



# 剖析元宇宙發展痛點 資訊安全與數位人權

2022.02.14 一 下午2:00-5:00

臺大校友會館

台北市濟南路一段2之1號4樓

1. 協會介紹
2. 協辦單位
3. 研討會議程
4. 簡報

## 【線上講座】「元宇宙」之外的想像

行政院 唐鳳 政務委員

## 數位科技與數位人權教育

國家人權委員會 范巽綠 委員

## 從區塊鏈到元宇宙的美麗與哀愁

台灣大學資訊工程學系 廖世偉 副教授

## 元宇宙時代如何建構智能防禦系統：偵測 威脅、填補漏洞、自我進化

數位金融交易暨資料保護協會 蔡一郎 理事



# 中華民國數位金融交易暨資料保護協會

## Digital Financial Trade and Data Protection Association

### 一、 組織名稱

中華民國數位金融交易暨資料保護協會，英文名稱為Digital Trade and Data Protection Association，簡稱DFTDPA。

### 二、 成立緣起

在近三年的網路技術發展中，最火紅的不外乎是「區塊鏈技術」與「NFT」的催生與應用，尤其是NFT爆炸性成長，更是帶動數位資產市場的快速成長，亦已引起全球金融監理機關、機構投資人及基礎設施提供者等的高度關注，如何發展數位資產金融生態系，亦是刻不容緩的議題。

除此之外，也由於網路環境的成熟與手持式移動裝置的成長，各式網路應用服務或是網路社群媒體更是以爆炸性的方式，充斥在人們的日常生活當中，所有因應而生的網路訊息完全碎片化，管道也多元化，而致使網路秩序失去倫理且無法可管，導致數位人權意識薄弱，此點所造成的事件，也是已經普遍存在於虛擬網路與實體社會環境裡。

在上述整體環境，且相互循環發展與影響的前提下，資訊安全就是隨之而生必須應該要被高度關注的議題，如何利用開創性的新穎技術捍衛數位化資產、建立數位化倫理、保障數位化人權，在在都與此息息相關，資訊安全於網際網路世界裡，合理需要以高度位階地被重視。

### 三、 成立宗旨

- (一)推廣金融科技應用於金融上的消費者保護觀念。
- (二)推動數位產權交換標準，創造友善的數位流通環境來提升社會整體效率。
- (三)推行電子存證技術及應用，利用電子加密技術提升資料公正性質。
- (四)統一資安標準，建立資安聯防保障資通安全。
- (五)培訓產業資安人才，普及資安技術及提升專業技能。
- (六)發展數位化資產、數位化倫理相關的法遵及監理科技，自動識別法遵風險，以提升網路上的數位化人權的意識。

### 三、 營運方針

- (一)實現普惠金融，加速金融保險業等科技應用發展。
- (二)建立銀行、保險及證券業等安全數位交易環境保障資通安全。
- (三)創造友善數位流通環境提升金融、保險等產業競爭力。
- (四)利用前瞻科技導入金融保險產業提升監理效能。
- (五)推廣最新專業技能普及資訊科技安全人才。
- (六)利用數位加密技術提升產官學隱私應用效能。
- (七)推廣數位科技相關事務。
- (八)建言數位化資產、數位化倫理、數位化人權的法令催生。

### 四、 組織計畫

- (一)與各政府機關、機構辦理相關研討會，探討推動相關議題的挑戰與因應策略。
- (二)透過社群媒體，例如Facebook、IG、YouTube、Line等，推廣數位化資產、數位化倫理、數位化人權的素養與觀念。
- (三)彙整全球關於資訊安全於數位應用等重要議題，比較各國實施策略與作法，探討不同國家在推動相關資訊的挑戰與因應策略。
- (四)研擬金融相關法遵及監理數位科技的作法或規範，提供政府部門做為產業發展建言。
- (五)分析研究數位化資產、數位化倫理、數位化人權的法規與技術，提供政府部門做為產業發展建言。

# 協辦單位



中華電信  
Chunghwa Telecom



中華民國期貨業商業同業公會  
Chinese National Futures Association



中華民國人壽保險商業同業公會  
The Life Insurance Association of the Republic of China



中華民國產物保險商業同業公會  
The Non-Life Insurance Association of the Republic of China



財團法人金融消費評議中心  
Financial Ombudsman Institution



財團 TAIWAN INSURANCE INSTITUTE  
法人保險事業發展中心



臺灣期貨交易所  
TAIWAN FUTURES EXCHANGE



臺灣集中保管結算所  
TDCC Taiwan Depository & Clearing Corporation



證券櫃檯買賣中心  
Taipei Exchange



台灣金融研訓院  
TAIWAN ACADEMY OF BANKING AND FINANCE



臺灣證券交易所



國立陽明交通大學科技法律學院  
National Yang Ming Chiao Tung University School of Law

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# 剖析元宇宙發展痛點 資訊安全與數位人權

2022.02.14 一 下午2:00-5:00

臺大校友會館

台北市濟南路一段2之1號4樓

14:00-14:05

開場

14:05-14:45

【線上講座】  
「元宇宙」之外的想像

行政院  
唐鳳 政務委員

14:45-15:15

數位科技與數位人權教育

國家人權委員會  
范巽綠 委員

15:15-15:30

休息時間

15:30-16:00

從區塊鏈到元宇宙的美麗與哀愁

Subtitle: 1維元宇宙=區塊鏈  
2維元宇宙=GameFi  
3維元宇宙=發生中

台灣大學資訊工程學系  
廖世偉 副教授

16:00-16:30

元宇宙時代如何建構智能防禦系統：  
偵測威脅、填補漏洞、自我進化

數位金融交易暨資料保護協會  
蔡一郎 理事

16:30-17:00

【綜合與談】  
便利與隱私的兩難：  
數位監控與數據搜集時代的  
自由與人權

主持人 |

數位金融交易暨資料保護協會 翁仲和 副理事長

與談人 |

國家人權委員會 范巽綠 委員  
台灣大學資訊工程學系 廖世偉 副教授  
數位金融交易暨資料保護協會 蔡一郎 理事  
開放文化基金會 李欣穎 執行長



【線上講座】

# 「元宇宙」之外的想像

行政院 唐鳳 政務委員



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國家人權委員會  
NATIONAL HUMAN RIGHTS  
COMMISSION, TAIWAN

# 數位科技與數位人權教育

國家人權委員會

范巽綠 委員

2022.02.14



國家人權委員會  
NATIONAL HUMAN RIGHTS  
COMMISSION, TAIWAN

## 兒少數位權益

鑒於數位環境隨著資通訊技術的革新，日益發展擴張，並已深入兒少的日常生活，臺灣在2021世界數位競爭力調查評比（IMD World Digital Competitiveness Ranking 2021, DCR）排名位居第8名，數位環境雖提供了臺灣兒少與世界接觸的舞台，但也存在著某些隱憂。





數位科技已屬現代社會發展必然，  
在享受數位科技帶來的利益時，數位科技也為社會帶來侵害

- 網路成癮
- 網路霸凌
- 隱私侵害
- 數位性剝削



## 一、數位環境基礎設施

(一)依據2020年財團法人台灣網路資訊中心報告，我國兒少之網路使用現象：

12-14歲上網率為98.4%、15-19歲上網率為100%；另全年齡層上網率非偏鄉為83.9%，偏鄉為69.8%，其中在無線上網率、行動上網率及無線區域上網率，非偏鄉均明顯高於偏鄉。每人每月行動上網平均費用非偏鄉為653元、偏鄉為736元。



- (二)國家人權委員會2021年辦理焦點座談中，NGO代表反映於安置機構、偏遠地區(因交通、文化、經濟等因素，致有教育資源不足之地區)居民仍存有嚴重的數位落差現象。
- (三)國家人權委員會呼籲，政府應採取相關措施消除數位鴻溝，克服數位排斥現象，讓兒少獲取數位資源的機會均等，以符合CRC兒童權利公約第25號一般性意見「數位環境下的兒少權益」。



## 二、數位環境立法、政策、資料收集及公開

- (一)、國家人權委員會2021年數次焦點座談，NGO代表反映意見如下：
- 1.政府未能有效掌握兒少數位環境基礎數據，且各部門仍居於本位主義，未進行系統化歸納、分析及整體研究。
  - 2.政府雖已設置網路內容監理主管機關，惟對於網路安全之權責未有明確歸屬。



國家人權委員會  
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## 網路內容防護機構(iWIN)

依100年11月30日修正公布之兒童及少年福利與權益保障法第46條規定，為防止兒童及少年接觸有害其身心發展之網際網路內容，由通訊傳播主管機關召集各目的事業主管機關，如衛生福利部、教育部、文化部、內政部警政署、經濟部工業局以及經濟部商業司等共同委託民間成立內容防護機構。



國家人權委員會  
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網路內容防護機構辦理下列事項：

1. 兒童及少年使用網際網路行為觀察。
2. 申訴機制之建立及執行。
3. 內容分級制度之推動及檢討。
4. 過濾軟體之建立及推動。
5. 兒童及少年上網安全教育宣導。
6. 推動網際網路平臺提供者建立自律機制。
7. 其他防護機制之建立及推動。





據網路內容防護機構(iWIN)統計，2021年共接獲3,912件申訴案件，申訴內容占比最高為色情(47.42，共1,855件)，主要來源為境外公司。而在2021年國家人權委員會兒少分區座談中，兒少代表表示不了解iWIN的功能及定位以及申訴途徑。



3.網路內容防護機構(iWIN)受理各項舉報之追蹤處理，由地方政府依iWIN檢舉案件時之處理流程及「社政主管機關處理網際網路內容違反兒童及少年相關法規處理原則」等相關規定處理，惟實務上地方政府執行處分，過度依賴iWIN提供意見，產生受託機關影響政府決策之效果。



- (二)政府於2011年訂有《兒少通訊傳播權益政策白皮書》建立長期性施政方針，惟公告迄今未有更新。
- (三)網路內容防護機構(iWIN)受託執行《兒童及少年福利及權益障法》賦予之7大任務，並調查國內兒少使用網際網路行為，完成《兒童及少年使用網際網路行為觀察報告》，惟尚未公開。



- (四)2021年11月19日行政院提出《CRC》第二次國家報告，國家人權委員會將於2022年上半年提出《CRC》獨立評估意見，因此建議政府為回應《CRC》第5號及第25號一般性意見，應對於兒少建立常態性數位環境調查研究，作為後續政策評估基準，並促使中央及地方政府共同參與行動，包含數位環境監管、設計、管理及使用，以確保兒少最佳利益實現。



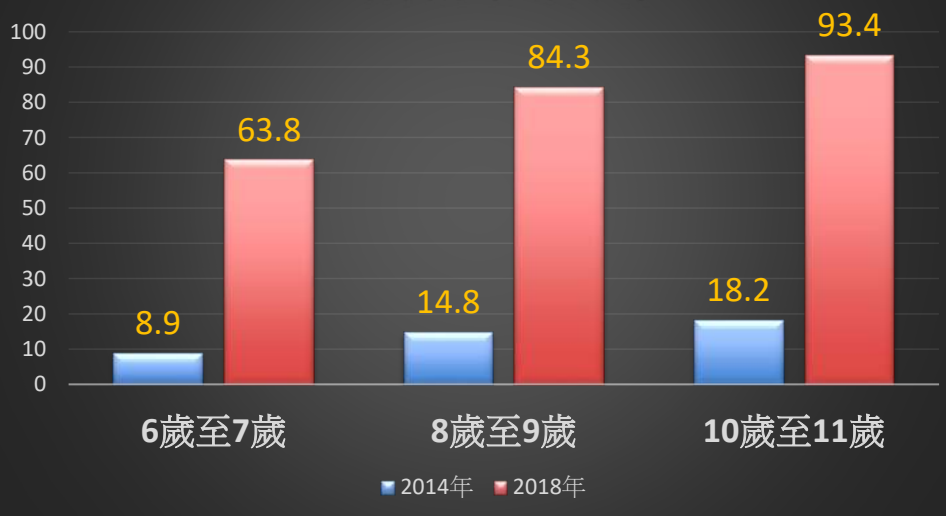
### 三、數位科技發展下的人權侵害

#### (一)網路成癮、數位霸凌

1. 據2018年衛生福利部統計調查學齡兒童上網情形(6-7歲、8-9歲、10-11歲)，2014年為8.9%、14.8%、18.2%，107年為63.8%、84.3%、93.4%；據網路內容防護機構(iWIN)提供未公開報告，發現高達74.7%兒少於10歲以前即第一次接觸網路。



衛生福利部2018年統計調查學齡兒童  
上網情形(百分比)



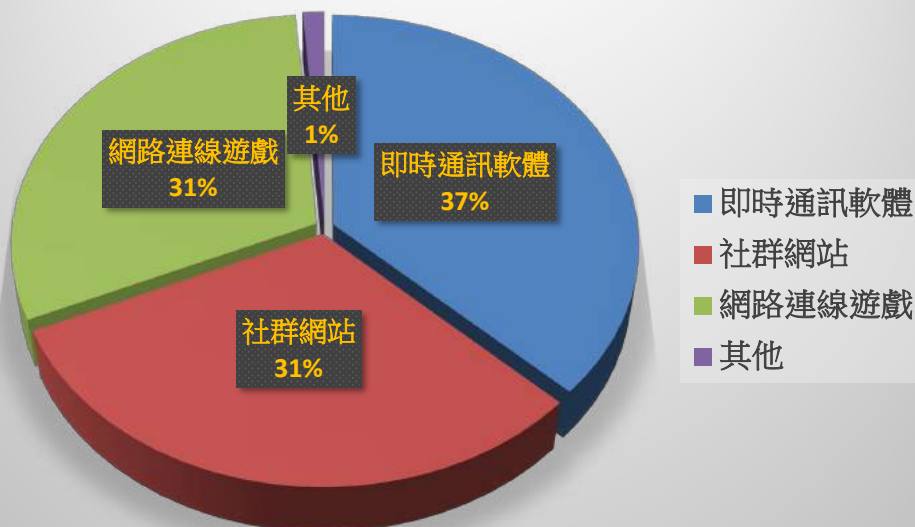




2. 據兒童福利聯盟2019年問卷調查，有61%兒少曾使用3C產品到半夜的經驗；兒童福利聯盟2021年線上調查，表示有超過2成之兒少曾有遭受網路霸凌之經驗，其中僅22.4%告知老師家長，另有62.5%兒少出現疑似「網路社交焦慮」徵狀、26%兒少曾想過傷害自己。
3. 網路內容防護機構(iWIN)提供未公開報告，受測兒少遭受網路霸凌之平台以即時通訊軟體(35.92%)為最高，其次為社群網站(30.3%)及網路連線遊戲(29.49%)。



網路內容防護機構(iWIN)2021年提供  
兒少遭受網路霸凌發生平台統計





4. 國家衛生研究院2018年發表之研究報告，有3.1%的青少年有網路遊戲成癮，52%的網路遊戲成癮者表示，曾在遊戲中花費金錢，且每週花費41個小時在網路遊戲上，比起非網路遊戲成癮者高出將近一倍（25%與24小時）。



## 5. 國家人權委員會建議

- (1) 隨著網路使用時間增長，對兒少認知情感社會發展造成影響，且網路霸凌恐會產生嚴峻的精神及生理層面威脅，政府應針對此種態樣研議積極性防制計畫，並透過輔導措施提供支持性服務。
- (2) 隨著兒少網路使用年齡下降，政府應關注兒少發展權相關議題，如網路使用對幼兒期、青春期神經發展的影響，並應向照顧者提供適當使用數位設備的培訓，並告知可提供照顧者APP管理、網路時間管理、分級事前設定等預防性服務。



## (二)網路分級及隱私權

1.2020年財團法人台灣網路資訊中心辦理之報告，觀察12-24歲前三名使用率之網路服務項目，第一名為社群論壇(95.6%)、第二名為即時通訊(90.2%)、第三名為影音/直播(87.4%)。



