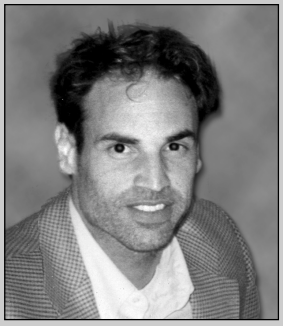
Write Costing-Based CO-PA Reports Your Readers Will Trust —

Five Secret Tricks to Building General Ledger Reconciliation into Your "Profitability Analysis" Data

Kurt Goldsmith



Kurt Goldsmith of ICM America LLC specializes in the repair of broken, loose, and otherwise unpleasantly surprising R/3 integration design areas, including CO-PA to G/L Reconciliations, Automatic Inventory/Sales/ Procurement Accounting, Make-to-Order Sales, Chart of Accounts Redesign, Purchase Requisition Release Strategies, and ABAP/Query.

(complete bio appears on page 118)

This is a story of Promise. And, Pain. And, eventually, Victory. It is intended for an audience of people who currently work with the area of R/3 known as "CO-PA" (Profitability Analysis).

This "work" might be design work, or development work, or end-user work. Or, it might even be scope work in the sense that you need to decide if you want to bring up, turn off, both, or neither, this thing called CO-PA. Additional information about CO-PA should prove helpful to you. And your work.

And, what about readers and writers of company reports in general — reports that focus on quantities or frequencies or some other important, but not necessarily revenue-related data? The owners of reports that are based on data from the SD, MM, PP, WM, or HR modules. Is there something for *them* in an article dealing with *Profit Analysis*?

Of course, the answer is yes. You didn't think I'd ask a question without already knowing the answer, did you?!

But, more to the point, the answer is "yes" because the CO-PA module demonstrates a very important trait of all "good" reports. This trait is the ability to help the report reader figure out not just what certain measurements are (e.g., After-Tax Profit = $1,000,000), but *why* they are what they are. This Why-related task is commonly known as "analysis," and the employees doing this sort of work are often referred to as "analysts."

In order for a report reader to be able to explain why a report's numbers are what they are, certain conditions must exist. I call these conditions "Walls." All forms of analysis require at least one "Wall." Two "Walls" are preferable to one. And, a "Wall" that can be built into a report is preferable to a "Wall" that exists outside of the report. More about this later. First things first.

Section 1 of this article is especially for people who consider themselves CBR (Confused Beyond Recognition) by R/3's "distributed" approach to accounting.[1] Section 2 expands on this topic while specifically identifying some needed background information for examining CO-PA report challenges. Section 3 puts a finger on both some well-known and some not-so-well-known integration trouble spots for CO-PA reporting. Section 4 offers some creative ways for resolving these integration conflicts. Section 5 tries to summarize the article's points in terms of why trustworthy data in any report (including in a CO-PA report) is everybody's business, not just Accounting people's business. Or, in other words, what these so-called "Walls" are to an analyst, and why the existence of "Walls" is an important precondition to your organization's success.

The **Promise** of SAP R/3's "Profitability Analysis" reporting module has been — and continues to be — the ability to find otherwise hidden tradeoffs between the expenses you incur, and the revenues such spending generates, that traditional reports (e.g., Sales Statistics, Balance Sheet, P+L) cannot help you uncover. Revenue vs. Expense. Tradeoff. Find it. Measure it. Own it. This is CO-PA.

Awareness of these tradeoffs will, in theory, help you make much better responses to both long-term and short-term questions about what to build, buy, and sell, to whom, how, and in what quantities.

[1] To be honest, this "distribution" concept might be the most poorly understood functionality in all of R/3, and could easily fill up an entire article in itself. Implementation mistakes are very common, even by experienced FI/CO consultants. In Section 1, I try to touch on just the few points that matter to our CO-PA reporting discussion, however, so even non-accountants should be able to take away something positive.

The CO-PA module specializes in linking your Sales Revenues with marketing-based factors (e.g., Customers, Products, Sales Reps, Distribution Channels, Sales Regions, Shipping Plants, etc.), *and then* matching those revenues to the expenses incurred on behalf of those exact same factors. This allows you to calculate a total for a given measurement (e.g., Total Gross Margin for fiscal period 01/2001), and then break that total into smaller and smaller pieces — using the marketing-based factors as chisels — until you see something surprisingly big, small, or growing. What you're looking for is something unusual related to why your company's historical profits (i.e., Revenues minus Costs) were what they were. Again, the goal of the analysis is not "What?" but "Why?"

Figure 1, **Figure 2**, and **Figure 3** give a visual example of using CO-PA to break a "Totals" measurement into smaller and smaller pieces. Start with Total Gross Margin from January 2001, broken out by a hypothetical six sales regions (Figure 1). Then, isolate *one* of those sales regions, and show the Gross Margin associated with the six customers that purchased something in that region during January 2001 (Figure 2). Then, isolate one of that region's customers, and show *that* subtotaled Gross Margin value broken out into further subtotals, this time by the hypothetical four products purchased! The chisels in this example? Sales Region. Customer. And, Product.

How far can you chisel?

The report reader is limited only by the number of different marketing-based factors (called "Characteristics") that your CO-PA implementation team decided it made sense to activate.

How many different "Totals" measurements can be analyzed?

The "Total Gross Margin" measurement from Figures 1, 2, and 3 is just one common example. The report reader is limited only by the number of different Revenue and Expense categories that your team decided it made sense to activate. It is important to note here that these categories do not necessarily have

Figure 1 Example of Total Gross Margin, by Sales Region

Fiscal Period: 001/2001

Customer: All
Product: All
Distribution Channel: All
Sales Rep: All

SALES REGION	SALES	COST OF GOODS	GROSS MARGIN
Europe	$ 5,000,000	$ 3,000,000	$ 2,000,000
Asia	$ 4,000,000	$ 2,200,000	$ 1,800,000
Middle East	$ 3,000,000	$ 1,600,000	$ 1,400,000
Africa	$ 2,500,000	$ 1,300,000	$ 1,200,000
Latin America	$ 4,000,000	$ 1,650,000	$ 2,350,000
United States	$ 4,000,000	$ 2,750,000	$ 1,250,000
***TOTALS**	**$22,500,000**	**$12,500,000**	**$10,000,000**

Figure 2 Example of a Sales Region's Total Gross Margin, by Customer

Fiscal Period: 001/2001

Product: All
Distribution Channel: All
Sales Rep: All

Sales Region: Europe

CUSTOMER	SALES	COST OF GOODS	GROSS MARGIN
Microsoft	$ 600,000	$ 200,000	$ 400,000
SAP AG	$1,000,000	$ 800,000	$ 200,000
Siebel	$ 600,000	$ 500,000	$ 100,000
IBM	$1,400,000	$ 600,000	$ 800,000
Pratt	$ 700,000	$ 500,000	$ 200,000
Fiat	$ 700,000	$ 500,000	$ 300,000
***TOTALS**	**$5,000,000**	**$3,000,000**	**$2, 000,000**

