



cea

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HistoTrust

PATENTS
15+
PATENTS

Blockchain and hardware security for auditing embedded AIs

What it is

CEA-Leti has developed a data authentication and traceability technology specifically for complex systems. A demonstrator was created to illustrate an implementation of the technology on a digital twin. Industrial robots with embedded AI are emulated using circuit boards. Data from pre-recorded images is analyzed by the AI, and the AI's behavior is registered at regular intervals.

At each step, a cryptographic imprint is generated and then integrated into a transaction signed by a hardware security component. This immutable proof is recorded on a blockchain using an appropriate smart contract.

What it can do

HistoTrust is designed to secure AI-based systems, as well as any embedded business software deployed in decentralized, multi-stakeholder environments:

- **Production lines:** Guarantee the traceability, authenticity, and correct assignment of responsibility of actions performed by robots, PLCs, or hybrid systems.
- **Multi-stakeholder supply chains:** Link immutable proof of origin and compliance to all activities at every step.
- **Equipment manufacturers or rental companies:** Obtain proof of misuse, facilitating the management of warranties, disputes, and liabilities.

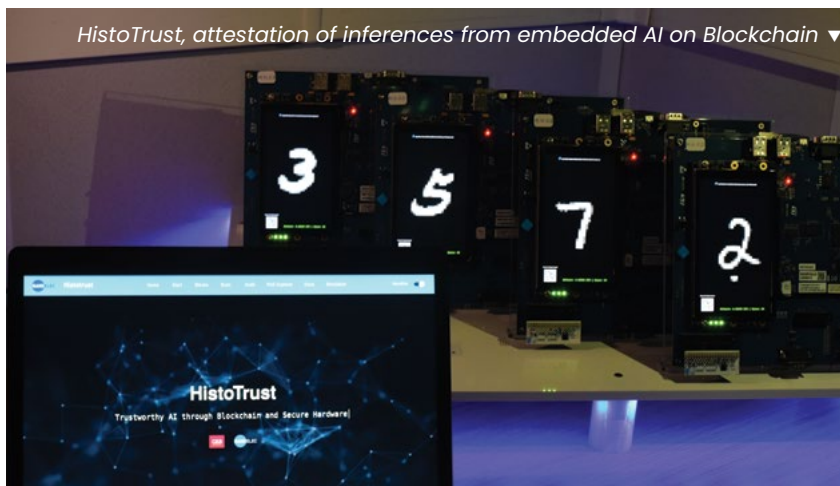
Work performed in the frame
of the IRT Nanoelec consortium.



What makes it unique

CEA-Leti's HistoTrust technology is different from existing embedded solutions in that it connects directly to a blockchain without the use of third parties, providing end-to-end security. With HistoTrust, users can:

- Generate an ordered, time-stamped log of events in multi-stakeholder environments for full traceability of all activities backed by an incontestable and auditable guarantee.
- Integrate the solution with any blockchain that has an Ethereum Client interface.
- Integrate the solution with any business software or agentic AI.



Working with CEA-Leti

This technology can be developed for specific use cases in partnership with OEMs (robot and PLC manufacturers, for example) seeking solutions to make their products more traceable and secure. Partners benefit from CEA-Leti's broad expertise in cybersecurity and, especially, hardware security. Several types of partnerships are available to meet the needs of a wide range of companies. CEA-Leti supports each project from design through to the transfer of new technologies to partners for integration into their systems.

CEA-Leti, technology research institute

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HistoTrust technology

- Certifies data generated by business software.
- Guarantees the scheduling, time-stamping, and auditing of verifiable proof.
- Offers the advantage of very low power consumption.
- Ensures that transactions are sent to the blockchain, avoiding saturation even for fast application data streams.

Scientifics publications

- Pereira, A., Paulin, D., Hennebert, C. (2026). *Beyond HistoTrust: A Blockchain-Based Alert in Case of Tampering with an Embedded Neural Network in a Multi-Agent Context*. Applied System Innovation 9, no. 1: 19.
- Paulin, D., Joud, R., Hennebert, C. et al. (2023). *HistoTrust: Tracing AI Behavior With Secure Hardware and Blockchain Technology*. Ann. Telecommun. 78, 413–427.

Interested in this technology?

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