2.依據2019及2020年兒童福利聯盟調查報告表示：

(A)87%兒少有社群軟體帳號，平均每個兒少有3.8個社群帳號，然有47%兒少使用社群軟體未進行隱私設定；有36.6%兒少曾提供網友重要個資。

(B)有7成兒少曾於社群軟體看過恐怖、血腥、暴力、色情等不適宜內容；對於不符合兒少使用年齡之APP註冊情境，有41.8%兒少會選擇違反規範，勾選「自己已符合軟體使用規範年齡」。





3. 國家人權委員會肯定網路內容防護機構(iWIN)對於境外平台，其原屬地允許色情內容，但其防護機制無法滿足我國要求，納入兒少不宜接取之清單，並提供政府、學術單位及中華電信公司，列入過濾軟體防護黑名單，避免兒少存取之機制。
4. 國家人權委員會建議應強化分齡分層資訊、暴力性剝削內容、避免煽動自殺議題，並透過違反態樣分析，研訂相關措施。



### (三)數位性剝削、網路誘拐

1. 2018年兒童福利聯盟調查，表示有37.7%兒少曾使用交友APP，其中曾遇過網友要求單獨外出(11.8%)、情侶交往(13.4%)、要求提供裸露照片或影片(6%)，有18.8%兒少曾單獨赴約。

**拒絕  
網路  
性誘拐**

**遭遇非法侵害  
立即截圖保留證據與對話  
向警方報案**





## 2. 國家人權委員會焦點座談，NGO代表反映

- (1) 所服務之兒少性剝削被害樣態中，有42.5%為受網路誘騙提供裸照，有很大部分的原因在於兒少對於隱私的界線或法律不明。
- (2) 警政部門有權依據《兒童及少年性剝削防制條例》對拍攝、製造兒童或少年為性交或猥褻行為之圖畫、照片、影片、影帶、光碟、電子訊號或其他物品進行處罰，惟警政部門對於易發生案件之期間(寒、暑假)設有特殊績效制度(青春專案)，對於警政部門期間選擇性執法有一定影響，恐致期間外之兒少無法獲得完整的保護。



## 3. 國家人權委員會呼籲

- (1) 政府應關注兒少網路交友情形，特別是在網路誘拐及網路性剝削，應採取措施讓兒少免於風險，並未受害者提供救濟及支援。
- (2) 政府除配合學校資訊課程之預防教育，可透過數位宣傳準確投放到使用端，強化預防教育之成效。





## (四)申訴與救濟

1. 國家人權委員會焦點座談，NGO代表反映，兒少之網路性私密影像如經散布，透過平台業者自律機制下架最迅速，如在警政及司法程序，需同時確保證據的保存及爭訟程序，常緩不濟急，而國家人權委員會也發現如屬兒少自願性上傳性私密影像，無法依《兒童及少年性剝削防制條例》處理，建議政府研究事後被遺忘權之議題。



## 2. 國家人權委員會期盼並建議

- (1) 網路內容防護機構(iWIN)與國際平台業者(Facebook、IG、twitter、Line、Yahoo、Google、抖音)溝通討論，達成對有害兒少身心健康內容處理方式達成共識，並建立專責聯繫管道。
- (2) 對於現實世界中的兒少申訴機制可以透過數位科技之技術，達成對於隱匿性的保護，並鼓勵吹哨者舉發，以落實兒少權利保障。
- (3) 數位科技有助於實現兒少於國家及地方政府的參與，讓數位服務提供者與兒少接觸，提供更適宜的服務，且應鼓勵利用多種形式，多種國家和國際來源，以兒少理解的語言，讓兒少實現獲取資訊的機會。



## 四、數位科技發展下人權教育及兒少發展

### (一)比較亞洲數個國家的網路安全治理模式

1.從整體國家保護機制觀察，比較亞洲數個國家的網路安全治理模式：

(1)新加坡網路管制架構法源基礎在1996年廣電(類別執照)通知(Broadcasting Class Licence Notification)，網路內容供應商與服務商在此規範下，都須遵守類別執照條件與網路產業指南。管制重點採三管齊下，結合低度管理、鼓勵業者自律及提倡網路安全教育。



(2)日本網路安全係建立跨部門合作機制，由日本國際網路協會(警察廳)、網路內容安全協會(總務省)及網路安全協會(資訊產業)共同運作，日本網路媒體自律相關立法，依據青少年網路利用環境法，要求手機及電腦販賣業者須提供青少年用戶過濾軟體服務。

(3)韓國是以情報通信部主管國家資訊、通訊、廣播及網路內容管制，以網路實名制、第三方身分認證、業者自律及強化檢舉通報機制，以共同維持網路安全。





2. 觀察世界各國及國內各單位處理網路申訴案件經驗，比較新加坡、日本、韓國網路安全治理模式，發現上述國家政府對於網路安全治理，原則以低度管理為主，重視網路社會責任及業者自律，強調網路安全教育，預防宣導勝於治療。
3. 韓國N號房事件，涉及性私密影像散布，因舊法對於此類行為刑度過低及保護規範不足，引發社會輿論譁然，遂迅速於事發後六個月完成抑制此類事件再次發生的相關立法。



## (二)我國目前於數位環境下人權教育

### 1. 人權教育學習主題與實質內涵

人權教育是一種價值教育，希望能讓學習者，由心動進而行動，共分六個學習主題，包括：人權的基本概念、人權與責任、人權與民主法治、人權與生活實踐、人權違反與救濟及人權重要主題。





## 2. 人權教育議題納入108課綱

人權教育議題已納入十二年國民基本教育課程綱要，並由國家教育研究院依據課程綱要，研發議題融入說明手冊，進行課綱理念內涵之解析與實踐方向的指引，提供學校課程與教學設計、教師教學與學習評量實施、以及教材研發與選用之參考。



### (1) 總綱

核心素養為B2科技資訊與媒體素養；核心概念在於培養學生具備善用科技、資訊與各類媒體之能力，培養相關倫理及媒體識讀的素養，俾能分析、思辨、批判人與科技、資訊及媒體之間的關係。







## (2) 領綱

例如綜合型及技術型高中一般科目，社會領域之公民與社會科，內容包含探討數位性別暴力、網路誹謗罪、智慧財產權保障等，培養學生對於數位基本人權的認知，並從中學習網路安全教育。

## (3) 教學現場實行方式

於朝會、班週會、友善校園週、教師融入課程及本部全民資安素養網等管道，進行數位人權教育之宣導，例如資安素養自我評量網路活動、防治數位性別暴力宣導、發展人權素養書單。



## (三) 我國教育體制如何實施兒童權利公約下之人格尊重及隱私權教育

### 1. 人格尊重與班級經營

將人格尊重融入週會、班會、各領域教學，從學生的生活經驗出發，共同討論出解決方法，例如班規制訂由學生討論，老師協助，共同訂定，孩子遵守規則，因為那是他們討論過、認同的規則。





## 2. 隱私權與正向管教

隱私是一種很重要的權利，但是碰上更重要的價值與利益時，隱私必須受到限制。透過自問自答，不斷的思考，互相討論，學生能學到如何做出限制個人隱私的決定。



## (四) 結語

### 1. 數位發展部的成立

數位科技發展為人類社會帶來進步，科技方式的人權侵害態樣亦伴隨而至，法律制定修正似乎永遠跟在科技發展的背後追趕，數位發展部組織法已於2022年1月19日制定公布，**數位發展部**下設**數位產業署**及**資通安全署**，各界期望能在今年上半年度正式掛牌上路，期待將來主管機關能確實發揮職權，儘速使數位環境的人權保障機制趨於完備。







## 2.公私協力與業者自律

數位環境的人權保障，僅仰賴政府部門的政策推行與強力執法，是遠不足夠的，政府還需要與網路經營業者合作，透過公私協力推動國家數位政策與人權保障，同時提高網路經營業者與參與者自律意識，維護數位環境中兒少安全。



## 3.人權教育向下扎根

數位科技發展對人權的侵害，法律的制定及修正似乎永遠不足以防止或預防這些侵害，對於保護制度發展尚未健全的數位世界，需倚賴人權教育向下扎根，從小培養科技資訊與媒體素養，進而提高數位領域每一位參與者素養，透過人權教育強化並保護每位國民權益。





國家人權委員會  
NATIONAL HUMAN RIGHTS  
COMMISSION, TAIWAN

謝謝聆聽

# 從區塊鏈到元宇宙的美麗與哀愁

Subtitle: 1維元宇宙=區塊鏈  
2維元宇宙=GameFi  
3維元宇宙=發生中

Prof. Steve Liao 廖世偉, National Taiwan University

[liao@csie.ntu.edu.tw](mailto:liao@csie.ntu.edu.tw)

[https://docs.google.com/presentation/d/1n0J-TZyhd\\_0AQ2TvON5lt\\_iSAs\\_P3JdQms\\_NQh9P7WA/](https://docs.google.com/presentation/d/1n0J-TZyhd_0AQ2TvON5lt_iSAs_P3JdQms_NQh9P7WA/)

## Dr. Liao:

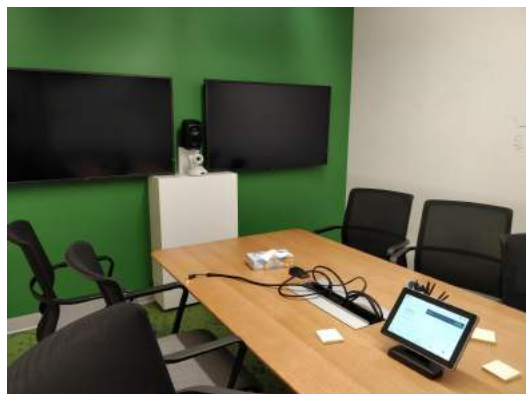
- Dr. Liao aims at real-world impact through *innovation*, *productization*, and *open-source/education*.
- Dr. Liao (PhD Stanford) was with Stanford University, Intel and Google headquarters for 22 years, culminating at receiving the highest award from Google: Google Founders' Award to employees with big impacts.
- 7 years ago Dr. Liao returned to Stanford University to teach program analysis and optimizations. Dr. Liao has 100 papers and patents and now teaches Big Data Systems and FinTech at National Taiwan University.





# International Collaboration

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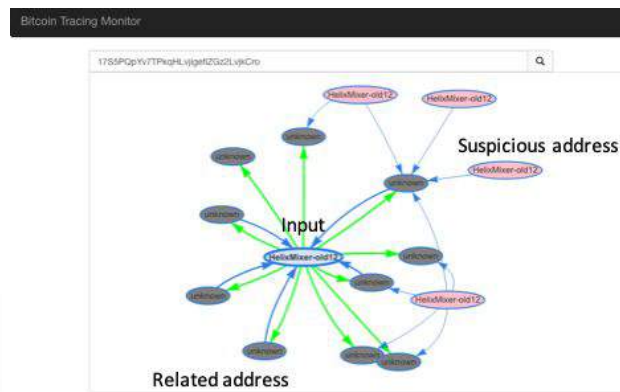
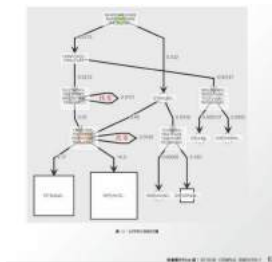




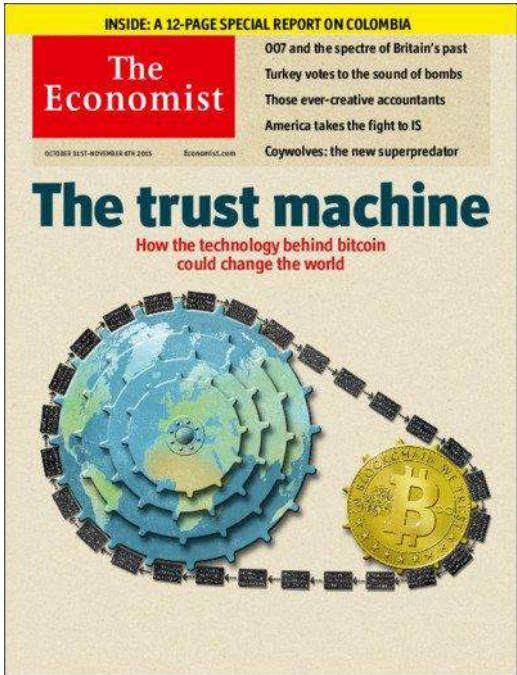
# 30k people @ FinTech Taipei Exhibition:



## Big Data: Bitcoin Tracing



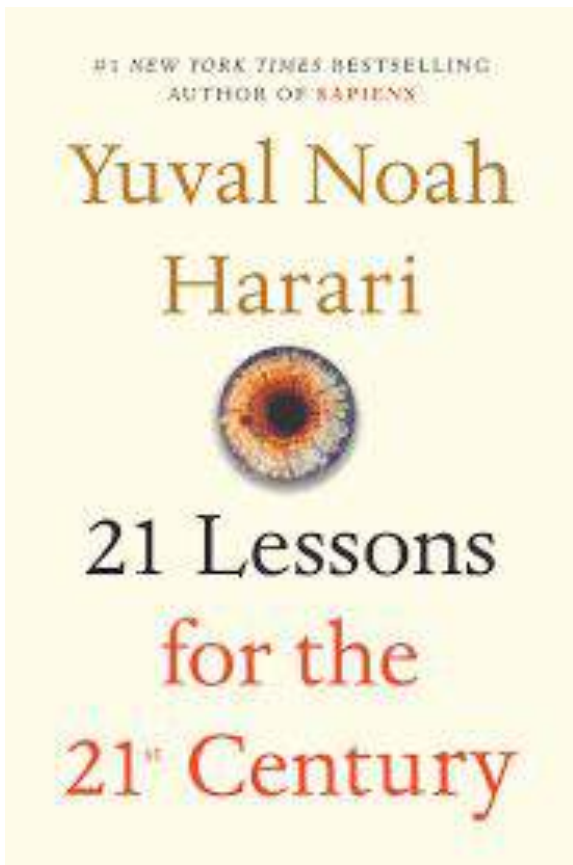
<https://youtu.be/0rsOLJ1RmqA>



Project Transparency: Supported by many exchanges. <https://apbcd.org/sro.html>



<https://m.youtube.com/watch?v=97eegbLcQ24>



The 7 AI companies weild too much knowledge & power.

However, to preserve humanity, one must remember:  
**Knowledge is NOT power.  
 Clarity is.**

Now, go back to the first principles:  
**Big Data Analytics**

# Outline:

1. Where we are: From Digitization to 元宇宙
2. How data forms metaverse: 3 pillars: Illusion, Value system, Governance (GbA)
3. Why omniverse today? Why metaverse today? Metaverse = omniverse + metaverse + meta-metaverse...
4. How BigTech think of Metaverse
5. How General Public think of Metaverse. How Cyberpunks think of it.
6. Metaverse definition: How I think of Metaverse in the coming age of Freedom
7. Metaverse: NFT
8. Metaverse data analytics
9. Omniverse data analytics

## World-class illusion con artist: Best DeepFake technology:

NVidia touts the best metaverse illusion ever created:

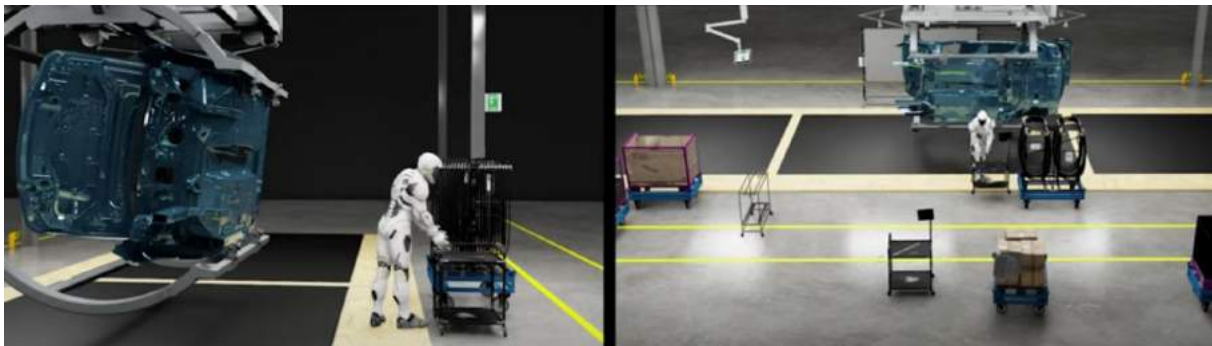
- In 2020 and 2021, due to COVID-19, NVidia CEO always gave keynotes from his kitchen.
- In GTC Spring 2021 (2021/4/12), NVidia CEO gave a keynote from his kitchen again. Really?
- During SIGGRAPH (August 9-13), NVidia admitted it's fake, except for the keynote content itself. No one noticed until then.





