



Financial Markets Infrastructure Case for Change

An Exchange Perspective

October 2019

Executive summary

The digital future of exchange operations is imminent

The vast majority of executives in the securities industry have recognised that change is imminent for the operations function. A poll conducted at the most recent Securities Industry and Financial Markets Association (SIFMA) Operations Conference indicated that the majority of operations leaders believe their work will be transformed by emerging technologies within three to five years. The progressive leaders in this space have developed a holistic vision for the future of exchange operations and are adopting a modularised approach to execute on their vision. Many have started with proof of concepts for various tools and technology to gain familiarity, launching scaled transformation programs that encompass:

- Hiring of new skill sets (e.g., data scientists, bot engineers) and realigning existing “superstar” resources to a lean team to pilot transformation in a limited area
- Launching processes and data improvement initiatives to standardise the current operating environment to take advantage of new and traditional technologies
- Training their current operations workforce to be more data and technology savvy to create a workforce of the future
- Partnering with external providers or vendors to build out their knowledge base and establish an ecosystem network

These leaders have recognised that the critical success factor to any major transformational change is not technical abilities—it’s a mind-set change. They have embraced the fact that they are uniquely positioned to be change agents for their organisations. This modernisation journey will not be easy, but organisations that avoid the journey risk being displaced in the era of digital disruption. The digital future of exchange operations is imminent, a theme we will continue to demystify through the reimagining the future of capital markets series.



David Myers

Partner
Market Infrastructure Leader

Deloitte London

1 New Street Square
London, UK

T +44 20 7303 5609

M +44 7798 634 845

damyers@deloitte.co.uk



Robert Walley

Principal
Market Infrastructure Leader

Deloitte New York

30 Rockefeller Plaza
New York, USA

T +1 212 436 3212

M +1 917 9525 173

rwalley@deloitte.com

Introduction

The purpose of this document is to layout a vision and hypothesis for the future of exchanges and related components of the Financial Markets Infrastructure (FMI) ecosystem. For 25 years, trading, clearing and settlement have been primarily fully electronic where orders are electronically routed to an exchanges, validated, matched, and executed. With billions of orders and executions, technology enablement has been essential to the access to the traded markets, development of new products and services and available to a broad investor community.

Everyday we see advances on high frequency trading, co-location venues and direct market access for trading partners, we have not seen the same level advances in the non-trading functions of the exchanges. Everyday exchanges are searching for better margins, improved shareholder value and improved risk management, yet many operational functions remain dependent on spreadsheets, manually intensive operations and a limited control environment due dependency on desktop tools, email, end-user-computing tools (EUCTs).

This paper focuses on two primary areas of the future of exchanges: (a) digitised operations and controls and (b) new revenue streams. While there are many dimensions of the ecosystems that we can focus on, we believe the priority is that of the exchanges.

Over the course of this paper, we will layout a set of hypothetical areas of focus where exchanges begin their journey to move to a more efficient and effective, non-trading operational functions.

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Global securities exchange industry

The global securities exchange industry is being reshaped by business challenges, strategic choices and the new possibilities that emerging technologies offer

Financial pressure

- **Revenue pressures** resulting from regulatory mandates and restrictions (e.g., fee transparency for market data services, connectivity, etc.)
- **Tightening margins** resulting from increased competition (easy access to new exchanges and products) and lower switching costs driven by tech advancements

Legacy challenges

- Older and traditional exchanges facing stiffer competition from new nimble exchanges, further exacerbating **legacy operational inefficiencies** and **technology debt**

Regulatory scrutiny

- **Heightened regulatory activity globally** with focus on transparency, oversight and robust operational controls and risk management processes
- **Operational Resilience & risk under constant scrutiny** - spanning surveillance, recovery and ability to handle stressed markets



Concerns on cyber security

- Constant and evolving nature of **cyber security** threats, requiring laser focus on **protecting data** and **technology ecosystems**

Consolidation of exchanges

- Significant **consolidation** of exchanges **driven by technological, legal and competitive changes**, and the need to expand into new markets, products and service offerings

Evolving ecosystems

- Evolving **technological ecosystem** driven by integration of new capabilities such as FinTechs, **incorporation of emerging technologies** such as, **blockchain**, big data analytics, cloud, and AI / ML

Emerging revenue streams

- Exchanges are exploring alternate mechanisms for revenue generation. Avenues include **direct market access** platforms, **monetisation of data** and analytics, etc.

