project manager to ensure resource requirements are met. Resources might be people-focused. Other resources might be physical (e.g. equipment)

4.4.8.3 *Project Support Officer*

The role of the Project Support Officer covers a diverse range of activities to support the delivery of the project's objectives. The Project Support Officer enables the smooth running of the project by supporting the project manager through the operation of project management processes, and the co-ordination of business management actions and activities on their behalf.

Other roles such as Finance officer, Impact officer and Industrial Liaison officer might exist, depending on the project.

4.4.8.4 *Evidence and Impact Team*

The Evidence and Impact (E&I) team within the Strategy Planning and Communications (SPC) directorate has responsibility for STFC's Monitoring and Evaluation (M&E) processes (7.1)

5 Portfolio management

The Strategic Portfolio Management Office (SPMO) sits within the Strategy, Planning and Communications Directorate. SPMO's responsibilities include early-stage business case process development, guidance and assistance in business case development for major projects (typically >£20M value). After funding, SPMO reports on major projects to STFC's Executive Board, UKRI and BEIS.

The SPMO conducts reviews of £5M+ projects' progress against their business cases.

The head of the SPMO is STFC's interface to the UKRI Project Profession steering team and a member of the Project Review Committee.

6 Programme and project management in STFC

6.1 The purpose of programme and project management

A programme is a temporary, flexible organisation created to co-ordinate, direct and oversee the implementation of a set of projects and other work components to deliver outcomes and benefits related to a set of strategic objectives. Programmes can be undertaken in one or more tranches (phases), each of which is structured around distinct step-changes in capability and benefit realisation.

Note that "programmes" within STFC can also mean projects undertaken by the Programmes Directorate.

A project is a temporary management environment, undertaken in stages, created for the purpose of delivering one or more business products or outcomes. A project might be standalone within a portfolio or part of a programme.

Programme and project management includes the planning, delegating, monitoring and control of all aspects of a programme or project and the motivation of those involved to achieve the defined objectives within the constraints of time, cost and quality. Project management is the application of processes, methods, skills, knowledge and experience to achieve specific project objectives according to the project acceptance criteria within agreed parameters. Project management has final deliverables that are constrained to a finite timescale and budget.

6.2 Programme and project management framework

A department can create its own framework, conforming to the principles in this document, to provide a greater level of detail than included here.

For projects, the Project Management Plan (PMP) or Project Initiation Document (PID) must define how the project will be managed. This document underpins the project. It includes:

- A summary describing the aims of the project and the expected benefits, assumptions and constraints
- How lessons learned will be created, implemented and stored
- The processes that will be used to monitor and report on the status, handle risks (Risk Management Plan), change, quality etc.
- The delegated authorities within the project
- Escalation processes
- Documentation of the scope, requirements and budget as well as a time and a dependency based schedule such as a Gantt chart.
- The quality standards with which the project must comply.

6.3 Lifecycles

Shown below in Figure 4 is the HMT project lifecycle that has been adopted across UKRI. The project lifecycle for your project might differ. For externally funded work the full lifecycle shown below is best regarded as being applied across two sub-projects:

- Project to deliver the proposal

The deliverables of this project are a proposal to the customer to be followed, hopefully, by a contract. The project includes the project stages in the lifecycle from Assess feasibility through to Deliver but not Operate, Embed. Gateway 3 shown in the figure corresponds to an internal decision to commit the necessary resources to prepare a proposal, and Gateway 4 corresponds to the STFC bid review/approval as required by the process described in Annex 2 - The STFC Bid Register.

Negotiation with the customer prior to contract award may require revisiting some of the work done in the early stages from Feasibility to Define with another review/approval gateway prior to contract signature.

- Project to deliver on the contract

This project will not include the Assess feasibility and Appraise & Select stages, although it will need another Initiating activity to (re)assemble the project team. It might include more work in the Define stage with customer-led reviews such as the System Requirements Review, Preliminary Design Review and Critical Design Review before moving on to final Delivery. The extent to which Operations/Embed activities will be required will depend on contractual obligations, but Closing will still be needed.

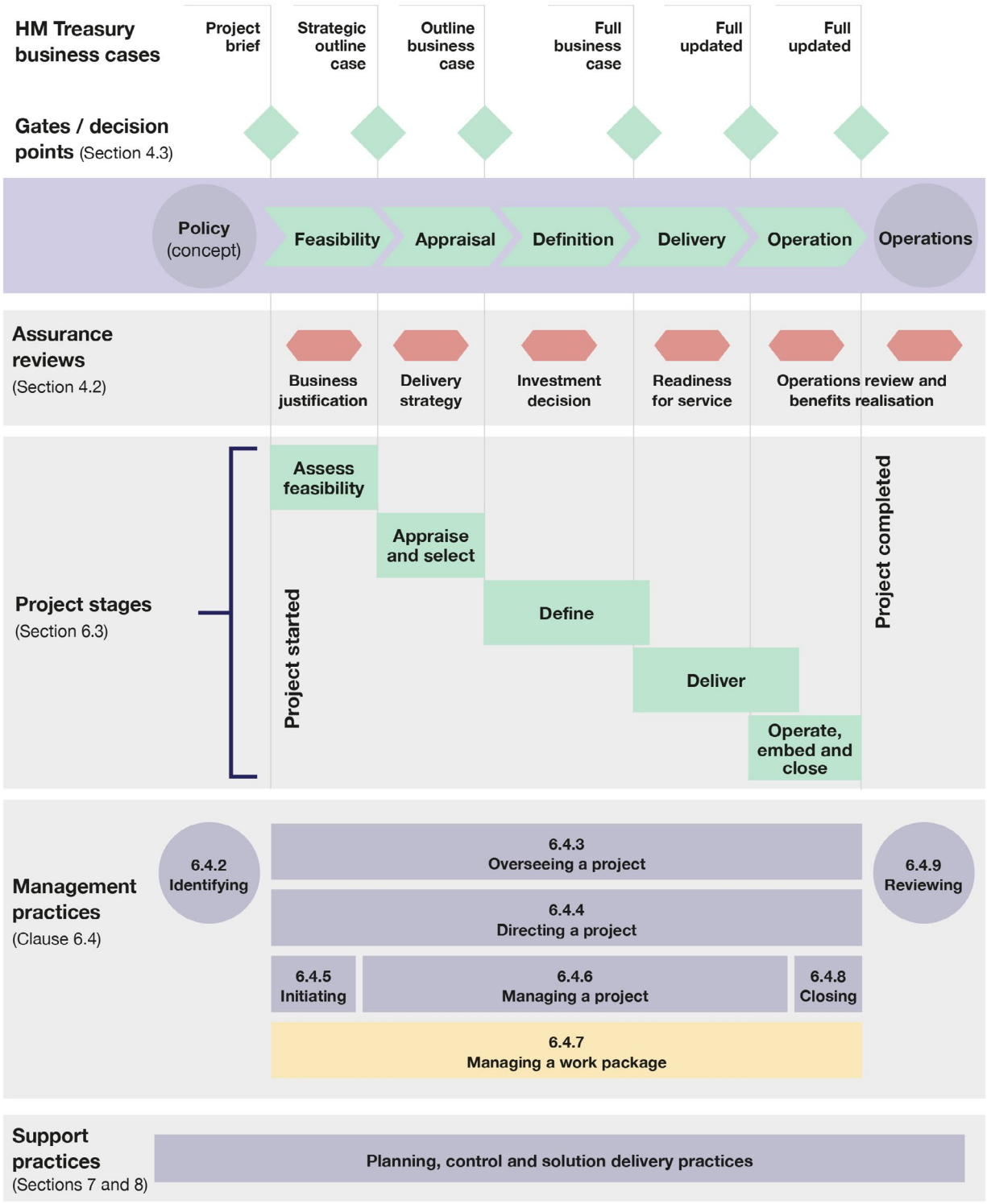


Figure 4: Example project lifecycle with stages, gates and assurance reviews from section 4 and their relationship to the practices in sections 6 and 7. Note that the whole diagram relates to the biggest projects (typically £20m+) and section 6.3 applies to all. Phases before Feasibility relate to conception or identification of new opportunities.

Project stages - overview

Assess feasibility

Explore possible outline solutions, their viability and risks.

Appraise and select

Undertake detailed appraisal of shortlisted options and select preferred solution.

Define

Undertake detailed investigation to define the selected solution and assess its viability.

