DATA FOUNDATION

Financial Data Transparency:

2022 Forum Compendium

The Data Foundation's 2022 [Financial Data Transparency Forum](#) provided an opportunity for stakeholders representing financial institutions, the data community, and academia to offer actionable and practical feedback on how to improve data management strategies across federal financial regulatory and oversight agencies. The forum was designed using a stakeholder feedback model that supported the creation of the [Federal Data Strategy](#) and the accompanying Action Plans for [2020](#) and [2021](#). The Open Data Standards Task Force co-hosted the public forum with the support of the Data Foundation.

The following themes and recommendations emerged during the forum as stakeholders considered how to best improve data quality and use, literacy, and transparency in partnership with financial regulatory agencies:

- Establish a shared understanding of data definitions, common data standards, and formats
- Empower staff to make data-informed decisions by investing in agency-wide data literacy

- Identify and prioritize data management best practices
- Approach data demands with existing and emerging technologies
- Commit to transparency and good governance

The forum featured 17 speakers who offered insights and recommendations about how to improve data governance and use.

Establish a shared understanding of data definitions, common data standards, and formats. *Agencies should expand the use of common data standards, data formats, and an understanding of shared definitions to contribute to an adaptable and interoperable data framework. A highly reliable and quality data ecosystem can help facilitate timely data analysis and provide easier adoption of technological solutions and collaborative solutions across agencies.*

Inconsistent data definitions, standards, formats, and forms might be considered among the known evils of doing business in financial institutions and government. However, such inconsistencies create unnecessary work and confusion. In times of crisis, considering lessons learned from the 2008 Financial Crisis and fraud under the Pandemic Payment Program, having timely, high quality, verifiable data broadens the ability of regulators to identify anomalies and prevent, or at least stymie damage to the financial market and economy.

Taking examples from the private sector, presenter [Ken Lamar](#), a Principal Partner at Lamar Associates LLC and former Senior Vice President at the Federal Reserve Bank of New York, observed that the most common, and biggest issue in the financial market is when it comes to data management. Data management, in this case, includes issues connected to data structure, accountability, firmwide data quality programs, effective change management, and the infrastructure of the data itself. These issues are exacerbated by inconsistent data standards across different agencies and jurisdictions, as one firm's data standards can be completely different from another organization's set of standards and definitions. Thus, instead of there being a single, agreed-upon definition of a product, transaction, or beneficial owner, for example, between two different organizations, or even the same organization, there could be multiple meanings, confusing the data correlated to the inquiry and definitions. A lack of structure and consistency makes it difficult to analyze and organize data. A good governing structure can serve as a guide for agencies on how to use and store this data, as well as track what regulations to implement.

Lamar reiterated that having consistent standards and definitions is especially critical as the demand for more readily available data increases and the benefits of data sharing becomes more apparent. Without having clear standards and definitions, agencies are limited in their ability to share and analyze real-time data.

Chief Strategist for Open Data and Standards at Bloomberg LP [Richard Robinson](#) provided more nuance about the challenges of data standards, data sharing, and the importance of getting it right. In his comments, he stated that "standards provide a method for bringing together data in a way that is uniform and enables clear understanding of what that data means, at least within a specific context."

"Standards need to be used in the manner they were intended, including the user community for which it applies. High level data standards may have different interpretations depending on use. The more specific a definition a data standard has, the more narrowly it should be used and applied," continued Robinson. While broad standards have built-in flexibility, organizational context can alter the interpretation and implementation of such standards.

"In financial services, the same applies to ISO 20022.[1] ISO 20022, the standard, outlines a methodology for creating message and data definitions. However, this does not mean that any two ISO 20022 messages or definitions are interoperable or even agree on data definitions for data elements that both implementations may incorporate." To further illustrate his point, Robinson discussed the possible meaning of 'trade', which may differ among user communities that submit a business justification for a message and accompanying definitions. A 'block trade' and 'trade settlement' could be identified as 'trades' but have very different meanings and usage. The broad standard captures more processes, but important differences are muddled in the wide definition. Robinson suggests that narrow definitions are not quite the antidote to this issue, though.