Figure 3 Example of a Customer + Sales Region's Total Gross Margin, by Product

Fiscal Period: 001/2001

Distribution Channel: All
Sales Rep: All

Sales Region: Europe
Customer: Microsoft

PRODUCT	SALES	COST OF GOODS	GROSS MARGIN
Lawn Mowers, model A150	$150,000	$ 50,000	$100,000
Tool Shed, size 25 x 15	$150,000	$ 20,000	$130,000
Fertilizer, 5 kg boxes	$150,000	$ 30,000	$120,000
Grass Seed, 100 count packs	$150,000	$100,000	$ 50,000
***TOTALS**	**$600,000**	**$200,000**	**$400,000**

to be "real" categories, such as actual domestic sales or actual cost-of-goods-sold. Remember: The goal is to find tradeoff relationships, so that we can explain the "Why?" of the organization's profits. Yes? Sometimes the best way to do that is to analyze what actually happened. And, *sometimes* the best way to do that is to compare what actually happened against *what might have happened* if certain scenarios had worked out differently for your company! To do that, you also might need to capture some "fictitious" data such as sales order "revenues" that you have not actually yet delivered (i.e., "Backlog"), and a future cost-of-goods-sold that reflects not-yet-achieved additional manufacturing capacity (i.e., "What If…" analysis). Ah, yes! The joys of creative thinking. Hope my managers take note that I've been doing that "Out of the Box" thing they keep asking us at the annual Christmas party to practice more of for our customers!

The report reader *also* controls the "breaking into smaller and smaller pieces" *sequence* of the report. He or she can begin with any Characteristic they like, and then start adding additional "chiseling" Characteristics as they see fit. This sequence control can be true for any CO-PA "Totals" measurement report you've developed. This gives the report reader *extreme* flexibility to hunt for Revenue vs. Expense tradeoff relationships.

CO-PA reporting sounds, uh, *promising*.

The **Pain** of SAP R/3's "Profitability Analysis" reporting module has been — and continues to be — the ability of its Totals and Sub-Totals numbers to fall out of synch with the accounting profit and loss numbers showing up in your General Ledger reports. Or, in your Special Ledger reports. Or, in your Profit Center Accounting module's reports.

When this happens, it becomes unclear which report's numbers — if any — should be trusted.

This is bad. If it happens, you've lost a "Wall" — a formula *constant* that your employees rely on in order to analyze the formula *variables* of business management, when attempting to answer the question: "Why?" You must have at least one constant in any problem if you hope to make a successful decision on those variables.

Do you remember your high school algebra class? If so, please try to solve the problem "X = Y". You can't. It contains only variables, X and Y. Now, try to solve the problem "$X^2 = Y$". This one's still difficult. But, the presence of one constant — i.e., a "Wall" — at least helps you to understand that the "Y" variable cannot be a negative number. Okay, now try to solve the problem "$X^2 = Y$" when I also tell you that "X = 3". I gave you an additional "Wall," an additional constant that you could rely on. And, your analysis of the remaining variable then becomes easier.

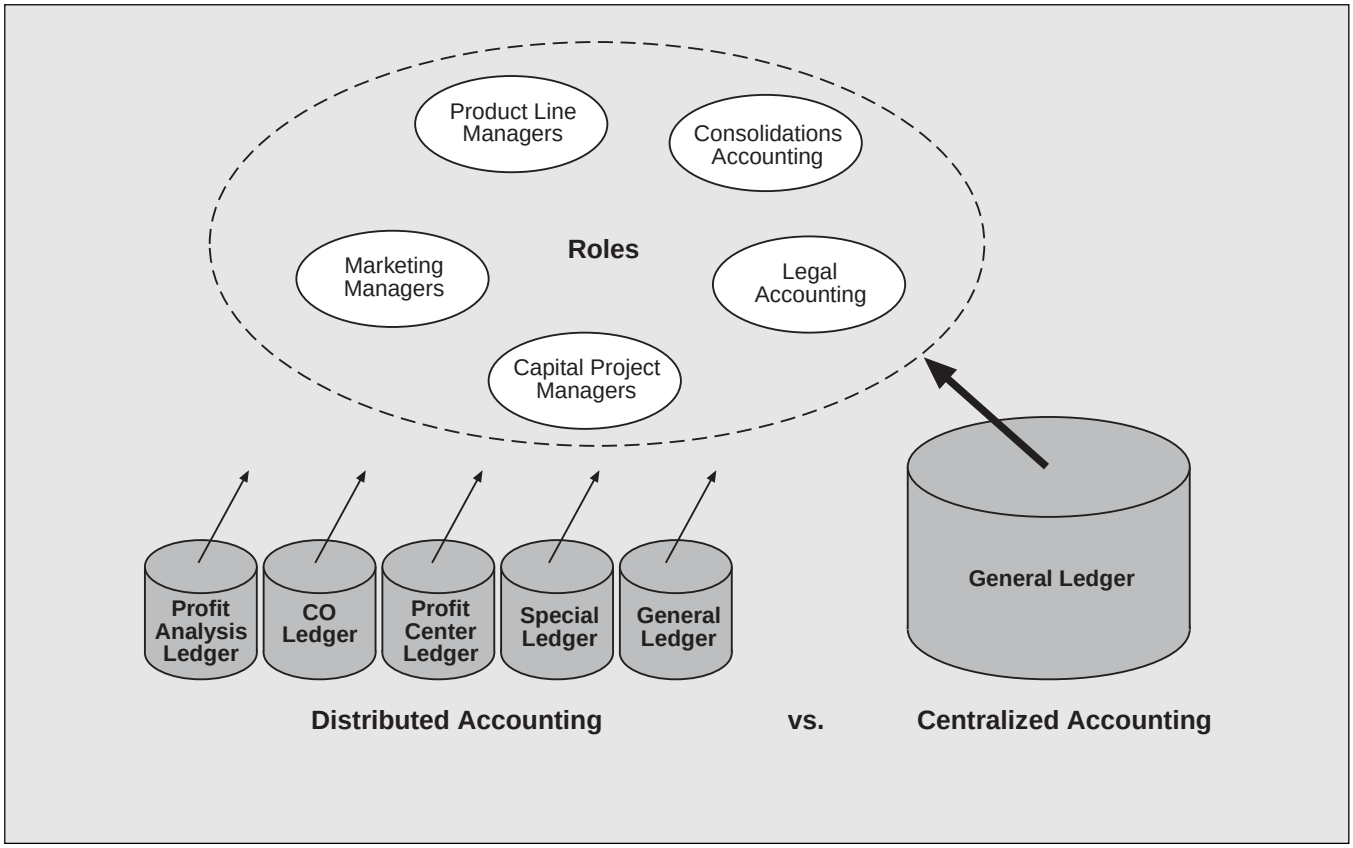
Business analyses (Why something happened, not just What happened) also improve when "Walls" outnumber variables. Thus, if one "Wall" crumbles, you need to fix it. Fast. An exciting analysis tool such as CO-PA falls in value when a "Wall" (such as having its numbers be explainable relative to your organization's official P+L report numbers) does not hold up. At some R/3 sites, in fact, the absence of a reliable "Wall" leads to the deactivation of a currently running CO-PA module. The Pain exceeds the Promise.

