Accelerating the technological transformation of banking

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> "We need to revolutionize our business because the world has changed so much. It's only through the concept of us becoming an applied technology company that we'll achieve it. " – John Cryan, CEO, Deutsche Bank[1]

Since the financial crisis, regulation and related market changes have put pressure on banks' profitability. At the same time, a new threat has emerged: technology-enabled companies that are changing the ways in which customers obtain financial services. Bank boards are working hard to distinguish between hype about disruption and the practical challenges their institutions face – to *"sort out the substance from the noise"* – as they consider the appropriate scale and pace of technology transformation their institutions will require to compete in an expanding marketplace.

While much of the commentary about technology in banking focuses on the external threat posed by these new, technology-enabled competitors, or on the way banks are changing their customer interface and creating mobile and other digital offerings, a further and broader transformation is also under way. Many banks are only beginning to address their underlying systems infrastructures, updating legacy systems pieced together over years of mergers and acquisitions. Advances in technology are changing the way banks collect, access, and analyze data, manage risk and compliance, improve the speed of core processes, and build resiliency. As one director emphasized, *"This is not just about developing the new whizzy apps."* Rather, it is about transforming businesses for future success. Boards have a major role to play in encouraging effective innovation and wise long-term investment.

Over the course of the last several months and culminating with a meeting on May 5th in New York, Bank Governance Leadership Network (BGLN) participants discussed the challenges and opportunities in transforming bank operations via technology [a full list of discussion participants is included in the appendix].

Perspectives from those discussions are synthesized in the following sections of this *ViewPoints*[2]:

- **Technology is increasingly driving business model changes**
- **Boards need a broad, strategic view of technology needs, opportunities, and investment**
- **Banks are working to attract technology expertise and build a culture of innovation**
- **Regulation is adapting … slowly**

Technology is increasingly driving business model changes

One discussion participant observed, *"In the past, when you looked at digital, it was all about the customer experience. The question then changed from the user experience to end-to-end digitization. It is no longer how you digitize the current model, but what should your strategy be with a digital model?"* As a result, technology is now central to the broader strategic and business model changes that banks are tackling. And they are working faster and faster: *"If you look at the pace of change and the integrated nature of change, it is unprecedented. It is both the number and velocity of transitions,"* noted one participant.

"It is no longer how you digitize the current model, but what should your strategy be with a digital model?"

– Participant

Though most banks have made major technology investments in recent years, they have often been piecemeal, targeting specific regulatory requirements or providing specific solutions. Participants identified additional drivers for the need for broader technology transformation:

- **Historical underinvestment in infrastructure.** In March, Jürgen Fitschen, co-chief executive of Deutsche Bank, admitted that the complexity of its systems was partly due to past efforts to exploit money-making opportunities as quickly as possible. "The inefficiency of our IT was the price we had to pay to catch up with the fast-growing Wall Street banks," he said.[3] A regulator shared a similar perspective, noting, *"The banks built up their organizations rapidly before the crisis … Now they are trying to catch up and to build the proper organizational infrastructure in audit, control, and risk functions and IT systems."* A director added, *"We had such a long period of underinvestment in infrastructure and are now paying dearly for it. The attitude was always to postpone a bit longer."*
- **Growing pressure to address costs.** Banks are under sustained pressure to significantly reduce costs. As one fund manager noted, "Shareholders are focusing on profitability rather than revenue growth for all of these banks ... [They] have taken a much greater part in pressuring management to reach their targets."[4] This pressure to meet heightened investor expectations is exacerbated by rising regulatory costs. An executive stated, *"If we can't grow the top line, the pressure to address costs will only increase."* One director commented, *"At the end of the day, we will need to get regulatory costs under control. The longer this business environment continues, the more pressure there will be on the cost side. It will lead to innovative ways of working."*

"In the 90's and right up through the dotcom bubble, it was more hype than reality; the ratio was probably 80/20. That has now been inverted: it is more like 20/80 hype to reality."

– Participant

Responding to the challenge of fintech competitors

Boards overseeing major technology investments often struggle to understand the potential scale of the threats from new, technology-enabled competitors and, therefore, the implications for their institutions' business models. A participant noted, "*In the 90's and right up through the dotcom bubble, it was more hype than reality; the ratio was probably 80/20. That has now been inverted: it is more like 20/80 hype to reality … It is making people rethink their fundamental business model."* As an EY expert recently noted, "New technology really shows its promise with new business models. The Internet, for example, increased the efficiency of many existing businesses, but it is the new business models which have become the real stars. We should focus on what those new businesses are, and not be the financial services equivalent of a recording company in the 90s looking at the Internet wondering how they can use it to sell more CDs."[5]

Boards are continuously trying to determine the impact of tech-enabled companies on competition and to assess what their appropriate response should be. A director suggested there are two ways that financial technology firms can impact incumbent banks: *"Some of them have business models and access to capital to scale, and they can be the classic Clay Christensen disruptors. Or the other bucket, where they develop technology that could enable the banks to provide superior service and reduce costs – and they may struggle to get to scale – in which case we should be thinking about acquisitions or partnerships."* Some participants were not overly alarmed about the prospect of true disruption. One said, *"I'm relaxed about disruption. It gives banks an opportunity to challenge their models. If Quicken can do a complex transaction in 18 minutes, do banks want to get to that point too? Does a regulated bank really want an 18-minute approval process? Or does that act as a catalyst to get to a two-day approval instead of 30 days?"*

"In the payment space, the high network effects and opportunity to lose the face-to-face with the customer is the real threat."

