

# Designing an Immersive Library Portal: emerging technologies and challenges

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## Abstract

Immersive library portals show a 3D environment for education, entertainment, or library services. Augmented reality (AR) and Virtual Reality (VR) are emerging immersive technologies. These are gradually being implemented in many libraries worldwide. AR is the blending of the natural world onto the virtual world. In contrast, virtual reality (VR) is a simulated environment that may be "similar to" or differ entirely from our real world. The digital library section of the central library IIT Kharagpur implements innovative immersive information delivery services using web-based augmented reality (WebAR). The users also experience virtual reality using the Oculus Go VR headsets. This study does an online survey of selected 150 such library portals that provide AR/VR/MR/XR services to their users. The research findings helped us prepare a critical parameter index that worked as a reference tool for designing and developing our immersive library portal. The survey data assessment shows that 66% of the libraries allow their users to borrow the VR headset. Data analysis shows HTC Vive as a preferred VR device headset, and 30% of the libraries use Oculus as a VR device. We found that only 46.9% of the libraries display FAQs or safety instructions for the VR device setup & damage-related information. During our study, most library portals have not mentioned the usage process of the devices. The "Unity3D" and "Unreal Engine" are the common VR software development platforms. An analysis of the library addresses shows that developing countries like the USA, UK, France have these services in almost all libraries. In contrast, such services are practically negligible in SARC countries. The study proposes a model framework that a library portal must implement while offering such services. This study will help the academic librarians who think about implementing AR/VR services in their libraries.

**Keywords:** *Immersive Library Services, Augmented reality (AR), Virtual Reality (VR),*

*HTC Vive, Oculus, web-based augmented reality (WebAR).*