

S/4HANA AND THE INTELLIGENT ENTERPRISE

WHITE PAPER

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RESPONSIVE, ADAPTABLE AND INTELLIGENT ORGANIZATIONS

What makes an organization intelligent?

The concept of Intelligent Enterprise is not new: it was actually proposed in 1992 by James Quinn, a business professor in the US at that time. To paraphrase his thinking:

Intellect is the primary resource for producing and delivering services, so firms must derive their competitive advantage not simply from superior products, but from a deep understanding of highly developed "core competencies" based on knowledge and services. In other words, intelligent businesses will achieve sustainable advantage from knowledge and service-based activities that leverage intellectual assets.

This kind of proposition seems fairly standard to us yet 30 years ago it was revolutionary. A lot of unexpected developments have emerged from this idea, and the rise of new technology concepts (including the Web, Cloud, Intelligent Networks, Edge and IoT...) have helped accelerate the process of business evolution.

Enterprises have become more ambitious and creative in rethinking their organizations, using new technologies as enablers of greater agility, speed and competitive performance. In some sectors we are seeing the rise of distributed and devolved structures, with greater use of collaborative ecosystem working. In others, ERP operations are being bundled into a centralized financial ERP, with extensions to smaller application instances in public cloud, with local manufacturing models and centralized Master Data to avoid fragmentation.

This is the world in which we are living, competing and working: a digital native environment, where the rules have changed, and business intelligence is the essential key to success. So how do we develop such organizations? What are the building blocks and the roadmap to success?



Integration, collaboration, creativity

We are trying to build organizations that can learn, evolve, develop, cooperate with other inhabitants of the same ecosystem and become more intelligent. This is easy to say but much less easy to do.

All enterprises have business goals, strategies, shareholders and targets to meet. They cannot simply allow evolution to take its course in a random way. The main building blocks for intelligence in the enterprise need to be established, developed and managed if they are to deliver on business goals in a suitable timescale. Intelligent enterprises are Integrated, Collaborative and Creative as a function of their structures and processes. That means we need to:

- Empower employees, partners and customers to operate as a single community, in which they prioritize creative thinking and drive continuous improvement.
- Create responsive value chains, backed by automation and Edge-based intelligence, playing an essential role in monitoring, managing and optimizing them.
- Integrate data with processes at every level, removing silos and enabling development of end-to-end processes across every part of the business.
- Prioritize environmental concerns to make the organization more resilient, sustainable and aligned to Environmental, Social, Governance (ESG) and sustainability models.
- Provide effective orchestration, to ensure coordinated action and a clear strategic focus in this more complex landscape.

This approach requires a new way of thinking (more collaborative, more empowered), new ways of organizing (devolved, decentralized, ecosystem-focused), and new ways of using intelligent technology (including Machine Learning, AI, predictive interventions driven by analytics, Blockchain and digital native environments).



Technology enablers

Modern enterprises are trying to combine the need for a secure and stable Core, a common platform that can be repurposed in multiple ways for different purposes, and the growing agility provided by more flexible ecosystem working. The approach most enterprises are taking now involves a different kind of architectural approach. This involves building three interconnected layers of activity, covering Business Processes, Applications and Extensibility / Connectivity. The full capability of the Intelligent Enterprise can be summarized as:

- Modular Cloud-based ERP, normally covering financial and some core operational processes.
- Procurement function powered by Intelligent Spend & Business Networks.
- Supply Chain Management with embedded AI, full end to end transparency and real time insights.
- Sustainable Business solutions to help you understand and manage your impact on people and the environment.
- Customer Experience solutions (CX) to provide a personalized, comprehensive view of customer and business partner activities and needs that connect front and back office.

