Responsible of the community « Disruptive technologies »
Tiana RAMAHANDRY
t.ramahandry@idate.org

XR - Innovation & prospective

Webinar in partnership with Inetum

Online meeting - 12/10/2021

Agenda

1h

Ouverture de la session — *10h00*

Les technologies de rupture : présentation de la communauté “Disruptive technologies”

- **Tiana Ramahandry,** Responsable de la communauté “Disruptive technologies”, **IDATE DigiWorld**

L’innovation chez Inetum

- **Jean François Gaudy,** Chief Innovation Officer & Digital Officer, **Inetum**

Principaux enseignements du rapport “XR consumer market – Different prospects for Gaming, Video & Entertainment, retail & e-commerce”

- **Basile Carle**, Consultant, **IDATE DigiWorld**

Etude de cas | XR dans le B2B : présentation de Dreamtime

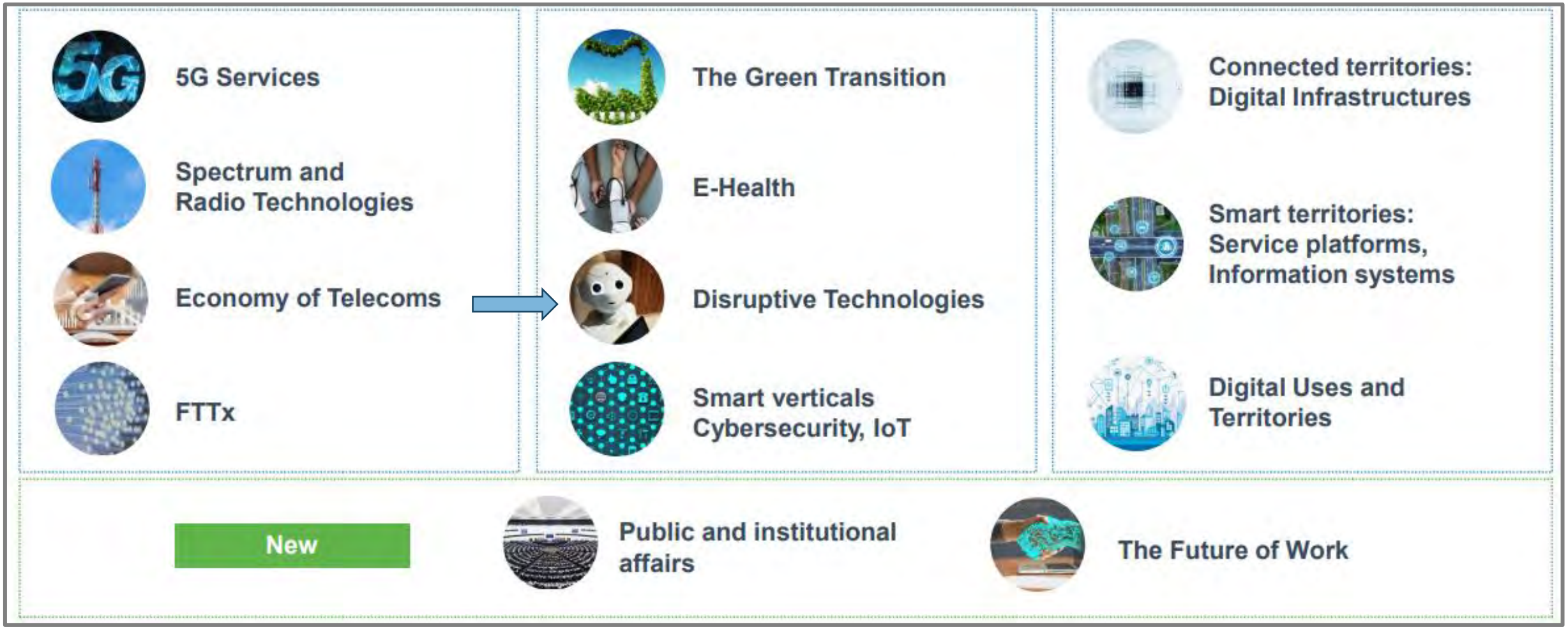
- **Jean-Paul Muller**, Global Practice Manager AI et Directeur du FabLab de Paris, **Inetum**

