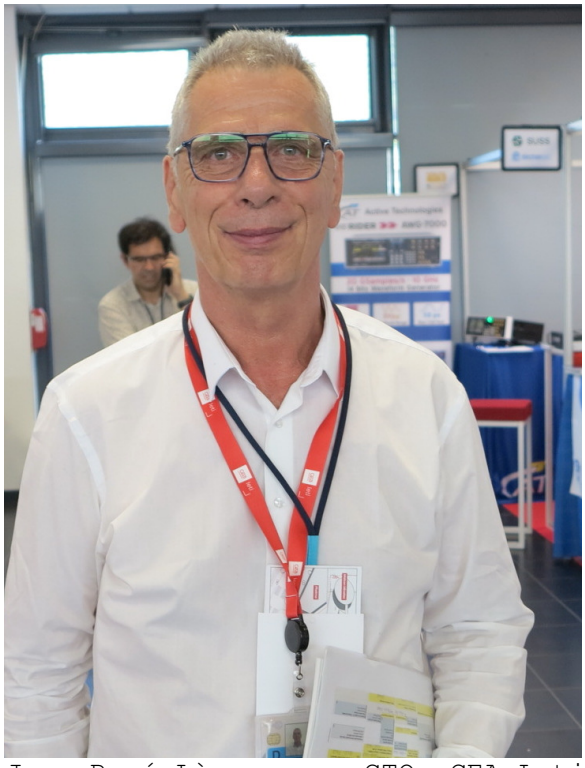
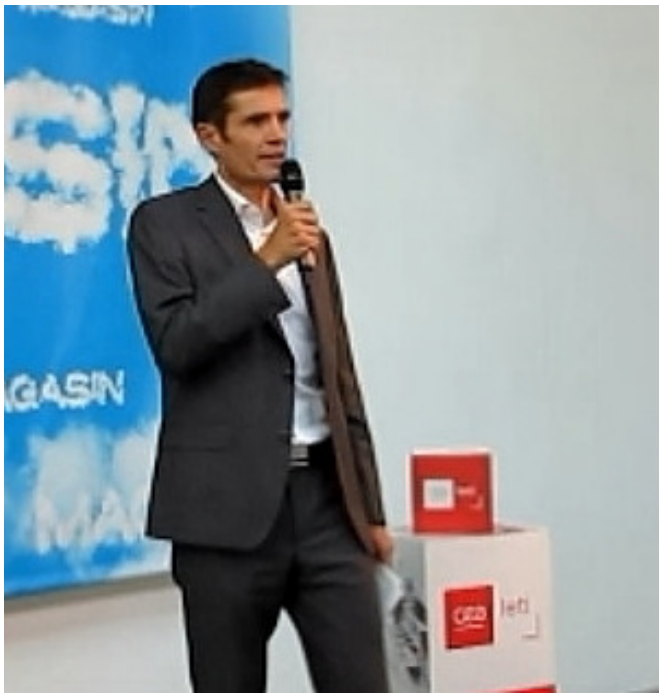
Leti Innovation Days, June 17–19, 2025, Grenoble, France