Newest “Digital Twins” at BMW: Finally BDA (big data analytics) technology is ready: [NVIDIA @ GTC 2021/4/14. GPU Technology Conference]

- 2.5m BMW cars done per year; 99% of them are custom made.
  - Industry 4.0 also goes for custom-made, versatile, non-mass production.
- >> Digital Twins: Let’s collaborate in **Omniverse** (NVIDIA’s metaverse):
  - Omniverse is BDA, especially popular during COVID-19. You cannot travel.
    - BDA: A lot of Big Data Processing: <https://www.youtube.com/watch?v=6-DaWgg4zF8>
  - “Omni” because it’s both Universe & Metaverse (a.k.a. digital twins) and because it’s both BMW-USA-metaverse & BMW-Europe-metaverse collaborating:
- Before you build your next factory, have an Omniverse first. Save \$\$.



## NVIDIA’s CEO Jensen Huang: Omniverse

- [https://www.youtube.com/watch?v=f\\_Lv8BOjs4E&ab\\_channel=NVIDIA](https://www.youtube.com/watch?v=f_Lv8BOjs4E&ab_channel=NVIDIA)
- From Our Kitchen to Yours: NVIDIA Omniverse Changes the Way Industries Collaborate:





## HTC's CEO Cher Wang: 2021/10/27 Metaverse

- TAM (Total Addressable Market) = \$7 Trillion
- HTC's VR (Virtual reality): Full product line now:
  - VIVE flow: VR glass, due 2021/11: 189g. No longer helmet like Oculus
    - Virtual (心靈藍海)
  - VIVE pro 2: Enterprise. Not like Metaverse' Gaming origin
    - Medical (醫療), 建築, 設計, ...
  - VIVE focus 3: Gamers (玩家)
- <https://finance.ettoday.net/news/2110170>



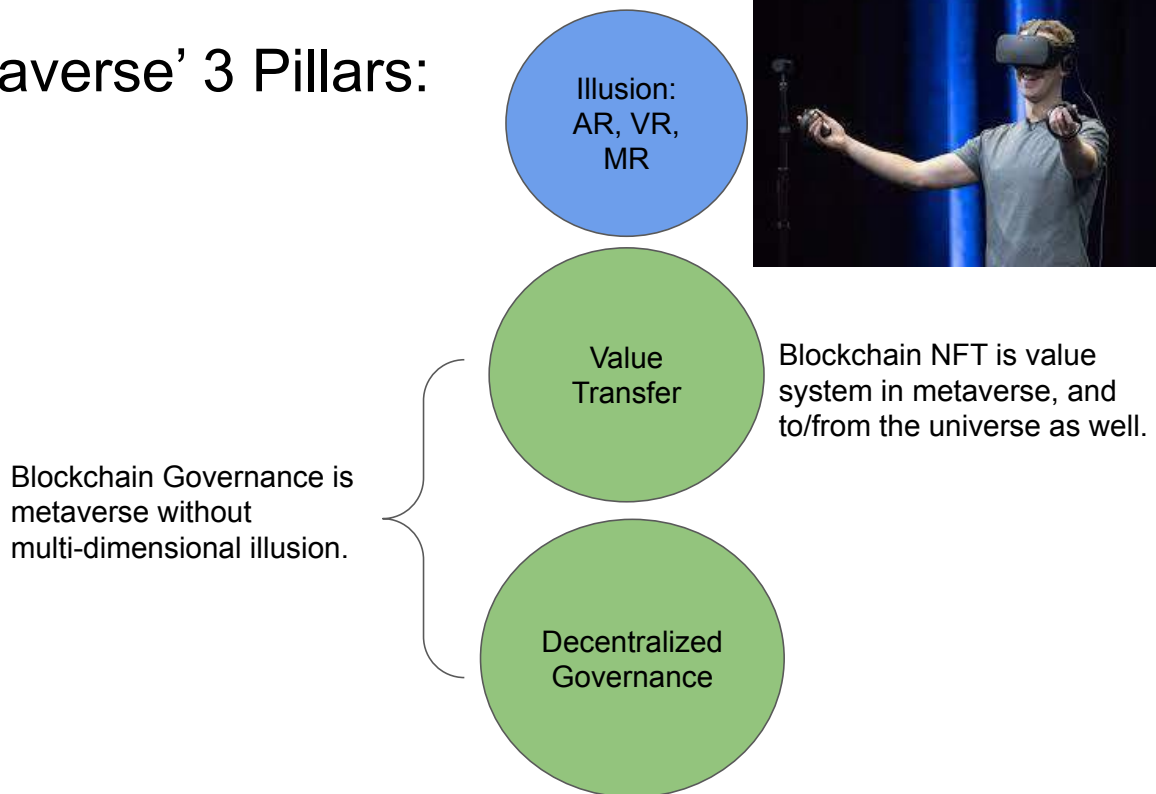
NVIDIA's Metaverse is 2B: It's top-notch GPU and it's for companies like BMW. How about general public?

- Metaverse for general public involves NOT just illusion technology; People's Metaverse has to answer the Value system (incentive, business model, economics) question and the Governance question.
  - Note: Between BMW and NVIDIA, they have contracts that regulate the business model between the 2 business companies and the governance already.
- Metaverse for Facebook is what Zuckerberg called: "Social Network 2.0"
  - General public deeply care about the Value and Governance a lot:
    - When people found that Facebook in Virtual Reality (people wearing Oculus) inserted ads, people protested loud and clear!
- Metaverse' 3 pillars: Illusion (technology), Value system, Governance

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## Metaverse' 3 Pillars:



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## Why Metaverse today? It's NOT just because: Facebook changed to Meta on 2021/10/28





## Facebook under “HOUSE ARREST”: Let’s Meta it.



### Universe is in pain: [Recap: Universe and Metaverse: Atoms and Bits (Data)]

- After unearthing the atoms (“extracting the earth”) since 7000 BC, **earth is overloaded** and moaning in pain: Climate change etc.
- Data is the building elements in Metaverse.
- Big Data AI is key to ushering in Age of Freedom.
  - Creation is no longer bounded by the Industrial Order.
    - i. Some created data for illusion.
    - ii. But don’t forget: Data created needs to have a value system.
    - iii. Governance of data system is key.
  - Reference: Government by Algorithm (GbA), by Stanford Law School, New York University, Administrative Conference of the United States, 2020/2/20

Human being is in pain:

Remember Metaverse' Original Author:

- In 1992, SciFi by Neal Stephenson, "Snow Crash", proposes 2 concepts:
  - Metaverse
  - Avatar (化身)
- Plot: Reality is terrifying. A real person uses VR to co-live with a virtual being in a future, virtual space. (虛實合一)
- Reality 1: Even after 2008 crisis, rich gets richer and poor gets poorer.
  - **Richard Wagner's quest for governance tool with Big Data precision:** Otherwise, today's government keeps generating asset bubble instead of growth
  - **Richard Cantillon effect:** Where you put \$ in the system determines the price.
    - Today, there is no helicopter \$ that continues to shower on individuals. All \$ is locked in financial institutions
- Reality 2: AI has wiped out tens of millions of jobs, even before COVID-19:
  - The jobs are not going to poorer countries. The jobs simply disappeared!



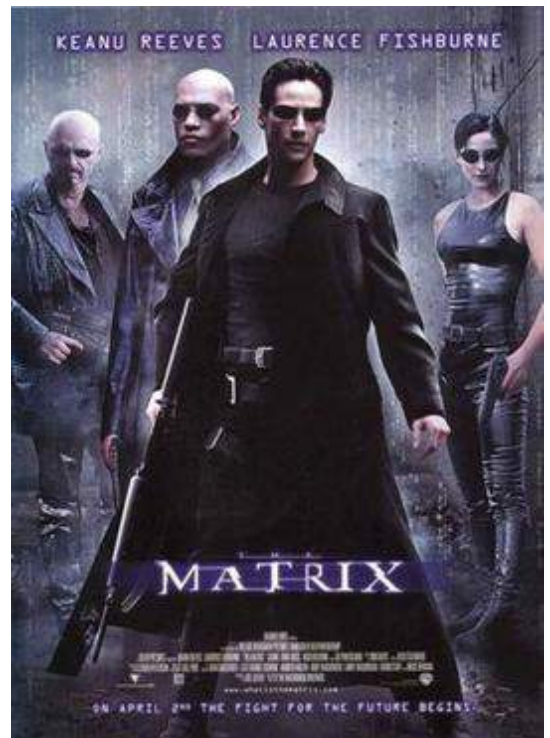
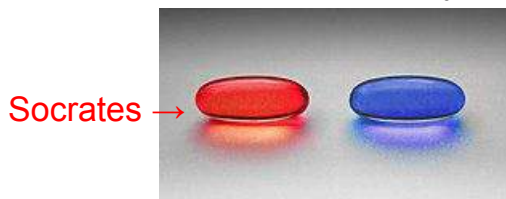
## Ready Player One, 2018

- Looks like a Metaverse
- But not true to the Metaverse spirit
  - Centralized
  - Controlled by James Halliday & Ogden Morrow of Gregarious Games



# Matrix, 1999

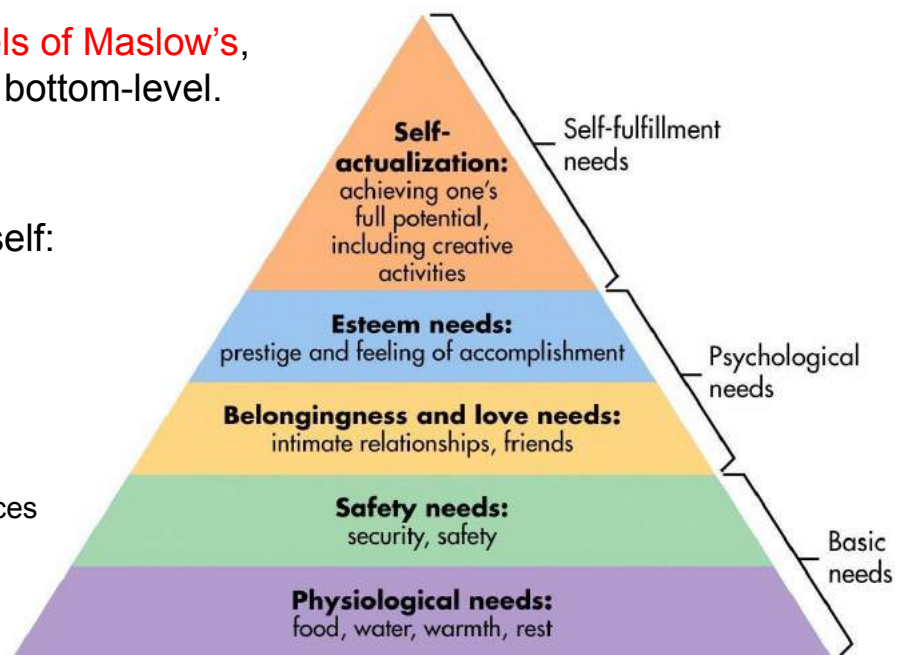
- More like a Metaverse: Decentralized
- Neo (Keanu Reeves) is faced with the Choice: Painful (Socrates) vs. obviously happy (pig).



- Universe: Painful; You can't just be yourself; You rely on *psychological crutch* and "one-time UBI" (2021's \$180 in Taiwan, 2020's \$72 in Taiwan, or 2021's \$3200 in US. All in US\$)
- Metaverse:
  - You can be yourself.
  - You're **mentally strengthened** → Better universe in the future.

# Maslow's Hierarchy of Needs

- Metaverse can **satisfy all 5 levels of Maslow's**, except for physical pizza at the bottom-level.
  - > 7 Trillion market.
- In metaverse, you can be yourself:
  - Can be pseudo-anonymous.
- In universe, lay-flat movement (躺平, 小確幸)
  - Capitalism & Technological advances → **M-form society**
  - Spend more time in metaverse: Get strengthened in metaverse, Go back to universe → **W-form society**





# We are in-between ages: Universe vs. Metaverse

- > 60% people unhappy about their work:
  - Main part of the day (9-to-6 or 8-to-5): they are unhappy. Do we *really* have freedom?
  - During hunter-gatherer days, men actually had more leisure time.
    - The concept of “work” is relatively new.
- Men may have some freedom of speech (vote, ...), but no real freedom from work. After all, we need to make a living.
  - When the Big Data AI arrives, we may finally have freedom in the pursuit of happiness. It's called “**the coming age of freedom**” by Seba.
- We are in between ages:
  - Between Age of Extraction & Age of Freedom (Big Data AI)
- We are physically unhappy, bounded by **Industrial Order** (with band-aid applied), but the Age of Creation has dawned on us. This spiritual abundance is called Metaverse.

[Reference: **Rethinking Humanity**, by James Arbib & Tony Seba, June 2020]

## Examples: Physically unhappy, but spiritually strengthened in Metaverse:

- Buddhism: “眾生皆苦，我佛慈悲” (Translation: All beings are suffering, my Buddha is compassionate.)
- Christianity:
  - “Blessed are the poor, for theirs is the kingdom of heaven.
  - Blessed are those who mourn, for they will be comforted.
  - Blessed are the meek, for they will inherit the earth.
  - Blessed are those who hunger and thirst for righteousness, for they will be filled.
  - Blessed are the merciful, for they will be shown mercy.
  - Blessed are the pure in heart, for they will see God.
  - Blessed are the peacemakers, for they will be called children of God.
  - Blessed are those who are persecuted because of righteousness, for theirs is the kingdom of heaven.”

