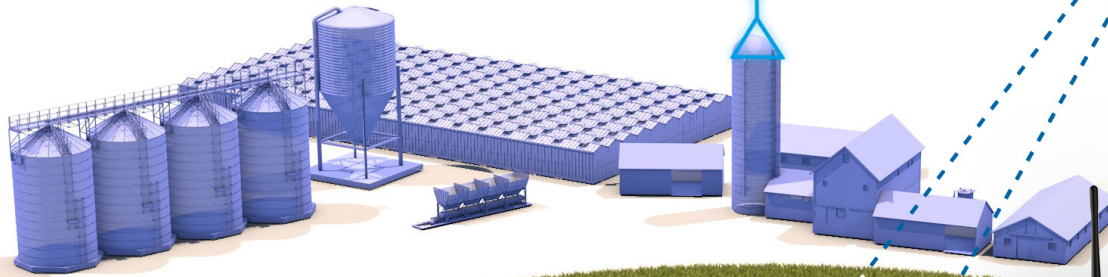


SQ OUT
N800
HOTSPOT



TEMPERATURE
AND MOISTURE
SENSOR

LIGHT SENSOR

SUBMERSIBLE
WATER LEVEL
SENSOR

SQ CONTROLLER
SIGNAL A

SF SMART AGRICULTURE

Smart farming, precision agriculture for a more sustainable world by SF SYSTEM

SOIL MOISTURE,
TEMPERATURE AND
ELECTRICAL
CONDUCTIVITY
SENSOR

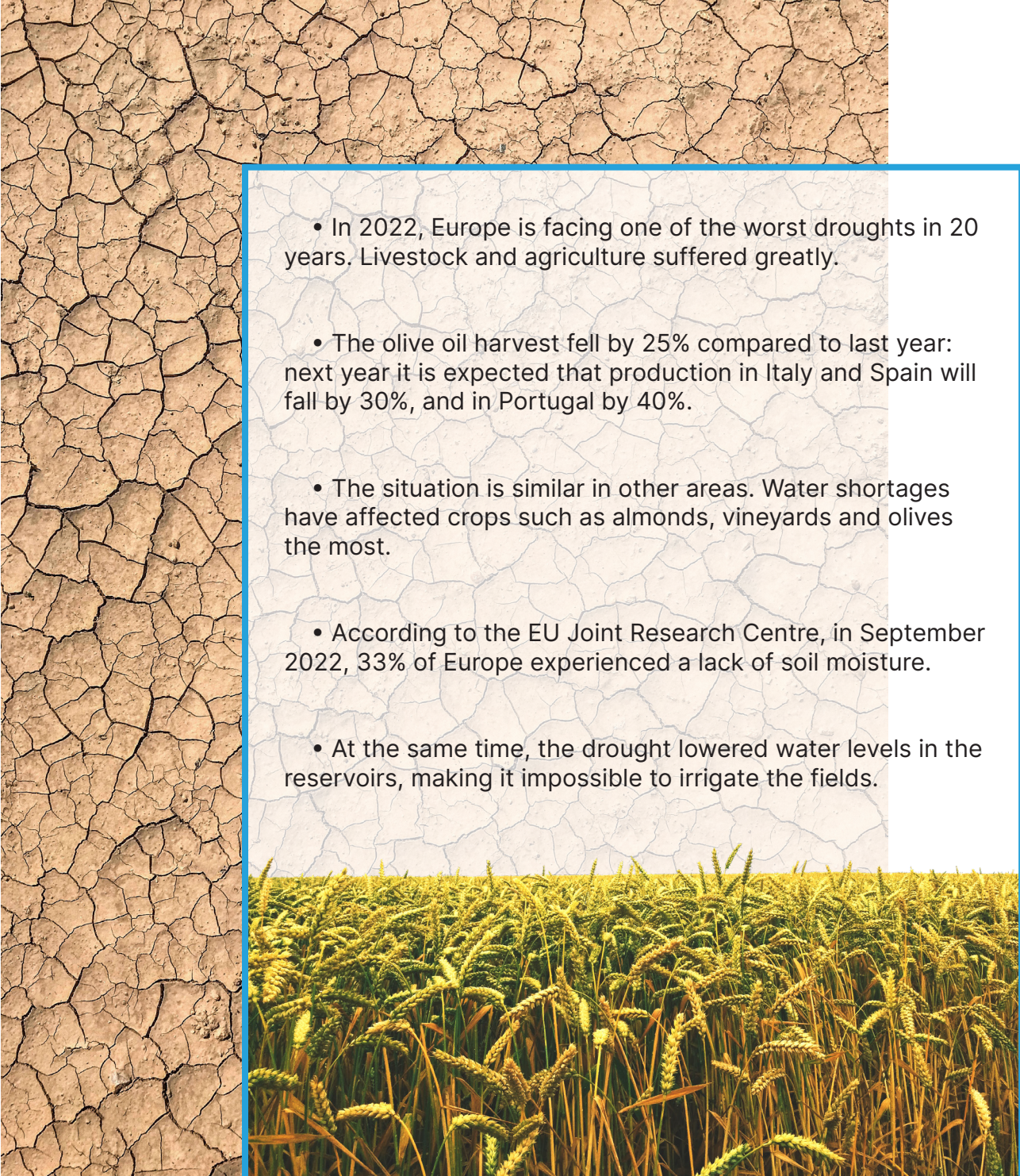


SQ TRACKER
TRANSPORT



SF SYSTEM



- 
- In 2022, Europe is facing one of the worst droughts in 20 years. Livestock and agriculture suffered greatly.
 - The olive oil harvest fell by 25% compared to last year: next year it is expected that production in Italy and Spain will fall by 30%, and in Portugal by 40%.
