



Light. Insight. *Life.*

# Better data. Better instrument performance.

How embedded intelligence increases performance, productivity and profitability.



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# Digitalization

Across life sciences and diagnostics, digitalization is the next big thing. And with artificial and embedded intelligence technologies advancing rapidly, it's about to get even bigger. But what does it mean to be in the lab and at point of care? What can it do for you right now? Most importantly, how can digital technologies fit into the existing workflow so that they help, rather than hinder, the vital day-to-day work of the laboratory?

## AI and Embedded Intelligence in Life Sciences and Diagnostics

The industry has only begun to scratch the surface of AI and embedded intelligence's potential – but it is gaining momentum QUICKLY.

By melding these technologies with rigorous medical and scientific knowledge, companies can leverage them to transform processes and achieve a competitive edge.

A recent Deloitte survey of global industry leaders indicated just how quickly investments in AI are growing:

*More than 60% of life sciences companies spent OVER \$20 million U.S. on AI initiatives in 2019, and more than half expect those investments to grow considerably.*

**The top outcomes that life sciences companies are trying to achieve with AI include:**

- Enhancing existing products (28%)
- Creating new products and services (27%)
- Making processes more efficient (22%)
- Most (43%) report having used AI successfully to make processes more efficient

**The top challenges impacting AI initiatives include:**

- Difficulty in identifying business cases with the highest value (30%)
- Data challenges (28%)
- Integrating AI into the organization (28%)

# Volpi AI-Powered Optical Modules

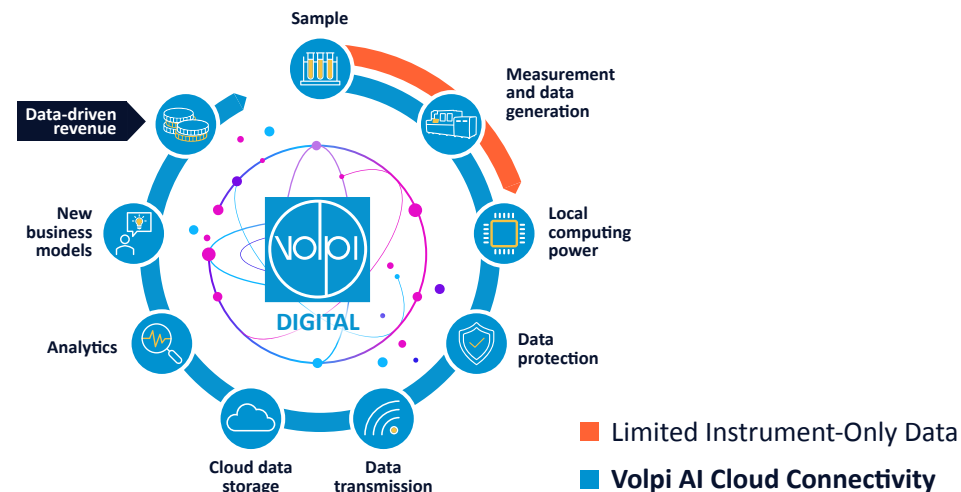
It is Volpi's point of view that embedding AI into the “heart” of instrumentation (the optoelectronic module) is the key to leveraging these technologies to improve lab performance and productivity.

Volpi is the proven world leader in smart optical modules, and we are now extending our leadership position with embedded intelligence optical modules, helping you assist your customers with:

1. **Decreased cost of ownership**
2. **Reduced downtime**
3. **More efficient operations**
4. **Valuable performance insights**

Plus, these modules offer a bonus for instrument manufacturers: new revenue-generating models.

## From sample to data-driven revenue



## 1. Decreased Cost of Ownership

Volpi's AI-powered optical modules enable remote continuous and proactive monitoring on your instruments, allowing customers to save on the overall cost of purchase, installation and maintenance for both hardware and software components of assembled equipment.

In conventional settings, routinely scheduled maintenance and routes might not efficiently predict system failure, may require many work-hours, have major safety implications and often will not detect human error or process upsets – leading to excessive repair costs and downtime. With continuous remote monitoring, maintenance staff will be able to accurately determine when specific equipment needs to be investigated or system checks are required, and implement them accordingly.

## 2. Reduced Downtime

In diagnostics, instrument availability is vital to patient health – especially in point-of-care settings, where getting the right results right away is essential.

The negative effects of downtime on your business can be significant as well, including loss of potential revenue, increased cost of unplanned repairs and diminished client trust due to failed deadlines. Further, downtime can affect employee morale and efficiency as their ability to perform their jobs is hampered.

