



WRIO Internet OS

A web 3.0 IoT platform

wr.io

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MISSION

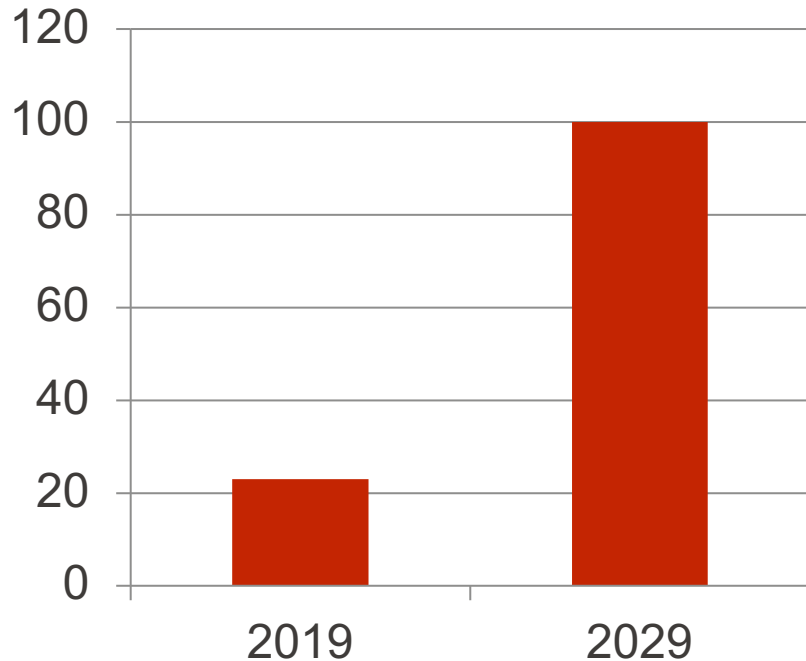
Develop an open-source, decentralized and secure Facebook for smart devices and sensors

A WEB 3.0 IOT PLATFORM

Demand



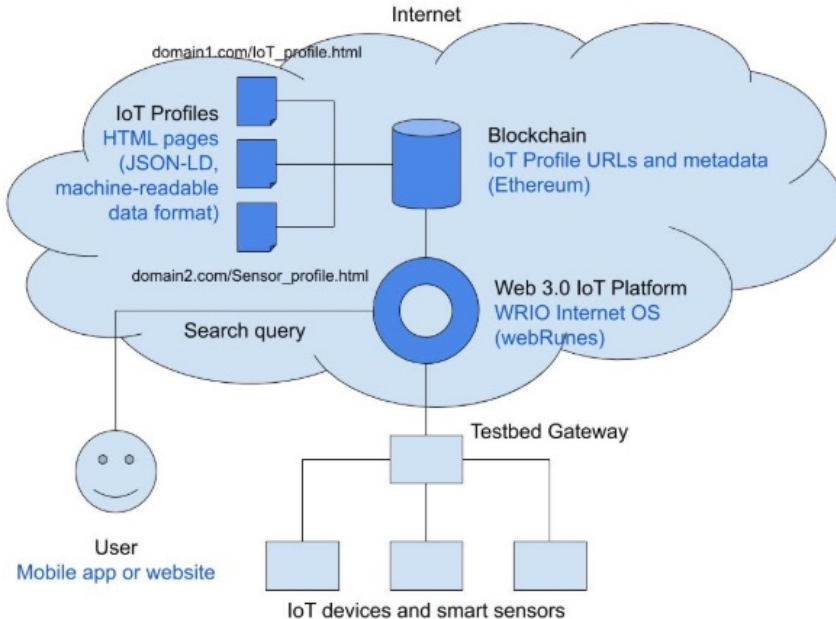
of connected devices



There are 23 billion connected devices in the world; this number doubles every 36 months and will exceed 100 billion in the next decade.

All these autonomous sensors require secure auto management and tracking.

