Data Migration

An automation-first framework for SAP S/4HANA Greenfield migrations using DMAG™

Executive Summary

S/4HANA Greenfield programs frequently underestimate the complexity of moving business-ready data from legacy systems into the simplified S/4HANA data model. The highest risks are poor data quality, incomplete documentation, and late discovery of issues that force rework and extend testing cycles. This white paper outlines an automation-first approach to data migration using DMAG™ (Data Migration, Audit and Governance), a framework that stages, cleanses, transforms, validates, and loads Master, Transactional, and Configuration data into SAP S/4HANA. The outcome is faster iterations (dry runs), higher data quality, and reduced migration effort and timeline.

Guiding principle: "Get Data Right the First Time" by starting early, industrializing migration steps, and running continuous audit & governance.

What is DMAG™

DMAG™ (Data Migration, Audit and Governance) automates data migration from Oracle, Microsoft, SAP, and non-SAP systems by combining robotic data staging, data dialysis, data cleansing, mapping, transformation, and rapid conversion/loading into SAP S/4HANA. It supports "like-to-like" migrations (ECC→ECC, ECC→S/4HANA) as well as heterogeneous migrations (non-SAP→S/4HANA). DMAG helps simplify landscapes, improve data quality via business-rules validation, and accelerate test readiness by loading business-ready data early and repeatedly.

Migration Scope

Data Category	Typical Objects in Scope	Examples of Outcomes
Master Data	Customers, Vendors, Materials, Cost Centers, Profit Centers, G/L, Organizational Entities	Consistent master records, reduced duplicates, improved compliance
Transactional Data	G/L balances, Inventory balances, Asset balances, Purchase Orders, Sales documents	Accurate opening balances, clean transaction history for operations
Configuration Data	Org structures, control tables, reference/config settings	Standard footprint, simplified landscape, process-enabled configuration

Common Migration Risks and Business Impact

Greenfield migrations often face these predictable risks:

- Data is adequate for legacy systems but not for SAP/S/4HANA standards.
- Lack of accurate documentation for legacy systems and transformations.
- Poor data quality in source systems (duplicates, missing fields, invalid formats).
- Errors detected late in the lifecycle, leading to rework, delays, and cost overruns.
- Data management draws resources away from subsequent rollouts and stabilization.

When these risks materialize, they commonly lead to process and object-level failures:

Category	Typical Issues
Process Issues	Unable to ship product; unable to cut a PO; unable to manufacture material; cannot plan or sell; no warehouse management; cannot release planned orders; incorrect pricing.
Object Issues	Duplicate vendor records; incorrect address causing failed delivery; missing tax jurisdiction causing incorrect tax; missing phone/email causing supplier/customer contact failures.

Methodology: Start Early and Industrialize Migration

A sustainable migration program applies a repeatable lifecycle, enabling faster dry runs and stronger governance:

- Start gathering, analyzing, and cleansing legacy data before the design phase.
- Clean data in legacy systems before it is migrated to S/4HANA to reduce downstream rework.
- Assess maturity of business processes to align data quality targets to process criticality.

- Rapidly automate source-to-target mapping using governed mapping rules.
- Use rapid generators to automate extraction from SAP and non-SAP source systems.
- Load business-ready data early to support integration testing and process validation.
- Balance three strategic variables continuously: complexity, speed, and cost.

Architecture and Workflow

DMAG sources data from legacy platforms (e.g., QB/Excel, Oracle, Microsoft, SAP ECC/R/3) into a staging area, validates completeness, performs data dialysis and cleansing, transforms to S/4HANA structures via built-in mapping rules and complex transformations, and then conducts pre-load audit and governance using business/industry rules. After multiple dry runs, data is loaded into production for go-live using rapid conversion and BAPI-based loading.

