



Digital Systems & Technology

The Journey to Intelligent ERP

Taking a business value-driven approach, organizations are transforming aging ERP backbones into systems of innovation via SAP S/4HANA.

Executive Summary

To drive innovation and grow the business, the use of technologies such as social, mobile, analytics, cloud and artificial intelligence (AI) is a strategic imperative for more and more enterprises. This process often starts with the customer interface, such as a mobile app or web self-service portal. But companies are realizing that overhauling their core processes is equally (if not more) important. That is because that core, often made up of enterprise resource planning (ERP) applications deployed in the 1980s or 1990s, is the source of all the data required by every user interface and business process.

However, before transforming those “systems of record” into systems of innovation, C-level executives

must answer critical questions to justify the required investment. The key to building the business case is positioning it as not just another IT project; it is a business project, whose goal is to fundamentally simplify the business, modernize its processes, give employees deeper insights, create new business models and monetize enterprise data.

This white paper explains the drivers and benefits of this strategic shift, describes why S/4HANA – the latest version of the core ERP platform running many enterprises – can be the right platform for such a new “system of innovation” and how to begin the journey.

Digital transformation: Drivers and benefits

The definition of digital transformation will vary with each company’s size, its markets, the competitive threats it faces and its appetite for risk. In our work with customers, we’ve found a range of goals, ranging from the most conservative to the most visionary (see Figure 1).

Conservative organizations take small steps, beginning with optimizing their IT landscape by moving to S/4HANA. Their key drivers are minimizing the risk, cost and effort of technology migration and organizational change management. However, their caution could leave them far behind their competitors in leveraging digital tools for competitive advantage.

The pragmatists are a relatively smaller number of organizations that are looking beyond IT optimization. They aim instead to leverage technology to increase their operational efficiency, productivity, agility and flexibility while embracing data to empower real-time decision-making.

The visionaries, in our experience, are a very small group taking giant steps to become market leaders. This requires greater investment, a larger appetite for risk and a strong change management capability. As a result, successful visionaries will emerge victorious by staying ahead of their competitors with new products, services and business models.

