Chapter 3
FusionFlow:
A Software Development Approach in the Era of Design Thinking and AI

A. D. N. Sarma
https://orcid.org/0000-0003-2093-388X
Jaya Soft, India

ABSTRACT

The chapter begins with a brief introduction to design thinking, AI and its advantages. Outlines how the combination of design thinking approaches with the advantages of AI is relevant to software development. Outline the gaps in the existing software development methodologies. Moreover, explain the need for design thinking and AI in software development process. Besides, explain a conceptual view of FusionFlow, which is a software development methodology. FusionFlow model is formed a fusion of design thinking, tools and techniques of AI and existing software practices. Briefly explain various phases of FusionFlow and explain its key characteristics. Furthermore, provide a mapping between various phases of design thinking and FusionFlow -software development model. Finally, presents the benefits of FusionFlow model.

1. INTRODUCTION

Design Thinking (DT) is a process that concerned with solving complex problems in highly user centric way focuses on human first. Further, DT is based on the methods and processes that designers use, which was evolved from a wide range of different fields including architecture, engineering and business. Besides, DT pro-

DOI: 10.4018/979-8-3693-9531-8.ch003

cess can be applied to any field including but not limited to software development that transforms the way and brings creative way to develop software focusing on innovation and user centric approach. In recent years, the field of Artificial Intelligence (AI) has made major progress and finds its presence in all most all industries including software development from automating code generation to testing and deployment. In today's rapidly evolving digital world, role of DT methodologies together with AI can play a significant role in software development that transform boundaries which leads new possibilities of software development methodologies that overcome business challenges and provide business value.

The broad objective of this chapter is to provide an evolution of software development models, and various types of software development methodologies. In addition, mention gaps in traditional software development. Besides, present evolution of DT and its process. Moreover, present the need for DT and AI in software development. Additionally, provide a conceptual view of new software development process that is based on the fusion of three different disciplines such as DT, AI and existing software development processes. In short, this new software development model is called 'FusionFlow'. Further, explain various phases of the FusionFlow model and its key characteristics. In addition, provide a mapping between phases of DT and FusionFlow: software development model. Moreover, mention various benefits of FusionFlow. Finally, conclude the chapter. This chapter is primarily aimed at business leaders, executives, software practitioners, managers, and developer community to provide a complete view of the FusionFlow – Software Development Model and its benefits.

According to a study by Sreenivasan and Suresh (2024) stated that the two disciplines such as DT and AI work together and how AI technologies can advance the design process in terms of encourage innovation, produce more individualized and user-centric solutions. Further, this study examined the fusion of AI and DT to improve the design by making it more unique and innovative way. Additionally, this study was made clear that there is need to address crucial issues like justice, bias, and ethics when incorporating AI into design processes. Moreover, this study revealed potential future fields of study and cross-disciplinary collaborations influencing AI-infused DT. The design industry could greatly benefit from the combination of DT and AI. Further, responsible AI-driven design results from embracing human-AI collaboration focusing on ethics and user privacy. By proactively and morally incorporating AI, and DT together can transform the design process that improve lives, and contribute to a more inclusive and sustainable future.

This chapter is organized as follows: Section 2 presents evolution of software development, various types of software development methodologies, and gaps in the traditional software development methodologies. Section 3 covers evolution of DT, phases of DT, need for DT in digital software development. Following up,