Journal of Research in Science and Engineering (JRSE)
ISSN: 1656-1996 Volume-7, Issue-1, January 2025
DOI: 10.53469/jrse.2025.07(01).07

Transitioning to S/4HANA: Future Planning for Cross Industry Business to Achieve Excellence in Supply Chain Digitization

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Abstract: ***The evolution of technology has spurred a transformative wave in the enterprise resource planning (ERP) landscape, and at the forefront of this change is SAP S/4HANA. As organizations recognize the imperative to modernize their ERP systems, navigating the road to SAP S/4HANA has become a strategic journey that requires careful planning and execution. This article explores key considerations /Implementation process of supply chain technology makes it possible to create simplified business processes besides it opens the world of innovation in supply chain domain for enterprises embarking on the path to SAP S/4HANA.***

Keywords: SAP, HANA Migration, Digital Transformation, Digital supply chain, Transition to S4, selective data transition, Machine learning (ML)

1. Introduction

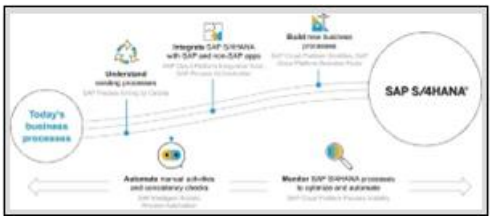

Figure 1: Introduction to Digital S4 Hana Journey

For many companies, core supply chain operations processes are still far too fragmented, too vulnerable, and too difficult to control while their front ends towards customers are becoming more global and seamless. As we have seen in the recent pandemic, many leaders are largely left in the dark when it comes to effectively preparing for and responding to sudden disruptions. There must be a better way forward. For companies running SAP, this is where SAP S/4HANA® comes into the picture – the number one digital core ERP and business transformation platform in the world for optimizing end-to-end supply chain. Addressing critical supply chain capabilities quickly means the journey toward broader transformation with SAP S/4HANA can be taken incrementally. Reflecting the reality that supply chains are networked businesses, our new offering integrates seamlessly with SAP Logistics Business Network to offer complete visibility for execution as well as capabilities to simulate and effect changes.

1.1. Background

The rapidly evolving digital global economy means manufacturing and distribution activities are becoming more consolidated and more complex, which in turn drives the need for efficient planning, execution, and management. Deployed effectively, SAP S/4HANA® can help organizations develop the competitive edge they desperately need, supporting their ability to make decisions rapidly and accurately across the entire spectrum of their operations. The solution's strength lies at the intersection of analytics and functionality as well as its in-memory processing capabilities for handling massive amounts of data. Manufacturers, for example, might face complex questions about sourcing related costs in rapidly moving markets. For example, they may need instant information on incidental expenses for expediting freight – or one-time supplier charges for special orders. Need to make ad hoc changes for massive orders? SAP S/4HANA® can help ensure that production and distribution can keep flowing. And it can do a lot more. Ultimately, it can help you transform decision-making and take customer service to the next level. The analytics capabilities of SAP S/4HANA® provide real-time functionality that enables end-users to create and personalize reports, KPIs, or any other analytical artifacts as needed to monitor and improve operational performance. All is enabled by the simplified SAP data model, which supports operational, financial and predictive data analysis at the most granular levels. Across the supply chain processes, you can enable reliable, real-time decision-making by leveraging data across the entire digital enterprise. For the first time, you will get instant answers on costs, spending and resources, simulate alternative scenarios, and make proactive decisions with a

bird's eye view as important events unfold. failures and uses real-time data to predict and prevent failures. Through advanced algorithm analysis, predictive maintenance solutions aim to lower operational costs and increase reliability. These solutions provide flexibility in maintenance planning. Preventive maintenance tasks should be reviewed to ensure their necessity when moving towards condition-based maintenance.

Figure 2: Supply Chain digital Transformation

1.2. Integrated, robust but flexible processes

Whether we are looking at purchasing, production, warehouse operation and transportation, asset management, aftersales or overall planning, what is evident is that rising expectations across the supply chain bring new demands, more layers of interaction, and more data for the enterprise to process. As challenges grow exponentially, organisations seek solutions that allow them to respond rapidly to evolving challenges. SAP S/4HANA® is not just a game-changing digital core but integrates natively with the full spectrum of SAP supply chain application components, including SAP Ariba, SAP IBP (Integrated Business Planning), SAP EWM (Extended Warehouse Management), and SAP TM (Transportation Management). It is worth remarking that what many customers refer to as the SAP monolith, the core of SAP has shrunk since the rearchitecting of SAP S/4HANA®. SAP has massively rationalised its table structure and module relationships, optimising data access in real-time and increasing flexibility. Its core application is much smaller than before while industry specific and functional area solutions are now typically launched as cloud-native satellites around the core, connecting via open APIs Therefore, it's also a solution that is greater than the sum of its parts, in that the integration of its components allows companies to achieve new levels of cohesion and collaboration across the organisation and with customers and suppliers. When transforming to SAP S/4HANA® with a Selective Transformation approach, companies can maintain a robust backbone, protect their legacy investment for their business operations while having the flexibility to develop new solutions to respond to changes in market conditions or to adopt intelligent cloud-based solutions.

