

Taming the Multi-ERP Tangle

Leveraging a Financial Data Warehouse to Realize an Integrated Chart of Accounts

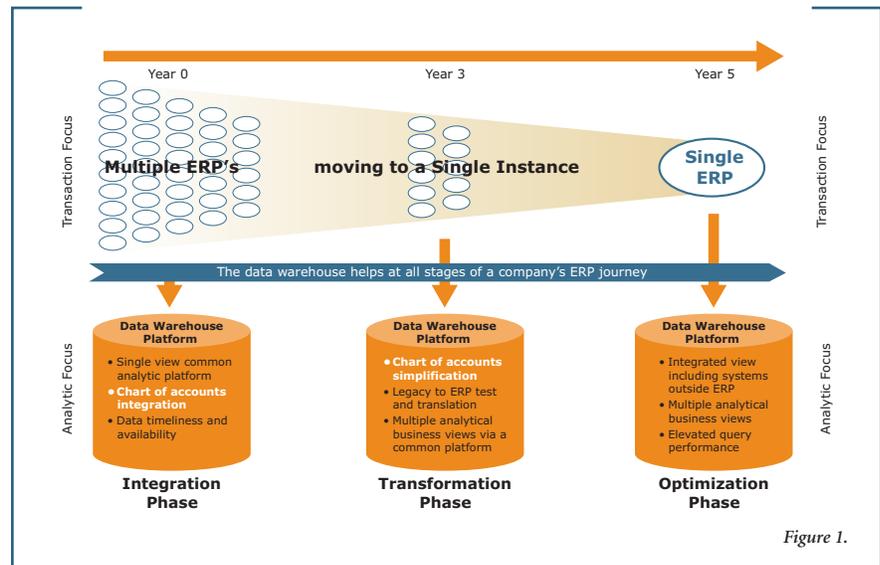
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Corporate finance organizations today are always on the hunt to reduce costs by simplifying systems and processes. One of the keys to eliminating complexity in the area of corporate finance and performance management is to drive toward the use of one simplified, enterprise-wide chart of accounts.

Chart of accounts refers to the list of financial account codes used within the General Ledger to report income statement and balance sheet results. Usually one finds that each ERP (Enterprise Resource Planning) system within a company will contain only one chart of accounts – so far, so good. However, when a company possesses multiple ERP systems within its information architecture, it must battle a complex reporting environment by reconciling and consolidating results across multiple charts of accounts structures.

Whether it is through acquisition or a legacy of individual country or business unit structures – all who have demanded their own ERP – many companies today operate with multiple ERPs. Often, these companies embark on a journey to reduce the number of ERP instances. Expected advantages that prompt them to reduce the number of ERP instances include getting one common view of financials, transactional processing efficiencies, training simplification, and reduced IT maintenance and upgrade headaches.



Because the road to reducing ERP instances generally stretches across many years, a decision to collapse ERP instances is not taken lightly. Strategic business or cost considerations may dictate that a company looks for alternatives to get to a single view or reduced ERP instances, but never gets to a single ERP instance. Whatever the case for the company in question, a data warehouse provides the platform which facilitates integration and smoothes ERP transitions. During the beginning *Integration Phase* the data warehouse provides a common means through which business users can gain a single view across the entire company. In the last stage, the *Optimization Phase*, the data warehouse retains a key position by allowing the ERP instance to continue transaction processing while analytical queries are off-loaded to the enterprise data warehouse (EDW). This becomes critically important because the volume

of data retained within the ERP database from all the previously collapsed instances, is larger than ever before. The ERP instance needs to be structured as simply as possible to ensure ideal performance.

The focus of this paper will be on a key component within the *Integration Phase* and the middle *Transformation Phase* – chart of accounts integration and simplification. One company's experience in undertaking a strategic ERP integration initiative will be used to illustrate the role that a data warehouse plays during these phases. Multiple chart of accounts integration can be achieved before any ERP consolidations take place. A data warehouse can facilitate the desired integration by assigning a common translation layer of separate general ledger chart of account definitions into a single defined mapping structure and providing access to underlying details outside the General Ledger.

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The Value of a Single Chart of Accounts

The move to a single chart of accounts has always been an attractive one for enforcing greater architectural simplicity throughout the enterprise. With simplicity comes cost reduction and speed.

