

ABSTRACT

Screenless display technology is a transformative advancement in the field of visual communication, aiming to eliminate the traditional reliance on physical screens such as those found in televisions, monitors, and smartphones. This technology encompasses various methods of visual representation, including holography, retinal projection, light field displays, and acoustic/ultrasonic displays, which enable users to experience content in a more immersive, interactive, and intuitive way. Screenless displays project images directly into the air, onto the retina, or into the surrounding environment, allowing for 3D visuals, augmented reality, and hands-free interaction without the need for a physical surface.

The report explores the core principles of these technologies, highlighting how they work and their potential applications in diverse fields such as healthcare, entertainment, education, and consumer electronics. Additionally, it examines the challenges facing screenless display technology, including issues with resolution, power consumption, cost, and scalability, while also forecasting the future of this technology. The convergence of advanced optics, laser technology, artificial intelligence, and wearable devices is expected to further enhance the potential of screenless displays, creating new forms of communication, entertainment, and information-sharing. This report outlines the promising future of screenless display technology, offering insights into its implications and the path forward for its widespread adoption.