SAP S/4HANA migration: greenfield, brownfield, or phased?
Executive summary

S/4HANA is SAP’s next-generation Enterprise Resource Planning (ERP) Suite. Organizations planning to implement this real-time digital core to their business need to choose between a migration (brownfield) or start anew (greenfield). Bluefin Solutions outlines the pros and cons of each strategy and extends the choice with a hybrid solution.

Moving to SAP’s latest ERP is not like any other enterprise software upgrade. With a new database technology, a new user experience, and redesigned business processes, adopting S/4HANA is a system conversion.

Organizations need to evaluate their current landscape, technical prerequisites, target software versions, and business case in order to select the right migration path: brownfield, greenfield, or a phased approach.

**Brownfield**

Traditional implementation projects require the complete migration of the legacy environment, including master data and transactional data, as far back as legally required.

**Greenfield**

In a greenfield environment, most of the master data will be converted, but most transactional data will be archived or discarded.

**Hybrid/Phased**

Rather than migrating a complete system, a new environment can be implemented gradually: country by country, division by division, etc.

Master data will be converted first, and then transactions will gradually be transferred to the new system.

Our current ERP systems can only support today’s business model; we need a digital platform to enable tomorrow’s business.

IT Director of a Fortune 500 US Contract Manufacturer
S/4HANA migration paths

At Bluefin, our specialist S/4HANA teams are regularly asked the same question:

“When considering an S/4HANA implementation, what’s best? Greenfield (starting fresh) or brownfield (migration)?”

Field colors

In integration services language, a ‘greenfield’ implementation refers to first-time installations, or so-called ‘net new’ customers. In contrast, upgrades and migrations are called ‘brownfields’. The pros and cons of implementation projects in both situations can be summarized as follows:

<table>
<thead>
<tr>
<th>Greenfield</th>
<th>Brownfield</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Cons</strong></td>
</tr>
<tr>
<td>- Typically new customers are smaller, requiring smaller scope</td>
<td>- Workforce needs to be educated in the SAP language and objects</td>
</tr>
<tr>
<td>- Smaller scope means shorter projects, leading to quicker returns on investment</td>
<td>- New system needs to be fitted into the current architecture</td>
</tr>
<tr>
<td>- Migration of data subset, leading to smaller footprint</td>
<td>- S/4HANA does not cover all industry-specific features and functions</td>
</tr>
<tr>
<td>- Enablement of process transformation</td>
<td>- Functional changes still require retraining and change management</td>
</tr>
<tr>
<td></td>
<td>- Potential impact on unique configurations and customizations</td>
</tr>
<tr>
<td></td>
<td>- Potential requirement for significant downtime, incompatible with business and operations</td>
</tr>
</tbody>
</table>
History can be deceptive

The case studies currently available on S/4HANA implementations can be misleading: one might infer from customer success stories that all S/4HANA projects are going to be greenfield ones, but this would simply be statistical bias. Since early adopters were smaller customers, the initial projects were by default greenfield. This does not mean that S/4HANA will never be relevant for brownfield implementations, it just indicates that they will probably not be the first ones to start or complete an implementation.

Not just an upgrade, but a system conversion

Contrary to upgrade projects from older releases, e.g. from SAP R/3 4.6C to SAP ECC 5.0, or from Business Suite on AnyDB to Business Suite on HANA, the migration to S/4HANA is not purely technical. Not only will the underlying architecture be changed, but so will various key tables, transactions, and processes. This system conversion from release R/3 to S/4 will require both technical and functional resources in order to fully retest all transactions and business processes.

A work in progress

The SAP S/4 development team is going through fundamental code refactoring in order to fully transform and leverage the power and capabilities of the HANA database. In particular, not all Industry Solutions have currently been ported to the S/4HANA platform. You will need to check the SAP Product Availability Matrix (PAM) for more information on your specific Industry Solution³.

Bluefin gave us the confidence that we were working with a partner who’d been down this road before. Their experience with SAP HANA implementations meant they understood the challenges we were facing, and could resolve any issues that emerged along the way.

BI Manager, Howdens, FTSE 250 Company
Evaluate your situation

As with every significant enterprise project, there are multiple criteria which influence decisions like greenfield vs. brownfield. In the case of an S/4HANA conversion, the most important criteria that Bluefin experts have identified are: the start release, the technical prerequisites, the edition options, and the business case.

Start release

If your current enterprise ERP solution is not provided by SAP, there is no easy migration option available. In this case, the only option is to go greenfield. However, if your ERP solution is provided by SAP, then you might be able to upgrade your platform as brownfield if your system supports the technical prerequisites.

Technical prerequisites

One of the key requirements for any migration to the SAP HANA database is a Unicode encoding system. If your current database is not Unicode-compliant, then you would need to perform a Unicode conversion in order to support a brownfield migration. This step cannot be bundled with other migration steps.