# Humanity 1.0, 2.0, 3.0: We are between Age E & F:

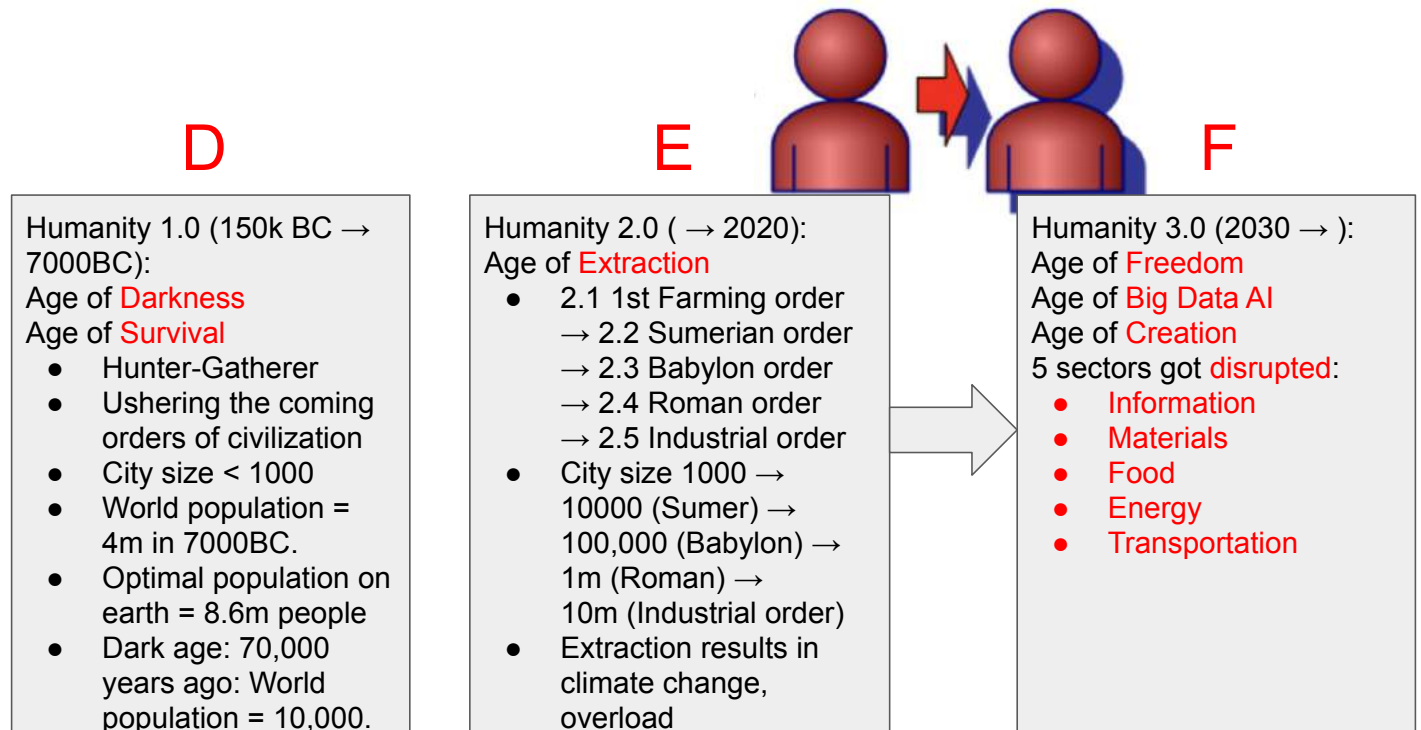
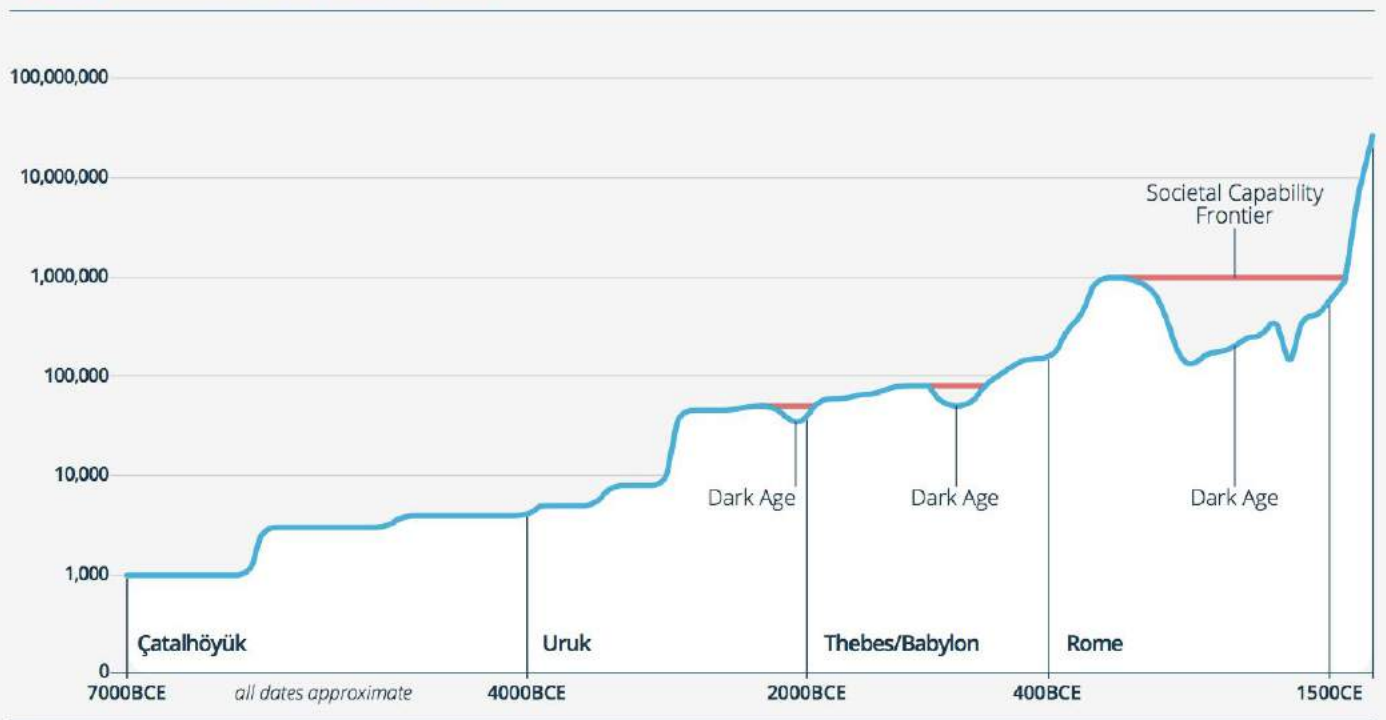
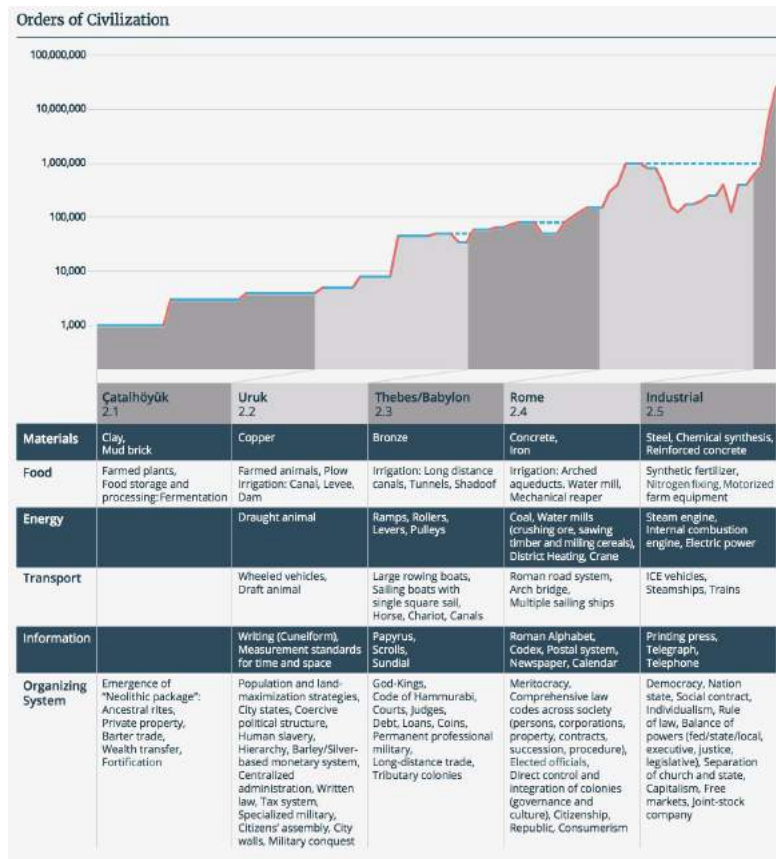


Figure 8. Growth in City Size Through History<sup>61</sup>





Data source: Morris, 2011



## From Extraction to Creation

- Materials
- Food
- Energy
- Transport
- Information

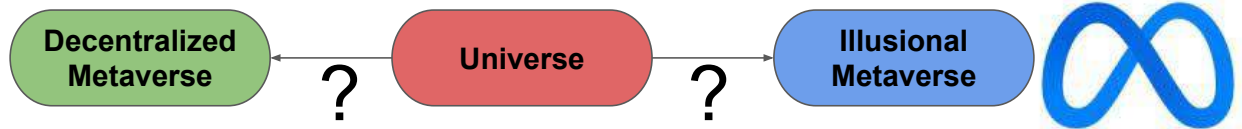


	<b>Extraction</b>	<b>Creation</b>
		
<b>Model of production</b>	Extract (plant, animals, fossil fuels, metals, materials, land, people) break down and process. Repackage	Create from building blocks in nature (photon, electron, DNA, molecule, bit/qbit). Self-replicating once seeded
<b>Based on</b>	Scarce, depleting resources	Locally abundant resources (e.g. seed stocks of metals)
<b>Key requirement</b>	Reach and scale to harness key physical resources	Key physical resources available locally. Self-sufficient communities
<b>Causing</b>	Huge global flows of physical commodities (e.g. industrial cows, oil, metals) and physical goods (with embedded knowledge). Limited local production of physical goods	Huge global flows of digital knowledge, huge local goods production (with high embedded knowledge) and flows of physical goods. Limited global physical commodity flow
<b>Cost</b>	Inefficient, high waste, high cost	Efficient, low waste, low cost
<b>Key Driver</b>	Zero-sum predatory competition leads to growth imperative (exploit or be exploited). Dysergies (1+1<2)	Little competition for physical resources. Synergies (1+1>2)
<b>Economics</b>	Extraction economics - diminishing returns. Supply-side economies of scale	Information/Network economics - increasing returns. Network effects
<b>Leads to</b>	Centralization and concentration of production	Distributed, modular production
<b>Geography</b>	Geography important for competitive advantage	End of geography as determinant of competitive advantage
<b>Architecture</b>	Centralized, brittle, fragile. Single points of failure	Network and node. Robust, resilient
<b>Governance</b>	Centralized, hierarchical, unequal. Need for military to protect access to scarce physical resources and trading routes	Distributed (node), global (network). Diminished need for conquest and military protection of physical resources and trade flows
<b>Flaws</b>	Growth imperative that drives inequality and environmental degradation (externalities), systemic booms and busts, and predation of resources	Ownership of network/platforms. Data ownership/ surveillance. Weaponization of information, biology and (artificial) intelligence
<b>Kinship</b>	Exclusionary, binary, analog: local, racial, religious, national	Inclusionary, multi dimensional, digital: community based on evolving common interest globally
<b>Work</b>	Specialization Forced labor	Generalization Rights to needs

## TIR is not Third Wave (Alvin Toffler), nor “Industry 4.0”

	1st Industrial Revolution: 1784~1H of 1800's	2nd Industrial Revolution: 1870~1H of 1900's	3rd Industrial Revolution: Ongoing
<b>How you organize &amp; communicate</b>	Printing press Telegraph (1832)	Radio, telephone TV (CRT in 1897. 1920)	Internet, IOT Cyberphysics System: IOT even lacks dominant standards.
<b>How you power things</b>	Coal Steam engine	Electricity Oil	Renewable energy: Wind, solar, hydraulic power: Near-zero cost, but huge capex.
<b>How you transport things</b>	Railroad (1826)	Combustion engine Automotive	Autonomous electric vehicle: A factor of 5x-200x, but still piloting

# Universe is inflaming: Red pill or blue pill or green pill?



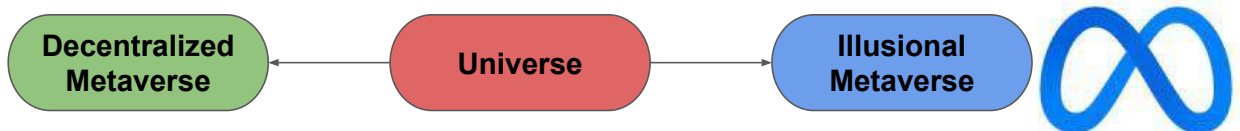
In the Oasis Metaverse:



After taking the illusion drug, you will see a lot of blue mushrooms:

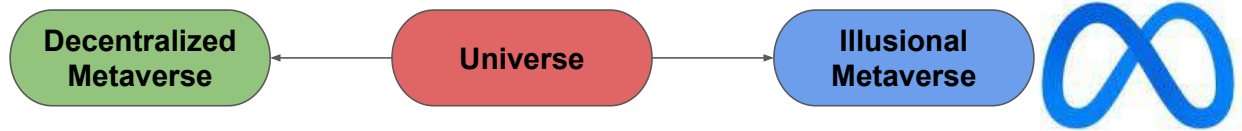


# Universe is inflaming: Red pill or blue pill or green pill?

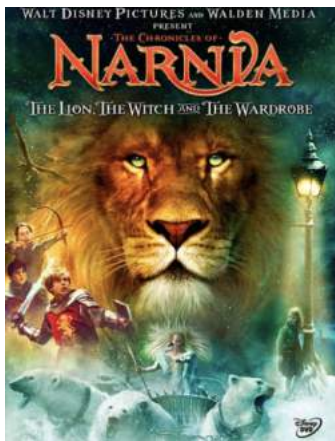


- Age of Creation has dawned on us. This spiritual abundance is called Metaverse.
- If you are as strong as Neo now, take the red pill now and go save the world. Otherwise, spend time in Metaverse to get your mind strengthened first. Eventually, metaverse and universe will be together, according to Snow Crash.
  - Please throw up the blue pill. Don't go to Facebook Meta. Please take the green pill.
  - Tony Seba explains why the "Industrial Order with Band-Aid applied" cannot rein in Facebook (Big Data AI). Today we are the Physically Unhappy under the Industrial Order, in need of the green pill.
- **Healthy, decentralized metaverse:**
  - You can be yourself.
  - Friction and marginal cost is low: You can die and reborn by just going to the next metaverse.
  - Your Maslow's hierarchy of needs will be satisfied. You will be strengthened.
  - Governance & the value system (e.g., the transfer of value is not through facebook) will be healthy.

Don't build 21st-century's Tower of Babel. Build green metaverse.



Chronicles of Narnia:



University (future) is supposedly a Green Metaverse, but University today doesn't prepare students well for real-world.

Tower of Babel:



## Outline:

1. Where we are: From Digitization to 元宇宙
2. How data forms metaverse: 3 pillars: Illusion, Value system, Governance (GbA)
3. Why omniverse today? Why metaverse today? Metaverse = omniverse + metaverse + meta-metaverse...
4. **How BigTech think of Metaverse**
5. How General Public think of Metaverse. How Cyberpunks think of it.
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8. Metaverse data analytics
9. Omniverse data analytics



# Facebook changed to Meta on 2021/10/28



Facebook under  
“HOUSE ARREST”:  
Let’s Meta it.



# Apple's CEO Tim Cook: Augmented Reality

Metaverse?

- We just call it **augmented reality**.
- I'll stay away from the buzzwords.
- But I am super excited about these things. I believe that technology can do so much good in the world. And of course it depends on the **creator**, and whether they thought through the ways it can be used and misused.
- But mainly, I am so optimistic about all the things that can happen in our lives that free up time for more leisure activities and other things that we want to do in life.

[<https://time.com/6099169/tim-cook-apple-privacy/> 2021/9/19]

## VR or AR?

## Metaverse' Original Author:

In 1992, SciFi by Neal Stephenson, "Snow Crash", proposes 2 concepts:

- Metaverse
- Avatar (化身)

Plot:

- A real person uses VR to co-live with a virtual being in a future, virtual space. (虛實合一)



## Recap: How BigTech thinks of Metaverse

- NVidia's Jensen Huang:
  - Metaverse is Omniverse, using NVidia's GPUs.
- Facebook's Mark Zuckerberg:
  - Metaverse is Social Network 2.0.
- HTC's Cher Wang:
  - Metaverse is Virtual Reality 2.0.
- Apple's Tim Cook:
  - Metaverse is Augmented Reality.



# BigTech succeeded because of data centralization & monetization

- Why did BigTech succeed?
  - Big Data & Big Compute; and BigTech monetizes them.
  - But why did they have Big Data?
    - Because they centralize your data!
    - But how about your data privacy and security?
- Naturally BigTech focuses you on data-induced illusion and immersion. Facebook knows that **value** and **governance** is key, but they don't want you to think about the **value system** and the **governance** based on data.
  - So far, BigTech monetizes values. In contrast, you got little.
  - So far, BigTech governs. See Roger McNamee's and Tony Seba's books: How Facebook governs the data to the way that benefits them.

