Hyperledger Webinar

Tokenizing the Syndicated Loan Market: Going Beyond Traditional Boundaries in Finance
Content

01. ioB: Who we are and what we do
02. Syndicated Loan Platform: Introduction
03. Syndicated Loan Platform: Demo
04. Q&A
01

Who we are and what we do
Who we are?

A Blockchain & DLT technology company

We are a blockchain & DLT tech firm specializing in enterprise solutions. Our team, comprised of architects, blockchain specialists, business & legal experts, partners with companies to unlock their potential in blockchain and DLT adoption.

Our focus is on bringing game-changing solutions that add efficiencies, enhance liquidity, or transform business models across various industries.

By employing our modular solution suite and operational framework, we deliver tokenization services with speed and efficiently, ensuring technology serves the business needs.
We don't just build products, we create regulated & compliance-conforming solutions for our clients

Enterprise blockchain experts

- Strong positioning and reputation in the blockchain enterprise sector at global level
- Demonstrated delivery capacity in productive projects, not just PoCs
- Innovation is embedded in our DNA, as we constantly explore new technologies to transform and evolve specific markets
- Our way of working is agile and collaborative, enabling us to quickly adapt to the changing needs of the market
- Our values are transparency, collaboration and non-conformity. We build trust with our clients and people, creating long-lasting relationships based on mutual respect and shared success

Business & regulatory compliance mindset

- We do not adapt to compliance. We design based on compliance
- We help our clients navigate the complex legal landscape of DLT technology
- Our solutions stand as exemplary models of regulatory adherence
- We collaborate with top-tier law firms and closely engage with regulators like ESMA and CNMV to ensure the highest standards in our solutions
- We accompany our clients every step of the way, ensuring we integrate compliance-conforming and regulated solutions into their business
Our areas of expertise

Strategic Blockchain consultancy
We help organizations in the process of understanding and adapting the technology for their specific business and operational needs.

Digital assets
We design, develop and maintain Digital Assets solutions based on Blockchain/DLT for the financial and corporate sectors to generate new business models, reduce costs, improve operational efficiency, and increase transparency and security.

Deep tech & Innovation
We are experts in advanced technologies that require extensive research, innovation and development to bring them to market. Solutions that are characterized to a high degree of complexity and novelty.
ioBuilders’ foundations for delivering tokenization services

**Strong Track Record**
More than 5 years of experience, successfully completing over 30 blockchain/DLT projects for top industry organizations has equipped us with unparalleled expertise in the field.

**Our Tokenization Framework**
Our tokenization framework allow us to enhance existing security standards overcoming their current limitations, integrating unique aspects and life cycle characteristics of the assets.

**Our Building Blocks**
Leveraging our tokenization service development experience, we’ve created a robust suite of tools and components that streamline the execution of complex projects.

---

**Faster Time to Market**

**High Quality and Efficient Project Delivery**
## Some of our use cases & credentials

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Digital Securities</strong></td>
<td>We have extensive experience in the <strong>tokenization of financial instruments</strong> for our clients, spanning <strong>stocks, bonds, funds, syndicated loans, and other credit products</strong> across diverse industries like finance, energy, or real estate amongst others. Our solutions facilitate <strong>DvP &amp; atomic payments</strong> as they integrate with digital money platforms.</td>
</tr>
<tr>
<td><strong>Digital Credit</strong></td>
<td>We have a deep expertise in <strong>digital money projects</strong> across different typologies: <strong>tokenized e-money, commercial bank money, CBDCs and Stablecoins</strong>.</td>
</tr>
<tr>
<td><strong>Digital Cash</strong></td>
<td>We provide deeptech knowledge to <strong>high-tech and innovative projects</strong> (e.g. smart contracts standards, network deployment, asset bridging, or interoperability).</td>
</tr>
<tr>
<td><strong>Deep Tech</strong></td>
<td>We are developing <strong>digital &amp; blockchain-based legal solutions</strong> that bring greater security, transparency and efficiency to the business and its users.</td>
</tr>
<tr>
<td><strong>Legal Tech</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Use case deepdive*
Syndicated Loan Platform: Introduction
ioB journey: Expanding our technology in the markets

- **Fixed Income**
  We developed a digital bond platform built for a large regulated CSD, using blockchain, and enabling atomic delivery vs payment.

