



# INTERNET OF THINGS BASED SMART FARMING

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## INTRODUCTION

The Smart Agriculture project, rooted in the realm of the Internet of Things (IoT), represents a groundbreaking initiative aimed at transforming traditional farming practices into a more efficient, sustainable, and data-driven model. This project is designed to elevate productivity, optimize resource utilization, and establish a resilient agricultural framework by leveraging IoT technology to monitor, analyze, and automate various agricultural processes.

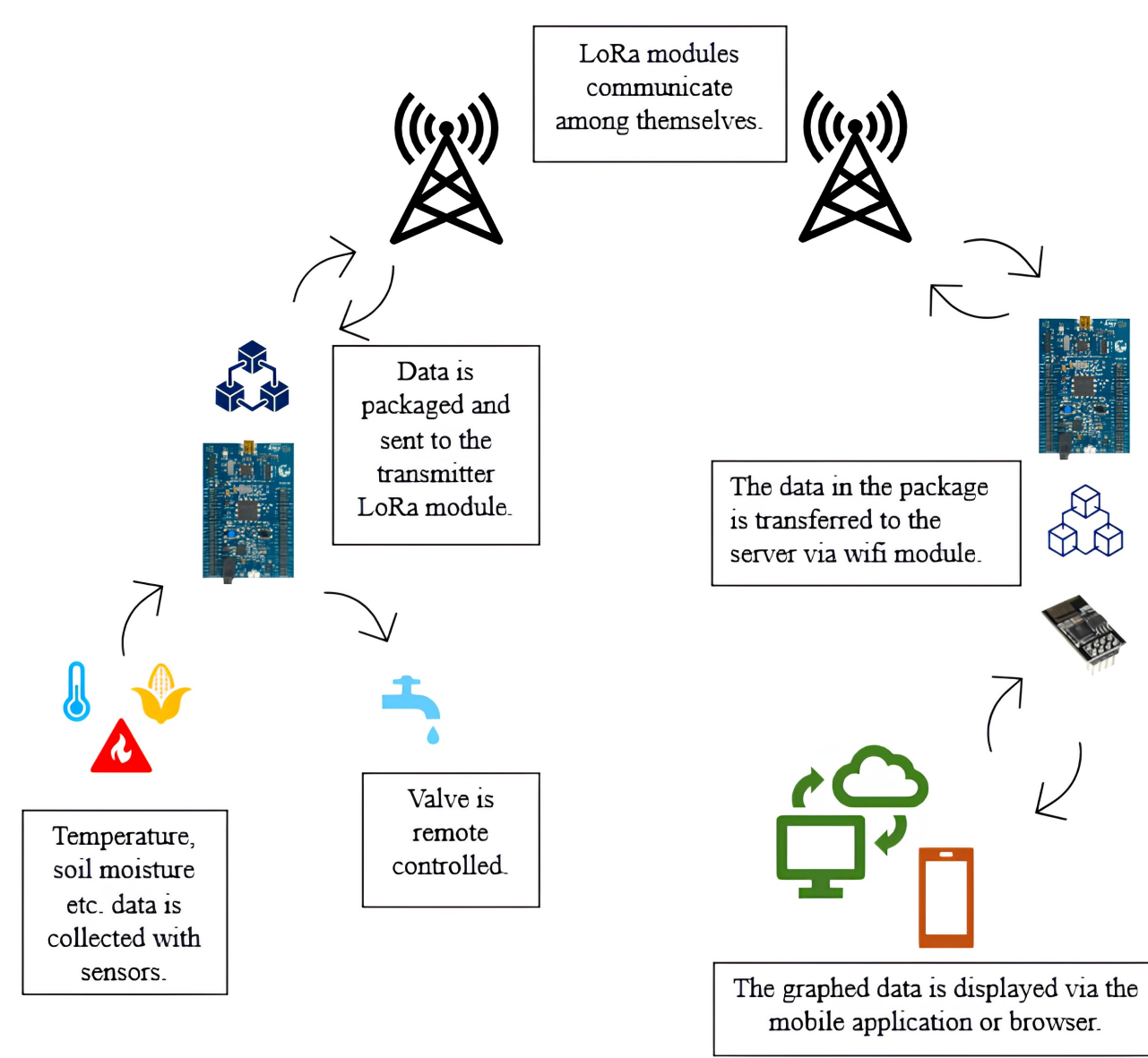


FIGURE 1

## METHODOLOGY

The newest technology used in IoT projects around the world is LoRa technology. LoRa is a type of wireless telecommunication wide area network designed to provide small-sized long-range communication between objects that consume low energy.

