Marinacloud and IoT Net Adria protect marinas and vessels from loss, damage and destruction with Sense4Boat, an IoT boat environment monitoring solution

The Challenge

Marinacloud is a Croatian IoT company specialising in the development of technology-based solutions to protect marinas and boats. The Marinacloud team are marina operators and boat owners themselves, so the group is proud to design solutions *for* boat owners *by* boat owners.

The Solution

Sense4Boat: an IoT-enabled boat environment monitoring solution connected to the Sigfox powered 0G Network, helps boat owners and marina operators prevent asset loss and destruction by remotely monitoring battery levels, temperature, smoke, and water levels to reduce the risks of fire, water damage, sinking, and battery destruction.

The Results

Marina operators and boat owners instant visibility to the risk of fire, sinking and water damage to vessels moored and berthed at marinas.

With the reliable, monitoring and real-time alert solution the risk of damage or destruction through fire, water damage and battery sulfation is significantly reduced and has prevented numerous incidents.

0G Network Operator

IoT Net Adria is the Sigfox 0G Network Operator in Croatia, and end-to-end IoT solution provider delivering local service with global scale. For details on IoT Net Adria's 0G Network and services, visit the company website.

Solution Partner

Marinacloud specialises in the development of nautical solutions and the digitisation of marinas and boats through IT solutions such as Sense4Boat. Visit the Sense4Boat website to see their full list of services.

Customer

Located on the Croatian island of Krk, Marina Punat is the largest marina in the North Adriatic sea. A modern marina with residential amenities, Marina Punat offers full yacht and boating services. Visit their website for more information.

CG Case Study

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In 2012, the historic Marina Punat, the oldest Croatian marina on the island of Krk, was devastated by fire. The blaze started with an electrical malfunction on one vessel, which rapidly destroyed 20 other boats and parts of the marina. After recovering from the blaze, the Marina Punat operators were determined to find a solution to prevent fire jeopardising lives, damaging and destroying their infrastructure and the boats stored at their marina ever again.

> " The Marina Punat fire was our motivation to find a technology-based monitoring solution to protect boats and marinas. There are few official statistics on boat fires and sinkings in Europe. Based on our own experience and knowledge-sharing with industry experts, we know that quite a number of boats sink or burn to the water line at marinas each year. I knew that getting the correct information about a problem on time could prevent many incidents.
>
> Krešimir Žic,
> CEO and Founder @ Marinacloud

The Marinacloud mission

In the aftermath of the Marina Punat fire, Marinacloud's mission became twofold:

1. to help marina operators safeguard vessels berthed and moored using their infrastructure against sinking, water damage, and electrical malfunctions that could trigger a fire

2. to give boat owners peace of mind that the risk of their valuable asset experiencing damage or destruction through fire, water damage, and battery sulfation is significantly reduced*

An Internet of Things (IoT) enabled boat monitoring system emerged as an obvious solution because of the capability to assess environmental conditions over long distances remotely.

* Sulfation is the formation of lead sulfate crystals on a battery's lead plates. If left unattended, sulfation forms larger and larger crystals, diminishing the battery capacity so, eventually, the battery may not work.

Unique challenges with marine environments

The unique nautical environment presented challenging conditions for the project. The IoT solution needed to run on energy-efficient, long-life batteries to minimise maintenance and manual monitoring. The devices required reliable, affordable network connectivity with strong signal coverage inside a boat, across large marina areas, and over water. The solution also had to remain operable in all weather and temperature conditions.

Žic explains, "We searched for the best technology solution and network to fit our needs. We had specific difficulties like signal coverage on the water and sea, sensor battery lifespan, and keeping the total cost affordable. We had to avoid expensive and complicated central units to which various sensors are traditionally connected. We also needed the system to work without connecting to the boat's infrastructure and power. The goal was a genuinely standalone, "hands-off "solution that didn't add risk or complexity to the boat. "

Smart marina management: designed by marina managers for marina managers

Marinacloud researched and tested multiple IoT solutions for boat monitoring for Marina Punat. In the marine environment, the right network connectivity platform remained a challenge. Traditional solutions required base stations or central units on vessels which took up space, complicated connectivity and configuration, added to the cost, and didn't always perform reliably.

A breakthrough came with an introduction to IoT Net Adria, the exclusive operator of the national Croatian 0G Network, powered by Sigfox. The 0G Network is the public, low-cost, low-power wide-area network dedicated to connecting Internet of Things (IoT) devices over long distances. The 0G Network reliably provides instant, easy network connectivity and national coverage to support two-way communication across outdoor, indoor, and underground environments.

Marinacloud and IoT Net Adria soon developed and deployed the first version of Sense4Boat at the Marina Punat, which later became Croatia's first commercially available 0G connected solution.

Case Study

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Sense4Boat: an IoT-enabled boat environment monitoring solution

At the Marina Punat, Sense4Boat was deployed with four fit-for-purpose sensors inside a vessel to remotely monitor and detect water penetration, temperature changes, the presence of smoke, and battery state 24x7. Each sensor is independent and powered by a long-life battery that requires no maintenance or link to the boat's infrastructure. Connection to the IoT Net Adria 0G Network is instant with a brief, simple configuration. Data captured by the sensors is automatically shared to a central data management platform.

