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Deltek Special Edition

Project-Based ERP

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Learn to:

- Use an ERP system built specifically for your project-based business
- Track projects effectively and deliver them profitably
- Enable the alignment of people, processes, and tools

Kim Koster
Brian LaMee

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About the Authors

Kim Koster is currently the Senior Director of Product Marketing for GovCon tools and solutions. She has 21 years of industry experience working for Raytheon and ATK where she had the opportunity to work as a finance professional on multiple projects, programs, and product lines. Kim also participated in multiple successful ERP selections and implementations. She held management positions such as Javelin JV Controller, Director of Financial Business Systems, Product Line Business Manager, and EVMS Focal Point. She has been a trainer in her organizations and has provided guidance to many project and executive teams. Kim holds a BBA in Finance from the University of North Texas.

Brian LaMee is currently the Senior Director of Product Marketing for Deltek. He's spent the last 16 years working with project-focused firms helping them understand trends, best practices, and tools that are used by the industry. He got his start writing project software for the printing industry and has worked for companies such as Great Plains and Microsoft. Brian holds a BA in Business at Ohio Northern University.

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Brian LaMee dedication: To Tom Higginbothom and Jerry Robinson, who taught me all I know about ERP and projects.

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Introduction

Most companies these days recognize the need for ERP, an enterprise resource planning system that integrates a vast range of business information, from financial to customer to HR to manufacturing data, and a lot more. Some 88 percent of companies use some type of ERP.

But ERPs aren't "one size fits all," and many companies are using systems that aren't right for their business needs. This is especially true among companies that execute projects for external customers. Traditional product-based ERP systems just aren't a fit for the needs of project-based companies. And if your ERP isn't optimized to meet your company's specific needs, you probably have just barely scratched the surface of the potential power of ERP.

About This Book

Project-Based ERP For Dummies introduces the basic concepts of ERP systems that are intended to serve project-based businesses. Companies that are project-based typically include government contractors, not-for-profit nongovernmental organizations (NGOs), consulting firms, architectural and engineering firms, oil and gas operations, accounting businesses, legal firms, and agencies.

If projects are in your company's DNA, you can benefit from this book. It doesn't matter what your company builds or services — if your revenues and profits are derived from projects, you really need a purpose-built ERP system to run your business. As you flip through the pages of this book, explore ERP basics, and look into the differences between generic and project-based ERP, you'll see how your business can benefit from an ERP that fits like a glove. This book will give you practical advice on picking and using an ERP that's right for you.

This book was written by subject-matter experts who have led or participated in the selection and implementation of ERP systems and who have defined underlying processes of multiple types of businesses. The writers are currently employed by Deltek, and this book includes some information about Deltek-specific products. The Deltek writers worked with *For Dummies* editors to create this book.

Foolish Assumptions

While writing this book, we made a few assumptions about you, the reader:

- You're likely an executive, operations manager, business development professional, program manager, accountant . . . someone whose job it is to help a business succeed.
- You might have a lot of experience with and knowledge about ERP — or you might not.
- You've decided your business would benefit from the competitive edge a good ERP system can provide, whether you don't have one at all or you're seeking an upgrade.

Icons Used in This Book

Like all *For Dummies* books, this one uses icons to help draw your attention to certain types of information.

Look beside this icon for a nugget of helpful advice about making ERP work for your business.

We hope you'll remember every single word you read, but just in case that's not possible, pay special attention to this important point.

You might be able to get by without the technical details next to this icon, but you still might find them quite interesting.

Don't miss this point because it's a particularly critical bit of info for your ERP success.

Chapter 1

What Is an ERP System?

In This Chapter

- Understanding project-based businesses
- Defining ERP
- Choosing between project-based and generic ERP
- Learning the roots of ERP

Just about everyone handles projects from time to time, at home and at work. But would you consider your business to be project-based? Good question, and to figure out the answer, you'll need to educate yourself about what a project-based business is.

Confirming whether your company is project-based helps you decide whether your current ERP system really fits the needs of your company — or whether you have an ill-fitting system that is crippling your profitability and productivity. In this chapter, we discuss just what constitutes a project-based business and reveal more about ERP (starting with what those initials stand for, and no, it's not the sound someone makes when burping). Then we talk about how to make the choice between project-based ERP and a more generic variety.

What Is a Project-Based Business?

The answer isn't all that difficult. A *project-based business* is simply a company that generates the majority — or at least a large portion — of its revenue from managing and delivering projects for its clients. A number of important characteristics

define a project-based company. If these descriptions sound like your company, you may be a candidate for a project-based ERP system.

A funnel filled with opportunity

There's a very special kind of business development team at a project-based enterprise. It's all about filling the funnel. Visualize a funnel, and think of the size of the top of the funnel — yes, it's much larger than the bottom. The business development department's job is to fill the top of that funnel with opportunities, bids, and contract wins so that the business can produce revenue. It's a never-ending job because the funnel must be constantly filled. That doesn't mean the team can toss just anything into the top of the funnel, though. In order to know what to bid on, the business development organization must understand what kinds of projects have historically been profitable and must really grasp the diversity of the portfolio.

Built for executing projects

You won't be surprised to know that the overall organization of a project-based business must be crafted to execute projects and put the right people resources in place to make those projects happen. Many project-based companies have a matrixed organization, which means people with particular skill sets can be used wherever work they're trained to do needs to be done, whatever it is. This type of organization respects skill sets, and it's known to have a very high utilization of labor.

Matrixed is more of a descriptor than a name in many companies. Matrixed organizations are often called *functional* groups or departments.

Wanted: program or project managers

Program or project managers may handle work at the product level or the work-type level. You might hear these professionals called integrated product team (IPT) leaders, control account managers (CAMs), or work package managers.

Whatever you want to call them, these project team members are responsible for delivering the project to the client, and must manage their project's scope, schedule, and budget.

What in the World Is ERP?

The ERP acronym stands for *enterprise resource planning*. ERP systems are designed to integrate an organization's business information, including finance/accounting, customer relationship management, management accounting, procurement, human resources, budgeting, sales order entry, materials, and manufacturing.

It makes sense to integrate all these functions into one ERP system because it allows your company to establish business rules that will enforce critical processes. The whole idea is to seamlessly flow accurate and timely information between the different business functions. That gives leaders visibility into what's happening inside the enterprise and a much greater control of the components of a business.

What's an ERP like? Here are some key characteristics:

- There are transactional inputs.
- It has one central database for all information.
- Information is current (near real time).
- It's modular in design.
- It features open system architecture.

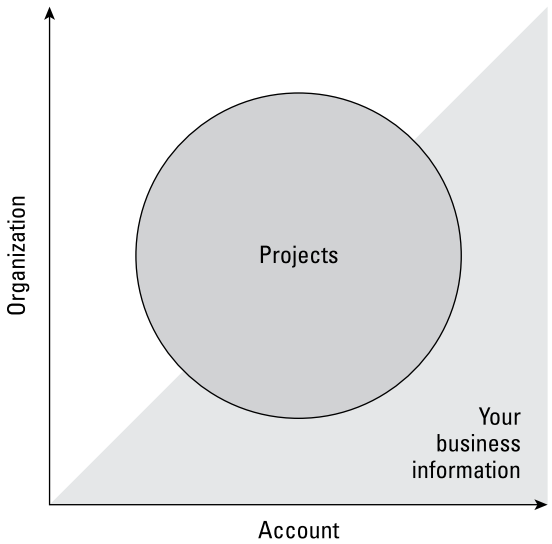
A project-based ERP has all of the preceding characteristics, just like any ERP. At its heart, though, it focuses *all* the processes and *all* the data on the company's central revenue generator: the project!

Why to Choose a Project-Based ERP

Project-based companies have their own distinct needs and requirements, and they must be able to view their business

in three dimensions. They need to be able to see the nature of the expense, what resource performed the work, and the project for which the work was accomplished. But take that one step further.

Generic ERP systems depict the business as flat (see Figure 1-1). They can't fundamentally understand the project dimension — they simply try to pancake over the top of the vastness with some level of project information. Projects are truly an afterthought in the system design. Because such a system requires customizations to make it operate with a project point of view, you must pay big bucks upfront, resulting in a higher total cost of ownership.



Source: Deltek

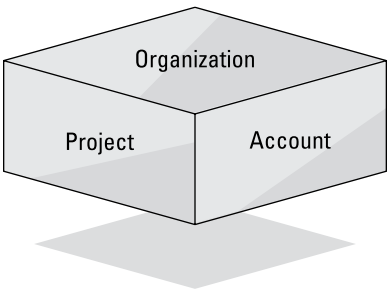
Figure 1-1: A generic ERP system with projects pancaked on top.

Beyond that, customization of generic ERP systems often doesn't work well. Project-based businesses that attempt this pancake maneuver find they have poor visibility, manual costing, manual reconciliations, assumed revenue calculations, and manufacturing systems that aren't tied to the projects for which the work is being done.

Generic solutions struggle to provide common deliverables that are tied to the project, and that struggle makes it difficult or impossible to produce an accurate view of project profitability

and health. Businesses often respond by using predictive methods to approximate materials costs and try reconciliation efforts to connect accounts receivable and accounts payable transactions. They may spend weeks summing all this information up into useful materials so leaders can make business decisions. This creates a situation where visibility into projects is blurry at best and somewhat fictional at worst.

Now, put on your 3D glasses and take a look at what a truly project-based ERP can provide (see Figure 1-2).



Source: Deltek

Figure 1-2: A project-based system sees the business in 3D.

With a true project-based ERP system, every single transaction is tied to an account, an organization, and — you guessed it — a project! Look a little further at these three important elements that are fundamental to success:

- **Account:** The general ledger account that describes the expense. Examples include hotel costs, airfare, labor, and subcontracts. Think of this as a chart of accounts.
- **Organization:** This may describe a department, a functional group, or a product line. Most importantly, it describes who is doing the work.
- **Project:** This is the product or service being delivered to a customer or client. The project is where economic value is created within the firm and where billings and revenues come from. It's the central activity that makes the business stay in business.

