



جامعة الجميع الذكية  
EVERYONE'S SMART UNIVERSITY

## Everyone's Smart University Project (Spring 2021)

|              |                            |               |
|--------------|----------------------------|---------------|
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| Section |
| Course  |

Master  
(PMG506)

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| Code     |
| Thursday |

Date

18 / 03 / 2021.

## Advanced project Management

### Instructions:

- اخر موعد للتسليم هو يوم الخميس 2021-05-20 في تمام الساعة 9 مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الانجليزية.
- يتم تسليم المشروع في صيغة ملف pdf مع الالتزام نموذج الجامعة ولن تقبل أي مستندات أخرى.
- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion، وأخيراً المراجع References. وان كان هناك ملحقات Appendices يتم إضافتها)
- يجب الالتزام بـ Theme موحد كما يلي:
- حجم الخط 12.
- نوع الخط Arial.
- لون الخط أسود.
- المسافة بين الأسطر 1.5 line spacing
- عدد صفحات البحث (لا يقل عن ثلاث صفحات ولا يزيد عن ست صفحات).

Instructor's Name: ~~Eng. Amaal Aburumman~~ **Eng. Dr. Akram M. S. Ali**

### Project:

You are required to document your role in administering a project. The project may be set in a business, social, sporting, or family environment but must be of a significant size and scale. If you do not have an actual project to write about you may complete the project hypothetically.

**This report will be between three to six pages in length.** This is a significant research project.

Your report must address ~~each~~ **ONE** of the following issues:

1. Identify and describe the purpose, scope, and objectives of the project. **Display this information using an appropriate tool.**
2. Describe how the team is given an outline of the project.
3. Describe the strategies that are going to be set up to maintain communication with the team members.
4. Describe the tools that are going to be used to monitor the goals, time frames or milestones.
5. Identify project milestones and activities. **Display this information using an appropriate tool.**
6. Create a budget and link the costs to the key milestones for a project.
7. Describe how you are going to divide tasks and resources amongst a project team. **Display this information using an appropriate tool.**
8. Briefly describe how the progress will be monitored.
9. How are current project records maintained? Who has responsibility for this? provide some recommendations on how this process could be improved.
10. Describe the current procedure for finalizing projects. Create your own procedure and identify how you will evaluate the success of the project.
11. Legislation that may affect the project including health and safety, and anti-discrimination legislation.

**Best of luck...**

### المشروع:

مطلوب منك توثيق دورك في إدارة مشروع. قد يتم تعيين المشروع في بيئة تجارية أو اجتماعية أو رياضية أو عائلية ولكن يجب أن يكون بحجم مناسب. إذا لم يكن لديك مشروع فعلي لتكتب عنه ، فيمكنك إكمال المشروع افتراضياً. **سيكون هذا التقرير من ثلاث إلى ست صفحات .** يجب أن يعالج تقريرك كل **أحد** القضايا التالية:

1. تحديد ووصف الغرض والنطاق والأهداف من المشروع. اعرض هذه المعلومات باستخدام أداة مناسبة.
2. صف كيف يتم إعطاء الفريق مخططاً تفصيلياً للمشروع.
3. وصف الاستراتيجيات التي سيتم وضعها للحفاظ على التواصل مع أعضاء الفريق.
4. صف الأدوات التي سيتم استخدامها لرصد الأهداف أو الأطر الزمنية أو المعالم.
5. تحديد معالم المشروع والأنشطة. اعرض هذه المعلومات باستخدام أداة مناسبة.
6. إنشاء موازنة وربط التكاليف بالمعالم الرئيسية للمشروع.
7. صف كيف ستقوم بتقسيم المهام والموارد بين فريق المشروع. اعرض هذه المعلومات باستخدام أداة مناسبة.
8. صف بإيجاز كيف سيتم رصد التقدم.
9. كيف يتم الاحتفاظ بسجلات المشروع الحالية؟ من المسؤول عن هذا؟ تقديم بعض التوصيات حول كيفية تحسين هذه العملية.
10. وصف الإجراء الحالي لإنهاء المشاريع. قم بإنشاء الإجراء الخاص بك وحدد كيفية تقييم نجاح المشروع.
11. التشريعات التي قد تؤثر على المشروع بما في ذلك الصحة والسلامة ، وتشريعات مكافحة التمييز.

مع تمنياتي بالتوفيق..

## THE BUDGET OF A D-CHECK MAJOR VISIT PROJECT

### 1. INTRODUCTION

In the aviation industry, the projects of aircraft operators are divided into two types; the first type is correlated with a newly purchased aircraft, this type of projects is known for “Completion Project”, which carries a complete interior building that includes aircraft cabin and cabin systems, as new aircrafts are delivered as an empty tube also known as “green aircraft”, while the other type of the projects is known for “Checks Project”, which carries the performance of regular checks for an aircraft that is in-operation, but has reached the due of the scheduled tasks interval. As a project manager the main goal in either types of the projects is to complete the project successfully (i.e. on-time, within budget, and meets the scope).