– Director

Participants discussed the following issues regarding the competitive impact of fintech companies:

- **Disintermediation is still the biggest threat.** While some pointed to the threat to margins in businesses like trading and market-making, for example, most agreed that the primary concern is disintermediation – particularly in payments, where banks risk losing the direct interaction with the customer and the relationships and data that accompanies it. A director stated, *"That is the existential threat … There is a difference between banks upping their game in response to new competitors, and something like Apple Pay, where someone is acting as the intermediary and applying a chokehold … In the payment space, the high network effects and opportunity to lose the face-to-face with the customer is the real threat. As directors, we don't always know how to distinguish between the two."*
- **Back-end efficiency is important, but improving the customer interface is still central.** To avoid disintermediation, banks must continue to improve the customer experience. While addressing process efficiency and related costs is necessary, one participant said, *"I'm not sure the inefficiency of the back end matters for most things … I don't care what goes on behind the scenes – you can have a roomful of gerbils on wheels."* The same participant insisted that the central issue remains how the customer experience changes: *"Some things are clearly broken … The process of getting a mortgage is horrifying. I expect technology to simplify things and make it less horrible, along with spotting trends that are worrisome. The question is, can the process be better, and not only better, but 10 times better? Incremental change is not what we are shooting for."*

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– Participant

- **Banks' legacy data can be an asset**. As customer-facing fintech grows, so do the opportunities to better use technology within the banks. At the World Economic Forum, James Gorman, CEO of Morgan Stanley, described the commentary around fintech as "near hysteria," arguing that incumbent banks are still in a strong position, with assets that new entrants lack.[6] A director said bank leaders need to make some difficult decisions: *"Other people are figuring it out without the burden of the legacy we have. We have to decide, is that legacy an asset or a liability? Is there value in the legacy I have as an incumbent bank?"*

The growth of fintech

How should directors respond to the hype around the growing threat from fintech? It may help to look at the growth of fintech companies:

- **Investment has grown dramatically.** Total investment in fintech between 2010 and 2015 totaled $47.5 billion globally. Investment in 2013 totaled $3 billion,[7] whereas in the first three quarters of 2015 alone, investment exceeded $11 billion.[8]
- **Individual firms are growing.** The largest fintech "unicorns" are valued over $5 billion, with some surpassing $10 billion. PayPal now has over 173 million users.[9]
- **Loan volumes are increasing but are still small relative to loan assets in traditional banks.** SoFi's loan volume in 2015 exceeded $6 billion.[10] QuickenLoans closed $220 billion of mortgage volume since 2013.[11]
- **Large banks are among the largest investors in fintech.** Today there are sixteen bank-backed corporate accelerators around the world investing in fintech startups.[12]

Boards need a broad, strategic view of technology needs, opportunities, and investment

Boards need to understand their firms' strategies and approaches to technology. A participant asserted, *"The discussion of technology philosophy and your basic architecture is critical. I'm not sure how much this comes up in the boardroom. A good CIO should be able to articulate that strategy on infrastructure."* Some directors noted that, as their banks address technological challenges and opportunities, they rarely have time to stand back and consider technology investment strategy as a whole. As one said, *"Boards usually deal in the context of the change agenda. When we have discussions, it is usually talking about technology in the context of other things that we are trying to get done."* Participants noted that many of their current technological initiatives are driven by regulatory demands. As technology becomes increasingly central to strategic considerations, however, boards need to adopt a strategic approach to transformation. One director noted, *"IT became an impediment to strategy implementation. It was hard to get the board to look three to five years out."*

This focus on an overarching technology strategy is leading to longer-term thinking about capabilities: *"We take a five year view,"* one director related, *"What businesses will we have to invest in to ensure we have the capabilities built that we think we will need in three to five years?"* It is also leading to more centralized approaches: *"One of our biggest challenges was the businesses called the shots and we ended up with things that didn't make sense for the enterprise. The pendulum has now swung back to central architecture, which is very helpful,"* said another director.

Technology issues requiring board attention are expanding

While the customer experience may drive competition, technology is being applied across a range of internal processes including back-end efficiency, risk management, data analysis, and compliance. This contributes to the need for the board to take a broader view in order to understand where investment is going and how it is contributing to broader business objectives.

