F1™ in Schools

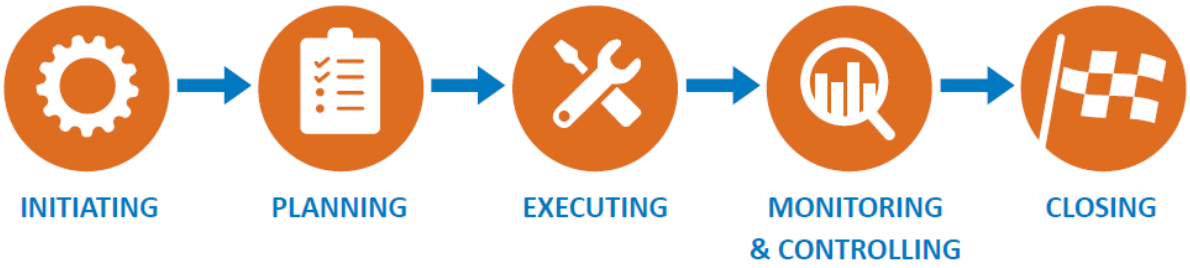
PROJECT MANAGEMENT GUIDE 2022

In Association with

Educational Foundation
Project Management Institute.

THE PROJECT MANAGEMENT PROCESS

Any project, no matter the size or complexity, involves using specific skills, tools, and procedures to complete the project's goals. Project management can be broken down into five processes:



These processes help the project manager and team members define, organise, and keep track of all the work that needs to be completed for a project to be successful.

Overview

The **Initiating Process** is the beginning of the project. During this process, project stakeholders are identified and a project manager is selected. Project goals and objectives are defined and authorisation is obtained to proceed with the project.

During the **Planning** Process, the project plan is created. The project manager and team members define the activities and tasks needed to complete the final product, service or result. They also determine what staff and resources are needed and establish the timeline and available budget for the project. The planning process is very important to the overall success of the project. Without careful planning, a project manager and project team may find it very difficult to achieve project success.

Executing is the process of working through the project plan. The executing stage involves performing the activities outlined during the planning process.

Monitoring and Controlling occurs throughout the entire project. Monitoring and controlling involves ensuring that all the tasks in the project plan are completed on time and within budget, as well as addressing any changes necessary to successfully achieve the project goals.

In the **Closing** Process, project goals are delivered. Final administrative work is completed, and lessons learned are captured to improve future projects. The closing process involves taking the time to celebrate the team's successes along the way toward completion of the project.

Each of these processes will be addressed in more detail below:

INITIATING PROCESS

The initiating process group has three goals:

- **Defining the project**
- **Identify stakeholders**
- **Authorise the project**

Defining the project

During this process you will define the goals and identify the deliverables of your F1 in Schools competition entry or as we will now call it your F1 in Schools Project.

You will need to answer the basic project questions of Why, Who, What, When, Where and How:

WHY is the project being initiated? What is the reason for the project?

WHO is this work being done for? Identify the people participating in or affected by the project's outcome both positively and negatively.

WHAT are we going to deliver? What work do we need to complete? What resources and funds do we need to produce these **deliverables**?

WHEN will we produce these deliverables? When will the project sponsor approve and accept the final project deliverables?

WHERE will the deliverables be used?

HOW are we going to achieve the project's goal and objectives? How will success be measured?

Identify stakeholder

Stakeholders are the people or organisations involved or that have an interest, positively or negatively, in the project or the project's outcome. A stakeholder register should be created which includes the individuals involved and/or impacted by the project, their role in the project and their contact information.

Name	Role in project	Organisation	Contact	Engagement Activities
Mrs Smith	Teacher	My School	smith@school.com	
R Harvey	Sponsor	Sponsor Inc	rharvey@sponsor.eu	
A Denford	Comp CEO	F1 in Schools	info@f1is.com	
S Millar	Team member	My Team	millar@team.com	

Authorise the project

A **project charter** is a document authorising the start of a project and is used to further clarify and refine the project. It will describe the outcomes and expectations for the project and identify the measure of performance, milestones, assumptions, constraints, and identify risks and resources.

