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| Project | **HMD based 3D Content Motion Sickness Reducing Technology**<<http://sites.ieee.org/sagroups-3079/> **>** |
| Title | **Propose to new PAR of the ‘Motion to Photon (MTP) Latency in Virtual Environments’** |
| DCN | **3079-20-0003-00-0000** |
| Date Submitted | **February 2, 2020** |
| Source(s) | **Lim, Hyun Kyoon** hlim@kriss.re.kr **(KRISS)****Choi, Dong Soo** soochoi@dau.ac.kr **(Dong-A University)** |
| Re: |  |
| Abstract | This document contains a proposal to create an IG (interest group) formation on the appropriate guide lines for the ‘Motion to Photon (MTP) Latency in Virtual Environments (VE)’ to reduce the cyber sickness of user wearing HMD.  |
| Purpose | Virtual reality (VR) is already being applied in various fields and the number of users is also increasing regardless of age or gender. Some users are complaining of cyber sickness when they experience the VR wearing head mounted device (HMD). However, it is hard to find a standard for reducing cyber sickness in VR field. Therefore, the purpose is to present appropriate guide lines that are useful for applying to VR contents including screen motion parameters.  |
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**PAR for a New IEEE Standard**

# Section 1

* 1. **Assigned Project Number**:

P3079.3

* 1. **Type of Document: *Standard, Recommended Practice, or Guide***

Standard

* 1. **Life Cycle: *Full Use or Trial Use***

Full Use.

# Section 2

**2.1 Project Title:**

Motion to Photon (MTP) Latency in Virtual Environments

# Section 3

**3.1 Working Group: Human Factor for Immersive Content**

**3.2 Sponsoring Society and Committee:** C/SAB

[A listing of Sponsor P&Ps and Sponsor Scopes is available at <https://development.standards.ieee.org/pub/view-sponsor-pnps>]

**3.3 Joint Sponsor:** (chosen from drop down menu)

If you are not adding a joint sponsor to this project, you may leave this field blank.

# Section 4

**4.1 Sponsor Balloting Information: *Individual or Entity***

Individual

**4.2 Expected Date of Submission of Draft to the IEEE-SA for Initial Sponsor Ballot**

**Month: Dec. Year: 2021**

**4.3 Projected Completion Date for Submittal to RevCom**

**Month: Oct. Year: 2022**

# Section 5

**5.1 Approximate number of people expected to be actively involved in the development of this project:**

30

**5.2 Scope of the proposed standard:**

This standard is intended to provide a standard guide line for virtual reality contents aimed of providing database to reduce cyber sickness cause by the motion to photon (MTP) latency in Virtual Environments. The scope of this standard includes specific requirements of contents and test methods only for MTP including hardware and human factors. Here, hardware and human factors will be included in the standard. Hardware includes display types, rendering modes, head tracking methods, field of view, flicker, etc. Human factor includes age, gender, prior experience, cyber sickness susceptibility, duration, etc. Among many parameters that are affecting the cyber sickness, MTP related parameters are collected and suggested in this standard.

**5.3 Is the completion of this standard contingent upon the completion of another standard? No**

**5.4 Will this document contain a Purpose clause? No**

**5.5 Need for the project:**

Virtual reality has been introduced already for many years and heavily used in the various fields as well as video games. The users are getting increased regardless of age, gender, and cyber sickness susceptibility even in hospitals to explain the strategy of their disease treatment process. Nevertheless, it is hard to find a standard for reducing cyber sickness in VR field. Good guide lines regarding VR contents including screen motion parameters (rotation, motion axes, zoom in, zoom out speed, display range, etc.) would be useful to contents makers to reduce cyber sickness. It would not be, however, an easy task or simple tests to make such a complicate database. Uncertainty during measuring the levels of cyber sickness caused by screen motion parameters, hardware diversity, and human factors will be not located in acceptable range based on the classical conservative measurement standard. Nevertheless, the standards should be made for the many users who are suffering from the unguaranteed or tested for their motion sickness safety.

**5.6 Stakeholders for the standard:**

Content Providers, Manufacturers, Constructors, Real-Estate Developers, Medical Equipment Provider, Travel Businessman, etc.

# Section 6

**6.1 Intellectual Property:**

**A. Is the Sponsor aware of any copyright permissions needed for this project? *No***

**B. Is the Sponsor aware of possible registration activity related to this project? *No***

# Section 7

**7.1 Are there other standards or projects with a similar scope? *No***

**7.2 Joint Development - Is it the intent to develop this document jointly with another organization? *No***

**7.3 International Standards Activities**

**A. Adoptions - Is there potential for this standard to be adopted by another organization? *No***

**B. Harmonization - Are you aware of another organization that may be interested in portions of this document in their standardization development efforts? No**

**7.4 Does the sponsor foresee a longer term need for testing and/or certification services to assure conformity to the standard? *Yes***

**Additionally, is it anticipated that testing methodologies will be specified in the standard to assure consistency in evaluating conformance to the criteria specified in the standard? *No***

# Section 8

**8.1 Additional Explanatory Notes:**

**8.2 IEEE Code of Ethics**

**I acknowledge that I have read and I understand the** [**IEEE Code of Ethics**](http://www.ieee.org/portal/pages/iportals/aboutus/ethics/code.html)

**I agree to conduct myself in a manner that adheres to the IEEE Code of Ethics when engaged in official IEEE business.**