SMART INDIA HACKATHON 2025

TITLE PAGE

- **Problem Statement ID – SIH25052**
- **Problem Statement Title- AR-Based Cultural Heritage Preservation Platform**
- **Theme- Heritage & Culture**
- **PS Category- Software**
- **Team ID-**
- **Team Name - Abhyuday**

Abhyuday

IDEA/ APPROACH

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भारत की धरोहर केवल पत्थरों में तराशी कला नहीं है, यह हमारी आत्मा और पहचान की जीवित तस्वीर है।

India's rich cultural heritage is at risk due to environmental factors, neglect, and limited accessibility. Our solution aims to digitally preserve and promote heritage sites by building an immersive Augmented Reality (AR) platform:

- Develop an AR-based mobile app with **3D virtual tours** of at least five major Indian heritage sites (e.g.Red Fort,Ajanta Caves , Sun Temple,Taj Mahal, Hampi).
- Integrates the **richness of ancient India ,historical narratives** and **multilingual support** to make experiences engaging and inclusive.
- Ensure **low-bandwidth compatibility** by using compressed **3D models**, **offline caching**, and progressive loading of AR assets.
- Gamify the experience with quizzes, **provides reference e-books**, **AR treasure hunts**, and achievement badges to **engage younger audiences.**
- Provide a **cloud-hosted content library**, enabling historians, archaeologists, and educators to upload verified content.
- Incorporate **AI-powered guides** (chatbot avatars) to answer user questions during the AR tour.

User

AR App

Indian Heritage Site

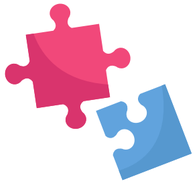
AR View

workflow diagram

chatbot

multilingual

informative games for kids



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TECHNICAL APPROACH

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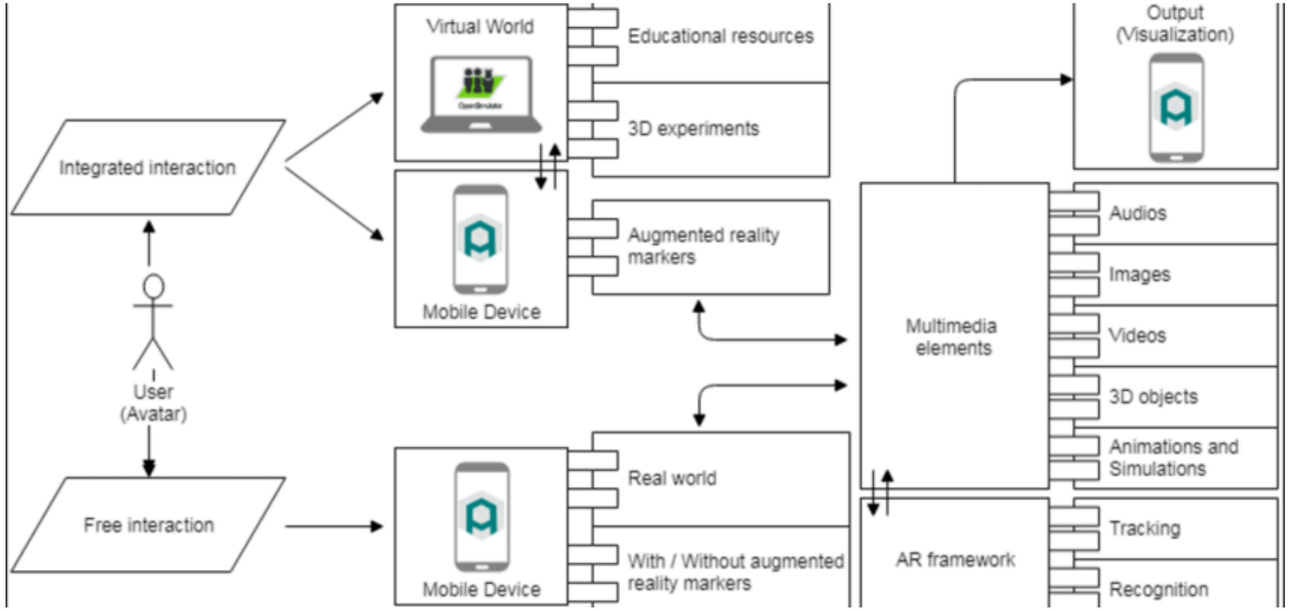
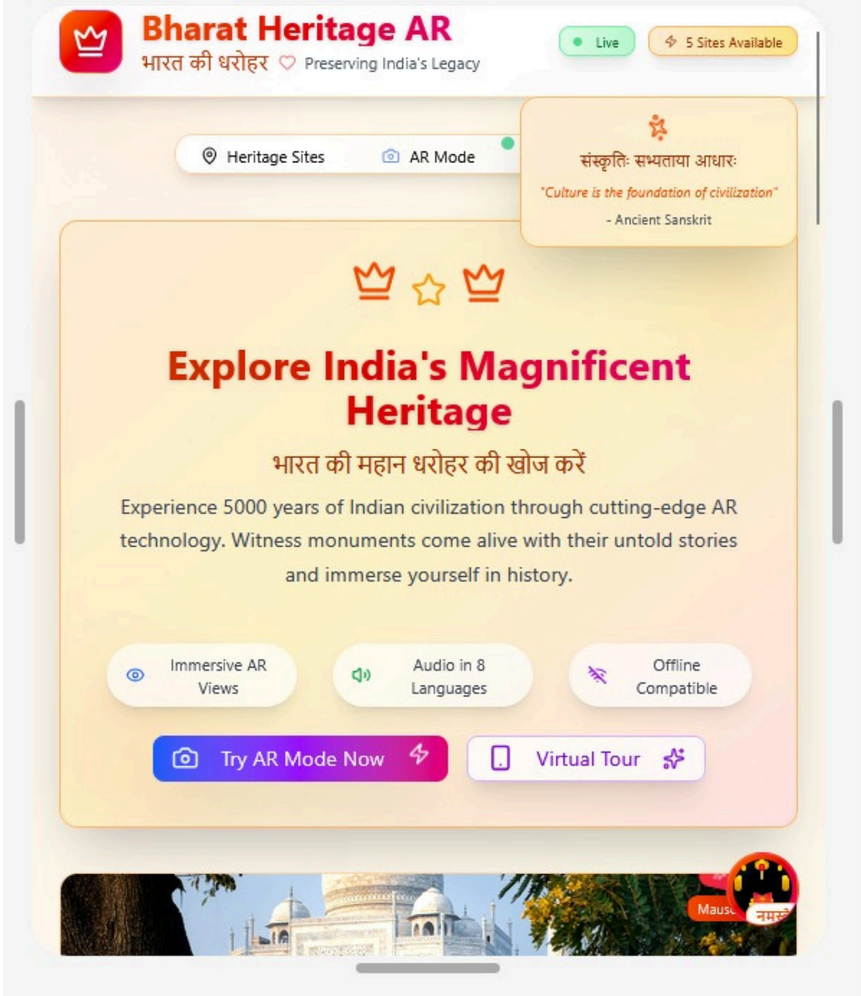
Architecture Diagram



