



頭條報道	Headline	1 - 3
商會與你	ECA Cares	3
搵食資料	Notes to Trade	4
商會活動	Organised Activities	4 - 7
即將舉辦之活動	Upcoming Event	7
會員動態	Members' News	7

## 頭條報道 *Headline*

### Understanding Metaverse

#### 認識元宇宙

Ir Dr FC CHAN

Wikipedia defines the "Metaverse" as follows: "In futurism and science fiction, the Metaverse is a hypothetical iteration of the Internet as singlet, universal and immersive virtual world that is facilitated by the use of virtual reality and augmented reality headsets." In layman terms, a Metaverse is a network of 3D virtual worlds focused on social connection in which all individuals have their respective identities to experience an alternated life in the virtuality. The purpose of this article is to provide some basic understanding about Metaverse and its seven layers.

The word Metaverse was first appeared in a science fiction book "Snow Crash" written by Neal Stephenson in 1992 and Metaverse is the name of the network world with headset for entering the virtual world. In 2018, the movie "Ready Player One" presented the real world and virtual world and avatar is the identity figure in the virtual world. Figure 1 shows the real world environment with avatar in the virtual world.

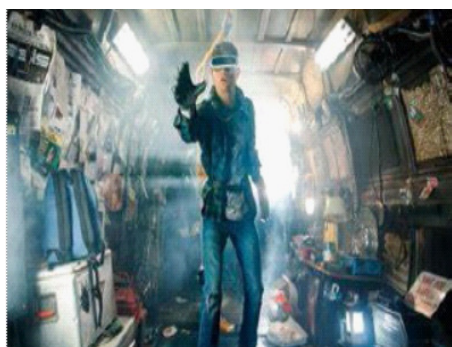


Figure 1 The movie "Ready Player One"

The development of Metaverse became noticeable from 2021 as all related supporting technologies were the enablers, including the Graphic Display Power

Chip Unit (GPU), Game Engine, VR (Virtual Reality), AI (Artificial Intelligence), IoT (Internet of Things), 5G and Blockchain technologies. These groups of technologies can be abbreviated as BIGANT (Blockchain, Interactivity, Game, AI, Network - 5G, T- IoT). Using VR headset (eyeglasses) and hand devices, individual users have their respective avatars (similar to the user's physical self, to experience an alternated life in the virtuality.

Metaverse is a virtual world built in real world for social, entertainments, create, exhibit, educate and exchange activities. There are eight key characteristics of Metaverse: Identity, Friends, Immersive, Low Friction (minimum delay), Variety, Anywhere, Economy and Civility.

Roblox is a company producing VR games and having an on-line game platform for game creation. In these games, Robux is its virtual currency. During the COVID-19, some real world event was held in the virtual world, for example, Graduation Ceremony of UC Berkeley was held at Minecraft game platform, AI Seminar and workshop was held at Animal Forrest game platform. Singer Travis Scott organized a singing show in Castle Night game platform.

The real world and virtual world integration has been accelerated particularly after the global pandemic: work culture has changed, offices downsizing by the use of video conferencing like Zoom, digital economy has risen, etc. Figure 2 shows a converged universe of a real and virtual world. In the virtual world, it can be subdivided mirror world and native world. Currently, the Metaverse is still at its infancy state and may need few more years to develop its native economy including assets and trade.

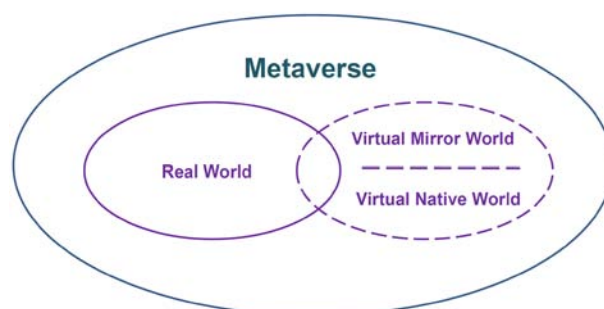


Figure 2 Metaverse World

## Understanding Metaverse

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Gaming in the Metaverse is the mainstream or driving force to make the platform more accessible. Recently, the applications in education, trainings, team collaboration and virtual office are some good results of the gaming development. In fact, the game platform allows more contents creators and business model does change.

There are seven layers suggested for the Metaverse structure as shown in Figure 3. These 7 layers adopt various technologies to provide the required user experiences.