Defining the FMI landscape

In approaching the future of exchange's it is key to understand the ecosystems in which they operate and the interconnectivity related to these entities. All dimensions of the ecosystem have similar operational challenges and pressures



Exchange non-trading operations

In order to understand the future direction of exchanges, it is essential to decompose the organisations functionally and to address each area’s challenges and evaluate various solutions to the problem at hand



Digital transformation



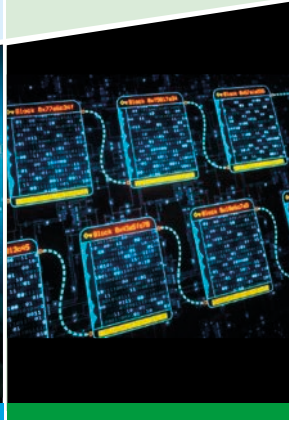
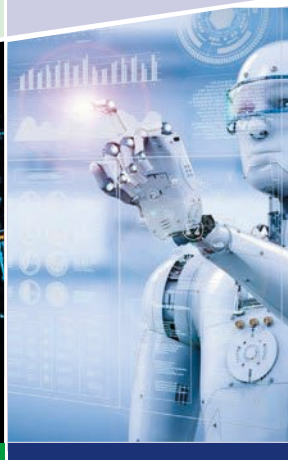
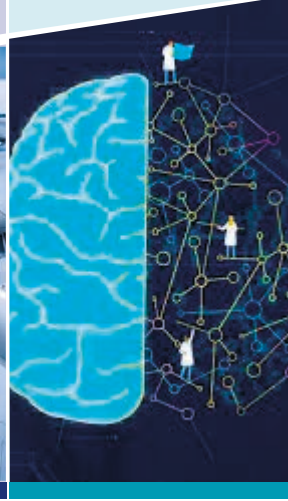


Over the past few years, some global exchanges have embarked on digital transformation journeys to reshape business models, redefine customer / employee experience, and strengthen compliance



Source: Deloitte Analysis

Digital transformation

These transformations are enabled by a portfolio of emerging technologies, making exchanges “future-ready” while managing business and cyber risk

Reimagined UX	Open APIs	Big Data and Analytics	Robotic Process Automation	Artificial Intelligence and Cognitive	Distributed Ledgers	Cloud Services
<ul style="list-style-type: none"> • Reimagined, state of the art user experience for end customers, members and employees • Any time, any device, any place access to key customer end user touchpoints 	<ul style="list-style-type: none"> • Modular architecture and reusable components at UX, domain and system levels • Seamless, yet controlled integration with exchanges core systems • Critical component to enable a “market place” of “plug and play” services 	<ul style="list-style-type: none"> • Enhanced insights (trading patterns, audit trail, market behavior, etc.) • Improved compliance through surveillance and fraud analytics • New revenue stream enabled by data monetisation opportunities 	<ul style="list-style-type: none"> • Increased operational productivity; ability to deploy staff on value added activities • Improved customer service enabled by increased processing accuracy and faster response times 	<ul style="list-style-type: none"> • Improved customer experience supported by digital virtual agents • Predictive operational risk controls • Increased resiliency through predictive maintenance of IT systems 	<ul style="list-style-type: none"> • Enables reduction of information asymmetry, and greater compliance • Enables transparency, trust and increased operational efficiency across the network 	<ul style="list-style-type: none"> • Reduced capex • Flexible consumption models • Unprecedented access to innovation and increased time to market 

Exchange of the future

The exchange of the future will be characterised by new revenue streams, streamlined operations and a symbiotic network of ecosystem partners made possible by emerging digital shifts

New age “retail like” customer experience

- Intuitive and seamless customer experience focused on E2E “retail-like” customer journeys
- Any-time, any-place, any device access for applicable customer interfaces and interactions

Enhanced and automated controls

- Automated operational controls supported by state-of-the-art dashboards that allow for proactive risk identification and mitigation

