Blockchain-Integrated Full-Stack Application
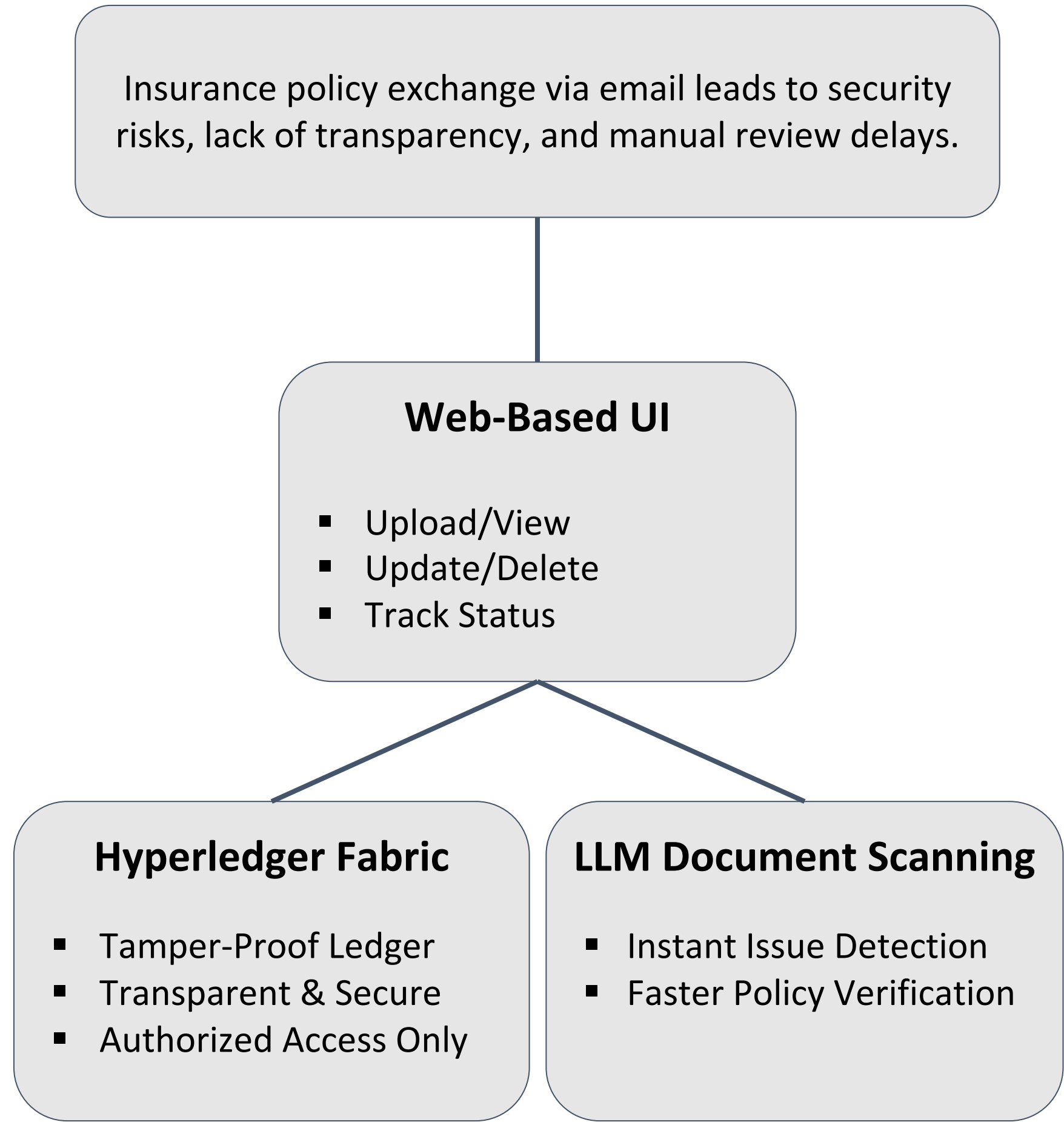## Using LLM Document Scanning For Insurance Policy & Fraud Verification

IS&T, Computer Science

CONTRIBUTORS:

- Benjamin Wesch
- Evan Hoffschneider
- Rashawn Thompson
- Vincent Buda
- Dr. Cristian Mateos
- Dr. Harvey Siy
- Toe Arkar

Innovative Solutions

Insurance policy exchange via email leads to security risks, lack of transparency, and manual review delays.