When considering standards, Robinson noted that understanding context and user community are essential to communicating consistent meaning. Therefore, as uniform standards are presented for industry and government use, communities would be better served by being able to translate meanings from one code in one context to a different code in a different context. "Data models, like the FIGI, – the financial instrument global identifier standard for instruments - have utility in linking disparate standards."

New legislation in the United States calls on financial regulators to improve underlying data used by, generated by, and shared with a variety of communities by agreeing to common data standards, data definitions, and formats. The law, the [Financial Data Transparency Act of 2022](https://www.datacoalition.org) (FDTA) "requires that data be rendered fully searchable, which is facilitated by the requirement to be 'machine-readable' as now defined in federal law as meaning 'data in a format that can be easily processed by a computer without human intervention while ensuring no semantic meaning is lost' (per P.L. 115-435)."[2]

Facilitating a shared understanding of meaning among data standards, as Robinson, Lamar, and others recommended, the FDTA directs covered agencies to develop common data standards through a joint rulemaking. The data standards would address regulatory and compliance information reported to each agency by financial institutions under their respective jurisdiction and data collected from member agencies on behalf of the Financial Stability Oversight Council (FSOC) without introducing additional disclosure requirements.[3]

The data rendered "machine-readable" and "open" will ultimately reduce compliance and reporting burdens, increase transparency, and improve the quality, reliability, and potential timeliness of financial regulatory data. As noted by Robinson, "Financial regulatory data serves an array of critical functions for the financial industry, regulators, and investors. Transparency and the ability to consume and use data that is reported and made available is a key component in providing oversight, fair and equal markets, and the ability for investors to have the information required to make sound decisions."

Empower staff to make data-informed decisions by investing in agency-wide data literacy. *Foundational knowledge of how data and information can be shared, protected, used, stored, and communicated could reduce barriers to collaborative work and, in broader terms, improve trust in government. Data literacy efforts can help staff and offices translate and identify common data terms, distill what problems they are trying to solve for, identify data gaps, and how to access data for informed decision-making.*

Simply stated, data literacy can be defined as one's ability to read, write, and communicate with data in context.[4] Knowing how to effectively communicate data to a specific audience is fundamental to improving and maintaining data transparency, as it enables the audience to understand data and data-related studies, and consequently understand how to apply these findings to implement new changes and improvements. In her remarks, [Shelley Metzenbaum](#), Principal at the BETTER Project and former Associate Director for Performance and Personnel Management at the White House Office of Management and Budget, touched on key components of data literacy and how they connect to transparency, data users, and governance – top among them was communication.

To properly handle, analyze, store, and communicate with data, or at least get a handle on data use, one must learn about data and how to put data into context. Even entry-level data literacy can clear barriers for staff to approach and interact with data, which may require cultural changes and most certainly will ask for clear leadership.

As data ecosystems grow more complex inside and outside government, public servants are expected to be data savvy and informed. While potentially intimidating, as acknowledged by [Alexis Bonnell](#), Emerging Technology Evangelist at Google and former Chief Innovation Officer at the U.S. Agency for International Development (USAID), supportive leadership can ease the process of fostering greater data literacy within organizations and motivating individuals to develop a greater appreciation and appetite for information and evidence-driven decision making. Bonnell notes how the most successful approaches to this have been undertaken by organizations

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[1] ISO 20022 is "A single standardisation approach (methodology, process, repository) to be used by all financial standards initiatives," "ISO 20022." ISO20022. https://www.iso20022.org/.
[2] "Section by Section: FDTA 2022" Data Coalition, May 25, 2022. https://www.datacoalition.org/resources/Documents/Section-by-Section-FDTA-2022.pdf.
[3] Ibid.
[4] Nick Hart, Adita Karkera, and Valerie Logan. "Data Literacy for the Public Sector: Lessons from Early Pioneers in the U.S."Data Foundation, March 2022. https://www.datafoundation.org/data-literacy-report-2022.

such as the USAID, which have committed to creating a culture that continuously seeks out more information and knowledge, and encourages individuals to be curious and ask questions so they can better understand the function and importance of data analysis and management.

