



THE PROCESSOR
AT THE HEART OF
INTELLIGENT SYSTEMS



Updated: December 2018

Company Overview

Kalray is a fabless semiconductor company, pioneer in developing a new generation of processors designed to fuel the next generation of intelligent data centers and embedded systems such as autonomous vehicles. Kalray's intelligent processors have the capability to analyze on the fly, and in an intelligent manner, a very large flow of information, and to react and make decisions in real time. They are at the heart of the Artificial Intelligence revolution.

Kalray's offering encompasses both processors and complete solutions (electronic boards and software). Kalray serves customers such as server manufacturers, intelligent system integrators, and consumer product manufacturers, including car makers.

Today, Kalray employs over 70 employees across 4 offices: the French headquarters in Grenoble & Sophia Antipolis, the North American branch in Los Altos, CA, USA and the Tokyo branch, Japan.

Kalray was founded in 2008 as a spin-off from the CEA (the French Department of Energy lab), one the largest research labs in Europe, capitalizing on over 50 years of research and development on new architecture processors.

Kalray went public in June 2018, raising more than \$50 million – the most significant IPO since the creation of Euronext Growth in Paris.

Kalray is backed by prominent financial partners as well as large corporate venture funds, such as Alliance Ventures, operated by Renault-Nissan-Mitsubishi, world's leading automotive alliance, or European aerospace champion Safran.

Vision: power the new generation of intelligent devices with a unique high-performance, low-power and time-critical processor solution, the MPPA®.

Headquarters: Grenoble & Sophia Antipolis, France, Los Altos, USA and Yokohama, Japan

URL: www.kalrayinc.com

Social channels: LinkedIn – [Kalray](#) Twitter – [@Kalrayinc](#) YouTube – [Kalray](#)

Executive management team:

- Eric Baissus, CEO
- Anne Gabrot, CFO
- Benoît Dupont de Dinechin, CTO
- Olivier Lauvray, EVP Worldwide Sales & Business Development
- Stéphane Cordova, VP Embedded Technology Business Unit
- Loïc Hamon, VP Data Center Business Unit & Corporate Development

**Board of directors:**

- Gilles Defassy, Chairman of the Board
- Eric Bantegnie, Vice-Chairman

Product information**Technology:**

The foundations of Kalray's solutions lie in its manycore architecture, the MPPA® (Massively Parallel Processor Array), the outcome of 10 years and 60 M€ of R&D investment. This breakthrough technology is protected by 23 patent families (21 proprietary, and 2 families with an exclusive CEA license) and addresses the issues raised by a new generation of intelligent systems:

- Extreme computing power
- Low power consumption
- Real-time data processing
- Completion of dozens of critical tasks in parallel
- Full programmability (open system)
- Security & Safety

Affiliations:

- [Autoware Foundation](#)
- [Embedded France](#)
- [Global Semiconductor Alliance \(GSA\)](#)
- [Khronos](#)
- [Minalogic](#)
- [NVM Express \(NVMe\)](#)
- [Storage Networking Industry Association \(SNIA\)](#)

Markets

Kalray is presently focused on two main markets with a very strong short-term potential:

- **Intelligent data centers:** Kalray's processors enable new-generation storage systems and networking cards.
- **Intelligent embedded intelligent systems:** Kalray's processors enable new-generation embedded systems such as autonomous vehicles, healthcare equipment, as well as drones and robots.

By 2020, the commercial potential of these markets is estimated at \$ 3,25 billion with the emergence of artificial intelligence and rapid memory storage (Sources: Gartner/IDC).



Data storage:

With the adoption of high-speed, low-latency SSDs, new performance bottlenecks are created at different points along the data path. The deployment of the emerging NVMe-oF protocol helps alleviate these bottlenecks and enable a disaggregated storage model to scale compute and storage resources independently.

