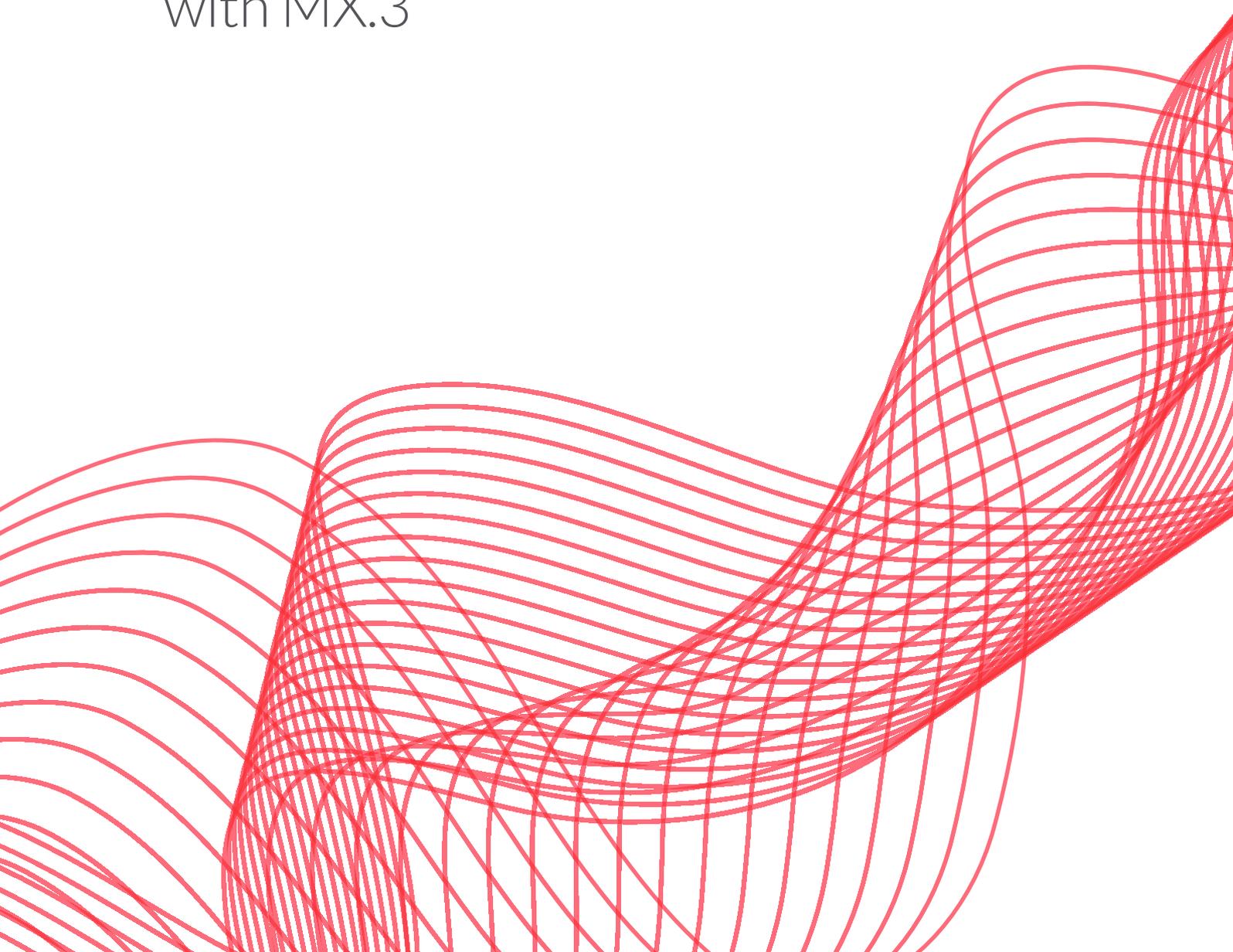




# IBOR Reform

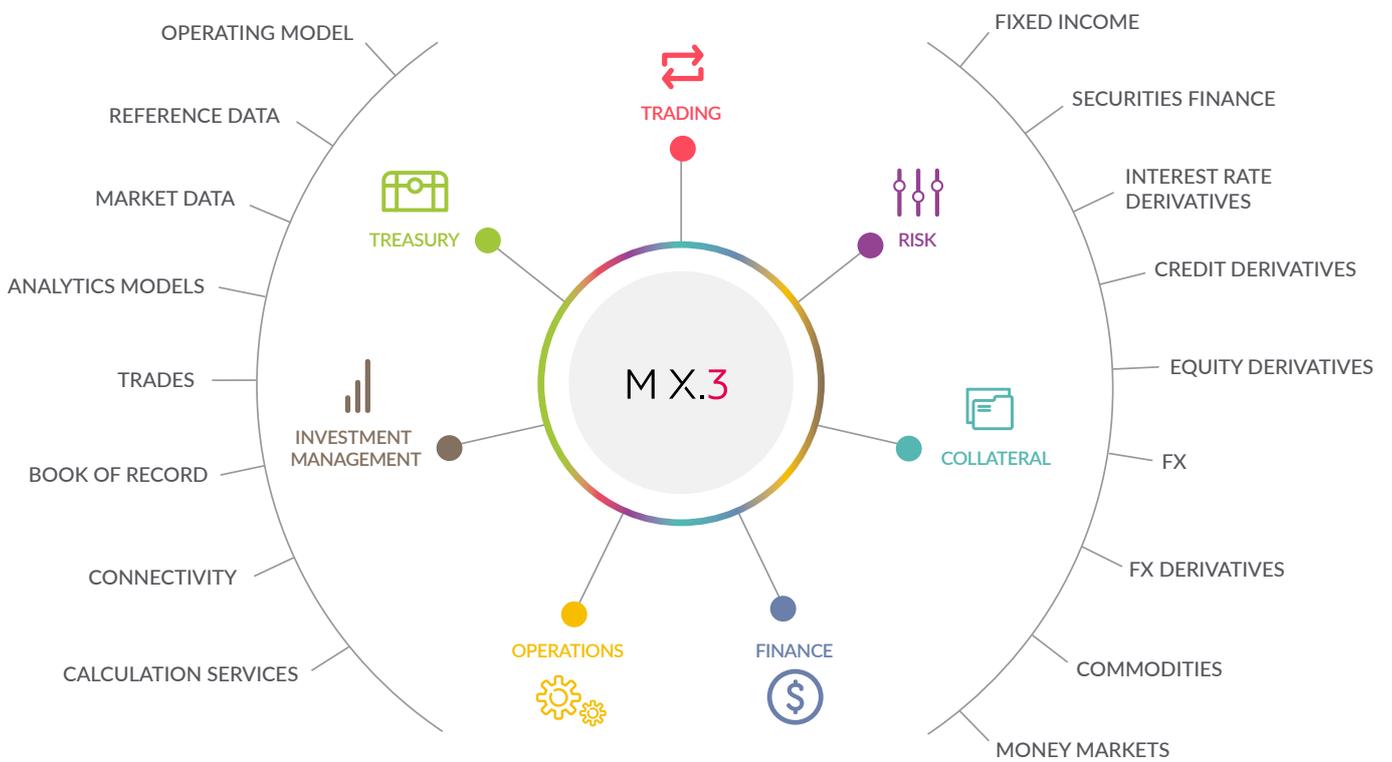
Accelerate, automate and simplify  
the transition to the new world  
with MX.3





# Discover MX.3

One platform, multiple solutions



# IBOR phase-out: Impact and challenges ahead

The move away from the London Interbank Offered Rate (LIBOR) and similar benchmarks to risk-free rates (RFRs) is undoubtedly a challenging transition for most capital markets participants. With working groups and regulators around the world striving to create a clear path to reform, financial institutions must prepare for change.

From the start, it is important to look at the big picture. The deadlines for IBOR discontinuation coincide with other fundamental market shifts, including non-cleared margin rules, FRTB, the CVA capital charge and the revision of the leverage ratio.

In a constantly evolving environment, financial institutions need to keep investing in technology. Choosing the right partner committed to agility, adopting best practices and delivering timely new functionality is a recipe for success.

Murex has developed a solution to facilitate this transition and help your organization adapt to the new world. This solution is built around transition mechanisms covering all aspects of the reform, from discounting switch at CCPs to fallback processes. Complemented by out-of-the-box RFR indices, instruments and curves, as well as powerful tools, it helps you understand the impact every step of the way across business processes front-to-back-to-risk.

In addition to a leading solution, Murex has established a cross-geography team of experts to provide our clients with support and guidance during the IBOR transition.