Concept and objectives



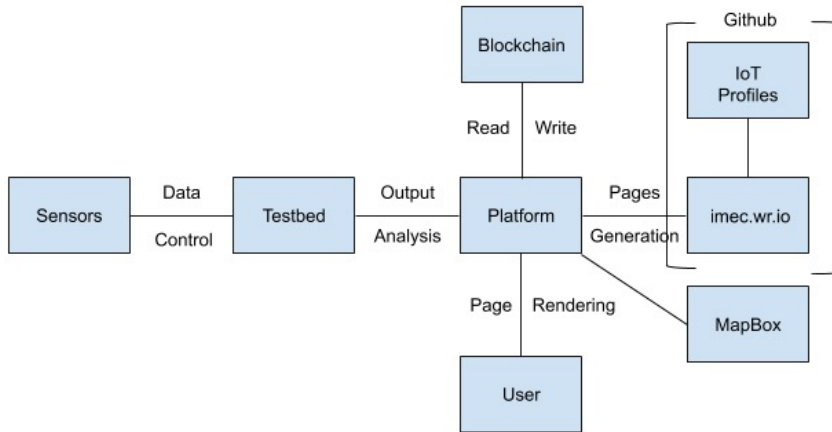
The project objective is to store full details of registered IoT devices, tracking and logging data transferred by them.

Background and motivation



- Verify technological assumptions and selected solutions
- A step-by-step running of the entire cycle: from connecting to sensors to processing, storing and visualizing acquired data
- Choose a proper tech to assemble Demo Kits
- The minimal, yet valid product for demo to pilot clients

Experiment set-up



- Access to the Testbed
- Reservation
- Tools installation
- Getting static & dynamic data
- Storing data on AWS and GitHub
- Writing metadata into blockchain
- Management on-the-fly
- Live reprogramming
- Report and demo

Results



The screenshot displays a web dashboard for IoT devices. At the top, there are navigation tabs for 'HOME', 'DASHBOARD', 'DEVICE PROFILE', and 'FEED'. A yellow banner at the top left states: 'Dashboard is under development and the functionality is limited. Premium features are available to Alpha testers only.' Below this, there are sections for 'FOLLOWERS' (showing 8+2) and 'ANALYTICS' (Total devices: 17). A table lists devices with columns for ID, Node name, State, Access, and Last seen. The device '22131 Zolertia Re-Mote' is highlighted. Below the table is a map showing the device's location with a pop-up displaying its temperature (28.095 °C), latitude (3.72898), and longitude (51.049357). To the right, a 'Product details' section provides information about the device, including its ID, name, description, brand, manufacturer, production date, purchase date, release date, height, weight, and width. A physical image of the Zolertia Re-Mote device is shown in the center. A yellow circle highlights the 'Last Readings' button in the table, with an arrow pointing to a 'Last Readings' pop-up showing the temperature. Another yellow circle highlights the 'Radio parameters' section in the product details, with an arrow pointing to a 'Radio parameters' pop-up showing various radio settings.

ID	Node name	State	Access	Last seen	Sensors	Battery
ae33...	HP206C	🟡	Read	2020-01-20T:08:00:22		
2cc6...	SHT21	🟡	Read	2020-01-20T:08:00:22		
22131	Zolertia Re-Mote	🟢	Read	2020-03-21T:08:00:07	Temperature: 28.095 °C	100% 3.304 V

Showing 1 to 4 of 4 entries

Product details
Product ID: 22131
Name: Zolertia Re-Mote
Description: Zolertia Re-Mote
Brand: Zolertia
Manufacturer: <https://zolertia.io/>
Production Date: Unknown
Purchase Date: Unknown
Release Date: Unknown
Height: 57mm
Weight: Unknown
Width: 35mm

Radio parameters
Blockchain address
Owner: T11
Registrar: 0
Last updated: -1
URL: <http://c.wri.io/43981/22131/>
TXLevel: 3
Channel: 26
Network ID: 22131
Node uID: 22131
RSSI, dBm: -104
LQI: 22131
RX Mode: 3

