
Why is the management of bilateral OTC derivatives to become simple?

Daniel Ivanier, Chief Executive Officer, Fragmos Chain, divanier@fragmos-chain.com

Jean-Baptiste Ziadé, Chief Product Officer, Fragmos Chain, jbziade@fragmos-chain.com

1. Bilateral OTC Derivatives: a risky business

Uncleared OTC derivatives (also called “bilateral OTC derivatives”) represent only a small fraction of the overall derivatives trade volume but they carry a disproportionate amount of risk. In fact, they account for 70% of banks’ operational risk capital related to derivatives, 90% of counterparty risk capital, and 80% of post-trade costs.

The risks associated with bilateral OTC derivatives are numerous and include fraud, operational errors, and non-compliance with regulations, that can result in significant financial losses. Operational errors are often caused by the many manual tasks involved in post-trade processes, such as mis-booking, incorrect or late confirmation of new trades and lifecycle events (e.g. cash-flows, corporate actions). The risk of non-compliance with regulations is high, and includes late confirmations, low data quality in regulatory reports, and inconsistent reports between counterparties (all subject to regulations such as Emir, Mifid 2, Dodd-Frank, and similar regulations across the world); long margin dispute process, which can result in a high margin period of risk (MPOR) under the Basel Committee’s rules for regulatory capital; and difficulties shifting to risk-free rates, as mandated by the Libor reform (Benchmark directive in Europe).

The financial losses incurred by firms due to these issues are high and estimated by McKinsey to be between \$4 billion and \$7 billion¹.

¹ McKinsey, “Fintech decoded, Capturing the opportunity in capital markets infrastructure”, March 2018

These issues affect all asset classes, as evidenced in figure 1. Although clearing has been highly recommended by regulations since 2008, the proportion of bilateral trades remains high, accounting for between 40% and 100% for all asset classes, with the exception of rates. Even for rates, bilateral trades are still prevalent, especially for smaller parties below the clearing threshold. Despite significant progress in the automation of the matching process, the confirmation and matching of many products, particularly complex ones, remains a manual process.

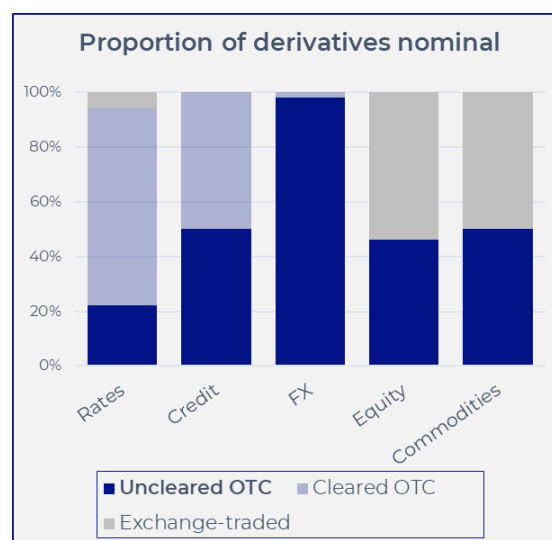


Figure 1: listed, cleared and bilateral derivatives by asset class
Source: Banks' data, Frangos Chain research

2. The path to the solution: CDM and DLT

The underlying issue is the challenge of comparing trades booked by different firms, due to their divergent booking systems and data models. The reconciliation process still relies heavily on manual comparisons between a trading system screen and physical documents, such as paper confirmations and term sheets, or even raw data sources like Excel spreadsheets used for cash-flow calculations. This manual process, which is both inefficient and error-prone, remains the primary method for post-trade reconciliation across many organizations.

The **CDM (Common Domain Model)**, as a universal representation of trades and lifecycle events, opens the path to the solution. Launched by the ISDA, CDM "creates a standard representation for events and products, [and] enables firms to develop automated solutions that can be interoperable and scalable in a way that has never been done before"².