Why? Why does this CO-PA vs. General Ledger vs. Profit Center vs. Special Ledger synchronization problem happen? When did this start? Can't we do something about it? How much does ICM America (phone 610-647-9000) charge for onsite CO-PA consulting? Will somebody just please write a plain-speaking article about this?

Section 1: What Does "Accounting Synchronization" Mean in an SAP R/3 System?

If two wristwatches are synchronized, does this mean that both watches show the exact same hour and minute? No. Not necessarily. Even if perfectly synchronized, one watch might be set to

Figure 4 *Distributed vs. Centralized Accounting Design*



United States' Eastern Standard Time, and the other watch set to Europe's Greenwich Mean Time. The values shown on the watches won't be equal. Just synchronized.

As will be discussed a few paragraphs from now, "Accounting Synchronization" in R/3 also does not necessarily mean "equal." First, though, some quick background information about R/3's approach to accounting might be helpful.

Unlike mainframe-based accounting systems of the 1980s and early 1990s, the client/server-based SAP R/3 accounting package does not rely on a single, "all things to all accounting users" General Ledger. The illustration in **Figure 4** demonstrates a typical contrast between a legacy system's centralized approach to accounting, and R/3's distributed approach.

The **Promise** of R/3's distributed approach consists of fast-response, easy-to-personalize reports and queries for end users of each of the very different kinds of accounting data your company generates.

The **Pain** of a distributed approach comes from the fact that the G/L, Special Ledger, Profit Center Accounting, Cost Accounting, and Profitability Analysis modules each store their data in their own, physically separate data tables, *while possibly sharing* certain kinds of measurements (such as Profit and Loss statistics). Oh no! The exact same measurement (e.g., Sales Revenue) appears in four physically separated ledgers, where each ledger is allowed to have its own update rules!

Can you say "Reconciliation Nightmare"? We could easily end up with four reports (one for each ledger), where each report shows a different "Sales Revenue" value. Hmmm. Is this automatically a problem?

For starters, please realize that only one ledger is mandatory — the G/L. It has built-in protections such as hard-coded relationships with your Inventory, A/P, A/R, and Fixed Asset subledgers. Unfortunately, SAP's version of a G/L doesn't offer particularly interesting data that we can fill a report with. Thus, most R/3 sites choose to implement at least one of the optional ledgers — Cost Controlling (CO), Special Ledger (SpL), Profit Center Accounting (PCA), and/or Profitability Analysis (CO-PA). These offer extended reporting capability to accountants. If you can keep them in synch with the G/L, great. But, this synchronization is *not* hard-coded! Your design (customization) must accomplish this. And, you *must* periodically verify that your designs have held up.

Example: Let's say that you decide to implement both the G/L (called "FI") and the Special Ledger modules. And, let's also say that you configure your Special Ledger to have slightly more functionality in its data update rules than your G/L. If so, then if you want readers to trust the data in the Special Ledger reports (i.e., Trust = a "Wall"), your Accounting department must "prove" periodically that the numbers there have stayed in synch with the accounting numbers in the *one* ledger that SAP designed with hard-coded data integrity — the G/L.

Be careful! This does not mean that the numbers in both ledgers need to equal each other. It means that the numbers must be "synchronized" to the degree that they were designed to be synchronized. Remember the "Two Watches" example. Those two watches were designed to stay five hours apart. Each watch wearer could trust the time shown, as long as that time stayed five hours ahead/behind the other person's wristwatch time. The "trust" goal in R/3 accounting is achieved the same way.

Differences between two accounting reports on a certain measurement (such as "Sales Revenue") are known as "Reconciling Items," and are acceptable as long as the reasons they exist are understood. The main objective of synchronization is merely to ensure that report readers are getting what they think they're getting, to create trust, and thus an environment where decisions both can and will be made in response to the report.

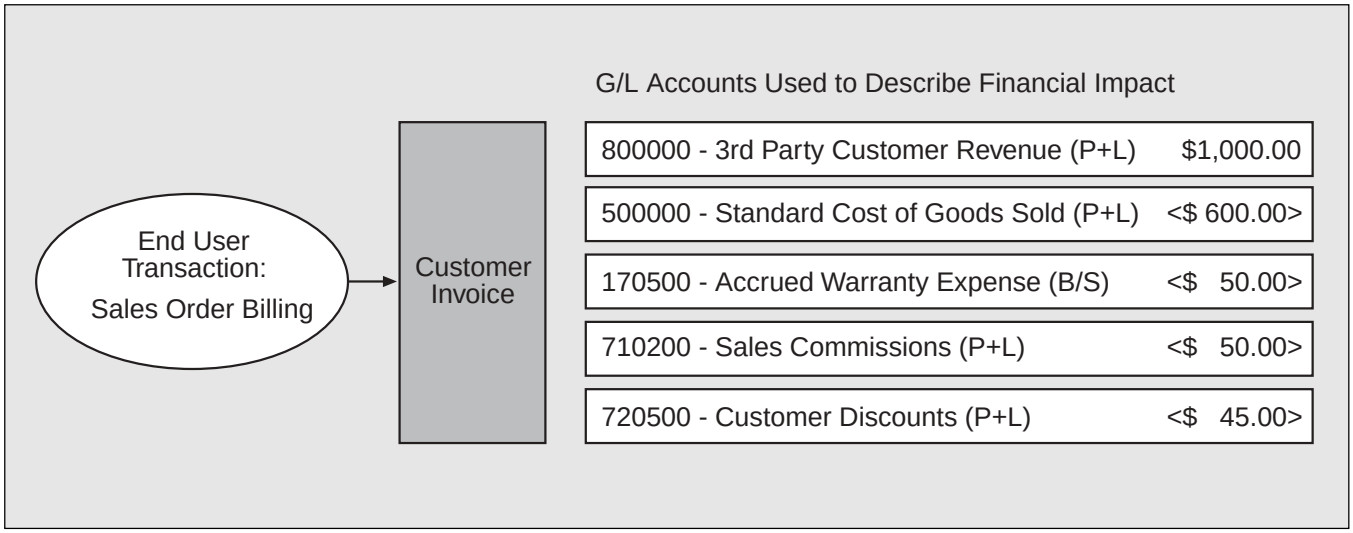
Pop Quiz:

Okay, who's been paying attention? Here's a quick question to test yourself! Ready?

