

# **DIGITAL DERIVATIVES DOCUMENTATION**

## Embracing change

# FUTURE OF DERIVATIVES CONTRACTS

**B**y 2030 derivatives contracts will be fully digital. Operational terms will be entered straight into cloud based utilities, leaving no ambiguity and without need for additional manual capture. This data will allow automatic execution of margining and interest payments, with no delay in time-to-trade, all wired up to unified pools of collateral, with optimisation built in at every stage. Master agreements will be digitally created and executed without ever seeing a piece of paper. Contracts will be filed using Legal Entity Identifiers (LEI) allowing complete understanding of counterparty relationships.

Regulatory reporting will be fully automated ensuring effective understanding and management of systemic risk. Required data sets will be generated using standards such as LEI, Unique Product Identifier (UPI) and Unique Transaction Identifier (UTI) along with standard messaging formats. Efficient, unambiguous processing.

This efficiency will result in an end to one-off challenges such as LIBOR and Brexit requiring teams of consultants and legal focus. Similar future challenges will be managed by simple automated rule-sets flowing changes for digital approval, identified through simple data filtering.

*Sounds good? Its not as far-fetched as self-driving cars sounded 10 years ago; the pieces are already falling into place.*

*In this article we explore the path to full digitisation of derivatives contracts, catching a train along the way and stopping for quick bath! We take stock of progress to-date, map out the road ahead and identify how firms can embrace this change for maximum benefit.*

## LEGACY

As a result of the 2008 financial crisis, derivatives documentation came to the fore. Market participants rushed to understand the web of interconnectivity in the financial markets. High profile failures and bailouts highlighted the importance of these agreements and the language they contain, yet many were poorly filed, some even existing in paper form only.

Since then the market has been on a trajectory of regulatory reform, leading inexorably towards digitisation - either through direct mandates, or simply the downwards pressure on costs and the need to improve efficiency.

## THE NEED FOR CHANGE

Market participants need to 'do more, with less'. This has been said for some years now but continues to be an undeniable reality.

Post-trade operations are expensive, with too many manual steps. Collateral is a valuable commodity that gets 'squeezed' by regulatory requirements, making optimisation (pre- and post-trade) a very desirable outcome.

More market participants than ever must post collateral as a result of the uncleared margin reform regulation. Firms must increasingly provide evidence of record keeping capabilities and provide post-trade reporting, with no discernible competitive advantage by creating solutions in-house.

Derivatives documentation has multiplied over the past 10 years as a result of regulation. Layer on protocols and amendments for benchmark reform or Brexit and you've got a lot of documents. Yet the processes to create, use and manage these contracts has not kept pace - if anything it is more complex now.

The 2008 financial crisis highlighted the need to manage counterparty risk more than ever, yet few firms have queryable data regarding their termination provisions, NAV and ratings provisions or contract obligations.

***For 7% of firms the lack of digitisation had cost them more than \$1 million; most firms just didn't know<sup>1</sup>***

To be able to do more with less, something must change.

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<sup>1</sup> ISDA Collateral Management Toolkit: Digitizing Documentation and Streamlining to Operations ([link](#))



## EMERGING SOLUTIONS

### ***DIGITISATION SERVICES***

The last decade has seen a proliferation of contract digitisation and analysis services. Platforms touting ‘artificial intelligence’, ‘machine learning’ and ‘natural language processing’ capabilities. Some of our team were among the first to see the opportunity these computer science disciplines would create when coupled with the gnarly problem of derivatives contracts.

This is the foundation layer, and a contract data management solution is a ‘must’ to proceed along the evolutionary curve.

The emergence of these tools means that there is no longer any excuse for not being

able to find or record contract data accurately and efficiently. However these solutions should also be augmented to reach the desired end-game: more efficient ways of contracting to reduce ‘after-the-fact’ data capture, and a common language to promote use of the captured data.

