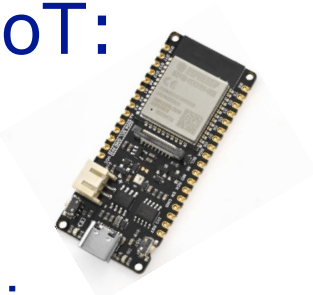
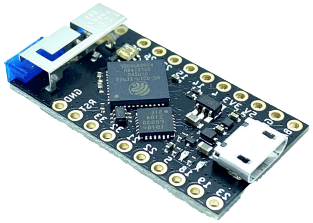
Welcome to AlgoIoT !

Today we are introducing the future of IoT:
our microSDK for **Algorand**



A powerful tool designed to simplify blockchain transactions
in the Internet of Things era, with unprecedented trust and security.



Powered by: GT50 Visionary Innovators

Introduction: the Team

GT50 is a true force in the Web3 space, founded by a team of industry veterans with an average of 20 years of work experience for each member.

These seasoned professionals bring a wealth of knowledge, with a deep-rooted passion for digital signatures and cybersecurity.

Their flagship solution, *Timbro Digitale*, is revolutionizing the way digitally signed documents are perceived. In particular, these documents retain their legal validity even when translated into paper format.

The team boasts a wide range of contributions to Algorand's blockchain ecosystem. Their involvement includes activating multiple dedicated nodes in specialized projects, integrating the Algorand blockchain into 3D virtual worlds, and managing one of the first Italian relay node.

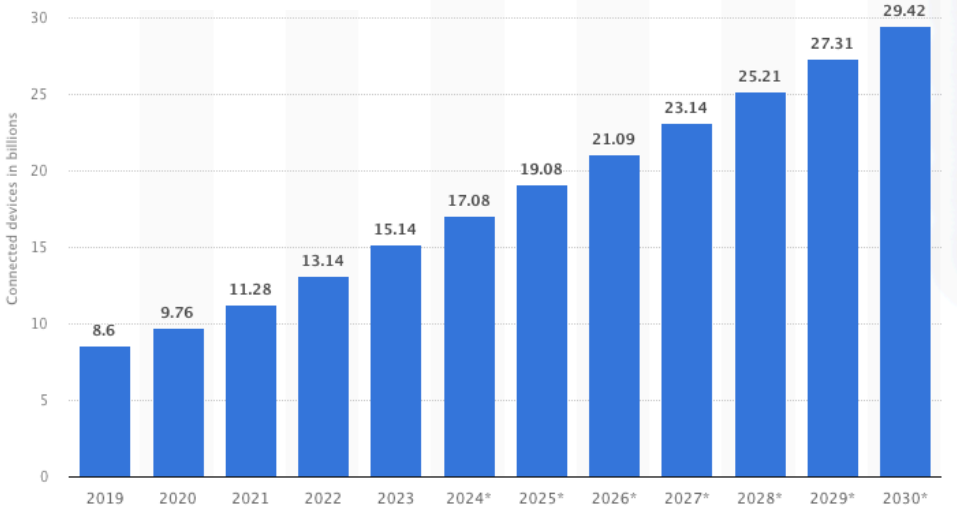
In addition, GT50's expertise extends to the IoT (Internet of Things) .

This multidimensional experience underscores its adaptability and forward-looking approach.

Problem statement: the IoT and Blockchain Challenge/1

The problem? Implementation can be complicated.

We face the IoT challenge: the smart sensor market is growing in double-digit annual figures, and there are already billions(*) of devices with fast and secure transaction needs.



To achieve the required level of trust, we believe that the use of a blockchain that formalizes the origin of the data and its integrity over time is critical.

Algorand blockchain can provide data security and transparency, and its features make it a perfect fit for the IoT environment:

- a significantly higher throughput
- a foolproof consensus mechanism,
- processes up to 1,000 transactions per second
- ultra-low staking requirements for nodes
- low transaction costs
- lower carbon emissions

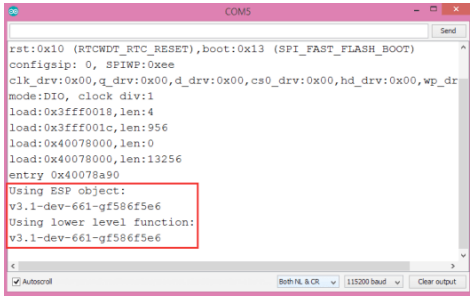
(*) "Number of Internet of Things (IoT) connected devices worldwide from 2019 to 2023, with forecasts from 2022 to 2030" https://www.statista.com/statistics/1183457/iot-connected-devices-worldwide/

Problem statement: the IoT and Blockchain Challenge/2

At the same time, in order to obtain the required level of trust, we are convinced that the Algorand transaction should originate from the smart sensor itself, without resorting to an intermediate service or application gateway.

