**ELEC352 - Task 3 - Part A**

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| **Group number: Group 28** | |
| **PM: Shiyan Wang** | **Secretary: Zekun Li** |

1. As a team brainstorm the possible risks and who they will affect. In the answer box below bullet point the **stakeholders involved** in your project.

The internal stakeholders could be divided into three groups [1]:

* The first group are leaders in this project. In this project, the **project manager** is the main leader, whose decisions will have a profound impact on the progress of the project including the time and cost. There will be occasions when the project manager will have to decide between his interests and the overall interest of the team. It will involve the distribution of salary in this project and the project manager will have different options to decide. He could take more for himself or share it equally with his team members. In addition, **Dr Kai Hoettges** is also the leader in the sub-project Organic Material Testing, and the members participating in this project will be guided by him. Dr Kai also needs to decide between his interest and the interest of the overall team. For example, he could pay more time on this project, but it will affect his project schedule or rest time.
* The second group is the members of the project. The **students participating in this project** are a significant part of this project, whose competence could directly affect and determine the outcomes and results. In the meantime, students are also affected by the project activities. If the project is successful, the project could enrich their CV and bring them more opportunities. On the other hand, if it is unsuccessful, it will waste some rest time. Thus, the students could also be regarded as stakeholders.
* The third group is the person who has direct help to the group members. This is a unique group because they do not have much interest in the information and contents of the project but the members. The **professors who train students** will teach the students some basic information about each sub-project and safety knowledge. The progress or results of the program is not important to them and does not affect their interests greatly. However, they will influence the project, if they do not complete the training mission. In addition, the **families and friends of the members** will support and help the members of this team, although they are not interested in the program. In other words, they are phantom stakeholders, which is a group influenced by the project but do not formally consider stakeholders. Our group classifies this category under internal stakeholders.

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| **Internal stakeholders:** | **Level and Evaluation:** |
| 1. Students participating in the project | Manage closely |
| 1. Project manager | Manage closely |
| 1. Dr Kai Hoettges | Manage closely |
| 1. Professors who train students | Monitor |
| 1. Families and friends of the members of this project (phantom stakeholders) | Monitor |

There are five different parts to external stakeholders [1]:

* The first group is the suppliers, who will provide some project essentials. For example, the **components suppliers**, may not be interested in the contents of the program but could affect the project by delaying the delivery date or being out of stock. In those two situations, the project schedule will be disrupted, and progress may be severely delayed. Indirectly, this could lead to project failure. If the team want to solve such risks, they will need a certain amount of financial and time support. In addition, the **staff in Cornwall spaceport** will also provide the service on rocket launching, so they are also the suppliers. At the end of the project, the staff at the launch centre need to work together with the team, and a failed launch could have serious repercussions.
* The second group is customers, who will benefit from this project. The sub-project Organic Material Testing is research on muscular dystrophy in space. Therefore, **patients with muscular dystrophy in space** could be one of the customers, who may get some treatment from this sub-project. However, they will also affect by this project, for example, the treatments or tests need their private information. There are also possible for them to choose other teams who can provide a better service, so they decide not to continue working together.
* The third group is the **competitors**, who are working in similar areas. In this case, although there will not be a “price war” it is possible that the plagiarism or similarity of the project of a competitor may result in our team needing to change sub-projects on short notice. They will affect the progress of the project.
* The fourth group is the university and government departments. The university departments are including the **finance office, university security communities and university laboratory manager**. The finance office will approve the financial application of students and can directly determine the size of the amount. The university security communities have the right to access the safety of the project as an act of protecting the students. The university laboratory manager has the right to refuse the requests to borrow laboratory equipment because the equipment is already being used in other projects. Those three departments may do not interested in this project but have high power to decide or influence the project's progress. If the application is not approved for the programme, it is likely to cause a time delay. The government department is including the **customs office.** Because this is an aerospace project, some precision instruments may be used. Customs may investigate those instruments, which may lead to a waste of time.
* The fifth group is **media**. There will probably be media coverage of the project. Then the project may receive some additional attention. If it is some negative comments, it will undermine the self-confidence of the members. Although the media is not interested in and do not have the power to manage this project, it still has a possibility to influence the progress.