> If someone came to you complaining that the "Sales Revenue" number in the company's G/L report disagreed each month with the "Sales Revenue" number in one of the company's Special Ledger reports, how could you modify the report(s) to improve reader satisfaction? Hint: Think "trust." (Answer at the bottom of the page).[2]

[2] Assuming that the differences are due to intentionally unique Update Rules that we configured, the easiest way to address this complaint is to add one feature to the Special Ledger report. In the header of the report, disclose that Special Ledger includes data updates from source transactions (let's call them X, Y, and Z) that the G/L does not include. Then, either in the Special Ledger report itself, or via a button that can be mouse-clicked, allow the reader to see a separate total of the X, Y, and Z source transactions. Your readers can now verify by themselves whether the two reports in question have or have not stayed in synch!

Figure 5 *Typical "Accounts" That Describe the "Bill Your Customer" Event in Terms of Financial Impact*



Section 2: Costing-Based vs. Account-Based Profitability Analysis (CO-PA)

In SAP R/3's CO-PA module, you are allowed to activate one or both of two distinct versions: An "Account-based" version, and a "Costing-based" version. Two versions. One purpose. Revenue vs. Expense. Tradeoff. Find it! Measure it! Own it!

Let's hold off for the moment on why you would want one version over the other, or on why you would want both versions to be active at the same time, and instead try to understand why two versions exist in the first place.

In traditional **account**ing, all transaction data centers around **account** numbers. These account numbers represent financially relevant categories of a given business event. **Figure 5** shows a typical example of these categories, for the event known as "Bill Your Customer." (Note that in most countries, the numbers and text descriptions for "accounts" are not mandated by law. Each company is free to decide on which accounts to create, and on what to name and number them.) And, remember, what we're concerned about with CO-PA in regard to any event is Revenues vs. Expenses, and Tradeoffs, because we eventually want to be able to explain — not just measure — profit.

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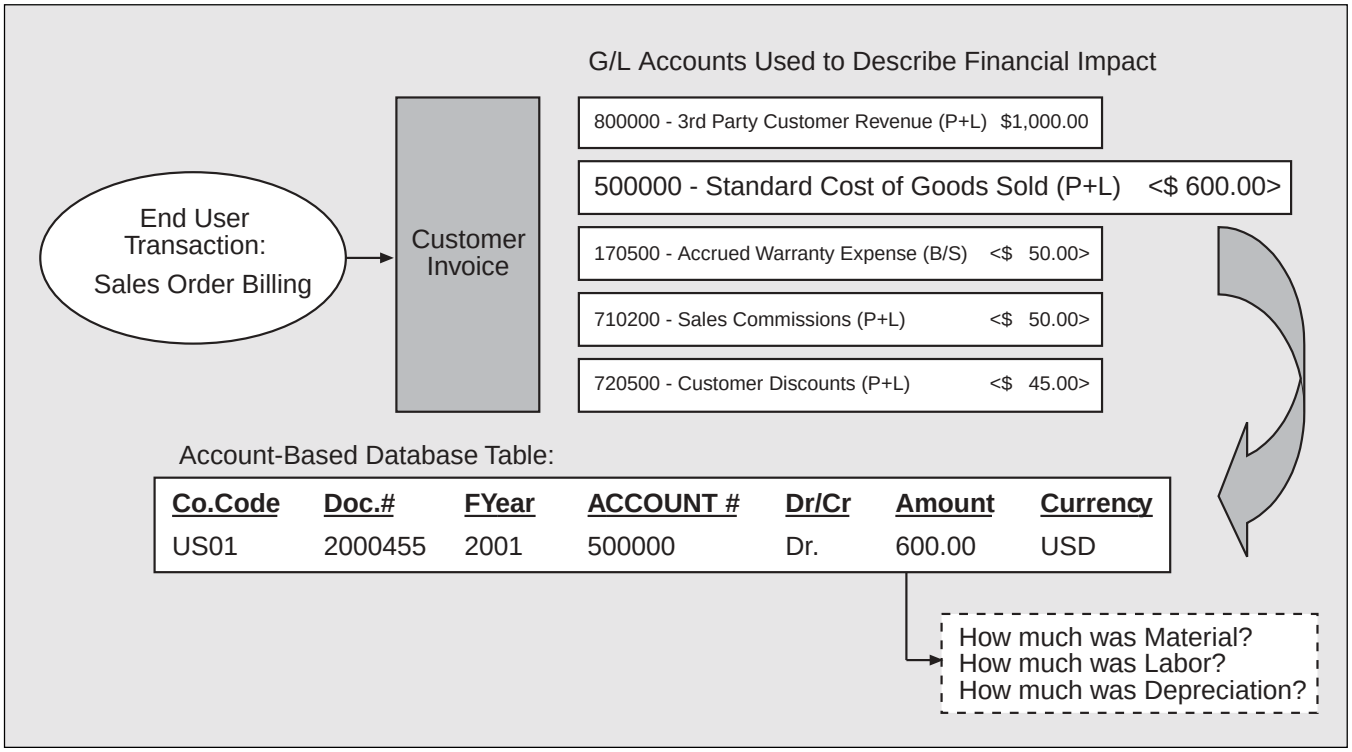
Unfortunately, as nifty as these **account** number things are, the fact that they exist as the central item of a transaction data table (such as the G/L data table) creates some annoying limitations regarding what kinds of tradeoff information I can record into … and

Figure 6 Example of the Limitations of a Database Table That Centers on the Account Debit or Credit Posting



thus report out of … my ledger. As an example of these limitations, notice in **Figure 6** how some important facts about your Cost of Goods Sold for the event known as "Bill Your Customer (for Product They Purchased and You Delivered)" can't fit into a table that revolves around a description of a single category (i.e., an "account"). **Figure 7**, however, shows what becomes possible when using a table that revolves around the *event*, rather than around the account.

The **Promise** of an Accounting transaction table as shown in Figure 7 is the ability to record — and thus report — multiple kinds of revenue and multiple kinds of expense related to an event, all on a single line, as a way to increase my chances of identifying an insightful tradeoff relationship. Yes!

The **Pain** is that such a data table would need to be 100 percent customized from scratch, with 100 percent customized data update rules. Ouch.

To deal with this, SAP gives you a middle-ground option. It offers less Promise. And, also less Pain. This is the "Account-based" version of CO-PA.

