

FROST & SULLIVAN

TRANSFORMATIONAL GROWTH LEADERSHIP

A CEO Perspective

Mastering Manufacturing Complexity: Reimagining AI for the Factory Floor

Dr. Jonathan Spitz

Founder & CEO,

GaussML,

in conversation with

Sebastian Trolli

Research Director,

Industrial Automation & Software,

Frost & Sullivan





From Manufacturing Expertise to Digital Intelligence

Manufacturers are facing a growing challenge that extends beyond automation and digitalization. As experienced operators retire, decades of process knowledge are disappearing from the factory floor, creating an urgent need for new tools that help the next generation handle the complexity of fine-tuning machine parameters.

For [Dr. Jonathan Spitz](#), Founder & CEO of [GaussML](#), artificial intelligence (AI) is not about replacing human expertise. It is about enhancing it. By combining manufacturing knowledge with AI, he believes organizations can extend the ability to find ideal process parameters to a broader workforce.

In this Transformational Growth Leadership conversation, Dr. Spitz discusses why manufacturers need practical AI rather than complex AI projects, how small-data machine learning is helping organizations optimize industrial processes in just a few experiments, and why the future of manufacturing depends on making decades of operational expertise accessible to every operator.

“ Try to get into that mentality of trying new things, even if you are almost certain that it's not going to work.” — Jonathan Spitz, Founder & CEO, GaussML

Addressing Manufacturing's Growing Skills Gap

Sebastian Trolli: *For readers who may be discovering GaussML for the first time, how would you describe the problem the company was created to solve?*

Jonathan Spitz: My background combines mechanical engineering, robotics, and artificial intelligence, but throughout that journey I found myself coming back to manufacturing. One of the biggest challenges manufacturers face today is the growing shortage of experienced machine operators.

For many years, manufacturers relied on highly skilled operators who developed an intuitive understanding of how to fine-tune machines. They knew which parameters to adjust, how machines behaved under different conditions, and how to consistently achieve high-quality results.

Today, much of that expertise is disappearing as experienced operators retire. GaussML makes expert-level performance available to all manufacturers, even without expert operators. Our solution, **Optimzyer**, acts as a digital parameter expert. Rather than replacing operators, it helps them identify the right machine parameters using only a small number of experiments, allowing organizations to achieve high productivity, excellent quality, and lower resource consumption without depending entirely on decades of individual experience.

Making AI Practical for Manufacturers

Sebastian Trolli: *GaussML takes a different approach to industrial AI than many companies in the market today. What makes your approach unique?*

Frost & Sullivan's **Transformational Growth Leadership Program** aims to honor visionary business leaders who possess the foresight and leadership acumen to drive positive change within their organizations. The leaders we celebrate hail from diverse sectors and company sizes, yet they all share an unwavering commitment to innovation and excellence.

Jonathan Spitz: One of the principles we have followed from the beginning is making AI as easy and as low risk as possible for manufacturers to adopt. Many AI projects require organizations to collect enormous amounts of historical data, build large data lakes, install additional sensors, or invest in lengthy implementation projects before they can generate value. We deliberately chose a different path. **Optimzyer** works directly with the machine using what we describe as a small-data approach.

Operators simply enter the suggested parameters, run a small number of experiments, evaluate the results, and provide feedback. Based on that feedback, **Optimzyer** continuously updates its digital model of the machine and quickly identifies the operating parameters that best achieve the customer's objectives. That means manufacturers don't need years of historical data or major infrastructure investments before getting started. Instead, they can begin optimizing existing machines almost immediately while keeping implementation risk low and time to value short.

From Machine Optimization to Physical AI

Sebastian Trolli: As GaussML continues to grow, what are your aspirations for the company's next phase of development?

Jonathan Spitz: We started by helping small job shops optimize laser cutting machines, but from the beginning our ambition was always broader. Over the past few years, we have steadily expanded across different manufacturing technologies. What began with laser cutting has grown to include robotic welding, machining, and more recently plastic injection molding. At the same time, we've grown from working with companies employing a few dozen people to supporting large manufacturers with thousands and in some cases tens of thousands of employees. That progression has reinforced our belief that the challenge we are solving isn't limited to a single process or industry.

Manufacturers everywhere face similar questions about optimizing machines, improving quality, and making expertise available across their operations. Looking ahead, we want to continue helping manufacturers apply AI directly where value is created at the machine itself.

