



TRANSFORMATION IS A TEAM SPORT

APPLYING TECHNOVISION TO OPERATIONALIZE
TRANSFORMATION PROGRAMS

FOREWORD

Digital technology has become an all-pervasive force with impact spreading across multiple industries. The capital markets industry is heavily dependent on data: as a result, its leaders have been pushing for rapid digitalization since the very beginning, and they were the first to apply it to their day-to-day operations to help improve efficiency and thereby reduce costs. Despite an early start, however, the degree of digitalization in this industry lags behind other financial services sectors. And when looking across the overall landscape, the financial services industry trails as compared to several other key sectors including retail, telecommunications, and automotive.

Today, the capital markets industry finds itself in a period of significant transition. It must act to reduce structural, operational, and per-unit trade costs, introduce efficiencies, and invest in digital infrastructure – all while meeting increasing regulatory obligations.

Capgemini is pleased to present this report, where Aite-Novarica Group explores the key elements of successful approaches to business transformation. The report also outlines four significant initiatives occurring across the capital markets industry that will require firms to embrace new, collaborative approaches to business redesign.

This report covers:

- Basic hygiene factors for the digital transformation journey
- Potential of distributed ledger technology (DLT) as an enabler for the capital markets industry
- Adoption of AI, ML, and RPA for business processes
- Risks and benefits of transformation efforts within the existing market infrastructure

We help our clients create efficient and responsible organizations with digital innovation at their core – including business, product, and regional eco-systems. And our holistic data, cloud, and analytics solutions enhance customer engagement, streamline operations, and ensure more effective risk management.

We hope these insights will help guide you in your digital transformation journey.



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INTRODUCTION

The business model capital markets firms are using to maintain, upgrade, and enhance technology is broken. It does not work in an environment where step change, rather than incremental change, is the norm, and where singular changes to data or workflow can have cascading implications across the business. In the current business model, technology alone cannot solve the issues the industry faces today, such as operational resiliency, regulatory compliance, and sustaining competition.

The pace and complexity of technology change have created new options for building evolving ecosystems that work. Business transformation requires collaboration to redesign people, processes, data, and technology to do things differently. It is not sufficient to look at incremental faster, cheaper, or easier outcomes only; instead, define true and important goals, and redesign the business process to create transformational change.

Background

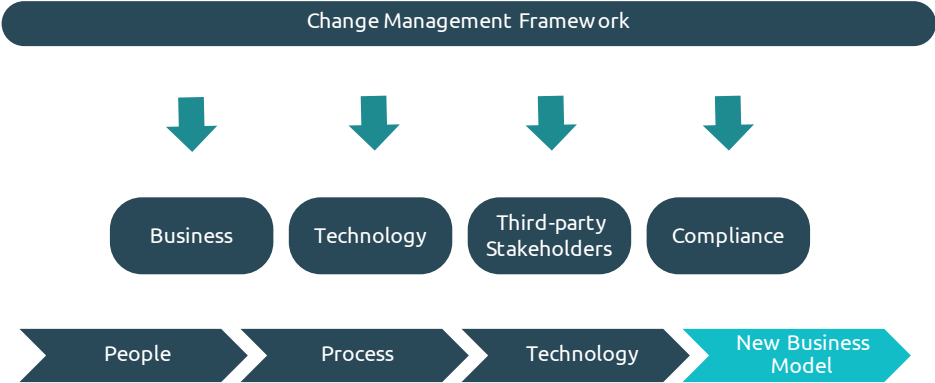
Technology leaders across the capital markets industry are tasked with maintaining, upgrading, and enhancing the dozens if not hundreds of solutions that keep the business going. The business aligns resources with those technology teams to provide business input. The technology team owns the technology architecture, i.e., the schematics that show how data applications stitch together. Good ones will show the data flow between those applications.

The business comes with organizational people charts and documented business processes. In most organizations today, it is unlikely that anyone has the data that shows the manual processes that occur to manipulate or enhance data between applications, the bottlenecks that occur and the actual time to complete each business process, and the error rate for each of the steps in the business process.

As firms embrace technology upgrades or business transformations, they need an innovative approach. Increased use of outsourcing and cloud providers expands the number of interested and impacted parties. Global regulatory mandates focused on systemic interdependencies, operational risk, business continuity planning (BCP), and more require a framework from which firms can implement, evaluate, and document business and operational process changes (Exhibit 1).

Transformations require a collaborative approach that ties together business, technology, business units upstream and downstream of the process, compliance, and often third-party providers. It requires those groups to be equal stakeholders and demands that they challenge the assumptions built into existing business processes. It requires effective tools to create collaborative communication across groups who have historically spoken different languages.

