EARLY DETECTION SYSTEM FOR FLOOD RISK REDUCTION

SUMMARY

Rain, like most things in life, is best when in moderation. Not enough rain, and you get drought and water shortages. Too much rain, and you get floods and damage to infrastructure not built to withstand it. Just enough, and you might get to see a rainbow.

Floods in particular are a hassle, as they disrupt traffic by blocking roads. The amount of time and money lost worldwide due to people getting stuck in traffic when a flood ensues is so large that any measures to reduce it are definitely welcome.

CHALLENGE

Floods are very difficult to prevent, and there is no such thing as a flood-proof city – at least not yet. Many cities have drainage systems in place, but even those fail when rain refuses to stop pouring. In such cases, the best course of action is to alert your citizens about the flood to prevent traffic from heading its way, and towards danger.

But detecting when a downpour reaches a critical threshold means someone needs to be on the lookout whenever it rains, either in the field or by watching real-time CCTV footage. If you live in an area of the world where floods are expected and long-lasting, that's a lot of human resources that need to be spent just for you to know when to act.

But even if time and money were no issue, would you really want to put people's lives and the stability of your city's transport system and economy in the hands of a single person prone to human error?

Both efficiency and accuracy call for an automated system that does not get tired or distracted, and isn't using precious human resources until a critical threshold is reached.

PARTNER - RAZRLAB

RAZRLAB is a UAE-based specialist in designing tailor-made IoT solutions. Its solutions solve problems in a myriad of different sectors in Africa and the Middle East, using the latest IoT technology available to maximize efficiency, reliability, and security. When a governmental authority in Dubai reached out to it to solve the flood detection problem, RAZRLAB rose to the challenge.

SOLUTION

The solution RAZRLAB came up with is quite simple, but highly effective. If the critical threshold of a flood is determined by the amount of water on the road, the road itself holds the key to early detection. Hence, a water-level sensor was installed on the curb.

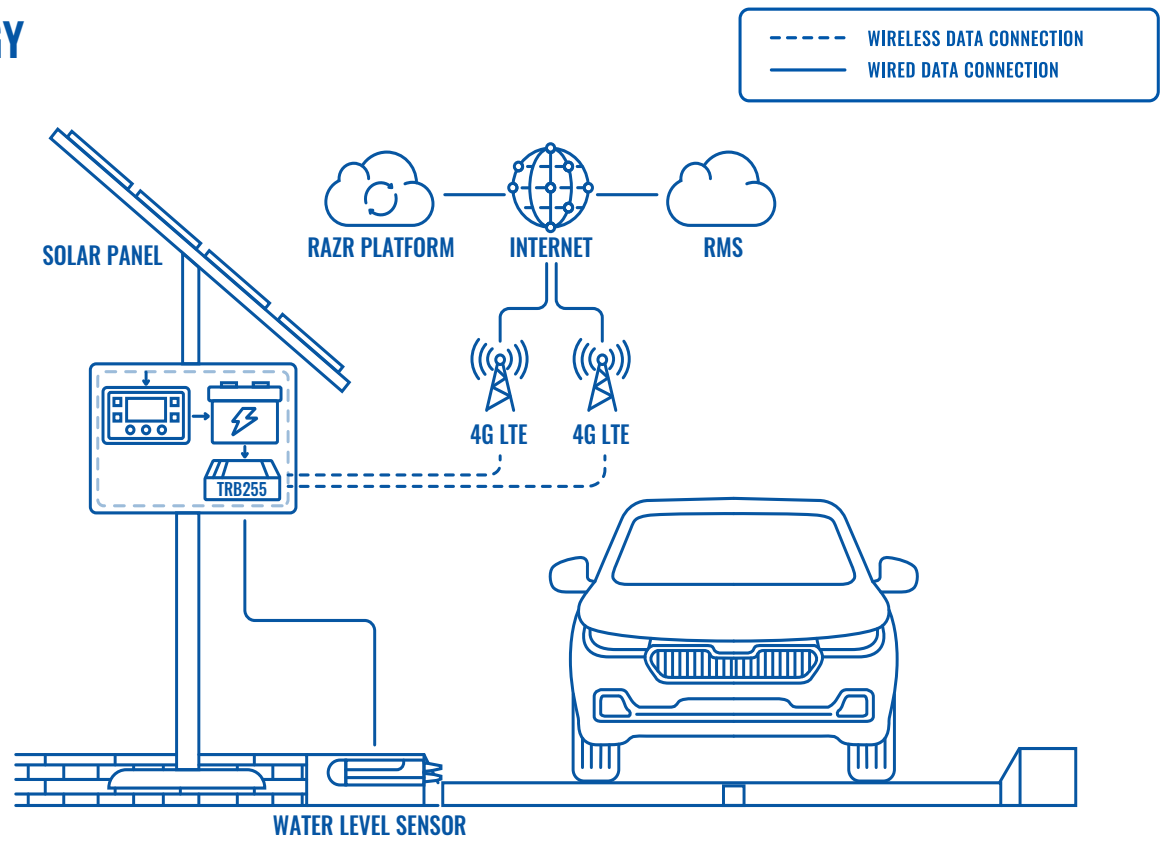
The sensor is connected to our TRB255 industrial cellular gateway via an RS485 interface. The gateway is positioned inside a solar-powered cabinet by the road and wirelessly sends all data collected by the sensor to a custom RAZR IoT cloud platform capable of alerting personnel whenever too much water is detected on the road.

TRB255 is a compact and sturdy model, making it easy to install in tight spaces, but two other features make it perfect for this job. The first is its Modbus RTU and MQTT capabilities, which are the best choice for telemetry and sensory data conversion.

The second is its efficient power consumption. Using under 1.2 W when idle and under 5 W when operating at maximum capacity, the TRB255 keeps the system going even on rainy days when the solar panel isn't generating much energy to power it.

In addition, it ensures a reliable and uninterrupted internet connection thanks to its dual SIM functionality and auto-failover feature. It can also withstand temperatures ranging from -40 c to 75c, meaning that no temperature throughout the year will damage it.

TOPOLOGY



BENEFITS

• TRB255's low power consumption of <1.2 W when idle and <5 W at maximum capacity enables efficient energy use.
• Its Modbus RTU and MQTT capabilities make the TRB255 the perfect choice for IoT solutions involving telemetry and sensory data conversion.
• Encased with aluminum and designed to withstand -40 c to 75c, TRB255 is sturdy enough to deal with adverse weather conditions.
• A small and compact design and a variety of I/Os make it easy to install and fit into a wide range of applications.

WHY TELTONIKA NETWORKS?

Teltonika Networks is based in Lithuania, a country named after the Lithuanian word for rain. We know very well how a downpour can significantly impact lives and the importance of being well-prepared for it.

While we can't claim our national heritage to every IoT solution our wide range of products enables, we care about each one nonetheless. The flexibility and reliability provided by all of our models is something we take pride in, and if it helps save time, money, and lives – we're all the happier for it.