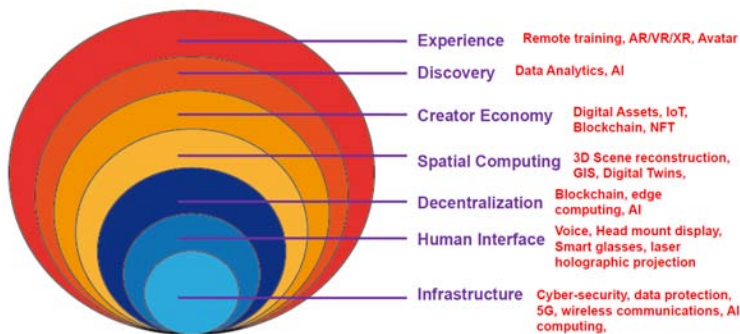


Figure 3 Metaverse Structure

### Layer 1: Experience

Metaverse is a dematerialized version of physical space, not only 3D graphics as it can provide an abundance of experiences not available now to enjoy. For the case about Singing show of Travis Scott, there is no worry of buying a front row ticket as all tickets to join will be in the front row. The physical space limitations can be removed and provide a range of experiences in the digital world. Massive Interactive Live Events (MILEs) are coming to provide new experience with further enhancement in VR, AR (Augmented Reality), MR (Mixed Reality), XR (Extended Reality) technologies. AR is having virtual elements overlaid on the real world. MR is with anchored virtual elements that can interact with the real world. XR is an umbrella term for AR, VR and MR.

### Layer 2: Discovery

Discovery layer, with inbound and outbound, is “the push and pull that introduces people to new experiences”. Inbound discovery occurs when people are actively looking for information. Meanwhile, outbound refers to the method of seeking to push messages out to people whether or not they asked for it. Data Analytics is the essential technology. Customers can learn about the platform provided by Metaverse.

### Layer 3: Creator Economy

In Metaverse adopting Web 3.0, everyone will be able to easily become a creator on the web. Creators use tools, templates, and marketplaces of content in a top-down, creatively centered process. Digital assets and/or linked with Non-Fungible Token (NFT) and Blockchain is the required technology. Blockchain is a digital database or ledger that is distributed among the nodes of a peer-to-peer network. A database structures its data into tables, whereas in Blockchain, structures its data into blocks (stringing them together). It is a database of information and a distributed ledger; it is a database of information and a distributed ledger; it contains a series of blocks with a sequential chain-like structure as shown in the Figure 4. NFT is a unique digital identifier that cannot be copied, substituted or subdivided and is recorded in a Blockchain.

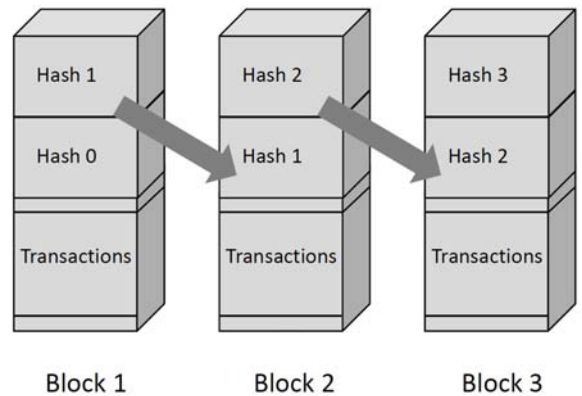


Figure 4 Blockchain structure

### Layer 4: Spatial Computing

Spatial computing is the digitization of activities of machines, people, objects and the environment where action and interactions taking place. Digital twin and 3D reconstruction are the required technologies to support to drive value across products, peoples, places and processes. Spatial computing can be described as the technical solution that merges virtual and augmented reality by using the cloud, enabling sensors to react with motors and digitizing the physical world. It blends VR, AR and MR enabling users to interact with 3D environments.

### Layer 5: Decentralization

Metaverse is designed not to be ruled by single entity or authority and decentralization is the key feature as being open and distributed. Blockchain technology provides an immutable activity ledger that can precisely track financial transactions. Decentralized Metaverse can help ensure privacy and security using cryptographically secured digital identities and smart contracts.

