



PS: Design a system that uses smart contracts on a blockchain to automate payments for freelance work upon milestone completion

Presenting an Advance yet User-Friendly Solution

Smart Pay

A Freelance Assurance Protocol

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The Challenge: Trust & Efficiency in Freelance Payments

In the rapidly expanding world of freelancing, payment processes often grapple with significant challenges. Freelancers face the risk of non-payment or delayed payments, while clients worry about the quality of delivered work or project abandonment. These concerns lead to a lack of **trust**, complicated dispute resolutions, and often high transaction fees imposed by traditional intermediaries.

Trust Deficit

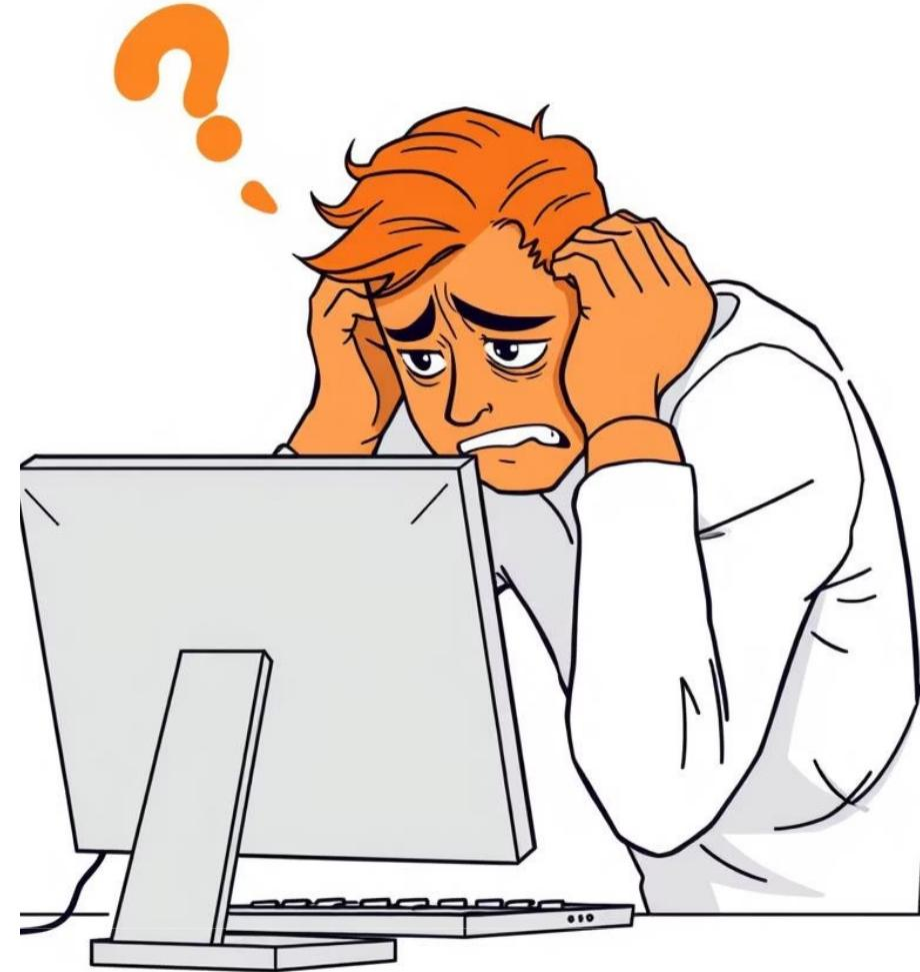
Clients and freelancers often lack a secure, neutral ground for transactions.

Payment Delays

Funds can be held up, impacting freelancer cash flow and client project timelines.

High Intermediary Costs

Traditional platforms levy significant fees, reducing earnings for freelancers and increasing costs for clients.



Our Vision: Fair, Transparent, and Secure Freelance Work

We aim to revolutionize freelance payments by leveraging blockchain technology to create a system that is **trustless**, transparent, and highly efficient. Our project ensures that both clients and freelancers are protected, fostering a more reliable and equitable global freelance economy.

1 Enable Trustless Escrow

Securely hold funds in a smart contract until agreed-upon conditions are met.

2 Facilitate Milestone Payments

Allow for phased releases of funds as project milestones are completed and approved.

3 Reduce Transaction Costs

Eliminate or significantly minimize fees associated with traditional payment gateways.

4 Enhance Transparency

All transactions and agreements are immutably recorded on a public blockchain.



Introducing the Freelance Assurance Protocol

Our core solution, the Freelance Assurance Protocol, combines the power of **smart contracts** for automated agreement enforcement and IPFS for immutable document storage. This creates a robust and **decentralized** framework for freelance project management and payment.