Web-Based UI
- Upload/View
- Update/Delete
- Track Status

Hyperledger Fabric
- Tamper-Proof Ledger
- Transparent & Secure
- Authorized Access Only

LLM Document Scanning
- Instant Issue Detection
- Faster Policy Verification

Advantages of Private Blockchain

Feature	🔒 Private Blockchain
Access	Restricted to authorized users
Control	Managed by a group or consortium
Privacy	High privacy
Speed	Fast and scalable
Fees	No transaction fees like public blockchain

Hyperledger Fabric Overview

Ledger = Blockchain (Immutable) + World State (Current)
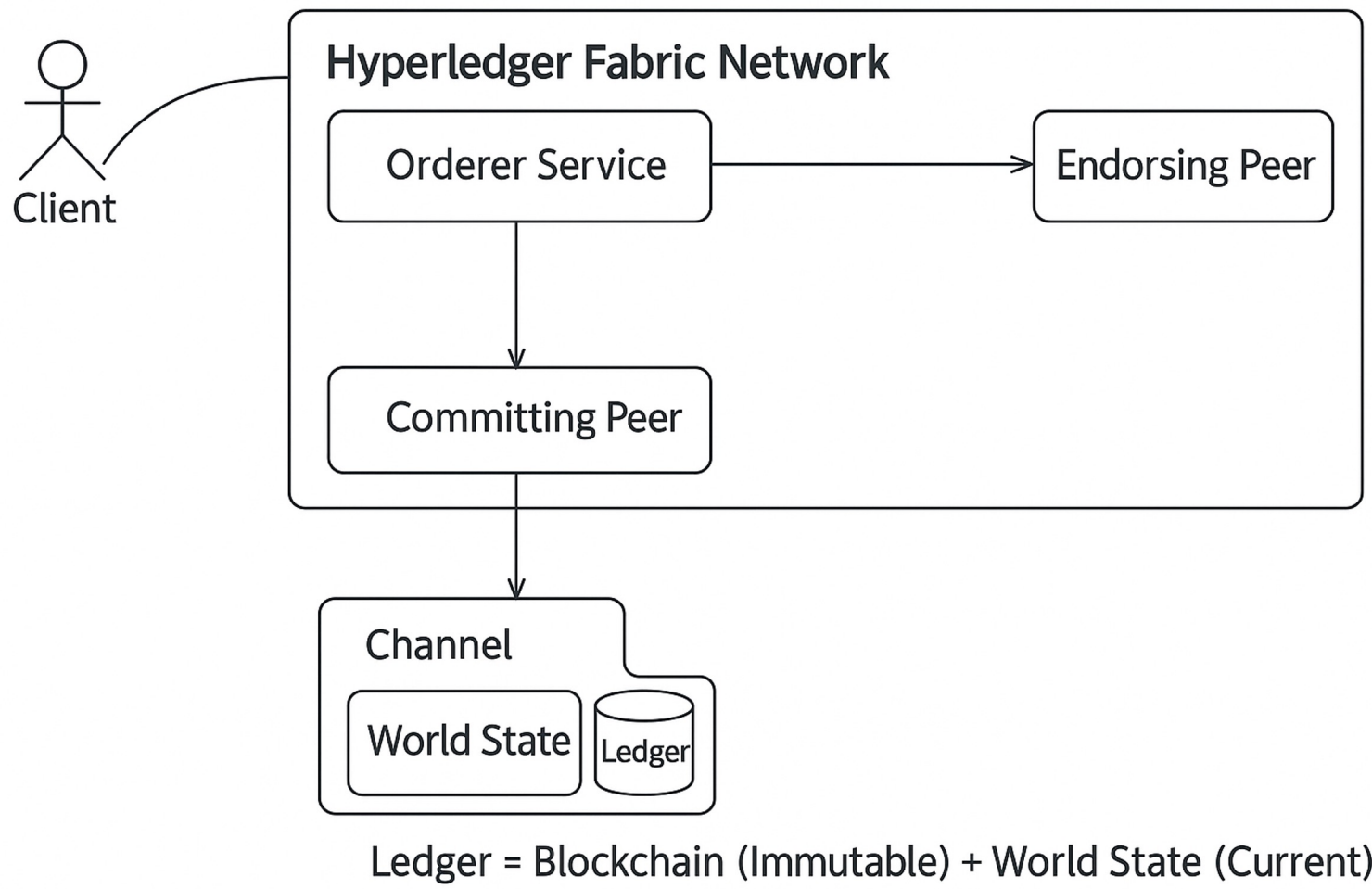
Application Architecture
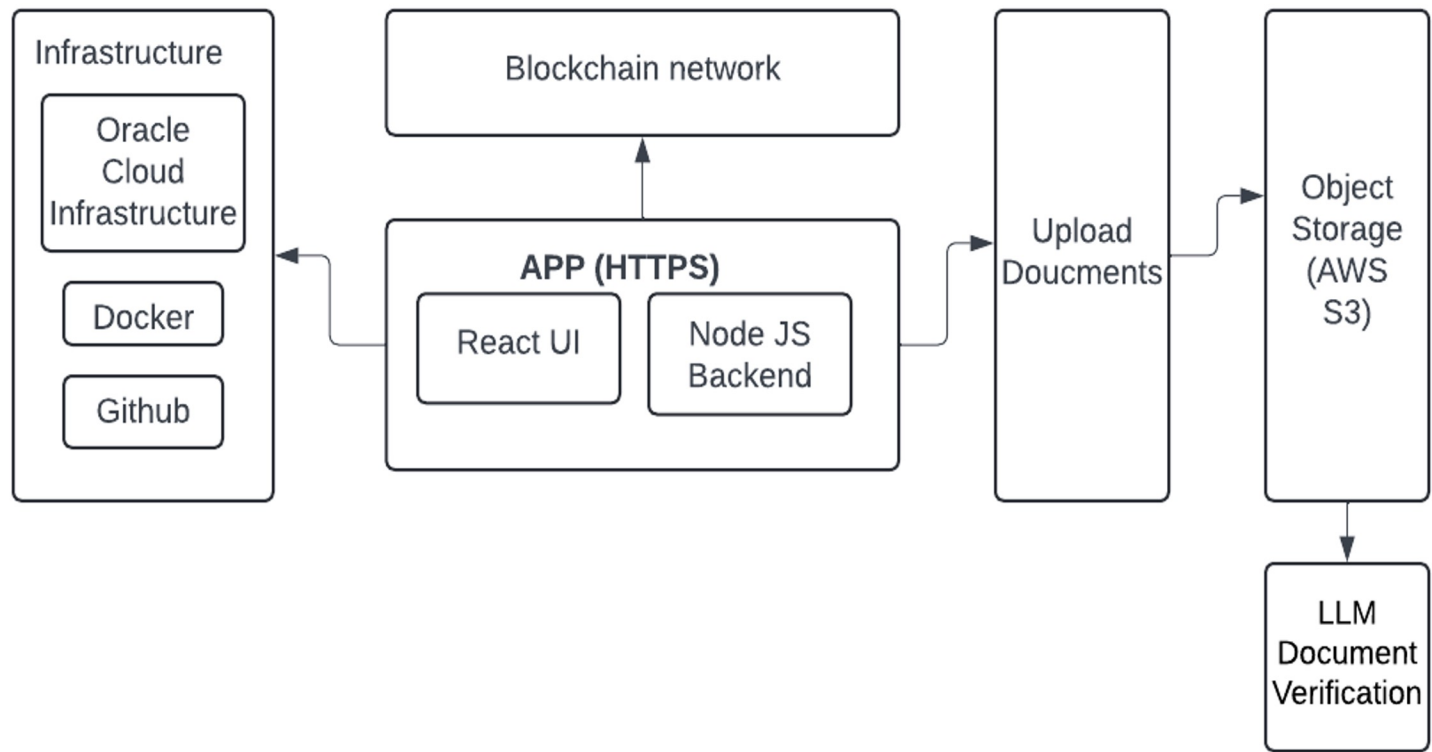
Features and Achievements

