

Data-Driven Banking: Managing the Digital Transformation



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Executive Summary

Banks are on the front lines of business disruption. Uber and Airbnb may get more press, but fintechs and new online banks are just as disruptive. These new competitors, are digitizing individual services, picking them off piecemeal and eroding the income of financial institutions. Even the largest financial institutions are feeling the heat and are offering their own automated services. Structural and technological complexity, cost and compliance issues — along with internal politics — are holding large banks back. They know they need to respond, but they are too fragmented, and redesigning individual services is not adequate. Meanwhile, banks are slowly dying the death of 1,000 cuts.

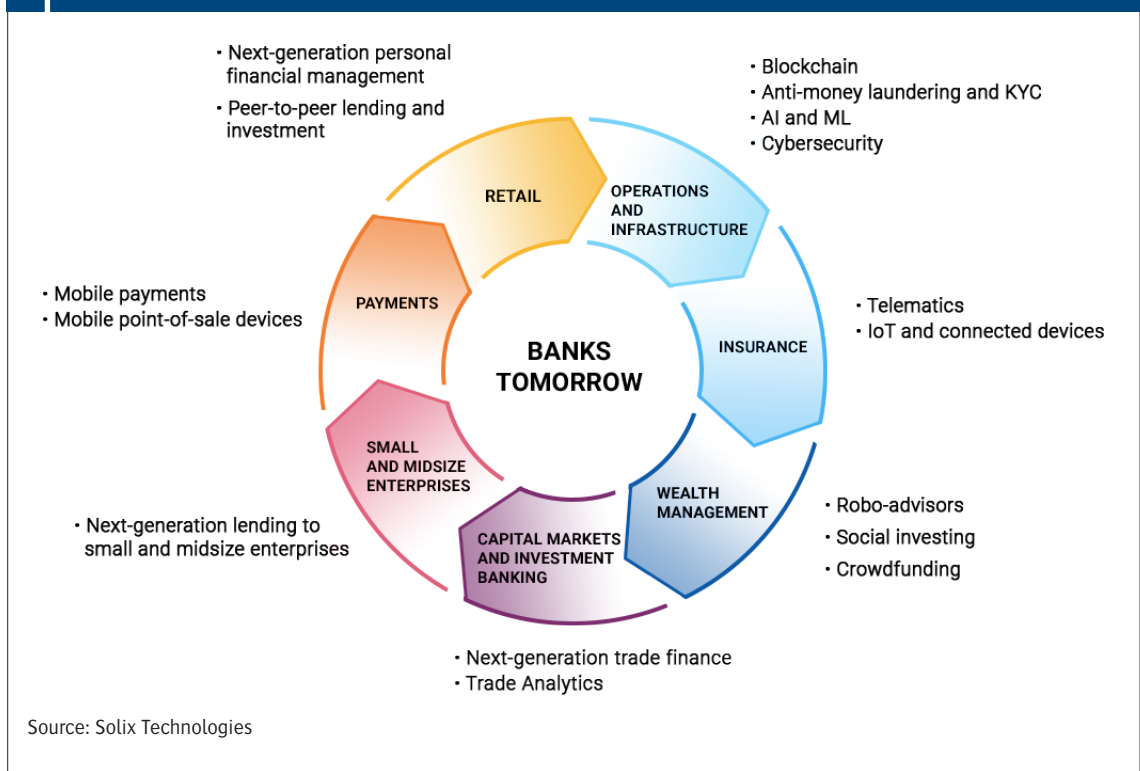
Full-service digital banking demands technology that can capture all the bank's data, including audio and visual, provide one version of the truth and support a 360-degree view of each customer, from individuals to Fortune 500 corporations. That technology must cost a fraction of today's

infrastructure. The Enterprise Data Warehouse (EDW) cannot handle the huge volumes and variety of data types and formats involved, and it is too expensive.

Digital banking requires a platform that will support plug-and-play integration of new technologies with existing infrastructure, allowing banks to automate individual business processes locally, while creating a new, unified infrastructure. This platform will allow them to create a fully integrated banking operation for the first time, while continually adopting the latest technology easily, quickly and inexpensively. It will support advanced analytics, including cognitive, to deliver answers to complex questions — quickly, interactively and directly to bank personnel and customers — without the need for IT intermediaries to code reports. This will allow them to offer something that the competition cannot — a coherent, customized financial solution for each customer.