## Layer 6: Human Interface

The key aspect of this layer of Metaverse is human interference. The technologies allow users to explore Metaverse through sophisticated human-computer interaction. For example, the use of biosensors and neural interfaces between brains and computers, called brain-computer interface (BCI). With the combination of spatial computing and human interface, information can be gathered about surroundings and creating shared AR experiences by just looking around at the physical world. Also, microelectromechanical systems (MEMS) that facilitate tiny sensors, compact and long-lasting batteries are also demanded. The virtual world can thus accept a person's body as a realistic avatar.

## Layer 7: Infrastructure

The seventh layer utilizes technology that makes everything become real. The communication of various infrastructures using 5G or even 6G can improve bandwidth and reduce network contention and latency. The capacity of Metaverse is also enhanced and AI is an important computing power behind. It is interesting to note that the gaming and associated techniques also form a culture. Gaming can be considered as one of the modern skills as

compared the Chinese old "six arts" (Rites, music, archery, chariot racing, calligraphy and mathematics 禮樂射御書數). However, the gaming environments do need a reliable communication connection with a faster data transmission like 5G so that the VR headset with wireless connection with a PC or console can be fully integrated. In addition, Blockchain wallet is required as Metaverse game involving the use of crypto currencies or digital money.

The development of Metaverse will inevitably continue to affect our daily life in all aspects. We need to embrace the trend and try our best to understand and grasp the opportunities and possible benefits it might bring to us sooner better than later. The assessment of trade skills and process knowledge can be carried out via Metaverse simulated environment. Hearing with Metaverse Court to protect witness and enhance security has been taken place. Metaverse exhibition as a multi-venue international exhibition has been successfully organized. Metaverse coaching and training has been provided without the need of real person present by using the avatar with AI to simulate human sense. Metaverse health can allow mental health of people to interact with physical and digital objects. The Metaverse era has arrived!

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商會與你 *ECA Cares*

## 恭賀柏高工程有限公司

### Congratulations to Pekko Engineers Limited

本會恭賀柏高工程有限公司中標於啟德2B5號和2B6號地盤公營房屋發展計劃建築工程的電力裝置工程，並祝順利如期完成。

On Behalf of Hong Kong Electrical Contractors' Association, we would like to convey our congratulations to **Pekko Engineers Limited** for the Electrical Installation for Construction of Public Housing Developments at Kai Tak Sites 2B5 and 2B6 (Sub-contract to Contract No. 20210258).

## 香港房屋委員會 招標公告

香港房屋委員會招標公告可在以下網頁查看:

<http://www.housingauthority.gov.hk/en/business-partnerships/tenders/>

## 商會活動 Organised Activities

### 兔年春節團拜

### 2023 Year of Rabbit Chinese New Year Gathering

2023兔年會員新春聯歡團拜已於2023年2月10日(星期五)(農曆正月廿十日)在本會舉行。兔年春茗晚宴於同日晚上在香港銅鑼灣告士打道311號皇室堡5樓迎禧舉行。多謝各會員參加。

Celebrating the year of Rabbit was held on 10 February 2023 (Fri), members first met at Association venue to greet each other for a prosperous year, then moved to Cheers Restaurant, 5/F, Windsor Plaza, No. 311, Gloucester Road, Causeway Bay, Hong Kong for Spring dinner. Thank you all joining members.



### 馬來西亞參觀 Malaysia Visit

於2023年2月16 - 19日(星期四至星期日), 為期四天的馬來西亞之旅, 包括參觀電匯排及電線碼廠房。並於2023年2月18日參加馬來西亞電業公會TEEAM 70週年白金周年晚宴在One World Hotel成功舉行盛大晚宴。

On 16 - 19 February 2023 (Thur to Sun), a four-day trip to Malaysia, including a visit to busduct factory and cable cleat factory. The Electrical and Electronics Association of Malaysia's (TEEAM) 70th Platinum Anniversary Dinner was held on 18 February 2023 at One World Hotel Petaling Jaya.