 - The situation is similar in other areas. Water shortages have affected crops such as almonds, vineyards and olives the most.
 - According to the EU Joint Research Centre, in September 2022, 33% of Europe experienced a lack of soil moisture.
 - At the same time, the drought lowered water levels in the reservoirs, making it impossible to irrigate the fields.

With our system, you can make your farm less dependent on natural disasters, more predictable and more profitable.

SF SMART AGRICULTURE
will let you manage all aspects
of your farming!

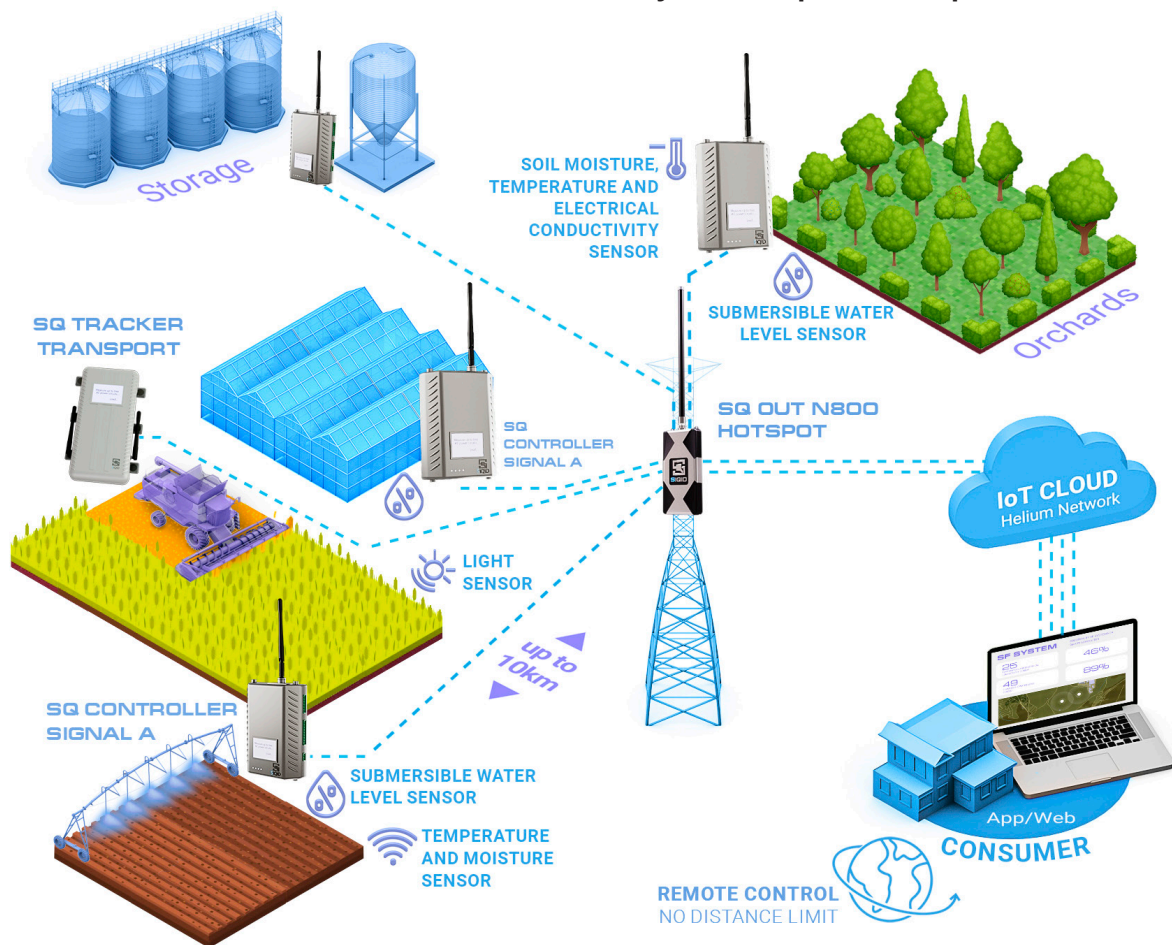
Are you tired of investing in “air” and losing crops? - Control every centimeter of your farm so that your decisions are timely and your spending is reasonable!

