

NIIT Technologies Advisory SME's John Speight and Joseph Mendel respond to common questions on LIBOR, and explain how we are supporting businesses grappling with the transition

Can you provide some background to the LIBOR conundrum?

The attention that the upcoming transition from the LIBOR1 benchmarks has generated over the past few years is certainly warranted. It has been called “The world’s most important number”, with many articles and opinions written regarding the impact of the upcoming transition deadline of December 31, 2021. It has been estimated that there is in excess of \$400 Trillion worth of LIBOR-based products held by financial institution across the globe; these will need to be examined in order to assess the impact of moving to the proposed alternate reference rates (ARR).

The LIBOR benchmarks have been commonly used since the 1980’s. They are based on the unsecured wholesale rates at which banks lend to each other, both overnight and for designated maturities. It is the basis for determining rates, pricing and risk for many financial products such as mortgages, commercial and retail loans, syndicated loans, corporate debt issuances, securitization, credit notes, Swap contracts, FRA’s, IRS, and repurchase agreements.

LIBOR is:

- Supplied for 5 currencies (USD, GBP, EUR, CHF, JPY) and 7 maturities (Spot, 1W, 1M, 2M, 3M, 6M, 12M).
- Calculated using the rates provided every business day by 17 panel banks.
- Is administered by ICEⁱ and overseen by the UK regulator FCAⁱⁱ.

What are the problems with LIBOR?

Since the 2008 Financial crisis, there has been a move away from funding via overnight money markets on which LIBOR is based, as such the liquidity underpinning the rates has significantly reduced.

Also, there have been concerns over the ease at which the rates could be manipulated, this came to light in the 2012 scandal, evidence suggested that collusion had been going on since 2005; that banks had been reporting artificially low or high rates to benefit other parts of their business (e.g. derivatives).

The final nail in the LIBOR coffin was the FCA announcement in 2015 that it would only support LIBOR until 2021, stating that it would stop insisting that the panel banks provide rates. The cost of administration for panel banks along with the regulatory and reputational risk associated with any issues means that banks are unlikely to continue providing the requisite rates post 2021 once compulsion retracted.

So, what is replacing LIBOR?

Since the financial crisis we have seen the increased use of alternate reference rates (ARR), also known as Risk Free Rates (RFR). These are all benchmarks based on active, liquid underlying markets; as such

they address key concerns highlighted with LIBOR (i.e. the lack of underlying liquidity and ease of manipulation). The primary ARR's are shown in table below.

CCY	ARR	Published by	Secured?	Calculation
CHF	SARON	SIX exchange	Yes	Based on rate that reflects interest paid on interbank overnight repo.
EUR	ESTR	European Central Bank	No	Based the overnight wholesale deposit transactions reported.
GBP	SONIA	Bank of England	No	Based on the rate paid on overnight unsecured wholesale transactions.
JPY	TONAR	Bank of Japan	No	Based on the overnight call rate market
USD	SOFR	Fed	Yes	Based on multiple overnight repo market segments

Are there issues that firms will have to address?

The simple answer is yes. Not only are there fundamental differences between LIBOR and the ARR's; there is also the scale of business that needs to be processed. Transitioning to ARR's will impact how financial contracts are priced and how firms manage their risk while contractual fallback provisions may result in economic value transfer or contractual challenges.

As stated, there are fundamental differences between LIBOR and the ARR's, it is important that firms take these into account when moving from LIBOR, these include:

- LIBOR benchmarks are centrally managed whereas the ARR's are managed by different intermediaries, each at different state of readiness; as such firms will have to handle both old and new based on the implementation timelines.
- LIBOR benchmarks are forward looking with term maturities whereas the ARR's are backward lookingⁱⁱⁱ and do not provide maturities.
- LIBOR benchmarks are all unsecured rates whereas some of the ARR's are secured (i.e. include credit risk in the rate).
- LIBOR benchmarks incorporate market risk to account for volatility during periods of crisis whereas ARR's do not.

