Assignment 1

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Introduction

Managing a project without proper management methodologies is a recipe for disaster. Fortunately there are plans and methodologies one can use to ensure the success of a project.

P1 — Phases of a Project Lifecycle

Pictured left is a project lifecycle. This is an incremental approach whereby the project is implemented in stages, instead of processes going in parallel. This specific lifecycle is that of the PRINCE2 project management methodology, which will be covered in this section.

INITIATING

In this stage the project is evaluated and prepared. Meetings are held to decide the scope of the project, what it covers, and whether it is fundamentally feasible. This is a very important stage, and if the project is not correctly evaluated and initial documents are not prepared during this stage it could lead to failure later on.
For example if the fundamental idea of the project was flawed or unfeasible then the further development of the project would eventually halt, not before consuming valuable time and resources.

Risks of the project are assessed and estimates of financial gain are made during this phase. Once all the steps are completed a first document will be created, which details the basic ideas of the project and all estimates and projected risks, at a preliminary level, which can be built on in later documents which go into more detail and require more analysis.

PLANNING

This phase is where the project is planned. Whilst the previous stage only deals with basic initialisation of the project, this is where the project is fully prepared and planned, and budgets are prepared. These are concrete plans that define the structure of the project. Risks are also assessed and considered. Project deliverables are evaluated

A team will be assembled during this phase, and the work required will be broken down and divided into the departments and team members. This stage is also very important, as this where the concrete structure for the project is laid out and designed. Lots of care must be taken when undergoing this phase, as a small misstep in planning requires further changes during project execution which take time to implement, much more than simply error-checking the planning document.

This phase is where project planners do the most work. They must create a full project plan which can be used to fully implement the project. This document must contain all information about the project, alongside potential risks, the projects scope, and financial and budget information.

EXECUTION

This stage is where the project is actually implemented. All the planned movements and actions will be performed.
If the project is planned well this stage should go flawlessly, as long as any errors encountered are solved easily and according to the plans laid out in the previous stage.

This is dependent on whether the project plan was correctly designed and the risks were correctly evaluated. Unless an unexpected issue arises which could not have been planned for, in which case the issue must be swiftly dealt with and the solution implemented to allow the project to continue.

MONITORING

In this stage the role of the project managers is much more passive. The completed project is monitored to see how it performs, and what errors or discrepancies arise.

Action will be taken in the monitoring stage if the project is not doing as well as it should be. As it is monitored managers and project personnel will judge whether the project is going to plan and on time, and if not corrective actions will be taken to catch the project up with its original goals.

These factors can be things like:

- Cost of the project, and how much it has changed from the original budget
- Scope of the project, and whether the project has outgrown it
- Effort for implementation, whether the team has fallen behind

This is potentially the longest stage, as this is where the project is deployed and operated. This can be considered the trial period + operational period for the project, where the planning has all been undertaken and the project is underway.

Another factor is analysing how the changes will affect the project, i.e. will making changes to the project to try and improve it actually make it worse. This means that the project is still under management, as decisions must be analysed, especially as the project is currently underway and downtime for changes can be critical.

CLOSING

Closing a project happens when the project is fully implemented and it can be fully handed over to the client. A large and often overlooked stage of management, this involves closing all areas of development and maintenance so that the project staff can finalise all extra processes of the project.

Closing a project is not only about paperwork but also terminating contracts and dealing with assets. If spare development equipment is left over then the managers must decide whether to keep them as company assets or sell them off, often in bulk at an auction or sold to third party auction businesses.

One of the important things to do when closing a project is to create a document in closing. This is called a project closure report. It includes mistakes made, and how it is recommended to resolve the issues next time. This document can compare the original project plan to how the project eventually turned out. This includes the factors outlined before, scope, costs, time taken, and some new factors that can only now be evaluated, such as eventual product quality compared to predicted and how the project compares to its original business case.

P2 — Resource available to Project Managers

Many resources are available to the people managing a project, and they must be wisely used in order to correctly implement a project. Misusing resources can lead to exceeding budgets or time limits, something which may not be considered by a project plan.

This section will cover a some of the resources available to assist in managing a project:

- Information related resources
- Staff and human resources
- Facilities available
- Financial resources

When resources are not used a project can be put at risk, for seemingly no reason, as the resources are still available for use. If a project fails because of lack of resources when more were easily available the project manager should be investigated, and the failure documented as management error.

INFORMATION RESOURCES

These resources are gathered before a project begins, and also during planning. They assist in developing the project, and can often describe issues faced by previous project managers on previous projects which can be taken into account when reducing issues for the project.

Information resources can also include documents describing the area the project will be implemented in, such as maps and geological surveys of construction sites, which can be used when placing and constructing foundations to keep the buildings safer. In other projects such as software ones, these resources can be specifications for the hardware that the software will run on, and if for example the system is a produce management system, information about Point of Service locations and handheld scanners, along with a network map.