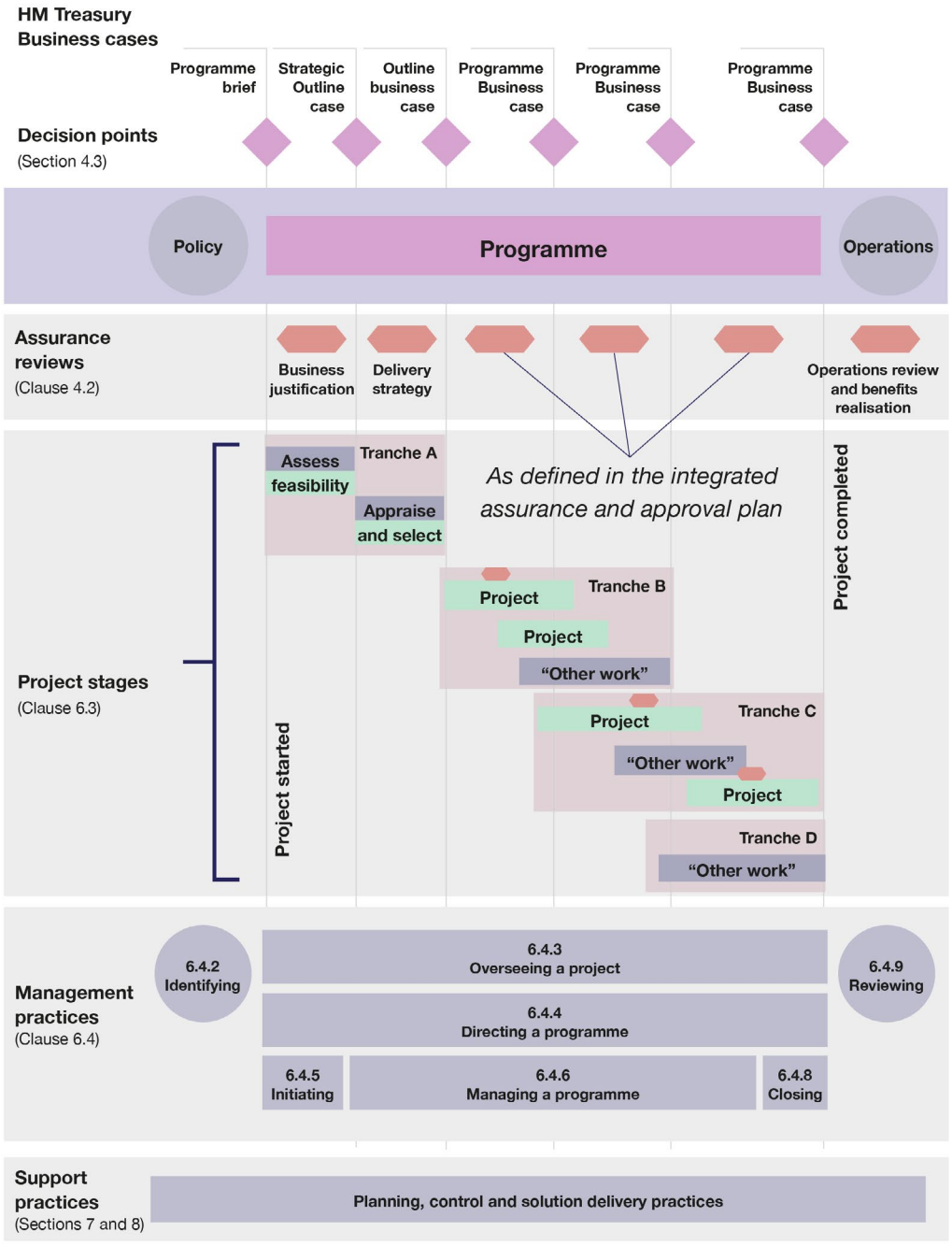
Deliver

Undertake the work defined in the project documentation to develop the outputs and achieve the outcomes.

Operate, embed and close

Oversee initial use of the outputs, check outcomes are as expected, take corrective action as required and formally close the project.

Figure 5: Example programme life cycle, showing tranches, decisions and assurance reviews from section 4 and their relationship to the practices in sections 6, 7 and 8



Mandatory and Optional Project Management Artefacts

During "Appraise and Select" a project should propose the list of artefacts it will create and these should be shown in its project plan along with its expected deliverables. Use the following table to determine which artefacts should be created during a project lifecycle. Please note that some departments may require some artefacts to be mandatory rather than optional. Click here for forms and templates.

Type	Assess feasibility	Appraise and Select	Define	Deliver	Operate, embed and close
>£20M	**Mandatory:** Viability case **Optional:** Feasibility case	**Mandatory:** Outline Business Case (OBC) Strategic, scientific and management case (PD projects) Lessons learned **Optional:**	**Mandatory:** Full Business Case (FBC) Project Management Plan (PMP) or Project Initiation Document (PID) (finalised) **Optional:**	**Mandatory:** Gateway reviews (for over 50m) UKRI and BEIS highlight reports Status reporting Budget reports M&E plan (finalised) **Optional:** Release plan Test plan Service design	**Mandatory:** Closure report Benefits Analysis Benefits owner identified Monitoring & Evaluation **Optional:**
PRC-reviewed projects (see 7.2.3)	**Mandatory:** Project brief **Optional:** Feasibility case Viability case	**Mandatory:** Project management plan (PMP) or Project Initiation Document (PID) Business case Lessons learned Risk management plan **Optional:** Outline Business Case (OBC)	**Mandatory:** PMP or PID (finalised) Business case (finalised) **Optional:** Full Business Case (FBC)	**Mandatory:** PRC monthly report Status reporting Budget reports Time recording **Optional:** UKRI and BEIS Highlight Reports M&E plan (finalised) Release plan Test plan Service design	**Mandatory:** Closure report Benefits Analysis Benefits owner identified **Optional:** Monitoring & Evaluation

Type	Assess feasibility	Appraise and Select	Define	Deliver	Operate, embed and close
PD (Includes assurance artefacts)	**Mandatory:** Community Support Fit to Strategy Route to funding (10YP, STFC or UKRI/BEIS scheme) **Optional:**	**Mandatory:** Statement of Interest Risk management plan **Optional:** Business case (depending on project value - mandatory for >£20M or where funding sits outside of STFC)	**Mandatory:** Case for Support Je-S (Joint Electronic Submissions) Form, where necessary Data Management Plan **Optional:** Impact plan Business Case Procurement plan	**Mandatory:** Project Management Plan PD project governance plan Progress Reports Researchfish **Optional:** Business case Monitoring and Evaluation (M&E) plan Release plan Test plan Service design	**Mandatory:** Closeout report / lessons learned Expenditure Statement (on grants) **Optional:** Benefits Analysis Monitoring & Evaluation
Other	**Mandatory:** Project summary **Optional:** Viability case	**Mandatory:** Project Management Plan (PMP) or PID Business case Risk management plan Lessons learned review A project code **Optional:** Outline Business Case (OBC) Stage approval	**Mandatory:** PMP/PID (baselined) Business case (approved) **Optional:** Full Business Case (FBC) Project Management Definition - finalised Technical design Stage approval	**Mandatory:** Status reporting Budget reports Time recording **Optional:** Release plan Test plan Service design Critical readiness report Stage approval M&E plan (finalised)	**Mandatory:** Closure report **Optional:** Benefits Analysis Monitoring & Evaluation

Figure 6: Mandatory and optional artefacts

6.4 Programme and project management practices

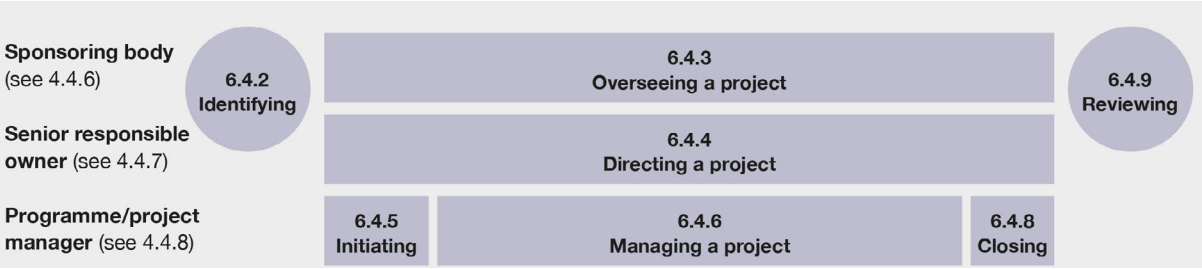


Figure 7: Relationship between the roles and the programme and project management practices

6.4.1 Overview

The programme and project management practices are defined in this and departmental frameworks (see 6.2). Figure 7 shows the relationship between the roles defined in clause 4.4 and the practices in clause 6.4.

6.4.2 Identifying projects

Identifying a programme or project ensures that the objective for undertaking the work is defined and likely to be realistic before the first phase of work is authorised to start, and funds and resources committed.

The senior responsible owner or sponsor (see 4.4.4) shall be appointed. Potential team members and subject matter experts should be identified and be involved with project formulation to ensure the opportunity or need is explored and understood and that deliverability is taken into account.

Before a programme or project is submitted for approval, the senior responsible owner should ensure:

• the vision, justification and desired outcomes for the programme or project, together with any strategic assumptions, are documented in a programme or project brief

• decision makers have sought advice from experienced professionals on deliverability and risks

• the appropriate assurance review has been conducted (see 4.2). If objectives change as the work progresses through the life cycle, the senior responsible owner shall review the impact and consider whether the work is still justified; resultant changes to the programme or project should be controlled (see 7.7).

STFC Departments or Directorates must maintain registers of new opportunities and active Projects. Refer to your directorate's or department's process.

6.4.3 Overseeing

Overseeing a programme or project ensures the sponsoring body is satisfied that the team is able to achieve the objectives, meet the organisation's needs and stakeholders' expectations, and that risks are at an acceptable level.

Oversight can be through:

• involvement in key decisions

• periodic reporting

• independent assurance reviews and audits

• ad hoc escalations and interventions

The sponsoring body (see 4.4.3) should keep the senior responsible owner or sponsor (see 4.4.4) updated on the wider context, providing guidance and direction, as needed or when requested. The sponsoring body shall enable the senior responsible owner to have sufficient time to carry out their responsibilities effectively.

6.4.4 Directing

Directing a programme or project ensures continuing strategic fit and relevance in the prevailing business context. The senior responsible owner should ensure the solution meets the needs of the organisation and represents value for money. The senior responsible owner shall provide direction and make decisions regarding the future of the programme or project, taking into account changes to the overall political, social, environmental, or technological context and prevailing risk. This should include ensuring the programme or project remains justifiable and assurance reviews and approvals (such as at gates and at closure) are undertaken at the right time and corrective and preventative actions taken, if needed. The senior responsible owner should refer decisions above their delegated authority to the appropriate decision makers, in accordance with the governance framework (4.3). Note: see also section 4.4.4, role of senior responsible owner.

6.4.5 Initiating

Initiating ensures a programme or project is set up, defined and planned, and that the team is mobilised and understands the opportunity or need to be addressed. The senior responsible owner should confirm a real organisational need is being addressed, communicate the vision and objectives, together with strategic assumptions, and set criteria for measuring success.

The resources and skills necessary for the project or facility should be identified and flagged early as they are critical for its success.

The team needs to be aware of the organisational context and implications of the project. For example; where staffing numbers are expected to change or when an infrastructure is being built or modified, Estates Services need to be consulted early.

The Programme Manager or Project Manager should mobilise the team and facilities required to undertake the work and define the management framework to be used (6.2). The team should understand the requirement, assumptions, constraints and risk potential, and should investigate different solutions, delivery approaches and implementation options. A plan for the work should be developed (7.2.1), including approaches to be used for specialist work, taking into account lessons learned from previous, related work. The initial justification for the project should be documented in a Viability Case, programme business case (or equivalent). Note: 'Initiating' ensures the programme or project is started in a controlled way. The choice of solution might require a discovery stage (agile) or number of investigative stages to be undertaken (6.3).

All projects, even the best managed, will be subject to factors or changes that are unknown at the start. All projects, not just those with business cases, should therefore have cost and time contingency or working allowance and this should be costed into the project and included in the schedule. It is prudent in preparing cost estimates to recognise the degree of risk and uncertainty in the estimates and to allow an appropriate contingency, e.g. the commercial bid form includes 10% as a baseline. This is split into the "working margin", which covers the known specific risks to a project, and the "contingency allowance", which covers the more general non-specific risks. All project costings should allow for both of these as direct costs. However care should be taken with presentation, as certain customers, such as ESA and the EC, do not allow explicit inclusion of contingencies.