The Account-based version of CO-PA does not require you to build a custom data table. It stores its "How Much" and "What Account" transaction data in R/3's standard, delivered CO module set of (Cost Accounting) ledger tables, right alongside the transaction data of more familiar CO cost objects, such as Cost Centers and Internal Orders. And, just as the name implies, the Account-based version centers its transaction line items around "accounts."[3]

And, although it's true that the "accounts" piece of Account-based CO-PA imposes some of the annoying limitations identified back in Figure 6, you get a truly useful feature that other profit **account**ing areas in R/3 (such as Profit Center Accounting and Special Ledger) do not have. This

[3] In the CO module, "accounts" are called "Primary" and "Secondary" Revenue and Cost Elements.

Figure 7 Example of the Possibilities of a Database Table That Centers on Capturing Details of an Event

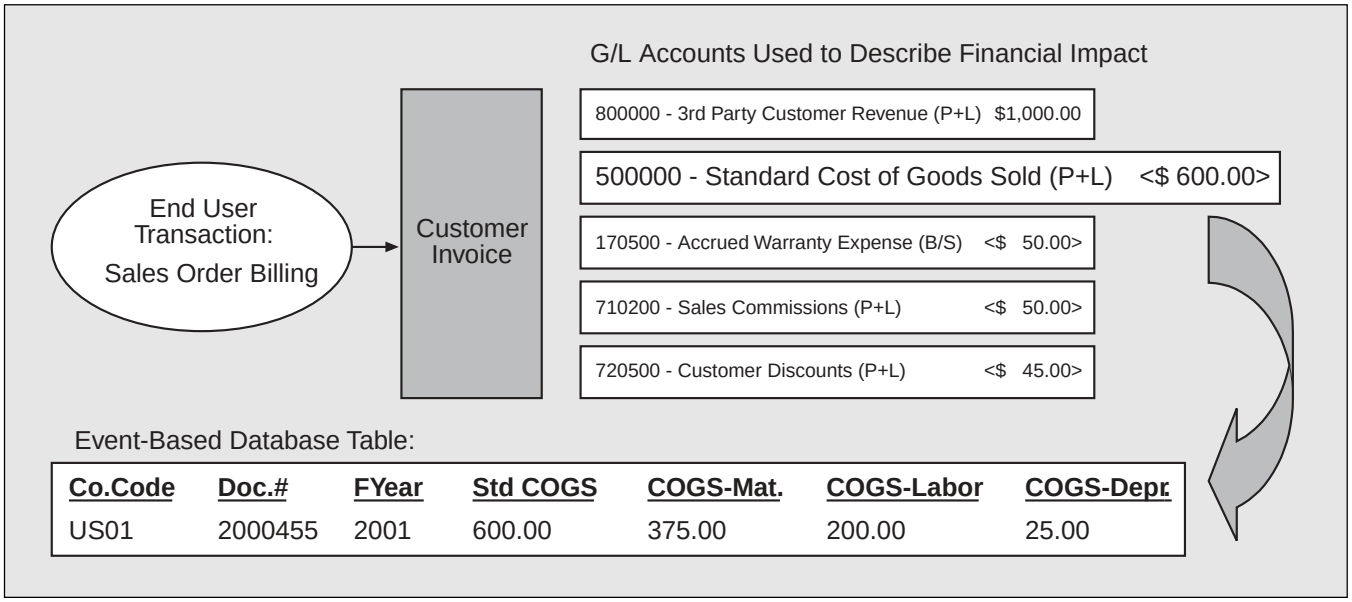
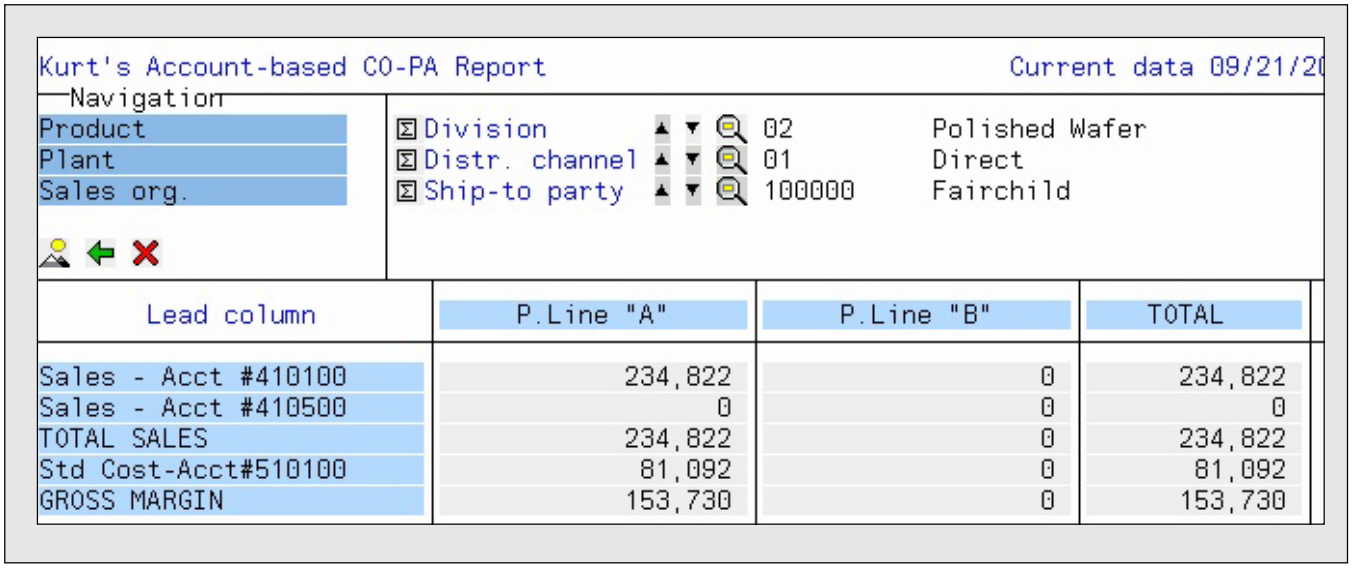


Figure 8 Sample Account-Based Report



is a feature that allows the capture of sales-related factors (e.g., Customer, Product, Sales Rep, Distribution Channel) alongside the more traditional accounting-related factors (e.g., Company Code, Business Area, Profit Center) with each debit and credit.

Figure 8 shows an example of an Account-based CO-PA report.

Because the Account-based version of CO-PA has very useful functionality, and because it centers

around these things called "account numbers" (just like the G/L — i.e., simplified synchronization), the obvious question becomes: Who needs a "Costing-based" version of CO-PA? Does anyone even want a ledger that looks like what was shown in Figure 7?

In my opinion, the Costing-based version of CO-PA is a pain to set up (you must build it 100 percent from scratch), and it's a pain to keep synchronized with the G/L (it doesn't even store "accounts"). And, thus, it's a good area of R/3 to ignore when deciding on what to implement.

