Alternative Reference Rates Committee (ARRC)

Minutes for the September 5, 2019 Meeting

1. Federal Reserve staff provided a presentation (Attachment 1) on preliminary analyses on potential spread adjustment methodologies for cash products for the ARRC's consideration as it moves to consider spread adjustments. The ARRC Chair reminded members that the Committee has committed to recommending a spread adjustment, which would account for the difference between LIBOR and fallback rates, as referenced in the ARRC's recommended fallback language for new issuances of various cash products. A few ARRC members highlighted that confusion could arise if a spread adjustment approach for cash products diverges from the approach selected for derivatives. The ARRC Chair noted that while ideally the Committee's recommended approach will be consistent with ISDA's work on derivatives, the ARRC needs to perform its own analysis to determine its recommendations for what spread adjustment approach would be most appropriate for use in cash products and asked for members to contribute to this analysis.

2. Federal Reserve staff provided a presentation (Attachment 2) on the parameters they are considering for producing SOFR averages and a related index. Federal Reserve staff noted that SOFR averages would likely be produced across 30-, 90-, and 180-day tenors. Staff also noted that an index based on SOFR would allow market participants to calculate compounded SOFR averages over custom time periods. Federal Reserve staff noted that production of the proposed SOFR averages and index is anticipated to begin in the first half of 2020 and the exact timing depends on the feedback received in response to a public consultation, which would be launched soon.

3. The co-Chairs of the ARRC's recently launched Operations/Infrastructure working group provided a presentation (Attachment 3) on the group's mission, noting that a key function will be to monitor the industry's readiness to ensure that appropriate steps are being taken to prepare systems for the transition away from LIBOR. A co-Chair of the Business Loans working group highlighted work being done by its Operations subgroup, including on how to build systems that could incorporate SOFR compounded in arrears.

4. The ARRC Chair noted that CME and LCH had both announced plans to move to SOFR price alignment interest (PAI) and discounting in the second half of 2020. The ARRC Chair also noted that the CFTC's Market Risk Advisory Committee would meet on September 9, 2019 to discuss whether greater consistency in the two central counterparties' (CCPs) planning would be beneficial to the market and ways that CCPs could coordinate their plans, while also recognizing that the CCPs will ultimately need to make decisions based on feedback from their respective members. A co-Chair of the Market Structure/Paced Transition working group noted that this issue is of particular importance for uncleared products that deliver cleared products, such as swaptions, and that working group members were examining potential solutions for these products.

5. The ARRC Chair invited Committee members to share their observations about the types of fallback language being used in recent issuances of cash products that reference LIBOR and to identify whether there was anything the ARRC should address to further support the adoption of

robust fallback language. The Chair of the Floating Rate Notes working group indicated that floating rate notes are experiencing significant uptake of the ARRC's recommended fallback language. Several members noted it would be beneficial to have a forum where investors, issuers, and trustees can address the extent to which consistent fallback language would facilitate a smoother transition across markets. ARRC members agreed to study and publish a note on recent trends in the usage of the ARRC's recommended fallback language.

6. The ARRC's antitrust counsel noted that ISDA had submitted a Business Review Letter (BRL) request to the Antitrust Division of the Department of Justice (DOJ) in connection with ISDA's work on fallbacks. The Legal working group recommended the ARRC authorize its antitrust counsel to express the ARRC's support for the ISDA BRL request. The ARRC approved this recommendation.

7. The co-Chairs of the Legal working group and representatives from Cadwalader highlighted a potential legislative approach for dealing with certain legacy contracts that reference U.S. dollar LIBOR. The ARRC Chair requested that members provide the co-Chairs of the Legal working group with their feedback about the potential legislative approach. The ARRC Chair emphasized the need for the Committee to articulate and dimension the risks that could materialize if a legislative solution is not pursued as this would help the Committee decide on the path forward.

8. The ARRC Chair reminded Committee members to respond to the ARRC's public consultation on fallback language for adjustable rate mortgages. The ARRC Chair also noted that momentum is building behind the Committee's work, highlighting recent developments such as the Financial Accounting Standards Board's (FASB) release of an exposure draft letter on modification relief and hedging relief associated with the LIBOR transition and rising SOFR-linked debt issuance.