In this project, the data received from various sensors of the agricultural land located in an area without internet connection was processed by the microcontroller card and transferred to another environment with internet connection using LoRa technology.

The data reaching the LoRa receiver, where the internet connection is located, was arranged by another microcontroller card and collected on the server with the WiFi module. This data on the server can be viewed both via the internet browser and the mobile application.

## RESULTS

The graphs below show how the data on the server is graphed and displayed on the internet browser. (The last figure shows the values of the data before it is transferred to the server.)

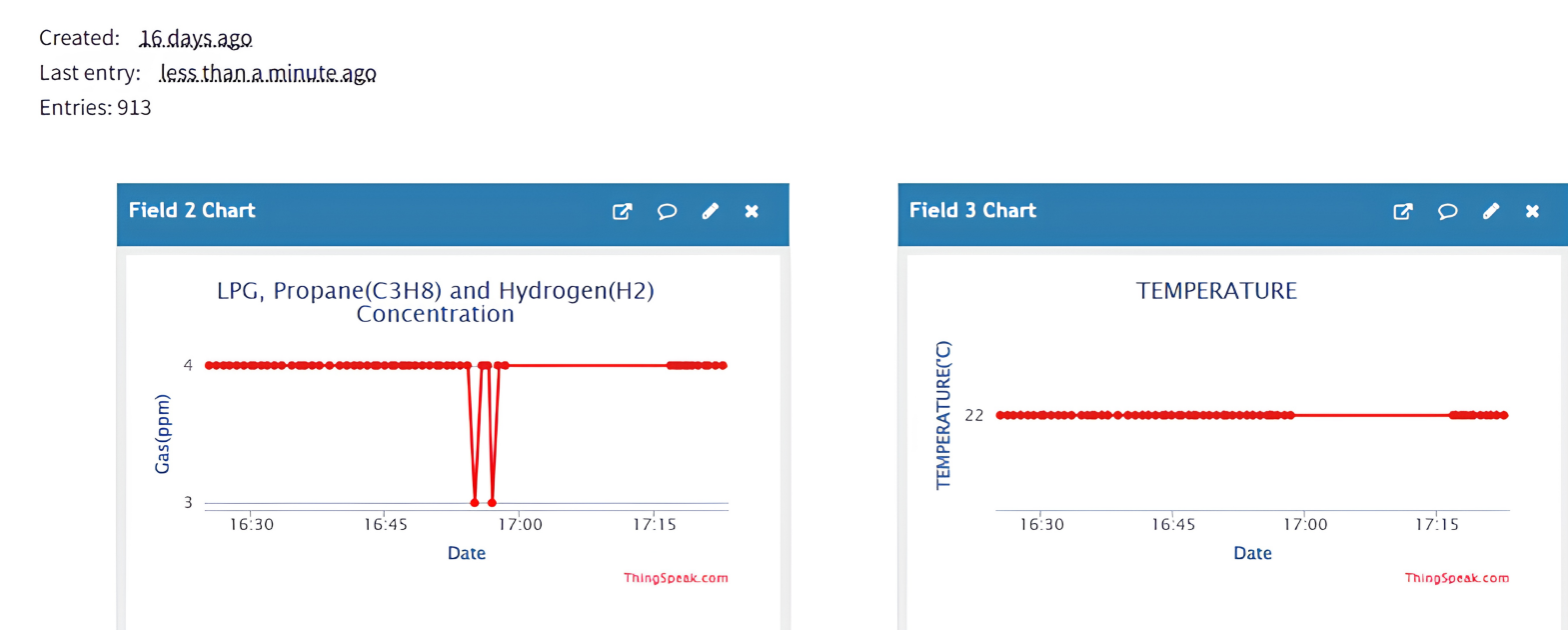


FIGURE 2

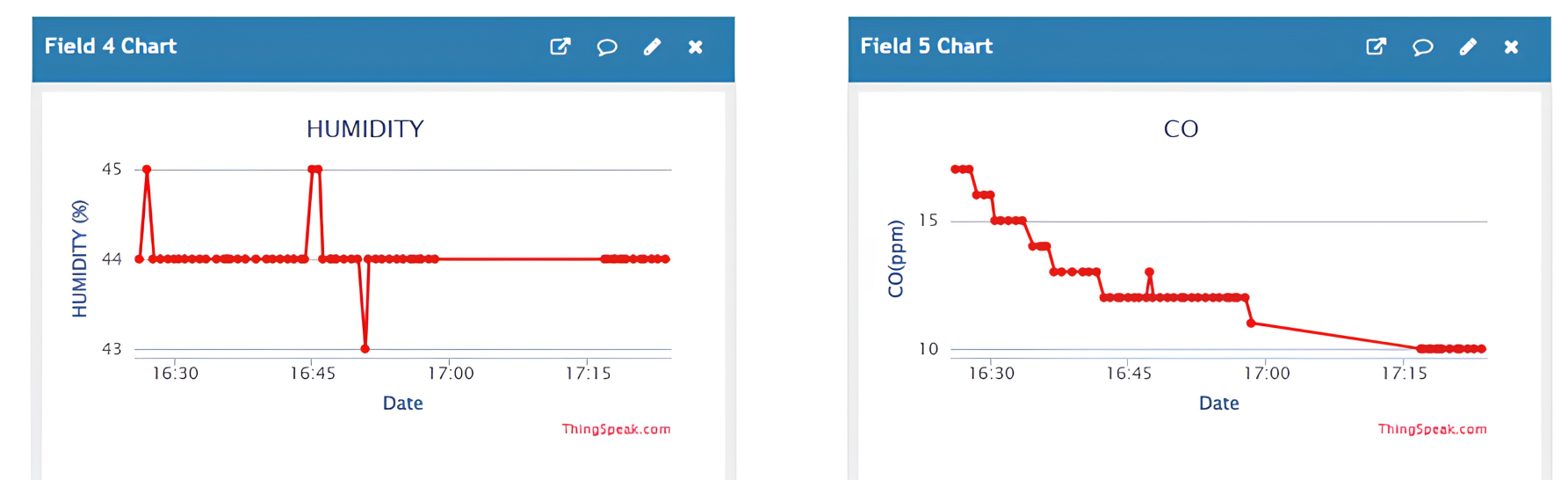


FIGURE 3

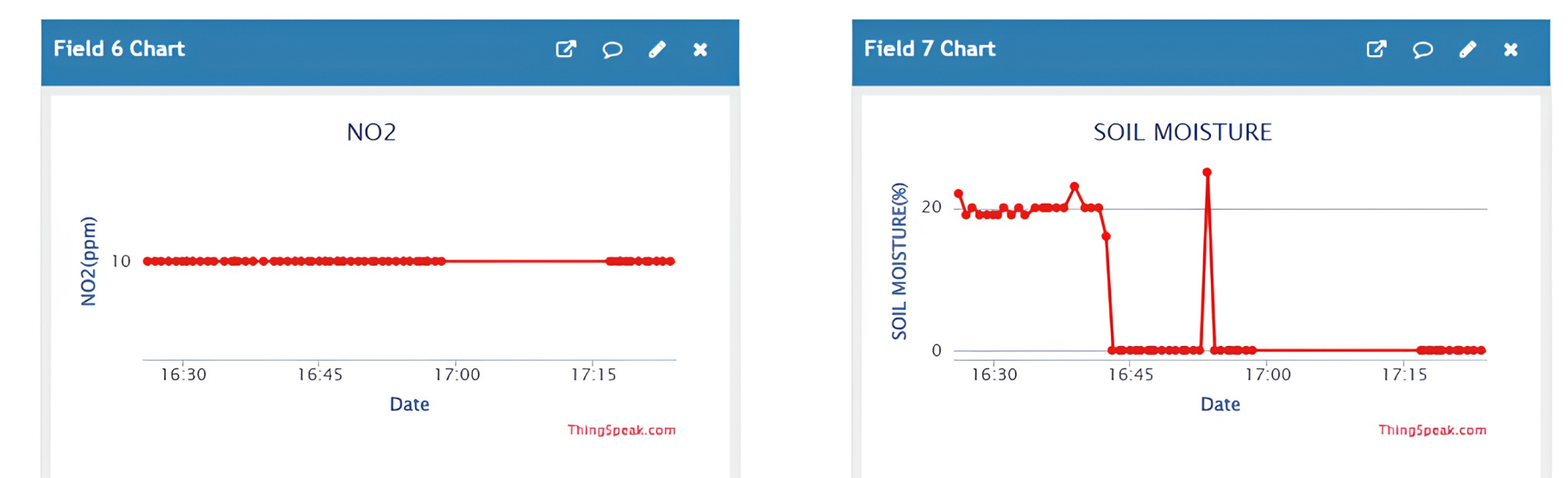


FIGURE 4

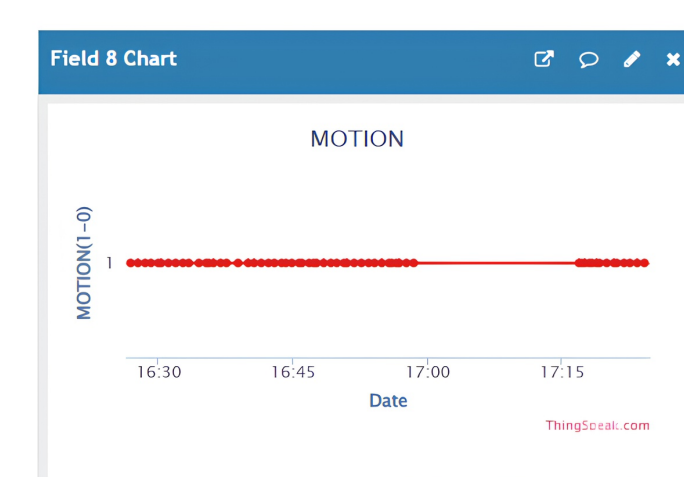


FIGURE 5

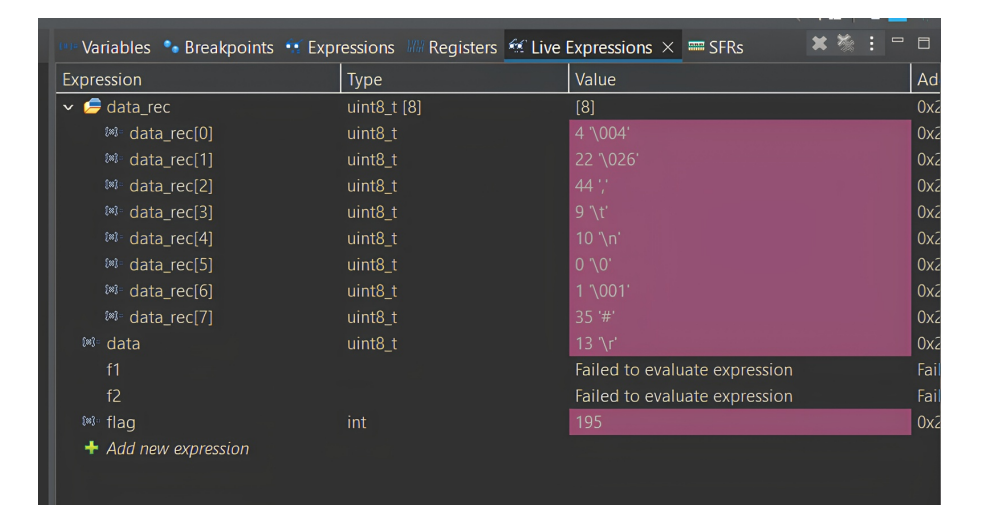


FIGURE 6

## CONCLUSION

As a result of the project, it was experienced how LoRa technology should be adapted to life and the advantages and disadvantages of this technology were observed. After the creation of the prototype, high-quality resources were created on hardware and software of which there are few examples and knowledge in the world. It is also anticipated that after the project is integrated into life, data that can be used in different areas of technology will be obtained. Finally, we would like to thank our advisor Dr. Barış YÜKSEKKAYA, who guided us throughout the year in the project.