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| **External stakeholders:** | **Level and Evaluation:** |
| 1. Components Suppliers | Keep satisfied |
| 1. Finance Office | Keep satisfied |
| 1. University laboratory manager | Keep satisfied |
| 1. Customs office | Keep satisfied |
| 1. University security Communities | Keep satisfied |
| 1. Competitors of similar projects | Keep informed |
| 1. Patients with muscular dystrophy in space | Keep informed |
| 1. Cornwall spaceport staff | Monitor |
| 1. Media | Monitor |

There are four levels to rank the stakeholders: manage closely, keep satisfied, keep informed and monitor. Evaluating those levels will use two criteria: the level of interest and the level of power. The following figure shows detailed information.

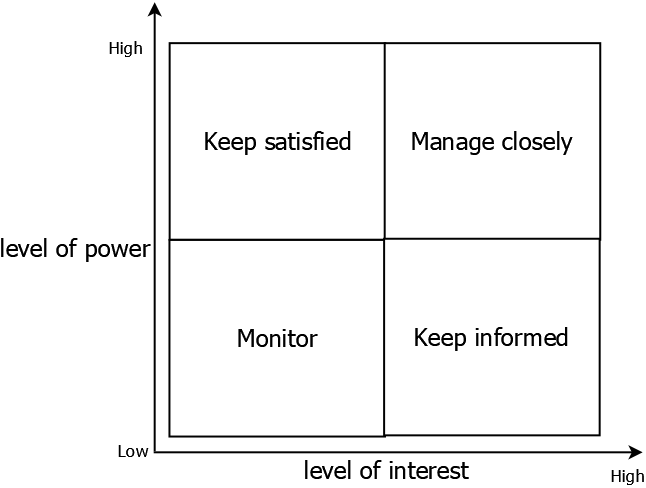


Figure 1. the different levels of stakeholders

1. Using the template below, devise a **Risk Register** for your project identifying **fifteen possible risks**, estimate the probability and the impact of each risk, and calculate their severity.

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|  | **Risk** | **Probability**  **(1-5)** | **Impact (1-5)** | **Severity** |
| 1 | Launch failure creates danger for **Cornwall spaceport staff** | 2 | 5 | 10 |
| 2 | Slow delivery of components from **suppliers** | 4 | 1 | 4 |
| 3 | **Financial offices** do not support or cannot provide sufficient funding | 3 | 3 | 9 |
| 4 | **The professor who trained** the students did not complete the mission, resulting in an extension of time | 2 | 3 | 6 |
| 5 | **The project manager** considers his interests and makes the project funds unevenly distributed | 2 | 3 | 6 |
| 6 | The conflict between the **student**'s major course time and project time | 3 | 4 | 12 |
| 7 | Components that may not be approved by **Customs** | 2 | 4 | 8 |
| 8 | **Competitors** plagiarise or steal ideas from projects | 2 | 5 | 10 |
| 9 | Too heavy workload on projects may result in not spending enough time with **family or friends** | 2 | 3 | 6 |
| 10 | The fire was caused by inappropriate operation under the responsibility of the University Laboratory Manager | 1 | 5 | 5 |
| 11 | The personal time of **Dr Kai** conflicts with the project time. | 2 | 3 | 6 |
| 12 | The **University security community** won't allow to perform the project because of the risk | 2 | 5 | 10 |
| 13 | **Students** are not enthusiastic about continuing to do research for the project | 3 | 3 | 9 |
| 14 | **Patients with muscular dystrophy** do not provide data to the project because of privacy concerns | 3 | 3 | 9 |
| 15 | Negative media coverage affects team member's confidence | 2 | 3 | 6 |

***State what scale was used to calculate the probability and the impact, and also which method you used to calculate severity, and why.***

**2.1 Quantifying Risk**

To better quantify the above risks, we intend to use 1-5 to scale the probability of a risk and the magnitude of its impact.

