In 2021, the **IOTA Foundation** was selected as one of seven projects from 30+ applications to participate in the **European Blockchain Pre-Commercial Procurement (PCP)**. The PCP aims to design new DLT solutions for Europe – first to improve the **scalability**, **energy efficiency**, and **security** of European Blockchain Services Infrastructure (EBSI), an open, permissioned network of blockchain nodes across Europe, and then to expand on the **European Digital Infrastructure Consortium (EDIC)** for Blockchain Services.

Today, the IOTA Foundation is one of **three final projects** that has successfully completed the PCP. The results are in the early stages of being exploited in new **commercial services** and **partnerships** across the world.
The European Blockchain PCP aims to enhance **EBSI**, intending to enable **secure**, **scalable**, and above all **sustainable** blockchain applications for identity management, supply chain tracking, circular economy, tokenization, and secure data storage.

At present, **EBSI** is a trust service provider that implements a trust framework to simplify processes gravitating around **identity management** and credential exchange and verification across agencies, such as passports or diplomas. Digital identities also enable single-login access to **e-government portals**, ensuring privacy.

As part of the PCP, IOTA is developing a novel solution that expands EBSI’s capabilities not only in blockchain technology but also with new use cases such as **Digital Product Passports** and **IP Management**, which demand high transaction throughput and tokenization capabilities.
IOTA And The European Blockchain PCP

The current version of EBSI is designed to support human-centric applications, particularly using verifiable credentials for individual identity verification. It is built on a single blockchain capable of handling up to 400 transactions per second and incorporates trusted registries, a trust framework, decentralized identifiers, and verifiable credentials. The system features a centralized API for interactions and functions within a permissioned framework.

During the European Blockchain Pre-Commercial Procurement, IOTA integrated its advanced technology into EBSI, enhancing the capabilities of EBSI v1.0. The goal is to prepare EBSI for wider use and establish it as the trust layer for Europe’s future Economy of Things, facilitating transparent and trusted transactions in the Circular Economy.
IOTA's technology stack enhances the European Blockchain PCP with:

**Versatility**
The IOTA tech stack supports a broader range of applications, including Digital Product Passports, Track & Trace solutions, and tokenization. Its open-source nature ensures full transparency and compliance with EU regulations.

**Scalability**
IOTA achieves high transaction throughput through multi-network deployment with minimal energy consumption. This allows for seamless scaling while retaining overall security and integrity.

**Decentralization**
Unlike the permissioned nature of EBSI, IOTA envisions permissionless network participation and governance. This fosters organic growth without central authorities, ensuring a more decentralized and trustless infrastructure.

IOTA is using the opportunities offered by its involvement in the PCP to offer unique value propositions that transform Europe's blockchain landscape.
Expanding the European Blockchain PCP with IOTA

As part of the Pre-commercial Procurement, IOTA delivers:

**Customization**

The IOTA-EBSI solution developed for the PCP offers bespoke solutions tailored to the specific needs of both public and private entities, enhancing adaptability across varied economic landscapes.

**Cohesive Data Management**

The IOTA-EBSI solution facilitates the transition from fragmented data silos to integrated dataspaces, promoting decentralized governance without compromising trust.

**Regulatory Compliance**

Engineered in alignment with standards such as ETSI, W3C, and GS1, and adhering to regulations including GDPR, the IOTA-EBSI solution ensures compliance without sacrificing the utility of shared data.

**Interoperability**

With inherent compatibility within the IOTA network and seamless integration with external platforms via industry-standard interfaces and adaptable connectors, the system supports extensive cross-platform interoperability.

**Sustainability and Scalability**

The architectural design of IOTA not only supports high transaction throughput but also maintains minimal energy consumption, facilitating sustainable practices alongside scalable growth.

**Transparency and Trust**

By providing open access to its code repositories, IOTA enhances transaction and identity trust through heightened accountability and verifiability, thus reducing security risks.
The expanded European Blockchain PCP solution’s key components

- **DLT System**
  The central technology providing the core Distributed Ledger Technology (DLT) for EU Blockchain services including smart contracts, IOTA node plugins extending the functionalities of the core node.