New and alternate revenue streams

- Monetisation from raw transactional feeds, curated historical data and analytical models
- Application hosting platform for Fintech and other ecosystem players
- Small Market exchange platform providing a suite of “soup to nuts” listing and secondary market services
- Direct Market Access targeting specific customer segments (e.g., targeting VCs to trade in small market stocks)



Focus on new age products

- Focus on listing, trading and settlement of digital products (e.g., ICOs)
- Focus on digitising physical assets through tokenisation to enable efficient transactions processing

Supported by next-generation scalable architecture

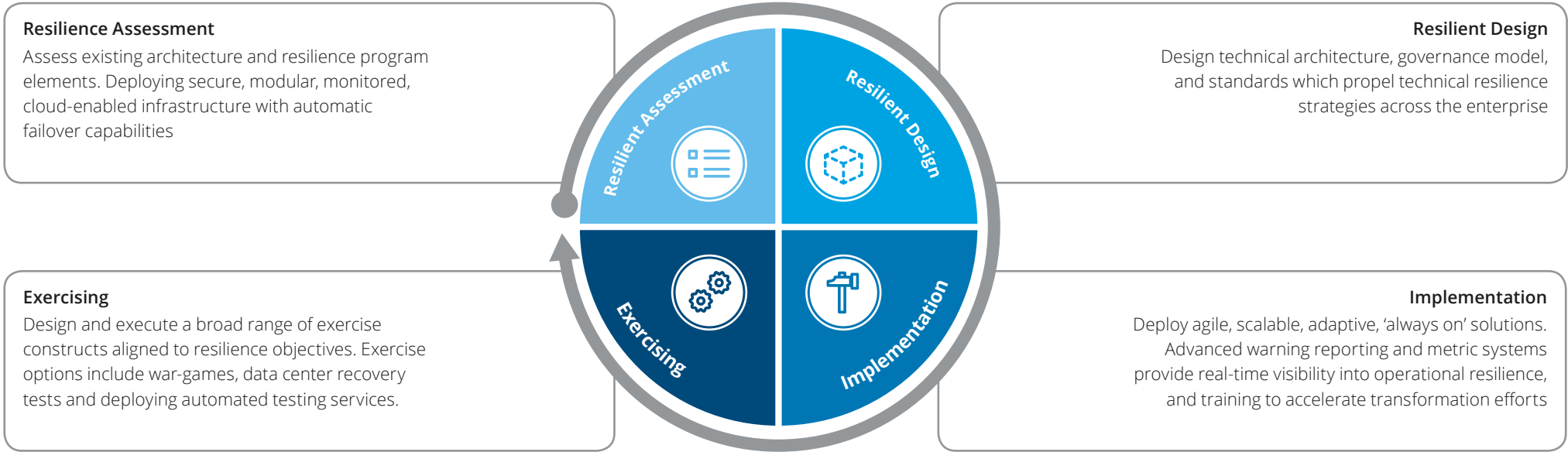
- An operating environment architected on next generation technology platform
- Systematic focus on innovation and reduction of technology debt
- Shift from legacy systems to platforms and ecosystems supported by emerging technologies

Run by an augmented workforce

- Human and digital labor working symbiotically performing core operations processing at scale and with precision
- Automated workflows, with exceptions based middle and back office processing

Successful FMIs design resilience in their technology

The world is more interconnected every day. Customers and business partners have come to expect technology to be ubiquitous and “always on”