The business impact of various levels of digital change

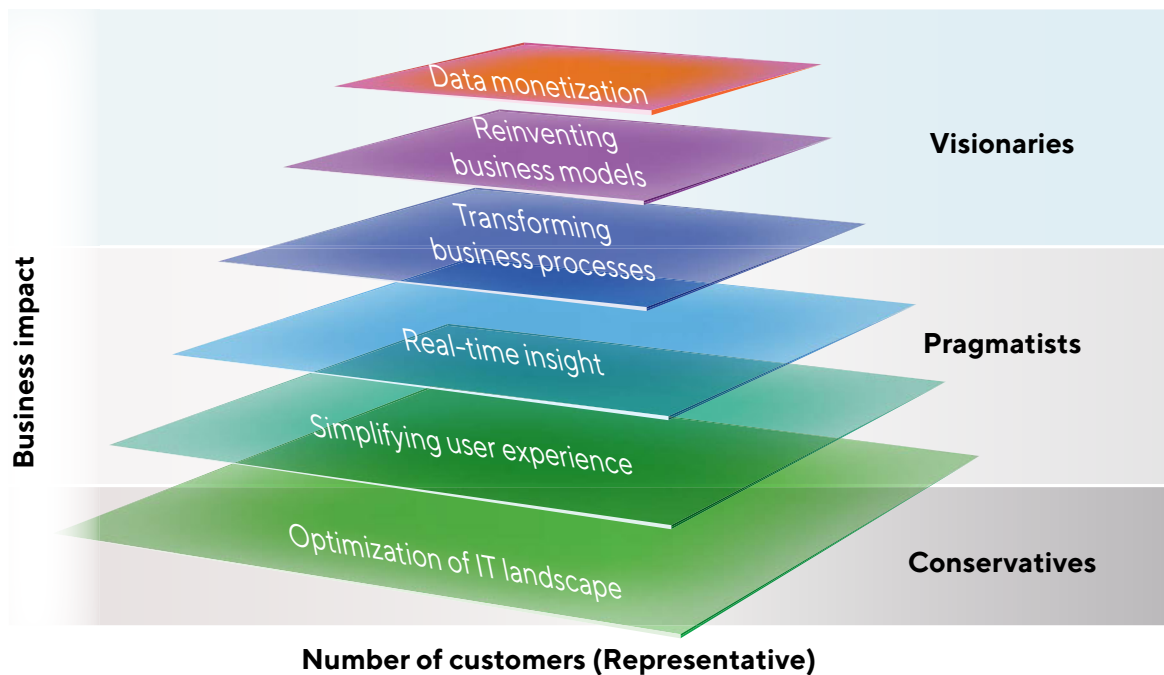


Figure 1

The higher the level of business change, the greater the effort and challenge involved, but the more potential for lasting, substantial competitive advantage. For example, optimizing the IT landscape can enable organizations to meet ongoing needs to reduce costs and increase agility. These needs include supporting growing numbers of users, transactions and records, as well as a “cloud-first” strategy that makes it easier to leverage new technologies such as social, mobile, analytics, AI and machine learning.

Other optimization goals include:

- **Reducing** software customization that makes it harder to adapt to changes in business requirements and increases maintenance costs.
- **Consolidating** “islands” of ERP systems to reduce error-prone manual data entry and delays and simplify business processes while delivering more and better real-time insights with an integrated view of the enterprise.
- **Reducing** the data footprint and integrating SAP ERP with other components to cut hardware, software and management costs and delays in resolving complex system issues.
- **Integrating** core ERP processes with open-source technologies to more effectively deliver and analyze data.
- **Speeding** time to market and better matching spending to revenue by shifting from a Cap-Ex model of owning hardware and software to an Op-Ex, or subscription-based, cloud model.

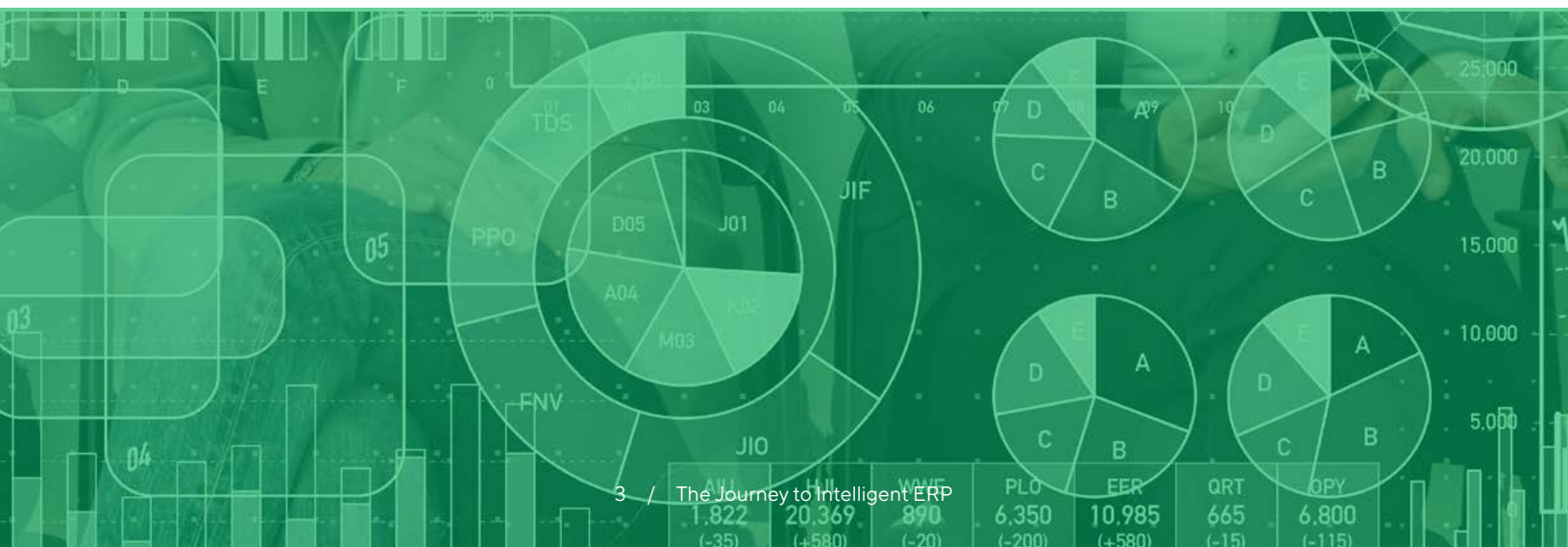
Simplifying the user experience addresses the needs of internal and external users who, in an era of smartphones and app-driven business models, demand a personalized, responsive, and simple user experience powered by near real-time information on any device. This requires:

- An intuitive, easy-to-use interface.
- Consistent product, pricing and support information across channels such as web, phone and email.
- Timely and accurate updates on product availability, pricing and delivery as well as speedy problem resolution.

