

## T5 - Project Management

T-CEN-500

### IRON MAN

Project management in the context of building an Iron Man Suit





# IRON MAN

delivery method: CEN\_ironman\_\$ACADEMICYEAR  
language: English

The aim of this project is to show that you can handle a project which is aimed at printing and building a 3D Iron Man suit.



The purpose of this module is pretty specific, you **are not going to build the actual suit**, your job is to manage the project. Nevertheless, all the aspects of the project need to be taken into account.

## WHAT'S YOUR MISSION?

### + CONTEXT

Epitech is looking for ideas to highlight the work that can be done inside the Hub with a 3D printer. Epitech has thus tasked various groups of students with the creation of an Iron Man suit, in order to be able to showcase it on the various events in which Epitech takes part (Salon de l'Etudiant, JPO, etc)

Ironman:

-> We're the Avengers...how do we cope with something like that?

Captain America:

-> Together.

Words of inspiration can come from a variety of sources: even the movie franchise that occupies the fourth and sixth top-grossing spots of all time.

The Avengers, a.k.a. Earth's mightiest heroes, had some very useful words of advice in their most recent blockbuster movie Avengers: Age of Ultron that **can be flawlessly applied to effective project management techniques**. As a disparate group of extraordinary individuals, teamwork might not come naturally to all of them but their effectiveness as a team is undeniable. Here's what they can teach the rest of us about change management.



The movie Avengers: Age of Ultron is an epic if you look at it from the view of a project manager. While it might come as a surprise to many, but the plot of the movie has all the ingredients of 'a good project gone bad' recipe.



## + CONSTRUCTION PROJECT

As part of this project, you will have to develop an Iron Man suit with several parts, more or less independent, which rely on different technologies.

You will have to hold a **brainstorming session** with the rest of your project team, which will let you list all the elements you need to take into account for the construction of the Iron Man suit. The specifications are as follows:

- A *3D printed articulated suit* that mimics the actual armor
- A *robotized part* that will show the electronics capabilities of the Hub (which part is robotized is up to you)
- The possibility for non-tech people to showcase it to the public
- The possibility to have it shipped safely wherever needed in France

Be informed of the following resources that have already been awarded to the project (for the construction steps), but that you will need to confirm:

- 1 person working full time on the project for 6 months (fixed term contract, period not identified yet)
- 2 tek3 students doing their part time job period (november to february)
- 1 tek5 students doing his/her internship for 1 semester (march to july)

Your team is in charge of having the project completed on time and with a satisfying level of quality. You're in charge of :

- Scheduling the different steps
- Managing tasks completion
- Allotting resources
- Present a budget proposition
- Guarantee risk containment
- Identifying relevant skills and profiles
- Reporting and communicating about the project

## + GLOBAL PROJECT MANAGEMENT

You probably already have some standards about project management, this is great practice. Here we insist on a 2 folded project with some sort of recursivity in it:

- Managing or, more specifically, scheduling and staffing the construction project (this project will imaginarily take place outside of the T-CEN-500 time period)
- Managing your work as a team for the set up of the construction project (this part of the project is totally included in the T-CEN-500 time period)

Recursivity is a keyword here because you are asked to take the time to adapt your hand-ins any time it is relevant, so you'll need to regularly ammend the versions your documents.

If at some point of the project, you spot something you forgot to take into account, and since the construction phase has not started yet, you'll have to add it to your previous plan, budget etc...



This is why you will have to select a project management tool that will let you do just that. The expected format, in any case, is a **Gantt chart**.



You may want to make sure that you don't mistake a Gantt chart for a mere timeline. In which case, you'd probably better go find out more about it!

