Point of view | Application Services

Embrace data-first modernization

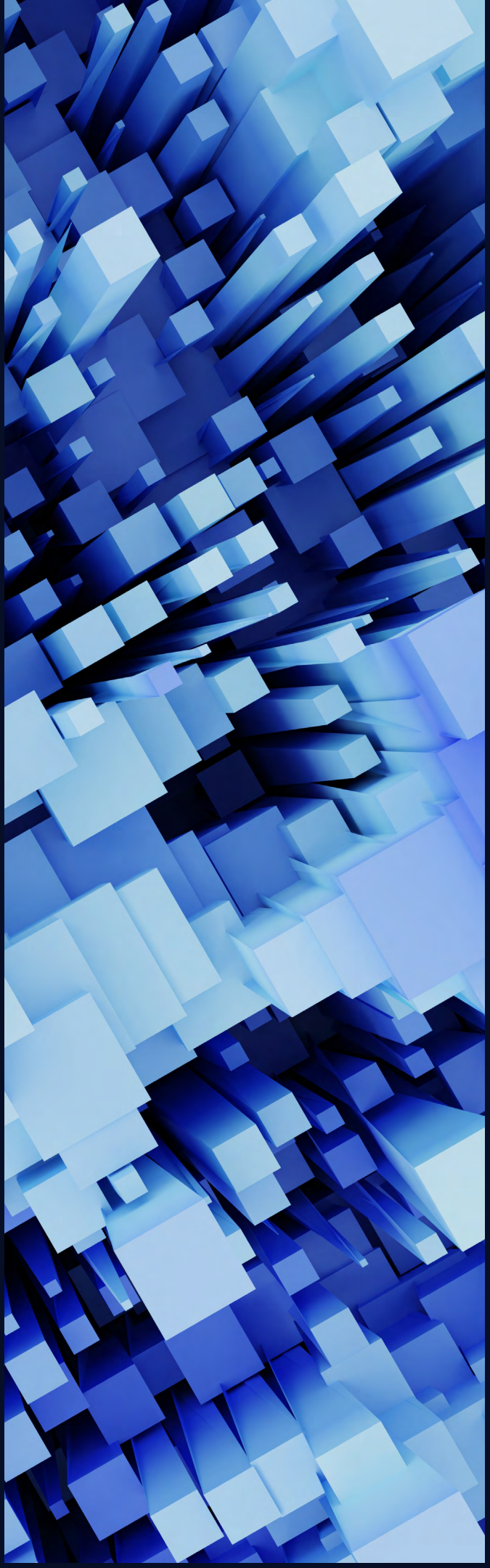
Strategies for a sustainable competitive edge

Navigating the shift to a data-driven business

In an era where digital technology reshapes every facet of our lives, consumer expectations have evolved rapidly. The need for on-demand, hyper-personalized and hyper-connected experiences hasn't merely emerged. It's become the new normal, redefining the way businesses interact with their customers and the market at large.

Today's consumers seek experiences that are distinctive, meaningful and memorable. Businesses must craft and deliver experiences that stand out to sustain a competitive advantage. This evolution calls for a profound change in how businesses strategize and operate: from basic data collection and use to drawing advanced insights from that data. And then using that data-driven approach to build products, deliver services and create defensible positions in the market.

The shift also heralds a new age where data is more than an asset; it's the core around which business strategies revolve. This paper explores emerging trends reshaping the data landscape and application architecture. It discusses the challenges businesses face in leveraging this shift and the strategic solutions required to thrive in a data-centric world. And it delves into what it means for an enterprise to be data-driven and how it unlocks innovation, customer engagement and market leadership.



The evolving data landscape

In response to the transformative shift in consumer expectations, several distinct trends have emerged to redefine the role of data in modern enterprises and set the stage for data-centric business strategies.

The data landscape has changed:

- Data architecture and analysis is now a core product focus and business value generator.
- The popularity of certain big data tools and enterprise software-as-a-service (SaaS) products has intensified the talent war.
- Successful client engagement is measurable and actionable through adequate observability.

