

# ERATOSTHENES

SECURE MANAGEMENT OF IOT DEVICES LIFECYCLE THROUGH IDENTITIES, TRUST AND DISTRIBUTED LEDGERS

*Lifecycle Management of IoT Devices Via Digital Identities  
Management and Distributed Ledgers Solutions*

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**inlecom**

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## inlecom

### **Enhancing innovation capacity through digital ecosystems**

Research. Advancing Technology. Disruptive Business Models

### **Research & Innovation Consultants.**

Established in 1996 with presence in Greece, Belgium, Ireland and the UK

### **Strong participation in Research Projects. Bringing innovation to industry.**

**25 ongoing projects, 7 coordinating.**

> 40% proposal success rate vs EU <10% average.

> 35 EU-funded completed projects.

> successfully granted patents (80% success rate).

- **Applied ICT and Internet of Things**
- **Transport & Logistics**
- **Food & Circular economy**
- **Security**
- **Energy**
- **Green buildings & Smart Cities**
- **Health**
- **Manufacturing**

# 1. Project overview



ERATOSTHENES

## ERATOSTHENES

- 14 Partners - 8 Countries
- GA No: 101020416
- Start date: 1 October 2021
- Duration: 42 months



No	Name	Short name	Country
1	INLECOM INNOVATION ASTIKI MI KERDOSKOPIKI ETAIREIA	INLE	Greece
2	UNIVERSIDAD DE MURCIA	UMU	Spain
3	ATOS IT SOLUTIONS AND SERVICES IBERIA SL	ATOS	Spain
4	SINTEF AS	SINTEF	Norway
5	AIRBUS CYBERSECURITY SAS	AIRBUS	France
6	ENGINEERING - INGEGNERIA INFORMATICA SPA	ENG	Italy
7	KATHOLIEKE UNIVERSITEIT LEUVEN	KUL	Belgium
8	TECHNISCHE UNIVERSITAET GRAZ	TUG	Austria
9	UNIVERSITY OF PIRAEUS RESEARCH CENTER	UPRC	Greece
10	IDIADA AUTOMOTIVE TECHNOLOGY SA	IDIADA	Spain
11	DIGITAL WORX GMBH	DWG	Germany
12	TELLU IOT AS	TEL	Norway
13	EULAMBIA ADVANCED TECHNOLOGIES MONOPROSOPI ETAIRIA PERIORISMENIS EFTHINIS	EUL	Greece
14	DBC EUROPE	DBC	Belgium