Data-informed decision making is becoming the expected norm for policy and legislative changes. Metzenbaum noted that data users typically use data in three ways: (1) improving outcomes or - if they already have the desired outcomes - maintaining those outcomes at a practical level, (2) improving operational quality, and (3) improving transparency. Data are, of course, used for more specific purposes, and these vary depending on the audience. Policymakers, for example, need data to determine what laws or rules need to be implemented, while frontline regulators use data to determine what kind of permits and licenses are necessary to issue, what inspections should be conducted, and what enforcement actions should be taken.

Data studies and evidence-informed research should be more accessible for audiences who might be less knowledgeable, adjusting for general and specific uses.

Understanding an audience's objectives in using data increases the effectiveness of how data, data analysis, and studies and findings are communicated and thus understood (and later applied) by their audiences.

Data literacy efforts should not be limited to traditional or obvious data experts. Given the proliferation of data and benefits that come from increasingly maturing data literacy, data literacy workshops should be prioritized to a critical level across agencies, including but not limited to legal professionals, researchers, data leaders, analysts, and agency heads.

Identify and prioritize data management best practices. *Data management includes data inputs, organization, storage, and use. Agile management can support consistent knowledge of what data exists, what data are needed, and how to verify, analyze, and reuse data across an enterprise or agency. Good data management facilitates efficient data use among empowered staff for informed decision making practices.*

Data is about representation, and granularity. Data use requires understanding, context, and precision. Data represents "real things", as described by Michael Atkin, Managing Director of Content Strategies LLC, data represents customers, products, people, and processes. "It represents the commitments we make and the obligations we accept." While presenting his remarks, Atkin, who served as the Chair of the Data and Technology Committee in the U.S. Department of the Treasury just after the 2008 financial crisis, highlighted fundamental data management elements, like maintaining good data hygiene and implementing semantic standards for identity, meaning, and business rules, guidance suggested by presenters from Richard Robinson and Vishal Kapur, as well.

Context, identity, and meaning support flexible and reliable data management practices. Precision and nuance matter, and have to be able to follow data through various reports, uses, and reuses. To be precise, nuanced, and flexible is a challenge for many data users. Multiple presenters during the forum, including Atkin, Lamar, Robinson, Peggy Tsai, Chief Data Officer at BigID, Vishal Kapur, Principal at Deloitte, and John Bottega, Executive Director of the EDM Council, mentioned the vital importance of a widely understood data meaning, standard, and definition. Whether tagged through metadata to allow for interpretive flexibility or developing an ontology, the original meaning and context of the data should be traceable. For those using and receiving data, we, as Atkin said, have a "right to expect the data to be true to original intent."

Managing the data lifecycle might also include efforts to identify and address data gaps and potential data linkages. Secretary of Treasury Janet Yellen elevated the need to identify data gaps among FSOC agencies.[5] Additionally, legislation like the Foundations for Evidence-Based Policymaking Act (Evidence Act) and the FDTA formalize data management, data discovery, and standardization processes across agencies.

Comments and recommendations presented during the forum brought focus to the importance of identifying data gaps and how to incorporate available technologies to improve data linkages. A few speakers referred to the information blindspots, or data gaps.

Instances of data gaps become apparent when a question is asked with no information to draw from. Sometimes, the data does not exist, as we have seen when a crisis highlights missing information – whether measuring the household impact of the pandemic shutdown or knowing the extent of investments and ownership in subsidiary companies. In other cases, data might exist, but exists in incomplete formats, as unstructured data, in a dataset outside the user's knowledge, or out of the immediate context of an office's mission.

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[5] Issue noted in 2021 FSOC Annual Report; Yellen directed agencies to harmonize efforts. Financial Stability Oversight Council, "2021 Annual Report", December 17, 2021, page 170, https://home.treasury.gov/system/files/261/FSOC2021AnnualReport.pdf.

