METAVERSE BUILDING BLOCKS

THE FOUR SCENARIOS

May 2022

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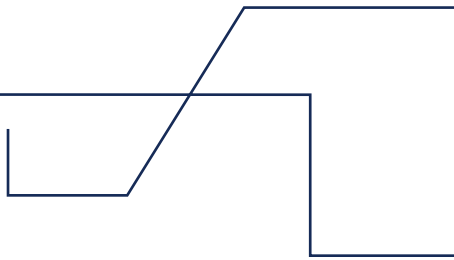
The COVID-19 pandemic and its repercussions (ongoing and onward-going) will (hopefully) be the subject of decades of research. While the outbreak has stunted human development – some may argue, even reversing social growth – technological innovation has flourished exponentially.

The end of 2021, otherwise known as Covid Year 2, saw the clique obsession with something called the Metaverse: a thing that was undefined as the New Year rang in, and remains to be defined – because "What is a definition if not agreed upon?" In other words, there is no consensus on what the Metaverse is.

A thing that is not defined is pliable, not limited to its denotation: either a shrewd business castling move or an onus that no one wants to concede. Whatever the reason(s), such signals are of interest to futurists and non-futurists alike.
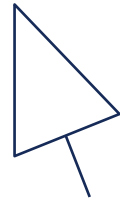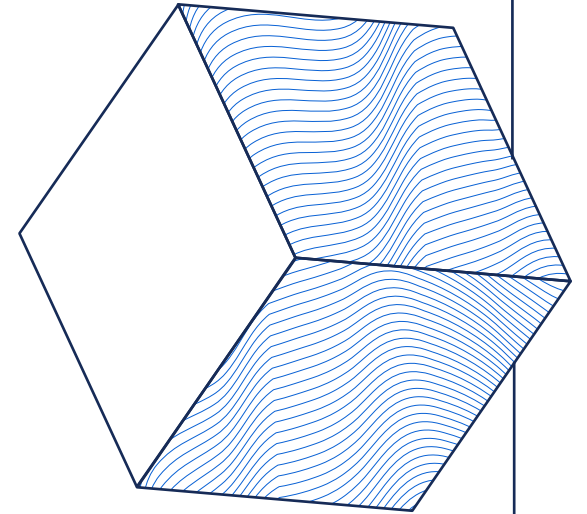
> "What is a definition if not agreed upon?"
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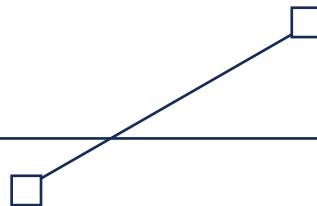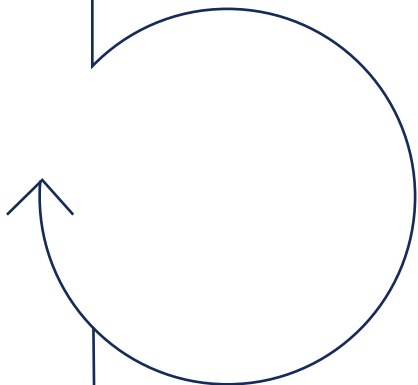
An appealing avenue of investigation is the horizon scanning of the Futures of live, work, learn, play, move, and sustain within the context of the Metaverse.