Participants highlighted new areas where technology is transforming bank operations:

- **Data management and analysis.** *"Regulators are big on institutions redoing all of their back-office systems to strengthen data capture and data feed into the regulatory agencies. These systems are 20 years behind. Everything requires special inquiries,"* one director commented. A supervisor stated, *"You need an across-the-firm view, not just in silos. That is a board issue. We are demanding it at the board level because we want that view as supervisors. If management can't do it for you, they can't do it for themselves.*"

  These regulatory requirements are contributing to a broader shift in how banks gather and manage data. Instead of exclusively using teams of specialized data analysts, one participant endorsed the *"democratization of analysis,"* whereby tools are enabling more employees to use and analyze data. For example, a participant observed, *"Many of these requirements, such as the need to have a single view of a client, are pushing banks to architect their system so anybody at the company can get data. They are doing it for compliance, but there are other benefits. You can then see where there is systemic risk, or opportunities for new revenue. It has driven a need to integrate data sets, and that is opening up new avenues for analyzing risk and revenue opportunities."*

"You need an across-the-firm view, not just in silos. That is a board issue."

– Supervisor

- **Robotics and artificial intelligence.** Robotics and artificial intelligence could replace people in roles ranging from back-office functions to loan officers. A participant observed, *"Early [robotics] applications were primarily around data, but it is now being applied to end-to-end processes. It is becoming large-scale transformation programs."* A recent article in the *Wall Street Journal* noted, "Whether it's being used to help with anti-money laundering programs, know-your-customer checks, sanctions list monitoring, billing fraud oversight, or other general compliance functions, proponents say artificial intelligence can improve efficiency, weed out false-positive results, cut costs, and make better use of workers' time and company resources."[13]

- **Cloud storage.** A participant asserted, *"Storage should not be a limitation. Storage is cheap and accessible now via the cloud."* Another noted the impact of this storage opportunity, saying, *"We are now seeing large financial institutions look at how to move groups of applications to the cloud to drastically reduce costs."*
- **"Reg tech."** A director said boards need to ask, *"As we move to the digital world, how are controls and processes evolving? How do both worlds transform at the same time?"* Given cost pressures, getting control of high rampant regulatory compliance costs without increasing risk is an important step. A participant noted, *"There is no silver bullet, but banks are becoming more effective in their response to regulatory requirements. If they need to remediate, they can do it in a much more effective way and get a benefit going forward"* – that is, a benefit in terms of improvements to the broader business processes.
- **Blockchain.** Blockchain technology has captured the imagination of financial services firms and futurists. Blockchain is about more than bitcoins and cryptocurrencies. At its core, it is a technology for shared databases (ledgers) that are distributed to all users, and are therefore not dependent on any single data keeper. According to economist Simon Johnson, "there is a very real prospect that this will reduce transaction costs across much of the financial sector."[14] Blockchain technology has potential applications for reshaping many of banks' daily operations, from upgrading old back-office systems to automatic execution of contracts and changing the way value is transferred.

  A director highlighted the potential: *"People think of blockchain as a cryptocurrency mechanism, offering anonymity, but it can be used for any real-time exchange of documents and actually increases transparency regarding individuals in the system."* Even as firms recognize the potential value of distributed ledgers and related uses, challenges remain, and many suggest that the transformative effect of blockchain technology may be slower than some predicted. A participant said, *"There are very different views on the pace of adoption. We see its earliest applications in financial services. It will come, but likely more slowly than many expect, but with broad implications."*

Determining the appropriate scale and pace of change needed remains challenging

Many banks' legacy systems have been critiqued as an antiquated mess of systems pieced together over the course of mergers and acquisitions, with add-ons for new capabilities built up over decades. As a result, in order to take advantage of emerging uses of technology, some suggest major core-systems upgrades may be required. A director said, *"Is there anyone that can step back and do a complete redo of all of their systems? The firm that can do that without caring about the cost may be at a real advantage."*

"Is there anyone that can step back and do a complete redo of all of their systems? The firm that can do that without caring about the cost may be at a real advantage."

– Director

Boards are considering how best to prioritize technology investment in order to determine, *"What is the right way to balance speed versus controls? What imperatives are offensive and defensive? How do you do this without the wheels coming off the car, but still do it expeditiously?"* according to one participant. Another participant observed, *"One of the real problems is the board keeps asking, 'If we throw more resources at it, can we solve the problems sooner?' The stock answer from management is, 'We are doing everything that we can.'"*

"The run-the-bank/change-the-bank mind-set is part of the problem … The better question is, how do we transform the enterprise so that everything moves forward?"

– Director

Participants highlighted the following challenges:

- **Distinguishing run-the-bank from change-the-bank investments.** A director said, *"It is challenging for boards to differentiate between investment that's compulsory – because we have to comply with regulators or because we need to fix old, creaking infrastructure – and innovation that will help us compete."* One participant summarized the dilemma: *"If you don't separate the two, what happens is the important gives way to the urgent … You find that you didn't make much progress because you were dealing with daily fires."* Still, another director said that this was a false dichotomy: *"The run-the-bank/change-the-bank mind-set is part of the problem. We have been led for too long by people who say we can't do both. The better question is, how do we transform the enterprise so that everything moves forward?"* A participant suggested historical underinvestment was hampering banks' abilities to improve the balance: *"We are now spending a lot of money on back-office systems, absorbing a lot of budget dollars, rather than doing offensive things that would be the highest priority."*

- **Short-term cost pressures hampering long-term investments.** It is difficult for a public company to make massive investments that could pay off over the long term, given short-term pressures on costs and returns. A participant said, *"We have a debate on short-term versus long-term investment. It is a lot easier when you can take a medium-term view."*

"These initiatives are so huge and interconnected … There are only so many you can get done and they all need to be done by the same people."

