Digital Empowerment of Jharkhand Tourism
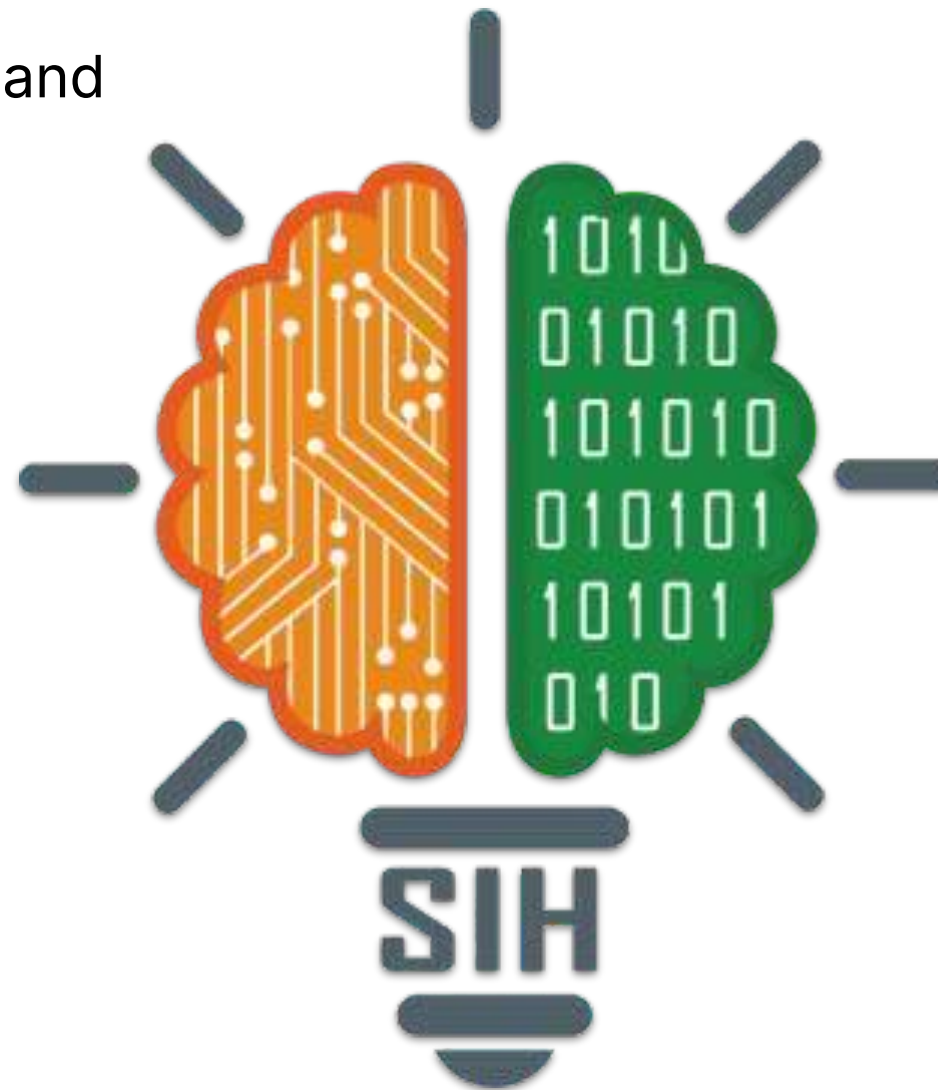
Problem Statement ID: 25032

Problem Statement Title: Development of a Smart Digital Platform to Promote Eco & Cultural Tourism in Jharkhand

Theme: Travel & Tourism

PS Category: Software

Team ID:

Team name: Aetherion

Proposed Solution: AI-Powered Digital Tourism Platform

- **One-stop digital hub:** Next.js ,interactive map, AR/VR previews, marketplace and creator portal.

- **Smart travel engine**: AI itinerary planner + multilingual chatbot give instant, personalised plans and support.

- **Trust by design**: Sepolia smart-contracts log every booking and publish on-chain certificates for guides, stays and transport.

- **Immersive promotion:** Three.js 360° VR player and AR models let tourists "try before they fly," boosting intent.

- **Creator & community economy:** Dashboard auto-tiers YouTubers, automates incentive payouts; marketplace lets artisans sell/customise handicrafts with image-fusion AI.

- **Data-driven improvement:** Sentiment analysis dashboard flags service gaps for officials, closing the feedback loop.