This architecture is shown, in a simplified form, in figure 1 below. The three layers are:

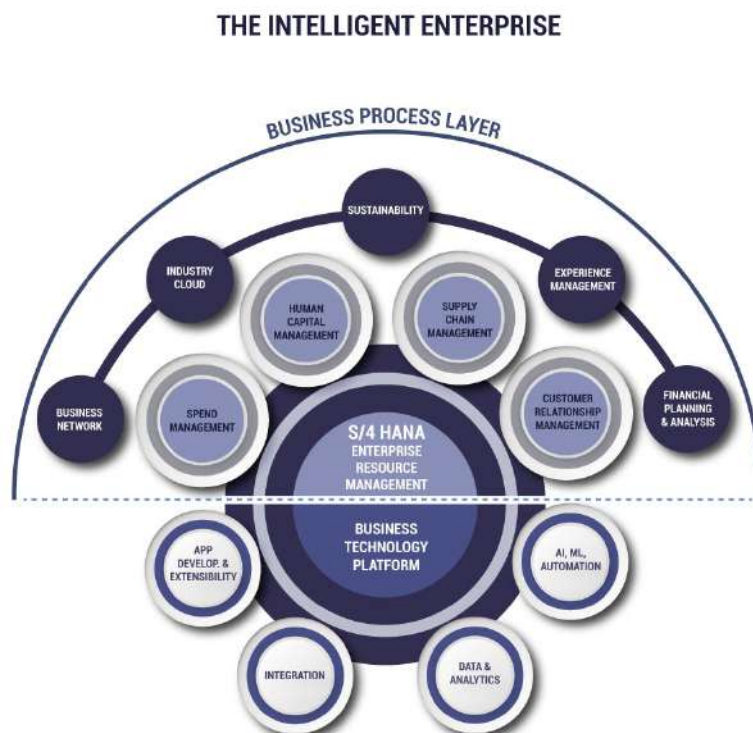


Figure 1: building a more intelligent, adaptable business through a new architectural vision

Business Process Layer. This is business process management. It is where the organization's business processes are discovered, analyzed, designed, monitored, and optimized. The objective is to model, improve and manage the business processes supported by technology in the most efficient way possible. We do this through a complete vision of the processes managed by business applications, allowing agile, continuous transformation in response to market demands.

Application Layer. Where we locate, develop and update all the applications required to manage enterprise business activities. The main areas covered are: resources, people, finance, customers, planning, product development... This means that, as the business develops, so the software in the application layer will also grow and evolve.

The applications suite can be viewed in a number of different ways, which adds to complexity. There are end-to-end processes (record to report, procure to pay...); components (ERP, CRM...), vendor, usage... Some applications are entirely "in-house", some externally facing, others have different roles in different circumstances. The picture changes all the time, and all this complexity is supported by:

Technology Layer (for extensibility/connectivity). Basic core standard applications must often be supplemented by extensions that enhance functionality. They also need to be connected to each other and into other parts of an ecosystem. Finally, emergent technologies like Machine Learning, RPA, Advanced Analytics or Artificial Intelligence need to be applied to the specificities of each organization. SAP's vision, as an example, is shown in figure 2 below.

