



WHAT IS THE METAVERSE?

AND WHAT SHOULD
WE BE DOING?

INTRODUCTION



Steve Davies CISSP CISSP-ISSAP CCSP CISM



linkedin.com/in/sldavies



about.me/stephendavies



- Head of Cyber Security at DLA Piper (International)
 - Security Engineering & Architecture
 - Security Operations



- Enterprise Security Architect at Sky Betting and Gaming
- Security Architect at William Hill





Steve
@Northvein

...

So the hype train around [#Metaverse](#) isn't slowing down, despite the damage Facebook has done to the works SO can anyone point me towards any thinking / projects around security, privacy and safety in a **!@?%\$!** virtual/augmented reality world?



forbes.com

Remote Work, Job Interviews, Business Meetings And Live Events Will All Be Conducted On The...

13:53 · 02/01/2022 · Twitter for iPhone



Steve
@Northvein

...

So it's happened... we've had a request around supporting a metaverse project...

I'm going to share thoughts and resources on handling this as we go along but I'd still love to hear from any hackers/infosecers thinking about this same stuff



Steve @Northvein · 02/01/2022

So the hype train around [#Metaverse](#) isn't slowing down, despite the damage Facebook has done to the works SO can anyone point me towards any thinking / projects around security, privacy and safety in a bull shit virtual/augmented reality world? ...

15:41 · 13/05/2022 · Twitter for iPhone

INTRODUCTION

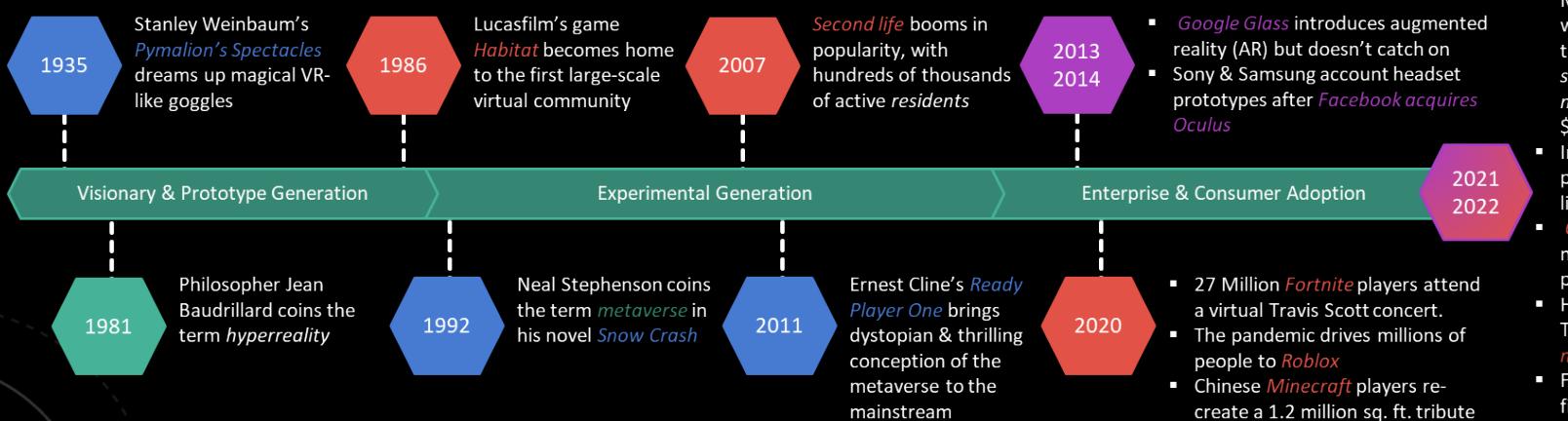
1. What is the Metaverse?
2. What should *WE* be doing?

WHAT IS THE METAVERSE?



WHAT IS THE METAVERSE?