### IoT industrial/scientific gaps & Focus

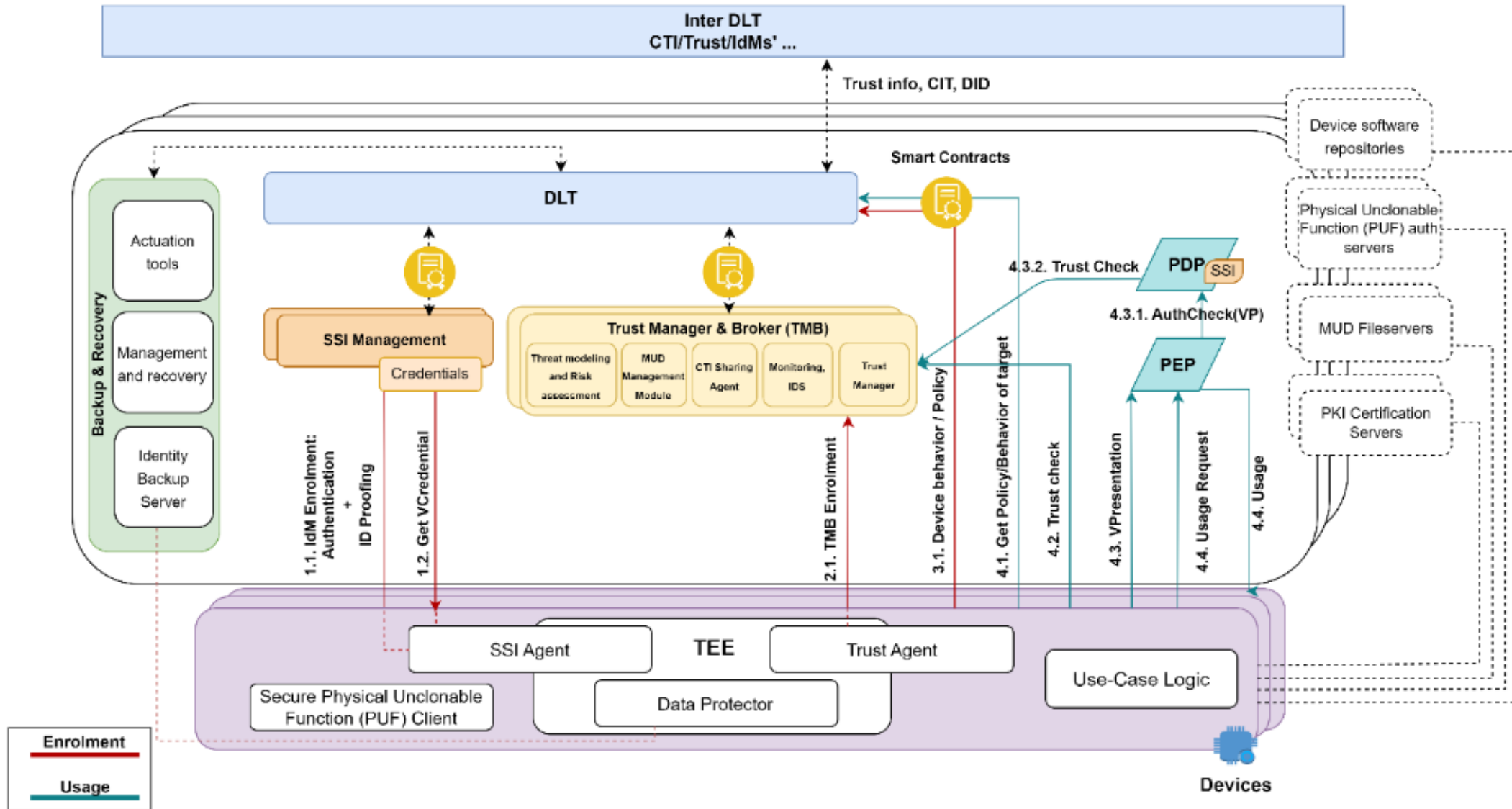


- Lack of **security visibility** that leads to security incidents
- Lack of **effective information sharing** between organisations
- Lack of a **trustworthy environment** due to heterogeneity of IoT devices
- Lack of secure solutions for **firmware and security updates**
- Lack of **security training and security protocols'** adoption for persons and devices

## Innovation & Technical Outcomes

- A distributed, automated, auditable, privacy-respectful, **Trust and Identity Management Framework** to manage the lifecycle of IoT devices
- First-ever enclosure of **cybersecurity features in IoT devices** through deployment of Trust Agents and continuous trust evaluation
- **Decentralized identity management** mechanisms to conciliate the requirements of self-sovereignty and privacy preservation
- **Self-encryption/decryption at device-level with an automated recovery process after an attack**
- **Threat analysis models** based on federated learning and collaborative **IoT threat intelligence** sharing across ledgers

# 4. ERATOSTHENES Architecture



# 5. Validation Pilots and Use Cases



## Connected Vehicles

- Secure interaction with vehicle (V2V) and road infrastructure
- Secure environment for software updates



## Smart Health

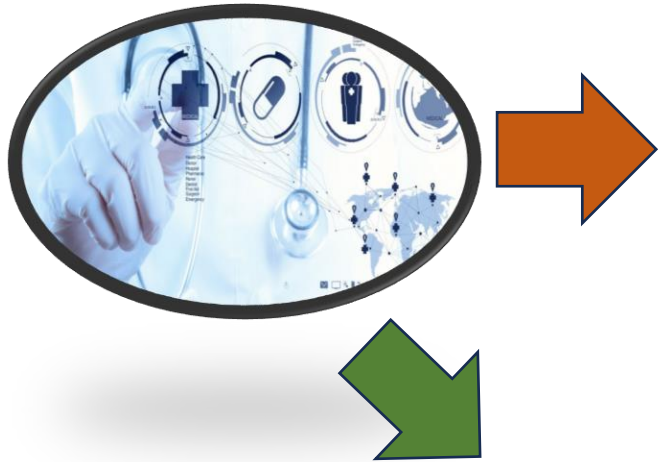
- Zero-contact enrolment of users and devices
- Integrate with third-party services
- Extending the platform with private devices
- Emergency situations
- Continuous monitoring and lifecycle management of services