Linking these elements makes it possible to produce accurate and timely deliverables that are the lifeblood of any business, including:

- Financial reports
- Invoices
- Payroll
- Project status reports

When your corporate information and project financial information are tied together through the system, you have unparalleled visibility and control of your business. That enables you to make decisions based on current, real-time information, instead of managing through a rearview mirror.

The roots of ERP

The enterprise resource planning concept got its start in the 1960s, when manufacturing companies realized they needed a way to better control their manufacturing operations. The first answer was known as MRP, short for materials requirements planning. These systems were developed to order and allocate the materials needs for the manufacturing process.

From these early attempts to manage inventories came such new concepts as just in time or JIT. It wasn't until the early 1990s that the Gartner Group employed the acronym ERP. You may have noticed that ERP is a lot like MRP, with just one letter swapped out. That's important because ERP came to encompass much more than manufacturing. In fact, not all ERPs have embraced MRP and manufacturing at all.

As technology got more sophisticated, so did the adoption of the ERP system within companies. In the mid-1990s, ERPs incorporated all the core functions businesses needed to operate. By the end of the 1990s, ERP installations really exploded, as the euro took off, and as companies started to worry that their legacy tools might be disrupted by Y2K issues.

By the first decade of the new millennium, ERPs started to encompass not only the back office but also front office applications such as customer relations management (CRM). The role of ERP began to move from transactional-only to playing a major role in the decision making of the company.

Today, ERP may be a source of joy or pain. Many companies purchased generic systems that were expensive to operate and needed a bunch of customization. This was especially true for project-based companies that tried to shoehorn their business into a generic, manufacturing-based system. The globalization of the economy has also had a major impact on evolution of the ERP system. Today's enabling technology gives you the information you need to run your business no matter where in the world your employees live or work.

Chapter 2

The Components of a Project-Based ERP System

In This Chapter

- Following the financials
- Getting paid for your project
- Tracking time and people
- Complying with the rules
- Documenting goods and materials
- Tying it all together

When it comes to ERP systems and tools, project-based businesses have needs that are a lot different from other organizations. Each project is different, and a project-based business must be able to manage each one effectively despite variation. For that to happen, ERP tools must be able to manage and track information at the project level. In this chapter, we give you a closer look at the parts and pieces of ERP systems that are built specifically to handle projects.

Following the Money

You wouldn't be in business unless you were making money, and you'll be most successful if you keep close tabs on financial matters. Financials typically include such specific applications as the general ledger, accounts payable (the people you owe), accounts receivable (the people who owe you), and billing. In the project world, you need your financial tools to give you the ability to track your financials at the project level.

For example, if you want to track the profitability of a specific project, you need to know your revenue from that project (how much do you expect to be paid?) as well as that project's specific costs (including labor, materials, and other expenses) — the difference between those two numbers is that project's profit. Sounds simple enough, but if your ERP system can't track those costs and revenues at the project level, finding the difference isn't really all that easy.

Many ERP and financial management systems have been designed to meet the general needs of all types of businesses and don't have the ability to easily track costs for specific projects. This often means companies need to make the standard Chart of Accounts into a complex project-tracking system. Doing so creates reporting and auditing nightmares for project-based businesses, especially in industries and situations where compliance is vital to success (such as if your organization is a public company).

Making Sure You Get Paid

What's so hard about this? Just send out the bills and watch the cash flow in, right? Not necessarily. For project-based businesses, billing can present special challenges. Clients often specify exactly how they want to be billed and what the rules are for billing each project. Those rules may vary greatly from project to project. Your challenge is to be able to bill in whatever format your client wants.

Most generic ERP systems offer just a couple billing types. They're designed for industries where clients don't care what the invoice looks like. In the project world, that is not the case — you have to follow the client's billing rules.

For example, one project may be billed at 25 percent of the total project fee for each of the next four months. Another project may be billed when key milestones are completed. Your billing tools need to allow for different billing rules to be established for each individual project.

Then there are the invoice formats. One client may ask for detailed invoices showing every task completed and every employee who worked on the project, while another client

may be fine with a summary invoice that has no detail. Again, if you want the business, you must be able to address these client requests, and generic ERP systems simply can't support flexible billing requirements.

Don't create special invoices using spreadsheets or word processing tools. This approach doesn't provide an audit trail of the invoice and proper tracking for billing purposes.

If you're doing projects for customers in another country, you may need to create invoices and receive payments in your client's currency. That means your systems need to be able to handle currency translations.

Calculating Time and Expenses

Chances are, people are the most important assets of your company. They deliver your projects, which means they're a cost of completing the project. It stands to reason that in order to understand the profitability of the project (remember, revenue minus costs) you need to know the actual costs, including the all-important people costs. For example, you've estimated that Bob will spend 20 hours on a project, but when the project's over, you need to know exactly how much time he devoted to it. Likewise, you figured Bob would spend $2,000 traveling to visit the client, but what was the actual final cost?

Needless to say, capturing actual time worked on a project can be key to understanding the project's real costs. That means Bob must be able to easily log how much actual time he spent on a specific project or task, as well as whether he incurred any expenses. You'll never know the true profitability without this information.

Even if you outsource your payroll to a payroll provider, you still need this detailed time information for each specific project.

Beyond tracking profitability, there's a good chance you'll need this information for invoicing. For example, say Bob is completing a *time and materials* type of project — that's a project for which you bill the client for every hour Bob works as well as every expense he incurs. You quite simply can't

create an invoice without complete details of Bob's actual work time and expenses.

What if the project is being done for a *fixed fee,* which means you're charging a flat rate for the project no matter how much time Bob works on it? You'll still benefit from capturing time and expenses because doing so will tell you what the true costs are — otherwise, you'll never know whether the fee you charged was high enough to turn a decent profit.

These days, smartphones are in nearly everyone's pocket, and the Internet can be accessed just about anywhere. Time capture tools are available on phones and through web browsers, which means your people can log their time anywhere and anytime — that increases the odds that they'll quickly and accurately enter their time against the project.

Working with People and Payroll

No matter how much they love the work, all those people working on your projects expect to be paid. This means you'll need to track employees, pay rates, and benefits, and process your payroll. For project-based businesses, this tracking has two main purposes. The first, of course, is so you can pay them — you can't keep your employees without issuing paychecks. The less obvious reason is that this information is key to understanding what your costs are for the work each employee is doing. How much does Bob cost you, and more important, how much does an hour of Bob's time cost you? Read on to see why this is so important.

Take a look at a simple example. If Bob's salary is $60,000 per year + $10,000 in benefits, and he gets two weeks of paid vacation per year, that means he's available for project work for 50 weeks per year and 40 hours per week. His cost could roughly be estimated at $35 per hour ($70,000 ÷ 50 weeks × 40 hours).

Project-based ERP systems help identify costs because they can do a detailed analysis to distribute costs across the project and organization. In the simple example we're citing, we didn't include any overhead — such as building, utilities, and equipment — but a project-based ERP system can help spread

all such costs across employees to give you very specific costs for your project resources.

This information is critical because at some point you'll have to decide how much you're going to charge for the work. If you know you need 20 hours of Bob's time and his costs are $35 per hour, that means his pay and benefits cost for the project will total $700, and that's not including overhead — make sure you charge enough for the project to turn a profit. If you need a large team or the project is going to take a long time, this kind of information helps you decide whether taking on the project will be profitable for your business.

Getting in Compliance

Government contractors and plenty of other companies must meet accounting standards. *Generally Accepted Accounting Principles,* or GAAP, is the name of a common set of accounting principles, standards, and procedures that companies follow when they compile their financial statements. GAAP is the commonly accepted way to record and report accounting information. It was created from a combination of authoritative standards (set by policy boards).

GAAP ensures a level of consistency in financial reporting and helps investors gain confidence in the financial statements they use when they analyze companies and make their investments. Companies are expected to follow GAAP when reporting their financial statements in the United States.

IFRS stands for the *International Financial Reporting Standards*. These standards are designed as a common global language for business affairs, ensuring that company financials are understandable and comparable across international boundaries. IFRS is progressively replacing the many different accounting standards around the world. Even so, individual countries often adopt their own flavors of IFRS, which means enough nuances exist between countries to make comparisons a challenge.

To learn more about IFRS and whether your firm will be required to follow its standards, visit `www.ifrs.org`.

Keeping Track of Inventory

Inventory is a term for materials that a company already has on hand, so making sure you keep track of when such items are used for customers is important. For example, you may need to use a piece of equipment or certain kinds of materials specifically for one project. Track these items carefully and add their costs to the overall costs of the project. For instance, Bob's project is an environmental study that uses a $5,000 test kit. You must make sure that kit is charged to the project along with Bob's time, or your ability to turn a profit will be impaired.

Putting It on Your Tab

Some projects may require that you purchase specific materials or services from other businesses — you'll want to tie these items directly to each specific project. For instance, Bob had to order some supplies for his project. A purchase order was entered for the supplies and then purchased and delivered to Bob. Those supplies are part of the overall cost of the project, so you want to make sure the goods are associated with Bob's project. You don't want those items charged to the wrong project — or not charged to a project at all.

Make sure your purchasing system is part of or directly tied to your project system. That will reduce the need to enter purchase orders in separate systems and reconcile them back to the project system.

Manufacturing on a Project Basis

Companies that manufacture or refurbish things on a project-by-project basis need specialized software for tracking their shop floor activities, statuses, and completions. We get into

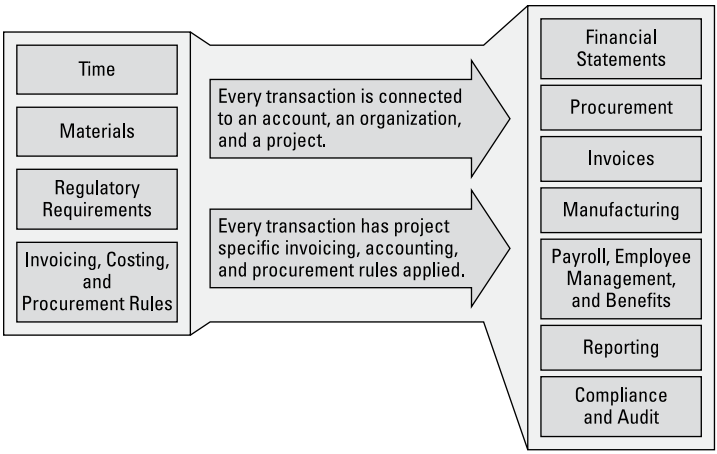
more detail on this in Chapter 6, but the project manufacturing system should have these components and functionalities:

- **The manufacturing execution system** (MES) should provide online documentation, work instructions, and routing information. This system captures work order status throughout the manufacturing process and supports quality control and nonconformance findings and results.
- **Shop floor time systems** capture start and stop times for shop floor activities. They should also support complex pay rules and schedules, as well as employee self-service scheduling requests and approvals.
- **Procurement systems** help you manage the purchasing and tracking of materials throughout the procurement process. Purchase orders can be completely tracked from planning to approval, purchase, shipment, and receiving.
- **Sales order entry** lets you generate sales orders for products and services while managing the shipment and invoicing process.
- **Inventory** offers the ability to manage asset inventories, project-owned inventories, and customer or government furnished materials (GFM).
- **Manufacturing** supports manufacturing orders, allocation of labor and part costs, and the fulfillment of sales contracts.