On the plus side, though, it shares the "sales-related factors" functionality with Account-based CO-PA. This is quite nice. But, more important, it has three features that Account-based CO-PA does not have and that can make Costing-based CO-PA well worth the pain of implementation. Of course, this is true only if you believe you will actually make use of one or more of these three features. Here they are:

1. **Event-Oriented Reporting:** Costing-based CO-PA avoids the limitations of reporting off of transaction tables (such as those in FI and in CO) that center around accounts. Thus, a single event (such as the "Manufacture a Standard-Costed Material" event) can post into the table not just multiple "Who" (e.g., Plant # and Company Code #) and "What" (e.g., Product # and Make-to-Order vs. Make-to-Stock) values onto a single line, but also multiple "How Much" values (such as Quantity variance vs. Labor variance vs. Substitution variance, etc.) onto that *same* line. An account-oriented transaction table limits you to a single "How Much" value, such as simply "Total Variance from Standard Manufacturing Cost." Having multiple "How Much" values available from a single event can greatly improve your ability to search for hidden Revenue vs. Expense tradeoffs. In other words, this adds a "Wall" for your analysts.

2. **GAAP Not a Restriction:** Costing-based CO-PA allows (but certainly does not require) you to do things that fall outside of Generally Accepted Accounting Principles (GAAP). Here are two examples that allow you to build "What If…" type analyses directly into your reports. Such kinds of analyses can greatly improve your ability to search for hidden Revenue and Expense tradeoffs: (A) You can book revenues and related costs of sales (such as commissions and freight) when a sales order is entered, not just when the goods that were ordered have been shipped. (B) You can double- and triple-post Cost of Goods Sold (e.g., a current, a future, and a past value) when you bill your customer.

3. **Sales Quantity-Driven Annual Budgeting/ Forecasting:** Costing-based CO-PA has wonderful functionality to support the multiple iterations of "Data entry of forecasted sales quantity → calculate the planned revenues/costs of those quantities → management evaluation of those planned revenue/cost figures → changes to forecasts in hopes of finding more acceptable planned revenues/costs" that occur as part of many organizations' annual budgeting process. As an example of the functionality, part of these iterative loops can be an integration link that helps to determine the Production department's annual plan of labor and machine usage. This link, in turn, integrates with your calculations for your next year's Standard Cost Estimates data on your manufactured products, data that, in turn, feeds back to Costing-based CO-PA and the calculated revenue/cost numbers. Numbers on your Planned P+L for next year not looking quite right? No problem. Make a few adjustments here and there; then run the whole cycle over again. Multiple iterations are not painless. But, they cause *less pain* with Costing-based CO-PA active than they would without it. Sometimes, a lot less pain.

The remainder of this article focuses on the more difficult of the two CO-PA versions to synchronize: Costing-based CO-PA. And, the "other reporting ledger" we'll compare it to for synchronization purposes is the SAP R/3 General Ledger.

Figure 9 List of Well-Known Reasons for CO-PA vs. G/L Value Differences

- **Unique Source Transactions for COGS:** The G/L source = the SD Delivery transactions; the CO-PA Source = the SD Billing transaction. Thus, something as simple as a Blocked Billing document can cause differences, until the Blocked error cause is repaired.
- **Use of the CO-PA Functionality Known As "Valuation":** The G/L does not have this functionality. Therefore, discrepancies can easily occur.
- **Activation of CO-PA User Exits:** These impact only CO-PA, not the G/L. Therefore, discrepancies can easily occur.
- **Timing Differences for Expenses:** Cost Center expenses typically get to the G/L immediately, but only get to CO-PA during period-end allocations. Thus, differences will be visible until after those allocations.
- **End-User Confusion About Report Levels:** Some revenues and costs in CO-PA are visible in reports only at Company Code and Sales Org levels. Thus, what appears to be a difference vs. the G/L is merely a report interpretation issue.

Section 3: Five Secret Reasons Why CO-PA Falls Out of Synch with Your G/L

Synchronized does not mean identical. By "falling out of synch," we mean that differences exist on a given measurement (such as Gross Margin) between CO-PA and the G/L, *and we don't know/can't prove why!* If differences exist — but we know why! — then these differences are simply "reconciling items," and aren't much of a concern.

A number of reasons for value differences are already well-documented by SAP. **Figure 9** lists these. Boring, boring, boring. "Zzzzzzzz…." What a wonderful cure for insomnia.

Now then! Listed next are *my* five favorite design areas where I look when I'm called in to investigate a CO-PA to G/L synchronization mystery. I call these the "Five Secret Reasons" why your CO-PA numbers won't match your G/L numbers. Not even the snoopiest tabloid journalist or paparazzi photographer knows about *these* secrets! The *National Enquirer*? The *Daily Sun*? *Time* magazine? Hah! Only from the *SAP Professional Journal* can you get this kind of information!

1. **Either the "Internal Orders" or the "Project Systems" module is being used to allocate costs to CO-PA.** In this case, a huge temptation exists for the people developing the designs in these modules to think only about the final step in this process — the allocation to CO-PA (called an "Assessment"). However, how the debits and credits get to the Internal Order and/or Project prior to allocation is perhaps even more important. Often, these debits and credits arrive via something called "Activity" postings (a common example of this is the recording of an employee's time against the order/project).

   Uh-oh! Looks great on the CO module report. Unfortunately, these types of postings cannot update the G/L on their way to the Project/ Internal Order! As a result, CO-PA and the G/L will have differing cost numbers, after

the allocation to CO-PA. But, worse, you'll have to really research heavily each fiscal period to prove why, as Projects/Internal Orders tend to accumulate huge numbers of individual debits and credits during a month.

2. **So-called "Revenue Determination" variables drive the derivation of the SD module's billing document's G/L accounts.** The automatic selection of G/L accounts in response to a financially relevant Logistics transaction is a common function in R/3. Ordinarily, this function is harmless in regard to CO-PA vs. G/L accounting values. However, automatic accounting for the SD Billing document is the exception. The CO-PA module can only derive its equivalent of G/L accounts (called "Value Fields") based on the Condition Type in the SD Billing document. It's a 1:1 relationship. But, the G/L module can derive G/L accounts based on many factors such as Customer, Material, and Billing Type. It's a 1:Many relationship.

   The temptation is to use this 1:Many flexibility as a way to reduce the overall work effort in the SD-to-FI integration design. If this occurs, the ability to understand why a CO-PA vs. G/L value difference exists at period-end becomes so difficult, only an expert can find the cause of that difference.

3. **Balances are left in Cost Centers and/or Internal Orders and/or Service Orders.** Yes, we all know about the possibility for timing differences for allocations from CO objects such as Cost Centers directly to CO-PA. Yawn. Zzzz. Wake me when it's over. But, please realize that cost and revenue allocations that do not directly involve CO-PA can wreak equal havoc on reconciliation to the G/L! This is because certain CO module allocations deal with moving money off of the G/L's P+L and onto the G/L's B/S. If something goes wrong with these kinds of allocations, CO-PA and the G/L will show different P+L data. These kinds of discrepancies can be very difficult to research, since the error has nothing to do with CO-PA. A researcher is likely to spend many hours looking in the wrong places.