Q&A

Clôture de la session — *11h00*

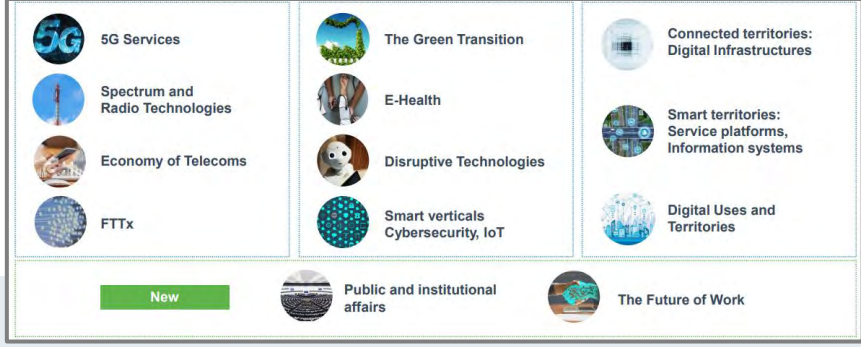
13 communities within IDATE DigiWorld

Thematic communities at the heart of digital challenges for industry, businesses, territories and European citizens



Community « Disruptive technologies »

Think tank dedicated to the technological enablers of disruption



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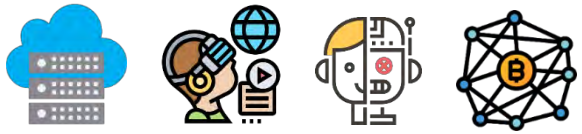
IDATE Members

Industry stakeholders

- Edge computing
- Virtualisation
- XR
- AI
- Robotics
- Blockchain
- Quantum computing

CORE DIGITAL TECHNOLOGIES



- IoT
- 5G
- FTTx
- Smart industries
- Smart cities

….RELATED SUBJECTS

Community « Disruptive technologies »

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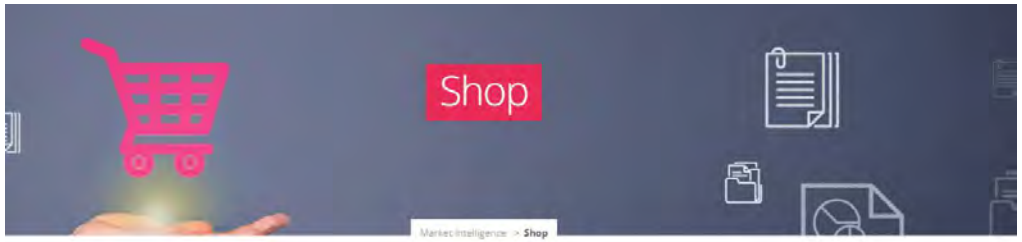

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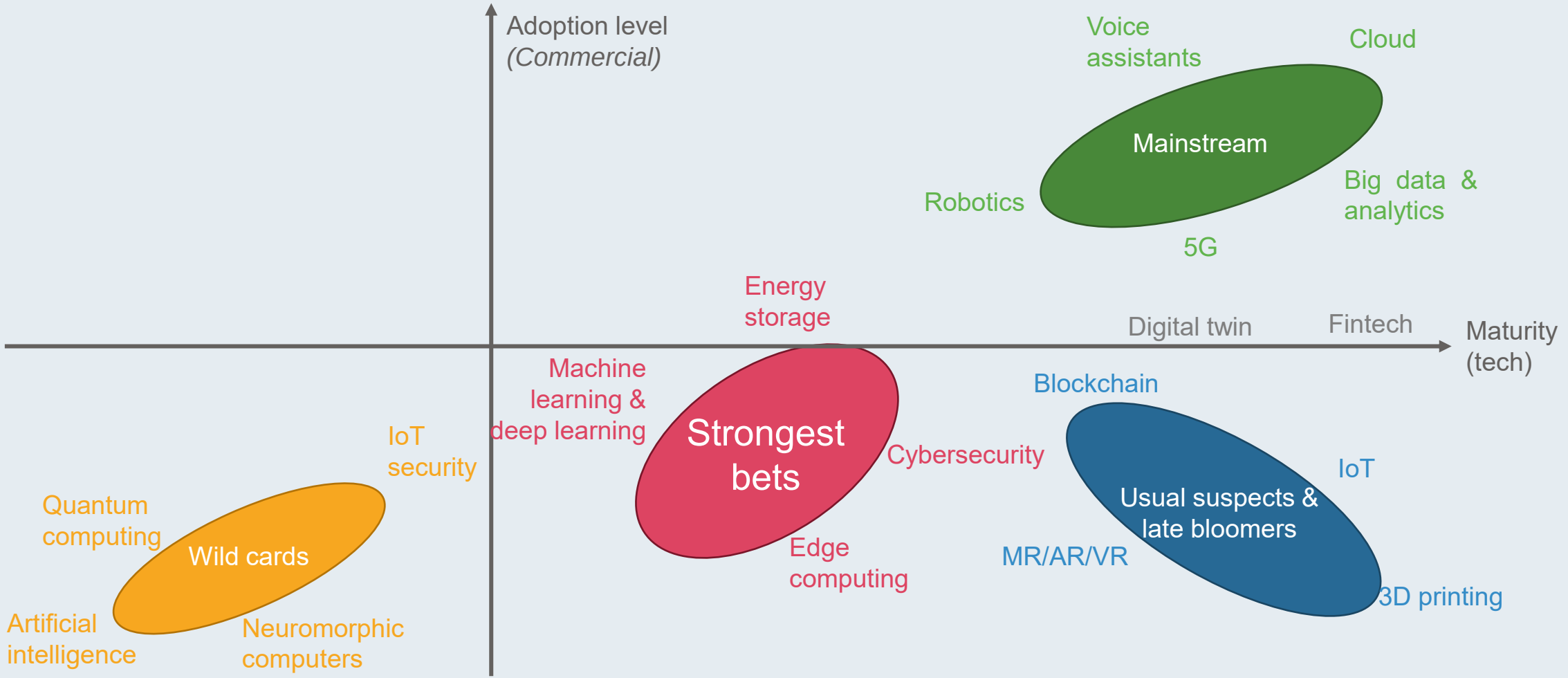
Innovation map – IDATE survey 2020

