

AET VISION

**“THE ADDED VALUE OF
BLOCKCHAIN SPANS ACROSS
A 360-DEGREE VISION:
IT INCREASES EFFICIENCY”**



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With a strong focus on promoting knowledge innovation and professionalisation across mobility and logistics AET (Asociación Española del Transporte – Spanish Transport Association) aims at becoming a think-tank – a one-stop-shop for professionals involved in all transport modes. Founded by PhD Antonio Carbonell almost 40 years back, nowadays AET has reformed itself – brought afresh by the initiative of its associates, as an ideas & research lab, where strategic, unbiased reflection within the sector is fostered – the aim of which is, no doubt, adding value to transport stakeholders.

Knowledge creation, sharing and management; supporting entrepreneurship and innovation, promoting institutional relationships between stakeholders and developing training and qualification of transport professionals – this latter aspect being strongly linked with attracting talent and reaching gender equality within transport, remain AET’s core objectives.

In the above light, AET is implementing various initiatives, such as the development of territorial branches within the Iberian Peninsula and beyond. Also, it includes the rollout of thematic Working Groups (WG): Digital Transformation (DT), Mobility of People and Goods, Rail Transport, Ports, Maritime Transportation, Road Transportation, Airports, Air Transportation, Regulation, Transport Economics, Logistics Platforms, Innovation in Transport (INNO), Sustainability in Transport, Women and Diversity, Training and Employability. These WG propose

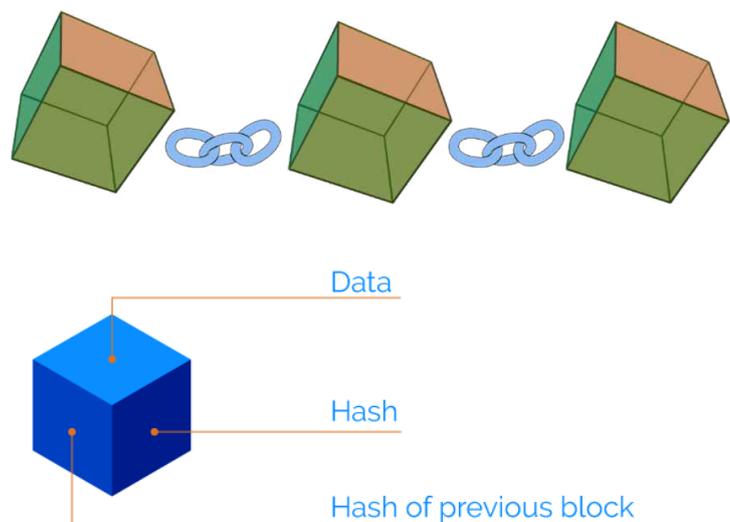
and further develop transport-relevant topics which, in most cases, are multidisciplinary. As an example, WG’s DT and INNO have recently explored Blockchain technology: foundation, regulatory aspects and implementations, and its specific application into state of the art people mobility concepts like MaaS (Mobility as a Service). Within this article we are presenting blockchain as a paradigm to revolutionise digitisation of port-related activities and systems, adding efficiency and trust in modal transaction, whilst dramatically increasing interoperability of processes.

BLOCKCHAIN WITHIN SUPPLY CHAINS

Blockchain is a Distributed Ledger Technology consisting of a set of information (Blocks) bound together

(Chain) to form an immutable data registry. The information within these blocks is secured and encrypted, resulting in “hashes”. These hashes are linked to the blocks’ data and the previous block’s hash, making manipulation impossible, so the result is an unalterable chain of data blocks – a blockchain.

The supply chain is a non-stop set of processes and activities: it simply can’t afford to pause – regardless of external disrupting factors, whether these be in the form of armed conflicts, pandemics and even intrinsic ones, such as large ships blocking canals. All in all, for supply chains the show must always go on. Other than such relentless “crisis tolerance”, these are often characterised by a heterogeneity of stakeholders, documented processes – often demanding standardised content



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to allow for progressing into further steps. Also, supply chains are affected by overwhelming conflicts of interests: across transport modes, stakeholders and end users. Plus, regulators and administrators add an additional layer of supervision. This context poses a perfect scenario for the application of Blockchain technologies, thereby helping supply chains further improve and optimise.

Reducing lead times, sharing information within stakeholders in a secure, trustable manner, seamless fulfilment of regulation and real-time tracking of assets for an optimal management of resources – thereby reducing cost and yielding higher benefits are some of the benefits that can be yielded by the incorporation of Blockchain.

APPLICATION TO THE PORT ECOSYSTEM

Ports illustrate a condensed vision of supply chains – very much represented in a physical, tangible place. They congregate distinct transport modes and freight types. Plus, they serve as gathering point for various stakeholders that implement their processes daily. Ports are both storage and forwarding facilities; their management is through Public Administrations (Port Authorities) whilst operations are typically conducted by private entities. In short – they provide a perfect scenario for the application of blockchain technologies.