Historically, companies have maintained separate charts of accounts for many reasons. The most prevalent of these are 1). Separate local financial reporting standards for each country of operation, 2). Country-based management models, 3). Transactional system limitations and 4). Growth by acquisition. With economic globalization and system technology advances, though, the old rationales for maintaining separate charts of accounts have begun to peel away. Global financial reporting standards are becoming reality with the expected merger of IFRS (International Financial Reporting Standards) and U.S.-based GAAP in 2014. Country models have evaporated over the past several years as country managers, CFOs, and their staffs have been consolidated into regional shared service centers with high-performing analysts and accountants that support multiple countries. Web technologies and global ERP applications support the shared service centers, although the system capacity for handling analytical detail often needs the support of data warehousing technology to sustain required performance.

The reduced rationale for separate charts of accounts can lead many companies to see the transition to IFRS as an opportunity to

also pursue a single chart of accounts infrastructure and a single ERP (or a significantly reduced number of ERP instances). However, migrating to a single chart of accounts and running the business during the multi-year rollout of an ERP can be daunting. For both of these linked initiatives, use of the data warehouse can yield great benefits. The experience of NCR Corporation, as revealed in this paper, provides a real-world example.

Optimizing the Chart of Accounts

Companies should realize that it's not just about having a single chart of accounts, it's about having a smart chart of accounts. The temptation is to put every dimension by which a company would want to analyze and report as a chart of account segment within their General Ledger. Certainly, it makes sense to have the basic attributes as segments within your chart of accounts – Organization, Account, and perhaps, Sub-Account, come quickly to mind as necessary segments. However, if a company, for example, wanted to do customer analysis, they wouldn't want to put customer as a required segment within their charts of accounts. A person would have to select the right customer ID from thousands of options and populate each transaction. That would be a major burden on any General Ledger system and support team. The more variables that are contained within the chart of accounts, the greater the chance for error when booking the transaction. The more potential error,

the more time and analytical effort is required to close the books and certify that the results are correct – a burden made all the more salient today under Sarbanes-Oxley.

Beyond the complexity of closing the books monthly, there is a database cost to having a complex chart of accounts in at least some ERP systems. Imagine a chart of accounts that had the following profile:

Segment Name	# of Valid Values
Country	145
Organization	8,500
Location	750
Legal Entity	125
Account	550
Sub-Account	435
Product Line	75
Industry	35
Customer ID#	111,230
Vendor	4,700
Project	5,830

Within a typical relational database, a value would be stored by accounting period for each activated combination of values for these ten segments. In theory the number of activated code combination place-holders which the database must lay aside would be equal to the number of valid values in a segment times the number of valid values in the next segment times the number of values in the next segment, and so forth. Admittedly, no company is really likely to generate the number of combinations where every segment value gets combined with every other segment value. For example, only a

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few location fields would ever map to any one country. Nonetheless, with a complex chart of accounts with many segments, the number of activated code combinations can get quite large quickly. Obviously, the storage and performance capabilities of an operational general ledger which had this kind of chart of accounts profile would be sorely tested. The company could opt to close out particular combinations, but once activated (even if later closed out), the combination would always be stored in the General Ledger database thereby consuming valuable storage space.

Simplifying the General Ledger at NCR Prior to ERP Consolidation

Before introducing a new chart of accounts, there were several steps that NCR Corporation took to simplify and reduce the growth in the number of code combinations within its general ledger. These steps can be generally classified into three areas:

- > Established a central validation system and process that globally controlled the introduction of any new account or organization values within any of NCR's 57 Oracle instances.
- > Used information available in the data warehouse from the general ledger to reduce the number of accounts upon which consolidation was performed.
- > Used information available in the data warehouse from sub-system financial applications to reduce the number of dimensions upon which the books were closed monthly.

Central Validation System and Process

Financial reports at the surface aggregate level are fairly static entities that remain consistent from year to year. However, every year there is a strong probability that management will modify the organizational structure or that new accounts will be added for statutory reporting purposes. For global companies expecting to view reported results through a single set of reports, it is imperative that all account values and organization functions are known worldwide.

This requirement can be particularly vexing if there are multiple general ledgers in place worldwide with different owners who can add new accounts or organizations at their own discretion. For example, if a Canadian operation unilaterally decides to add a new revenue account code without the knowledge of operations elsewhere in the world, then the global reports **will not** pick up the activity and worldwide revenue would be understated.

NCR understood the need to centralize the decision making process for adding, changing, or closing any key chart of accounts value used within its consolidated financial reporting. They implemented an internally developed validation system (called Trident) that synchronized with each database instance of Oracle General Ledger to close any code combination that did not contain a valid value within the Organization or Account segments. The system also made available new account values that could be used with new combinations for any General Ledger

worldwide. With this centralized control, they were able to incorporate changes in report definitions as the new account or organization types were added into their global financial architecture.