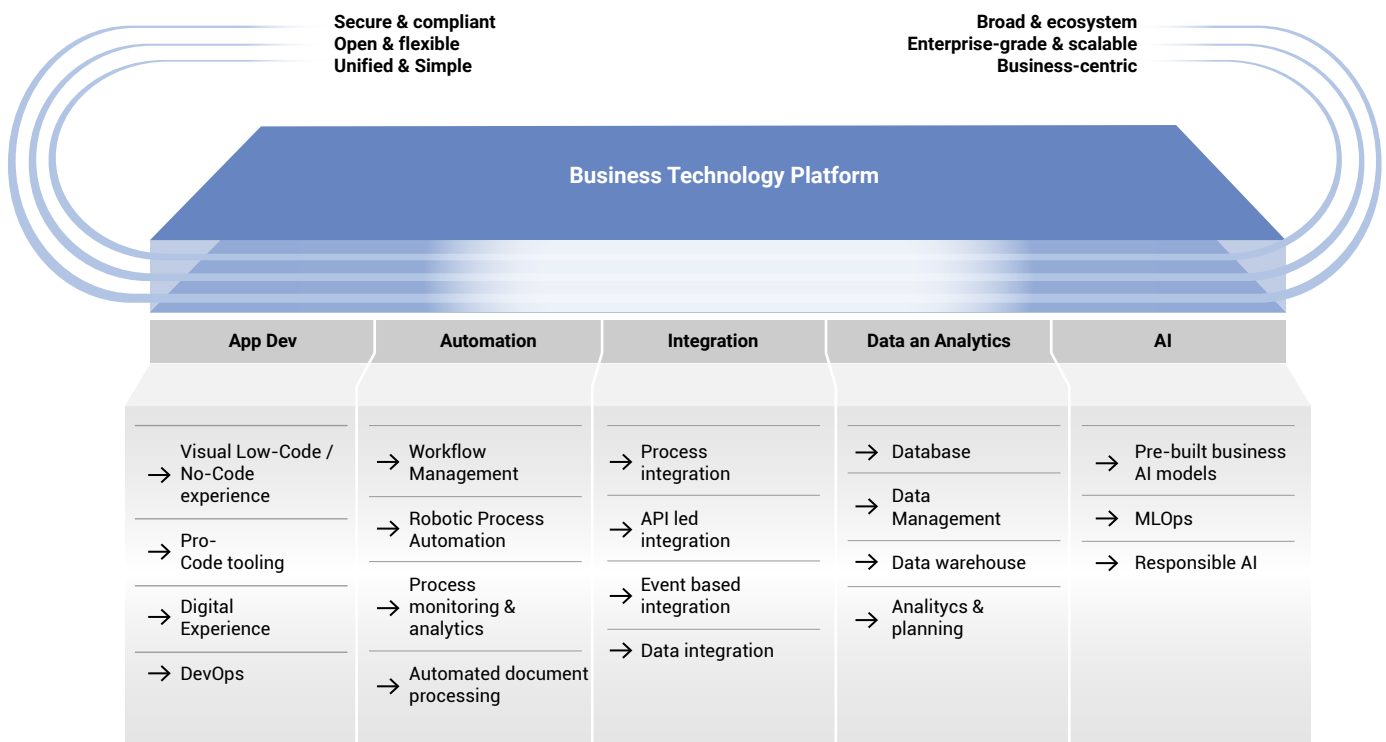


Figure 2: the SAP Business Technology Platform (BTP) vision.

RETHINKING THE BUSINESS CORE

The heart of the business

The Enterprise Core holds the Master Data, business rules and Core Processes that define the status and operational realities of a major organization. In the Enterprise Core, we expect to see the latest, most definitive information on:

- Organization, including things like cost centers or divisions.
- People, with employee and partner data, latest information about ecosystems and strategic alliances.
- Customers, with detailed information about sales, customer lists and status.
- Assets, from raw materials to components to finished products to offices and capital goods.
- Financial data, with a definitive, up to date view of all aspects of financial management.
- Security and authorizations, covering who is cleared to access what and under what circumstances.

It is not productive to define the Enterprise Core in terms of specific components, but we can usefully view it as the place where the latest, most complete version of “the Truth” is always to be found and where new information is fed in. The core is therefore subject to constant update and development, which means it needs to have, not just maturity and solidity but digital native characteristics. Some items can be delegated to a central synchronizing system, used to distribute “rules” to the full system landscape, but the core (the ERP instance) is where “the truth” originates, by being entered into the system by the appropriate users.



Extensibility/Connectivity

Large enterprises need core systems of record they can absolutely depend on. As we have already stated, however, these core systems must be capable of interfacing and integrating to other applications, solutions, and systems, some of which may be remote, distributed and digital native. They should also be enhanced to cover non-standard needs.

In that sense, it is absolutely impossible now to evaluate an ERP system without taking into consideration, at the same level, the technological foundation that allows it to be extended to other functionalities and integrated to other systems.