1. **For the probability of a risk**, the probability of occurrence can be effectively estimated using the 1-5 scale approach. For risks with a scale of 1, the probability of occurrence is very low. For example, natural disasters, fires, etc. In the case of this project, the probability of fire risk is therefore also low. This is because we will purchase components with protective circuits, which reduces the risk to a certain extent. For risks in levels 2,3, there is a small probability that these risks will occur, but they still require attention. For example, the professor may not be able to train the student within the time limit, but the probability of this risk occurring is relatively low. For higher level 4,5, the probability of this risk occurring is higher. As a result of the Covid-19 outbreak, the global supply chain has been affected, and this will certainly affect the speed of supply for this project.
2. **For the magnitude of its impact**, the same 1-5 scale is used to estimate the impact of risks. The higher the value, the greater the impact of the risk. For level 1 risks, the impact of the risk on the whole project is relatively small. For example, if the supplier is unable to supply a component on time, other parallel work can continue to be completed. Once the component has arrived, the task that requires this component will be undertaken again. This is feasible due to the relatively large number of parallel tasks in our plan. For risks with an impact level of 2-3, they require more attention. This is because the consequences of these risks if they occur, can affect the entire project. For example, if the students' enthusiasm for the project disappears, the efficiency of completing the project will be reduced and this will affect the overall project schedule. These risks are particularly noteworthy for risks with an impact level of 4-5. If they occur, the project may be terminated. For example, in the event of a fire in the laboratory, the laboratory equipment would be damaged and the project might have to be terminated.
   1. **Methods of calculating the severity**

Severity is a measure of both the probability of a risk occurring and the magnitude of its impact on the project [2]. For this project, the product of the probability of a risk occurring and the magnitude of its impact is used as the severity of that risk. If the magnitude of the probability of a risk occurring is expressed as p and the magnitude of its impact is expressed as m, then the severity of the risk would be:

If the range of p is 1-5 and the range of m is 1-5, then the severity will range from 1-25. If the additive formulation is used, the severity will range from 2-10. Since the product provides a larger range of severity for the next step in the analysis, the product measure is used for this project. The overall severity reference table is as follows:

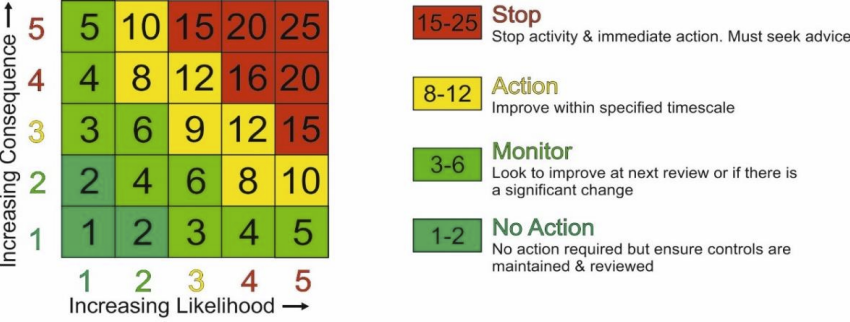


Figure 2: The Severity Reference Table (p\*m) [3]

For risks with severity in the 15-25 range, they should be stopped immediately. However, none of the risks has been calculated to be in this range. For risks in the 8-12 range of severity, action should be taken to reduce the occurrence of the risk or to reduce the impact of the risk if it occurs. For example, a student's major courses may conflict with the project, which requires coordination between the project manager and the course director to reduce the conflict. Risks with a severity index between 3 and 6 need to be monitored closely. For example, Dr Kai's personal time may conflict with the completion of the project and this requires the project manager to make adjustments at any time. For risks with a risk severity level of 1-2, no additional action will be required.

1. In no more than **200 words**, identify which risk should be dealt with as the highest priority, briefly describe the relevant issues, and suggest what you will do to mitigate against it. Your discussion should refer to stakeholders, time and money.

The severity of the risk of conflict between the student's major course time and project time is greatest (12) and therefore, the risk should be dealt with as the highest priority. The stakeholder for this risk is students, and if students choose to miss lectures, additional time may be needed to make up for it. If the student chooses to take the lectures instead of working on the project, then the project may cost more money because of the lack of operators and the process of the project will also be delayed.

Therefore, to reduce the possibility of this risk occurring, the project manager needs to consult with the course director. Students should not be assigned to work on projects during their course time. To minimise the magnitude of its impact, project manager needs to talk with professors about the possibility of answering questions for students who are absent due to conflicts, to minimise the time taken for students to complete their studies. But inviting the professor for additional help will increase the amount of money spent. Alternatively, project manager could arrange other students to complete the work instead of the student who has lectures, but this may increase the expense.