1.3. Reconfiguring the business for the future

Needless to say, A supply chain transformation driven by SAP S/4HANA® is only one element of the vast efforts through which companies are right now trying to navigate in a difficult environment, ultimately reconfiguring, reorganising, and reinventing their business for the future. SAP S/4HANA® is not only a state-of the- art technology, but also a method for constantly aligning technology with your business needs and with your vision for the future in order to stay ahead of expectations and evolving market forces. From experience we know that these transformational journeys are already taking place.

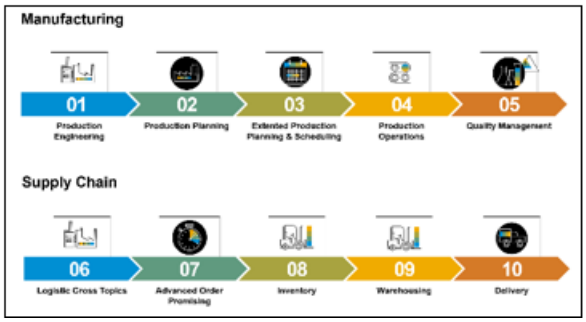

Figure 3: Supply chain flow in SAP S4 Hana Cloud

2. S/4 HANA Transformation

2.1 Overview of Implementation process of S4 Hana

SAP S/4HANA Supply Chain Management comprises solution capabilities for managing sophisticated business processes for planning and optimizing stock and goods movements, checking the availability of products in the order creation process, as well as handling shipping, warehousing and transportation and there are three implementation scenarios available for SAP S/4HANA.

Green Field Implementation:
This scenario is suitable for those seeking to establish a new instance of SAP S/4HANA.It involves either migrating, data from a legacy system or conducting a net-new installation of SAP S/4HANA capabilities.

Landscape Transformation:
Organizations opting for this scenario aim to streamline, their existing SAP software landscape. This may involve consolidating various entities or processes or isolating specific components as part of the transition to SAP S/4HANA.

System Conversion:
This scenario is designed for those who wish to convert, their existing SAP ERP application to SAP S/4HANA. The process includes migrating both business data and configuration to the new platform.

Figure 4: S4 Hana Migration process/Transformation

2.2. Key Considerations for Designing a Roadmap to S/4 HANA supply chain

This section aims to help in planning the transition to SAP S/4HANA and constructing a roadmap. While it outlines a general approach and addresses common customer queries, it provides generic statements and recommendations. It is important to note that, given the diverse nature of specific cases and requirements, the roadmap may vary significantly to SAP S/4HANA.

Alignment with Business Strategy
A successful roadmap to SAP S/4HANA begins with a clear alignment with the overall business strategy. Organizations should articulate how the move to S/4HANA supports their long-term goals, such as improving operational efficiency, enhancing data-driven decision-making, or enabling greater agility. This alignment ensures that the roadmap is not just an IT initiative but a strategic enabler of business success.

Assessment of Current Landscape
Before designing the roadmap, a comprehensive assessment of the existing IT landscape is crucial. This includes an analysis of the current ERP system, customizations, integrations, and data structures. Understanding the strengths and limitations of the current environment helps in making informed decisions about the migration approach, whether it is a new implementation, landscape transformation, or system conversion.

Data Quality and Cleansing Involved
Data is the lifeblood of any ERP system and migrating to SAP S/4HANA presents an opportunity to enhance data quality. Organizations should invest time in cleansing and validating data before the migration. This includes addressing data inconsistencies, duplicates, and obsolete records. A robust data quality strategy ensures a smooth transition and sets the foundation for accurate reporting and analytics in the new system.

User Training and Change Management
The success of any ERP migration hinges on user adoption, and training is a pivotal element. Organizations should invest in comprehensive training programs for end-users, key stakeholders, and IT teams. Additionally, a robust change management strategy is vital to address resistance, foster a culture of adaptability, and ensure a smooth transition for employees.

