



RatioWaste is a solution that was created by combining the **Waste24.net** waste disposal software with the SKEY blockchain and **THR System** sensors. The effect that was achieved in this way allows you to:

- Monitoring the level of filling containers with the use of smart contract SKEY,
- Creating automatic orders for waste collection after reaching the set limit of filling the containers,
- Monitoring of other parameters such as: temperature, humidity in the container, opening of the flap or liquid level,
- Opening doors to rooms, gates and barriers.



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The Ratio Waste consists of:

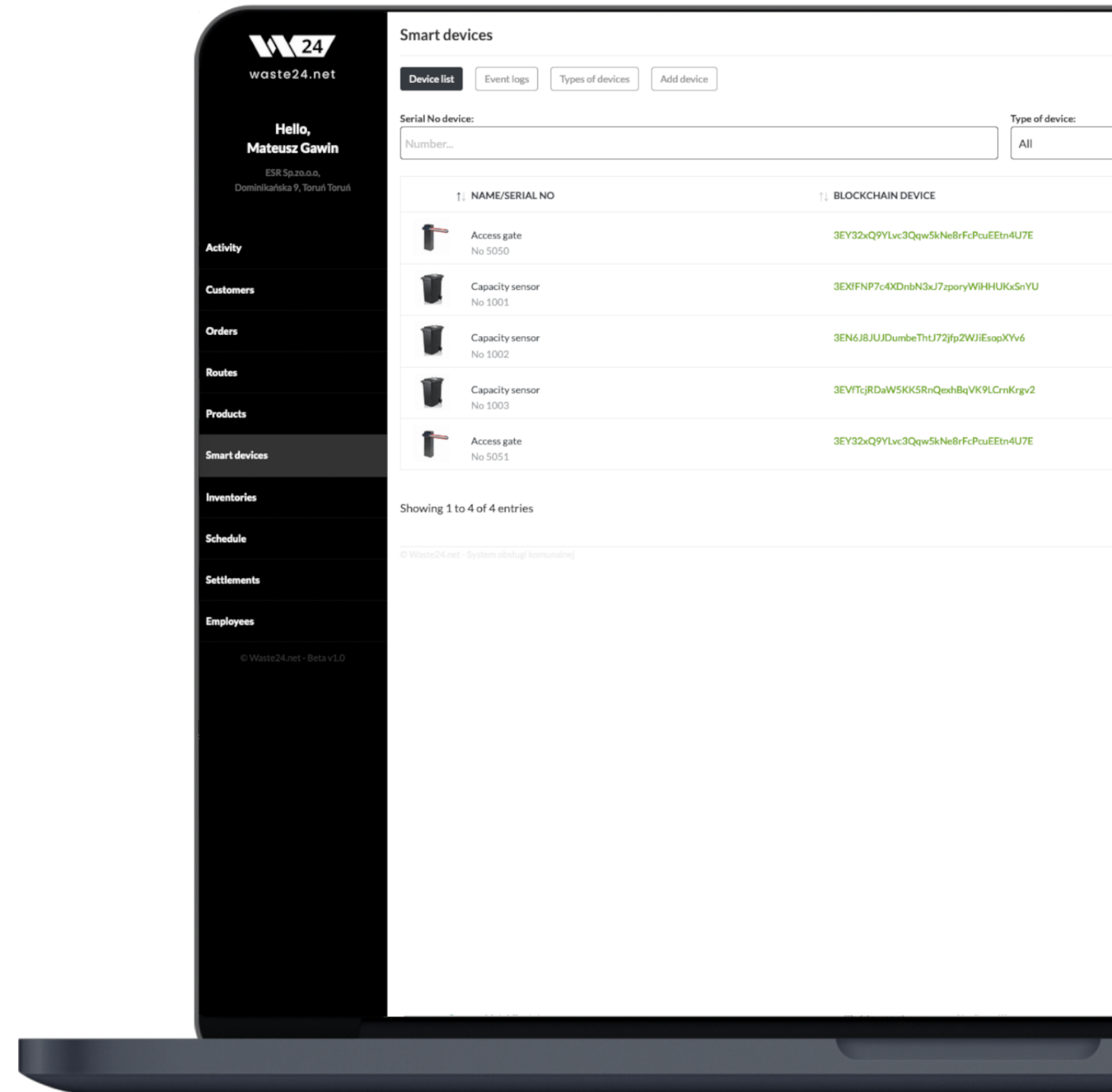
- Software in the SaaS model for waste disposal integrated with the SKEY blockchain
- The "Driver" mobile application integrated with the Skey blockchain for Android and IOS
- The "Digital key" mobile application integrated with the SKEY blockchain for Android and IOS
- Sensors, the type of which depends on the intended use



