Data Migration

Successful Data Migrations: A Viewpoint
Every enterprise transformation, be it an enterprise application implementation, legacy modernization or application consolidation or LOB application implementation or a business analytics program, has an essentially critical but often overlooked component of Data Migration. Data migrations are usually a part of larger business initiatives and are taken up independently in very rare cases like an information lifecycle management initiative or probably a datacentre move to the cloud. The complexity of these data migration projects is directly proportionate to the complexity and business value of the larger initiative.

Any system or application, cannot go live without the business data needed by it. This means data migrations can delay most of the go-lives. Unfortunately, they still don’t get the deserved attention and initiated pretty late in the program. As per industry analysts, 80% of data migrations either overrun on schedule or budget – schedule overruns average out to 40% while cost overruns are to the extent of 30%. Hence 80% of data migrations are a failure. Even more alarming than the overruns is the fact that 75% of data migrations do not meet up with business needs completely. They either end up with incomplete or inconsistent data in the target system.

Let’s examine each of these and look at some examples of where they worked and where they didn’t:

1. **Data migration is considered to be an IT problem!**
   This is one of the most common points of failure where business is either not involved or is involved only at the initial phase to provide the requirements and then during UAT.

**The good - a pharmaceutical multinational**
- Consolidation of two business units to leverage the synergies across the two and gain market share
- Global template of SAP ECC, SCM & BW rolled out across all regions over 3 years
- Treated as a ‘Business Harmonization’ initiative
- Business led the program end-to-end
- Business owned the data, business rules & implications across the two business units
- Dedicated business & IS data migration leads jointly planned, executed & aligned priorities end-to-end
- Zero go-live delays due to data migration/readiness

Experiences across several data migration projects and research point to six major issues that cause a data migration failure.

1. **Data migration is considered to be an IT problem!**
2. **Not enough focus – budget, time, planning, analysis, testing!**
3. **Manual processes that keep adding & changing!**
4. **Poor structure/execution process!**
5. **Target system structures that keep changing!**
6. **Low focus on overall data governance!**
The bad & ugly - an auto OEM

- The manufacturer requires the availability of a large number of inventory at key points in the production process
- Inaccurate data from the legacy system to SAP resulted in inventory accounting issues
- Business process users were not involved in the data migration end-to-end, they provided their requirements in the initial phases and validated data post data migration
- A number of data transformation rules and anomalous scenarios were left untouched due to lack of business ownership

2. Not enough focus – budget, time, planning, analysis, testing!
Again a very highly recurring problem – it’s just data migration, how complex could it get?

The good - a life insurance company

- SAP was rolled out across 12 country clusters to modernize legacy applications owing to improved business opportunities and an acquisition
- Assets worth ~2 billion USD were migrated to the new platform
- Budget for the entire program and its components were prepared based on the criticality and complexity of each in alignment with the business value of the overall initiative
- The implementation strategy included a global template built with roll-outs every 4 months which included 3 mock data loads and validation cycles for each cluster
- Localizations were kept to a minimum and agreed upfront with a change control board leading to minimum surprises at execution

The bad & ugly – a CPG company

- Larger initiative was to migrate from multiple SAP legacy and JDE instances to a single global ECC. SAP MDM was also being migrated to SAP MDG as a part of the same to ensure better governance
- To reduce timelines it was decided to go with a big bang approach instead of phased roll-out approach
- Two cycles of mock loads were done away with leading to the inability to test every market, plant & function and scenario
- Cutover activities and go-live were scheduled in the busiest business periods not getting enough attention from business

3. Manual processes that keep adding & changing!
Too many Excel templates which change with every roll-out and need a lot of uncontrolled user intervention is often the biggest reason why there is poor control on the process, automation is limited and delays are unavoidable.
The good - a semi-conductor manufacturer

- Complex data migration for 4 legacy systems including SAP & non-SAP systems
- Target systems were SAP ECC, SAP BI & SAP SCM
- An end-to-end data migration workflow automation was achieved with tools like Win Shuttle, SAP BODS, LSMW, and ABAP
- Standard SAP Rapid Deployment Solution was used wherever applicable with appropriate customizations

The bad & ugly - a provider of logistics solutions

- Several local legacy systems were to be decommissioned by onboarding business processes into an existing global SAP ECC implementation with minor localizations if needed
- Excel templates were defined for getting the data from the source based on target structures – these kept changing for every legacy system with a lot of manual effort spent in bringing it to suit the target
- Data extraction, validation, cleansing, reconciliation was all manually done which doubled the project timeline

4. Poor structure/execution process!

Lack of reuse and repeatability across roll-outs, lack of a systemic process to onboard all stakeholders on to an agreed set of activities, SLAs, schedules.