- It's the next version of the internet
- It's made up of **virtual worlds** where people can get together to do *stuff* (virtual communities)
- It's many **technologies** coming together to make this happen (AR, XR, VR, Web 3.0)
- It's been a long time coming, the **conceptual metaverse** is old



- Facebook becomes *Meta*, with Mark Zuckerberg stating that he would like the company to transition from "primarily being a *social media company* to being a *metaverse company*", spending \$5.7Bn in year one
- Investors pay millions for virtual plots in blockchain-based worlds like *Decentraland*
- *OtherSideMeta* debut their metaverse with to 4,500 participants in a live demo
- Hong Kong University of Science & Tech (HKUST) announced *metaverse campus*
- FTC blocks Meta from buying VR fitness firm *Within*



Timeline credit: Andrew R. Chow (Time Magazine)
Illustration credit: Saitemiss (for Time Magazine)

WHAT IS THE METAVERSE

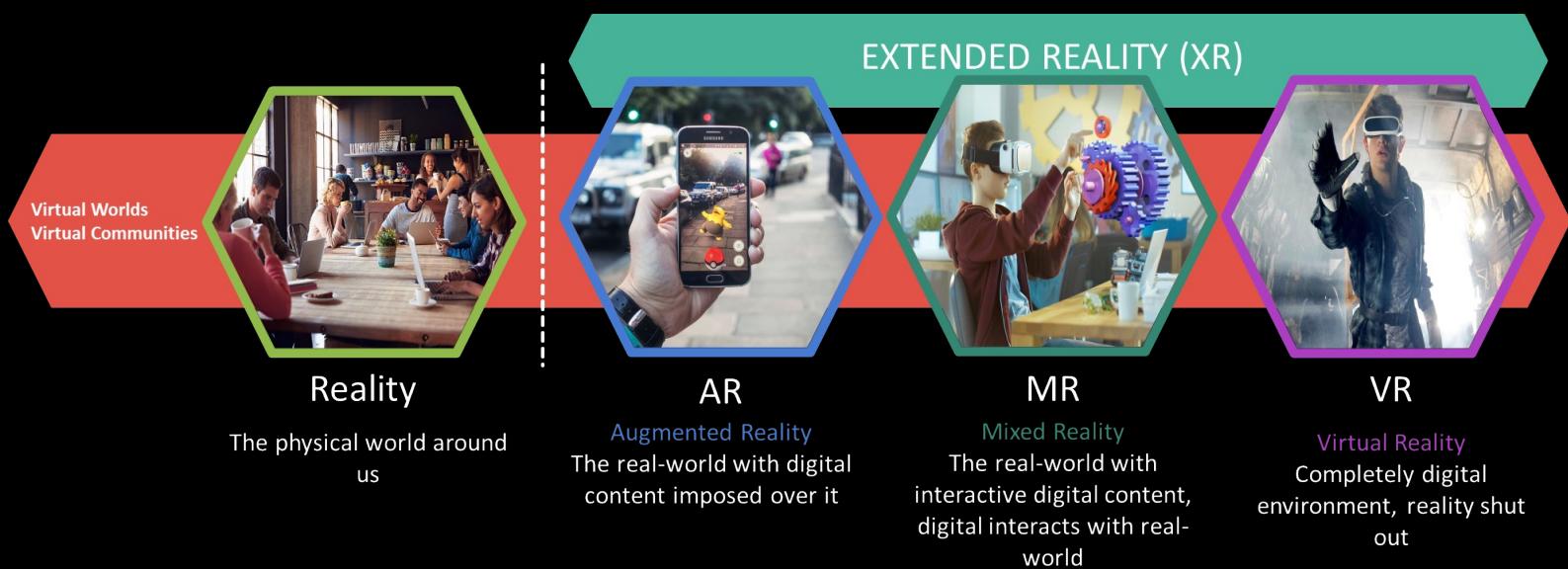
	Web 1.0 (1990 – 2003) The Read-Only Internet		Web 2.0 (2004 – 2017) The Read-Write Internet		Web 3.0 (2022) The Read-Write-Execute Internet	
Interaction, creators & contributors	Read-only, static content produced by few, consumed by many.		The Social internet (social media) with more user generated content (UGC) including podcasts, blogs, tags, comments, voting etc.		Virtual Worlds / Virtual Communities Extended Reality (XR)	
Technology & Architecture	PC/Desktops Poor cameras and graphics Connectivity \$\$\$		Social Media and Mobile Apps High quality cameras and graphics Connectivity \$, Mobile Access, High-speed Global Internet Centralised, FAANGs		AR/MR/VR Semantic/intelligent web De-centralised Private and Secure IoT	
Online Commerce	Not really! Very basic online stores		Extension of existing markets and opportunities Live Chat customer services Limited acceptance of crypto		Limitless Potential New ownership of media and materials Digital reputation AI Chat Services , Virtual Reality Support	
Remote Working	Not really! Pre-cloud technology stacks requiring LAN-like access		A perk Culturally unacceptable Achievable with significant investment		The New Normal Ubiquitous and culturally acceptable Technically trivial	
Security & Privacy	Not really! Best efforts or strict compliance requirements but in reality security and privacy were often afterthoughts...		InfoSec grows up – recognition and acceptance that InfoSec is an essential business enabler Privacy gets teeth – the GDPR and constant media coverage of breaches make privacy a primary concern		Data subjects as data owners, users can monetise their own data	

WHAT IS THE METAVERSE?