There are numerous other considerations that firms will need to consider, from simple operational changes to regulatory reporting and tax changes (e.g. under LIBOR, rates are published at 11:00AM London time across all currencies whereas ARR's will be published at different times during the day).

Firms must take a holistic view when managing their transition. Why? It is common to see firms use various combinations of financial instruments, each with their own contractual agreements to offset or hedge other exposures. That is, firms must look across their books to ensure that their transition does not expose firms to additional risk. One good example is the use interest rate swaps to hedge the floating rate exposure on products such as syndicated loans. In such cases, changing the benchmark rate within one agreement is likely to cause a mismatch in payments within the related hedge contracts. It is therefore critical that firms investigate the changes required across all its financial products.

Realistically there could be millions of contract agreements that must be identified, catalogued and indexed, analyzed, reconciled, remediated and tracked. When looking at their LIBOR transition programs, Firms will need to understand and determine:

- How will their balance sheet be impacted?
- What will the tax implications be, especially if value-transfer occurs?

- What are the legal implications?
- What are the regulatory implications?
- What changes required to internal IT and operations?

Questions, that firms need to consider include:

- How do I price and value my interest rate products (e.g. FRAs) given that ARR's are backward looking?
- How do I calculate new spread adjustments given that ARR's do not consider credit risk and term liquidity?
- How do I handle multi-currency swaps, loans etc. where there are no viable risk-free rates for other currencies?
- What are the tax implications if there is a value-transfer?
- What if my contracts do not have fallback provisions that consider a permanent discontinuation of LIBOR?
- How do I handle contracts that require 100% consent from all parties?

You mention fallback provisions, can you explain?

Fallback provisions are triggers added to the contracts to cater for situations where the LIBOR reference rate is not available. However, many contracts did not have fallback provisions, or the fallback provisions did not account for a permanent discontinuation of the reference rate (i.e. would state that prior published reference rate would be used). In the later situation, such fallback terms would effectively see the variable reference rate become a fixed rate.

Firms will also need to pay attention on how to set the rate equivalence between the LIBOR reference rate and the ARR (i.e. making sure that they consider the term and spread adjustment implications). However, the International Swaps and Derivatives Association, Inc. (ISDA), along with other institutional groups are aware of the issues. As such they have been running public consultations to finalize the adjustment methodologies for contracts related to affected financial products. ISDA have already selected Bloomberg as the service provider to calculate and distribute the ARR adjustments, including the Adjusted Reference Rate, the Spread Adjustment and the resulting Fallback Rate.

What is clear though is that firms need to have timely and constructive communication with all parties when handling fallback provisions. It will be critical to ensure that the transition is handled smoothly; if not then the resultant impact, both financially, regulatory and reputationally could be significant.

ARR's do not have maturities, how will firms handle this?

A key challenge facing the industry. ARR's are backward looking. However, a combination of overnight ARRs with term maturities would help partially address this challenge (i.e. a credit/term spread would need to be applied to the overnight rate).

One proposal is to use a 5-year retrospective look at the historic spread differential between LIBOR and the corresponding ARR in order to produce an algorithm to calculate the term spread. However, this approach has already been criticized for not including the effects of the financial crisis of 2008/2009 (i.e. important as LIBOR incorporates risk related to volatility caused by financial stress whereas ARR's do not).

There are vendors who are looking to provide term maturities for the ARR's (e.g. LSEG, ICE, Refinitiv and Markit for GBP SONIA^{iv}), these seem to be looking at variations on the retrospective models or use of spot and forward OIS transactions as the basis. There are some concerns over the volume of

transactions to provide the requisite liquidity but expect issues to be resolved as the market develops. We also expect that similar services will become increasingly available for other ARR's

How is COVID-19 impacting the Transition?

