

Learning Journal 1

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Course: SOEN – 6841 Software Project Management

Journal URL: <https://github.com/gauravsharma2802/LearningJournalSPM>

Week 1(Chapter 1 & 2): 9th September 2024 – 16th September 2024

Date of the journal: 16th September

Key Concepts Learned: In Week 1, the foundational aspects of software project management were introduced. Challenges in Software Projects arise from **invisibility**, **complexity**, **conformity**, and **flexibility**. Software projects are typically **non-routine**, **goal-oriented**, **customer-focused**, and **resource-constrained**. The **Project Management Phases** include **Initiation**, **Planning**, **Monitoring & Control**, and **Closure**. The **Software and Development Life Cycle (SDLC)** encompasses **requirement gathering**, **design**, **development**, **testing**, and **maintenance**. A **Project Charter** formally authorizes the project, while **SMART Objectives** ensure goals are clear and measurable. Accurate **Budget & Effort Estimation** and **Schedule & Project Division** optimize task allocation and cost management.

Application in Real Projects : In real-world projects, **invisibility** and **complexity** can be managed with **visual tools** and **automated testing**. **SMART Objectives** ensure clear, measurable goals, guiding projects effectively. A **Project Charter** defines the project's purpose, and **Budget & Effort Estimation** optimize resource allocation. During **Monitoring & Control**, deviations are managed, while **Project Division** breaks down tasks for better management. In the **SDLC**, **requirement gathering**, **design**, **development**, **testing**, and **maintenance** ensure functionality and adaptability.

Peer Interactions: This week, discussions with peers were insightful. A peer emphasized the value of **automated testing** in managing software complexity, enhancing my approach to the **SDLC**. Another suggested using **Kanban boards** for better task tracking during **Monitoring & Control**, which I found practical. A key breakthrough came from **collaborating on effort estimation**, where peer feedback helped me consider both **technical and non-technical tasks**, improving my overall estimation approach. These interactions deepened my understanding and problem-solving techniques.

Challenges Faced: The biggest challenge this week was understanding the **accurate effort estimation** how to balance purely technical tasks with non-technical ones. Also, the management of **scope creep** during the **Planning** phase in project management needs more elaboration. Further, the ways of adjusting **SDLC methodologies** for fast-paced environments without compromising quality need more absorption. These areas will require further emphasis and practice in the days to come.

Personal development activities: This week, I started a personal project that implements what I have learned, focusing on Agile methodologies and techniques of time estimation to improve my project management skills. Such activities provide me with the opportunity to get practical experience in managing projects and making correct project estimates.

Goals for the Next Week: I will read Chapter 3 next week and apply its concepts to my personal project. Then, I will meet with my teammates to choose our topic of the project and make a plan in how to deliver the first deliverable.

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Week 2(Chapter 3): 16th September 2024 – 20th September 2024

Date of the journal: 20th September

Key Concepts Learned: In week 2, I encountered various project estimation methods and how these act to decrease uncertainty as a project progresses. Among the important ones used are **Function Point Analysis (FPA)**, which measures the size of software based on the level of interaction with users and its complexity, and **Wideband Delphi**, a consensus-based effort estimation technique. I have also learned **COCOMO models**, which are models based on the lines of code for estimating project effort, knowing that more advanced versions of this model take into account specific cost drivers. Also, I provided experience-based approaches to come up with the estimation, such as **Estimation by Analogy** and **Expert Judgment**, in order to put weight on past data and expert opinions to increase the accuracy of the estimate. I have also discussed **COCOMO 2**, the model that adjusts according to different phases of a project to enable good planning and resource management.

Application in Real Projects: This Week2 concept can be applied to real-world projects such as **e-commerce sites and banking systems**. With **FPA**, software size **estimates** can be derived based on user interactions. This will help arrive at better resource planning and allocation. **Wideband Delphi** provides the best opportunity for getting accurate estimates by utilizing the **combined knowledge** of the team members. It's ideal for **agile development**. **Estimation by Analogy and Expert Judgment** will let one estimate or forecast; however, there may be some problems in making an accurate forecast due to obsolete data or biased judgment. **COCOMO 2** is ideal for large, **resource-intensive projects, and ERP systems** are no different. A unique novel approach that can be employed is using the combination of FPA and machine learning to much better accuracy in regard to constant changes in **aviation or fintech industries**.

Peer Interactions : In this week's discussion with the peer, there was an interaction with a software developer who provided insight into the **real-world applications of COCOMO 2 and FPA**. He indicated that in his team, expert judgment is used to improve estimates when historical data may be limited, especially in agile environments. This discussion helped in the understanding of theoretical concepts matched with day-to-day project management challenges, such as **balancing estimation accuracy** with project timelines. These discussions furthered my appreciation for how these **estimation techniques** actually get applied in **real projects**.

Challenges Faced : This week, I had trouble comprehending some of the cost estimation models and their practical applications. Although their theoretical concepts were relatively simple, the practical ones required consideration in minute detail with awareness of factors solely applicable to any one model. For example, the formulae **for FPA and COCOMO** required a lot of studying. Further, with much research and careful study of the course slides and the textbook, I was able to get them straight.

Personal development activities: This week, I focused on personal development activities related to project management. I read about time, effort, and cost estimation techniques that take human and mechanical errors into consideration and pursued best ways through which these errors can be eliminated so that the value-to-performance ratio is effective. I looked into best practices and the newest strategies for managing projects, with the idea of refining my approach to make them more efficient in my future projects.

Goals for the Next Week: For the coming week, I intend to read Chapters 4 and 5, and revise some of the previous material covered to meet the requirements of the course. Additionally, I will also meet with my teammates in the project and review our status and progress in market research and cost estimation to ensure we are on schedule and on the same page as regards our approach.