Figure 1. Types of Futures Knowledge [1]
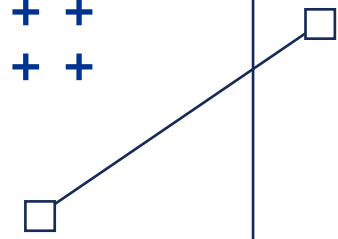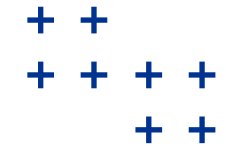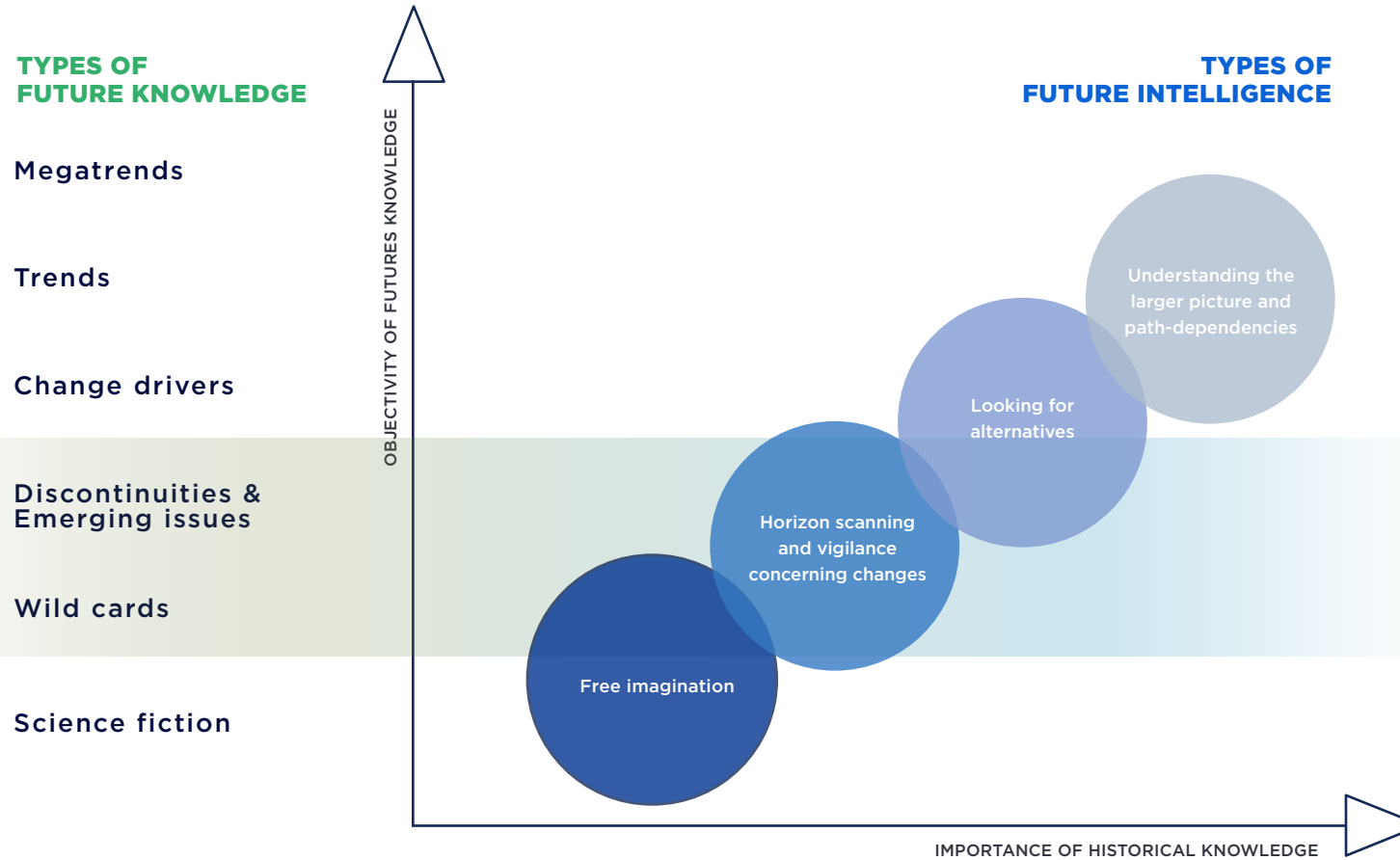
TYPES OF FUTURE KNOWLEDGE

TYPES OF FUTURE INTELLIGENCE

Megatrends

Trends

Change drivers

Discontinuities & Emerging issues

Wild cards

Science fiction

OBJECTIVITY OF FUTURES KNOWLEDGE

Understanding the larger picture and path-dependencies

Looking for alternatives

Horizon scanning and vigilance concerning changes

Free imagination

IMPORTANCE OF HISTORICAL KNOWLEDGE

METAVERSE BUILDING BLOCKS

[1] Kuosa, T. (2021, January 27). Horizon Scanning and Vigilance Concerning Changes: Discontinuities, Emerging Issues and Weak Signals. Futures Platform. https://www.futuresplatform.com/blog/horizon-scanning-and-vigilance

As can be seen in Figure 1, horizon scanning is in the 2nd tier of Futures Intelligence. In other words, there are a plethora of weak signals that assist in illustrating probable, plausible, possible, and impossible scenarios of the futures.

The researchers at FutureTales Lab by MQDC spent the last quarter of 2021 immersed in the examination of the Metaverse and its implications for the futures of live, work, learn, play, move, and sustain. This short report encapsulates the analysis and presents four scenarios.

Guided by the STEEPV framework, the following trends were identified:

Social (S)

New normals – evolution of relationship with digitisation amid generational disparities

Technology (T)

Driven by FOMO – industry leaders are driving (or being driven) toward seamless interoperability and integration

Environment (E)

The invisible forerunner – a heightened consciousness of carbon footprint(s) and Net Zero

Economics (E)

Divergent yet aligned – a burgeoning of the shared economy concept coupled with the proliferation of "everything-as-a-service"

Policy (P)

White elephant – an increased demand for transparency, accountability, concise communication, and participatory policymaking practices

Values (V)

Post-Covid shift – convenience, personalisation, and simplicity have become the belief of new buyers