In real-time, the sensors transmit condition data to the Sense4Boat Control Centre, a mobile application accessed by Marina Punat's marina manager and boat owners anytime, anywhere, and on any device. The Sense4Boat Control Centre application is user-friendly and easily configurable to instantly alert owners and marina managers to unusual conditions based on the presence of water, smoke, or changing temperatures.

Smart bilge sensors detect water penetration. If the sensor detects water in a vessel, the Sense4Boat Control Centre alerts the owner with a push notification or a voice, email, or SMS message. Other smart sensors monitor for smoke and temperature changes. When smoke or unusual temperature increases are recognised, the boat owner and marina managers are immediately alerted to take protective action. Sense4Boat's smart battery sensor helps boat owners avoid battery capacity loss and extend battery life by monitoring sulfation so recharging can occur promptly.

In the last few years, Sense4Boat has been deployed and connected to the 0G Network across Italy, Malta, France, Portugal, Netherlands, Denmark, Germany, Poland, England, Finland, and the United Arab Emirates.

> *In the last few years, Sense4Boat has significantly improved safety and security levels at Marina Punat. When a boat is at risk of fire or sinking, it is critical to have information on that situation as fast as possible to allow preventative action. Sense4Boat sensors give us real-time alerts on potential issues, which let us act quickly to prevent damage and destruction before a fire becomes unstoppable or a vessel sinks. The outstanding IoT technology in Sense4Boat lets our boat owners feel relaxed because they know their assets are protected. It also gives our staff the confidence, backed by reliable technology, that our marina is the safest in Croatia.*

Renata Marević,
Manager @ Marina Punat

Why the IoT Net Adria 0G Network?

Marinacloud chose the IoT Net Adria 0G Network, powered by Sigfox technology, to connect the Sense4Boat solution because:

- each sensor consumes minimal power and runs on a multi-year long-life battery
- connectivity to the public 0G Network is easy and instant, without the need for a central unit, or line-of-sight requirements
- the devices are fit-for-purpose, small, and easy to install in any boat
- the solution is simple to scale and expand with additional sensors
- Sense4Boat will operate wherever there is 0G Network coverage (currently 71 countries globally).

Žic says, "We partnered with IoT Net Adria because the 0G Network delivers the cost-effective, reliable, long-range network connectivity that makes Sense4Boat so effective. The extended battery life means users don't need to worry about maintenance or manually checking sensors. A big advantage of the 0G Network is its presence in 71 countries, which means users can track assets in many marinas around the world."

⊙G Case Study

Marinacloud and IoT Net Adria protect marinas and vessels from loss, damage and destruction with Sense4Boat, an IoT boat environment monitoring solution

Sense4Boat improves marina operations and customer satisfaction.

Sense4Boat lets marina managers offer a safer environment to boat owners, protect marina assets against damage, and offer new value-adding services to boat owners. If disaster strikes and threatens harm to an entire marina or multiple vessels, Sense4Boat simplifies and accelerates the process of early detection and corrective action for marina managers.

Leading insurance companies recognise the benefits of Sense4Boat, and some offer benefits for boats equipped with Sense4Boat. Croatian insurer Osiguranje provides a 20 percent discount on its KASKO policy for boat owners using Sense4Boat.

Boat owners choose Sense4Boat for peace of mind that a reliable, affordable, real-time asset monitoring solution helps protect their valuable assets. Sense4Boat has become invaluable to many boat owners since the global COVID-19 pandemic when many countries introduced restrictions that made it challenging for owners to check vessels personally.

I installed the Sense4Boat sensors on my boat myself. Installation was child's play because the sensors need no external power supply or cables. The battery sensor is excellent! Wherever I am, the app lets me check the battery condition and charge levels. The bilge and fire sensors are great safety features too. If something unexpected happens, the marina can provide immediate help to minimise damage. Sense4Boat is a successful solution that every boat owner should have onboard.

Owner of a Bavaria 33, Marina Punat

Plans for the future

For Marinacloud, the four Sense4Boat sensors are just the beginning. In the future, the company plans to offer watercraft position surveillance and combined sensors for smoke, temperature, and humidity. The firm is collaborating with other partners to create even more value for marina managers and boat owners. Further international expansion is planned too, with a focus on Australia and the USA.

The IoT penetrates all industrial verticals either by improving the processes or completely changing the business paradigm. Marinacloud proved that, with IoT, the only limit is the imagination. This project offers added value to marina managers and boat owners by exponentially raising asset security. Marinacloud recognised the benefits of the 0G network to meet the challenges of this project. Those benefits included coverage without roaming, installation without complicated technical demands, low total cost of ownership, and connections solving three critical challenges of docked vessels.

Ranko Režek,
CEO @ IoT Net Adria

Example locations where Sense4Boat is in action

Croatia
- Loka Volme
- Marina Baotić
- Marina Dalmacija

Denmark
- Marina Sonderbord

Finland
- Jakobstad

France
- Port Beaucaire

Italy
- Marina Degli Aregai
- Porto Mirabello
- Vento di Venezia

Malta
- Roland Marina

Netherlands
- Aalsmeer
- Jachthaven Nieuwpoort
- Leeuwarden

Poland
- Jacht Marina, Gdansk

Portugal
- Porto Lagos

Slovenia
- Mennyacht Portorož

Spain
- Port Adriano, Mallorca

sigfox CANADA

Sigfox Canada is the Sigfox 0G Network Operator in Canada
www.sigfoxcanada.com

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