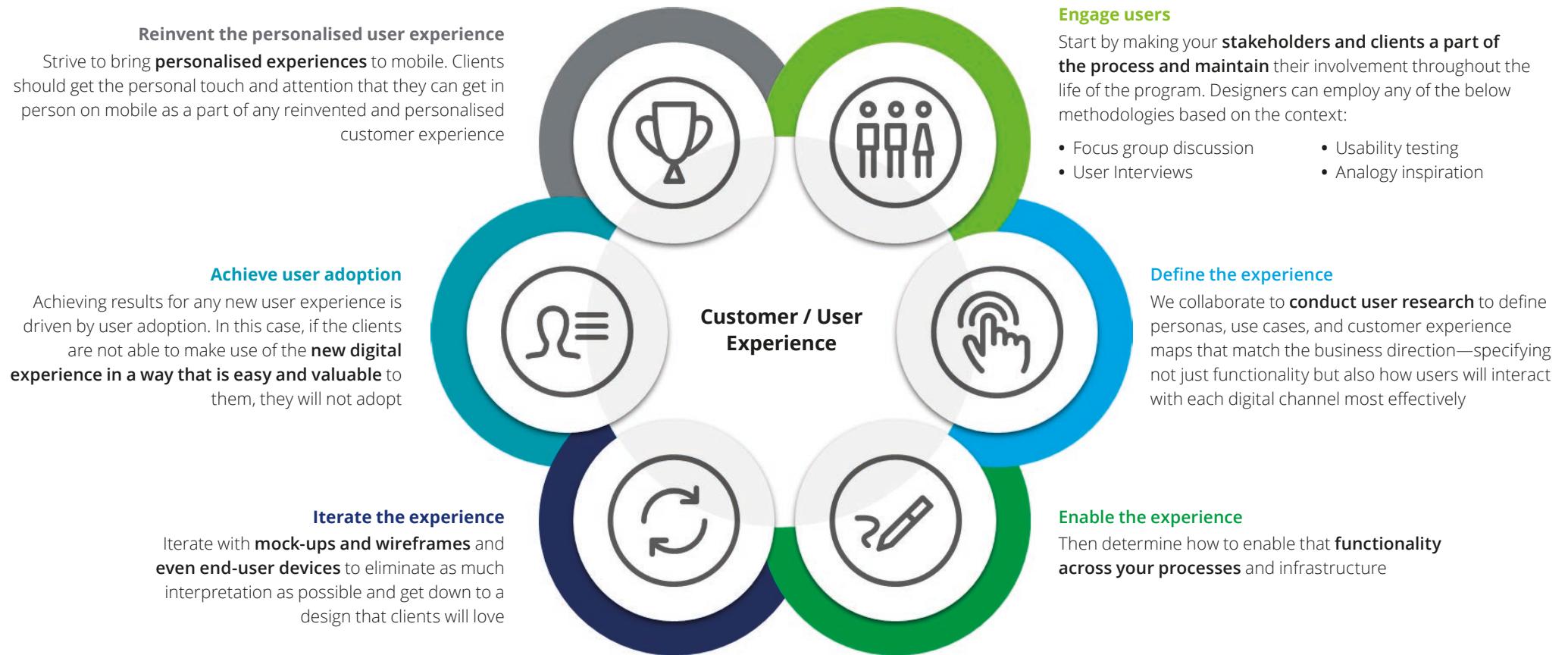


Benefits of technical resilience

- “Always on”**
Aligns all organisational elements to support zero downtime expectation
- Improved cyber risk posture**
Protection against evolving cyber threats
- Risk optimisation**
Aligns all organisational elements to support zero downtime expectation
- Cost savings**
Focus on scalable, rapidly-provisioned solutions over redundancy
- Improved speed to market**
Adaptability supports accelerated change management processes
- Increased flexibility**
Cloud-enabled solutions reduce dependence on physical data centers

How to win

To develop winning value propositions, FMIs must focus on some key design principles, placing customers / users at the epicenter



Revenue enhancement and operational enablement

A number of initiatives can enable FMIs to create revenue enhancing and streamlining opportunities



IPO listing and post listing compliance

Streamline listing and post listing operations through automated workflows, NLP and analytics



Securities lending & borrowing (SLB)

Improve SLB registration and transactions management through a distributed ledger platform and smart contracts



Data monetisation

Generate new revenue streams for Exchange by creating an ecosystem to monetise Exchange generated data and analytics



Small market storefront

Develop a next generation marketplace targeted at SME institutions to buy and sell end to end listing and post listing services



Open API enabled platform

Generate an ecosystem of services provided by Fintech providers enabled by an Open API platform



Shared KYC

Streamline end-to-end KYC specific operational processes through application of distributed ledgers and smart contracts and automated workflows



Trade surveillance

Monitor and proactively detect market manipulation and fraud by leveraging big data and next generation analytics capabilities



Continuous model validation

Model Risk Management, continuous monitoring and testing of financial models used to managed risk and exposure

Notes



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