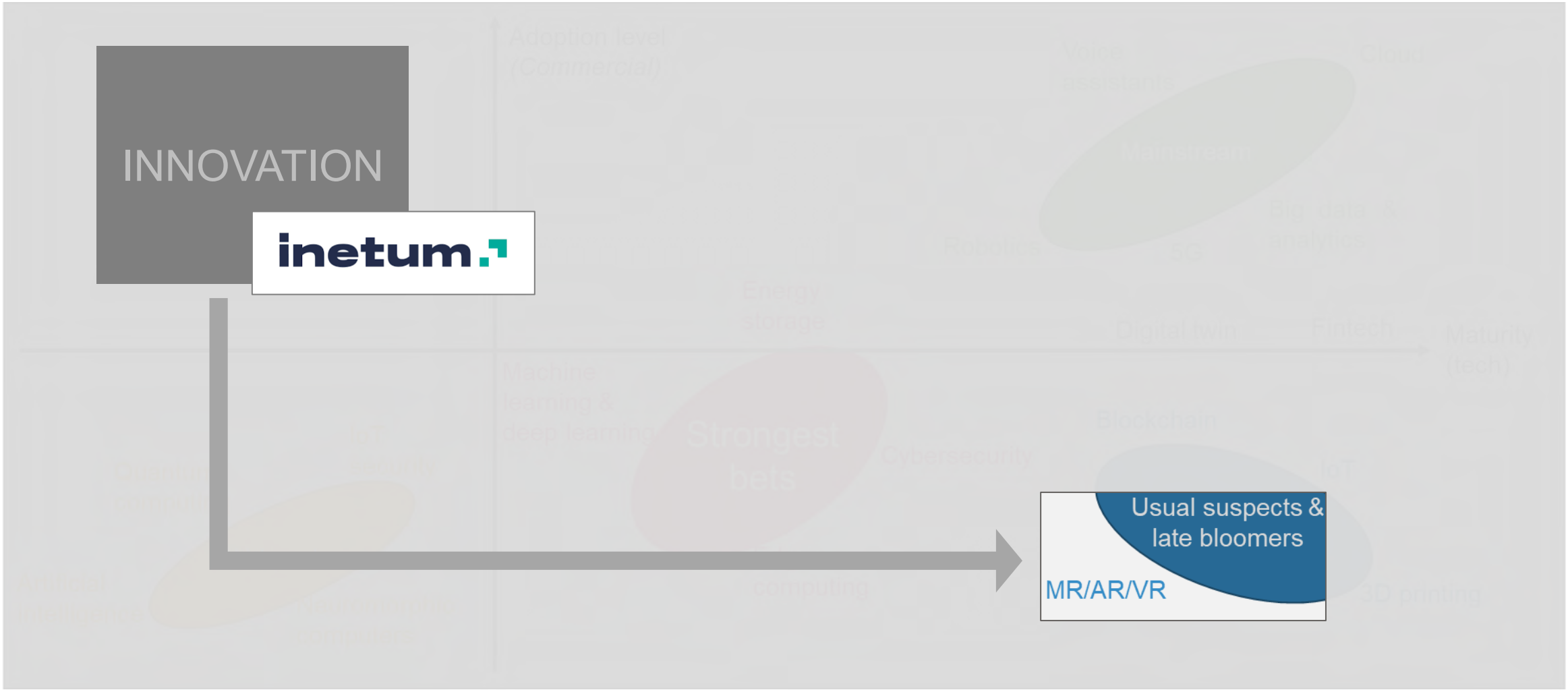
Where are the technologies of 2030 positioned on the map?