Application architecture has also changed:

- Real-time use cases demand computational intensity and speed, neither of which can be traded off.
- Systems consist of loosely coupled, reusable and specialized services, enabling independent operation. Microservices are autonomous, self-sufficient and can be containerized for easy deployment and migration.
- Service-oriented architecture (SOA) is giving way to event-driven architecture (EDA), data streaming and application programming interfaces (APIs). Events are human-system or system-system interactions that result in important changes. EDA allows for real-time or near-real-time processing and analysis of these events and helps break application silos to create a more integrated ecosystem. More critically, it helps process large data volumes from a wide range of services and stores them efficiently for useful insights.

Characteristics of a data-driven enterprise

- Data is collected during every interaction, employed to optimize all processes and forms the foundation of every decision.
- Data is trustworthy and syndicated across the enterprise, based on parameters aligned with the business strategy.
- Data privacy, security and resiliency are templated and ultimately automated through robust pipelines.
- Data management is in place to provide real-time processing and delivery of data.
- Human-machine collaboration enables a culture of innovation and decision-making.
- Analytics is integrated into strategy and operations, and the right data is used to support the right business decisions through appropriate decision support systems. Markets acknowledge that data-driven enterprises provide unique customer experiences and make better business decisions.

There's also more data than ever with the rapid infusion of artificial intelligence (AI) technologies, including generative AI. "In 2023, an estimated 120 zettabytes of data will be created, expected to rise to 181 zettabytes by 2025."[1] Yet, only 46% of organizations express confidence in their data, and 43% acknowledge having inaccurate data.[2]

Businesses often struggle with leveraging and monetizing data, and even lack the necessary trust to act on data insights. The challenges are as follows:

- Organizations use predictive systems and AI-driven automation only sporadically, which results in lost value.
- Legacy technology and architecture constraints mean that only a fraction of data is processed and analyzed in real time, limiting the availability of insights.
- Traditional database tools are designed primarily for structured data at scale, but most of the generated data is unstructured or semi-structured.
- Data is often siloed, redundant or dormant, complicating its discovery, access and integration.
- Data governance, sharing, privacy and security mechanisms aren't yet mature enough to be scaled effectively.

To address these issues, businesses must develop an innovative approach to data management and use, including smart workflows and seamless interactions between humans and machines. Doing so will empower employees to use data to optimize nearly every aspect of their work.

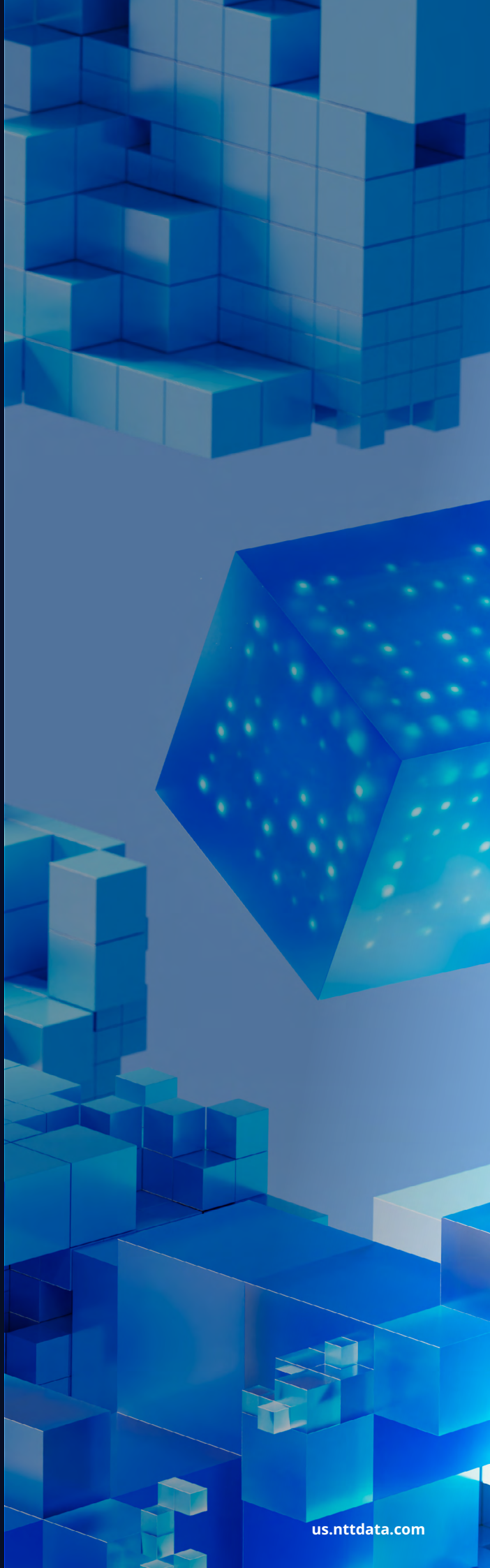
Data-first modernization: Enterprise transformation