– Director

- **Limited internal resources.** A director noted, *"The constraint is getting all the planes to land on the aircraft carrier. These initiatives are so huge and interconnected … There are only so many you can get done and they all need to be done by the same people."* Another observed, "*It is not so much a lack of desire to spend, but really about resources and the subject matter experts who need to engage on it. It is not about money, but how many projects you can get done when there are so many things that land on the desk of the same people. Diverting talent to change a bank is really hard."* A director described one way boards can help ensure efficient coordination: *"Directors can push management to piggyback on things we are already doing for other reasons, such as regulatory requirements."*

- **Disruptive transitions.** Technology is improving to the point that major transformations are becoming easier and more cost effective, but major changes are disruptive and risky. Chris Skinner, a prominent writer on financial technology and banking, summarized the challenge: "How do you transform a business where the customer expects no risk and minimal change? … Change implies risk, and general banking should avoid risk in the eyes of both the bank and their customers … Any fault, glitch or failure gains headlines of gloom. Any downtime, lost transaction or missed payment results in regulatory review."[15] Banks need to ensure that systems are able to run while changes are being implemented. A director noted the importance of systems from a risk perspective: *"You cannot state your enterprise risk without understanding what is being phased out, what systems are changing, and the strategy for how this all fits together. You cannot do one without the other."* A regulator noted the concerns: *"Change brings risk and we want to make sure the risk you take is manageable. How do you effect change without increasing risk?"*

Moving quickly, but with prudence

Some participants cautioned against attempting massive transformation programs. One compared it to modernizing a city's infrastructure, saying, *"You are not going to rip up the entire city. You can't change it all at once. It needs to be targeted. So, how do you innovate on top of it? What legacy components are really at risk?"* Others suggest a staggered approach. A regulator said, *"Do you do an ideal architecture across the entire organization, or try it in individual lines and then see if it works to apply across the organization? This would allow learning to take place. It helps to avoid huge strategic blunders. I'd like to see your institutions take a more gradual approach."* Another director questioned the benefits of being a first mover: *"I would rather be a fast follower and risk missing the bus than get carried away with the hype and risk damaging customers' trust in the brand."*

While there is growing acceptance that legacy systems and core infrastructures need to be addressed, one participant emphasized that the issue is not the resilience of legacy systems, but the cost and speed of maintenance: *"I'm not worried about legacy systems failing. It is that they are difficult to change relative to newer technology. What concerns me is how fast we can change and adapt."* A regulator went further, saying, *"The problem with older systems is your ability to change them. You are afraid to change something in the spaghetti because you might break it. I have some concerns that the core infrastructure runs on systems so old that there is no support. Where are you going to find a COBOL programmer in 10 years?"*

Learning to predict, prioritize, and measure technology investment and impact

Directors and executives often struggle with defining and monitoring the return on technology investments. An executive admitted, *"It is hard to really understand what you are getting for your IT spend. We spend $2 billion, and I have no idea what I'm really getting."* Another said, *"It is hard to get an accurate view on [return on investment] before you go in … It is often more beliefs and conjecture rather than real analysis."* The focus tends to be on cost, not value. Some directors have adopted a skeptical approach based on past experience. One quipped, *"I tend to double the projected costs and knock 50% off of the predicted benefits."* While attempting to measure the return on technology investment is in many ways *"more art than science,"* given the range of investments banks are making – from remedial issues to those that can truly create competitive advantage and offer more tangible return on investment – participants see opportunities to improve the way they track value.

A director observed, *"It is interesting that in banking, we measure everything except for this. It is not hard, it is value-based. We should go back and look at a project and ask, 'Did you meet what you wanted to do?' The discipline that you see in other industries hasn't been there in banking."* Another participant agreed, stating, *"It should be relatively straightforward for bank boards to receive and have explained to them some basic metrics around project benefit realization, which could be linked to improvements – also measureable – relating to service levels, resiliency, risk reduction, security, et cetera."* A participant said they are trying to take a more holistic approach: *"Do we have the relative priority right in what we are investing in? At this stage, we are trying to quantify our whole build. What is it worth to us if we do it right? It creates a higher order of accountability and is more exciting for the organization."*

"We should go back and look at a project and ask, 'Did you meet what you wanted to do?' The discipline that you see in other industries hasn't been there in banking."