The role of SAP

SAP has been the global pioneer in usable, effective ERP solutions for several decades. Now, the strategic move to SAP S/4HANA enables businesses to enter the digital native world by providing them with a core solution designed for cloud operations. The core now interfaces, by design, with such solutions as:

- Ariba and Concur (for procurement, spending and financial management).
- Success Factors (SFSF- for people and talent management).
- Qualtrics and SAP Customer Experience (CX, for delivering quality experiences).
- The Business Network (combining key functionalities across this ecosystem).



Additionally, SAP has developed its own Business Technology Platform as the cloud-enabled foundation for all the capabilities described in this paper. The BTP effectively acts as the extensibility/connectivity layer in modern SAP instances. This provides many advantages that cloud-based solutions deliver, including the ability to call in functionality as services, freeing the applications from the need to have such functionality embedded. This brings extra speed and agility to the overall solutions being delivered.



Figure 3: Simplified representation of the SAP application landscape

This flexible and “intelligent” vision for ERP is driven by emerging capabilities that include:

Innovation and transformation. SAP S/4HANA can intuitively integrate with intelligent new technologies from the SAP BTP stack. These include predictive analytics, machine learning (ML), artificial intelligence (AI), **robotic process automation (RPA)** and **conversational AI**.

Development. SAP S/4HANA is compatible with different forms of Platform as a Service (PaaS) solutions to foster more rapid development through use of SAP UI5 interfaces, which speeds and simplifies application creation. Extensibility is enabled via the logic layer, which enhances standard SAP software functions to meet specific customer needs. These components can expose any data and

interact with different databases to enable development in a variety of programming languages.

Integration. The SAP Integration Suite simplifies interaction between critical customer applications and systems. It uses preconfigured content and follows integration patterns to allow many services to run on their own, with a minimum of control and supervision, and with standard monitoring tools.

Advanced Data & analytics. SAP S/4HANA incorporates advanced analytics capabilities, embedded within the solution, which include visualization and planning tools, and also easily links into expanded SAP BTP technological layer capabilities. This enables enterprises to move faster and more efficiently towards the concept of a data-driven enterprise, using analytics at the heart of its decision-making.

Because SAP S/4HANA is a digital native and cloud-enabled solution, it can balance the solid, efficient and consistent core that every major enterprise requires and the constantly growing ecosystem of services, applications and partnerships the cloud offers. This enables enterprises to manage long-term strategic intent with short-term agility, as required.



THE NTT DATA POINT OF VIEW

About the SAP S/4HANA product

We have no doubt about the important, central role that SAP plays in the management of large enterprises. SAP has been a vital strategic factor for decades, ever since the original development of ERP almost 50 years ago, and this will not change in the near future. We believe the launch of SAP

S/4HANA has been a positive step in enabling enterprises to move more functionality to the cloud, and to take greater advantage of the rich service and application ecosystem provided by partners and specialist vendors.

The ultimate goal for SAP is to provide a truly cloud-based and digital native ERP solution, connected to the SAP BTP for agile and easy enhancements and connections, hosted in a real public cloud environment, enabling end to end, simple and seamless integration with Software as a Service (SaaS) and PaaS services. The reality is, however, that today there are different versions of SAP S/4HANA with different content and functionalities, and we need to be clear about the differences between them.

Current public cloud versions of SAP S/4HANA are still some distance away from the agility and functionality that digital native solutions have to offer, together with the added difficulty of preserving customer developments. Great progress is being made by SAP, but for many complex customers, SAP S/4HANA Cloud, Private Edition is still the preferred option. This is not really surprising, as SAP S/4HANA Cloud, Private Edition shares the same code line with the traditional On-Premise solution hosted by the client, themselves, a hyperscaler or any other datacenter.

Combined with SAP BTP (as the preferred technology platform) and orchestrated with other SAP tools, both versions are very powerful and should cover most requirements. Customers, however, do need to analyze and review their primary goals, mid and long-term strategy and fundamental requirements to understand the capabilities and implications of the two deployment options before choosing which way to go.