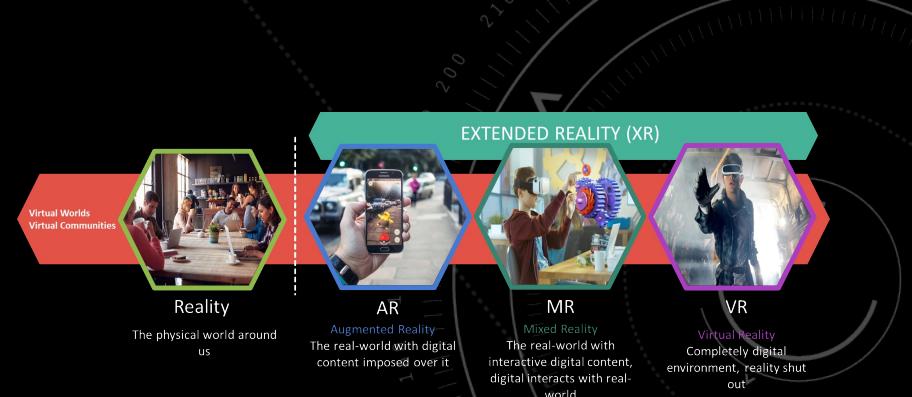
- The internet has become ubiquitous over the course of a few decades
- This has been underpinned by the developments in communication technologies (web, social, apps)
- These technologies led to **virtual communities** coming together in '**virtual worlds**' to play, learn & work
- **Virtual worlds** aren't all 3D, highly immersive experiences like games
- Zoom calls, Teams Meetings, Facebook, Twitter, Reddit are all virtual worlds
- **Virtual worlds** are systems that together make up the **metaverse**

WHAT IS THE METAVERSE?

- What we're seeing now is a change in the focus of technology to human experience
- We're seeing investment in new technologies that extend reality
- Extended Reality (XR) refers to the technology which immerses the user in their experience

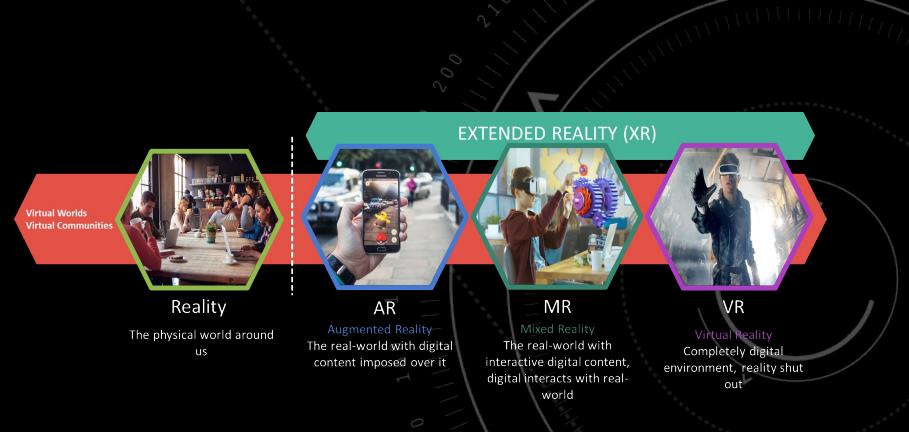


WHAT IS THE METAVERSE?



- Extended Reality has the potential to dramatically change how we work together
- In a virtual world there are no limitations on office size so teams can grow without office space or office location informing the hiring process
- Extended reality (XR) could let them work on real things together in a virtual world
- Imagine being able to point your smart phone at a server bezel and have all the monitoring data or support details appear
- Imagine being able to ‘blow up’ something to the size of a house to diagnose the problem or take a tour through it as a new starter so you know how it all really works

WHAT IS THE METAVERSE?



