Smart Manufacturing

Opening Remarks



G. Notarnicola
Partner and Head of Semiconductor Industry
Porsche Consulting S.r.L., Milano, Italy

Abstract
Coming Soon

Biography
Giovanni Notarnicola is an electronic engineer with an international career spanning over 18 years, marked by deep expertise in the semiconductor industry and strategic transformations. He began his journey at the CERN in Geneva, where he contributed to cutting-edge projects in particle physics, an experience that laid the groundwork for his ability to tackle advanced technological complexities.
In 2008, he was selected for the "high potentials" program at Bosch, where he worked at both central and plant levels across Europe and Asia, leading strategic transformations in supply chain, production, and IT for the automotive sector. This experience allowed him to develop a deep understanding of industrial production processes and lead global optimization and innovation projects.
In 2012, Giovanni joined Porsche Consulting, initially leading strategic transformation projects across various industrial sectors, including manufacturing, consumer goods, and automotive. Over time, he took on roles of increasing responsibility, eventually becoming Global Head of the Semiconductor Industry at Porsche Consulting, where he is responsible for growing the industry practice. In this role, he supports the strategic transformations of key industry players in the post-COVID world, focusing on building new capabilities and challenging the status quo to drive a higher level of performance. His work leverages innovative technologies such as AI applied to operations and the development of lights-out factories, while also providing strategic support on geopolitical challenges and innovation to help the industry achieve greater resilience and global competitiveness.
In addition to his role at Porsche Consulting, Giovanni is Chairman of several initiatives within the strategic partnership between SEMI and Porsche Consulting, aimed at contributing to the development of a technologically advanced and competitive ecosystem for the semiconductor industry.

References

From Automation to Autonomy: Building the Dark Factory with Physical AI and Intelligent Robot Orchestration



Y. J. Jang
Professor
KAIST, Seoul, Republic of Korea (South Korea)

Abstract
The semiconductor industry is entering a new era of manufacturing, moving beyond traditional automation toward fully autonomous operations. As semiconductor fabs become increasingly complex, conventional Material Control Systems (MCS) and equipment-level automation alone are no longer sufficient to achieve the flexibility, intelligence, and operational efficiency required for the next generation of manufacturing.
This keynote introduces a new vision of the **Dark Factory**, where Physical AI continuously monitors factory conditions, coordinates heterogeneous robots and manufacturing equipment, and dynamically optimizes operations with minimal human intervention.
At the center of this transformation is **KAIROVERSE**, an AI-powered robot orchestration platform designed to integrate and intelligently control diverse material handling systems, including Overhead Hoist Transport (OHT), Autonomous Mobile Robots (AMRs), and other robotic systems, within a unified factory-wide operational architecture. By combining intelligent material handling control, real-time decision-making, simulation, and AI-driven optimization, KAIROVERSE enables a transition from isolated automation systems to coordinated, autonomous factory operations.
The presentation will also highlight practical applications and lessons learned from deployments of selected technologies in large-scale semiconductor and automotive manufacturing facilities, demonstrating how intelligent orchestration can improve material flow, operational flexibility, and factory-wide coordination.
Ultimately, this keynote presents a broader perspective on Physical AI: **the factory itself can be viewed as a massive, interconnected robotic system**, where intelligence extends beyond individual machines to the autonomous operation of the entire manufacturing ecosystem.

Biography
Young Jae Jang received his Ph.D. in Mechanical Engineering from the Massachusetts Institute of Technology (MIT) in 2007, and dual M.S. degrees in Mechanical Engineering and Operations Research from MIT in 2001. He earned his B.S. in Aerospace Engineering from Boston University in 1997.
He is currently a Professor in the Department of Industrial and Systems Engineering at the Korea Advanced Institute of Science and Technology (KAIST) and the Founding Director of the Center for KAIST Manufacturing Physical AI, where he leads research on next-generation autonomous manufacturing systems.
In parallel, he is the CEO and Co-founder of DAIM Research Corp., the leading startup commercializing AI-based manufacturing powered by Physical AI technology. DAIM's platforms have been successfully deployed by major global manufacturers, including Samsung Electronics, LG Electronics, SK On, and LG Energy Solution, demonstrating large-scale industrial adoption and real-world impact.

