



Immersive Virtual Heritage for Cultural Conservation

Comparative Study of 360° Video, Virtual Reality, and Virtual Tour
Technologies in Borobudur and Lawang Sewu

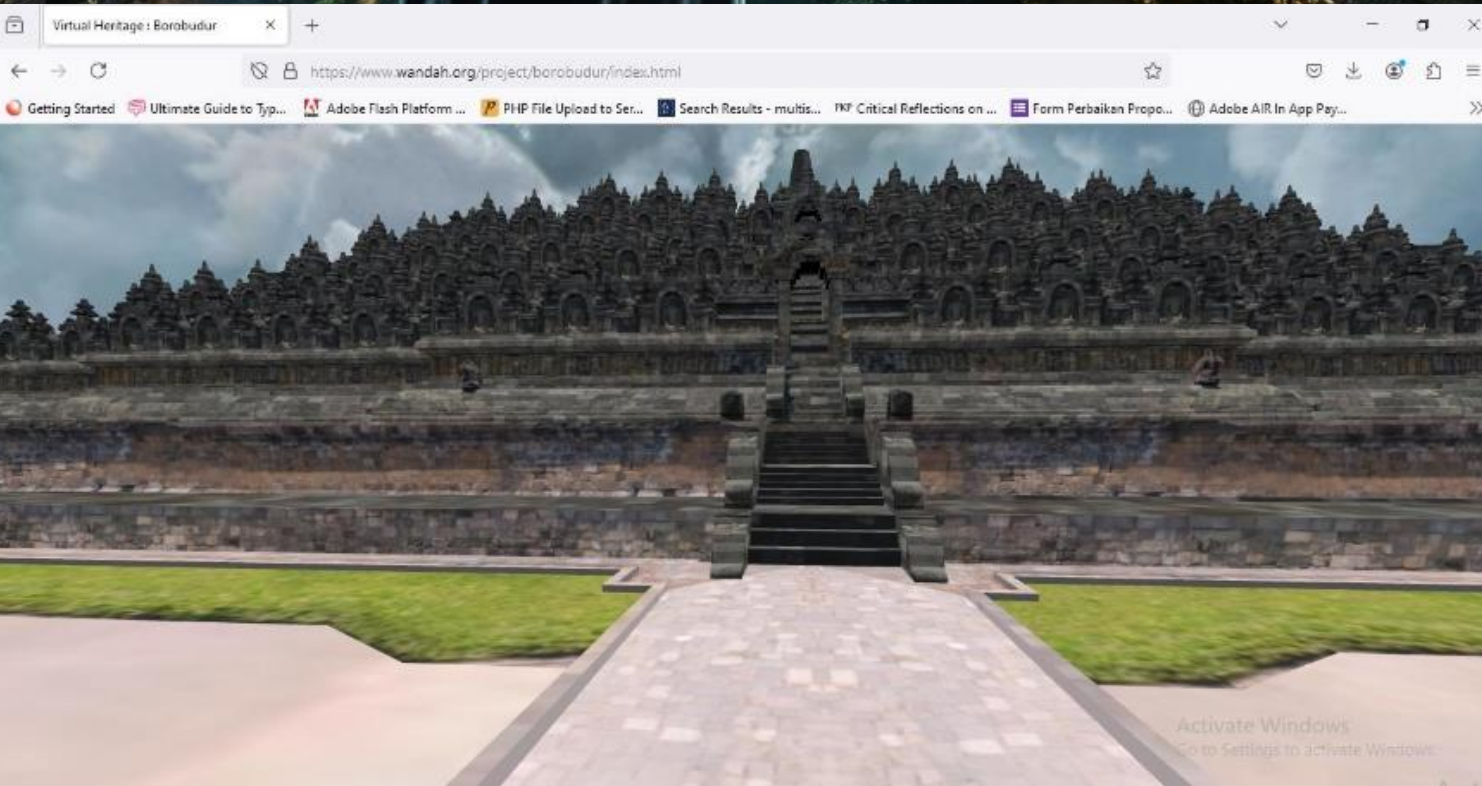
Dr. Wandah Wibawanto, M.Ds

Kerusakan struktur Candi Borobudur akibat ulah oknum wisatawan