Artificial Intelligence is a kind of a new sort in the industry and the technology is now used in nearly all industry branches. If used correctly AI and generative AI can be very useful making many applications and functions more efficient. With the ability to search through enormous amount of data and give quick answers will AI be able make many operations more optimal, such as more efficient tools, more efficient equipment, new system architectures and innovation etc.
In the semiconductor industry artificial intelligence has a strong potential to leverage the IC market, from chips everywhere to AI everywhere. As AI is redefining the semiconductor landscape there will be fundamental changes in how chips are designed and used.
To compute applications using AI and especially generative AI with large language (LLM) models the servers, particularly in data centers, have to work hard and therefore use a lot of energy. Therefore it is important to consider the sustainability of the AI innovation in order to ensure long-term benefits for the environment. Industry-experts anticipate that next generation of LLM training will require 100x more compute power, and to train a leading model the energy needed is multiplied by 10 every two years. Energy consumption in AI factories (or data centers), is one of the main challenges with artificial intelligence, and as the amount of data is rapidly growing the need for energy increases strongly. Today for example a single AI factory rack can contain up to 72 GPUs and consumes 120 kW, but in the not so far future this may increase to 1024 GPUs and 1 Megawatt per AI rack. A reduction of the power consumption in the AI datacenters can therefore contribute considerably to obtain sustainability in the semiconductor industry. This will need innovation on all levels in the electronics industry, for example replace copper wires in the AI datacenters with optical interconnects and silicon photonics which use light to transmit data and result in lower latency and lower energy consumption. The goal in the industry is to obtain 1000x gain in energy efficiency by 2032.
"The AI advances are due to high performance chips, and more than ever advanced semiconductors are the basis of the AI power, from the edge to the cloud" said Sébastien Dauvé, CEO, CEA-Leti.
The LID World Summit 2025 at CEA-Leti in Grenoble, France (where artificial intelligence was the theme) gave a good impression of the R&D activities and AI innovation in the semiconductor industry.

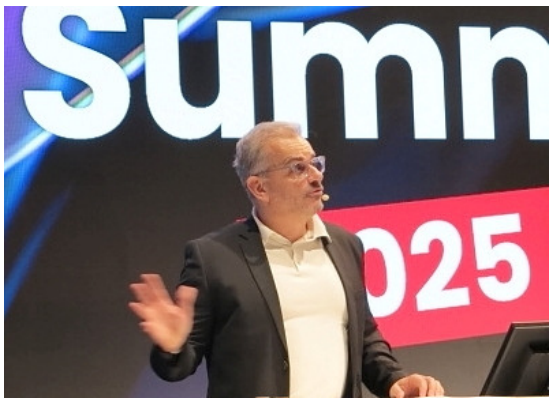
Michael Tchagaspanian and Susanna Bonnetier, CEA-Leti, opened the LID25 conference



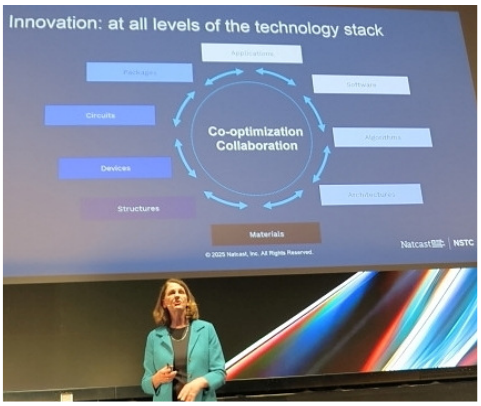
Jean-René Lèquepeys, CTO, CEA-Leti
We need to improve the energy efficiency of chips and electronic systems by a factor of 1,000 by 2032



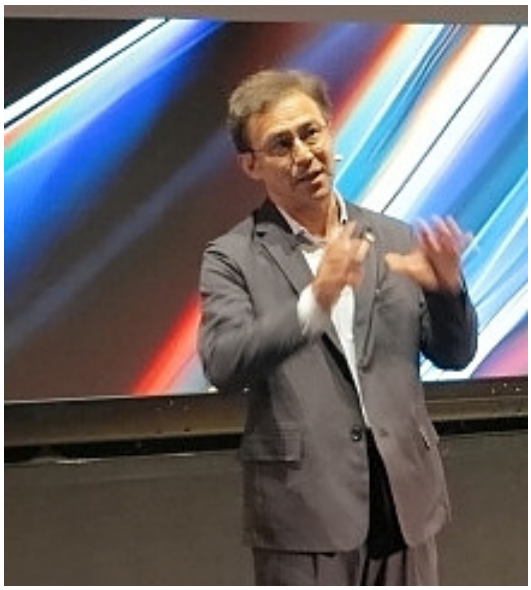
Sébastien Dauvé, CEO, CEA-Leti
Europe shall again be a solid player on the semiconductor market world wide, and the FAMES project among others can pave the way