Fuzzy Name Matching Module
Business Name Matching on Sign-Up Using Levenshtein & Jaccard

Document Upload
UI for Policy Document Management with Object Storage S3 Integration

LLM Integration
LLM-Powered Compliance Scanning with LLaMA 3-70B & Gorq API

Testing
Wrote Unit Tests Across the Application for Quality Assurance

Future Enhancements

We'll use a graph database to map policy, coverage, claim, and risk relationships. Ontologies and reasoning will power intelligent queries and recommendations.

Example structure:

- Customer → owns → Policy
- Policy → includes → Coverage
- Coverage → related_to → Risk
- Claim → filed_for → Incident
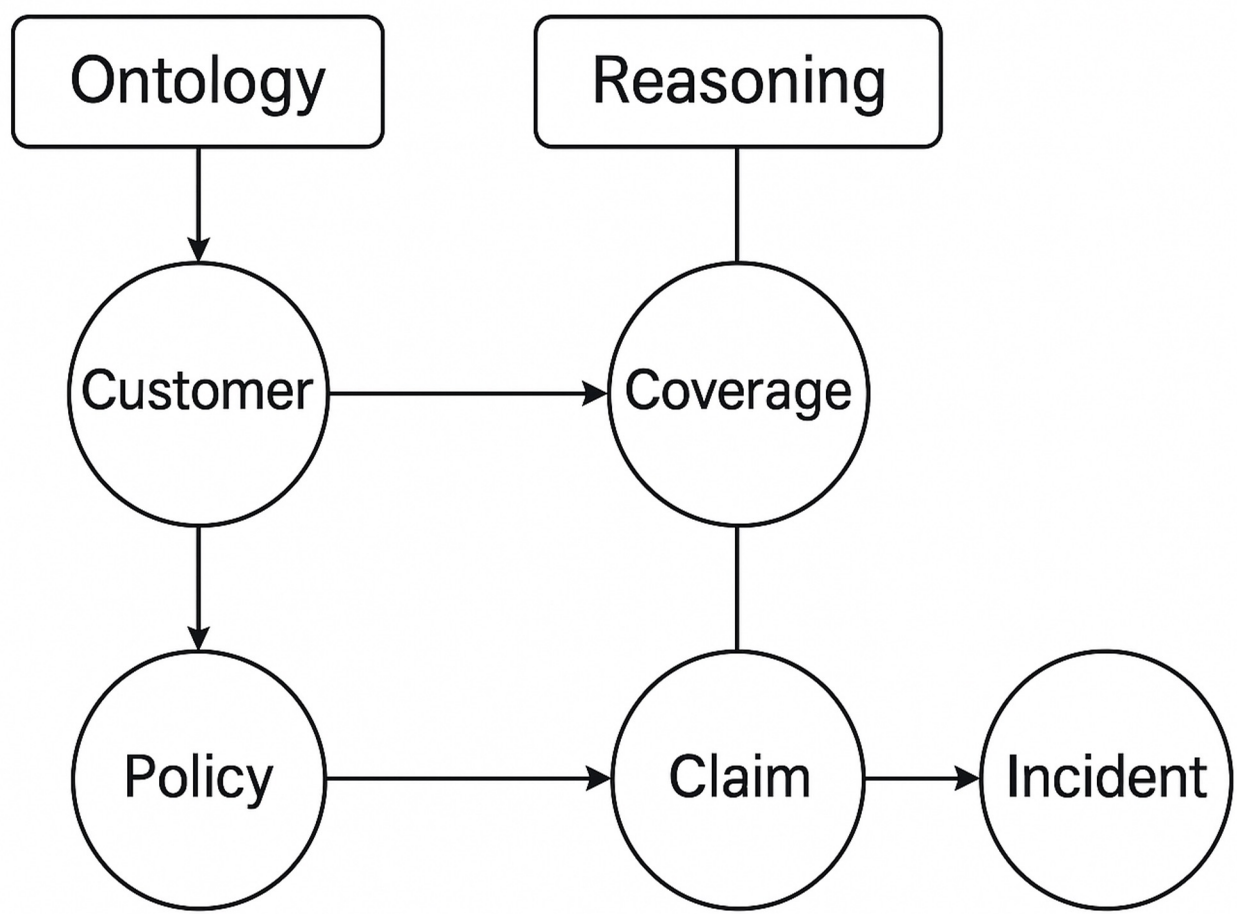
Acknowledgements

We would like to express our sincere gratitude to We Care Insurance for giving us the opportunity to work on this innovative project. Toe has provided us with so much valuable insight and guidance, and we have learned a great deal through completing this project. Also, a big thank you to Dr. Harvey Siy for running this capstone class and allowing us to put our education to good use for a real-world project that will impact the world outside of UNO. Go Mavs!

References

- Hyperledger Fabric Guide: https://docs.google.com/presentation/d/1Maqwoc0X94_GD73R2wzIeUIunM6_n48T9yGbWeIYUjI/edit#slide=id.g9ad9b01cb9_0_59
- Hyperledger Docs: https://hyperledger-fabric.readthedocs.io/en/release-2.5/
- Using Hyperledger Fabric in Node.js Application: https://github.com/Toe12/blockchain-experimental
- Verifying Insurance Documents using LLM: https://github.com/Insurmate-app/experimental
- Oracle Cloud Infrastructure: https://www.oracle.com/cloud/
- Groq API: https://console.groq.com/docs/overview
- Amazon S3 (Object Storage):https://aws.amazon.com/s3/

Scan To Open App