One thing is very clear – the financial services of the future will run on data; that data will include audio and visual, social media, Internet-of-Things (IoT), log files and digital transaction files. Some data streams will be internally generated and others will be external – from social media, and IoT

FIGURE 1 Banks Tomorrow



Fortunately, that vision exists. It is Solix Technologies' Common Data Platform (CDP). With the CDP banks can integrate their existing, fragmented infrastructure with Big Data safely and effectively, allowing the bank to build a single central repository for all its data. With the Solix CDP banks can mine data to gather unprecedented Business Intelligence, increase margins and

provide significant ROI, while protecting data to ensure compliance and reducing operating costs; it eliminates the need for data scientists and other scarce skill sets; it is the foundation on which banks can build their digital future.

Source: Solix Technologies

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The Changing Landscape of Banking

Banks are facing a massive disruption similar to what retailing is experiencing at the hands of Amazon (see Figure 2). By disintermediating retail, harnessing new technologies, such as Big Data and advanced analytics, and in some cases creating new technology, Amazon designed its infrastructure for maximum efficiency and redefined "doing more with less." And, Amazon did it well, while offering a superior customer experience. Its IT infrastructure and overall operations cost a fraction of that of the major retailers, while supporting a selection of products no retailer can match and providing two-day delivery in most cases.

Amazon is the definition of digital business, and it never stands still. It constantly improves its technology and services, while cutting costs. In the digital world everything — the technology, business processes, the definition of the business itself — constantly evolves. "One and done" no longer exists.

If that weren't enough, Amazon has demonstrated another core characteristic of the digital enterprise — the ability to leverage its flexibility and core capabilities to disrupt an entirely different vertical, the IT hardware industry. When it started Amazon

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FIGURE 2 The Changing Landscape of Banking



BIG BANKS

Largest banks by asset

**CHALLENGER BANKS/
SMALLER BANKS**

Aim at becoming fully-licensed banks, creating new data-driven banking experiences and pricing models

FINTECHS

Portmanteau of financial technology describing an emerging financial services sector in the 21st century

LARGE RETAILERS

Retailers are increasing the scope and complexity of their offers of various financial services

Source: Solix Technologies

Web Services (AWS) few, if any, in the IT industry anticipated that it would disrupt the computer giants. Today Amazon makes most of its profits from AWS, not from its huge retail operation. This is both the largest threat and the potential of digital business. Executives fear that some company they have never heard of will create an entirely new paradigm that totally disrupts their business. But, the potential is that a big bank builds the banking equivalent of Amazon becoming the disruptor and finding its own opportunity to infiltrate some other major market.

To fulfill the potential, today's major banks need to transform themselves into the banking equivalent of Amazon — efficient, agile, able to evolve or rebuild services on a dime — all while cutting operational costs and capital investments to a fraction of what they have been. Today, no one knows what the digital bank of the future will look like. The winners will define that as they constantly evolve to meet changing customer desires. That is Amazon's strategy. Banks that cannot transform face marginalization as those that do evolve, including entirely new competitors, steal their business.

Big banks, however, have a major advantage over their competition — their depth of data on their customers.

Digital Disruption Spearheaded By Fintechs

Fintechs are charting new ways of banking. Global fintech investment grew 75 percent in 2015, exceeding \$22 billion, and the growth rate shows no signs of slowing down. While banks feel bound by regulation, in reality only some services, such as deposits and the fiduciary duties surrounding them, are highly regulated. Fintechs are focusing on other areas such as SME lending, with simpler regulations. They are taking advantage of the regulatory atmosphere as financial regulations continue evolving rapidly to address the emerging world of mobile and automated financial services.

Fintechs are also free of the expensive, cumbersome IT technology anchoring big banks to the past. This makes them agile. They focus on mobile banking, delivering their services wherever the customer is through mobile apps. Their person-to-person (P2P) banking matches the expectations of Millennials, and opens an opportunity to bring banking to 1.7 billion unbanked potential customers.

