In the Architectural and Engineering industry today, many companies still struggle with financial and project reporting. This a direct result of improperly structuring their organizations and project management accounting systems. They are simply not structured in an efficient, user friendly, and system friendly manner. In too many instances the past has been dragged into the future. It is much like trying to navigate today's web using a Windows XP computer. The In the article that follows, I will attempt to provide and understanding of how and why the industry is still struggling with this situation and provide a solution to the problem.

Background

A Simple Parallel Scenario

In the United States today, there are many neighborhoods comprised of houses with no garages. They were designed and built before the concept of the automobile was conceived or designed and built before the impact of the automobile was realized. No one in their right mind would design and build a neighborhood like this today unless it was positioned in a city center with a very capable mass transit system. The reality today is most new homes today are built with a minimum two car garage, many with a three car garage.

Architecturally, many organizational reporting structures for A&E firms resemble the aforementioned turn of the century neighborhood rather than a modern suburban neighborhood. That is a sad and truthful reality. Using a modified quote from the movie Moneyball, (Baseball thinking is medieval) "Departmentalized Profit Centers in a Job Cost environment is Medieval". What makes the concept medieval is the unknown and/or overlooked power of the reporting capabilities of A&E industry specific software paired with the misunderstood concept of accountability. The software companies themselves, in my opinion, have overlooked the endless reporting capabilities their own software possesses. Further, many firms that allocate expenses from a cost center to a profit center have a misguided understanding of accountability.

Dysfunctional Practices in the Industry

In most A&E firms that have departmentalized their profit centers, managers are assigned the responsibility of managing one or more profit centers (departments). Revenue and costs are funneled to those profit centers. Below are the methods that I have personally encountered for funneling revenue and direct costs to the various profit centers.

1. Direct costs and revenues automatically flow to the profit center that owns the project. The direct costs can include activity from other profit centers. Indirect costs are allocated to the profit center. (Owning Model)
2. Direct costs and revenues automatically flow to the profit center that performed the work. Indirect costs are allocated to the profit center. (Performing Model)

3. Direct costs and revenues automatically flow to the profit center that owns the project. At period end a series of reports are run, and the costs and revenues are journaled or allocated back to the performing profit center. Indirect costs are allocated to the profit center. (System Setup as Owning but managed as Performing)
4. Phases of the project are structured to match the firm's departmental structure rather than to match the manner in which the work is performed. This in an effort to eliminate the need to run a series of reports and have to journal the costs and revenues back to the performing profit center as detailed in number 3 above. (No name for this one - just an overall bad situation)
5. Other variations of the above.

If the challenges of getting the direct costs and revenue funneled to the right profit centers were not enough, now we are faced with the task of allocating indirect costs to the profit centers. I can write another entire article on the challenges of allocating indirect costs. Let's move forward on the assumption that creating methods of allocating indirect costs and implementing them are not without challenges.

No Respect for the Industry

Only a small percentage of companies operating in the business world utilize a job cost accounting system. The remaining or vast majority simply do not have need to do so. There is simply not enough incentive for many accounting software developers to make industry specific software. After all, Job Cost systems are much more complex than standard accounting systems. Therefore the cost to produce these systems is greater and the market is smaller. The main by-product of this situation is a lack of innovation, a lack of competition, and attempting to fit a square peg into a round hole.

Personnel Challenges

I am comfortable stating that most non accounting professionals and many accounting professionals(possesses a bachelors degree or higher in accounting) are not qualified to design and implement a fully integrated project management and accounting system such as Deltek Ajera, Deltek Vision, or Clearview In-Focus. I make this statement based on experience. Consider the following statements when assessing your own staff's qualifications.

For the remainder of this article, the term Controller / Bookkeeper will refer to the individual that is responsible for the firm's accounting function. That person could range from a CFO with a masters degree, the spouse of one of the principals with a liberal arts degree or a person with little formal education that has only "on the job" training.