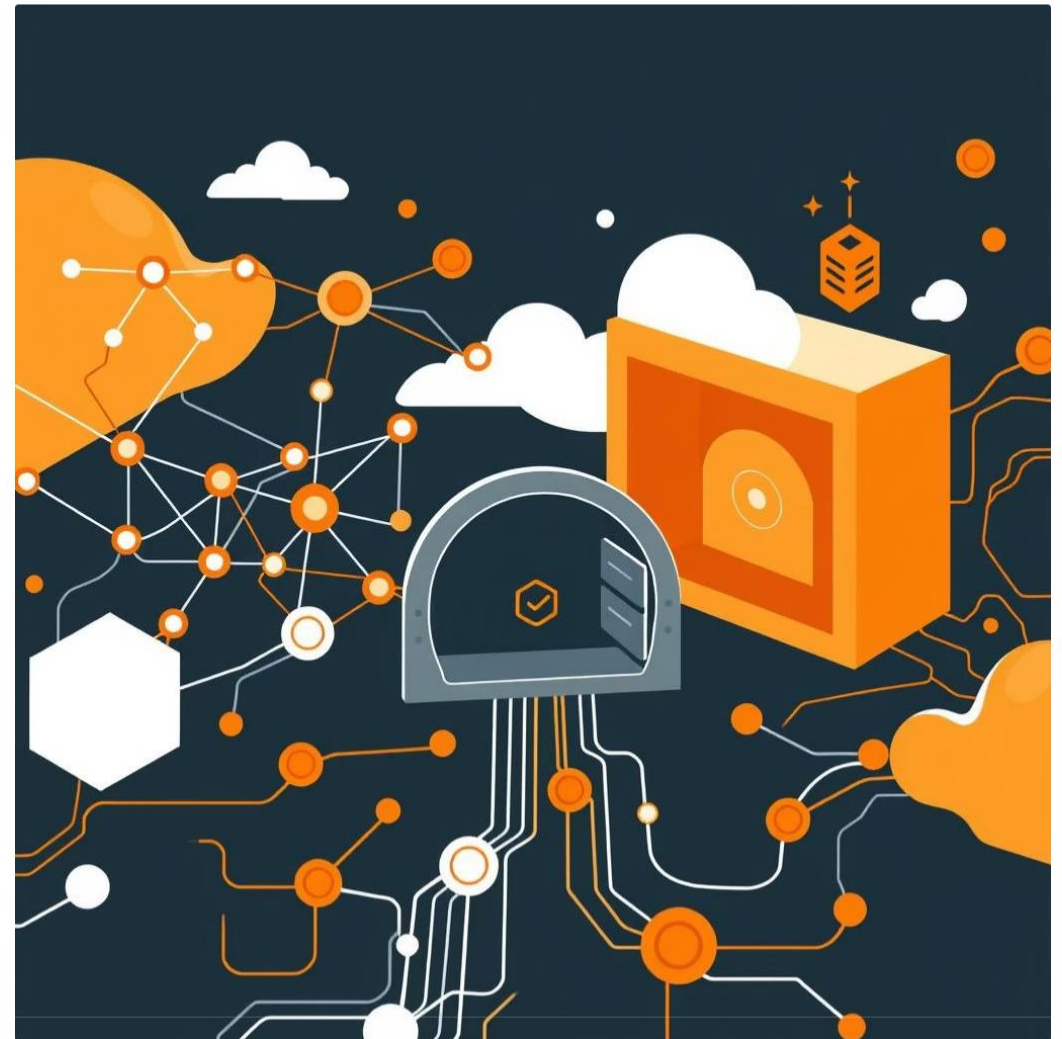
Smart Contracts

Self-executing agreements with terms directly written into code. They manage the escrow and payment logic, ensuring unbiased execution without intermediaries.



IPFS (InterPlanetary File System)