While monitoring market risk, financial regulators rely on a number of data sources, including data snapshots, compliance forms and other filed disclosures, as well as reports from across the government. Data timeliness, access to real time data, data processing, and contextualization could each influence the potential data gaps existing in an agency.

Avijeet Sinha, Principal at Deloitte, defined a data gap as the lag and subsequent blindspot between market snapshots. High-frequency data and alternative data sources can be used as indicators when data gaps exist. Sinha recounted an example of how the Federal Reserve Bank of St. Louis used timesheet data to estimate closer real time estimates of unemployment during the early stages of the COVID lockdown, rather than waiting for the monthly unemployment rates reported by the Bureau of Labor Statistics.

High frequency data, as described by Sinha, includes a large number of observations or indicators within the formation of a pattern or trend, like rate of travel booked, daily electrical use, and even Twitter output on a given topic. When resources are constrained, incorporating high frequency data to supplement snapshots and other data feeds could decrease blindspots in risk assessment and oversight.

The Treasury Department's Office of Financial Research (OFR), however, does provide a tool for FSOC agencies to review and assess data gaps. The Interagency Data Inventory catalogs data collected by FSOC agencies, providing brief information like "the description of the collection, collecting organization, and the name and number of the form used to collect the data." [6]

John "JB" Byrd, President at Miller/Wenhold Capitol Strategies, highlighted an area where data gaps might exist, particularly among financial regulatory agencies – geospatial data. "Geospatial data has been itemized as a crucial dataset as part of the Federal Data Strategy (FDS)," which also identifies geospatial data as a strategic asset. While there is a view that troves of geospatial data exists, Byrd posits that there is a "massive need to acquire new data to complete the National Spatial Data Infrastructure (NSDI)." Geospatial data provides context and locational information that can enrich "Troubled Assets Relief Program (TARP) transparency, an 'early warning detection system' preventing the next financial crisis, the ALTA/NSPS Land Title Survey Standards in close coordination with the U.S. Department of Housing and Urban Development (HUD), and populate the National Spatial Data Infrastructure (NSDI)."

The "early warning system" Byrd described would link mortgage transactions with geocoded parcel numbers, which is an existing provision amended in the Home Mortgage Disclosure Act (HMDA). While geographic data are applied, they are at the "wrong level." Census tract data provides location, but cannot communicate more specific datapoints that could feed into an "early warning system," like "value, improvements, taxes, and something that none of the current government mortgage datasets, including HMDA, maintain – the precise physical location of the property."

Byrd's comments illustrated various points made throughout the forum, hitting on examples of why data management, linkages and collaboration, context, and gaps are important – transparency into TARP expenditures, identifying risk in mortgage market anomalies, and facilitating cross-sector insights into extreme weather-related risks.

Approach data demands with existing and emerging technologies. *Good data management and hygiene expands an organization's ability to employ existing technologies, like machine learning, and cloud storage and computing. As the amount of incoming and outgoing data grows, data solutions and technologies can also be used to improve management by identifying inconsistencies, data gaps, sifting through unstructured data, and integrating different datasets together.*

Peggy Tsai, Chief Data Officer at BigID, pulled from her experience in financial services to bridge data management challenges experienced by financial institutions and regulators. Not only are data flowing in torrents, but many data collection efforts are manual and time consuming, i.e. picking up specific bytes of information from a paper-format financial statement. Additional complications arise with data that span across different time periods and geographic areas. Such challenges affect data timeliness, replicability, and quality.

From her own experience in using artificial intelligence (AI) and machine learning in data management activities, Tsai notes how machine learning supports complex use cases in data life cycle management, including the reuse of data when it comes to grouping or differentiating data that are fit for purpose, identifying gaps or differences in data, integrating data sets together, and understanding the regulatory expectations for that data.

[6] Data Committee of the Financial Stability Oversight Council, "Interagency Data Inventory", May 2022, https://www.financialresearch.gov/data/interagency-data-inventory/.