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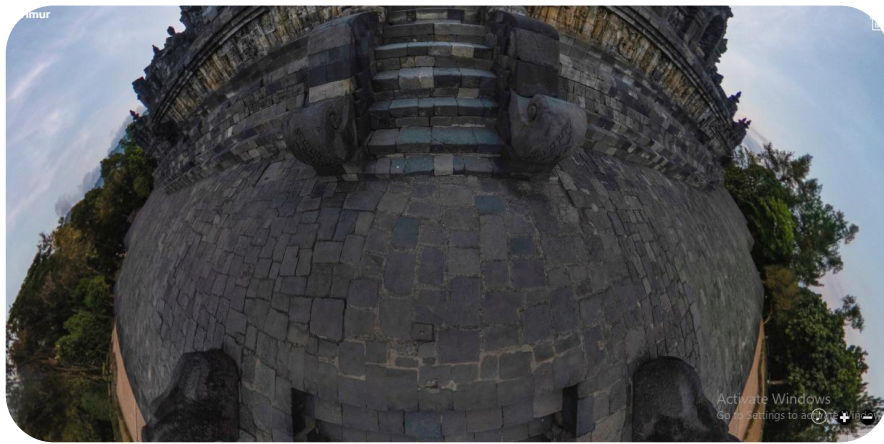


- Cultural heritage sites face degradation and access limitations
- Digital technologies support preservation and education
- **Objective:** Compare 360° Media, Virtual Tour, and VR → virtual heritage



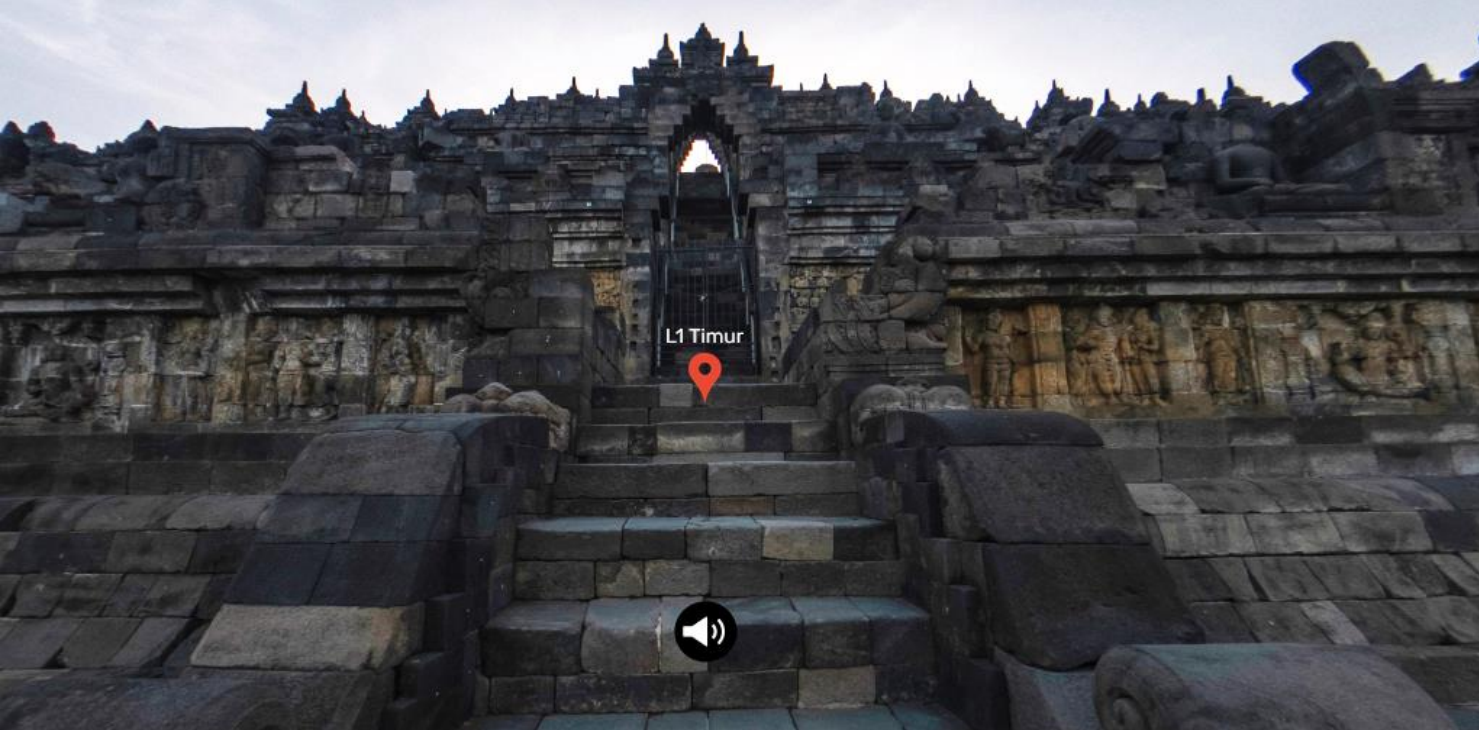
Why Immersive Virtual Heritage?