Implementing proactive remote monitoring will allow equipment users to monitor equipment continuously from the moment of installation. The surveillance system enables rapid diagnostics, automatic recalibrations and effective manual maintenance, thus preventing total process shutdown/downtime.



## Opening to New Revenue Models

Finally, cloud-based analytics of volume, test type, performance and productivity open up new ways for instrument manufacturers to generate revenue, including:

1. The “razors and blades” model – providing the instrument at little to no charge and charging per test
2. Adding an analytics offering
3. Adding a price premium for remote monitoring and predictive maintenance

...and more.

### 3. More Efficient Operations

Data collection and interpretation can prove to be a tedious task that is error-prone even with the most dedicated of workers. With embedded intelligence-enabled performance surveillance, production efficiency can be significantly improved.

A cloud-based remote maintenance and monitoring system can easily perform cumbersome data collection tasks requiring teams of staff. As a result, lab operations will move at a faster, more efficient rate. Additionally, the manpower freed from tedious inspection and data crunching can be redirected to other equally important aspects of production.

#### Predictive Maintenance

Another key benefit of remote monitoring is the proactive nature of interventions it affords operators. When compared with traditional instrument monitoring and maintenance protocols, the advantage that AI-enabled remote surveillance technology offers in this regard is obvious.

While conventional monitoring might only discover and correct some instrument failures on total instrument shutdown, data from remote monitoring systems can be used to predict future system failures **before** they occur. This facilitates a proactive approach to instrument maintenance.

And the use of AI and cloud computing means this valuable data is location independent. You’ll have it whether it’s on the instrument on-site, or in the cloud – where you can access it no matter where the instrument is or where you are.

### 4. Valuable Performance Insights

The use of remote monitoring software also allows operators to gain useful insight into how well their instrument is performing.

Using AI-embedded modules enables the capturing, reporting and analysis of insights that cannot be achieved by traditional optics technology.

Historically, optimizing measurement performance has largely depended upon the level of hardware utilized – specifically, the optics. That no longer needs to be the case. With embedded intelligence modules, instrument manufacturers can spend less on the physical optics, as the AI software can ensure the optical measurement accuracy of less sensitive optics.

Data collected by monitoring software can then be reproduced electronically as graphical readouts illustrating instrument performance over given periods. Consequently, weekly, monthly or yearly representations of performance can be used to streamline decision-making, and therefore improve the overall production process.



## Partnering for Performance and Productivity – Volpi and TOPIC

We've partnered with TOPIC Embedded Systems, a leader in embedded intelligence, to expand our portfolio of optoelectronic measurement solutions.

The partnership enables Volpi to accelerate the development of optical modules with embedded artificial intelligence, ultimately helping to improve patient lives, optimize instrument performance and drive innovative new revenue-generating business models for our customers.

**Volpi is the first and only optical module design, development and manufacturing firm to offer optical modules with embedded intelligence, connectivity and cloud computing.**

Leveraging TOPIC's software, embedded intelligence is being built into Volpi optical measurement modules to help increase the productivity of instruments through predictive maintenance and remote monitoring capabilities. It will also track and deliver insights faster, reduce hardware costs and generate new revenue and business model opportunities for instrument manufacturers.

**Product development is already underway, and Volpi and TOPIC are actively collaborating on client engagements. Volpi will debut its intelligence-embedded optical measurement modules at the AACC Annual Scientific Meeting and Clinical Lab Expo in Atlanta in September 2021.**

If you'd like to learn more about how Volpi can vastly improve the performance, productivity and profits of your instruments, email us at [info@volpi-group.com](mailto:info@volpi-group.com).



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### About Volpi

Volpi improves patients' lives through light-created insights. Volpi helps healthcare professionals make more informed treatment decisions by delivering innovative optoelectronic solutions that enhance the performance of the diagnostic instruments used to research and diagnose disease. With offices in the U.S. and Switzerland and clients around the globe, Volpi works with the world's best-known and most respected life sciences and diagnostics instrument manufacturers. For more information, visit [volpi-group.com](http://volpi-group.com).

### About TOPIC

For 25 years, TOPIC Embedded Systems has provided customers worldwide with consultancy and development services, standard products and healthcare solutions in different application domains. TOPIC's expertise covers software design, board development, FPGA design, mathematical modeling and AI algorithm development. TOPIC supports its customers with innovative solutions in the embedded domain and on PC platforms and cloud-based infrastructures. Projects executed by TOPIC follow development processes covering specification, design, testing, integration and configuration management according to TOPIC's ISO13485 certified quality management system. With an ambition for innovation, sustainable relationships and growth, TOPIC wants to make the world a little better, healthier and smarter every day. For more information, visit [topic.nl](http://topic.nl).