The future is already here: modern technologies increase the quality and quantity of crops, reduce costs and optimize the use of human labor.

How?

Smart farming technology from SF SYSTEM uses artificial intelligence, a system of sensors and trackers to manage your farm.

- **Precise watering** and accurate plant nutrition
- **Climate control** and greenhouse control
- **Sensors** for soil moisture, rain, light, air pollution, temperature
- **Location systems** - GPS, satellite, LoRaWAN®
- **Communication systems** - LoRaWAN®.
- **Software platforms**
- **Analytics and optimization platforms**



Sensors and machines are connected through the Internet of Things, forming a complex system. This allows you to control processes on your farms and make strategic decisions remotely - from your tablet, phone or another mobile device - without being in an open field, in your greenhouse, garden, vineyard, etc.

Thanks to our **SF SMART AGRICULTURE** solution, you get a smart system that will automatically inform you about the need for watering on your farm at a particular time, climate control, lighting, plant fertilization, crop maturity levels, etc. And if you have automated systems, such as automatic watering, etc., then our system will turn it on and off as needed. It will also monitor the harvesting and logistics route.

And it doesn't matter how far from the farm you are. You may even be on another continent - you'll receive information instantly.

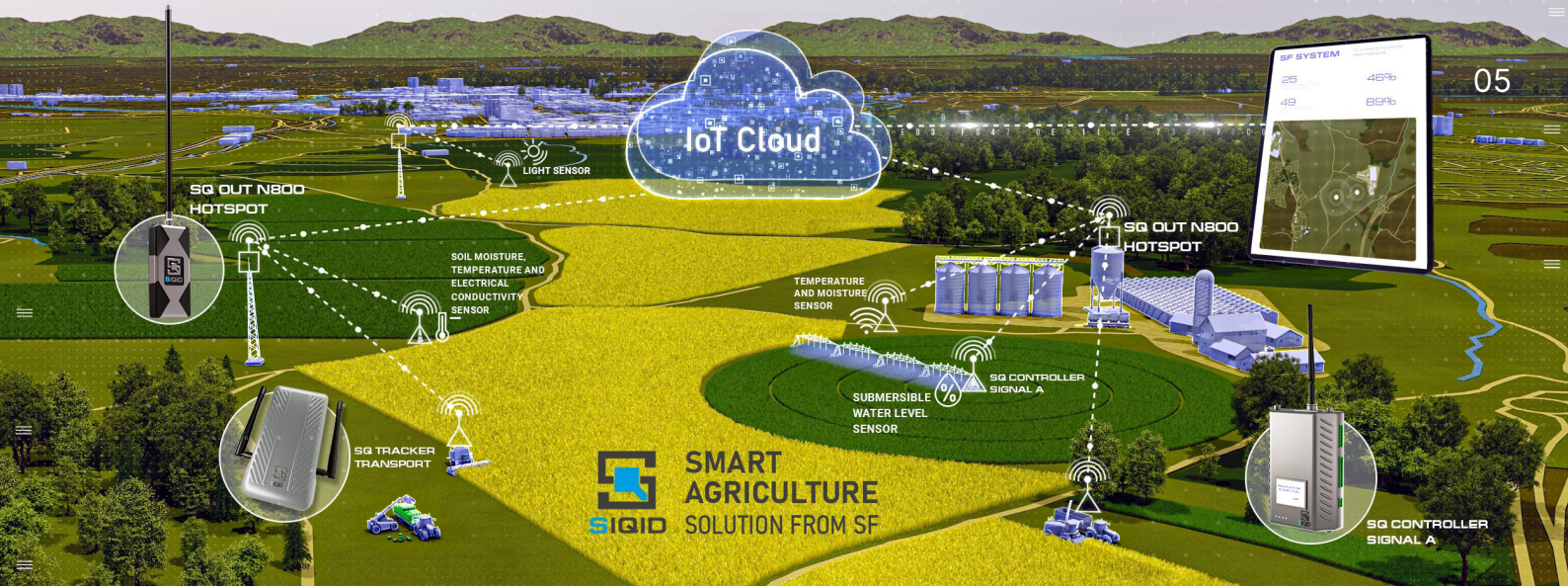
With SF SMART AGRICULTURE technology, you are changing the way you farm! Everything becomes more superficial, more transparent and more manageable:

1. **Data collection:** you know what is happening at any given moment, anywhere on your farm. Sensors installed at all critical points of the farm collect and transmit data on soil, air, lighting, etc.
2. **Asset tracking:** trackers installed on the equipment inform you about all the nuances of its work. Would you like to know how long has the combine been in the field and how often has it been refueled? To control the movement of every truck with your grain? Evaluate logistics, identify downtime? - It's all possible!
3. **Diagnostics:** a smart system will quickly determine if something is wrong. The system analyzes collected data, draws conclusions about the state of the monitored object or process, and identifies potential problems.
4. **Decision making:** automate this step or entrust it to a specialist. Based on issues identified, the software platform and/or the person managing the platform decides on the necessary actions (watering, ventilation, lighting, etc.). You can create your system operation algorithm, considering the specifics of your farm.
5. **Actions:** timely and precisely what is needed. The system sends a signal - and the actions defined in the previous step are performed. The sensors then take a new measurement of soil, air, moisture, etc., and the whole cycle starts again.

What do you get?

Process automation → High precision and 24/7 control → Resource saving: water, energy, fertilizer, staff time → Cost reduction and efficiency improvement

As a result: your farm works at full capacity in any climatic conditions, you do not lose money - but earn it!



SF SYSTEM LoRaWAN CERTIFIED

SQ OUT NB00 HOTSPOT

transmitting data on the coordinates of the location and the speed of movement, the time of stops.

IoT Cloud

SF SYSTEM
25
46%
49
69%

A device for transmitting data on the coordinates of the location and the speed of movement, the time of stops.