Source: IDATE DigiWorld, *The Key Digital Technologies of 2030*, December 2020

Back to today

Zoom on Innovation and XR



Project leader
Basile Carle, consultant
+33 (0)6 75 04 65 68 – b.carle@idate.org

XR Consumer market: Different prospects for Gaming, Video & Entertainment, retail & e-commerce

Main learnings

- IDATE & Inetum Webinar – 12 October 2021-

What is extended reality? (also coined XR)

VR experience

The Lab (e-learning game)

Augmented Reality

Windshield AR (Panasonic)

Mixed Reality

Car design at Ford

Difference between AR, VR and MR

Features	AR	VR	MR
Enhance the real environment with useful information	✓	✗	✓
Mix virtual elements with reality	✓	✗	✓
Interactions possible between the “real” and “virtual”	✗	✓	✓
Replace the real world	✗	✓	✗

Source: IDATE DigiWorld, *XR consumer market*, May 2021

How to experience eXtended Reality: the devices

Three different main kinds of device

Opaque headset (e.g. Oculus Quest 2)

Opaque headsets are usually associated with VR but the development of inside-out tracking and the inclusion of more cameras pave the way for digital see through and usages for AR and MR both in addition to VR

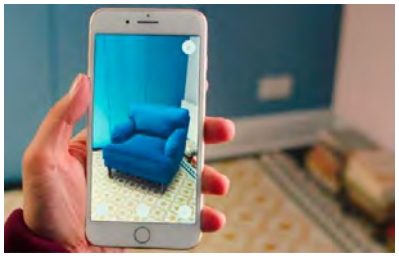
See-through headset (e.g. MS Hololens 2)

See-through headsets are used for AR and MR applications as the real world is always there in the background.

Ultimately, see-through devices are to become thinner and thinner, more like real (wearable) glasses but technology is not yet mature enough in terms of miniaturization, display quality and power consumption

See-through headsets are mostly used in the B2B market (logistics, supply chain, safety, maintenance)

Mobile apps on mobile devices



Mobile devices (Smartphone mostly, tablets…) are the most popular for mainstream AR because of the relatively limited (computing) resource requirements and their ubiquity in people's life.

The ever-growing technological capabilities of smartphones (AI, multiple sensors) however make them more and more capable, even though immersiveness is more limited

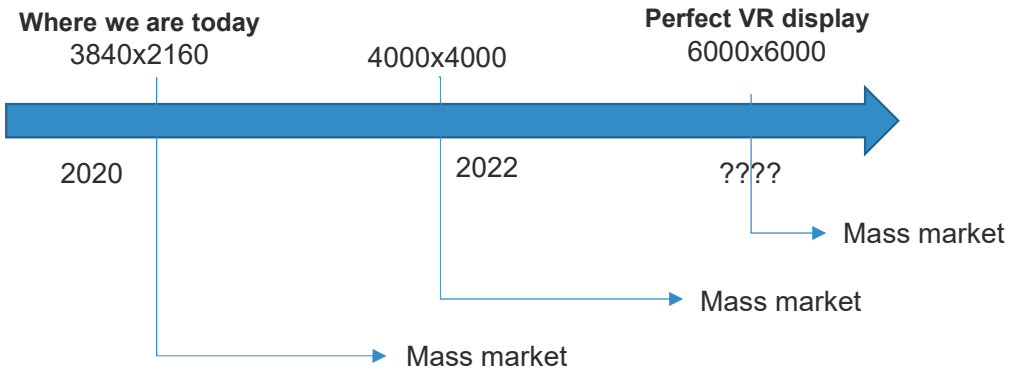
Other devices (e.g. windshield)

While still immature and limited today, new "devices" will see AR/MR/VR capabilities integrated such as

- In the cockpit (car, truck, plane…)
- On mirrors
- …

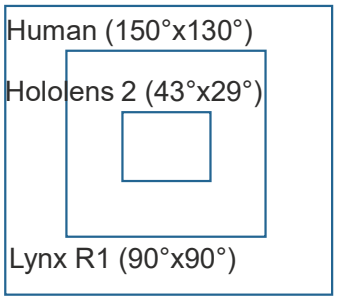
XR devices evolution over the last two years

Evolution of resolution per eye on VR Headsets



Source: IDATE DigiWorld

Room for improvement of field of view in AR/MR devices



Source: IDATE DigiWorld and Lynx-r

Video see-through capabilities can enable increased immersiveness in AR/MR use cases according to a not yet released Lynx R1 headset (professional headset)

Lynx R1 AR+VR headset

Comparison between Oculus Quest 1 and 2 in terms of specification

Oculus	Oculus Quest	Oculus Quest 2
Launch date	21-May-19	01-Sept-20
Price (64 GB)	399 USD	299 USD
Chipset	Snapdragon 835	Snapdragon XR2
Resolution	1440x1600 per eye	1832x1920 per eye
Display	OLED	LCD RGB
Field of view	N.A	110°
Update frequency (Hz)	72 Hz	90 Hz (but initially 72 Hz)
Weight	571g	503g
Battery life	between 2 and 3 h	between 2 and 3

