

## **Gist of the 23rd EA-RTM Symposium**

### **"Smart Entertainment"**

Monday, November 30, 2020, Seoul, Korea

The National Academy of Engineering of Korea (NAEK), the Chinese Academy of Engineering (CAE), and the Engineering Academy of Japan (EAJ) shared the current issues of technological cooperation on Smart Entertainment as well as overall technological cooperation among Korea, China and Japan in the 2020 EA-RTM Symposium. Speakers from both academia and industries enriched the discussion with wide experience and deep understanding of the smart entertainment. The discussion sessions included detailed explanation and introduction of state-of-the-art technologies on the fields of smart entertainment, including but not limited to IT, VR/AR, AI, games and exhibition from the three countries.

The presenters throughout all the sessions reached a consensus that technological innovation and convergence between different disciplines are necessary to advance into a knowledge-based industry of smart entertainment. The presentations and discussions included valuable information of the key concepts, and up-to-date technologies along with the examples of practical applications.

The key value of smart entertainment is creating a new creative, interactive and exciting user experience. Although there are a number of challenges and difficulties in each field of smart entertainment, further efforts on technological advances from both public and private would provide solutions. In addition, considering the interdisciplinary nature of smart entertainment industry, there should be active cooperation across different sectors of East Asian countries, especially in the era of difficulties and uncertainties from COVID-19. It was agreed that cooperation mechanisms including a platform for sustainable technology cooperation should be established to maintain and develop the comparative advantages of each country and complement each other's weaknesses.

### **Session Summary**

#### **Keynote speech**

Sungsoo Chris Lee, who is a CEO of SM Entertainment, delivered a keynote speech on the trends and examples of smart entertainment. Based on the company's strong contents assets, SM Entertainment developed new business areas such as but not limited to virtual showcases, hologram musicals, and introduced a new concept of K-POP where musicians interact with their own characters of the virtual world.

#### **Session I: Trends of Digital Transformation in Smart Entertainment**

As for the first presentation in the session, Sung-Ho Sean Lee, CEO of d'strict introduced the development of immersive media technology and smart entertainment, and recent outcomes of d'strict, such as hologram concert in cooperation with SM Entertainment. He emphasized that the future entertainment industry will create new virtual experience using media technology, and more dreamlike moments will come true through technology innovation.

Next, Prof. Junjun Pan of Beihang University explained about 3D modelling technology for flowers. He introduced the component-based approach to flower modelling leading to more realistic illustration with less effort. Through this innovative approach, it is possible to lower the calculation cost of modelling and create diverse types of flowers through combinations of components.

As for the last speaker of the session, Dr. Koichiro Eto of National Institute of Advanced Industrial Science and Technology, presented the previous works on visualization of internet connection, and recent works to establish an environment for co-creation. World-changing inventions would be possible

through co-creative innovation, where large number of users can contribute to innovation together. He also presented an example of Tsukuba Mini Maker Faire where co-creative innovation is taking place.

The three speakers commonly pointed out the importance of technological innovation that brings new user experience and industry paradigm in the smart entertainment industry. The speeches were based on different technologies and industries, but the speakers expressed optimistic viewpoints on the innovation that would bring brighter future of the industry.

### **Session II: Future Innovation on Smart Entertainment**

In the first presentation of this session, Dr. Joon Young Yang, a senior vice president of LG Display, introduced the VR and AR technologies at the frontier level. He introduced a recent case of OLED on Silicon, with various advantages in microdisplay industry, and examples of OLEDoS application to VR and AR devices and efforts for further innovation from LG Display.

Secondly, Prof. Takuji Narumi of Tokyo University presented the embodiment in VR, which allows us to possess different types of bodies in the virtual world. Recent applications of VR already demonstrated that people can enjoy different abilities, such as playing piano or becoming a cartoon hero in the virtual world. He suggested that embodiment through multi-sensory feedback in VR dramatically changes our perception, behavior, and cognitive process, and therefore we can design ourselves in the new world.

Lastly, Prof. Baoquan Chen of Peking University presented about the effects of technological innovation on the future visual entertainment industry. He expects that the paradigm of movie production will look very different from the traditional paradigm under the AI-era, and the synergy of connecting arts and technology such as data mining technology to produce artificial environments would be significant.

The three presentations introduced up-to-date technological application of smart entertainment industry specifically from VR, AR and AI technology perspectives, which are the promising fields of the future smart entertainment industry. These presentations presented interesting and interactive types of user experience, showing the importance of close linkage between technological advance and actual products.

### **Session III: Prospects of Game Industry**

In the first presentation of this session, Mr. Jaehwan Jay Lee, CEO of One Store, presented the key trends of recent game market. He has suggested the three key trends. The first one is a “beyond device”, which expands service provision through cross-platform. Another key trend is a “beyond space”, gaming without actual hardware such as cloud gaming. The other trend is a “beyond Google”, which suggests various alternative markets for higher level of market competition.

Secondly, Mr. Yunfei Zhang who is a founding director of Tencent Future Network Lab, focused on the cloud based gaming industry and related technologies. Cloud gaming, where users can play games through remote server without actual devices, suggests a new paradigm to the value chain of game industry. Even though there are challenges such as inefficiency and cost of large data centers, Tencent continues to improve the user experience based on technological advances.

Lastly, Mr. Takashi Kudo, a communication director of TeamLab Borderless, showed the new concepts of interactive exhibitions. In TeamLab’s exhibitions, visitors can actively interact with the objects, actively collect the information, and can even lose the way since there is no traditional map for the exhibition. These exhibitions promote the motivation and inspiration of the visitors, and suggest a new way to interact with culture, environment, and arts.

The third session focused on the specific fields of smart entertainment – especially the game industry. These fields provide exciting user experience and evolve based on the interaction with the users. The speakers pointed out both changing paradigm of user experience and wide opportunities to appeal to the users, and that technological innovation would be the keys to meet the challenges.