Questions have been asked whether the COVID-19 crisis will delay the LIBOR transition. As we all know, most businesses are currently focused on survival; not on activities related to the expected discontinuation of the LIBOR benchmark in 18 months-time. A recent Oliver Wyman article^v summed up the situation well, but also provides stark warning over why continuation would be a prudent activity re:

“Although regulators have indicated that the industry should stick to the 2021 date, it does seem possible that LIBOR transition may end up being extended by 1 or 2 years. The natural inclination of many will be to freeze their programs and restart at a later time. In our view, that would be a terrible mistake. LIBOR is still a fragile rate, unsecured interbank lending is unlikely to increase in volume, and regulators will still want the industry to be prepared for LIBOR's end.”

COVID-19 has also increased industry concerns over how the spread adjustment will be calculated. Today, there is a significant divergence between LIBOR and the corresponding ARR. Why? Well, 3-month LIBOR looks to be responding to a perceived increase in systemic risk whereas the equivalent ARR appear to be responding to a combination of government liquidity intervention and the flight to safe assets (e.g. U.S. Treasuries, UK Gilts).

The dislocation of the spreads between the overnight ARR's and the term rates in the current markets is causing a debate as to whether, or how, to factor current spread differentials into the longer-term calculations. In some respects the COVID-19 problem is more complicated than in 2008/2009, not only because of liquidity issues and central bank responses, but also because stimuli are being injected directly into affected countries' economies by way of tax holidays, cash grants and loans direct from governments, bypassing the conventional market routes of lending.

So, what else do firms need to consider?

As explained, the situation is inherently complex, firms need to Identify all contracts with LIBOR exposures, quantify them and then assess the benefits and risks. This is not just a legal exercise, but an organization wide program to change how they process benchmark-based products.

AT NIIT Technologies we have mapped out activities that financial firms need to consider as part of their LIBOR Transition. Examples are shown in the table below.

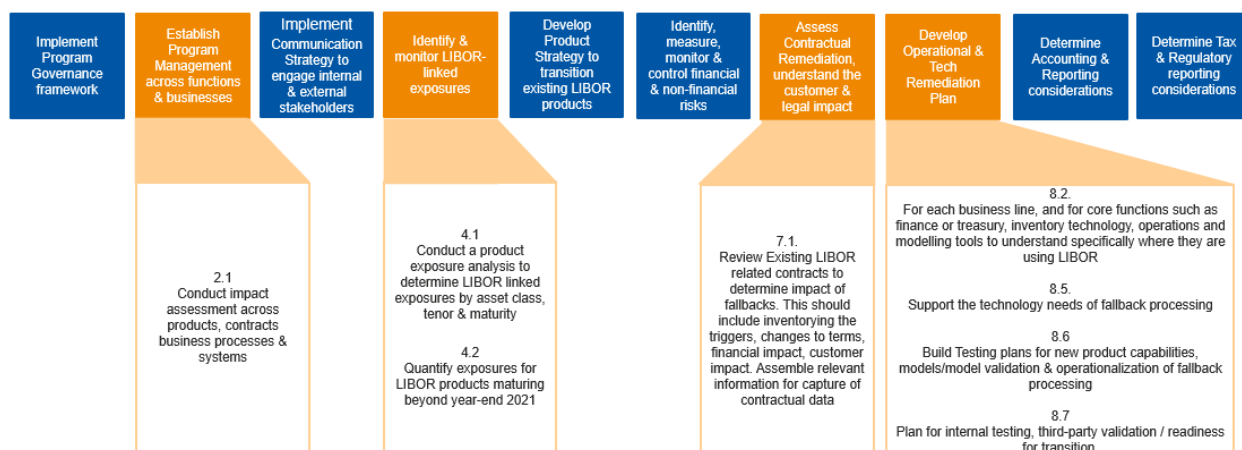
Exposure Reporting	<ul style="list-style-type: none"> • Identify all contracts with LIBOR exposures • Quantify & track Libor exposures • Determine if exposure is increasing or decreasing • Bucket exposures based on contract maturity
Legal	<ul style="list-style-type: none"> • Identify legal agreements that refer to LIBOR benchmarks • Validate the fallback provisions reference ARR in the event of LIBOR discontinuation on contracts with maturity later than 2021. • For new contracts referencing LIBOR ensure new fallback provisions reference ARR. • Where required, get consent from counterparties on changes to legal agreements. • Put in place effective communication with counterparties and customers
Treasury	<ul style="list-style-type: none"> • Determine what asset liability risk faced as a result of the changes in interest rates caused by LIBOR transition (i.e. Asset Liability Management, ALM) • Based on findings perform adjustments to ALM.