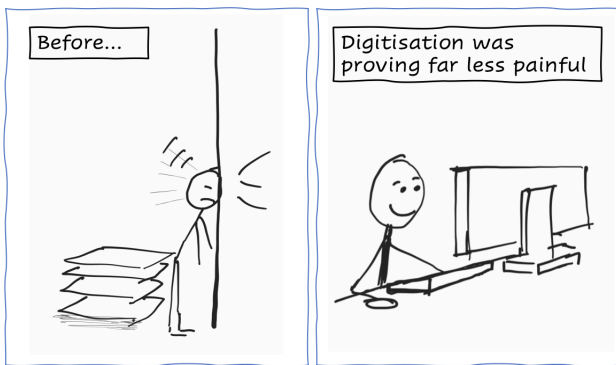
### ***CLAUSE LIBRARY: DIGITAL NEGOTIATION***

The idea of a clause library has been around for a long time. Most firms already have solutions of varying degrees of sophistication to ensure that lawyers follow ‘house’ standards, but until recently there was no industry-wide clause library. Now ISDA has created one. Not only does this make for more efficient and consistent drafting of legal agreements, but it also promotes more efficient use of digitisation

services as it is now possible to recognise standard and non-standard clauses.

Better still, the use of a clause library means that it is possible to record data at the point of authoring. An instantiation of the ISDA Clause Library has been created to achieve just this, in the form of ISDA Create.

Whether banks are willing to shift from investments in template libraries, document assembly tools and internal clause libraries remains to be seen, but for those with no preexisting solution the benefits are there to be had.



## E-SIGNATURES

Electronic signatures have become much more mainstream over the last 10 years as the major jurisdictions have introduced laws to clarify their legal standing. There are clear benefits - allowing contract execution to happen quickly and without the need to resort to paper and ink. A contract that has been electronically signed, based on a known digital version of that contract, unlocks the ability to use the data captured at source, confident in the fact that no changes have been sneaked in.

## COMMON DOMAIN MODEL

In lieu of a standard, we created our own detailed domain models for representing derivatives contract data. Everything from termination provisions, bail-in language, deviations from boilerplate language, through to specific operational terms such as eligible collateral and margin thresholds. Any organisation investing in their own build will also have had to perform this analysis and design. No two independently created models will be identical.

The challenge has always been that if you want this data in a different system you must map between the two, and this is often a costly exercise, adding a risk of information being 'lost in translation'.

With a common model, vendors and in-house systems are able to use a shared language, safe in the knowledge that the systems will be able to communicate without an expensive IT project.

***71% of firms identified a standard data model for ISDA terms as a key benefit of digitisation<sup>2</sup>***

The ISDA Common Domain Model promises to solve this mapping challenge, removing interpretation differences. Initially it focused on capturing events and processes in the trade lifecycle, but in recent releases this has been expanded to include a digital representation of the legal agreements.

<sup>2</sup> ISDA Collateral Management Toolkit: Digitizing Documentation and Streamlining to Operations ([link](#))



The benefits of a common language, a single way to represent contract data, a single unambiguous interpretation of complex provisions such as eligible collateral and ratings downgrades, are very obvious. It is an open standard available for all to use and contribute to, and already has open-source implementations in a wide range of programming languages - its hard to see why you wouldn't use it.

For digital derivatives documentation to become possible, this lingua franca is a fundamental building block.

### SMART CONTRACTS

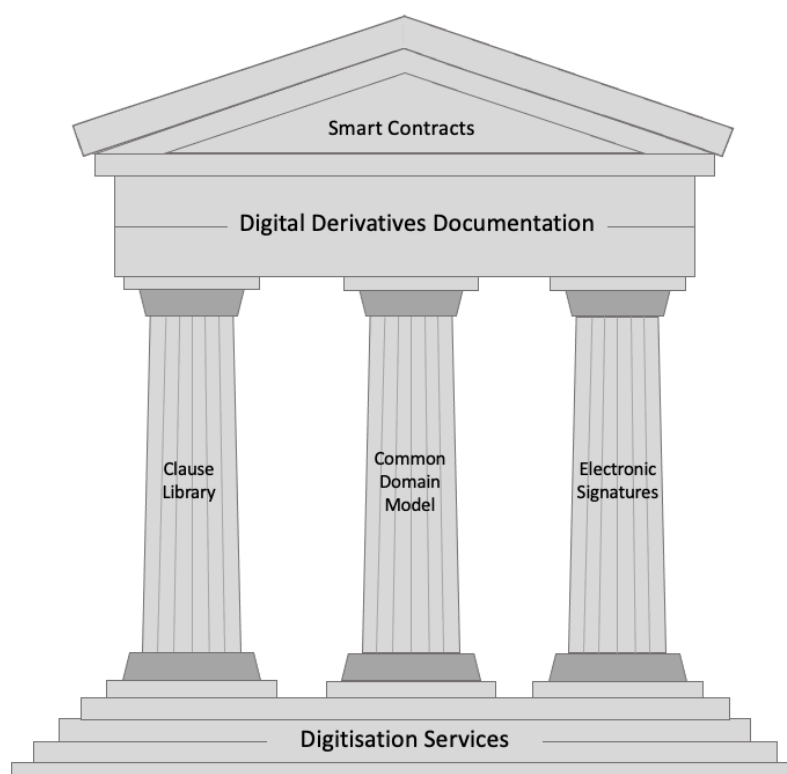
The term 'smart contract' was first coined by computer scientist Nick Szabo in 1994, but has come to the fore in recent years due to its association with cryptocurrencies and the wider applications of blockchain technology.

