A Comprehensive Review on SAP ECC to S/4 HANA Migration

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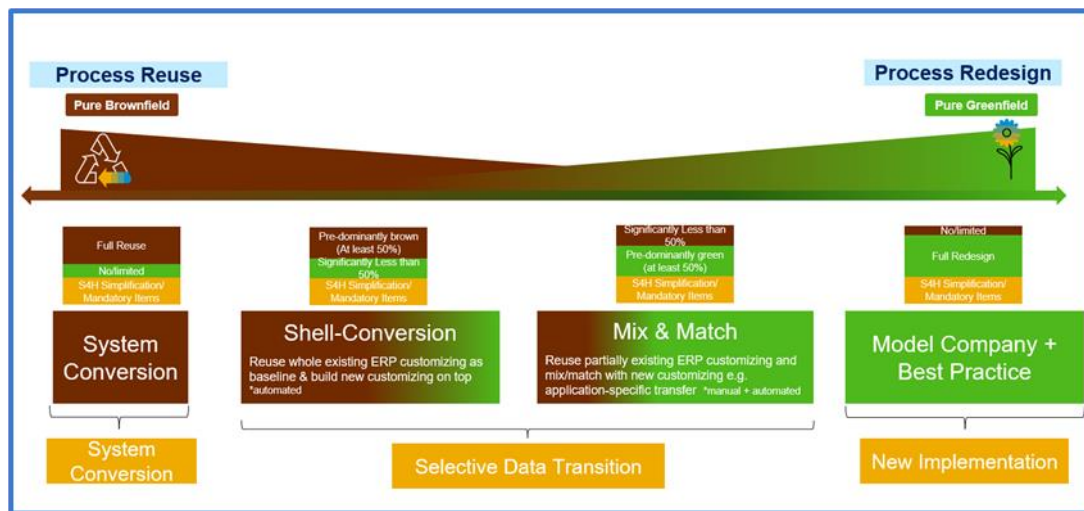Accenture LLP, USA

Abstract

SAP S/4HANA is the next-generation ERP suite that runs on SAP's high-performance in-memory database, SAP HANA. It offers a simplified data model, enhanced user experience with SAP Fiori, and improved performance over SAP ECC. SAP has announced that support for SAP ECC will end by 2027. This means organizations still using ECC will no longer receive updates, security patches, or support from SAP, making the transition necessary for continued efficiency and security. While the migration from SAP ECC to S/4HANA requires lots of planning and effort, it is a strategic necessity for businesses that want to stay ahead in a rapidly evolving digital world. There are a lot of benefits of migrating to the S/4 HANA system such as improved performance, real-time analytics, and a simplified user experience that make it a critical upgrade for enterprises using SAP. In this paper we will take an in-depth look at the best migration strategies, the challenges businesses face, and how to overcome them.

Keywords: SAP ECC, SAP S/4 HANA, Migration, Greenfield, Brownfield, Bluefield

1 Introduction:

Migrating to SAP S/4HANA is not just a technical upgrade but a business transformation. Companies must choose the right strategy (Greenfield, Brownfield, or Bluefield), address data and customization challenges, and ensure smooth business adoption. Depending on what S/4HANA deployment option organizations decide on, there are two main options to approach the transformation: the Greenfield approach, which is starting from scratch, or upgrading SAP ECC 6.0 in a Brownfield approach, which allows the transformation without re-implementation and without disrupting existing business processes. A Greenfield approach is best suited for looking for process reengineering, cloud adoption, and digital transformation while the Brownfield approach is suitable for organizations that want minimal disruption with a technical upgrade. Some organizations opt for a third option of hybrid approach(Bluefield), which lets them choose the best parts of Greenfield and Brownfield implementations. This approach is best for companies needing flexibility in choosing what data and customizations to migrate or some of the large enterprises with a lot of data and complex systems.

1.1 Importance of Migration:

- SAP ECC will no longer receive mainstream support after 2027.
- SAP S/4HANA enables real-time analytics, simplified business processes, and improved integration with emerging technologies like AI, IoT, and blockchain.
- Migration offers an opportunity for digital transformation and process optimization.