INTEROPERABLE

HARDWARE

PROPRIETARY
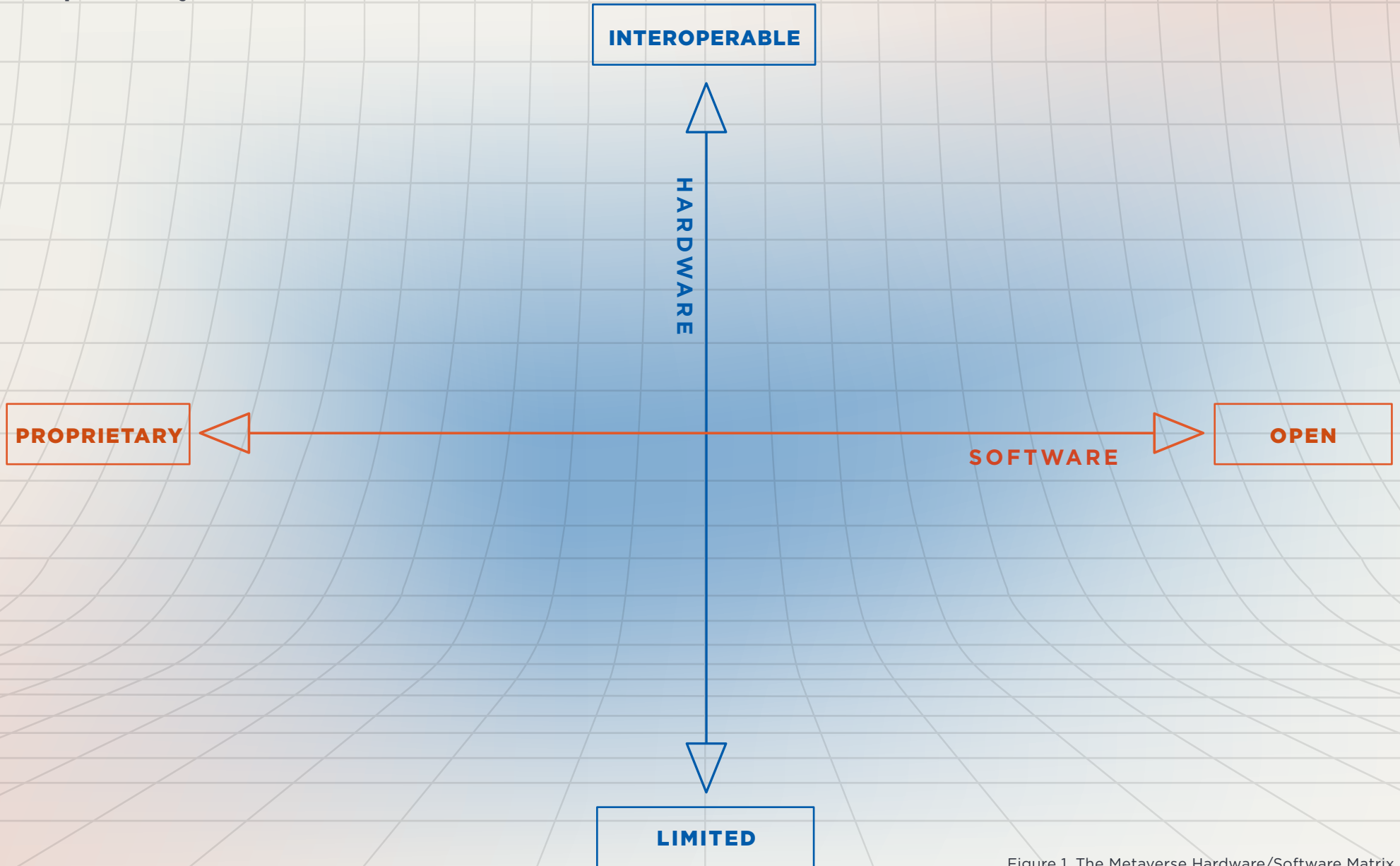
SOFTWARE

OPEN

LIMITED

METAVERSE BUILDING BLOCKS

Figure 1. The Metaverse Hardware/Software Matrix

DECENTRALISED

A decentralised system can be interpreted as one with dispersed functions. The power is "away" from a central location or authority. In a decentralised architecture, it is difficult if not impossible to discern a particular center.[2]

SOFTWARE

Instructions that tell a computer what to do. Software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system.[3]

OPEN

Open-source software (OSS)[4] is a decentralised development model that distributes source code publicly for open collaboration and peer production known as "the open-source way". The open-source way is a form of thinking and collaborating within the open-source community. This philosophy is based on intellectual freedom and core principles: transparency, collaboration, delivery, inclusion, and community. The exchange of ideas and software developed by communities has driven creative, scientific, and technological advancement in such industries as: education, government, law, health, and manufacturing. This movement created a way for a global community to collaborate, share, and assist both individual and group goals through source code.

Open-source software is collaborative, relying on community production and peer review to use, change, and share source code. Developers share insights, ideas, and code to create more innovative software solutions both collectively and individually. This scalable and flexible software ensures that anyone with the source code can modify, enhance, and redistribute it for better reusability and accessibility. Open-source software operates with the underlying principles of peer production and mass collaboration, creating more sustainable software development for end users.

PROPRIEATARY

Closed source software (CSS)[5] is proprietary software that is not distributed to the public. The software is encrypted, so only the original authors who created the code exclusively have rights to legally copy, modify, update, and edit the source code. Closed software imposes restrictions on what the end user can do with the application, preventing users from modifying, sharing, copying or republishing the source code.

