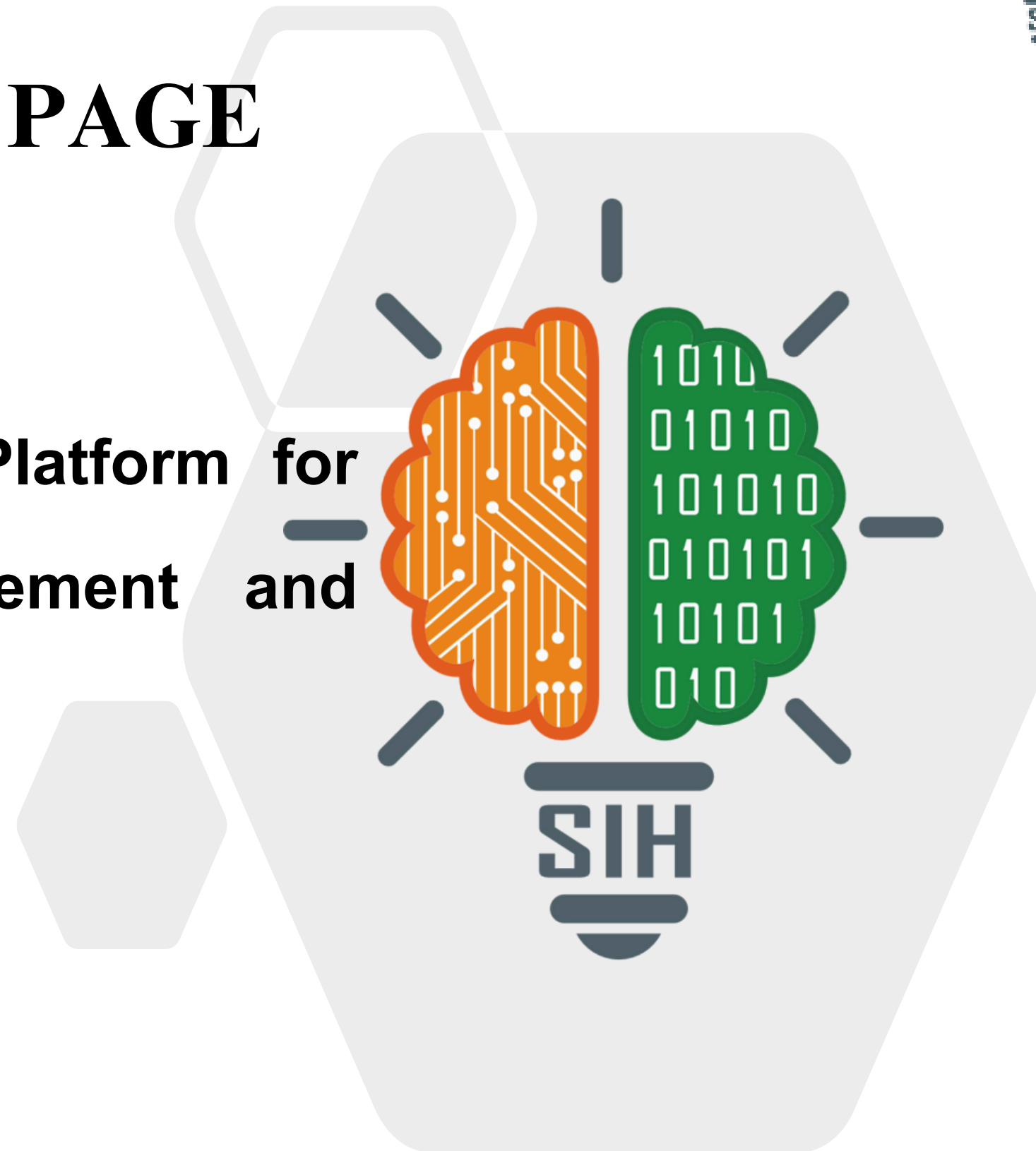
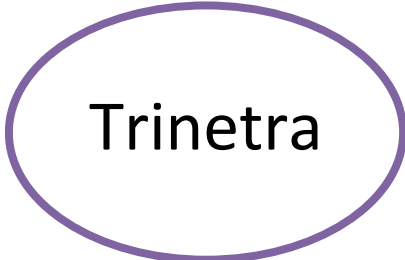


