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Assignment 1

Unit 17

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# P1 – Phases of a project lifecycle

## Model 1

Define/Specify

Plan and Design

Complete and Review

Research

Employ

### Define/Specify

This is the first point in the project life cycle, and of course you need to find out what you actually *need* to do. This is the main opportunity you have to speak to the client. You need to be aware of their needs, wants, budget, time scale, and other important factors. If this information isn’t found out now then you may find the project nearing the end and the customer saying that what you have created isn’t what they wanted.

This is also the time where you write up a specification that is confirmed by the customer. This is there to ensure that you can look back at something to decide exactly what the customer asked for and see if you are doing it. It can also be used to present to a customer if they say that it wasn’t what they asked for. It is also a good idea for a copy of the specification to also be given to the customer, this insures their part in the brief as well.

This step may be repeated/cycle restarted at any point during the project. For example, if the customer decides that he want his bridge to be blue rather than green now, that should be put into the specification so that you and your customer has a copy of what the job is that needs to be done.

### Plan and Design

At this point in the process you should have an exact outline of what the customer wants you to do. This should be in the form of a specification but carried forward with the understanding of the meeting that you had.

You should now start writing up rough ideas for the project that you can advance into more precise understanding of the result which will result in you creating an exact plan of the end product. This should then be referred back to the specification you made in the previous step to see whether it is what the user wanted you to do. If this is not the case then it is vital that you make it so it is.

If you find yourself in the situation of not seeing a feasible way of creating this product in guidelines of the specification then it is necessary to go back to step 1 and describe to the customer what you are finding so hard. It may be that the customer has overestimated how much he desired one feature and the project can continue. It is now vital that you update the specification to the new requirements.

### Research

Now you should have a relatively good idea of what needs to be created and how you are going to do it. You now need to proceed by looking into costs, shipping, any regulations you need to abide by etc. This means that you fully understand any problems that you may run into. This is also a prime opportunity to go back to the customer and ask any further questions needed.

It may be necessary to return to the previous step and edit some of the plans to fit in with your new discoveries. Again it may also be required to go back to step one to reproduce a specification which can include all of your new findings. It may be a good idea to repeat this step a few times.

### Employ

This is the point of actually putting all of your ideas into practise. You have a plan of what the customer wants, you know how you are going to do it, you know all of the problems you may face and now you are ready to put the plan into action.

If all of the previous steps have been done to proper extent then this step should run flawlessly, however, there is always unknowns and pressure from the customer may have resulted in the steps being rushed/skipped all together.

If any faults are found in the plans then it is very important to return to step 1, negotiate with the customer, and try to sort something out that will work for both parties. It is important to remember that this must be done with haste, this will prevent having staff being paid for doing nothing and roads being closed while no work is going on.

**It is vital that this step is as quickly as possible as it is the most costly!**

### Complete and Review

This is a step that (unlike the one above) needs to be done as much as possible. This is the part where you look back at the project that you have just done, and say to yourself “What went wrong?” If you reply with something along the line of nothing, then you need to look a little deeper. There will always be something that went wrong whether that be your specification was written in a hard to read font or a vital part of your project was delivered 12 weeks late.

Once faults have been found then you need to make a plan of how not to run into them again or even how to fix them. This may be for the current project that you are working on or as a companywide thing. This must be done to the highest standard and checked thoroughly as faults are very costly to all projects, and you now have a point to possibly remove one forever. If this is not taken then it could cost you later down the line.

### Define/Specify

We are now back at step one. You have competed a project now and need to make some changes. You need to implement what you have learned what/what not to do so that mistakes are not made again. It may be that you have mistakes on the current project. This means that you may need to rethink the way you are going to tackle the project or just need to make a minor change. Either way you need to make sure that you complete each step as thoroughly as can so that no more errors occur.