FIGURE 3 Customer 360



Source: Solix Technologies

Big banks, however, have a major advantage: their customer data. However, that data is locked in multiple siloed systems. To maximize its value, the banks need to unify all that data in one place and combine it with the social media data, including video and potentially IoT data from smartphones and wearables, to develop a 360-degree view of their customers (see Figure 3). The new online banks, for instance, provide instant loan approval. With their deep customer knowledge, big banks could use cognitive analysis to offer approval, even for mortgages and larger business loans, before the customer asks, with at least equal risk management as their present slow, manual approval methods provide.

Social media and web search data can let a bank identify customers in the market for a new car and send them a pre-approved car loan offer, based on automated analysis of the customer's credit history, before the customer has contacted an auto dealer. This could open the auto loan market to the bank.

Exposure to Cyber Security/Threat

Consumers trust banks to protect their personal information. Banks have physical security, network security, wire security. But, is that enough in the digital era, where increasingly sophisticated cyber criminals are constantly looking for weaknesses, and

many of the most devastating attacks often start by tricking an employee into infecting a system with malware? Security used to depend on firewalls to keep the crooks out. Now, it starts with the presumption that your systems have been penetrated. The focus is to identify incursions as soon as possible and limit the damage (see Figure 4).

One large U.S. bank suffered a cyberattack that compromised the data of more than 70 million households. A data breach of the online platform of another bank may have exposed the personally identifiable information of thousands of customers. Lost devices, payment card fraud and unintended disclosures are other causes of the data breaches across various banks in the past.

Advanced security systems harness Big Data and advanced analysis capabilities. They analyze log files from all the devices on the internal system, from network switches to printers, to look for suspicious activities, such as systems sending data to suspicious web addresses and employees printing large amounts of data.

Millennials and Customer Experience

In North America alone, 80 million millennials are poised to transform banking forever. This unique generation is now the fastest growing segment of bank customers in the United States. Millennials

Is the bank secure 'enough' in the digital era, where increasingly sophisticated cyber criminals are constantly looking for weaknesses?

FIGURE 4 Banking Fraud Losses



Source: Solix Technologies

Millennials present a once-in-a-generation opportunity for community banks to show how they understand, value and embrace this new generation.

present a once-in-a-generation opportunity for community banks to show how they understand, value and embrace this new generation. This generation grew up with mobile computing and social media. They expect banks to offer services through mobile apps and communicate via messaging. Mobile can reduce the cost and error rate of handling transactions, reduce expenses of running physical branches and open a huge market of unbanked individuals. For customers it means 24/7 banking from wherever they happen to be. But, it requires high levels of automation and real-time service delivery. Add machine learning analysis, and a bank can sell services to customers the way Amazon sells books based on the customer's reading habits.

Digital Era: New Sources of Revenue

Personalization across all stages of customer experience will be a key differentiator for banking. It can increase customer engagement, reduce costs, increase cross sales and improve customer satisfaction and loyalty.

Market research shows customers, including Millennials, want financial institutions to understand their needs and deliver customized services. The lack of personalization is a major reason banks are losing business. Banks have a huge advantage in the data they have on their customers. Digital banks will use that to improve services, including anticipating customer needs. For instance, the digital bank will know what customers need to replace their air conditioning and offer a pre-approved home improvement loan proactively, making it easier for the customer to use the bank.

Performance and Regulatory Issues

The quandary facing financial institutions is clear; financial data is among the most regulated commodities on Earth (see Figure 5). The banking business model rests on being a safe and secure place for the customer's money and personal information. With the diversification of the banking industry and addition of customer-friendly services, such as online banking and mobile apps, banks are inundated with the volume, variety and velocity of data collected.

Source: Solix Technologies

Personalization across all stages of the consumer journey will be a key differentiator for banking. It can increase customer engagement, reduce costs, increase cross sales and improve customer satisfaction and loyalty.



Gartner says “As the implications of digitalization play out in an industry challenged with performance and regulatory issues, it is becoming clearer that 20th century business and operating models are inadequate.”