Attendance at the September 5, 2019 Meeting

ARRC Members

American Bankers Association	Hu Benton
AXA	Julien Zusslin
Bank of America	Greg Todd
Bank of America	Sonali Theisen
Bank of America	Alex van Voorhees*
BlackRock	Jack Hattem
Citigroup	Dina Faenson
Citigroup	Jeannine Hyman
CME Group	Agha Mirza
CME Group	Fred Sturm*
CRE Finance Council	Lisa Pendergast
CRE Finance Council	Raj Aidasani
Deutsche Bank	Adam Eames
Deutsche Bank	Vishal Mahadkar
Fannie Mae	Bob Ives
Fannie Mae	Nadine Bates
Fannie Mae	Wells Engledow*
Federal Home Loan Bank	Kyle Lynch
Federal Home Loan Bank	Phil Scott
Freddie Mac	Ameez Nanjee
GE Capital	Michael Taets*
Goldman Sachs	Brian Friedman*
Goldman Sachs	Gigi Chavez de Arnavat
Goldman Sachs	Jason Granet
Goldman Sachs	Richard Chambers
Government Finance Officers Association	Emily Brock*
HSBC	Blair Selber
HSBC	Shirley Hapangama
Independent Community Bankers of America	Chris Cole*
Independent Community Bankers of America	James Kendrick*
Intercontinental Exchange	Harvey Flax
International Swaps and Derivatives Association	Ann Battle
JP Morgan Chase & Co.	Alice Wang
JP Morgan Chase & Co.	Andrew Gray
JP Morgan Chase & Co.	Emilio Jimenez
JP Morgan Chase & Co.	Perry Elbadrawi*
JP Morgan Chase & Co.	Terry Belton
LCH	Phil Whitehurst*
Loan Syndications and Trading Association	Meredith Coffey
Loan Syndications and Trading Association	Tess Virmani*
MetLife	Alex Strickler*
MetLife	Jason Manske
MetLife	Kevin Budd*

Morgan Stanley	Maria Douvas-Orme
Morgan Stanley	Tom Wipf
National Association of Corporate Treasurers	Tom Deas
Pacific Investment Management Company	Courtney Garcia*
Pacific Investment Management Company	Scott Goodman*
Pacific Investment Management Company	Tracey Jordal*
Prudential Financial	Chris McAlister
Prudential Financial	Gary Horbacz
Securities Industry and Financial Markets Association	Chris Killian
Securities Industry and Financial Markets Association	Rob Toomey *
Structured Finance Association	Sairah Burki*
TD Bank	Greg Moore*
TD Bank	Priya Misra
Wells Fargo	Alexis Pederson
Wells Fargo	Brian Grabenstein
World Bank Group	Don Sinclair

Ex-Officio ARRC Members

Commodity Futures Trading Commission	Sayee Srinivasan*
Consumer Financial Protection Bureau	Abhishek Agarwal
Federal Deposit Insurance Corporation	Irina Leonova
Federal Housing Finance Agency	Dan Coates
Federal Reserve Bank of New York	Adhiraj Dutt
Federal Reserve Bank of New York	Alyssa Cambron*
Federal Reserve Bank of New York	Betsy Bourassa*
Federal Reserve Bank of New York	Cam Fuller*
Federal Reserve Bank of New York	Caren Cox
Federal Reserve Bank of New York	Jamie Pfeifer
Federal Reserve Bank of New York	Joshua Jones*
Federal Reserve Bank of New York	Justine Hansen
Federal Reserve Bank of New York	Matt Lieber*
Federal Reserve Bank of New York	Megan Zirinsky*
Federal Reserve Bank of New York	Nathaniel Wuerffel
Federal Reserve Bank of New York	Ray Check*
Federal Reserve Bank of New York	Scott Sherman
Federal Reserve Bank of New York	William Riordan*
Federal Reserve Bank of New York	Scott Nagel
Federal Reserve Board of Governors	Chiara Scotti*
Federal Reserve Board of Governors	Darren Gersh*
Federal Reserve Board of Governors	David Bowman
Federal Reserve Board of Governors	Diana Iercosan
Federal Reserve Board of Governors	Erik Heitfield
Federal Reserve Board of Governors	Evan Winerman
Office of Financial Research	Matt McCormick*
Office of the Comptroller of the Currency	Ang Middleton