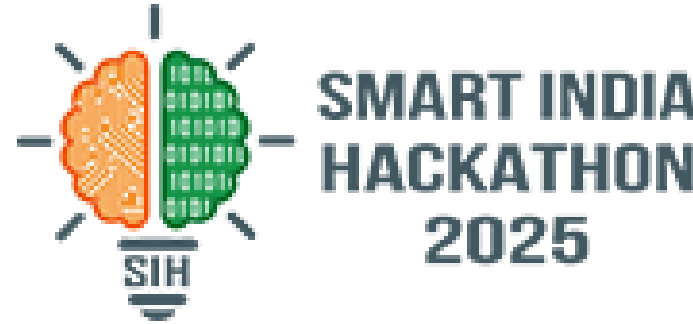
TITLE PAGE

- Problem Statement ID – SIH25017
- Problem Statement Title- Digital Platform for Centralized Alumni Data Management and Engagement
- Theme- Smart Education
- PS Category- Software
- Team ID- 69110
- Team Name:- Trinetra





IDEA TITLE

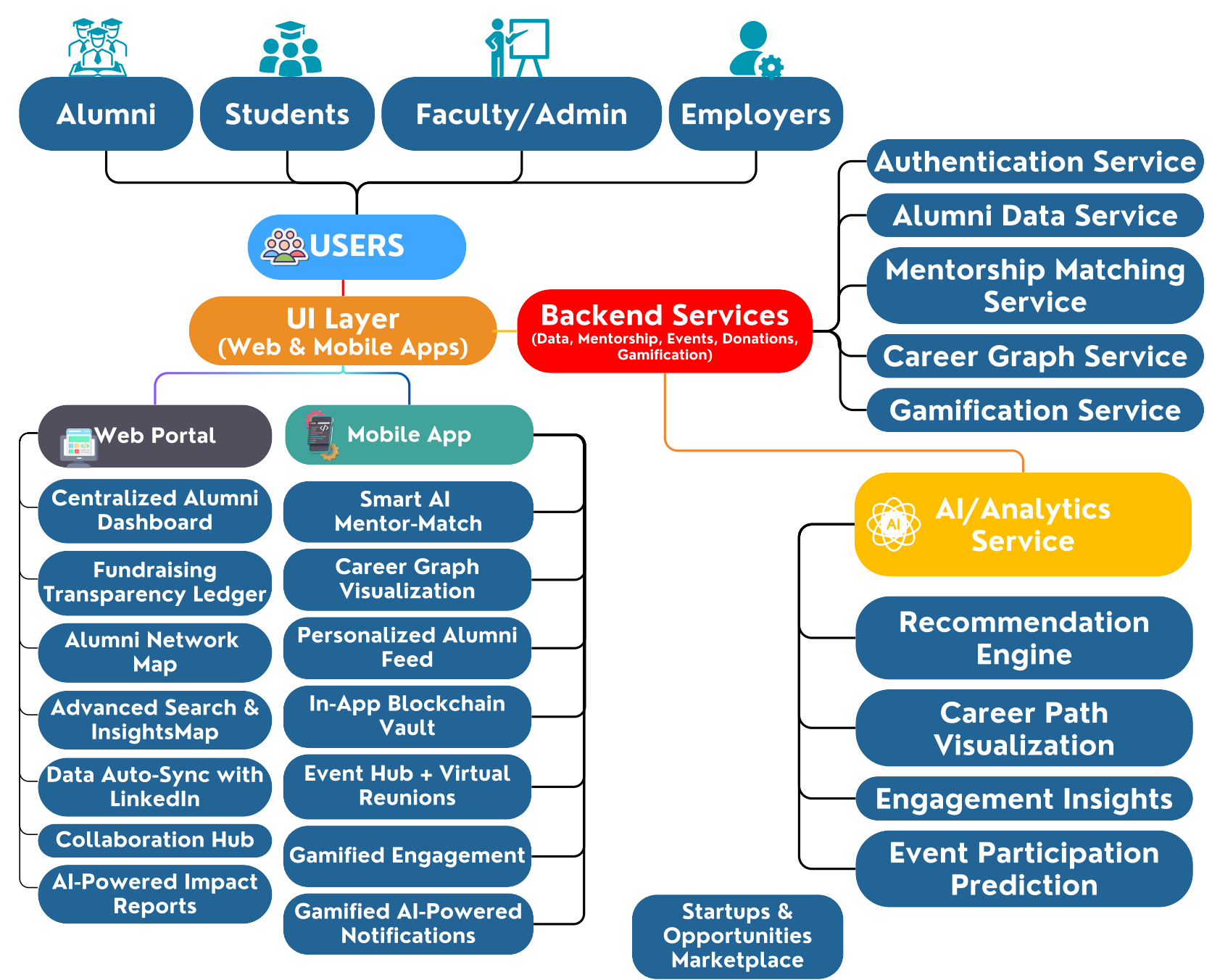


• Proposed Solution :-

A Smart Alumni Ecosystem powered by AI + Blockchain + Cloud with Centralized, secure alumni hub for data, networking, and engagement

