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GDG_WTM_TASK1

Blockchain-Based Scholarship Fund: Bridging the Gender Gap in STEM

It leverages blockchain technology to create a decentralised, transparent scholarship fund for women in STEM.

Gender Inequality in STEM:

1. Women represent only 28% of the global STEM workforce.
2. They deal with educational biases and discriminatory hiring practices.
3. Financial constraints prohibit many women from pursuing advanced degrees in STEM professions.
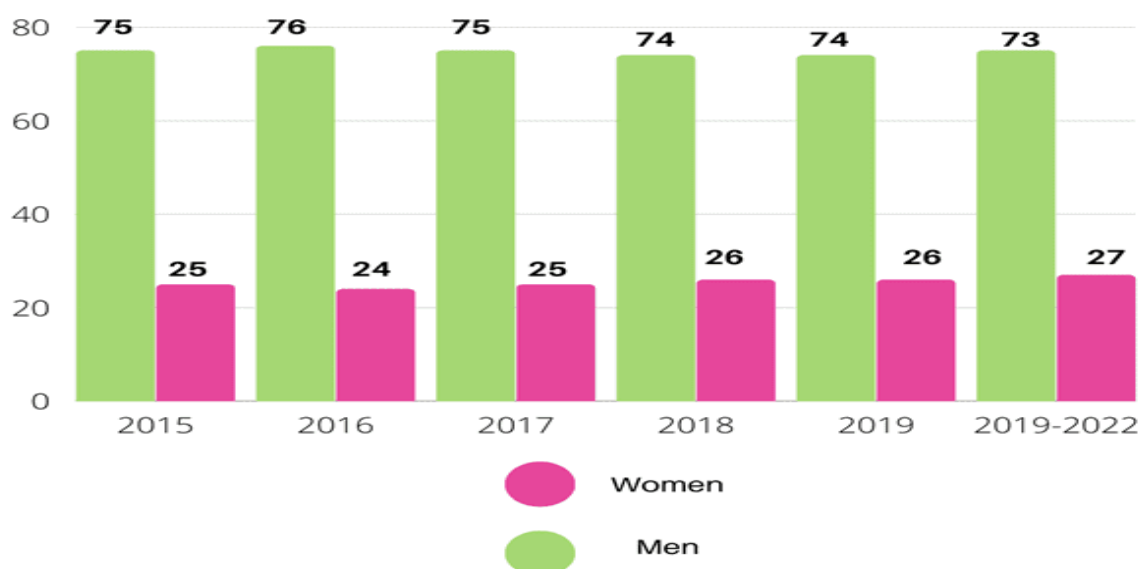

Fig 1:Women in Tech Statistics

Current Scholarship Challenges:

- **Lack of Transparency:** Traditional scholarship programs can suffer from corruption or misallocation of funds.

- **Bias and Inequality:** Women in STEM face systemic barriers in accessing funding and educational resources.
- **Trust Issues:** Donors are often unsure whether their contributions are reaching deserving candidates.

Key features:

- Transparency: All transactions are permanent and visible to all participants.Increases confidence between funders, recipients, and stakeholders.
- Decentralisation: No central authority; reduces corruption and bias.Democratic access to funds and verification processes.
- Global Access: Blockchain transcends borders, allowing women from any region to apply.Reduces administrative costs and bureaucracy.
- Financial efficiency: Reduces brokers and operational costs, allowing more resources to reach recipients.

Technical Steps:

1. **Blockchain Platform:**
   - Ethereum: For its smart contract capabilities and wide adoption.
   - Hyperledger: For enterprise-grade solutions and scalability.
2. **Smart Contracts:**
   - Defining criteria: Academic performance, financial need, personal statement.
   - Automate fund release upon verification.
3. **User Interfaces:**
   - Donor Portal: To view impact metrics and donation history.
   - Applicant Portal: Secure submission of personal details and verification documents.
4. **Partner with Educational Institutions:**
   - Integrate university databases for real-time academic verification.