The good – an agribusiness major

- Existing SAP ECC EMEA environment was rolled out across all European countries that were on legacy environments in 8 clusters; one cluster was rolled-out every 12 weeks
- An end-to-end data migration process was defined – including business onboarding, activities, RACI, SLAs, timelines
- Central data migration team managed the activities with business leads, business process data owners, IS leads and technical team
- Zero glitches, on-time roll-outs, within budget

The bad & ugly - a manufacturer of batteries

- Embarked on a large global business transformation program moving all legacy systems into a single global SAP ECC instance
- Thought about the intricacies of data migration too late in the program - didn't define its business requirements timely and accurately; lack of business process engineering/change management, scope management, senior management support, formal project plan and schedule
- Different processes were followed for every country roll-out
- Program was later scrapped

5. Target system structures that keep changing!

Another very common problem in every data/information project (which is usually the last/end process) is waiting for all upstream process to be finalized. Changes in target structures late in the program have a cascading and adverse impact on data migrations.
The good – a dairy product provider

- Complex data migration for 4 legacy systems including SAP & non-SAP systems
- Target systems were SAP ECC, SAP BI, SAP SRM, SAP SCM and SFDC
- Target systems were being designed as a part of the program
- Critical entities that have major design impact were identified & finalized early to avoid cascading impact on downstream systems & processes; these were then changed only after a change approval board (CAB) approval with due consideration to impact on effort & schedule

The bad & ugly - a food & beverage enterprise

- Involved an SAP ECC implementation across APAC with migration from existing legacy systems
- While a regional template was designed it did not have a buy-in from all countries, leading to several localization changes with every roll-out
- Some design changes came in late in the project schedule
- Data migration mappings, rules, validations needed to be modified for all the changes coming in
- Go-lives had to be delayed despite additional efforts

6. Low focus on overall data governance!

Usually data migrations are part of roll-outs which extend over a few years. Two or more different set of systems are active in the interim since the data is moved from one environment to other(s) Master data created in this period should adhere to the new processes and design. Lack of data governance leads to data quality issues and inconsistencies that creep from the old applications to the new.

The good - an automotive manufacturer

- Integrated strategy to consolidate 40 companies spread across 6 SAP instances on a single ERP system, while implementing 20 industry-specific solutions in parallel together which were integrated with dealer portals/systems
- A single platform for master data as a ‘System of Record’ (SOR) early in the process, laid the foundation for data governance and quality data managed by a shared services team across the group
- Ensured data integrity and consistency in the target system right from the beginning

These simple best practices, which cover the process, technology and people aspects of the program can be followed to avoid data migration pitfalls.

Process

- Global alignment on selected key business processes
- Formalized up-front scoping and fit-gap exercise
- Core decisions should be signed off by business
- Detailed planning not limited to the begin of the project but done at every stage with refinements
- Documented methodology with key stakeholders identified, activities identified, RACI and SLAs agreed
- Quality checks to be a part of the methodology
Technology
- All components of the process should be standardized as far as possible to ensure reusability, repeatability and improvements with every roll-out
- All components should be automated as far as possible to improve productivity and remove manual errors
- Low reliance on Excel and high leverage of specialized tools for DM
- Data quality checks should be an integral part of data migration; target system is as effective as the quality of data loaded into it
- Post load validations reduce business surprises

People
- End-to-end ownership & involvement from the business leadership
- Deep technical and functional domain experts that understand both target and source systems
- Effective organizational change management and business process reengineering
- An advisory role that drives alignment between IT and business stakeholders for ongoing data management at the organizational, process, and technical levels
- Proven experience in managing large-scale projects at an enterprise-level, in mission-critical environments

When it comes to prioritizing data migrations, it is also very important to estimate them correctly. Below is a cheat sheet that can be used to size the category (by complexity), of any data migration. It can be put into a scoring sheet contextualized to an organization/program scenario, weighted for factors that are rated by relevance and scored accordingly.