Technical Components

Unity® · Unity AR Foundation · ARCore · RealityCapture · Flutter · aws · Firebase · AR · blender



(Prototype)

FEASIBILITY AND VIABILITY

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Feasibility Analysis: Can We Build It?

Technical: We will use trusted and reliable technologies such as **Unity 3D, ARCore/ARKit**. The application will be designed with a **low-bandwidth** focus to ensure accessibility across India's diverse network conditions and promote **rural freindliness.**

Operational: The success of the application will depend on **effective collaboration** with cultural authorities and tourism boards for accurate **heritage representation** and **user interaction**. Regular updates of 3D models and historical content like exploring the cultural sites will be managed to keep the application engaging.

Economic: We will start with a few sites to keep costs low and then expand. The app will be cheap to maintain in the long run.

Viability Analysis: Is It Sustainable?

Market: The project connects with the **fast-growing AR** and **digital tourism** (influenced by social media)sectors. In India as well as tourists from foreign especially want more engaging and interactive ways to explore culture.

Monetization: We can earn through partnerships with tourism boards, premium content for special experiences, and small in-app purchases like digital souvenirs(keychains, seashell, etc) and quizzes.

Long-Term Vision:This is only the start, with time, the platform can expand to become India's digital library of culture - not limited to heritage sites, but museums, art, and traditions as well. With AI, we look forward making history come alive and relevant in everyone's own customized cultural journey.

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AR

DIGITAL GIFT

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IMPACT AND BENEFITS

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Statistics

10 million students and tourists annually through partnerships with schools and tourism boards.

Makes heritage sites virtually accessible

Can be integrated into the curriculum of over 50,000 schools for engaging history education.

Creates a digital archive for future generations, protecting against natural decay and disasters.

Impacts

It makes India's cultural heritage accessible to everyone, everywhere, no matter the location or socioeconomic status.

Makes learning history fun and interactive and helps students to experience history in a lively and engaging way

It results increasing physical tourist engagement by 10% or more by sparking curiosity.

It helps preserving the exact state of heritage sites for archaeologists, historians, and future restoration projects.

Benefits

Cuts down the price and less reliance on printed guides and materials, making things easier and eco-friendly

Offers a virtual way to explore, reducing crowding at real sites and interactive games for kids to understand history

Built on cloud services, the platform can easily scale to include more monuments and millions of users.

Features like text-to-voice and multilingual support make culture accessible to people with disabilities and non-English speakers.

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RESEARCH AND REFERENCES

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1.Amrita University, "AR-Based Immersive Experience of Indian Heritage Sites," Project Page, 2023. [Online].
Available:-https://www.amrita.edu/project/ar-based-immersive-experience-indian-heritage-sites/.

2.Reviving the Echoes of the Past: Augmented Reality in Historical Site Restoration:-
https://ar-locations.com/en/reviving-the-echoes-of-the-past-augmented-reality-in-historical-site-restoration/

3. S. Chourasia and A. Verma, "Exploring the Potential of Augmented Reality and Virtual Reality on Indian Tourism Industry," ResearchGate, 2024. [Online].
Available: https://www.researchgate.net/publication/380793447.

4.Augmented Reality and Cultural Heritage: https://arvrtravel.com/2024/09/05/augmented-reality-and-cultural-heritage-enhancing-historical-sites/