## 商會活動 Organised Activities

### 馬來西亞參觀 Malaysia Visit



### 機電業博覽2023

### Electrical and Mechanical Expo 2023

機電業博覽2023 - 機電新世代，已於2023年3月3日(星期五)在葵芳新葵街13-19號職業訓練局葵涌大樓2樓禮堂舉行。機電工程署聯同香港機電業推廣工作小組舉辦主題日及講座，由機電業界代表向參觀人士介紹機電業的工作範疇、就業前景、晉升機會、培訓和進修資訊。

The Education & Careers Expo 2023 - Grooming Young Talent Building Smart City, the E&M Expo 2023 was held on 3 March 2023 (Fri) at the 2/F, VTC Youth College, 13-



### 機電業博覽2023

### Electrical and Mechanical Expo 2023

19 San Kwai Street, Kwai Chung, NT. The Electrical and Mechanical Services Department (EMSD) and the Hong Kong Electrical & Mechanical Trade Promotion Working Group jointly organised the theme day and a series of seminars. Representatives of the E&M trade introduced to visitors the scope of work, career prospects, promotion opportunities, and training and continuing education in the industry.



### 啤酒同樂日

### Beer Fun Day

港九電業總會與本會聯合舉辦『啤酒同樂日』，已於2023年3月24日(星期五)在北角英皇道58號康福園地下A及B號舖太平洋酒吧舉行。是晚節目內容豐富，包任飲任食大會指定啤酒及小食，為增加節目氣氛，是晚設有獎遊戲及卡拉OK，多謝會員踴躍參加。

The Beer Fun Day jointly organized by "Hong Kong & Kowloon Electric Trade Association" and HKECA was held on 24 March 2023 (Fri) at Bar Pacific, Shop A&B, G/F, Comfort Gardens, 58 King's Road, North Point, Hong Kong. Thank you all joining members.



## 商會活動 Organised Activities

### 接駁電力供應研討會 Hong Kong Electric Company Limited Seminar

本會聯同香港電燈有限公司合辦接駁電力供應研討會，已於2023年3月28日(星期二) 在本會舉行，當日會員非常之踴躍參與及發問有關技術性等問題。

Guide to Connection of Supply Seminar, jointly organised by our Association and Hongkong Electric Company Limited, was held on 28 March 2023 (Tue) at HKECA Office. Our members actively participated and asked questions for enhancing their technical skills.



### 職業安全健康局感謝典禮

### Occupational Safety and Health Council

職業安全健康局「行業安全及健康委員會2019-2023 屆度感謝典禮」已於2023年4月3日(星期一)舉行。感謝本會於2019 年至 2023 年期間擔任機電業和汽車業及維修業安全與健康委員會委員，為促進香港的職業安全與健康標準提供寶貴服務。

A Ceremony was held by the Electrical & Mechanical Trade and Trade and Repair of Vehicles Safety and Health Committee of the Occupational Safety and Health Council on 3 April 2023 (Mon). A certificate to express gratitude to our association for the valuable services during 2019-2023 in fostering the occupational safety and health standards in Hong Kong.



### 秋季一日遊2023 HKECA Tour 2023

本會春季一日遊，已於2023年4月16日(星期日)舉行。遊覽：流水響「天空之鏡」、錦田壁畫村、錦田樹屋。多謝各會員參加。

HKECA Tour 2023 was held on 16 April 2023 (Sun). Thank you all participating members and friends.



### 秋季一日遊2023 HKECA Tour 2023



### 「學校起動」計劃 Project WeCan

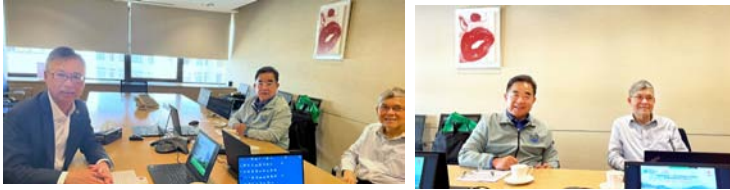
於2023年3月1日(星期三)，由港鐵人力資源管理部安排在九龍灣地鐵車廠為大埔佛教大光慈航中學學生舉行港鐵業務簡介及工作機會講座。



## 商會活動 Organised Activities

### 「學校起動」計劃 Project WeCan

於2023年3月10日(星期五)，與香港教育大學合辦進行網上講座，優質教育發展整全支援項目 - 聯校教師職業發展日，講題：家居用電安全。



## 即將舉辦之活動 Upcoming Activities

### 廣州國際照明展覽會

#### Guangzhou International Lighting Exhibition

2023年廣州國際照明展覽會構建“光+未來”，超越照明的世界大無窮：全球照明及LED行業風向標

第28屆廣州國際照明展覽會將於2023年6月9至12日(星期五至星期一)在廣州中國進出口商品交易會展館載譽歸來。作為照明行業領先的博覽會之一，2023年的展會將與廣州國際建築電氣技術展覽會(GEBT)同期舉辦，一同擴展至中國進出口商品交易會展館的A、B、D三個展館，匯聚來自18個國家和地區的3318家參展商。