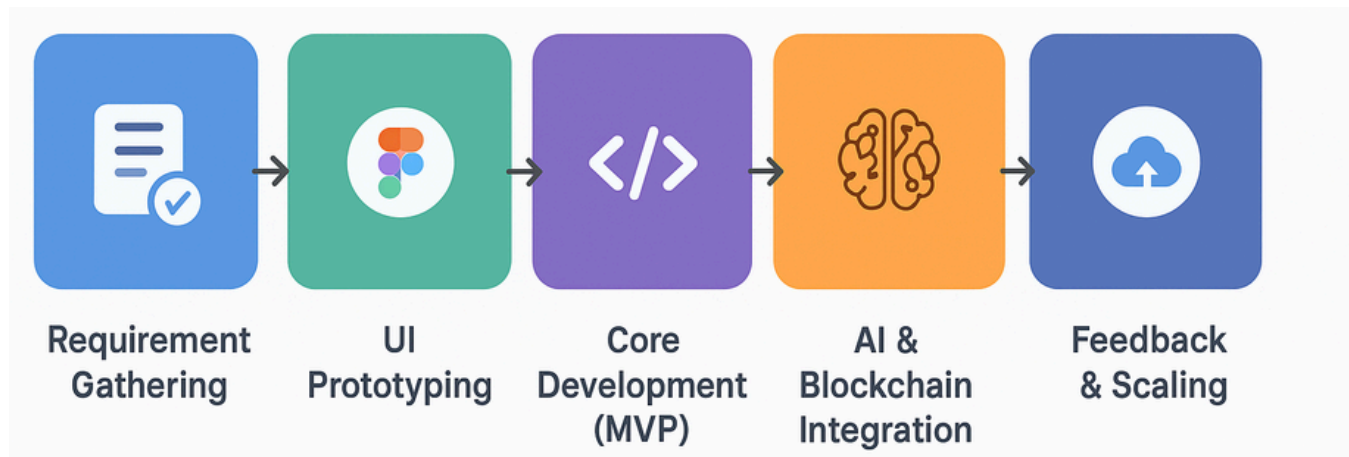
- **Centralized Alumni Data Hub:-** Unified, secure platform to store and manage alumni information (academic, professional, and personal updates).
- **AI-Powered Alumni Mapping & Career Graphs:-** Visual representation of alumni career journeys across industries and geographies. & Helps students discover real-world career paths and enables recruiters to identify talent.
- **Smart Mentorship Matching:-** AI/ML-based system to pair mentors (alumni) with mentees (students/alumni) based on skills, interests, and career goals & Structured mentorship cycles with feedback tracking for measurable outcomes.
- **Alumni Marketplace & Collaboration Hub :-** Alumni can showcase startups, projects, and job opportunities & Encourages collaboration between alumni, students, and institutions for research, entrepreneurship, and employment.
- **Personalized Alumni Engagement Feed:-** Each alumni gets a tailored feed with relevant jobs, events, and updates & Makes engagement interactive and continuous instead of one-time newsletters.
- **Blockchain-Based Credential Verification:-** Issuance of verifiable digital certificates and transcripts to alumni & Ensures global recognition and prevents credential fraud.

Allumino – Smart Alumni Management and Collaboration Hub



• Technologies to be Used:-

- **Frontend:-** React.js + Next.js (Web), Flutter (Mobile), TailwindCSS (UI)
- **Backend:-** Node.js, Go, FastAPI (microservices)
- **Databases:-** PostgreSQL, MongoDB, Neo4j, Elasticsearch, Redis
- **AI/ML:-** TensorFlow, PyTorch (recommendations, graphs, predictions)
- **Blockchain:** Ethereum/Polygon (credentials)
- **Cloud/Infra:** AWS/GCP, Docker, Kubernetes, GitHub Actions (CI/CD)
- **Integrations:** LinkedIn API, Firebase/Twilio



