Learning Journal

Student Name: Shravani Sandesh Kulkarni

Course: Software Project Management (SOEN 6841)

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Week 4: 11th Feb 2024 - 17th Feb 2024

Key Concepts Learned: This week, I explored Chapter 5 and Chapter 6 and the concepts in it:
Chapter 5:

1. **Configuration Management Necessity:**
   - Emphasizes the importance of configuration management in software projects.
   - Highlights the role of proper version control to prevent errors and enable continuous integration.
2. **Configuration Management Objectives:**
   - Aims to organize, store, and control access to project work products and information items.
   - Addresses challenges in managing different versions through tagging and hierarchical folder structures.
   - Establishes a secured access system based on roles and permissions.
3. **Centralized Configuration System:**
   - Stresses the importance of a centralized configuration management system for smooth collaboration in distributed software development.
   - Warns against the chaos and integration problems that can arise in decentralized systems.
4. **Key Techniques and Best Practices:**
   a. *Centralized Configuration Management System:* A centralized system ensures smooth functionality across teams.
   b. *Secured Access with Role-Based Control:* Establishing a secure access mechanism enhances system security.
   c. *Continuous Integration with Smoke Test Facility:* Integrating continuous software builds with automated smoke tests, such as Cruise Control, helps maintain build integrity.
   d. *Easy Branching Mechanism:* A simple branching mechanism facilitates the creation of new software versions.
   e. *Audit Facility:* An effective configuration management system should include a robust audit facility for document verification and version tracking.
5. **Continuous Integration:**
   - Explains the critical considerations for managing the central source code build in continuous integration mode.
   - Highlights the role of developers checking code against the existing build and the importance of automated smoke test facilities.
   - Emphasizes the efficiency of creating a new workspace by branching existing project files.

6. Describes diverse artifacts in a configuration management system, stressing the creation of new versions for document or artifact changes.

This chapter provides a comprehensive understanding of the principles, challenges, and best practices associated with configuration management in software projects, emphasizing its critical role in maintaining project integrity and collaboration.

Chapter 6:

1. Project Planning Overview: Balancing quality, schedule, cost, and organizational benefits.
- Consideration of market share increase, cost reduction, risk mitigation, and regulatory compliance. Significance in outsourced projects for maintaining profitability.

2. Initial Project Planning:
- Based on limited details and rough effort estimates.
- Differentiates top-down planning for fixed release dates and bottom-up planning for custom software development.
- Components include risk, resource, task, effort, cost, communication, configuration management, tool, supplier management, quality, and scope planning.

3. Top-Down Project Planning:
- Essential for product development with strict time constraints.
- Involves predetermined project release dates aligned with market demands.
- Outputs encompass various aspects like supplier management, configuration management, communication management, and risk management.

4. Bottom-Up Project Planning:
- Commonly used for large projects with initial uncertainty.
- Involves gathering information about the project scope, requirements, and SLAs.
- Outputs include supplier management, configuration management, communication management, and various project-related aspects.

5. Work Breakdown Structure (WBS):
- Tasks are grouped under pseudo tasks to identify dependencies, critical paths, and milestones. It Facilitates readability and management in tools like Microsoft Project.

6. Resource Allocation:
- Allocating resources to the projects is extremely crucial. The project team is the most expensive resource. Uneven resource requirements over project phases result in problems.
- Evolution of concurrent engineering models for parallel work.
- About 50% of resources are needed during the construction phase.

7. Supplier Management:
- Crucial for outsourced projects. Involves creating and complying with SLAs to ensure consistent quality.
- Integration of software parts from suppliers into the main software build is crucial.

8. Configuration Management Plan:
- Emphasizes careful configuration management, especially with scattered teams.
- Advocates for a centralized configuration management system for uniformity and security.

9. Communication Management:
- Depends on project organization structure, customer management strategy, and supplier management needs.
- Emphasizes a proper communication management strategy with standard templates.

10. Defect Prevention Strategy (Quality Assurance):
- Highlights the importance of quality assurance and control.
- Validates and verifies work products after each project phase.

11. Project Duration: Project duration is calculated using the critical path.

12. Project Cost: Project cost estimation based on effort estimation, productivity, and hourly salary rate.
- In addition to this, there is scope management, effort estimate, tool and risk management which was learnt in previous chapters in detail.

14. Project Planning Techniques:

a. Critical Path Method (CPM):

- Definition: Developed in 1957, CPM is a widely used project planning technique.
- Execution: Tasks are organized based on their start dates, and dependencies between tasks are identified. A path, known as the critical path, is established by linking tasks in a way that represents the longest duration for project completion.
- Critical Path: This critical path determines the project's overall duration. Tasks on the critical path are essential, and any delay in these tasks directly impacts the project timeline.

b. Goldratt's Critical Chain Method:

- Limitations of CPM/PERT: Recognizes challenges in traditional methods where tasks are padded with buffers, often leading to inefficient use of time.
- Theory of Constraints: Introduced by Eliyahu Goldratt, emphasizing that constraints (risks) can impact a project in terms of cost, schedule, or content.
- Buffer Management: Proposes removing buffers for tasks that are well-understood and easily calculable. For uncertain tasks, buffers are detached, monitored separately, and restored at the end of the project.