- Digital preservation
- Educational enhancement
- Wider accessibility
- Tourism promotion
- Conservation support



Technology Overview

- 360° Video → Virtual Tour → Virtual Reality
- Increasing **immersion and interactivity**.



360° View

Advantages:

- High realism
- Low production cost
- Easy distribution

Limitations:

- Passive experience
- Limited interaction





Borobudur 360° Case Study

- Documentation of temple pathways
- Architectural visualization
- Remote educational access



D Selatan



L1 Selatan



Activate Windows
Go to Settings to activate Windows.



Virtual Reality (VR)



- Full immersion
- Interactive environment
- Spatial presence
- Educational simulations
- Require VR Headset/ HMD
- Short time → eye durability

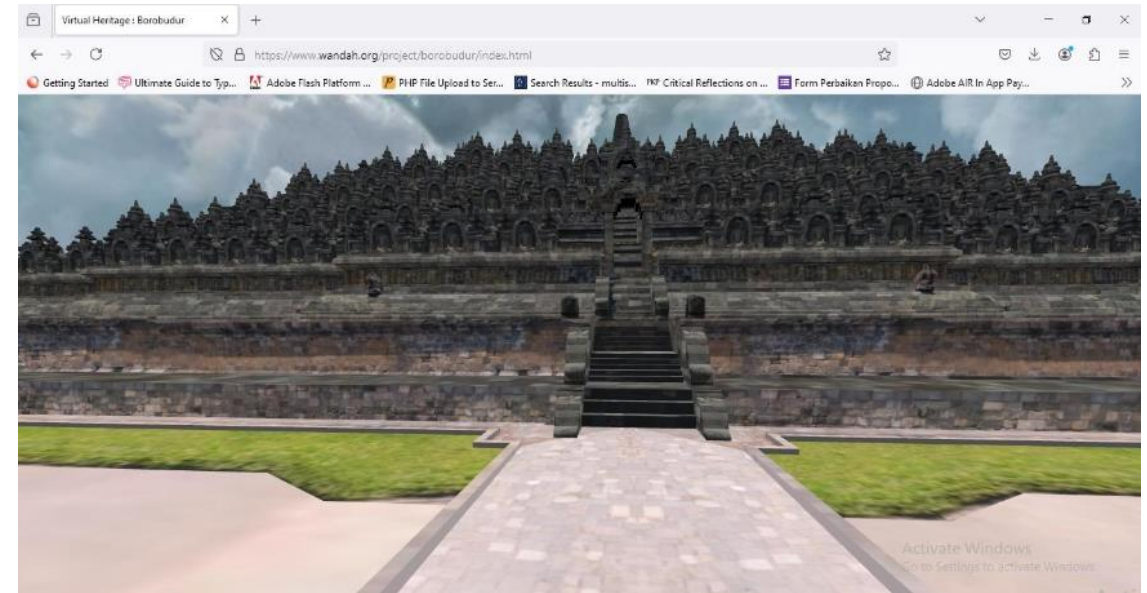


Immersive Virtual Tour

- 1st person movement (Game like)
- Information panels
- Interactive storytelling
- Web-based accessibility
(no additional hardware/software)