Real-time insight gives employees and partners the right information at the right time to make the most informed decisions. It also provides websites and other platforms the right content or offers to capture a customer before they click on to a competitor. The emergence of embedded analytics that merge traditional online analytic processing (OLAP) with online transaction processing systems (OLTP) such as ERP enables near real-time insight within ERP systems, and the ability to predict and simulate outcomes using near real-time data.

Delivering real-time insight requires:

- Flexible, high-performance integration of data among traditionally siloed systems.
- Eliminating the time lag between an event and the notification of all appropriate stakeholders.
- Access to cloud-based storage and analytic platforms.



Transforming business processes allows organizations to meet today's digital economy requirements of simultaneously cutting costs, improving quality and accelerating new product and service delivery.

Transforming business processes allows organizations to meet today's digital economy requirements of simultaneously cutting costs, improving quality and accelerating new product and service delivery. This involves simplifying and automating processes that require manual, disjointed effort and eliminating redundant tasks that drive up costs, slow execution and risk manual error in tasks such as data entry.

Reinventing business models is one of the greatest opportunities created by the advent of digital. It enables an enterprise to tap new markets, customers and revenue before its competitors, creating first-mover advantage and barriers to entry. This requires rethinking the business around the needs of today's (and tomorrow's) customers and technologies, and challenging assumptions about everything from the organization's core business to

what differentiates it from its competitors.

This requires:

- Connecting to people, devices and business networks in real time.
- Seamless integration with devices on the Internet of Things (IoT).
- Big data to fuel artificial intelligence (AI) algorithms to understand and act in real time on specific customer needs and changing market/competitive requirements.
- Use of the cloud to quickly and cost-effectively handle changing transaction volumes, and to host core ERP systems for more cost-effective delivery of big data, predictive analytics and IoT services.





Data monetization allows enterprises to use their terabytes of data about everything from customer needs to manufacturing processes and product reliability for more than “post mortem” reports or (at best) demand forecasting. Migrating such data to a modern ERP platform (and integrating it with data from the IoT) allows such data to be processed with predictive analytics and AI platforms to unlock its full value. This value can take the form of predictive maintenance and inventory optimization to reduce costs or better understand customer behavior to increase sales. The cloud also allows use of the data in new business models, such as selling it (where appropriate) to partners who can profit from an understanding of customer needs or the status of product or equipment.

Data monetization requires:

- Storing, accessing and applying mathematical models to very large volumes of data quickly enough to deliver near real-time analytics.
- Integration with open-source or proprietary

advanced analytics and machine learning tools such as the Python programming language and SAP Leonardo machine learning platform.

- Semantic tools to help understand and categorize the data.
- Strategic planning and business consulting to identify and fill market needs,
- Proper security, regulatory and compliance processes.
- Self-service portals that allow users to easily access data and insights. An organization’s digital overhaul begins with a thorough self-assessment of the extent to which it is using digital to meet its business goals, and how it could improve. These organizational priorities and the urgency with which an organization must move are typically driven by the competition, the organization’s ability to fund business innovation, its risk appetite, its current IT infrastructure and the skills of its staff.

Building a modern digital foundation

With SAP S/4HANA, organizations can modernize core back-end “systems of record” into agile “systems of innovation” that can quickly adapt to changes in technology, markets, customer needs and business models. This can be achieved through the seamless integration of SAP S/4HANA in-memory database, which speeds analytic processing, with open-source applications such as Hadoop, Python and R. (See “Quick Take.”)

The ability to build extensions on the SAP Cloud Platform integrated with the S/4HANA core allows businesses to, for example, simplify

customer billing, reveal hidden trends in financial statements and shorten the invoice-to-cash process. Integration with SAP Leonardo empowers businesses to complement core processes with robotic process automation, artificial intelligence and machine learning.

Together, the elements of the SAP S/4HANA ecosystem (See Figure 2) provide transformative process automation, simplification that delivers ease of use, real-time information and integration, and a seamless data flow with other systems.

Quick Take

Tapping open-source integration to cut production planning costs

S/4HANA offers a library of whitelisted APIs that can be seamlessly integrated with open-source platforms such as the TensorFlow machine-learning framework and the Python programming language. These APIs let organizations pull data from core ERP processes, apply machine learning and analytical algorithms to them, and return data, decisions or tasks to the execution system.

