

Donald Donahue, President and CEO, The Depository Trust & Clearing Corporation
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The Infrastructure as “Cloud”

How managing risk, meeting regulatory demands and evolving 21st century financial markets will reshape the industry’s relationship with its core infrastructures.

Thank you and good morning. As always, it’s a pleasure to speak at a SIFMA event.

I want to talk about clouds today, as in the concept of “cloud computing,” – more particularly, how the industry’s infrastructure already today operates in a kind of “cloud” role and can increasingly do so in the future. So I hope no one here suffers from nephophobia, which is fear of clouds. Instead, what I hope you all have—and I need to be very careful how I pronounce this—is nephomania, which, of course, means love of clouds.

The term “cloud computing” first started to emerge about four years ago, but these days, it’s getting even more attention. Just last week, for example, Steve Jobs unveiled Apple’s new “i-Cloud.” At the same time, there was a huge, four-day-long “Cloud” Conference and Expo here in New York, where they covered subjects that ranged from “putting your wallet in the cloud” to “business-critical security and compliance in the cloud.”

It’s obvious we are entering the age of the cloud. But what’s at the heart of this concept? The National Institute of Standards and Technology has set forth a definition of the term “cloud computing” which, in my slightly tweaked version, goes as follows:

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.

So the key elements are “on demand access” to a “shared pool of . . . resources” that can generate a rapid, “just in time” response with the desired result.

Of course, the industry's post-trade infrastructure has long constituted a "shared resource" that member firms interact with on an "on demand" basis for rapid results. In fact, the genesis of DTC and NSCC was based on just this concept – creating a mutualized, shared resource of basic clearance and settlement services common among financial market participants. But over the past year, there have been several developments that, in my view, lay the groundwork for the creation of "next generation" utility services that move us even closer to a "cloud" processing model, if you as participants and members are prepared to migrate your systems and your interactions with us in that direction.

One key intersection between the back-office needs of the industry and the concept of "cloud" processing is the opportunity to mutualize the access to and the costs of core reference data, defined as the fundamental information required by all financial institutions – whether to uniquely identify securities, to identify trading counter parties, or to perform compliance-related functions. We believe that centralizing access to core reference data through a global financial utility like DTCC – moving core reference data functions into the "cloud," if you will – offers an opportunity to dramatically lower costs to the industry, enable cost-effective compliance, including the ability to perform systemic risk analysis, and eliminate the complexities for firms dealing with commercial data providers for core information.

The ALERT Database

As an example, consider the ALERT database of standing settlement instructions that Omgeo, our trade confirmation affiliate, has maintained for the industry since the early 1980's. Currently about 850 investment managers use ALERT to communicate standing settlement instructions covering approximately 487,000 accounts – ALERT actually holds roughly 5 million SSIs across global equity, fixed income and foreign exchange markets for those accounts. Importantly, ALERT allows all parties to correlate that account data with their own reference information, so that brokers and custodians can each tie their own internal account numbers to the ALERT record. ALERT also has embedded in it a rules engine that ensures that those SSIs meet current requirements for the markets to which they apply – in instances where a market requires beneficial owner information, for example, ALERT is going to flag that that information needs to be contained in any transaction instruction for a settlement in that market.

Now since ALERT's creation your firms have essentially followed a bifurcated model in interacting with it – you rely on us to maintain the central database, but typically you also replicate the portion of the database you need within your own data centers, devoting programming and data storage resources to keeping and updating exactly the same data that the central infrastructure holds. There are a number of historical reasons for that – pricing and data quality among them. As these issues have gotten resolved, however – and we've made real progress on them over the past year-plus – we're starting to see your firms moving in the direction of using ALERT as a "cloud" resource, retrieving the necessary data on a "just in time" basis as a particular transaction confirmation needs to be enriched.

It's particularly notable, for example, that ALERT users seem to be leveraging ALERT's rules engine directly – rather than replicating that real-time, frequently updated rules engine to "re-validate" data already validated by ALERT, users are beginning to depend on the ALERT validation entirely. Using the ALERT data as a readily configurable resource – retrieved "just in time" as you need it for a particular transaction, or perhaps even just populated directly to the transaction record automatically, without your intervention – seems like a short step to take, but one that eliminates resource burdens on you and maximizes your ability to leverage the central infrastructure.