video src : KompasTV



Borobudur Immersive Virtual Tour

- 1st person view
- User able to explore all location freely
- Multiplatform (laptop, PC, mobilephone)
- No installation (direct load from web)



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PERINGATAN MESRA K...

4. MUHAMMAD NADZ...

(72) WhatsApp

Innovation Awards UN...

Virtual Heritage : Borobud...

localhost/borobudur/



Getting Started

Ultimate Guide to Typ...

Adobe Flash Platform ...

PHP File Upload to Ser...

Search Results - multis...

Critical Reflections on ...

Form Perbaikan Propo...

Adobe AIR In App Pay...



Virtual Heritage

Simulasi

Activate Windows
Go to Settings to activate Windows.



Type here to search



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Comparative Analysis



360° Video:

- High realism
- low interactivity
- Low cost
- Good for research data



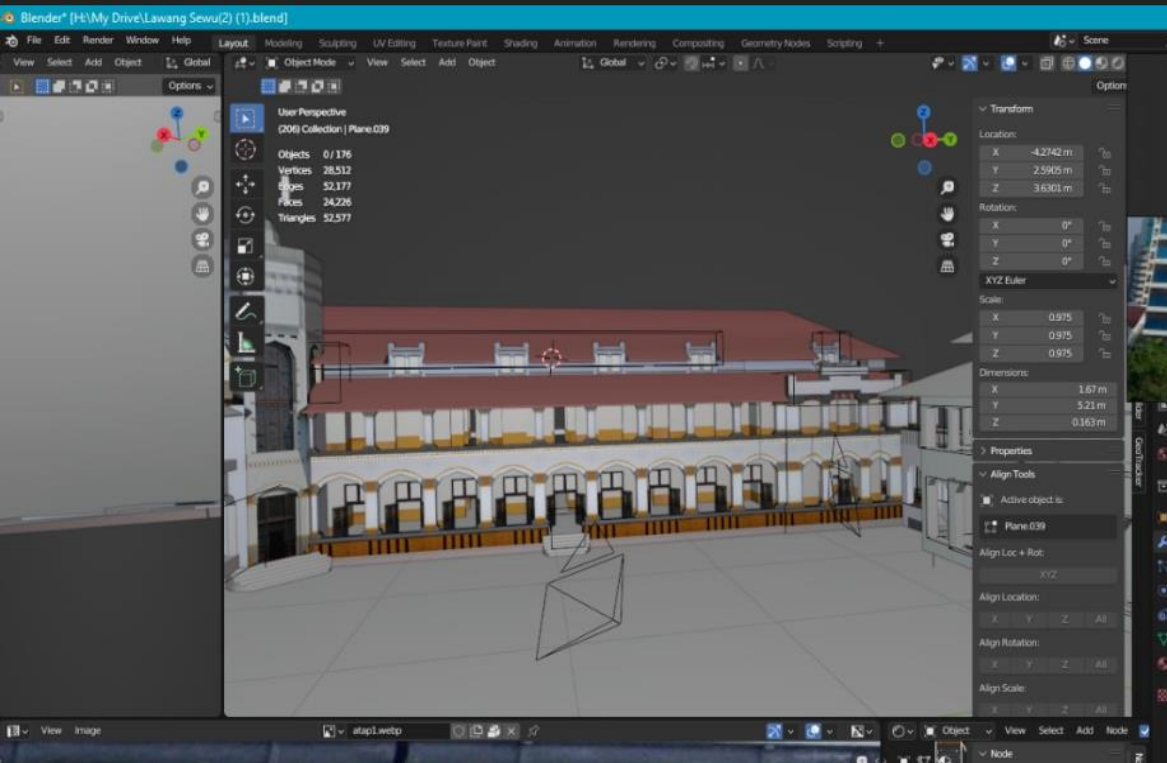
Virtual Tour:

- Balanced approach
- Low cost
- Multiplatform
- Gamification ready



VR:

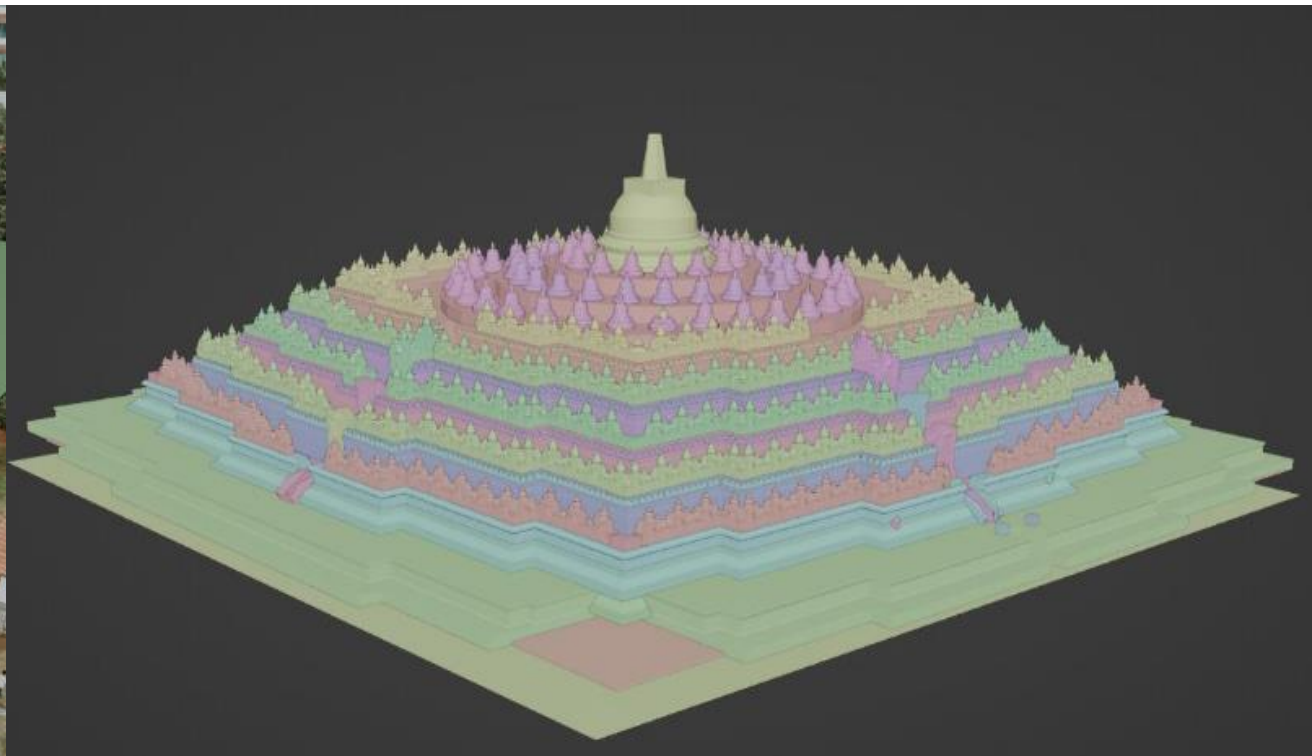
- Highest immersion and engagement
- Eye durability
- Costly Hardware (HMD)
- Complex development



Challenges

- Technical complexity
- Hardware requirements
- Authenticity concerns
- Long-term preservation