The Why, Who, What, When, Where and How questions are used to create the project charter.

The **project description** outlines your goals. Goals should be specific, measurable and observable. Goals can guide a project from start to finish. The clearer you are in defining your goals, the easier it will be to stay on track.

The **project manager** should be named and a list created of the **team members** that will be involved in the project.

The **project reason/justification** outlines the reason for doing this project. The why question could be 'we want to become World Champions'.

A **milestone** is an estimated time when a major deliverable will be completed. Consider when high-level progress will be made throughout the project. For example, when your car will need to be completed.

The **acceptance criteria** documents how the final product will be evaluated and what the quality of the final product will look like. It defines how you will know you are done and if you have successfully completed your goals.

Assumptions are factors about the project that you consider true without getting proof. Identifying assumptions helps a team clarify assumptions that not all team members share. An assumption could be that your school will excuse you from class to attend a final event.

A **constraint** is any factor that provides a limit on the ways that a project goal can be accomplished. This may include limitations in finance, scheduling, people or others. For example, a sponsor not paying would limit finance or the new release of the technical regulations has increased the minimum weight of the car.

Risk includes any unexpected situations that might arise. Consider potential risks at the beginning of a project so that you can manage them appropriately and create a plan of response. While you cannot predict all situations, the more prepared you are, the more successful your project will likely be. An example of a risk could be an issue with your 3D printer preventing you from printing your car front wing. The response plan would be to have a list of contacts who have a 3D printer and would be willing to let you use it.

Resources may include money, time, people, expertise, equipment, machinery or a workplace. Consider all resources that would be needed for the project and their estimated cost.

By taking the time in the beginning to define the project and obtaining authorisation, teams can set themselves up for success. Once the project charter has been approved the project is authorised and can commence.

Template Project Charter

Project charter

Project: *F1 in schools*

Team name: *Evolution*

Date: *September 15*

Project manager

The person responsible for ensuring that each of the project's goals and objectives are completed.

Team member

The people who work on a project and contribute to its success.

Project description

Describe the project. What is the goal of your project?

Project role/justification

Why are you doing this project?

Major milestones

What are the big points of progress? What are the deliverables? When are they due?

Acceptance criteria

How will the final product be evaluated?

Assumptions

What do you believe to be true about this project?

Constraints

What factors will limit how the project gets done?

Risk

What things could cause issues during the project?

Resources

What resources are needed? What will it cost?

Project Start date	XX/XX/XXXX	*End Date*	XX/XX/XXXX
Project Manager	Signature	*Date*	XX/XX/XXXX
Approved by	Signature	*Date*	XX/XX/XXXX

Helpful hints

Deliverables

These are the products, services or results of a process or project. In F1 in Schools this will be your cars, portfolio work, pit display etc. Deliverables are written as a statement of something accomplished or produced.

Milestones

Milestones will always have at least one deliverable and will include the due date. This serves as a marker for how far along you are in the project.

The **Why, Who, What, When, Where and How** are not yes/no questions. Instead, they are all open-ended questions. Asking open-ended questions helps get a fuller sense of what the project includes.

For example:

If your team asked "Do we know who the project stakeholders are?" You might answer "Yes," but it is possible that each team member has different people in mind.

Asking an open-ended question like, "Who are the project stakeholders?" provides the opportunity for all ideas.

Brainstorming

This is a strategy of creative thinking, usually done in groups, that comes up with as many creative ideas as possible, over a set period of time.