Contingency should be adequate for the nature of the project, e.g. higher risks usually require higher cost and time contingency. A small contingency might indicate a poorly planned project, rather than a well-planned one. Release of contingency would normally be subject to some formal governance process, whereas working allowance is that part of contingency that the project manager can use. Contingency should be managed throughout the project, for example through monitoring of the remaining contingency relative to the cost to complete.

For projects above STFC's delegated approvals limits (typically over £20M) a full impact Monitoring and Evaluation (M&E) plan should be developed within the first six months of the business case approval, in accordance with the UKRI Monitoring and Evaluation Framework.

For smaller projects the sponsor should seek advice from the E&I team, where appropriate, to decide whether the project requires a monitoring and evaluation plan. The scale of monitoring and evaluation should be proportionate to the scale and sensitivity (reputational risk, national

security, other) of the project. This should consider both the immediate benefits realised from the project and the long term impacts achieved by the investment.

Where an M&E plan is required a baseline assessment should be completed to enable eventual assessment of the impact of the project.

STFC recognizes that our range of projects are best served by tools and methods that are appropriate to the type and complexity of the project they are looking to deliver, for example Waterfall vs Agile, PRINCE2, RIBA. Project managers should ensure they use the most appropriate tools and methods that align to their departmental practice.

The methodology chosen should be appropriate to the project and articulated in the PMP or PID – seek guidance or training from your department.

Please see Annex 4 for a description of the Agile methodology.

6.4.6 Managing a project

The programme or project manager should ensure a suitable team (including suppliers) and facilities are in place. New tranches, stages or work should be planned and reviewed prior to approval (see section 6.3). Work packages should be initiated and monitored against the plan or product backlog, risks mitigated, issues addressed and changes controlled. Lessons should be continually captured and managed (8.8). Outputs should be developed ready for use (8.3-8.6) and stakeholders' views should continue to be addressed ensuring that the desired outcomes are achieved (8.7). Commercial and financial aspects should be addressed (7.10-7.11). The continuing justification for the programme or project should be monitored and business case updated, if appropriate (4.3), in a controlled way (7.7).

6.4.7 Managing delivery

The programme or project manager (4.4.8) should ensure the appropriate team (including suppliers) and facilities are in place.

New tranches, stages or work should be planned and reviewed prior to authorisation (6.3).

Work packages should be initiated and monitored against the plan or product backlog, risks mitigated, issues addressed, and changes controlled. Lessons should be continually captured and managed (8.8).

Outputs should be developed ready for use (see 8.3 to 8.6) and stakeholders' views should continue to be addressed ensuring business changes and new ways of working are being embedded, such that the desired outcomes can be achieved (8.7).

Commercial and financial aspects should be addressed (see 7.10 and 7.11).

The continuing justification for the programme or project shall be monitored and business case updated, if appropriate (4.3) in a controlled way (7.7).

Please refer to your directorate's or department's specific guidance on managing projects.

6.4.8 Closing

A programme or project should be closed in a controlled way. Closure of a project can happen when a project is completed as planned or terminated prematurely:

- delivery of outputs and achievement of outcomes to date should be confirmed
- unfulfilled requirements should be documented together with how they are to be addressed

• responsibilities for ongoing risks, issues, actions and benefit tracking should be handed over to, and accepted by, the appropriate business authority

• documentation and information should be securely archived

• the team should be reassigned and any temporary facilities should be demobilised

Termination might occur because the work is no longer needed or viable, or because the risks associated with it have become unacceptably high.

The programme or project manager, with the team and key stakeholders, should undertake a closure review, which should include an assessment of performance against the plan and the extent to which objectives have been met. New lessons should be captured and analysed together with those identified during the work, significant learnings should be captured and shared (8.8). Plans for post-closure reviews should be agreed by the senior responsible owner (4.4.4). Stakeholders should be informed about closure. Note: termination might occur because the project is no longer needed or viable, or because the risks associated with it have become unacceptably high.

In STFC projects often conclude with the creation of a facility or experiment. In these cases the project team is responsible for handing over the outputs to business as usual (BAU) operation. A benefits owner for the experiment or facility must be identified. An aspect of their role is to ensure that the benefits promised in the business case are achieved and recorded.

6.4.9 Reviewing outcomes

Reviewing outcomes assesses the degree of the programme or project's success. The senior responsible owner should ensure a review is undertaken to assess the extent to which benefits realisation and operational performance have met, and are likely to continue to meet, the objectives and expectations stated in the business case. Lessons should be captured and communicated.

7 Planning and control practices

7.1 Overview

Planning and control support practices ensure work is planned, and corrective and preventative actions taken, to ensure delivery follows the baselined plan. The planning and control practices should be managed and monitored, throughout the life cycle (6.3), using a defined and established approach that is improved through use (8.8). Work shall be defined, planned, monitored and controlled. Managers of work components should be set permissible tolerances within which no escalation is required to the next level of management. Tolerance levels can cover, but not be limited to costs, benefits, schedule, quality, scope, performance, and risk. The planning and control practices are the responsibility of the relevant manager, for example, portfolio manager for a portfolio, project manager for a project or team manager for a work package.

7.2 Planning

7.2.1 Overview

Planning ensures the outputs and outcomes are likely to be delivered within the defined constraints (including time, cost and quality) to support the arrangement of funding for the work (7.10), to demonstrate that objectives will be achieved and the required benefits will be realised.

7.2.2 Plan derivation

The delivery plan should be derived from an agreed delivery strategy, selected from a range of options, which outlines the delivery approach to be used for the solution (8.4), phasing of the work, and governance needs, and which takes into account risk and constraints. Plans may be for direct use or be created as contingency plans to be used in response to known risks. Planning should be a collaborative activity involving team members advising on the planning of their work. Planning may be iterative and progressive through the life cycle of a work component, with more detail for the immediate future than for more distant work with increasing confidence as work progresses. Scope may be refined and clarified as work progresses to develop a plan which can be delivered at an acceptable level of risk. A plan may include an indication of the current level of certainty by, for example, using ranges or confidence indicators.

7.2.3 Benefit, cost, schedule and resource estimating

Estimates for costs, benefits, schedule and resources should be justifiable through evidence, consensus or experience from previous work. Estimating methods should be appropriate to the type and, where relevant, phase of the work being undertaken. Cost and benefits estimates shall be within the confidence limits defined for the respective business case (4.3).

7.2.4 Plan characteristics

The plan should be based on a hierarchy showing each work component's place in the hierarchy (Figure 1 and Figure 2), and accountability for every component should be identified. Depending on the level of the plan (portfolio, programme, project or work package), a plan may include forecasts of benefits (if applicable) and should include milestones, activities, schedule, cost and resources, with associated assumptions, constraints, critical paths and risk. Dependencies between activities and other work components (including programmes and projects) should be defined. The plan should also include and allow for assurance and decision-making activities (see 4 and 6.3).

7.2.5 Baselining the plan

Once approved, plans shall be baselined and progress regularly monitored and analysed. Forecasts should take into account progress to date and prevailing assumptions and risks. Plans should be maintained to support significant decision points, such as at a project's gates (6.3). Changes to a baselined plan shall be undertaken using change control (7.7) and may result in further baselines being recorded.

7.3 Benefits management; Monitoring and Evaluation (M&E)

Benefits Management

Benefits management ensures benefits are realised in practice. The relevant stakeholders' expectations regarding the benefits to be realised should be understood by the team developing the solution.

Benefits should be identified, analysed, defined, planned and tracked and included in the overall plan for the work (7.2). Forecasts of benefits should take into account negative impacts resulting in dis-benefits. Benefits should be assessed for a number of options before a solution is chosen (see 8.4) and included in a business case (see 4.3), in which potentially conflicting pressures, such as costs, benefits, schedule, quality, scope, performance, and risk are balanced. Each discrete benefit should be assigned to a benefit owner who has responsibility for forecasting and monitoring it. Benefits should be reassessed throughout the duration of the work as new benefits might emerge as the work progresses and expectations might change. Benefits trigger points should be included in plans (7.2). Once triggered, actual benefits realisation should be tracked against the plan. There should be two-way traceability between benefits, outcome, solution, outputs, requirements and objectives (see Figure 8 and 7.8).

Note benefits mapping might be used to demonstrate traceability. Tracking and achievement of the benefits and impacts continues after the project is closed (6.4.8). The SRO or sponsor retains accountability for the achievement and tracking of benefits and impacts, even if elements are delegated.

Benefits management typically has five main stages

1. Identification and quantification of benefits,
2. Valuation and appraisal of the benefits,
3. Planning for benefits realisation,
4. Realising the benefits,
5. Reviewing as a basis for learning and continuous improvement.

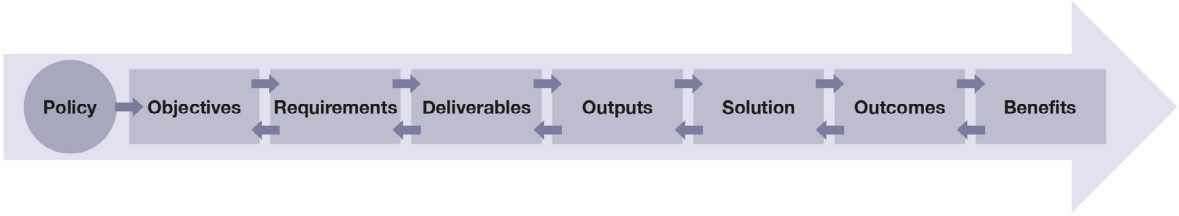


Figure 8: Example of benefits mapping, showing two-way traceability from policy to benefits

Monitoring and Evaluation (M&E)

The Business Case should define an M&E plan where required. The Evidence and Impact (E&I) team has developed guidance Impact - M&E Plans. The scale of the M&E activity and the E&I team's involvement will be proportionate to the size of project.

For STFC's biggest projects the dedicated Evidence & Impact (E&I) project representative assists the project manager in developing the Monitoring and Evaluation (M&E) plan. Once the plan is approved by either the E&I team, and/or UKRI (depending on funding source), the project team is responsible for delivering the objectives within it.

For projects funded through grants, outputs and outcomes of research and innovation activities should be reported at regular intervals. See UKRI & BEIS M&E Guides for default guidance for different activities.