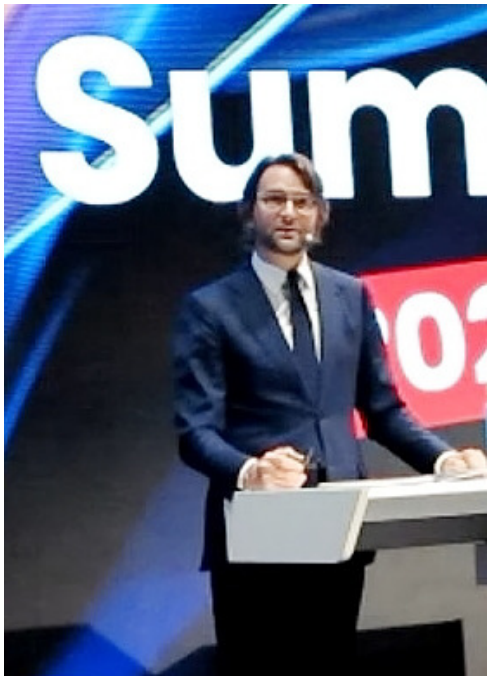
Remi El-Ouazzane, president, STMicroelectronics, Silicon photonics in next generation AI factories reduces cloud power consumption and increases internal data bandwidth



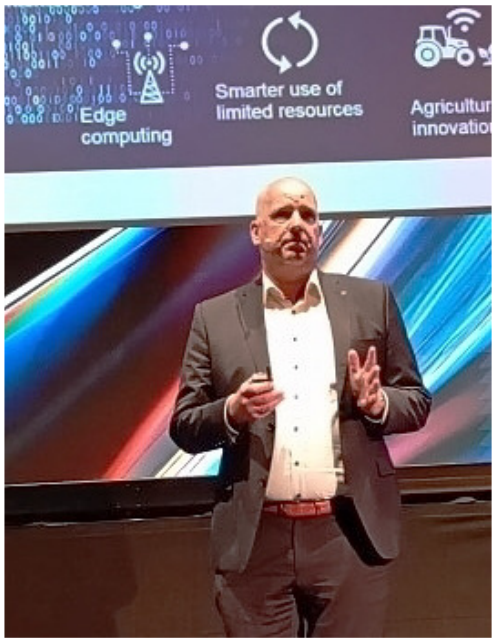
Deidre Hanford, CEO, Natcast,
The semiconductor market is a business worldwide and will be so for decades to come. EU has many good ideas and research and Natcast will cooperate about this



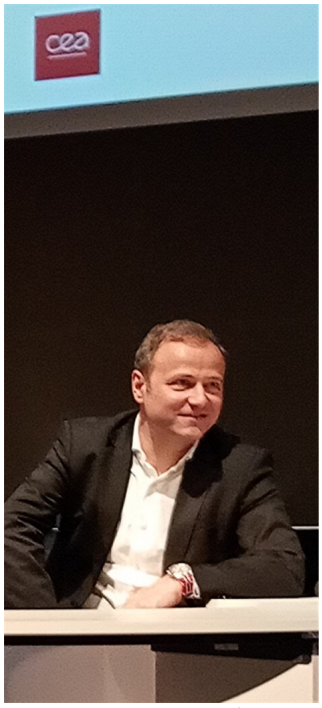
Yoshinami Takahashi, CEO, Fujitsu,
our AI investment increases 88% and Fujitsu's Uvane electronics can be compared with a formel 1 racer