4. **Someone has deactivated Error Message #KI-166.** This error message only applies if you have just the Costing-based version of CO-PA active. It also only relates to manual postings to G/L accounts, made in the FI module, in one very specific situation — the G/L account being posted to also exists in CO as a "Type 11" or "Type 12" Primary Revenue Element (i.e., account). CO accounts of "Type 11" or "Type 12" are interpreted by R/3 as being "Revenue Elements," and accounts of "Type 1" are interpreted by R/3 as "Cost Elements." The "Revenue Element" setting has special meaning to R/3. It means, first and foremost, that the $1 posted into the G/L absolutely must also be automatically posted into the CO ledger when the G/L entry gets saved. But, it also means that the $1 posted into the CO module can only get posted to a CO module revenue-related cost object, such as to a Project (WBS Element) or to a CO-PA "Profit Segment." If end users who perform the G/L manual entry do not type in a Project or a Profit Segment prior to saving their data entry (because, for example, they instead typed in a Cost Center or a Profit Center), they are supposed to get Error Message #KI-166.

   Unfortunately, SAP has made it very easy for the end user to deactivate this error message — permanently! Anybody can do it simply by viewing the Long Text of the error, and then clicking on one hypertext button within that Long Text. Quite often, this occurs very early in an implementation, long before any "Go Live." And, because nobody ever realizes it's been deactivated, no one ever reactivates it. Oops! As a result, no error message. And, the $1 posted to the G/L that was supposed to — one way or another — also find its way into CO-PA? Well, the good news is that it does, in fact, make it to the CO module's ledger. But, the bad news? You'll never find it. It's absolutely invisible to your Costing-based CO-PA reports!

5. **Someone has tried to manually enter period-end accruals directly into CO-PA.** Yes, all manual adjustments made to Costing-based CO-PA seem risky on the surface. Actually, manually entering a period-end accrual adjustment isn't the problem here. It's what that type of entry then requires as a follow-on step. This follow-on step is a "reversal" of the accrual, a day or two after the Period-End Closing process is finished. That is the risk! Sigh.

   The Costing-based CO-PA ledger simply is a fundamentally unique animal as compared with other R/3 accounting ledgers (G/L, Special Ledger, Profit Center Accounting). So, although end users who are familiar with the "Accrual/Reverse Accrual" process in, let's say, the G/L might be able to complete this process without error 100 times out of 100 tries in the G/L, they will encounter big troubles when they try the same procedure in CO-PA. The CO-PA version of Accrual + Accrual Reversal is something like a popular skills game at carnivals and fairs that involves throwing a baseball two times. On your first throw, you just throw the ball at a wall. It's impossible to miss. A machine measures the speed that the ball traveled. No problem. It's the second throw that's a problem! You are required to guess the speed that your baseball will attain. Unless you do everything — grip, arm motion, breathing, release point, knee bend, etc. — the same way the second time as you did the first time, you'll lose. So many things to duplicate that can go wrong.

   Well, the same is true with reversing a manual adjustment to the Costing-based CO-PA ledger — there are many things to duplicate that can go wrong. Unfortunately, a similar chance for error does not exist when reversing the G/L version of the accrual. As a result, your G/L and your Costing-based CO-PA ledger will likely show different numbers when all is said and done. And, you'll have a very difficult time proving why the two are out of synch.

Section 4: Five Design Tricks for Building G/L Reconciliation into Your Costing-Based CO-PA Module

Pop-Quiz:

If synchronization between CO-PA and the G/L gives report readers a constant that they can count on (i.e., a "Wall") in their analysis of what happened, we must do the following in order to achieve this synchronization:

a) Ensure that the numbers in CO-PA reports and the numbers in G/L reports are exactly the same.

b) Ensure that we can explain to the reader any differences between the numbers in CO-PA reports and the numbers in G/L reports.

c) Ensure that we are on extended holiday just after CO-PA and G/L numbers get released.

Put down the phone to your travel agent! We're not going anywhere! We're instead going to use our knowledge about SAP's multiple ledger approach to Accounting to identify some creative ways either to prevent CO-PA and the G/L from having different numbers, or to ensure that we can explain any differences.

1. **Build a "G/L to CO-PA" bridge.** There is a fairly simple bit of configuration that allows any manual entry to a P+L account in the G/L to automatically update the equivalent of an account (called a "Value Field") in CO-PA. This allows a very desirable 1:1 relationship between a G/L account and a CO-PA Value Field. Even better, the G/L document and the CO-PA document become linked, giving you an easy audit trail to quickly disprove your manual G/L entry as the source of any CO-PA vs. G/L value discrepancies that might show up at period-end.

2. **Use the unpublicized ABAP programs to make any required reversing entries in CO-PA.** Your SAP R/3 system comes delivered with two ABAP programs you can use to automatically reverse any Costing-based CO-PA document. But, for some reason, these programs and how to use them are not well-documented. Program RKECANCL is used when you want to nullify a CO-PA update that came from an SD Billing document, and you want both the original and the reversal CO-PA entry to be visible from the Billing document. Program RKECADL1 is used when you want to sever the relationship between the Billing document and the original CO-PA entry. The program also creates a second, reversing CO-PA entry. For CO-PA documents that are due to direct manual entry to CO-PA, either program will do the job. This eliminates the high risk from making your reversing entries in CO-PA manually.

3. **Consider the impact on the G/L when designing your CO Allocation Rules. (Allocate the costs on a WBS or Internal Order *before* a Goods Issue to Delivery. Or, allocate to a G/L account.)** Hey — who ever said there's a law that forces you to allocate costs from CO objects such as Projects directly to CO-PA? What about allocating those costs to a Production Order, instead, so that the expense becomes part of the moving average value of a finished good? This way, your Total Costs of Creation post to both the G/L and the Project when that finished good gets shipped (i.e., "Goods Issue to Delivery"). There's also no rule against allocating from a CO object to a G/L account that has a "dummy" Cost Center set up for it as a default. You can then set up an automatic allocation from the dummy Cost Center direct to CO-PA. The point? Keep in mind the objective of proving CO-PA numbers against the G/L's numbers when you're designing these allocation things. You typically have many more options available than you might think at first glance.

