NTT DaTa

A guide for D&I-Driven organizations

WHITEPAPER

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Executive Summary

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A framework for building D&I-driven organizations

The entire global marketplace has become more unpredictable. The impact of digitization is making many existing organizational models out of date, with an urgent need to rethink corporate structures, ecosystem relationships and how to acquire and manage talent. External events are driving business leaders to look for new ways to innovate at speed, reduce and share risk, while establishing stronger competitive positioning, based on differentiation, unique service offers and much faster response- and sensitivity- to the specific individual needs of millions of customers.

In this increasingly competitive business environment, it is very clear that tomorrow's winners- in any and all sectors, markets and geographies- will be the enterprises that move fast and confidently to accelerate their innovation processes and adoption of new strategies and technologies. They will need to become expert at building high levels of trust with partners, employees and customers; to attract and nurture the very best talent; extend data literacy right across their organizations; while maximizing the potential of AI and using the cloud for more effective collaboration and joint ecosystem development.

Put simply, the enterprises with a long-term sustainable future will be those that focus strongly, right there and now, on confident use of Data and Artificial Intelligence as a lever for transformation. To help visionary companies deliver on their future vision, NTT DATA has developed its own Data & Intelligence framework, aimed at helping clients move with confidence and at low risk, step by step through a clear process until their organization is truly Data & Intelligence driven.

The framework gathers all the expertise and know-how developed by NTT DATA across its global operations, providing an end-to-end multidisciplinary vision that includes all business areas. Business Value, Responsible Governance, Core Tech and Next Gen Operations, Ecosystem and Innovation and Culture and Change management are the different domains that compose the framework and that allow companies to become a Data & Intelligence driven organization.

Before going into detail about how to do this, we want to highlight why AI is of growing importance across every industry and sector.

CHAPTER 1

What do we really mean by D&I?

All of us, in every aspect of our lives, are increasingly surrounded by services and applications powered by Data & Artificial Intelligence algorithms, which learn and make patterns from vast amounts of complex data, collected from individuals' behavior, industry performance and sector developments. These D&I-driven solutions permeate every market and sector, from manufacturing to tourism, healthcare to smart cities and beyond, transforming processes, boosting user experiences and enhancing human decision-making in innovative ways.

For example, at NTT DATA we are already harnessing D&I-driven solutions to revolutionize these and many other markets:

Healthcare, for such applications as diagnosis, or in strategizing some surgical interventions. In these cases, D&I has often proved to be highly effective, often faster, and more accurate than even an expert human professional.

Today, we are using AI in the Connected Patient, which uses non-invasive monitoring techniques based on wearable technology, and in Adlife, a European Horizon 2020 project that will use machine learning and Federated learning techniques to allow access to patient data by authorized clinicians, while safeguarding their privacy.

Another example is the use of autonomous vehicles, where D&I is at the heart of the systems used to manage the interactions of autonomous and human-driven vehicles on the same road, while also dealing with other road users (cyclists, pedestrians, eScooter users…) and unexpected hazards. This example clearly shows both the vital importance of D&I and its requirement for close and transparent management. It is inconceivable that we could implement autonomous vehicles in what can truly be designated as a "chaotic" environment (city streets) without increasingly effective AI

AI is increasingly important in fashion and other retail applications, aiming to enhance customer experience, differentiate between brands and boost sales conversion. AI and Cloud combined deliver more personalized recommendations and options, based on growing knowledge of the customer, and a far richer experience,

including search by computer vision, in which product details are retrieved from an image alone.

We have to remember that AI-based systems are not and never will be human. They need to be given ethical parameters, trained to make complex judgments (whose life to save in an emergency?) and supervised to ensure that they replicate the actions of a responsible human as closely as possible. Experiments and proofs of concept have shown there are ongoing issues in all these areas, which is why the role of ethics, transparency, and trust are all so important in the development of D&I and AI solutions.

In this paper, we look at the ways in which D&I can be successfully implemented within large organizations, the kind of structures needed to maximize the potential of these new technologies, and the vital role of culture in helping an enterprise and its people ready to benefit and extract maximum value.

It all begins with Data & Intelligence

Why is Data & Intelligence so important?

There has never been a time when informed, confident decision-making was more important to every kind of business. There has also never been a time when sound decision-making has been more difficult.

In every industry or sector, rapid digitization is opening new opportunities, leading to a potential competitive advantage for early adopters. Yet those who make poor decisions or hesitate over their future strategy for too long also face the prospect of being left behind. Businesses need to innovate at speed, and that places even more pressure on good decision-making, greater corporate agility and access to the right talent.