U.S. Securities and Exchange Commission	David Metzman
U.S. Securities and Exchange Commission	Michelle Danis*
U.S. Treasury	Chloe Cabot
U.S. Treasury	Peter Phelan

Observers

Bank of Canada	Sheryl King
BNP Paribas	Simon Winn
Cadwalader	Jonathan Hoff
Cadwalader	Lary Stromfeld
Deloitte	Alexey Surkov
Ernst & Young	Roy Choudhury
Morgan Lewis	Jon Roellke
Oliver Wyman	Adam Schneider
U.S. Department of Housing and Urban Development	Richard Perrelli*
U.S. Department of Housing and Urban Development	Jose Fernandez
Venerable	Charles Schwartz

*Indicates participation by telephone

Attachment 1

Preliminary Analysis of Potential Spread Adjustment Methodologies for Cash Products

Diana Iercosan and David Bowman

September 5, 2019

Motivation

- The ARRC has committed to recommend spread adjustments for cash products as part of its work to encourage more robust fallback language in new issuances of products that continue to reference LIBOR.
  - A clear majority of respondents to the ARRC's consultations on fallback language believed that it would be helpful to the market for the ARRC to make such recommendations.
- This deck is intended to help foster a start to the ARRC's discussions as the group considers its recommendations. We provide an analysis of the methodologies that ISDA is consulting on for derivatives and how they might work if applied to cash products.
  - Although it may ultimately be appropriate for the ARRC to select a different methodology, ISDA's work can serve as a baseline to the ARRC's discussions

Method of Analysis

- The ARRC's recommendations would fallback to a version of SOFR (either term SOFR if the ARRC has recommended such a rate, or a compound average of SOFR) plus a spread adjustment.
- Historical proxies for SOFR go back to 1998, but because the ISDA methodologies may use up to 10 years of data to calculate a long-run mean or median spread, we base the analysis here on the effective fed funds rate (EFFR) in order to understand how the methodologies might behave over a variety of economic conditions. EFFR data goes back far enough to combine with LIBOR data starting in the 1980s and to look at historical differences between LIBOR and the ISDA methodology from 1998 onward. More recent daily data on term EFFR is also used as proxy for SOFR.
- We consider a hypothetical Floating Rate Note (FRN) that pays 3-month USD LIBOR quarterly and consider what would have happened had LIBOR stopped at some point in the past, with different remaining maturities on the FRN. We compare variants of the ISDA methodology, calculating a LIBOR-EFFR spread adjustment for each, and then compare those results to what actually happened to the LIBOR spread ex post.

Preliminary Questions

- We examine the following questions about the goodness of fit of various choices that ISDA is consulting on in regards to derivatives:
  1. Does the length of the historical lookback and/or method of calculating the long-run mean/median matter if they were to be applied to a cash product?
  2. Does the choice of a best methodology depend on the form of SOFR that would be used?
  3. Does the inclusion of a 1-year transition period to the long-run mean/median spread improve the fit for a cash product?

Initial Results

Historical Results for a Hypothetical FRN Paying 3-Month LIBOR Quarterly had LIBOR Stopped between 1999-2019 with 5-Years Remaining Maturity on the FRN

Spread to EFFR in Advance

calculation method	lookback	mae	rmse
average	2y	0.21	0.26
trimmed mean	2y	0.13	0.17
median	2y	0.20	0.24
average	5y	0.17	0.19
trimmed mean	5y	0.10	0.12
median	5y	0.16	0.18
average	10y	0.11	0.14
trimmed mean	10y	0.09	0.11
median	10y	0.11	0.14

