
PM WORLD BOOK REVIEW



Book Title: ***The Triumvirate Approach to Systems Engineering, Technology Management, and Engineering Management***¹

Author: **Thomas J. Day**

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Introduction

Project management is a methodology with a set of structured approaches and a set of procedures to achieve an outcome of a defined objective. It applies tools and techniques to monitor, control, and capture data to produce an informative result on a project's success. However, with the advancement of technological sophistication within modern systems, a deeper understanding of the product development life cycle and the processes that are involved with innovation and production is important. This is achieved by collaborating effectively with stakeholders who are directly involved with the design, development, and production of the technology. The Triumvirate approach to System Engineering, Technology Management, and Engineering Management discusses the three disciplines and their uses in executing technology-based development with the assistance of project management tools. It is an approach that supports technical program and project managers.

Overview of Book's Structure

The book is organized as a journal with a collection of research documents with information cited and referenced. The author included a preface, table of contents, glossary, and a reference section referencing each chapter and an index page. Each chapter included an introduction, a body including graphical illustrations of process flows, and a summary of key points. There are fifteen chapters broken down into

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subsections for clarity guiding the reader through the content and they are organized chronologically.

Concepts of System Engineering, Technology Management, and Engineering management were presented in detail including descriptive process flows that are detailed to present the subprocesses, dependencies, and transition steps from one process to the other.

System Engineering methodology was discussed in detail including product life cycle and problem solving, followed by the transition to Technology Management operations that focuses on the strategic and organizational aspect of the technology and ended with Engineering Management that highlights the decision-making process for selecting and identifying executable innovation.

Highlights

Failure of most projects comes from the lack of clarity or the incomplete execution of the original plan, on the other hand, the success of technology development is achieved by understanding the innovation, its classification, requirements, specifications, and knowing the resources needed to build it. It requires a detailed definition of the technology and its desirable outcome and uses. Also, it is crucial to have the proper tools to manage the resources in addition to implementing the right frameworks that guide the use of the managing tools. All leading to a structured development and a successful reproducible outcome.

The integration of project management tools into the innovation processes was illustrated. During the development phase, project management tools are implemented to manage the resources, keep the technical team focused on the result, and prevent deviation from the initial plan. In Technology Management, project management tools are used to manage the application of the technology and its use from the aspect of schedule, scope, and cost. Engineering Management manages the engineering teams selects the best innovation ideas and brings them to production. They are the decision makers that identify the innovation in both system engineering and technology management processes, and they control the entry and exit criteria between the two processes.

Concepts that were deemed confusing to junior project management practitioners are conveyed with clarity and descriptions. For example, the differences between testing and evaluation, proof of concept and prototyping, verification, and validation. The definitions and explanations of each of the concepts were provided within the project management and product development frame of work. Also mentioned is the confusion between requirements and specifications, where requirements come first and specifications, being more technical, are the result of the implementation of the requirements.

The author discussed the Concept of Operations (ConOps), which is documentation that serves as the foundation for planning, design, and development activities. It provides clarity on how the system should function and describes the purpose, scope, and objectives. It outlines the characteristics and expectations of the proposed innovation. ConOps place heavy emphasis on using visual descriptions such as process flow diagrams as being the heart of any system design.

Highlights: What I liked!

The author brought to attention the failure or the incomplete development of most innovations due to having unclear objectives or divergence from the main objective of the goals, and that developers and stakeholders need to be reminded and kept focused on the purpose and mission. That is accomplished with proper project management tools and the presence of a business analyst for effective requirements gathering; in other words, innovators are ought to have project managers to assist them in reaching the project goals and eliminate confusion by reiterating the purpose of the invention by providing clarity or structure to keep teams motivated and on track and mainly a mapped methodology to track history and progress.

Structured development of technology projects is key to a successful outcome. A reproducible result is the dream of every developer and researcher who wants to bring profit to the market. This is achievable with proper innovation management that involves a disciplined approach with intensive documentation and tracking. For example, the author explained the benefits of structured testing and how it can expedite prototyping.

The author distinguished between research and product development and compared them based on project objectives, approaches, and strategies. Researchers are not tied to a schedule like system engineers who have a product to develop and deliver within a time frame, instead, their focus is on finding the next area to research.

Technology business development and all its implications, including law consideration, limiting lawsuits, and liabilities for products or service issues over the technology life cycle were discussed comprehensively. The author discussed intellectual property documentation and protection, in addition to product labeling and technology transfer.

Who might benefit from the Book?

The book is a great benefit for those wanting to lead a technology-driven organization, business folks wanting to understand the process and workflow of software or hardware development, and the implementation of Information Technology services. The content is meant precisely for system engineers, technology managers, engineering management professionals, technical project and program managers including mid to high-level individuals with background work in the technology industry. Junior level project managers with engineering and technical backgrounds can use it to grow their technical knowledge for its introductory information on System

Engineering and Technology Management. Graduates of business and management schools can use it as a reference to prepare for a position in the workforce.

Conclusion

The Triumvirate Approach to System Engineering, Technology Management, and Engineering Management is a methodology that complements project management. It describes processes of a successful project outcome, that is initiated by understanding system requirements to develop the needed and wanted deliverable which makes it possible to map its life cycle. Technology Management is the branch of operations that studies the market to gain solutions adapted to a specific infrastructure problem.

Engineering Managers have the job of monitoring the progress and decisions of System Engineering and Technology Management processes. Successful technology development requires focusing on reaching the desired result and eliminating the blocks to failure. This approach can be implemented in the academic sector that has a strong research approach and is driven by the market technological advances, with the help of project managers, scientists, and researchers can avoid drifting off their initial research goal due to their “flash of ingenuity” and focus on their research deliverable and not lose the chances to success.

For more about this book, go to: https://www.routledge.com/The-Triumvirate-Approach-to-Systems-Engineering-Technology-Management/Day/p/book/9781003215462?_gl=1*nvjd6m*_ga*NDMxMDQ4MzY5LjE3MDYyMTY4MTM.*_ga_0HYE8YG0M6*MTcwNjlxNjgxNC4wLjAuMTcwNjlxNjgxNC4wLjAuMA..

About the Reviewer



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Norah K. Almadani holds a B.Sc. degree in Chemistry from the University of Minnesota. She furthered her education by obtaining a M.Sc. in Environmental Science and Engineering from the University of Stuttgart. One of Norah's notable achievements is completing the project Management Professional (PMP) certification, which highlights her dedication to enhancing her skills and knowledge in project management.

Norah's Career began as a Research Assistant at the Institute for Sanitary Engineering, Water Quality, and Solid Waste Management at the University of Stuttgart in Germany. During her time there, she conducted research projects focused on eliminating micropollutants from wastewater treatment plant effluents.

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