• Process Flow :-

Requirement Gathering → UI Prototyping (Figma) → Core Development (MVP) → AI & Blockchain Integration → Testing → Cloud Deployment → Feedback & Scaling

FRONTEND



React.js

NEXT.js



BLOCKCHAIN



Ethereum/Polygon

BACKEND



FastAPI

AI/ML



TensorFlow



PyTorch



redis

DATABASES



PostgreSQL



mongoDB



Neo4j



elasticsearch

CLOUD/INFRA



aws



Docker



GitHub Actions



Twilio

DATABASES



Lwen



Neo4J



elasticsearch

INTEGRATIONS



LinkedIn



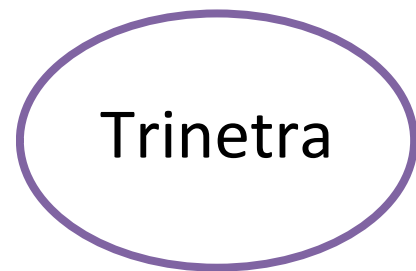
Firebase



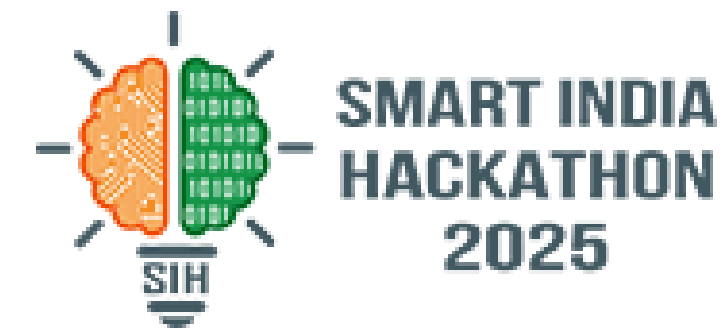
Twilio

• Project Links Demo:-

- **Github:** <https://github.com/TrinetraGuard/Alumni-Management>
- **Demo Live Prototype :** <https://alumni.trinetraa.site>



FEASIBILITY AND VIABILITY



Feasibility :-

- Technical: Uses proven AI/Blockchain/Cloud tech → scalable
- Economic: Open-source stack → low cost, sustainable via donations/recruiter tie-ups
- Operational: Simple UI, role-based access, inclusive (web + mobile + SMS)
- Social: Strengthens alumni-institution bonds

Potential Challenges:-

- Data privacy & trust issues
- Integration complexity (APIs, blockchain costs)
- Adoption resistance (alumni preferring WhatsApp/LinkedIn)
- Scalability under large datasets

Mitigation Strategies:-

- Encryption, GDPR compliance, role-based access
- Modular microservices for staged integrations
- Gamification + institutional mandates for adoption
- Cloud-native infra with Redis caching & auto-scaling

Viability:-

- Technically feasible with AI, Blockchain, Cloud-native architecture
- Economically sustainable with low-cost open-source stack
- Socially impactful → boosts alumni-institution-student engagement
- Scalable & adaptable for universities, colleges, and training institutes

Business Potential:-

- Alumni fundraising campaigns & donations (blockchain transparency)
- Recruiter partnerships → revenue from verified alumni/job postings
- Premium institutional subscriptions (advanced analytics, dashboards)
- Marketplace for alumni startups, internships, and collaborations

Use Cases:-

- Alumni fundraising campaigns & donations (blockchain transparency)
- Recruiter partnerships → revenue from verified alumni/job postings
- Premium institutional subscriptions (advanced analytics, dashboards)
- Marketplace for alumni startups, internships, and collaborations

Challenges:-

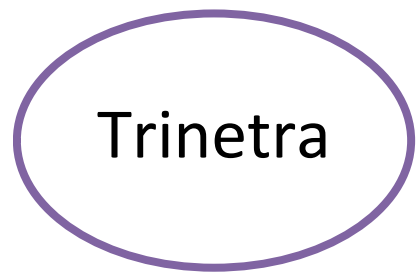
- Alumni adoption & trust (hesitation to shift from WhatsApp/LinkedIn)
- Data privacy & security concerns
- Integration complexity with APIs & blockchain costs
- Scalability with millions of alumni records

Solutions:-

- Gamification & incentives for adoption (badges, recognition)
- Strong security: Encryption + GDPR compliance + Role-based access
- Modular microservices → staged integrations for LinkedIn, payments, blockchain
- Cloud-native infra with Kubernetes + Redis caching for performance