Exhibit 1: Change management framework



Source: Aite Novarica Group

TECHNOVISION: A FRAMEWORK TO OPERATIONALIZE TRANSFORMATION PROGRAMS

The TechnoVision framework (Exhibit 2) has been developed by Capgemini to help firms successfully navigate the technology and business landscape. It categorizes technology trends into six well-defined containers, offering a snapshot of innovation from different perspectives – ranging from user experience and collaboration, via data and process automation, all the way to infrastructure and applications. A seventh container offers a series of overarching design principles to apply to the trends in order to create successful transformational impact.

Extending from systems to people, the TechnoVision framework helps both technology practitioners and business stakeholders clearly understand and articulate the interdependencies of the elements that constitute the enterprise value chain. Each of the seven containers in the framework is a fundamental element in the chain; together, they provide a holistic view of how they interact to drive technology-business transformation.

Exhibit 2: TechnoVision framework



Source: Capgemini

Forgotten hygiene

In the digital-first era, companies are in a rush to embrace new technologies without ensuring their alignment with the business strategy. Technologists and business leaders are striving to be technology champions, largely by fitting digital technologies into the existing business landscape, thus sidelining the potential to discover new applications and business models in the transformation process. Here's a list of a few basic hygiene factors which can help firms in mastering the business transformation process:

- **Organizational agility:** Organizational agility is the ability of businesses to adapt to rapid changes in the market, and strategic course correction goes beyond Agile projects. The Agile methodology concerns itself with project management, but organizational agility has other elements in its scope, such as business processes, employee engagement, and culture and collaboration.
- **Product-aligned delivery:** Product-aligned delivery, as opposed to capability-aligned delivery, with end-to-end responsibility for teams, results in greater and faster value realization for businesses. It drives customer-centricity and innovation and is relatively easy to manoeuvre to align to business objectives.
- **Build vs. buy vs. partner:** The optimal choice significantly varies depending upon the organization's inherent strengths, the program's scope, availability, and cost of capabilities in the market. However, a thorough analysis is required before committing to avoid significant wastage of time, effort, and money.
- **Greenfield vs. brownfield:** This decision is especially important for transformation projects. Organizations with significant legacy systems generally choose brownfield with a coexistence period built into the project, whereas greenfield is preferable for separate programs like digital-only subsidiaries.
- **Open-source tools:** Security concerns exist, but we are now witnessing the emergence of enterprise-grade open-source tools and assets that provide necessary resilience levels for most industries. Financial institutions can consider such solutions for specific pointed applications within the organization.

Four significant initiatives to embrace a new collaborative approach

The "We Collaborate," "Thriving on Data," and "Process on the Fly" containers of the TechnoVision framework account for significant trends across the financial services industry that will require firms to embrace new collaborative approaches to business redesign:

- The promise of distributed ledger technology (DLT) as the great enabler
- The adoption of artificial intelligence (AI), machine learning (ML), and robotic process automation (RPA) for business process
- Operational resilience, regulatory mandate, and hybrid working environments
- Sell-side evaluates all risks to remain competitive.

The TechnoVision framework is backed by Fluid Workforce, an agile, adaptive workforce model that boosts organizational resilience and productivity, saves costs, and addresses the shortages of skilled resources.

The promise of DLT as the great enabler

Advancements in blockchain and DLT are transforming the financial markets by creating new ways of exchanging data, including forms of assets and payment methods to exchange these new and existing assets. The pillars of capital markets are issuance, trading, clearing, settlement, and asset servicing with a structured governance model.

The emergence and coexistence of assets established under the current setup, with a new form of financial asset representation on blockchain and DLT, create new operating models in parallel to the existing operating model for these financial assets. Business, operations, and technology need to transform to support these operating models - DLT and non-DLT. Three examples of areas of transformation follow:

- **Transformation efforts in the existing established market infrastructure:** The initiatives are pervasive and include trading, clearing, and settlement supporting a move towards T+1 settlement, central clearing, advancement in electronic trading in the fixed income market, increase in trading activities from retail participants, adoption of cloud technologies, outsourcing of trading activities, messaging interface standardization, and integration of existing technology platforms.