- Is your present Controller/Bookkeeper an accounting professional?
- How many years of experience in the A&E industry does your Controller/Bookkeeper have?

- How many years' experience does your Controller/Bookkeeper they have operating an industry specific software solution such as Ajera, Protrax, Vision, In-Focus, Advantage, Wind2, etc.
- Has your present Controller/Bookkeeper implemented a similar system in the last five years?

Not possessing the above qualifications does not render them incompetent nor does it mean they are not a valuable resource to the firm. It simply means they have most likely or will be placed into a position to fail (setting up the system) unless they receive professional help. Personally, I do most of my own home maintenance, but I do not work on roof repair or electrical. Roof repair is too critical to the remainder of the home, and electrical can work can get me killed. I am not skilled in these trades, encounter enough work in these areas, and therefore, I do not consider myself qualified to perform this type of work. This does not mean I am not a good handyman!

I was controller level or higher in the industry for five years, and I have been consulting in the industry for twenty years plus years. I routinely encounter new challenges and curve balls so to speak. I cannot image how a person with little or no experience in these situations is feeling about his or her situation!

The Solution

Now that the groundwork has been laid, what is the solution?

The solution is simple but without a name. Revenue and direct costs are not departmentalized, indirect costs are departmentalized. Let's look at revenue and direct costs with a slightly different perspective. They are already "departmentalized". They are departmentalized by project. Associated with each project, is a project manager, a principal, a client, a client type, a project type, many other attributes. Any attribute associated with a project can be the basis of a sort or grouping (departmentalization) or a report. By rolling up or grouping a set of project detailed transactions to a project manager or principal in charge level, does this tell me what I need to know? Let's take this concept further. Take the same data and group it by client or project type. This will clearly show us which clients are more profitable to the firm than others or which project types are more profitable than others. In my opinion, that type of information is invaluable in determining the direction of the firm and evaluating project manager performance.

This approach also removes many obstacles that serve as distractions to the **firms** goals. Some of these obstacles are:

- How to allocate overhead / indirect costs.
- Which project cost flow model do we follow (owning vs. performing)
- Resource allocation (department managers "guard" their best resources and do not want to assign them outside their department)

Another way of stating this solution is as follows: Accountability is placed with the individual directly responsible for the budget. The budget may exist with the project/project manager (direct), an office manager (indirect), or department manager (indirect).

Let's Get Detailed.

A simple rules few rules to remember
1) No indirect costs are allocated.
2) All projects are assigned to an Operations Department (a large generic bucket).
3) Once a period is closed, no costs (direct or indirect) are moved, period. This will force managers to review charges in the current period.
4) Project Managers and "department" managers must be provided adequate reports to properly manage their budgets.
5) No squabbling allowed.

Some Optional Rules (highly recommended)
A. A portion of incentive compensation is tied to performance against budget.
B. Project Managers sign off on their budgets before they take effect. This will help establish ownership and accountability for the budget.

The Gross Margin portion of the budget is assigned to the project managers as shown:

Accuterra Engineering					Simple Firm Annual Budget
Income	**Total**	**Operations**	**Civil**	**Mechanical**	**Structural**
Project Revenues	3,000,000	3,000,000			
Direct Costs	1,100,000	1,100,000			
Gross Margin	**1,900,000**	**1,900,000**	**0**	**0**	**0**
Expense					
Indirect Labor Cost	500,000	0	250,000	150,000	100,000
Employment Taxes	90,000	0	45,000	27,000	18,000
Benefit Insurance	24,000	0	12,000	7,200	4,800
Cost Training, Seminars Cont Educ	12,000	0	6,000	3,600	2,400
Office Expenses	38,000	38,000	0	0	0
Professional Services	29,000	29,000	0	0	0
Communications	16,000	16,000	0	0	0
Business Insurance	21,000	21,000	0	0	0
Depreciation Expense	15,000	15,000	0	0	0
Total Expenses	**745,000**	**119,000**	**313,000**	**187,800**	**125,200**
Net Margin	**1,155,000**	**1,781,000**	**-313,000**	**-187,800**	**-125,200**

