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
  - 3D Visualization
  - Realistic

- Real-time Collaboration
  - Text & share
  - Voice & video

- Tool Integration
  - Data Import/Export
  - Seamless

- Cross Platform
  - Desktop/Mobile
  - AR/VR
Metaverse Pillars for Construction

3D Visualization

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 a 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.
We enhance teamwork by incorporating voice and video communication, fostering a more interactive and immersive experience.
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.
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.
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
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.
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Metaverse for Construction + Technologies

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Security

Digital Twins
Metaverse for Construction + Technologies

Blockchain is a secure, decentralized digital ledger of transactions.

Security

- 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

Revit architectural 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

Prompt 4:
/imagine prompt: Adaptive reuse of an industrial building, transformed into a sustainable school with solar panels and green walls, bustling urban environment, Energetic, linocut printmaking, --ar 16:9 --v 5
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AI

Real-time multiple design options

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AI Real-time multiple design options

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AI  Real-time multiple design options

Midjourney Bot 🔴 BOT  Today at 6:43 PM

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AI Real-time multiple design options
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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

Abdulrahman Aarabi (Abed) • 1st
Project Management | Constructions | BIM | Digital Transform...
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**Security**
- Decentralization
- Encryption
- Immutability
- Smart Contract

**Pillars**
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Artificial Intelligence

Security
Decentralization
Encryption
Immutability
Smart Contract

Pillars
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Tool Integration
Cross Platform

Digital Twins
Data Assets
Data Collection
BIM & GIS
IoT

Data Science
BI Reporting
Analytics
ML/AI
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Asmaa Abouleish
BIM Manager at Egis | AI/ML | Digital Transformation | Strategic Thinking | PMP® | ACP | BRE ISO 19650 | K...

THANK YOU