But let's move still further into the cloud. Omgeo has recently concluded an agreement with Markit Partners that starts a process of interconnecting the ALERT data with Markit Document Exchange – a product that will create a "cloud"-based option supporting your ability to meet your "know your customer" responsibilities. As this evolves, the accounts recorded in ALERT will be aligned with the relevant KYC documentation available through Markit Document Exchange, so that as you need these details, you will be able to retrieve them. Today's distributed process of each firm doing its own extensive and duplicative work to obtain and update KYC documentation involves a staggering waste of resources. A "cloud"-based solution, leveraging interconnected infrastructure capabilities, seems a far more effective and far less costly way of dealing with this issue.

Legal Entity Identifiers

But let's move still further into the cloud. Later this morning you have a panel session on the current initiative to create a global "legal entity identifier." This LEI initiative is developing in response to an announcement from regulatory authorities in the United States late last year that they want to see the introduction of a numbering system that can not only be used to identify legal entities involved in financial transactions, but also provide background information on them. Jean-Claude Trichet, the

president of the European Central Bank, immediately endorsed the idea as a requirement that should be applied globally, and we certainly see the ECB strongly supporting this in Europe as well.

The need for an LEI system is growing out of regulatory authorities' efforts to establish ways of monitoring systemic risk in response to the last decade's financial crisis. To do this, supervisors will need to have some way of correlating a firm's activity it can see in one system with activities it sees in another – cross-referencing the legal entities that are involved in those transactions. And the only way to do that is to create a legal entity identity system. Every legal entity would have its own unique ID number, which, in turn, would be linked to specific basic reference data about that entity. A common identifier would not only enable systemic risk analysis – it also reduces the need for you to commit resources towards creating and maintaining your own, internal identifiers of your counter parties.

Centralizing the creation and on-going operation of this kind of system is a huge task. You don't have to think about it very long before you realize, as we did, that having the system set up and administered by a global utility is probably the most cost-effective way to get the job done. Given our at-cost business model, our experience as a utility, and our recent acquisition of Avox, recognized as the global leader in entity identification capabilities three years in a row by Insider Reference Data, we think DTCC should play a principal role in creating and running this new system. We're prepared to do this job, to create economies of scale by operating the system globally, and, as a global financial utility, to leverage our existing industry governance structure and experience to ensure that the LEI Utility meets the changing needs of the financial markets for years to come.

We wouldn't expect to take this on alone, however. To work on a global basis it would be desirable to involve a partner that also has a global reach, and, in fact, we have concluded an agreement with SWIFT to work together on this project. Under the solution that is proposed in our joint response to the industry's recent "Solicitation of Interest" on this subject, SWIFT would be the global registration authority for a newly created ISO-standard LEI, and DTCC would be the facilities manager, using the capabilities of our Avox subsidiary, to collect, validate and maintain the core data library on each entity and its ultimate parent. The Legal Entity Identifiers established through the joint DTCC/SWIFT solution will be available for your use without licensing, payment, or other restrictions.

This, too, gives you access through the "cloud" to an even broader set of capabilities to address all of these needs for your firm. The Legal Entity Identifiers from the joint DTCC/SWIFT solution can be

aligned with the standing settlement instruction details available through ALERT. You can map these through ALERT to your own internal identifiers which may help you avoid massive upgrades to get your internal applications to run on the new LEI standard. These connected LEI/ALERT records can then be further aligned with documentation available through Markit Document Exchange, so that all of these pieces can be put together leveraging infrastructure-based solutions. Very easy to say, of course, and much more difficult to do – but I believe the direction is very clear, and the benefits the industry can achieve from moving in this direction are very substantial.

Asset Reference Data

But let's move still further into the cloud, beyond what's already on the drawing board to talk about what perhaps should be on the drawing board. Creating "cloud"-based capabilities for identifying and validating legal entities has been a longstanding industry issue for years, and it is very gratifying to see a solution to that issue finally in the works. In parallel, however, the issue of standardized reference data for financial assets – standardized security descriptions, as one example – has also been with us, crying out for a solution, for decades. In the early 1990's, DTCC spent several years working on a standardized industry "Glossary" at the behest of the Data Management Division, but it became clear over time that the extensive investment that was then required could not possibly achieve a payback in any reasonable time period. DTCC's focus then turned toward standardizing reference data in more limited spaces – standardizing corporate actions data, for example – and the industry's attention also turned elsewhere. So that need has remained unmet, even as the assets we trade every day have grown more complex, with more extensive features and more complicated data flows involved in their analysis.