Source: IDATE DigiWorld based on Oculus

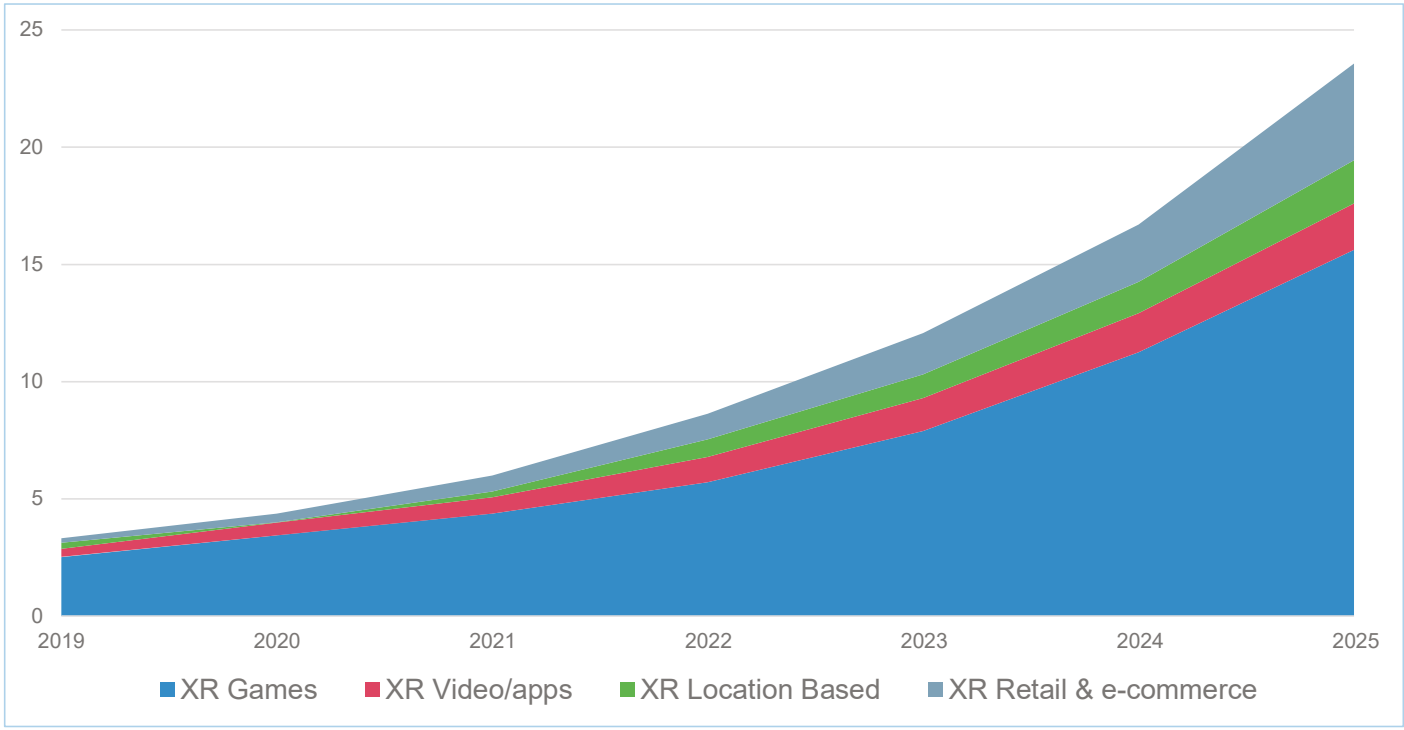
Vuzix blade upgraded smart glass launched in October 2020