Banks and Big Data

The Role of Big Data

Financial services of the future will run on data — structured customer data, transaction data, streaming clicks and log data, audio/visual data, social media, IoT and digital transaction files. Some data streams will be internal and others external — from Twitter, Facebook, wearables and smart phones. The volume of data involved is growing exponentially, and new data types are being added constantly. Data holds the key to increased revenue, better security, stability and customer service in an ever-shifting regulatory and technological landscape. Data drives the digital economy (see Figure 6). It is an asset that gives a 360-degree view of customers, reveals revenue streams and maximizes profit margins.

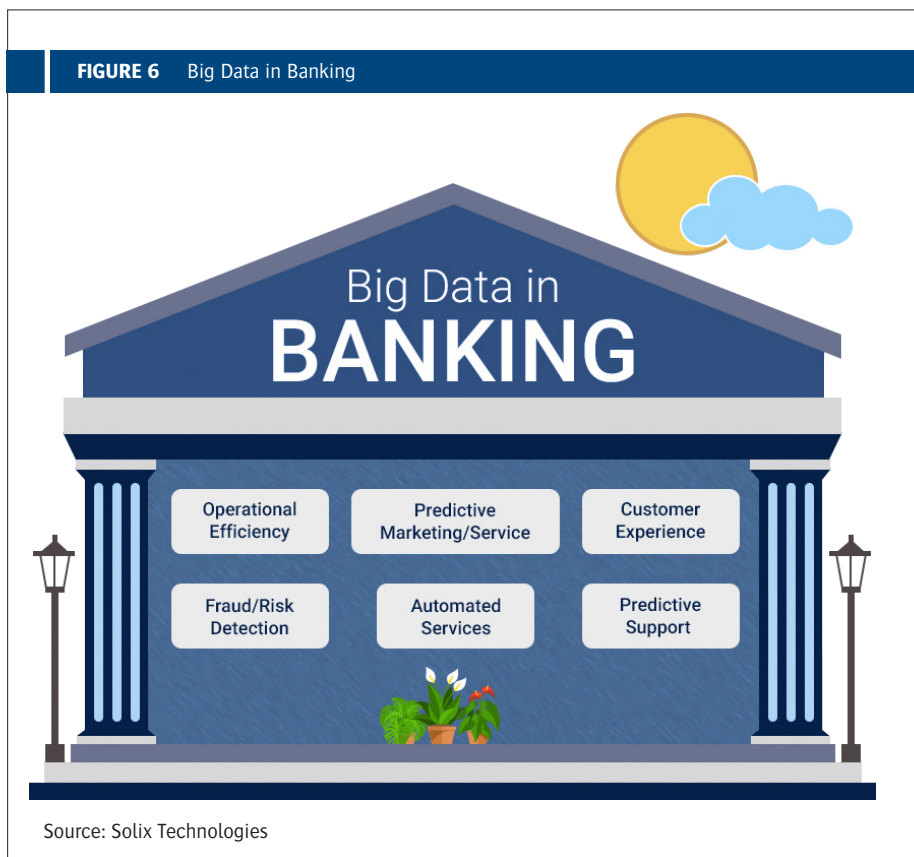
Big Data technology can meet critical banking requirements in the areas of customer segmentation and personalized product offerings, compliance and regulatory reporting, fraud detection, security, risk management, streamlining and evolving internal business practices.

A leading global bank is leveraging Big Data to acquire and retain customers, while driving down IT costs. Another bank uses Big Data to develop in-depth profiles of consumer habits to develop new revenue streams.

Challenges with Current Big Data Technologies

Digital banking requires a next-generation enterprise infrastructure based on Big Data technology that delivers the right information to the right person at the right moment. It needs real-time analysis to support high levels of security, market development and personalized customer service. The traditional top-down, tightly architected IT structure is antithetical to the agility required to constantly develop and redevelop the multiplicity of services that will make up the digital bank. IT needs to create an ecosystem of independent processes unified through a common data platform and a library of standard APIs.

Data holds the key to increased revenue, better security, stability and customer service in an ever-shifting regulatory and technological landscape. Data drives the digital economy.



Gartner says, “any organization thinking of simply applying existing information governance practices to Big Data will likely fail – not least because much data is ungoverned; or governed by others according to a different set of objectives.”