4. **Turn your sales orders into CO cost objects (to get 100 percent control over which G/L account dollars map to which CO-PA Value Fields!).** Oh, I'm going to need to name-drop on this one, to give credit to the two SD/SM consultants who accidentally discovered this trick. Tushar Raval, take a bow. Raj Ganjur, take a bow. Both serve as living examples that brains and beauty can coexist in a Logistics consultant! (Uh-oh. No protest letters, please. We're all God's creatures.) Of course, *how* they made the discovery is not necessarily so flattering. But, that's another story altogether. What's important here is that one little trick can establish a 1:1 relationship between your G/L accounts and your CO-PA Value Fields for *all* of your sales billing document debits and credits. This trick revolves around something called a "Requirements Class." When set up the right way, the "Requirements Class" turns your sales order line items into CO cost objects. As a result, the debits and credits from the eventual Billing Documents post to your G/L, as usual. But, instead of automatically creating a CO-PA document (where the updates would be based not on G/L accounts, but on the Condition Types of the Billing document's Pricing Procedure), R/3 posts those CO module debits and credits to an object called "SDI" (sales document item). At that point, you can easily allocate from this "SDI" thing to CO-PA, with one important advantage: the mapping into the CO-PA Value Fields is based on the G/L accounts! Yes, it's one extra step for the Accounting department, but the synchronization effort becomes extremely simple. And, the SD consultants can stop worrying about developing 14 different versions of their Pricing Procedure, each with some unique "Condition Types" naming convention, as a way to indirectly achieve the 1:1 relationship between G/L accounts and CO-PA Value Fields.

5. **Turn off Account-based CO-PA (to gain triangulation!).** On the surface, it sounds as if having both the Costing-based and the Account-based versions of CO-PA would allow us to reconcile using triangulation — the Account-based numbers to the G/L, and then the

Costing-based numbers to the Account-based numbers. Ironically, the opposite is true. This is because the Account-based version of CO-PA stores its data in the standard-delivered tables of the CO module (e.g., table COEP). When the Account-based version of CO-PA is inactive, however, R/3 does an interesting thing. It stores two pieces of data in each debit or credit recorded into table COEP, in response to any transaction (such as Billing) that updates both the G/L and Costing-based CO-PA. The first piece is the Cost Element # (i.e., the G/L account). The second piece is the CO-PA Profit Segment #. This gives us a link between the G/L and Costing-based CO-PA that, in some cases, we cannot get anywhere else in R/3. You'll need to develop two custom reports … and a little help from a CO-PA consultant … to compile the data. But, when all other research fails to find a CO-PA to G/L discrepancy, this kind of triangular reconciliation can often be used to resolve any mystery. Once the two reports are developed, any end user with even a mild amount of CO-PA knowledge can perform the triangular synchronization check.

Section 5: Summary — Give Me a "Wall"!

In summary, let's quickly review the context I used when deciding to write this article, which can be phrased as a question: "Why should we care about reports?"

To me, the point of collecting data into a report is to summarize all the zillions of things that happen in an organization into something that can help you make a decision on what to do next. The summary measurements attempt to answer the question: "What Happened?"

However, my experience developing reports over the years leads me to believe that data involving the results of multiple kinds of organizational handoffs — such as Profit/Loss data — prove to be very difficult to summarize in a way that communicates what to do next. This kind of data summarization, therefore, often requires not just a friendly report format for answering "What Happened?" questions, but also a specialist researcher known as an "analyst." Based on the explanations provided by analysts, the people in your organization responsible for making high-impact decisions on what to do next feel more confident in their decision-making, and thus more willing to make what are sometimes very difficult decisions. This is extremely important, since without *somebody* making new decisions, what your organization is left with is inertia.

SAP's "Profitability Analysis" module can be, and should be, used to give your analysts a *unique* way to research what happened. The emphasis is on finding your organization's current Revenue vs. Expense tradeoff constraints (i.e., Cause) that have led to your organization's historical profit/loss results (i.e., Effect), which other reporting sources have been unable to expose.[4] This represents the **Promise** of CO-PA.

What we don't want, however, is to waste your analysts' time by giving them the equivalent of a math problem that contains only variables. X + Y = Z? Who wants to try solving that? Not me. I don't care how much you want to pay me. How about you? That's what I thought.

Yet, as we discussed in this article, this is what can happen to your analysts when your overall R/3 system design includes a measurement — such as "Sales Revenue" — that appears in your G/L, in your

[4] If your analysts today get what they need from existing reports, then you accomplish nothing by activating CO-PA. Yes, it might sound useful to develop a report that shows full-blown P+L data broken out by some variable (such as Customer) that you're not getting today. But, those kinds of data summaries are likely to be useless in regard to helping you identify what you need. Data on a report is just that — data. It only becomes "information" once somebody can explain why it's there. Putting data onto a report is the easy part. Explaining it is the hard part. Keep this latter task in mind when asking your consultants what kind of statistics you can and can't get in CO-PA.

Project Systems ledger, in your SIS tables, in your Profit Center Accounting ledger, etc., etc. All of these sources are physically separate data tables that allow for unique data update rules. The danger is not so much that the "Sales Revenue" (for example) shown in each source will be a different number. The danger is that any differences won't be explainable. Something that your analysts should be able to count on as a constant gets reduced to just another variable to explain. Nowhere in R/3, perhaps, is this danger greater than in the Costing-based Profitability Analysis module. This represents the **Pain** of CO-PA.

The good news is that R/3's distributed approach to accounting data has a center point. It is the G/L, which is more commonly referred to as the FI module. This set of accounting tables has an extremely high degree of built-in, hard-coded data integrity that other accounting modules do not have. I discussed this in Section 1. Therefore, we can use our knowledge of this to identify possible data synchronization weak spots with one of these other modules. I gave an example of this in Section 3. If we then apply our knowledge of one of R/3's more interesting accounting modules (Section 2), we can develop some creative ways to soft-code a G/L synchronization into our designs (Section 4).

Do this right, and your analysts will love you. You will cease to hear their complaints about having too many variables in their math problems, and not enough constants. Although these verbal expressions of frustration might take many forms, the non-verbal message is always the same: "Give Me a *Wall*!" Well? Go ahead. Give them one. This represents the **Victory** of CO-PA.

Kurt Goldsmith specializes in the repair of broken, loose, and otherwise unpleasantly surprising R/3 integration designs. Areas of particular enjoyment include CO-PA to G/L Reconciliations, Automatic Inventory/Sales/Procurement Accounting, Make-to-Order Sales, Chart of Accounts Redesign, Purchase Requisition Release Strategies, ABAP/Query, and the fine art of phrasing new OSS notes to successfully avoid the infamous "How About Some Remote Consulting" response.

When not wearing his SAP hat, Kurt can be found either at the local horse-racing track, in the bubble bath, or in his home city of Austin, Texas. A 1995 graduate of the U.T. Austin MBA program, Kurt gained initial R/3 project work through Thom Morgan and Warren Norris of SAP America's Dallas office, multinational R/3 work through John Wade and Bill Arrigo at IBM in New York, and eventually full-module integration work through Winni Hesel and Julian Pasley-Smith at the Malvern, Pennsylvania, offices of ICM America LLC.

You can contact Kurt with questions or comments about this article at KGoldsmith@ICM.de.