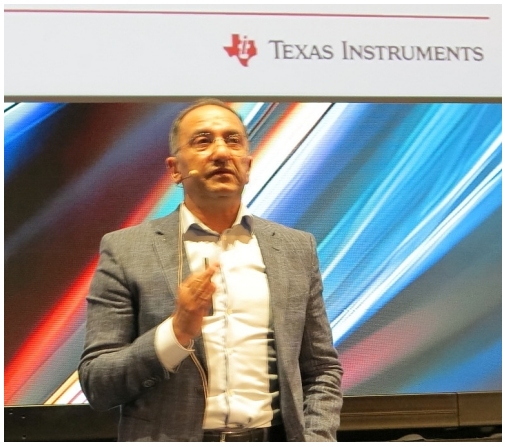
Thibault Basquin, Co-Head of Buyout, Ardian. As a worldwide private investhouse we see huge growth perspectives for semiconductors and Europe has a unique opportunity



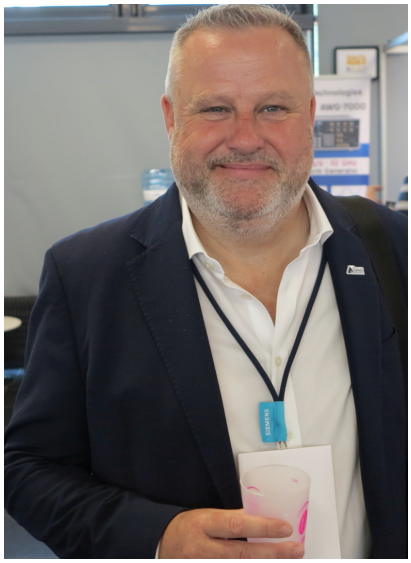
Herman Boom, VP, ASML,
AI drives the whole semiconductor industry and applications will grow in functionality and performance, leading to semiconductor growth



Pierre Barnabé, CEO, Soitec, Intelligent materials enabling AI everywhere giving a good potential for the FD-SOI technology

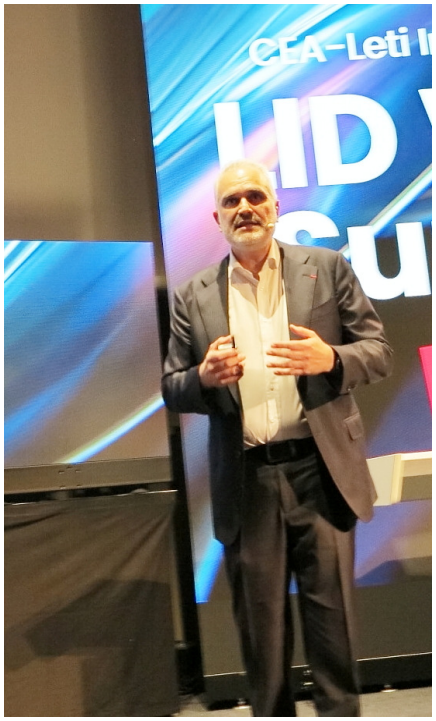


Dr. Ahmad Bahai, SVP & CTO, Texas Instruments, AI is important for the edge electronics to give intelligence at every level locally

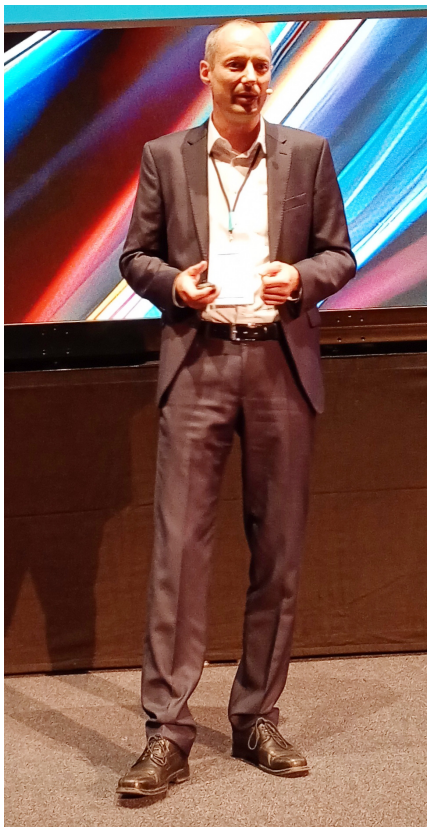


Haynes, VP, LAM Research, AI-based process equipment and advanced technology for next generation solutions achieve faster yield

