GWF 2023
GEOSPATIAL WORLD FORUM

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Constructing the Digital Bridge to Enable Metaverse in Construction

Asmaa Abouleish

BIM Manager at Egis Group

Are we ready to take a step and enter a shared digital world?

How does the concept of metaverse differ from VR?

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VR is a technology that lets you enter and interact with a computer-made world like it's real.
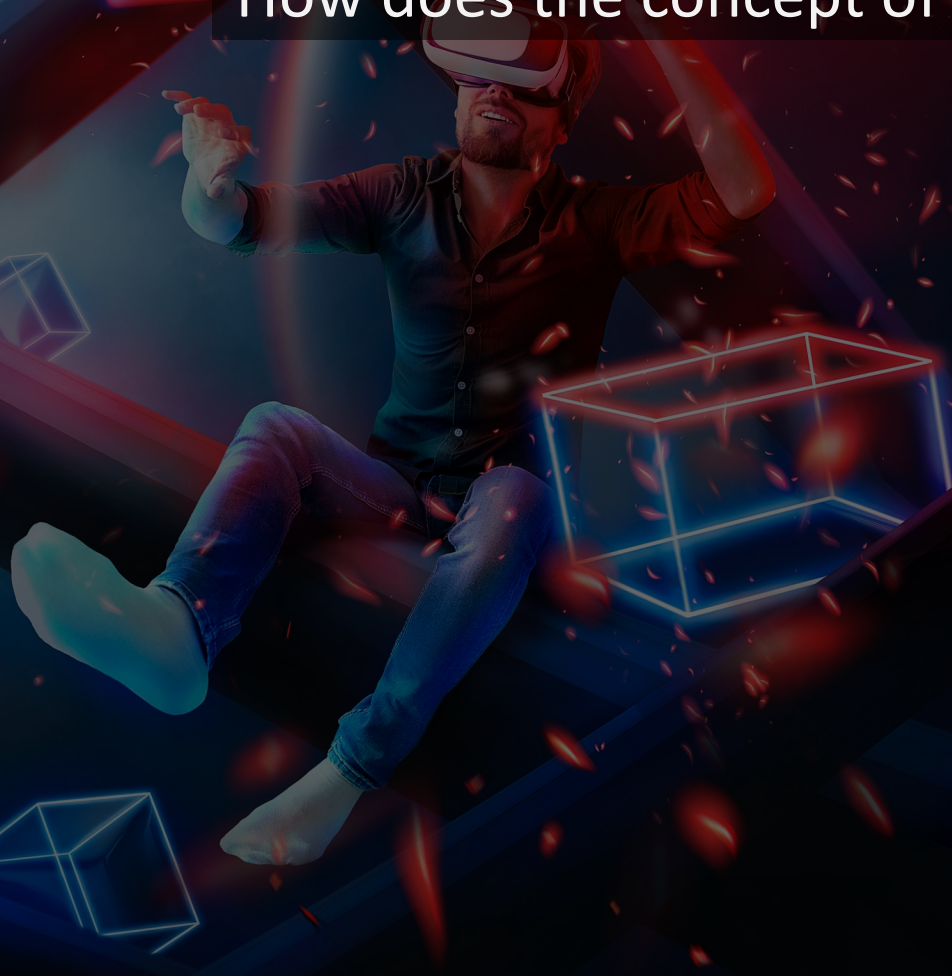
How does the concept of metaverse differ from VR?

The metaverse is a virtual **shared** space that allows for interaction & collaboration. It can be accessed by VR, AR or even from your laptop!