Source: Vuzix

Worldwide XR Consumer services market forecasts

Total revenues

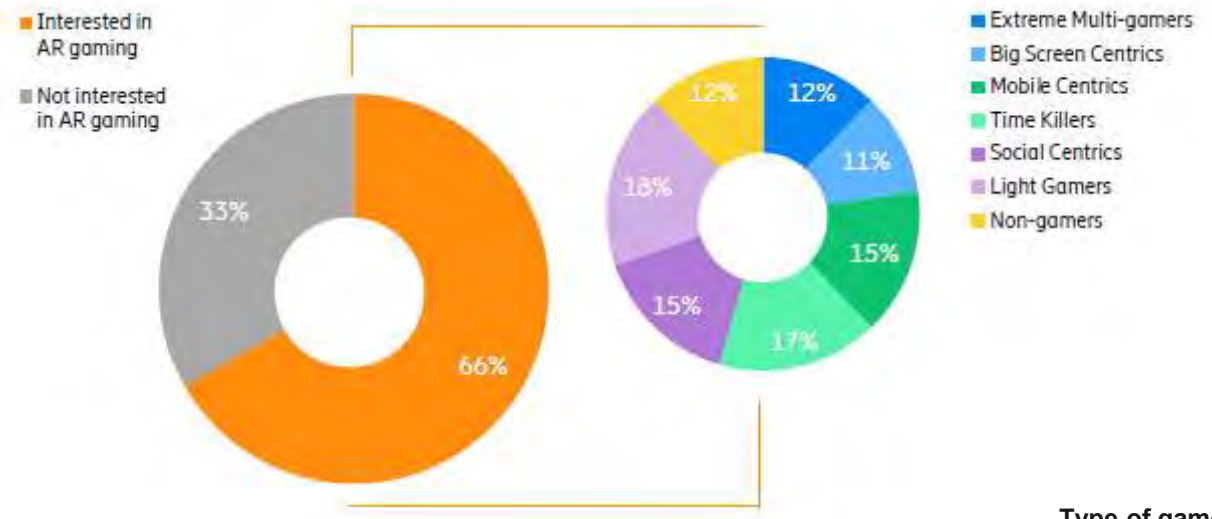
Market forecasts for Worldwide XR Consumer market, 2019-2025 (Billion EUR



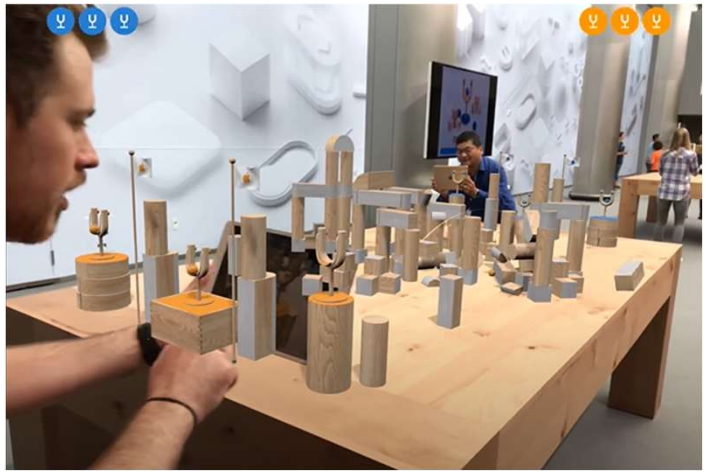
Source: IDATE DigiWorld, *XR consumer market*, May 2021

What does XR have to offer to gaming?

Share of total population that is interested in AR gaming, and contribution from each gamer segment [Self-reported]



Multiplayer AR with Apple Swift Shot demonstration app for ARKit



Car driving simulation in VR with Gran Turismo Sport

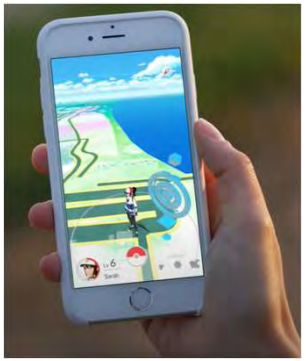
FPS particularly adapted to VR experience: here with Half-life Alyx

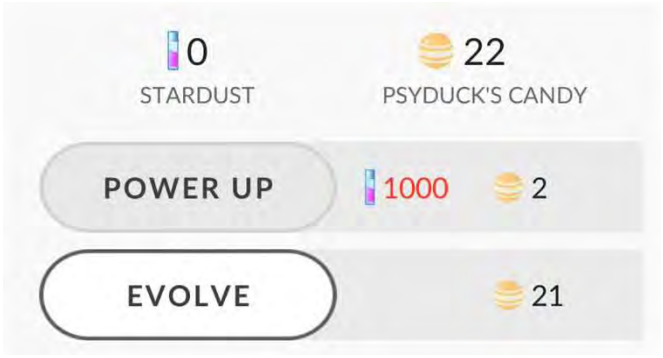
Type of games available in AR and VR

Augmented reality	Virtual reality
Geolocation / Adventure (Pokemon GO, Ingress Prime, The Walking Dead: Our World)	Simulation (Racing, Gliding sports, climbing…)
Board/Brain/Puzzles (Tower Blocks, Jenga AR)	Relaxation / game of skill
Shooting (Real Strike AR, Shooter-AR)	First Person Shooter (e.g. Half Life Alyx)
Strategy (Knightfall AR)	Tabletop / Board game
Sport (NBA AR, AR Dunk)	Fitness