A project-based manufacturing system supports Lean and paperless manufacturing processes that help your company be more profitable overall.

Tying the Components Together

In generic ERP systems, components are disconnected, but if you purchase a true project-based ERP, every transaction is connected to an account, an organization, and a *project*. Yes, a project (see Figure 2-1 for a visual). That ensures that the multiple ledgers within the ERP are all the same, requiring no reconciliation!



Source: Deltek

Figure 2-1: Tying a project and its details together.

Chapter 3

Turn Knowledge into Wisdom

In This Chapter

- Discerning business intelligence
- Making reports useful for all
- Getting the scoop on analytics
- Letting trends tell a story
- Driving your business with dashboards

Extracting information from the data within your many systems isn't easy, but it's critical for making good business decisions. Many businesses today are both data-rich and knowledge-poor. In this chapter, we explore reporting and analytics, note the differences, and demonstrate why they're so important to effectively managing a project-based business.

Getting Smart with Business Intelligence

It's awesome to have mounds of data, but data is nearly useless if you can't turn it into actionable information. That's why your company needs a *business intelligence* application (that's BI for short) to make sense of all of the data. A good application is a one-stop shop for assessing results by project, department, account, customer, organization, vendor, and so forth.

All BI systems have some components in common:

- **Data:** All your functional areas probably have their own applications, databases, and spreadsheets. Businesses maintain systems for accounting, time and expenses, human resources, customer relationship management, budgeting, and manufacturing (if that's what your business does).
- **Metadata:** Think of metadata as the way that your BI system makes sense of data. It's kind of like a library catalog, categorizing data by all the attributes that are important to your business. Metadata is what makes a good BI application really shine, but building metadata yourself takes time, often months.
- **Report-authoring interface:** You need access to a straightforward graphical user interface for your report writers. Your authors will choose elements from the metadata (for example, *revenue by project*) and structure the report in a manner that's easily understood.
- **Consumer interface:** This is the "face" of the application that most of your organization will see, and it can make or break you. Your users want easy access to the information they need so they can run reports quickly.
- **Administrator interface:** The administrator must be able to secure data, control the environment, and monitor use.

When selecting a BI system to help your business make sense of your data, evaluate each solution's power as well as ease of use. If you're considering a homegrown tool, be sure to assess the total cost of ownership — sometimes saving some money upfront can be costly down the road.

Creating the Most Useful Reports

Good reports make everyone happy — bad reports waste people's time. Following are some simple tactics that will help make BI reports valuable for your business:

- **Keep it simple:** Consider what users really want and need to see. Reports should fit the users' "care-abouts." Overcomplicating the report will just prevent people from using it.

- **Be current:** As with fruits and vegetables, the freshest possible data is the best. Your business can't make critical decisions as effectively if the information isn't current.
- **Communicate to the report users:** When you're creating reports, be sure you understand the requirements, share drafts of the reports, and then monitor usage of each report.
- **Stay consistent:** Try to use the same reports for everyone as much as practical. In a perfect world, you may change the delivery method but not the report or the underlying data.

Getting to Know Analytics

There's knowledge, and then there's wisdom. They're two different things, but the former can lead to the latter. Think of your company's data as knowledge. You've got lots of it, but do you have the wisdom that comes from understanding that data? That's what *analytics* is all about.

Analytics is best defined as the use of data and analysis to identify trends and make business decisions. Although analytics may be easily confused with reporting, there are notable differences, which you can see in Table 3-1.

Table 3-1 Reporting versus Analytics

Reporting	*Analytics*
Detail- or transaction-based	Summary level
Provides data	Provides a platform for decisions
Data is raw from source data system(s)	Presented as key performance indicators/metrics
No inherent comparisons or variances	Compares actual results to targets
Often just includes data for a single period	Based on trends
Typically historically focused	Includes both historical and forward-looking information
Frequently just tables of numbers	Incorporates charts, graphs, and visualizations

An analytics platform is deployed as a series of *dashboards,* with each one typically tied to a specific *key performance indicator* (KPI) or metric. Because different members of the organization may be interested in different KPIs, your executives may follow one set of dashboards while your project managers follow another.

KPIs are the measures that drive your business. Although each business is different, there are several KPIs that apply nearly universally to project-based businesses:

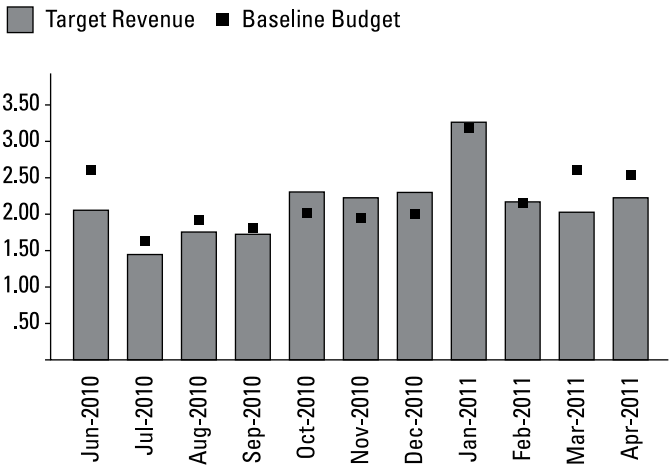
- Revenue
- Profit
- Backlog
- Labor utilization
- Indirect rates
- Proposal win rate
- Days sales outstanding

Looking at Budgets, Forecasts, and Trends

If someone told you a division's labor utilization for the first six months of the year was 75 percent, what kind of assumptions would you make and what actions would you recommend? Hard to say, because it's difficult to make sense of that statistic without any perspective or comparisons. Now imagine you also learned that the division's utilization for the prior year was 78 percent and that the budget for this year is 82 percent. Once you know that, you have a better idea where the division stands, and you'd probably be concerned. Stir in a little more analysis, and you could start to suggest corrective courses of action.

Comparisons to budgets, forecasts, or targets are critical components of an analytics environment. As the example highlights, metrics in a vacuum are virtually meaningless.

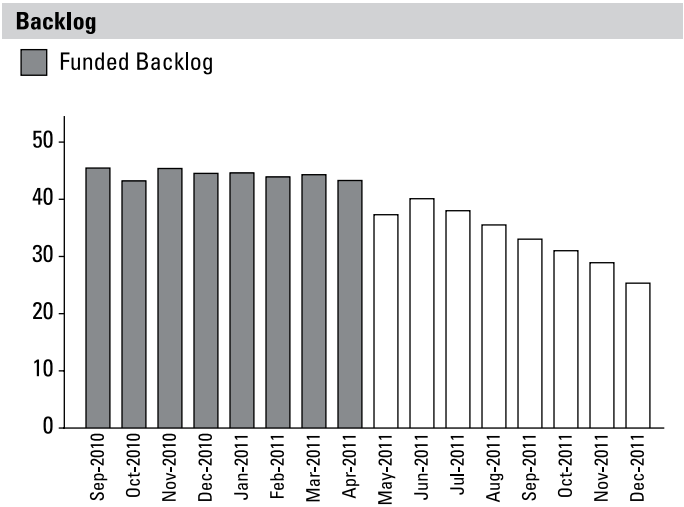
Evaluating performance against the baseline budget is often the best way to gauge whether the organization is meeting expectations. In Figure 3-1, you can easily see that the organization's revenue for March and April 2011 fell below budget, while results for the preceding several months were very positive.



Source: Deltek

Figure 3-1: Target revenue versus baseline budget.

Forecasts typically represent the "best guess" today of how the organization will perform in the future. Combined with actual results, forecasts can provide valuable visualizations of trends. In Figure 3-2, the shaded columns represent the funded backlog for the prior eight months. Performance has been relatively flat, and that information alone is fairly benign. To the right, however, are the forecasts for the coming months, and you can see that there's reason to worry. Based on Figure 3-2, backlog is expected to fall dramatically over the next eight months, which means it's time to investigate what can be done to change course.



Source: Deltek

Figure 3-2: Backlog report.

These examples highlight how analytics can provide insights that drive informed decisions and illustrate the difference between reporting and analytics. Reporting nearly always focuses on looking in the rearview mirror. That can be important, but it's also history, something that can't be controlled. Chart out trends that incorporate both history and your future projections, and you can start to impact where you're headed.

In the backlog example, the next step is to drill into that trend and isolate which divisions, program areas, or project managers are most responsible for the anticipated slide. The problem could simply be that part of the organization hasn't fully updated its backlog forecast. But perhaps a key program area is failing to find any new funding or work is drying up.