HARDWARE

Computer machinery and equipment, including memory, cabling, power supply, peripheral devices, and circuit boards. Hardware design specifies a computer's capability.[6]

INTEROPERABLE

Interoperability is a term coined by the information technology (IT) industry to define an ideal way for computers and other electronic devices to relate to each other. A basic example would be any USB device (thumb drive, memory stick, or peripheral) that is interoperable with any modern computer terminal's corresponding USB port. Plugging them together yields results since there is barrier-free information exchange between the computer and the USB memory stick. This information is entirely transportable to secondary computers, printers, and other peripherals because the USB storage device was designed in accordance with interoperability standards.[7]
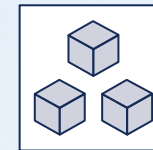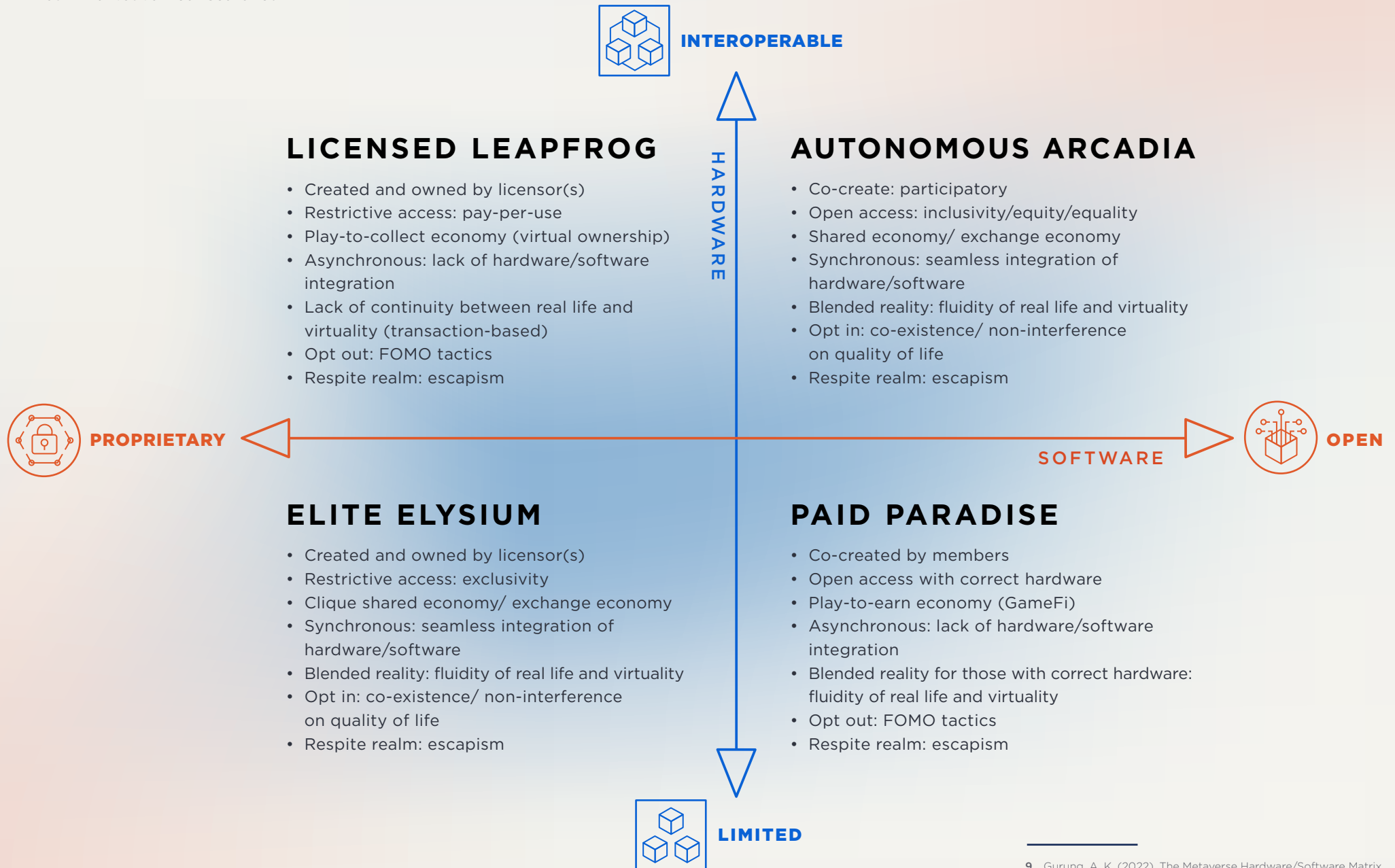
LIMITED

Otherwise termed as non-interoperability, this state is characterised by the incompatibility between different interfaces due to licences, patents, or trademarks.[8] This means that no information is exchanged between the equipment because it is designed to inconsistent standards.