Outcomes and impacts should be collected in line with the plan and communicated with the E&I team at agreed time points.

7.4 Resource, capacity and capability management

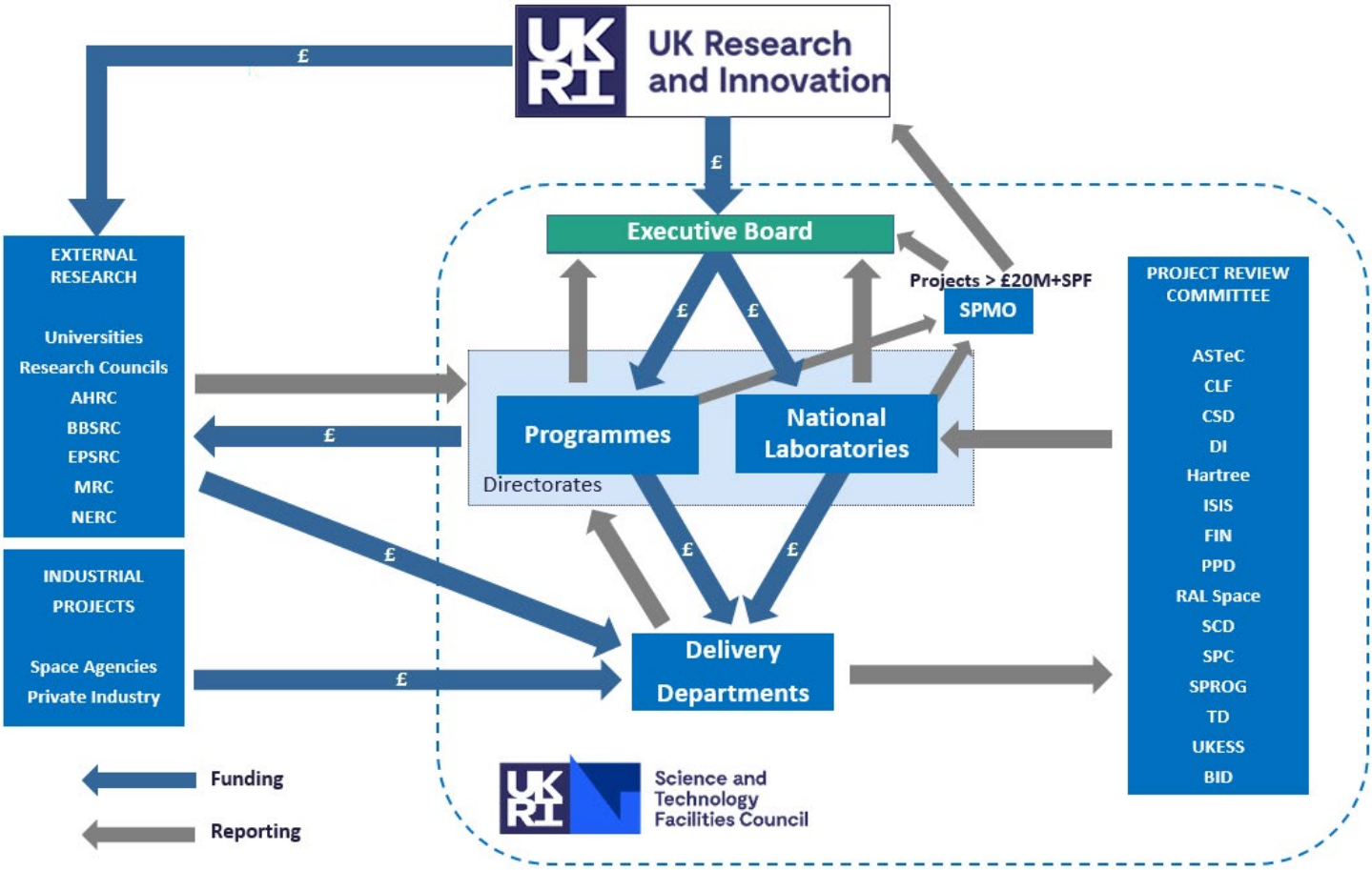
Resource, capacity and capability management balances the supply and demand for appropriate resources (such as people, equipment, material and facilities) to be deployed when needed. Resources might be sourced from within STFC, by recruiting or from the supply chain. A comprehensive view of future resource needs should be developed and maintained, with possible shortfalls identified and addressed. Resources should be acquired or developed to meet the planned needs. If insufficient resources are available, work should be re-planned to reflect such constraints. Business continuity measures should be in place in the event of the loss of critical resources.

7.5 Reporting

Reporting ensures the management team(s) and interested parties are aware of the current status and outlook, particularly with respect to the likelihood of achieving the objectives. Reporting, monitoring and escalation procedures for the project should be defined within the PMP.

The diagram below shows funding and reporting flow for STFC.

For the largest projects, typically >£50M total value, monthly highlight reporting to BEIS via UKRI centre is defined and mandated. The SPMO review and approve the reports before submission to central UKRI for onward circulation.



Project reports for sub £50M but above £20M projects follow the same process, but are not distributed to BEIS.

Projects covered by the Project Review Committee report monthly.

Projects within the Programmes Directorate report monthly to the Associate Directors Finance Meeting.

Externally funded projects will typically have contractually-specified requirements for regular reporting to the customer.

For other projects the sponsor will agree the level and frequency of reporting required.

A reporting framework should be designed to meet the needs of the identified report recipients in a timely manner. A report should highlight progress to date, whether the current work scope is likely to be completed to plan, prevailing risks and issues and any decisions or direction required. Appropriate milestones and performance indicators should be included in the report. Performance indicators should reflect the delivery method used (e.g. backlog for agile delivery). Each report should state the period or date the report is related to and the date on which the report was published, or if live, created. The form of a report should be appropriate and proportionate to the work being reported on (e.g. Gantt, slippage, visibility chart, burn-down) and the roles being reported to.

7.6 Risk and issue management

All projects must ensure that adequate risk and issue management is in place. Projects are, by their very nature, risky enterprises and might give rise to potential hazards. Some form of risk management is essential on even the smallest of projects.

A risk is an uncertain event that would have an impact on the project.

An issue is a relevant event that has happened (or is inevitable), was not planned and requires management action. It could be a problem, benefit, query, concern, change request or a risk that has occurred.

Risk should be managed within the organisation's risk appetite and tolerance and each department should have an agreed approach to risk management. This should include identification, assessment, prioritisation and control measures.

Risk Management repeatedly looks ahead and considers what could go wrong (i.e. in terms of both threats and/or missed opportunities), and then puts in place strategies to eliminate or mitigate the risks.

Every project is required to maintain a visible risk register that describes, by risk:

- The nature of the risk;
- Measures of the likelihood, impact and overall risk;
- The action to be taken and responsibility;
- The residual risk and estimate of financial exposure.

Risk management at project level mostly focuses on risks that will affect the project's objectives, but it is also important for the project manager to understand the overall risk exposure of the project, so that this can be reported to the Project Sponsor and other stakeholders. Consideration should be given to other potential risk areas such as risks to achieving benefits even if outside of the project lifecycle, reputational, Legal & Regulatory, Environmental etc.

Consideration of Safety, Health and Environmental (SHE) risks follow a similar process and should be considered by the Project Manager alongside other project risks (see 7.5).

Projects at high risk overall (typically those of value over £1M per year/£5M in total or

of high reputational risk to STFC) that are within the control of STFC's National Labs, are recorded on the STFC Project Register and regularly reviewed at the STFC Project Review Committee (see section 7.2.3).

Significant risks or aggregated common risks across projects, departments or directorates might be escalated to the Corporate Risk Register.

Risks within projects overseen by the Programmes Directorate are recorded within its Traffic Light Report and reviewed monthly by Associate Directors and Finance Meeting, which includes consideration of escalation to the Corporate Risk Register.

A Quick Reference Guide to Risk Management is available on the STFC Project Management intranet site highlighting key aspects and areas of best practice. Project risk management in STFC

7.7 Change control

Change control ensures only beneficial or necessary changes to the baseline are implemented. Changes might originate from any stakeholder, including executive management, end users, suppliers or team members. A formal record of agreed changes is required.

Any changes to plans or specifications should be made in a controlled way. Larger projects with a formal governance structure should define the type and scale of changes that are subject to governance approval and should implement a formal change control process. This will quite often be linked to contingency management (see 6.4.3).

If a change can be executed within the defined parameters of the project, an internal project change process may be followed.

If the necessary change results in a change to the agreed project parameters of the project, the project approvals must be revisited.

For a commercial project where STFC has made a contractual commitment to another party, any change in the scope of the project will need to be made through a formally negotiated contract change, supported by the UKRI Commercial and Legal teams. Where such a change increases the exposure of STFC to financial or other risks, approval might need to be obtained at an appropriate level within STFC.

Where there are significant or cumulative changes or external factors which impact on the project, it might be necessary for the project to be re-baselined and a further review and approval required before the project continues. Re-baselining should only be carried out in agreement with the stakeholders and on an infrequent basis. A detailed final review is always undertaken before the final deliverables are signed off/accepted.

Alternatively, a change might result from a risk or issue which cannot be resolved. Guidance is required for:

- the aspects of the work should be change controlled
- which individuals or groups have the authority to approve changes (see section 4.3)

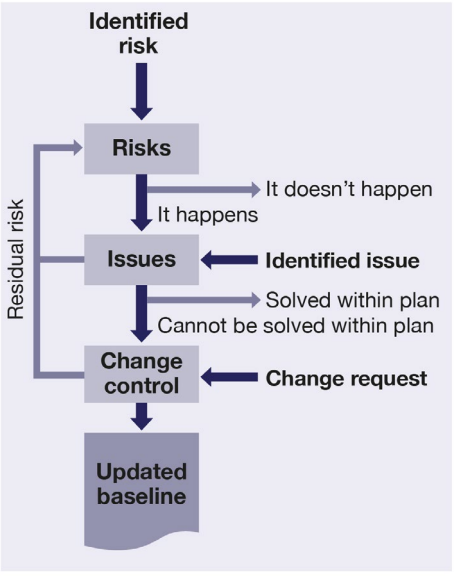


Figure 9: Relationship between risks, issues and changes

7.8 Traceability management

Traceability management ensures the relationships among the different elements of a solution and the associated management documentation is known, such that, at any point in time:

• change control can be applied effectively (see 7.7)

• the makeup of a solution and parts is defined and reproducible (see 8.4)

The elements to be managed should include those produced by suppliers and internally, tools used during the design, development or manufacturing of a solution, and the management deliverables. Information with respect to traceability should be managed in accordance with clause 7.9. Each element should be identified in terms of status and version. There should be two-way traceability from the higher-level to the lower level elements that comprise it as well as among different elements. Traceability management should include:

• planning the scope of and managing the relationships between elements, including baseline control

• identifying and understanding the relationships between elements at a given point in time

• reporting to ensure those requiring this information are informed

• verifying the accuracy of the records

7.9 Information and data management

Information and data management ensures information and its underlying data (physical or electronic) is available and reliable for undertaking work and making decisions.