## Prince2

### Initiating

The initiation stage starts with the client putting forward the project that they want you to complete. It is vital to start to think about some of the possible risks of the task and how you will take action to mitigate risks. You will then evaluate this for feasibility before creating a meeting with the client or a representative. The meeting should discuss the scope/boundaries, deliverables and potential ways of completing the project. It should also bring up the risks you evaluated beforehand and possible faults with the project.

The whole point of this meeting is to try to create a compromise between what the customer wants, and what your team is willing to do. It is also to get a better understanding of the brief to start planning it. Minutes should be taken from the meeting to ensure full understanding of the criteria is known.

After coming out of the meeting documentation needs to be created. This is made using the Minutes from the aforementioned meeting. The documentation you need to create is the project brief, any supporting documentation for that (e.g. previous project reports/current client situation) and a detailed project specification (a.k.a. timeline).

The brief needs to detail the deliverables of the task so that the goal is clear to all. It also needs to include the scope so that you do not create something that is not needed for the task. It may be an idea to include references to the specification and/or supporting documentation in the brief.

The supporting documentation can include a wide range of information from contact addresses to past projects or other companies’ quotes. The whole point of these documents is to give readers a better overall understanding of the project.

The timeline needs to detail exactly how long the planners feel each section of the project should take (i.e. planning stage, building stage etc.). This will later be given to team leaders to both add in exactly what activities need to take place to complete tasks as well as survey whether the time period given is appropriate. The point of this document is to add in milestones that the project must meet. These can have varying degrees of severity. Milestones could include: builders arriving, final deadline etc. It may be required to make a more detailed beginning to the project so that all workers know what work to start with.

### Planning

The first thing to do is create a budget. This needs to go from the very start to the very end of the project. It should use details from the project specification. The total budget for the project should have been discussed in the feasibility section of the initial meeting. It may be necessary to return to the client if you find that the project is going to cost more than you expected. It is important to do it at this stage rather than further along the line. The client is much more likely to be up for compromises in the planning stage rather than when the project is half way done.

You should have a look at what assets you have to your disposal (e.g. staff, labourers, equipment etc.). These should then be divided up into sub-teams/competencies. Leaders of these teams should then start to expand upon the specification done by the project planners. It should this time include your own team’s milestones and individual tasks that need to be completed to achieve the overall goal (i.e. get ready to present first plan). As soon as the plan has been created the whole team should be following it. Once you feel that the plan is complete get it cross referenced. This could be done by a higher/equal authority on the project. This insures no risks were overlooked.

It may also be necessary to create a more detailed brief for your sub-team. This could be both to prevent flooding the team with information that isn’t relevant to them and to add extra information that you feel is relevant to your part of the project. You need to make sure that your team only needs to use one brief otherwise it may become confusing. This means that if you are creating a brief it needs to include all of the information from the main brief in good enough quality so that the team doesn’t need to use it anymore.

### Execution

This is the point where you put all of the planning into practise. You need to follow the brief to the letter and make sure that you follow the specifications. The documentation should guide you through the entire project and no other research should be carried out during the execution stage.

The risks section in the brief should be concentrated on in this stage. You need to have decided by this point which risks you are going to mitigate. You need to make sure that you effectively mitigate these risks so that they don’t occur. If it comes to the stage that you knew about the risk but decided not to deal with it is a lot worse than if you didn’t know about it.

It is very important to try to make this stage as quick as possible. This is because it is the point in the project that will have the most milestones. This will include things such as workers arriving, machinery deadline etc. This will be very costly if you need to keep these longer than is needed.

### Monitoring

Unlike the other stages this one can/should start during the previous one. This stage should evaluate how well the project is going/went. You need to evaluate whether the project is on task, whether the project is going well and whether it is to the client needs. If you find that one of these is not as expected then you can take action to fix it. This is why it’s suggested to start the monitoring stage during the previous stage.

