



WRIO Internet OS

A web 3.0 IoT platform

wr.io

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MISSION

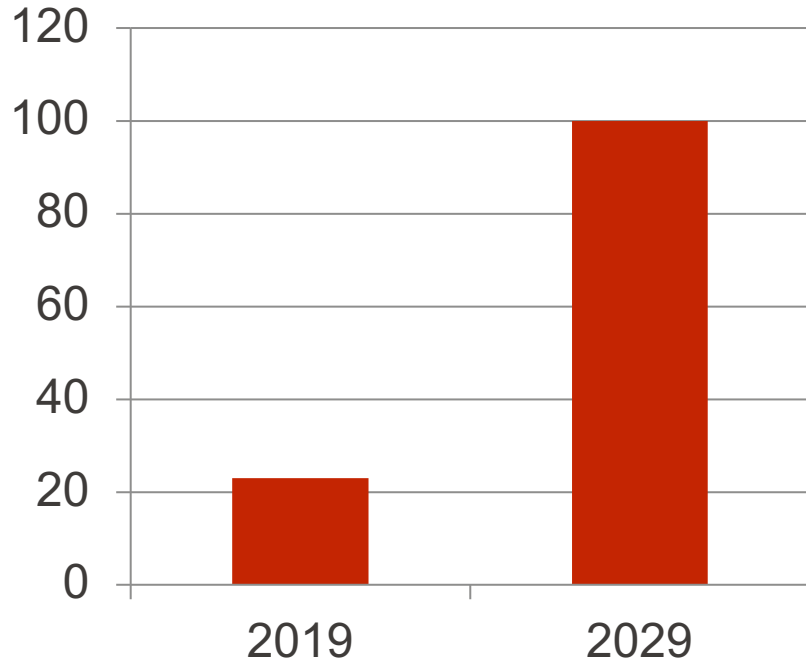
Develop an open-source, decentralized and secure Facebook for smart devices and sensors