Prioritizing data-focused modernization starts with an accurate initial enterprise data strategy. This critical step requires focusing on both an overarching goal and a set of well-orchestrated steps that deliver incremental value at each control point.

But establishing a data or analytics strategy isn't enough to become a data-driven enterprise. Businesses need a strategy that uses data as a lever to stay ahead of the competition. It shifts the focus of digital transformation to data-centric value creation. It's a cultural evolution in the way a business operates. A data-first modernization strategy defines the target state of a digital transformation as a set of digital capabilities aligned with the business strategy. It reconfigures the operating model, centralizes operations and re-organizes functionality. And it builds capabilities, enhances observability, reduces costs and gains efficiencies.

True transformation happens only when an organization learns how to optimally act on data and use that data to architect new processes.

Data-first modernization highlights opportunities where data from disparate systems can be used to pursue new business offerings or make business-critical systems more resilient to disruptions. It factors in data-driven business advantages that a technology modernization may not consider. Following this approach, organizations can prioritize key business use cases and the target state needed to enable them. Additionally, it provides adequate justification for modernization efforts by tying it directly to business benefits.



How data-first modernization transforms the enterprise

Data-first modernization leverages digital capabilities, using modern technologies and processes to achieve business objectives. It measures these capabilities, or digital use cases, with experience-level agreements (XLAs). Each digital use case can span multiple functions across the value chain.

Implementing these use cases breaks down functional silos and effectively integrates processes beyond their current boundaries to create a value network. It creates technology-enabled control systems and decision support systems that use data to inform decision-making, process optimization or activity sequencing.

This holistic cross-functional optimization creates end-to-end visibility, increasing organizational intelligence. Ultimately, each digital capability creates synergy across people, processes and technology, and optimizes value at each point of interaction.

The key to a successful modernization initiative is to have a clear vision, set business goals, identify and prioritize the targets, and build a realistic modernization plan. This approach will improve the digital maturity of the ecosystem across client, strategy, operations, technology and culture segments.