- **MTF Equity-Bonds**
  Development of a Multilateral Trading Facility System supervised by European & Spanish Regulators, with an initial use case in the real estate sector.

- **Carbon Credits**
  DLT solution to enable the issuance and management of digital CO2 credits, providing a seamless system for tracking carbon emissions.

- **UCIT Funds**
  Working since 2020 for one of the largest funds distribution entities in Europe: tokenization of fund shares, market transfer orders, settlement etc.

- **Private equity**
  We are working on the creation of a full end-to-end solution to digitalise the entire lifecycle events of PE funds.

- **Syndicated Loans**
  Development of a platform to issue, manage and trade syndicated loans, covering the end-to-end lifecycle of loans.
**Syndicated Loans Platform Approach**

**Overview:** Creation of a digital, DLT-based technical infrastructure that aims to automate the end-to-end lifecycle of a syndicated loan (SL) aiming to service credit entities (lenders) & borrowers participating in the SL.

<table>
<thead>
<tr>
<th>Problems to be Solved</th>
<th>Our Role and Solution</th>
<th>Regulatory Context</th>
<th>Impact &amp; Value Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inefficient back-office operations due to non-communicative systems, requiring significant manpower.</td>
<td>Technology partner of the first digital credit infrastructure in the EU leveraging DLT benefits, that aims to transform how parties involved in syndicated transactions collaborate.</td>
<td>Regulatory Context: the SL platform will be regulated under the new EU regulation (MICA) and is designed to comply with all standards set by the Loan Market Association (LMA), ensuring a professional and regulated approach to lending practices.</td>
<td>First DLT-based infrastructure for the SL market in the EU under regulatory scrutiny.</td>
</tr>
<tr>
<td>Numerous actors involved, with costly intermediaries.</td>
<td>Improved access to SL by saving costs and standardizing its lifecycle management.</td>
<td>We are partnering with the largest law firm in Spain to fully align all the regulatory requirements</td>
<td>Providing liquidity to SL markets by providing a secondary market.</td>
</tr>
<tr>
<td>Limited liquidity due to scarce secondary markets, amidst banks' need for more efficient balance sheet utilization.</td>
<td>Detail of the solution provided in the next slide.</td>
<td>Improved efficiency by standardizing lifecycle management and reducing back office costs.</td>
<td></td>
</tr>
</tbody>
</table>
Syndicated Loans Platform
Core Characteristics

Sylot is harnessing DLT for Transparent and Efficient Management of Syndicated Loans.

- **DLT based**
  Consensus-based, transparent and auditable processes are orchestrated within the technical infrastructure

- **Full life cycle tokenization**
  Management, execution and settlement of all capital and interest events

- **Registry & distribution**
  Tokenization and registry of the initial participants in the syndicated loan

- **Transfer of participations**
  Seamless exchange of participations between lenders and investors
Sylot tokenization Blueprint

- Asset anatomy, rules and asset information
- End to end native asset lifecycle
- Transfer of participations rules and executions
- Standards + custom implementations
- Token taxonomy framework
- Factory, Facade, and other enterprise blockchain standards
- Transfer restrictions mechanisms
Asset taxonomy (+issuance)

- A base asset standard
- Per asset type data and rules definitions
- Common asset class characteristics
- Asset class specifics per biz market. Example: plain vanilla vs green/sustainable syndicated loan
- Jurisdiction and geography specifics