Streamlining Account Consolidation

Monthly consolidated results form the basis not only for external reporting, but also for management reporting against which business unit heads are held accountable. With so many people having an interest in the financial numbers, it is natural that different constituents will have different demands for details within their spheres of influence.

For example, within NCR, the implementation coordination cost of rolling out and installing Retail Point-of-Sale systems across multiple store locations is a major factor in deal profitability. Retail Management must see the details of this cost, but putting these detailed personnel costs at the account level within the General Ledger for this function would be of no interest to other business units. Adding details to the monthly close process dilutes focus on overall management results and, by adding complexity, undermines the capability of the accounting staff to close quickly.

So how does one bridge between consolidation simplicity and an individual business unit's need for detail? For NCR, the answer was to use a Teradata® system to provide Business Unit Management with the analytical structure and details for the particular questions that were

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important to them. For consolidated reporting, alternatively, these details are rolled up through summary mapping tables and reported through fewer accounts within the corporate consolidation system. This process allows the capture and accessibility of the detail where it is needed and out of the monthly close process.

Simplify! Close on Fewer Dimensions

Several years ago, NCR performed its monthly consolidations via matrixed reporting by country, by solution portfolio, by product line, and by industry. Field accountants were compelled by the business units to spend many days doing additional validation of results by product line and by industry at a time when operations by solution portfolio was the business model under which NCR operated. By shrinking the product line and removing the industry dimensions from the required consolidated reporting matrix, NCR stripped eight days out of the monthly close cycle.

Valuable management information on product line and industry was not sacrificed. Instead, this information was made available to the business units through reports they could perform monthly (or daily) against the Teradata system. Source data to the warehouse came from the subsidiary order and billing systems where

detailed product line and industry information could be found. Furthermore, the business units could also do analysis from the data warehouse on a new dimension: results by customer – a capability that had never been available through the consolidated general ledger process.

By closing on fewer dimensions and shrinking the number of values (i.e., accounts) on the remaining dimensions, NCR reduced the size of its consolidation database by approximately 70%. More importantly, it eliminated the belief among the finance community that dimensional reporting could only be achieved with a complex chart of accounts. The stage was now set for NCR to simplify its chart of accounts as it moved to Oracle ERP 11i.

Defining Values for a New Chart of Accounts

NCR began a project to migrate 57 unique database instances of Oracle, which shared the same chart of accounts, into a single database under Oracle ERP R11i. Among the benefits of a single operational instance of Oracle ERP were worldwide financial process consistency, future ease of migration to new Oracle ERP patches and releases (thereby optimizing IT deployment expense), and the opportunity to migrate to a new, simplified chart of accounts. To support the ease of future Oracle ERP migrations, the directive was to keep the

new install of Oracle as “vanilla” as possible. “Vanilla Oracle” meant accepting the Oracle database structure and definitions without modifications to support all aspects of NCR’s business. By minimizing customizations, future releases of Oracle ERP could be deployed more readily with less resource. They also minimized the risk that a customization in one ERP module (for example, Inventory) would cause unintended consequences in the financial reporting within another module (for example, the Cost of Revenue passed into the General Ledger module). Such in-house customizations always risked invalidation of Oracle ERP service agreements.

The directive was clear enough, but how can a “vanilla” operational system support an analytical business world that demands “many flavors” and views? The answer for NCR was to leverage the power of its internal financial data warehouse built on Teradata. Feeds would be taken from all Oracle ERP modules (Inventory, Receivables, Payables as well as General Ledger) and placed into the Teradata repository. Within the warehouse data could be combined and optimized into the various dimensions needed by the business for analytical purposes. By moving the analytical work to Teradata, NCR not only avoided customizations to Oracle ERP, but also restricted the number of concurrent users within the Oracle ERP system to those

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Chart of Accounts Summary

Current		vs.	ERP	
Segment Name	Size		Segment Name	Size
Set of Books Partition Code	10		Set of Books Partition Code	3
Organization Code	9		Organization Code	9
FML Account Code (FACCT)	10		FML Account Code (FACCT)	4
Common Sub Account (CSUB)	5		Common Sub Account (CSUB)	4
Inter-Entity Code (IET)	10		Inter-Entity Code (IET)	3
Financial Project ID	10		Financial Project ID	6
Product Service Code	4		Product Code	2
Location Code	6		Location Code	0
Originating Organization	9		Originating Organization	0
Country Code	2		Country Code	0
Sales Channel	2		Sales Channel	0
Customer Number	8		Customer Number	0
Balance Sheet Activity Code	10		Balance Sheet Activity Code	0
13 segments – 95 characters			7 segments – 31 characters	

Figure 2.

who had an operational need. Without this type of restriction, it is doubtful that NCR would be able to realize its vision of collapsing its financials into a single database instance of Oracle. By keeping access to Oracle ERP to an operational focus, security was strengthened and system performance was optimized. Furthermore, by bringing the ERP financial information into the data warehouse, NCR retained its ability to have a single version of the truth during the multi-year transition process of collapsing from multiple Oracle instances to the single instance of Oracle ERP.