## A guide to risk-free rates

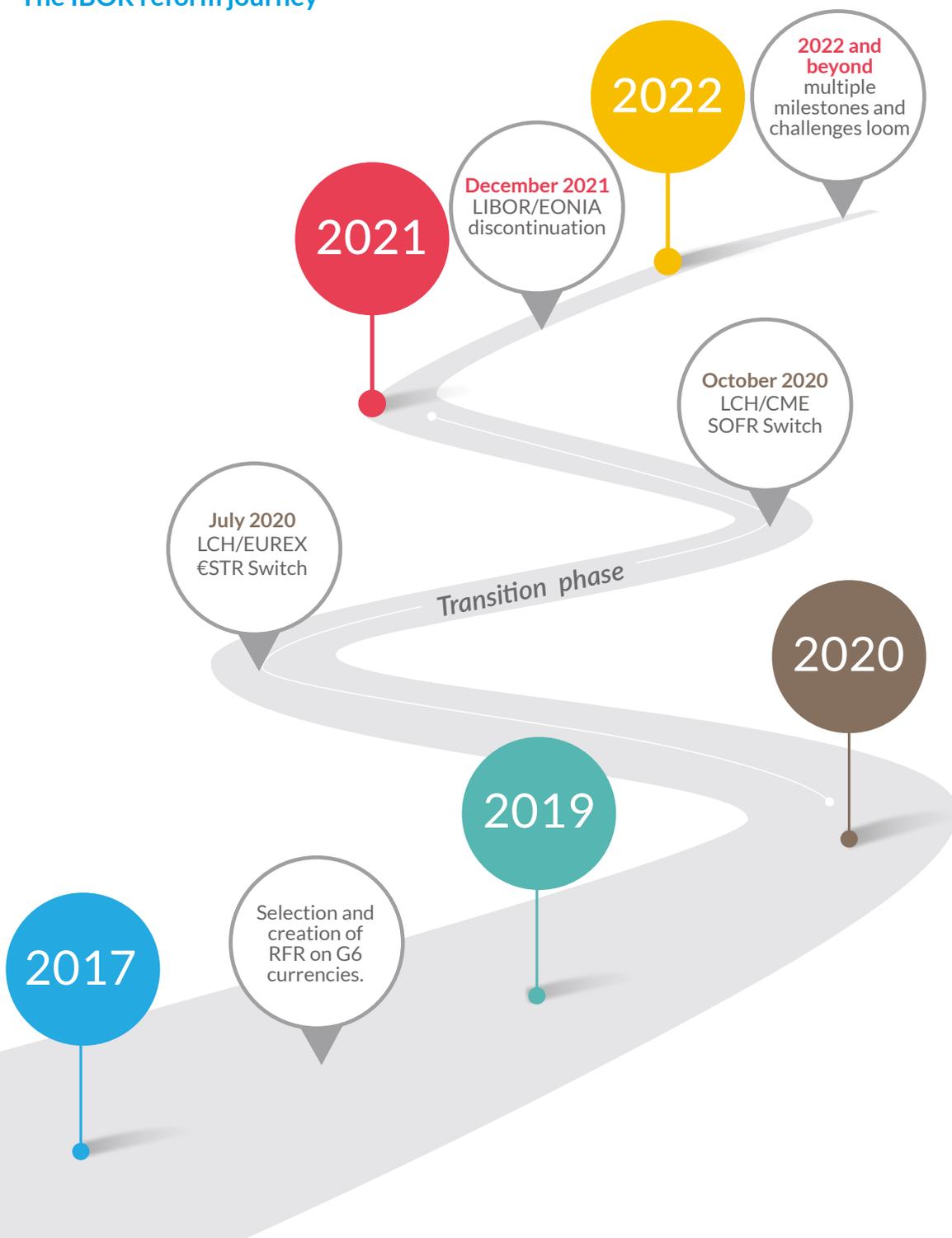
	 USD	 EUR	 GBP	 JPY	 CHF	 AUD	 CAD	 SGD	 THB	 HKD
<b>Alternative Reference Rate</b>	SOFR	€STR	SONIA	TONA	SARON	Cash Rate (AONIA)	CORRA	SORA	THOR	HONIA
<b>Status</b>	New	New	Reformed	Reformed	New	Reformed	Reform on-going	Pre-Existing	New	Pre-Existing
<b>Launch date</b>	April 2018	October 2019	April 2018	December 2016	December 2017	May 2016	June 2020	July 2005	April 2020	April 2016
<b>Legacy Benchmarks</b>	USD LIBOR	EUR LIBOR EURIBOR EONIA	GBP LIBOR	JPY LIBOR TIBOR EUROYEN TIBOR	CHF LIBOR	BBSW	CDOR	SOR	THBFIX	HIBOR
<b>Official sector approach</b>	Transition to SOFR	Multiple rate approach	Transition to SONIA	Multiple rate approach	Transition to SARON	Multiple rate approach	Multiple rate approach	Transition to "Fallback Rate (SOR)" & SOR	Transition to "Fallback Rate (THOR)" & THOR	Multiple rate approach
<b>Administrator</b>	Federal Reserve Bank of NY	European Central Bank	Bank of England	Bank of Japan	SIX Swiss Exchange	Reserve Bank of Australia	Bank of Canada	Monetary Authority of Singapore	Bank of Thailand	Treasury Markets Association
<b>Type</b>	Secured	Unsecured	Unsecured	Unsecured	Secured	Unsecured	Secured	Unsecured	Secured	Unsecured
<b>Description</b>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Collateralised (repo) rate</li> <li>ACT 360</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Wholesale euro area banks borrowing cost</li> <li>ACT 360</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Wholesale bank borrowing cost</li> <li>ACT 365</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Wholesale call rate</li> <li>ACT 365</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Based on transactions &amp; binding quotes</li> <li>Collateralised (repo) rate</li> <li>ACT 360</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Interbank borrowing cost</li> <li>ACT 365</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Collateralised (repo) rate</li> <li>ACT 365</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Interbank cash (MM) rate</li> <li>ACT 365</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Collateralised (repo) rate (private bank)</li> <li>ACT 365</li> </ul>	<ul style="list-style-type: none"> <li>Overnight</li> <li>Transaction-based</li> <li>Interbank borrowing cost</li> <li>ACT 365</li> </ul>