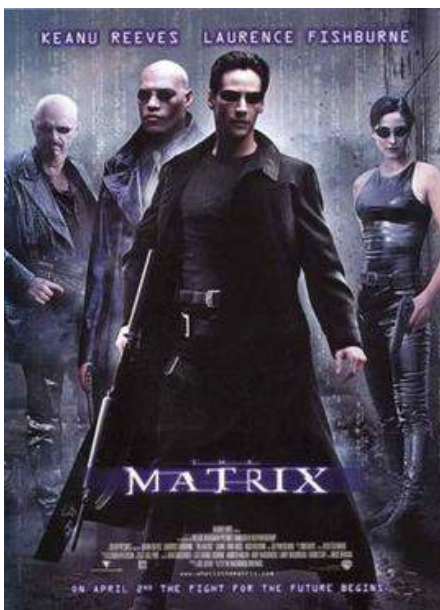
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## How General Public thinks of Metaverse in 2021: Free Guy

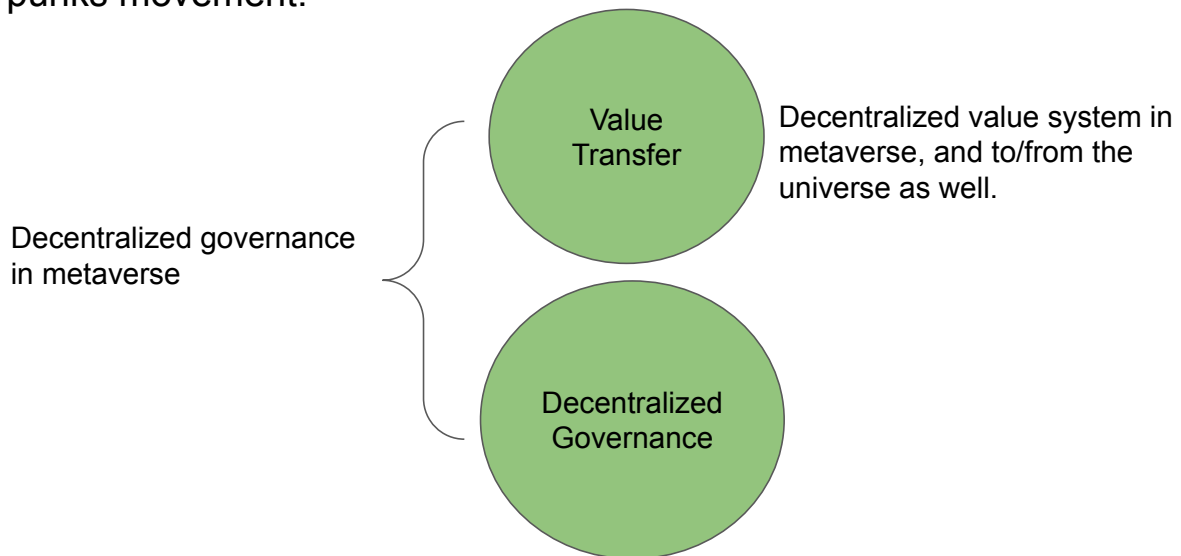


## Recap: How General Public thinks of Metaverse



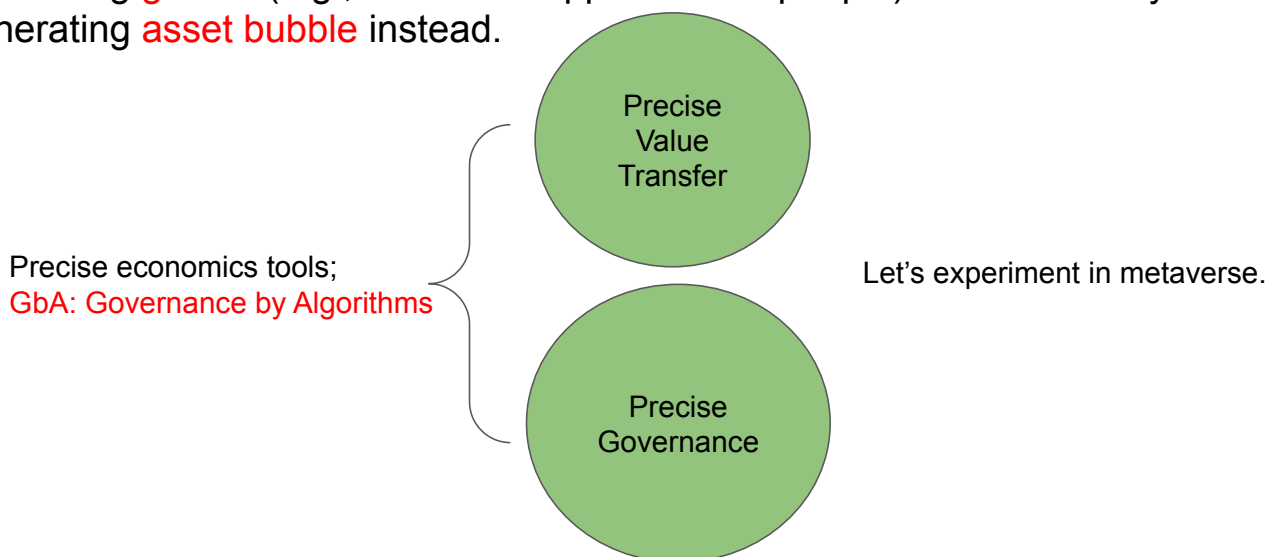
# How Cyberpunks think of Metaverse

Both metaverse and blockchain originated from Cyberpunks movement.



How Richard Wagner (Nobel Laureate James Buchanan's student) thinks:

Government needs more precise tool: Currently Fed's policy can't guarantee it's generating **growth** (e.g., food that supports more people). It's more likely generating **asset bubble** instead.

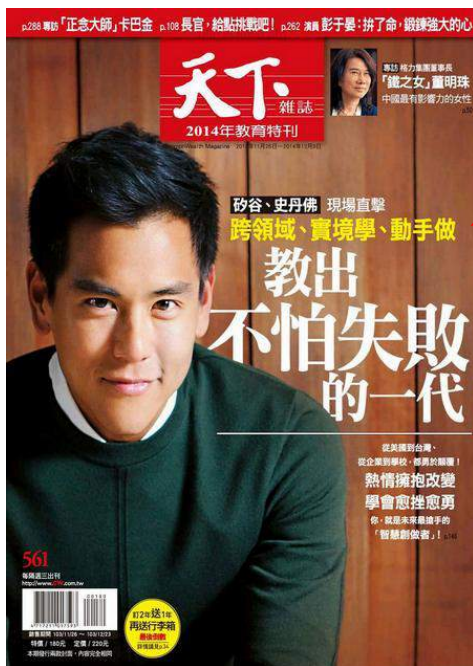




# Outline:

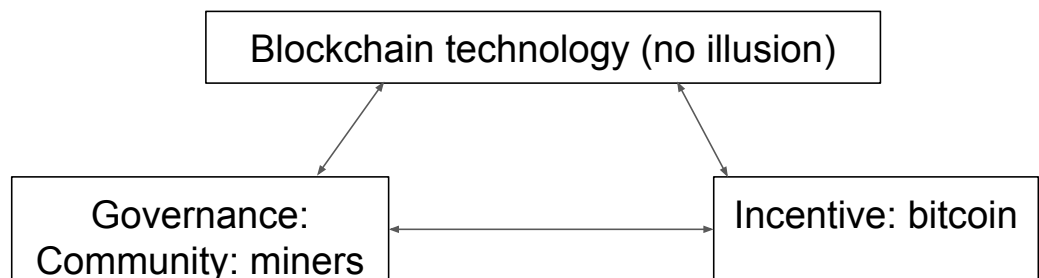
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## Metaverse: An Ecosystem: Virtuous Cycle!



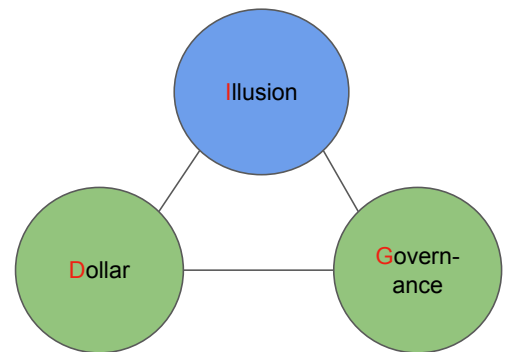
Bitcoin blockchain: Satoshi Nakamoto  
Inter-disciplinary (Fin+Tech)  
Real world: Internet-style,  
Doing: Open-source code

- Satoshi understands Fin & Tech: Blockchain is the 1-dimensional metaverse without illusion.



# What is Metaverse? A cyber-physical system (CPS) that ...

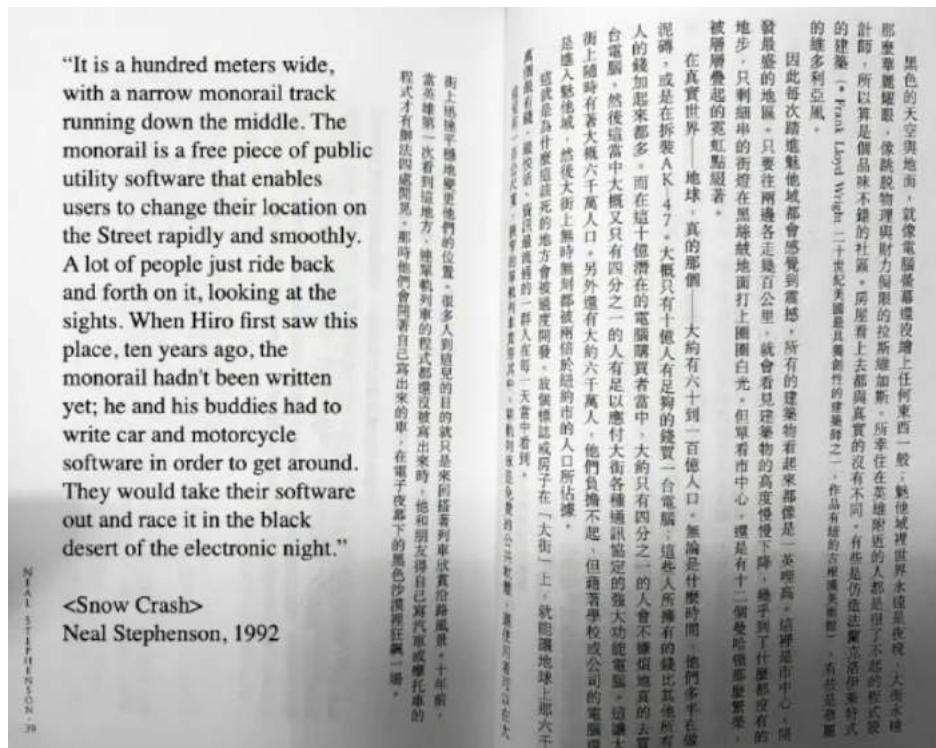
- Metaverse is super Digital Twins:
  - Digital Twins + Omni-connected (connecting universe, metaverse\_foo and metaverse\_bar) + Possibly no universe yet.
- DIGital metaverse is *not* a mindless video game (just illusion). It has:
  - Dollars
  - Illusion
  - Governance

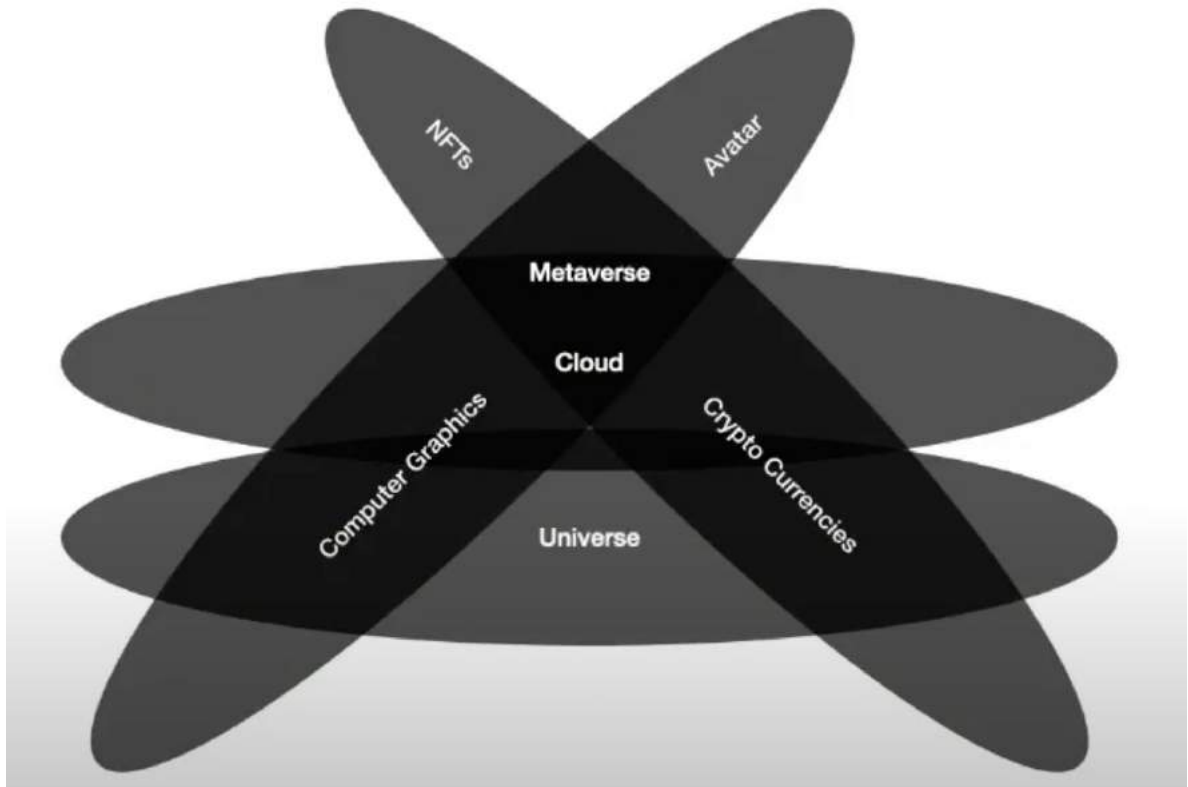


- Recap: Metaverse is a CPS that's super Digital Twins and that has DIG.

# Metaverse is DiiG, according to Snow Crash

- Dollar
- inter-operable
- illusion
- Governance





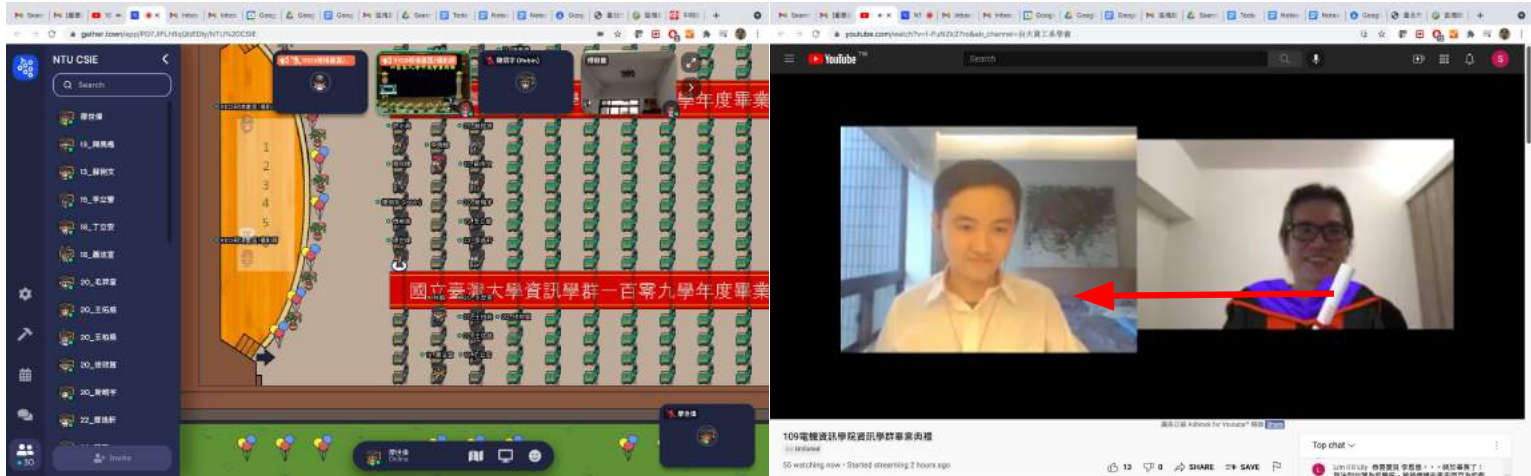
Illusion is outside the scope of this lecture:

- CPS is challenging. Our mindset may need to adjust:





# Commencement in 2021:



# Good news: DAO governance can get somewhere

- 5000-people governance:  
[https://www.youtube.com/watch?v=wsAM0L3PY2g&ab\\_channel=%E6%9E%97%E4%BA%A6LYI](https://www.youtube.com/watch?v=wsAM0L3PY2g&ab_channel=%E6%9E%97%E4%BA%A6LYI)



- Inspired by [Loren Carpenter experiment in SIGGRAPH'91](#): Pong game

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## Metaverse & NFT



One pillar of metaverse: Value system: NFT

- NFT designates the resource (in virtual world)
  - Men naturally take up the resource (like before).
  - Economics ensues.
  - Functions/Roles appears.
  - Men lives in the virtual world more.
- NFT (Value system) is a pillar in this metaverse. On the other hand, NFT will become bubble if metaverse doesn't take hold.