– Director

Some directors feel that their institutions have made progress. One reported, *"On our dashboard, we look quarterly at these indicators. We separate them into categories like run the bank, change the bank, and regulatory requirements."* But another questioned how thoroughly boards really vet investment in this area, asking, *"How often are you able to back test that you are getting value from your investment? How do you think through whether your prior investment got you to the stated objective?"*

Building flexible, adaptable systems

The systems that banks are building today will soon have to be adapted to rapidly changing needs and to integrate new technologies. A director observed, *"Most of the things we are discussing are point solutions. You want a particular capability as opposed to looking at deep architecture issues. The real question is, have I written my systems in a way where I have the ability to plug and change? You have to have a conversation with the technologists about what you are doing with your long-term architectural view. Then, what are your interim steps to develop your systems in a way where it is far easier for you, for example, to move to the cloud in three years? If you don't architect on day one you will always be playing catch-up."* Another participant advised, *"Build something that can change over time. Companies have created overly inflexible systems. You don't need to have every use case figured out from the start."*

"The real question is, have I written my systems in a way where I have the ability to plug and change?"

– Director

According to one participant, *"The best firms are light on their feet and focus on the products that really offer a competitive advantage."* That includes determining where they need to build proprietary technology and where the industry standard is good enough. A director said, *"It can become very costly to use proprietary technology, and you can risk falling off the development curve, but how else do you differentiate? You have to determine if the industry standard is good enough to move onto, or if you should keep it proprietary."*

Investing and creating partnerships to drive innovation

Banks are now among the largest investors in fintech start-ups and incubators. A participant noted, *"There are multiple strategies. You have an investment strategy, a partnership strategy, and a build strategy. This allows you to hear what is happening and where the energy is. You have a combination strategy based on your risk profile."*

Participants highlighted two areas for greater cooperation among firms:

- **Partnering with fintech start-ups.** Some banks have been *"strategically placing a bunch of little bets,"* by investing in fintech companies where they see opportunities to improve their own technology, create a solution to a problem, or avoid disruption. A number of banks have established accelerators to invest in and partner with fintech companies. A director noted, *"What our accelerator offers is the promise of the scale of our distribution model."* It may also offer greater credibility: as another participant noted, *"It is actually scary to start a fintech start-up to compete with the big incumbent players. The one who gets selected by [a major bank] is legitimate, now."* One participant suggested banks need to simplify bureaucratic processes that make it difficult for fintech companies to do business with them. Participants see real benefit in engagement, as one said, *"Doing investments, dropping seeds, making alliances, and dabbling with fintech, you learn from them and then modify your current offerings to compete."*
- **Coordinating industry activities.** There are also opportunities to pool resources across the industry and leverage technology for such non-competitive issues as cybersecurity, compliance with anti-money laundering, know your customer, and Bank Secrecy Act regulations. A participant said, *"There is real opportunity. The banks are each spending a billion or more on one line of compliance. It is an extraordinary pain point. It seems like an area where more data mining would make sense."* Another said, *"Individual banks are rallying their peers. Tech companies are getting involved. Regulators are encouraging cooperation in noncompetitive areas like AML. There is a real opportunity because no bank feels a competitive advantage. It is not just about cost reduction; you get much richer results combining data."*

"It is actually scary to start a fintech start-up to compete with the big incumbent players. The one who gets selected by [a major bank] is legitimate, now."

– Director

"Doing investments, dropping seeds, making alliances, and dabbling with fintech, you learn from them and then modify your current offerings to compete."

– Participant

Banks are working to attract technology expertise and build a culture of innovation

One director emphasized, *"This is about people, processes, and technology. Technology is just one component."* Another stated, *"It starts with culture and people."* Building additional technology experience and expertise is essential for banks, which have long been, in many ways, information technology companies at their core. As technology-related issues from cybersecurity to digitization have risen to the top of the strategic and risk agendas for boards, many are adding "digital directors"; and some firms are elevating technology leaders in the organization. Recruiting digital talent at all levels of the organization has become an increasing priority.

Adding capable directors with technology experience

Do all bank boards need at least one technology expert? Participants generally agreed that they do. One said, *"You wouldn't dream of having bank boards without regulatory or accounting expertise. Every bank needs digital expertise. Maybe not all, but at least one or two."* But they also cautioned against prioritizing technology expertise over identifying candidates who bring the capabilities they would expect of any director. One stated, *"There should absolutely be digital expertise, but often someone great at innovation is terrible on a board. You need to match up the skill set."* Another agreed, *"It is about the importance of capability, not the résumé. You need to improve capabilities as opposed to chasing certain résumés."*

"You wouldn't dream of having bank boards without regulatory or accounting expertise. Every bank needs digital expertise."