About RISE

The stated policy of SAP is to use its own RISE offering to help manage the transition from current status, including traditional ERP instances (such as ECC) to the cloud-enabled future state (with SAP S/4HANA). RISE includes at this stage not only SAP S/4HANA Cloud (Public or Private Edition) but also SAP BTP, Infrastructure and additional features, such as a starter pack of SAP Business Network or Business Process Intelligence.

SAP's strategic goal is to move its their customers to the RISE model, which is subscription-based. It is not true "Pay As You Go" but rather "Pay As You Subscribe", based on a series of pre-set "sizes", rather than the older perpetual licenses and maintenance contracts.

From a product perspective, the combination of the ERP Core, the Business Technology Platform and the included starter packs is logical and effective. From a service perspective, however, two major topics may potentially create customer resistance to a RISE deal. For the SAP installed base, the impact of moving from (an already owned) Perpetual License to a Pay-per-Subscription model needs a very detailed business case exercise. In all cases, subscriptions are calculated (at this stage) according to a list of preconfigured sizes, which might not fit everyone. Changing size is not an automatic process, as one would expect from a flexible cloud service, so customers need to understand potential impacts and different options to help them evaluate their current and future needs carefully.



About the Adoption Process

For some customers, adopting SAP S/4HANA can be a major endeavor. The logical of SAP S/4HANA adoption is to enable Digital Transformation of the organization, so this cannot be a mere technical upgrade. To take full advantage of its potential, enterprises will need to review and clarify their business priorities and fully evaluate their processes.

In addition, adopting the underlying SAP BTP technology platform and even implementing the simplifications and improvements inherent in the ERP solution, itself, will involve making large-scale technological changes in the organization's landscape. Some companies choose to make some of those changes before the adoption process begins, while some will run these changes concurrently with adoption. As a third option, it is also possible to do at least some of them after completion of the adoption/change process.

Every organization will want to choose the most suitable and efficient approach, and this choice obviously depends on an organization's specific needs and current situation, as well as its future direction. SAP provides tools to help customers on the technical and functional transition, some of them being part of RISE (like the Custom Code Analyzer or the SAP Readiness Check), but customers will certainly need more support than that.

Conclusion

SAP S/HANA is a remarkable solution and, when teamed with SAP BTP, is a clear market leader in ERP. At this point, however, customers wishing to adopt SAP S/HANA must plan a multi-year progression and transformation roadmap, tuned to their own business needs, and few can do this on their own and with the available information.

THE ROAD TO TRANSFORMATION: THE SAP S/4HANA JOURNEY

Logically, the SAP S/4HANA adoption journey can be divided into 3 different phases: preparation, adoption and post-adoption, evolution and usage of the new solution.

Preparation for the journey

Transitioning to the digital native Enterprise Core can be simplified through guides, pre-prepared best practice "packages" and strong delivery expertise. Figure 4 below gives a top-level view of the processes involved at this stage of activity as they apply to a specific enterprise moving to a Global ERP solution that includes a high level of cloud enablement.