Examining the Metrics That Matter Most

Every organization measures itself in a slightly different manner, but certain key metrics are relevant for a high percentage of project-based businesses. For additional information on project-management-based analytics, see *Earned*

Value Management For Dummies, Deltek Special Edition, or *Integrated Program Management For Dummies,* Deltek Special Edition. Here are some of the metrics likely to be most useful to your project-based business:

- **Revenue:** The revenue recognized by project-based businesses is shaped substantially by the contract type(s) in effect for each project. Revenue is calculated differently for time and materials, cost-plus, and firm-fixed-price contracts — and countless variations exist for each primary type. Evaluate your revenue analytic by organization, project manager, customer, and specific project.
- **Profit:** This is arguably the most important metric for any company and is the ultimate measure of your success. As with revenue, profit is impacted largely by contract type. Companies should be able to assess profitability trends across contract type to ensure that they're pursuing the right type of business.
- **Backlog:** Your backlog analytic helps track how much work remains for your organization and allows you to measure whether you're operating above or below your budget. Make sure that this analytic includes not just existing contracts but also those you're proposing and hope to win.
- **Labor utilization:** This metric evaluates how efficiently your employees are being applied to direct, or billable, projects. The labor utilization analytic can offer insight into which employees are overperforming or underperforming and let you know whether your staffing levels are appropriate. It's imperative for management to be able to review both direct and indirect components of the metric.
- **Indirect rates:** Many companies track at least two different versions of rates for indirect pools such as fringe, overhead, and G&A. The *target* rate is the estimated rate based on its budget, while the *actual* rate is calculated based on incurred costs. Comparing both as the fiscal year progresses is a critical function and a valuable component of an analytics system.
- **Proposal win rate:** No need to limit your analytics to financial data. For example, as a project-based organization, your ability to win new business is paramount to your success. Setting targets for proposal win rates

across different parts of your company will allow you to evaluate the performance of your business development function.

- **Days sales outstanding:** The processes of quickly and efficiently recording costs, billing the customer, and receiving payment have a dramatic impact on your company's success. Errors in coding vouchers or timesheets or delays in generating invoices can be devastating to cash flow. *Days sales outstanding,* or DSO, is a measure of the time it takes to collect on an invoice, converting a receivable into cash.
- **Projects at risk:** Perhaps the greatest potential of an analytics application is the ability to draw attention to areas that need corrective action. Project-based businesses want to quickly know whether they're operating projects that have the potential to generate losses or leave the company out of compliance with contract terms. Examples of risk categories include:
  - Billing in excess of the funded contract value
  - Costs incurred after the project's end date
  - Revenue recognized in excess of the contract value
  - Revenue recognized below the budgeted amount

Designing Your Dashboards

Now that you've decided which analytics to track, you need to decide what sort of format should be used for the individual dashboards. For instance, what charts, tables, and visualizations would give your executives the best sense of project profitability across your enterprise?

Start the same way you did with reporting. Ask your managers what type of interface and information would be most beneficial to them in their decision-making process. Base your conversations and your dashboard design on the following considerations:

- **Preferences for information consumption:** Executives tend to opt for more graphical displays of information than other users, but that's not always the case. Find out what level of detail is the "right" level.

- **Quantity of information:** With analytics, you can definitely have too much of a good thing. Managers may ask for 20 different revenue charts, and they may be able to justify each. The end result, though, will be an exceedingly crowded screen that's both confusing and overwhelming.
- **Consistency in dashboard design:** Executives aren't hired based on their ability to interpret a dashboard, and they don't have time to become familiar with a bunch of different dashboard styles. Build some consistency into each dashboard in your analytic application to minimize the learning curve of your users.
- **Timeliness of information:** Make sure the dashboards are refreshed as often as reasonably possible. Analytics, by their nature, tend to be summary-level measures that don't change dramatically every minute. It's usually acceptable to update your dashboards with new data every night, but make sure your executives are aware of when the last refresh occurred.
- **Control of dashboard look and feel:** For years, dashboards were designed and controlled centrally, with very little flexibility for users to modify the appearance of the interface. These days, users have more control and can interact more powerfully with the dashboards and even add their own objects.

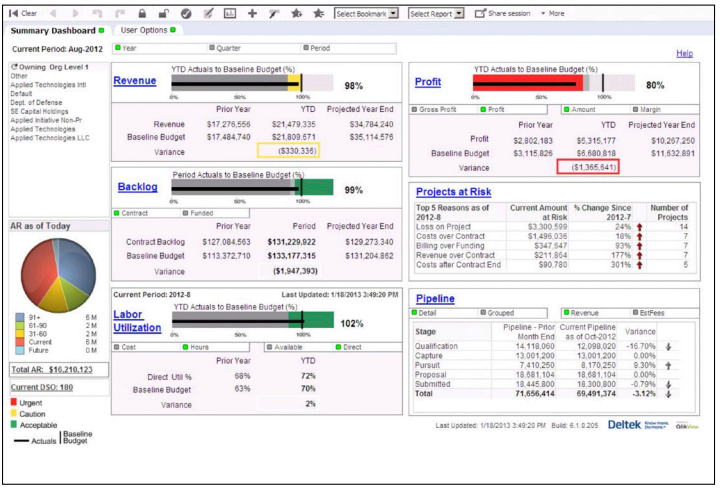
Displaying a Thousand Words

Charts that once required days of work by a graphic designer can now be rendered in minutes or less, telling stories more effectively. They're often visually stunning, but are they the right fit for the analytical needs of a project-based company? Here are some thoughts:

- **Keep the dashboard simple:** Restrict your display to the information that is relevant to the decision-maker. Similarly, avoid using chart types that are cluttered and require extensive explanation.
- **Match the chart type to what is being measured:** Different chart types are inherently better at displaying different types of information. Line graphs work best when measuring progress over time. Pie charts effectively compare percentages of various components to the whole.

- **Avoid the bells and whistles:** Technology makes it tempting to overload dashboards with objects that flash, spin, and jump off the screen. They look great in demos, but if they distract from the message of the dashboard, leave them out.
- **Remember the function of the visualization:** Each object on the dashboard should have a purpose. One component may exist to explain how revenue trends over the course of a year. Think about what type of object would best serve that purpose (a line chart, perhaps) and what options should be available to the user (analyzing the data by organization, contract type, or project manager, for example).

Figure 3-3 shows an effectively formatted dashboard that conveys role-appropriate information.



Source: Deltek

Figures 3-3: An example of an effective dashboard.

Chapter 4

CRM Made Just for Projects

In This Chapter

- Defining project-based CRM
- Deciding if an opportunity is profitable
- Forecasting your resources
- Creating a winning proposal

Customer relationship management, or CRM, is nothing new, but not everyone is familiar with project-based CRM. What makes project-based CRM different from generic CRM? Project-based CRM tracks different information and gives visibility to the type of work coming down the line and the potential resources that may be needed. This chapter examines the attributes of project-based CRM and illustrates how it helps your project-based organization thrive.

Knowing the Problems with Regular CRM

Most CRM tools are designed for businesses that sell products to help these companies forecast demand and serve their customers well. It's simple enough to determine the value of a potential sale — you just figure out how much of the product the customer wants to buy and then multiply price by quantity. Total up all the potential sales and you have your revenue forecast. Total up the inventory you potentially might sell and you have a forecast of the products that will be in demand.

This concept just doesn't work for project-based businesses because the key item often needed for a potential project is labor. As you're planning for a project, you need to know what resources you'll need and what those resources cost so you can prepare a cost estimate that's both competitive in the market and profitable for your business. If you're bidding on a job for $10,000 and it'll take four people two weeks to complete, is it profitable for your business to pursue this?

Hearing Opportunity Knock

Although general CRM is designed to build estimates and quotes by identifying the value of an opportunity based on product items, a project-based CRM system is designed to value the opportunity based on resources, products, expenses, and, if you need them, subcontractors. If you take the four-person example mentioned in the previous section, you can plug in the information shown in Table 4-1.

Table 4-1 Projected Resources Needed for Project

Resource	*Amount*
Project manager	20 hours
Designer	40 hours
Junior writer	30 hours
Senior writer	10 hours
Expenses for traveling to client	$5,000

Seems simple, but what you really need to know is what the labor is going to cost your business, so you can add in a profit margin. A project-based CRM system has the ability to plug in the costs of your labor resources and determine what you will charge per hour. It looks like Table 4-2.

Table 4-2 Costs of Projected Resources

Resource	*Hours*	*Hourly*	*Cost*	*Charge (+30%)*
Project manager	20	$35	$700	$910
Designer	40	$35	$1,400	$1,820

Resource	*Hours*	*Hourly*	*Cost*	*Charge (+30%)*
Junior writer	30	$20	$600	$780
Senior writer	10	$30	$300	$390
Expenses for traveling to client			$5,000	$6,100
TOTAL			**$8,000**	**$10,000**

Now you can make a solid decision about whether pursuing this $10,000 opportunity will be good for the business. Also, by tracking these opportunities, you can see how much work you're pursuing and evaluate whether you have enough work to grow the business, when this work is expected to come in, and how long it will last.

Forecasting Your Resources

Tracking resource information allows you to forecast your resource needs. Returning to the previous example and looking at just one of those resources for the $10,000 job, you estimated you would need a designer for 40 hours. How many other potential jobs also need a designer at the present time? Imagine that during the next six months there will be 15 jobs that need design work. Each job needs roughly 40 hours of work, for a total of 600 hours of design work. Now imagine you have two full-time designers who can each work 40 hours a week, which means that over the next six months you have 1,920 hours of design time available (960 per designer). So, do you have enough work over the next six months to keep these two people busy? Do you need to find more design work? On the other hand, if they're already backlogged for the next five months, does that mean you need to find an additional designer?

By tracking resources needed based on opportunities, you can answer two key questions:

- Do you have enough work to keep all your people employed and busy?
- Do you have all of the right resources for all the work to which you could potentially commit?

Some companies accomplish this tracking with spreadsheets that are attached to opportunities. Ask this question: If you had to find out how many designer hours were in the forecast for all opportunities expected to close over the next six months, how many spreadsheets would you have to look through? A project-based CRM system solves this for you.

Creating Solid Proposals

Back to the example again — you have decided that the $10,000 job would be profitable for your business and you have the resources needed to get the job done. Now you must create a proposal. Many businesses have proposal templates handy, allowing them to put together their written presentations to potential clients. These templates include such things as descriptions of the company, the team that will be involved and their resumes (that's important because your customers are often buying your expertise and your employees' skills), similar projects your organization has successfully completed, and countless other pieces of information that go into a winning proposal.

Although every proposal to every client is different, many pieces of that proposal are similar to, if not the same as, what you've used in other proposals. So when creating a new proposal, you'll spend lots of time searching through previous proposals and cutting and pasting items from one document into another. You'll spend just as much time hunting down people who have answers or who need to update certain pieces of information, such as resumes and project descriptions.