The idea is that a contract can be self-executing. The intent can be coded into the contract at the start and will remain

unchanged. The 'self-executing' part relates to events or triggers that are contained in the contract, that might otherwise have required a person to notice, interpret and action them. Imagine a smart contract being able to fulfil the obligations automatically - posting interest or making payments for example.

Of course it would need to be wired up to the relevant systems and the devil really is in the detail, but conceptually the potential benefits are obvious.

Operational contracts - those that **SHOULD NOT** be open to interpretation lend themselves well to this idea, however to reach this stage it is essential that most of the previous building blocks are in-place, and in particular a common domain model.



# THE ROAD TO DIGITISATION

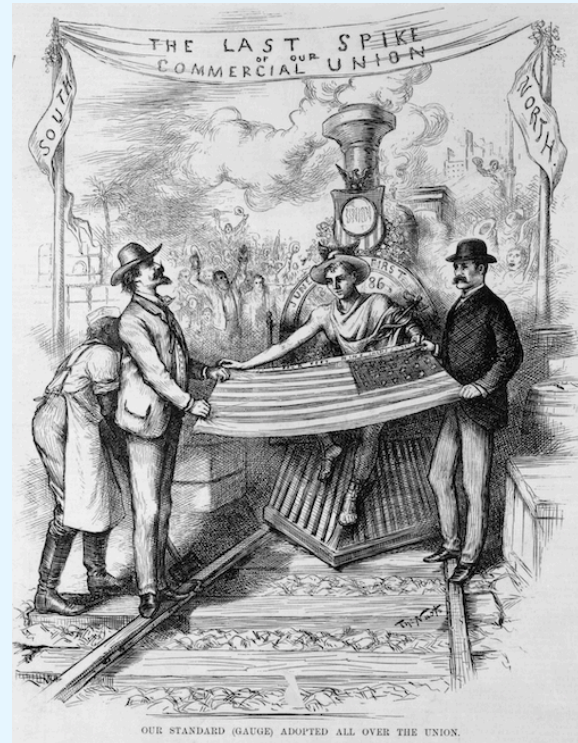
## LESSONS FROM THE PAST

The expansion of the railroads in the 19<sup>th</sup> century shaped the modern world, but long-distance transport in the early days was far from smooth.

National rail networks evolved from railroads serving individual regions. The distance between rails (the gauge) was determined by each operator. The choice was sometimes an engineering decision - wider gauge for stability, narrow gauge for mountainous terrain. Often it was a marketing decision – a ‘gauge break’ could block rivals from connecting to their network. It could even be a military strategy – memories of Napoleon led to Spain choosing a wider gauge than France, and Canada’s fear of a U.S. invasion was assuaged by a gauge break at the border!

Operators protected their service at the expense of smooth transportation. Moving from rails of one gauge to another meant transferring goods (or passengers) between trains. Mark Twain complained of the “*paralysis of intellect*” that led to him changing trains “*by lantern-light in the morning in the biting-cold*”. Moving freight between trains was expensive in terms of both time and labour, and increased the risk of damage to goods. Train manufacturers took advantage of proprietary track gauges to ensure buyer lock-in.

Engineers came up with technological workarounds. An extra rail allowed two gauges to be supported, but there were 20 or more in use. Wider wheels spanned multiple gauges, but



“Our Standard (Gauge) Adopted All Over the Union”

sometimes slipped off the rails. More promising was an invention allowing wheels to slide along the axle, but it was difficult to operate and maintain. The resulting accidents hastened the introduction of the most effective solution – standardisation.