When we analyse industry statistics and combine it with our project experience in data migration projects, we get the following range for data migration roll outs. This has been arrived at keeping in mind the complexity factors enumerated above

<table>
<thead>
<tr>
<th>Factor</th>
<th>Complexity</th>
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<tbody>
<tr>
<td>No. of BUs &amp; functions using target system</td>
<td>↑</td>
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<tr>
<td>No. of regions using target system</td>
<td>↑</td>
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<tr>
<td>Business impact of overall program &amp; target system</td>
<td>↑</td>
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<tr>
<td>Understanding of existing/source systems</td>
<td>↓</td>
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<tr>
<td>Understanding of target system</td>
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<tr>
<td>Complexity of target system</td>
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<tr>
<td>No. of existing/source systems</td>
<td>↑</td>
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<tr>
<td>Quality of data of existing/source systems</td>
<td>↓</td>
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<tr>
<td>No. of data objects/tables to be migrated</td>
<td>↑</td>
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<tr>
<td>No. of critical data elements</td>
<td>↑</td>
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<tr>
<td>Level of inter-object dependencies</td>
<td>↑</td>
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<tr>
<td>Data volumes</td>
<td>↑</td>
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<tr>
<td>Level of inter-project dependencies</td>
<td>↑</td>
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<tr>
<td>No. of roll-outs</td>
<td>↓</td>
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<tr>
<td>Level of finalization/agreement on design of target application</td>
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<tr>
<td>No. of test cycles</td>
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Every organization has its own implementation/roll-out approach, however, given below is a typical approach that can be used for most roll-outs. It can also be used as a checklist for activities in different phases. Needless to say, planning is the single most important element for the success of data migration projects. This should be an integral part of every phase and activity and shouldn’t be looked at just in the preparation phase of the project.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
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<tbody>
<tr>
<td>Cost (US $ 000)</td>
<td>300 to 1200</td>
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<tr>
<td>Full time Employees (FTEs)</td>
<td>3 to 12</td>
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<tr>
<td>Duration (months)</td>
<td>3 to 6 months</td>
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<table>
<thead>
<tr>
<th>Plan Preperation</th>
<th>Execute</th>
<th>Monitor</th>
<th>Plan</th>
<th>Execute</th>
<th>Monitor</th>
<th>Plan</th>
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<tr>
<td><strong>Analyze</strong></td>
<td><strong>Extract</strong></td>
<td><strong>Cleanse</strong></td>
<td><strong>Validate</strong></td>
<td><strong>Load</strong></td>
<td><strong>Recouncil &amp; Validate</strong></td>
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<tr>
<td>• Identify &amp; define Business process &amp; data requirements</td>
<td>• Mapping source and target structure</td>
<td>• Data cleaning &amp; standardization</td>
<td>• Validate data by source</td>
<td>• Interactive mock data loads to target structures with different scenarios</td>
<td>• Check of loaded data for number of records</td>
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<tr>
<td>• Identify source systems</td>
<td>• Define needed checks &amp; transformations</td>
<td>• Harmonization &amp; consolidated</td>
<td>• Validate data quality</td>
<td>• Correct objects from correct source using correct rules</td>
<td>• Correct objects from correct source using correct rules</td>
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<tr>
<td>• Assess data readiness &amp; quality</td>
<td>• Develop interfaces</td>
<td>• Deduplication</td>
<td>• Validate business rules</td>
<td>• Integration testing</td>
<td>• Validation of cross object dependencies for business process correctness</td>
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<tr>
<td>• Identify gaps, dependencies &amp; integration points</td>
<td>• Extract data</td>
<td>• Enrichment</td>
<td>• Validate cross-object dependencies</td>
<td>• Unit testing</td>
<td>• Performance testing</td>
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DISRUPT  DIGITIZE  SYNERGIZE
About the author

Rakhi Makad is the Director for Next Generation Business at Bristlecone. Her key focus areas include Analytics, NEO™ Platform, Internet of Everything (IoE), Smart Factories, SAP HANA and Enterprise Information Management & Data Management. Rakhi also jointly heads the Bristlecone Labs Division. Prior to joining Bristlecone, she was the Industry Principal & Head of Innovation initiatives for the manufacturing vertical at Infosys. She is a leading expert in software and technology with over 18 years of experience.

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An ever increasing amount of data is being generated throughout supply chains, which can be used as an advantage.

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