MX.3 can help you to navigate the transition at a global level for all asset classes, including both cash and derivative products.

# Helping you prepare for the future

Working closely with leading financial institutions, market infrastructure and industry associations, Murex monitors market developments to ensure that clients around the world benefit from a leading solution.

## The IBOR reform journey



## Key benefits

- **Achieve seamless transition.**  
By providing a comprehensive range of transition mechanisms across asset classes and business processes, MX.3 helps you deliver end-to-end automation, increase efficiency and reduce operational risks.
- **Respond quickly to a shifting landscape.**  
Our solution allows the user to trade, process and manage risk for new RFR instruments immediately.
- **Facilitate dynamic decision-making.**  
Our solution enables clients to have a detailed, accurate and quantitative view of the impact of the reforms across business processes.

## Navigate this journey with MX.3



# Technology for a smooth transition

Our solution helps you understand the impact of the transition across MX.3, to manage the transition of legacy IBOR transactions to risk-free rate instruments and to enable the trading of RFR instruments. You can complement the solution with the automation of the discounting switch at CCPs and CSAs and enable collateral-based discounting.

## End-to-end transition mechanisms for instruments and positions

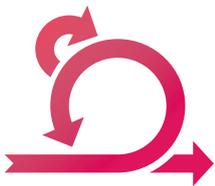
This solution has been designed to manage early transition, cessation and pre-cessation scenarios seamlessly and to provide consistency across all business processes.

With MX.3, the user can apply dedicated transition events in bulk mode or at the individual trade and security level. This allows an impact preview on risk and P&L and the capture of P&L jumps through dedicated P&L explain effects.

The solution also supports the management of specific behaviors such as:

- Zero-coupon trades management
- Stub period management
- Current period management
- Transition credit spread management
- Post-fallback fixing and accrual logic as defined by ISDA

From an operations perspective, MX.3 for IBOR Reform enables full life cycle management across asset classes, including exotics and structured products. It also includes the tools required to facilitate smooth negotiation and communication with clients and counterparts throughout the transition.



***The transition from LIBOR remains a priority as firms cannot rely on LIBOR being produced after end 2021.***

fsb.org (2020)

## Out-of-the box RFR indices, instruments and curves

New benchmarks, listed and OTC linear instruments, FRNs and rate curves are supported. They are available as configuration packs that can be easily deployed by Murex clients.

For rate curve construction, the solution guarantees accurate valuation of all RFR-based instruments, the co-existence between RFR and legacy IBOR curves, as well as seamless transition in terms of calculation timing. As markets quickly evolve, Murex experts ensure that packages reflect the latest changes and that regional requirements are captured.

## Impact analysis

Dedicated analysis tools offer a comprehensive view of the full impact of the transition for each index.

They provide a qualitative and quantitative understanding of the outcomes of a discontinuation on each business process, including P&L and risk.