To apply AI technologies and machine learning, Tsai recommended elevating the use of metadata. Vishal Kapur, Principal at Deloitte, noted that the use of metadata standards also opens up the possibility of greater data sharing capabilities and collaboration in a secure and privacy-preserving environment.

Kapur noted how privacy is one of the most commonly-held concerns in data sharing, and in the financial industry in particular, this often manifests itself in financial institutions facing the risk of exposing competitive knowledge, regulators attempting to preserve confidential data while sharing information, and individual citizens wanting to have their privacy protected. Beyond privacy, however, there is also the challenge of having a lack of a common technical foundation, with different organizations and agencies across the globe having their own data definitions and standards, as well as the high cost and efforts required to have the global data ecosystem operate together as a whole.

In response to the global pandemic we saw a paradigm shift in data sharing, illuminating a critical example on how these issues can be tackled effectively and how data sharing can operate efficiently on a global scale.

Organizations are moving from employing legacy technology to modern cloud-enabled platforms, which allows for greater real-time data sharing. He also noted a change in organizational data ecosystems in which organizations are moving away from MOUs, waivers, and contracts and focusing instead on privacy enhancing techniques such as encryptions to make the process more efficient while still maintaining protections for sensitive data.

Securely sharing sensitive data across entities has become an easier reality due to cloud computing and cloud storage. Examples in the private sector include data sharing among competing financial institutions that maintain strict privacy and confidentiality standards, a point John Bottega, Executive Director of the EDM Council, discussed during his remarks as he described the the Cloud Data Management Capability Framework – a free-license detailed guideline for managing sensitive data in Cloud, Multi-Cloud, and Hybrid Cloud environments.[7]

Commit to transparency and good governance. *Open data standards and interoperable identifiers are tools that can increase transparency, improve governance, and promote public accessibility.*

The Digital Accountability and Transparency Act (DATA Act) of 2014 required U.S. federal agencies to publish spending information into open data in a publicly accessible and downloadable format. In 2017, every agency in the federal executive branch began reporting spending data using the standardized data structure that the Department of the Treasury and the White House Office of Management and Budget had established.[8] The DATA Act was a major step along the road towards government accountability and spending transparency, and also marks a significant milestone for government-wide data standards.

Sean Moulton, Senior Policy Analyst at the Project on Government Oversight (POGO), has followed efforts to increase insights into government spending and contracting. As the federal government responded to the pandemic with COVID relief funds, POGO developed a spending tracker[9] that allows users to see where relief funds went, as well as track spending in each state and on which programs. Where the DATA Act and the POGO pandemic spending tracker intersect is on government contracting and beneficial ownership reporting.

The Corporate Transparency Act (CTA) of 2021 requires beneficial ownership disclosure for companies receiving $500,000 or more in government grants or contracts. Currently, Moulton underscored, the federal government does not have a consistent or reliable way of verifying or requiring the disclosure of entities or beneficial ownership. A point also made by Karla Mckenna, Managing Director of the Global LEI Foundation, Peter Warms, Business Development Manager at the Global LEI Foundation, Ryan Gurule, (former) Policy Director with the Financial Accountability and Corporate Transparency (FACT) Coalition, and Marc Joffe, Policy Analyst at CATO Institute and former Senior Policy Analyst at the Reason Foundation.

Moulton's recommendations focused on consistent standards for disclosure and changes to federal code to close loopholes with self-disclosure requirements, as well as updating the code from the current $10 million to the required $500,000, as written in the CTA. He also suggested blending the CTA's beneficial ownership disclosure code with other existing data laws as data are reported through USASpending.gov, the Federal Awardee Performance & Integrity System (FAPIS), and the System of Award Management (SAM System), as well as standardizing the type of data collected from companies other than names. Moulton recommended collecting demographic information related to the owners to verify that the companies are indeed what they claim to be (women-owned, veteran-owned, etc.) and thus legitimately eligible to receive benefits provided for such statuses.

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[7] "Cloud Data - CDMC". EDM Council. https://edmcouncil.org/page/CDMC.
[8] "DATA Act". Data Coalition. https://www.datacoalition.org/sys/website/?pageId=18216.
[9] "Covid-19 Relief Spending Tracker." POGO. https://covidtracker.pogo.org/.