2   Anderson, M. (2019, February 7). Exploring decentralization: Blockchain technology and Complex Coordination. Journal of Design and science. Journal of Design and Science. Retrieved October 15, 2021, from https://jods.mitpress.mit.edu/pub/7vxemtm3/release/2#:-:text=Decentralization%20is%20the%20process%20of%20dispersing%20functions%20and%20power,a%20central%20location%20or%20authority.&text=The%20World%20Wide%20Web%20was,of%20decentralized%20architectures%20and%20systems.
3   Britannica, T. Editors of Encyclopaedia (2021, January 14). Software. Encyclopedia Britannica. https://www.britannica.com/technology/software
4,5 IBM. (n.d.). What is open-source software? IBM. Retrieved October 15, 2021, from https://www.ibm.com/topics/open-source.
6   Britannica, T. Editors of Encyclopaedia (2021, June 29). hardware. Encyclopedia Britannica. https://www.britannica.com/technology/hardware-computing
7   Incorporated administrative agency. (2007, June). Interoperability Framework for Information Systems - IPA. IPA. Retrieved October 15, 2021, from https://www.ipa.go.jp/files/000024895.pdf.
8   Reichardt, M. (2004, December 10). The Havoc of Non-Interoperability. Virginia; OGC.

PREMISE: DECENTRALISED

INTEROPERABLE

HARDWARE

LICENSED LEAPFROG

- Created and owned by licensor(s)
- Restrictive access: pay-per-use
- Play-to-collect economy (virtual ownership)
- Asynchronous: lack of hardware/software integration
- Lack of continuity between real life and virtuality (transaction-based)
- Opt out: FOMO tactics
- Respite realm: escapism

AUTONOMOUS ARCADIA

- Co-create: participatory
- Open access: inclusivity/equity/equality
- Shared economy/ exchange economy
- Synchronous: seamless integration of hardware/software
- Blended reality: fluidity of real life and virtuality
- Opt in: co-existence/ non-interference on quality of life
- Respite realm: escapism

PROPRIETARY ← → OPEN

SOFTWARE

ELITE ELYSIUM

- Created and owned by licensor(s)
- Restrictive access: exclusivity
- Clique shared economy/ exchange economy
- Synchronous: seamless integration of hardware/software
- Blended reality: fluidity of real life and virtuality
- Opt in: co-existence/ non-interference on quality of life
- Respite realm: escapism

PAID PARADISE

- Co-created by members
- Open access with correct hardware
- Play-to-earn economy (GameFi)
- Asynchronous: lack of hardware/software integration
- Blended reality for those with correct hardware: fluidity of real life and virtuality
- Opt out: FOMO tactics
- Respite realm: escapism

LIMITED

METAVERSE BUILDING BLOCKS

9   Gurung, A. K. (2022). The Metaverse Hardware/Software Matrix Derivative: Four Scenarios. FutureTales LAB.

Scenarios

SCENARIO 1
Autonomous Arcadia

SCENARIO 2
Paid Paradise

SCENARIO 3
Elite Elysium

SCENARIO 4
Licensed Leapfrog

Scenarios provide a vision of how the future could unfold, given various factors. They are useful tools when the future does not seem to be a linear projection of the past, with many large-scale forces or trends making it difficult to forecast with certainty what the future will look like.[10]

The purpose of an explorative scenario is not to predict the future, but to show how these forces or trends could influence it. Scenarios need not be mutually exclusive; different scenarios might play out simultaneously in different geographies, industries, age cohorts, or socio-economic groups.[11]
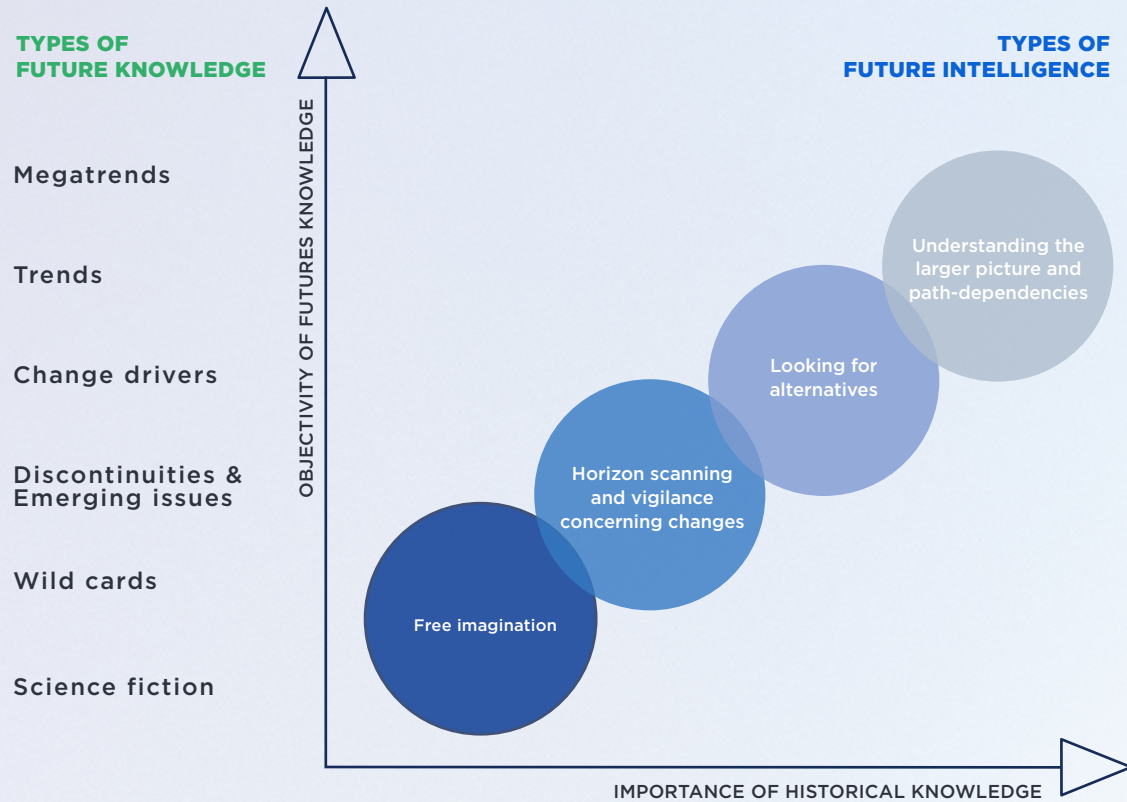
10 Kosow, H., & Gaßner, R. (2008, January). Methods of Future and Scenario Analysis. Overview, Assessment, and Selection Criteria. ResearchGate; German Development Institute.
https://www.researchgate.net/publication/258510126_Methods_of_Future_and_Scenario_Analysis_Overview_Assessment_and_Selection_Criteria