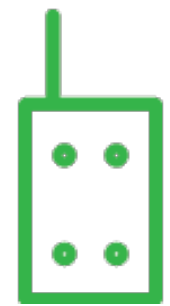
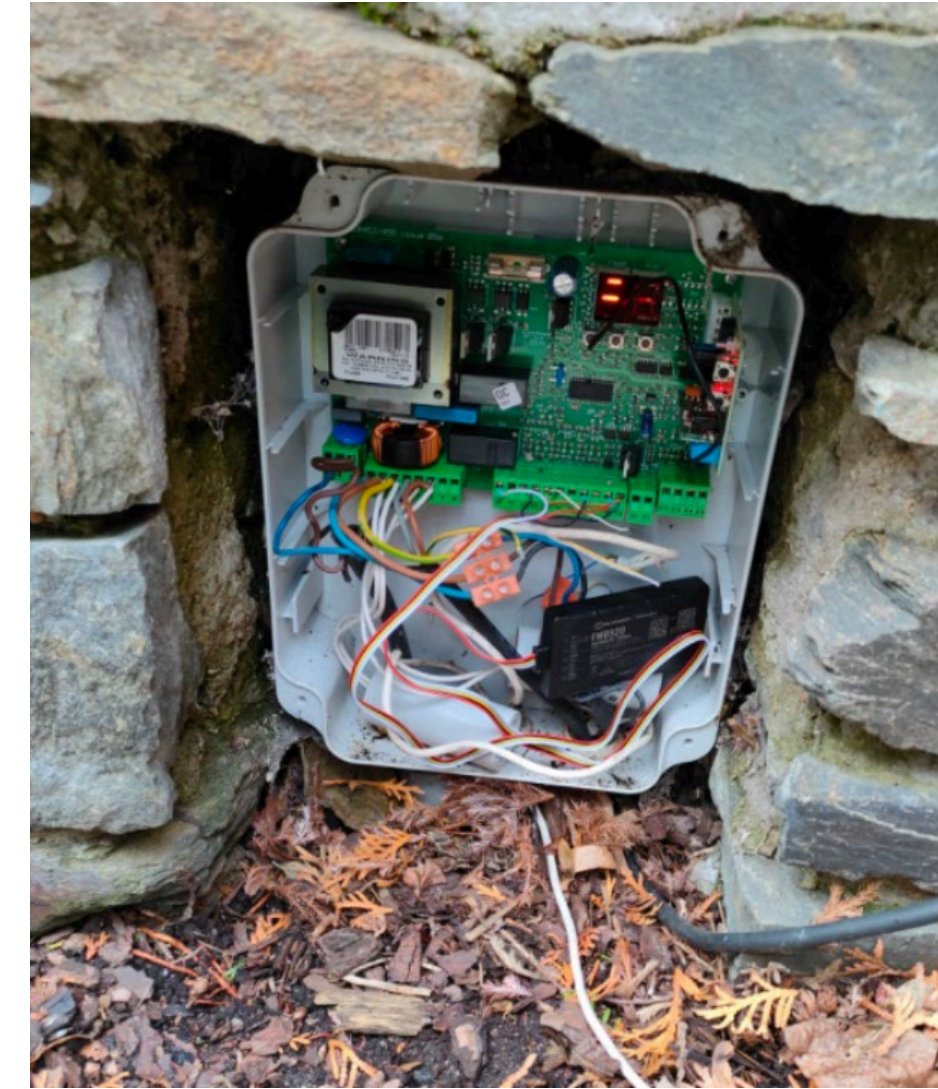
Waste24.net software is a fully functioning system for managing a municipal company used by customers all over Poland.

In combination with the SKEY blockchain and sensors, it creates a number of new opportunities that will interest new recipients.

After the integration, the target group of customers will also be cities implementing **Smart City** and IoT solutions, as well as companies that want to more fully supervise waste management.



At **RatioWaste**, we use ultrasonic sensors that communicate using NB-IoT, CAT-M and LoraWan technologies, which **connect with SKEY blockchain** technology. Additionally, it measures temperature, humidity and has an accelerometer. The sensor is equipped with a casing with an IP67 protection. The casing is designed for easy installation. The device does not require an external power supply.



Digital keys

Our system allows drivers to avoid problems entering the property. With the help of the mobile application, the driver can open gates and barriers thanks to the blockchain keys assigned to him.



