

F R O S T & S U L L I V A N

2024

**ENTREPRENEURIAL  
COMPANY OF THE YEAR**

*IN THE GLOBAL  
SOFTWARE-CENTRIC  
AUTOMATION INDUSTRY*

F R O S T & S U L L I V A N

BEST

2024 PRACTICES

AWARD



**SOFTWARE  
DEFINED  
AUTOMATION**

## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each Award category before determining the final Award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Software Defined Automation excels in many of the criteria in the software-centric automation space.

AWARD CRITERIA	
<i>Entrepreneurial Innovation</i>	<i>Customer Impact</i>
Market Disruption	Price/Performance Value
Competitive Differentiation	Customer Purchase Experience
Market Gaps	Customer Ownership Experience
Leadership Focus	Customer Service Experience
Passionate Persistence	Brand Equity

### ***Software Defined Automation: Revolutionizing Industrial Automation***

Founded in 2021 and headquartered in Boston, United States, Software Defined Automation (SDA) manages, deploys, secures, and extends the programs that run on specialized industrial computers or programmable logic controllers (PLCs). Its solutions include automated backup, code version control, secure remote access, browser-based engineering, and AI-generated code documentation, all in a single, vendor-agnostic platform. Leveraging software development best practices, the company enables comprehensive, unified cloud-based management of industrial control systems, bridging silos and reducing the need for traditional, vendor-specific hardware and on-site management. SDA’s solutions portfolio offers extensive capabilities to streamline automation engineers’ workloads and enhance manufacturing companies’ automation performance. Delivered through its Industrial DevOps platform, Frost & Sullivan appreciates how SDA significantly advances factory automation, promoting innovative, efficient, and intelligent factories.

### ***Empowering Efficiency and Superior Capabilities through Cutting-edge Technology***

SDA’s comprehensive product suite empowers automation engineers to be more dynamic and responsive, optimizing factory operations. By streamlining processes and accelerating timelines, the company makes their capabilities more proficient, agile, proactive, and cost-effective. With SDA’s solutions, engineers can maintain seamless operations, rapidly resolve issues, enhance security, drive innovation, and optimize

resource utilization. As a result, it boosts productivity, reduces downtime, improves efficiency, and cuts costs for manufacturing and industrial companies.

SDA harnesses advanced technologies (e.g., cloud computing, Git-like version control, and virtualization tools) to streamline automation management and promote continuous improvement. By leveraging its benefits (e.g., scalability, flexibility, security, and cost-efficiency), the company enhances operational efficiency and ensures robust management and industrial automation systems security, thereby significantly improving overall performance. Among SDA's notable offerings identified by Frost & Sullivan is its browser-based engineering, which provides secure, universal access to vendor-agnostic Integrated Development Environments (IDEs) via web browsers. It allows engineers to access all automation projects through a single interface, regardless of the hardware vendor, eliminating the need to switch between

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**- Agustin Fabris  
Industry Analyst**

different vendor-specific tools or software and associated hardware and license costs. This enables engineers to work more efficiently from any location, significantly reducing travel and on-site hardware management burdens. Additionally, it facilitates real-time updates, troubleshooting, and support tasks, improving responsiveness and accelerating problem-solving.

The company also offers advanced version control, streamlining PLC code management with detailed modification tracking, and easy accessibility through

web browsers. It maintains a comprehensive version history, allowing for rollbacks to previous versions. In addition, it facilitates team collaboration, enabling engineers to develop code and troubleshoot together on a unified platform. Through synchronized efforts, teams can resolve issues faster and ensure smoother project execution, thus improving the development process, enhancing code quality, and accelerating update deployments.

SDA's automated backup solution, powered by its vendor-agnostic lightweight PLC connectivity, enables engineers to manage backups from multiple sites through a single interface. It deploys backup versions and leverages scripts (through its REST API) to manage the deployment process during system failures or disruptions, offering robust disaster recovery for PLC files. The integrated approach helps engineers quickly restore systems to their previous states, ensuring operational continuity and minimizing downtime.