Custom Code Analysis
Many organizations have custom code in their current ERP systems, and this code may need adjustments to function correctly with SAP S/4HANA.The roadmap should include a detailed plan for identifying, analysing, and adjusting custom code. Leveraging tools and resources for code optimization ensures a seamless transition and minimizes post-migration issues.

Integration with Other Systems
Consideration for how SAP S/4HANA integrates with other systems is paramount. Whether it is third-party applications, legacy systems, or cloud services, a comprehensive integration strategy is essential. This includes assessing the impact on existing integrations, planning for adjustments, and ensuring a smooth flow of data across the entire IT landscape. Depending on the scenario, this may include migrating from any database to SAP HANA, implementing SAP S/4HANA, loading and converting business data into the new and simplified business data model, and conducting landscape transformation activities.

Project Management Office
The project management team oversees common project and quality management tasks, including project planning. Collaboration between the technical quality manager (TQM) from SAP and the project manager, whether from your company or the implementation partner, is integral to this workstream.

IT and User Acceptance Testing
This workstream encompasses test planning and execution, including integration, regression, and user acceptance testing. Technical architecture and infrastructure SAP S/4HANA has HANA as the underlying database. The introduction of SAP HANA into your data centre must be properly planned based on your business and IT American Journal of Computer Architecture 2023, 10(2): 37-41 39 requirements. You may also include connectivity to SAP Cloud Platform or any Hyper Scaler of choice for integration or extension use cases.

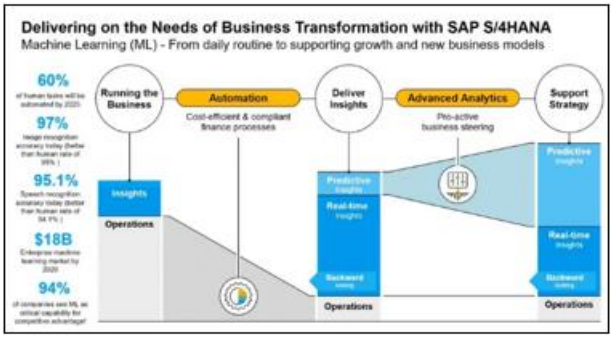

Figure 6: Deciding the path

3. Tools & Accelerators

SAP offers a range of tools and resources to facilitate the migration from ECC (ERP Central Component) to S/4HANA. The migration process is a significant undertaking, and these tools aim to streamline various aspects of the transition. Here are key tools and resources provided by SAP for ECC to S/4HANA migration.

3.1 SAP Readiness Check

Offer an overview and planning baseline for important topics in the migration process. Assess the readiness of the current system for the planned conversion to SAP S/4HANA. Performs functional and technical assessments. Provides insights into

changes and associated impacts. Assesses functional redesign needs for system conversion. Evaluates Fiori compatibility with your system's current transactional load. Covers technical aspects like sizing, data volume management, and software prerequisites. Facilitate team collaboration through an interactive dashboard. Analyses the existing system landscape. Provides insights into potential issues and areas that require attention. Generates a detailed report on the system's compatibility with S/4HANA.

3.2 SAP S/4HANA Migration Cockpit

SAP S/4HANA Migration Cockpit is a tool provided by SAP to facilitate and streamline the process of migrating data from legacy systems to SAP S/4HANA.It is an integral part of the data migration strategy when transitioning to the S/4HANA suite.

3.3 SAP Advanced Data Migration (ADM)

SAP Advanced Data Migration (ADM) stands as a robust solution designed to address the intricate challenges associated with migrating data in large-scale enterprises. In the dynamic landscape of business operations, where data is a critical asset, ADM emerges as a powerful tool to ensure seamless, accurate, and efficient data migration processes.

3.4 SAP Transformation Navigator

The SAP Transformation Navigator serves as a guiding companion rather than a mere options provider. This tool facilitates your journey through digital transformation by generating a tailored product roadmap comprising recommended SAP products and solutions aligned with your business needs. Furthermore, it aids in aligning your company's aspirations by selecting value drivers, thereby assisting in constructing a compelling business case for your transformative journey. The tool offers insights into customer proof points and successful adoption cases, serving as a valuable resource for potential license implications. Upon completion, it produces a set of three guides (business, technical, and transformation) encompassing detailed information about products, licenses, integration, services, and business capabilities.

3.5. SAP Fiori Apps Library

The SAP Fiori Apps Library is a centralized hub that houses a vast collection of Fiori apps designed to streamline and simplify user interactions with SAP applications. It serves as a dynamic resource for businesses leveraging the Fiori design principles to deliver intuitive, responsive, and efficient user interfaces.

3.6. SAP S/4HANA Migration Object Modeler

The SAP S/4HANA Migration Object Modeler is a pivotal tool designed to facilitate and streamline the intricate process of data migration during the transition to SAP's next-generation business suite, S/4HANA. In the evolving landscape of enterprise technology, where data precision is paramount, the Migration Object Modeler emerges as a powerful solution, empowering organizations to achieve seamless and accurate data migration.

3.7 Maintenance Planner

The Maintenance Planner (MP) stands as a crucial tool in orchestrating the planning phase of a system conversion, underscoring the importance of initiating it early in the migration process to ascertain the technical feasibility of transitioning from SAP ERP to SAP S/4HANA.This tool plays a pivotal role in assessing the compatibility of add-ons, allowing organizations to proactively determine how to handle each one. Notably, it conducts a thorough examination to identify unsupported add-ons that may pose challenges during the conversion process.

3.8 ABAP Test Cockpit

The ABAP Test Cockpit (ATC) stands as SAP's essential toolset for conducting static checks and unit tests on ABAP programs, leveraging the foundation of Code Inspector (SCI) checks. This tool is integral for the identification of ABAP custom code requiring adaptation to pre-empt potential functional issues. Evaluating custom code is a critical task, often underestimated in complexity. It is not a task to be initiated at the onset of a project; rather, adjusting ABAP to run seamlessly on HANA is a substantial undertaking that demands proactive attention well in advance.

3.9. Simplification Item Catalog

SAP furnishes a catalog of simplification items for each S/4HANA release, with the current S/4HANA 1909 release comprising 632 items. These items serve to delineate incompatible or disruptive changes inherent in SAP S/4HANA as compared to SAP ERP or preceding versions of SAP S/4HANA. Conduct the Simplification Items check expeditiously, as the adjustment of intricate business processes may necessitate more time than initially anticipated. On average, the simplification check report typically highlights between 50 to 80 relevant implications items for a given system. Given the potential significance of these items as potential showstoppers, leveraging the tool early in the process is imperative to identify and address them promptly, contributing to a smoother and more expeditious conversion.

3.10. SAP Roadmap Viewer

The SAP Roadmap Viewer grants entry to the comprehensive content of the SAP Activate Methodology, encompassing tasks, templates, and accelerators. Additionally, it incorporates valuable project experiences derived from SAP S/4HANA implementations, offering substantial support for your conversion project through structured documentation for each project phase. If you seek a consistent and proven approach, you will discover it within the SAP Roadmap Viewer.

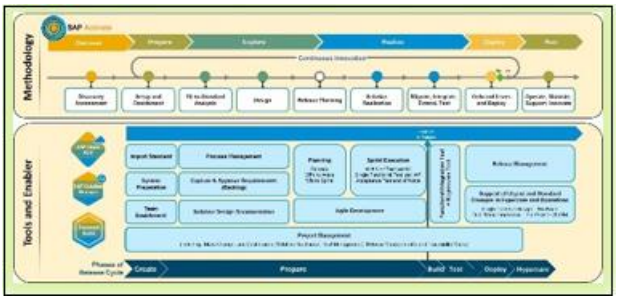

Figure 7: S4 Hana Tools and enablers

4. Project Methodology of supply chain S4 Hana

Figure 9: S4 Hana Transformation process

The "Transition to SAP S/4HANA" roadmap unfolds in distinct phases aligned with the SAP Activate methodology, detailed in the below section:

4.1. Discover Phase

Focuses on recognizing the value of SAP S/4HANA within the digital transformation strategy. It involves creating an implementation plan, identifying high-level areas in the existing solution landscape that benefit from SAP S/4HANA, and devising a value-based implementation strategy. A "cloud trial" may be employed to highlight potential implementation issues.

4.2. Prepare Phase

Officially initiates the project after the business case approval. This phase includes the preparation of an implementation plan, considering findings from the "Discover" phase and potentially incorporating insights from a prototype project. Additional preparation activities, such as the detailed planning of specific scenarios are undertaken. General project preparations, including staffing and governance, are carried out.

4.3. Explore Phase

Involves defining the to-be design of the SAP S/4HANA solution, documenting functional gaps, and prioritizing them. Fit-Gap-Workshops are conducted with pre-configured sandbox systems representing SAP's Best Practice solutions. For system conversion scenarios, existing custom code is analysed for SAP S/4HANA readiness. Technical design and documentation are crucial for the technical setup of sandbox and development environments. All technical and functional aspects are fully planned and documented by the end of this phase.

4.4. Realize Phase

Encompasses preparing the technical architecture and infrastructure for SAP S/4HANA. Supporting systems are set up or converted following best practices and the implementation plan. Custom code is adjusted, and application and analytics functions are implemented, configured, integrated, and tested. Integration validation addresses performance issues in key business processes. IT adjusts operational tools and procedures, and end-user training is conducted.

4.5. Deploy Phase

Finalizes readiness for SAP S/4HANA and business processes for production go-live. This involves final testing, rehearsing the cut-over, and ensuring the IT infrastructure is optimized. End-user training is delivered, and the productive instance of SAP S/4HANA is implemented or converted on the Go-Live weekend. The "hyper care" phase follows, optimizing IT operations before full operational responsibility is transferred to the production support team.

4.6. Run Phase

Focuses on stabilizing and optimizing operations. The SAP system is continuously updated, incorporating the latest innovations from SAP. This phase marks the beginning of the innovation cycle.

4.7. Cost and Licensing

The licensing and cost options for SAP S/4HANA migration can vary based on several factors, including the deployment model, edition chosen, and the specific needs of your organization. It's important to note that SAP's pricing and licensing models may be subject to change, and you should always refer to the latest information provided by SAP or consult with SAP representatives for the most accurate and up-to-date details. Here are some general considerations regarding licensing and cost options for SAP S/4HANA migration.

4.8. Editions or Versions

SAP S/4HANA is available in couple of editions, such as SAP S/4HANA RISE or cloud and SAP S/4HANA On-Premise.

4.9. Deployment Models

4.9.1 Cloud

SAP offers a cloud-based deployment model where you pay for a subscription based on factors such as the number of users and specific functionalities required.

4.9.2 On-Premises
For on-premise deployments, the pricing may include software licenses, maintenance, and support fees. Licensing may be based on metrics like the number of users or the size of the organization.

4.9.3 User Licensing
In addition to offering customers the versatility to employ the deployment alternatives, SAP presents flexible licensing American Journal of Computer Architecture 2023, 10(2): 37-41 41 options with three distinct models:

4.9.4 Perpetual License Model: SAP's perpetual license model grants the customer enduring rights to utilize the software perpetually, primarily applicable in on-premises deployment scenarios. In this context, the initial one-time software fee confers perpetual usage rights for a specified quantity of software. This fee forms the foundation for the annual SAP support fee, contingent upon the terms outlined in the respective SAP support agreement.

4.9.5 Subscription License Model: The subscription license model is applicable to all SAP software deployed in the cloud. Under this model, customers do not possess perpetual usage rights; instead, they remit an annual subscription fee as part of a term contract. This fee encompasses all Software as a Service (SaaS) components, inclusive of support. Subscription terms typically span three to five years, with renewal lengths defined in the contract, typically ranging from one to three years. In standard private or public cloud contracts, customers retain the flexibility to augment the contract with new software or additional quantities of existing software during the initial term or renewal periods.

4.9.6 Consumption-Based Model: The consumption-based model is presently applicable to a subset of SAP software deployed in SAP's public cloud, including solutions such as SAP Fieldglass, SAP Ariba, and SAP Cloud Platform. In this model, customers are billed retrospectively based on actual usage. The fee incorporates SAP Enterprise Support cloud edition and all SaaS components.

4.9.7 Infrastructure Costs:
For on-premises deployments, organizations may need to consider infrastructure costs, such as hardware, storage, and networking.

4.9.8 Support and Maintenance:
Annual maintenance and support fees are typically part of the overall cost. These fees may cover updates, patches, and access to SAP support services.

4.9.9Additional Functionalities:
Additional functionalities or modules beyond the core SAP S/4HANA offering may have separate costs.

4.10.1 Customization and Integration:
Costs associated with customizing the system or integrating it with other applications.

4.10.2 Contractual Agreements:
Licensing agreements and costs are subject to negotiation, and contractual terms may vary based on the specific agreement with SAP. It's crucial to engage with SAP representatives or authorized partners to get a personalized quote and discuss the specific requirements and circumstances of your organization. Additionally, SAP regularly updates its offerings, so it's advisable to check the latest information on the official SAP website or contact SAP directly for the most accurate details.

5. Conclusion

The adoption of SAP S/4HANA supply chain module opens doors to a new era of efficiency, collaboration, and strategic decision-making. While challenges exist, the transformative power of this platform far outweighs the obstacles. Businesses that navigate the implementation process with precision and invest in ongoing improvement will find themselves not only keeping pace with industry trends but setting new standards or success. The collaboration with SAP Value assurance further ensures a smooth transition, allowing organizations to harness the full potential of SAP S/4HANA and pave the way for a digitally empowered future. As organizations embark on this transformative journey, they are not just migrating systems but navigating toward a future of innovation, agility, and unparalleled business capabilities.

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