Once the decision had been made, the roll out was rapid. The effort involved in changing thousands of miles of track was substantial, but U.S. railroad companies completed it in days.

Standardisation ushered in the golden age of rail, with interoperability and interchangeability delivering economic advantages to the most competitive operators and to innovative suppliers.

# THE ROAD TO DIGITISATION

Fortunately the derivatives, securities lending and repo markets are in better shape than nineteenth century railways. They already have industry organisations in place, promoting safety and efficiency - but these initiatives depend on the active support of market participants, and there are valid concerns which must be addressed.

## AVOIDING THE ROADBLOCKS



### DIGITISATION SERVICES

#### CHALLENGE #1: GETTING TO THE TOP OF THE PILE

Sorting out your contracts is a bit like going for a run on a rainy day - the first step outside the front door is the hardest.

If you've ever despaired at the mess your firm's contracts are in, then take some comfort in the fact that you're not the only one. There are duplicate copies of contracts, some executed, others not, many retained simply through fear of discarding anything. Reams of documents in storage and backups. Filenames are all over the place, dates are unreliable and you strongly suspect that some documents are missing.

Most organisations have conducted some form of digitisation by now, normally to solve a very specific regulatory issue, although very few have 'done it properly'.

Habitual neglect means that the pile of contracts keeps growing, and contributing to spiralling costs every time you need to know something or remediate. How many times have the same contracts been looked at and amended over the last 10 years?

The regulators aren't impressed by this approach either. A lot of work has gone into being able to manage risk more effectively, yet contracts define a business. They aren't static documents that can be forgotten about - the clauses and operational terms in them need to be known and managed.

**SOLUTION:** the easiest way to get started is to use the next *must-do* project to start the process.

Do it properly, so its not throw-away and therefore the next project has a head-start and suddenly you can actually be knowledgeable when asked a question about your contracts out of the blue. Oh, and you need to do this step to benefit from the others.



**COMMON DOMAIN MODEL**

**CHALLENGE #2: YET ANOTHER STANDARD**

It's true. 'Yet another standard' is going to be a worry for CDM. There are plenty of seemingly related standards, some with overlap. FpML, for example, has overlap with the transactional side of CDM - but the other standards don't support the legal agreements, and this has been a challenge for some time. CDM embraces the parts of FpML that make sense, but goes further to cover reference data - data such as collateral eligibility for example.

Even so, the past is littered with failed attempts to introduce standards, and the support of industry associations is not a guarantee of success - as ICAD codes, first published in 2003, demonstrated.

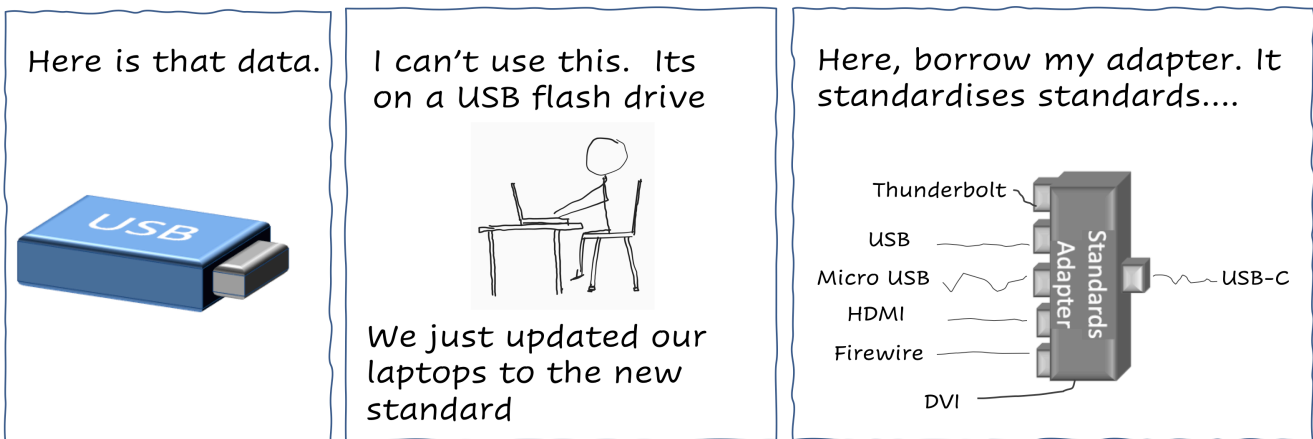
Conceptually a useful idea but never widely adopted, in practice ICAD codes muddied the water even further. Now you can

represent collateral using an ICAD code, or a written description.