Project Budgets	Revenue	Costs	Margin
Project 1	500,000	184,000	316,000
Project 2	1,000,000	350,000	650,000
Project 3	800,000	325,000	475,000
Project 4	700,000	241,000	459,000
	3,000,000	**1,100,000**	**1,900,000**

This portion of the budget is owned and managed by project managers

The unallocated general office expenses portion of the budget is assigned to the Operations Manager (typically the office manager or managing principal) as shown:

Accuterra Engineering					**Simple Firm Annual Budget**
Income	**Total**	**Operations**	**Civil**	**Mechanical**	**Structural**
Project Revenues	3,000,000	3,000,000			
Direct Costs	1,100,000	1,100,000			
Gross Margin	**1,900,000**	**1,900,000**	**0**	**0**	**0**
Expense					
Indirect Labor Cost	500,000	0	250,000	150,000	100,000
Employment Taxes	90,000	0	45,000	27,000	18,000
Benefit Insurance	24,000	0	12,000	7,200	4,800
Cost Training, Seminars Cont Educ	12,000	0	6,000	3,600	2,400
Office Expenses	38,000	38,000	0	0	0
Professional Services	29,000	29,000	0	0	0
Communications	16,000	16,000	0	0	0
Business Insurance	21,000	21,000	0	0	0
Depreciation Expense	15,000	15,000	0	0	0
Total Expenses	**745,000**	**119,000**	**313,000**	**187,800**	**125,200**
Net Margin	**1,155,000**	**1,781,000**	**-313,000**	**-187,800**	**-125,200**
Project Budgets	**Revenue**	**Costs**	**Margin**		
Project 1	500,000	184,000	316,000		
Project 2	1,000,000	350,000	650,000		
Project 3	800,000	325,000	475,000		
Project 4	700,000	241,000	459,000		
	3,000,000	**1,100,000**	**1,900,000**		

This portion of the budget is owned and managed by the office manager or firm's PIC

The remaining indirect expenses portion of the budget is assigned to the department managers as shown:

Accuterra Engineering					**Simple Firm Annual Budget**
Income	**Total**	**Operations**	**Civil**	**Mechanical**	**Structural**
Project Revenues	3,000,000	3,000,000			
Direct Costs	1,100,000	1,100,000			
Gross Margin	**1,900,000**	**1,900,000**	**0**	**0**	**0**
Expense					
Indirect Labor Cost	500,000	0	250,000	150,000	100,000
Employment Taxes	90,000	0	45,000	27,000	18,000
Benefit Insurance	24,000	0	12,000	7,200	4,800
Cost Training, Seminars Cont Educ	12,000	0	6,000	3,600	2,400
Office Expenses	38,000	38,000	0	0	0
Professional Services	29,000	29,000	0	0	0
Communications	16,000	16,000	0	0	0
Business Insurance	21,000	21,000	0	0	0
Depreciation Expense	15,000	15,000	0	0	0
Total Expenses	**745,000**	**119,000**	**313,000**	**187,800**	**125,200**
Net Margin	**1,155,000**	**1,781,000**	**-313,000**	**-187,800**	**-125,200**
Project Budgets	**Revenue**	**Costs**	**Margin**		
Project 1	500,000	184,000	316,000		
Project 2	1,000,000	350,000	650,000		
Project 3	800,000	325,000	475,000		
Project 4	700,000	241,000	459,000		
	3,000,000	**1,100,000**	**1,900,000**		

This portion of the budget is managed by the individual department heads.