In addition to the Unicode system, your SAP platform will require Release 6, Enhancement Package 7 or higher, and a HANA database. If these criteria are not met already, don’t worry, you should be able to do a one-step conversion to upgrade your brownfield system.

Some early adopters may have already installed the Simple Finance add-on. This is not a prerequisite and doesn’t prevent the conversion to S/4HANA.

More details can be found in SAP’s transition white paper⁴.

"One of the key requirements for any migration to the SAP HANA database is a Unicode encoding system. If your current database is not Unicode-compliant, then you would need to perform a Unicode conversion."

SAP S/4HANA migration 5
**Edition options**

Now that you have a better picture of where you stand, let’s take a look at where you’re going. S/4HANA comes in two editions: on-premise and cloud. Here’s a quick comparison of the two options.

<table>
<thead>
<tr>
<th>Licensing model</th>
<th>On-premise</th>
<th>Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional licensing</td>
<td>Subscription licensing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure and maintenance model</th>
<th>On-premise</th>
<th>Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>The customer is in control of deployment and maintenance with dedicated own IT staff</td>
<td>SAP provides the system and is responsible for the system maintenance</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Speed of innovation</th>
<th>On-premise</th>
<th>Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer has full control over speed of innovation, planned downtimes, changes within the system, changes of the system</td>
<td>Cloud customers participate automatically on quarterly innovation upgrades</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation approach</th>
<th>On-premise</th>
<th>Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly individual requirements regarding business processes and customization</td>
<td>Predefined best-practice configuration with limited specialization</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional scope</th>
<th>On-premise</th>
<th>Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full ERP scope (including SAP S/4HANA applications), integrates with SAP SuccessFactors Employee Central, SAP Fieldglass, SAP Hybris Marketing, SAP JAM and SAP Ariba Network</td>
<td>Key scenarios, embedded ERP scenarios, integrates with SAP SuccessFactors Employee Central, SAP Fieldglass, SAP Hybris Marketing, SAP JAM and SAP Ariba Network</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Custom code</th>
<th>On-premise</th>
<th>Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full traditional ABAP extensibility up to core modification (which is not recommended for TCO reasons)</td>
<td>In-app extensibility with limited ABAP; SAP HANA Cloud Platform (HCP) as extension platform for larger extensions</td>
<td></td>
</tr>
</tbody>
</table>

*SAP S/4HANA editions – at a glance. Source: SAP*
It is important to keep in mind that, despite its misleading name, the S/4HANA On-premise edition can be deployed in-house, in your own data center, through a managed hosting partner, in a private cloud or public cloud. All these options support a brownfield scenario.

However, the SAP S/4HANA Cloud edition can only be deployed in SAP’s public cloud and only supports a greenfield option.

**Business case**

You now should have a better idea as to whether you can technically perform a conversion to S/4HANA. The next question is “should you convert to S/4HANA?”

There are multiple criteria that could be taken into consideration, depending on your organization. Here are some examples:

**Data migration**

The larger the dataset, the more expensive your future S/4HANA system will be. Our experts will guide your teams while assessing your data migration strategy, including early watch reports, data growth and life cycle, and compression factors, etc. This is applicable in both the greenfield and brownfield scenarios.

**Custom code remediation**

Most companies that have been running an ERP system for a significant amount of time have had to customize it to a certain extent: missing functionalities, organization specific requirements, integration with other systems, etc.

What used to be an advantage, however, could potentially get in the way of a system conversion. Indeed, some custom programs might not work on a HANA-based platform. Some customizing might not even be needed anymore. A conversion to S/4HANA is a good opportunity for re-evaluation.

Bluefin partners with custom code remediation specialists to effectively clear such hurdles.
**Architecture complexity**
In a perfect world, your ERP landscape would contain a pristine platform: a single system, up to date, and out of the box. In the real world though, companies can have multiple ERPs, different releases, integration layers, and heavy customization, etc. This landscape complexity can significantly impact your ability to migrate or affect the project cost. There are potential solutions to reduce such complexity, which will be described in the ‘Phased Approach’ section.

**Changes to the business model**
As previously mentioned, the conversion to S/4HANA is not just technical. This move also presents you with a unique opportunity to unlock new potential for your business and/or accommodate changes in the way you operate.

During the Discovery roadmap workshops we run at Bluefin it isn’t uncommon for the business to share with us fundamental changes they have gone through, e.g.:

“We used to have 140,000 employees. Now, we’re less than 10,000. We need a new platform.”

“Our manufacturing footprint used to be huge, however, today our business is focused on outsourcing – a large portion of our ERP is now deadweight.”

“This industry has changed; nowadays we need to be better and quicker to acquire and integrate new companies.”

These factors influence the best strategy for your company.