References

Data Enablement as a Business Imperative in Semiconductor Manufacturing



C. M. Schilz
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M. Grafe
Solution Specialist for Smart Manufacturing
Carl Zeiss Digital Innovation GmbH, Dresden, Germany

Abstract

Data-driven manufacturing, AI, digital twins, and advanced analytics are rapidly becoming key competitive differentiators in the semiconductor industry. Yet many organizations struggle to scale these initiatives because the underlying data ecosystem is fragmented, inconsistent, or incomplete. Structured Data Enablement is therefore no longer optional. It is a business-critical capability and a prerequisite for sustainable operational excellence and future innovation. Based on an **ongoing data platform transformation** at ams OSRAM, this joint presentation shares how manufacturers can establish a holistic foundation for data-driven production and AI transformation. The session highlights **the role of Industrial Data Platforms**, the importance of separating data, semantic, and intelligence layers, and the value of a structured, step-by-step transformation approach. Attendees will gain practical insights into the drivers, objectives, challenges, and early lessons learned from building the foundation for scalable analytics, AI, and next-generation manufacturing use cases.

Biography

Dr. Christof M. Schilz is Vice President for Operations Technology at amsOSRAM, where he drives strategic initiatives related to digital manufacturing, automation and AI enablement. His expertise includes manufacturing execution systems, industrial data platforms, data governance, and the enablement of AI and advanced analytics. With more than 25 years of experience in operations, information technology, and quality management across the semiconductor industry, he combines deep technological expertise with a strong understanding of manufacturing processes and operational excellence.

Marco Grafe is a Solution Specialist for Smart Manufacturing at ZEISS Digital Innovation, where he coordinates development activities related to Industry 4.0. His areas of expertise include modern manufacturing organizations, industrial data platforms, and digital twins. With more than 15 years of experience in mechanical and plant engineering and project work across the semiconductor, automotive, and pharmaceutical industries, he combines deep technological expertise with a strong understanding of industrial processes.

References

The First Domino: How India Became the Launchpad for Micron Assembly & Test Modernization



D. Chavet
Senior Director & Global Head of Manufacturing IT
Micron Technology, Singapore, Singapore

F. A. Lobo
CEO
Critical Manufacturing, Porto, Portugal

Abstract

Micron's India Assembly & Test facility was more than a greenfield manufacturing investment. It became the catalyst for a new, globally integrated approach to manufacturing transformation, establishing the foundation for future Assembly & Test operations worldwide.

This session will explore how Micron leveraged the opportunity to design a modern digital manufacturing ecosystem from the ground up, connecting product lifecycle management (PLM), global master data authoring, automation, analytics, and operational processes around a manufacturing execution core built on Critical Manufacturing MES, unifying them into a single, scalable framework. Rather than deploying isolated solutions, the program adopted an end-to-end strategy that enabled common standards, accelerated deployment, and ensured consistency across the manufacturing value chain.

Attendees will learn how India served as the proving ground for this vision, demonstrating how a globally aligned digital architecture, with a modern MES as the execution layer of the digital thread, can shorten time-to-ramp, improve operational readiness, and create a repeatable blueprint for future Assembly & Test expansion. The session will share key lessons learned from implementing a unified digital thread that connects engineering, manufacturing, and operations while balancing global governance with local execution.

Key Takeaway: Modernizing manufacturing is not about deploying a new MES or automating individual processes. It is about establishing an integrated digital foundation that enables scalability, standardization, and agility across the enterprise.