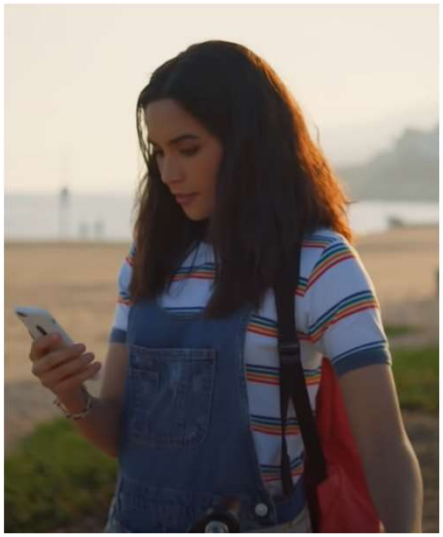
Source: IDATE DigiWorld, *XR consumer market*, May 2021

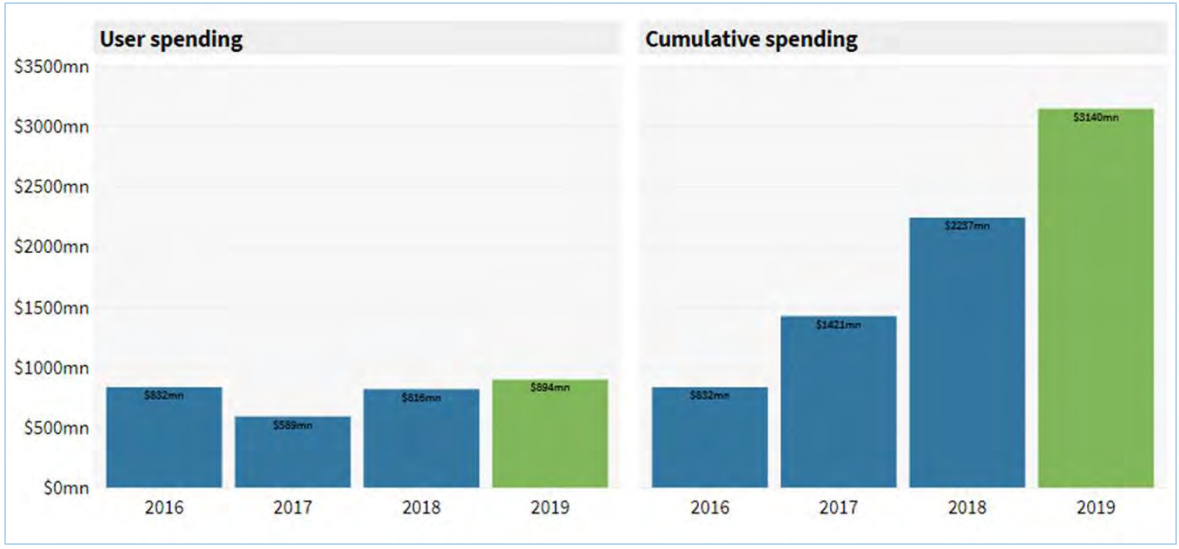
Pokemon GO use of AR and Geolocation

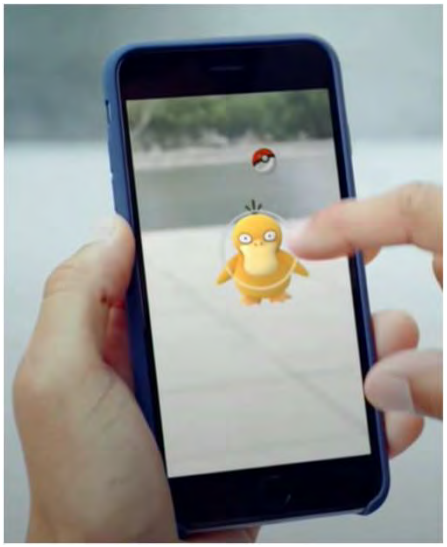




A long-term success: higher revenues generated in 2019 than in 2016 at launch with 894 million USD







