



# Analytics and IoT for the Vertical Transportation Industry

## A better way to keep the world upwardly mobile

Datahoist was established on the technical expertise and patents of its founder and has more than 25 years of experience in elevator diagnostics. Datahoist creates cutting edge solutions using artificial intelligence, machine learning and predictive analytics that are compatible with any cloud computing platform. These solutions install in two to three hours on any elevator make and model as well as escalators and moving walkways. By implementing Datahoist’s solutions, anyone can monitor the health of their vertical transportation assets, simplify how those are maintained and use AI, machine learning and predictive analytics to lower costs and keep profit margins under control.



Elevator maintenance has for too long relied on outdated reactive and preventive strategies that don’t diagnose problems until elevators have stopped working. For decades, companies have followed the same process of purchasing elevator assets, placing them into service and maintaining them reactively or repairing them only after they have already broken down. The market has pushed toward automation, particularly given the high cost of elevator maintenance. Leveraging the latest advances in IoT technology, Datahoist’s founder was able to invent a custom edge compute device that can work with the main elevators in the market today to make predictive maintenance a better option.

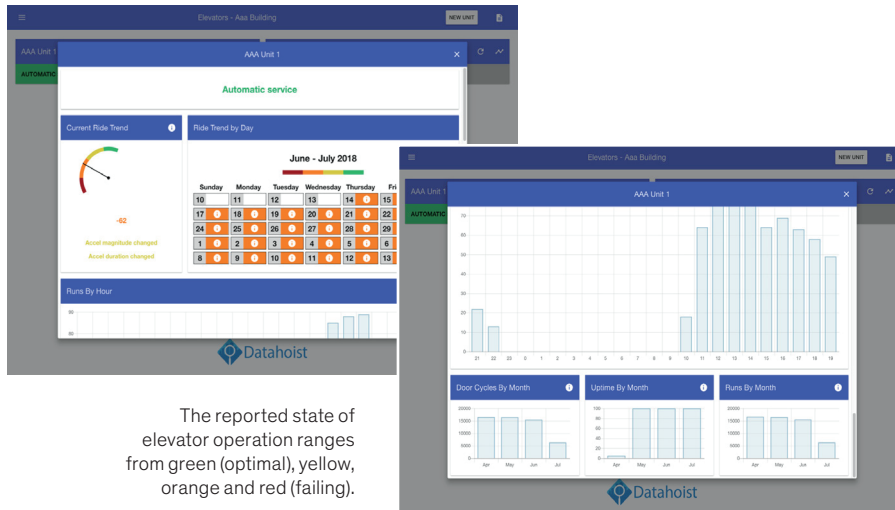
Most original equipment manufacturers (OEMs) offer proactive management solutions for elevator maintenance today. However, these solutions can be extremely costly, and often do not work well or at all on older elevators. Additionally, 30% of skilled elevator technicians in the U.S. will be retiring in the next four years, and new workers who take their place in the workforce lack the knowledge and expertise required to service older elevator models. Datahoist’s cloud-based monitoring solutions enable smart building owners, service companies, independent elevator operators and REIT/property managers to transition to proactive, condition-based, and predictive maintenance. These solutions increase the uptime of more of the world’s elevators and don’t lock anyone into any single proprietary brand.

Datahoist’s products can be set to send a variety of predictive maintenance reports by both email and Slack to any users who need the data, from building maintenance supervisors to elevator technicians and REIT directors. Reports display trending data on the elevator ride performance in customizable time durations from the current day up to a 30-day rolling window.

*“Our strategic partnership with Arrow has been the best one that I have ever experienced in over 25 years working with other technology companies. We are able to do things a lot faster and more efficiently with Arrow as our partner than if we had to do them in-house.”*

— Dan Bryant, CEO & CTO, Datahoist

## Arrow Global Services Case study



The reported state of elevator operation ranges from green (optimal), yellow, orange and red (failing).

By acting on Datahoist's predictive maintenance reporting, elevator asset owners can proactively send technicians to repair issues before an elevator goes down, saving elevator owners the emergency maintenance and downtime-related costs that would have been incurred had the elevator been left to fail. Getting ahead of technical issues before they get worse can also prevent failure altogether, and significantly reduce costs for enterprises that could have hundreds to thousands of elevator assets.

## The Challenge

### Scaling to meet increasing demand domestically and internationally

Datahoist found significant U.S. demand for its solutions, with enquiries coming from independent elevator service companies and property managers indicating their need for a product that competes with the more expensive offerings of OEMs. Independent service companies also want to offer Datahoist's products to their own customers, which number anywhere from hundreds to tens of thousands each. In addition, there are encouraging signs of market demand internationally, where the majority of elevator technology is newer and the use of IoT, AI and machine learning in smart building technology is ahead of the U.S. Greatly encouraged, Datahoist wanted to move quickly to manufacture and scale to get its products into the market as soon as possible.