This can help manufacturers build intelligent solutions such as robotic process automation, predictive modeling to enable predictive maintenance, intelligent scheduling and optimization logic for efficient capacity planning.

For example, our Production Planner's Assistant is a voice-enabled chatbot powered by conversational AI. Based on voice instruction from a production planner, the chatbot extracts production order data from S/4HANA, identifies exceptions that require human decisions and releases all other orders for a selected period to the shop floor based on predefined rules. Based on our tests using sample customer data, such automation eliminates as much as 60% of the manual work associated with production planning.

This assistant also uses machine learning to simplify and automate decision-making. It can, for example, learn when a shortage of raw material or production capacity should trigger a cancellation of a customer order and improve such decision-making over time.

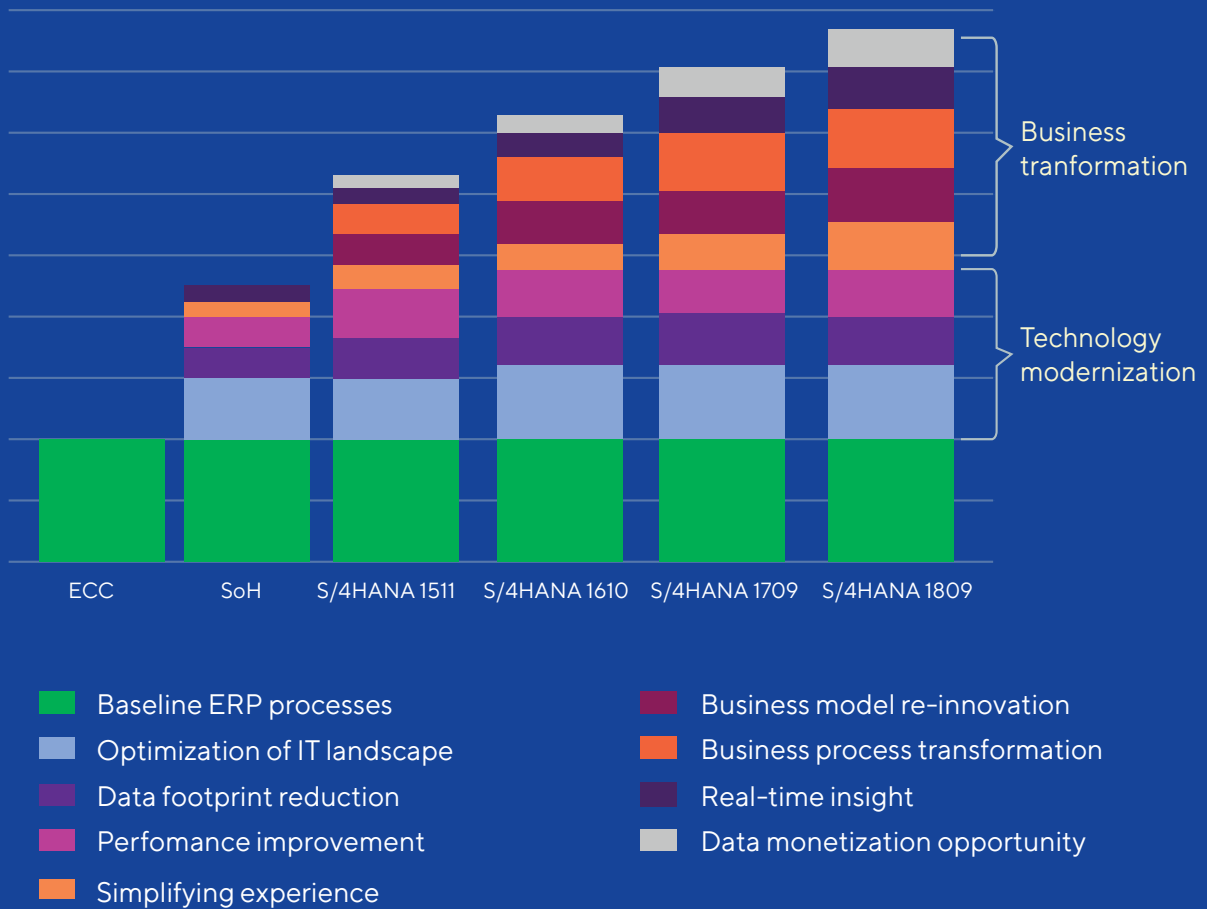
Quick Take

How SAP S/4HANA facilitates digital business

Optimizing the IT landscape	Data footprint reduction, improved performance and scalability, added functions through open-source support, cloud-based services.
Simplifying the user experience	Intuitive, user-friendly Fiori interface provides anywhere, anytime access to information. In recent versions, SAP started introducing intelligent process automation powered by machine learning.
Real-time insight	Embedded analytics for real-time display of metrics such as KPIs, exceptions and alerts. Transactions and real-time alerts on the same screen enable faster response.
Transforming business processes	Deduplication of processes for improved consistency and productivity. Real-time information through rapid consolidation of transaction data and master data reduces costs and delays.
Reinventing business models	Integration with SAP's machine learning/artificial intelligence platform enables robotic process automation and delivery of new services. Deployment in the cloud as well as on-premise data centers enables businesses to move from Cap-Ex to Op-Ex procurement models and respond more quickly to changing needs.
Data monetization	Integrated add-ons to S/4HANA core enable innovation. Integration with the cloud and open-source technologies create new opportunities for data analytics.

Quick Take

The evolving digital core



Notes: SAP S/4HANA is also cloud enabled and has cloud versions. This diagram is relative only and does not indicate any percentage improvement.

Figure 2

Source : Cognizant

Maximizing the returns

Our experience shows that companies looking to adopt S/4HANA face four common challenges:

I Inertia and organizational resistance often leading to simply “copy and paste” legacy processes from SAP ERP Central Component (ECC), the previous generation of SAP’s ERP software, into S/4HANA. As a result, they miss opportunities for greater efficiency and productivity by redesigning business processes leveraging the innovations of S/4HANA.

I Thinking of S/4HANA as simply SAP ECC with the addition of the Fiori user interface. This means they forego benefits such as real-time analytics and new process innovations such as demand-driven MRP or central finance.

I At the other extreme, treating the move to S/4HANA as a “from scratch” new ERP implementation, rather than leveraging the S/4HANA best practices library and SAP Model Companies or similar preconfigured industry solutions provided by SAP’s implementation partners. This