2. Greenfield Implementation:

The Greenfield implementation approach means starting from a clean slate. A Greenfield approach to migrating from SAP ECC to SAP S/4HANA is a complete reengineering of an organization's SAP processes and workflows. Additionally, any customization you've done on SAP ECC will be completely wiped out during a Greenfield implementation. For a company that has been using SAP for many years and has amassed many complex processes and code that's been heavily customized as per the age-old business model, the Greenfield approach may be the new start it needs to overhaul its use of SAP and reduce complexities.

The Greenfield approach can be done on-premise or in the cloud, enabling users to predefine migration objects. The main advantage of a Greenfield migration is that the transformation begins with a new system, providing the flexibility to drive such topics as standardization and simplification along with the migration itself. However, the Greenfield approach is definitely riskier than a different implementation strategy. That's because you also have to redevelop any system customizations that are critical to the business that you were running on another SAP ERP system, which will also take a considerable amount of time.

3. Brownfield Implementation:

The Brownfield approach is more like an upgrade, you can get SAP S/4HANA up and running, and at the same time, migrate your existing SAP workflows and systems over to the newest version of SAP S/4HANA.

The proven business processes as well as the customizations you've been using to manage your data can be kept since you don't have to move everything over. The Brownfield approach lets you reevaluate and edit your existing processes and port over the ones that are working. The main advantage of Brownfield is that there is usually a shorter project runtime, and therefore there's less disruption to your business.

Approach	Key Characteristics	Best For
Greenfield (New Implementation)	Full system redesign, clean start.	Companies wanting process transformation.
Brownfield (Conversion)	Upgrades existing ECC system to S/4HANA.	Companies wanting to retain customizations & historical data.
Bluefield (Selective Data Transition)	Migrate selected data & processes.	Businesses needing flexibility in migration scope.

4. Key Technical Aspects of Migration:

Following are the key aspects of Migration that need to be considered depending upon the existing system setup and migration strategy to be adopted.

- **System Readiness Assessment**
    - SAP Readiness Check: Analyzes compatibility, simplification items, and technical debt. This is very helpful in understanding the initial stage of the system and performing the fit-gap analysis.
    - Data Volume Management: Identifies unnecessary data and archives non-critical information. Custom Code Analysis: Evaluates ABAP code for HANA compatibility using ATC (ABAP Test Cockpit). This will determine the scope of the code remediation to be done and making the existing custom development ready for S/4 Migration.
- **Data Migration and Transformation**
    - SAP Migration Cockpit: Predefined templates for data migration.
    - SAP Landscape Transformation (SLT): Real-time data replication for complex migrations.
    - Third-party ETL Tools: Used for advanced data transformations.
- **Business Process Reengineering**
    - Fit-to-Standard Analysis: Aligning business processes with SAP S/4HANA Best Practices. It is best to adapt the old processes to the new S/4 HANA best practices. This will make the system more robust and as per the current industry best practices.
    - SAP Fiori Implementation: Replacing SAP GUI with modern UI for better user experience.
- **Infrastructure and Deployment Options**
    - On-Premise vs. Cloud: Choosing between SAP HANA Enterprise Cloud, public cloud, or hybrid models.
    - Hardware Sizing: Using SAP Quick Sizer for infrastructure planning.

Following picture shows the variety of tools and their usage depending upon the Migration task.

Tool	Purpose
SAP Readiness Check	Analyzes your current ECC system for migration readiness.
SAP Maintenance Planner	Helps plan and manage system updates and upgrades.
Simplification Item Check	Identifies necessary changes and adaptations for S/4HANA compatibility.
Custom Code Migration Worklist	Assesses which custom codes need modification for S/4HANA.
SAP Data Migration Cockpit	Facilitates data migration using predefined templates.
SAP SUM (Software Update Manager) with DMO (Database Migration Option)	Supports migration, upgrade, and database conversion with minimal downtime.
SAP S/4HANA Migration Cockpit	Used for data transfer from legacy systems to SAP S/4HANA.

5. Conversion Stages:

Let us discuss in detail the typical phases of the conversion project and what activities will be involved in each stage.