**23% of firms were spending an average of more than 4 hours resolving reconciliation or dispute issues**

One of the key goals of CDM is to eliminate this ambiguity. A single way to represent the same data is absolutely key. This is a basic precondition for achieving the goal of a smart contract, but near-term there are more definite needs<sup>3</sup> - dispute management, system interoperability, reporting, collateral optimisation.

**SOLUTION:** if the benefits are great enough, adoption will follow. Up until now there has not been a standard for legal agreement data, so embrace the opportunity created by ISDA and the other associations and help make it happen!



<sup>3</sup> Pain points included "large numbers of collateral disputes due to inconsistency in data representations...exacerbated by limited connectivity and interoperability" between systems  
ISDA Collateral Management Toolkit: Digitizing Documentation and Streamlining to Operations ([link](#), page 6)

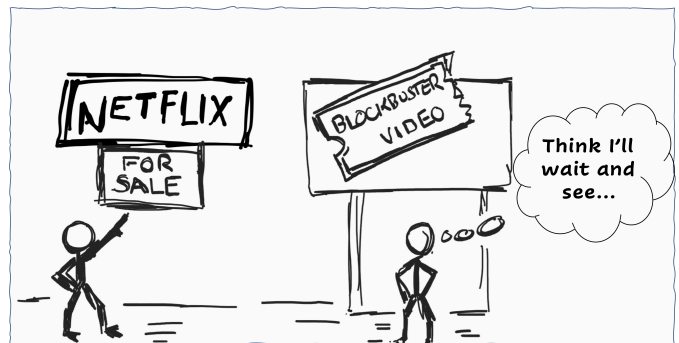
### CHALLENGE #3: NOT STANDARD ENOUGH

Failed attempts at standardisation are often characterised by a lack of ambition to take on the toughest challenges and the stamina to see it through to the end. There is real hope here with ISDA, ISLA and ICMA all pursuing a shared vision of a solution spanning markets and asset classes. The idea of the CDM has been around since 2018, and while much progress has been made there is still work to be done to cover all derivatives processes and agreement types. This creates a challenge for the standard and for better ways of doing things.

**SOLUTION:** get involved and ensure it covers everything you need. There's no excuse - it's an open standard!

### CHALLENGE #4: WAIT AND SEE MENTALITY

You probably agree that operational data relating to the mechanical implementation of a contract should eventually be handled entirely 'on platform' and not through more abstract provisions in legal agreements. You almost certainly agree that data mapping and transformation between systems is a waste of time (perhaps not if you are an IT consultant!). So all of this is a good idea, right?



Sometimes its best not to let chances pass you by....

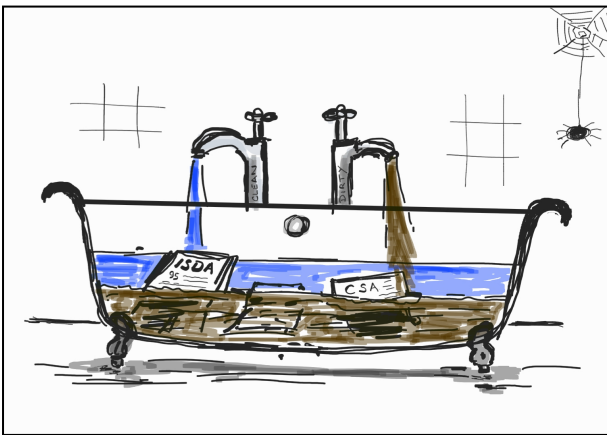
Recognising that something makes sense doesn't make it happen. The initial enthusiasm can quickly fizzle out, particularly if key players are content to sit on the sidelines and wait to see how things play out. In this case, if you aren't contributing to success, you are contributing to failure.