SDA empowers virtual PLC (vPLC) management, allowing control over industrial assets like traditional PLCs. Running on commercial off-the-shelf information technology (IT) servers or IPCs located at the edge, it controls assets in real-time, managing and monitoring them from the cloud on a single platform. vPLCs help overcome hardware-based PLCs' constraints by offering more flexibility, better resource usage, scalability, and lower costs in industrial automation deployments. Moreover, vPLCs allow engineers to create, test, and refine automation strategies in a virtual environment before deploying them, speeding up projects and fostering innovation without hardware limitations. SDA implemented a vPLC architecture

and conducted a real-time performance, demonstrating its suitability for automation applications requiring response times of 5-10 milliseconds.<sup>1</sup>

SDA prioritizes convenience and flexibility for automation engineers. Its solutions adopt an application programming interface-based modern, modular microservices architecture, facilitating seamless integration. This approach empowers automation engineers with the freedom to select and integrate various technologies according to their needs. Notably, engineers can now use devices like MacBooks and iPads for PLC programming, breaking away from the previous restriction of Windows-based systems. They can open Siemens' Totally Integrated Automation (TIA) Portal software for PLC programming in just 12 seconds, saving up to 3 to 5 minutes each time they open the TIA portal, thereby reducing downtime, and boosting productivity. Moreover, SDA features an auto-update capability that automatically updates all previous software versions when vendors release a new patch. Furthermore, SDA's Factory Agent (i.e., an auto-documentation tool for PLC program files) offers immediate value to automation engineers without the need to learn Git-like development processes. With a single click, it can generate documentation for a code, saving time compared to manual reverse engineering. This artificial intelligence (AI)-powered tool explains PLC program code (i.e., processes, inputs, outputs, and control logic), facilitating simple understanding. Integrated with version control, it helps users comprehend changes between code versions, similar to Chat Generative Pre-Trained Transformer (ChatGPT) explanations. It can generate compliant, functional code with detailed comments from simple prompts (like ChatGPT's capabilities).

SDA has built strong capabilities through continuous research and development efforts and strategic partnerships. The company transforms manufacturing and industrial environments from hardware-based to software-driven by integrating each vendor's PLC IDE (e.g., Siemens, Rockwell, Mitsubishi, Beckhoff, and Schneider) onto their platform, effectively making them behave as cloud computing instances. SDA also collaborated with VMWare and Codesys to develop its vPLC solution. Committed to advancing software-defined automation, SDA continuously collaborates closely with industry partners, leveraging their unique strengths to create transformative solutions that enhance efficiency, security, and flexibility in manufacturing and industrial processes.

SDA also drives the industry's shift from hardware-centric to software-defined automation by offering its expertise to automation technology providers, promoting widespread adoption. In 2023, SDA partnered with Lenze to integrate its cloud-based PLC management, version control, and edge management with Lenze's NUPANO platform, enabling advanced virtualization and workload consolidation, thus improving operational efficiency and flexibility.<sup>2</sup> In 2024, SDA provided the technical foundation to SEW-EURODRIVE (SEW) to develop a comprehensive set of tools to enhance the security, flexibility, scalability, and efficiency of industrial systems. The company offered essential solutions (e.g., connectivity, backup, version management, and browser-based engineering) for SEW's DriveOperations. With features like PLC backup, version control, AI-driven analysis, and PLC code interpretation, SEW's platform enables companies to improve operations, cut costs, and handle complex tasks more efficiently.<sup>3</sup>

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<sup>1</sup> <https://www.softwaredefinedautomation.io/resources/blog/dear-vplc-how-real-time-are-you/#title-0>

<sup>2</sup> <https://www.softwaredefinedautomation.io/resources/news/lenze-sda/>

<sup>3</sup> <https://www.softwaredefinedautomation.io/resources/blog/open-ecosystem-for-industrial-automation/>

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### ***Positioned for Growth***

SDA's approach goes beyond its extensive expertise and best-in-class capabilities, with customer value as a strategic imperative. The company clearly emphasizes its clients' needs, nicely demonstrating its commitment to customer satisfaction. For example, by understanding the importance manufacturing companies place on the reliable storage of their PLC files, SDA prioritizes staying current with relevant certifications. Furthermore, SDA focuses on robust security practices and IT management, underscoring its dedication to providing customers with secure and dependable solutions. Over 50% of its development efforts are dedicated to security, following AWS best practices to ensure PLC files are secure and inaccessible to SDA employees. Data is redundantly stored six times in the cloud, enhancing security through automatic backups. Additionally, SDA integrates with Active Directory and other authentication services for effective user access management. Engineers can have indefinite access or use browser-based access without credentials, with all activities logged. This restriction allows IT departments granular control over shop floor computers, akin to managing data centers.