The information and data which needs to be managed should be identified. This should include data and information relating to the solution and its development, plans, progress assessments, reviews and audits, contracts, reports and communications.Information should be recorded on receipt, validated as correct, securely stored, distributed to, and retrievable by those who need it.

Note: information and data concerning a solution can be related to requirements, drawings, designs, specifications, building information modelling and digital twins (see section 8).

The framework for managing data, information and its quality should be defined. Business continuity measures should be in place in the event of a disruptive incident (see 7.6).

New sets of information, such as documents, should be reviewed, approved, version controlled and, when no longer required, withdrawn and archived. The status, security classification and provenance of information and data should be clear. Where relevant, information and data should be handed over for on-going operational management. When not handed over, information should be retained to meet statutory, contractual and wider business requirements. The integrity of groups of related information should be maintained (see 7.8). GovS 005, Digital, data and technology shall be complied with, with respect to data handling. GovS 007, Security shall be complied with, with respect to data and information security.

Note: information management can include web content management, document management, records management, digital asset management, learning management, building information modelling and content systems.

7.10 Finance

Financial management ensures the efficient and effective management of money/ funding to accomplish the objectives of the portfolio, programme or project in the context of the overall strategy and objectives of the organisation. The level of funding needed for a project should be determined through robust estimation of direct costs required to deliver the project, including any relevant taxes e.g. VAT. Project budgets should also include the estimated effects of inflation, indirect costs/overheads, and a working margin/contingency proportionate to the uncertainty and risk involved in delivery. It is important, particularly for capital projects, that full-life running costs are identified and plans developed for how such costs will be funded. For commercial projects, where STFC is bidding in a competitive market, prices should be quoted in accordance with UKRI and government guidance including an appropriate financial margin. All sources of funding for the project should be identified with a plan for how costs will be shared if there are multiple funders. Financial management arrangements should be defined at the project bid/business case stage, including financial accountabilities, levels of delegation, approvals and monitoring. Government Functional Standard GovS 006: Finance should be complied with.

When preparing a business case or bid for a project, early engagement with the appropriate Finance Business Partner is important to validate costings, review financial arrangements and identify any financial issues requiring in depth analysis or specialist advice. Finance should assess whether there are any novel or contentious aspects of the project from a financial perspective and advise on whether any specific additional approvals will be required from UKRI, BEIS or HMT.

Following approval of an internally funded project or the signing of a contract for an externally funded project, Finance will set up the project in the finance system with the approved budget and an appropriate work package/task structure in consultation with the Project Manager. During the delivery phase of the project the Project Manager is responsible for managing the project budget, explaining significant variances in actual expenditure and income relative to budget, and updating forecasts. Finance will support the Project Manager in accessing and interpreting financial reports, which should be reliable and available in a regular and timely manner, and will advise on managing variances against the project budget or other financial issues that might arise. Effective two-way communication between Project Manager and their Finance business partner team is essential to ensure that the project is managed in compliance with UKRI's financial policies and processes and within the wider context of the budget of the relevant STFC department and the organisation as whole.

7.10.1 Financial Advice and Approval

The UKRI Finance Directorate should be involved in projects as early as possible. The level of involvement is dependent on the value, risk and complexity of the project. Project Managers should consult their local STFC Finance Team for advice on costing (including Corporate and Departmental overheads), financial risk, VAT, inflation, exchange rates, budget setting, value for money; and navigating bids and business cases through the UKRI/STFC financial approval process. For business cases the STFC Finance Director will nominate a senior Finance Business Partner to work with the project or programme team on the Financial Case.

All project costings should be approved by a member of Finance.

7.10.2 Estate and Financial Impacts

All projects should consider the impact on STFC estate infrastructure and in particular any impact on utilities (material changes creating an increase or decrease in demand) and include any additional marginal costs, for example, noting this is not an exhaustive list:

- Accommodation requirements
- Electricity (cost and consumption)
- Gas (cost and consumption)
- Water (cost and consumption)
- Services – waste, travel (and car parking), security, cleaning and restaurant facilities.

7.11 Procurement and contract management

Contract management ensures any products or services bought as part of resourcing the work or developing the outputs are of the required quality and delivered when needed. The management team should comply with the contractual obligations (as customer), including payments to suppliers. Supplier performance and quality should be monitored and accepted after verification against the contractual requirements. GovS 008, Commercial, relating to contract management should be complied with. Commercial Dept can provide support on contract management.

Other procurement processes are relevant and should be reported on for International facilities and Universities.

7.11.1 Commercial

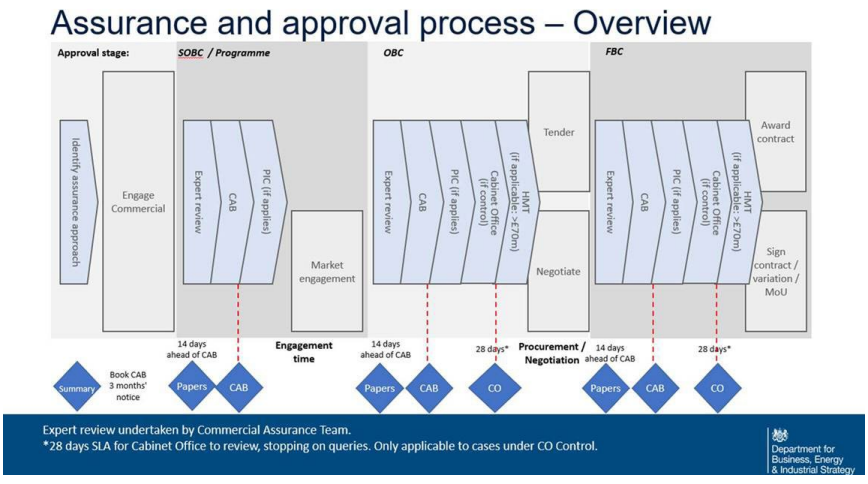
The Commercial department should be involved in projects as early as possible. The level of involvement is dependent on the value and complexity of the requirement.

For individual procurements valued at under £10M the Commercial staff will agree sourcing strategies (see 'Sourcing' below).

For procurements valued at over £10M, external assurance and approval needs to be received prior to the launch of any procurement process and again prior to contract award, so these need to be taken into account when working out the timelines of the overall project.

The nature of these approvals is dependent on value and complexity; all procurements valued at £10M+ require approval at OBC (pre-procurement) stage and again at FBC (Pre-contract award) stage; this is done through the Commercial Assurance Board (CAB) chaired by BEIS. BEIS will also triage to assess whether the case also needs to go to Cabinet Office (an additional 28 days per stage) and, if over £70M, Treasury approval is also required which will add to timelines.

The length of time taken for the creation of these business cases, and the approval



process, should not be underestimated and can significantly add to the length of a programme plan.

Any bookings to be made to attend CAB is done though the STFC Head of Procurement. CAB is held every 2 weeks, and is generally fully booked 6 months in advance, so pre-planning is essential.

7.11.2 Sourcing

Sourcing ensures products or services bought as part of resourcing the work or developing the outputs are of the appropriate quality, represent value for money and can be delivered within an acceptable level of risk. Appropriate contract strategy and sourcing packages should be determined, suppliers selected against defined criteria and the contracts formally agreed. Contracts should be designed to reflect the type and method of delivery and reliability of the supply chain. The scope of contracts should include all necessary documentation and tools required for the operation of the service or product. Government Functional Standard GovS 008: Commercial should be complied with.

7.11.3 Insurance

The public sector has a wide and diverse asset portfolio, so taking out private insurance isn't considered good value for money. Typically, assets are self-insured (see annex 4.4 of managing public money), but there might be limited circumstances where insurance is required. This can include where there are contract / legal obligations to insure or, for example, during transit of systems or deliverables between international partners. When thinking about insurance, consider:

- Potential insurance risks
- Engaging as early as possible with insurance team
- An insurance specific risk management review

Useful links to UKRI Insurance and contacts:

- The Source – Insurance
- Contacts – UKRI Insurance

8 Solution delivery practices

8.1 Overview

Solution delivery ensures that an appropriate and sustainable solution is developed and enables the achievement of the required objectives. Solution delivery is the responsibility of the programme or project manager (see 4.4.8), supported by subject matter experts for the respective practices. The solution delivery practices should be managed and monitored, throughout the life cycle (see 6.3), using a defined and established approach that is improved through use (see 8.8).

8.2 Quality management

Quality management ensures outputs are fit for purpose to achieve the objectives. Quality shall be actively managed to maximise the likelihood of success by determining the degree to which the features and inherent or assigned characteristics of an output or solution (whether product, person, process, service and/or system) meet expectations or stated needs, requirements and specification (see 8.6)

The quality standards, legislative requirements and quality levels that the project needs to meet should be defined in the PMP or PID (see 6.2).

A quality management framework should be defined and established, which is appropriate to the outputs and work required. People should be trained, briefed and competent to undertake the work assigned to them.

The PMP should include:

• quality assurance to provide confidence that outputs are likely to match the defined quality criteria

• quality control to monitor and verify compliance with the specified designs and to identify ways to eliminate causes of unsatisfactory performance

Note: the quality of the solution is dependent on the choice of appropriate design and development methodologies. Different approaches are appropriate in different circumstances, for example an iterative, agile delivery approach for digital service.

Departments may have additional formal quality standards that must be followed e.g. ISO 9001 or EN 9100.

8.3 User needs and requirements

Managing requirements ensures the needs of stakeholders are understood and considered throughout the design and development of the solution.

Requirements should be refined, elaborated (for example, as agile epics and user stories) and evolved with the design and development of the solution until a viable solution is defined and approved. Multiple iterations might be needed to fully understand the requirements.