**SOLUTION:** Market participants should be encouraging vendors to move to the CDM, and participating in its development to ensure it is fit for purpose. Vendors should be adopting the emerging standards.

## CLAUSE LIBRARY: DIGITAL NEGOTIATION

### CHALLENGE #4: BATH FULL OF MUDDY WATER?

Imagine a bath full of muddy water. You can turn on the tap and pour in clean water, but the water will still be very murky.



Contract data is in the same situation. The existing (legacy) agreements, often scanned images without structured data, are the muddy water in the bath. At the moment, most people are pouring in more dirty water - new agreements, drafted in MS Word, printed, signed and scanned.

Finding what you want in muddy water is difficult.

Digital negotiation platforms such as ISDA Create offers a tap of clean water - contracts with structured data, that have remained digital. The bath fills up, but the water is still muddy. Your new amendment might be 'clean', but the contract it amends is not, and you need the data across the two.

Not all contract types will be supported yet - so more muddy water goes into the bath.

By adopting digital negotiation for new contracts your users must now work with two systems. You have additional costs and the efficiency gains are eroded. Digital negotiation is a great idea, but if only 50% of a dealers counterparts agree to use it, then the other half are still using old-school documents.

Being realistic, there will always be some documents that aren't in digital format, or aren't standard enough to be created via a platform.

We all agree that having a pristine source of contract data is a good thing, but a manifesto of 'slightly less dirty water' isn't going to get the support necessary to overcome the challenges.

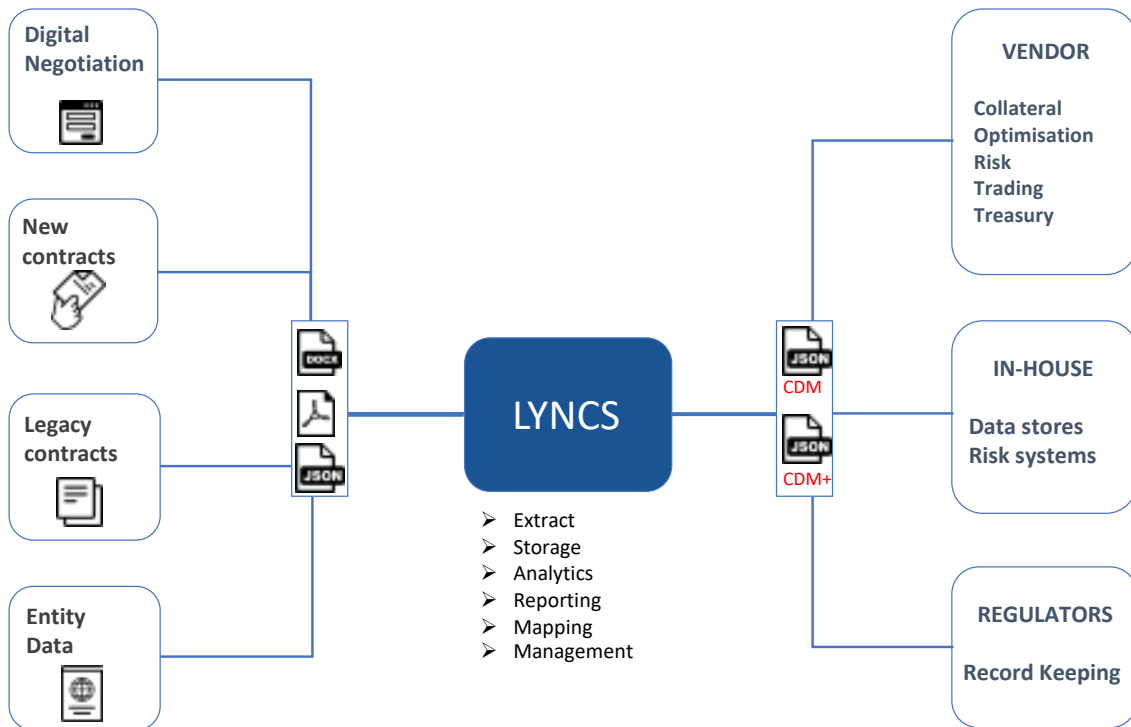
**SOLUTION:** Accepting that not all contracts will be digitally negotiated is realistic, but shouldn't matter - after all, you'll have put in place digitisation services to process the existing documents and a repository to store the organised data.