While there are many different approaches to brainstorming, generally, the rule is that no idea should be immediately judged or dismissed because negativity or self-doubt can make it very difficult to think as freely and/or as creatively as possible. Sometimes the idea that seems the strangest at first ends up being the inspiration for the perfect project solution

Mind Mapping

This involves writing the goal of the project in the middle of a piece of a large sheet of paper. Draw a circle around that idea. Then, think of as many ideas or concepts that relate to that central goal as possible. Write them on the paper around the central goal and draw lines out from the central circle to these related ideas. For each new concept, draw a circle around it and think of as many related ideas as you can and connect those ideas with lines to that circle.

THE MONITORING AND CONTROLLING PROCESS

Monitoring/controlling is a continuous process throughout the project life cycle. Project managers and team members need to establish a cycle to evaluate the progress of the project and report back to stakeholders about project developments.

Validating and controlling scope

This is a key component of the monitoring/controlling process group.

Keep the following in mind:

- Ensures that all the tasks necessary to achieve the project goals are completed.
- Identify if any activities need to be added to the project.
- Prevent work on the project from going beyond the scope.
- Determine what to do if any activity is taking more time than planned.

Scope creep

This occurs when work is added to the project without appropriately adjusting the schedule and resources, and without obtaining sponsor approval.

Routinely review the **Acceptance Criteria** that were established in the project to make sure that the products of a project will satisfy project stakeholders' needs and meet their standards.

Avoiding scope creep should start early in the project, ideally during the initiating process when you established a goal and set the boundaries for the project's work and scope. During the planning process you established what would not be included or would be "out of scope" for the project. If you establish early what is and what is not a part of the project's scope you can rely on and monitor those plans to help you avoid scope creep.

Adjust for the unexpected

It is more than likely that you will encounter some surprises as the project progresses. This is OK, it is what monitoring and controlling is for. Discuss any surprises that occur as project work is being done. If a change needs to occur, review the schedule, resources and scope to see if there are other changes that need to be made.

Status reports

A status report is an effective way to monitor and document of the progress of your project — and to communicate that progress to others. Each **status report** should include:

- ✓ What work has been completed
- ✓ What tasks are in progress
- ✓ What work is still planned
- ✓ What issues have developed

Status reports can help identify items that might affect the project scope, timeline, budget or deliverables. For example, if you raise money to buy a 3D printer but this arrives 2 weeks late, this will affect your timeline and you may not have time to 3D print your wheels for the regional final.

Example Status Report

Status report

Project: *F1 in schools*

Team name: *Evolution*

Date: *November 12*

Project status: *in good shape*

Tasks acomplished:

- all sponsorship acquired.
- car cad design milestone achieved and car ready for cfd analysis and then manufacture.

Tasks in progress:

- cfd analysis underway.
- manufacturing engineer is preparing resources (model blocks) and booking the denford cnc router to cut the car.

Planned tasks

- portfolio writing.
- verbal presentation script writing and powerpoint creation.

Issues:

- one of the team members has an appointment clash on the date of the regional final. They are currently attempting to reschedule the appointment.
- our 3d printer needs maintenance and we are yet to confirm an engineer site visit.

Questions for discussion:

- we need to finalise our transport arrangements for attending the finals.

THE CLOSING PROCESS

Closing is the process of completing the project. Finishing a project is an accomplishment. It is the achievement of a lot of work. As a group, you and your team members collectively sparked an idea, planned it, executed the plan, monitored/controlled your progress, and have now reached the closing process.

In the closing process you have the opportunity to reflect upon the quality of the project deliverables, what you learned about managing a project, and how well you and your team worked together.

In the closing process there is still some work to be completed as follows:

- ✓ A closing **presentation** is created, for some projects, to present the final report to the stakeholders.
- ✓ Collect and store any project-related paperwork and documents (such as the project plan, completed schedule, etc.) in a **project portfolio** such as in a notebook or a computer. These documents become reference material for future projects.
- ✓ Team members need to **"sign off"** on the project to verify that the project is completed.
- ✓ Create a **Lessons Learned** document with team members by asking what went well, what could have been done better, and what should continue. You may have received feedback from the judges which should be included. You can also reflect on how your car performed on the track.
- ✓ Complete **a self and peer assessment**. Include whether you and your group:
    - Treated each other with respect,
    - Shared responsibilities,
    - Communicated clearly and effectively,
    - Worked in an organized fashion and
    - Managed time wisely.
- ✓ Finally**, celebrate** all that you and your team have accomplished! Regardless of the outcome, you have dedicated time and effort, learned a lot along the way, and should be rewarded for such effort.