A common understanding of the outcomes for all phases of the solution's life cycle (including during development, in-life and disposal) should be agreed between those requesting the work and those undertaking the work. Requirements must take into account relevant statutory, regulatory and other constraints such as inclusion, health and safety (see 8.10) and sustainability (see 8.11). The requirements should be determined for those affected by the development and use of the outputs and subsequent outcomes, such as the public, end users, operational and maintenance staff, developers, constructors and manufacturers. Requirements should be uniquely identifiable, current, mutually consistent, understandable, unambiguous, prioritised and validated. There should be two-way traceability between the requirements and the elements of the design (see 7.8). Changes to requirements should be aligned to the objectives of the work component, and should be controlled (see 7.7).

8.4 Solution design

Solution design ensures the outputs meet the requirements and are likely to achieve the desired outcomes, realise the required benefits and represent value for money. Design should be in accordance with a defined approach and may be predictive, incremental, iterative, adaptive or hybrid, including agile approaches. Solution design may evolve as requirements are elaborated and as design and development progress. The solution design (or target operating model) should include the outputs needed to achieve the desired outcomes, including, but not be limited to, people, software, equipment, operations and maintenance products, manufacturing, security, information, organisation design, supply chain, performance characteristics and desired behaviours. The solution

should be defined sufficiently to enable its parts to be verified as correct. There should be two-way traceability between the design elements and the plan (see 7.8). The team undertaking the design should consider a range of solution options (design approaches, design concepts, or preliminary designs) that potentially satisfy the requirements and take into account complexity and value for money. After analysis a preferred solution should be recommended for implementation.

8.5 Solution development and integration

Solution development and integration ensures that the designed solution is built in a defined way such that the elements comprising the solution work together within the proposed development and operating environments. A strategy should be developed defining the approach to be taken for sequencing, delivery and integration of the elements of the solution, including any special temporary environments or facilities required. Working methods and processes should be defined together with how different elements of the designed solution relate (see 7.8) and are integrated such that the solution works as a whole.

8.6 Verification against design and validation against need

Verification checks the correctness of a solution (or part of a solution) to confirm that it complies with the specified design. It should be aimed at detecting faults or failures.

Validation ensures the right problem is being addressed and the solution is likely to fulfil the requirements when operating in its intended environment. Validation should be applied to the solution or a significant part of it and should be aimed at demonstrating stakeholder satisfaction.

Verification and validation should be continuous throughout the life cycle and may be iterative in nature with the requirements, design and solution evolving as work progresses. The methods used for specialist work should include appropriate approaches and planned activities for both verification and validation. Note: methodologies for verification and validation can include, but are not limited to: prototyping, simulation, inspection, show and tell, analysis, demonstration, test, trials or pilots, and sampling.

8.7 Management of change

This section relates to business change associated with the implementation of a project rather than change management.

The purpose of managing change is to prepare, equip and support organisations and individuals to change their approach and, where appropriate, behaviours where required to enable the success of the project. Projects should have a vision and blueprint for the future state, assess the current state of the target groups, use appropriate techniques to design and manage the required changes, continually assess the readiness of the target groups to accept the changes, and track progress towards achieving the future state. Milestones representing the achievement of outcomes should be included in the plan. Once a transformed operating approach has been implemented, it should be monitored to ensure behaviours and practices do not revert.

8.8 Learning from experience

Learning from experience helps avoids repeating the same mistakes and helps spread improved practices to benefit current and future work.

STFC adheres to the principle of continuous improvement and a collaborative working environment. A project should in its initial phase determine if there are any lessons to learn from past projects and if there are any exemplars that can be used as reference. The project should collect lessons learned and associated recommendations throughout the lifecycle. At the end of a project the team should complete a Lessons Learned workshop and build STFC's body of knowledge and exemplars.

Please find STFC's historic lessons learned document here: STFC lessons learned

Please add new lessons here: Capture new lessons learned STFC

8.9 Project delivery team induction and training

Induction and training ensure team members are working effectively as soon as practical through being briefed on the context of their work and the required operational procedures. For programmes and projects, induction should include, but not be limited to, ensuring a briefing on the specific role being undertaken (see 4.4), processes to be followed and specialist training required, as well as providing the necessary facilities and granting appropriate security access.

8.10 Health and Safety

"Safety has to remain at the heart of everything we do in the delivery of our world-class science programme" including the wide range of projects that we manage. Safety, Health and Environment (SHE) must be considered at all stages of each project, from inception to completion and handover.

Those managing projects that involve practical operations/construction should complete the STFC SHE Technical Managers training course prior to commencing the project to understand their SHE responsibilities within the STFC SHE Management Systems, in summary:

- safety management information is provided
- staff are aware of and trained to use safety related equipment
- hazards are identified and preventative actions taken
- risk assessments are conducted and findings acted on
- accidents are reported, recorded, and actions taken to reduce recurrence

To ensure continued compliance with statutory legislation, the framework for compliance is set out in the STFC SHE Codes and gives detailed guidance on activities including but not limited to:

- Risk Management
- Incident Reporting and Investigation
- Isolation of Services
- Excavation
- Demolition
- Control of Noise at Work

- Working at Height
- Work on Buildings
- Construction (Design and Management)
- Lone and Out of Hours Working
- Control of Contractors
- Asbestos Management
- Controlling Pollution to Air, Water and Land
- Electrical Safety

STFC Codes can be located: https://staff.she.stfc.ac.uk/Pages?Codes.aspx

A Project Safety Plan is required Risk Management Plan (stfc.ac.uk)

8.11 Environment and sustainability

Sustainability is concerned with meeting the present needs without compromising the environment for future generations. Sustainability requirements should be included in the objectives and scope for the work and documented (see 8.3). Legislation and evolving STFC and UKRI guidance shall be identified and complied with.

When establishing the sustainability of a solution's outputs and outcomes the assessment should cover the whole life cycle of the solution, including decommissioning or disposal.

Early engagement with Estates Services, H&S and Environmental Sustainability teams in this area is recommended.

Please see:

UKRI Environmental Sustainability Strategy

and

STFC Environmental Sustainability Action Plan that sets out STFC's response to the above document.

Annex 1 – Approvals required – large projects

Whole Life Cost of investment	Approvals required
< £20M	STFC Executive chair only
£20M to <£50M	Review by UKRI Investment Advisory Working Group (IAWG), ratification by UKRI CFO and endorsement by UKRI Executive Committee
£50M to <£70M	UKRI IAWG (CFO and ExCo) and BEIS Projects and Investments Committee (PIC)
≥ £70M	UKRI IAWG, (CFO and ExCo), BEIS PIC and HM Treasury
Business cases funded from certain ringfenced funds will require external approvals regardless of value.	
Infrastructure Investments will need to be reviewed and prioritised by the Infrastructure Advisory Committee (IAC) before being reviewed by IAWG.	
Approval at all levels is subject to the guidance to accounting officers provided in Managing Public Money.	
In addition the Board Investment Committee may elect to review any case >£20M.	
BEIS approval is also needed to approve any investment where >£10M is requested for the next Spending Review Period	
HM Treasury will also need to approve any investment considered novel, contentious or repercussive.	

Annex 2 – STFC Bid register

For internal STFC projects all applications for external funding must be entered into the STFC Bid Register Sharepoint site by the Bid Manager responsible for the proposal. The approvals process for projects on the Bid Register is automated and dependent on the size of the project proposed. The Bid Approval Delegation Matrix is shown in the table below.

Approval required by	Executive Board via appropriate Executive Director	Relevant Executive Director in consultation with Director of Finance	Department Head/ Director following Departmental Bid Review
Externally funded Projects (including those funded by SLAs and Grants from other Research Councils)	FEC >£5M total or >£2M per year - International or Government sensitivity - Reputational or ethical issues including conflicts of interest - Novel or contentious: outside the usual scope or pattern of STFC activities - **or inherent risk assessed as Black**	FEC >£3M to £5M total or >£1M to £2M per year - **or inherent risk assessed as Red**	FEC <£3M total or <£1M per year

Submission of bid forms on the Bid Register triggers the Bid Register Approvals Process. Invitations are sent to those assigned approvals responsibility on the Bid Register for each STFC Department. The detailed STFC Bid Process is mapped out on the Sharepoint site. Once Bid Forms are completed and uploaded by the responsible Bid Manager, the appropriate level of approvals is requested from those with delegated authority. In general, projects of £50K or less will only require email approval before being granted authorisation to submit.

Individual departments may have additional approvals processes alongside the STFC Bid Process.

Further information regarding the specific approvals processes of each National Laboratory may be obtained from the directorates or departments themselves.

With all approvals, decisions should be made in a timely manner by evaluating alternative choices against agreed criteria. Stakeholders and subject matter experts should be consulted. Decisions might relate to:

• approving strategy

• initiating a programme or project

• starting a new project stage e.g. gate or decision point (see 6.3, life cycles) or a new programme tranche

• suspending or terminating work

• selecting suppliers

• deciding options for further study

• selecting the solution

• approving plans and baselines

Decisions may be conditional, with responsibility for fulfilling such conditions defined. Decisions should be:

• holistic, taking account of the external context, whole life of outputs (such as in life service, disposal) and negative impacts

• phased to take into account risk (see 6.3, life cycles)

