CHAPTER

2

BLENDING USER EXPERIENCE INTO SOFTWARE DEVELOPMENT PRACTISE

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2.1 THE CHANGING LANDSCAPE OF SOFTWARE DEVELOPMENT

The Fourth Industrial Revolution (4IR) is frequently associated with advanced technologies such as Artificial Intelligence (AI), robotics, Virtual Reality (VR), and the Internet of Things (IoT). Yet, it is equally about the rise of creativity, emotional intelligence, and cognitive flexibility where skills that the World Economic Forum (2018) identified among the top ten requirements for future employment. These competencies highlight the human dimension of technology and emphasise that success in digital innovation now depends not only on technical mastery but also on sensitivity to User Experience (UX).

In conventional software development environments, the focus often remains on defining system requirements, modelling functionality, and ensuring technical accuracy. These aspects are essential, but they rarely capture the feelings, frustrations, and expectations of those who ultimately use the systems. Many projects succeed in meeting formal specifications while still failing to gain user satisfaction. Such gaps reveal an enduring tension between functional correctness and experiential quality.

Human–computer Interaction (HCI) and interaction design fields have long argued that a system can only be deemed successful when it satisfies both functional and emotional needs of users. Central to this perspective is the principle of User-centred Design (UCD), which places human goals, capabilities, and limitations at the forefront of the design process (Dix et al., 2004; Sharp et al., 2019). In industry, the practical expression of UCD has evolved into what is now known as UX research or UX study. Companies frequently use the combined term UI/UX, reflecting the integration of user interface design with broader experiential concerns.

The challenge, however, lies in how UX principles can be effectively embedded into the long-established processes of software engineering. Many teams continue to follow conventional lifecycles such as the waterfall model, where the emphasis on documentation and stage-based progress leaves limited space for iterative user engagement. This chapter explores how UX can be introduced and sustained within such contexts, showing how design thinking and agile practises help bridge the divide between technical precision and human experience.

2.1.1 From Conventional Engineering to Human-centred Thinking

The tension between engineering logic and human empathy is not new. Software development, as a discipline, emerged from engineering traditions that valued predictability, efficiency, and control. Conversely, design traditions celebrate ambiguity, creativity, and empathy (Schön, 1983). Integrating UX thus requires reconciling two epistemologies: One driven by problem-solving and optimisation, and the other by understanding and co-creation.

In practise, UX approaches enter conventional settings in incremental ways. Early efforts often start with minimal interventions, that is conducting short usability tests or developing personas, to familiarise technical teams with human-centred perspectives. Over time,

such activities can evolve into systematic UX programmes embedded within development cycles.

2.1.2 Understanding User Experience in Practise

User experience (UX) is often conflated with usability, yet the two differ in scope. Usability concerns the efficiency, effectiveness, and satisfaction with which users achieve specific goals; UX encompasses the holistic perception of interaction over time, including emotions, aesthetics, and meaning (Hassenzahl, 2010). A system can be usable but emotionally neutral, or even alienating. The ambition of UX is to create technology that not only functions well but also enrich people's lives.

The academic community has described this shift as a movement from user-centred to experience-centred design (Forlizzi & Battarbee, 2004). While UCD focuses on user needs and tasks, experience-centred approaches consider the broader social, cultural, and emotional contexts in which technology is used. This orientation is particularly relevant in Malaysia and other parts of Southeast Asia, where technology adoption is deeply influenced by communal values, institutional norms, and multilingual communication practises.

In these settings, UX cannot simply be imported as a Western design philosophy; it must be adapted to local cultures of collaboration and hierarchy. Designers must negotiate between formal authority structures and participatory ideals. As such, introducing UX into conventional software development in Malaysia represents not merely a methodological shift but also an organisational and cultural transformation.

2.1.3 The Malaysian Software Development Landscape

Although the value of user experience is now widely recognised across global technology sectors, UX adoption in Malaysia remains relatively uneven. Software development in many local organisations is still shaped by engineering priorities, like cost, timelines, and technical compliance, rather than user research or design thinking. Studies have