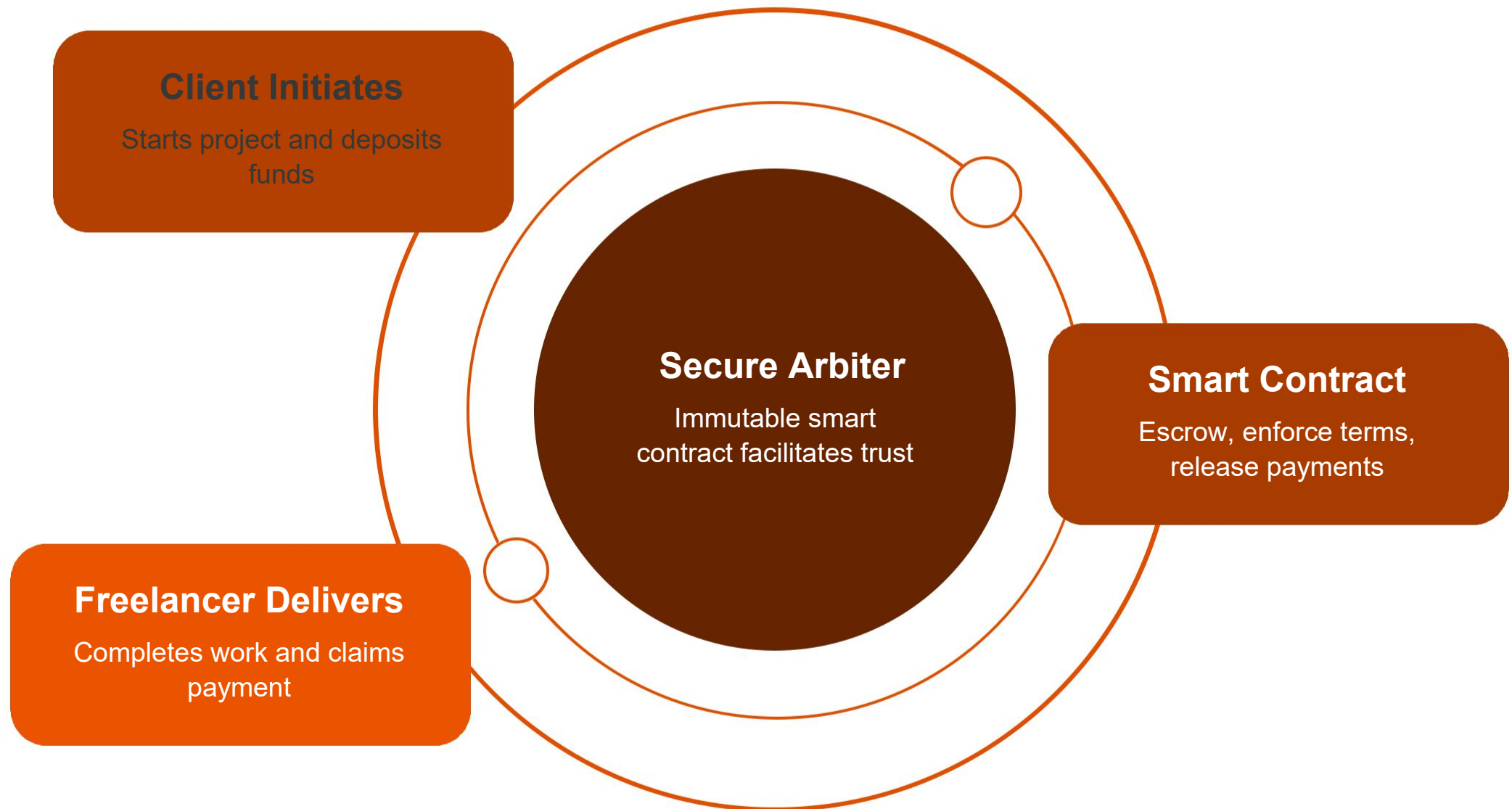
A decentralized peer-to-peer network for storing and sharing data. Project agreements, deliverables, and proofs are stored immutably, ensuring data integrity.



This integration provides a seamless and secure environment where project agreements are enforced automatically and all critical data is protected against tampering, creating a truly **trustless** and efficient system.

System Architecture: Actors and Interactions

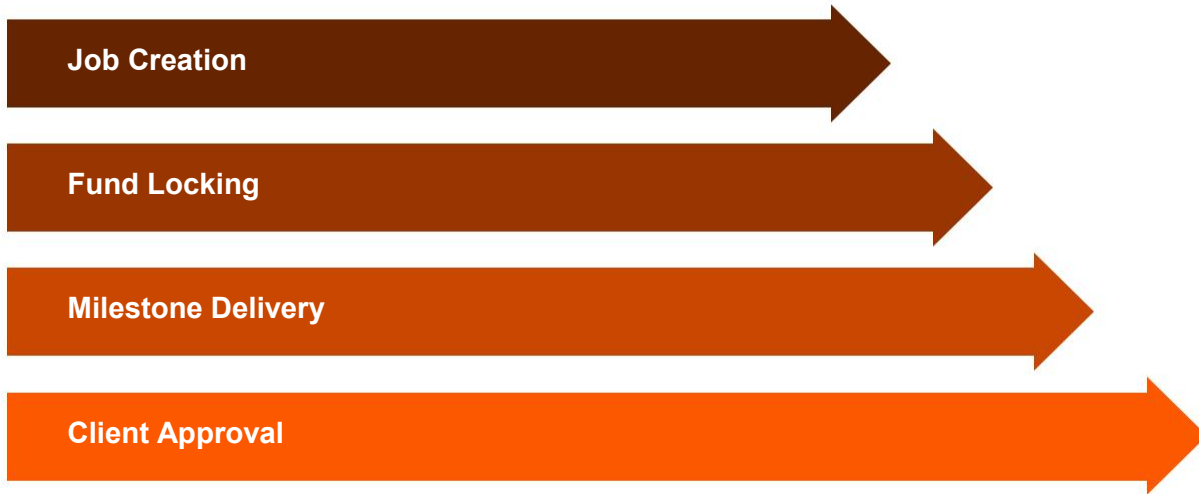
Our system is designed around key actors who interact seamlessly through the power of blockchain and decentralized storage. At the heart of it all is the **smart contract**, acting as the impartial arbiter for all agreements and fund movements.