To succeed in this new environment, businesses must build a different mindset towards Data & Intelligence and develop a business strategy that revolves around D&I technologies. Even such well-established concepts as "Big Data Analytics" now seem old-fashioned and are very much off the pace in a world where advanced technology is advancing at unprecedented speed. The most successful organizations will therefore focus on:

- A thorough understanding of how their business objectives connect with Data & Intelligence strategies, ensuring that D&I both informs decision-making at the highest level and drives clear business priorities.

- Accelerated machine learning, enabling continuous development and industrialization of algorithms through MLOps- which we explain in detail later in this paper. This approach enables greater automation, while leading to scalable business value and market impact, and a directed, strategic move towards true D&I.

- A richer partner ecosystem, interacting and interoperating with Hyperscalers and their partners by building on and extending their market-ready solutions and collaborative platforms to commoditize innovations and accelerate new service developments.

NTT DATA strongly believes that businesses in every sector need to use D&I technologies effectively across their entire organization to unlock and deliver long-term value. This is no longer a "nice to have" but a fundamental and essential element within their business strategies. To make this change happen, organizations need to deal with four major challenges. In particular, business leaders need to understand that corporate culture will prove to be as important as technology and organization in enabling successful transformation.

Trust. Most analytical engines and AI algorithms are considered to be "black boxes", because humans cannot scrutinize or fully understand the decision-making processes they follow in order to deliver their outcomes. This makes it hard to trust or to invest in them.

We believe that AI and trust have to go hand-in-hand, building confidence and ensuring buy-in from all stakeholders: Partners, end-user customers and suppliers. With higher levels of trust, based on transparency, stakeholders will feel comfortable in following the steps that constitute the algorithm's automated decision process.

They will do this - and they will ONLY do this - once they recognize that AI outcomes are trustworthy and compliant with all prevailing regulations.

Data Literacy. A further key issue for every ambitious enterprise today is talent management and data culture: how to find, attract, engage and retain the right people. Even today, despite the clear and obvious urgency of this issue, too many businesses just talk about disruptive technologies without building a robust D&I-driven culture across their organization.

Enterprises cannot afford to have their creative employees, natural fast-movers and innovators slowed down or become frustrated because their organization does not yet understand D&I.

Building a D&I culture that permeates the entire organization is the non-negotiable first step towards D&I leadership.

AI Everywhere Enterprises should ensure a consistent D&I mindset everywhere: it is very risky to permit different departments to have their own individual understanding of D&I. No enterprise can succeed if different departments build their own separate cultures and strategies. It will take too long to negotiate the interfaces between them, which undermines the logic of a D&I culture in the first place. Duplicating work, repeating what has already been done somewhere else in the organization not only wastes resources: it also greatly increases risk- and businesses today simply can't afford that.

Ideas can come from anywhere- the more the better- but they must be synthesized and harmonized into a single D&I environment.

Leverage Cloud. We believe half of all major enterprises will have up to 80% of their data loads in the cloud by 2025, making it highly efficient to innovate via collaborative development platforms. Innovation can be accelerated by cutting out time spent on reinvention, "translation" across platforms, and relearning old methods. Many innovations will rapidly become commodities in the Cloud, enabling collaborative teams to start each new engagement from a more and more advanced technological position.

Those enterprises able to use collaboration in the Cloud effectively will start to move faster than their more conservative competitors. That will become a killer competitive advantage.

To summarize: Data & Intelligence is not a separate discipline accessed and used only by specialist departments. Data & Intelligence must permeate all areas, departments and teams, leading to a need for democratized D&I literacy, a closer alignment between business units, and the ability to collaborate creatively via Cloud.

So where to begin?

CHAPTER 3
How do you build a Data and Intelligence Organization?

First, Data must be democratized through greater transparency, shared ownership and greater access by everyone across the organization. Second, we need to combine rapid training of algorithms through MLOps with ethical, non-biased, constantly scrutinized operations in order to achieve true AI industrialization, leading to business disruption.

These two principles are the foundation of everything else we wish to achieve in building a true Data & Intelligence-powered organization.