- **Blockchain/DLT for securities:** Blockchain and DLT platforms enable faster movement of assets between parties and support all the functions in the security life cycle, from issuance to servicing. Blockchain/DLT platforms have expanded the universe of asset representation by tokens or issuing assets natively to blockchain/DLT. The platforms promise to transform the time it takes to issue the securities and reduce risk, capital requirements, and bottlenecks in the current process. However, they also require change across the securities clearing and settlement process.
- **Blockchain/DLT for payment:** Blockchain and DLT have created alternative payment methods to exchange assets. The creation of stablecoins on the blockchain, backed by real currency and assets, has created a method of payment to exchange assets on the blockchain. Similarly, the retail central bank digital currency will enable individuals to maintain an account with the central bank directly and bypass the existing correspondent clearing bank model. Central banks will explore this massive undertaking in the coming years.

Aite-Novarica Group believes the combination of blockchain and DLT with the current assets will create multiple sub-operating models. Due to the silo representation of securities and payments on blockchain/DLT platforms, each sub-operating model would have its own market infrastructures and entities, such as exchanges, prime brokers, custody banks, service providers, technology applications, and regulatory governance models. Thus, the form of assets and payments to be exchanged could be all in DLT models or securities in DLT models and payments in FIAT currency.

Realizing the full benefit of the solutions would require all operating models to be interoperable. The pros and cons of adopting a private versus public blockchain created a hybrid blockchain. All these blockchains should be interoperable to meet the need for workflow customization, the volume of transactions to be processed, and a centralized or decentralized infrastructure. This interoperability among the blockchains and the various operating models would support the movement of assets from one model to another. The emergence of these multiple blockchains and operating models will continue to evolve in 2022 and beyond to create a sustainable financial market.

The adoption of AI, ML, and RPA for business process

Financial firms have been adopting advanced technologies such as AI/ML and RPA across business functions to automate and achieve efficiency in the current process and adopting modern technologies such as blockchain/DLT. More use cases are adopting these technologies across front-, middle-, and back-office functions in response to risk concerns and cost reduction strategies. Further driving the incursion of these advanced technologies into operations functions are global regulatory and industry initiatives such as the T+1 settlement, Basel III, Libor transition, and regulatory oversight over distributed ledger technologies.

AI/ML brings continuous learning in the automation process, while RPA involves emulating human actions interacting with systems, e.g., bots. These technologies can be adopted to streamline existing operations tasks or establish new operations functions:

- **AI for settlement fails:** Industry initiatives, such as the move to T+1 settlement underway in the U.S., require firms to have tighter windows to correct trade discrepancies. AI can help analyze fail patterns to predict future trade breaks before they become settlement fails. ML can theoretically fix discrepancies without human intervention.
- **Functions consuming massive data are ideal:** Functions that consume massive amounts of data, especially unstructured data, are ripe for AI/ML automation. Corporate actions processing is one such area, which depends on streams of non-standardized data that announce a million time-critical events per year globally.
- **RPA adopted in the back office:** RPA is being evaluated in back-office functions that require repetitive, manual processing. Such functions include completing tax forms, global tax reclamations, capturing and routing data from announcements and client instructions, and preparing customer notifications.

Initially, established manual business processes were identified as the ideal areas to adopt AI, ML, and RPA since the business process is known and there is greater confidence in integrating the technology solutions. It is also easier to adopt these technologies to establish new business processes or functions that do not carry the limitations observed while performing existing operations functions such as DLT/blockchain.

Business user adoption remains a key challenge for firms. Driving transparency into the actions and rationale behind processes automated by AI, RPA or ML is critical to gaining user buy-in and integrating the human element into improving automated processes.

Operational resilience, regulatory mandate, and hybrid working environments

Operational resilience encompasses the ability to deliver operations, including critical operations and core business lines, through disruption from any hazard. The financial market successfully responded to the COVID-19 pandemic, volatile market events such as the fall in GameStop stock in 2021, and the fall in bitcoin prices in 2022.

Operational resilience appeared as a top priority for regulators such as DORA in Europe, cloud concentrations risk from PRA & FATF, and industry participants following almost two years of the pandemic straining business processes to their limits.

In the last decade, industries have faced cybersecurity challenges (e.g., ransomware demands, data breaches), riots in major cities, climate events (e.g., severe flooding), terrorism, and supply-chain disruptions. These political, technological, economic, and regulatory factors require a full review, redesign, and documentation of people, processes, technology, and providers. Regulators are also providing more guidance, such as the five pillars under DORA: information and communications technology (ICT) risk management, digital operational resilience testing, ICT third-party risks, ICT-related mandatory incident reporting, and voluntary information sharing.

