

**Student Name:** Jayasurya Pazhani[40289512]

**Course:** Software Project Management [SOEN 6841]

**Journal URL:** [https://github.com/Sparky1505/SOEN6841\\_SPM/tree/main/Learning\\_Journals](https://github.com/Sparky1505/SOEN6841_SPM/tree/main/Learning_Journals)

**Date Ranges of activities:** Jan 20, 2025 – Jan 27, 2025

**Date of the journal:** Feb 7, 2025

### **Key Concepts Learned**

This week I learned about Software Effort and Cost Estimation (COCOMO & COCOMO II), Risk Management, and Configuration Management. Each is essential to project software management in terms of resource/time allocation, potential risk flagging, and avoidance. COCOMO (Constructive Cost Model) and COCOMO II are software effort estimation models for time and cost expectations for software development efforts. The first version examines such drivers as system reliability, team experience, and project complexity, the second version adds to this and includes an effort estimation model for development efforts which includes Agile which makes this model more digestible and understandable for iterative software development approaches. Risk Management assesses all potential risks that can affect projects or necessitate rework after a project goes live technological failures, compliance failures, and development operation failures and the identified mitigation strategies include avoidance, transfer, acceptance, and reduction. The best way to manage risks is through quantifiable or qualitative risks via the established, formalized risk assessment process for credibility. Configuration Management (CM) allows certain changes over time to a software product to ensure consistency, version control, and systemic/elemental adjustments to changes. The best configuration management minimizes compliance errors and installation errors down the road. This impacts the longest elapsed time of the software development life cycle.

### **Application in Real Projects**

Effort estimation and risk assessment are critical realities for the successful completion of software development projects. For example, projects go over budget when effort estimation is inadequate; projects fail when risk assessment fails to acknowledge major risk factors. Software development firms depend upon systems like COCOMO II to project accurate software development efforts for project costing. This is true on the enterprise front for larger scale applications. Similarly, most developers around the world rely upon a risk assessment framework to prevent negative occurrences. This means less money wasted on failed projects and more successful projects when operationally defined. For our AI-Driven Health Monitoring App, we tried a development time assessment via COCOMO II since we factored AI model complexities and integration options with existing healthcare APIs and our selected cost drivers for team expertise and anticipated system reliability. Thus, we could assess required budgets and reasonable expectations for project delivery time frames. In addition, without a risk management plan, we could never have determined how to circumvent issues surrounding less than ideal AI model accuracy, excessive data redundancy, integration downtime, etc. (GDPR and HIPAA compliance). Thus, we ensured no additional data via redundancies, compliance efforts would be upheld, contingency plans would avoid integration downtime, and ongoing risk assessment could ensure quality from inception to completion of project development. Configuration management is another important element for system maintenance. For this project, we used GitHub as our software version control configuration

management system and change management as we assess changes over time and our mapping and documenting of such changes keeps our systems consistent and aligned with changes over time for project needs. Therefore, in conclusion, completing the above assessments ensured a trustworthy, secure, and manageable system during development that would ultimately accommodate the needs of the final project solution, the AI-Driven Health Monitoring App.

#### **Peer Interactions**

We were in contact as a team, many times throughout the week via Google Meet, Zoom, WhatsApp calls, and even library meetups. Grouping for project deliverables and brainstorming helped with effort estimation and discussing potential risks. I gained knowledge from others when they lectured about COCOMO vs. Function Point Analysis (FPA), and I provided independent research on risk management associated with AI in healthcare. They gave feedback on my risk priority and estimation approach.

#### **Challenges Faced**

The three most challenging aspects of implementing the plan were as follows. First, estimating effort. We had to rely on relative case studies and a discussion with the team members for a better estimate since training time for the AI models was the hardest to predict. Second, measuring risk. We had to estimate for accurate probability and impact determinations of specific risks measured only relative to incidents determined in the past on other, unrelated projects. Third, integration of risk management and Agile. Where one is straight project management and control and the other relies on change and spontaneity, the process for risk management had to be flexible so that risks could be assessed post-sprint.

#### **Personal development activities**

I did extra learning and independent resources. For example, I searched for projects that used COCOMO and risk mitigation. I also read the IEEE Standards to see a more standardized version of the process. Much of what I found was online, from a tutorial on estimations and mitigation strategies to a webinar on Agile risk management (I found it fascinating that an iterative approach existed). Ultimately, I took some hands-on approaches as well. I explored JIRA for risk tracking and configuration management, drafted a couple of risk matrices and estimation models for practice, and began familiarizing myself with the accessibility to become more comfortable with the software.

#### **Goals for the Next Week**

Next week for Deliverable 2, I'll be contributing to a more detailed assessment of project requirements to improve our endeavor estimation. I'll be contributing to the risk management assessment by updating the risk quantification approaches and exploring additional mitigation strategies specific to using AI. I'll be contributing to the configuration management assessment by establishing automated CI/CD for deployment and version control assessments specific to ensure data integrity. Ultimately, all assessments will allow us to continue with our appropriately scaled AI-powered health monitoring application with risk and project management assessments in mind.