Another factor to look at during the project is the budget. It is one of the most important things to a client and the one that is most at risk. You need to be vigilant with the project to see if it is going to go over budget, how you can try to stop it. It is also important to look at your other biggest limit; time. If the project misses the deadline then the client won’t be happy. The team will be rushed and complete work to a substandard level. This may result in financial penalties.

You also at this time need to re-evaluate the scope and boundaries of the project. You need to think about what the project actually needs to be usable and how much time and money each part is going to take. This is a great opportunity to try and cut back if over budget E.G. You can have the realisation that you don’t need so many diggers to dig a pointless hole, sell some, and regain some of your budget. The same applies to time.

### Closing

Once a project is finished is important to properly close it. This means first and foremost replying to and closing email streams. This can be done by submitting the closing report detailed below. It can then be followed by re-direction (i.e. any information needed can be found by contacting <inquires email address>).

On closing a project it is also very important to deal with all of the company assets. This means that if workers are no needed anymore, their path is redirected or they are dismissed. Any extra equipment is either moved into storage or are sold for profits to the company.

It is vital that you create a closure report. This should detail the comparison between the initial project brief and reasons for any variants. This clearly places down reasoning for all failures, mistakes and gains in the project. This is very important from a law side of view as if the client makes any claims about the project you have all of the necessary documentation to support yourself. As detailed above, this report should be sent to all personnel involved with the project. You should also try to gain receipt of acknowledgement from each.

# P2 – Resources available to a project manager.

## Introduction

In this section I am going to take a look into the resource available to a project manager during any task/project. I am going to look at:

* Finance
* Labour
* Client/Stakeholder and Information
* Materials
* Facilities

As well as explaining what each point is, I will also explain the correct implementation of each of these.

## Finance

Finance is a very important resource in any project. It enables you to unlock all of the other resources above. As it is so important it is vital to create a budget plan. This is because it is very easy to go over budget. This must be very strict, therefore, you need to know exactly how you are going to go about the project before you do it.

This budget should be created in the plan and design stage of the project. This means that you may be required to go back to the client and cross check with them whether it is what they want.

To correctly implement the finance resource you need to decide what your preferences are. This means that when you plan how you are going to do the project, you need to decide what is important to you. If your preference is to buy a lot of the materials and get low skilled workers to assemble them, it means that within your budget you need to reflect that.

## Labour

Labour is another vital part of a project. Without a workforce you will just have a lot of materials, wasted money and an angry client. It is very common to hire labourers only for specific jobs you need them for. This means that they are very expensive, therefore, you need to be as accurate as you can with how many you hire.

The first thing you need to do is decide how skilled your workers need to be. Bear in mind that the more skill they have, the more expensive they are going to be, but the more productive they are and so less need to be hired. Then during the planning process you need to decide how many people you need doing each task. This needs to be a realistic figure. If you massively overestimate how many then you will be paying workers lots of money to do absolutely nothing.

Once this is done you can take an accurate plan of how many workers are needed for when. It is a good idea to get this done as soon as possible as the workers will be cheaper if you give them lots of warning. It is also a good plan to add a buffer of a few workers so that if some mistakes were made or someone is off sick, then you still have enough people to get the job done at a reasonable rate.

## Client/Stakeholder and Information

The client is eventually the person you are trying to impress. This means that you should try to befriend them as much as possible. You are also going to get all information from the client which you must remember and note down. This should be referred back to similar to a budget. This should be presented as an end goal that you are trying to achieve. This way you can see exactly how close to the initial brief.

The client should be used very wisely. Although you are trying to get as much information and input from them as possible, they are paying you to do the project. This means they don’t want you to ask them about every piece of information to check whether it is how they want it. Visits to the client should be kept to a minimum!

The information you get from the client is obviously very important, however, it can go out of date. This means that if on the first time you go to see the client and he says he wants his bridge to be blue, and then changes his mind to red, he may not have remembered to tell you. This means that you need to always ask for updated briefs but again following the rules above.