Transmits the received information through the LoRaWAN Helium Hotspot to the user's console

SQ TRACKER TRANSPORT

SF SYSTEM LoRaWAN

SQ OUT NB00 HOTSPOT

IoT Cloud

TEMPERATURE AND MOISTURE SENSOR

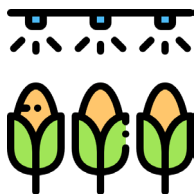
SQ CONTROLLER SIGNAL A

SUBMERSIBLE WATER LEVEL SENSOR

SF SYSTEM
35
56%
48%
12%

ON OFF

- low level of soil moisture
- when a signal about a low level of soil moisture appears, the irrigation system turns on
- automatic control of the state of the irrigation system and its position



So that every vegetable in your greenhouse gets the right amount of water, light and fertilizer



So that every animal in your barn is healthy, well-fed and washed



So that every berry in your gardens gets everything it needs to ripen

These technologies are working for you:

The Internet of Things

Makes it possible to optimize the monitoring of farms, mainly through smart sensors capable of measuring everything from solar radiation to leaf moisture and stem diameter, or the temperature of each animal in the case of livestock, making it easier to make all sorts of management decisions.

Big data

Managing massive amounts of data - information received from drones, the Internet of Things and other measuring devices. Farmers can integrate this data with both historical information for the farm and weather data to optimize all stages of the production process.