The EDW cannot meet the challenge for several reasons:

- Relational databases require that all data be transformed into a standard format. This extract, transform and load (ETL) process is slow and expensive, making the EDW unable to handle the huge volumes of data involved.
- The EDW is designed to handle “structured data,” alpha-numeric data that can fit into a spreadsheet-like grid. This excludes audio, video, still images and other forms of data that are vital to support machine learning and cognitive analysis.
- The ETL process creates a database that can only answer specific pre-defined questions. It cannot answer ad hoc, interactive, unpredictable questions that are required to manage 21st Century digital business.
- The EDW is expensive, making it impractical for storing and processing large volumes of data.

Big Data technologies excel at the requirements of the data-driven enterprise that the EDW lacks. But it has its own issues, including the constant technology churn and mutual incompatibility of many of the components of the Big Data stack, which are not designed to work together. The core Hadoop database strips all data of its vital metadata on ingestion. It cannot create a logical database that spans several physical databases running in different locations, which is a requirement when working with terabytes or exabytes of data that are too big to move.

Big Data Platform requirements

What banks need is a Big Data platform that can provide the missing core technologies, including:

- Basic data management technologies, including metadata capture and management.
- Advanced data management technologies required by banks, such as legal hold.
- A full set of APIs that can support plug-and-play construction and modification of the Big Data stack, eliminating the technical complexity of building the data lake.
- Support for all the major databases including traditional EDWs, the leading Hadoop distributions, and NoSQL databases.
- The ability to run across data lakes in multiple physical locations, both in-house and in the cloud, to create a single logical data environment to feed next-generation analysis systems that will power the digital financial institution.
- Ongoing support from a central source ensuring it will keep up with new technologies as they emerge, future-proofing the Big Data architecture.

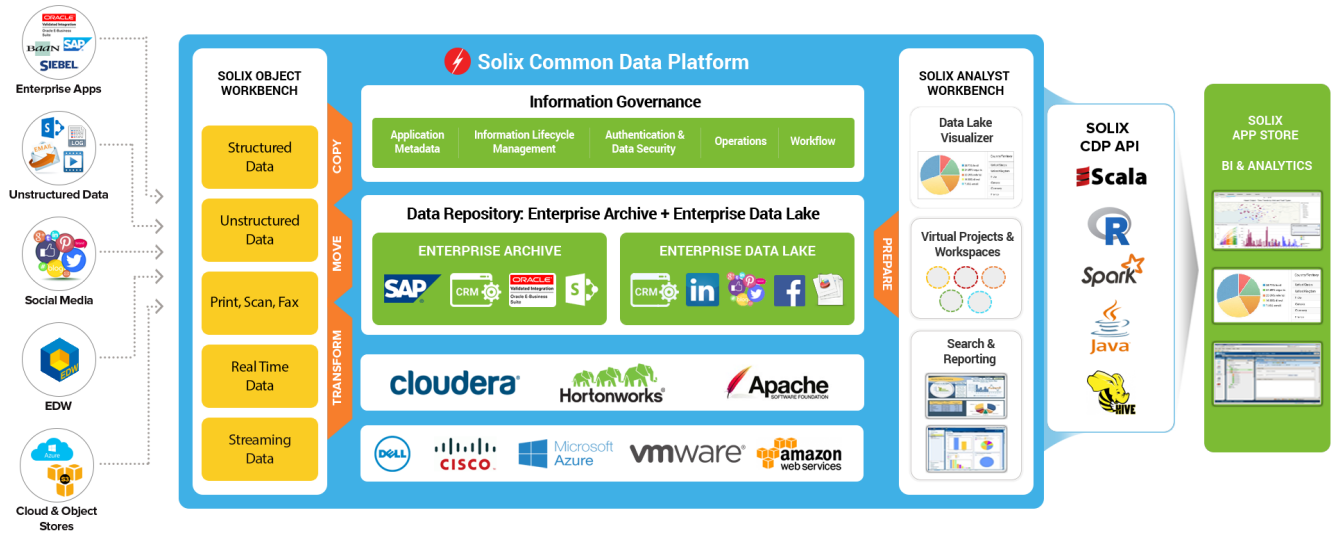
This is a big order. Fortunately, such a system exists in the market today. It is the Solix Common Data Platform.