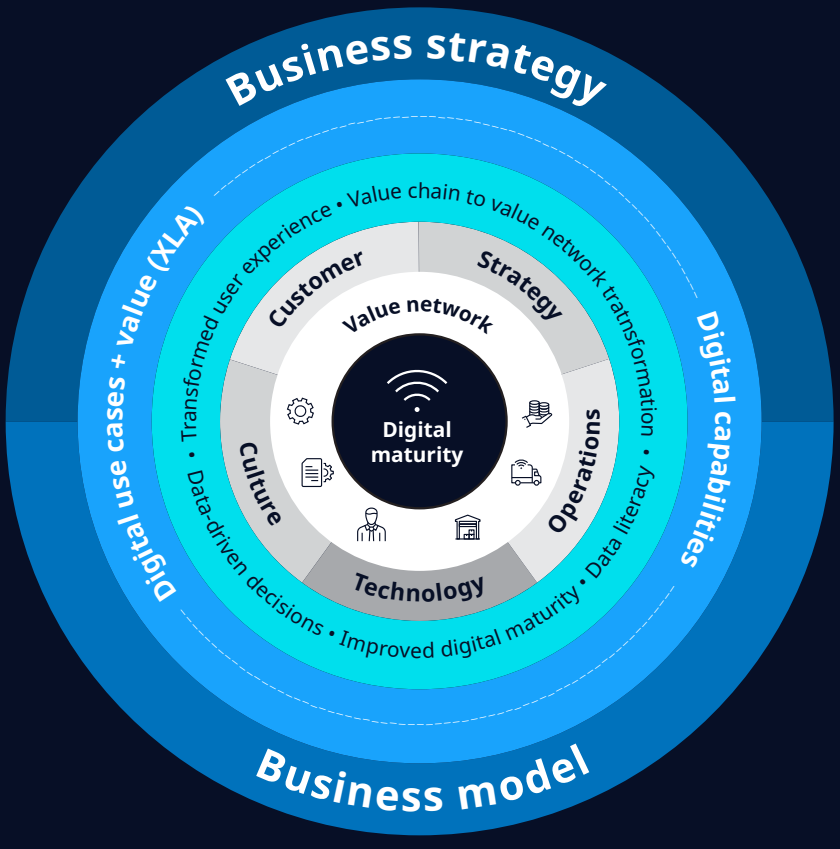


Figure 1: Digital use cases help break down silos and create a value network

A solid data-first modernization strategy includes:

- **A target state** defined in terms of digital use cases derived from the business model and corresponding XLAs for each persona involved in the use case.
- **A data management system** that can collect, cleanse, reconcile and integrate siloed, wrong, redundant, missing and good data.
- **Playbooks** that automate and orchestrate security and compliance procedures.
- **Analytics** that use quantitative and qualitative data from internal and external sources to influence decision-making processes.
- **A culture of data literacy** and self-service to make data-informed decisions.

Realizing the data-first modernization vision

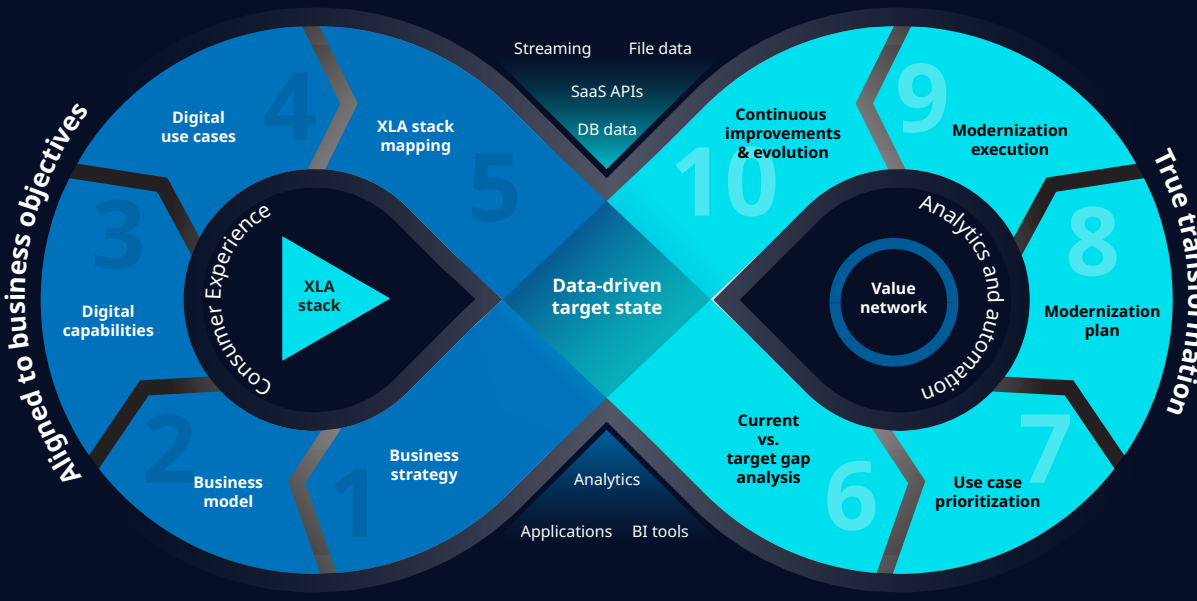


Figure 2: The continuous journey to data-first modernization

Step 1: Translate business goals

The digital revolution is propelling the world into "the experience economy," where businesses must measure their economic value (revenue, market share, productivity, innovation and client loyalty) against employee, supplier and customer experience. To build an integrated experience management strategy grounded in technology, start by translating the target business model into digital use cases that can be measured through XLAs, including key performance indicators (KPIs), operational or service metrics, service-level agreements (SLAs), experience indicators and sentiment. Each component helps build an XLA stack.