Key reports, Widgets, or Inquires will need to be updated to reflect the changes. The top half of the Income Statement (Gross Margin and above) can be dissected in many ways. Some of those ways include:

1) Project Manager
2) Project Manager's Home Department (Owning model)
3) Employee's Home Department (Performing Model)
4) Principal in Charge
5) Project Type / Market Sector / Lines of Business
6) Client
7) Client Type
8) Many Other Methods

The Gross Margin Analysis Report shown below is one report that demonstrates the power of the reporting capabilities of the industry specific software available to A&E firms.

UNLOCK TheData.com

Gross Margin Performance Report
For the Period Beginning1/1/2011 to 12/31/2011

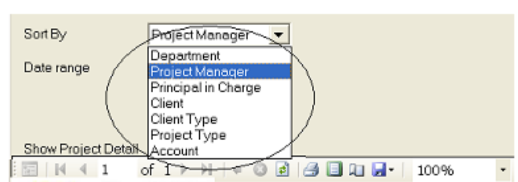
	Revenue				Cost				Gross		SG&A		Net
	Billings	Unbilled	Write Off	Total	Labor	Expense	Consultant	Total	Margin	NLM	Expenses	Other Inc	Income
Direct													
	37,473	7,515	0	44,989	9,188	3,427	11,300	23,916	21,073	2.48	-500	7,000	28,573
Boyle	48,745	32,191	2	80,938	13,915	3,434	19,200	36,549	44,387	1.88	-256	11,000	55,645
Brennan	6,488	1,435	0	7,923	1,873	50	1,000	2,923	5,000	2.90	0	0	5,000
Hill	156,860	-25,237	0	131,623	28,852	1,339	16,100	46,290	85,333	4.83	-98	3,000	88,431
Kingsley	0	15,197	0	15,197	3,558	929	0	4,486	10,711	-0.26	-22	0	10,733
Singer	7,500	24,802	0	32,302	8,760	1,258	0	10,018	22,284	0.71	-6	0	22,290
	257,066	55,903	2	312,972	66,145	10,437	47,600	124,182	188,788	3.01	-883	21,000	210,672
Indirect													
	0	0	0	0	0	0	0	0	0	0.00	76,143	0	-76,143
Engstrom	0	0	0	0	0	0	0	0	0	0.00	257	0	-257
	0	0	0	0	0	0	0	0	0	0.00	76,400	0	-76,400
Company Totals	257,066	55,903	2	312,972	66,145	10,437	47,600	124,182	188,788	3.01	75,517	21,000	134,272

Date Range from: 01/01/2011 to 12/31/2011

	YTD Balance
Total Income	312,971.70
Total Cost of Sales	124,182.04
Gross Margin	188,789.66
Total Expenses	75,517.25
Net Operating Income	113,272.41
Total Other Income	21,000.00
Net Income	134,272.41

Standard Income Statement Results

Gross Margin results by PM, PIC, Client, many more



Question: So… If I can dissect the Operations Department in so many ways, why do I need to physical separate it by department?

Short Answer: You do not.

Long Answer: You should not. In order to elevate project reporting to move to the next level, projects should be structured in the accounting database to match how the work is performed in the field. Failure to do so hinders the ability to implement project reporting tools such as Earned Value Management or RPC.

If you are having trouble viewing the above report, you can view a full size copy by clicking the following link: http://www.unlockthedata.com/images/Gross%20Margin%20Performance%20Report.pdf

Michael J. Brennan, CPA is one of the nation's leading experts in the management of A&E and professional services firms. Mr. Brennan has twenty five+ years of accounting and consulting experience in Architectural, Engineering, and Construction (AEC) industry. His certifications include:

- Certified Public Accountant
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- Certified Axium Protrax Consultant
- Certified Axium Ajera Consultant

Prior to starting unlockthedata.com he held the position of Controller at the Bentley Company and he was Manager of IT Consulting Services at Lautze & Lautze, a regional accounting firm in San Francisco. Mike is also an accomplished speaker, speaking to hundreds of A&E professionals each year at seminars and professional association conferences. He graduated in 1984 from Western Illinois University, with a BA, Accounting, and passed the CPA in Illinois in 1986.

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