11 The Futures School. (2021, July 8). Scenarios: Going Beyond Data To Map Complex Futures. https://thefuturesschool.com/2021/07/scenarios-going-beyond-data-to-map-complex-futures/

Scenarios

**TYPES OF
FUTURE KNOWLEDGE**

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Trends

Change drivers

Discontinuities &
Emerging issues

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**TYPES OF
FUTURE INTELLIGENCE**

OBJECTIVITY OF FUTURES KNOWLEDGE

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larger picture and
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alternatives

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and vigilance
concerning changes

Free imagination

IMPORTANCE OF HISTORICAL KNOWLEDGE

Figure 1. Types of Futures Knowledge[12]

They are intended to be neither utopic not dystopic, but to set out an objective vision of potential versions of the future. Scenarios can help leaders across industries and organisations to think more prospectively about what might happen in the future and to begin to identify preferred actions in preparation.[13]

The following scenarios have been mapped out with the key premise of 'decentralisation'. What this indicates is the assumption of mass adoption of technology as a way of life. The intention behind these scenarios is to present rich narratives on what the futures of live, work, learn, play, move, and sustain could be like given two variables in each quadrant of the matrix.

12 Kuosa, T. (2021, January 27). Horizon Scanning and Vigilance Concerning Changes: Discontinuities, Emerging Issues and Weak Signals. Futures Platform. https://www.futuresplatform.com/blog/horizon-scanning-and-vigilance

13 Saffo, P. (2014, August). Six Rules for Effective Forecasting. Harvard Business Review. https://hbr.org/2007/07/six-rules-for-effective-forecasting

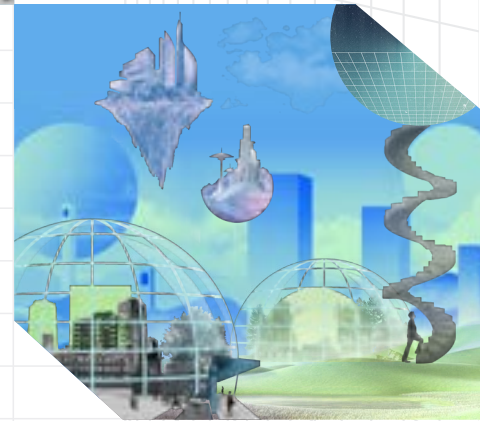Autonomous Arcadia

Elite Elysium

Paid Paradise

Licensed Leapfrog

Are these narratives unexpected?

The reader is encouraged to explore each scenario and find implications and arrive at their own interpretations.

What do you need to include in your planning to maximise these potential opportunities?

What are some key factors that you need to watch out for?

Are there any opportunities in these scenarios that might impact your current way of thinking and understanding of the Metaverse/metaverse?

AUTONOMOUS ARCADIA

1 AUTONOMOUS ARCADIA

Software: Open

Hardware: Interoperable

In the year 2030, as technology continues to be co-developed, ensuring a shared creative economy that is participatory, inclusive, and equitable, the integration between hardware and software is fluid and seamless. This has allowed the blending of realities, physical and digital, without interfering with either realm. All members of society find value in these immersive worlds.

