

Bringing sustainability to your industrial data architecture

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You don't have to agree with environmental policies to know that sustainability is a part of business and life today. Supply chain partners, regulators, customers, and investors are demanding more environmental accountability from manufacturers—and with good cause. According to the [International Energy Agency](#), the manufacturing and power sectors account for 63% of energy-related CO2 emissions worldwide. Progress depends largely upon their success.

Thankfully, manufacturing has come a long way since the third industrial revolution that saw a rise in automation and productivity without much consideration for environmental impact. The fourth industrial revolution, or Industry 4.0, has given manufacturers more insight into their operational efficiencies. Network-connected assets provide a real-time lens into performance metrics that go hand-in-hand with more sustainable production.

Still, this level of connectedness presents a new challenge: How to manage data more efficiently.

The two-fold challenge

Tackling emissions and data-center energy consumption means manufacturers must address sustainability on two fronts.

The first is in their own operations. In Europe, [Industry is one of the largest contributors of greenhouse gases](#) on the continent. Globally, industrial processes are also the fastest-growing source of greenhouse gas emissions, increasing by [203% since 1990](#). To slow this trend and make progress on reducing CO2 emissions and achieving net zero, industrial companies must master operational data management and extract insights from that data. But this is challenging. As noted in IDC's first Worldwide Energy Transition Survey in June 2022 (#US49548622), 45% of respondents cited a lack of enough good data on energy usage and CO2 emissions as a barrier to progress.

So industrial companies must collect higher resolution data from a wider variety of sources for sustainability and other operational use cases. This, unfortunately, creates the second challenge. While reducing operational carbon, are we increasing carbon consumption from the vast amount of data we are storing and processing in the cloud?

Data processing and storage must be part of the sustainability equation. Saving and storing 100 gigabytes of data in the cloud generates about 0.2 tons of CO2 annually, [according to Stanford Magazine](#). Based on the Stanford calculation, if a factory generated 1TB of data every day and moved all this data to the cloud, the site would generate 365,000 gigabytes or 730 tons of CO2 annually. For a large manufacturer with 60 sites, the company would generate 43,800 tons of CO2 emissions each year for data processing and storage alone.

To put this in perspective, that is the equivalent of nearly 10,000 passenger vehicles on the road every year.

Manufacturers must consider their total carbon footprint with a strategy that can address both aspects of this two-fold challenge. The data is essential for visibility. The cloud is essential for scale. But this data must be stored, processed, analyzed, and acted upon with purpose for truly sustainable manufacturing.

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Starting with a sustainable architecture

DataOps (data operations) offers an agile, automated, and process-oriented methodology used by data stakeholders to improve the quality, delivery, and management of data and analytics.

An Industrial DataOps solution like [HighByte Intelligence Hub](#) is designed specifically for industrial data and systems. The Intelligence Hub enables manufacturers to curate and flow valuable industrial data to the cloud where it can be analyzed for sustainability use cases. With the Intelligence Hub, users can condition, merge, and model, data at the edge to ensure only logical, usable payloads of information are delivered to the cloud. This reduces unnecessary data storage and processing costs—and accelerates the adoption of advanced analytics services from vendors like [AWS](#) and Microsoft. With the new Pipelines builder now available in HighByte Intelligence Hub [Version 3.0](#), users can further optimize complex data payloads for specific target applications.

Pulp and paper manufacturer Georgia-Pacific is a prime example of a company that quickly moved forward on sustainability initiatives using standardized data models.

“Our commitment to sustainability means we are continuously looking for new ways to improve efficiency and reduce waste in the manufacturing process,” says Lee Hunt, senior director of manufacturing IT at Georgia-Pacific. “By using HighByte Intelligence Hub as a data modeling abstraction layer, we are able to standardize data sent to the AWS Cloud.”

Hunt added that the code-free Intelligence Hub has helped the company be more agile and rapidly iterate on analytics and sustainability initiatives.

What's next

We are already seeing a rise in sustainability use cases across our customer base this year. It's clear the Intelligence Hub will be a key architectural component to help companies cut emissions, reduce energy consumption, optimize grid and alternative energy usage, reduce digital waste, and optimize processes.

And as my colleague John Harrington pointed out, sustainability in manufacturing is not just about cutting CO2 and SO2 emissions. By reducing defects and scrap through standard Lean and Six Sigma approaches, companies can also support their sustainability goals by expending less power per unit while potentially increasing production. These projects will enable customers to make progress on their sustainability initiatives—and improve their bottom line.

So, what's your sustainable manufacturing strategy? Are you making smart use of your operational data or are you creating digital waste? Wherever you are on your sustainability journey, HighByte Intelligence Hub can help you get to the next phase. Please [contact us](#) to discuss your first use case.

About HighByte

HighByte is an industrial software company founded in 2018 with headquarters in Portland, Maine USA. The company builds solutions that address the data architecture and integration challenges created by Industry 4.0. HighByte Intelligence Hub, the company's award-winning Industrial DataOps software, provides modeled, ready-to-use data to the Cloud using a codeless interface to speed integration time and accelerate analytics. The Intelligence Hub has been deployed in more than a dozen countries by some of the world's most innovative companies spanning a wide range of vertical markets, including food and beverage, health sciences, pulp and paper, industrial products, consumer goods, and energy. Learn more at <https://highbyte.com>.



About the Author

Torey Penrod-Cambra is the Chief Communications Officer of HighByte, focused on the company's messaging strategy, market presence, and ability to operationalize. Her areas of responsibility include marketing, public relations, analyst relations, investor relations, and people operations.

Torey is a marketing professional with nearly 15 years of experience creating compelling brand experiences that drive customer acquisition and expansion in highly technical environments. Torey's career began with a focus on biotechnology and international pharmaceutical product launches, and then evolved into a fast-climbing career in B2B industrial software. She is passionate about securing equal STEM opportunities for women, and excited by the potential of the Internet of Things in industrial environments.

Torey applies an analytical, data-driven approach to marketing that reflects her academic achievements in both chemistry and ethics. Torey received a Bachelor of Arts in Chemistry from Miami University in Oxford, Ohio and has completed post-graduate studies in Medical Ethics at the University of Pittsburgh.

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