How does the concept of metaverse differ from VR?
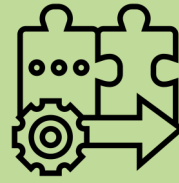
Real time Collaboration

Metaverse Pillars for Construction

Immersive
Environments

Real-time
Collaboration

Tool
Integration

Cross
Platform

Metaverse Pillars for Construction

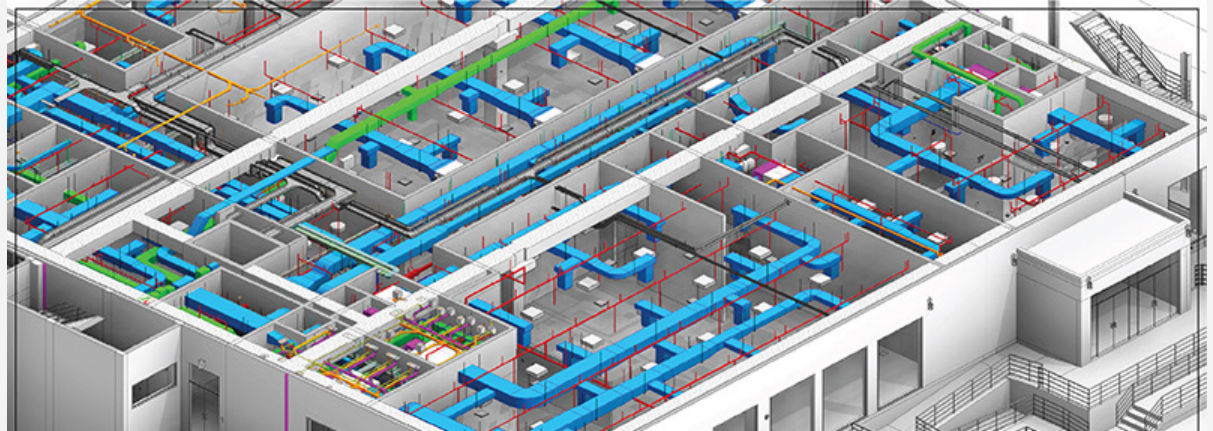| Immersive Environments	Real-time Collaboration	Tool Integration	Cross Platform
3D Visualization	Text & share	Data Import/Export	Desktop/Mobile
Realistic	Voice & video	Seamless	AR/VR
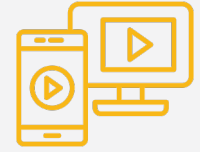
Metaverse Pillars for Construction

Immersive Environments

3D Visualization

Realistic

In Immersion Level 1, we focus on 3D visualization, providing easy-to-understand representation of construction projects

Metaverse Pillars for Construction

Immersive Environments

3D Visualization

Realistic

Here we elevate the experience with realistic visuals, offering an lifelike environment that enhances user interaction

Metaverse Pillars for Construction

Real-time Collaboration

Text & share

Voice & video

We enable efficient communication through text chat and file sharing, allowing team members to exchange ideas and collaborate on documents in a straightforward and accessible manner

Metaverse Pillars for Construction

Real-time Collaboration

Text & share

Voice & video

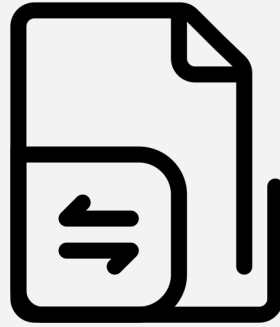We enhance teamwork by incorporating voice and video communication, fostering a more interactive and immersive experience

Metaverse Pillars for Construction

Tool

Integration

Data Import/Export

Seamless

we facilitate data import and export, ensuring compatibility with popular construction software and file formats, allowing for smoother exchange of information and streamlining the collaboration process across different platforms

Metaverse Pillars for Construction

Tool

Integration

Data Import/Export
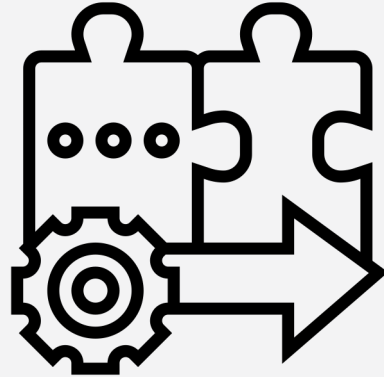
Seamless

We achieve seamless integration by enabling real-time data synchronization, shared libraries, and collaborative workflows, allowing teams to work efficiently and collaboratively within the metaverse