Virtuality has created participatory societies where relationships are forged and nurtured through interactions. Decentralised healthcare systems flourish. The state's medical budget is reduced and allocated to other sectors, ensuring quality of life and holistic well-being. Immortality is achieved through mind upload. Loved ones are just a click away. Digital IDs and wallets have empowered pe–ople of all generations to work on their own terms; the young inspire innovation and the elderly impart wisdom. No more hierarchical structures – no more siloed enterprises. Everyone works as equals within a community, which further cultivates resilience.

The EdTech economy prospers and providers engage in healthy competition to provide better quality products and services. Local (indigenous) knowledge goes global as education export is achieved, allowing shared authorship. NFTs are used to record an individual's educational history – the data is traceable and with permission accessible for verification. All devices and personal data are well protected. Cybercrime is minimised with the utilisation of blockchain and quantum internet, which further augments virtual experience for people dwelling in both worlds through their digital twin(s). Playing to earn has become the norm and has encouraged better world-building policies and regulations.

Those who actively participate in the everything-as-a-service business model find increased value in the interoperability of their points between the physical and digital worlds. Most people are able to work from the comfort of their homes, but those who wish to commute can do so in self-driving electric vehicles, and have either physical or virtual face-to-face interactions with others while in transit. The elderly are reinvigorated – being able to revisit places and memories from their past through virtual travel. Sustainability is addressed in a myriad ways from JIT manufacturing of user-selected prototypes to clean server houses that incorporate the latest green energy solutions. Decentralisation of energy production has allowed communities to incorporate circular methods and approaches.
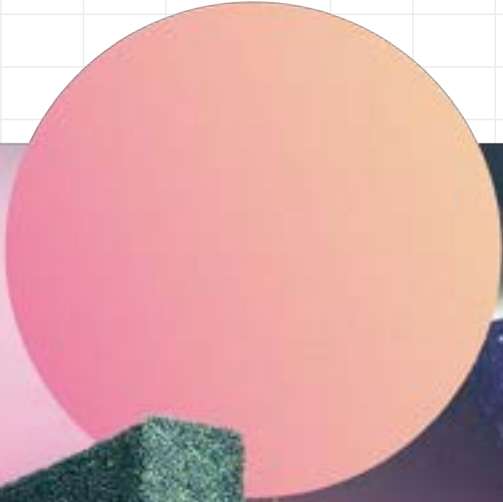
> **Virtuality**
> has created participatory societies where relationships are forged and nurtured through interactions.

Scenario 2 :

PAID PARADISE

2 PAID PARADISE

Software: Open
Hardware: Limited

Even though software developers have forgone IPs, the hardware industry is still firmly clenching on to their patents. The year is 2030, and interoperability is the buzzword on everyone's lips – from children who wish to virtually meet their friends to policymakers rallying support. The limitation of hardware has increased the wealth of a select few developers at a colossal human cost, widening the socio-economic dearth and steepening inequalities and inequities.

Virtual societies and communities are segregated contingent on the type of hardware an individual owns or has access to. Interactions are limited. Virtual ceremonies and celebrations are not as robust as they should be. Services including healthcare are not fully utilisable or developed. This places added burden on medical benefits – and government budget allocation. Device-linked access to medical services in the virtual world is localised and specific. Most of the services are provided through a platform model. People can get better services, but the format is limited. The imagery of ivory towers and fortresses presents itself as individuals with the right machines can join specific communities, increasing their work opportunities and in turn economic standing. Even though the option of a singular digital ID exists, individuals do not have access to hardware-specific services. There are growing concerns of certain communities, such as smaller companies shutting down due to interoperability issues.

Digital education is available, but accessible only in designated spots. The EdTech economy moderately rises as the companies have to bear interoperability costs applicable for all devices. Education cannot be exported freely as developing and under-developed nations do not have the infrastructure or capacity to import them. The limitation of usable devices creates competency gaps between the haves and have-nots of society. As communication becomes exclusive to people with similar devices, there is an increase in FOMO-related anxiety for those who do not have the same tools as their peers. Digital luxury is defined by the devices that people can afford to join online worlds. However, this limitation gives rise to a new type of job: bridgers (such as cartographers, spatial mappers, and digital twin implementors) who tackle technological asynchrony to deliver optimal user experience.

Though software technology has progressed to the point of fully autonomous vehicles, the issue of interoperability has caused low reliance on their safety. Added to this, the starkest barrier to access is the cost of such vehicles. Not only are they expensive, but their services are also limited to certain locations – making them less than convenient. Many employees are unable to work from home due to hardware limitations and must commute. As EVs have not reached mass-market scale yet, many operational vehicles are still fuel-powered. Sustainability goals and pledges are proving to be daunting challenges for most nation states across the world, especially those with a higher Gini index. If they are unable to reach their goals in the next 5 years, they will be subject to tariffs and sanctions – which will only deepen the current state of deprivation and worsen quality of life.