Proposal-generation tools can speed this process, especially if they're tied to your project-based ERP system. Think of your proposal as a puzzle. You just need to grab the right pieces and glue them all together for the finished product. For example, you may use several company boilerplates. Every member of the organization has a resume used on proposals, there is a list of previous clients to be used as references, and maybe there are descriptions or pictures of previous projects. A proposal tool allows you to select all the pieces you'll need from these choices and then pulls them all together into one document, saving you the time of searching, cutting, and pasting.

Your previous clients and projects will be part of your project-based ERP system, so the ability to pull from that system into your proposal will save lots of time.

Chapter 5

Planning the Project and Its Resources

In This Chapter

- Planning the steps
- Creating the schedule
- Assigning resources
- Tracking spending
- Making changes

So you've won the project — now it's time to start the work. But before you start working on your project you must make sure you've planned and scheduled all the project's steps and milestones. This chapter shines the spotlight on the planning process that will ensure success.

Creating the Project Plan

Your project plan will spell out all the steps that must take place and be checked off along the way in order to ensure that every part of the project has been completed. These steps may be termed tasks, phases, steps, or milestones within your project. Your project could be simple and have just a few tasks, or it could be a very large and complex project with hundreds of steps to reach completion. It's critical to develop a structure that is easy to follow and allows for change.

The plan is an instruction manual for the project, but it has another important purpose: allowing the project manager to keep track of the project's progress and make sure steps are being completed on time and on budget.

Fully understand the costs of people, materials, expenses, and subcontractors that will be needed to complete the project. The project plan will help you keep track of the planned costs versus the actual costs, so you'll know whether you're on-target.

A key component of the plan is knowing the amount of time particular phases will require for completion. So if you know that the first step of the project is to assess the current situation and you expect that task to take four hours, you need to plan for those four hours. After that is completed, your lead designer will take the notes from the consultant and start work. That work is expected to take 40 hours. So your plan might start to look something like Table 5-1.

Table 5-1 First Project Plan

Task/Role	*Planned Hours*	*Description*
Starting assessment by consultant	4	Conduct initial assessment and document details for design team
Design by designer	40	Do the design work

As a project manager, your job is to not only make sure the project is delivered on time in order to meet the client's expectations but to monitor your budgeted costs along the way to ensure that the project is done at or under the projected cost so you make money for the business. It doesn't do you much good to deliver a $10,000 project on time for the client if it took twice as many hours and expenses to complete and cost the business $15,000.

Things happen and plans change, so make sure that you have the capability to manage those changes and track the impact those changes have on the plan — including changes to people, materials, and costs.

Your project planning tool should show you not only the hours required but also the costs projected in order to complete the work. So it might start to look something like Table 5-2.

Table 5-2 Updated Project Plan

Task and Role	*Planned Hours*	*Planned Costs*	*Description*
Starting assessment by consultant	4	$140	Conduct initial assessment and document details for design team
Design by designer	40	$1,000	Do the design work

Stay tuned, because you'll need to track the actual costs to ensure the project comes in at or under budget.

Scheduling the Project

You've charted out the tasks or phases of your project and how much time is projected to complete each task. Now you must figure out when each task needs to be completed. The client may have a specific deadline for a particular piece of the project, or perhaps one task must be completed before another task is started. As the project manager, you will schedule the tasks, when they need to start, and when they need to be completed. Such a schedule might look something like Table 5-3.

Table 5-3 Scheduling Tasks

Task	*Planned Hours*	*Planned Costs*	*Start and Finish Dates*	*Description*
Starting assessment by consultant	4	$140	1/10–1/10	Conduct initial assessment and document details for design team
Design by designer	40	$1,000	1/11–1/21	Do the design work

Just as you must be able to manage project changes that impact the tasks and costs, you also must be able to track the impact those changes will have on the schedule of the plan.

Scheduling the Resources

You're making good progress on the plan. You know when the work needs to be done and what type of person needs to do the work. Now you have to figure out exactly who will do the actual work.

In the example here, if you have only one designer, this question is a no-brainer. You just have to know when that designer is available to do the work, which means you need to find out what's currently on his plate and when he can fit in this new task.

But what if you have five designers? Which one should you use for this project? A planning tool can help you see which resources are available to do the work based on the assignments the designers already have and when the new task needs to be completed. Also, does the designer for this task need a specific set of skills, familiarity with a specific tool, or a certain experience level for this project?

A project scheduling tool with resource attributes will give you the ability to search for the right resource, with the right skills, at the right costs, and when you need them.

It's quite possible that your resources don't all have the same cost basis, and if that's the case, it's important to be sure that the specific person doesn't cost you more than you were planning to spend. For example, if you budgeted for a designer who is paid $25 an hour but end up having to use your most senior designer who is paid $35 per hour, what does that do to your project budget?

Understanding Budget versus Actual

In the $10,000 project, you determined what your costs would likely be. Now, you need to monitor the costs as the project progresses. This is termed *budget versus actual*.

For example, you projected that your designer would spend 40 hours doing the work on this project, but now you need to know how much time it *actually* took to do the work. If it took less time, that means it cost less than you thought, and because you still get paid the same amount by the client, the project is turning out to be more profitable than expected. But what if it took your designer 50 hours to do the work? What does that do to your profitability, and is it possible to get it back in line by adjusting other tasks or costs on the project? And from a scheduling perspective, because design took longer than expected, are other tasks affected?

Hindsight may be 20/20, but it doesn't always do you a lot of good. Evaluating budget versus actual after the project is complete doesn't allow you to make adjustments to steer the project back on course. It's critical to evaluate the progress of the project at regular intervals while the project is underway and you still have the opportunity to make adjustments.

So how do you calculate the actual part of this equation? Chapter 2 discusses the components of a project-based ERP system, and time collection is a big piece. If your designer is logging his time against this project, a project-based ERP system can automatically update the project plan. When you look at the plan, you can see that 30 hours were logged so far. As project manager, you can evaluate whether your designer will finish with ten more hours of work — and if not, you have a problem. It might look something like Table 5-4.

Table 5-4 Examining Projected versus Actual

Task	*Role*	*Planned Hours/ Actual Hours*	*Planned Costs/Actual Costs*	*Actual Start and Finish Dates*
Starting assess-ment by consultant	Consultant	4/4	$140/$140	1/10–1/10
Design by designer	Designer	40/30	$1,000/$600	1/11–1/21

Embracing Change

Many things may change during the course of a project, but from the perspective of the budget, you can boil them down to two types of changes. There are changes that the client agrees to and will pay for, and there are changes that the client won't pay for.

For example, the client may change the *scope* of the project. Perhaps instead of designing one thing, the client wants you to design two, which means the design hours will double and you can't do two things for the previously agreed-upon $10,000. In this case, you will change the scope of the project and inform the client that the fee will also change. The client will determine whether to have you proceed with the additional work.

This is often referred to as *change in scope* or a *change order*. Perhaps you told the client that the additional design will cost an extra $5,000, the client agreed, and now you need to change your plan. You don't want this to look like you went over budget on the project, so you will create a revision to the plan, adjusting the hours and schedule. The original plan is often called the *baseline,* and your new plan will be called the *revision*.

However, sometimes the plan changes, but the client hasn't agreed to any increase in price. For example, maybe you estimated that it would take four hours for the assessment, which turned out to take eight. The client is still paying $10,000, but you just increased your costs. In response, you may want to talk to your designer and see if it's possible to do the work in 35 hours instead of 40 to make up the difference.

If you're starting a new project that is similar to previous work you did, consider using that previously completed project as the baseline for your new project. That way you'll have an accurate estimate of what it will take to complete the project based on real-world experience. Project-based ERP planning tools will help you do this.

Factoring In Other Key Measurements

Budget versus actual is critical. However, it is far from the only measurement that a planning tool can be used for. Here are some examples.

Utilization

Utilization tracks the workload being carried by your people. Consider the case of Bob. If Bob can work 40 hours a week on project-related work, how much of his 40 hours is actually focused on project-related work?

If he worked 30 hours on projects last week and had 40 hours available for project work, his utilization is 75 percent. That is a normal ratio, and the other 25 percent is likely work on internal projects or administrative work. But what if Bob was utilized at 50 percent? You need to find Bob more work. What if Bob is working 50 hours a week on projects and he should have been working no more than 40? You could be overworking Bob. Resource tools can help identify if you're balancing the workload.

Realization

Realization looks at Bob's overall contribution to the bottom line. If Bob worked 30 hours on his project last week (against his 40 available hours), from a utilization standpoint, discussed in the preceding section, he is 75 percent utilized. But what if he was only supposed to work 20 hours on that project? Just because Bob is busy, that doesn't mean all of his work is contributing to the bottom line of the project.

If he worked 30 hours but was supposed to work just 20, that essentially means you're not getting paid for 10 of his hours on the project. It might be an hourly rate project, but the

customer isn't going to pay for 30 hours when they originally agreed to 20. Or it's possible those ten hours put you over the project's budget because you do have to pay Bob for those hours. Realization helps you determine Bob's revenue contribution. Busy doesn't always mean profitable.

ETC (Estimate to complete)

Estimate to complete (also called ETC) is the amount of money or time you think will be needed to complete the remaining work for a project or phase of a project. This measurement can help you gauge how much of your budget is required to finish out the project and can also help you see if it will end as expected (or better) or if you need to make some adjustments.

EAC (Estimate at completion)

Estimate at completion, or EAC, is the amount of money or time that the project will cost you in the end. It is calculated as:

The Amount of Work Already Completed + ETC

EAC can help you identify whether your project is likely to come in exactly how you expected, or if there are going to be problems (such as being over budget) that need to be addressed before the project is complete.

Earned Value Management (EVM) and *Integrated Program Management* (IPM) are methodologies that help project managers manage scope, schedule, and budget. For more detail on these topics, please check out *Integrated Program Management For Dummies,* Deltek Special Edition and *Earned Value Management For Dummies,* Deltek Special Edition at `www.deltek.com/dummies`.