National Taiwan University's Non-Fungible Token (NFT): Save a bear cub. The story behind it: Who is #1 enemy to the cub's survival? Human being.

Mintable QR  
Code



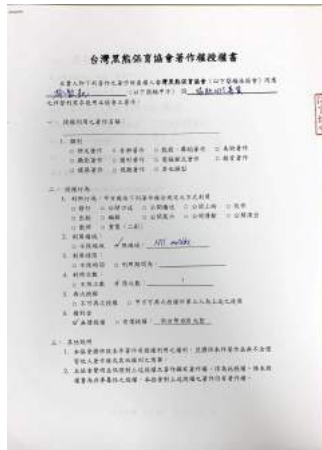
**Invest to save the bear**  
**Invest to save the Earth**  
**Your pocket money will**  
**makes a better world**

Note: The cub was rescued by human being in 2018/7, with mummy nowhere to be found. Worrying about her survival, we fed her with the chicken. But she refused to eat it. They became friends! The cub even gave chicken her food! We freed the cub on 2019/4/30. Your NFT transaction will save more cubs!

Make the donation process easy:



# 1. More trusted 3rd-parties are key: We signed contract with the Bear Conservation Society



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## Finish the Story: What will happen in the metaverse?

Note: In general 50% of an NFT effort is in the Story.

- For the NFT buyer, we create a Taiwan black bear in metaverse for him/her and place it in a forest.
- **Badge of honor:** The bear will often come back to the person and be a symbol of his/her kind act.
- We'll help **social-network** you kind bear-lovers.



62





# 600

## Taiwan Black Bear left in the wild

63

### Why Should I care?

#### FOOD CHAIN

Top predator in food chain to maintain the stability of Taiwan's mountain ecosystem

Taiwan black bear is one of the representative wild animal of Taiwan

#### FLAGSHIP SPECIES

#### SEED DISPERSING

Taiwan black bear help to spread seed through their waste, increasing diversity

The number of wild Taiwan black bear drops and every species has rights to survive

#### THREATENED SPECIES

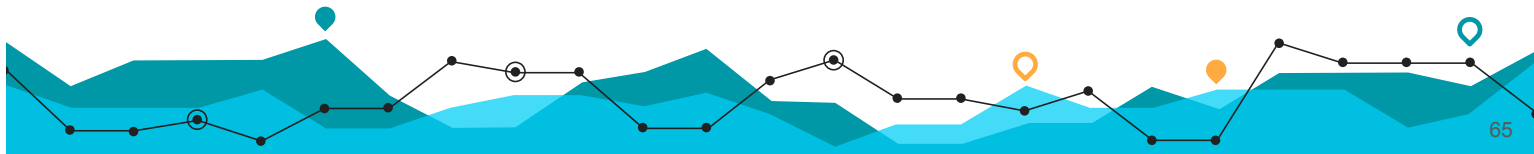


64



*All creatures deserve a life  
without fear and pain.*

*You nature-lovers deserve to  
love and be loved.*



65

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# Token

- [Transparency](#)
- Immutable
- Cannot fake it (不可調換)
- Non-split (不可分割)
- Trust-less
- Automated business process

## Surely you can launch your NFT on different chains:

- Ethereum: Most expensive. But most reliable.
  - If you have more money and want to do higher class marketing
- Binance
- Polygon
  - Cheaper, so it is:
  - Good for game's virtual goods. (larger quantity). Their price is lower than Digital Arts.

## Many platforms, many protocols, many applications, ...

- Largest digital arts platform: OpenSea. There are others such as mintable, rarible, ...
- Many smart contract protocols: ERC-1155 or ERC-721?
  - OpenSea: 2019/9/10: Launched semi-fungible 1155, praising its extensibility
  - However, 1155 adoption rate is not enough to replace ERC-721
    - 1155 suitable for Game's virtual goods. Good for limited sharing.
    - Cheaper
  - It's like 4G vs. WiMax: #applications will decide which protocol survives.

“Metaverse is the largest app of NFT.” -- 2017.

It's not just technical problems. It's education problem: Digital arts in the new era is about the **ownership on-chain**. The closest legal right is called the naming right in the metaverse.

## On-chain ownership, beginning with the voxel style:

- Cryptovoxel: First to launch
  - Old generation
- Decentraland: Second to launch
  - Game: Lose customers
- Sandbox: Roblox

Killer apps on the 3 platforms above will be key.



# ERC-721 vs. ERC-20: NFT vs. Fungible Token

- ERC20:
  - [Smart Contract Interface](#)
  - totalSupply, balanceOf, transfer, transferFrom, approve, allowance
  - E.g., USDT, USDC
- ERC721: **Unique, scarcity, forever, immutable.**
  - totalSupply, transfer, transferFrom, approve. (發行總數, 轉移, 授權)
  - Unique name (名稱與代號)
  - Look up Token ID's owner
  - Look up Token ID's description
  - E.g., Crypto Kittie, Crypto Punk

## 4 Eras of NFTs:

Note: 2017/11/9: 2nd draft of ERC721

1. GameFi: 2017/12: CryptoKitties
2. Art work: 2018-2020
  - a. Collectible is a good purpose in itself.
3. PFP (Profile Pictures): 2020- :
  - a. Branding, badge of honor
4. Metaverse GameFi: 2021-
  - a. Gala, Mekka, Sand (increased 5x)

You can think of NFT as Next-generation virtual goods or digital arts.

# Crypto-Kitties



## Work @ January 2017:

### Book of Orbsの特徴

1. Book of Orbsであなただけのコレクションを完成させよう。

2. 他のユーザーとブロックチェーン上で簡単に安全にトレード。中には超レアなアイテムも。

3. 新しいカードやページも続々追加。その他のサービスとの連携など、可能性は無限に広がる。



# New Year 2018 by Minako Kojima



呼保义·宋江

- 拥有者: 70D896
- 当前价格: 16.334325748005550381 ETH

标语: <https://cryptocities.net/premium>



玉麒麟·卢俊义

- 拥有者: E96A4D
- 当前价格: 10.108481446152274168 ETH

标语: COBO最棒! 谢谢COBO大大天天给我红包!



智多星·吴用

- 拥有者: 46E9B8
- 当前价格: 11.861993533750117646 ETH

标语: China buy buy buy~



入云龙·公孙胜

- 拥有者: 38C477
- 当前价格: 7.340783047927897249 ETH

标语: COBO钱包一出! 谁与争锋!



# Last Week, February 2018

## 王权之争 谁是你心目中的最强帝王



3.6803 ETH

帝业祖龙·嬴政

你们随便玩, 朕就要一统天下

拥有者: 220D27

现在购买



11.9144 ETH

陨落的神王·亚历山大

COBO BEST WALLET IN THE WORLD!

拥有者: FOEDDC

现在购买



13.9811 ETH

欧皇少女·拿破仑·波拿巴

COBO BEST WALLET IN THE WORLD!

拥有者: D17BF2

现在购买



6.6660 ETH

路痴美食家·乾隆

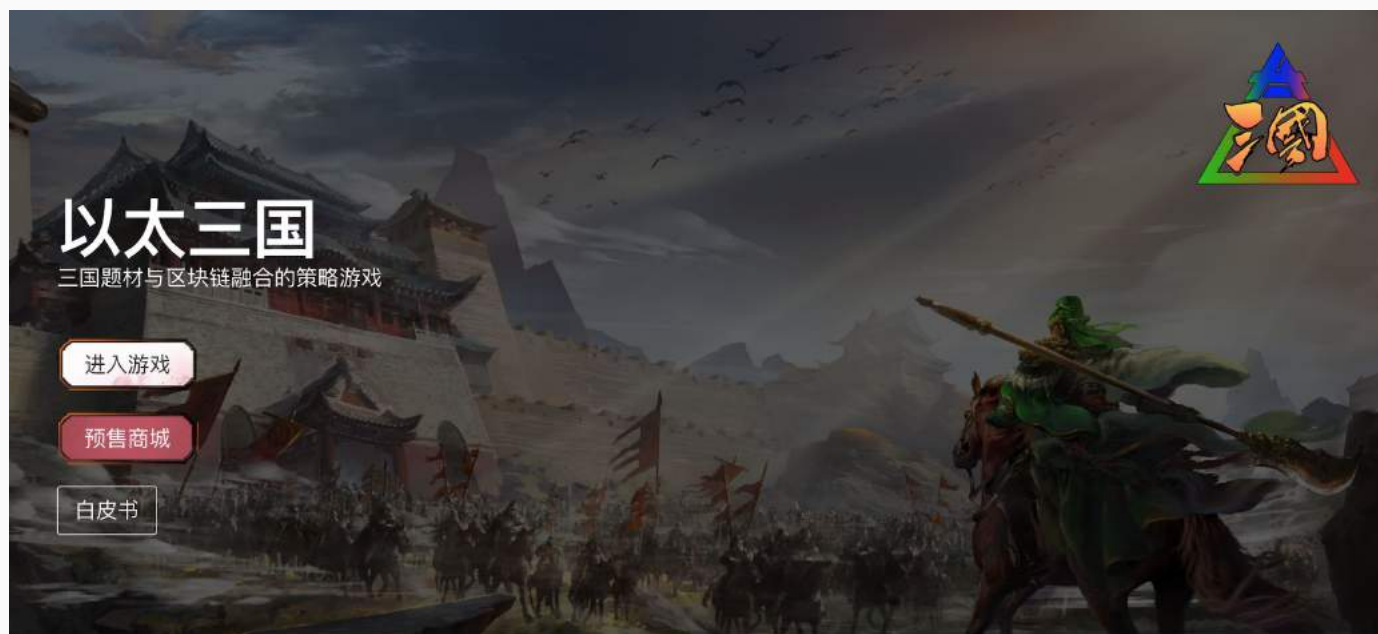
这里不是朕的天下, 是乡长的。

拥有者: 9419ED

现在购买



## Crypto-Sanguo.pro by Minako Kojima



## Crypto-Mingbi by Delton Ding



以太冥王  
天地通用銀行行長 丁盛豪





程序员Delton



3月22日 11:08 来自 微博 weibo.com

在被人问了无数次「你会做区块链吗?」「你为什么不去做区块链啊?」之后,我实在受不了了,今天我决定发行一个以太坊史上最唬烂的智能合约:以太冥币。

发行的以太冥币不可分割,编号唯一,更可以在人间进行交易流通,做到真正的天地通用。独创的烧币系统,把您对故人的思念永久写进区块链。冥币能不能烧给死人我们不知道,但是绝对能让活人看到。纪念馆页面永远展示着唯一编号的每一枚冥币最终烧给了谁,将您的孝心传遍整个区块链。

区块链燃烧,让您彻底远离危险。年轻人第一次环保烧纸钱,就用以太冥币。烧钱没有伤害任何森林资源,没有消防隐患,没有产生有害烟雾。你可能活着从未有过一枚比特币,为何不为自己死后留一枚加密冥币呢?



阅读 82.3万 推广

2199

259

899

Demo: In 1 hours

### Group Info



③点钟烧冥币

668 members

### Contract Overview



ETH Balance:	5.57 Ether
ETH USD Value:	\$3,709.84 (@ \$666.04/ETH)
No Of Transactions:	59 txns
Token Contract (ERC20):	<a href="#">CryptoMingbi (CM)</a>



## Election: “總統大選區塊鏈，台大資工”



## 4 Eras of NFTs:

Note: 2017/11/9: 2nd draft of ERC721

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4. Metaverse GameFi: 2021-
  - a. Gala, Mekka, Sand (increased 5x)

## Art: Many Pain Points

### 1. Pure Art, 致命真相





Lower cost:

## 藝術品拍賣稅率1.2% 業界：與香港競爭有努力空間

最新更新：2021/04/30 21:04



## 4 Eras of NFTs:

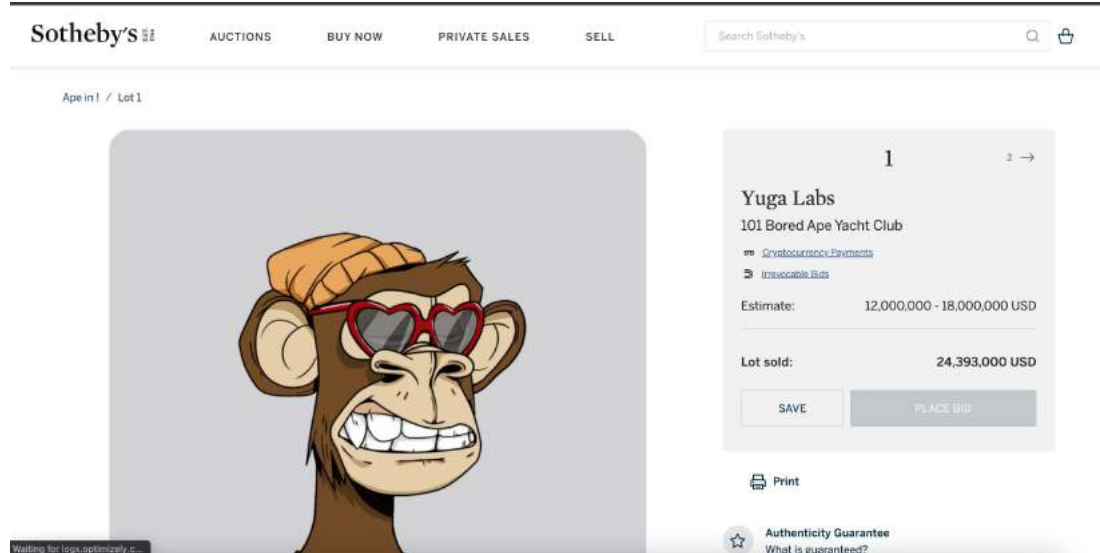
First, it's hard to teach old dogs new tricks. They have baggages & their accounting system is old school. High communication cost if they are established.