Data Democratization is the process by which an organization opens access to D&I and leverages cutting-edge analytical tools more widely. This expands access by users across the organization to data from Big Data platforms, boosting their tech skills, data literacy and confidence when using advanced, augmented analytical tools as a natural part of their daily work. This will require an investment in knowledge acquisition, specialized training, and effective leadership.
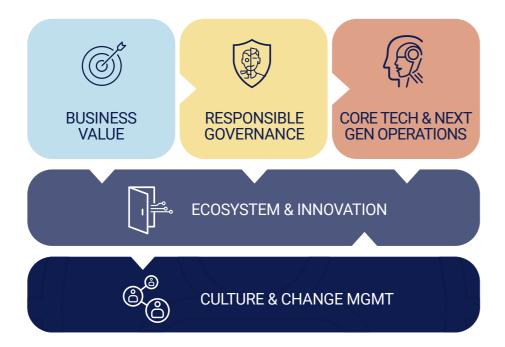
Business Disruption through AI is the goal toward which all business leaders are heading, because Data Automation and AI industrialization can be transformational in accelerating decision-making processes while reducing operational risk and increasing efficiency. Effective use of AI, however, also requires a deep understanding of AI ethics, mitigation of algorithmic bias and compliance with regulations and policies. As a result, organizations will need to implement the necessary tools and methods to enable constant monitoring, scrutiny, and potential decommissioning.

Our next task is to accurately define the structures, processes and methods to ensure that D&I delivers competitive advantage while remaining trustworthy, compliant, and scalable.

3.1 Building a D&I Framework

Our Data and Intelligence Framework proposition is a combination of strategic design, responsible and trustworthy mindset, application of our broad expertise, organizational and operational best practices, Cloud capabilities and so much more. To maximize D&I potential, therefore, NTT DATA's framework is structured in 5 natural blocks:

BUSINESS VALUE · RESPONSIBLE GOVERNANCE · CORE TECH & NEXT GEN OPERATIONS · ECOSYSTEM & INNOVATION · CULTURE & CHANGE MGMT

1. **Business value.** Design an ethical D&I strategy based on strategic business objectives, including growth, profit, innovation and sustainability, identifying the D&I initiatives that generate the most business value as we create a D&I-driven organization.

2. **Responsible governance.** This must be capable of orchestrating every stakeholder, data, AI model and tools, while achieving efficiency in its operations. The goal is to ensure common standards and practices, avoid duplication and, by doing so, extract maximum value from D&I.

3. **Core Technology and Next Generation operations.** Leverage new technologies and trends to enhance D&I capabilities, then scaling them to the required level to deliver competitive advantage while, fulfilling the business' strategic objectives.

4. **Innovation ecosystem.** Connect the business to innovations in the market that are relevant, challenging, advanced and creative, enabling fast access to a new ecosystem of partners for enabling a wide spread of differentiated, collaborative developments.

5. **Culture and Change Management.** We now need to define, develop and spread a responsible, D&I-driven culture that permeates the entire organization. This is the key to ensuring that every stakeholder within the organization is fully engaged in the process of change, takes advantage of new solutions, while boosting the new processes to make effective change happen.

3.2 The Framework explained

BUSINESS VALUE

The ultimate driver for all new techniques and methods is to improve the business value of the organization concerned, so ensuring that all actions taken help to make the business more competitive and efficient is therefore a non-negotiable first requirement. We achieve these goals by addressing these three key action areas:

Ethics & Compliance. Identify the principles, regulations and standards that guide definition of an ethical D&I strategy, always remaining compliant with constantly-evolving regulations when developing responsible and trustworthy D&I. This approach also guarantees protection of our rights and freedoms, while addressing the different risks involved in each phase of the lifecycle, thus providing the necessary context for all future-proof developments of D&I.

Data & AI Use Cases. Enterprises need a systematic method and set of processes for envisioning and defining new D&I services, solutions, value propositions and business models, while delivering improvement to existing offers: this is the key to generating added value in the market. This approach begins by aligning the enterprise's strategic objectives, tackling the challenges and needs of the business units, while creating a prioritized portfolio of use cases that can be actioned within a reasonable time frame.

Solution Design. Solutions should reflect client needs, market status and competitive analysis, while being deliverable, based on the company's current capacity. The design process will explore a concept's economic and technical viability, creating and training the model, and developing a prototype delivering a human-centered experience. Solutions developed in this way are then subject to continuous improvement based on market feedback.

RESPONSIBLE GOVERNANCE

Complexity is an inherent part of this entire landscape, and so is collaborative working. Robust and adaptable governance, therefore, is a fundamental requirement for successful operations. It requires a strong:

Organizational Model. Every business needs to objectively review whether roles and responsibilities are clearly identified, robust reporting lines are defined and collaboration models are in place to optimize operations in the faster-moving, less predictable marketplace now emerging.