Chapter 6

If You Build It: Project Manufacturing

In This Chapter

- Driving demand with MRP
- Getting to know your manufacturing system
- Maintaining products and services
- Getting information to the enterprise
- Executing by automating

Companies that build things need a combination of highly specialized tools to track shop floor activities, statuses, and completions. They also need a strong, project-based ERP environment for invoicing, materials management, and financial accounting. Project-manufacturing software is specifically designed to address the unique regulatory and operational needs of complex manufacturing firms. It's a solution that provides significant advantages for running an agile and streamlined manufacturing operation. This chapter explores the attributes and advantages of project-manufacturing applications.

Examining the Benefits of Integration

Who or what doesn't benefit from better communication? Here are some of the advantages your manufacturing operation can gain by using an integrated project-based ERP and manufacturing system:

- Greater realized efficiency
- Decreased costs, more financial predictability, and improved profitability
- Increased quality and more consistent processes
- The seamless ability to meet critical government contracting compliance needs (if required), right "out of the box"
- The ability to deliver on Lean and paperless manufacturing objectives
- Traceability of every component produced
- Information flowing to all stakeholders
- Knowledge of the actual time each operation took and how much it cost
- Creation of an actual basis for future work and cost estimation
- Increased overall competitiveness

Lean manufacturing is a practice focused on controlling costs, increasing efficiencies, and creating value for the customer. The idea is to ferret out and eliminate extraneous activities or wasteful expenses. *Value* is defined as any action or process the customer is willing to pay for, and the Lean concept strives to preserve value while reducing work. This concept was derived from the highly regarded Toyota Production System.

Understanding Materials Requirement Planning

If your business is manufacturing, your daily challenges include ensuring that you have enough of the right parts in inventory. In an ideal world, you would manufacture a product just in time to meet the customer's delivery dates and your revenue goals and objectives.

The problem is, any project, product, or task can be royally messed up if critical parts or materials aren't planned and inserted into the manufacturing process at just the right time.

Your procurement system helps order and track the purchase of materials and services, and although that tracking is critical, it's not enough. That's why companies use *materials requirements planning* (MRP) capabilities to ensure that the right materials are on hand, in the right quantities, at the right time, and at the lowest-possible cost.

With MRP, messages are automatically generated so planners can find out what actions need to be taken to meet any new demands — or changes in existing demands. These action messages help planners make the right decisions to expedite, reschedule, order, or cancel supply to meet demand. MRP will help you answer the following questions:

- What is our demand?
- Do we have enough supply? What parts need to be procured or manufactured? What engineering changes are being proposed?
- How much supply is required?
- When is the supply required?
- What action needs to be taken?

Tracking Your Orders

Sales order entry (SOE) lets you track and monitor your customers' orders for products and services while managing the shipment and invoicing process. Items on sales orders may be recurring, drop-shipped, procured, or manufactured. Sales order entry creates demand in the MRP, which will ensure there is enough supply to meet customer deliverables.

Managing Your Inventory

Inventory offers the ability to track and manage asset inventories, project-owned inventories (these are expensed or work-in-process), and customer- or government-furnished inventories. Rules established for each project determine how that inventory can be planned or used.

You can track lot numbers and serial numbers throughout each inventory transaction, giving full visibility. The inventory posting process generates the necessary general ledger journal entries covering the inventory transactions.

Taking a Look at the Manufacturing System

Manufacturing systems enable you to generate and process manufacturing orders or work orders to build parts. Using bills of materials and routings, manufacturing orders are created complete with requirements and routing operations to perform the production process. The costs of materials, labor, subcontractors, and overhead are captured for valuation of each part manufactured.

The advanced features of a manufacturing system make it easy to propose, design, plan, purchase, track, and manufacture products. This type of system supplies everything from as-built and as-maintained records to systems compliance to cost reporting to the tracing of serial or lot numbers.

Watching Over Production

A *manufacturing execution system* (MES) provides online, real-time visibility onto the production floor. It streamlines the production process and eliminates waste using *work plans,* which include documentation, visualizations, work instructions, and routing information. This type of system captures work order status throughout the manufacturing process and supports quality control and nonconformance findings and results.

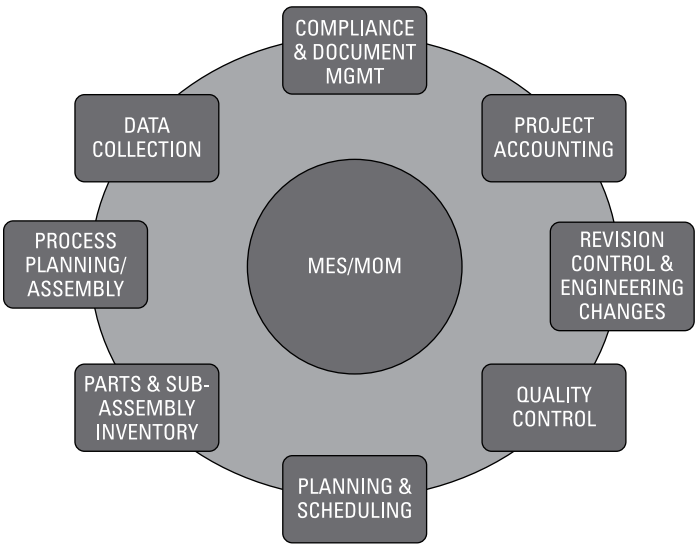
An MES will help you answer the following questions:

- What are the production schedule priorities?
- Who is working on what?

- How close is the work to being completed?
- What corrective actions need to be made? When are they required?

The MES is tightly integrated with the manufacturing system. The manufacturing system tracks bills of materials, supply and demand, inventory, and manufacturing order costs. As orders are planned and firmed up through MRP and then released to the shop floor, the MES begins tracking the progress with real-time updates to the manufacturing system.

This integration is often a back-and-forth between manufacturing orders and router steps. That tight integration allows the flow of information and processes from the MES, as depicted in Figure 6-1.



Source: Information Flow for Agility, Compliance and Performance in Project Manufacturing
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Figure 6-1: Business processes informed by the MES.

If you hear people in your manufacturing operation asking about MOM, odds are good that they're not inquiring about their mother. MOM also happens to stand for *manufacturing operations management*. It's the overall manufacturing process viewed holistically, with the goal of optimizing efficiency.

This concept encompasses Lean manufacturing practices for effective planning, scheduling, and control of a manufacturing organization.

A *work order* or a *manufacturing order* (MO) tells the factory what it must make. The MO also defines when the product is needed, and it can be generated manually or automatically from a sales order entry. *Router steps* tell the shop floor the name of the operation, who does the work, and the budget for the work. The details of the process are housed in the MES.

Keeping Time on the Floor

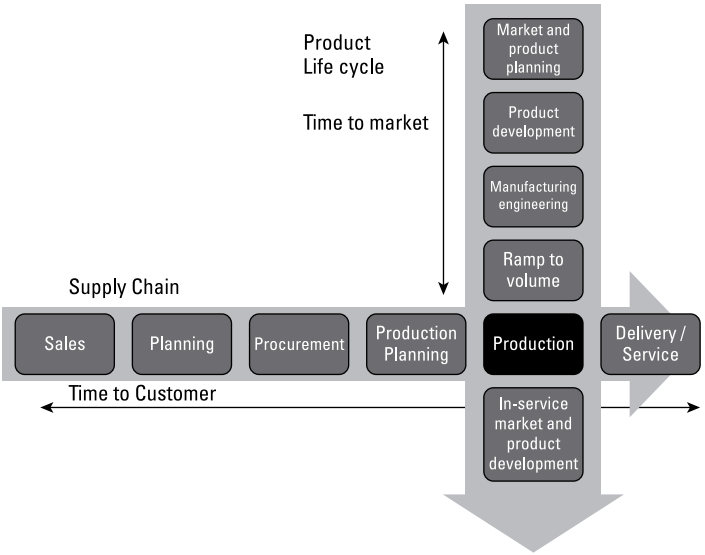
A *shop floor time system* (SFT) allows you to capture start and stop times for shop floor activities by each manufacturing order as well as each operation step. The system must support complex pay, overtime, and union rules, as well as be able to handle multiple shifts and schedules. Employee self-service allows workers to make scheduling requests and get manager approval. Tracking labor time for government contractors is a compliance requirement, plus capturing labor at the manufacturing order and operation level helps with future bids and opportunities because it helps you to cost each part accurately.

Collecting the time spent by workers on the factory floor can be time-consuming and costly. One way to reduce direct labor costs is to link your MES and SFT solutions together so that operations are automatically clocked into the time collection system. This is a low-touch or no-touch solution for tracking labor costs, and it eliminates one of the systems with which factory floor workers have to interact.

Sharing Information with Everybody

In manufacturing, all systems should work together to ensure on-time and quality delivery. From procurement through the shop floor, these systems must interact seamlessly and provide real-time status and information about manufacturing activities. If parts are late or production is slowed, your customers will not get what they need when they want it.

Information from all the systems mentioned so far must interact so that all teams within your manufacturing operations can be updated. For example, production scheduling needs timely information from the factory floor regarding current task status in order to build accurate schedules for future production. That same information needs to be available to procurement to ensure that materials and components will be available when needed. Production, as you can see in Figure 6-2, is the pivotal point where the product life cycle and the supply chain meet to ensure delivery.



Source: Information Flow for Agility, Compliance and Performance in Project Manufacturing

Figure 6-2: Production is the crossroads of the product life cycle and the supply chain.

Keeping Things Running

Maintenance, repair, and overhaul — better known as MRO — include any actions with the objective of keeping an item functioning or restoring it to a state in which it can perform its required function. These activities include all technical work as well as corresponding administrative, managerial, and supervisory actions.

Because the systems in the field today are so complex, you'll need to manage these operations with software. You can get an MES system that will support the management of MRO.

Executing by Automating

Production managers require real-time visibility of the day-to-day operations on their production floors. Maintaining spreadsheets and reporting operational details after the fact won't prevent problems and delays or quickly solve them should they occur.

