Chapter 12
Unleashing Metaverse for Sustainable Development: Challenges and Opportunities

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ABSTRACT

Metaverse has revolutionized the world of digital technology. Metaverse aspires to seamlessly combine physical and digital realities to create an immersive, linked digital cosmos. Metaverse a naïve concept previously, is gaining momentum and is drawing attention from the researchers all round the world. Today, the world is looking forward to sustainable development which aims to tackle the problems in broadly three major areas which are based on social, eco-nomic and environmental factors. Blend of physical and digital realities might enable more ef-fective and sustainable methods of communication, collaboration, and resource utilization due to its immersive digital environment and cutting-edge technologies. This chapter

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explores the chal-lenges presented by metaverse in the context of achieving sustainable development and also dis-cusses the opportunities that lie ahead of the user community in harnessing metaverse to achieve sustainable development.

1 INTRODUCTION

The idea of the metaverse has captured the attention of futurists, visionaries, and technologists all across the world. It symbolizes a combination of the actual world and the digital universe, a virtual environment where reality is created and experienced. This term Metaverse was coined by Neal Stephenson in a novel named "Snow Crash" (Mystakidis, S. 2022).The whole idea of metaverse is not novel (Kohler et al. 2008).The possibility of a fully developed metaverse is becoming more likely as Virtual Reality (VR) and Augmented Reality (AR) technologies continue to grow and make new discoveries. The sudden introduction and use of virtual reality in our daily lives has gained momentum right after the pandemic (Sarkadi et al. 2020), (Dianwei et al. 2022), (Theodorou et al. 2021). Opportunities for sustainable development appear in this context as a ray of hope, promising ground-breaking responses to some of the most urgent problems facing humanity.

Sustainable development, a worldwide necessity strive to meet the demands of the present without compromising the capacity of future generations to accommodate to their own needs (Tozzi 2022). This includes a wide range of interrelated goals, from social justice and environmental protection to economic development and educational achievement. As mankind deals with expanding environmental catastrophes, rising inequality, and the need to adapt to quickly shifting global conditions, achieving these goals has never been more important (United Nation 2022).

The metaverse has the potential to significantly advance sustainable development on a number of fronts due to its ability to seamlessly blend physical and digital worlds. It provides a fascinating range of opportunities that go well beyond the boundaries of entertainment and games. The focus of this article is on the possible uses of the metaverse in tackling global concerns, while also exploring the opportunities and difficulties posed by its incorporation into the goal of sustainable development.

The importance of the metaverse in sustainable development is examined in the first section of this chapter, which also examines how this cutting-edge technology might advance important causes like socioeconomic inclusion, education, and environmental preservation. The metaverse has the potential to have a transformational effect within these disciplines, reinventing how we approach pressing problems. The metaverse does pose with certain difficulties, despite its potential. The second portion explores the intricacies and challenges that must be overcome. Data privacy, digital identity, and ownership rights ethical conundrums need to be