Token Standard

Asset Type

Market Specifics
- Biz Sector specific needs

Regulation Specifics
- Regulation specific needs

Asset Taxonomy

Asset Factory

Live Factory
Deployment
Asset Bootstrap

Asset definition

Asset issuance
Full native tokenization approach

Ecosystem Setup  Asset Deployment  Issuance/Execution  Distribution/Registry  Ownership transfer  LifeCycle  Maturity

Asset Lifecycle

Deal / Facilities SC Set
Ownership Transfer SC Set
LifeCycle Events SC Set

Asset Taxonomy

Asset Factory SC Set
Asset SC Set

SC: Smart contract
## Main Functionalities Syndicated Loan Platform

<table>
<thead>
<tr>
<th>Registry &amp; distribution</th>
<th>Drawdowns &amp; Amortizations</th>
<th>Covenants &amp; Waivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deals and its facilities can be configured, assigning the participation of different lenders. On execution, tokens are distributed among them according to their level of participation.</td>
<td>Automatizing administrative checks provide shorter settlement periods in drawdowns. Once confirmed by lenders, funds are released and added to amortization calendar, allowing early payments under previously negotiated terms.</td>
<td>Covenants can be set, adjusting repayment conditions according to the borrower performance. Borrower can request a waiver for a specific covenant, and lenders vote in favour/against the waiver.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transfer of Participations</th>
<th>Interest / Fees Calculation &amp; Payments</th>
<th>Terminations &amp; Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>An agent bank can execute a transmission of ownership to a 3rd party are enabled according to the T&amp;C, by transferring debt tokens from a lender wallet to another entity wallet.</td>
<td>Interest and fee payments are also included in the calendar. These amounts are calculated automatically based on the conditions defined in the contract, including the reference rate, frequency of payments, floor, etc.</td>
<td>Facilities are terminated once they are fully paid: capital, interests and fees. Contract extensions can be negotiated through the platform. It contemplates distressed events such as delays, defaults, restructuring, etc.</td>
</tr>
</tbody>
</table>
Syndicated Loans Platform: Summary

Through our model, we can record the initial ownership of each lender’s participations in the SL, register changes in ownership records for each lender’s participations in the SL derived from the transfer of participations between lenders & manage events related to the end-to-end SL lifecycle from issuance, to drawdowns, interest payments, covenants or waivers among others.
Sylot uses Hyperledger Besu as a DLT client

Ethereum technology was chosen due to the many different tools and software developed by the blockchain community to support tokenization. The network is implemented using Hyperledger Besu.

**MAIN CHARACTERISTICS**

- Open source
- Public & Private
- Variety of consensus algorithms
- Privacy and permissioning mechanisms
- Broad community support

**HYPERLEDGER BESU**

- Private permissioned network
- Reduced processing time per transaction
- Free gas network
- IBFT2 Consensus algorithm (PoA)
DLT Network topology

- **Technology:**
  - Ethereum enterprise - Hyperledger Besu

- **Consensus mechanism:**
  - IBFT2

- **Topology:**
  - 4 validator nodes
  - 2 boot nodes
  - Access node (sylot platform)
  - (Optional) 1 access node per participant
Syndicated loans structure

- **Participants**: Syndicated loans involve different roles:
  - Agent
  - Lender
  - Borrower

- **Deal / Facilities**: Represented as fungible tokens:
  - Currently, Term Loan and Revolving Credit facilities (RCFs)
  - Tokens are distributed among lenders

- **The SCs orchestrate the life-cycle process**:
  
  Once the borrower draws the committed amount, the loan life-cycle starts triggering the obligation of repayment (plus fees and interests) from the borrower to the lenders:
  - Each repayment implies an update in the token status (partitions)
  - Every payment is distributed among lenders according to their respective participation in the loan and the corresponding tokens (i.e. the credit rights)
  - Change of ownership is possible by transferring the tokens to a 3rd party
Syndicated Loans participants

Each participant is responsible for:

- Agent: able to create deals/facilities (SCs owner, tokens minting and distribution)
- Lenders: manage the participation in the loan (own the debt tokens)
- Borrowers: able to perform life-cycle functionalities in a facility through SCs execution
- Admin: overall infrastructure management

Participants may have several representatives. These representatives are users of the infrastructure with different roles who have specific permissions.