## GANTT CHART

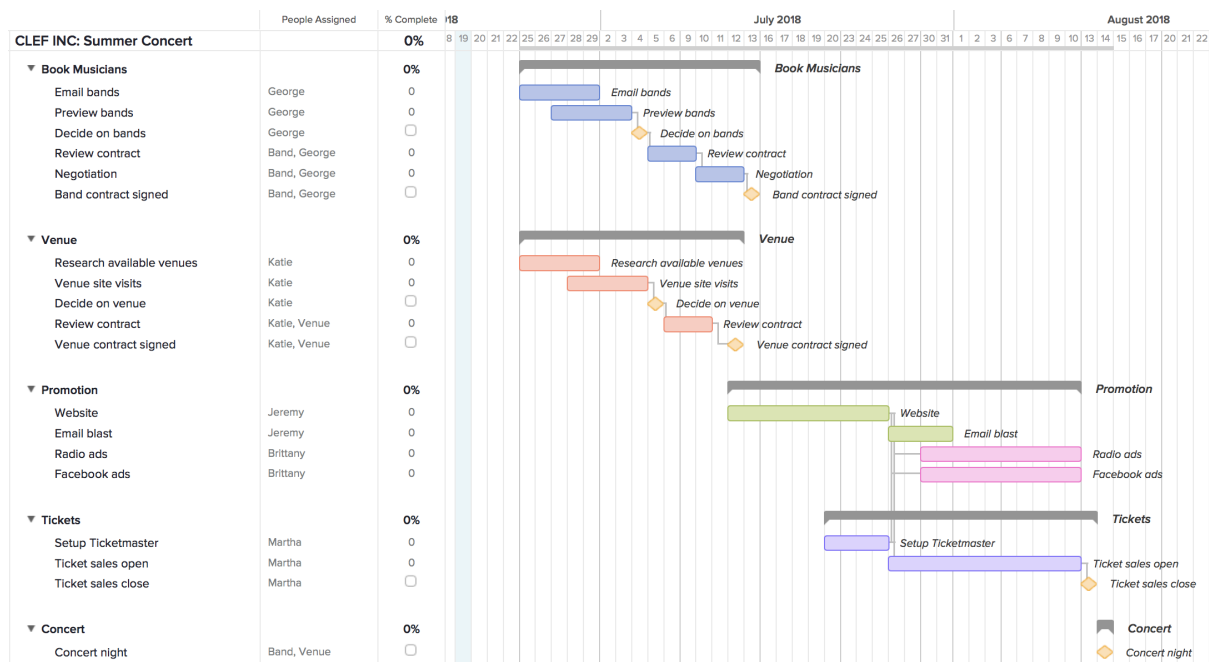
In the corporate world, people like when things can be foreseen, even if they know way too well that it is not enough to guarantee that things will happen this way.

If not more, a Gantt chart lets the company with a mile to follow, in order to set things up for budget, resources, workers, pitfalls.

### + WHAT YOU ARE EXPECTED TO HAND IN ON THIS TASK

We ask you to identify all the steps that are relevant the construction project and to create a Gantt chart with them. Your first version is expected to reflect this brainstorming explicitly and the unfolding you readily suggest. Of course, this version will need to be ammended in the course of the 4 weeks to come.

Document name: `groupname_gantt`





## **IDENTIFY THE SKILLS NEEDED ON THE CONSTRUCTION PROJECT**

Proper resource management is critical skill for project management. Who do you need for the job, and how will they best contribute? Whether you're assembling a new team or utilizing an existing one, your team will need differing skills and mind sets.

*I adore you. But I need the other guy*

*Black Widow,*

### **+ WHAT IS IT THAT YOU NEED?**

Once you have brainstormed the steps you'll have to go through, it is high time you got down to business. Which skills are needed in order to complete the construction project? Take the time to closely consider all the aspects of each task and to sort them in categories, to the fullest.

### **+ WHAT YOU ARE EXPECTED TO HAND IN ON THIS TASK**

Now that you have a list of skills and knowledge to browse through, you are able to write down the profiles you will be looking for. This is called a **persona** : it will be useful when you will start the recruitment process, in order to make sure that all the skill needs are covered. Read again this document if you don't remember how many people your project was granted, on top of you guys who just manage the project. You are expected to hand in 1 unique pdf file with one persona per page.