A WEB 3.0 IOT PLATFORM

Demand



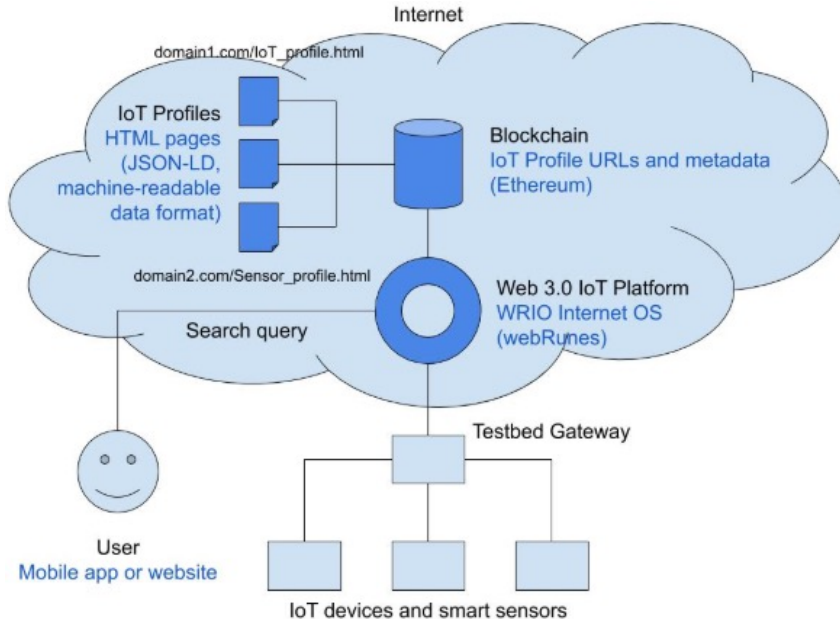
of connected devices



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



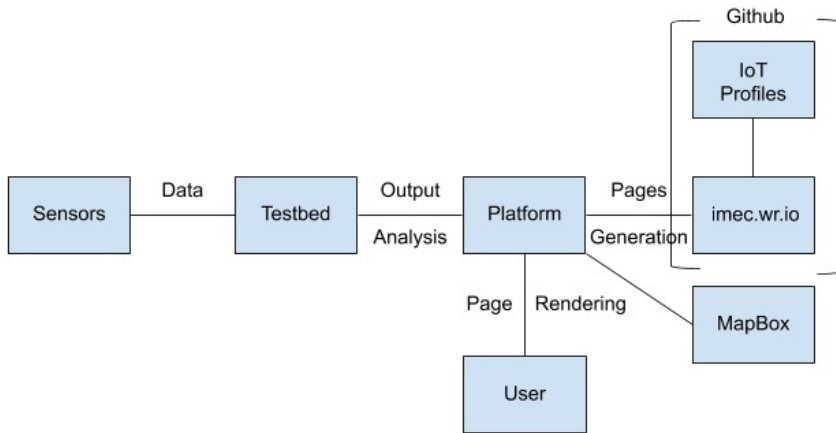
The project objective is to store full details of registered IoT devices, tracking and logging data transferred by them.

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 visualising acquired data
- The minimal, yet valid Proof of Concept

Experiment set-up



- Access to the Testbed
- Reservation
- Tools installation
- Getting static & dynamic data
- Analysis of received data
- Creation of first profiles
- On-the-fly page rendering
- Report and demo

Results



The screenshot displays the FED4FIRE dashboard with the following sections:

- Navigation:** HOME, DASHBOARD, DEVICE PROFILE, FEED
- Alerts:** 0 alerts, with a 'SET THRESHOLD' button.
- Last Readings:** The device is offline, with a 'REFRESH' button.
- Analytics:** Total devices: 17, with a 'DETAILS' button.
- Followers:** 8+2, with a 'FOLLOW' button.
- Device List:** A table with columns for ID, Name, State, Access, Last seen, Last readings, and Battery.
- Graphs:** A line graph showing battery percentage over 24 hours, and a 'Timeline' section for a specific device.
- Map:** A map of Ghent, Belgium, with a location pin.

ID	Name	State	Access	Last seen	Last readings	Battery
cd2a...	BMP180	🟢	Read	2019-08-1T:02:00:00	24.5 °C	20.2 %
ae33...	HP206C	🟢	Read	2019-07-1T:06:40:00	37.0 °C	42.1 %
2cc6...	SHT21	🟢	Read	2019-07-1T:05:30:00	24.46 °C	20.9 %
7648...	Zolertia Re-Mote	🟢	Read	2019-07-11T:05:30:00	31.4 °C	20.9 %

Battery Level Graph Data (Approximate):

Hours	Percentage %
0	20.8
2	20.8
4	20.8
6	20.8
8	20.8
10	20.8
12	20.8
14	20.8
16	20.8
18	20.8
20	20.8
22	20.8

Timeline Data (Approximate):


Time	State	Temperature	Pressure	Battery
00:00:00	Enabled	24.3 °C	1019.3 hPa	20.8

- Testing
- Page rendering
- Decentralized Database
- Demo
- <https://imec.wr.io/#dashboard>
- Checking

Lessons learned

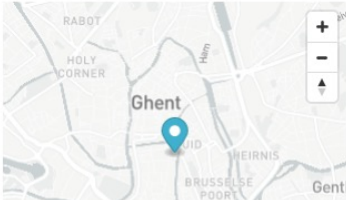
HOME DEVICE PROFILE FEED

The device is a part of an IoT network. [Back to the network provider's dashboard](#)



Product details

Product ID: cd2a403b-0562-4e62-99b1-e9801b1f7a41
Name: BMP180
Description: It is a high-precision, low-power barometric pressure sensor.
Brand: Bosch Sensortec
Manufacturer: <https://bosch-sensortec.com>
Production Date: Unknown
Purchase Date: Unknown
Release Date: Unknown
Height: 3.6 mm
Weight: Unknown
Width: 3.8 mm



Location

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Miriam Makebaplein 1
9000 Ghent
Belgium

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

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

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
- x1 humidity

Sensor nodes:

- x2 RM090

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 resources
- Tools offered
- Combining infrastructures



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WWW.FED4FIRE.EU