For example, when a customer orders a meal from a food delivery app, they expect on-time delivery and quality food. For the best customer experience, the app integrates a significant part of the application value chain, including menu choices, customer preferences, order receipt, payment processing, order tracking, operations (food processing and packaging), delivery and feedback.

XLAs in this example include customer satisfaction for both the delivery process and the quality of food as well as net promoter score (NPS) to determine if the customer would recommend this restaurant or menu items to others. The on-time delivery XLA is a function of many KPIs in the value chain, including perfect order rate, inventory accuracy, order lead time, cost per line, receiving cycle time and time in transit. It isn't necessary for every digital use case to have an XLA. However, a meaningfully constructed use case would generally have measures that contribute to other operational (use case level) or strategic (capability level) XLAs.

This process helps determine your goals and desired target state, providing clarity on what the business wants to measure across its value chain. Note that these XLA stacks make up the information that generates value for the business. The process of determining the digital capabilities, use cases and XLAs requires the involvement of all relevant stakeholders and teams across the enterprise.

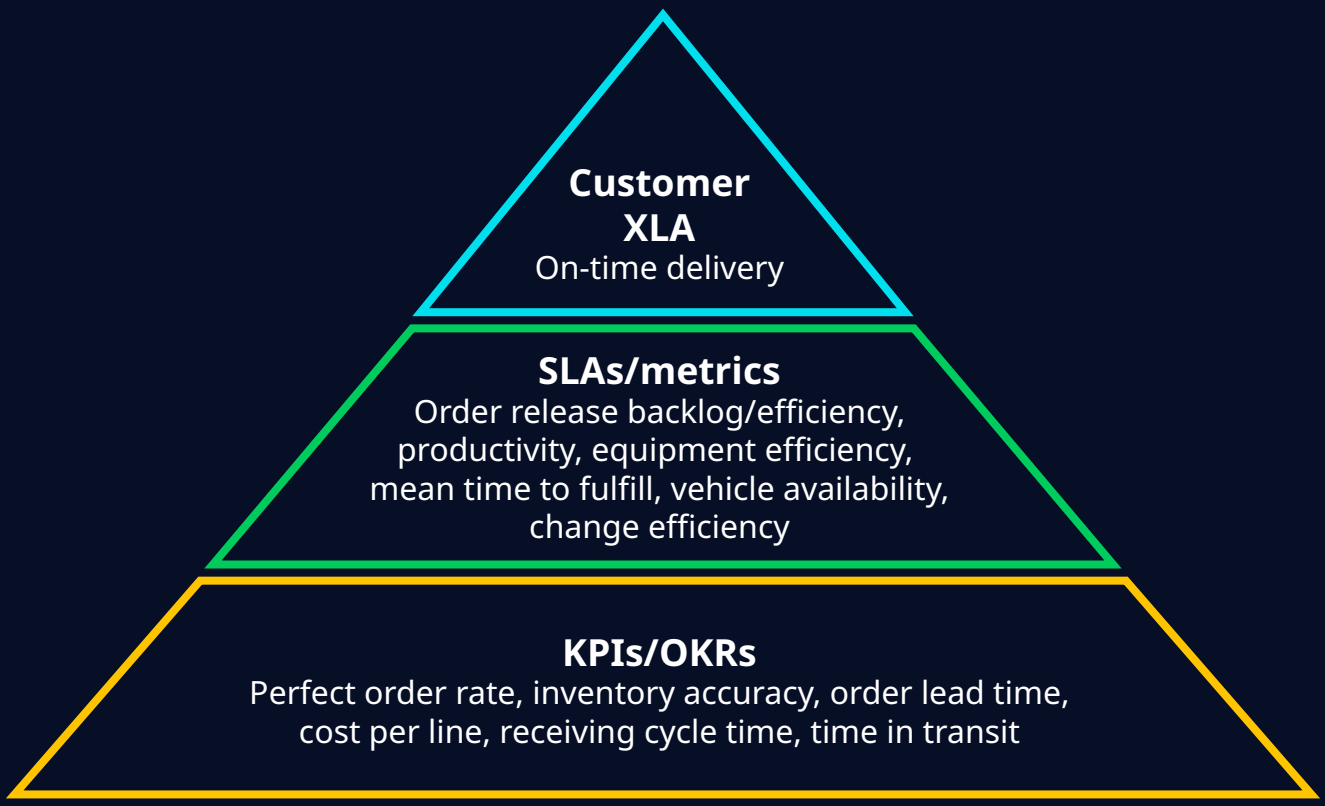
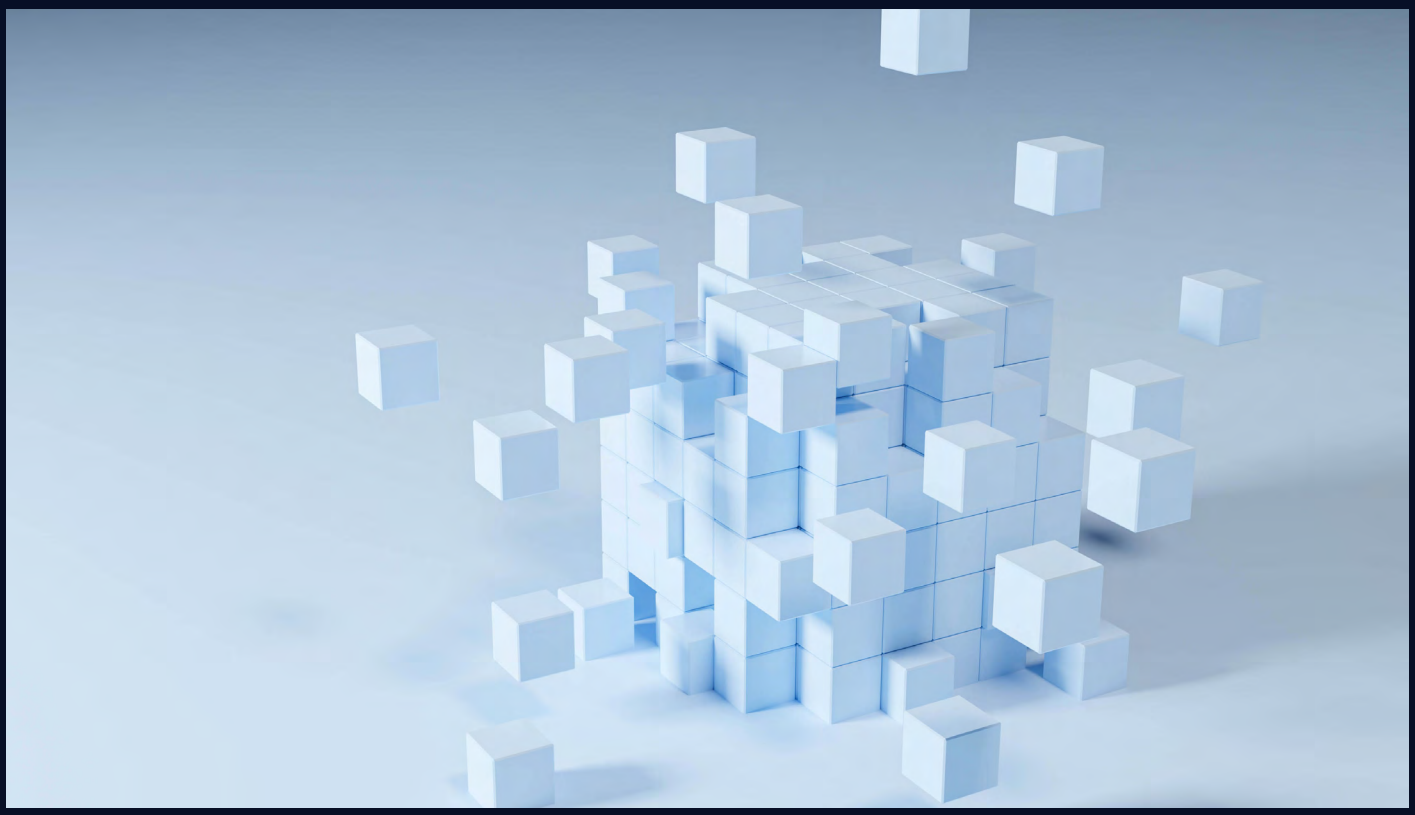