– Participants

They also noted that the right mix of experience and perspective remains more important to well-functioning oversight. One director said, *"On our tech committee, we have a variety of skills, including someone who brings the customer perspective. It is about how you use the different skills. You don't just want a group of technologists."*

In addition, given the many subcategories of "technology expertise," boards will never have enough seats for all the areas of relevance to a large bank. Instead, people with experience and understanding as to how technology can be used to transform businesses can be more valuable than people with narrow technical expertise. A director insisted, *"You only have so many seats to give up. I worry about giving up seats to people who fill the expert role."*

Changing governance structures

Many banks now have some variation of a technology committee. A director noted the value these committees can bring: *"We have a subcommittee on IT strategy. Without that, we would struggle to have debates with the full board, and would tend to be in listening mode … Without the separate committee, the level of debate would struggle to get above simply reacting."* Another director suggested that having that focus at the committee level is essential: *"At the board level, how many people talk technology budget? If you had a real conversation on technology, could you? We have maybe one conversation a year, but can't really have that detailed level of conversation."*

"We push management to articulate it in a way for everybody to understand, so by the time it gets to the full board for review, it is in a form that the board can grasp and respond."

– Director

Often, the tech committee is open to other directors attending the meeting. In at least one bank, most members of the risk committee attend tech committee meetings to ensure there is a risk overlay to the discussions. Others hold deep-dive sessions outside of the tech committee meetings, which are open to all directors and can last several hours.

Directors are also finding ways to ensure that the full board remains engaged and informed. One described their board's process: *"Three or four board members will meet with management to get a complicated tech subject grounded. We push management to articulate it in a way for everybody to understand, so by the time it gets to the full board for review, it is in a form that the board can grasp and respond."*

Boards are also pursuing alternative methods for accessing digital expertise, including increasing third-party assurance at the board's request and inviting outside experts to become members of technology committees. Some are setting up advisory committees for the board and CEO. These approaches allow technology experts to offer advice without taking on the full responsibilities of a director.

Ensuring that senior executives understand technology

"The biggest challenge is getting the right people. Do you have the right person leading the enterprise with the right resources and processes?" asked one director. *"Everyone is on the hunt for a digital expert now,"* said one director, noting the hire of Jon Rubenstein, a former Apple executive known for his work developing the iPod, as co-CEO of Bridgewater, one of the largest hedge funds in the world. Senior executives need to understand technology and where the market is going, but participants expressed different views regarding just how much emphasis to place on technology expertise.

"In a highly regulated financial sector, you need someone who can conduct the orchestra … The conductor doesn't need to play every instrument, but he does need to make the audience clap at the end."

– Director

Technology experience is now on the list of must-haves for any prospective CEO, but directors generally agree that banks don't require technologists as their leaders. A director predicted, *"The résumé of a CEO 10 years from now will look very different from a résumé today. In the past, when we did succession planning, we looked for experience across different business lines. Now, technology exposure is critical."* However, another countered, *"I wouldn't overplay the tech experience. The CEO needs to be a strategic thinker, but you do not want someone who is just a detailed technical expert. You want someone who is skilled in strategy."*

One participant characterized the debate around leadership requirements as an issue around philosophy of business: *"In Silicon Valley, you have product-centric and business-centric companies. Product people think that the best product wins, so if they lost all their sales people, they would be fine. Business-centric companies focus more on the whole operation than on an awesome product. Yahoo is a business-centric company. Even at product-centric companies like Apple and Google, it wouldn't be an IT person running the show. It would be a product visionary. Who is equivalent to the product visionary in banking? Would you put a product person in charge?"*

A large global bank's needs might be better served with a client-driven executive than a product visionary, given diversification of services and offerings. A director summarized the required skills: *"In a highly regulated financial sector, you need someone who can conduct the orchestra. A pure product visionary would not have the right skills in supplying what the regulators need, filling the compliance needs, managing risk, et cetera. The conductor doesn't need to play every instrument, but he does need to make the audience clap at the end."* Regardless of how much emphasis the board places on technology experience, it is now essential that a CEO understand technology and its uses. A director observed, *"In the past, we never included what we are talking about in terms of technology experience as we planned for succession. There is a new component that needs to be incorporated."*

Attracting tech talent and cultivating a culture of innovation

According to a recent Citi Global Perspectives & Solutions report, banks are quickly approaching an "automation tipping point" and could reduce staff levels by as much as

30% within the next 10 years because of fintech disruption.[16] In the context of these impending layoffs, the talent pool within the industry is changing. Yet banks face challenges in overcoming reputations that could limit their appeal to innovative tech talent. In a BGLN discussion last year, an executive noted, *"Digitization will have a major impact on headcount. Major players will be there, but they will look very different. We are hiring new people with new skills. We are hiring developers who, 10 years ago, would never have thought of working in a bank."*

To attract people with new and different skills, banks will need to offer a compelling proposition and nurture a supportive culture in an environment where all bank employees face a higher level of scrutiny than is typical in other sectors. In the past, banks could rely on the ability to pay well, but as Jim Cochran, JPMorgan's head of global recruiting, noted, "After 2008 that [pay] delta started to close and it became a much less compelling argument."[17] A *Wall Street Journal* report highlighted the continuing tension for junior-level bankers between banking's regulated, hierarchical culture and their desire to take on more substantial work sooner.[18] A participant asserted, *"Top-level technology product people don't want to be in the bowels of a large institution. It is hard to get good people to do that."*

