Device Layer



Detects and outputs methane concentration levels as analog signal

Network Layer



Transmits data via secure communication protocols using ethernet cables

Blockchain Layer



Each valid transaction is recorded on-chain using Hyperledger Fabric or Besu ensuring data integrity, traceability, and consensus validation

Application Layer



Pulls real-time or historical data from the blockchain using RESTful API queries and displays data on dashboards

Raspberry Pi 5



Converts the analog signal from the MQ-4 sensor into digital values using an analog-to-digital converter

IoT Server



Validates, enriches, and prepares data as blockchain transactions and Sends API requests to the blockchain via REST endpoints