



# Wastewater management project

## Roadmap

### GOALS:

How the Central government, the Purifier companies and common people (Makers) are or can be involved in Monitoring.

More transparency in monitoring and storage.

Attempt to design a strategy to increase water quality

### Monitoring, based on IoT

- Two prototypes with both Arduino and STMicroelectronics
- LPWAN connection with The Things Network (LoRa)

### Storage, on blockchain

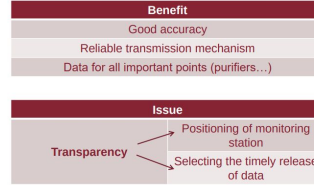
- Design of a *Smart Contract* for storing collected data

### Tax and trading scheme, on blockchain

- Design of a *Smart Contract* for enabling a virtuous market

# Wastewater management project - data collection

## Central Government & Purifier Companies Data Collection



Active citizens



+

Low-Cost Devices



+

Do-It-Yourself Electronics



Benefit
Low Cost
Everybody can realize a prototype
Easy-to-realize
Transparency

Issue
Lower accuracy
Scarce energy resource
Firmware integrity
No data certainty for critical points

# Prototype

## Do-It-Yourself Prototypes

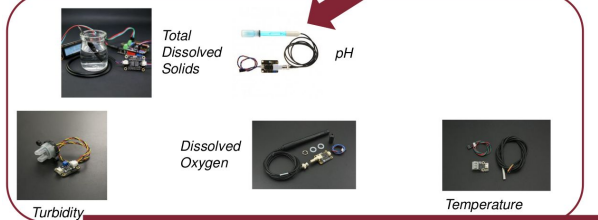
### Boards



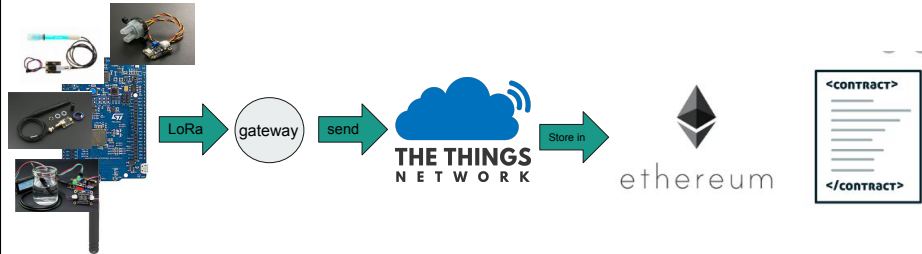
Arduino

STMicroelectronics

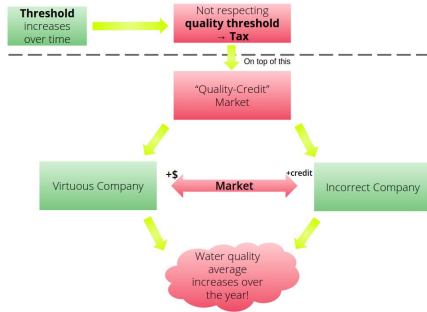
### Sensors



# Wastewater management project - data transmission and storage



## Wastewater management project - tax and trading system for purifier companies (1/2)



## Wastewater management project - tax and trading system for purifier companies (2/2)

Company 1						
	Measurements	4.5	5.5	8.5	7.8	9.0
	Percentage	80%	60%	40%	20%	10%
	Threshold	4.0	4.5	6.5	8.0	9.0
		0.5 \$	0.7 \$	0.5 \$	0.2 \$	
Company 2						
	Measurements	3.5	3.8	6.0	8.5	9.0
	Percentage	80%	60%	40%	20%	10%
	Threshold	4.0	4.5	6.5	8.0	9.0

Note that 80% is calculated like  $4.0 \times 0.8 = 3.2$  and that  $0.5 < 3.2$ , for the first year and so on...

## Fishcoin

- Fishing/Aquaculture project
- It wants to reduce pollution due to fishing/aquaculture and provide transparency to the supply chain of this industry.
- Purpose: more data, more fish value.
- Tokeneconomy on fishing data

## Fishcoin

Collecting data and selling this data in the whole supply chain

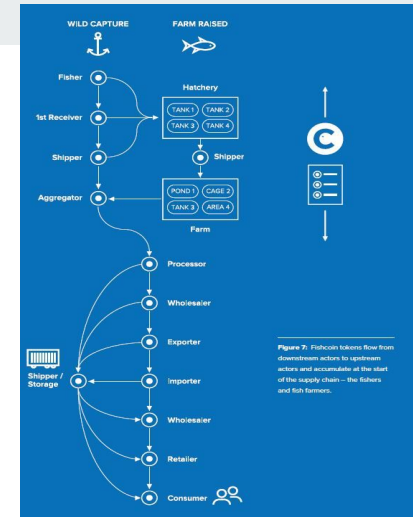
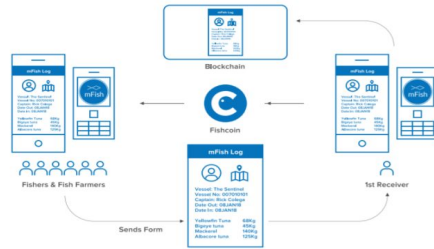
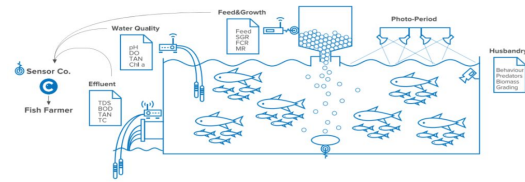


Figure 7: Fishcoin tokens flow from downstream actors to upstream actors and accordingly at the start of the supply chain - the fishers and fish farmers.

## Fishcoin



## iQShrimp

Aquaculture project to monitor the breed of shrimps and optimize the resources with the help of IoT, data visualization and machine learning.



## Openichnos

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GPS Tracking

IoT Monitoring