- Every user action that interacts with the DLT underneath is assigned with one unique participant key

Considerations:

- Sylot infrastructure only offers custody alternatives
- Participants need to engage with custody providers on a bilateral basis

Custody approach:

- Participant keys: Bring your own custody/3rd party custody providers
### Why are we using ERC-1400 standard?

ERC-1410 extends ERC20 capabilities with operations like: forcing transfers, dividing tokens into partitions, and adding metadata to transfers.

The partial fungibility feature allows us to have the tokens status implemented as a partition.
Syndicated Loans tokens

The representation of a syndicate loan uses EIP 1400 adding partial fungibility w/ per partition, operators, transfer restrictions + failure semantics, issuance controls, document management & delegated control (incl. clawback).

**ERC-1410: Partially fungible tokens**

The ability to divide a token holder's balance into partitions, each with separate metadata, enabling to add new dimensions to balance holding.

**ERC-1644: Controller Token Operation**

Since tokens are subject to regulatory and legal oversight this standard enable to retain the ability to force, stop control, transfer tokens between addresses.

**ERC-1594: Core Security Token**

The ability to provide data (e.g. signed authorisation) alongside transfer, issuance and redemption functions allows tokens to more flexibly implement transfer restrictions without depending on on-chain whitelists exclusively.

**ERC-1643: Document Management Standard**

Capability to reference unique external documents linked to the token such as original agreements signed.
ERC 1410 introduces the concept of partitions used as token status such as committed, drawn, paid, … Within a partition, tokens are similar to ERC-20’s: there’s a registry of who owns how many.

<table>
<thead>
<tr>
<th>Term Loan</th>
<th>Revolving Credit</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMITTED</td>
<td>COMMITTED</td>
<td>When deal/facility created or in RCF, when a borrower repays</td>
</tr>
<tr>
<td>DRAWN</td>
<td>DRAWN</td>
<td>When borrower disposes the loan</td>
</tr>
<tr>
<td>PAID</td>
<td>-</td>
<td>In term loan, when a borrower repays</td>
</tr>
<tr>
<td>UNPAID</td>
<td>UNPAID</td>
<td>(Out of PoC)</td>
</tr>
<tr>
<td>EXPIRED</td>
<td>EXPIRED</td>
<td>When the deal matures/expires</td>
</tr>
</tbody>
</table>

Partitions are defined according to the balance status:

Lenders **owning** loan tokens according to their current status, f.i. after the first repayment.
Value proposals

- **Improving efficiency**
  by standardizing lifecycle management and reducing back office costs using sylot as single source of truth.

- **Providing liquidity**
  to Syndicated Loans markets by providing a secondary market.

- **Shaping the future**
  by enabling new business models in RWA tokenization.
Q&A
Thank you!

Jorge Antolínez  jorge.antolinez@io.builders
Óscar Franco  oscar.franco@io.builders
Web  io.builders
Annex
1. Investment Funds
   - Tokenization of fund shares, market transfer orders, settlement and integration with T1 players.

2. Digital Bonds
   - A pioneering digital bond platform built for a large regulated CSD, using blockchain, and enabling DvP.

3. MTF for Alternative Markets
   - One of the first EU-based MTFs under the DLT Pilot Regime focused on bringing liquidity to alternative markets.

4. Private Equity
   - A new digital marketplace to issue, manage and trade Private Equity fund shares under a regulated framework (WIP).

5. Syndicated Loans
   - Full end-to-end platform / middleware to manage the entire lifecycle of syndicated loans using DLT. Built to boost ‘originate to distribute’ CIB models.