Operating Model. The same level of fresh thinking is needed at the day-to-day operational level. D&I-powered organization must assess the most appropriate strategy in terms of the operating model to ensure alignment between D&I initiatives and strategic objectives. They do this by developing the proper processes, policies and best practices required for an effective and governed operational model.

AI Model Governance. This must be designed to understand, stabilize and effectively manage operations throughout the lifecycle of AI-related initiatives. The goal is to ensure that all AI models are properly governed, so that they do not deviate from agreed standards and best practices, and that algorithms are properly monitored and updated. The ultimate goal is therefore to automate this lifecycle with MLOps.

CORE TECH & NEXT GEN OPERATIONS

Although we are clear that organizational and ethical concerns must be given the highest priority in D&I strategy, we also understand that technology enablement is the key to success. Strategies and methods for adoption and management of new technologies must therefore include:

Intelligent Platform. To profit fully from next-generation technologies (AI, Immersive Interfaces, hyperautomation, smart systems...) while enabling full exploitation of the data, the organization should design, develop and deploy an intelligent platform.

Data Products & Markets. To maximize the value of data, organizations need to democratize it, sharing data across all teams within the enterprise, and then supplementing it with acquisition of external data. This will allow them to explore and develop new concepts, options, dimensions and uses that have never been implemented before.

Green Cloud Strategy. Most enterprises have a cloud strategy by now but executing it can take time and be costly. Our green Cloud strategy ensures that business activities on Cloud, including market analysis and migration plan, follow sustainability criteria, environmental improvements and energy saving policies.

Data & MLOps. To implement AI at scale across complex organizations requires process automation throughout the AI lifecycle, together with hands-on management and administration. MLOps is used to guarantee quality, stability, reliability and effective governance of models.

ECOSYSTEM & INNOVATION

In markets that are being transformed by automated, industrialized and scalable D&I-driven capabilities, organizations must be able to leverage market-ready, commoditized developments from the partner ecosystem to speed up innovation. In this environment, enterprises will require:

D&I Observatory. This enables the business to learn about and understand the latest, emerging market trends and technology developments as the key to identifying best solutions and most innovative, relevant services. The ultimate goal of the Observatory is to identify business value, then build and enhance technical excellence, while developing the capabilities needed to make the best possible use of technology.

Alliances & Partnerships. This new D&I-driven environment fosters more effective and creative use of collaborative agreements and alliances with suppliers, hyperscalers, consortiums and niche companies. It is essential to understand, analyze and adapt market-ready developed services within this ecosystem, accelerating time-to-market and de-risking new service offerings. This approach will prove to be a major source of competitive advantage.

Prototyping Lab. The NTT DATA Rapid Prototyping Studio support building disruptive AI prototypes (PoCs), turning D&I initiatives into marketable use cases. The studio includes a controlled experimentation environment where designs and products can be refined and validated in just a few iterations, enabling companies to focus only on those designs likely to be successful.

TALENT AND CHANGE MNGT

The transformation we propose requires collective will and coordinated effort across the entire organization. The need for new attitudes and culture runs deep and includes:

Ethics & Literacy. We have already seen that ethics in Data and Intelligence literacy are essential requirements for long-lasting success. These qualities must permeate through the entire organization, at all levels, by developing literacy practices and initiatives that focus on boosting internal talent and analytical capabilities through D&I training programs and awareness workshops, which support the further spreading of D&I Ethics knowledge.
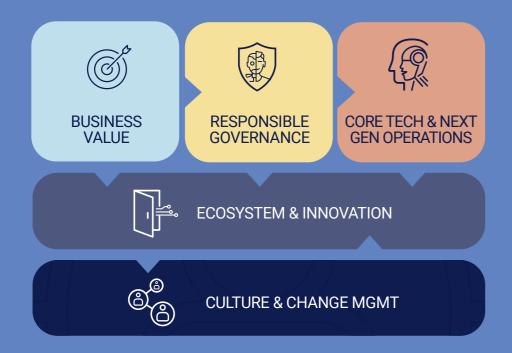
Talent Management. Organizations are constantly searching for the best talent both in-house and across the market. Businesses that want to maximize the potential of AI, cloud and data have to rethink their strategy and mindset regarding the identification of talent, recruitment techniques, engagement practices, and management operations to help their top D&I talent grow and develop.