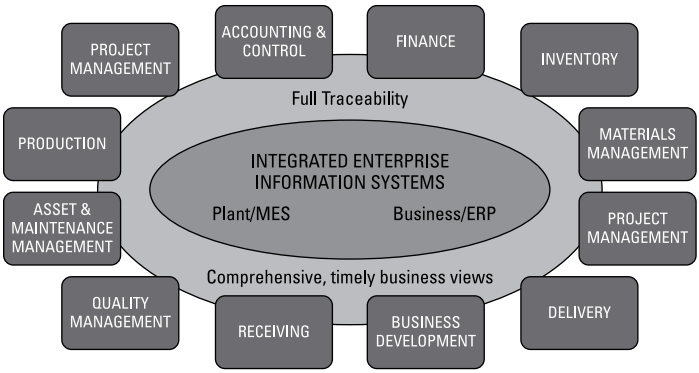
Similarly, shop floor employees' manual transactions don't allow managers to easily and accurately monitor labor cost and time utilization reports. If managers must manually ensure their production workers are performing tasks as planned, that can affect product cost, quality, and timely delivery.

Beyond that, a manual process can cost valuable production time waiting on material, machines, or personnel. If parts, people, or equipment aren't readily available when they're needed, production comes to a standstill. Quality issues, machinery downtime, and shop floor personnel searching for work plans or documentation can also stall production.

If your manufacturing is aerospace- or defense-related, you may also face industry traceability requirements that cause shop floor employees to manually enter transactions into multiple systems. That, of course, reduces your labor utilization and slows production. Sounds like a great place for some automation.

A more automated solution not only increases efficiency, but it also helps manufacturers deal with change. Successful production management requires the ability to monitor and react quickly to constant change in demand-driven manufacturing environments. These changes can include customer requests, engineering changes, machinery downtime, absentee employees, and many other uncontrollable situations that can result in shop floor bottlenecks. It's imperative that production managers be able to view these events and reschedule and reprioritize in a timely manner.

A fully integrated and automated project-based ERP and manufacturing system allows information to flow to all stakeholders (see Figure 6-3). This gives each level in the organization the information needed to operate and manage its piece of the pie.



Source: Information Flow for Agility, Compliance and Performance in Project Manufacturing
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Figure 6-3: Fully integrated ERP and manufacturing system.

Chapter 7

Conquering Compliance

In This Chapter

- Understanding the need for compliance policies
- Reintroducing FAR and introducing CAS
- Submitting a disclosure statement
- Creating solid timekeeping policies
- Making sure compensation and benefits are allowable
- Understanding contract procurement policies
- Getting to know your government audit agencies
- Steering clear of noncompliance penalties

Get used to it. No matter what industry you're in, compliance of some type is required. If you're a government contractor, compliance should always be top of mind for you and your entire organization because the federal government is allowed to come in and audit your organization at any time. Even if you aren't a government contractor, you may still be exposed to accounting regulations, both in the U.S. and abroad. This chapter explains why complying with regulations isn't really all that bad.

Understanding Compliance

Sure, rules and regulations can be a hassle. Who really looks forward to April 15? But it's best not to gripe; better to embrace compliance by developing and following sound compliance policies, for several key reasons.

Compliance policies show your corporate commitment to following the federal government's rules. They demonstrate consistency in how you and your staff behave. They also

lower your risk of exposure. And solid policies that your organization really follows reduce noncompliance in your government procurement program, and isn't that the whole point?

To be fully compliant, you need to create policies on timekeeping, travel, delegation of authority, accounting, estimating, billing, and labor. You should even have a "policy on policy." No kidding. It's an outline of what a policy should look like.

Introducing FAR and CAS

If you do work for the federal government, two sets of federal government rules apply specifically to government contractors: FAR and CAS. FAR is short for *Federal Acquisition Regulation,* which is essentially the bible of government procurement. It's the primary set of rules agencies use when purchasing goods and services. The guide to FAR can be found at most public libraries, federal agency resource centers, and online.

CAS stands for *Cost Accounting Standards*. Established in 1968, CAS was created to drive consistency within and between contractors' cost accounting practices. There are three major areas these standards cover (look it up for yourself in 48 CFR 9903.302-1, if you want):

- **Measurement of cost:** This involves the methods and techniques used in defining the components of cost, determining the basis of cost measurement, and establishing criteria for the use of alternative cost-measurement techniques. Here are some examples of cost measurement:
  - The use of historical cost, market value, or present value
  - The use of standard or actual cost
  - The designation of items of cost that must be included or excluded from tangible assets or pension cost
- **Assignment of cost to the cost accounting period:** This has to do with determining the amount of cost that will be assigned to individual cost accounting periods.

Examples are the requirements for use of accrual-basis or cash-basis accounting.

- **Allocation of cost to the cost objectives:** This refers to the method of determining direct and indirect allocation of cost. Here are some examples of allocation issues:
  - The accumulation of costs
  - The determination of whether to charge costs as direct or indirect
  - The determination of the composition of cost pools and their allocation bases

The federal government's auditors and the Defense Contract Audit Agency use FAR and CAS as their rule books. The latter group, known as the DCAA, is responsible for auditing Department of Defense contracts, but it also provides auditing assistance to other agencies. Audits assure the government that your organization is following the rules. For more information on Earned Value Management System audits by the DCAA, please reference *EVM For Dummies*, Deltek Special Edition.

Want to know what they're looking for when they audit? It's all spelled out in FAR. Check out the following list for common items and where to find the details:

- **Allowable costs:** FAR 31.201-2
- **Unallowable costs:** FAR 31.201-6, CAS 405
- **Direct costs:** FAR 313.202
- **Indirect costs:** FAR 31.203
- **Cost pools, pooling of indirect costs:** FAR Part 31

Filing Your Disclosure Statements

A *disclosure statement* describes a contractor's accounting practices and procedures. Fully CAS-covered contractors usually must complete a disclosure statement prior to landing a CAS-covered contract of $50 million or more. Also, corporate offices or other intermediate home offices that allocate costs

to one or more disclosing segments must complete Part VIII of the disclosure statement. File it with your contract auditor and your government administrative contracting officer (ACO). The ACO administers day-to-day activities after you're awarded a contract.

Once a disclosure is submitted, the ACO will ask auditors to make sure that the disclosure actually discloses everything it's supposed to under the CAS Board's rules, regulations, and standards. Simply put, the process is intended to collect a full description of a government contractor's accounting system, uncover any deficiencies, and give contractors such as you a chance to address those deficiencies, clarify wording, or expand upon a description or accounting practice.

There are eight sections to a CAS disclosure statement:

- General information
- Direct costs
- Direct versus indirect costs
- Indirect costs
- Depreciation and use allowances
- Other costs and credits
- Deferred compensation and insurance
- Home office expenses

Watching the Clock Carefully

Every government contractor must track labor every day because auditors want to be sure the government is paying for its project and nothing else. You can keep track manually or electronically, but if you're doing it manually, do it in blue or black ink (that's what the government wants). Track by project number or a contract name/number, and be sure that both employees and their supervisors sign off. If there's an error, draw a line through it and initial the change.

Want to help prevent audit headaches? Fully integrate your accounting system with your timekeeping system.

If you have an electronic timekeeping system, there are numerous considerations to keep in mind:

- Employees should be able to enter their own time into the system, and supervisors should use the same system to review and approve staff time.
- Payroll and timekeeping need to be segregated.
- Procedures must be evident and clear-cut.
- Controls must be verified, and any violations must be documented and remedied.
- Policies and procedures must be periodically reviewed with employees and managers.
- The system should allow direct entry of charging information, such as the project or contract number.
- Time should be entered on a daily basis.

Enter *all* hours, whether they're paid or not. Every employee needs to know that accurate and up-to-date time entry is a critical part of her job and that entering the wrong hours or improperly preparing timekeeping reports will be penalized. The government may do a *floor-check audit* at any time — that's when auditors ensure that employees are spending their time where their timesheets say they're supposed to be. So be proactive and perform your own floor-check audits from time to time. Record them and make them available to auditors to show that you're serious about following the rules and regulations. Better for you to uncover any issues, rather than your DCAA auditor!

The employees themselves should enter the time; supervisors may only complete an employee timesheet if the employee is absent for an extended period of time.

Examining Pay

When dealing with employee compensation, some costs are allowable and others aren't. Allowable cost for salaries include:

- Compensation reported on W-2 forms
- Payments in accordance with a written plan, offer letter, or employee contract

- All reasonable remuneration paid or proffered for services rendered
- Commitments made before services rendered

Auditors tend to pay special attention to executive compensation (don't we all?). For executive compensation to be considered allowable, it must be reasonable compared to other firms and it must be related to services performed, rather than distribution of profits. That "golden parachute" for the top brass? It's only allowable if it's not above normal severance pay limits.

A lot of people benefit from variable compensation — you probably call it a *bonus*. This is considered allowable as long as a written plan is in effect before services are rendered, the plan is followed consistently, and it's incentive-based, not based on profits. As for consultant pay for contract work, that's fine, but not if the consultant was previously classified as an employee.

Looking at Procurement and Subcontracts

What if you need to acquire property or equipment in the course of doing government work? There are a number of principles to keep in mind.

First of all, the government maintains any lease-or-buy authority. If these kinds of purchases are made with government money, the title resides with the government, not your organization. And lease or rental costs are allowable as long as they're reasonable, but interest costs aren't.

In other cases, you'll be working with government-furnished property or equipment. Take good care of that property because you're responsible for any loss or damage to the equipment. You're also responsible for tracking the equipment and conforming to FAR Part 45 requirements.

When dealing with subcontractors, many rules exist — you'll find them listed in FAR 19.502-2, if you're looking for a good read tonight. You'll need ACO approval when the subcontract is for cost reimbursement, time and material (T&M) or labor

hours, and the cost is greater than $25,000 including the fee. You'll also need approval if the subcontract is fixed price and the cost is greater than $25,000 or 5 percent of the total estimated cost of the prime contract. And for most subcontracts greater than $100,000, approval is also a must.

Getting to Know Your Auditor

The DCAA is just one of the potential auditors you might face. You could hear from an inspector general (or IG), whose job is examining the actions of a government agency as a general auditor. The IG ensures that the agency is operating in compliance with generally established government policies, audits the effectiveness of security procedures, and is on the lookout for misconduct, waste, fraud, theft, or certain types of criminal activity. There also are audit agencies within the U.S. Department of Urban Housing and Development (HUD), the U.S. Environmental Protection Agency (EPA), and the National Aeronautics and Space Administration (NASA).