### Key features include:

- Tracing of direct and indirect dependencies
- Modeling of financial impacts as of a future date
- Replication of CCPs discounting switch compensation calculations

The tools cover all business domains, from trading to risk management, collateral management and hedge accounting. The user can analyze impacted positions by Credit Support Annex (CSA) and devise adequate risk mitigation and early transition strategies accordingly.

During the transition away from IBOR, Murex's unique risk curve projection framework can provide traders with a flexible way to project risk on the driving and liquid instruments, which are likely to change rapidly.

## MarkitWire connectivity

Murex has enriched its inbound and outbound interface with MarkitWire to support the various transition scenarios:

- Data mapping required to trade new instruments
- Management of the soft link when linking a terminated trade with a replacement trade
- Full interoperability between Direct Amendment from IBOR to RFR in MarkitWire and Index Transition in MX.3
- Support of CCPs compensation trades to reflect the cash and/or risk compensation related to the transition
- Mapping of the Agreed Discount Rate for swaptions

## Discounting and Price Alignment Interest (PAI) transition

MX.3 facilitates assigning the appropriate discounting curve based on the transaction characteristics and provides a simple procedure to perform the switch in bulk while preserving all past-date calculations.

For cleared trades, MX.3 enables you to move to the new rates while also allowing the user to forecast and examine the impact of the PAI and discounting switch on valuation and risk.

In the context of bilateral trading, the solution supports the renegotiation and adjustment of agreements case-by-case. It allows you to closely manage any change in the risk profile.



## Technology for a smooth transition (continued)

### Hedge Accounting transition

The hedge accounting business is widely impacted by the IBOR discontinuation because of the potential ineffectiveness resulting from the transition.

To provide a seamless process, MX.3 simulates the transition impact on hedge prospective effectiveness and enables a smooth change of the effectiveness methodology without terminating the hedge relationship.

The solution also offers an automatic refresh of the hedge documentations upon benchmark change, reflecting the risk management objectives of the hedge relationship.

### Performance of OIS-style derivatives

Books consisting of transactions referencing IBOR will suffer a huge impact on performance upon the transition from IBOR to RFRs (i.e., OIS-style transactions with daily compounding in arrears). Murex invested heavily in the solution to preserve the high performance for such books and optimize the calculation time for P&L, sensitivities, VaR, IM and more.

### RFR analytics

Global exposure on compounded rates keeps growing across FRNs, swaps and loan instruments. Therefore, the creation of non-linear derivatives based on RFRs is a natural progression during the transition journey.

Murex has developed the required quantitative models to price, book and manage the risk of RFR options on compounded overnight rates in the transition phase:

- New product type for cap/floors on compounded RFRs
- An RFR-adjusted Bachelier model that enables the pricing and risk management of such products

with the available term rates (i.e., LIBOR-style) volatilities

- An extension of the LIBOR pricing/risk framework to support European swaptions and ETO on RFR
- Rate diffusion models adapted to price exotics and structured products

### 'Cliff effect' management

The "cliff effect" will materialize if LIBORs are subject to an early discontinuation announcement and RFR and LIBOR rates experience significant decorrelation. Practitioners need to manage their positions under two regimes: a LIBOR system until the discontinuation date and an RFR + transition spread framework after that point, with a clear cut on the discontinuation date.

MX.3 for IBOR Reform offers a pragmatic solution to manage this potential cliff:

- Rates analytics libraries are adapted to model a severe jump at the discontinuation date
- Risk calculations are amended to account for the double regime forward curve
- Trading desks are enabled to mark the final LIBOR fixing

### Ease of deployment

MX.3 for IBOR Reform deployment procedure is built with more agility to respond in a fast-paced environment and meet market needs in an efficient manner.

Murex also deployed a fit-to-purpose testing procedure supported by a comprehensive user stories library and advanced testing techniques to increase solution delivery quality.

## About Murex

For more than 30 years, Murex has been providing enterprise-wide, cross-asset financial technology solutions to capital markets players. Its cross-function platform, MX.3, supports trading, treasury, risk and post-trade operations, enabling clients to better meet regulatory requirements, manage enterprise-wide risk, and control IT costs. With more than 57,000 daily users more than 60 countries, Murex has clients across the financial services industry, from banking and asset management to energy and commodities. Murex is an independent company with over 2,300 employees across 17 locations.

Murex is committed to providing cutting-edge technology, superior customer service, and unique product innovation. MX.3 is specifically designed and engineered to solve the multi-faceted challenges of a transforming financial industry. To find out more, visit [www.murex.com](http://www.murex.com).

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