Faculty of Engineering and Applied Science

SOFE 3490U Software Project Management

Lab 3 Report

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Recap

The project selected in Lab 2 was the fall detection wearable for the elderly, there were many requirements set out and they will be referenced many times during this report to keep the project in line with said original requirements and constraints.

COCOMO & Function Points

We can create a nominal estimate using COCOMO and the following equation:

$$Ei = a * (KLOC)^b$$

As we are familiar with the nature of IoT systems, relatively experienced in the programming environment and have a decent programming team size we can safely say that this project is semi-detached and thus the *a* and *b* values are 3.0 and 1.12 respectively. After consultation with team members and external research, it is estimated that our solution will require approximately 20,000 lines of code. Using this information we can solve the equation and procure a nominal estimate.

$$Ei = 3.0 * (20)^{1.12}$$

$$Ei = 85.95$$

The resulting person-month estimate of approximately 86 person-months is a reasonable estimate given the nature of this project. From this person-month estimate we can calculate the duration of the project given an *a* value of 2.5 and a *b* value of 0.35 (duration values for a semi-detached project) with the following formula:

$$M = a * E^b$$

$$M = 2.5 * 85.95^{0.35}$$

$$M = 11.88$$

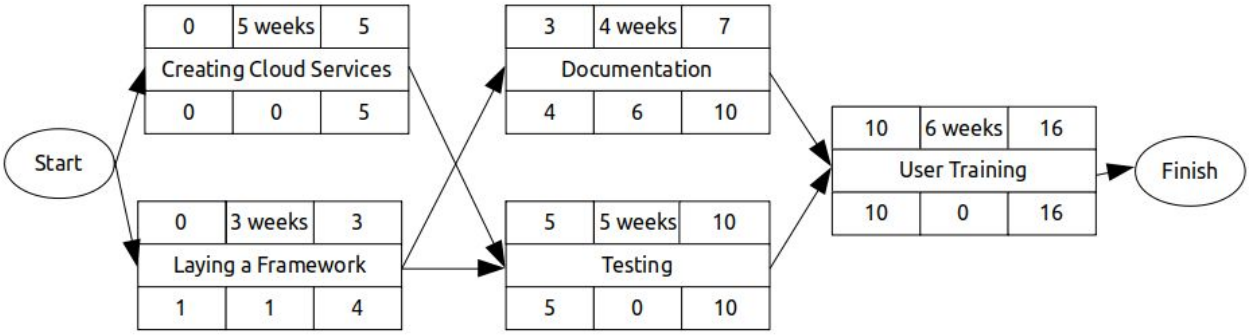
The resulting duration of approximately 12 months is a reasonable estimate for a project of this nature. Another method of producing an estimate, function points (FP), are dependent on system size. The calculation of function points and their estimates are shown below.

Measurement Parameter	Count	Weighting Factor	Total
# of user inputs	2	3	6 FP
# of user outputs	5	5	25 FP
# of user enquiries	0	3	0 FP
# of user files	3	7	21 FP
# of external references	7	10	70 FP
			122 FP

Given these function point values the total amount of function points for this project is 122. This is a reasonable amount of function points for this project.

Activity Diagram

Prior to constructing a pert diagram, the activities for the diagram need to be picked / created. The activities that are in this project are: laying a framework, creating the cloud services, testing, documentation, and user training. These activities are chosen due to similar projects that the team already has completed.



The PERT diagram for the activities is shown above and the critical path through goes from Creating Cloud Services, Testing, and then User Training.

Risks

Skills Risk

A skills risk could include insufficient training and lack of skill of the development team. To combat these risks, management will provide extensive training on the software used and protocols accompanying them, as well as screening applicants in the hiring process to include previous knowledge of applications used.

Project Planning Risk

Project planners on this project may be inexperienced, and therefore produce a poor project plan. This can derail the entire project from the beginning, resulting in failure. Combatting this could include hiring an experienced manager to the team, and consulting with external resources and companies for their expertise to apply to this project.

Project Complexity Risk

Another risk is that the project may end up more complex than planned, resulting in missed deadlines and high stress levels. Preventing this risk is to over estimate project complexity, so that upon completion moral is high.

Supplier Risk

Suppliers of the hardware product failing to meet physical expectations and providing hardware on time could apply to our project. This risk can be combated with creating a contract ensuring on-time delivery of product, and worse case scenario having a backup supplier to ensure timely launch of the project.

Integration Risk

Risk with integration in the public including participants unwilling to wear device at all times, resulting in inaccurate results and not having the device when needed is the final risk. This risk is the most unpredictable, and the most we can do to counter the mindset is to release manuals stressing the importance of constant wear, to ensure maximum use. Creating an FAQ section addressing main concerns such as safety, maintenance, and importance can improve willingness to comply and achieve the goal of the product, to improve safety and save lives.