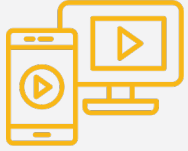# Metaverse Pillars for Construction
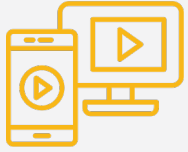
Cross Platform

Desktop/Mobile

AR/VR
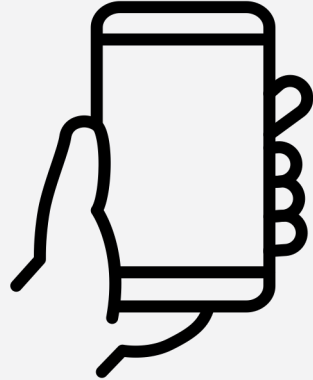
We emphasize mobile accessibility, enabling team members to engage with the construction metaverse using smartphones and tablets, providing flexibility and convenience for users who need **on-the-go access** to project information and collaboration tools.
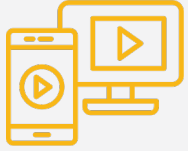
Metaverse Pillars for Construction

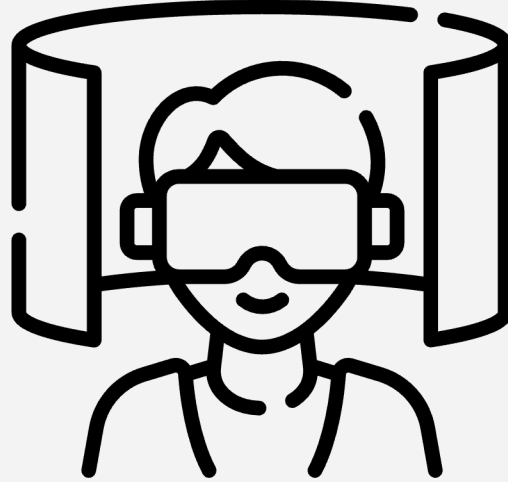Cross Platform

Desktop/Mobile
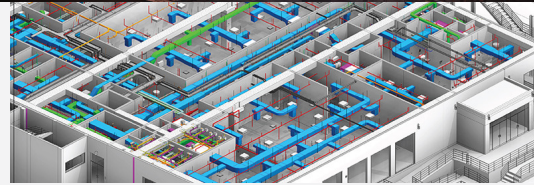
AR/VR

Metaverse Pillars for Construction

Cross Platform

Desktop/Mobile

AR/VR

We integrate AR/VR support, offering immersive experiences and enhanced interaction within the construction metaverse, empowering users to visualize, navigate, and collaborate on projects in a more engaging and intuitive way through augmented and virtual reality technologies.

Metaverse Pillars for Construction

Immersive Environments	Real-time Collaboration	Tool Integration	Cross Platform
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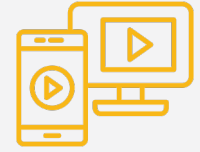
Cross Platform

Desktop/Mobile

AR/VR

Metaverse for Construction + Technologies

Security

Immersive Environments

Real-time
Collaboration

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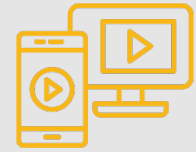
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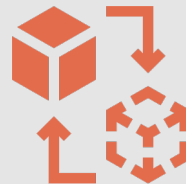
Digital Twins

Metaverse for Construction + Technologies

Security

Blockchain is a secure, decentralized digital ledger of transactions.

