

# Overview

2021





## Digital transformation

Digital transformation is “the process of using digital technologies to create new — or modify existing — business processes, culture, and customer experiences to meet changing business and market requirements.”

TycheTools delivers essential data for the digital transformation of critical infrastructure. What started many years ago as a university project in AI is today one of the most innovative solutions in indoor operational tools. TycheTools can speed your journey toward the ultimate goal of digital transformation: automating the environmental operation of critical infrastructure.



## The environment

Indoor environments are generally invisible. You might feel warm or cold, but unless you have a thermometer close by you are unable to define the temperature. Invisibility means danger when it comes to for critical aspects of indoor environments—those that impact your comfort, your health, or the capacity of your IT operations to ensure organisational continuity.

Environmental visibility requires multiple, real-time data points: temperature by itself is an important parameter, but without humidity measurement it cannot fully explain why you might feel uncomfortable.



## Data driven

That's why TycheTools collects, analyses and synthesizes multidimensional data at whatever scale you need. Whether your environment is limited to a few hundred square meters or your organization spans four continents, we provide the visibility you need, securely, simply, and effectively.



## Visibility

Our correlated data allows you to “see” your environment, both historically and in real time. This approach delivers crucial insights about how different indoor “elements” affect the environment and are affected by it. For example, CO2 levels within a room will change depending on the number of people going in and out and the nature and settings of the ventilation system. With visibility comes the capacity to determine how these elements are related to each other; these insights deliver the capacity to make decisions.



## Focus

At TycheTools we know that different environments require different measures. The data required to have visibility related to COVID-19 is different from the data required for a critical operation IT technical room. We therefore focus each solution on the data that matter most for your needs while leveraging the same state-of-the-art architecture and AI tools. Today we work in two different areas; ECOaaS for critical operation IT technical rooms and AQaaS for indoor air quality.



## Artificial Intelligence

Both public indoor spaces and technical rooms are governed by internationally adopted standards. These standards describe the “playing field”—the limits and rules about how a specific space is to be built. For example, the World Health Organisation started to define Indoor Air Quality back in 1984. Meeting these standards is mandatory, but it is not enough. Standards tell us nothing about the “normal” operation of an indoor space. For example, a piece of IT equipment might increase temperature without exceeding standard. If an alarm only tells us when standards are breached, it will remain silent. But this departure from “normal” function may signal an incorrect operation requiring immediate intervention. .



This is why TycheTools’ AI-based solutions establish “normal” operational models rather than simply ensuring compliance with regulatory standards. These models are constantly updated by real-time data from our proprietary sensors, ensuring that the models fully reflect changes introduced during the life cycle of the infrastructure. A change affecting the power requirements of IT equipment and, therefore, the heat it generates is rapidly incorporated into the “normal” operational model, allowing subsequent actions and decisions to take these changes into account automatically.



## Operation & Management

With TycheTools, organizations can transform their operations with management decisions based on real-time, historical and deeply correlated data. TycheTools designs sensors and enhances environmental monitoring, but our AI-driven solutions deliver much more than data monitoring— they provide insights that transform the Operations and Management of your indoor environments.



## Automation

Automation is the ultimate goal of digital transformation for critical infrastructures. Optimal operation of a complex system involving megawatts of power within a technical room or hundreds of people breathing in a single indoor space cannot be achieved manually. The minute changes required from an HVAC system to maintain the most efficient ventilation, temperature, and humidity in an indoor space with a continuously changing environment has to be automatic. Our solutions are an autopilot for your indoor environment. Like autopilot in a modern airplane, our solutions can manage almost all aspects of the operation. And like an airplane's autopilot, our solutions know what they cannot do—and they know to signal human operators that their intervention is needed. TycheTools enables your operators to concentrate their attention where it matters most.



## ECOaaS

Our ECOaaS solution is a transformative operations and management system for critical IT technical room environments. In today's world, IT is the base of any operation in any organization. If IT fails, there are ripple effects across the organizations. If IT fails dramatically, the entire organization grinds to a halt. TycheTools state-of-the-art sensors ensure that your operating environment is fully visible; our AI algorithms transform this data into actionable insights to help you achieve maximal operational efficiency while minimizing the risks of failure. Quite simply, TycheTools ECOaaS provides the data and insights so you can make better decisions.



## AQaaS

Our AQaaS solution is an Indoor Air Quality operation and management solution. Although built on the same platform as ECOaaS, its focus is people. We created AQaaS for a simple reason: the COVID-19 pandemic. On 30 April 2021 the WHO finally acknowledged what environmental experts had maintained since early in the pandemic—aerosols in indoor spaces are the primary mechanism for pandemic transmission and ventilation is the key to indoor safety.

While direct virus detection is not commercially viable, CO<sub>2</sub> concentration is considered the best proxy indicator for the potential presence of the virus. However, CO<sub>2</sub> measurement alone is not sufficient: what matters is correlated data and CO<sub>2</sub> variance over time. AQaaS delivers the data building managers need to protect public safety, in any space, all the time.

Increasing awareness of the connection between CO<sub>2</sub> levels and pandemic risk has also drawn attention to the deleterious effects of high CO<sub>2</sub> levels for cognitive function. Rigorous studies have demonstrated time and again a dramatic decrease in cognitive function as CO<sub>2</sub> levels rise. Fortunately, cognitive function can be protected by the same actions that protect us from exposure to the virus—greater ventilation control and where necessary closure of the indoor space.

**AQaaS delivers this control.**



How can we help you?

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