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  - a. Collectible is a good purpose in itself.
3. PFP (Profile Pictures): 2020- :
  - a. Branding, badge of honor
4. Metaverse GameFi: 2021-
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Sotheby paid US\$24m for 101 Bored Apes

<https://www.sothebys.com/en/buy/auction/2021/ape-in/101-bored-ape-yacht-club>



## Smart Contract: Bored Ape Yacht Club (BAYC)

<https://etherscan.io/token/0xbc4ca0eda7647a8ab7c2061c2e118a18a936f13d>

<https://etherscan.io/address/0xbc4ca0eda7647a8ab7c2061c2e118a18a936f13d#readContract>

- Role
  - Contract Owner - deployer
- Features
  - MintApe: Pay ETH: mint NFT
  - Withdraw
- Mint tokens when the sale is on
- ReserveApes

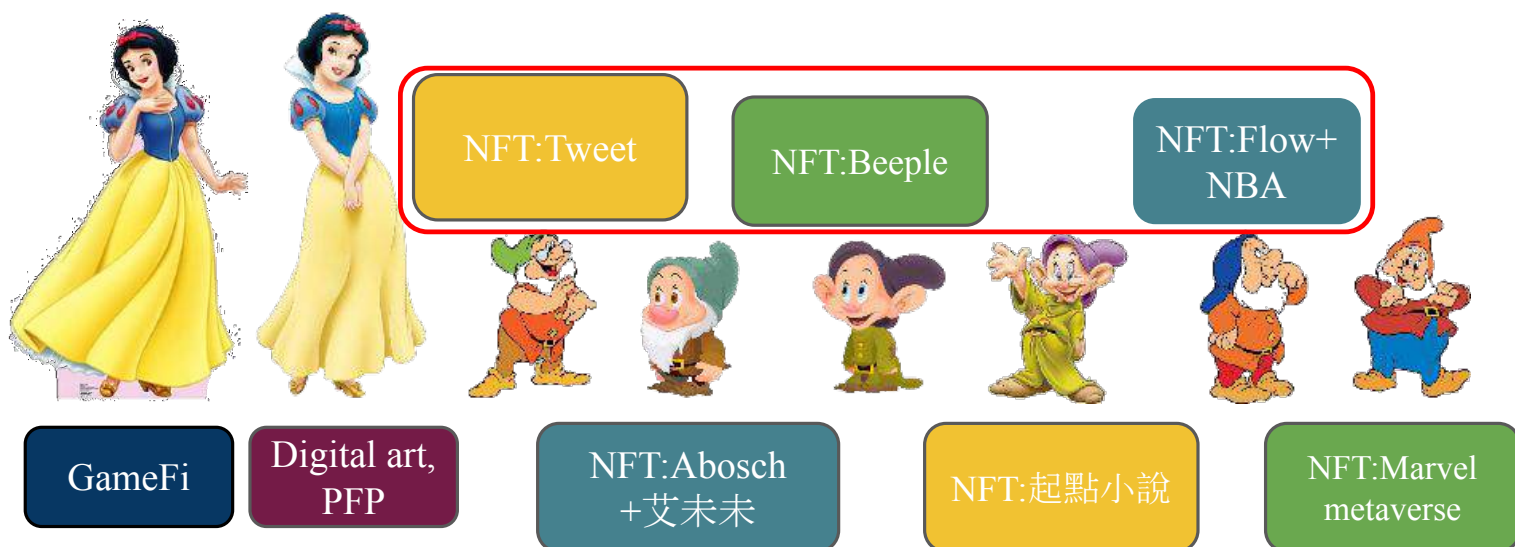
# Fandora Shop's 公仔 on Netflix

Currently NFT (Rave NFT series) costs more than 公仔.

1 NFT on Ethereum can be charged \$100 for gas fee alone.

<https://fandoranft.com/>

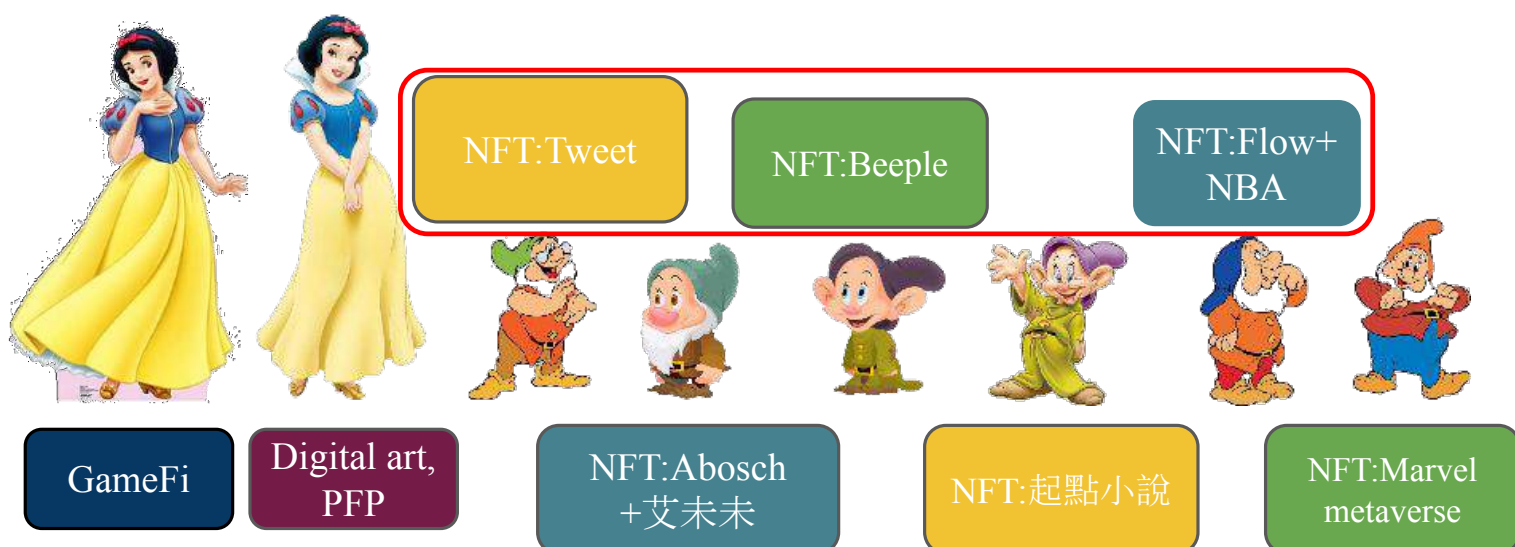
## NFT Outline: 4 Eras & 6 Case Studies



Jack Dorsey: 2021/3/22. "Just setting up my twttr" = ~US\$3m



## NFT Outline: 4 Eras & 6 Case Studies





## NFT捷報: 藝術家 Beeple 創 350 萬鎊 NFT 拍賣紀錄，實體黑標卡最高單價達 \$777,777



by Jason Liu — 2020-12-16 in 數位產權

0



Credit: Nifty Gateway / collections/ beepletwo

155 2.6k

分享至Facebook

分享至Twitter

### Beeple the Everyday artist: Name: Mike Winkelmann

Winkelmann started "Everydays," which involved creating a piece of art every day, on May 1, 2008.

Beeple Everyday:

2021/3/11

"Beeple Everyday" sold for US\$69m through NFT!

See Beeple-collect.com.

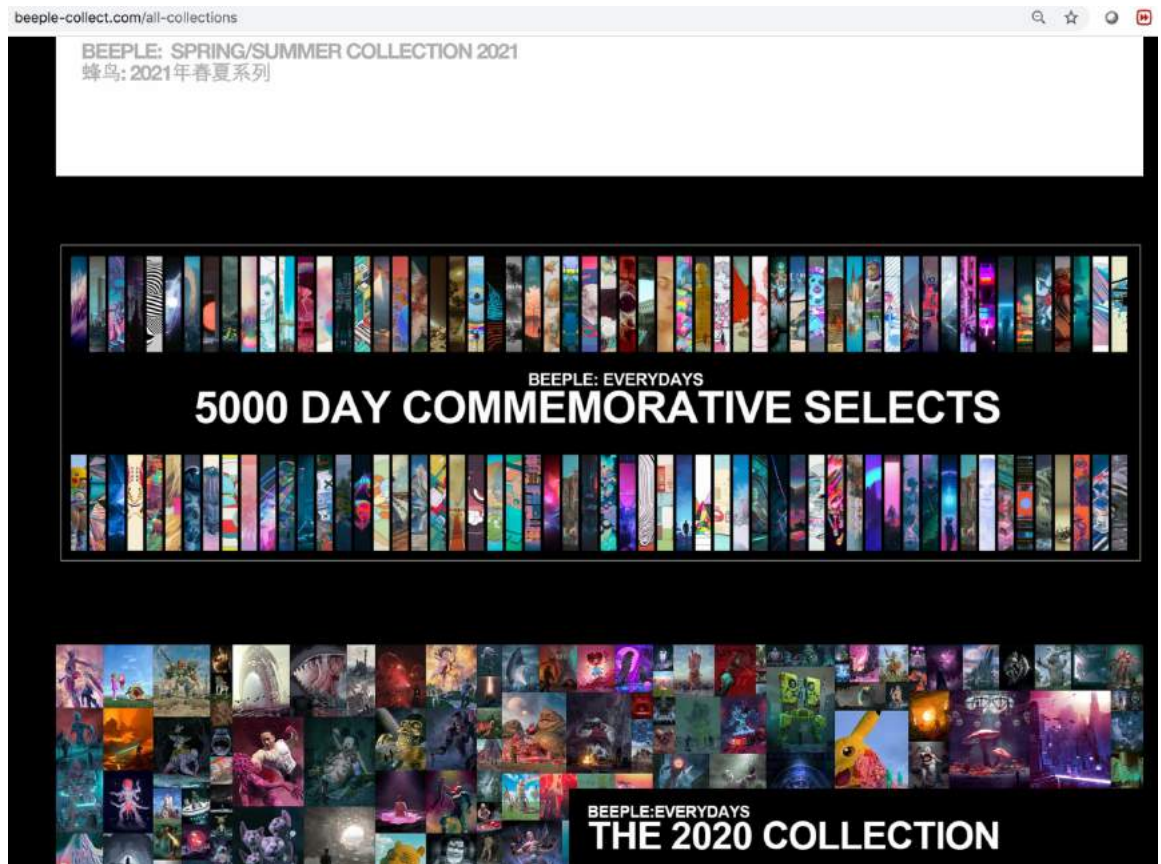
See Nifty Gateway.



Spring/Summer Collection:



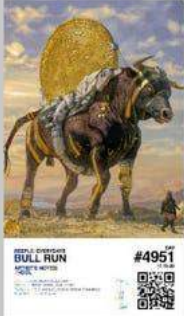

5000-day Collection:  
US\$69m

2020 Collection:  
"Friday 7pm EST  
21 single edition  
auctions throughout this  
weekend. 3 open..."



**OPEN EDITION (white label)**  
instant classic. stack these mf's up, they look  
dope af when you have a few on yer shelf.

**\$969**  
includes physical token  
(ships in 6-8 weeks)



(all 3 will be available for **5 minutes** starting at 7PM EST Friday)

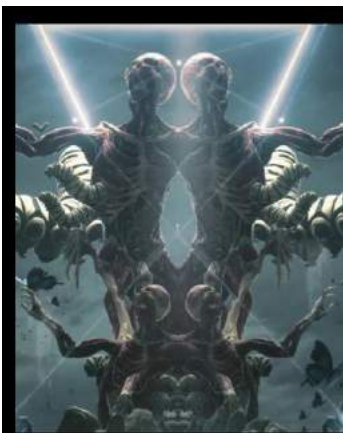
# Can creator get commission from each transaction?

## NFT Case Study [David Tseng 2021]

Collectible

### Digital art

Made known the creator, who will get commission from each transaction.



Artist  
**Beeple**

Price (USD)  
**\$777,777.77**

Price (ETH)  
**Ξ667.019**

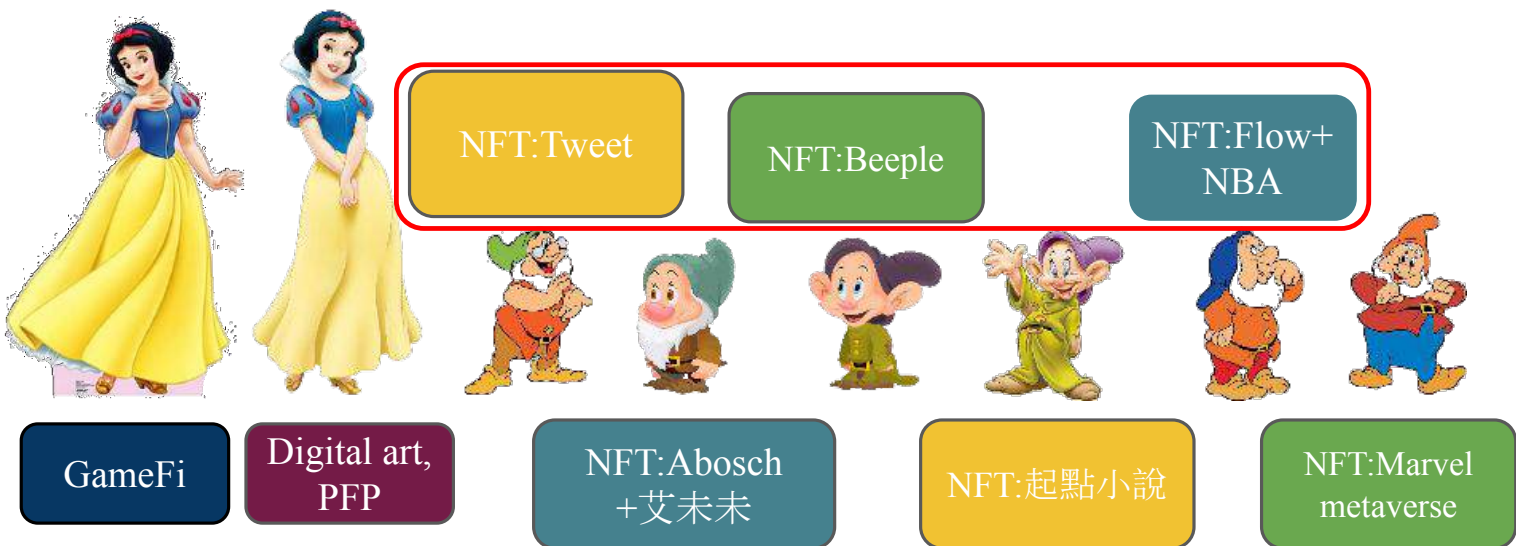
Artist  
**Trevor Jones**

Price (USD)  
**\$352,730.13**

Price (ETH)  
**Ξ302.5**



# NFT Outline: 4 Eras & 6 Case Studies



**FLOW**  
**NBA TopShot**





**NBA TopShot moments.**  
**No longer just static**  
**NBA TopShot cards.**

# iTunes + eBay

碎片化 序列化 二級流通

## Golden Age of Creation: Coming





# 元宇宙時代如何建構智能防禦系統

偵測威脅、填補漏洞、自我進化

數位金融交易暨資料保護協會  
蔡一郎 理事

## 蔡一郎 Steven Tsai

### • 現任

- ✓ 數位金融交易暨資料保護協會 理事
- ✓ 財團法人國家實驗研究院 研究員
- ✓ 數位經濟暨產業發展協會 理事
- ✓ 總統府、行政院、經濟部、教育部資安稽核委員
- ✓ Cloud Security Alliance Taiwan Chapter
- ✓ The Honeynet Project Taiwan Chapter
- ✓ OWASP Taiwan Chapter
- ✓ CSCIS APAC Vice President, Greater China + East Asia
- ✓ Chairman, InfoSec Taiwan
- ✓ 自由作家 35 本圖書著作

### • 曾任

- ✓ 台灣數位安全聯盟 理事長

### • 數位身份

- ✓ [blog.yilang.org](http://blog.yilang.org)







# 大綱

- 01 元宇宙的時代
- 02 面對的資安威脅
- 03 如何建立數位邊界
- 04 結語



# 元宇宙的時代

# 一個來自真實世界的實驗



[https://www.youtube.com/watch?v=k5eL\\_al\\_m7Q](https://www.youtube.com/watch?v=k5eL_al_m7Q)

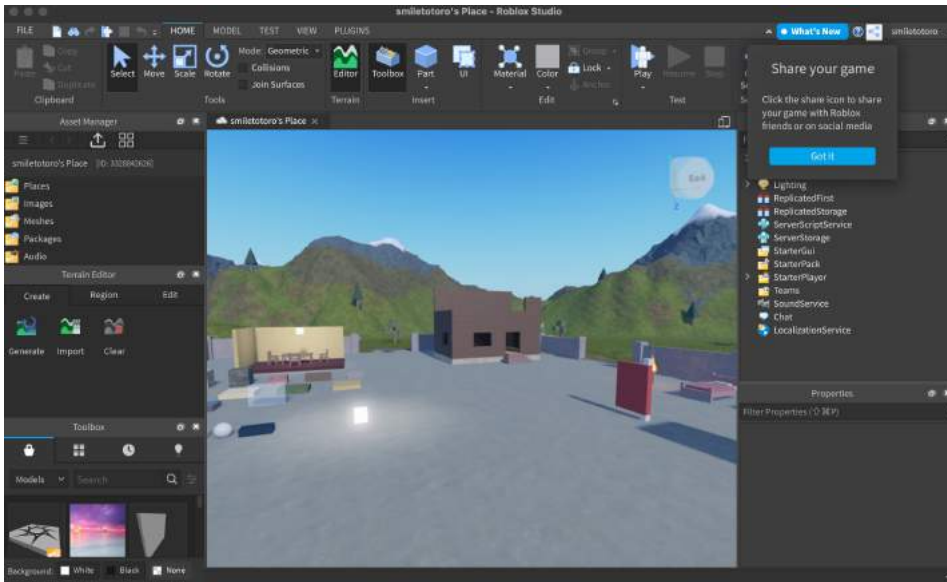
## Matrix vs Metaverse



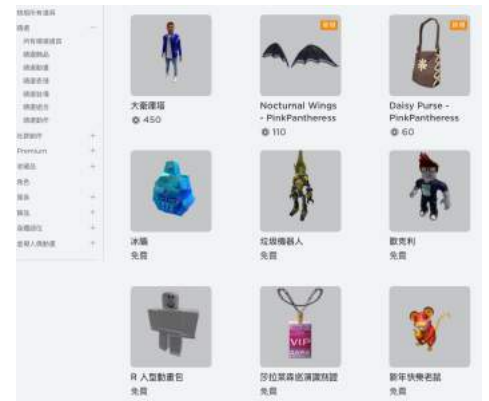
進入以「數據」驅動「生活」的時代



# 元宇宙中的虛擬世界



- 打造個人的虛擬世界
- 建立數位身份
- 與真實世界融合
  - 社交、分享、買賣...