---

Our Use Cases
Digital Bond Platform for a CSD
Use Case: Digital Bond Platform for a CSD

Overview: Implementation of a native tokenized bond, denominated and settled on tokenized cash (full lifecycle on blockchain, including issuance, coupons, principal repayments, and DVP settlement). First digital bond registered under a regulated CSD, supervised by the Spanish market supervisor (CNMV).

<table>
<thead>
<tr>
<th>Problems to be Solved</th>
<th>Our Role and Solution</th>
<th>Regulatory Context</th>
<th>Impact &amp; Value Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Efficiency: Bond issuance processes are lengthy, with T+2 settlement times and imply a high degree of manuality during the maintenance of the registry.</td>
<td>ioBuilders developed the full end-to-end platform / technology stack covering the full life cycle of the bond from issuance to management and trading. We used iob tokenization solutions to develop these capabilities enabling the DvP between the tokenized security and the tokenized cash. Detail of the solution provided in the next slide.</td>
<td>Regulatory Context: the digital bond platform was delivered using the existing regulatory framework as it did not apply any new exception and follow existing end-to-end processes. The project was built for the Spanish CSD/CCP, part of Six Digital Exchange Group</td>
<td>Pioneering the issuance of a listed digital bond, denominated in digital money, using a DLT. Implementing a real bond issuance within existing regulatory frameworks. Increased efficiency and automation. Attracting institutional investors to trade using this technology.</td>
</tr>
<tr>
<td>Real Delivery vs Payment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real end-to-end digitalisation: streamlining bond listing, issuance and distribution.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MTF for Alternative Markets
Use Case: MTF for Alternative Markets

Overview: Creation of a Multilateral Trading Facility System for Alternative Markets, supervised by the European securities regulation authorities (CNMV and ESMA). The market allows the issuance, management and trading of securities in primary and secondary markets.

Problems to be Solved
- Limited access to alternative markets from issuers and investors and high-costs of entry.
- Illiquidity of alternative assets such as real estate, infra or renewable energies.

Our Role and Solution
- Technology Partner and Co-founder of the regulated MTF in a JV with an EU-based T2 FI.
- Developed a full tech stack leveraging our digital assets solutions Asseto for tokenized cash and securities and enable DvP.
- Detail of the solutions provided in the next slide.

Regulatory Context
- Part of the EU DLT Pilot Regime and applying to several exemptions including transparency, transfer orders, recording of securities in book-entry form and securities accounts, segregation of assets or CSD responsibilities.
- Supervised by CNMV and ESMA (Spanish & European Regulators).

Impact & Value Provided
- First DLT-based market infrastructure in Spain (and one the first in the EU).
- Providing liquidity to traditional illiquid assets such as real estate vehicles.
- Lower access cost for issuers and investors.
- Attracting all kind of investors to access new alternative products.
Use Case: Investment Funds (UCITs Funds)
Use Case: Investment Funds

Overview: Working since 2020 for the largest funds distribution entity in Europe in the development of their blockchain-based products, including investment funds tokenization, market order/transfer management, settlement and smart contract dev.

Problems to be Solved
- Process Efficiency: Funds distribution platforms need to reduce issuance, transfer orders & fund servicing processes and the manuality implied + reduce their op. risk.
- Increased Margin: Financial distributors needed to increase their operating margin by reducing their back-office costs.

Our Role and Solution
- Technology Partner providing support in a diverse range of initiatives: tokenization engine, client integrations, sandbox support & market order transfers automation including subscriptions, redemptions and switches.
- Detail of the solutions provided in the next slide.

Regulatory Context
- Regulatory Context: current securities regulatory framework and Spanish Sandbox.
- Funds platform operator with financial licence, we did not use a CSD or CCP.

Impact & Value Provided
- Improved efficiency and transparency: The new platform provides a more streamlined & secure process for managing transfer funds and reduce manual reconciliations.
- Attracting large financial players in the EU and US: T1 FIs and AMs integrating their operations in production environments.