The period and cost of the Completion project for VIP aircraft depends on aircraft size and customer requirements. On the other hand, the period and cost of the Checks project depends on aircraft size, type of checks and scope of the modification if exist. There are four (4) types of aircraft maintenance checks as follows; A-Check, B-Check, C-Check, and D-Check.

The nature of project is the uncertainties of outcomes, yet in aviation industry it is known that Checks projects is full of uncertainties, as you can never anticipate the findings that will be reported during the performance of the scheduled maintenance task. The findings differ based on the root cause of each findings, the major findings are usually on aircraft's structure (i.e. corrosion), on the engines (i.e. defects of the engines), or even in aircraft's cabin (i.e. deteriorated fabrics). The repair of the findings is proposed to the project manager by the contracted repair station also known as Maintenance, Repair, and Overhaul (MRO) center in a change request form. Hence, the driving factor for all Checks projects is the findings, as if findings' repair requires high labor hours this may affect the planned re-delivery date of the aircraft likewise the budget of the project. Some findings would have no repair option, and the only option would be defects parts replacement, which is very critical especially if the part is out of production that also known as obsolete parts, in this case the available parts in the market would be either in overhauled, repaired, or inspected condition, either condition is normally offered at high price due to the scarcity, which affects one of the triple constraints (i.e. cost) [1].

I was assigned as a project manager for one of the VVIP aircraft that my organization maintain and operate. The project is a Check project for to perform D-Check tasks of the aircraft, including some modifications to comply with regulatory requirements and other modifications on the entertainment systems to enhance customer experience. A Request for Proposal (RFP) was released to be sent to the bidders once the tender is initiated. After receiving proposal from all bidders, it is project manager's task to evaluate all the proposals and filter it accordingly, and if any of the proposals have not covered all the scope of work, then it will be considered disqualified. Once all proposals been filtered and only the ones that covers all the scope of work remained, then the next step is to use project selection model that are in-use in my organization, which is an unweighted factor

scoring model. Finally, after selecting the highest scored proposal, the budget is then to be calculated as in this research we will address the calculated budget. Furthermore, the goal is to discuss whether it was calculated precisely or not, and to find an effective and efficient calculation method. Currently the project is at the execution phase.

Project budget estimation or calculation is one of the key activities when working in projects, as the budget is the key factor to run project's resources either labor or material. To increase the rate of project success, project budget needs to be calculated precisely. It is important to take into account when calculating project budget to make sure that the calculated budget covers all the activities that will be accomplished during Project Life Cycle (PLC) including any activities that need to be accomplished if any risks occurred and this will be placed under the contingency budget.

## **2. LITERATURE REVIEW**

Several studies presented methods of projects cost estimation, which are unlike the one used in our organization, as the nature of projects are different, which we can't 100% depend on those methods, yet we will review some of those methods in this study and highlight the ones that can be used in aviation industry from the operator perspective that provides more accurate and precise budget calculation than what we are currently using.

### **2.1. Calculation Budget for Maintenance Projects**

The researchers have developed a new budget calculation method that is called as practical adaptive budgeting of maintenance measures (PABI) [2]. This method was described to be suitable for calculating the budget of building maintenance projects, which takes into account several variables such as building age, technical equipment and size [2]. PABI is using weight factor, which concluded by the researchers that this method is a useful tool to be used by maintenance experts to calculate accurate project budget for building maintenance projects. We can use the concept of this method in my organization by adding additional factors such as aircraft age, complexity of aircraft systems, and the size of the aircraft.

### **2.2. Calculating Contingency Budgets**

The researchers have developed a method to calculate project contingency budget that should cover the cost of risks if occurred. It is said the developed method overcomes the deficiencies of the methods that uses a fixed percentage of project's total cost to calculate the contingency budget [3]. The developed method uses two stages of contingency budget calculation; the first stage calculates the maximum number of the anticipated risk events based on the present of certainty [3]. Then, using the output of the first stage by using appropriate sorting criteria to estimate the expected total damage of the project, then summing the impacts using certain formula [3]. The formula can be used in my organization, as it provides a better understanding of the cost of the expected risk events, which eventually increasing the precision of the contingency budget.

### 3. METHODOLOGY

In the D-Check project the method was adopted to calculate project budget is a mathematical calculation by summing the total offered cost of the won proposal plus additional costs that are divided into three categories; first category covers an estimated cost of the unquoted assumptions written in vendor's proposal by estimating each assumptions aside based on assumptions work weight, second category covers an estimated cost using 30% of the proposed labor cost for maintenance tasks and 30% of the proposed material cost for maintenance tasks to cover the cost of any reported findings out of scheduled maintenance task also known as non-routine cost, and third and last category covers an estimated cost for other fees that are needed during project life cycle such as but not limited to aircraft fuel, aircraft catering, and project team wage. And the other method was adopted is a table to present the results of the calculations.

