

The Augmented Employee: Immersive Technologies in Field Service Operations

Anasol Peña-Rios

¹ British Telecom Research Labs, Adastral Park,
Martlesham Heath, Ipswich, UK.
anasol.penarios@bt.com

Abstract. Immersive technologies have the potential to enhance service operations, improving customer service and increasing overall efficiency. By combining them with computational intelligence (CI) mechanisms to produce adaptive context-aware environments for advanced decision-support, these solutions can lead to a much faster knowledge transfer and a deeper understanding of different processes, enhancing experiential learning. This presentation will explore uses of immersive technologies for field service operations in the telecommunications domain.

Keywords: Virtual reality, augmented reality, mixed reality, training, knowledge transfer, experiential learning.

1 Introduction

The increasing complexity in field service operations (FSO) has brought the need for upskilling employee's working efficiency, which represents a big challenge for companies and employees themselves. If we sum up, employees' mobility to this scenario, we face a number of challenges, for example, how to quickly on boarding human resources? Or how to effectively transfer and maintain knowledge within the organisation? To solve this, we need to continuously work in enhancing talent development.

Training specialized workers represents a considerable overhead in any business. In addition, the increasing complexity and number of variants in underlying technologies is complicating the process of ensuring that the workforce is permanently up-to-date and knowledgeable on every technology and product involved in the services companies provide. Furthermore, the risk of losing crucial knowledge that cannot easily be replaced when expert employees leave an organisation (e.g. retirement of aging workforce) is another factor that needs to be considered. Knowledge needs to be distributed over all the actors of the workforce community as well as documentation supports.

The confluence of Immersive Technologies (Mixed Reality (MR), Augmented Reality (AR) and Virtual Reality (VR)) aim to augment human capabilities, providing enhanced memory, improved communication, and sharpened senses for multidimensional thinking and problem solving [1] towards the vision of what has been termed the *augmented*

employee (Fig. 1). Their use can potentially enhance working environments by removing restrictions of time and location, leading to a much faster knowledge transfer and a better understanding of different processes. Furthermore, industry can benefit from the use of immersive technologies to lower operational costs and thus sustain their growth and innovation.

These ideas align with the concept of Service 4.0, which is “a collective term for disruptive technologies—e.g., big data, wearables, and AR—that support and promote innovation for service organizations” [2]. In this regard, immersive technologies have the potential to enhance service operations, with the goal of improving customer service and increasing overall efficiency. By combining them with computational intelligence (CI) mechanisms to produce adaptive context-aware environments for advanced decision-support, these solutions can lead to a much faster knowledge transfer and a deeper understanding of different processes, enhancing experiential learning.

Potential use cases for the industrial workplace can be broadly divided into On-the-Job Support, Training, Knowledge and Skill Transfer [3]. This presentation will describe these scenarios for field service operations in the telecommunications domain using immersive technologies and will reflect on some of the lessons learned.



Fig. 1. The Augmented Employee.

References

- [1] K. Warwick, “Human Enhancement—The Way Ahead,” in *Ubiquity Symposium: The Technological Singularity*, 2014, no. October, pp. 1–7.
- [2] A. Pena-Rios *et al.*, “Furthering Service 4.0: Harnessing Intelligent Immersive Environments and Systems,” *IEEE Syst. Man, Cybern. Mag.*, vol. 4, no. 1, pp. 20–31, Jan. 2018.
- [3] M. Wang, V. Callaghan, J. Bernhardt, K. White, and A. Peña-Rios, “Augmented reality in education and training: pedagogical approaches and illustrative case studies,” *J. Ambient Intell. Humaniz. Comput.*, pp. 1–12, Jul. 2017.