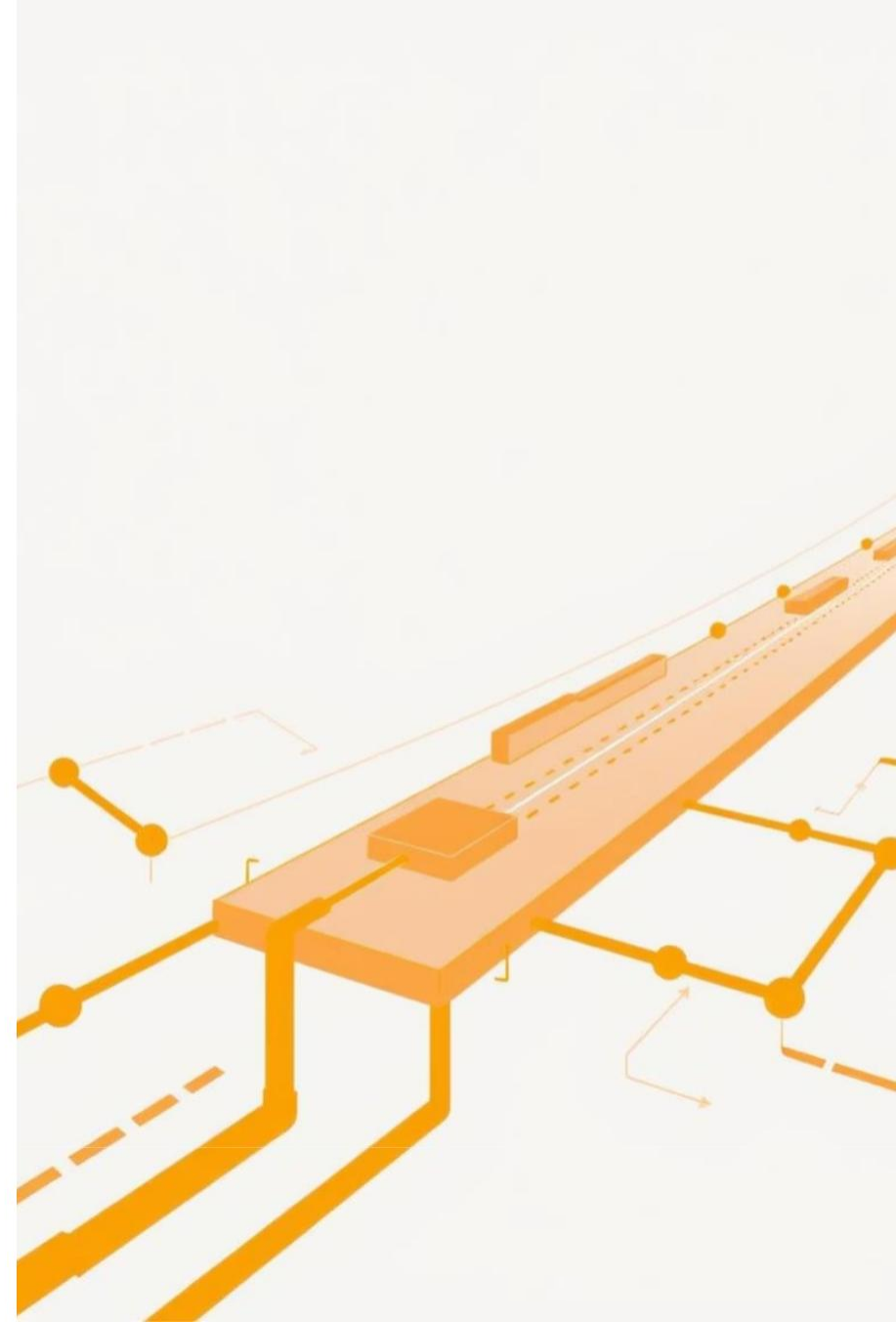
- **Client:** Initiates project, locks funds, reviews work, and approves milestone payments.
- **Freelancer:** Accepts projects, delivers work, and receives payments upon client approval.
- **Smart Contract:** A transparent and automated **escrow** agent, holding funds and releasing them based on predefined conditions.

Workflow Visualization: From Job to Payment

The entire process, from project initiation to final payment, is streamlined and transparent, leveraging the immutable nature of blockchain transactions. Each step ensures security and accountability for both parties involved.