15. Project planning, constituting around 10% of total project effort, involves generating various artifacts such as the project plan, risk management, effort estimate, cost estimate, resource allocation, communication plan, configuration management plan, WBS structure, supplier management plan, tool management plan, etc.

16. Project Planning in Agile Models:

- Agile models suit unclear requirements and small, frequent deliveries.
- Iteration planning based on velocity, measured in feature points per iteration.
- Iteration planning is crucial with constant feedback after each iteration.
- Adaptive nature, constant resource requirements, and refactoring considerations.

17. Planning at Project Management Office (PMO):

- PMO oversees organization-level management, providing resources, monitoring projects, and offering infrastructure and funds.
- Different forms of PMO, including program management, project portfolio management divisions, etc.
- Planning includes resource planning, business planning, and aligns with the business needs of the parent organization.

This chapter provides comprehensive insights into project planning, covering methodologies, considerations, and advanced techniques crucial for successful software project execution.

Reflections on Case Study/course work:

The **case study in Chapter 5** highlights a U.S.-based mid-market software vendor's successful implementation of a central configuration management system. Key insights include:

1. *Development Model:* Central system for incremental iteration development. Aligns with discussions on configuration management and iterative development.
2. *Collaboration Efficiency:* Effective collaboration with internal, external, and offshore teams, reducing costs and cycle time. Reflects teamwork strategies and global development considerations.
3. *Secure Syste*m: 24/7 accessibility, two-tiered access rights, ensuring security and reliability. Corresponds with discussions on secure configuration management.
4. *Automated Testing:* Smoke testing software for compatibility, and immediate issue identification. Resonates with discussions on automated testing and code compatibility.
5. *Local Builds Sync.* Developers sync local builds with the central system to minimize failures. Aligns with version control and local development practices.

6. *Effective Workflow*: Robust workflow, prompt issue escalation for uninterrupted global development. Reflects effective workflow management and issue resolution in configuration management.

The **case study in Chapter** 6 delves into a SaaS vendor's project planning, emphasizing both iterative and top-down approaches. Key takeaways aligning with course content include:

1. *Major Release Planning:* Top-down planning for major releases with fixed dates and feature prioritization. Aligns with discussions on project initiation and top-down planning.
2. *Feature Selection Challenge:* Collaboration and CTO decisions address feature selection challenges.Reflects discussions on project challenges and decision-making.
3. *Iteration Planning*: Iteration planning, influenced by release dates, introduces flexibility. Resonates with agile project management, emphasizing adaptability.
4. *Dynamic Approach*: Balances flexibility, responsiveness, and resource allocation.Aligns with discussions on adaptive project management.
5. *Detailed Planning Components:* Effort, cost estimates, risk, configuration, communication, and resource management. Practical application of theoretical concepts in real-world planning scenarios.

Collaborative Learning:

Throughout this week, our team dedicated efforts to refine the pitch for our AI-based academic advisor project. The primary objective was to effectively present our software implementation project within a concise 4-minute timeframe. Collaboratively, we engaged in brainstorming sessions to generate creative and engaging ideas, ensuring that our pitch was not only informative but also presented enjoyably and interactively. The focus was on striking a balance between the content's significance so that everyone understood our projects' features and the audience's engagement. Additionally, my classmate and I scrutinized the course-related case studies, assessing and appraising possible project risks to improve our project planning skills. We also learn about version control systems such as GitHub and Jira.

Further Research/Readings:

Continuing my research on project management, I explored materials tailored to our AI-Based Academic Advisor project:

1. "Effective Stakeholder Management: A Key to Project Success" by Simon W. Hayward: Provided stakeholder engagement strategies, aligning with our project's focus.

2. "Agile Project Management" by Jason Bennett: Introduced Agile methodologies for flexibility in our AI project's dynamic nature.

3. "Project Risk Management" by Michael M. Bissonette: Offered approaches to identify and mitigate risks, vital for effective project planning.

Adjustments to Goals:

1. Based on last week's goals, I revised 5 chapters out of 6 which are part of our mid-term exams. I completed my weekly journal and created a pitch for our group project.
2. I also studied chapters 5 and 6 in-depth and jotted down all the key concepts learned.
3. My main goal for this week is to again review all the chapters completed until now and be ready for the mid-term exam.
4. I want to go through all the sample quiz questions that ma'am has provided.
5. Also, complete the weekly journal for the upcoming week and do the associated exercises.