The CDM offers a bijective representation of derivatives trades and their lifecycle events, meaning that the same product has the same CDM representation regardless of how it was booked. Moreover, the CDM is designed to be modular, allowing for the high complexity often found in derivatives products.

DLT (Distributed Ledger Technology) ensures immutable data and contracts. The documentation of contracts on DLT platforms, like Corda³, has the crucial added benefit of being legally binding, as confirmed in whitepapers published by reputable law firms in collaboration with the ISDA and R3⁴. Hence the immutable nature of DLT provides a trusted source of information in the event of disputes or legal proceedings.

² "ISDA Common Domain Model (ISDA CDM)... Why now?", October 2019, <https://www.isda.org/2019/10/14/isda-common-domain-model/>

³ Presentation on <https://corda.net/>

⁴ "ISDA Launches New Legal Papers on Smart Contracts and DLT", October 2020, <https://www.isda.org/2020/10/21/isda-launches-new-legal-papers-on-smart-contracts-and-dlt/>

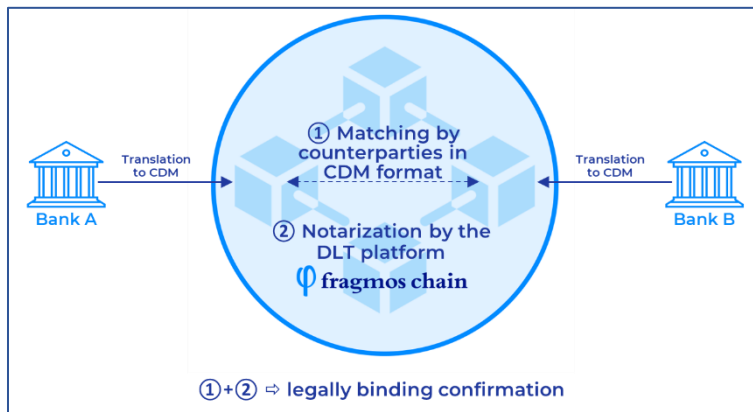


Figure 2: benefits of combining CDM and DLT

By combining the CDM and DLT, a shared and legally validated description of derivatives trades and events can be created, as shown in figure 2. This combination provides a more accurate, efficient, and secured trade processing.

3. Towards a vanilla processing of complex OTC trades

3.1. An efficient matching engine is the key ...

As evidenced in figure 2, a third crucial part of the solution is the matching. An effective matching engine must be capable of handling all types of trades, regardless their complexity, and all lifecycle events. Accordingly, it must be able to address a range of questions, increasing in complexity:

- Are the bookings of the trade made by a bank and its counterparty consistent? Does the same hold true for lifecycle events?
- If the bookings are not consistent, what steps should the bank take?
- How can it be determined if two seemingly different bookings describe, in fact, the same trade or event?
- If multiple trades or events are received within a short period of time, how can one determine which ones should be compared? And when to make this determination?

Standard reconciliation engines, such as those commonly used in trades portfolio reconciliation or in payments processing, are clearly insufficient for answering such questions. This is precisely where **Fragmos Chain brings disruptive added value to its customers. Based on Corda DLT, Fragmos Chain is a CDM-native trade and events matching solution**, designed to handle the complexity that is inherent to bilateral OTC derivatives processing, by ensuring a vanilla processing of complex OTC trades and events. Key features include:

- a clear, human-readable, representation of all kinds of trades and events,
- a best-in-class matching algorithm, taking into account all data at the most granular level,
- and a legally binding confirmation, based on ISDA definitions.