How It Tackles the Problem & What Makes It Unique

- **Closes the information gap**: one-stop portal aggregates routes, bookings, cultural facts and live support, eliminating scattered, unreliable sources.
- **Builds instant trust:** on-chain certificates for guides, homestays and transport stamp every service as government-approved, slashing fraud and touts.
- **Boosts tourist intent:** AR monuments and 360° VR tours let travellers "preview before they pay," replacing passive brochures with immersive try-outs.
- **Empowers local communities:** marketplace lets artisans sell and *custom-design* handicrafts, so tourism revenue flows directly to tribal households.
- **Crowdsources promotion:** Creator dashboard auto-rewards YouTubers whose content drives engagement, turning creators into measurable marketers.
- **Closes the feedback loop:** AI sentiment analytics surface pain points in real time, guiding officials to fix roads, sanitation or signage where it matters.
- **Device-agnostic tech stack:** custom stereoscopic VR works on any smartphone; modal viewer delivers AR without native apps, ensuring mass accessibility.
- **First-of-its-kind blend:** combines AI itinerary planning, blockchain verification, AR/VR media, and creator-economy incentives in a *single* state-tourism platform.

Technical Architecture: Building the Future of Tourism
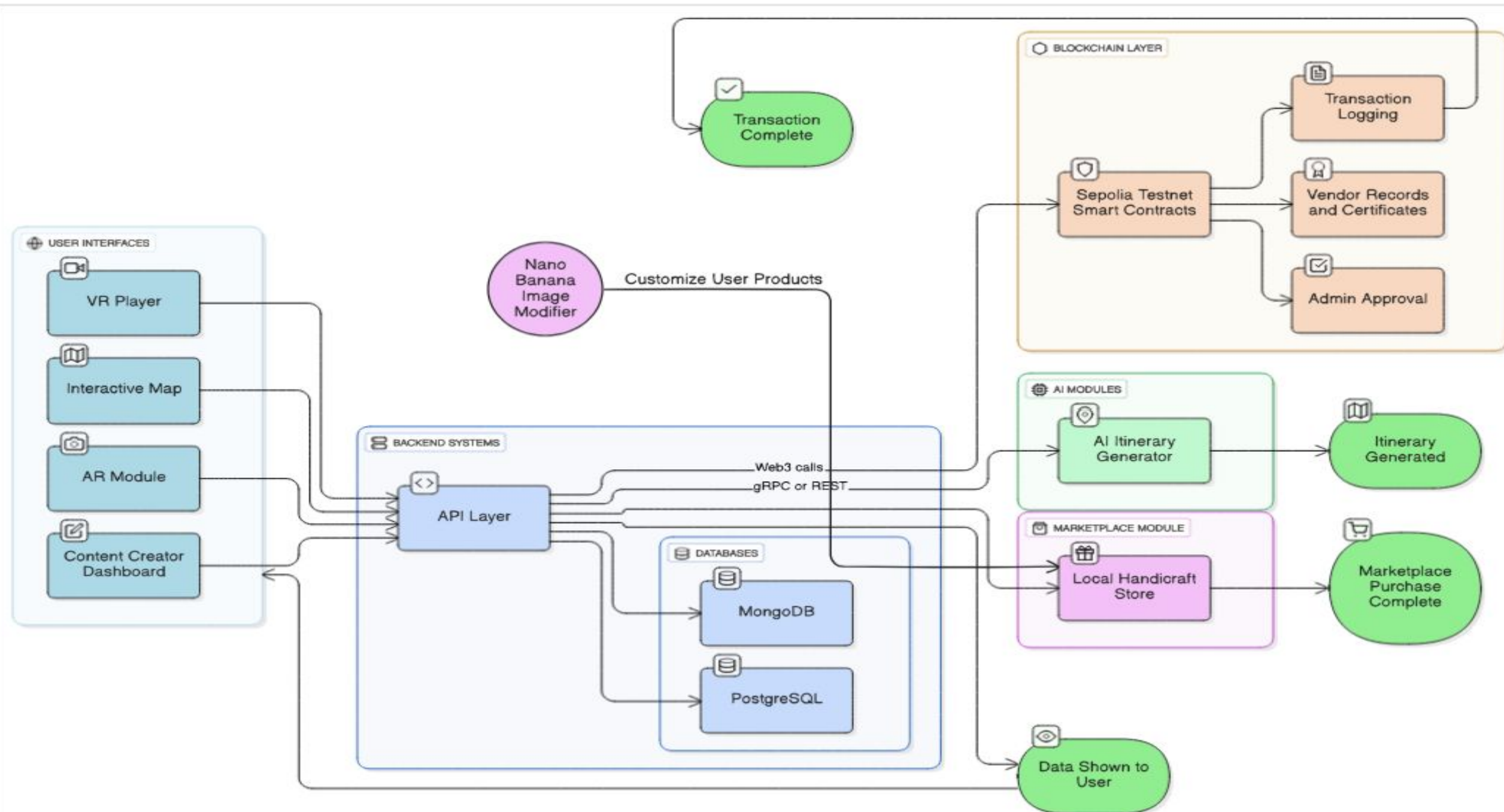
Tech Stack