Information resources can also be gained from consulting services, in the form of advice and assistance for the project implementors and managers. This assists in development of the project on a wide spectrum, and is especially useful when undertaking a project not implemented before, or with little information available. These services can also be used when a new team is in place who are not very well trained in the field which the project covers.

HUMAN RESOURCES

This resource is included in every project. It comprises of the staff who work on a project, who must be managed by a human resources department. This department deals with staffing and rota, and complaints which may have been made by employees, against other members of staff, against working conditions, or against external factors like consulting agencies. If staff are not managed correctly then some may be working overtime while others are excessively taking breaks or not working at all.

In these situations management must intervene and evaluate who is responsible in HR (Human Resources) for this misstep and deal with them.
Work must be balanced between employees and assigned to those with the relevant position and experience, so that the project can be completed successfully without the internal struggles that have plagued many projects. Larger projects are especially susceptible to the issues on the macro scale, whereby large mismanagement causes

duplicate groups of staff to work on the same area of the project without knowing, hence wasting time.

Human resources are gained from hiring processes, both of individuals and of larger groups who supply workers and teams. Often work will be outsourced to other company's who can better deal with parts of a project rather than management trying to participate in areas which they are not well trained in.
For example when designing a Data centre, the construction work can be outsourced to a construction company who would build the site, which can then be furnished and equipped by either the original project team or another contractor.

FACILITIES

Facilities available at the start of a project can greatly reduce costs. Facility resources are things like buildings which the project can be planned in, construction sites where a building can be built, Data centres or computers available to a software company, and also things like tools and equipped workshops, or even construction tools.

Any facilities not available but deemed required by the project planning must be purchased. These facilities must be purchased as soon as possible, so that delivery and logistics does not hold up the project.

A decision must also be made on cost vs time tradeoff. Some facilities may cost more but allow work to be competed quickly, but some may cheap yet slow. In these cases management must evaluate whether they can afford to speed up development but lose money, or whether they must go with a financially conservative effort that delays the project.

FINANCIAL

Financial resources consist of money that can be spent, and investors and other financial assets available for the project. These can be gained after the initial phase, where a preliminary investigation can project the budget for the project. Pitches can be made when getting funding using the budgets projected in the analysis.

Usually a specific financial department deals with these resources, and must be careful not to overstep the budgets.
This resource also must be balanced with facilities, as managers must choose whether to pick high cost but slow implementation time, or vice versa.

P3 — Issues that can affect project management

When implementing a project a project manager faces many issues. These must be correctly resolved in order for the project to be started and subsequently completed. These vary in their nature, although they must all be equally considered and dealt with. They can threaten the project at various times during development, unless correctly prepared for.

ETHICAL ISSUES

These issues can be hard to define. They comprise of issues that are generally considered to be unethical, however the term itself is subjective and can be interpreted differently depending on the context.
For these reasons it is important that ethical issues are always evaluated with a 'pessimistic' approach, that is, one should always attempt to resolve an ethically based issue regardless of how minor it seems. If possible all ethical issues should be verified with

an external party who is authorised to confirm or deny the severity of an ethical issue. These are often government bodies or worker Unions.

Ethical issues can include:
- Underpaid Workers or poor working conditions.
- Destruction of natural habitats.
- Ignoring Health and safety standards, putting both workers and users of completed project at risk.
- Unfair bias or picking favourites.

All of these issues are the sign of a bad project manager. Neglecting workers by not observing correct health and safety standards demonstrates how little the project manager cares for their team, aside from the fact that workers will underperform if in a poor environment. Neglecting health and safety standards can also cause issues for the project when completed, especially if people must interact with the finished product.

Any project that involves destruction of nature must first be evaluated to ensure any wildlife can migrate away and is not endangered. External government bodies often ensure that such things are considered when projects are being planned.

Another ethical issue occurs when a project manager makes decisions unfairly, especially when they are based off relations with individuals or when the manager has a personal investment in certain choices over others. A project manager should make decisions based purely off the pros and cons of those decisions, and which is best for the project.

SUSTAINABILITY ISSUES

Projects must consider issues of sustainability when being planned. If a project involves large scale destruction of wildlife it is not merely an ethical issue but one of sustainability, as all projects should ensure that they do not negatively affect the area they are implemented in.

For projects involving construction this means not only environmental issues but those affecting people living nearby. Construction of buildings creates noise and traffic, disrupting people. Entire roads may need to be torn up in order to construct the building, which will disrupt local traffic and require new routes to be cleared to allow regular traffic to travel around. If the new building is a public service then it will affect nearby shops and businesses, which must be considered too.

Other types of project have sustainability issues to consider too. For example, manufacturing of a product involves using varying materials, even for mundane products. Often these materials are sourced in non-sustainable ways, or ones which harm the environment. As such it is important to ensure that manufacturers considered during the project planning phase are all certified to be environmentally friendly.

NOT HITTING DEADLINE

These issues arise in many projects, and are often overlooked when compared to other, seemingly more pressing, issues. However failing to deliver on time can mean the closure of a project.