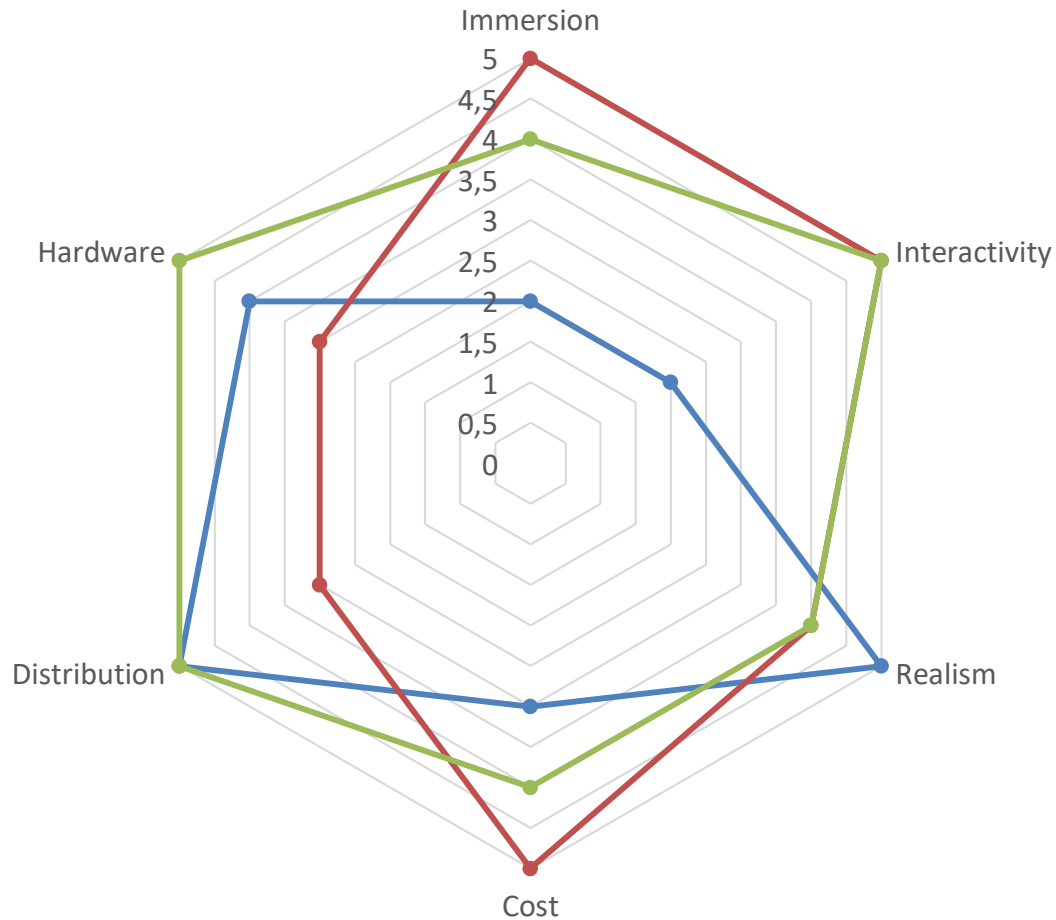
- **Authenticity concerns**

How to create a realistic, 1:1 scale

High accuracy virtual heritage

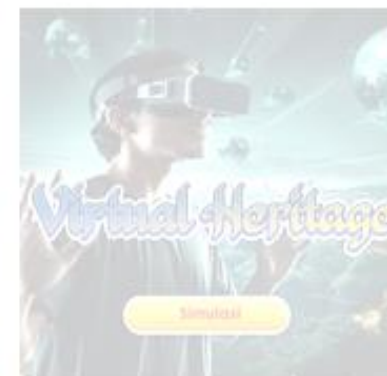
Virtual Heritage Form Comparasion

—●— 360 —●— VR —●— Virtual Tour



Conclusion

- The most effective strategy combines according to conservation goals and development capabilities
- Immersive Virtual Tour has balanced approach



Terima kasih (Thank you)

You can access the media in this presentation on www.wandah.com

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