Spread to EFFR in Arrears

calculation method	lookback	mae	rmse
average	2y	0.26	0.36
trimmed mean	2y	0.19	0.25
median	2y	0.23	0.31
average	5y	0.23	0.27
trimmed mean	5y	0.15	0.21
median	5y	0.16	0.23
average	10y	0.18	0.21
trimmed mean	10y	0.14	0.19
median	10y	0.15	0.21

Spread to Term EFFR Rate

calculation method	lookback	mae	rmse
average	2y	0.21	0.25
trimmed mean	2y	0.13	0.17
median	2y	0.19	0.24
average	5y	0.15	0.17
trimmed mean	5y	0.13	0.16
median	5y	0.14	0.17
average	10y	0.14	0.16
trimmed mean	10y	0.14	0.16
median	10y	0.15	0.18

Initial Conclusions

- A longer lookback period appears to produce more accurate results: The root mean square error (RMSE) and mean absolute error (MAE) improve notably when using a 5-year lookback compared to 2-year, and a 10-year lookback appears to offer some further, although more modest, improvement over 5 years.
- There are smaller difference between methods of calculating the long-run mean/median. A trimmed mean may be somewhat more accurate in this particular exercise than a median or average, and a median appears somewhat more accurate than a simple average.
- These results appear to be true whether the fallback rate is a compound average in advance, in arrears, or a term rate. Surprisingly, a spread adjustment to a compound average seems to yield slightly more accurate results than to a term rate.
- To compare whether the errors shown are large or small, we computed the root mean square difference and mean absolute difference between 3-month LIBOR and the Federal Reserve's published 3-month financial CP rate series over the same 5-year remaining maturities: those statistics (13-14 basis points) were very close to the RMSE and MAE from the ISDA methodologies with a 10-year lookback and trimmed mean ➔ There does not seem to be much loss in accuracy from using the more robust static spread adjustments to be used by ISDA.

Looking at Different Remaining Maturities

Comparing Errors Across Hypothetical FRNs with Different Remaining Maturities (Using Trimmed Mean)										
			2 Years Remaining Maturity			5 Years Remaining Maturity			10 Years Remaining Maturity	
Spread Relative to:	lookback		mae	rmse		mae	rmse		mae	rmse
EFFR in Advance	5y		0.17	0.22		0.10	0.12		0.06	0.07
	10y		0.16	0.21		0.09	0.11		0.06	0.07
EFFR in Arrears	5y		0.16	0.27		0.15	0.21		0.15	0.16
	10y		0.14	0.25		0.14	0.19		0.12	0.13
EFFR Term Rate	5y		0.12	0.20		0.13	0.16		0.12	0.12
	10y		0.13	0.21		0.14	0.16		0.11	0.11

These basic conclusions appear to hold across different remaining maturities for the hypothetical FRN. In general, a longer remaining maturity leads to a lower RMSE/MAE since any errors are averaged over a longer remaining period.

Looking at the Post-Crisis Period

Historical Results for a Hypothetical FRN Paying 3-Month LIBOR Quarterly had LIBOR Stopped in the Post Crisis Period with 5-Years Remaining Maturity on the FRN

Spread to EFFR in Advance				Spread to EFFR in Arrears				Spread to Term EFFR Rate			
calculation method	lookback	mae	rmse	calculation method	lookback	mae	rmse	calculation method	lookback	mae	rmse
trimmed mean	5y	0.04	0.06	trimmed mean	5y	0.05	0.06	trimmed mean	5y	0.05	0.06
median	5y	0.07	0.09	median	5y	0.05	0.08	median	5y	0.07	0.08
trimmed mean	10y	0.04	0.04	trimmed mean	10y	0.01	0.01	trimmed mean	10y	0.05	0.06
median	10y	0.05	0.05	median	10y	0.04	0.04	median	10y	0.07	0.07

Results would have been more accurate over the post-crisis period. If economic conditions remain relatively calm, the spread adjustments could be very accurate. Because these spread adjustments would be only applied when LIBOR stopped or was found to be non-representative (i.e, no longer accurate), it would be impossible to know after the fact if there was any error.