**Conversion effort**
The above criteria are only some of what should be taken into account to evaluate the level of effort required for the conversion of your system to S/4HANA. Based on these results, you should be able to build a well-informed strategy regarding a greenfield or brownfield project.

For further details, read ‘*Building the Business Case for SAP HANA: Engineering Simplicity*’ by Bluefin’s John Appleby.5
The case for a hybrid/phased approach

Enterprise platforms can grow in complexity depending on the history of the organization (e.g. mergers and acquisitions), the number and dependencies of business processes, the architecture and landscape, as well as the business environment. In such cases, the conversion to S/4HANA may not be possible or realistic.

In this scenario, the organization should consider a hybrid or phased approach. By migrating either system by system, or company code by company code, or module by module, the migration becomes more manageable. It is worth keeping in mind, however, that this approach will take longer and could require the temporary setup of a parallel landscape.

Leveraging SAP S/4HANA for Landscape Transformation. Source: ASUG

If this solution presents more controllable risks, it will also probably be more expensive. This should be evaluated while building the business case.

“Bluefin has helped us to understand where we are, where we want to be, and what we need to do to clean house. We are now laying the foundations on which to build and innovate.”

Business Analytics Manager, Noble Corporation
Summary

S/4HANA is SAP’s future. Older versions of the enterprise software will run out of maintenance by 2020 (non-HANA DB) or 2025 (HANA DB). Organizations need to start assessing their options and develop a conversion strategy today.

Your current release, technical prerequisites, edition options, and business case will all inform what your best S/4 HANA options are: greenfield, brownfield, or hybrid implementation. Our experts at Bluefin Solutions have in-depth experience of working with companies that were in a similar position as you are in today. We will help you and your organization develop an unbiased business case. Contact us today for your Discovery roadmap workshop.
References

1. Wikipedia: Greenfield Projects
   https://en.wikipedia.org/wiki/Greenfield_project

2. Wikipedia: Brownfield Projects
   https://en.wikipedia.org/wiki/Brownfield_(software_development)

3. SAP: Product Availability Matrix
   https://support.sap.com/pam

4. SAP: The Road to SAP S/4HANA – Transition and deployment options for SAP S/4HANA
   https://websmp102.sap-ag.de/~sapidp/012002523100011787552015E.pdf

5. Amazon: Building the Business Case for SAP HANA: Engineering Simplicity

Additional reading

Bluefin: How to get to SAP S/4HANA

Bluefin: SAP S/4HANA: Everything you need to know for a successful implementation
http://www.slideshare.net/BluefinSolutions1/sap-s4hana-everything-you-need-to-know-for-a-successful-implementation

Bluefin: 10 Golden Rules for S/4HANA Migrations
http://www.slideshare.net/BluefinSolutions1/10-golden-rules-for-s4-hana-migrations

SAP: What is SAP S/4HANA? 13 Questions Answered

SAP: Overview on SAP S/4HANA Transition and Migration Patterns

ASUG: S/4HANA Special Interest Group
https://www.asug.com/discussions/community/sig_communities/s4-hana

SCN: 10 Golden Rules for SAP HANA Project Managers
http://scn.sap.com/community/hana-in-memory/blog/2014/02/01/10-golden-rules-for-sap-hana-project-managers

SCN: How to decide between a Greenfield and Brownfield S/4HANA transition

SCN: SAP S/4HANA Migrations: Greenfields and Brownfields
https://scn.sap.com/community/s4hana/blog/2016/05/03/sap-s4hana-migrations-greenfields-and-brownfields

PAC Online: SAP S/4 HANA: Simplified ERP may not lead to simple migrations
https://www.pac-online.com/sap-s4-hana-simplified-erp-may-not-lead-simple-migrations
Bluefin is Mindtree’s award-winning global SAP consultancy, focused on digital innovation and powered by the scale and agility of Mindtree.

SAP is in our DNA. Our clients’ success is based on our deep understanding of SAP methodologies and processes. You can have confidence in your SAP journey because of our close relationships with SAP product teams, enabling you to create and innovate real-world solutions to meet your business needs.

Ensure your project is a success. Bluefin was the first to go to market with an SAP HANA practice in 2011, and is seen by SAP as the go-to partner for digitally transforming your SAP portfolio. We have a network of Mindtree Minds across 33 countries, focused on SAP technology. The depth and breadth of our knowledge and understanding of SAP products, combined with our agile approach, enables our clients to experience results quicker, mitigate risk, and lower their total cost of ownership.

Julien Delvat is a recognized expert in the enterprise finance and controlling domains, having spent more than 15 years in the development, architecture, and implementation of large scale ERP projects.

He leverages his global experience to bring a unique perspective on the impact of digital transformation across various industries, including manufacturing, consumer products, and automotive.

Julien holds a Master in Management from the Skema Business School in Sophia-Antipolis, France.

Email: julien.delvat@bluefinsolutions.com
Twitter: @jdelvat