Document name: groupname\_skills



Reading carefully the last paragraph may already bring to your attention a step that you potentially forgot to take into account. Remember to update your Gantt chart if need be



## IDENTIFY THE RESOURCES YOU NEED ON THE CONSTRUCTION PROJECT



SPOILER! When it comes to technology, Tony Stark is the man everyone looks up to. And, J.A.R.V.I.S.S. and his peace keeping army of robots is a clear reflection why he is called as the King of Automation. He has managed to identify the areas where technology can assist humans and could be used to benefit the world. Similar is the case with being a project manager. You need to be able to identify project management software and other tools that suit the best for the team; something that would help the team make the most of their skillset. However, be sure to not over rely on it, otherwise your project might become an example of terrible automation, just like it happened in case of Ultron (which was also created by Tony).

### + WHICH RESOURCES ARE NECESSARY FOR THE CONSTRUCTION PROJECT?

Now that you know who you need to hire, brainstorm and write down the blueprints, materials, devices, technologies, trainings, meetings... Remember that the Hub has been burglarized last week, so you're starting from scratch.

### + WHAT ARE YOU EXPECTED TO HAND IN ON THIS TASK

Hand in an Excel table listing the material needs (and quantity when necessary). Remember to ammend the Gantt chart with the info related to resources.

Document name: groupname\_resources

## BUDGET PROPOSITION

Now you have the set of skills (and relevant profiles to be hired), and also the list of things you'll need to purchase. It's time for your team to prepare a budget proposition. Find out the various prices on the net, create categories of budget.

### + WHAT ARE YOU EXPECTED TO HAND IN ON THIS TASK

You are expected to hand in an exhanced version of the list of resources you handed in the previous exercise. Remember to ammend your Gantt with the deadlines for material purchase.

Document name: groupname\_budget

## RISK MANAGEMENT

You can improve your project in many ways, but one thing you cannot control: unforeseen events. Take the time to identify what major risks threaten the success of the project, and how to tackle them.

### + WHAT ARE YOU EXPECTED TO HAND IN ON THIS TASK

Write down 3 major threats your team identified and a possible solution for each (if money is involved, do ammend your budget proposition, if time is involved, do ammend your Gantt chart, if skills and materials are invloved, do ammend whatever is needed).

Document name: groupname\_risks



SPOILER! Sometimes even negative characters can teach you something positive. And, the example of Ultron fits perfectly in this equation. Ultron could have easily continued to exist even after successful defending of the city by the Avengers; only if he had left one drone to sit out the fight. Or in other words, if he had simply spent a little time in risk management. The same theory holds true with projects as well. Even the best planned projects can have multiple points of failure if you do not assess the risks rigorously. And, this is the reason it becomes important to be iterative and have a backup plan.

## COMMUNICATION

Communication is a milestone in each and every project. You definitely need to master it if you want to successfully manage a project. The interlocutors are varied, but we'll focus on 3 of them : someone from the inside, someone from the outside and someone from above.



Tony Stark experimented with Loki's staff, even though he knew it was not a good idea in the first place. Tony did not tell anybody besides Bruce Banner, because he was scared of their disapproval. And, when the ultron attacks amidst the revelries, the entire Avengers team is shell-shocked. However, if Tony had told them about the experiments and their consequences, they would have been prepared for the adversities (or maybe would not have even let those adversities arise). Compare this to the projects you undertake at office, everyone can make mistakes in them, even you can. But, the most important thing is to not hide them, rather share them with the team so that they can prepare for the worst and iterate accordingly.





## + WHAT ARE YOU EXPECTED TO HAND IN ON THIS TASK

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Hand in 3 pieces of communication (email, letters, brochures, requests, info videos... as you like) directed to:

- \* The members of your team in order to present the various aspects of the projects and how you're going to handle them, basically explaining your management methods.
- \* A member of Epitech, to inform him/her of the budget request you are asking, explaining why you need this ridiculously high amount of money.
- \* An executive on a big event where you would like to showcase your Iron Man suit for the first time, asking for partnership on the project.

Documents names: groupname\_communication1, groupname\_communication2,...

Remember to amend your Gantt chart with these tasks!

## DELIVERY

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The delivery consists in a **review** of your documents with your academic tutor, as a group, where you'll have to explain the pitfalls you encountered and how you managed them.