Datahoist worked with AAEON, designers and manufacturers of advanced industrial and embedded computing platforms, to build a prototype device. Datahoist soon found that to scale up quickly and get a marketable price point for its device, it would be required to buy from AAEON in volume. Without the infrastructure required internally, Datahoist decided

*"Reducing the lead time so that we can get visibility, close sales and increase customer satisfaction quickly has made a big difference for us as a new company. It has been a great benefit not having to build these capabilities and hire a team in-house, but rather to rely on Arrow for this. We're much happier doing what we do best and focusing on product."*

— Dave Chun, Chief Revenue Officer, Datahoist

## Datahoist SOTL5

Datahoist's SOTL5 product is a worldwide patent-pending elevator health monitoring system. The device gathers and processes elevator data using analytics to know the characteristics of an elevator run and doors to register how well the elevator is operating and predict future performance.

### Datahoist product differentiators:

- > Transforms traditional elevators into smart elevators.
- > Installs on any elevator, regardless of make or model.
- > Gathers motion and telemetry data from the elevator without integration with the actual controller on the elevator.
- > Tracks ride quality and door behavior.
- > Sends alerts to users when anomalies are detected.

Cartop and door sensors send real-time streaming data through an edge gateway into Microsoft Azure cloud, where data is processed and analyzed. Fast and easy to install, the system learns patterns and sends alerts and notifications to users on any anomalies it detects 24/7 — before an elevator breaks down. It is more costly to repair an elevator once it has failed and can commonly take two or more days before a technician can visit. Preventive and prescriptive elevator maintenance is a more ideal way, but it relies on accurate, efficient and cost-effective monitoring solutions that can incorporate data feeds from elevator components that provide high-quality data inputs to machine learning algorithms for the best predictions and, in turn, optimal health of the assets.

## Arrow Global Services Case study

to rely on Arrow to handle integration, logistics and fulfillment of its unit orders. Datahoist was aware that quick fulfillment would be crucial as a new company, because follow-up orders from customers will depend on Datahoist's speed and ability to fulfill initial orders.

*"With the SOTL5 installed on our customers' elevators, it is very helpful for our field leadership to be able to catch an issue before it arises, by being alerted to trending patterns of the elevator's health."*

— Charlie Herrera, Chief Operating Officer, EMR Elevator, Inc.

## The Opportunity

Globally, there are an estimated 16+ million elevators in operation with annual year-upon-year increases of 2.5%. Less than 1% of elevators in operation are currently serviced by advanced IoT solutions such as Datahoist's SOTL5 and SOTL6. An estimated \$200 billion is spent annually on elevator maintenance worldwide. This massive market space coupled with traditionally high gross margins for the maintenance industry has resulted in the opportunity for disruptive IoT solutions to save money for industries that are eager for a better solution.

## The Solution

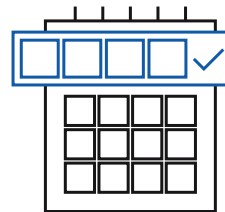
### Strategic partnership with Arrow enables Datahoist to focus on product and scale

Arrow partnered with Datahoist, enabling Datahoist to buy its production devices in bulk quantity from AAEON and get a lower unit price per device. This strategic partnership helped Datahoist to move quickly to market while remaining lean. Datahoist leveraged the team at Arrow's Integration Center in Phoenix, Arizona, so that Datahoist engineers could instead focus on what they love to do — create a great product. After manufacture of the compute devices at AAEON, the units were delivered to Arrow's Integration Center where the IoT team worked on connectivity and sourced cellular SIM cards, installed, powered up and tested them, making sure they could connect to the network. All of the data collected by Datahoist's products goes to the cloud, and Arrow's IoT team migrated Datahoist's initial test environment over to an existing Arrow-provided Microsoft Azure instance where the data is being hosted. Fulfillment is also handled by Arrow's Integration Team and all final products are shipped by Arrow to Datahoist's end-user customers.

*"Our partnership with Arrow enables us to focus on our technology and simultaneously get our products out there into the global market quickly, which increases our visibility and leads to more sales. Arrow enables us to do that at scale because we leverage the international co-selling capabilities of Arrow and reach their partners."*

— Dave Chun, Chief Revenue Officer, Datahoist

The strategic partnership with Arrow has positioned Datahoist for sales beyond the domestic U.S. market, and the company is well placed to fulfill orders internationally in Europe and Asia by leveraging Arrow's logistics, supply chain and co-selling capabilities. Datahoist engineers are also working with Arrow's design team and components group to develop Datahoist's future products, and Arrow is assisting the company to get these new product iterations into the market in an expedited time frame.



On an order of 50- 100 units, Datahoist's fulfillment time has **decreased from three weeks to one week** by working with Arrow's Integration Center team.



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