As an example, the figure 3 shows how data booked by two counterparties' trading systems can be easily compared: the discrepancies are clearly and automatically highlighted. Fragmos Chain actually covers the comprehensive set of data involved in OTC trades and events, including complex terms, such as payout terms, settlement terms, and many others.

| Dates | | | |
|-------------------------|------------|---|--------------|
| Event Date | 2021-11-21 | ● | 2022-12-01 |
| Business Center 1 | USNY | ● | USNY |
| Business Center 2 | EUTA | ● | CHZU |
| Business Day Convention | Following | ● | Modfollowing |

Figure 3: extract from Fragmos Chain's matching GUI

3.2. ... to unlock benefits in terms of costs, risks and capital

The financial industry can reap significant benefits from a platform based on CDM and DLT, and providing a best-in-class matching engine, such as Fragma Chain.

Some of the key benefits of such a platform include:

- **Reduction in post-trade and legal costs:** streamlining of the trade and event matching process and automating the production of digitized (paperless) legal confirmations result in increased efficiency and dramatic cost savings for financial institutions.
- **Improved operational risks management,** by reducing fraud and mis-booking, providing legal certainty based on reliable confirmations and sharply improving compliance with regulations related to OTC Derivatives such as Emir and Dodd-Frank.
- **Handling of all kinds of derivatives products,** regardless of their complexity. This includes basket derivatives, option strategies, structured equity and rates, FX exotic options and strategies, commodities derivatives, and more.
- **Handling all lifecycle events:** in addition to handling new trades, Fragma Chain also handles all lifecycle events, including cash-flows, amendments, increases/decreases, and corporate actions, hence ensuring a comprehensive and efficient trade process.

3.3. Matching and self-execution

The next step is to perform self-execution of deterministic events such as payout cash-flows, notional resets, or option exercises. This is made possible by the comprehensive representation of trades and events in CDM, allowing for a single calculation to be performed by smart contracts on behalf of both counterparties. This constitutes a further step beyond the already-efficient automated matching described earlier.

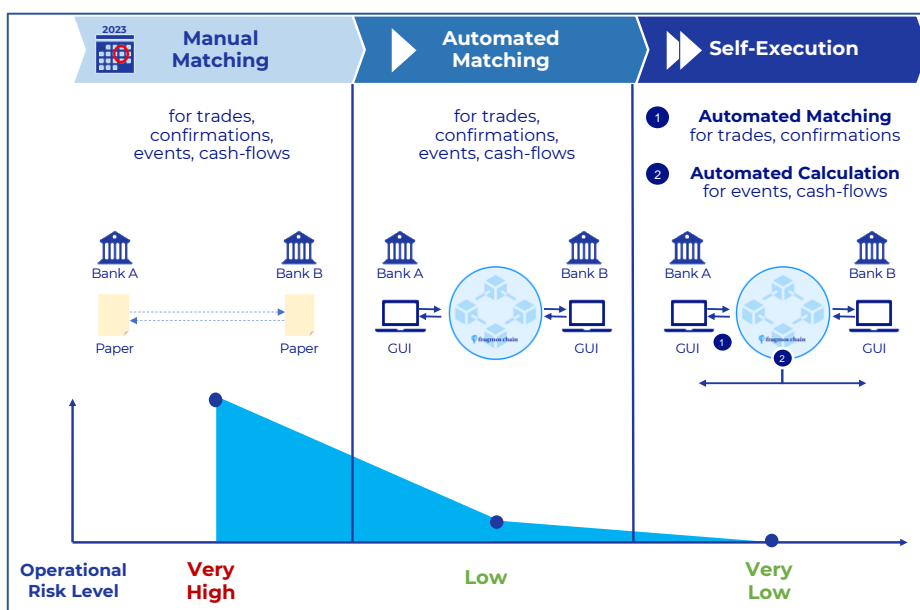


Figure 4: matching and self-execution

However as shown in figure 4, **self-execution only yields minor additional efficiency gains compared to automated matching.** In effect, automating the matching of calculations provided by two regulated financial institutions provides a robust solution that already significantly reduces operational risks.