Today there's a great deal of discussion around Physical AI, connecting advances in artificial intelligence with the physical world. Our work sits at that intersection. We operate as close as possible to industrial machines, helping manufacturers rebuild and preserve the expertise that's gradually disappearing as experienced operators retire, and making that expertise available to every manufacturing organization.

Why Now Is the Right Time for Manufacturing AI

Sebastian Trolli: What market shifts do you believe are creating the greatest opportunities for GaussML today?

Jonathan Spitz: Every company reaches a point where it has to ask a simple question: Why now? For us, several powerful trends are coming together. One is the growing instability across global supply chains. As manufacturers increasingly reshore production and distribute manufacturing capacity across different regions, expertise can no longer remain concentrated in a handful of locations. Companies need the same level of manufacturing knowledge whether they're operating in Germany, the United States, Italy, China, or anywhere else.

At the same time, the supply of experienced manufacturing experts is steadily declining. Many of the people who spent decades working beside industrial machines are retiring, and with them goes a tremendous amount of practical knowledge. While some processes may be documented, much of the expertise that experienced operators develop, knowing which parameters work best under different conditions or how to respond when processes begin to drift, often exists only through years of hands-on experience. That's creating a growing gap between the demand for manufacturing expertise and the number of people available to provide it.

For us, that's exactly where AI can make a meaningful contribution. Rather than replacing experienced operators, we see AI as a way to enhance that expertise and make it available to manufacturers wherever it's needed.

Building Trust Through Practical AI

Sebastian Trolli: *Many manufacturers are still cautious about adopting AI. How do you help customers build confidence in this technology?*

Jonathan Spitz: Manufacturing has always been a careful and methodical industry. Organizations don't adopt new technologies simply because they're available. They need confidence that those technologies will deliver value without introducing unnecessary complexity or risk. That's why we deliberately built **Optimzyer** to make getting started as simple as possible.

Customers don't need extensive infrastructure projects, large historical datasets, or additional hardware before they can begin using AI. They can start with the machines they already have, conduct a small number of experiments, and see measurable results very quickly. That low-risk approach is intentional.

We want manufacturers to experience the value of AI through practical application rather than asking them to commit to long, complex projects before they see any benefit. For us, successful AI adoption begins by making the first step as straightforward as possible.

Manufacturing First, AI Second

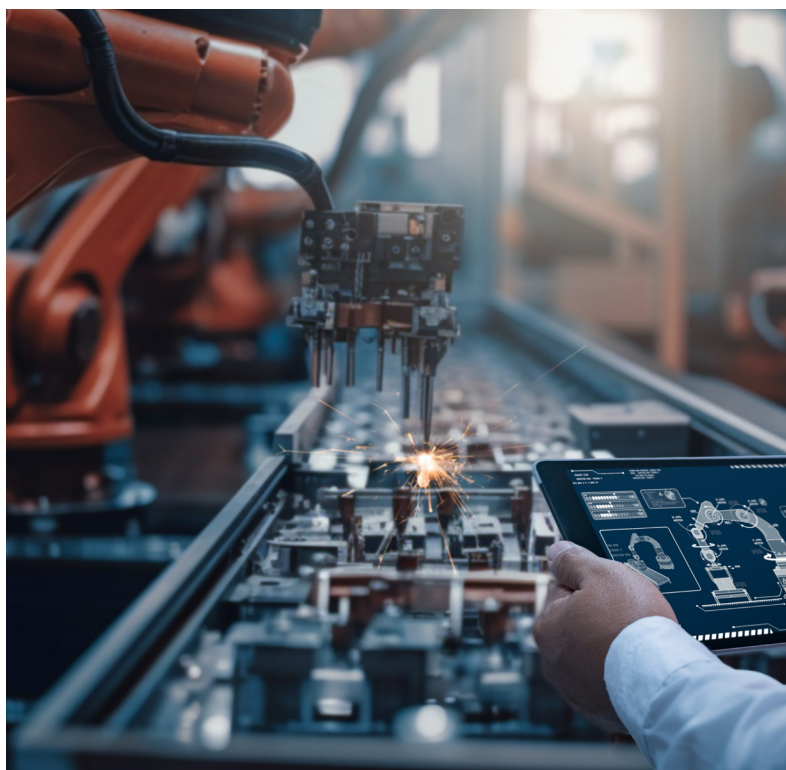
Sebastian Trolli: *As AI becomes increasingly crowded with new solutions and growing market attention, how do you want manufacturers to view GaussML, and what differentiates your approach?*

Jonathan Spitz: One of the things that makes us different is the philosophy behind how we built the company. From the beginning, we wanted to make AI as low risk and as easy to adopt as possible. Manufacturers are naturally careful when introducing new technologies, particularly something as transformative as

artificial intelligence. While the industry has been discussing digitalization and Industry 4.0 for many years, many manufacturers are only now beginning to adopt these technologies at scale. Understanding that reality shaped our approach.