So the transaction must be handled directly by the IoT device.

This means that the Ed25519 signature must be created on board and the smart sensor node must communicate directly with the Algorand network to submit the transaction.



For this reason, we have created Algo**IoT**, a small but powerful microSDK that simplifies the interaction with the Algorand blockchain,

processing transactions internally on the device,

operates quickly and with maximum security,

freeing coding from complex details.

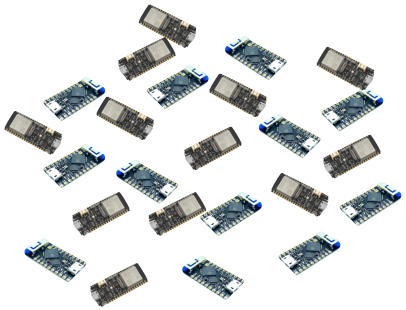
Local Integration on IoT Boards

The first release of AlgoIoT implements:

- BIP39 management
- Algorand Payment Transaction data structure: data to be "notarized" are embedded into the "Notes" field of the transaction, following the ARC-2 format.
- signature algorithm based on Curve 25519
- message pack generation
- Direct connection with Algorand API service

Let's look to the future together.

With our Micro SDK for Algorand, IoT becomes more accessible, secure and scalable than ever before.



Initial implementation hardware:

- on boards mounting the ESP32(*) series µcontroller.
- *further implementations on request.*

(*) The ESP32 microprocessor offers an impressive blend of performance and versatility and has earned its reputation as one of the most widely used microcontrollers in the world.

Next Steps

To reach new horizons in the era of blockchain and the Internet of Things, our plans include:

- interaction with ASC (Algorand Smart Contract)
- FT/NFT-based authentication
- Tamper detection component
- revenue sharing for the owners of the sensors that generated the data sold via ASC (on-chain Oracle)

This will make it possible to implement new solutions that harness the power of the Algorand blockchain

This approach will make it easy to govern the authentication operations of IoT devices

This mechanism -based on hw integrations- will enable security management of IoT devices used in processes or environments where intentional tampering or manipulation could occur.

This proposal is aimed at encouraging the development of IoT devices with validated data, to address Sustainable Development Goals 6 of the United Nations 2030 Agenda (improving water quality, reducing waste and promoting hygiene, which helps ensure access to clean and safe water resources for all).

Target Audience

To propose the use of IoT devices and the data they generate, developers and integrators will increasingly have to confront data security challenges.

Data authenticity and integrity characteristics must originate at the source.

The use of blockchain is certainly the first step, but there are currently no solutions that enable this operation directly from IoT devices

We face the IoT challenge: billions of devices with fast and secure transaction needs. Algorand Blockchain is the key to security and transparency.

The problem? Implementation can be complicated.

Our AlgoIoT unlocks the potential of projects, simplifies work, saves valuable time and offers uncompromising security, allowing developers to focus on the unique aspects of their projects while implementing maximum security.

We offer

AlgoIot under license: as a state-of-the-art software library for IoT environments that effortlessly integrates the power and security of the Algorand blockchain. The package is pre-configured with an Algorand account already funded according to the Customer's specifications.

The license comes with a digitally signed document that contains the following:

- the BIP39 sequence (text and QRCode) as a backup of the account created for that license;
- the basic account address32 and its representation in QRCode format, to be used for searches on the various explorer services and for further funding operations;
- all the necessary information for its use

Data security consulting services: Our team of experts will provide support to implement security best practices to protect your data.

The Team

Marco Angelucci
marco.angelucci@gt50.org

Fernando Carello
fernando.carello@gt50.org

Enrico Speranza
enrico.speranza@gt50.org

github:
https://github.com/GT50-SRL/algoiot

X (Twitter): @AlgoIoT

GT50
Visionary Innovators