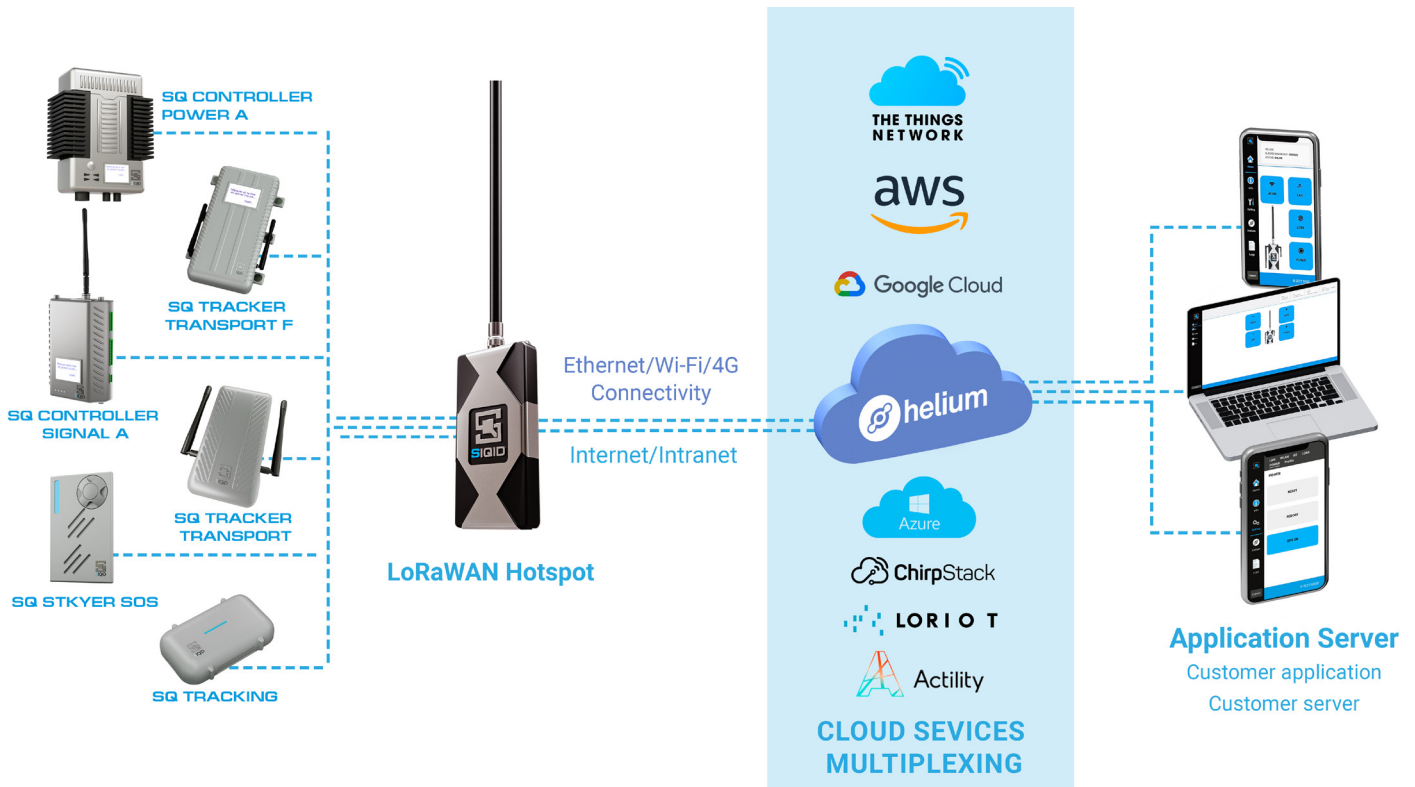
Blockchain

Blockchain allows you to protect the data collected from sensors from interference and distribute encrypted copies of the collected data to other network devices/ If someone tries to replace the collected data, it will be ignored by the majority of the network. If the attacker tries again, he will be blocked.

Artificial intelligence

In agriculture, artificial intelligence and robotics are mainly used to interpret field images, apply fertilizers and pesticides with surgical precision, or control weeds.

SF SYSTEM produces ready-to-use IoT devices that use the decentralized LoRaWAN® network, the fastest-growing public network.



Our solutions are:

- autonomous - use energy-efficient LoRa® technology instead of Wi-Fi®, thereby increasing the range and reducing battery consumption
- reliable – devices operate at temperatures from -40°C to +85°C and are resistant to harsh environmental conditions
- suitable for mining - by deploying the device for your purposes, you can simultaneously earn a new cryptocurrency - HNT
- configured individually for your needs - connect a variety of sensors and readers from different manufacturers
- easily scalable - you can install an unlimited number of sensors and hotspots, covering any area. In addition, no wires are required for installation.

You come to us with a problem - we create a solution. And this solution will work for you the way your farm needs to maximize profit and reduce costs. It's all simple!

SF SMART AGRICULTURE is a system that minimizes randomness and gives you complete and precise control.

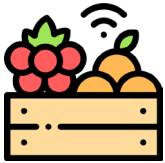
Precision farming makes agriculture more connected and intelligent



- **Increasing production:** Optimizing processes in agriculture and livestock increases productivity. With smart devices, multiple functions can be activated simultaneously, and automated services improve the quality and volume of products through better control of production processes.



- **Save water:** Coordination with the weather forecast and soil moisture sensors allows you to start watering only when needed and just as much as you need.



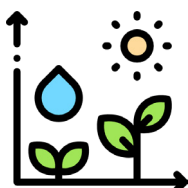
- **Better quality:** analysis of the quality of the resulting products concerning the applied strategies allows adjustments to be made to improve the quality of subsequent products.



- **Cost reduction:** Automating sowing, processing, and harvesting in the case of agriculture reduces the use of resources.



- **Increased sustainability:** conserving resources such as irrigation water and getting the most out of the land reduces environmental impact.