Source: Solix Technologies

What banks need is a Big Data platform that can provide the missing core technologies. Fortunately, such a system exists in the market today. It is the Solix Common Data Platform.

Introducing The Solix Common Data Platform

FIGURE 7 Solix Common Data Platform Architecture



Source: Solix Technologies

The Solix CDP brings enterprise grade capabilities to the Hadoop framework and addresses the shortcomings of data lakes. The Solix CDP provides uniform data collection, information lifecycle management (ILM), governance and secure data access for advanced analytics. It adds full metadata management, capturing metadata on data ingestion and recording accesses and changes as they happen (see Figure 8). This is particularly important for data security.

The Solix CDP is certified to operate with both the Cloudera and Hortonworks Hadoop distributions, the two most popular versions of Hadoop. It also supports all traditional database systems and most NoSQL database engines; it runs in-house or as-a-service on both the Amazon Web Services (AWS) and Microsoft Azure clouds, the two most popular IaaS systems.

Uniform Data Collection

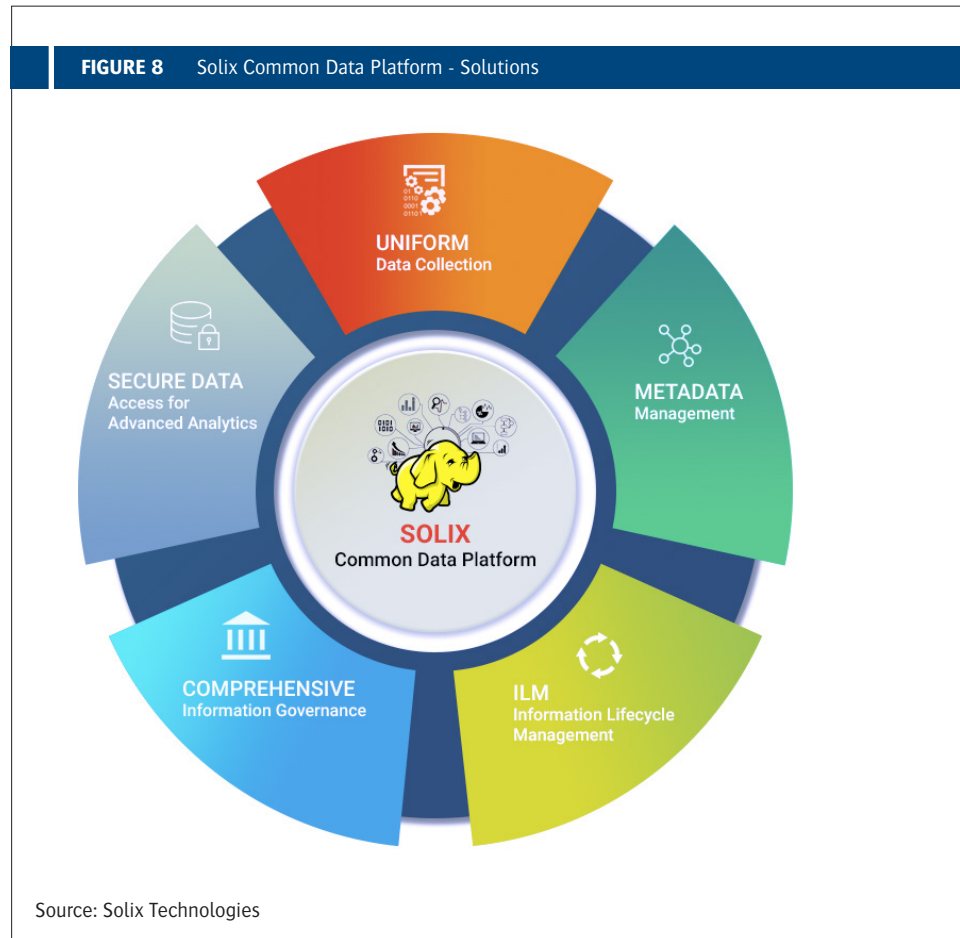
The Solix CDP is a uniform data collection system for structured, unstructured and semi-structured data, featuring low-cost data storage and advanced analytics. It stores data as-is to eliminate costly ETL operations, and transforms data to feed downstream NoSQL and analytics applications.