Journey to SAP S/4HANA® | NTT DATA Discover Methodology

Discovery Assessment : Build the Transformation Roadmap

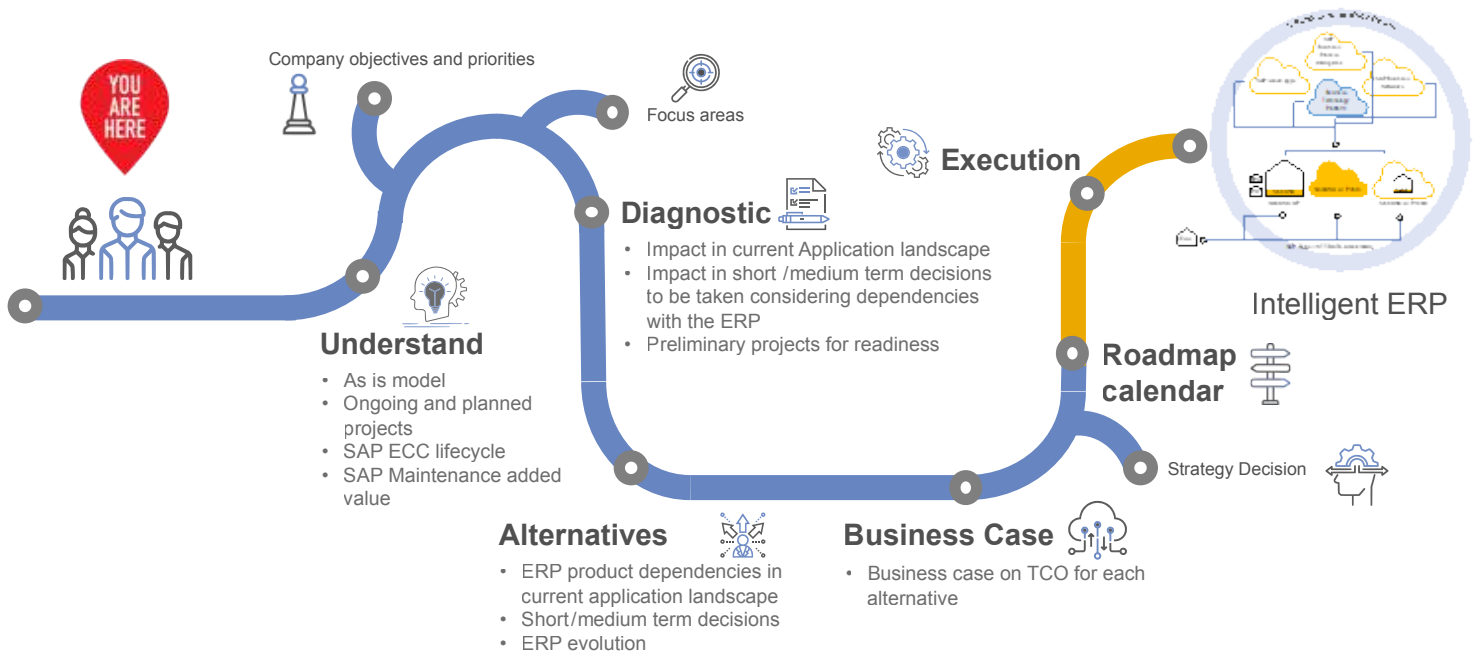


Figure 4: Outline of the discovery process

Supporting this journey definition process, building a roadmap for change is at the heart of our target activities, which also ensures mobilization and commitment at all levels of management. These are:

- **Understand current status.** This means analyzing the existing business model, identifying in-flight projects and starting to define potential added value of a global ERP solution. We also ensure that business priorities are defined and factored into the process and bring in C-suite leaders as well.
- **Run Diagnostics.** Define potential effects of change on current applications. Identify dependencies and start to prepare implementation activities by clarifying the short-term priorities and most suitable starting points.
- **Identify Options and Alternatives.** Bringing together all relevant stakeholders, we analyze dependencies in greater depth, agree the short and medium-term actions and build an evolutionary approach for global ERP adoption.
- **Define the Business Case.** Review alternative actions and implementation steps to define TCO for each, leading to recommendations which approach to adopt.
- **Pass the Decision Gate.** Business leadership, using the data created in the process so far, view through the strategic requirements and priorities of the business, will make a go or no-go decision, leading to:
- **Build the Roadmap and Implementation Plan.** Now we can build a comprehensive roadmap for change, including organizational, cultural and business actions (alongside the technology changes). Measures, further decision gates and governance requirements will be defined at this point.

By following this systematic approach, we ensure that every key stakeholder is fully informed of the required change, has given their input, point of view and recommendation, thereby committing to transition by being included in the transparent decision process.

Transition Activities

Transition is the process that ensures the smoothest achievable, lowest risk, non-disruptive move from the current position of the business to the agreed future status. Major change processes are holistic in nature and are always at risk of failure if they focus too narrowly on technology. With the enterprise core, this is a major risk, as the very centrality and importance of the technology can appear to be overwhelmingly important.