**Using SF SMART AGRICULTURE
for farming brings:**

85%
up to 85% water savings

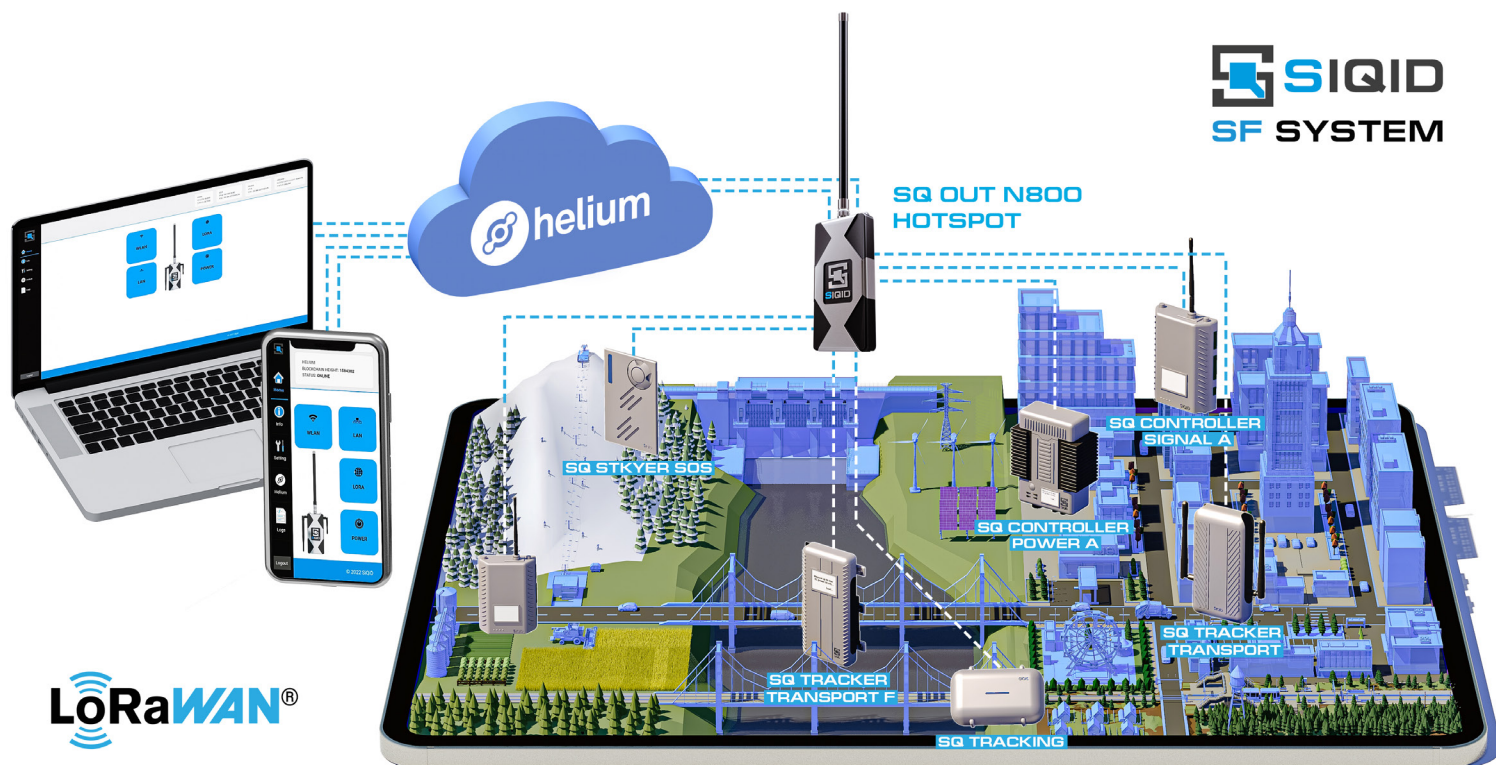
up to 50% energy savings
50%

40%
up to 40% yield increase while reducing
fertilizer and chemical treatment costs

60% reduction in losses
caused by the human factor
60%

SF SYSTEM

SF SYSTEM is a software development company with 15 years of experience. We are based in the Zona Franca Industrial da Madeira and operate around the world providing state-of-the-art technological solutions for a wide range of industries: helping farmers improve crop yields, building systems for smart cities, working in the energy sector, offering solutions for the recreational industry, and also develop individual systems based on the capabilities of the Internet of Things.



Our company started with the development of optical-electronic products for the military industry - and in this direction we have achieved significant success, becoming one of the world leaders. Now we have used our experience to create smart systems.

We are located in Portugal: solutions are born here, all SF SYSTEM equipment is designed and manufactured, and the software is developed. We are close to you - and always ready for a personal meeting!

Applying our advanced technologies to control and manage elements of farmland will allow you to support yourself with abundance, help those in need, and influence the reduction of global hunger.

We bring innovation to Portuguese businesses, from small private companies to public corporations. We will form a system for you from our ready-made elements or develop a unique solution for your needs.

**Do you want to transform your business into a digital environment?
SF SYSTEM will become a reliable guide for you on this path!**

**SF SYSTEM**

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