	<ul style="list-style-type: none"> • Validate how hedging strategies are impacted.
Valuation	<ul style="list-style-type: none"> • Calculate impact to Credit Value Adjustment (CVA) and Value-at-Risk (VAR) • Need to monitor and rebalance CVA, VAR and DV01^{vi} Risk
Accounting & Tax	<ul style="list-style-type: none"> • Recalculate fair-value adjustments • Review and recalculation of hedge accounting • Determine the taxation effects in case of fair value adjustments • Review impact of terminating Hedge transactions under US GAAP and IFRS
Operations	<ul style="list-style-type: none"> • Review and make adjustment to collateral managementvii • Review and adjust back-office processes (e.g. when rates published)

How is NIIT Technologies helping clients?

We recognize that firms face a challenging situation; not only due to the sheer volume of agreements that need to be processed but also the impact that the transition would have on their operating model, both technology and business.

In September of 2019, the Alternative Reference Rates Committee (ARRC) authored a “*Practical Implementation Checklist for SOFR Adoption*” in which they have recommended 10 steps for financial service firms to consider when establishing an all-inclusive LIBOR transition plan. We have used this as the basis for our approach to providing solutions.



We have invested to ensure we can help our clients address the core challenges when handling their LIBOR transition. Our end-to-end DART assessment framework takes a technology centric approach to the problems. That is, we have used our own IP that leverages Natural Language Processing (NLP) and Artificial Intelligence (AI) along with partner Fintech products to build a holistic solution that can help clients.

Within DART we Discover, Analyze, Rationalize and Track contract terms. That is; we identify and extract key terms and conditions from documents, we reconcile back to the books & records and then push through intelligent workflow for processing, The process is repeatable, allowing our clients to monitor on an ongoing basis how the transition is progressing visa-vie their plans.



Ok, but how do you identify and extract the LIBOR terms?

Our process begins with the **DISCOVER** phase; we review the documents associated with the financial instruments that traditionally have referenced benchmark rates (e.g. legal agreements, prospectuses, term-sheets, servicing agreements, loan agreements, loan notes, offering circulars, promissory notes, trust indentures). The review identifies the key terms, the rules and synonyms for each type of document to be processed.

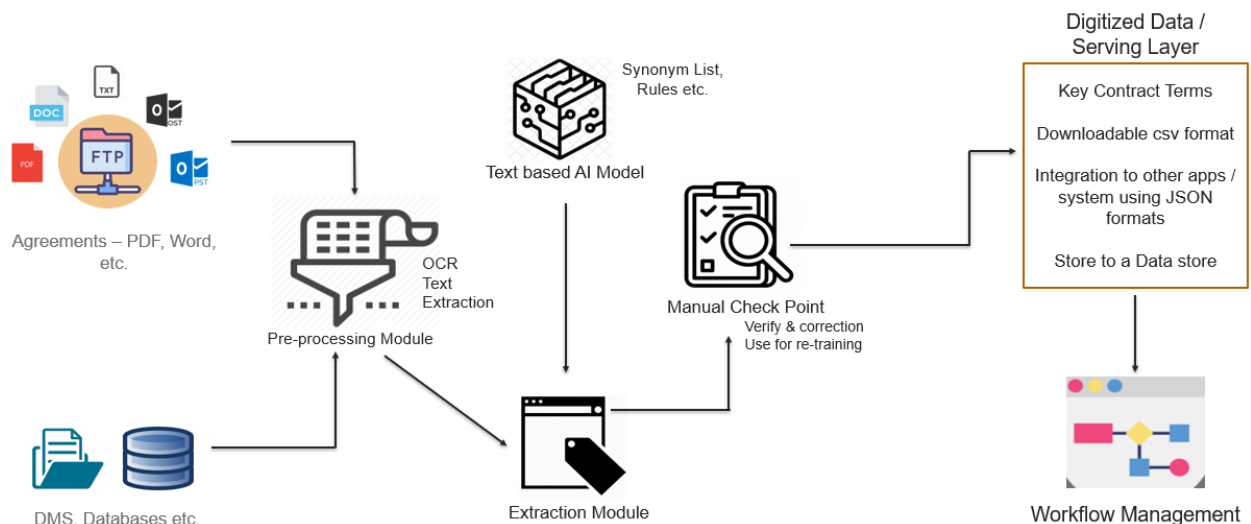
We then use our own IP, the intelligent document processing engine (IDP). It is the workhorse that underpins the **ANALYZE** phase; it ingests documents and uses the collated synonyms to extract the key terms & conditions such as Document type, Issuer, Issue Date, Maturity Date, Principal, Benchmark Rate, and Fallback Terms.