- Extended Reality has the potential to dramatically change how we help others...
- Customer Support - Teleport to customers sites and help them remotely, explore their issues with the help of a digital twin
- Communicate face to face like they were in your store (but online), provide great human-to-human OR human-to-AI support
- Host events virtually, take your office to the customer, reduce the impact of travel and events on the environment and lower the cost of participation
- Get access to medical expertise (telemedicine), backed up by increasingly sophisticated consumer health sensors (smart watches etc)

WHAT IS THE METAVERSE?



- Extended Reality has the potential to dramatically change how we learn...
- Imagine being able to take the best classes at the best Universities and colleges all remotely
- How much more could people learn and understand if they could 'be there'?
- Extended reality could make education accessible to more people with 24/7/365 access and limitless class sizes
- Academia is struggling to modernise, the metaverse could be it's future

WHAT IS THE METAVERSE?

- The metaverse is the next iteration of the consumer internet, it's **not any single platform or technology**
- The metaverse will further blur the line between the real world and online
- “ [The] metaverse is a congregation of physical and virtual environments which one day hope to connect as one”
- Organisations are starting to think about what the metaverse is and how they can be a part of it

WHAT SHOULD WE BE DOING?



WHAT SHOULD WE BE DOING?

- There's no escaping the fact that the metaverse is a confusing topic
- It's a difficult concept to describe and that assumes you can agree on a definition to begin with
- At one extreme there is scepticism around the metaverse, with some seeing it all as exaggeration, over promising on what the future of the consumer internet might be
- At the other extreme there's wariness around what the metaverse might become, fuelled by depictions of the metaverse from science fiction and concern around the impact of social media
- Somewhere in the middle is big tech, spending \$Billions on what will likely be the next iteration of the consumer internet

WHAT SHOULD WE BE DOING?

- Companies are starting to think about what the metaverse is and how they can be a part of it
- What should we as hackers / people working in infosec or risk / people who care be doing?

WHAT SHOULD WE BE DOING?

- **Treat the metaverse as inevitable.** Whatever your take on the metaverse, new technology is coming and with new technology comes new opportunities and new problems
- **Recognise that the metaverse has great potential.** We shouldn't miss this unique opportunity to shape the future of the internet and human engagement
- **Get involved now.** This is the future we imagined. We've grown up online and we've spent thousands of hours in virtual worlds. We're natural *metaverts*. Ask questions, help find answers

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WHAT SHOULD WE BE DOING?

High Level Challenge	High Level Guidance
<p>Risk Management</p> <p>Risk teams are going to need to adopt a metaverse parlance to discuss new challenges with stakeholders both technical and non-technical (sound familiar?)</p> <p>Metaverse initiatives might not be IT/technology led so may fall outside 'standard' engagement processes</p>	<p>Security and assurance teams need to become metaverts</p> <p>Identity key stakeholders and interested parties in your organization (who). Sales/Marketing, Events management, Technical Leadership... any team that led on remote working and/or is leading on 'ways of working'. Gauge current levels of interest and timescales (when) along with use-cases (why)</p> <p>As many metaverses will be built with the help of suppliers (how), Supplier risk management is going to need to understand the part these parties play in these new partnerships and be capable of assessing the suitability and posture of new and existing suppliers (that's where you come in).</p>
<p>Privacy</p> <p>There are no frameworks that exist today which describe how we should govern in a truly digital world. New frameworks will need to be written to support data sharing, privacy, consent and tracking in the multi-metaverse.</p> <p>Interoperability is a longer-term goal and one day customers will expect to be able to use their identities and carry data across metaverses but it will be some time before they expect walled gardens not to have walls.</p>	<p>Ask a lot of questions and challenge collection/access</p> <p>Hopefully with an understanding of who/when/why/how privacy concerns will become apparent. In addition to the usual data collection and processing activities a technology service performs there are totally new risks to privacy you're unlikely to have encountered before. Having a concrete understanding around how the solution is built, managed and hosted will answer some of these questions but you'll have to go a lot further and ask questions about collection and processing in the 'verse. Think video, audio, spatial data, biometric data to begin with...</p>
<p>Platform Security</p> <p>It's not just supply chain suitability - the Metaverse opportunity comes with new, different problems.</p> <p>Platform security should hopefully be a familiar problem set with well documented security guidance and best practices.</p> <p>The in metaverse challenges are new to all of us and the more immersive our metaverses become, the more traumatic and impacting "cyber attacks" will be.</p>	<p>Architecture, Shared Responsibility Model,</p> <p>There's enough reusable good practice around Platform Security (easy) – Cloud guardrails, network security, application security, registration and account recovery, payments(?), outage management, DDoS mitigation... If the solution is cloud-native it may even be built on turn-key services with turn-key security options and easy to consume guidance (yay!).</p> <p>Describe a code of conduct and have the engine enforce this. Meta's already added virtual boundaries to Horizons (anti-groping) and private rooms (with actual doors) exist in Gather so participants can enjoy private 1:1 conversations. Treat the virtual world like the real one ☺</p>

WHAT SHOULD WE BE DOING?

