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| Abstract | Definitions |
| Purpose | Review and comments |
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1. **Definitions, acronyms, and abbreviations**
   1. **Definitions**

For the purposes of this document, the following terms and definitions apply. The IEEE Standards Dictionary Online should be consulted for terms not defined in this clause. [[1]](#footnote-1)

VR (Virtual Reality) : The word is made up of Virtual and Reality. Virtual Reality is similar to the real world created by artificial technologies using computers, but it means a specific environment or situation or technology itself that is not real.

AR (Argumented Reality) : Augmented Reality is a branch of Virtual Reality. This is a computer graphics technique that synthesizes virtual objects or information into an environment that actually exists, making it look like something that exists in the original environment.

XR (eXtended Reality) : eXtended Reality is ultra-immersive technologies and services that include representative forms such as Virtual Reality and Augmented Reality technologies.

Metaverse: The word ‘Metaverse’ is made up of the prefix ‘meta’ (meaning virtual·beyond) and the stem ‘verse’ (a backformation from ‘universe’), meaning a three-dimensional virtual world. More specifically, it is widely used in the sense of a living and gaming virtual world that can coexist both reality and non-reality in the overall aspects of politics, economy, society, and culture.

Lage space: Large space means a space where a person can walk (free-roam) in a virtual reality space and provide the naturally feeling of such movement. The size of the space is defined according to the number of concurrent users: 5x7m for minimum size for 1-3 users, and 18x18m for 8-10 users.

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| Users | Minimum Size | Optimal Size | m² |
| 2~3 | 5m\*7m | 6m\*8m | 48m² |
| 3~6 | 10m\*10m | 12m\*12m | 144m² |
| 6~8 | 15m\*15m | 16m\*16m | 256m² |
| 8~10 | 18m\*18m | 20m\*20m | 400m² |

Realistic Content : Digital content that uses various sensors to recognize and analyze human behaviors such as human gesture, motion and voice, making virtual digital content interactive as if it was a real object.

Frameworks : Frameworks provide functionality in a series of collaborative forms to enable reuse of designs and implementations that correspond to specific parts of the software.

Interactions : Interactions in which characters and objects in the content are affected by the user's actions, causing feedback such as movement, sound, manipulation, etc.

Motion tracking: Tracking people moving in real space and applying them to characters in virtual space.

Optical cameras: Optical cameras are used to track a person's motion. It is achieved by inverting the three-dimensional coordinates of the target through triangulation after making the target to be projected to the same point from at least two cameras

IOT(Internet of things): Technique that connects to internet using censor and communication function built into various things.

HMD(Head Mounted Display) : The display device worn on the head. It is mainly used as a display device for the implementation of virtual or augmented reality, and is also used in combination with 3D display technology. Because it is mounted on the head, it has a shape of sunglasses with a lens which can see objects in the nearest place with light and thin displays such as LCD and OLED.

Digital twin system: Same objects that exist in both in reality and virtual reality; sensual movement existing in real object and visual movement existing in virtual reality.

Haptic: Technique that embody the sense of touch applying power, vibration, and motion to the user.

Tracking server: Server that provide information producing the location and direction of object and people collected from various tracking sensors.

Tracking marker : Tracking markers are attached to an object or human body to be tracked by a motion capture system. A 'passive marker' is covered with a material that reflects infrared light generated by IR cameras and an 'active marker' uses the flicker of the LED itself.

VR Backpack PC : A backpack-shaped PC with a high-performance CPU and GPU that can be powered by batteries and drive VR content at a stable framerate to allow the wearer to roam freely.

Calibration : Califration calculates the position and orientation of each IR camera used for motion tracking and the amount of distortion in the captured image to provide more accurate motion tracking. Such calculation need to periodically carried out as ambient factors such as fluctuations in temperature and other environmental conditions that can naturally degrade calibration accuracy over time.

Rigidbody : A collection of three or more markers on objects interconnected with each other, assuming that objects tracked by the IR camera are impossible to deform. Each object can be distinguished by a pattern of three or more markers.

Latency : When a user takes an action or operation, the runtime (latency) that takes to appear on the screen as a resulting value is reflected in the content (such as a game or simulation).

Walkthrough : VR technology that allows users to touch and feel virtual objects while actually walking around the virtual reality space. Such technology provides superior experience of freedom, angle diversity and informational and interactive play compared to traditional methods of using controller-to-controller movement.

Disaster response training system : A real-world training program that implements various disasters in virtual reality and provides response training or experience without the risk of users (trainers or experiencers).

IMU(Inertial Measurement Unit): Inertial measurement unit that measure power, angle and ratio using accelerometer and tachometer.

Gloves: It is devices for tracking hands

Device Controller : A physical device that generates an interactive elements in a virtual space through a physical input signal.

Physical space : A space of reality where a substance or object may exist or something can happen.

Virtual space : Virtual space created by computers, internet, etc. Not the real world.

Vitual Object : Virtual objects for interaction in virtual space.

Interactions : Interactions in which characters and objects in the content are affected by the user's actions, causing feedback such as movement, sound, manipulation, etc.

Accelerometer: A sensor for measuring linear acceleration or angular acceleration by measuring inertia-induced reaction.

* 1. **Acronyms and abbreviations**

CBR constant bit rate

FPS frame per second

HMD head-mounted display

IMU inertial measurement unit

6DOF six degrees of freedom

VR virtual reality

1. IEEE Standards Dictionary Online is available at: <http://dictionary.ieee.org> [↑](#footnote-ref-1)