Even though NCR was already on one standard chart of accounts, the move to the Oracle ERP system gave NCR the opportunity to implement a “smart” chart of accounts. The existing chart of accounts was unwieldy; it was composed of 13 segments and 95 characters. Fitting the 95 character accounting string onto any standard Oracle operational report meant customization – a violation of the “vanilla Oracle” directive. Through an analysis of what chart of accounts segments were really needed for monthly consolidated reporting and management reporting capabilities available from subsidiary financial systems within the data ware-

house, NCR was able to reduce the number of segments to 7 and the number of characters to 31. More details on the chart of accounts changes NCR implemented can be found in Figure 2.

Once the segments were determined, the next point of analysis was to review the individual values within each segment to determine if: a). Sufficient values existed to support required monthly consolidated and local statutory reporting, and b). Any existing segment values were redundant or unnecessary. For part a) of the analysis, NCR focused upon the Account and Sub-Account segments of the chart of

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accounts. Since NCR had integrated its entire chart of accounts within the last 10 years into a unified chart of accounts and made no significant acquisitions during that time, it was fairly well established that NCR already had all the accounts needed for reporting.

The next task was to eliminate unneeded values within the segments that would be migrated into the Oracle ERP system. Eliminating unneeded segment values reduces the number of potential code combinations and reporting confusion by standardizing on a single code value within the segment. NCR determined that a value was not needed if it had low usage over the past 24-month period, or if two values, which had the same meaning, existed.

For elimination of unneeded values, NCR focused upon two segments in the chart of accounts – Account and Financial Project. Account, a globally managed segment within NCR, contained approximately 700 values prior to ERP. With the migration to ERP, the number of discrete values was reduced to less than 600. More significant were the reductions in the number of unique segment values of financial project, a segment within NCR's chart of accounts, which was not globally managed prior to ERP. Financial Project as a segment within NCR is used to support project accounting within manufacturing operations. Over a two-year period, the number of global financial projects transferred to ERP was reduced from 20,500 to less than 1,500.

The challenging part of analyzing the account usage and potential duplicates in an existing chart of account segment is how to get the information – particularly if the data is spread across multiple General Ledgers. Just gathering the needed information for analysis from multiple finance individuals and IT database administrators would have been a daunting task. Fortunately, NCR already had the General Ledger information it needed from all the Oracle systems loaded in one place – the financial enterprise Teradata system. One person could run a report and find all worldwide financial projects for the past two years. Armed with this information, the analysis was shared with key business users within the sites migrating to ERP to gain concurrence on the elimination and consolidation of financial project codes.

How the Data Warehouse Supports Multiple Charts of Accounts

Once the new “smart” chart of accounts was set, the final step was to do the mapping from old segment values in the legacy system to the new segment values. Even though the core segments by which NCR did its consolidated reporting were retained from the legacy systems to the new ERP system, the length of the segment values was reduced. This was tantamount to a 100% change in the chart of account values for ACCOUNT and SUB-ACCOUNT. Therefore, during the multi-year transition from legacy Oracle

systems to the new Oracle ERP system, NCR had to manage its business in an environment of two charts of accounts. How would this be done without compromising the ability to take a single global view of NCR's results? NCR's financial data warehouse provided the solution.

For a period of several years Europe and Latin America remained on a different chart of accounts from the rest of the world within their respective legacy Oracle financial database instances. NCR's financial data warehouse took feeds from both the Legacy and ERP General Ledgers, retaining the applicable chart of accounts, be it either new or old, that was currently in place within the particular country.

The business needed to see ONE version of the truth. Understanding the key costs or expenses that may be impacting the business no matter where in the world the cost or expense occurred was the imperative. The business cannot be expected to rely on the design and storage of a multitude of complex queries that enumerate the different codes from each different chart of accounts just to return the total worldwide value of a particular detailed expense, such as Travel and Entertainment. What is needed is the capability to build tables that map values from disparate chart of accounts to a single value that can be queried and reported upon easily. Such a translation table could not reside within the operational ERP applications because they existed as separate databases.