## Disposable IDs in Industry 4.0

- Implementation of resilient and secure Asset Identification
- Distributed Disposable ID service & Trust and permission service
- Open Source and 3rd party integration

## Smart Health



## Contribution and Innovation

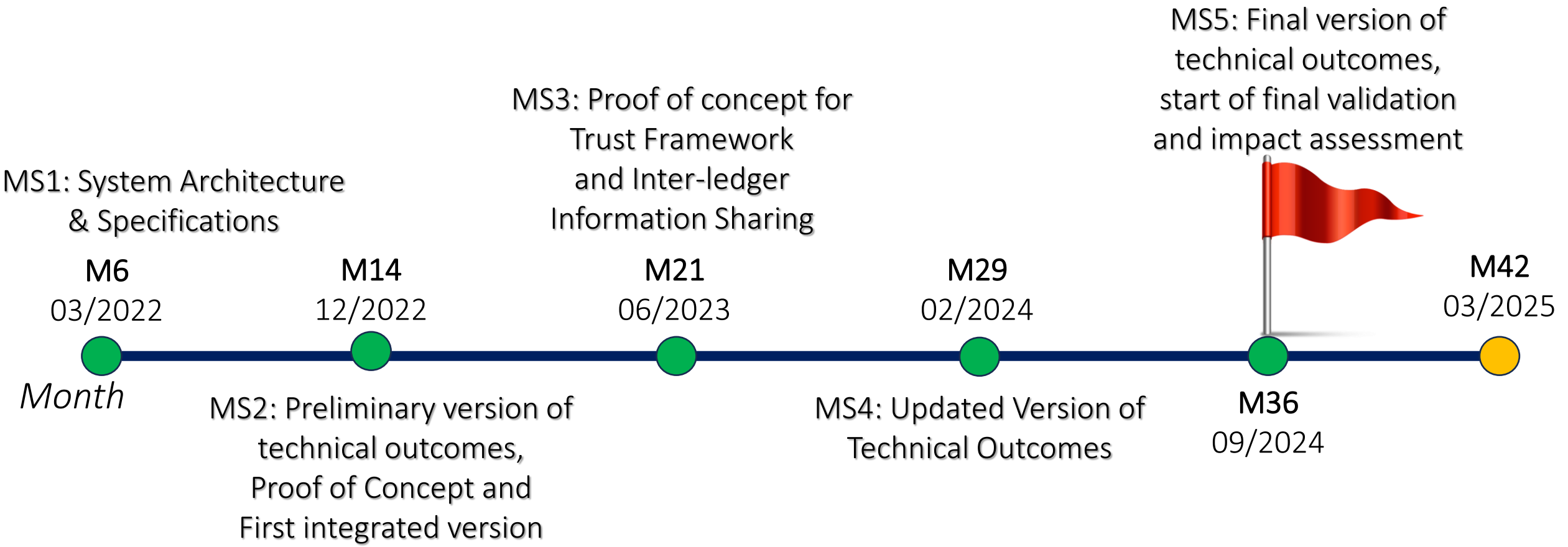
- **Distributed and flexible identity management method** friendly for elderly users, integrated with third-party authentication services
- **Risk and threat analysis** method based on evidence collection from both the system runtime and the development activity
- A new **gateway hardware design with possibly PUF modules** to achieve fast and trustworthy enrolment and recovery

## Role of the DLT in Smart Health

- DLT, in this use case uses blockchain technologies to store information that is used by the modules in the ERATOSTHENES network.
- Everything stored in this solution can be verified by members of the network but cannot be modified.



# 6. Technical Milestones



# 7. Scientific, Social and Economic Impact

- Reduced number and impact of cybersecurity incidents
- Efficient and low-cost implementation of the **NIS Directive** and **General Data Protection Regulation**
- Effective and timely co-operation and **information sharing between and within organisations** as well as **self-recovery**
- **Better standardisation and automated assessment frameworks**
- Availability of **user-friendly and trustworthy on-line products, services and business**
- **A stronger, more innovative and more competitive EU**



# Thank you for your attention!

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<https://eratosthenes-project.eu/>

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