The integration of a federated Blockchain platform in ports allows for the creation of a global ecosystem – one which would not only be limited to ports but,

instead, extensible to all modes. And this would be done in a digital, efficient and state of the art manner, automatically resolving issues affecting the wider supply chains, thereby implementing a 3-D paradigm: Digital, Disrupting and Decentralised.

In fact, already many ports worldwide are implementing such solutions to improve their operations: Los Angeles, Singapore, as well as Hamburg and Rotterdam in Europe. These are individual examples, yet in some cases blockchain-based platforms congregate port communities at national and international levels.

RELEVANT USE CASES

SARA Ports – developed by Eurotech is one tangible example of the application of Blockchain with a focus on security of railway and port processes. Its implementation has yielded the reduction of turnaround times needed to check

trains by 15 minutes/seconds per operation. Some document generation processes – such as those related to drug and alcohol controls have been accelerated by a dramatic 90 per cent.

However, the one pioneering application of blockchain into ports – still at a time where this technology was mainly restricted to finance and, particularly, bitcoin, was TRADELENS. Developed jointly by Maersk and IBM, it represented a foundation stone for the management of information within supply chains. Based upon Hyperledger Fabric technology, TRADELENS has been implemented in various international ports and has paved the way for applications developed later in the timeline. Albeit, technology-wise, the panorama has changed since it was first applied, it remains a leading edge service even when its ‘centralised-decentralised’ model and governance structure present issues that underpin why its integration and expansion has not been developed in full.

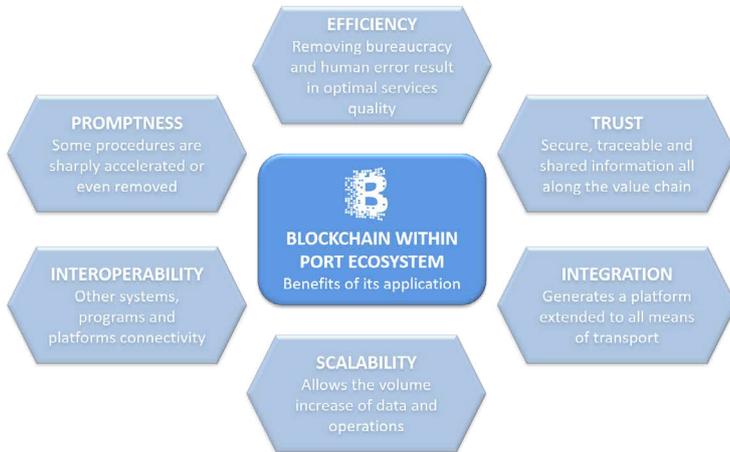
In the Spanish context, SIMPLE – a national platform promoted by Public Administrations, all of them associates to the AET: ADIF Administrador de Infraestructuras Ferroviarias (Railway Infrastructure Manager); Puertos del Estado (State Ports); and Ministerio de

BELOW
Spain's SIMPLE programme

SIMplification of Processes for Logistics Enhancement

Co-financed by the Connecting Europe Facility of the European Union

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Transporte, Movilidad y Agenda Urbana (Ministry for Transport, Mobility and Urban Agenda), the platform poses an iconic example of a digital transformation project with blockchain technology at its core. Besides, it also serves as living lab for the European project FEDeRATED, whose ambition is to create common semantics across transport modes within EU. SIMPLE binds maritime and ground transport (railway and roads) – whilst air transport is within the project roadmap for future updates. SIMPLE's implementation is led a consortium of companies – including high techs and specialised consultancies, thus allowing a great mix of technology disruption, operational & functional knowledge. SIMPLE is developed by INDRA, a Spanish technology company, which is also associated to AET.

BLOCKCHAIN: A WEALTH OF BENEFITS

The added value of blockchain spans across a 360-degree vision: it increases efficiency – thereby “leanifying” processes and reducing human error. It can also connect heterogeneous systems, thus representing an interoperability anchor, which underpins platforms integration and scalability – a feature which is key within sectors that bind

multiple stakeholders. At the core – particularly when promoted by third parties, it helps build trust within the entire ecosystem.

At AET we will further scout for blockchain-related applications within the transport ecosystem. This technology – in conjunction with others like IoT, AI and paradigms such as sandboxing and digital twins will further disrupt supply chains in a time fast-evolving transformations.

CONCLUSIONS

We can say that blockchain is not the future, it is the present and it will be probably the most disruptive technology due to its capacity to eliminate intermediations that really don't contribute real added value to the transactions.

From the Digital Transformation working group in AET bet heavily for this new technological concept.

The qualitative leap to the future is coming. Let's walk together.

ABOUT THE AUTHORS:

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LEFT
Benefits of blockchain within the port ecosystem

that allowed him to be part of the most ambitious projects revolving around these topics. Néstor is a guest speaker in several committees and associations and also work as a teacher in educative forums. Nestor. castanedo@aetransporte.org

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ABOUT THE ORGANISATION:

A transportation think tank, the Spanish Transport Association is a private non profit association founded in 1983. The think tank is formed by professionals involved in all modes and means of the mobility transport and logistics sector with the support of Entities and Companies linked to the sector. The organisation currently has more than 100 members.

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