CUSTOMER STORY
clarity

55+
countries empowered

91%
improvement in cities'
air quality data footprint

In 10+ cities
air pollution monitoring enabled
for the first time

How Clarity brings scalable air quality monitoring to 85+ cities worldwide with emnify.

According to the World Health Organization (WHO), ambient air pollution is accountable for 4.2 million premature deaths every year. Cities and industries have grappled with poor air quality for decades, and the lack of an affordable and scalable monitoring solution is a leading hindrance.

Founded in 2014, Clarity is on a mission to tackle the air pollution crisis using next-generation IoT sensing and data analytic technologies. Its turnkey solution provides real-time, hyper-local air quality data that supplements existing regulatory monitors to eliminate blind spots and empower cities and communities to take more effective action.

To deliver and operate Clarity products internationally - at times in remote locations, the team knew that having a cellular IoT partner for growth was vital. With emnify, today, Clarity has enabled the collection of higher-resolution air quality data in over 85 cities globally.

> "We partnered with emnify as our business was scaling up and we couldn't have made a better choice. Without such a global and flexible communication platform, we wouldn't be able to scale to so many locations so quickly."
>
> Paolo Micalizzi
> Co-founder & CTO, Clarity

About:
- Headquartered in Berkeley, USA
- Industry: Ambient air quality monitoring

Goal:
Making air quality management more accessible, cost-effective, and actionable than ever before.

Solution:
Sensing-as-a-Service for pollutant monitoring with an inclusive suite of sensor devices, software applications, and project management services.

emnify's products in use:
Connect:
- Global IoT SIM: Simplified product deployment and faster time-to-market.

Automate:
- **REST API:** More efficient product provisioning processes.

Operate:
- **emnify Portal:** Improved support and troubleshooting.
- **Network blocking**: Proactive control of sensor connectivity.

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Reimagining air quality monitoring

"Our customers are often challenged by the costs, complexity, and data gaps that come with traditional systems," said CTO Paolo Micalizzi. **"What we do is rethink air quality monitoring in a more scalable way."**

The Clarity solution allows governments, businesses, and communities alike to install and manage a network of hundreds or even thousands of air quality sensors with minimal resources and overhead. One key pillar

is the Clarity Node, a low-cost, self-sufficient sensor system that can accommodate site-specific requirements according to the customer's needs.

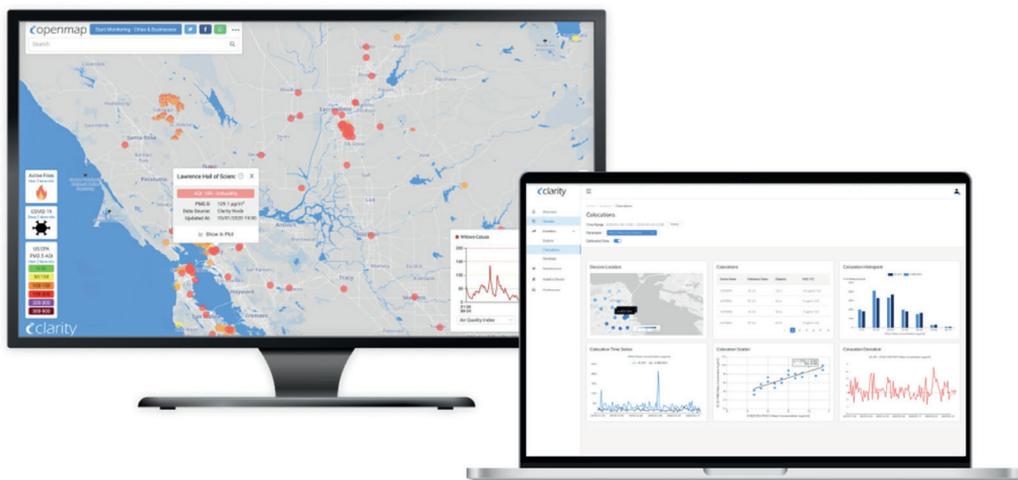**"As we aim to grow into an environmental data platform provider, our Nodes are designed to be also compatible with other sensor accessories in a plug-and-play fashion to capture an even wider range of environmental data as needed,"** added Micalizzi.

Measurements collected by the Nodes are uploaded to the Clarity Cloud, where they are constantly calibrated with other inputs from governmental monitors, rendering a high level of reading accuracy.

Besides a private web app for data visualization and remote sensor management, Clarity offers an OpenMap tool as an opt-in platform for customers who look to share their data with other stakeholders and generate public awareness.

Using emnify SIMs, Clarity Nodes can reliably communicate sensor data to the cloud – regardless of where they are.

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Making air quality measurement scalable with cellular IoT

When building an IoT product, getting the connectivity right is critical, but it's often easier said than done.

"We developed our first prototype of the Clarity Node using LoRa technology but ended up having to deploy one LoRa gateway for each Node," remarked Micalizzi.

To eliminate dependence on other infrastructure and simplify product installation for customers, Clarity decided on a combination of global cellular communications and solar harvesting for their sensor devices. **"For us, it became clear that if we want to make our solution scalable, our Nodes should be easily deployed and instantly connected anywhere without requiring additional network infrastructure,"** he added.

After testing several global providers, **"emnify's Portal, coverage, and pricing really convinced the team at the time"** – according to Baljot Singh, Co-founder and Hardware Lead.

Network troubleshooting made easy

For a tech company in a high-growth phase, putting engineering resources into best use while ensuring that customers get high-quality support is top-of-mind. emnify allows Clarity to do just that.

What significantly helps in terms of operations is that even our non-technical customer success team can troubleshoot sensor connectivity on their own using the emnify Portal. This frees up a lot of time for our engineering team."

Paolo Micalizzi
Co-founder & CTO, Clarity

Clarity Nodes

2G / 3G / 4G

emnify IoT Communication Cloud

Connect | Integrate | Automate
Operate | Secure

Clarity Cloud

Clarity Dashboard & OpenMap

emnify

In the past, Clarity experienced connection issues with a small group of networks due to the IoT module. The team was able to resolve this quickly with the capability to **block troubled networks** on the Portal at the push of a button.

"I also found the tagging system of the Portal very useful on a project basis. It allows us to see all devices by the organization at a glance rather than having to search for the device ID," added Levi Stanton, Solutions Engineering Lead.

Optimizing costs through automation

To bring higher efficiency to their operations while eliminating the need to pre-activate SIM cards and incur the associated costs, Clarity leverages emnify's REST API to let customers connect sensor devices out-of-the-box at their project sites.

Each Clarity Node has a node ID and SIM ICCID associated with it. Every time the customer deploys a Node and registers it on the Clarity Dashboard, it automatically assigns and activates the SIM card with all the pre-configured tariff and service profiles.

By using emnify's API, the SIM cards are only activated the moment our Nodes need to start sending data, which then helps us optimize costs."

Paolo Micalizzi
Co-founder & CTO, Clarity