<https://www.roblox.com/>



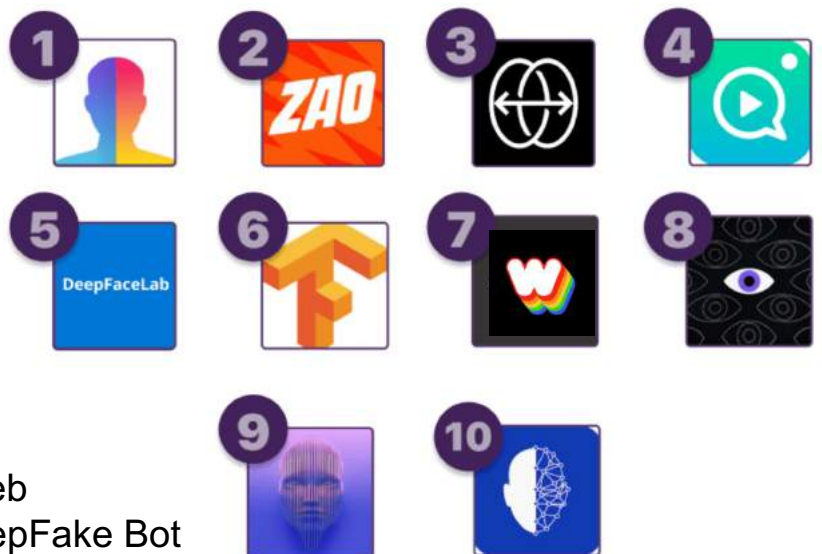
## 面對的資安威脅

# Deedfake 技術衝擊數位身份



<https://www.youtube.com/watch?v=cQ54GDm1eL0>

## Deepfake – AI技術下的產物



1. FaceApp
2. Zao
3. Reface
4. SpeakPic
5. DeepFaceLab
6. FakeApp
7. Wombo
8. Deepfakes Web
9. Instagram DeepFake Bot
10. Deepfake Studio



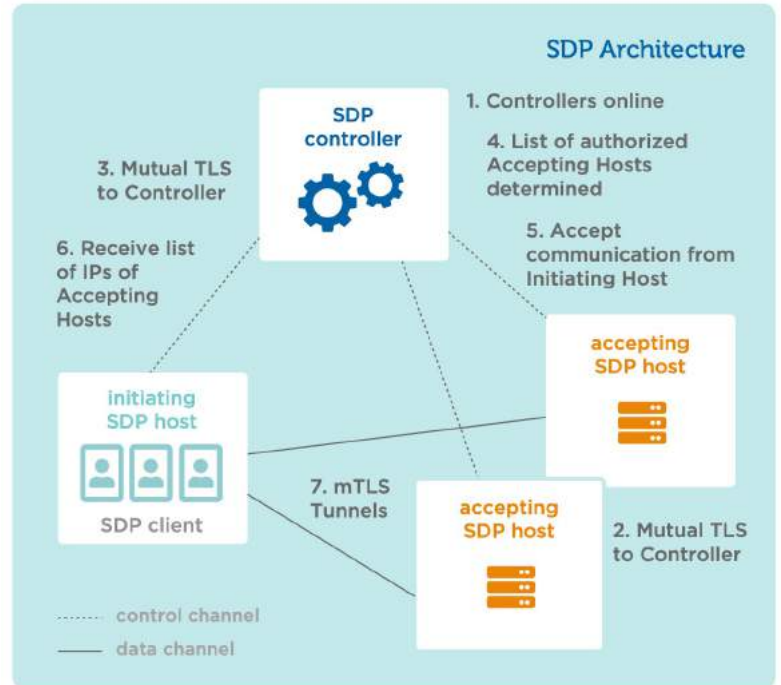
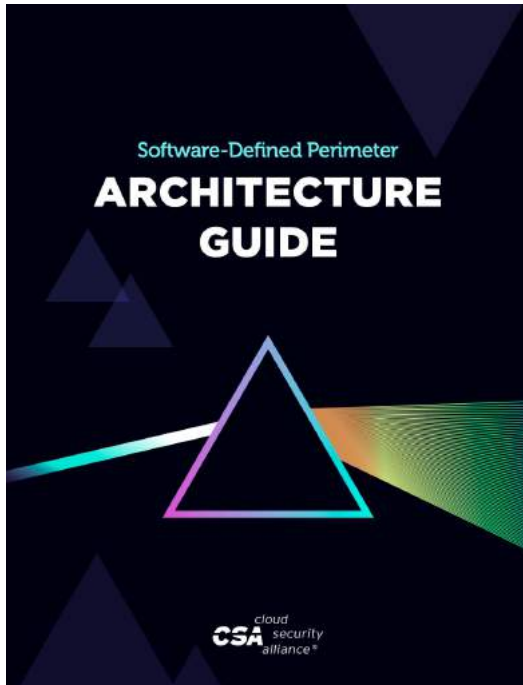
# 數位身份安全(個人資料)



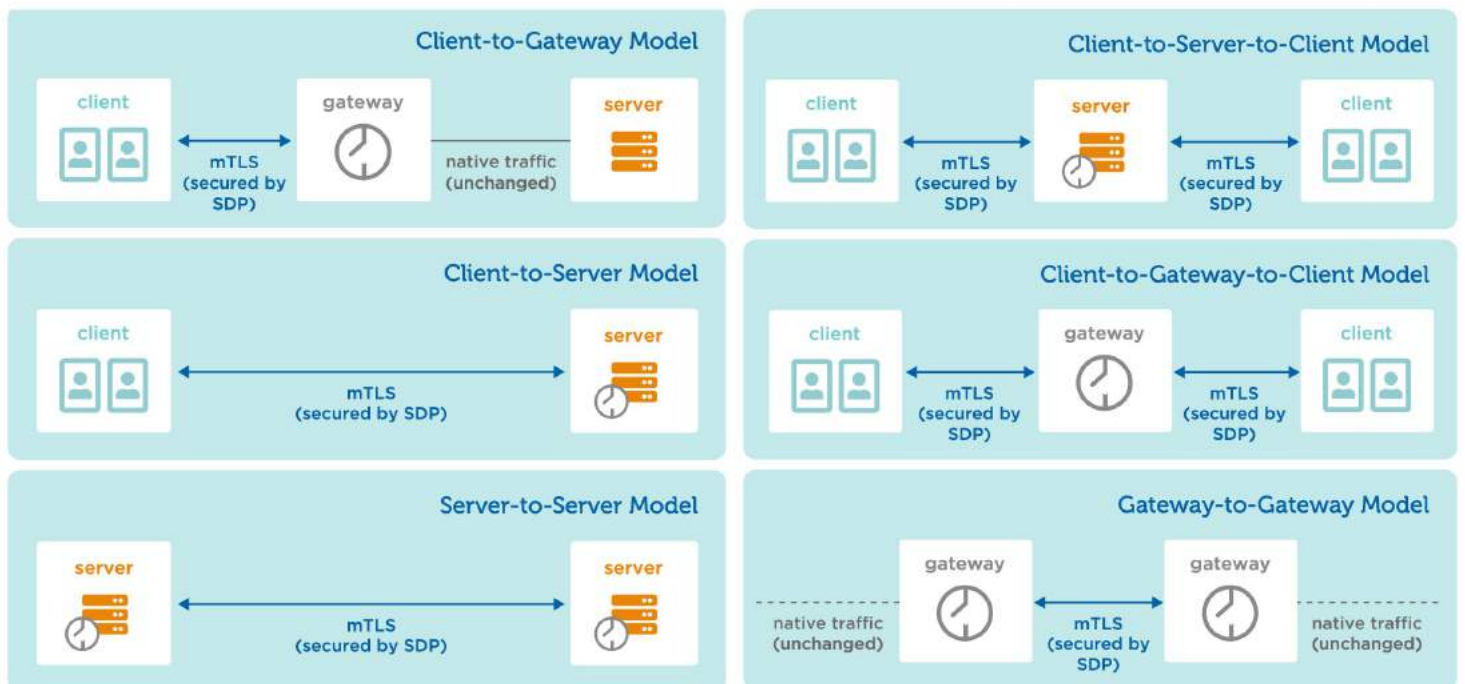
- MCA : 50 萬份貸款文件。
- RNC : 1.87 億筆選舉人資料。
- THSuite : 3 萬筆大麻販賣中心銷售記錄。
- Booz Allen Hamilton : 未知筆數最高機密資料。
- Dow Jones : 220 萬筆客戶資料。
- WWE : 200 多萬筆客戶資料。
- Verizon Wireless : 600 萬筆客戶資料。
- Accenture : 4 萬筆基礎架構登入密碼與詳細資訊。
- Capital One : 1 億筆客戶資料。
- US DoD : 18 億筆分析用的資料。
- Alteryx : 1.2 億筆個人資料。
- CAM4 : 1,000 萬筆個人資料。



# 雲端安全聯盟-軟體定義安全邊界



## 軟體定義安全邊界的六種模式





# 零信任網路

## Zero Trust

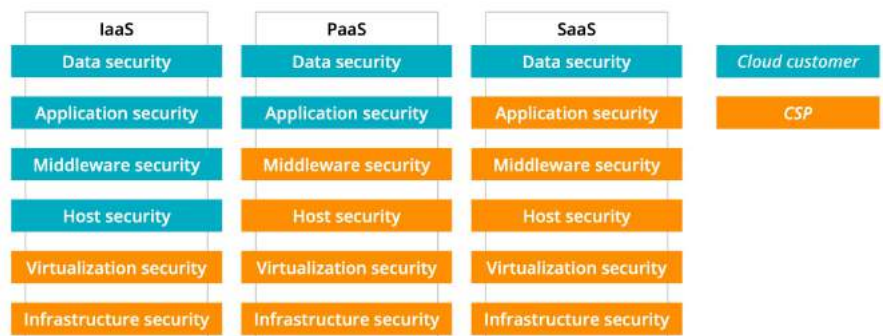
- 典型的資訊架構無法滿足有現資訊服務的需求
- 資安威脅與日俱增，打破傳統資安防禦思維
- 進入行動化、數位化、虛擬化的世代
- 關鍵基礎設施與核心系統成為駭客的主要目標
- 對任何的連線來源與請求，皆須審慎對待
- 軟體定義網路(SDN)、軟體定義廣域網路(SD-WAN)以及軟體定義安全邊界(SDP)成為主流
- 新型態的攻擊手法，帶來新的資安威脅

## 雲端服務與安全管理



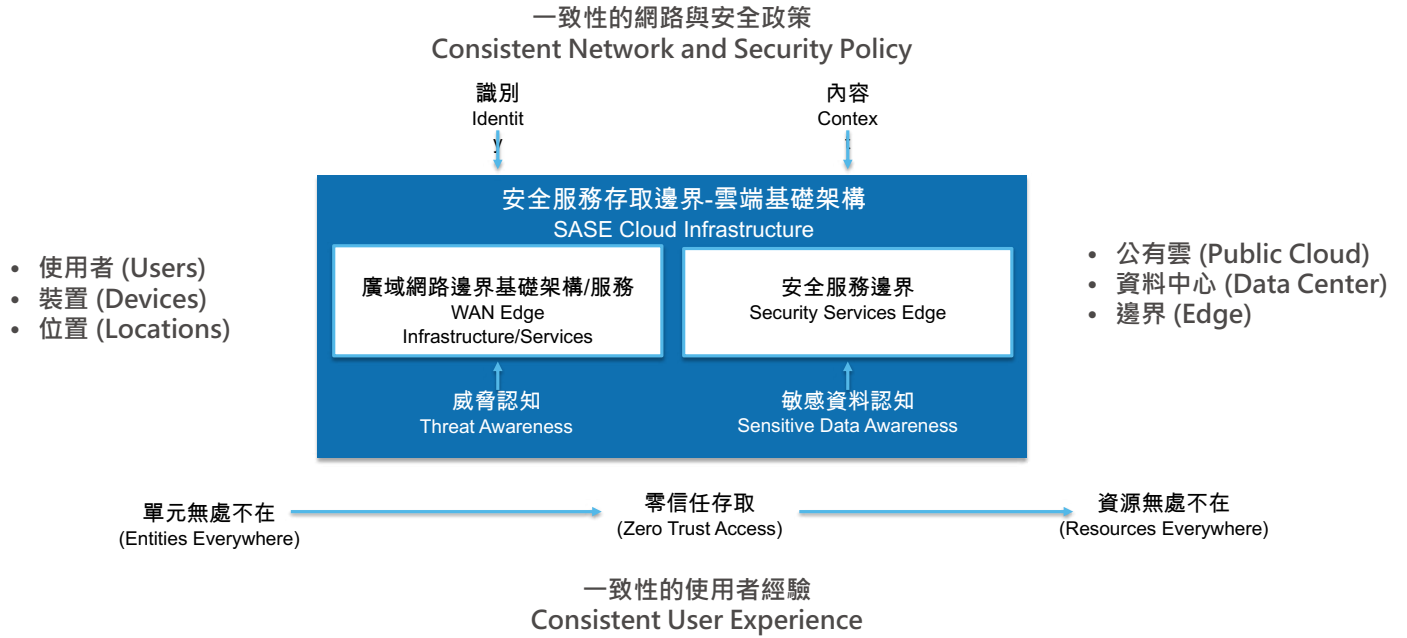
雲端服務安全，來自於雲端服務供應商與使用者共同建構的安全架構

新興應用服務多數以「SaaS」方式提供



<https://cloudsecurityalliance.org/research/working-groups/cloud-security-services-management/>

# 未來趨勢 - 安全服務存取邊界 (SASE)



\*SASE=Secure Access Service Edge





- 元宇宙是一個「概念」，融合多種資訊科技
- 多重「邊界」的資訊安全防禦
- 「威脅」來自人、事、物組成的環境中
- 面對未來「數位人權」的議題
- 摩爾定律因 GPU 成為分水嶺，但卻可能在元宇宙重生

看似終點  
卻是起點

科技來自人性

THANK YOU

# 數位人權研討會



國家人權委員會  
NATIONAL HUMAN RIGHTS  
COMMISSION, TAIWAN



中華民國數位金融交易暨資料保護協會  
Digital Financial Trade and Data Protection Association