## Materials

The materials are the things that you are actually going to build the project out of. You need to order these things early and plan it so that they are actually there for when you need them. To do this you need to refer back to your plan of the project that you made at the beginning of the project.

The materials that you order must be high enough quality. There is no point ordering a piece of cardboard to hold up your building as it simply isn’t strong enough. At the same time you don’t want to spend more money than you should on materials as this could result in the project going over budget.

Another factor is how you are going to buy the materials. What I mean by this is if you are building a new house, do you buy loads of bricks and mortar or a prefabricated kit. The kit will be more expensive but it will take less skill.

## Facilities

Another thing to think about is the use of facilities that you have. You also need to be aware of your priorities when placing things into your facilities. This means that if you have a load of stainless steel (can’t be made to rust) sitting in a warehouse and cardboard sitting out in the rain.

Another facility is the equipment you need to complete the project effectively. Like materials these need to be ordered ahead of time and to the right quality. If you need to dig a 100m deep hole, with shovels, it isn’t going to make your labourers very effective. If you order a digger however, you will only need 1 worker to do the same job. This should be reflected in your plan.

# P3 – Issues a project faces

## Introduction

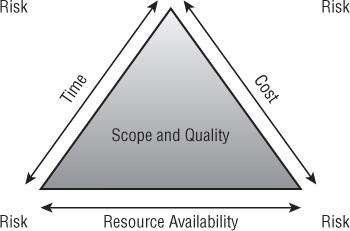
I am going to explain the following issues:

* Ethical
* Sustainable
* Failure

I am then also going to explain risks and how to mitigate them. I am also going to go through the decision making of whether you should mitigate the risks.

## Things that affect project management

A way to sum up the factors that affect project management can be summed up by scope. These are time, budget and people/resources. There is a common use of a triangle when it comes to these three points. The idea is that you require two but the third one is helpful, anything away from this brings risk. I will go into more detail about how each can affect a project below.



### Time

If a project isn’t given enough time it is inevitably doomed. If you do not give a project enough time then it won’t be able to fully develop and be tested. The only way to combat this failure is by spreading the work thinly enough (so that all of the work can be done), or by paying enough for higher paid workers and better tools to complete this work in time. Failure to do this will result in failure.

### Budget

If the project isn’t given enough money then there is very little likelihood that it will be successful. This is because you will not have enough money to hire high skilled workers over a period of time. The only way that this will work is if you hire very low skilled, low paid workers for a very long period of time. They will have to learn on the job and the output will not be very high quality but it does avoid risk of failure.

### Resources

Lack of resources is a big issue. In the scenario of a building site, they could have time and workers but no materials. This would result in minimal work being done and it would cost a lot. In the IT industry this situation is a little easier to solve. Workers could develop their own software (e.g. logos development software etc.) however it would take a long time, therefore, cost a lot of money. Doing this will avoid the failure of the task.

## Ethical Issues

Some ethical issues that you may face are going to mainly be from people’s opinions. This should be taken very wisely as you definitely don’t want to offend people. Some examples of ethical issues are:

* Poor working conditions
* Under paying workers
* Favouritism
* Health and Safety issues
* Business misconduct

When a claim is put forwards you must take it seriously and get to know the full extent of the issue before it gets out of hand. Once you know what people suspect has happened you need to investigate into the issue to find out if the claims are legitimate. Once you have found out you need to take action accordingly. You should make an open statement detailing the issues faced, and how you have resolved them.

## Sustainable Issues

Sustainable issues are more to do with the project itself. If the project is suspected to fail then it is a failed design. These complaints are more likely to come from people within the project and clients rather than an external focus. Some sustainable issues may include:

* Use of low quality materials
* Neglect of project
* Natural preservation

A factor that may be disputed from an external body would be natural preservation. This could occur if the project that you are doing is thought to effect life in some way. This may be building near to a natural habitat or removing nature to head forward with a project. A similar strategy should be taken as detailed above.