5.1 Discover:

This is the initial phase of the project where the intention is to Assess the feasibility of system conversion and understand business impact. SAP Readiness Check tool is very helpful to analyze system compatibility. Each object can have one of the following statuses:

- **Supported:** Transition of objects is supported automatically using the Data Transfer tool.
- **Supported With Restriction:** Transition of objects is supported with restrictions due to various reasons, listed in the specific object documentation.
- **Currently Not Supported:** Transition of objects isn't currently supported, maybe supported in a future release.
- **Not Supported:** Transition of objects isn't supported, which maybe due to implementation differences between Version 1 and Version 2.

In this phase custom code impact is identified and the areas where adaptation is required.

5.2 Prepare:

In this phase we set up project scope, build a roadmap, and ensure infrastructure readiness. The key activities include finalizing conversion strategy (big bang vs. phased approach), Identifying dependencies and interfaces with third-party applications, Setting up a sandbox environment for initial testing etc. We need to also define data archiving and cleanup plans and form the SAP conversion project team with the right skillset. SAP tools such as Maintenance Planner can be very helpful to plan updates, upgrades, and new installations in the system landscape.

5.3 Explore:

In this phase, we conduct detailed system analysis, adapt custom code, and define conversion approaches. We need to perform a Simplification Item Check to identify mandatory changes. Run Custom Code Migration Worklist to assess ECC custom code compatibility. Identify required Fiori apps and UI adaptations as per the Business Processes. SAP Fiori App Reference Library can be used to identify the Fiori Apps as per the functional area or system version. Also one of the key tasks is to Define data migration strategy for transactional & master data. Perform initial functional tests on a sandbox system.

5.4 Realize:

The goal is to execute the technical conversion and perform functional testing in this phase. Key tasks performed in this phase are as below:

- Run Software Update Manager (SUM) with Database Migration Option (DMO) to convert ECC to S/4HANA.
- Execute HANA database migration and application upgrade.
- Adjust custom ABAP code to be compatible with SAP S/4HANA.
- Conduct unit testing, integration testing, and user acceptance testing (UAT).
- Optimize performance tuning and fix system errors.

5.4 Deploy:

This is the final phase where we perform cutover and transition to SAP S/4HANA. Key tasks are as below:

- Execute cutover plan to migrate production system.
- Perform final data validation and system checks.
- Conduct user training sessions on SAP S/4HANA changes.
- Provide hypercare support to resolve post-go-live issues.

6. Best Practices for a Successful Migration:

Best practice guidelines to be considered for a Successful Migration as below:

- Conduct SAP Readiness Check Early: Identify potential roadblocks before migration.
- Define Clear Objectives & Budget: Align with business goals and cost constraints.
- Choose the Right Migration Approach (Greenfield/Brownfield/Bluefield): Consider business needs and system complexity.
- Optimize Custom Code & Business Processes: Reduce reliance on outdated customizations.
- Use SAP Best Practices & Automation Tools: Minimize manual efforts and errors.
- Train End Users & IT Teams: Ensure smooth adoption of SAP Fiori and new business processes.
- Plan for Continuous Improvement: Monitor performance post-migration and optimize.

Conclusion:

While the migration from SAP ECC to S/4HANA requires planning and effort, it is a strategic necessity for businesses that want to stay ahead in a rapidly evolving digital world. The benefits of improved performance, real-time analytics, and a simplified user experience make it a critical upgrade for enterprises using SAP. Organizations may choose an approach (Greenfield, Brownfield, or Bluefield) depending upon various factors according to their existing setup, migration strategy, cost, timeline etc. Each approach has its own set of key characteristics as below:

Greenfield

- Involves building a new SAP system from scratch
- Ideal for organizations that want to overhaul their processes
- Offers the most flexibility
- May be more expensive due to new system design and implementation

Brownfield

- Involves updating and upgrading an existing SAP system
- Suitable for minimizing disruption and retaining existing processes
- Can be the most cost-effective solution
- Usually offers a smoother transition for users

Bluefield

- A hybrid approach that combines elements of greenfield and brownfield migration
- Offers flexibility and reduced risk
- Strikes a balance between innovation and stability
- Requires careful planning

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