Information Lifecycle Management (ILM)

It's heritage in ILM means it supports RDBMS systems, including EDWs, adding them into the Big Data environment without disturbing their operations. It adds automatic data tiering, archiving and disposal based on customizable business rules. This is vital for managing the huge volumes of Big Data, improving system performance and accuracy of real-time analytics while cutting costs.

Solix Common Data Platform brings enterprise grade capabilities to the Hadoop framework and addresses all the shortcomings of data lakes.

Solix CDP =
Enterprise
Archiving +
Enterprise
Data Lake +
Information
Governance



Solix CDP provides uniform data collection, information lifecycle management, governance and secure data access for advanced analytics.

Comprehensive Information Governance

The Solix CDP's comprehensive information governance provides the control framework necessary for data access control, data assessment, data discovery, data classification, data validation, retention management, legal hold and privilege management. It adds other advanced features important for data management in financial organizations, including legal hold of specific data sets. A robust ILM strategy focused on governance and security requirements must be an essential part of the evolution of an organization's overall data strategy.

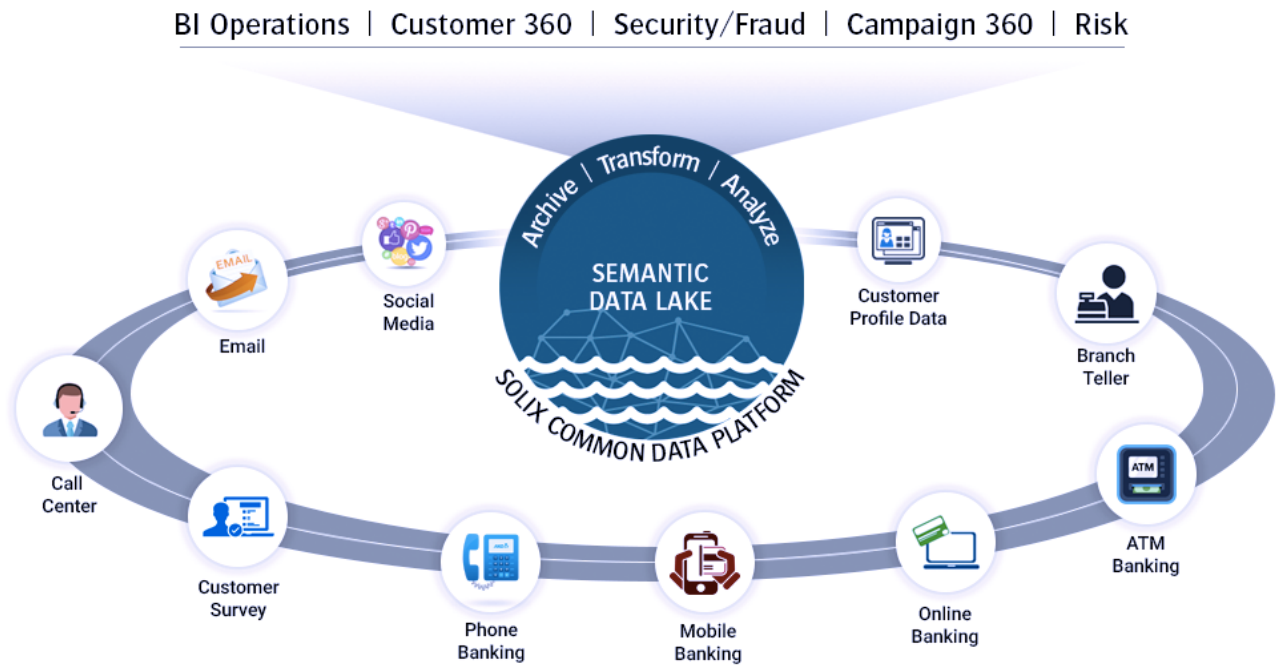
Secure Data Access for Advanced Analytics

The Solix CDP incorporates the Apache Spark and MapReduce technologies, providing support for advanced analytics. It can create a single,

logical data infrastructure across multiple internal and cloud-based databases, giving the analysis engines access to all the data needed for digital banking. Its constantly updated library of APIs for interconnecting Big Data software stack components, eliminates technical complexity. Solix software engineers constantly add APIs to support new technologies as they gain traction in the Big Data ecosystem, future-proofing customers' Big Data installations. Solix Technology stands behind this and all its products with full support and an engineering team that responds to customer requests for new and improved features. With the Solix CDP, replacing an older technology with a more advanced one is a plug-and-play exercise. For more [detailed information](#).