One director suggested banks can develop an innovative culture that will appeal to technology talent, saying, *"We need strong intraprenuership. Big companies can innovate. Not everything has to be done in Silicon Valley. It's like there must be a special microclimate there, the air must be different. It's nonsense. You can enable the right environment within the company."* Some participants cited as a possible solution building innovation groups that operate at arm's length from the bank's core business functions or IT departments. One director commented, *"Innovation doesn't need to happen in the boardroom. Innovation can happen in the technology lab in the basement or off-site, where you can let people wear their sandals and dreadlocks."* Other participants, however, cautioned against allowing these groups to drift too far away from the business: *"You cannot separate [innovation and run-the-bank IT] functionally. You end up with the run-the-bank people feeling like second-class citizens. And you cannot afford a blip … You can't relegate run-the-bank to somebody else."*

"It is not impossible to recruit tech talent. We need to make the opportunities great enough that they are prepared to live with the less attractive features of the organization."

– Director

A director suggested tweaking the value proposition: *"It is not impossible to recruit tech talent. We need to make the opportunities great enough that they are prepared to live with the less attractive features of the organization."* This director suggested that the appropriate talent pool for bank environments might not be the same as the pool of talent attracted to working in a tech start-up: *"We are not a high-tech company like Apple or Google. We need to populate the company with those who understand the opportunities and the challenges. Those who are most effective within banks are those who know how to work in this environment and get things done."* Finding ways to work with technology professionals may also require adjustments to compensation policies. A director suggested, *"We need to be flexible about compensation policies, how we think about paying these people, and consider different kinds of contracts."*

Regulation is adapting … slowly

Regulators recognize the importance of technological transformation within the sector and its impact on incumbent banks, both in pressing for technology improvements to serve regulatory objectives and in working to identify new potential sources of risk. Like banks, regulators are carefully adapting their approaches to technology and technology-enabled transformation. They are hampered by limited legal mandates and their own ability to attract technology-savvy talent, but most are trying to *"start a dialogue"* about what *"responsible innovation"* looks like, led at the international level by the Financial Stability Board and locally by national regulators. It is the beginning of what is likely to be a gradual shift and expansion of regulation. A regulator said, *"It is a live issue … How we finish the race remains to be seen, but we are at the starting gate."*

Participants identified a number of barriers to regulatory change:

- **It is not easy to expand regulatory and supervisory mandates.** One regulator noted, *"We would require legislation. Even when we examine tech services providers to banks, it is limited. We cannot supervise them as prudential authorities. There are limits in the questions we can ask and what we could pursue."* Another said, *"We can get a dialogue going, but in terms of absolute authority, we are very limited."*
- **The banking sector cannot easily influence regulation.** While the banks have an interest in ensuring that tech competitors engaging in bank-like activities are regulated as such, a participant said, *"There are two negative consequences if we engage: First, it makes us look defensive. Second, it may scare away fintech companies with which we want to collaborate."* The same participant suggested regulators might play a role in identifying ways for the industry to weigh in on the debate.
- **There is still work to be done in addressing technology issues within banking.** A regulator observed, *"We have done a lot of horizontal work on basic IT controls. Banks are lacking across the board. There are gaps all over the place. The basic fundamental ABC's are not there. That is the place to start … Resilience is a big emphasis for us."*
- **Regulators are overwhelmed by the current agenda.** Building capacity and taking on an expanded mandate given the workload that regulators continue to manage will not be easy. One noted, *"Complexity is the recurring theme. You face regulatory complexity, but we are a mirror image of you and can't catch up. Talent management is as much a concern for us as you."* Another acknowledged, *"The amount of information that we are getting, we can't digest. Supervision doubled their staff, but we still can't digest it all."* Several suggested they face a recruiting gap as their mandates have *"exploded,"* particularly in supervision, which requires skill and experience only obtained over time.

"You face regulatory complexity, but we are a mirror image of you and can't catch up. Talent management is as much a concern for us as you."

– Regulator

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A participant asserted, *"Banks have been remarkably innovative. Banks wouldn't be producing sustained performance without innovation, especially with very demanding customers. I don't buy the argument that banks are plodding dinosaurs."* Technology is advancing rapidly, however, lowering the barriers to entry for tech-enabled competitors with new and innovative models. Banks are responding with investment in technologies that are reshaping their business and operating models. An investor predicted, "The financial services industry is going through a significant re-architecture driven by changes in regulation and new technology and data-driven business services solutions … Over time the industry will evolve from one dominated by large, leveraged conglomerate banks and unregulated non-bank financial companies to a broader and more decentralized network of vertical financial services companies."[19] Boards increasingly need a strategic view of how their firms are investing across the enterprise as technology becomes a driver, not just an enabler, of their businesses.