(word count: 201 words)

**Reference:**

[1] Youssra Riahi, "Project management: techniques and methodologies", International Journal of Science and Research, Volume 6 Issue 2, February 2017, 465 -469

[2] W. Al-Nuaimy, “Risk and Cost 2020”, University of Liverpool, 2022

[3] D. Donaghy, "HEALTH & SAFETY Risk Assessment", University of Liverpool, 2021

Appendix -Meeting Agendas and Minutes

**Agenda 1:**

*Project Management Module*

Group 28 Virtual Project Management Committee

There will be a meeting of the above committee at 10 a.m. on 19/11/22.

### Agenda

1. Apologies *[the secretary should indicate which members have apologised in advance for their absence]*
2. Approval of minutes of the previous meeting *[Discussion of the task allocation of Task 3A. List and explain all the stakeholders]*
3. Review of progress on current tasks *[members who were allocated tasks should report on their progress]*
4. Brainstorm all the stakeholders in this project and divide them into internal stakeholders and external stakeholders *[Discuss what needs to be done and the responsible team member will be recorded in the minutes]*
5. Explain the relationship of each stakeholder to this project *[Discuss what needs to be done and the responsible team member will be recorded in the minutes]*
6. Analysis of the possible risks, then choose the most reasonable risks for each stakeholder *[Discuss what needs to be done and the responsible team member will be recorded in the minutes]*
7. Agree on the date, time, and place for the next meeting
8. Any Other Business

**Meeting 1:**

*Project Management Module*

Group 28 Virtual Project Management Committee

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| **Minutes of the meeting on the 19th of November 2022** | | | |
| **Group Name/Number:** | | **group 28** | **Meeting Date and time :** | **22/11/19** |
| **Meeting Topic:** | | **Weekly Review Meeting** | **Location:** | **Harold Cohen Library** |

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| **Attendees:** | (Project Manager) Shiyan Wang |
|  | (Secretary) Zekun Li |
|  | Zhiyu Zhu |
|  | Tiankuo Jiao |
|  | Yuhao Zhu |
| **Apologies:** | N/A |
| **Absences:** | N/A |

1. No Apologies

Everyone attended.

1. Approval of minutes of the previous meeting

Everyone has approved the previous minutes.

1. Review of progress on current tasks

Currently, our group has finished planning the project schedule and has completed the Gantt chart and network diagram. Also modified the project planning after the Work Change Order.

1. Brainstorm all the stakeholders in this project and divide them into internal stakeholders and external stakeholders

In this meeting, Zhiyu Zhu suggested that the most relevant stakeholders for this project should be **the members working on this project**. Shiyan Wang believes that the project will have financial implications, so the **university's finance office** and **component purchasers** are also stakeholders. Tiankuo Jiao also suggests that in addition to financial support, there are certain safety risks associated with this project, so the **university's security department**, **laboratory managers** and **rocket launch staff** are also important stakeholders. Yuhao Zhu added that the **student's family and friends** may also be among the stakeholders. Zekun Li noted that Dr Kai's project was to study muscle atrophy in space, so **Dr Kai** and **patients with muscle atrophy in space** could also be stakeholders. All the proposals were agreed upon by the other members.

1. Explain the relationship of each stakeholder to this project

Zekun Li recorded the relationship of each stakeholder to the project, which is included in the above discussion. Then, Yuhao Zhu and Tiankuo Jiao will add more detailed information based on the record. Finally, they will also rank the stakeholders according to their importance.

1. Analysis of the possible risks, then choose the most reasonable risks for each stakeholder

Based on the stakeholders discussed at the meeting, each member listed the relevant risks according to their own understanding. After a discussion, the most reasonable 15 risks were selected. Shiyan Wang will summarize all the risks in the Risk Register, which will be used to estimate the probability and the impact in the next meeting.

1. Agree the date, time, and place for the next meeting

The next meeting is to be held on the 24th of November at 10 a.m. in the ETC

1. Any Other Business

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| ACTIONS SUMMARY – For review at next meeting | | |
| Future agreed Actions | **Initials** | **Due date** |
| 1. Z. Li to write up the minutes | ZL | 24.11 |
| 1. Z. Zhu to summarize and write down the stakeholders and divide them into two categories | ZZ | 24.11 |
| 1. T. Jiao and Y. Zhu to rank each stakeholder’s level and explain them | TJ YZ | 24.11 |
| 1. S. Wang to complete the risks lists, which are discussed in the meeting | SW | 24.11 |
| 1. Z. Li to explain each risk | ZL | 24.11 |

**Agenda 2:**

*Project Management Module*

Group 28 Virtual Project Management Committee

There will be a meeting of the above committee at 10 a.m. on 24/11/22.