A Transition Period

Comparing Results Across Hypothetical FRNs with and without a 1-Year Transition Period (Using Trimmed Mean, 1-Year Remaining Maturity)

		With Transtion Period		Without Transition Period	
Spread Relative to:	lookback	mae	rmse	mae	rmse
EFFR in Advance	5y	0.17	0.25	0.23	0.30
	10y	0.17	0.25	0.23	0.30
EFFR in Arrears	5y	0.14	0.26	0.18	0.35
	10y	0.13	0.25	0.16	0.33
EFFR Term Rate	5y	0.11	0.21	0.13	0.26
	10y	0.12	0.22	0.14	0.27

Incorporating a transition period to the long-run mean/median appears to produce more accurate results in the short term. A transition period would also help to avoid any potential cliff-edge immediate jump in rates paid by borrowers, which could be important for a cash product. **Over the period examined, without a transition period, we could have seen jumps of more than 40 basis points for a compound average in arrears at some times, and much more for a compound average in advance.**

Attachment 2

FEDERAL RESERVE BANK *of* NEW YORK

SOFR Compound Averages & Index

Potential Program Parameters for Discussion at September ARRC Meeting

Scott Sherman
AVP, FRBNY Markets Group

Background

- July 2018 ARRC Roundtable
  - The ARRC discussed the potential benefits that backward-looking compounded averages of the SOFR could provide to facilitate adoption of the SOFR, including use in consumer loan and floating rate note (FRN) issuance
  - This, in turn, could encourage greater use of the SOFR derivatives to hedge
- January 2019 FOMC Minutes
  - "[FRBNY] staff had begun work aimed at publishing a series of backward-looking average secured overnight financing rates (SOFR) as a further step to support reference rate reform."
  - "The staff planned to solicit public feedback on this effort later this year and initiate publication of these averages by the first half of 2020."
- April 2019 ARRC User's Guide to SOFR
  - The ARRC's white paper explains how market participants can use an average of SOFR in cash products and describes the differences between compound and simple averaging
- This presentation is to solicit feedback on certain details of how such rates, and a related index, could be constructed

Broad Features for Discussion

Parameter	Compounded SOFR Averages	Compounded SOFR Index
Targeted Use Case	Consumer Loan Issuance	FRNs, Loans, and Other Products
Tenors	30-day, 90-day, 180-day	N/A
Calendar Window	Actual # of days vs Calendar months	N/A
Calculation	Daily Compounded Geometric Average	Daily Index, starting at 1, showing the cumulative impact of compounding the SOFR to a unit of investment over time
Weekend/Holiday Treatment	Consistent with ISDA's compounding and the way interest is accrued by rolling overnight repo transactions, the compounding of interest applies only to business days, as defined by the SOFR publication calendar; simple interest applies to any day that is not a business day, at a rate of interest equal to the SOFR value for the last available business day. In other words, when treating weekends and holidays, the averages and index would apply the SOFR value from just before the weekend or holiday, multiply it by the relevant number of consecutive calendar days associated with that weekend and/or holiday, and compound the rate/index once by the adjusted term.	
Rounding	To the 5th decimal place	TBD – Likely the 8th decimal place
Publication Time	8am ET, shortly after daily SOFR publication to include most recent print	
Publication Location	Separate FRBNY web page dedicated to term averages and SOFR Index	
Publication Calendar	Same as SOFR calendar, which follows SIFMA calendar	
Revision Policy	Rates only revised upon a revision to SOFR at 2:30pm ET each publication day	
Additional Statistics	N/A	
Lagged Quarterly Data Releases	Not necessary; rates are based on official SOFR rates that are finalized the same day as initial publication	

Compounding Methodology

- Consistent with ISDA's compounding methodology and the way interest would be accrued by rolling overnight repo transactions in practice:
  - The compounding of interest applies only to business days, as defined by the SOFR publication calendar
  - Simple interest applies to any day that is not a business day, at a rate of interest equal to the SOFR value for the last available business day
  - Interest would be calculated using the actual number of calendar days, but assuming a 360 day year