It helps in standardizing & structuring large amounts of text data, quickly extracting & converting multiple data formats to a single template that can then be used systemically in the transition process.

It provides advanced text-based software features like Clustering, Topic extraction, Sentiment analysis to enable seamless extraction from Financial, Legal and Contract files.

It contains a pre-processing module that houses the Natural Language Processing (NLP) and Optical Character Recognition (OCR) tools to efficiently extract text. The core module is a text-based Artificial Intelligence (AI) component that includes the synonyms list and rules database that routes data through a series of checkpoints to a digitized data servicing layer where the key contract terms are translated into downloadable formats and sent through intelligent workflows to a data repository.

The data repository is the supply distribution point used to launch a host of associated processes designed to accelerate the decision-making process through the various stages of the transition journey.



You mention decision making process, can you elaborate?

Yes, this is the **RATIONALIZE** and **TRACK** phase. We recognized that the LIBOR Transition consists of a series of activities that can impact a firm's business. Once the details have been extracted from the contracts there is a need to understand the overall exposure; to achieve this, the contracts must be reconciled back to the client's books & records.

Our solution incorporates automated reconciliation, case management and workflow to facilitate hand-offs and assignments. In addition, there are dynamic operational and management dashboards that capture key performance indicators such as total volume of contracts ingested, volume of contracts in each stage, total volume of contracts remediated, total aggregate exposure to date identified, exposure mitigated to date, as well as individual contract progress to date, stage and disposition of individual cases, exceptions logged, etc. Metrics for system performance and SLA information will also be captured and reported.



This information will be accessible to anyone within the organization with permissions granted and will be used as the foundation for proof of an installed and active LIBOR Transition Plan (i.e. as required by regulatory agencies).