High Level Challenge	High Level Guidance
Verification and trust Crypto has paved the way, and crypto currencies and non-fungible tokens (NFTs) are bound to have some part to play. We need to set aside any crypto-cynicism and appreciate that crypto is the best candidate for value exchange today	Security and assurance teams need to become crypto-fluent If our metaverses allow participants to monetise their creations, and receive real-world financial remuneration we need to ensure our controls are sufficient to protect transactions and detect platform abuse or manipulation (fraud)
Regulatory Compliance Regulatory compliance will need an overhaul - consider gambling as an example... We'll likely see meta-crimes emerging, pump and dump crypto is just the start.	Compliance & Enforcement Work closely with compliance and legal teams to outline strict requirements which align with regulatory requirements. Engage regulators directly and seek guidance.

Facebook's Metaverse gives avatars 'personal bubbles' to block virtual groping and harrassment

Comment



Jeff Parsons

Monday 7 Feb 2022 11:31 am

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By EJ DICKSON

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THANKS!

DRAWING SLIDES



WHAT IS THE METAVERSE?

Virtual Worlds
Virtual Communities



Reality

The physical world around us



AR

Augmented Reality
The real-world with digital content imposed over it

EXTENDED REALITY (XR)



MR

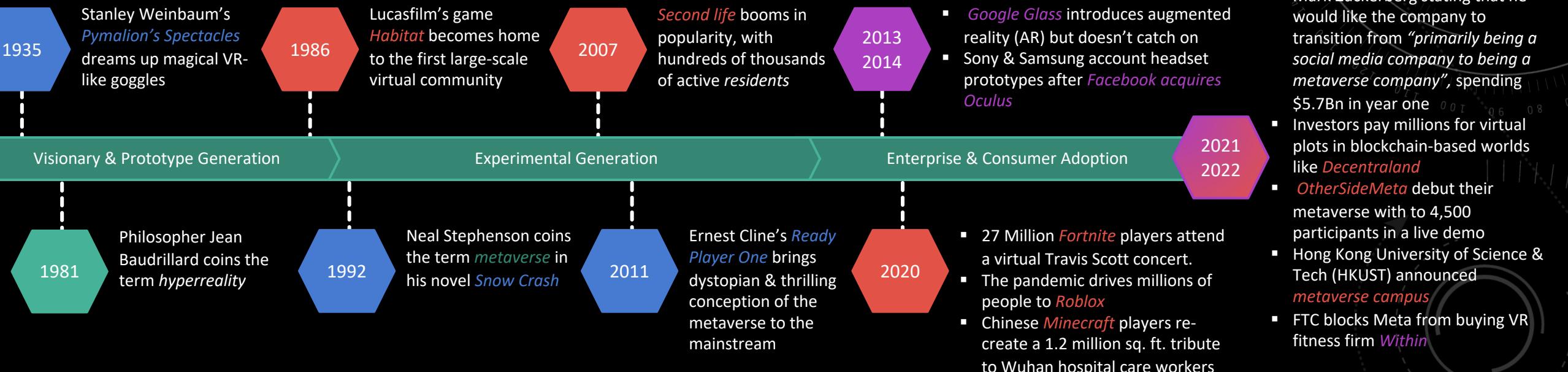
Mixed Reality
The real-world with interactive digital content, digital interacts with real-world



VR

Virtual Reality
Completely digital environment, reality shut out

WHAT IS THE METAVERSE?



WHAT SHOULD WE BE DOING?

- Companies are starting to think about what the metaverse is and how they can be a part of it
- There's a risk that scepticism and cynicism hold sway over our collective appreciation of what the metaverse is or what it could be
- There's a risk that we oversimplify or pigeonhole the metaverse as one thing (like VR)
- There's no single blueprint or vision for the metaverse should be
- Our legal and regulatory systems aren't ready for virtual worlds
- We're still struggling to manage the social implications of the internet and protect the vulnerable
- What should we as hackers / people working in infosec or risk / people who care be doing?