4. A holistic management of OTC Derivatives

Several initiatives have been launched by the ISDA, which allow a holistic approach to OTC derivatives management. These initiatives work together to reinforce each other and ensure a more efficient framework. These initiatives include:

- **ISDA Create**⁵, which simplifies the process of negotiating derivatives master documentation, such as ISDA Master Agreements and Credit Support Annexes (CSAs).
- **Digital regulatory reporting (DRR)**⁶, which “refers to the publication of reporting rules by regulators and/or the implementation of derivatives reporting requirements by market participants via human-readable, machine-executable code”. DRR is closely tied to CDM.

The close relationship between these initiatives and post-trade platforms, such as Frangos Chain, is highly advantageous. Master contracts in CDM can feed post-trade platforms for a more accurate management of post-trade events. Trade data matched in a post-trade platform can be used by DRR to enhance regulatory reports’ quality and consistency between counterparties. More generally trade data in CDM format can serve as a Golden source or Authoritative Data Store (ADS), which, as mentioned in a Barclays whitepaper⁷, “can be considered a primary source of information that acts as a single logical reference point”.

By having a post-trade platform able to feed not only regulatory reporting platforms, but also margin, collateral and risk platforms, the management of OTC derivatives becomes more secure and consistent.

5. How to ensure a smooth transition?

The benefits of standardization projects are often delayed. However, the benefits of the solution we are describing here should be immediate.

Instead of waiting for all firms to fully adopt CDM, it is better to build bridges between firms. CDM was designed to facilitate the building of such bridges. As mentioned by REGnosys, a co-founder of CDM, “the CDM’s focus on logic enables interoperability between existing standards and systems. [It] provides a single, logical layer to articulate from a FIX into an FpML and into an ISO message”⁸. This is particularly true as the core of all legal confirmations produced by the financial industry is the ISDA definitions, which are formalized in CDM.

Hence the key to the successful adoption of CDM and its associated initiatives, such as post-trade platforms, is **interoperability**. Several key players are already positioned to help with this process, including Frangos Chain, REGnosys, and trading software vendors.

⁵ <https://www.isdacrete.org/>

⁶ “Digital Regulatory Reporting: Market and Regulatory Initiatives”, ISDA, March 2022. <https://www.isda.org/2022/03/28/digital-regulatory-reporting-market-and-regulatory-initiatives/>

⁷ “Industry Adoption Scenarios for Authoritative Data Stores using the ISDA Common Domain Model”, Aishwarya Nair and Lee Braine, Barclays, July 2020. <https://arxiv.org/abs/2007.06507>

⁸ “CDM myth #1: it’s a new standard”, Leo Labeis, REGnosys, December 2021. <https://regnosys.com/insights/cdm-myth-1-its-a-new-standard/>

6. Conclusion

The white paper discusses the risks associated with bilateral OTC derivatives, which are a small but disproportionate part of the overall derivatives trade. These risks include fraud, operational errors, and non-compliance with regulations, and result in significant financial losses. The paper proposes a solution to these problems through the use of the CDM and DLT.

The CDM provides a standard representation of trades and lifecycle events, while DLT ensures data immutability and legal certainty. By combining these two technologies, a shared and legally validated description of derivatives trades can be created, leading to a more accurate, efficient, and secure trade process.

The paper then highlights the importance of an effective matching engine to handle all types of trades and events.

The convergence between all types of players, sell-sides and buy-sides, trading systems vendors, platform and service providers, market infrastructures, and of course regulators, is critical to ensuring a secure and transparent market function.

About Fragmos Chain

Fragmos Chain has revolutionized the post-trade management of OTC derivatives by introducing a cutting-edge Blockchain-based platform. This platform, built on the foundation of ISDA CDM and Corda DLT, offers cross-asset and cross-product capabilities, making it a comprehensive solution for all types of bilateral OTC derivatives. With its advanced automation features, such as trade matching, reconciliation and confirmation, it provides enhanced security, greater efficiency and reduced risk and cost for financial institutions. The platform's seamless integration of these features ensures a smooth and secure post-trade process for all stakeholders involved.

For more information, visit www.fragmos-chain.com.