We wanted customers to experience value quickly without requiring large investments, lengthy implementation projects, or major changes to the way they already operate. Just as importantly, we don't think of ourselves as an AI-first company.

We are a manufacturing-first company. My background is in mechanical engineering, and the same is true for many members of our team. Whether they are working in sales or customer engagement, they understand manufacturing processes and speak the language of manufacturers. That allows us to begin every conversation by understanding the process a customer is trying to improve rather than leading with artificial intelligence. AI is the technology that enables the solution, but manufacturing expertise is what shapes it.



Helping Manufacturers Build a Culture of Continuous Improvement

Sebastian Trolli: *As we wrap up our conversation, what's the one message you would like to leave with the manufacturing community?*

Jonathan Spitz: One thing we have consistently observed is that the results themselves are rarely the biggest obstacle. Whenever we work with customers, we see meaningful improvements in productivity, throughput, and operational performance.

What often determines success isn't the technology but the culture of the organization. The manufacturers that achieve the greatest success are those that embrace continuous improvement. They are constantly looking for ways to become a little better every day and are willing to explore new approaches when opportunities arise. Those organizations don't need much convincing. They see a new capability, they evaluate it, and if it helps improve their operations, they move quickly. Other organizations are understandably more cautious.

My advice would be to develop a mindset of trying new things, even if you're not completely convinced, they will work the first time. We use AI every day ourselves. I don't believe we're at a point where AI can solve every problem independently without human oversight, but I also see how rapidly it's improving. That's why I continue giving it increasingly difficult tasks.

Every few months, it's capable of doing more than it could before. Manufacturers should approach AI in much the same way. Experiment with it. Learn from it. And continue evaluating its potential as the technology evolves. Otherwise, there's a real risk of missing opportunities that could significantly improve competitiveness over time.

Looking Ahead: Mastering Manufacturing Complexity Through AI

Sebastian Trolli: *Looking ahead, how do you see AI reshaping manufacturing over the next five to ten years, and what role do you hope GaussML will play in that evolution?*

Jonathan Spitz: I believe AI will become a much more natural part of manufacturing operations. Today, many organizations are still evaluating where AI fits and how they can apply it effectively. Over time, I think we'll see AI becoming another tool that manufacturers use every day to improve productivity, quality, and operational performance.

For us, the opportunity is to continue helping manufacturers achieve excellence beyond the knowledge that has traditionally existed in the minds of experienced operators. That knowledge is incredibly valuable, but it's becoming increasingly difficult to replace as experienced people retire from the workforce.

By making manufacturing expertise available to more people through AI, organizations can scale beyond a handful of specialists that optimize every process. They are able to combine human expertise with AI to make better decisions, improve consistency, and accelerate learning across their operations. That's where I believe AI can have its greatest impact, not by replacing people, but by making manufacturing expertise more accessible.

Innovation Begins with a Willingness to Experiment

Sebastian Trolli: *Finally, what advice would you offer manufacturing leaders who are still uncertain about taking their first steps with AI?*

Jonathan Spitz: My advice is to stay curious and be willing to experiment. You don't have to believe every AI project will succeed immediately. What matters is developing a mindset of trying new approaches, learning from the experience, and continuously improving. That's how we have approached AI ourselves.

We use it every day, we continue testing its capabilities, and every few months we find that it's able to solve problems that previously seemed out of reach. Manufacturers should adopt the same mindset. Start with practical problems. Learn from each implementation. Build confidence over time.

The organizations that are willing to experiment today will be much better positioned to benefit as AI continues to evolve.

Closing Reflections: Making Manufacturing Expertise Scalable

Throughout the conversation, Jonathan Spitz consistently returned to one central idea: the future of manufacturing depends not only on adopting AI but also on enhancing the expertise that has traditionally lived in the heads of skilled operators.

Rather than replacing experienced operators, Dr. Spitz describes AI as a practical way to enhance and scale manufacturing expertise across the organization. By lowering the barriers to adoption and focusing on measurable operational improvements, manufacturers can begin realizing value without large-scale infrastructure projects or lengthy implementation cycles.