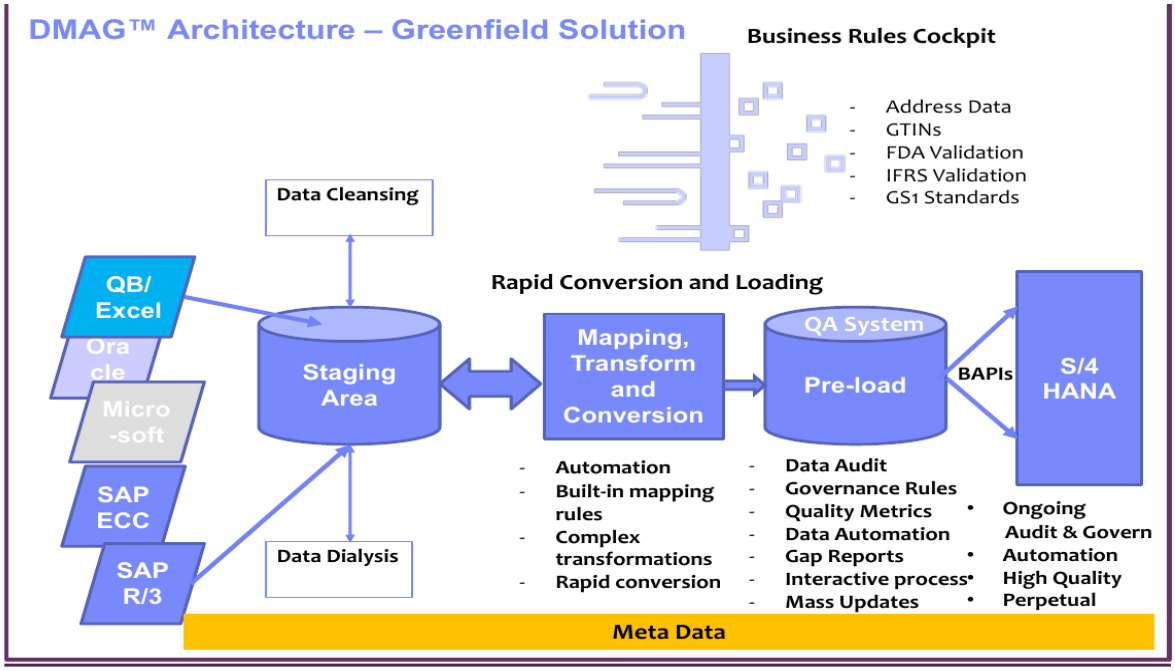

Figure 1 - DMAG Solution

DMAG has capability to source the data from legacy systems: QB, Excel, Oracle, Microsoft, SAP ECC and SAP R/3 systems. It gets the data into a staging area, validates the records, formats, structures and ensures that all the expected data from legacy is transitioned. It stores the data in the Staging area, conduct Data Dialysis , Cleanse and Scrub it and transform it into useable formats. Then, the data is transformed and mapped into S/4 formats and structures via Automation, Built-in Mapping Rules and Complex Transformations using Rapid Conversion and Loading. On top of the transformed Data, Data Audit is conducted, validations performed using Industry rule sets, GTINs and Regulations such IFRS, and the validation reports are produced. The Validation

Audit, Governance, and Validation

Pre-load audit and governance are critical to achieving first-time-right data. DMAG applies business rules, industry rule sets, and regulatory validations to produce exception reports and quality metrics. These insights drive corrective actions before loading, reducing post-go-live disruptions.

- Governance rules and gap reports highlight missing or inconsistent fields and data elements.
- Industry and regulatory validations may include GTIN checks and standards such as IFRS and GS1 (as applicable).
- Interactive remediation and mass updates support data stewards in resolving remaining exceptions efficiently.
- Quality metrics and trend reporting support continuous improvement and ongoing data dialysis.

Value Proposition

DMAG is designed to reduce migration effort and accelerate delivery by automating mapping, transformation into new S/4HANA elements, and data resolutions. Based on client experience referenced in the DMAG material, organizations often achieve substantial reductions in migration effort and time—ranging from roughly one-third faster cycles to as much as ~60% efficiency gains depending on scope, data quality, and automation coverage.

- Reduces implementation and support risk by delivering a proven, repeatable migration methodology.
- Automates and speeds up migration by industrializing extraction, mapping, conversion, and loading.
- Improves business process execution by increasing information accuracy and completeness.
- Delivers reusable infrastructure for multiple SAP deployments and ongoing enterprise integration.
- Supports perpetual data quality checks and proactive cleansing through continuous audits.

Recommended Implementation Roadmap

Phase	Key Activities	Deliverables
1. Discover & Plan	Inventory sources, define scope, identify critical processes, establish rule ownership	Migration scope, rule catalog, cutover strategy
2. Stage & Profile	Extract to staging, profile completeness/quality, baseline KPIs	Staging datasets, profiling report, defect baseline
3. Cleanse & Map	Apply cleansing, mapping rules, transformations; resolve deterministic issues	Mapped datasets, transformation logic, exception queues
4. Audit & Dry Runs	Run governance validations, generate reports, repeat dry runs 2–3 times	Validation reports, quality metrics, signed-off datasets
5. Load & Cutover	Rapid conversion/loading, reconciliation, hypercare data checks	Production load, reconciliations, governance runbook

KPIs to Track

Track measurable outcomes per dry run and over time:

- Defect density (exceptions per 1,000 records) by object and rule
- First-pass validation pass rate after cleansing and transformation
- Time per dry run cycle (extract → stage → cleanse → audit → load)
- Automation coverage (% fixes applied automatically vs. manual remediation)
- Post-load reconciliation accuracy (balances, counts, and key totals)

Conclusion

Successful S/4HANA Greenfield programs treat data migration as an industrialized, governed process—not a one-time technical load. By staging data, applying disciplined cleansing and transformation, auditing against business and industry rules, and enabling fast repeatable dry runs, teams reduce risk and accelerate readiness for go-live. DMAG™ provides a practical framework to operationalize this approach and sustain data quality over time.