This structured workflow minimizes potential disputes and ensures that payments are released only when the agreed-upon milestones are successfully completed, providing unparalleled **assurance**.



Technology Stack: Powering Our Protocol

Our robust solution is built upon a foundation of cutting-edge blockchain and web technologies, ensuring scalability, security, and a seamless user experience. We've carefully selected tools that align with our goals of efficiency and decentralization.



Polygon Blockchain

Chosen for its low transaction fees and high scalability, making it ideal for frequent freelance transactions.



Solidity

The primary language for writing our secure and efficient **smart contracts** on the Ethereum Virtual Machine.



Hardhat

Our development environment for testing, compiling, and deploying smart contracts.



IPFS

For **decentralized** storage of project agreements and deliverables, ensuring data integrity.



React + Vite

Building a fast, responsive, and intuitive user interface for a smooth user experience.

Web3Modal & MetaMask

Enabling easy and secure wallet connection for interacting with the blockchain.

Key Features & Distinct Advantages

Our Freelance Assurance Protocol offers a suite of features designed to enhance security and user confidence, setting it apart from traditional systems and paving the way for a more efficient freelance ecosystem.

Key Features

Secure Escrow

Funds are locked in the smart contract, released only upon mutual agreement or successful dispute resolution.

Milestone Payments

Break down projects into manageable phases, ensuring payments correspond to work completion.

IPFS Storage

Immutable and decentralized storage for all project-related documents and deliverables.

MetaMask Integration

Seamless and familiar wallet connection for easy interaction with the protocol.

Advantages Over Existing Systems

Lower Fees

Significantly reduced transaction costs compared to traditional platforms.

Instant Payments

Funds are released almost immediately upon approval, no more waiting periods.

No Intermediaries

Direct peer-to-peer interaction, fostering direct trust and eliminating third-party reliance.

Enhanced Trust

Blockchain's transparency and immutability build inherent trust between parties.

Future Horizons & Overcoming Challenges

While our current prototype demonstrates a robust solution, we envision further enhancements and acknowledge the journey of development has its hurdles. Our commitment is to continuous improvement and innovation.



Future Scope

- **On-Chain Reputation System:** Building a transparent and immutable freelancer reputation score.
- **Advanced Dispute Resolution:** Implementing decentralized arbitration mechanisms for complex cases.
- **Scaling to Multiple Freelancers:** Adapting the protocol for team-based projects and larger collaborations.
- **Cross-Chain Compatibility:** Expanding support to other blockchain networks for wider adoption.