- Web UI – Next.js + Tailwind (no PWA)
- Maps & Routing   – Leaflet JS + OSRM
- Immersive Media   – Three.js 360° VR AR
- Core APIs   – Next.js / Node 18 serverless routes
- AI Itineraries – Spring Boot + Node micro-service that proxy calls to Python (FastAPI) workers using Gemini API keys stored in Google Secret Manager
- Blockchain – Solidity contracts on Sepolia, accessed via Ethers.js
- Data   – MongoDB Atlas + Postgres
- Image Customisation — Google Nano Banana

Feasibility and Viability: A Path to Success

Low-Capex build – 90% open-source stack (React/Next.js, Leaflet, Three.js, MongoDB); serverless deployment on Vercel Atlas cuts infra costs and enables MVP launch in < 4 months.

Proven technology – Sepolia PoS smart-contracts, PWA offline cache and scalable APIs have been demo-tested; codebase is ready to migrate to Ethereum mainnet or a state-run chain.

Multi-stream revenue – 5% booking fee, 3% marketplace commission, premium vendor listings and a SaaS analytics dashboard for the Tourism Dept.; break-even at ~30 k monthly active users.

Elastic scalability – Auto-scaling functions and horizontal DB sharding absorb festival-season surges; smart-contracts are upgrade-safe for new services or loyalty tokens.

Stakeholder alignment – Artisans onboarded via district kiosks, verified guides gain on-chain certificates, and the platform dovetails with Jharkhand Tourism Policy 2025 incentive schemes.

Transformative Impact and Benefits

- **Tourist footfall surge** – immersive AR/VR teasers and AI-tailored itineraries turn online curiosity into on-ground visits, unlocking year-round demand beyond peak seasons.
- **Inclusive local prosperity** – on-chain vendor verification and the artisans marketplace direct booking fees and craft sales straight to tribal communities, multiplying rural incomes.
- **Trust & safety uplift** – blockchain-backed certificates and transparent payment logs eradicate touts, counterfeit guides and hidden charges, raising traveller confidence.
- **Data-driven governance** – real-time sentiment analytics and heat-maps help officials prioritise infrastructure, sanitation and conservation budgets where impact is highest.
- **Sustainable tourism** – smart-routing minimises carbon miles, while digital previews reduce overcrowding at fragile sites by spreading visitors across lesser-known gems.
- **State brand elevation** – positions Jharkhand as India's first AI + Web3 eco-tourism pioneer, attracting investors, creators and policy accolades.

Research & Foundational References

- AI-driven personalization and guest experience: AI enables hyper-personalized recommendations, chatbots, and dynamic itineraries, significantly improving tourist satisfaction and business performance.

  [AI-Driven Personalization in Tourism Services (IGI Global, 2025)](#)

  [AI-Driven Hyper-Personalization in Hospitality (IJRISS, 2025)](#)

  [Exploring the Role of Artificial Intelligence (TACIT, 2024)](#)

- Trust, adoption, and ethical AI in smart tourism: Trust dynamics, ethical AI practices, and personalization are key to user adoption and positive tourist behavior in AI-powered tourism platforms.

  [Assessing the interplay of trust dynamics, personalization, ethical AI practices, and tourist behavior (ScienceDirect, 2025)](#)

- Generative AI and efficiency in tourism: Generative AI content and recommendation engines drive efficiency, trust, and intent to use travel and tourism apps, especially in the Indian context.

  [Revolutionizing Travel: The Impact of Generative AI on Personalization and Efficiency in the Tourism Industry (Indian Journal of Marketing, 2024)](#)

- AI as a catalyst for sustainable tourism: AI adoption enhances tourism efficiency, resilience, and sustainability, supporting smart destination management.

  [Artificial intelligence as a catalyst for sustainable tourism (ScienceDirect, 2025)](#)

- AI and privacy challenges: AI enhances travel personalization, but privacy and data protection remain critical challenges for recommended AI applications in tourism.

  [Artificial Intelligence and Personalizing Travel (JISEM, 2024)](#)