Green Data Mindset. It is essential to build a more sustainable approach to D&I, which is achieved by making data storage and harvesting "greener" (through energy efficiency, avoiding duplication, selecting green infrastructure); working with infrastructure partners to develop radical new ways of doing business, with a strong focus on sustainability; and by making sure that policies and guidelines for D&I are fully compatible with the UN's Sustainable Development Goals. Of course, this approach will also encourage environmentally responsible behavior and methods across the whole organization.

Change Management. To carry out the changes that build a D&I-driven organization, while encouraging employees to keep promoting the change, these processes must be properly executed and carefully managed. This will foster a new culture of innovation, powered by D&I transformation, permeating all departments and levels of the business.

BUSINESS VALUE
- Ethics Compliance
- Data & AI Use Cases
- Solutions Design

RESPONSIBLE GOVERNANCE
- Organizational Model
- Operating Model
- AI Model Governance

CORE TECH & NEXT GEN OPERATIONS
- Intelligent Platform
- Data Products & Markets
- Green Cloud Strategy
- Data & MLOps

ECOSYSTEM & INNOVATION
- D&I Observatory
- Alliances & Partnerships
- Prototyping Lab

CULTURE & CHANGE MGMT.
- Ethics & Literacy
- Talent Mgmt.
- Green Data Mindset
- Change Mgmt.

To Summarize:

The D&I Framework is the key to maximizing the potential of both Data and Artificial Intelligence within the organization. It can deliver transformational improvements in efficiency, quality, sustainability, and competitive performance. Building a true Data & Intelligence organization is the key to achieving long-term success, differentiated service offerings, outstanding market presence and a strong competitive advantage.

It's time to get started.

Getting Started

In our emerging digital world, businesses are searching for new capabilities and solutions that help them to address their clients' needs with personalized services and targeted solutions. Our D&I Framework plays a vital part in helping organizations achieve this goal.

We understand that every organization is unique and different, with their own imperatives, priorities, maturity and goals, yet we also believe they are eager to embed D&I capabilities throughout departments, processes, and solutions. For that reason, we work openly, honestly and transparently with our clients, customizing our offerings to meet existing objectives and deliver the agreed key business priorities.

There is no fixed process or method, no "one size fits all", because embedding D&I within an organization is of its nature a highly customized and tailored activity. We work closely with our clients to define priorities, design processes and implement state-of-the-art Data & Intelligence methods in ways that fit the maturity and goals of each client's business.

Take your first steps towards D&I Discovery

You can take practical steps towards defining and executing new D&I-related services and solutions. These include helping to understand your current maturity level for embedding D&I technologies, working jointly to explore and define future-proof D&I strategies, building a detailed D&I Roadmap and carrying out creative idea development.
At all stages, we ensure that regulatory compliance and ethically responsible practices are at the heart of all recommendations.

Speed up innovation and experimentation

Successful enterprises will learn to move further and faster in terms of creativity, development and collaborative working. NTT DATA can provide proven, practical methods for developing differentiated business cases and building technology-driven solutions by implementing rapid prototyping, experimentation, modelling and testing on collaborative platforms.
We also boost collaborative working models across the organization, enabling faster development, while ensuring these remain within agreed, cost-effective thresholds. That will help the organization feel more confident when innovating and experimenting, and better able to handle change faster. This covers culture and mindset, together with capabilities and organizational structures.

Scaling your D&I

Leveraging the Open D&I Ecosystem enables organizations of every kind to establish creative new ways of partnering with Cloud Hyperscalers and other tech providers. That is the key to accelerating successful developments while reducing risk and costs. We help our clients implement scalable solutions from a business and technology architecture viewpoint, seeking to cover the end-to-end solution lifecycle and scale through MLOps and sound, proven governance practices. That is where the investment in D&I generates remarkable ROI and creates a virtuous circle, with each new idea driving new successes.

About NTT DATA

For 2021 Gartner's Magic Quadrant, NTT DATA has been named a Challenger service provider. This supports NTT DATA's goal to help clients maximize their business value through technology implementation expertise, innovation practices, and trustworthy Data and Intelligence (D&I).

The company shares the Innovation DNA as part of NTT Group, which boosts the innovation in the open ecosystem and fosters responsible AI across its operations. As a trusted global innovator, our values come from "consistent belief" to shape the future society with clients and "courage to change" the world with innovative digital technologies.

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