Biography

Didier Chavet is the Senior Director and Global Head of Manufacturing IT at Micron Technology, leading the strategy, delivery, and operations of Manufacturing IT capabilities supporting Micron's worldwide semiconductor manufacturing network. With more than two decades of experience in the semiconductor industry, he is responsible for the technology platforms and operational systems enabling highly automated front-end and assembly & test manufacturing across Micron's global factories.

Throughout his career at Micron, Didier has been at the forefront of digital transformation initiatives that have significantly advanced manufacturing automation, operational excellence, and factory intelligence. He played a pivotal leadership role in the development of Micron's vision for highly autonomous "Lights Out" manufacturing operations, helping drive the integration of advanced automation, manufacturing execution systems, and data-driven decision-making capabilities across the company's assembly and test operations.

More recently, Didier has been leading Micron's Assembly & Test (AT) Modernization Program, one of the company's most strategic manufacturing transformation initiatives. This program is reimagining the technology foundation of Micron's Assembly & Test network through modernization of manufacturing platforms, standardization of global processes, and adoption of next-generation digital capabilities that improve scalability, resiliency, and operational agility.

A strong advocate for innovation and emerging technologies, Didier also drives the incorporation of Artificial Intelligence and advanced analytics into manufacturing operations. Under his leadership, Manufacturing IT has accelerated the use of AI-powered solutions to enhance operational efficiency, predictive decision-making, automation, engineering productivity, and factory intelligence. His focus is on transforming data into actionable insights while enabling smarter, more autonomous manufacturing ecosystems.

Having lived and worked across Asia, North America, and Europe, Didier brings a global perspective to technology leadership and organizational transformation. His international experience, coupled with deep expertise in semiconductor manufacturing and digital innovation, enables him to lead diverse global teams while delivering large-scale business and technology transformations that support Micron's continued growth and competitiveness.

Francisco Almada Lobo is recognized as a top strategic thought leader and evangelist on digital transformation, specifically Industry 4.0, manufacturing operations and the factories of the future. He holds an MBA and an Electrical Engineering Degree from the University of Porto. He started his career in a CIM R&D Institute and joined Siemens Semiconductor in 1997. Throughout his tenures at Siemens, Infineon and Qimonda, he specialized in optimizing highly complex, discrete manufacturing operations. In 2004, he led the first migration of an MES system in a running high-volume facility. Francisco Almada Lobo holds various positions within the smart manufacturing and venture capital industries, including being a Member of the 200M Fund's Investment Committee, Executive Committee Member of SEMI Smart Manufacturing Technology, Member of the Forbes Technology Council and Advisor to many Industry 4.0 startups. Francisco Almada Lobo co-founded Critical Manufacturing in 2009 and has been CEO since 2010.

References

Shift Left to Ramp Smart: Cutting Cost of Ownership with Advanced Sensor Analytics and Machine Learning in HVM

C. Doyle
Technical Program Manager
Tokyo Electron Europe, Productivity and Data Analytics, Dublin, Ireland

Abstract
Accelerate HVM Ramps and cut cost of ownership by up to 20%.Learn how Machine learning and high frequency sensor analytics can reduce tool qualification times ensuring semiconductor companies meet surging market demands.

Biography
Catherine Doyle is a distinguished Technical program manager and semiconductor industry veteran with 25 years experience at a premier global semiconductor manufacturer, where she directed advanced etch process through Multiple technology node transfers and Highvolume ramps.
Over the last 5 years in manufacturing, she managed to strategic benchmarking initiatives to maximize productivity and Overall equipment Efficient(OEE)across global supplier fleets.
Currently she drives innovation at Tokyo Electron(TEL)Leading advanced technical programs that leverage machine learning to optimize tool performance and significantly reduce the cost of ownership(CoO) .
She is engaging with the ecosystem partners to discuss how the intelligent automation and advanced data analytics are reshaping European fab productivity

References

Mobile Manipulation Robot-Based Fully Auto Fab Solutions



G. Jian
Vice President
YOUIBOT Robotics, Shenzhen, China, People's Republic of

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Closing Remarks



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