Automation of exports

Intelligent sensors allow you to track the current level of filling containers with waste and, using Smart Contract in Blockchain, automatically create orders ordering their emptying



Blockchain technology



Thanks to the integration with the SKEY blockchain technology, we authorize the communication of our sensors with the Waste24.net system using smart contracts and manage the access control of employees' rights. This allows you to achieve such an effect as:

- Transparent view of the event log
- Automation of activities confirmed in the SKEY blockchain
- Safe communication between the system and Smart devices
- Reliable employee authorizations

Ratio Waste project is intensively promoted through the available media, such as:

- Blog of waste24.net
- Mobile application stores: Google Play and App Store
- Social media: LinkedIn, Facebook

Martyna Zastawna - one of the most influential women in 2021 according to Forbes, Sustainable Development Leader by Forbes Women, Zero Waste Pioneer.

LinkedIn



App Store



Forbes

Our team has already made the first steps towards implementing the Ratio Waste project. The following entities are interested in purchasing it:

City of Grudziądz
PoC date



May 2022

PUM Sp. z o.o.
PoC deadline



May 2022

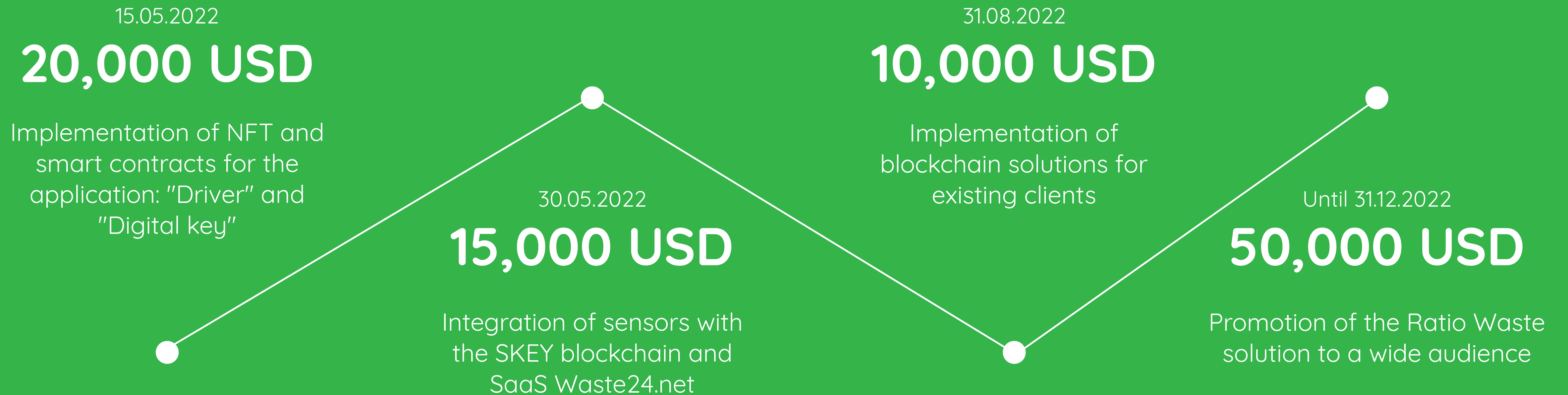
Government of Wales
PoC deadline



July 2022



The stages of work on completing the project have been divided into the following "milestones":



Key members of the RatioWaste team:



Łukasz Kamiński

Specialist in the waste industry, with almost 10 years of experience as a logistics manager. The creator of many optimization solutions, including those that allow to reduce the amount of waste generated and reduce the carbon footprint of the organization



Mateusz Gawin

Developer of mobile and web applications with over 10 years of experience and passionate about new technologies. Co-creator and developer of many applications known on the Polish and foreign market



Michał Ziółkowski

A graduate of the Master's Degree in Automation and Robotics at the Faculty of Electrical and Control Engineering at the Gdańsk University of Technology. Experienced in the design and manufacture of electrical switchboards. Team member in the research project For Remontowa Electrical Solutions: Mathematical modeling of generators and marine engines regulators. Main executive engineer of SCADA system for Building Management Systems purposes, in particular fire protection systems. Additional skills in the field of 3D modeling and additive manufacturing methods.



Emilian Piesik

Lecturer and PhD student at the Faculty of Electrical and Control Engineering at the Gdańsk University of Technology. A graduate of the Master's Degree in Automation and Robotics at the Faculty of Electrical and Control Engineering at the Gdańsk University of Technology. Co-author of 27 scientific publications on functional safety and cybersecurity. Associated with research on functional safety and cybersecurity, risk analysis, human reliability analysis in technical systems. Member of national and international research teams.