Figure 3: Building the XLA stack

Step 2: Set up incremental change

The next step is to determine what transformation needs to happen to enable these digital use cases. Doing so enables the business to respond to XLAs and detect anomalies — in real time. For this process to be successful, the information it generates must be reliable and the activities, for the most part, automated. Take the following steps:

1. Map each digital use case to the ideal functions/processes/applications in the value chain and corresponding XLA stack to the ideal single source of truth for the data that's required to measure it. Such functions/processes/applications or data may not exist currently and will need to be created. This essentially defines the target state.
2. Compare the above with the current state and determine what modernization needs to happen to bridge the gaps across both applications and data. Also determine where each data element should remain — at the edge or in the cloud. Make appropriate accommodations for robust governance, maturity, security, privacy and data management.
3. Determine what's critical, and then prioritize and sequence the modernization based on business needs and impact.
4. Build the modernization plan using an agile approach that delivers incremental business value at each release.
5. This approach informs an incremental approach to data-first modernization that's closely aligned with business needs in terms of scope, priority and scale. It helps organizations keep the proverbial "eye on the ball" by tracking every segment of the journey to business outcomes. It also gives the business the best chance of success in the journey to be a data-driven enterprise.



Step 3: Keep innovating and improving

The story doesn't end here. Becoming a data-driven enterprise is a continuous journey, not a one-time achievement. Data-driven enterprises are characterized by the ability to measure XLAs consistently and respond to anomalies. To adapt swiftly to disruptions. And to anticipate future trends yet make informed, data-driven decisions. In this dynamic environment, your systems need to automatically adjust and correct course, providing ongoing alignment with strategic objectives.

For example:

- You might have a backlog that you previously de-scoped — features, products or capabilities that'll enable you to push market extensions.
- Further improvements may be necessary to calibrate and benchmark your XLAs and address any anomalies or opportunities for transformation.
- You want to make the user experience even better.
- The analytics you created tells you there's a possible demand in the market for a new product or service.

Remember: "Experience" is human-centric and doesn't have a constant baseline. Expectations and perceptions will change over time and need to be addressed quickly. What's working now won't work later. Cultural shifts will also need to be enabled and reinforced from time-to-time to help your workforce adapt to evolving business model changes.

Technologies will evolve or converge over time, too. This raises two issues: Your systems and data will need to be compatible with newer technologies, and effort is needed to evaluate and adapt to the changes it will take to make sure your technology stays up to date.

And don't forget: Your competitors have caught up and are accelerating, too. You need to stay ahead of the curve.

Conclusion

The journey to becoming a truly data-driven enterprise is complex yet imperative. It's a path characterized by continuous adaptation, innovation and strategic foresight. Businesses that take the lead in implementing data-first modernization strategies will stay ahead of the curve — and redefine it. They'll set new benchmarks in customer experience, operational efficiency and market leadership.

About the author

Krishnakumar PK,
NTT DATA, Senior Specialist Advisor, Digital Application Services

Krishnakumar PK has close to 30 years' experience in the software industry, having played global leadership roles across product and application services. He blends a passion for technology and innovation. Krishnakumar has helped clients across multiple industries successfully deliver on their digital transformation initiatives.

Let's get started

Transformation doesn't need to be a solitary endeavor. It requires collaboration, expert guidance and robust partnerships. At NTT DATA, we're committed to being the compass that guides enterprises through this transformative journey. Our capabilities, intellectual property and partnerships are geared to empower businesses in navigating the intricacies of digital transformation.

Contact **Krishnakumar PK** or visit Application Services and let us help you measure your progress and advise you on the path ahead. The era of data-driven excellence awaits.

Sources:

1. https://www.statista.com/statistics/871513/worldwide-data-created/
2. NTT DATA. "Innovation Index: Shifting from Disruption to Growth." December 2022.

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