### 4. RESULTS AND DISCUSSION

The details of the calculated project budget are shown in Table 1. The used method in

Table 1

Details of project budget

| Task                                    | Labor <sup>1</sup> | Material <sup>1</sup> | Total <sup>1</sup> |
|-----------------------------------------|--------------------|-----------------------|--------------------|
| Maintenance Package                     | 8,000.00           | 2,000.00              | 10,000.00          |
| Avionics Upgrade Modification           | 1,000.00           | 2,000.00              | 3,000.00           |
| Complete Project NRC <sup>2</sup>       | 800.00             | -                     | 800.00             |
| Technical Documentation                 | 500.0              | 30.00                 | 530.00             |
| Medical Room Modifications              | 2,000.00           | 1,500.00              | 3,500.00           |
| Flooring Replacement                    | 450.00             | 400.00                | 850.00             |
| Total Offered Cost                      | 12,750.00          | 5,930.00              | 18,680.00          |
| Estimated Cost for Unquoted Assumptions | -                  | -                     | 1,000.00           |
| Non-Routine Estimated Cost <sup>3</sup> | 2,400              | 600.00                | 3,000.00           |
| Other Fees <sup>a</sup>                 | -                  | -                     | 3,500.00           |
| Project Budget                          | -                  | -                     | 26,180.00          |

<sup>1</sup> All costs shown in this table are not real, as based on my organization policy it is not allowed to share or reveal any numbers or information outside organization property without official permission. And all the numbers in this table are in USD currency.

<sup>2</sup> Non-Recurring Cost (NRC) covers all the cost that are one time cost for engineering to develop, design, and test the modifications.

<sup>3</sup> Covers an estimated cost using 30% of the proposed labor cost for maintenance tasks and 30% of the proposed material cost for maintenance tasks to cover the cost of any reported findings out of scheduled maintenance task.

<sup>a</sup> An estimated cost that are to be paid by aircraft operator specially for the project aircraft fuel, aircraft catering, and project team wage.

my organization to calculate the non-routine cost USD 3,000.00 as shown in Table 1 is not practical for D-Check projects, as D-Check projects are meant to perform high interval tasks that are only performed in such major visits, due to the fact that most of the tasks are detailed inspection tasks which do requires lots of open-ups to access aircraft internal structures, in which all aircraft cabin will be removed out of the aircraft to allow the accessibility of the technical to perform the task easily and effectively. The interval of D-Check tasks is 6 - 8 years depending on aircraft size, and since aircraft internal structure are not checked in any other checks apart from D-Check, majority of the findings will be costly. The project currently in the execution phase and got into budget overrun by USD 2,000.00.

The method is used in my organization to calculate project budget need to be adjusted to avoid getting into budget overrun, and based on the literatures review above, we can develop a new calculation method that would decrease or eliminate getting into budget overrun, which eventually increase the rate of project success and allowing to calculate project precisely, especially on Checks projects.

The developed new calculation method is adding a contingency budget above the current calculations. The developed method uses four stages of contingency budget calculation; first stage is to add weights for aircraft age, complexity of aircraft systems, and the size of the aircraft. The weight for aircraft age would be an additional percent for each year (e.g. 20 years old aircraft would have 20% additional cost on the total estimation of non-routine cost), the weight for aircraft system complexity would add 1-5 percent depending on the rate of system complexity (e.g. if the aircraft is the most complex in the fleet, then the additional percentage would be 5%, if the least complex in the fleet, then the additional percentage would be 1%), while the weight for size of the aircraft would add 1-5 percent depending on the rate of aircraft size (e.g. if the aircraft is the largest in the fleet, then the additional percentage would be 5%, if the smallest in the fleet, then the additional percentage would be 1%).

The second stage is to generate a risk register and list down all the anticipated risks using all possible estimation techniques such us but not limited to expert judgments, analogy, and historical data [4], then to identify the likelihood and impact of each risk item with allocating an estimated cost for each risk item.

The third stage is to filter the risk items and keep only the high likelihood items.

The fourth and last stage is to sum up the output from all previous three stages and define this as the contingency budget of the project.

## 5. REFERENCES

1. Franklin, T. (2008, August). Adventures in agile contracting: Evolving from time and materials to fixed price, fixed scope contracts. In *Agile 2008 Conference* (pp. 269-273). IEEE.
2. Bahr, C., & Lennerts, K. (2010). Quantitative validation of budgeting methods and suggestion of a new calculation method for the determination of maintenance costs. *Journal of facilities management*.
3. Cioffi, D. F., & Khamooshi, H. (2009). A practical method of determining project risk contingency budgets. *Journal of the Operational Research Society*, 60(4), 565-571.
4. Kerzner, H. (2017). *Project management: a systems approach to planning, scheduling, and controlling*. John Wiley & Sons.