## Consequences of failure

Failure is a big issue for a project. In fact if you do reach this situation, you have **failed.** Obviously lots of complaints will come in if you do reach this point. It may be that the project that you are doing is to bring relief in some way. This will mean that time pressure is a lot bigger. Anything with a tight deadline will have massive implementations if it is failed.

An example of this is the London 2012 Olympics. If the stadium failed and could not be completed until 2013, it would mean the UK would not be able to hold the Olympics. This would have massive cost implications for the client (the UK) and will have social/business implications such as looking unorganised. This will mean that there are a lot of long term effects for the business such as no repeating/new customers.

## Risks

Risks are things that contribute to failures in the tasks. It is important to identify these earl and order them by likelihood to happen, effect on project if they do happen and effect on project if they don’t happen. This will allow you to correctly identify the worst risks to take onto the mitigation stage.

Typical IT risks include:

* Hardware/Software quality (reliability)
* Availability of skilled staff
* Integration of different technology

Risks to the project can come from anywhere. This means that it may be very difficult to see risks coming. This means that some risks may be fatal to the project and you had very little time to deal with it. His is why when you find a risk you evaluate and deal with it swiftly.

## Risk Mitigation

Risk mitigation is the biggest tool to try and avoid these risks but it can be very costly. An example of risk mitigation is to avoid sustainability issues you use very high quality materials. This will cost a lot of money but sustainability issues are no longer a threat. You need to think wisely whether it is worth trying to avoid these risks. If you mitigate a low threat risk it may be that higher threat ones are left to develop.

When deciding if you should try to avoid the risk you need to consider these 3 things:

* How likely is the risk
* How much will it cost to try and avoid
* How likely is the risk after it has be mitigated

If you decide that the risk is very likely, it is cheap to avoid, and is very unlikely to occur after then you have a perfect scenario. This is obviously not always the case. You need to decide within the business how important each of the factors is to you.

# M1 – Previous failed projects

## Millennium Bridge

Main cause of failure

The main cause of failure was the oversight of the swaying factor of the bridge. This then forced people to walk in a way that assisted the swinging. They may have seen in testing that there was a risk of swaying but they didn’t think what effect that would have on the people and again the bridge.

What was the brief?

To build a good looking bridge that went from one side of the river to the other.

How was the project organised?

It was outsourced to civil service companies called Monberg & Thorsen and Sir Robert McApline

Were there any failures in the planning? Detail them.

The power of the people walking across the bridge. Due to this the bridge swayed a lot and so the bridge had to be closed.

How could they have been fixed at the time?

By realising that the bridge swaying was caused by increased oscillations and adding extra structural supports

How did they eventually fix it and at what cost?

Added more support to the bridge. The bridge was closed for 2 years and it gained a bad reputation.

## Apollo 13

Main cause of failure

Apollo 13 was a very unlucky circumstance. The only fault they made was not making the filters modular. This meant that the crew had to make their own filters. If this failed then they could be at risk of poisoning. The first fault of Apollo was that the oxygen tank exploded. This was seen as a risk but had a very slim chance of happening.

What was the brief?

To take people to the moon.

How was the project organised?

It was run by NASA and was funded by the US government. Construction was outsourced to contractors but management was done NASA.

Were there any failures in the planning? Detail them.

An oxygen tank exploded and had to abort the mission.

How could they have been fixed at the time?

Return back to earth and repair filters while in space to preserve the lives of the passengers.

How did they eventually fix it and at what cost?

After returning to earth another mission was launched. It was Apollo 14 and was launched 1 year later. The cost was the price of the space ship and not being able to do experiments on the moon.

## F35

Main cause of failure

The main cause of failure was the amount of time it took to get to market. What happened with the F35 was they took a long time to develop it in the first place (presumably to make it a high quality). When they then tried to release it they realised that the market had moved on and that it was outdated. To try to combat this they redeveloped the plane and brought it to market again. They realised the same thing had happened but they had to release it. Due to the development costs it was very expensive. This resulted in them releasing an outdated fighter that wasn’t very popular.