Source: Solix Technologies

FIGURE 9 Solix Common Data Platform - Enabling a Data-driven Enterprise



Quick Glance: Features of Solix Common Data Platform

The Solix CDP is a multi-level platform based on the proven Solix ILM tool set:

- It is certified on the Cloudera and Hortonworks Hadoop distributions, the two most popular versions of Hadoop, as well as all traditional RDBMS and most NoSQL database engines, and as-a-service on AWS and Microsoft Azure.
- It can create a single, logical data infrastructure across multiple internal and cloud-based data lakes, giving the analysis engines access to all the data required for digital banking.
- It includes a constantly updated library of APIs for interconnecting Big Data software stack components, eliminating technical complexity.
- It adds full metadata support to Hadoop data lakes, which is the basis for data management, search, and security.
- It adds ILM capabilities, most notably automatic data tiering, archiving and disposal based on customizable business rules. Without ILM data lakes become bloated with old data that slows response times and can result in inaccurate analysis results.
- It incorporates both the Apache Spark and MapReduce technologies, providing support for advanced analytics.
- Solix Technology stands fully behind this and all its products with full support and an engineering team that responds to customer requests for new and improved features.
- For more detailed information, visit [here](#).

With Solix CDP, you can refocus on the emerging digital business climate, respond quickly to the latest challenges to your business, and build the services that will turn your company from a legacy service provider to a powerhouse of disruption.

A Digital Business Conversion Strategy

Moving a financial institution to the digital economy is complex, requiring constant flexibility. The bank has to disrupt itself, while simultaneously delivering all of its services, maintaining security, complying with regulations and fending off digital upstarts nibbling at the bank's business.

Financial institutions can learn from the auto industry in the 1980s. Manufacturers faced major disruption when the first generation of robotics impacted the industry. The big three American auto

companies built new automated manufacturing facilities that were often outmoded on the day they opened. The Japanese automated workstations one at a time, building on a plug-and-play platform that guaranteed full integration of the factory. As new requirements and technologies emerged, they could replace individual pieces quickly and inexpensively. The result was constant evolution toward the goal of the modern automated factory.

Source: Solix Technologies

Conclusion

For the last two years, Big Data early adopters have struggled to build systems from immature, often incompatible technologies. Wikibon's George Gilbert says this is delaying the adoption of Big Data technologies despite the tremendous promise of digital businesses. The Solix CDP eliminates the daunting technical complexity of Big Data and makes it practical for financial services companies to build digital businesses that respond to the changing business climate and customer needs.

With the CDP, you can refocus on the emerging digital business climate, respond quickly to the latest business challenges, and turn your company from a legacy bank to a powerhouse of disruption that can take full advantage of the opportunities presented by the digital business revolution.

Source: Solix Technologies

About Solix Technologies

Solix Technologies, Inc. is a leading big data application provider that empowers data-driven enterprises with optimized infrastructure, data security and advanced analytics by achieving [Information Lifecycle Management \(ILM\)](#) goals. [Solix Big Data Suite](#) offers an ILM framework for [Enterprise Archiving](#) and [Enterprise Data Lake](#) applications with Apache Hadoop as an enterprise data repository. The Solix [Enterprise Data Management Suite \(Solix EDMS\)](#) enables organizations to implement [Database Archiving](#), [Test Data Management \(Data Subsetting\)](#), [Data Masking](#) and [Application Retirement](#) across all enterprise data. Solix Technologies, Inc. is headquartered in Santa Clara, California and operates worldwide through an established network of value added resellers (VARs) and systems integrators. To learn more, please visit <http://www.solix.com>.