Smart Contract Workflow (Detailed Example)
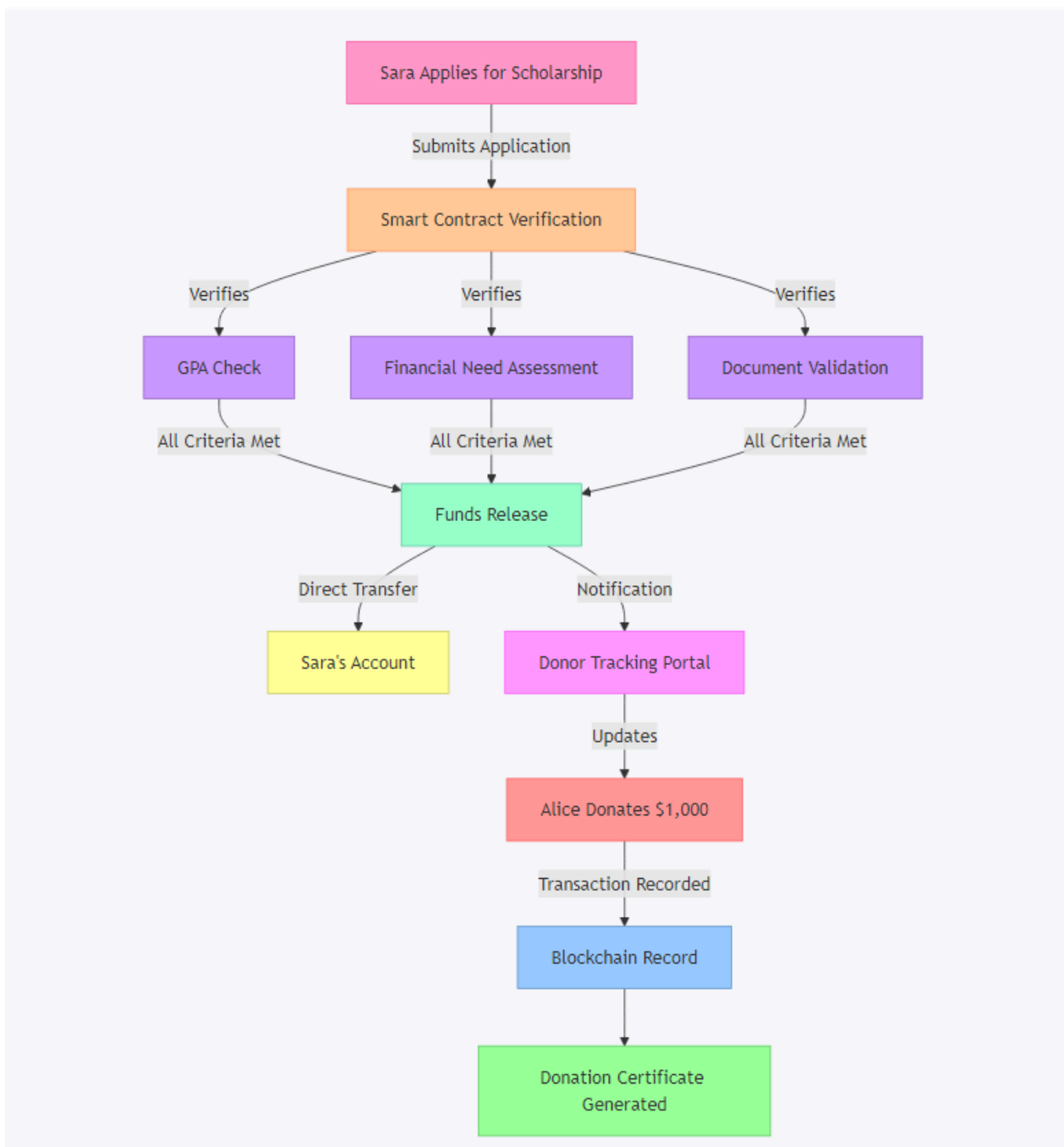
Technology Stack

Blockchain:

- Ethereum: For creating smart contracts.
- IPFS (InterPlanetary File System): To securely store documents.

Backend:

- Node.js: Server-side logic.
- Python: For data validation and processing.

Frontend:

- React.js: Interactive web applications.
- Bootstrap: For responsive design.

Database:

- MongoDB: For storing metadata.
- PostgreSQL: For relational data.

Scalability

Phase 1: Pilot Launch

- Target a single country or region with a high gender gap in STEM.
- Partner with universities and NGOs to promote the program.

Phase 2: Regional Expansion

- Integrate with global education platforms (e.g., Coursera, edX).
- Establish corporate sponsorships with tech companies.

Phase 3: Global Scaling

- Multi-language support for international accessibility.
- AI Integration: Predict future needs based on applicant trends.

Potential Challenges

Challenge 1: Technological Literacy

- Solution: Develop an easy-to-use mobile app with educational materials on blockchain and STEM.

Challenge 2: Data Privacy

- Solution: Use zero-knowledge proofs to verify eligibility without exposing sensitive information.

Challenge 3: Internet Accessibility

- Solution: Offer offline application support and integrate with community centres.