SUPPORTING FACTS FOR FEASIBILITY AND VIABILITY

- Universities with strong alumni engagement raise 30–40% more funds (Harvard/Stanford case studies)
- Blockchain-based credential verification is already piloted in MIT & IITs
- AI-driven recommendation systems improve user engagement by 3–5x
- Cloud-native deployment reduces infra costs by 40% vs traditional servers



IMPACT AND BENEFITS



- Potential impact on the target audience:-

- **Alumni:** Stronger network, recognition, collaboration
- **Students:** Access to mentors, internships, jobs
- **Institutions:** Better outreach, global credibility, fundraising growth
- **Employers:** Verified alumni credentials, targeted hiring

- Key Alumni Engagement Insights

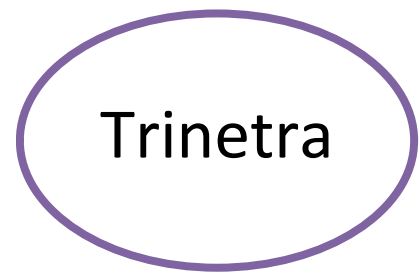
- 93% of alumni donors are active on alumni portals.
- Alumni in mentoring programs are 156% more likely to donate, 209% more likely to give again.
- 70% of alumni want career support & networking as top services.
- 75% would engage more if platforms are mobile-friendly.

- Benefits of the Solution (Social, Economic, Environmental)

- Unique Outcomes from Our Solution

- **Engagement Increase:** Could boost alumni portal activity (logins, profile updates) by ~80-90% among alumni who otherwise are passive.
- **Donation Uplift:** With mentoring + blockchain transparency, donations may increase among engaged alumni by over 150% compared to non-engaged groups (based on real precedents).
- **User Satisfaction:** Expect >75% satisfaction for mobile/web UI if benefits are mobile-friendly and flows intuitive.
- **Institutional Credibility:** Through verifiable credentials & impact dashboards, institutions might see better rankings, alumni trust, and partnerships.

Type	Benefit	Supporting Example
Social	Increased alumni participation & sense of belonging	Mentorship boosts donation likelihood by 156-209%.
	Better networking & career opportunities	70%+ alumni rank career support & networking as highest valued services.
Economic	More donations & funding streams	Alumni giving was \$13.5B in 2024.
	Higher donor retention & future giving	Mentors are more likely donors in the future.
Environmental	Reduced resource use via digital / virtual features	Virtual/hybrid events reduce travel, printed materials — aligned with trends in digital alumni engagement.



RESEARCH AND REFERENCES



• Research Papers:

- a. [Obeng-Ofori, D., and Kwarteng, H. O., “Enhancing the Role of Alumni in the Growth of Higher Education Institutions,” International Journal of Multidisciplinary Studies and Innovative Research, vol. 4, pp. 40–48.](#)
- b. [Khan, N. A., Siddiqi, A. M. U., and Ahmad, M., “Development of Intelligent Alumni Management System for Universities,” Asian Journal of Basic Science & Research, vol. 3, no. 2, pp. 51–60.](#)
- c. [Nanda, H. I., Putri, S. F., Putri, D. M., Ermayda, R. Z., and Palil, M. R., Study of Alumni Engagement and its Relationship to University Curriculum Reforming,” Proceedings of Universitas Negeri Malang \(Indonesia\) and Universiti Kebangsaan Malaysia.](#)

• Alumni Platforms:

- a. **Graduway:** <https://graduway.com>
- b. **Alumnforce:** <https://www.alumnforce.com>
- c. **LinkedIn Alumni:** <https://www.linkedin.com/alumni>

• Project Links Demo:-

- **Github:** <https://github.com/TrinetraGuard/Alumni-Management>
- **Demo Live Prototype :** <https://alumni.trinetraa.site>

Feature	Our Platform	LinkedIn	Graoluway	AlumnForce
1. AI-Driven Career Simulation	✓	✗	✗	✗
2. Skill-to-Job Gap Analysis	✓	✓	✓	✗
3. Anonymous Q&A with Alumni	✓	✗	✓	✗
4. On-Platform Micro-Recommendation	✓	✗	✗	✓
5. Gamified CSR / Donation Tracking	✓	✗	✗	✓
7. AI Sentiment Analysis on Feedback	✓	✗	✗	✗
8. Voice & Video Networking Rooms	✓	✗	✗	✗

• Research Flow:

