



الْمَعْهَدُ الْوَطَّانِيُّ لِلْبَرِيدِ وَالْهَوَافِرِ
Institut National des Postes et Télécommunications

BLOCKCHAIN IN ENVIRONMENTAL SERVICE



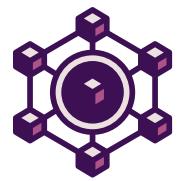
BLOCKCHAIN AND
SMART CONTRACT

PRESENTED BY :

FAHYM Abd Elfattah
ELKHOUR Khalid
BOUCHAOUCH Ayoub
IZERIA Youness
OUHASSANE Lahcen

SUPERVISED BY

Dr. EL AYACHE
Meryeme



PLAN

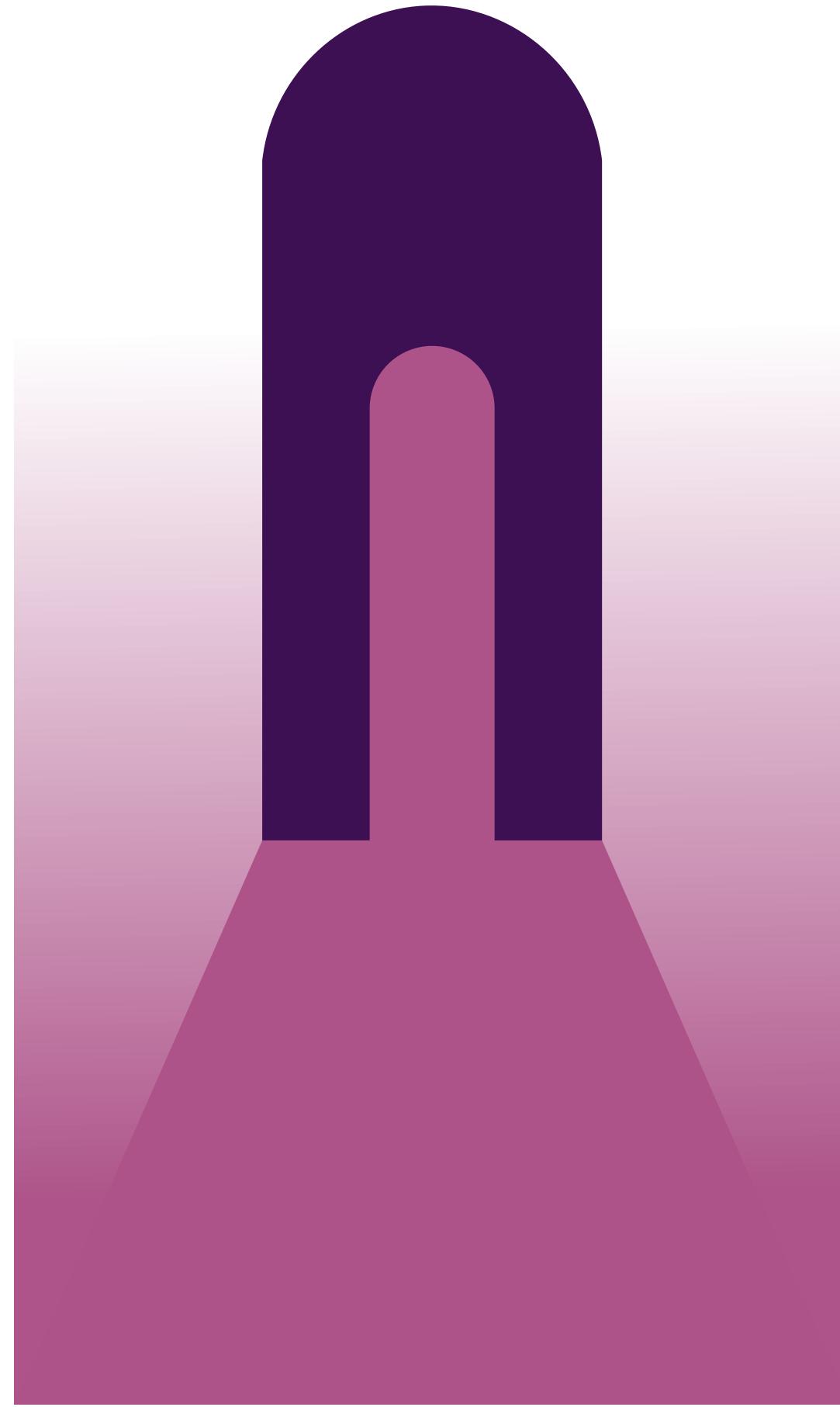
3 INTRODUCTION

14 IMPLEMENTAION

4 PROBLEMATIC

20 CONCLUSION

5 ARCHITECTURE

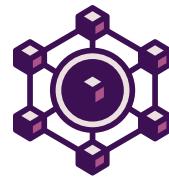




INTRODUCTION

Blockchain technology has the potential to enhance transparency, accountability, and trust in various service environments.

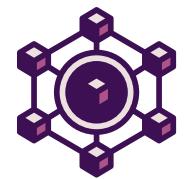




PROBLEMATIC

The Volkswagen emissions scandal

- DECEPTIVE EMISSIONS SOFTWARE
- INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION
- LEGAL AND REGULATORY CONSEQUENCES FOR THEIR ACTIONS



BLOCKCHAIN AND
SMART CONTRACT

ARCHITECTURE

Description of our system

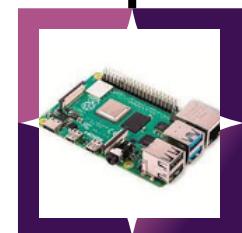
MQTT

communication protocol



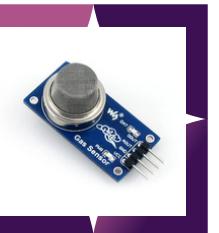
WEB3

blockchain transaction



RASPBERRY PI

mini computer



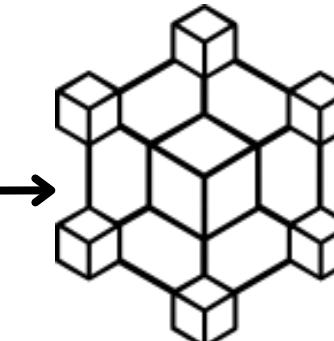
GAZ SENSOR

KAFKA

data transportation



SMART CONTRACT



BLOCKCHAIN

Digital Ledger



EMISSION SENSOR

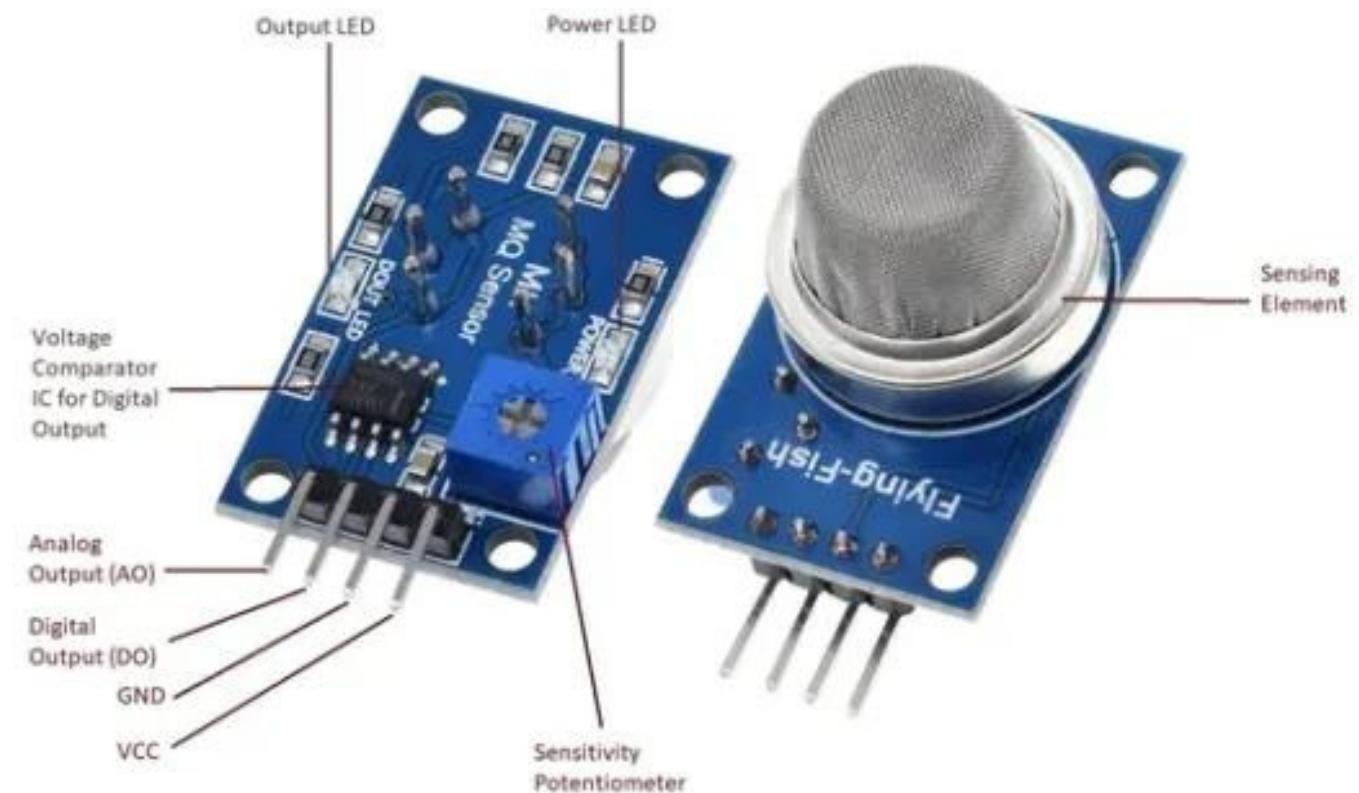
ARCHITECTURE

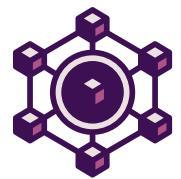
Operating Voltage is +5V

Can Measure or detect LPG, Alcohol, Propane, Hydrogen, CO and even methane

Analog output voltage: 0V to 5V

Digital Output Voltage: 0V or 5V (TTL Logic)

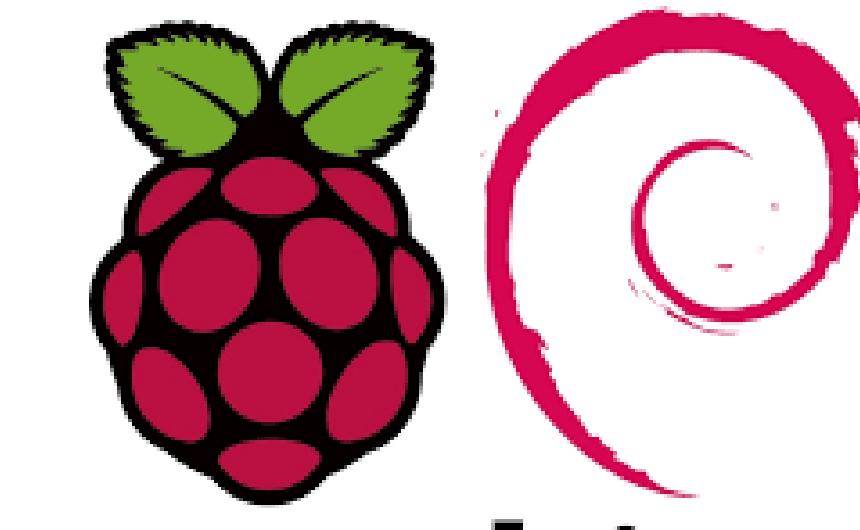
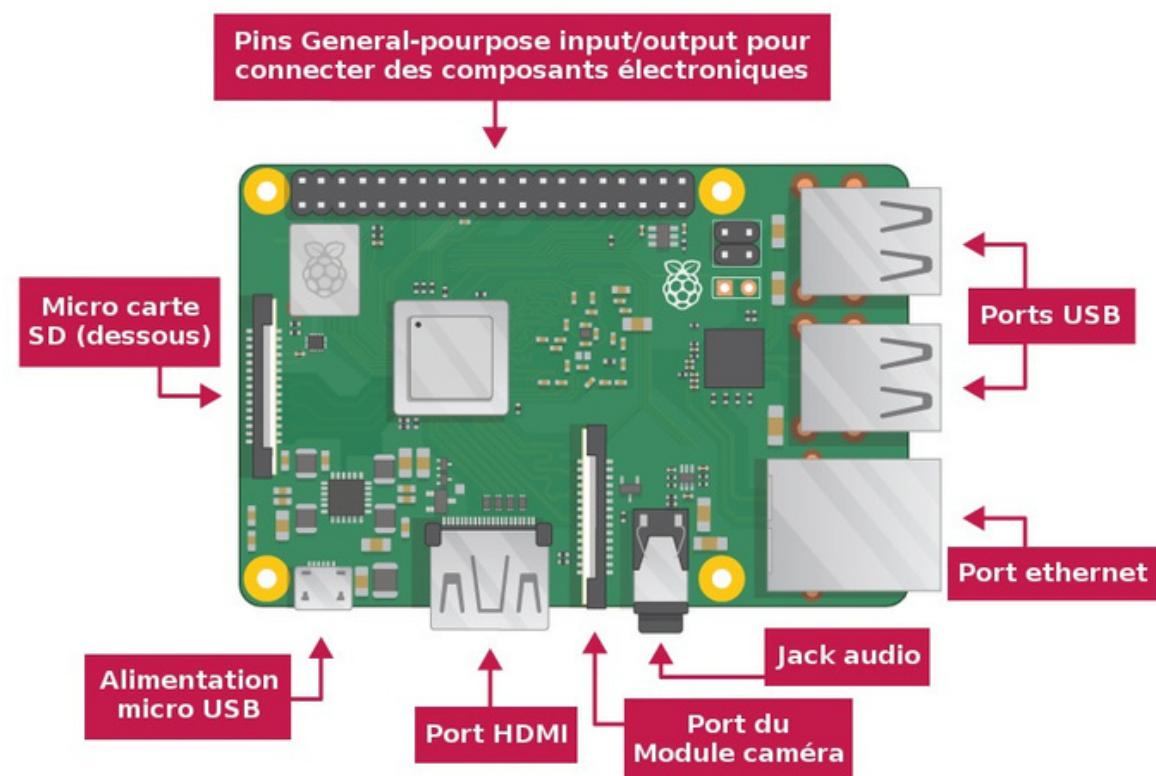




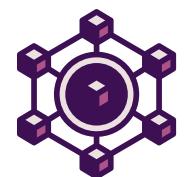
BLOCKCHAIN AND
SMART CONTRACT

RASPBERRY PI

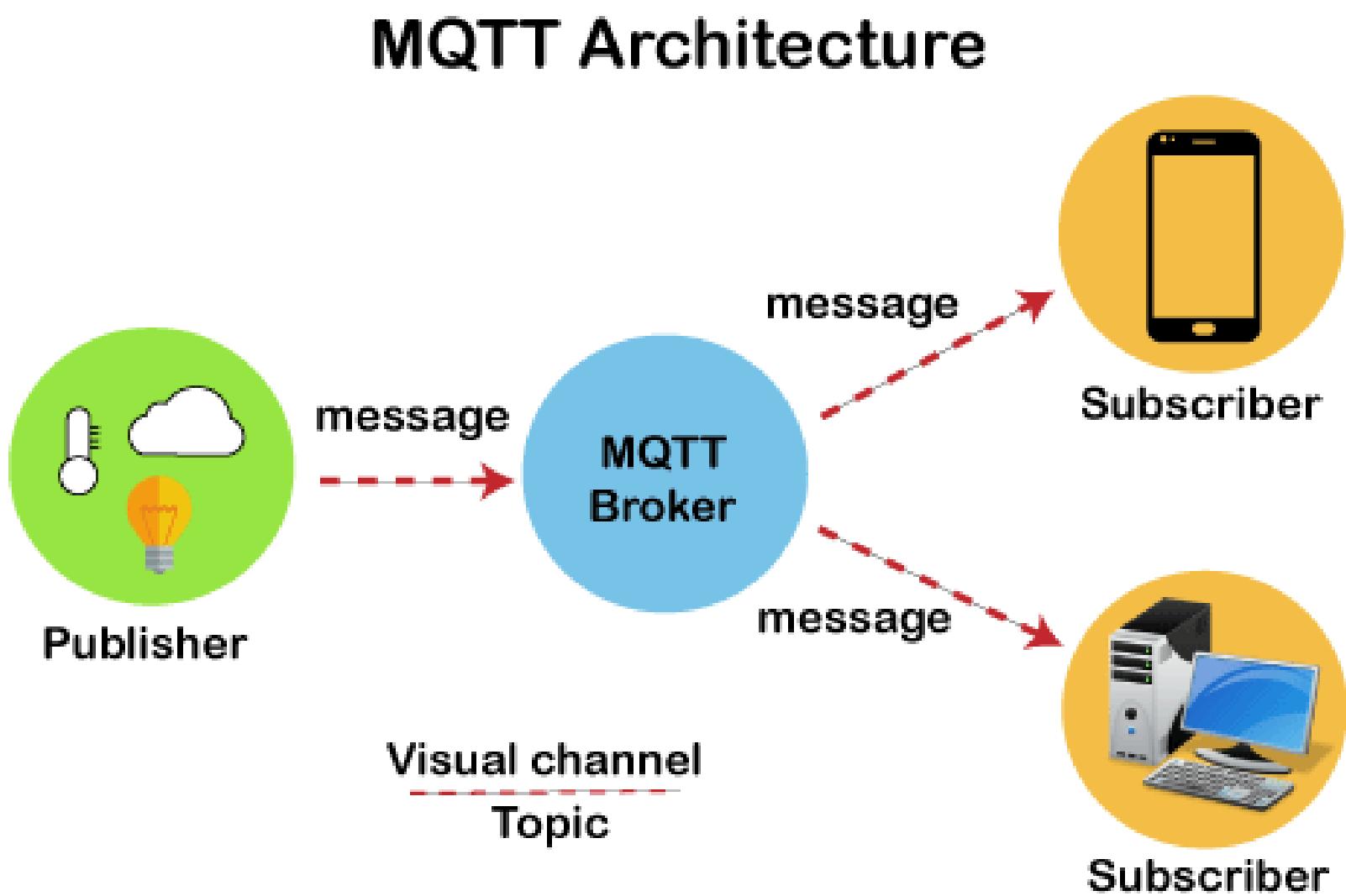
ARCHITECTURE

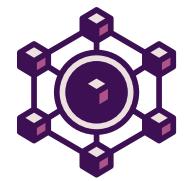


Raspbian



COMMUNICATION PROTOCOLE

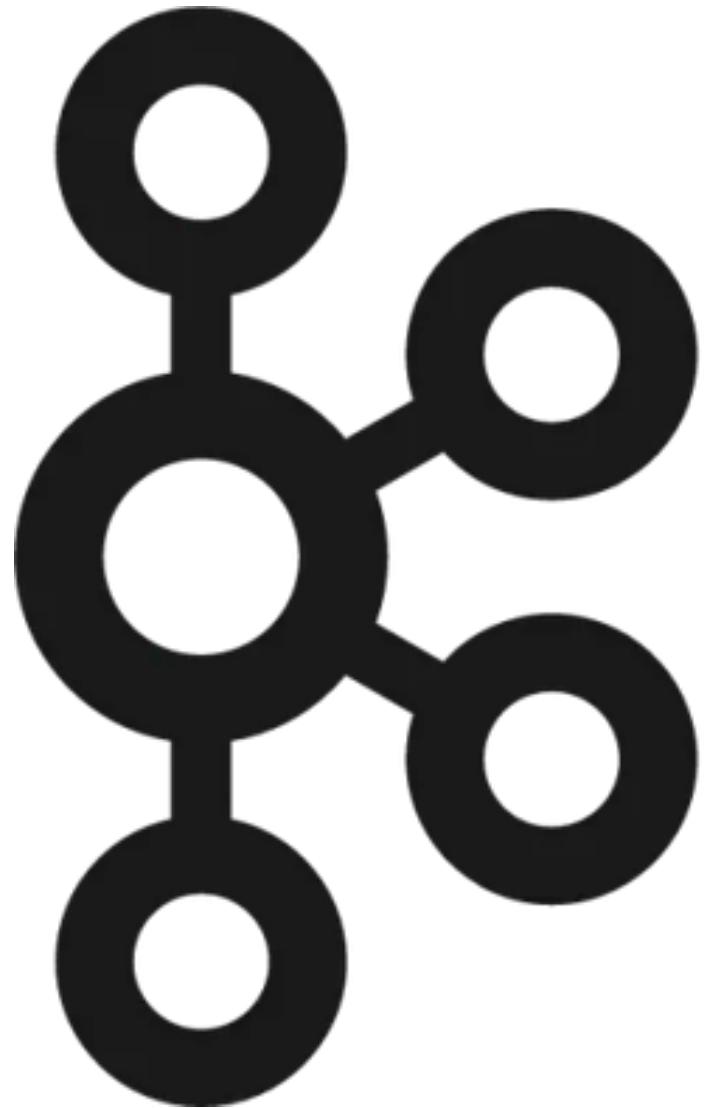




BLOCKCHAIN AND
SMART CONTRACT

ARCHITECTURE

KAFKA



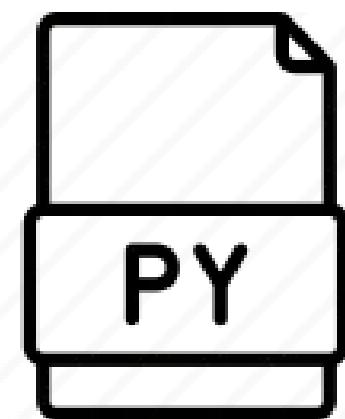
kafka



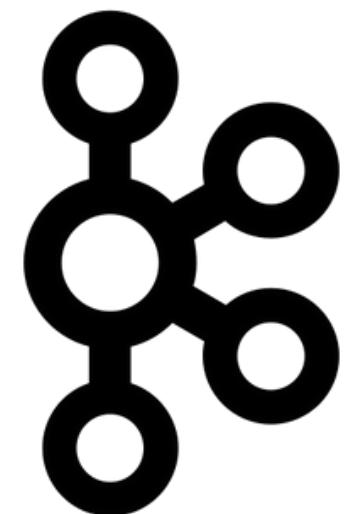
BLOCKCHAIN AND
SMART CONTRACT

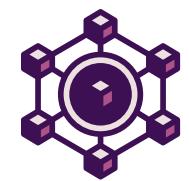
ARCHITECTURE

MQTT TO KAFKA



GAZ_SENSOR_TO_KAFKA.PY





BLOCKCHAIN AND
SMART CONTRACT

ARCHITECTURE

WEB 3

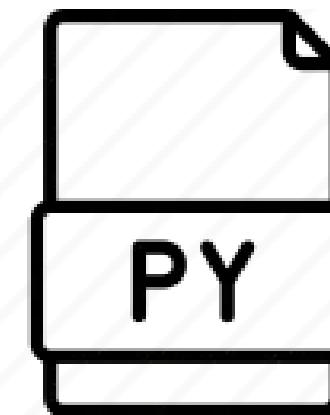




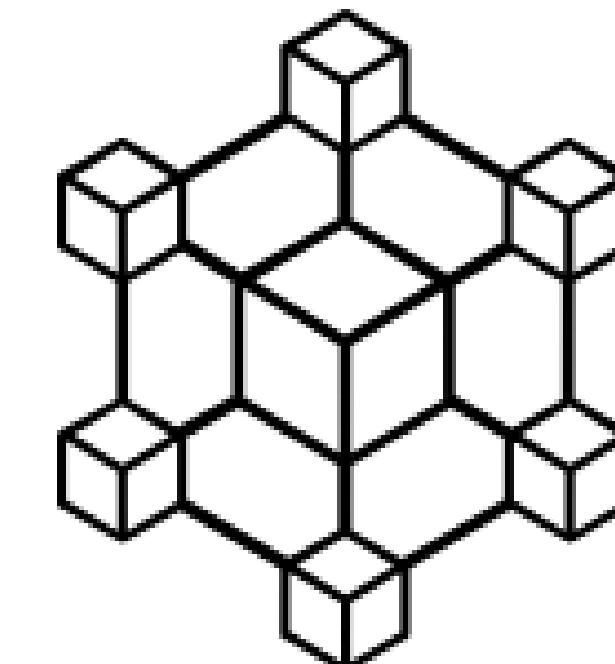
BLOCKCHAIN AND
SMART CONTRACT

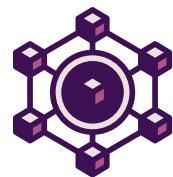
ARCHITECTURE

KAFKA TO BLOCKCHAIN



WEB3_ENTR_TO_ASSOC.PY





SMART CONTRACT

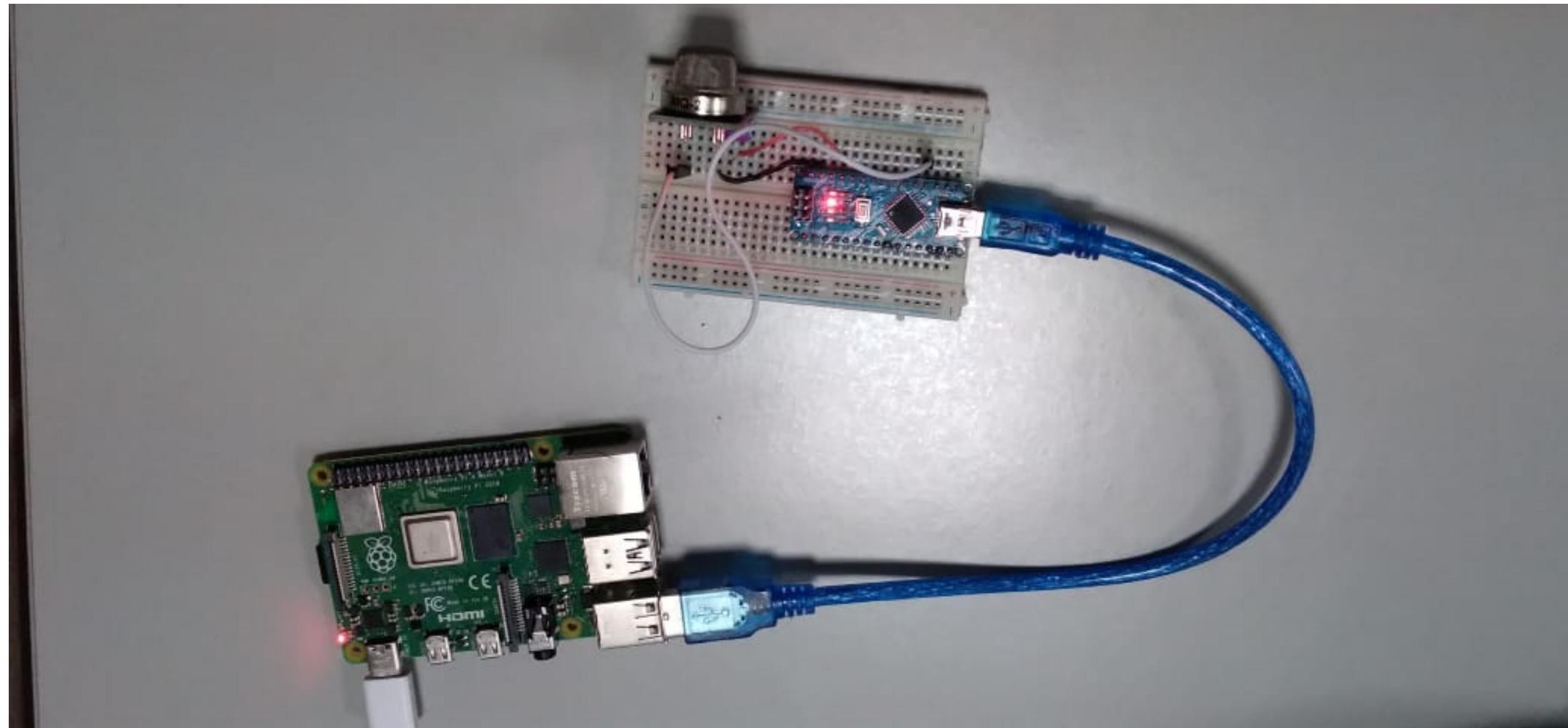
```
1 // SPDX-License-Identifier: MIT
2 pragma solidity ^0.8.0;
3 contract PenaltyContract {
4     address public owner;
5     address public companyAccount;
6     uint256 public gasThreshold = 50; // exemple de seuil arbitraire
7     uint256 public penaltyAmount = 1 ether; // montant de la pénalité, ici 1 Ether
8     constructor(address _companyAccount) {    ↪ infinite gas 380800 gas
9         owner = msg.sender;
10        companyAccount = _companyAccount;
11    }
12    modifier onlyOwner() {
13        require(msg.sender == owner, "Only owner can call this function.");
14        ↪
15    }
16    function setGasThreshold(uint256 _newThreshold) external onlyOwner {    ↪ 24709 gas
17        gasThreshold = _newThreshold;
18    }
19    function applyPenalty(uint256 gasValue) external onlyOwner {    ↪ infinite gas
20        if (gasValue > gasThreshold) {
21            require(address(this).balance >= penaltyAmount, "Contract balance is not sufficient.");
22            payable(owner).transfer(penaltyAmount);
23        }
24    }
25    // Fonction pour permettre à l'entreprise de déposer des Ether dans le contrat
26    function deposit() external payable {    ↪ 2641 gas
27        require(msg.sender == companyAccount, "Only the company can deposit Ether.");
28    }
29    // Fonction pour consulter le solde du contrat
30    function getBalance() external view returns (uint256) {    ↪ 362 gas
31        return address(this).balance;
32    }
33 }
```



BLOCKCHAIN AND
SMART CONTRACT

IMPLEMENTATION

Realization





IMPLEMENTATION

Realization

The screenshot shows the MetaMask extension interface. At the top, it displays the network selection dropdown set to "Sepolia" and the account dropdown showing "Account 1". Below this, the account balance is shown as "2.0916 SepoliaETH" with a copy icon next to it. Underneath the balance, there are five circular buttons with icons: a plus/minus sign for "Buy & S...", an arrow for "Envoyer" (Send), a double arrow for "Swap", a curved arrow for "Pont", and a wallet icon for "Portefeuille" (Wallet). At the bottom of the interface, there are three tabs: "Jetons" (Tokens), "NFT", and "Activité" (Activity), with "Activité" being the active tab.



IMPLEMENTATION

Realization

Sepolia Testnet Search by Address / Txn Hash / Block / Token

[This is a Sepolia Testnet transaction only]

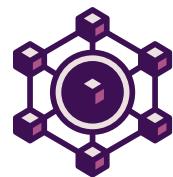
② Transaction Hash:	0x418277e2d9dc678452937c3a676ff112b5ec120e64b9b0fb224410fd0f336bc5 Copy
② Status:	Success
② Block:	4596924 12 Block Confirmations
② Timestamp:	2 mins ago (Oct-30-2023 10:23:48 PM +UTC)
② From:	0x788660fa8D25B4EA605F51d9bcf8E989C56b8bfF Copy
② To:	0xFDCF57A2Efef4d08bd8b617B43809bc8f124e728B Copy
② Value:	♦ 0.01 ETH (\$0.00)
② Transaction Fee:	0.00042 ETH (\$0.00)
② Gas Price:	20 Gwei (0.00000002 ETH)



IMPLEMENTATION

Realization

The screenshot shows the Metamask extension interface. At the top, it displays the network as "Sepolia" and the account as "Account 1" with address "0x78866...b8bfF". The main balance is shown as "2.0812 SepoliaETH". Below the balance are five circular buttons with icons: a plus sign for "Buy & S...", an upward arrow for "Envoyer", a double-headed arrow for "Swap", a circular arrow for "Pont", and a wallet icon for "Portefeuille...". At the bottom, there are three tabs: "Jetons", "NFT", and "Activité", with "Activité" being the active tab.



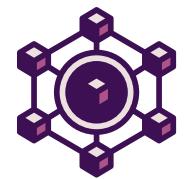
IMPLEMENTATION

3.2889 SepoliaETH

+/- Send Swap Bridge Portfolio

Oct 31, 2023

Receive Confirmed	0.01 SepoliaETH 0.01 SepoliaETH



IMPLEMENTATION

Realization

Realization

Receive X

Status [View on block explorer](#)

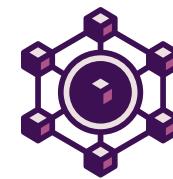
Confirmed [Copy transaction ID](#)

From	To
0x78866...b8...	L_OU

Transaction

Nonce	34
Amount	0.01 SepoliaETH
Gas Limit (Units)	200000
Gas price	20
Total	0.014 SepoliaETH

[+ Transaction data](#)



CONCLUSION

Web3 presents a vision of a decentralized internet where users have more control over their data and interactions, reducing the influence of tech giants and promoting peer-to-peer networks and applications.