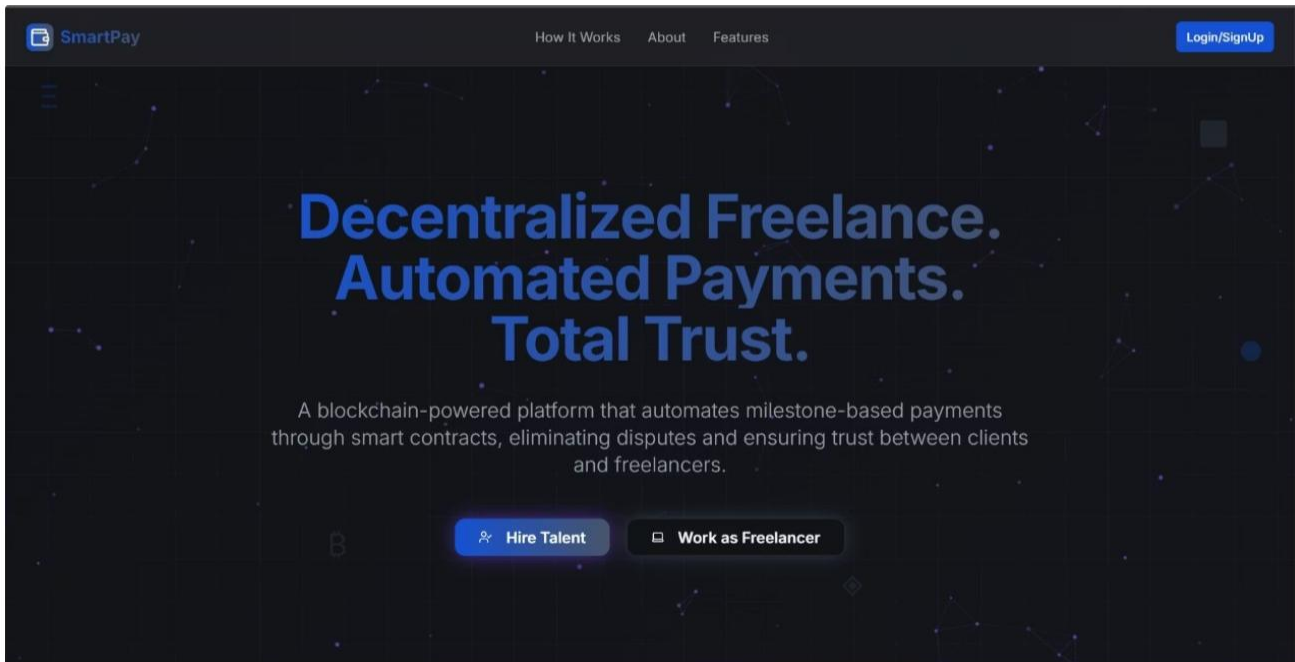


Challenges Faced

- **Smart Contract Deployment:** Ensuring secure and efficient deployment on the Polygon network.
- **Wallet Integration Complexity:** Seamlessly connecting various Web3 wallets for diverse users.
- **IPFS Storage Implementation:** Optimizing the storage and retrieval of project files on a decentralized network.
- **User Experience Design:** Creating an intuitive and user-friendly interface for blockchain-based interactions.

A Glance at the Website

Discover the intuitive interface of our platform, designed for seamless navigation and empowering interactions between clients and freelancers.



- **Hire Talent** ³ Clients can effortlessly post projects, define milestones, and secure funds in escrow, attracting top-tier freelance talent. **Work**
- **as Freelancer** ³ Freelancers can easily discover and accept projects that match their skills, benefiting from secure payments and transparent terms.
- **Login / Sign Up** ³ Securely access your account using either your Web3 wallet for decentralized convenience or traditional email for familiar onboarding.
- **Navigate** ³ Explore our comprehensive resources, including detailed guides on *How It Works*, our company's *About* section, and a full breakdown of our unique *Features*.

User Onboarding: Signup & Account Creation

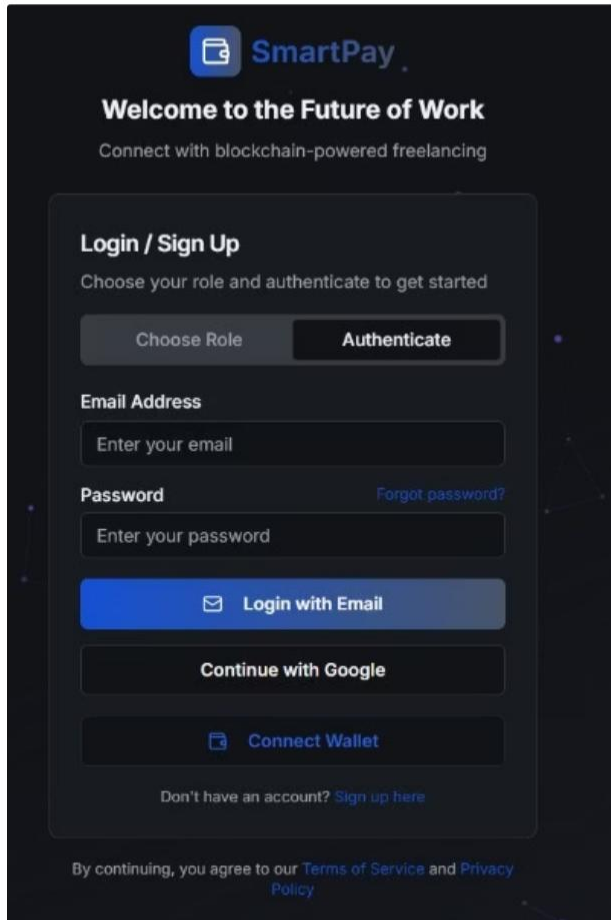
The image displays three sequential screenshots of the SmartPay user onboarding process. The first screenshot shows the initial landing page with the SmartPay logo and the headline 'Join the Future of Work'. It prompts users to 'Create your account and start your decentralized freelance journey' and offers two options: 'I'm a Client' (Post projects and hire talented freelancers) and 'I'm a Freelancer' (Find projects and earn with guaranteed payments). The second screenshot shows the 'Create Account' form with three tabs: 'Choose Role', 'Account Details', and 'Verify Email'. The 'Account Details' tab is active, showing fields for 'Full Name', 'Email Address', 'Password', and 'Confirm Password'. There is also a checkbox for 'I agree to the Terms of Service and Privacy Policy' and a 'Create Account & Connect SmartPay' button. The third screenshot shows the 'Check Your Email' screen, indicating that a verification email has been sent to the provided email address (d24almi086@charusat.edu.in). It includes a 'Resend Verification Email' button and a note to check the spam folder if the email wasn't received.

Our streamlined signup process guides new users through essential steps to get started on the platform, ensuring a secure and personalized experience.

Key Steps

- **Select Your Role:** Choose between **Client** or **Freelancer** to tailor your experience.
- **Provide Your Full Name:** Essential personal details for account setup.
- **Enter Email Address & Authentication:** Used for registration and important communications.
- **Set and Confirm Password:** Create a secure login for your account.
- **Agree to Terms & Privacy Policy:** Mandatory step to proceed.
- **Create Account & Connect SmartPay:** Finalize registration and link your digital wallet.
- **Already a User?** Easily sign in to your existing account.