One existing solution to both the issue of self-disclosure and verifying ownership could be the use of the verified Legal Entity Identifier, or vLEI,[10] which embeds the LEI in digital certificates. Together, digital credentials and the LEI deliver decentralized identification and verification for organizations as well as the persons who represent their organizations either in official or functional roles. Karla Mckenna of the Global LEI Foundation explained that the vLEI can also validate roles beyond ownership and verifies official business roles for those acting or signing on behalf of the organization.

Beneficial ownership disclosure and verification can reduce fraud, waste, and abuse. Access to trustworthy and timely information about beneficial ownership can also help investigators and regulators identify nefarious market actors, shell companies, money laundering, and more. The United States ranks first on the Tax Justice Network's 2022 Financial Secrecy Index as the most secretive jurisdiction, allowing individuals to obscure finances and hide corrupt activities from fraud to arms dealing, human trafficking, terrorism, and money laundering.[11]

Ryan Gurule, former Policy Director at the FACT Coalition also discussed requirements of the CTA as it relates to beneficial ownership disclosure to the Treasury Department's Financial Crimes Enforcement Network (FinCEN). As Gurule describes the requirements, he noted that FinCEN estimates that close to 26 million existing entities are likely to be subject to the reporting regime, and that somewhere near 3.23 million new entities will become subject to CTA reporting each year. The resulting BOSS directory–or Beneficial Ownership Secure System–will not be available to the public, but will be accessible to state, tribal, local, and international law enforcement officials, as well as certain financial institutions. FinCEN, Gurule recommended, should use clear, standardized beneficial ownership declaration forms to populate the BOSS directory. He noted that "well-structured data, well-designed forms establish the basis of a verification system that can reduce accidental errors and detect deliberate falsehoods. Failure to consistently implement well-designed forms, on the other hand, can generate multiple data-related problems that impede analysis and investigation."

Open, interoperable standards like the Beneficial Ownership Data Standard ([BODS](#)) developed by Open Ownership, a non-profit organization focused on beneficial ownership transparency, can save taxpayers substantial amounts of money, as well as improve the utility and interoperability of beneficial ownership data under the CTA.

Taking a different look at where data standards can improve transparency and good governance, Marc Joffe focused his comments on the Municipal Security Rulemaking Board's Electronic Municipal Market Access Website (MSRB-EMMA).

The use of open data standards and identifiers, Joffe explained, can be implemented to increase the public's accessibility to municipal bond data and improve how the data itself can be used to track the financial health of state and local governments across the United States. As it exists now, MSRB data is relatively inaccessible, but could improve with the use of open entity identifiers, like the LEI or FIGI. Joffe suggests MSRB unlock its data on issuers and securities, and convert pdf documents such as bond offerings and event-based continuing disclosures into extensible business reporting language, or xBRL, documents, which would make it easier for users to collect this data and use it productively (municipal bond investors, for example, would be able to collect more data to better analyze securities, and citizens would be able to locate information on the financial status of their cities, special districts, counties, schools, or states).

Implementing these changes, Joffe argued, will be a significant step forward in increasing transparency and data quality across local and state governments when it comes to financial reporting, given how there is a current lack of consistent accounting standards across the United States, with only around 45 states using the same 'homegrown' accounting standards. Considering that local and state governments account for over 10% of the GDP, "it is vital to push for more open data standards not only for the sake of more accurate and transparent financial reporting, but to have more consistent and higher-quality data concerning the overall U.S. economy."

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[10] See also, Allan Grody, written remarks: "Entity Identification in Financial Services".

