The blockchain technology enables a group of users with a common goal to create an authenticated and accountable distributed chronological tracking system (through use of a ledger) of transactions or events. The functioning of the blockchain is guaranteed without the intervention of a central authority or central maintenance, but thanks to a self-managed peer-to-peer network of application nodes. The transactions are validated by these participants throughout a calculation process. The security relies on mechanisms based on cryptography. Moreover, the duplication of the ledger on each computer of the network makes it extremely difficult to falsify or remove a record.

Initially set up in 2008 to support digital payments in Bitcoin, the blockchain presents interesting features for many other situations. Indeed, as all transactions are registered in the same ledger, it is possible to track the different owners of a product or to track events related to an item to collect its "genealogy".

With its key assets of unquestionable authentication and accountability, this innovation will bring many benefits, such as infrastructure reduction costs and quick settlement of transactions. Nevertheless, this technology is still young and users lack experience to identify and prevent potential risks. And if payment was among the first use case, the blockchain can now be used every day in a broader scope. As the first steps at Worldline, we have applied this technology to already existing processes. Here is a use case of blockchain technology in the corporate bonds environment, offering a safe and straightforward way to manage their workflows.

**What was the goal of this Blockchain Proof of Concept?**

The goal of this Proof of Concept (PoC), designed and developed last year by Worldline R&D, was to get a better understanding of the Blockchain technology and to demonstrate its potential both internally and to our customers.

**Why did you choose to focus on corporate bonds?**

Corporate bonds are financial instruments issued by corporations in order to raise financing. Their processing workflows are complex and involve many decentralized actors for issuance, brokerage, coupon and maturity management, etc. This business model fits the Blockchain methodology well which is why we used it to illustrate how this technology could be used to simplify and automate these workflows.

**How does Blockchain improve or change the current workflows?**

First, the Bitcoin Blockchain technology is used to record the assets (bonds) and their holders (individuals, corporations), as custodians do it today. Blockchain basically provides a "time-stamped" registration of the transactions. The multiple databases and reconciliation processes used today are removed.

Second, Blockchain enables the automation of transactions using the multi-signature feature, which is part of the Blockchain protocol. For example, a buy/sell transaction will be recorded in the Blockchain when and only when the seller’s bank has received the funds from the buyer. It then signs the transaction in the Blockchain, which records the transfer of ownership. In our PoC, money transfers are done using SEPA Credit Transfer, just like in "the real world".

The Blockchain exploration tools could also be used to list the corporate bond owners at the time of coupon or maturity payments.

The transactions are initiated by buyers and sellers using an adapted Bitcoin wallet that can be downloaded from the corporate bond issuer’s website. KYC, bank account information, security … are integrated in this wallet solution.

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[Image of Jean-Claude Barbezange, Director of R&D]
**Smart Corporate Bonds**

**Which Blockchain technology did you use?**
In terms of technology, there were very few operational solutions at the time we developed this PoC. Therefore, we worked with what was state-of-the-art and we chose the Bitcoin Blockchain technology with Colored Coin and Open Asset protocol.

**What did you learn?**
After a quite complex design phase, the implementation revealed to be easier than expected. And all the goals of this PoC were validated. Blockchain provides solutions where all existing players in the value chain can have a role, although different, which is reassuring. This Blockchain PoC has allowed Worldline to improve its knowledge on these emerging and disruptive technologies and to assess their advantages and limits. The R&D team has since then continued to evaluate new use cases: POS card hotlist, Car Maintenance book... With the extremely quick evolution of Blockchain technologies, we will probably choose another one such as Ethereum, Hyperledger... Nevertheless, we progress cautiously as this technology and the related solutions are very young and still need to mature.

We have also disseminated this early experience to all Worldline operational teams to better prepare for the first customer realization.

**How can we know more about this PoC and Worldline's progress on Blockchain?**
We have created a demonstrator that we will be pleased to share with you in one of our offices. You just need to contact us.

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**About Worldline**

Worldline (Euronext: WLN) is the European leader in the payments and transactional services industry. Worldline delivers new-generation services, enabling its customers to offer smooth and innovative solutions to the end consumer. Key actor for B2B2C industries, with over 40 years of experience, Worldline supports and contributes to the success of all businesses and administrative services in a perpetually evolving market. Worldline offers a unique and flexible business model built around a global and growing portfolio, thus enabling end-to-end support. Worldline activities are organized around three axes: Merchant Services & Terminals, Mobility & e-Transactional Services, Financial Processing & Software Licensing including equensWorldline. Worldline employs more than 8,600 people worldwide, with estimated revenue of circa 15 billion euros on a yearly basis. Worldline is an Atos company.

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