- **Satellite Systems**
  Complementary systems orbiting the DLT System, offering specific functionalities like object tracking or data sharing.

- **EBSI Connector(s)**
  Software connectors bridging the DLT system and satellite systems, enabling plug-and-play interfaces for third-party participation.

- **3rd Platforms (Solution Providers)**
  External platforms, integrated if they offer an EBSI Connector, expanding the solution space.

- **EUDI Wallet**
  Aligned with the Unified European Digital Identify Framework, compliant with OpenID4VCI, OpenID4VP, and SIOP2 standards. Utilizes DLT System’s Decentralized Identity services.

- **Solution Layer**
  Top layer allowing permissioned solutions to leverage API services, EUDI Wallet, and DLT system. All layers provide Open APIs for maximum flexibility.

**On a high level this includes**

- **API Services Layer**
  Abstracts underlying systems, offering Open APIs for notarization, trusted issuers, distributed storage, and new services like Object Tracking through IOTA.

- **Satellite Systems**
  Complementary systems orbiting the DLT System, offering specific functionalities like object tracking or data sharing.
The underlying DLT architecture

Layer 2
Horizontally and vertically scalable child networks

Layer 1
Core Tangle (Root)

Multi-network deployment through anchoring in lower level parent network(s). Sharding methodology allows scaling organically with demand, while maintaining sustainability.
Prototypes

Among the technologies introduced by IOTA to the PCP are smart contracts and object traceability capabilities: these have been used for two key prototypes: Digital Product Passports and Intellectual Property Rights Management.
The EU has proposed a digital product passport (DPP) as part of its sustainability efforts. This digital tool will help businesses, authorities, and consumers share and access product-related information more transparently and efficiently.

As part of our work for the EBSI PCP, we have developed two DPP prototypes:

**Electronics DPP Prototype**
In collaboration with the Technical University of Catalonia, we've developed tools, integrated with smart contracts, to capture crucial data about electronic goods. This system tracks the lifecycle of electronic devices from manufacturing to recycling.

**Plastics DPP Prototype**
Teaming up with enterprise software and services provider Digimarc, we're tracking and tracing the recycling journey of plastics, transforming plastic waste into sustainable products (bioplastics) for retail and agriculture.
The music industry faces issues of payment transparency and rights identification.

Collaborating with the EU-funded Musika Periferica project, our Intellectual Property Rights marketplace prototype facilitates faster and more secure royalty distribution through smart contracts and NFTs, ensuring timely compensation for artists.

We propose a combination of blockchain and smart contracts to enable tracking of creative work usage, transfer of intellectual property rights, and automated, trusted compensation.

Industry actors can directly interact in our Marketplace interface. The Prototype utilizes smart contracts for encoding creative works administration economics, while musicians can license music rights with immutable terms.
Intellectual Property Rights Management

In collaboration with Musika Peripherika Project

Smart Contracts for Media Use Case
Film Producer obtains a synchronization license for a musical composition and the use of a song record.

Industry Challenges
Music industry faces issues of payment transparency and rights identification.

Blockchain Solution
Blockchain and Smart Contracts proposed for transparent rights management and efficient compensation. Enables tracking of creative work usage, transfer of intellectual property rights, and automated, trusted compensation.

Marketplace Development
Aim to build a Marketplace where industry actors can directly interact. Prototype utilizes smart contracts for encoding creative works administration economics. Musicians can license music rights with immutable terms.

Benefits of Blockchain
Increases efficiency by ensuring transparency, accountability, and resolving payment delays in the music industry.
What’s Next?

After completing the European Blockchain PCP, we are now in conversations with partners to help scale our solution and use cases into commercial products.

Our Technology Adoption Team is spearheading commercialization efforts with an ecosystem of partners – reach out to christoph.strnadl@iota.org to learn more about pursuing these opportunities.
About Us

Founded in 2015, IOTA is a public goods infrastructure to bring trust in our digital world. Through IOTA, governments, organizations and people are able to interact with each other in a secure, trusted and verifiable way.

IOTA is one of the most established blockchain projects in the world and is primarily driven by a global ecosystem of non-profit organizations.

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