## Editorial

# Start Thinking in Systems

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The financial industry is in the process of transformative change. Driven by changing customer needs, cost pressure, and regulatory change, this decade is about to bring a techno-logical transformation that will lead us from an old world, characterized by redundancy, fragmentation, and reconciliation require-ments, to a new world of seamless interaction between investors and issuers.

This transformation will be based on a number of technologies whose names have become so familiar that I hesitate to call them "new": artificial intelligence, machine learning, cloud, distributed ledger technology, blockchain. These tools will allow us not only to digitize our systems and processes, but ultimately also our products.

Being responsible for global operations at Clearstream, a leading provider of post-trade market infrastructure, one area of focus for me is the continuous improvement of our processes. Traditionally, our industry has been very operations-heavy and grapples with a lot of manual processes which take up resources and are vulnerable to human error. As cost pressure mounts, market participants are increasingly looking to new technologies for their potential to create operational efficiencies.

How do we make that work in practice? If we want the promise of automation and machine learning to materialize on a large scale, it is vital for us not to see individual use cases or technologies in a vacuum. While it is important to focus on concrete use cases that can bring real benefit, that alone is not enough. We need to create the right ecosystem for these solu-tions to work.

Achieving true technological transformation in post-trading operations is conditional on providing the right expertise, the right tech-nical infrastructure, and the right contractual framework. To be successful, you need to employ experienced data scientists and engi-neers who will be able to support your busi-ness in developing machine learning and automation solutions. Provide access to flexi-ble cloud services as the necessary technical foundation. Ensure that these services are available within a highly regulated environment with strict data protection requirements.

At Clearstream, we have been able to success-fully implement machine learning solutions in production that have resulted in tangible efficiency gains, e.g., by using machine learn-ing in SWIFT message routing to improve straight-through processing rates or by employing optical character recognition and natural language processing to classify and process incoming e-mail attachments in fund operations.

We have been able to do so because, being a part of Deutsche Börse Group, we are embedded in an excellent ecosystem with a clear focus on new technologies, which pro-vides centralized big data and automation tools and services as well as agile development with mixed business and IT teams. This is further supported by Deutsche Börse's multi-cloud strategy, which enables us to work in a regulated environment while making use of cloud services provided by trusted partners.

Harnessing the potential of automation and machine learning takes a holistic view that considers the interaction of technologies and the necessary legal and regulatory framework – ensuring a focus on stability and integrity at least as much as on efficiency. This holds true for all aspects of technological transfor-mation. It is a challenge we can only take on if we stop seeing processes and technologies in a vacuum and instead start thinking in systems.