SOFR Index

- The index would represent a compounding sequence allowing market participants to calculate compounded SOFR averages over custom time periods
- Effectively, it would measure the cumulative impact of compounding the SOFR to a unit of investment over time, indexed to a value of “1” on April 2, 2018--the first day the SOFR was published.
- For example, a 30-day average rate calculated using the index should be similar/equivalent to the published 30-day backward average SOFR covering the same period because it employs the same compounding approach

SOFR Publication /Index Date		SOFR As-of Date		SOFR	Calendar Days Applicable	Compounding
Mon	4/2/2018	Fri	3/30/2018	N/A	N/A	1
Tue	4/3/2018	Mon	4/2/2018	a	1	(1)(1 + a*1/360)
Wed	4/4/2018	Tue	4/3/2018	b	1	(1)(1 + a*1/360)(1 + b*1/360)
Thu	4/5/2018	Wed	4/4/2018	c	1	(1)(1 + a*1/360)(1 + b*1/360)(1 + c*1/360)
Fri	4/6/2018	Thu	4/5/2018	d	1	(1)(1 + a*1/360)(1 + b*1/360)(1 + c*1/360)(1 + d*1/360)
Mon	4/9/2018	Fri	4/6/2018	e	**3**	(1)(1 + a*1/360)(1 + b*1/360)(1 + c*1/360)(1 + d*1/360)(1 + e*3/360)

SOFR Index: Illustrative Example

SOFR Publication /Index Date		SOFR As-of Date		SOFR	Calendar Days Applicable	Index
Tue	12/17/2019	Mon	12/16/2019	2.00	N/A	1
Wed	12/18/2019	Tue	12/17/2019	2.00	1	1.00005556
Thu	12/19/2019	Wed	12/18/2019	2.00	1	1.00011111
Fri	12/20/2019	Thu	12/19/2019	2.00	1	1.00016668
Mon	12/23/2019	Fri	12/20/2019	2.00	3	1.00033337
Tue	12/24/2019	Mon	12/23/2019	2.00	1	1.00038894
Thu	12/26/2019	Tue	12/24/2019	5.00	2	1.00066683
Fri	12/27/2019	Thu	12/26/2019	0.00	1	1.00066683
Mon	12/30/2019	Fri	12/27/2019	-2.00	3	1.00050005
Tue	12/31/2019	Mon	12/30/2019	1.50	1	1.00054174

Note: Index rounded to 8 decimal places; SOFR values are made up for illustrative purposes

Custom term rates can be derived from the Index using the following equation:

$$\left(\frac{SOFR\ Index_{end}}{SOFR\ Index_{start}} - 1\right) \times \left(\frac{360}{calendar\ days}\right)$$

For the term starting 12/19 and ending 12/26, the implied compounded average rate is:

$$\left(\frac{1.00066683}{1.00011111} - 1\right) \times \left(\frac{360}{7}\right) = 2.85767\%$$

Attachment 3

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Operations/Infrastructure Working Group

Mission Statement and Plan

ARRC Operations/Infrastructure Working Group

ARRC
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Draft Mission Statement

The ARRC's Operations/Infrastructure Working Group was formed in June to identify key infrastructure and operational changes that need to be enacted in order to allow for a smooth, market-wide transition from U.S. dollar LIBOR or to allow for the adoption and use of SOFR where desired across derivatives, cash products, and systems. Its mission is excerpted below:

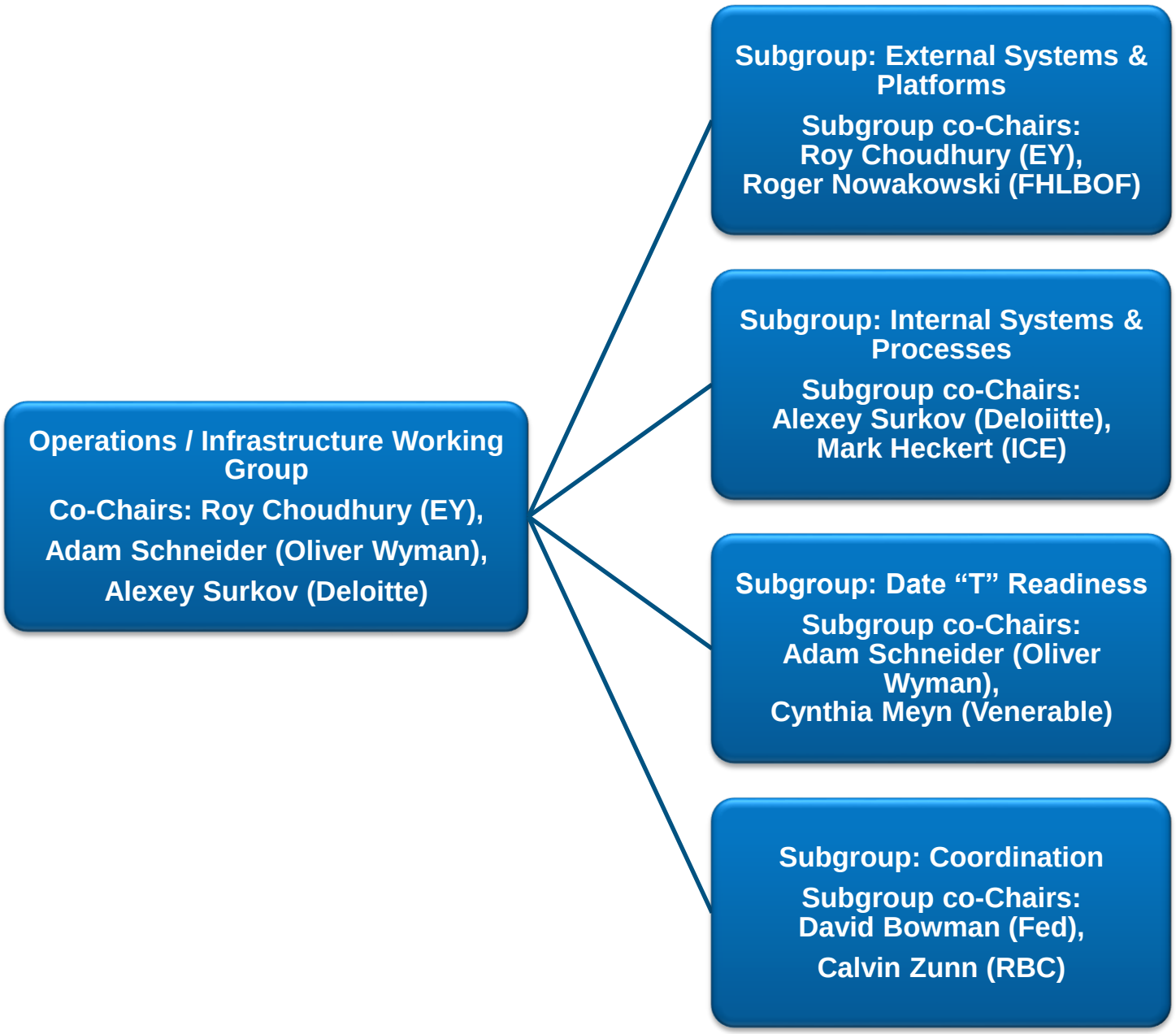
Identify key infrastructure / operational changes needed to allow a smooth, market-wide transition from US dollar LIBOR or to allow for the adoption and use of SOFR across derivatives, cash products, and systems

Identify internal systems changes, external systems changes, or changes to market conventions that are necessary or that would help to achieve this goal

Prepare recommendations including proposals for industry timelines, checklists, market conventions, or actions that could be taken to address specific implementation issues and will be targeted to promote broad-based transitions that minimize market disruption

Coordinate as appropriate with other ARRC Working Groups.

The Working Group has four subgroups, each of which is likely to break into more detailed sub-groups to deal with specific issues



The Operations/Infrastructure Working Group will focus on implementation and have a significant footprint.

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Firms Involved: almost all industry participants will interact with this Working Group, including financial firms, external vendors, and utilities.