Furthermore, the platform supports modern access management for PLCs, including temporary third-party access and role-based permissions (e.g., read-only, edit, or admin). For instance, a system integrator can gain temporary access without needing the actual password, and manufacturers can rotate passwords without changing user access rights, ensuring secure and seamless operations. SDA's solution also

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***- Rubini Kamal  
Best Practices Research Analyst***

includes encrypted Message Queuing Telemetry Transport communication for base communication, on-demand encrypted WireGuard Virtual Private Network connections to Operational Technology devices, and automatic logging of every connection and action. Additionally, the company provides the SDA gateway at no additional cost, including its backup and versioning solutions.

SDA serves clients across diverse industry verticals, including chemical, furniture, and pharmaceutical sectors. The firm provides steadfast support throughout its clients' journeys to achieve their objectives. In 2024, SDA partnered with COPA-DATA and FLECS to develop an innovative ICaaS solution for pharmaceutical giant Boehringer Ingelheim. This collaboration involved transforming COPA-DATA's zenon Engineering Studio into a browser-based IDE and complementing it with its product suite (i.e., automated deployment, backup, version control, and secure remote access), facilitating seamless automation management.

For its next growth phase, SDA aims to expand into new markets, particularly in high-demand sectors - such as automotive, consumer packaged goods, logistics, and utilities. Despite longer adoption cycles, SDA recognizes significant opportunities in process industries. The company's interactions with process industries focus on critical aspects such as security, resiliency, and disaster recovery, which are crucial for



maintaining uninterrupted operations. These industries' Distributed Control Systems (i.e., specialized computerized control systems) are highly customized to meet specific customer needs. Expansion into these new markets will promote further growth and cement its industry-leading position.

Frost & Sullivan commends SDA for its focus on data security, controllability, and access management, showcasing its dedication to robust security practices and comprehensive IT management capabilities.

## Conclusion

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Hardware-centric, on-site automation management and vendor-specific software and licenses hinder industrial and manufacturing companies' efficiency, productivity, and cost-effectiveness. Software Defined Automation (SDA) properly addresses these issues, providing cutting-edge control and orchestration solutions and transforming industrial automation. SDA's Industrial DevOps platform offers secure, universal access to vendor-agnostic Programmable Logic Controllers (PLC), advanced version control, automated backups, and virtual PLC management. Its platform allows automation engineers to manage projects from a single interface, work remotely, provide real-time services, collaborate seamlessly, automate backups and deployments, and virtualize industrial assets. SDA prioritizes customer-centric strategies, enhancing brand equity and establishing leadership in the software-centric automation market. Frost & Sullivan appreciates how the company is dedicated to security, implementing robust protocols and information technology management practices to ensure the secure and reliable storage of customer assets.

With its strong overall performance, Software Defined Automation earns the 2024 Frost & Sullivan Global Entrepreneurial Company of the Year Award.

## What You Need to Know about the Entrepreneurial Company of the Year Recognition

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Frost & Sullivan's Entrepreneurial Company of the Year Award recognizes the best up-and-coming, potentially disruptive market participant.

### Best Practices Award Analysis

For the Entrepreneurial Company of the Year Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Entrepreneurial Innovation*

**Market Disruption:** Innovative new solutions have a genuine potential to disrupt the market, render current solutions obsolete, and shake up competition

**Competitive Differentiation:** Strong competitive market differentiators created through a deep understanding of current and emerging competition

**Market Gaps:** Solution satisfies the needs and opportunities that exist between customers' desired outcomes and their current market solutions

**Leadership Focus:** Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

**Passionate Persistence:** Tenacity enables the pursuit and achievement of seemingly insurmountable industry obstacles

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty

## About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

## The Growth Pipeline Engine™

Frost & Sullivan’s proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

[Learn more.](#)

### Key Impacts:

- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



## The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

### Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