The main cause was lack of planning for the future. They tried to build a fighter to compete with the market they were in. This meant that they were left behind. They should have tried to make a plane for the future with new technology. This would mean that they would lead the market and be very popular.

What was the brief?

Create a new multipurpose fighter for the US military.

How was the project organised?

The project was funded by the US but was also funded by partners. The project was outsourced to contractors and Lockheed Martin was chosen to undertake the task.

Were there any failures in the planning? Detail them.

They underestimated how long it would take to make and how the market would progress.

How could they have been fixed at the time?

Try not to do so much with one project and plan how the market would change.

How did they eventually fix it and at what cost?

They finally made the plane however it is a lot more expensive than the rest of the planes on the market and it’s starting to become outdated.

## Common traits of failures

In the following sections I will explain common flaws that resulted in the failure of the tasks above.

### Not planning for what it was going to be used for

A common error I found was the overlooking of applications of the project. This was seen in both the Millennium Bridge and the F35. In the bridge project the planners didn’t think about what would happen to the people on the bridge if it started to sway a little. This then resulted in the problem being massively exaggerated to a level that they didn’t expect. In the F35 the planners thought about the plane purely from a business and market point of view rather than what the customers will need. This resulted in the jet being outdated and then overpriced.

The planners should have set out what they need to achieve what they need to achieve in the project clearly before they started to plan it. This is usually done from the minutes of the meeting with the client, however, due to the fact that there was no client maybe this meeting didn’t take place. One reason that the planning may have been faulty is if it was rushed (the project was given a very short deadline). This refers back to the scope triangle shown above. The project wasn’t given enough time so the planning was rushed, overlooking some fatal errors.

### Not planning for when it fails

Another common error found in these tasks was not planning for when the project/product fails. This was seen in all three of the projects above.

In the Apollo mission they didn’t look at weak points of the craft. This resulted in the air tanks exploding and damaging the filters. They also didn’t make the filters modular meaning it was a lot more difficult for the astronauts to replace/fix them. This resulted in the astronauts being put in a lot of danger and the mission having to be abandoned.

On the Millennium Bridge project they planned for an error of the bridge swaying slightly but they didn’t look at what effect that would have on the people on the bridge. This oversight caused the bridge to be left able to swing, forcing people into a walking pattern that assisted to the sway of the bridge. This put the bridge into an ever-increasing swing forcing them to close the bridge due to it being unsafe for use. This pushed the bridge opening back by over a year, damaging public relations, also the very important factor of the look of the bridge (due to the methods used to fix the error).

The F35 was supposed to be a quick project. Due to the planners under estimating how long the development stage would take, when the plane was released it was outdated. They then re-entered the development stage (their second mistake) and remade the plane for a more modern market. When the plane was ready for release it was very costly to the company and therefore a lot more expensive than anything similar on the market. Due to the time in production a lot of other companies took what they were trying to do and built a better, cheaper plane, removing the space for the F35 on the market. This ruined any chance of sales, making the project a complete failure.

The Apollo mission failed to plan the event of an incident happening. The main evidence for this is the air filters and the fact that they are not modular. This would have been acknowledged as an option (due to the fact that a lot of the rest of the ship was modular) however they decided not to take this forwards, perhaps due to cost. Due to this decision, when failure hit the craft it made it very difficult to repair. This put them in a lot of danger as for a long period of time they didn’t have clean, safe air.

These errors could have all been fixed by using risk mitigation and going further off of that. In all of the projects the planners would have seen the errors but may have decided not to mitigate them due to calculations that they would have made at the time. They should then have created plans if for if any of the risks happen.

This could then be reviewed with a long period of time and with very little pressure. Leaving these decisions to be made when the error occurs removes the time resource from the scope triangle. This means that the project (now the decision making to fix the error) puts it at risk and may lead to the wrong decision being made.