Login Page (User Actions)



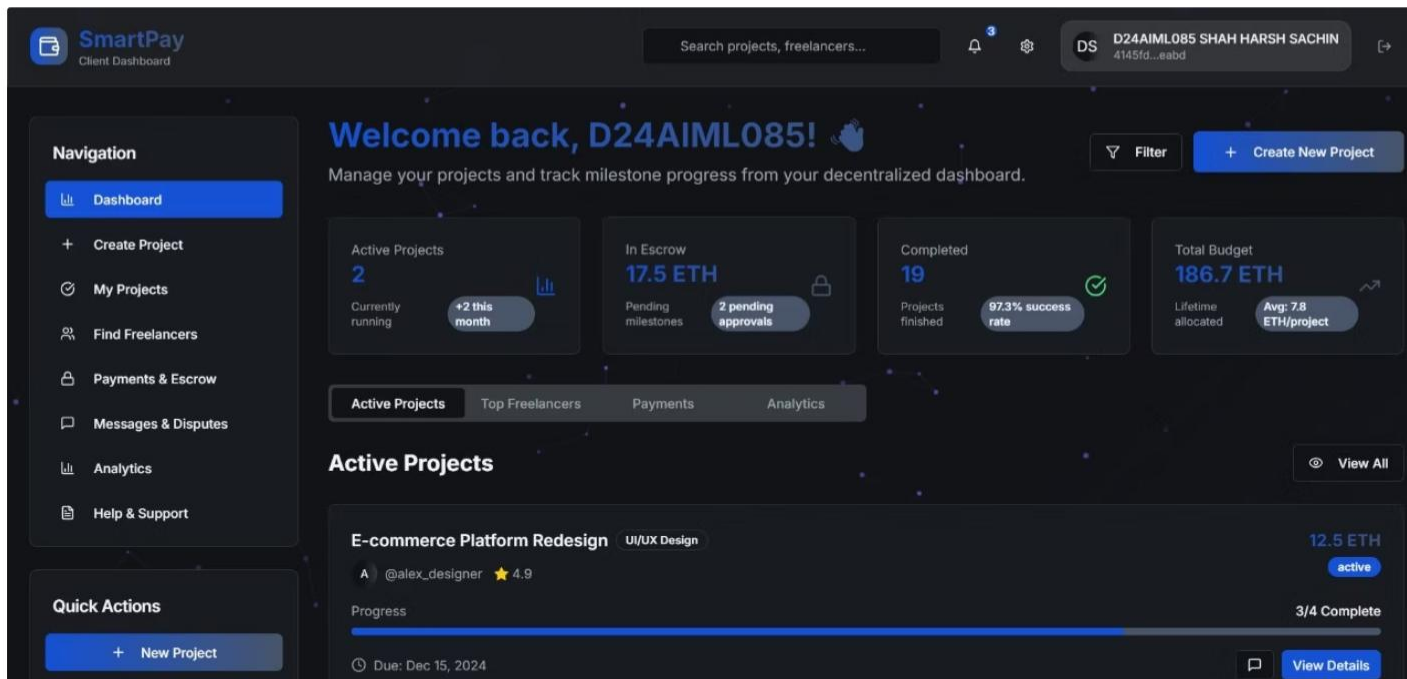
The image shows a dark-themed login page for SmartPay. At the top, the SmartPay logo is displayed next to the text "Welcome to the Future of Work" and "Connect with blockchain-powered freelancing". Below this, a central form titled "Login / Sign Up" contains the following elements: a "Choose Role" button and an "Authenticate" button; an "Email Address" field with the placeholder "Enter your email"; a "Password" field with the placeholder "Enter your password" and a "Forgot password?" link; a blue "Login with Email" button with an envelope icon; a "Continue with Google" button; and a "Connect Wallet" button with a wallet icon. At the bottom of the form, there is a link "Don't have an account? Sign up here". Below the form, a footer states "By continuing, you agree to our Terms of Service and Privacy Policy".

Our login page provides a straightforward and secure entry point, offering multiple authentication options for a seamless start to your Smart Pay experience.

- **Choose Your Role** ³ Easily switch between *Client* or *Freelancer* interfaces to tailor your initial experience.
- **Enter Email Address** ³ Input your registered email for direct account access.
- **Enter Password** ³ Provide your account password to securely log in.
- **Forgot Password?** ³ Recover credentials quickly through email verification.
- **Login with Email** ³ Proceed with traditional email and password authentication.
- **Continue with Google** ³ Opt for a quick and seamless login using your existing Google account.
- **Connect Wallet (Web3)** ³ Connect your Web3 wallet (e.g., MetaMask) for decentralized, secure authentication.
- **Sign Up Link** ³ New users can quickly navigate to the account creation page.