Decentralization	Encryption	Immutability	Smart Contract
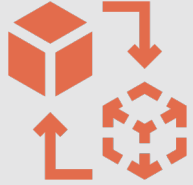
Metaverse for Construction + Technologies

A virtual replica of a physical asset, process or system in Construction

Digital Twins

Data Assets

★ Data Collection

★ ★ BIM & GIS

★ ★ ★ IoT

Data Science

★ BI Reporting

★ ★ Analytics

★ ★ ★ ML/AI

Metaverse for Construction + Technologies

AI Real-time multiple design options

AB Revit architechtural BIM model building for school

ChatGPT+AIPRM Chrome Extension for MidJourney

Prompt 1:
/imagine prompt: Futuristic school with a solar-powered roof, surrounded by lush greenery, students playing on the playground, large windows allowing natural light to flood the interior, Photorealistic, DSLR camera with a 24-70mm lens, --ar 16:9 --v 5

Prompt 2:
/imagine prompt: High-tech school building with energy-efficient design, vertical gardens and rooftop greenhouse, students and teachers interacting in a collaborative learning space, Serene, watercolor painting on paper, --ar 1:1 --niji

Prompt 3:
/imagine prompt: Reimagined school building with an open-concept design, outdoor classrooms, and tree-filled courtyards, sunset casting warm golden light over the scene, Tranquil, digital illustration, --ar 9:16 --v 5
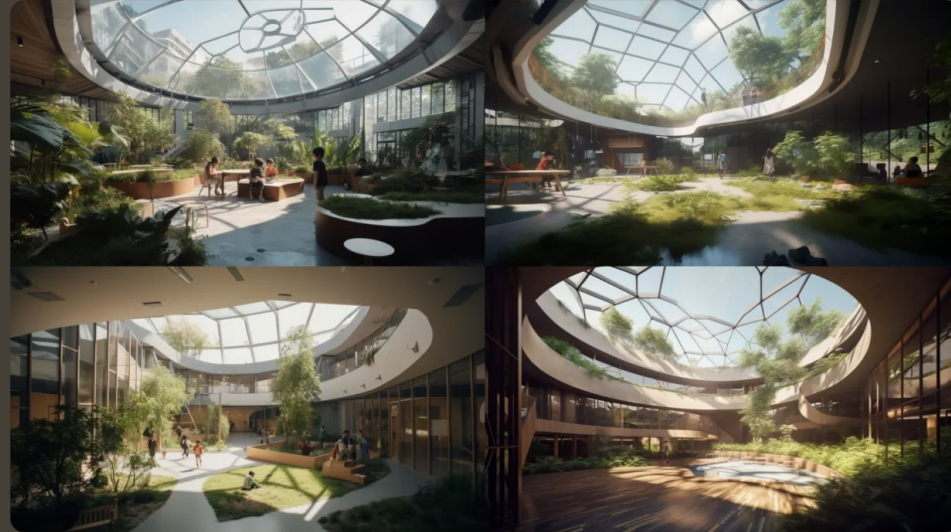
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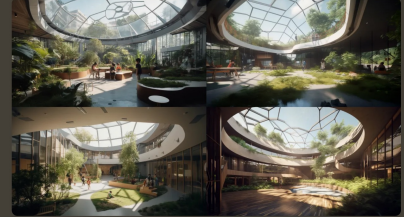
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Metaverse for Construction + Technologies

AI   Real-time multiple design options

This is the current 2D situation. Imagine the same but real-time in the immersive metaverse environment!!!!!!!

Metaverse for Construction + Technologies

AI Real-time Query

Constructing the Digital Bridge to Enable Metaverse in Construction

Security — Decentralization — Encryption — Immutability — Smart Contract

Pillars — Immersive Environments — Real-time Collaboration — Tool Integration — Cross Platform

Digital Twins — Data Assets

- ★ Data Collection
- ★★ BIM & GIS
- ★★★ IoT

Data Science

- ★ BI Reporting
- ★★ Analytics
- ★★★ ML/AI

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BIM Manager at Egis | AI/ML | Digital Transformation |
Strategic Thinking | PMP® | ACP | BRE ISO 19650 | K...

THANK YOU