### Agenda

1. Apologies *[the secretary should indicate which members have apologised in advance for their absence]*
2. Approval of minutes of the previous meeting *[Complete task 3A.]*
3. Review of progress on current tasks *[members who were allocated tasks should report on their progress]*
4. Quantify and evaluate the risks, which are listed in the last meeting. In the meantime, discuss the scale used in this part *[Discuss what needs to be done and the responsible team member will be recorded in the minutes]*
5. Rank the risks based on their severity and describe the relevant issues considering the stakeholders, time and money *[Discuss what needs to be done and the responsible team member will be recorded in the minutes]*
6. Agree the date, time, and place for the next meeting
7. Any Other Business

**Meeting 2:**

*Project Management Module*

Group 28 Virtual Project Management Committee

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| --- | --- | --- | --- |
| **Minutes of the meeting on the 19th of November 2022** | | | |
| **Group Name/Number:** | | **group 28** | **Meeting Date and time :** | **22/11/19** |
| **Meeting Topic:** | | **Weekly Review Meeting** | **Location:** | **Harold Cohen Library** |

|  |  |
| --- | --- |
| **Attendees:** | (Project Manager) Shiyan Wang |
|  | (Secretary) Zekun Li |
|  | Zhiyu Zhu |
|  | Tiankuo Jiao |
|  | Yuhao Zhu |
| **Apologies:** | N/A |
| **Absences:** | N/A |

1. No Apologies

Everyone attended.

1. Approval of minutes of the previous meeting

Everyone has approved the previous minutes.

1. Review of progress on current tasks

Currently, our group has finished planning the project schedule and has completed the Gantt chart and network diagram. Also modified the project planning after the Work Change Order. In the last meeting, our group identified all the stakeholders and relevant risks.

1. Quantify and evaluate the risks, which are listed in the last meeting. In the meantime, discuss the scale used in this part

Shiyan Wang suggested that the scale should **use numbers to represent the probability and magnitude of impact**. All the members agreed. Zhiyu Zhu suggested that we can scale the magnitude of impact from 1 to 5. Tiankuo Jiao added that we also can scale the probability from 1 to 5. Thus, **ranking 1 represented the level of LOW and RARE, and ranking 5 represented the level of HIGH and FREQUENT.** The detailed information is shown in the following table.

Table 1. the ranking and represented levels

|  |  |  |
| --- | --- | --- |
| Ranking number | Level | Meaning |
| 1 | Low (Rare) | No serious consequences / Low probability of occurrence |
| 2 | Low/ Medium (Unlikely) | The consequences will affect the progress of the project but are not serious/ Unlikely to occur |
| 3 | Medium (possible) | The consequences will affect the progress of the project and the project may be failed by this risk / possible to occur |
| 4 | Medium/High (Likely) | There is a high chance of being interfered with by this risk and causing failure / Likely to occur |
| 5 | High (Frequent) | Once the project occurs, it will be declared a failure / greater than 90% probability of occurrence |

More specific information will show in the answer sheet.

1. Rank the risks based on their severity and describe the relevant issues considering the stakeholders, time and money

Zekun Li suggested that we should consider the level of risks by the levels of stakeholders. Yuhao Zhu believed that the magnitude of the impact of the consequences should consider realistic factors, so it should be evaluated by some real examples. Then, all the members evaluate the risks by probability (P) and magnitude of impact (M). After the discussion, Zekun Li complete the risk register, which is shown in the answer sheet. In addition, in this part, our group will choose **P\*M** to calculate the severity of the risks, and the reason will also be explained in the answer sheet.

1. Agree the date, time, and place for the next meeting

The next meeting is to be held on the 1st of December at 10 a.m. in the ETC

1. Any Other Business

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| ACTIONS SUMMARY – For review at the next meeting | | |
| Future agreed Actions | **Initials** | **Due date** |
| 1. Z. Li to write up the minutes and complete the risk register | ZL | 1.12 |
| 1. Z. Zhu to explain the calculation of severity | ZZ | 1.12 |
| 1. T. Jiao to modify the rank of risks by some realistic examples | TJ | 1.12 |
| 1. S. Wang to rank the risks by severity | SW | 1.12 |
| 1. Y. Zhu to find the solution to the highest priority risk | YZ | 1.12 |