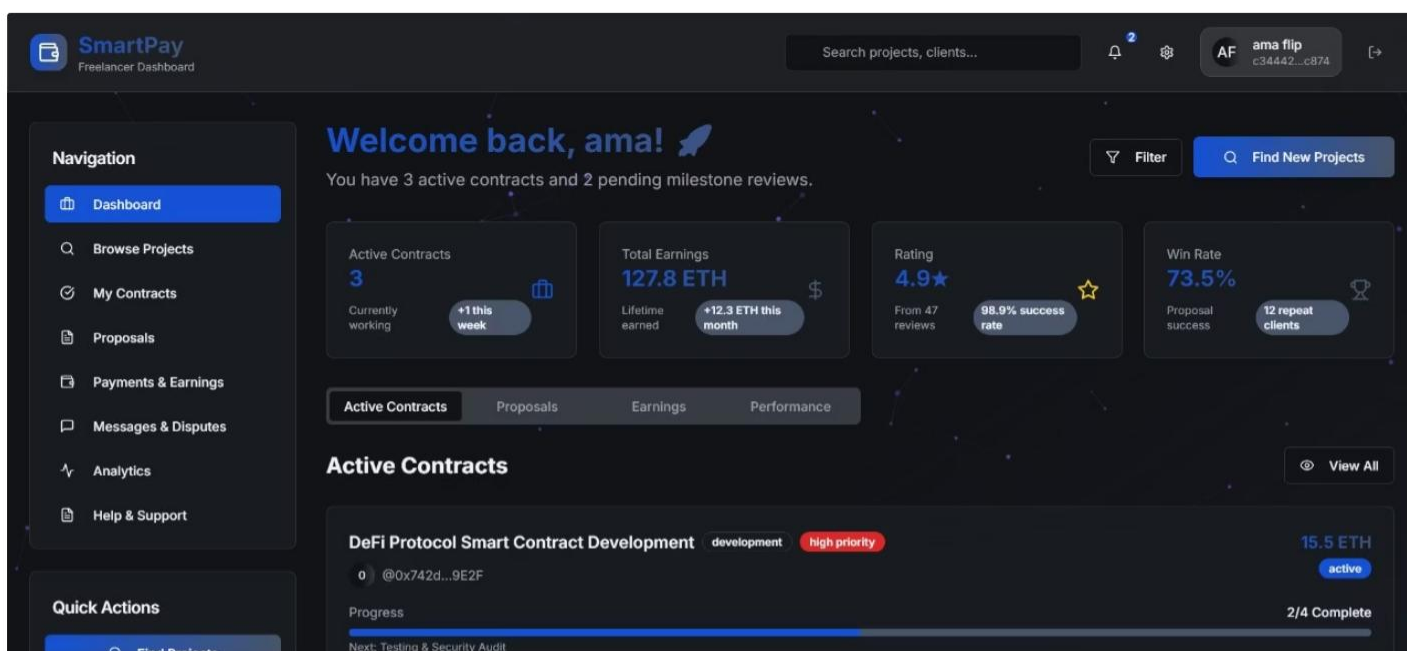
This comprehensive login interface ensures user accessibility and security, accommodating both traditional and blockchain-native authentication preferences for a seamless experience.

The Client Dashboard



- **Project Overview:** A comprehensive summary of active projects, completed projects, and the client's overall success rate.
- **Financial Tracking:** A clear display of funds held in escrow and the total budget allocated for projects.
- **Project Management:** Detailed listings of active projects, including assigned freelancers, progress status, due dates, and budget specifics.
- **Quick Actions:** Convenient shortcuts to initiate new projects, hire talent, and export project data.
- **Intuitive Navigation:** Easy access to the main dashboard, project listings, payment records, and freelancer search functionalities.

The Freelancer Dashboard



- **Current Engagements:** A detailed overview of ongoing projects, displaying titles (e.g., "DeFi Dashboard Development"), client details, priority levels (e.g., "high priority"), current budget in ETH, progress, and due dates.
- **Streamlined Navigation:** The left-hand menu provides quick access to key sections such as the **Dashboard**, **Browse Projects**, **My Contracts**, **Payments**, and **Disputes**.
- **Personalized Profile:** Displays the freelancer's name (e.g., "Sarah") and connected wallet address, highlighting the platform's decentralized nature.



A New Era for Freelance Payments

Our Smart Contract Freelance Payment System marks a significant step towards a more **secure, fair, and transparent** freelance economy. By leveraging the power of blockchain, we empower both clients and freelancers with direct, **trustless** transactions and ironclad agreements.

"We believe in a future where every freelancer is paid fairly and on time, and every client receives the quality work they expect, all powered by the transparency and security of blockchain technology."

Thank You!

Team **Galcogens**