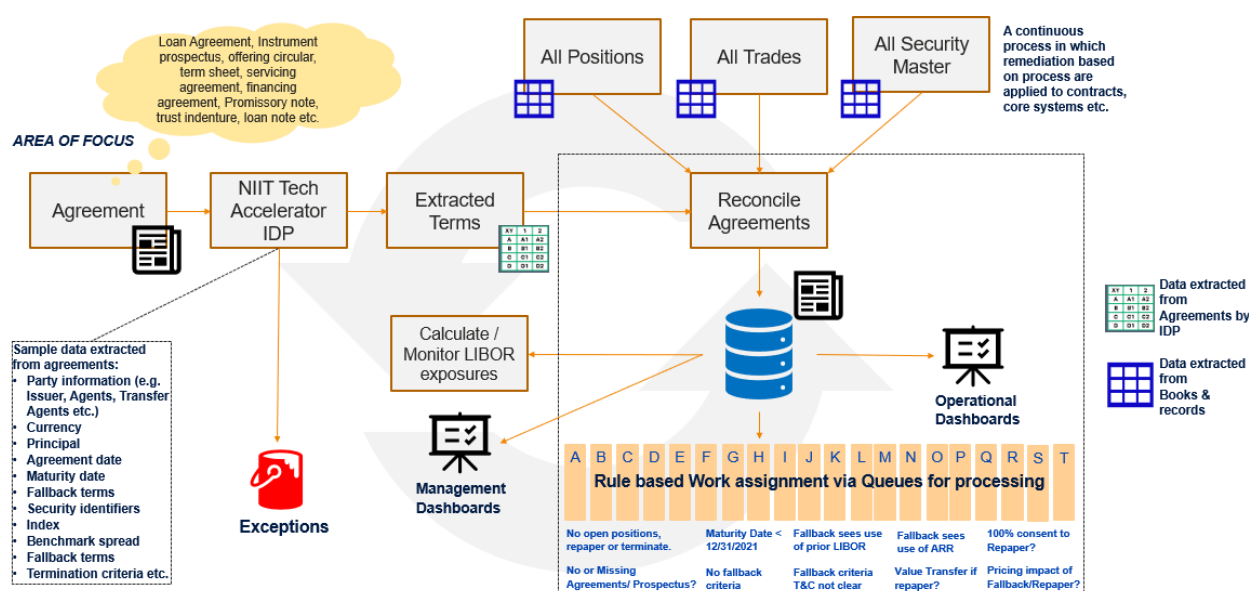
Our solution can ingest IBOR Fallback terms from Bloomberg (license permitting); then used for validation of key terms against details extracted by IDP from contracts and the firms trades and positions.

Our solution can leverage industry leading reconciliation and data curation platforms to ingest positions, trades and reference data from the firm's books & records; providing a business orientated rules engine for processing matched and un-matched items.

We use APPIAN to drive the orchestration, with full integration to provide a one-stop environment for business users,

NIIT technologies have configured an out-of-the-box set of rules and workflows that can be used to route and prioritize the contracts, positions and trades for processing by the business. These rules are based around simple questions such as:

1. Does the contract reference LIBOR benchmark?
2. Does the agreement mature after December 31, 2021?
3. Does the agreement have fallback provisions?
4. Do the fallback provisions reference an ARR?
5. Does the contract require consent from all parties for changes or termination?
6. Are there any open trades or positions associated with the contract?



While building the solution, we also focused on repeatability; that our customers would want to be able to run the processes on a continuous basis; thereby enabling them to track the progress.

You mentioned prioritization, how does this work?

Yes, this is key component we have built as part of the workflow. Once the matching engine has reconciled the contract terms to the trades and positions the rules engine is fired. The rules engine incorporates a prioritization matrix to determine where to route a contract. Do note that it is feasible and likely that the rules engine will route a given contract to multiple queues for processing.

So, to sum up?

NIIT Technologies believes that it is important to have a mix of technology and strategic manual input as a part of any comprehensive LIBOR Transition.; to leverage technology to complement and thereby deliver a value-add contribution to the desired business outcome. Discover, Analyze, Rationalize and Track (DART) methodology is the foundation for an Intelligent Document Processing platform that can help drive the LIBOR transition process for any financial services organization.

ⁱ Intercontinental Exchange

ⁱⁱ Financial Conduct Agency

ⁱⁱⁱ Forward-looking rates are rates that are known or realized at the beginning of the payment period, whereas for backward-looking rates it is performed at the end of the period.

^{iv} See <https://www.clarusft.com/sonia-term-rates-which-is-best/> for further details on maturities.

^v See <https://www.oliverwyman.com/our-expertise/insights/2020/mar/what-if-libor-transition-is-postponed.html> for details on impact of COVID-19.

^{vi} A bond valuation calculation showing the dollar value of a one basis point decrease in interest rates

^{vii} LIBOR linked collateral will not be eligible as collateral with Bank of England post 2021 and any issuances post October 2020 will be ineligible. See <https://www.bankofengland.co.uk/markets/eligible-collateral> for further details.