The 28th Guangzhou International Lighting Exhibition (GILE) will stage again at the China Import and Export Fair Complex. As one of the leading fairs for the lighting industry, this year exhibition together with the Guangzhou Electrical Building Technology, will be held on 9 - 12 June 2023 (Fri to Mon). Both fairs expand to occupy areas A, B, and the new area D of the China Import and Export Fair Complex in Guangzhou, bringing together 3318 exhibitors from 18 countries and regions.

### 三會舉行中華人民共和國成立74周年聯歡晚會

#### The 74th PRC Anniversary Celebration Dinner

港九電業總會、香港電器業進出口商會及本會，將於2023年9月22日(星期五)在旺角彌敦道612號好望角大廈旺角倫敦大酒樓舉行中華人民共和國成立74周年聯歡晚會。歡迎各會員參加。詳情將容後公佈。

The 74th PRC Anniversary Celebration Dinner jointly organized by "Hong Kong & Kowloon Electric Trade Association", "Hong Kong E.P.M. Importers and Exporters Association Ltd." and HKECA will be held on 22 September 2023 (Fri) at London Restaurant, Good Hope Building, 612 Nathan Road, Mong Kok, Kowloon. All members are welcome to join. The details will be announced in due course.

### 2023年度亞洲太平洋電器工事協會聯合會會議 FAPECA 2023 Conference

亞洲太平洋電器工事協會聯合會2023會議將於2023年11月14日至18日(星期二至星期六)在新加坡舉行。

The Federation of Asian and Pacific Electrical Contractors Associations (FAPECA) Meeting and Conference for 2023 will be held on 14 - 18 Nov 2023 (Tue to Sat) at Singapore.

### 2023第二十一期會刊

#### 21st Edition Association Journal

時光荏苒，不覺間本會之雙年刊第二十一期又開始籌備，承蒙各會員與同業先進過去多年的鼎力支持，會刊內容越趨豐富。隨著會務迅速發展，會刊已成為本港業內廣泛傳閱之刊物，亦成為海外各友會間以至海內外工程從業員尋找產品資料的上佳媒體。本期(第二十一期)會刊將發行1,000本，本刊可發揮強大的廣告效力，有助推廣產品及服務，拓展商機。本會刊將於2023年11月出版，藉此良機，惠賜廣告。

Time passes quickly and it is time for us to prepare the 21st edition of our biennial Association Journal. With your continuous support over the past 20 issues, the Journal is able to grow along with the Association. With the enriched contents, the Journal is regarded as the most informative guide for own electrical industry. For the coming Journal, we plan to publish 1000 copies. With this large circulation base, we believe companies will find it worthwhile to promote their images, services and products through our Journal. The 21st edition of our biennial Association Journal is scheduled to release in November 2023. Your company is most welcome to place your promotional advertisement on the industry's most valuable guide.

### 2023年度週年會慶暨第二十五屆理事就職典禮 HKECA 2023 Anniversary Dinner Cum 25th Term Executive Committee Inauguration Ceremony

2023年度週年會慶暨第二十五屆理事就職典禮將於2023年11月23日(星期四)在香港荃灣楊屋道8號荃灣西如心酒店7樓宴會大禮堂設宴舉行。

HKECA 2023 Anniversary Dinner Cum 25th Term Executive Committee Inauguration Ceremony will be held on 23 November 2023 (Thur) at Nina Ballroom, Level 7, Nina Hotel Tsuen Wan West, 8 Yeung Uk Road, Tsuen Wan, Hong Kong.

## 會員動態 Members' News

香港電器工程商會 1/2023 - 4/2023年度新會員名單

入會日期	申請會員名稱	會籍	代表人
Joining Date	Applicant Name	Membership Types	Representative
3/2023	光電太陽能工程有限公司 Solarpower Solar Energy Engineering Co.	贊助會員 Associate Member	鄺錦豪先生 Mr. KWONG Kam Ho
4/2023	羅霆琛先生 Mr. LAW Ting Sum	普通會員 Ordinary Member	

Strong track record in delivering electrical and mechanical residential, infrastructure and data centre projects.

主營多項住宅、基建及數據中心的機電工程項目