- **Lack of clear definitions leads to all activities in scope and the need for flexible approaches:** The activities that organizations must include in operational resiliency are unique to a firm. A range of potential hazards cannot be prevented; even the Basel Committee believes that a pragmatic, flexible approach to operational resilience can enhance a firm's ability to withstand, adapt to, and recover from potential hazards - thereby mitigating potentially severe adverse impacts.
- **Talent availability is the key to the new working model:** Technology advancements have made it possible for teams to collaborate easily, irrespective of firms/employees adopting in-person, hybrid, or remote approaches. Redesigning the business process around a geographically distributed workforce creates new opportunities and new challenges.
- **Regulators want to know more about operational resilience:** The quick business operations realignment at the start of the pandemic was nothing short of magic. Now the regulators want to know more about the magic and ensure that firms follow a structured approach to be resilient. Regulatory initiatives such as resolution planning by Federal Reserve in the U.S., the Basel Committee, and the FSB have approached operational

resiliency, attributing significance to systems availability, cybersecurity, and the full documentation of those operational resilience plans.

Firms are continuously refining the work model to remain competitive and resilient. Technology and relationships with third parties have simultaneously supported the continued delivery of products and services to customers and enabled financial institutions to continue operations during the pandemic. Still, the growing interdependence of all members of the financial ecosystem is leading to the treatment of BCP as an industry wide and c-suite priority to prevent process failures at one firm from becoming a systemic disruption.

Financial institutions undergoing large operational resiliency transformation initiatives cover business recovery, continuity planning, and documenting various process flows. The challenge is to ensure that no critical functions are left out to maximize the probability that the results in an actual crisis are close to those observed during testing. Institutions will manage operational risk by avoiding a full cloud migration of all applications and not relying on one cloud provider across the industry for a function.

Sell-side evaluates all risks to remain competitive

Volatile market conditions have led to increased trading activities, which has benefited firms with robust trading IT infrastructure and the scale to accommodate dramatic volume swings. However, volatility also means markets with greater swings and often wider bid-ask spreads, thereby increasing the risks and costs of trading and exposing firms that do not have the expertise to manage such realities.

Firms with diversified revenue sources, strong Agile technology foundations that provide scalability, and string risk governance functions are better able to respond to market volatility and economic conditions. The recent examples of crypto firms Voyager and Celsius, along with the losses caused by the fall of Archegos, support this view. Keeping pace with these changes and new regulations will require firms to invest aggressively in technology.

- **Adopt cloud technology:** Compute-heavy regulations, such as the Fundamental Review of the Trading Book, have motivated banks to adopt advanced technology. Cloud technology has benefited from these trends as the sell-side looks to shift more functions away from on-premises solutions and cloud-first strategies in favor of value-based cloud strategies. Cloud computing engines to enhance performance, reliability, and efficiency are driving adoption, but they also have cascading implications across business processes and the broader technology stack.

- **Adopt data-first strategy:** Data governance in the financial services industry is expected to get even more complex with mandates from new regulations, new business mergers and acquisitions, the development of various partnerships to exchange data, and the drive for digitalization during the COVID-19 pandemic. The road to digitalization, adoption of API for data monetization, and increase in the use of NLP/NLG for automating complex reporting process has increased the need to govern structured and unstructured data, leading to the creation of data mesh architecture and advancements in data visualization techniques.

- **Need for real-time risk management:** The availability of real-time or end-of-day views of cyber risk, vendor lock-in, FMI risks, data protection risk, and identity risks may be the most critical requirement emerging in a faster, more regulated environment. Making faster decisions, reducing capital requirements, and having complete views of current risk exposures become increasingly important in these dynamic markets.

High-computer market participants on trading desks and in risk management need to update their tech stacks to accommodate swaths of data tied to the market and regulatory practices. The end game will see effective flow data sharing of a continuous stream of real-time data for analysis.

Sell-side firms have been on the receiving end of swaths of regulations since the 2008 fiscal crisis. At that time, the near implosion of capital markets prompted rules tied to strengthening balance sheets and additional monitoring of risk and counter parties.

CONCLUSION

Regulation, technology evolution, and dynamic and evolving markets are the reality of the capital market industry. Technology has often struggled to keep up as clients add new and complex instruments to their portfolios, businesses struggle to adapt, and regulators continue to up the ante for the near future. Building a business culture, approach, and tools to support change that impacts people, processes, and technology is critical to every firm's effort to remain competitive.

ABOUT US

Aite-Novarica Group

Aite-Novarica Group is an advisory firm providing mission-critical insights on technology, regulations, strategy, and operations to hundreds of banks, insurers, payments providers, and investment firms - as well as the technology and service providers that support them. Comprising former senior technology, strategy, and operations executives as well as experienced researchers and consultants, our experts provide actionable advice to our client base, leveraging deep insights developed via our extensive network of clients and other industry contacts.

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Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 350,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2021 global revenues of €18 billion.

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