• communicated to the relevant stakeholders

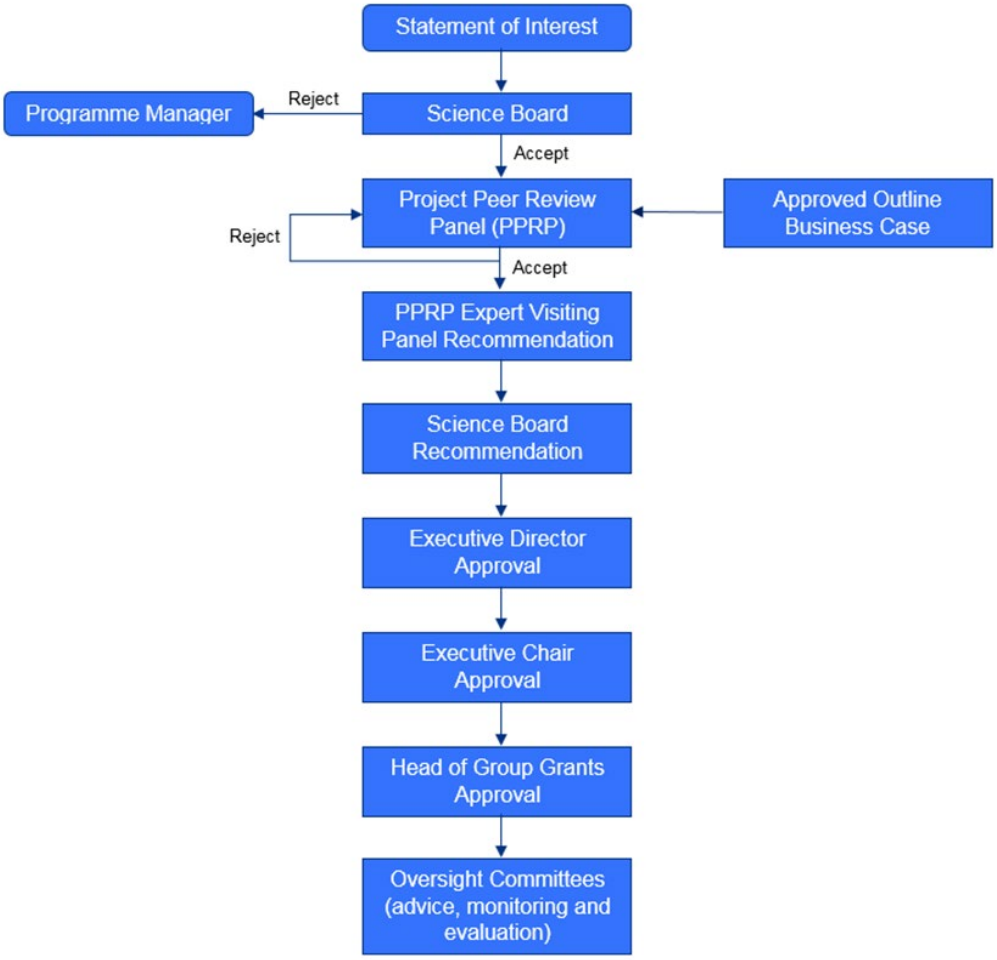
A programme or project shall be governed through a business case. If a project is part of a programme, its business case may be included within the programme's business case. A business case should demonstrate strategic, economic, commercial, financial and management justification [5].

The business case should be developed over a number of phases and should be updated to reflect changes and reviewed prior to every gate or decision point to justify continuing the work.

The PMP defines the methods to be used for progress reporting and control in the Deliver stage up to Op/Embed/Close. The plan includes frequency and attendance for progress meetings, the acceptance process for key deliverables and milestones, and the frequency and content of progress reports.

Annex 3 - Project approval lifecycle within Programmes Directorate

Project from Feasibility to Deliver: approval to implementation



Many projects that go to Project Peer Review Panel (PPRP) are of a size and cost that means that it is frequently no longer possible for a single country to build and run them, consequently international collaborations are a necessary part of this field of science. The science drivers and goals for new projects evolve through consultation and are underpinned by international strategic updates.

Within the UK the STFC Advisory Panels look at the national and international context and develop roadmaps in consultation with the community that help inform STFC's approach to funding its long-term construction and exploitation programme. In addition STFC's Science Board (SB) organises periodic reviews of STFC's programme that help inform the decisions and the provision of advice relating to the investment of funds in the particle physics, astronomy, nuclear physics and other programmes.

Ideas develop through community interaction, in liaison with STFC, and crystallise into a Statement of Interest (SoI), which goes to SB. The Board reviews it in conjunction with information from the Programme Manager and decides whether to recommend that the Principal Investigator (PI) (usually heading up a collaboration of researchers often at different universities and institutes) be invited to submit a full proposal for review to the PPRP.

The PPRP scrutinises the proposal with a view to determining whether the collaboration has the right experience and skills to deliver the project, whether they have adequately costed the project, whether the project is timely, whether the risks have been properly assessed and that schedule is realistic. The Panel is reinforced by independent experts, who may be drawn from the international community, and also looks at peer review comments, which will have been sought as part of the grant review process. In general, the proposal is presented by the collaboration to a PPRP meeting, which is attended by the experts. PPRP will identify areas that need further investigation and a smaller panel, including the experts, meets with the collaboration to probe these further. A routine part of this process is to ask the collaboration to outline the steps that they would take to de-scope the project to a lower level of funding. This helps the Panel determine the priorities and relevance of different work packages.

The output from the PPRP takes the form of a report, which is presented by the Chair or Deputy Chair of PPRP to SB. This report will recommend the optimum project, which fits within the strategy and overall programme, and the level of funding within the constraints of the budget available. It will also identify risks of funding at a lower level and if necessary the minimum viable level.

On the basis of the report and subsequent discussion and deliberation SB will make a recommendation to STFC on whether to fund the project.

On occasion an Outline Business Case has been used to secure funding through different mechanisms that augment STFC's Core Programme budget. This allows the project to skip the first submission to SB and the collaboration will be invited by the STFC Programme Manager to develop a proposal for review by PPRP. The project then follows the normal review route.

The recommendation from SB is processed by the Programme Manager who makes any required changes to the proposed awards to the participating institutes and prepares a Project Approval Report. This is given to the Executive Director of Programmes for authorisation and if necessary, depending on the size of the award, the Executive Chair.

Once the authorisation process is complete the Programme Manager will work with the collaboration and provide guidance to enable them to put a baseline project management plan in place. The Programme Manager will also put in place an Oversight Committee (OsC) of experts that acts as an advisor to Programmes Directorate and a critical friend to the project. The OsC will typically meet twice a year throughout the lifetime of the project and more frequently for larger projects of if problems are encountered.

In addition to this, projects with a significant STFC National Laboratory component submit a report to the monthly Project Review Committee and the Programmes Directorate provide monthly updates to the UKRI Project Office for projects valued at over £20M.

Annex 4 - The Agile methodology

Agile Projects

Agile encompasses a range of approaches from rapid prototyping, through to iterative and continuous development and is most frequently encountered in the creation of digital assets, e.g. software development. It is also commonly used in the creation of new business processes and publications but tends not to be explicitly called out in this manner.

In general the creation of physical assets use a concept, design, build, test, live staged approach known as waterfall, e.g. systems hardware infrastructure, a complex device such as a satellite, or a property project. However, an agile iterative approach is often used when creating physical prototypes and the end product cannot be completed from a single stage design and it is feasible to redo a prototype.

Agile is considered to share a set of values and principles that differentiate it from waterfall.

Agile Values

- *Individuals and interactions over processes and tools*
- *Working software over comprehensive documentation*
- *Customer collaboration over contract negotiation*
- *Responding to change over following a plan*

The 12 Agile Principles

1. *Our highest priority is to satisfy the customer through early and continuous delivery of valuable software*
2. *Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage*
3. *Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale*
4. *Business people and developers must work together daily throughout the project*
5. *Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done*
6. *The most efficient and effective method of conveying information to and within a development team is face-to-face conversation*
7. *Working software is the primary measure of progress*
8. *Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely*
9. *Continuous attention to technical excellence and good design enhances agility*
10. *Simplicity--the art of maximizing the amount of work not done--is essential*

11. *The best architectures, requirements, and designs emerge from self-organizing teams*
12. *At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly*

Potential Advantages of Each Model

Traditional (Waterfall/Linear)

• Costs/Timescale expectations established upfront at a high level of detail and predictability to inform stricter contract and governance contracts.

• Agreed deliverables and exit criteria must be completed before proceeding to the next phase allowing for timely intervention

• Reduced end-user/Sponsor engagement and only when required releasing development team to focus on implementation

• Scope creep tightly managed

• Measure twice/cut once and reduce the level of potential re-work

Agile (Iterative/Incremental)

• Earlier and continuous delivery of deliverables and business benefits

• Increased sponsor engagement and feedback leading to a better product

• Deliverables are available earlier so the project can be changed/stopped earlier if it isn't delivering the expected benefits

• Able to deal with ambiguity better and easier throughput of changing requirements

• End user/sponsor collaboration and acceptance of each feature as its developed

Potential Disadvantages of Each Model

Traditional (Waterfall/Linear)

• Potential bad design, problems or misunderstanding identified at end resulting in bad budgetary and time overruns

• Testing at the end introduces risk of rework and extended timelines and subsequently cost

• Deliverables and business benefits are delayed until completion of project

• Reduced hands on sponsor/user engagement requires more assurance resulting in heavy admin and reporting overhead

• Reduced ability to deal with ambiguity

Agile (Iterative/Incremental)

• With more extreme agile methods there is a risk of loss of control and anarchy

• With more extreme agile methods there is a risk of misalignment with corporate culture still based on a linear model

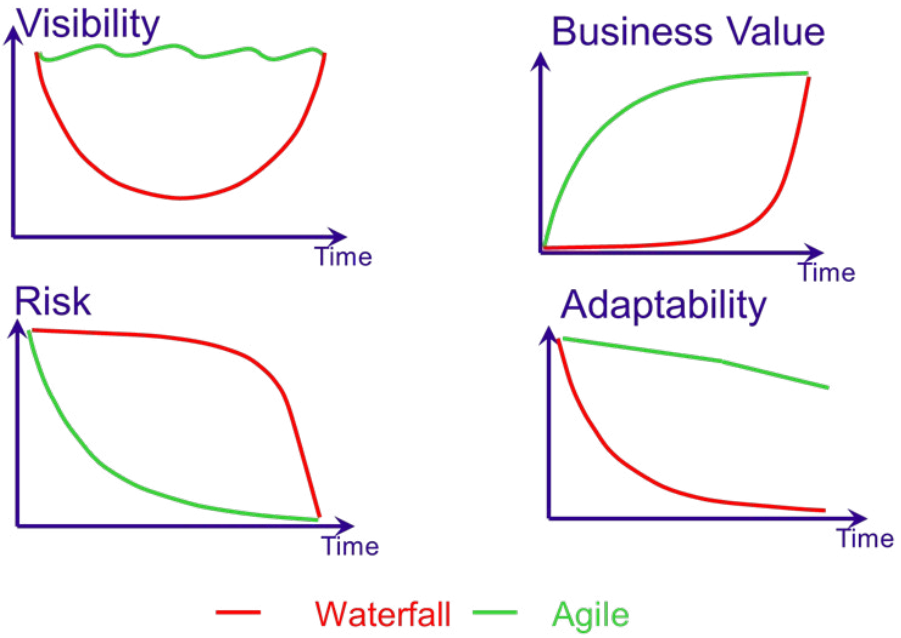
• There is a risk that the development team may be pulled into non development activities where they have little experience