With its MPPA offering more than 100 cores towards end-user processing, Kalray offers customers the chance to make their JBOF smarter while exploiting the performance of SSDs to the fullest. Equipped with Kalray's MPPA processor, **Kalray's NVMe-oF Target Controllers** have fully integrated CPU + NIC functions which enable high-density/high-performance storage solutions with in-line processing capabilities such as deduplication, encryption, compression, RAID, etc. The KTC solution is the first fully integrated system certified by the NVM Express organization.

Data networking:

Virtualization has changed the face of many industries, but none so much as networking for telecommunications and data centers. Data centers are quickly adopting two new techniques, Network Function Virtualization (NFV) and Software-Defined Networking (SDN), which offer software and Cloud-based solutions in order to avoid costly and frequent hardware updates.

Kalray offers several **programmable SmartNIC solutions**, which allow telecommunications and data centers to completely offload their compute-heavy CPUs. With real-time processing, reliably low-latency and standard C/C++/OpenCL programmability, customer can maintain line-rate performance implementing solutions such as Juniper Contrail and RedHat Openstack.

Autonomous vehicles:

Present-day cars are brimming with electronics since more autonomy requires more capabilities and much more computing power. At the same time, car infrastructures are moving from a multitude of disseminated small processors (ECU) to a much more centralized platform ("**SuperECU**") supporting a wide number of assistance functions. Deep learning, computer vision, sensor fusion are all compute-intensive functions, yet they are just a subset of what needs to run in parallel.

Kalray's MPPA is the ideal optimized processing solution for autonomous vehicles, offering:

- **Extreme computing:** an unreached level of heterogeneous compute power and the ability to execute simultaneously multiple independent applications or multiple threads of the same application so that all time-critical heavy-computing functions of the Autonomous Driving System can be integrated on the same die. In addition, the MPPA offers an optimized tool and libraries allowing the best performances of deep-learning or vision-type algorithms. The inherent scalability of the MPPA architecture further allows the use of one, two or more MPPA processors, depending on the level of performance they require.
- **Safety:** architectural determinism ensures reliability, security and a high level of safety. The MPPA processor supports ASIL B/C and fulfils the ISO 26262 standard.
- **Power consumption:** as low as one tenth of that of existing solutions so that architects can develop dense systems with no, or limited, cooling needs, thus reducing the cost of the solution and of maintenance.
- **Programmability:** the MPPA offers an easy-to-program platform, that can be easily customized and updated. Not only can standard C/C++/OpenCL code libraries, standard libraries (OpenCV, OpenVX...) or run-time environment (AUTOSAR) be used, so can plugins to existing code generation tools, allowing the reuse of an easy legacy code.



Press releases

[NXP and Kalray enter partnership to develop platform for safe, reliable autonomous driving](#)

January 8, 2019

[Kalray Joins Autoware Foundation as Founding Premium Member](#)

December 14, 2018

[Kalray releases Kalray Neural Network 3.0 \(KaNN\) to accelerate artificial intelligence application development](#)

November 13, 2018

[Kalray strengthens management team with the appointment of Olivier Lauvray as EVP of Global Sales & Business Development](#)

November 7, 2018

[Kalray Unveils Artificial Intelligence Capabilities for Autonomous Vehicles Based on Baidu's Apollo Open Platform](#)

September 18, 2018

[Inside Secure Technology Chosen to Secure Kalray's Intelligent Processors for Autonomous Vehicles and Next-Generation Data Centers](#)

July 9, 2018

[Kalray unveils its certified intelligent NVMe-oF solutions with server and storage leader AIC at ISC 2018](#)

June 25, 2018

[Kalray has raised €43.5M: the most significant IPO since Euronext Growth was created in Paris](#)

June 7, 2018

[Kalray first to receive NVMe-oF Certification for a fully integrated system](#)

May 22, 2018

[Kalray announces its IPO on Paris Euronext Growth Stock Market](#)

May 17, 2018

[Alliance Ventures and Definvest acquire stakes in Kalray](#)

May 2, 2018

[Kalray raises \\$26 million, anticipating the launch of its third generation of microprocessor](#)

June 22, 2017

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