Before we take the first step on the journey, Enterprise CIOs will need to make a fundamental decision: whether to build a completely new instance (Greenfield) or adapt current investments (Brownfield or Bluefield). The Greenfield approach has the great advantage of enabling comprehensive use of the most current emerging technologies, yet this is a major undertaking and will require considerable investment of time and resources.

In reality, it is rarely possible to write off large existing investments, which is why the hybrid approach, or Mix and Match can be the most rational option. This involves System Conversion with Selective Data Transition, enabling the organization concerned to take a “best of both worlds” approach. It is complex and comes with a lot of challenges, however, and both IT and business leadership must be fully informed of the issues in advance so they can make the most suitable decisions.

Change is primarily a human activity. People drive it and need to be convinced of its rationale and benefits, which is why we focus on three levels of change:

1. Technical and functional implementation.
2. Human and organizational change.
3. Governance and active review.

At the technical implementation level, we apply the NTT DATA refinement of the SAP Activate Plus toolset and methodologies. This includes project governance and change management layers, and covers every aspect of updating, redefining, optimizing and implementing SAP solutions in a cloud environment.

The methodology covers 8 layers of activity, including Scope, Cost and Quality (which defines the practical actions needed to make technical change happen). Then Risk, Procurement and Integration (which ensures implementation within the agreed project limits and delivers fully functional solutions). And finally, Human Resource and Communications (designed to keep teams up to date, informed and comfortable with how change affects them).

For human and organizational change, we aim to blend a strong, well understood and highly logical change process flow with feedback loops, failover options (if required) and intense mobilization activities at every stage. We deliver a strong plan that nevertheless has sufficient flexibility for regular updates as required by events and “facts on the ground”.

Change activity is based on four key stages: Understand (achieve buy-in from those responsible for delivering change and impacted by it). Then Plan and revise the plan as needed (making sure that the plan we are executing is fit for purpose, understood, supported and achievable). Deliver the plan as defined (which includes strong leadership from the top). Finally, we have the Embed stage, which is

where the success of the entire project is determined (this means ensuring that the changes defined in the roadmap become a new “business as usual”).

Issues encountered at every stage will be clearly reviewed, analyzed and, where necessary, act as catalysts for changes to the plan. Change involves clarity of purpose but must avoid rigidity in execution.

For Governance we ensure that all stakeholders, starting with the most senior management, are visibly engaged and informed at every key stage in development. It must be stated again that no major change is achievable without their leadership. We govern our projects using the Project Management Institute (PMI) PMBOK process.

We cover all 9 of the core functional areas for review: Integration, Scope, Time, Cost, Quality, Resource, Communication, Risk, Procurement, and monitor all activities at every stage. Issues are identified early, and remedial action is defined and taken fast.

Consolidation and Transformation

The ultimate goal for moving to SAP S/4HANA is Transformation by helping an enterprise transform key aspects of its working methods and business activities, becoming more agile, faster-moving, responsive and competitive as a result. To transform through moving to SAP S/4HANA, we must consolidate the changes made at Transition and then move onto a new form of steady state running that also includes continuous improvement and evolution.

Transformation begins with new ways of thinking, which drive new ways of operating. Once transition is complete, fresh thinking, fresh working methods, fresh business relationships will ensure that transformation takes place organically.

The comprehensive approach we at NTT DATA take to this process of transformational change is shown in the last part of this paper. To summarize, the journey begins with:

- Clear goals, based on analysis of priorities and understanding of the possible paths and options.
- Strong alignment, with business and technology leadership each understanding the other's position and agreeing with the path to be taken.
- Appropriate support, with in-house capabilities at the least supplemented by external know-how and experience.
- The right tools, enabling an efficient, industrialized process, which also reflects the complexities of the path ahead and the need for constant agility.

NTT DATA AND SAP

NTT DATA is an SAP Platinum partner and SAP Global Service Partner, defined by leading analysts as a global leader in the field of SAP S/4HANA Application Services, Worldwide. Thanks to our industrial heritage, as part of the wider NTT Group, we are also a major researcher and innovator in our own right.