About the Bank Governance Leadership Network (BGLN)

The BGLN addresses key issues facing complex global banks. Its primary focus is the non-executive director, but it also engages members of senior management, regulators, and other key stakeholders committed to outstanding governance and supervision in support of building strong, enduring, and trustworthy banking institutions. The BGLN is organized and led by Tapestry Networks, with the support of EY. *ViewPoints* is produced by Tapestry Networks and aims to capture the essence of the BGLN discussion and associated research. Those who receive *ViewPoints* are encouraged to share it with others in their own networks. The more board members, senior management, advisers, and stakeholders who become engaged in this leading edge dialogue, the more value will be created for all.

About Tapestry Networks

Tapestry Networks is a privately held professional services firm. Its mission is to advance society's ability to govern and lead across the borders of sector, geography, and constituency. To do this, Tapestry forms multi-stakeholder collaborations that embrace the public and private sector, as well as civil society. The participants in these initiatives are leaders drawn from key stakeholder organizations who realize the status quo is neither desirable nor sustainable, and are seeking a goal that transcends their own interests and benefits everyone. Tapestry has used this approach to address critical and complex challenges in corporate governance, financial services, and healthcare.

About EY

EY is a global leader in assurance, tax, transaction, and advisory services to the banking industry. The insights and quality services it delivers help build trust and confidence in the capital markets and in economies the world over. EY develops outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, EY plays a critical role in building a better working world for its people, for its clients and for its communities. EY supports the BGLN as part of its continuing commitment to board effectiveness and good governance in the financial services sector.

Appendix: discussion participants

On May 5th in New York, Tapestry and EY hosted a BGLN meeting on the technological transformation of banking and had numerous conversations with directors, executives, regulators, supervisors, and other thought leaders. Insights from these discussions informed this *ViewPoints* and quotes from these discussions appear throughout.

The following individuals participated in these BGLN discussions:

Participants

- Nick Donofrio, Technology Committee Chair, BNY Mellon
- Kevin Kelly, Non-Executive Director, CIBC
- Dick Thornburgh, Vice Chair and Risk Committee Chair, Credit Suisse
- Denise Schmedes, Senior Vice President, Complex Financial Institution Function, Financial Institutions Supervision Group, Federal Reserve Bank of New York
- Tim Flynn, Non-Executive Director, JPMorgan Chase
- Tom Glocer, Operations and Technology Committee Chair, Morgan Stanley
- Bob Herz, Audit Committee Chair, Morgan Stanley
- Tim Tookey, Risk Committee Chair, Nationwide Building Society
- Marty Pfinsgraff, Senior Deputy Comptroller, Large Bank Supervision, OCC
- Kevin Walsh, Deputy Comptroller, Market Risk, OCC
- Narindar Bhavnani, Managing Director, Deposit Taking Group, Conglomerates, OSFI
- Chip Emanuel, Government Partnerships, Palantir Technologies
- Eric Rosenblum, Leader, Project Management, Palantir Technologies
- Toos Daruvala, Risk Committee Chair, RBC
- Morten Friis, Non-Executive Director, RBS
- Colleen Johnston, Group Head, Direct Channels, Technology, Marketing and Real Estate, TD Bank
- Dave Kepler, Non-Executive Director, TD Bank
- David Sidwell, Risk Committee Chair, UBS
- Jim Quigley, Audit and Examination Committee Chair, Wells Fargo

EY

- Ted Price, Senior Advisor, Risk Governance
- Bill Schlich, Global Banking and Capital Markets Leader
- John Weisel, Banking and Capital Markets Advisory Sector Leader

Tapestry Networks

- Dennis Andrade, Partner
- Jonathan Day, Vice Chairman
- Colin Erhardt, Associate

Endnotes

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[2] *ViewPoints* reflects the network's use of a modified version of the Chatham House Rule whereby comments are not attributed to individuals, corporations, or institutions. Network participants' comments appear in italics.

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[7] Georgi Georgiev, What you need to know about the fintech industry in 2016, TechinAsia, February 10, 2016.

[8] Falguni Desai, "The Fintech Boom and Bank Innovation," *Forbes.com*, December 14, 2015.

[9] Georgi Georgiev, What you need to know about the fintech industry in 2016, TechinAsia, February 10, 2016.

[10] Ibid.

[11] According to http://www.quickenloans.com/press-room/fast-facts/#ZOaP1F6SfOCKs2M7.99.

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[13] Ben Dipietro, "Financial Firms Turn to Artificial Intelligence to Handle Compliance Overload," *Wall Street Journal*, May 19, 2016.

[14] Simon Johnson, "The End of Big Banks," *Project Syndicate*, February 29, 2016.

[15] Chris Skinner, "Is It Fintech or Techfin (Part Two)," *Chris Skinner's Blog*, February 8, 2016.

[16] Portia Crowe, "Citi: The 'Uber Moment' for Banks Is Coming – and More Than a Million People Could Lose Their Jobs," *Business Insider*, March 30, 2016.

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[18] Daniel Huang and Lindsay Gellman, "Millennial Employees Confound Big Banks," *Wall Street Journal*, April 8, 2016.

[19] "Vikram S. Pandit and Atairos Group Create New Financial Services Company," BusinessWire, May 18, 2016.