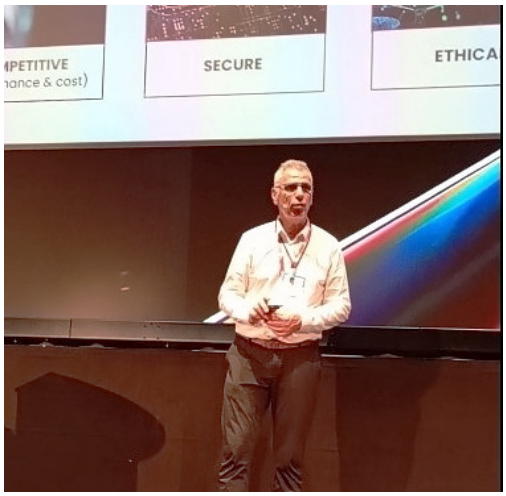
Barbara De Salvo, Dir. of research, META Reality Labs. Smart AR glasses with AI will transform the ways in which we live and work. Glasses are the most natural form factor for Wearable AI devices



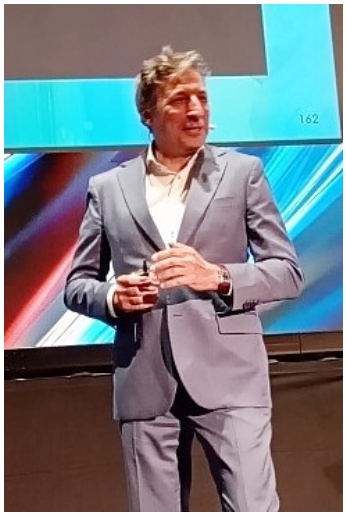
Hervé Bouaziz, president, Lynred, Next-gen infrared sensors with integrated AI make automatic acute braking of smart cars possible



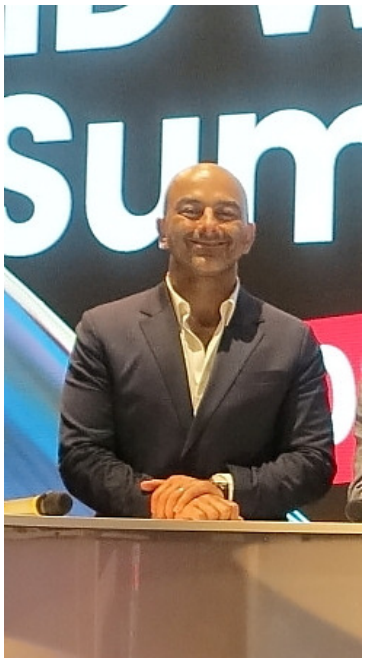
Jörg Doblaski, CTO, X-FAB group, AI is important for our speciality foundry in many ways, for example to obtain power efficiency and a fast transition to sustainable electronics using SiC and GaN devices



Jean-René Lèquepeys, CTO, CEA-Leti, Innovation will be key to move towards greener electronics and to limit the environmental footprint of chips and electronics systems. And Leti’s new flagship initiative, R.E.S.O.L.V.E., leads the way



Kaïs Mnif, CEO, Trixell, Thales. Disrupt X-Ray imaging with next generation technology in a portable unit to get faster X-Ray results which is important for the human health



Ashkan Seyedi, Dir., Optical Interconnect, NVIDIA. AI factory scale-out and AI density depend on optical connectivity, and the power consumption of the optical network represents 10% of the compute resources

Emmanuel Le Taillandier de Gabory, General Manager, NEC Corp., Generative AI has potential to simulate advanced human expertice. The integration of AI into diverse social activities is driving significant transformation across society, industry, and daily life