• Requires continuous and hands on engagement with sponsors/users

• Increased risk of scope creep

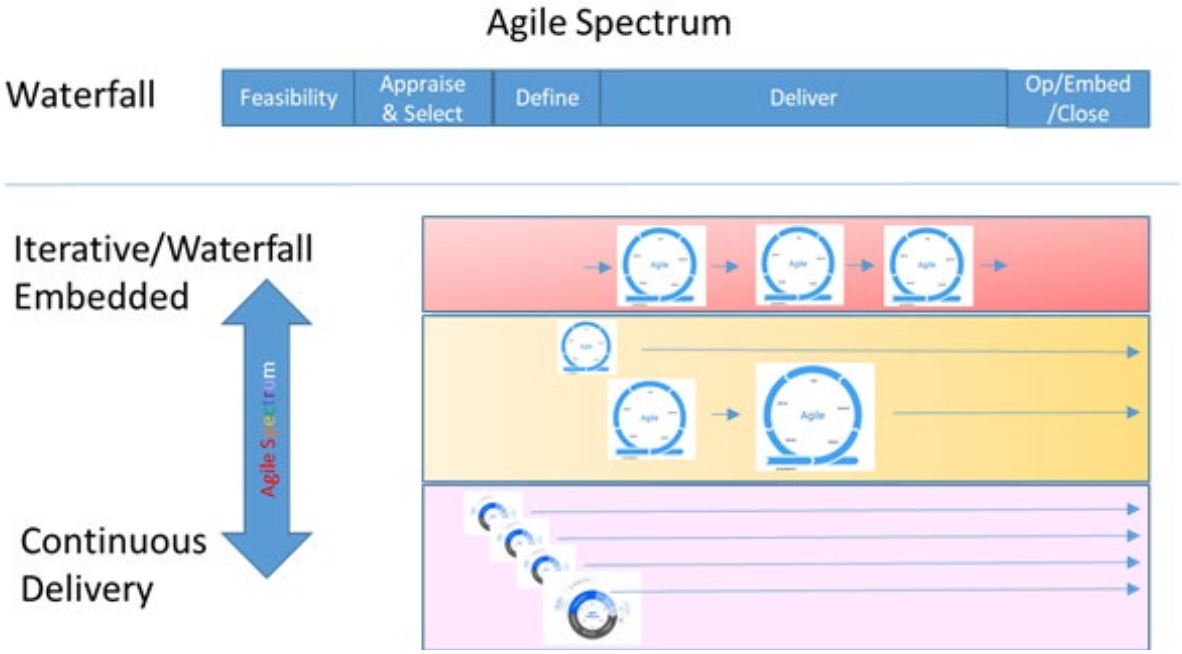
• Risk of senior management thinking the product has been delivered when its not sustainable

How Agile Manages Complexity



Agile Lifecycle

The agile lifecycle in general ranges from an iterative to self-contained continuous delivery that incorporates the Define, Deliver and Op/Embed/Close stages of our STFC project framework.



Criteria for Lifecycle Selection

Model Type	When to Use It
Linear/Waterfall / Traditional	The solution and requirements can be clearly defined
	You do not expect too many scope change requests
	Existing corporate governance is unable to deal with ambiguity
	Costs and timescale need to be known upfront for the project to be agreed
Incremental	Same conditions as the Linear approach, but the client wants to deploy business value incrementally
	There may be some likelihood of scope change requests
Iterative	You feel that requirements are not complete or may change
	You will learn about remaining requirements in the course of doing the project
	Some features of the solution are not yet identified
Adaptive	The solution and requirements are only partially known
	There may be functionality that is not yet identified
	There will be a number of scope change from the client
	The project is oriented to new product development or process improvement
	The development schedule is tights and you can't afford rework or replanning
Extreme	The goal and solution are not clearly known
	The project is an R&D type project

All of these approaches have their own strengths and weaknesses and one size does not fit all. For portfolios, programmes and projects a range of agile and or waterfall approaches can be used for different stages or work packages. A project does not have to be exclusively waterfall or agile.

It is important that expert advice is sought for the right approach to the expected problem(s), matched to the availability of skills sets. To decide on the best approach, you should consult, prior to the Define stage, with your departmental PMO or agile expert.

Criteria for Lifecycle Selection

Each Department within STFC may have its own recommended and mandatory agile deliverables based on the type of agile methodology used, customer obligations and local implementation.

Please refer to section 6.3 of this document for the generic mandatory project management artefacts for each stage of our STFC Project Management Framework that has been decoupled from choosing either agile or waterfall.

Glossary

For definitions of Portfolio, Programme, Project, and work package see section 3.

Term	Definition
assurance	Assurance is the systematic set of actions necessary to provide confidence that work is controlled, on track to deliver and that it is aligned with policy or the department's objectives.
baseline	A measurement, calculation, or location used as a basis for comparison. In a project delivery context baselines typically apply to plans and to sets of data relating to the solution (such as requirements baseline, design baseline).
benefit	In the context of project delivery, benefit is the measurable value or other positive impact resulting from an outcome perceived as an advantage by one or more stakeholders, and which contributes towards one or more objective(s).
blueprint	The blueprint is a model of the future organisation, its working practices and processes, the information it requires and the technology that supports its operations. From Managing Successful Programmes.
business case	The justification for an organisational activity (strategic, programme, project or operational) which typically contains, benefits, outcomes, timescales, costs and risks against which continuing viability is tested. Adapted from AXELOS Common Glossary.
constraint	In the context of project delivery, a constraint is a limitation or restriction on planning or undertaking work.
dis-benefit	In the context of project delivery, dis-benefit is the measurable value or other impact resulting from an outcome perceived as a disadvantage by one or more stakeholders, and which partially or fully negates the achievement of one or more objective(s).
gantt chart	A graphical representation of activity against time, often produced in specialist software.
gate	A decision point, carried out as part of formal governance, at significant points in the life cycle to ensure that the decision to invest as stated in an agreed business case and plans is, and remains, valid.
governance	Governance defines relationships and the distribution of rights and responsibilities among those who work with and in the organisation. It determines the rules and procedures through which the organisation's objectives are set, and provides the means of attaining those objectives and monitoring performance. Importantly, it defines where accountability lies throughout the organisation.

Term	Definition
integrated assurance and approval plan (IAAP)	The planning, co-ordination and provision of assurance activities and approval points throughout the 'policy to delivery' life cycle, proportionate to levels of project cost and risk. From Treasury approvals process for programmes and projects.
issue	A relevant event that has happened, was not planned and requires management action. It could be a problem, benefit, query, concern, change request or risk that has occurred.
life cycle	The life cycle provides a phased structure for governing the work and underpinning the delivery plan, from start to finish. Life cycles can be applied to a portfolio, service, product, system, programme or project.
management framework	The agreed management practices adopted by an organisation (or part of an organisation), such as portfolio management framework, programme or project management framework.
major project	A central government funded project or programme that requires HM Treasury approval during its life, as set out in Delegated Authority letters, or is otherwise of special interest to the government. A government major project is listed in the Government Major Project Portfolio (GMPP).
outcome	The result of change, normally affecting real-world behaviour or circumstances. Outcomes are desired when a change is conceived. Outcomes are achieved as a result of the activities undertaken to effect the change; they are the manifestation of part or all of the new state conceived in the blueprint.
output	A specialist product (the tangible or intangible artefact) that is produced, constructed or created as a result of a planned activity and handed over to users.
plan	A plan sets out how objectives, outcomes and outputs are to be delivered within defined constraints.
portfolio management	Portfolio management is a co-ordinated collection of strategic practices and decisions that together enable the most effective balance of organisational change and business as usual.
project delivery	Collectively, portfolio, programme and project management are referred to in government as "project delivery".
quality	The degree to which the features and inherent or assigned characteristics of a product, person, process, service and/or system bear on its ability to show that it meets expectations or stated needs, requirements or specification.
quality assurance	The planned systematic process that will be used to provide confidence that outputs will match their defined quality criteria.

Term	Definition
quality control	The process of monitoring specific project results to determine whether they comply with relevant standards and of identifying ways to eliminate causes of unsatisfactory performance.
residual risk	The risk remaining after the risk response has been applied.
risk	Uncertainty of outcome (whether positive opportunity or negative threat). It is the combination of the chance of an event and its consequences.
risk appetite	The amount of risk the organisation, or subset of it, is willing to accept.
schedule	A timetable showing the forecast start and finish dates for activities or events within a project, programme or portfolio.
sro/sponsor	The role of the SRO / Sponsor is to ensure the project delivers the agreed benefits, outcomes and deliverables as defined in the Business Case or Case for Support.
stage	In the context of project delivery, a stage is a subdivision of a project life cycle.
stakeholder	Any individual, group or organisation that can affect or be affected by, or perceive itself to be affected by an initiative (programme, project, activity, risk).
strategy	A strategy outlines longer term objectives, outcomes and outputs, and the means to achieve them, to inform future decisions and planning.
target operating model	A model of the future organisation, it's working practices and processes, the information it requires and the technology that supports its operations (often called a blueprint).
termination	Termination is the premature closure of a work component because it is no longer needed or viable, or because the risks associated with it have become unacceptably high.
tolerance	The permissible deviation above and below a plan's target for time and cost without escalating the deviation to the next level of management. There can also be tolerance levels for quality, scope, benefit and risk. Tolerance is applied at project, stage and team levels.
tranche	A programme management term describing a group of projects structured around distinct step changes in capability and benefit delivery.
transformation	A distinct change to the way an organisation conducts all or part of its business.

Term	Definition
two-way traceability	The ability to trace both forward and backward. (for example, from requirement to an element of the solution and from the solution element back to requirement). It can also be applied in other areas, such as to output-outcome-benefits mapping, and solution-plan mapping.
validation	An activity that ensures a solution (or part of) meets the needs of the business. Validation ensures that business requirements are met even though these might have changed since the original design.
value for money	Value for money is a balanced judgment based on the benefit cost ratio which brings together social costs and benefits including public sector costs over the entire life of a proposal, together with decisively significant unquantified deliverables, and unmonetised risks and uncertainties, to deliver a proposal's objectives.
verification	An activity that ensures that a solution (or part of) is complete, accurate, reliable and matches its design specification.
work component	A defined and managed part of a portfolio, such as a lower level portfolio, programme, project, other related work or work package.
work package	A group of related activities that have a defined scope, deliverable, timescale and cost, contributing to the required outputs and outcomes.

UKRI Science and Technology Facilities Council