incurs unnecessary cost and effort, which can be substantial based on the complexity of the customer environment, the number of instances they run, and the scope of languages, geographies and business processes involved.

I Underestimating the impact of change management and training requirements. Even existing ECC customers are facing challenges in convincing their business process owners to adopt S/4HANA innovations and move to standard processes rather than highly customized legacy ECC systems.

How can companies avoid these pitfalls? From more than 100 S/4HANA engagements, we have identified the three proactive steps that help maximize returns from S/4HANA investments:

- I Start the journey with a value discovery assessment.
- I Leverage S/4HANA industry best-practice driven design.
- I Invest in change management and training.



Quick Take

Reinventing business models

We are helping an automotive manufacturer move beyond traditional vehicle sales to a subscription model in which the customer will pay a monthly fee for not only the vehicle but also all the related services. We are developing a digital solution that will enable every aspect of this service—from analyzing the customer’s credit using big data-based predictive analytics, tracking the vehicle through sensor data, providing service through a nationwide network of maintenance facilities, and maintaining (using predictive analytics) an optimal parts inventory at each location to meet service-level expectations while minimizing costs.

Analysts predict that such subscription programs could account for nearly ten percent of new vehicle revenue in the U.S. and Europe by 2025. This new business model will help the manufacturer tap this new sales channel.

Transforming business processes

The use of manual scheduling at a European manufacturer caused significant downtime and inefficient utilization of molding and pressing equipment. We are helping this manufacturer reinvent shop floor scheduling using the S/4HANA core to integrate advanced optimization techniques into scheduling. This is expected to produce a double-digit increase in the utilization of mold and pressing equipment through a significant reduction in downtime and increased productivity.

This will reduce costs, increase manufacturing efficiency, and improve productivity and customer service through the on-time delivery of products.



The value discovery assessment

This helps customers achieve maximum value from their S/4HANA implementations by evaluating the impact, opportunities, risks and return on investment before committing to S/4HANA. It also helps CIOs build the business case for it with business stakeholders and senior management.

For example, our approach to value discovery consists of three steps:

1. **A technical impact analysis** uses multiple diagnostic tools to understand the impact of S/4HANA simplification on the SAP transaction codes currently in use in the organization, the roles that give users secure access to the system, and integration between their current SAP platform and other business systems. This context helps clarify the cost and effort required to move to S/4HANA.
2. **A business process analysis** identifies business challenges the organization is facing and how the new functions within S/4HANA can help address these issues. Together with a broader analysis of the competitive landscape and external industry forces, this step helps identify the potential benefits of a move to S/4HANA.
3. **The results of the first two stages are combined** in an assessment that includes an impact analysis, business case with ROI estimates, high impact use cases and a roadmap for the S/4HANA implementation.

This process helps customers build a business case for the benefits of S/4HANA, understand their organizational readiness for it, and creates an implementation roadmap complete with estimates of the required effort and key performance indicators to help management track the process.

Industry best practice-driven design

Rather than “reinventing the wheel” by configuring every business process in S/4HANA, businesses can reduce implementation cost and effort using the SAP S/4HANA best practices library. This consists of process documentation, preconfigured business processes and statutory processes for more than 20 countries and other accelerators. In addition, SAP’s Activate methodology is a modular and agile framework that helps customers

take such a best practices-driven approach to implementation of, or migration to, S/4HANA.

Note: SAP S/4HANA best practices are generic in nature. To address this gap, leading integration service providers are enhancing SAP’s best practices with industry-specific S/4HANA solutions. (See Figure 3 for an overview of our solutions in use at various clients worldwide.)

Cognizant’s industry-specific S/4HANA solutions

Industry	Solution	Benefits
Utilities	Utilize	Pre-configured templates speed transition to SAP S/4HANA Utilities or SAP Customer Relationship and Billing.
Chemicals	ChemX-press	Includes embedded SAP Country best practices, as well as process flow diagrams, test scripts, templates and checklists for processes such as batch management and traceability, shelf life management, environmental health and safety management and serial number management.
Pharmaceuticals	LifeCare	More than 70 preconfigured pharmaceutical-specific business processes and more than 150 custom solutions including codes and configuration templates, as well as scenarios for common requirements such as Good Manufacturing Practice and warehouse management.
Discrete Manufacturing	MfgCare	More than 90 best practice scenarios enhanced with industry KPIs and integrated with SAP’s Hybris customer relationship management solution, SAP Leonardo and other applications. Reduces implementation times by 30 percent.

Figure 3

Quick Take

Data monetization

Communication service providers are using customer transaction data to predict customer churn based on their usage history and related data. This is helping them proactively retain customers and avoid expensive efforts to attract new customers.



Proactively managing the change impact

The move to S/4HANA can be a big change even for long-term SAP ECC customers. Organizational inertia and the tendency for customers to treat S/4HANA Services as just a minor upgrade from the previous ECC can lead to missed opportunities to leverage its benefits. Generating awareness about the unique capabilities of S/4HANA and structured training are thus essential to driving the maximum benefits from a migration to it.

Being digital typically means something different at almost every enterprise. But for each, it is a strategic

imperative to grow and thrive in a changing world. To deliver the maximum benefit, digital must extend beyond websites and mobile apps to transform the enterprise's core systems into systems of innovation.

Justifying the required investment to board-level decision-makers requires explaining the effort, cost and risk of whatever level of change is required: from infrastructure optimization through real-time insight, as well as business process change to optimized business processes and data monetization.



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Arup Ray is an AVP in Cognizant's Enterprise Applications Services unit and focuses on intelligent ERP. A senior executive with 25-plus years of experience in managing global practice, consulting and driving business transformation, Arup is currently responsible for Cognizant's S/4HANA center of excellence. He is passionate about helping businesses innovate and achieve excellence through technology, and in advising global clients in their journey toward an intelligent enterprise via S/4HANA, and AI/machine learning. An accomplished author and speaker, Arup has presented several research papers in industry forums like NASSCOM and national conferences on AI and advanced analytics. He can be reached at Arup.Ray@cognizant.com

About Cognizant's SAP digital practice

Cognizant is a global SAP services provider with end-to-end solutions and services capabilities. We help our global customers by partnering in their business and IT transformation journey to the next-generation digital enterprise. Our offerings include transformation services (business and technology consulting), managed services (hosting, AMS and upgrades) and industrialized factory-based services. Our delivery engine foundation offers a combination of onshore, near-shore and offshore delivery centers, enabling us to provide a right-shore delivery model. We also offer technology-based tools that result in maximizing effort and cost optimization for our customers, along with ongoing improvement of the landscape via value-added innovations engrained in our delivery model. Our transformation services use SMAC-enabled solutions to provide customer centricity, collaboration, operational excellence and IT excellence. Visit the [SAP Solutions section of our website](#) to learn more.

About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 195 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us [@Cognizant](#).

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