[11] "Financial Secrecy Index 2022". Tax Justice Network. https://fsi.taxjustice.net/

Conclusion

Secretary Yellen identified the need for a financial data strategy when she was confirmed as the department head. The 2022 Financial Data Transparency Forum gathered individuals from across industry, academia, and nonprofits who have insights into how to improve data collected, used by, and disseminated by FSOC agencies. Data that has the power to improve decision-making, identify market risks, shed light on the financial health of local and state government, and improve overall governance. The Data Foundation, Open Data Standards Task Force, and participants of the forum thank FSOC agency leads for the opportunity to provide comments on how to build from the complicated and good work being done, and encourage FSOC leaders to engage more with the public in this stakeholder feedback sessions to inform the technical aspects of the data strategy.[12,13]

To learn more about the Data Foundation here.

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[10] "Federal Data Strategy: Background". Federal Data Strategy. , https://strategy.data.gov/background/.

[11] The Data Foundation and Data Coalition Initiative hosted an AI Symposium as part of a RegTech Data Summit, with comments focusing on how AI could be best applied in the public sector; in Fall 2021, the Data Foundation hosted a Chief Data Officer Forum, hearing feedback from the data community for the federal CDO Council regarding data workforce, data sharing, value of data, ethics, and equity; each of these building from forums the organization co-hosted with the Office of Management and Budget to facilitate feedback on the Federal Data Strategy and the Action Plan.

Speakers in Order of Appearance

1. Peggy Tsai, Chief Data Officer, BigID - "Leveraging Automation and Data Insights to Govern Financial Regulatory Data"
2. Peter Warms, Business Development Manager, Global LEI Foundation - "Public and Private Sector Progress with the LEI"
3. Vishal Kapur, Principal, Deloitte - "Data sharing"
4. Ryan Gurule, Policy Director, The FACT Coalition - "Standards & Best Practices"
5. Ken Lamar, Principal Partner, Lamar Associates LLC - "Standards"
6. Allan Grody, President, Financial InterGroup Advisors - "Identifiers"
7. Rich Robinson, Chief Strategist, Open Data and Standards, Bloomberg LP - "Standards"
8. John Byrd, Senior Vice President, Miller/Wenhold Capitol Strategies - "Data sharing"
9. John Bottega, President, EDM Council - "A framework for migrating and managing sensitive data in Cloud"
10. Alexis Bonnell, Emerging Technology Evangelist, Google Cloud - "Data sharing"
11. Avijeet Sinha, Principal, Deloitte - "Data gaps"
12. Karla McKenna, Managing Director, Global LEI Foundation - "Identifiers"
13. Greg Feldberg, Research Scholar, Yale School of Management - "other" (*Fixing financial data to address system risk & data coordination among FSOC agencies*)
14. Shelley Metzenbaum, Principal, The BETTER Project - "Collecting & Communicating Financial Regulatory Data to Inform Focus & Improvement"
15. Sean Moulton, Senior Policy Analyst, Project on Government Oversight - "Reporting Loopholes"
16. Michael Atkin, Director, Enterprise Knowledge Graph Foundation - "Data literacy"
17. Marc Joffe, Senior Policy Analyst, Reason Foundation - "Standards"

Additional Reference Materials

Vishal Kapur:
- https://www2.deloitte.com/us/en/insights/focus/tech-trends/2022/data-sharing-technologies.html
- https://www2.deloitte.com/global/en/pages/financial-services/articles/the-next-generation-of-data-sharing-in-financial-services.html

Ryan Gurule:
- https://us.transparency.org/resource/letter-to-fincen-urging-adoption-of-the-beneficial-ownership-data-bod-standard/
- https://thefactcoalition.org/wp-content/uploads/2022/04/CTA-Letter-_-Data-Best-Practices-_-Final-4-14-2022.pdf
- Written Materials - Prepared Remarks

Allan Grody:
- Written Materials - Entity Identification in Financial Services

Rich Robinson
- Written Materials - Prepared Remarks

John Byrd:
- Written Materials - Geospatial Data Enabling The Visualization of Patterns and Results

Greg Feldberg:
- https://www.brookings.edu/research/fixing-financial-data-to-assess-systemic-risk/

Michael Atkin:
- https://theinnovator.news/the-business-case-for-knowledge-graphs/
- Written Materials - The Business Case for Information Literacy
- Written Materials - The Business Case for Data Management (*powerpoint slides)