Example Lessons Learned Report

Lessons learned

Project: *F1 in schools*

Team name: *Evolution*

Date: *January 15*

What did we do right?

- we won the regional final and have a place at the national finals.

What could we have done better?

- we have not scored well in our verbal presentation. We all acknowledge we did not rehearse this enough.
- our car was not as fast as we had hoped. We all acknowledge that we did not leave enough time to test our prototypes.

What should we continue to do?

- test, test, test
- verbal presentation script writing, this really helped

What significant issues did we encounter and how did we resolve?

- our 3d printer really let us down
- we built a relationship with our local university to gain access to their equipment

What are our lessons learned?

- we need to use as much time as we can analysing our cad design. Our car was fast, but we wanted to win the fastest car award
- we should have had more team meetings especially as we progressed through the project milestones

Template Self & Peer Assessment

Self & peer assesment

PROJECT: F1 in Schools
TEAM NAME: Evolution
DATE: JANUARY 15

List your team's members, including yourself, in the space provided below. Then, rate every person on each behaviour listed. Use the following rating scale:

4 = Always 3 = Usually 2 = Sometimes 1 = Never

	Team Member Names (including your own)					
Behaviors						
Exhibited a positive attitude						
Treated other with respect						
Shared responsibilities						
Did work accurately & completely						
Communicated clearly & effectively						
Was organized						
Managed time wisely						

KEY TERMS

INITIATING PROCESS	
Acceptance criteria:	A set of conditions that is required to be met before deliverables are accepted.
Assumption:	A factor in the planning process that is considered to be true, real, or certain, without proof or demonstration.
Constraint:	A limiting factor that affects the execution of a project, program, portfolio, or process.
Deliverables:	Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.
Milestone:	A type of schedule that presents milestones with planned dates.
Project charter:	A document issued by the project initiator or sponsor that formally authorizes the existence of a project and provides the manager with the authority to apply organizational resources to project activities.
Project scope:	The work performed to deliver a product, service, or result with the specified features and functions.
Resource:	A team member or any physical item needed to complete the project.
Risk:	An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more of the project objectives.
Stakeholder register:	A project document including the identification, assessment, and classifications of project stakeholders.
Negative interest	A stakeholder with negative interest is typically one who is affected by the outcomes of a project. They either does not want that outcome to happen or will be negatively impacted by that outcome.
PLANNING PROCESS	
Milestone:	A significant point or event in a project, program, or portfolio.
Planning process:	Those processes required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.
Project schedule:	An output of a schedule model that presents linked activities with planned dates, durations, milestones, and resources.
Scope:	The sum of the products, services and results to be provided as a project.
Work Breakdown Structure (WBS):	A hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables.

EXECUTING / MONITORING / CONTROLLING	
Communications management:	A component of the project, program, or portfolio management plan that describes how, when, and by whom information about the project will be administered and disseminated
Executing process:	Those processes performed to complete the work defined in the project management plan to satisfy the project requirements.
Monitoring/controlling:	The processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.
Risk:	An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.
Scope creep:	The uncontrolled expansion to product or project scope without adjustments to time, cost, and resources.
CLOSING PROCESS	
Closing process:	The process(es) performed to formally complete or close a project, phase, or contract.
Lessons Learned:	The knowledge gained during a project which shows how project events were addressed or should be addressed in the future for the purpose of improving future performance.

FURTHER READING

For more resources and information about project management, head to the resources page of the f1 in Schools website:

F1INSCHOOLS.COM