Dr. Spitz also emphasizes that successful AI adoption is as much about organizational mindset as it is about technology. Manufacturers that embrace continuous improvement, remain open to experimentation, and focus on solving real operational challenges will be best positioned to benefit as AI continues to mature.

For GaussML, the goal is not simply to apply AI to manufacturing. It's to help manufacturers get the most of their machines by enabling the next generation of operators and engineers to reach expert-level performance with AI.





Dr. Jonathan Spitz | Founder and CEO, GaussML

Dr. Jonathan Spitz is Founder and CEO of GaussML, the company behind Optimyzer, a small-data AI system that finds ideal machine parameters in six to nine experiments across manufacturing technologies, including laser cutting, robotic welding, machining and plastic injection molding.

A mechanical engineer by training, he holds a PhD in humanoid locomotion control. He went on to research the gap between digital twins and reality at Inria in France, where he began working on helping machines learn from far fewer data, and then joined the Bosch Center for Artificial Intelligence as a Research Scientist working on AI for manufacturing. He founded GaussML in 2020, after concluding that big-data methods do not fit manufacturing's small-data reality.



Sebastian Trolli | Research Director and Global Head of Research for Industrial Automation and Software, Frost & Sullivan

Sebastian Trolli is Research Director and Global Head of Research for Industrial Automation and Software at Frost & Sullivan. With over 20 years of experience spanning industrial automation, industrial software, digital industries, and manufacturing, he brings deep expertise in leveraging emerging technologies, market trends, and business models to drive industrial growth. He has been recognized as a Top 50 Thought Leader in Manufacturing and Industry 4.0, often speaks at industry events, webinars, and podcasts, and is a Senior Member of the International Society of Automation (ISA). His domain expertise spans the entire industrial value chain—from design and engineering through process control, operations, services, and enterprise integration. His career includes 13 years with Honeywell (Process Solutions and Connected Industrial divisions) and leadership roles at Clariant, Akzo Nobel, and Precision Valves Corp, focusing on advancing industrial transformation through strategic insights and innovation.

Ready to Lead the Transformation?

- ▶ **Schedule a Growth Strategy Dialog:** Align your growth roadmap with Frost & Sullivan's Visionary Growth Pipeline™ Dialog.
- ▶ **Engage with Growth Experts:** Co-design AI-enabled, data-driven operating models that scale industry-specific and commercial impact.
- ▶ **Showcase Your Transformational Leadership:** Position your organization as a transformation leader through Frost & Sullivan's Transformational Growth Leadership platform.
- ▶ **Join the Growth Council:** Collaborate with industry leaders shaping the future of your ecosystem.
- ▶ **Explore Best Practices Recognition:** Be recognized for excellence in growth strategy, execution, and customer impact.
- ▶ **Benchmark Your Industry Positioning on the Frost Radar™:** Benchmark your growth performance and innovation strength against industry competitors.
- ▶ **Tell Your Story:** Accelerate awareness, engagement, and revenue growth through integrated brand and demand generation strategies.



Annexure:

Frost & Sullivan delivers actionable intelligence that helps industrial leaders, manufacturers, and technology providers identify emerging growth opportunities and accelerate transformational change across advanced manufacturing and industrial AI. Our expertise spans industrial AI, intelligent process optimization, manufacturing automation, Physical AI, workforce transformation, and next-generation production technologies. To learn more about the latest growth opportunities, strategic imperatives, companies to action, and best practices shaping the future of intelligent manufacturing, explore our portfolio of growth analyses.

- ▶ [Frost Radar™: Industrial Connectivity Software, 2026](#)
- ▶ [Growth Opportunities in Emerging Industrial AI Ecosystem, Global, 2025–2029](#)
- ▶ [Frost Radar™: AR-Centric Augmented Connected Worker Platforms, 2026](#)
- ▶ [Microfactories and Distributed Manufacturing: Localized, On-Demand Production for Supply Chain Resilience](#)
- ▶ [Physical and Embodied AI for Highly Dexterous Robotics](#)
- ▶ [Top 10 Growth Opportunities Impacting AI Applications and Use Cases](#)

YOUR TRANSFORMATIONAL GROWTH JOURNEY STARTS HERE

Frost & Sullivan's Growth Pipeline Engine, transformational strategies and best-practice models drive the generation, evaluation, and implementation of powerful growth opportunities.

Is your company prepared to survive and thrive through the coming transformation?

[Join the journey.](#) →