- Improved and optimized the structure of pages
- Blockchain record and data retrieving from it
- Decentralized database
- Improved demo <https://imec.wr.io/#dashboard>
- Ready to participate in accelerators

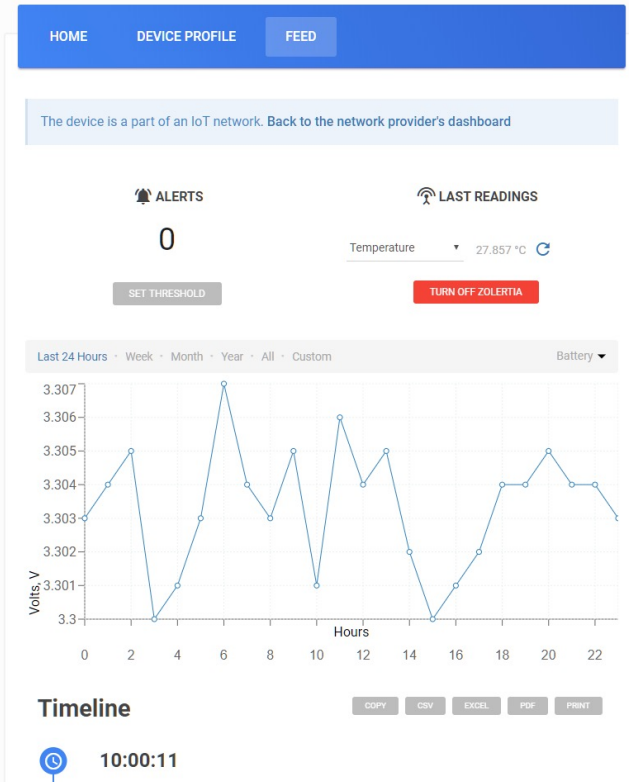
Lessons learned



The experiment confirmed that there are no technical constraints for using various sensors with any types of datasets.

Based on the experiment results we decided to develop Demo Kits using Zolertia sensors as a proven and convenient tool.

Output: No restrictions for further usage, development and dissemination of the achieved results.



Business impact

THE EXPERIMENT ALLOWED US:

- To identify problems that could result in excessive system maintenance costs in the future
- To create a solution with the next level of TRL and obtain new options for finding grants and investors
- To develop the Demo to find pilot clients

Business impact

HOW DID FED4FIRE HELPED

- Gained actual knowledge of IoT WRIO Platform limitations
- Verified the existing technical structure and determined the vector of future development of the Platform
- Gained additional practice and knowledge on working with new types of sensors and nodes
- Identified issues that will have to be solved when developing our own IoT gate solution (Demo Kits)

Business impact

VALUE

- Received scalable solution that can be extrapolated to different business cases
- Gained new ideas for connecting devices with the Platform

IoT WRIO Platform is a game-changing solution applicable to a wide range of other scenarios, products and industries.

Business impact

WHY DID WE COME TO FED4FIRE

- To manage the risk of selecting a wrong technical implementation
- As a result – we avoided possible negative effect on the financial sustainability of the project
- Advanced chances during negotiations with pilot clients and investors

Feedback

USED RESOURCES

w-iLab.t (imec)

Zolertia Re-Mote sensors:

- x1 temperature + battery data

Sensor nodes:

- x1 RM090

Note: due to patron's supplier issue we were unable to prepare a report containing more diverse data. Nevertheless, it had no effect on the running of the experiment.

Feedback

USED TOOLS

w-iLab.t (imec)

- JFed
- JFed command Line (CLI)

Feedback

WHAT WE WOULD LIKE TO SEE NEXT TIME

- Web API, to get access to shared resources like sensors
- Different types of sensors
- Qualified expert opinion and feedback concerning results
- Contacts of potential partners, accelerators and clients

Feedback

ADDED VALUE OF FED4FIRE

- Support and documentation
- Easy setup of experiments
- Diversity of available testbeds and resources
- Tools offered
- Combining infrastructures



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WWW.FED4FIRE.EU