Transition Planning: ARRC has published its implementation "checklist" and there is an interest in providing more details. This could include:

- Whether to extend to other segments (insurers, asset managers…) or ensure these are created
- Whether to build a comprehensive implementation plan for firms ("stages of success" / "best practice")
- Whether to publish an overall timeframe and guidelines for readiness

De-risking new operational requirements: identifying mechanisms that can simplify the newer operational work required, for example for fallbacks and for new non-LIBOR products

Testing: whether there is a need for a testing regime across the industry (and later on, requirements for operationalizing this testing)

Monitoring: There may be a need to monitor progress as we approach date "T". Potential areas include:

- Level of LIBOR exposures / perhaps by maturity
- Non-LIBOR product availability and liquidity
- Firm transition readiness

Other: understand needs of industry utilities, software vendors, standards for client notification so as to identify impediments and issues

Deep Dive: External Systems/Platforms Subgroup

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Identify other institutions that should be part of the subgroup

Use the existing ARRC vendor list and industry knowledge to identify key vendors by type (software, data, loan, etc.) and systemic importance. Define tier 1, tier 2, tier 3 levels of importance, spelling out what characterizes various tiers

Create systems for ongoing communication with the vendor community (one suggestion is to develop a set of questions to send out as a short survey), directly looping in tier 1 vendors immediately

Develop minimum requirements for transition readiness for key external systems to ensure a consistent standard and set of business requirements for critical systems. Apply first to Tier 1 and then to others.

Create roadmap outlining the timing of when key services/infrastructures need to be or are anticipated to be provided and monitor progress against the roadmap (does vendor have test systems in place, do they have systems in production, etc.) leveraging / coordinating with Internal Systems and Date T subgroups

Deep Dive: Internal Systems/Processes Subgroup

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Identify other institutions that should be part of the subgroup

Finalize draft ARRC checklist and have distributed

Confirm type of institutions to be addressed and how widely to cover industry participants and types of firms

Develop a high-level process taxonomy highlighting the key processes impacted by IBOR transition – this is expected to provide guidance to firms to conduct a more comprehensive impact assessment across process, systems and controls

Create specific internal firm checklists and transition tools / playbooks starting with the ARRC's example of a large financial firm

Distribute requirements for transition readiness for internal systems and processes (leveraging / coordinating with External Systems and Date T subgroups)

Maintain on-going coordination of requirements and changes with other subgroups to ensure that changes made by vendors / platforms are appropriately reflected in corresponding adjustments to internal systems / processes

Deep Dive: Date T Readiness Subgroup

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Identify other institutions that should be part of the subgroup

Categorize what must be done to plan for an be ready for LIBOR end (or non-representative) date. Work to set requirements for readiness.

- Set out minimum and optimum readiness requirements and readiness playbook
- Evaluate whether to build a complete implementation plan with Internal Systems / Processes subgroup
- Evaluate whether to extend to other segments (insurers, asset managers…)

Evaluate need for monitoring industry progress. Potential areas include:

- Value of LIBOR exposures
- Availability / liquidity of non-LIBOR products
- Confirmation of transition readiness / self-certification

Evaluate and if appropriate build a testing regime including fallbacks and new products as necessary

Evaluate other mechanisms to de-risk implementation. Potential examples:

- Fallback trigger notification protocols
- Test data and expected results for fallbacks and new product implementation
- Build out / publish / centralize product specifications for the industry (a la Barclay's/vendors/"how to use")
- Build out / publish test data and expected results for each instrument
- Standards for client notifications

Work closely with Coordination subgroup on issues relating to scheduling such as product standards and industry constraints

Deep Dive: Coordination Subgroup

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Identify other institutions that should be part of the subgroup

Coordinate with other ARRC working groups on new product specifications (example Business Loans Working Group spec sheet), vendor outreach, and solutions needed for fallbacks/legacy contracts to be workable.

Identify and coordinate with other industry groups in order to provide coverage of the wide set of industries/firm types that have LIBOR exposures (for example, AFP is beginning to work on a checklist for nonfinancial corporates), and work both with those groups and the other Operations-Infrastructure subgroups to develop industry/firm-type specific products similar to those developed by subgroups 1-3.

This could involve linking industry groups in to subgroup work, linking subgroup members in to industry work, or both.