The same pressures for stronger capabilities for systemic risk oversight that are driving the "legal entity identifier" development may well force us to revisit the issue of standardized asset descriptions. While, to my knowledge, no one here in the U.S. has made that connection, European Central Bank President Trichet, in his remarks endorsing the efforts to develop standardized LEIs, also called for the development of standard asset descriptive data as being equally important to the issue of systemic risk oversight. Recent SEC rule proposals seek to standardize information flows for asset-backed issues. Both the SEC and the CFTC are seeking to standardize the descriptions of over-the-counter derivative contracts, as part of the push to get all of these assets recorded in central swaps data repositories. It seems quite possible that the push to standardize reference data for these different types of financial assets may evolve into a broader effort to finally address this longstanding industry problem.

Systemic Risk Reporting

If I can stretch my “cloud” analogy still further, it seems likely to us that the central infrastructure will have to play a key role in the broader push towards systemic risk oversight and the capabilities systemic risk overseers will want to develop to permit them to monitor financial system activity to identify exposures much earlier in the process. Here in the States the Dodd-Frank Act established the Financial Stability Oversight Council to provide a mechanism for systemic risk oversight, and the Office of Financial Research, a division within the Treasury Department, that is intended to serve as a research arm for the FSOC, mining data from the financial system to identify potential risks as they start to evolve. Europe has the European Systemic Risk Board, with an assignment similar to that of the FSOC.

While conceptually we all get what these systemic risk oversight authorities are trying to do, we also can all appreciate the sheer magnitude of the task they’re taking on, and the incredible complications of amassing and analyzing all of the data relevant to the judgments they’re trying to make. Right at the start, how are they going to accumulate all this information? Going down the path of requiring every financial institution to take on new reporting responsibilities would impose a staggering burden on the markets, not to mention the staggering data management task that would follow once all the data has been collected.

Here too, in our view, is a way in which leveraging the central infrastructures as the basis for the necessary reporting – with your firms outsourcing that reporting task to us – can provide a far more effective and palatable answer. The central infrastructures – collectively, as a group – have most if not all of the necessary information; we have it in a form that I’d call “pre-digested” – meaning that it’s not just raw transaction data but consolidated data that shows the net effect of the financial activities; and we have it across all of the systemically important financial institutions that the oversight authorities will be looking to monitor. Using that as the basis for a solution – having the oversight authorities interacting with the infrastructure “cloud” just as you do – seems to us a far more cost-effective and efficient way of addressing the systemic risk oversight needs with a minimum impact on the market’s functioning.

The Risk Management “Cloud”

But we don’t just need to “monitor” systemic risk – increasingly we need to figure out how to “manage” it. Here too I believe the infrastructure has a critical role to play in evolving post-trade clearance and

settlement systems to strengthen the shock absorbers and increase the system's ability to mitigate risk across all market participants – to migrate even more of the operational risk concerns market participants have to address into the “cloud.”

Within DTCC we launched last year an internal initiative – dubbed “DTCC 3.0” – to ramp up our risk management in ways we think will provide better cloud cover for the industry. In fact, for regulatory and business reasons, we're totally revamping how we manage risk, how we think about it, how we measure it and how we go about preventing or at least mitigating it. We can already see, as we go through this exercise, that the changes we're making will reshape the infrastructure we've built and how your companies use it. Since the devastating collapse of the global financial markets in 2008...the passage in the U.S. of the most far-reaching financial industry reform bill in 75 years...the regulatory push – both here and abroad – to write new rules...and the growing degree of international coordination on global risk standards, it was obvious to our board and to us that our old risk management practices were due for a serious overhaul. We're proud of our record in containing the damage from the Lehman Brother collapse, by the way, but that was one of the events that convinced us we could no longer take a business-as-usual approach to risk management.

In addition, in a world where markets outside the United States now float and trade far more new issues than we do in this country, we all need to be more alert to international risk standards. If we want to serve our customers and work in the global marketplace, we will need to play by global risk rules...and those rules are also being rewritten right now.

The objective of this more focused and structured approach is to keep our risk management activities focused on four key areas:

- Managing risk within DTCC itself, with a particular focus on the “tail” risks – how do we control the more extreme forms of risk we could conceivably become subject to?
- Monitoring and managing systemic risk, both from DTCC's own operations and within the financial “ecosystem” we operate in.
- Continuing to get better at how we help you manage your overall risks, too. We've always done that, of course. But we aim to become more disciplined and methodical about it.
- And, ultimately, taking as much risk burden off your organizations wherever it makes sense by continuing to automate post-trade activities, and by leveraging DTCC's ability to centralize and then steadily reduce—as much as possible—risk for various asset classes.