> "
> **As communication becomes exclusive to people with similar devices, there is an increase in FOMO-related anxiety for those who do not have the same tools as their peers.**
> "

ELITE ELYSIUM

3 ELITE ELYSIUM

Software: Proprietary

Hardware: Limited

As the old adage goes, "The rich get richer and the poor get poorer." Even with the 2020s coming to an end this still holds true. When the metaverse buzzword surfaced, many thought that it would be the harbinger of equity and equality. Decentralised systems, they said. Interoperability, they said. The little people dreamt dreams of a just transition to a fair world. Instead, at the end of this decade, socio-economic gaps have widened and there is little to no hope of reversing climate change. Many have been left looking in from outside white picket fences.

As access has become exclusive to the 'haves' of society, the wealthy own all the virtual and most of the physical assets. Others are unable to own property in both the real and the virtual worlds, and the disparity of land ownership makes it difficult to break free from the generational cycle of poverty. This cascades into healthcare with the elite extending their lives while others can barely treat curable diseases. Virtual rituals and socialisation are restricted to individuals with access to devices and platforms, and so are jobs – economic nepotism prevails. Remote-first policy becomes the norm for tech-oriented enterprises or big conglomerates.

Digital learning is reserved for the privileged. While limited access yields higher levels of cybersecurity, those on the periphery develop new ways to try to hack systems to gain access to siloed databases. Centralised NFTs are deployed to create invitation-only participation, and each platform develops its own tokens that cannot be used in the real world – limiting not only participation but also innovation. Digital twins very much like their real-life counterparts are custom and used only in specific paid-for platforms. Metaverse policies fail to regulate the market and result in wider socio-economic disparity. Those who cannot enter Web 3.0 are left behind. No new jobs are created as the metaverse becomes a niche market.

Autonomous EVs and drones bedeck megalopolises enriching the supply chain for the wealthy. Anything from fresh Scottish salmon to saffron from Iran is delivered within the hour – or you get your tokens back. Prototyping becomes an exclusive hobby – a playground for the rich to experiment with gene therapy, customise babies, and design their 11th residence (with a digital counterpart, of course). Mobility is impeded both in terms of transportation and social movement for those on the less fortunate end of the socio-economic spectrum. For them, sustainable living is not even a choice – living on the outskirts of "domed" cities has made them more resilient, but at an immeasurable human cost.

> **Prototyping** becomes an exclusive hobby – a playground for the rich to experiment with gene therapy, customise babies, and design their 11th residence.

LICENSED LEAPFROG

4 LICENSED LEAPFROG

Software: Proprietary
Hardware: Interoperable

Hardware giants made a pact – accessible development and innovation. In a show of collaboration, the CEOs of each company burned their patents in a huge bonfire ringing in the New Year in 2025. Quite a newsworthy image, not the best move for the environment – people cheered and counted their losses. Though their software counterparts said they would follow suit, it has been 5 years since that momentous occasion. Payment firewalls pop us every few clicks. Machines talk to one another, but systems are like star-crossed lovers – chance meetings when the opportunity presents itself. Digital literacy is unparalleled. Access limitations, however, distinguish the haves and have-nots. This is not about capabilities – rather, it is about access.

A glaring distinction is observable between big and small platform players. Virtual societies are born only when people using the same platform can build relationships through digital channels. There is a sense of equity in access to healthcare. A wide range of medical services are available, enabling users to effectively utilise services in the virtual world. However, the pay-for-access model means that choosing the right platform and service requires expert guidance. People can participate in virtual rituals through a variety of devices. But there is a limitation of connectivity between platforms, making the services different in form and style. The well-off gift their offspring NFTs/tokens that grant them premium user access to platforms that exclude those who are not so well-off. Another use for tokens is realised – virtual voting for policy changes at the workplace becomes an engagement booster. Virtual labour unions are formed, democratising the workforce. Purpose-driven organisations will be lauded by the public; however, they will need to overcome myriad challenges to create real impact.

On the other hand, digital learning has become a booming industry. Platforms distinguish themselves on the basis of unique offerings that are accessible by all kinds of hardware. Interestingly, cybercrime and attacks are quite low as customising malware and hacking codes is quite expensive. Centralised NFTs are used to record learning history but are not sharable without a fee. The EdTech economy is booming with firms organising into clusters. Only people who use the same platforms can digitally communicate with one another. This further multiplies communication channels to serve different needs of users. Metaverse policies promote hardware interoperability and successfully lower the prices of devices in the market; however, the regulations do not address software accessibility issues, leading to further fragmentation of market and ownership. Content creators lead the aesthetic commerce movement and design multi-layered experiences for users.

Ride-sharing apps have made mobility accessible to most people within communities; not only that – public services have flourished under the interoperability scheme. Different companies provide similar services, but all address current needs of users on different platforms. Sustainability goals are met at different layers with different solutions. Some are grassroot while others are funded by the software giants (who, some argue, have a hidden agenda that benefits their brand but not the planet). The debate surrounding information transparency of GHG emissions from server houses is not open source, arousing suspicion and distrust. Hardware interoperability has ensured that the majority of society is able to move freely, be it transport or social movement. Virtuality is persistent for those with unlimited access, but is fragmented for the less fortunate.

> **Different companies provide similar services, but all address current needs of users on different platforms.**

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