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Information technology — Information modelling for virtual, augmented and mixed reality based education and training systems

Technologies de l'information — Modélisation de l'information pour les systèmes d'éducation et de formation basés sur la réalité virtuelle, augmentée et mixte

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Contents

Page

Foreword

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Introduction

Virtual, augmented, and mixed reality (VR/AR/MR) systems that are used for education and training require approaches that support systems integration with various industry areas. Because the integration aspects should include common functionalities, unique information modelling requirements are necessary. Use cases for education and training have been reviewed to determine education and training technologies that are in common use and to determine an information model that can be used to support these types of activities supported by VR/AR/MR technologies. This document includes these use cases.

VR/AR/MR based education and training systems have requirements related to learning and teaching approaches, representation, exchange, data, and interaction, in the following ways. First, existing learning and teaching approaches can be integrated with the use of VR/AR/MR technology and form the basis for user interactions with the systems and its elements. Based on differences in learning and teaching methods when using VR/AR/MR, requirements that support interaction and simulation should be included. For example, the use of haptics can be added to support user interaction with the system. Second, visual and interactive representation should be provided to enhance the effectiveness of education and training. Simulation can be an important aspect in representing information and in understanding education and training content. Third, information should be exchangeable over heterogeneous computing environments so that it is accessible to users to support their education and training activities anytime and anywhere. Fourth, education and training information and data should be organized, transferred, stored, and managed securely. Fifth, interfaces for interacting with devices and sensors should be included and should meet the requirements of users.

This document provides requirements and recommendations for developing VR/AR/MR based education and training systems to meet the requirements listed above. The requirements and recommendations include concepts, information modelling architecture, standards based functional components, and implementation components for VR/AR/MR based education and training.