With a contract data management solution in place, you can flow the output from your digital negotiation into a platform that already contains your legacy contract data and get a complete picture.

Any additional costs are offset by the savings gained through capturing data at source and your accuracy and time-to trade improves.

## NAVIGATING THE WAY FORWARD

Digital connectivity - paving the way towards smarter contracts



With output mapping to CDM standards, Lyncs provides a single, clean source of data to vendor platforms and proprietary system, with full traceability

**Step 1:** Sort out your legacy agreements. The problem is getting bigger rather than smaller; don't continue to waste time and money by ignoring it. It's cheaper and easier than you think, and the investment will pay dividends very quickly.

**Step 2:** Adopt and contribute to the Common Domain Model. To tame your legacy agreements you need a model to represent the data - use a standard.

**Step 3:** Use straight-to-digital formats and online negotiation where they make sense, especially when they produce data in a standard CDM format (no mapping project)

The goal of having contract data represented in a standard Common Data Model, flowing directly into internal and vendor systems, **is** achievable.

A Contract Data Management platform (such as Lyncs in the diagram above) can speak CDM with ISDA Create and other negotiation tools, enrich incoming agreement data where the CDM does not yet cover specific needs, handle the documents that aren't in a digital format, and produce consolidated output in a standard format (CDM) ready for use in downstream systems.

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## KEY BENEFITS

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It's an exciting time for the industry, with a new breed of innovative companies and next-generation platforms offering a major advance on existing proprietary systems and older vendor platforms. The business case for switching to a new (often cloud-based) platform seems strong - advanced functionality, a modern user interface, more efficient and secure, and cheaper to run and operate. Yet it often breaks down because sat in the way of realising those benefits is an enormous IT project. They say that data is the new oil, but not when a change of supplier means digging up and replacing the pipelines.

Imagine that there was a common language that meant you could easily adopt or switch between vendors (spoiler alert: CDM). No more vendor lock-in. Rather than build a regulatory reporting solution for BRRD or QFC record keeping, you could buy one that's ready to use, knowing that as long as the plugs on both ends of the wire fit CDM sockets it will 'just work'.

The decision making process becomes easier, because you go into it knowing that should a better solution come along a couple of years down the line, it will be easy to swap out the old.

Think about collateral optimisation too. How much easier would it be with a common way of describing collateral eligibility and concentration limits? Support from the custodians would result in improved interoperability and efficiency. No need to deal with multiple feeds and formats.

There are other more obvious benefits. One place to view all your (now digital) legal agreements. Gain complete insight into counterparty relationships. Proactively manage risk. Identify non-standard agreements. And spend far less time and effort on the next LIBOR or Brexit challenge.

### **Benefit from a better go-forward process:**

- the ability to view, query and use data on all agreements in one place
- full traceability from CDM data, back to agreement families and underlying documents
- no more mapping projects
- faster, cheaper, more accurate data
- data extraction only where needed to enrich the process.

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## CONCLUSION

At Logical Construct we've put a lot of effort into creating rich domain models for legal agreements, yet we appreciate the value of the CDM.

A data integration project means delay, noise, information loss and expense. We would much rather use a common standard wherever possible.

With the support of ISDA, ISLA and ICMA, market participants, service providers and technology vendors, we are a step closer to fully digital derivatives documentation and all the benefits that can provide.



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## Glossary

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- BRRD** Bank Recovery and Resolution Directive (and in particular record keeping requirements)  
**CDM** Common Domain Model  
**LEI** Legal Entity Identifier  
**QFC** Qualified Financial Contract  
**UPI** Unique Product Identifier  
**UTI** Unique Trade Identifier

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## Acknowledgements

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Image 1: Digital Wallpaper - Photo by Scott Web on Unsplash

Image 2: Steel Waves - Photo by Ricardo Gomez Angel on Unsplash

Image 3: Our standard (gauge) adopted all over the union - by Thomas Nast

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## Logical Construct.

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Logical Construct provides a complete Contract Data Management solution for data extraction and analysis from legal documentation.

With full support for ISDA contracts and feeds for industry wide collateral initiatives and adoption of emerging standards, we help market participants better manage their trading, operations, compliance and risk.

[www.logicalconstruct.com](http://www.logicalconstruct.com)