In projects which are time critical progress must be very closely monitored so that action can be taken if it falls behind schedule. The same should be done in regular projects, but especially so when delivering on time is critical to the projects success.

If a project does not deliver on time, it must be further evaluated to get an estimate of how much more time the project will take to complete, and at what cost. New resources must then be allocated to the project, so that it continue development. The new cost may be significantly greater than previous estimates, especially if extra measures must be taken to compensate for the delayed projects late deployment.

PROJECT RISKS

When projects are planned some of the key factors to be considered are the risks that project will face, and how severely they will affect it. During the initial phase the major issues will be considered, and hopefully alleviated.
During the planning phase a full evaluation of the potential issues will be performed, and plans for how to deal with those risks well be either implemented at the time or put in place so that if those issues do arise they can be swiftly and efficiently dealt with, without causing the project any delay.

Although different projects can face risks with varying degrees of similarity, they will all share some common ones.

- Financial — Project running out of funding, this is a risk for investors as well, i.e. if the project fails then they will not get a return.
- Technology/Equipment — Vital equipment being used for the project failing.
- Staff — Unqualified or incompetent staff being assigned important roles that they are not trained for.

Most of these risks can be easily alleviated during planning, as long as a full planning document is made, and a proper risk analysis is performed. This in itself could be considered a risk, if project managers do not successfully evaluate all risks, which must too be considered.

RISK MITIGATION

Once risks are successfully identified they can be correctly stopped. Depending on the risks the mitigation process can be simple or complex. In all cases though it is much cheaper on both resources and time to asses and mitigate risks beforehand rather than ignoring them until the project is being implemented, or even deployed, and they come up.

Whilst mitigating different risks will require different action, the process is similar. One must first identify the causes for the risks, and which ones can be eliminated. These are then eliminated. Causes that cannot be eliminated must be further prepared for, by putting more safeguards in place against the risks they facilitate.

M1 — Failed Projects

Millennium Bridge

WHAT WAS THE PROJECT BRIEF?
To build a bridge crossing the River Thames.

HOW WAS THE PROJECT ORGANISED?
The project's construction was outsourced to civil engineering companies Monberg & Thorsen and Sir Robert McAlpine.

WHERE THERE ANY FAILURES IN THE PLANNING?
The bridge was not successfully analysed before construction, and had to be closed immediately after opening due to oscillations. This was caused by the movement of pedestrians on the bridge, something not anticipated.

HOW COULD THEY HAVE BEEN FIXED AT THE TIME?
If the bridge was correctly analysed during construction and more testing was undertaken then the subsequent shutdown and repair could have been avoided.

HOW DID THEY FIX IT?
By evaluating the issue and realising that the bridge lacked proper support, and wobbled when people walked on it.

AT WHAT COST?
The bridge was closed for two years the same day it was opened, and spent many years and financial resources being repaired.

F35 Fighter

WHAT WAS THE PROJECT BRIEF?
To create a new multi purpose strike force for the US military.

HOW WAS THE PROJECT ORGANISED?
The project was funded mostly by the United States, but also took funding from other countries partnered in the program. Several contractors were chosen to create a prototype, and in the end Lockheed Martin were chosen due to their advanced stage of development.

WHERE THERE ANY FAILURES IN THE PLANNING?
The project went massively over budget in both finance and time. When it was successfully completed it was so expensive that no one wanted to buy it when other alternatives were available.

HOW COULD THEY HAVE BEEN FIXED AT THE TIME?
If the project anticipated the costs then they could have budgeted better.

HOW DID THEY FIX IT?
The end price cannot be changed. While the project has succeeded technically it could be considered a financial failure as few countries want to invest in the f-35, apart from the creators, the US.

AT WHAT COST?
As this project was unfixable there was no cost to the resolution of the errors.

Apollo 13

WHAT WAS THE PROJECT BRIEF?
To fly the 3rd manned Apollo lunar landing mission.

HOW WAS THE PROJECT ORGANISED?
The project was organised by the US government's space administration, NASA, but the actual construction and design of the spacecraft was outsourced to contractors, who bid for the contracts.

WHERE THERE ANY FAILURES IN THE PLANNING?
The planning of the mission was sound, but for the design of the spacecraft. Mostly some design changes such as sheathing on wires, but also making the filters more modular so they could be exchanged.

During the flight an oxygen tank exploded and caused the cabin to be filled with toxic air.

HOW COULD THEY HAVE BEEN FIXED AT THE TIME?
Modularity of components could have been further stressed, meaning that repair of the

HOW DID THEY FIX IT?
The crew had to jury rig the co2 filters in order to return to earth in the toxic capsule.

An investigation was held after the flight, which found that the tank had to be redesigned.

AT WHAT COST?
The flight was changed and the astronauts couldn't land on the moon. They almost died during the flight. One Apollo mission cost billions of dollars, and foregoing the moon landing caused lots of activities to be pushed onto the next mission, whose own had to be pushed forward and so on.