We have developed methodologies, solutions and tools - all approved by SAP - that form the basis of our SAP practice. Our business consulting teams are located all over the world, which means we have strong capabilities in virtually every market. Technical consultancy for SAP is closely integrated with SAP consulting teams, providing a single point of contact, no learning curve and fast transit to high intensity, evolving high performance operations.

NTT DATA employs 19,000 SAP consultants worldwide.

But what makes us really different?

Business Consulting Services

The starting point for any successful transition and transformation activity is high quality consulting, and that is the rationale for our consulting services strategy.

In the specific case of SAP S/4HANA, we have already anticipated that many customers will need both technological as well as business advisory to clarify their needs, understand the alternatives SAP offers and plan a long and mid-term roadmap ahead. We simplified these mandatory evaluation services into the Preparation Phase as a starting point for the Transition Journey. The required activities cannot be undergone easily without heavy business and IT consulting (not implementation) services.

This approach provides the time and space needed to understand options, review and evaluate them in depth, prepare a detailed roadmap to the future, followed by experienced professional guidance to unlock the maximum value from the transformation process. NTT DATA is rated by leading technology analysts as a top performer and leading in SAP S/4HANA adoption. Our consulting capabilities play a major part in achieving this recognition.

We have more than 3000 business consultants ready to support major transformation projects.

Greenfield or Brownfield...or both?

For Brownfield projects, NTT DATA can deploy its own "Conversion Factory" in India, which carries out transitions on an industrialized basis, fast, efficiently and to best practice standards. The "factory" approach offers clients unique expertise and experience, based on delivering hundreds of major projects, a capability that remains extremely rare.

NTT DATA's Conversion Factory has successfully executed more than 100 SAP S/4HANA conversions through industrialized delivery.

For Greenfield projects, NTT DATA can mobilize a very large international consulting capability, together with the status that comes from being rated as a market leader by Gartner. Also, this can be complemented by the Selective Data Transition capabilities of one of our sister companies.

NTT DATA owns 51% of Natuvion, one of only 4 companies worldwide selected by SAP to carry out Selective Data Transitions (hybrid implementations).

Preconfigured SAP Accelerators

NTT DATA can deploy high expertise and advanced capability to suit all architectural requirements, from pure SAP to a wider ecosystem of software and technologies. Our teams are always focused on client outcomes, so they are technology agnostic, able to select the right partners to provide platform services.

We have preconfigured SAP S/4HANA implementation templates for Life Sciences, Automotive, Manufacturing and Medical Devices, with others in development.



Technologically Agnostic Capabilities

Our SAP-based Industry Solution templates have been developed to enable faster project commencement and reduce the level of new work required, enabling NTT DATA to accelerate definition and creation of solutions customized to individual enterprises.

In case our templates are not sufficient for a particular customer requirement, we can also Build solutions at speed due to the presence of a mature and experienced global development practice, covering every part of the world and backed by rapid onboarding and training techniques. Good to know this can be done based on SAP proprietary technology or any other technological stack which might better fit specific company needs.

17 Industry Solutions and 60 Rapid Deployment Solutions developed by NTT DATA.

Global Presence

We are committed to an uncompromising "People First" strategy. We know that a main reason for the high analysts rating NTT DATA achieves year after year is a result of the high project delivery quality, which would be nothing without our people and tools.

NTT DATA has currently over 130,000 employees worldwide, soon to expand to 200,000 after the forthcoming NTT Inc. merger, so we can support any relevant technology in an SAP context.

Training Excellence

Our SAP Academy is one of the world's leading establishments for recruiting, training, mobilizing and constantly developing outstanding professionals in the field of SAP systems, solutions and technologies. We believe in lifelong technical and business education: our people are not simply trained and left to do the best they can. They are always within the scope of our development processes, always motivated and empowered to develop new capabilities, while contributing to our uniquely rich knowledge base.

***NTT DATA SAP S/4HANA certified Trainings,
NTT DATA SAP S/4HANA Learning System, Training Management
Support, Client Foundation Enablement, Client tailored Trainings,
Project Support, Project Team Training.***



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