Source: Sensor Tower via Business Insider

Niantic case study

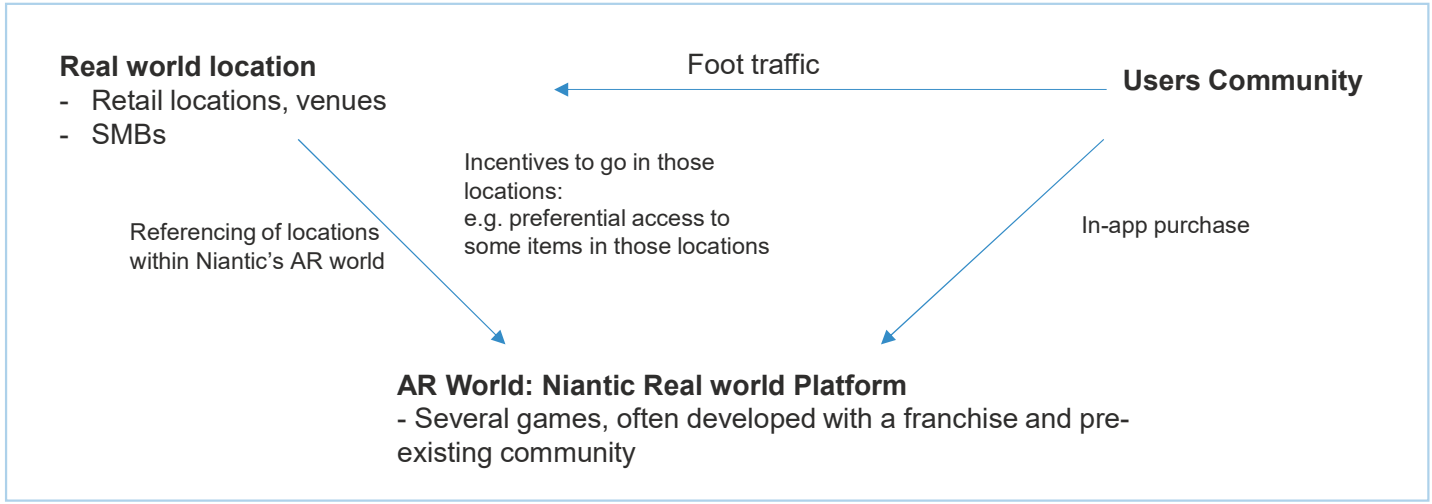
> Company presentation and context

- A company specialized in AR game development and formed in 2010.

> What challenges is it trying to solve?

- How to use AR multiplayer capabilities and franchised universe to build gamers' engagement (in time and customer value)?
- How to provide more realistic AR experiences
- How to leverage mobile gaming connection with the real world to create foot traffic

➔Developed Niantic Real World Platform as a global operating system opened to additional developers as part of the Niantic Beyond Reality Developer Contest



Pokemon Go, Ingress Prime and Harry Potter Wizards Unite: Niantic biggest success

Game	Description	Number of installs
Pokémon Go	The goal for the player is to catch and train Pokémon characters in real locations.	**> 1 billion)**
Ingress Prime	Adventure game where players explore the world around them and interact with places of cultural significance to collect valuable resources using their Ingress Scanner.	10,000,000+
Harry Potter Wizards Unite	A Niantic and WB Games collaboration. It is inspired by the Wizarding World and the Harry Potter franchise.	5,000,000+

Source: IDATE DigiWorld, *XR consumer market*, May 2021

What does XR have to offer to the video industry?

AR used for years in sport event broadcasts

Original image captured

AR effect applied → Final image broadcast →

Encrusted effect on the television

Source: IDATE DigiWorld , Ross video and the noun project

Watching non 360° films in a VR theater

Live events (concerts, sport events) broadcasting

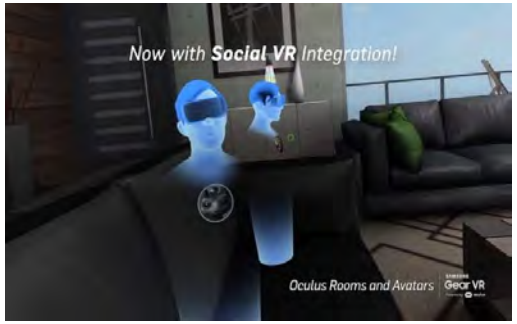
AR used in political broadcasts

3D content (volumetric video) (live) streaming in the living room

Still not a commercial service

Source: Condense reality

Social VR capabilities when watching a film in VR (Hulu added social capabilities for its "VR theater" to share movie watching with up to 3 friends)



Source: Hulu

NextVR specialized in sport and music event broadcasts…

Before recently being acquired by Apple

Source: NextVR

Volumetric video, the next step for XR?

Evolution of immersive video from stereoscopic to true 3D video

Stereoscopic Video (simulated 3D effect) → 360 Video (+stereoscopy) → Volumetric video (Real 3D video with 6DoF)

LGU+ invested in volumetric content creation for AR and VR content creation

Some metrics on LGU+ volumetric video capture process

- 30 4K cameras to capture the performance
- 130 GB of data required to produce a 1 minute long 360° AR video, afterward compressed to a 600 MB video for streaming
- 3 to 4 hours of processing required for 30s video: takes time

Source: koreajoongangdaily

Condense Reality is developing real time volumetric video streaming

- A startup created in 2018-2019 and part of a consortium called 5G Edge XR…
- … that provides off-studio real-time Volumetric video broadcast technology thanks to computer vision and deep learning to reconstruct the content of a scene
- Current partnership with BT (one of the biggest boxing broadcasters in the world)

➔ **The goal: being ready when Apple release its AR headset**

Source: Condense Reality

Thanks for your attention