The global picture

Our focus at DTCC on our risk-reduction role as an infrastructure company is, in part, driven by the virtual certainty that the Financial Stability Oversight Council will designate our main subsidiaries as “systemically important”. In addition, US regulators are working with their counterparts in Europe and in Asia to create a more uniform and more rigorous set of global standards for risk management at the systemic level.

The basis for these standards is something known as the "CPSS-IOSCO recommendations," which set forth globally agreed principles and practices for the safe and sound governance and operation of clearing and settlement systems. This past March the global regulators issued a revised version of these standards, now called the “Principles for Financial Market Infrastructures,” for comment by the end of July. We are expecting that the final version of these standards will be issued some time early next year; a critical question that will have to be answered by then is how quickly the global regulators will expect the infrastructure organizations to bring our systems into compliance with the tougher standards embodied in the new “Principles.”

While these “Principles” build on the earlier versions of these standards, they also incorporate some significant changes. For instance, the draft Principles focus on the issue of settlement finality, and set forth basic standards that infrastructures are expected to meet – arguably these standards will necessitate that we further curtail the ability to force a reclamation of a delivery, or perhaps even move to bilateral pre-settlement matching in the U.S – a practice we’ve never followed, but which virtually every other market around the world uses. The Principles also explicitly suggest that the end-of-day net settlement process that the U.S. follows needs to be reconsidered, and this suggestion also appears in the draft rules for clearing agency operations the SEC recently released for comment. We will need to begin thinking about how to move towards intra-day settlement processes -- perhaps settlement payment processes at several set times during the day, as an example. As a first step toward grappling with this issue, we will be releasing a paper later in the summer on how we can subject deliveries of Continuous Net Settlement obligations to the depository’s risk management controls as a way of containing intra-day liquidity demands – the first significant change with several more to come.

Another issue reflected in the draft principles – coming directly out of the experience with the Lehman bankruptcy in Europe – is an increased focus on segregating customer assets more definitively

throughout the clearing and settlement process. While this sounds a bit like “motherhood and apple pie,” the reality is that in the cash securities markets it isn’t quite so clear when an asset is a customer asset and when it is not. Transactions with the investment management arms of mutual funds, for example, are virtually all done on a “delivery versus payment” basis, so – prior to the point at which the fund has paid for them – how can they have been deemed an asset that should be subject to segregation requirements? Working through these questions to develop an appropriate outcome will be complicated, but there seems little doubt that some higher level of identification of customer assets will be required.

We’re also trying to move toward international standards in a number of our businesses. In our global corporate actions business, for example, we’re now testing new messaging that we developed with SWIFT based on global ISO 20022 standards. The new CPSS/IOSCO “Principles” calls for infrastructures, at minimum, to offer global messaging standards as an optional input and output medium, if the infrastructure doesn’t actively require their use. Our intention is that DTCC will offer these standards as an option to you, and we are incorporating this into several planned system redesign efforts over the next few years. Our broader goal is to reduce or eliminate as many proprietary formats and trade submission routines as possible.

T+2 Settlement?

Another possible change coming from the global marketplace involves shortening the trade settlement cycle. As you know, equity trades in U.S. markets settle on a T+3 basis. Market participants on the other side of the Atlantic, however, have begun serious discussions about making a T+2 settlement cycle the standard throughout Europe within the next few years.

So we now have to confront the question of whether we should move consistently with Europe down this road, making T+2 the de facto international standard. Although adopting T+2 would mean a big change in how we do business, there are good arguments for shortening the settlement cycle. The shorter the cycle, for example, the less counterparty risk you run and the less time you have to keep funds tied up in margin. If both Japan and Europe switch over to a T+2 cycle and we do not, there would certainly also be concern about how it might impact the competitiveness of the U.S. industry.

Conclusion

Whatever the outcome of these initiatives, we all realize that our industry is becoming more international, more regulated, more automated, more interconnected. The broad array of capabilities

that the infrastructure organizations offer to you, our members, can increasingly serve to create interconnected, “virtual” capabilities that can meet your organization’s needs. Responding to the heightened risk management imperatives that we all face will, in part, involve DTCC’s increasing our capacity to centralize operational and other forms of risk from across the industry so that we can manage and control them more effectively, allowing you to place the management of those risk categories into the “cloud” and freeing you to focus on the more critical risk issues your own firms face. We face a challenging future, but also an exciting one that offers many new potential solutions to further strengthen our firms and our financial markets.

Thank you.

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