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		A	B	C							
REPORT TYPE CODE	REPORT TYPE CODE DESCRIPTION	HYPERION REPORT LINE	REPORTING CODE	REPORTING CODE DESCRIPTION	From FACCT	To FACCT	From CSUB	To CSUB	From P/S	To P/S	
3103	2009 Detailed Profit Statement	63100.01.01	6210	Selling & Marketing Salaries & Wages	63400000	63419999	A1100	A3201	0000	6999	
3103	2009 Detailed Profit Statement	63100.01.01	6210	Selling & Marketing Salaries & Wages	6340	6340	8000	8019	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	6210	Selling & Marketing Salaries & Wages	6343	6343	8000	8019	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	6220	Selling & Marketing Commission	63400000	63419999	A3202	A3202	0000	6999	
3103	2009 Detailed Profit Statement	63100.01.01	6220	Selling & Marketing Commission	6340	6340	8020	8020	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	6220	Selling & Marketing Commission	6343	6343	8020	8020	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9718	Payroll Taxes FICA	63400000	63419999	B5020	B5020	0000	6999	
3103	2009 Detailed Profit Statement	63100.01.01	9718	Payroll Taxes FICA	6340	6340	8142	8142	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9718	Payroll Taxes FICA	6343	6343	8142	8142	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9719	Payroll Taxes FUI & SUI	63400000	63419999	B5040	B5040	0000	6999	
3103	2009 Detailed Profit Statement	63100.01.01	9719	Payroll Taxes FUI & SUI	6340	6340	8143	8143	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9719	Payroll Taxes FUI & SUI	6343	6343	8143	8143	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9720	Group Benefits	63400000	63419999	B1850	B1850	0000	6999	
3103	2009 Detailed Profit Statement	63100.01.01	9720	Group Benefits	6340	6340	8131	8131	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9720	Group Benefits	6343	6343	8131	8131	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9721	Meals - Entertainment	63400000	63419999	C1103	C1103	0000	6999	
3103	2009 Detailed Profit Statement	63100.01.01	9721	Meals - Entertainment	6340	6340	8210	8210	00	99	
3103	2009 Detailed Profit Statement	63100.01.01	9721	Meals - Entertainment	6343	6343	8210	8210	00	99	

Figure 3.

One option for integrating the financial data from separate charts of accounts was to have all integration occur within an external consolidation database, such as Hyperion Enterprise. However, the objective was to consolidate on fewer variables, instead of more, to expedite the close process. This would mean that the translation to a common account would tend to take place at a high level of summarization.

However, if the closed, summarized data is the only place where the disparate chart of accounts integration takes place, then the financial community within the company

must sacrifice its ready access to the detailed financial data. It is the integrated data at the detailed level, that is necessary to answer questions that arise, or to surface problems that may otherwise remain hidden within summary balances.

The bridge between the multiple charts of accounts values residing within the Oracle databases and the summarized information within the consolidation system is the financial data warehouse. Here, mapping tables were built to provide one unified code across the account dimension from multiple charts of accounts so that multi-

ple codes representing Travel and Entertainment became one. The mapping tables were also used to summarize numerous accounts to one summary account that can then be fed to the Consolidation system each month.

Figure 3 provides an excerpt of the mapping table definition found within NCR's financial data warehouse.

Through use of the mapping tables within the data warehouse, NCR implemented a closed loop system through which executive decision makers could drill from

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summary balances in the consolidation system (Code 63100.01.01 in Column A in the example above) into composite details residing within the data warehouse (such as code 6210 in Column B), and then to the actual detailed chart of accounts value found within the actual Oracle operational General Ledger (as described in Column C).

Conclusion

NCR Corporation seized the opportunity of going to a single instance of Oracle ERP

as an ideal time to build a new chart of accounts. The new chart of accounts was designed to simplify user administration, simplify modifications to the Oracle application, and reduce the burden of storage on the Oracle ERP that impaired performance. Moving to a new chart of accounts is challenging in any large organization; particularly during the period of transition from a legacy chart of accounts to a new, “smart” chart of accounts. NCR found that the use of a financial data warehouse was invaluable to

the chart of accounts change. The warehouse played a major role in laying the foundation for a new chart of accounts, identifying legacy segment values that did not need to be uniquely migrated forward, and for managing the transition period during which NCR has operated under multiple charts of accounts.

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