But no matter which agency is conducting the audit, there are key topics of interest. The auditor is ensuring that all transactions (including those involving your firm) are proper and legal. The auditor wants to be sure transactions are recorded accurately and that everyone is complying with established policies.

Want to be as audit-safe as possible? Make sure that everyone in your organization has a role and employees are responsible for timesheet accuracy and consistently following established policies. And management must ensure that policies are consistently applied and that auditors get the help they need.

When the auditors arrive, demonstrate a spirit of cooperation and show that you have a genuine desire to assist in the audit process. If possible, assign an *audit liaison* to be the primary face of your organization with the audit staff.

Following the Rules

Civil and criminal penalties await your organization if you're found to be out of compliance. *Civil penalties* are determined per violation per invoice. The government can recoup $5,500 to $11,000, and the contractor may pay the government up to three times the damage. Ouch!

If that's not bad enough, *criminal penalties* are much more serious. We're talking up to five years' imprisonment for whoever signed the Certificate of Cost and Pricing data.

It's probably a no-brainer but still worth mentioning that you run the risk of having your payments suspended or the contract terminated if you're found to be out of compliance. The latter can happen if termination is deemed to be in the best interests of the public (that's called *convenience*), or if your company is found to be in *default* on the contract, meaning you've failed to deliver.

Then there's *debarment,* which essentially means you're banned from the government contracting world. Debarment can either be *statutory* (for willful violations of certain statutes) or *administrative* (for violations of criteria provided in agency regulations).

It is a best practice to use accounting systems that help keep you compliant by ensuring you have accurate data, process flows, and canned reports that help you respond to audits quickly and effectively.

A rundown of audit types

- **Incurred cost:** A review of accounting practices and systems, ensuring that costs charged are allowable, allocable, and reasonable.
- **Pre-award audit:** A review of procedures for generating a price.
- **Defective pricing:** Ensures that cost and pricing data are current, accurate, and complete.
- **Forward pricing plan audit:** A check of contract pricing rates to determine a fair and reasonable basis for negotiating a cost proposal.
- **Compensation and benefits:** An audit of the contractor's compensation system and related internal controls.
- **Contract purchase systems review (CPSR):** A review to understand the contractor's purchasing system and related internal controls.
- **Labor charging/floor checks:** A check for mischarges, fraud, and cost shifting, and a general check for accounting policy compliance.

Chapter 8

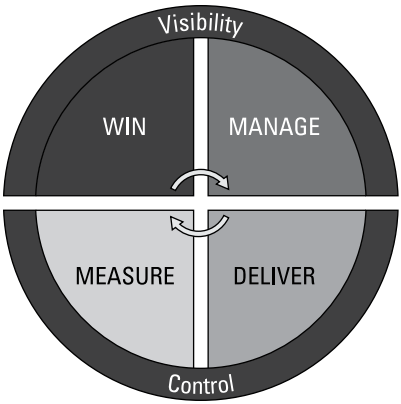
Eleven Ways Deltek Can Help Your Business

In This Chapter

- Highlighting the Deltek solutions for project-based ERP
- Putting the pieces in place

The earlier chapters in this book spell out at length the differences between ERP built for everyone and ERP created specifically for project-based businesses. This chapter will explore the solutions that Deltek has created with project-based ERP in mind. Deltek's solutions can help you manage your business in four key areas (also shown in Figure 8-1):

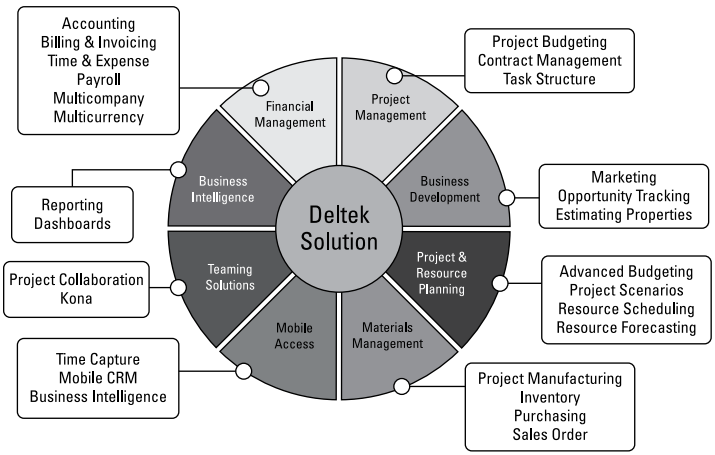
- **Win:** This involves understanding the market and identifying, tracking, and capturing opportunities from before RFP through the project award.
- **Manage:** High-quality tools move you from project award to execution through schedule, cost, resource, and risk management, to attain fully integrated program management.
- **Deliver:** Execute and deliver on your projects and corporate objectives through a robust and compliant project-based ERP suite of solutions. Manage your key back-office processes by the project, not just the account or organization.
- **Measure:** Examine your business in real time to make critical decisions about the present and the future through a set of analytic and ad hoc reporting tools.



Source: Deltek

Figure 8-1: Deltek Enterprise Management.

Deltek's solutions are built for project-based businesses, but you may have your own specific needs based on the types of projects you do, the clients you serve, and the areas you want to manage as part of your projects — such as business development, resources, billing, or all of the above. What specific tools might you need for the kinds of projects you do? Figure 8-2 shows some specific uses to look at when deciding what tools you might need based on the types of projects you do.



Source: Deltek

Figure 8-2: Deltek project-based solutions.

Projects for the Government

If you perform work for the government, you know just how complex those projects can be. Chapter 7 discusses many of the rules and regulations with which you must comply. Deltek has solutions built specifically for businesses conducting projects that fall under federal regulations and has an extensive offering for government contracting companies.

For more on the importance of these regulations and the intricacies of doing business with the government, please see *Government Contracting For Dummies,* Deltek Special Edition at `www.deltek.com/dummies`.

Providing Professional Services

If you're not doing business with the government, then some of the requirements and regulations won't apply to you. Deltek offers solutions designed for those project-based businesses not subject to as tight a regimen of regulations and tracking. These include architects, engineers, consulting businesses, accounting firms, agencies, and legal businesses.

Develop Business through CRM

What's the difference between standard customer relationship management and CRM geared specifically for project-based businesses? Chapter 4 provides the answer in full detail. But the short answer is that project-based CRM helps manage, track, and forecast opportunities in ways especially helpful for project-focused businesses. Deltek offers project-based CRM for both professional service organizations and government subcontractors.

Handle the Financials

As Chapter 2 outlines, the financials include everything from accounting and billing to revenue tracking — everything you need to track the revenue and costs on your projects and bill your clients. Depending on the types of projects you do

and for whom you do those projects, Deltek has a number of options. For example, if you're a small government contractor, your needs are quite different from those of a large accounting business. Deltek offers options for both.

Track Time and Expense

For most businesses, time and expense tracking is part of the overall ERP solution, but some businesses just need standalone project time and expense tracking that may be tied to another billing solution. The ability to capture time via mobile devices can be quite helpful as well.

Master Project Management

For businesses that need to plan out the project, the phases, or tasks, and budget for the project at any of those levels, Deltek offers project planning and budgeting tools that can help give your project managers visibility into the project and help them stay on task and on budget all the way through.

Get a Handle on Resource Planning

Chapter 5 provides full details on creating the project plan and lining up the necessary resources. For those businesses that need to schedule and manage their resources and teams, Deltek offers planning tools to help get the right people on the right job at the right time.

Materials Management Made Simple

Manage the purchasing and tracking of materials throughout the procurement process. You can track customer orders

completely from planning to approval, purchase, shipment, and receiving. Deltek's solutions include purchasing, receiving, and procurement planning applications.

Social Collaboration

Need to collaborate with a team around your project? Perhaps share status updates with your client? Perhaps you need to bring together the project team to come up with ideas for dealing with a tough situation while making sure the project is delivered on time. Just as other social tools are connecting people, Deltek's Social Collaboration tools link people around the project to share conversations, tasks, events, and files.

Analysis and Portfolio Management

If you manage many projects, you'll need to be able to view and measure the entire portfolio. You can answer some incredibly important questions. Which clients are most profitable (and how can you get more business from them)? On what industries should you focus, and which should you avoid? Are all of your projects on track and profitable for the business?

Project Manufacturing

If your company builds or manufactures deliverables, Deltek offers a full set of project-based manufacturing tools. The software links shop floor activities with financial management, accounting, and project management at the most-detailed levels possible. It provides instructions for complex product assembly or maintenance, repair, and overhaul. It also collects important information, including start and stop times for each operation as well as quality inspection results. All the project status and cost information is automatically fed from the shop floor into the ERP environment.

Deltek's project manufacturing solutions assist in the build-to-order, engineer-to-order, and MRO fields. Businesses that develop and maintain complex product offerings will benefit from improved compliance, efficiency, quality, and visibility.

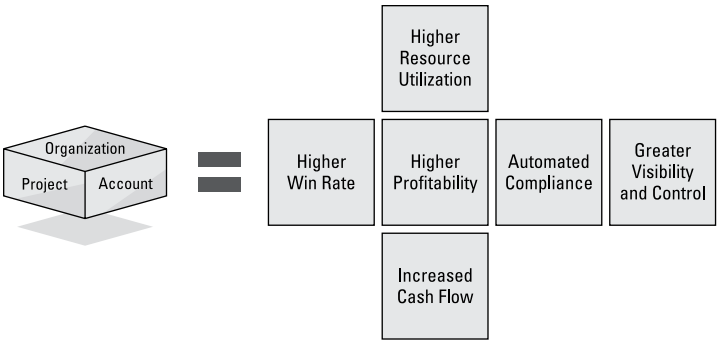
Chapter 9

Six Ways Project-Based ERP Can Make a Difference

In This Chapter

- Winning more deals
- Using resources more effectively
- Generating higher profits
- Boosting your revenue and cash flow
- Making compliance automatic
- Gaining visibility and taking control

You wouldn't run a marathon in high heels, would you? Of course not. And you wouldn't run your business with the wrong tools, either. You should use ERP tools that have been designed specifically for project businesses. Project-based ERP helps you see what's going on with your corporate and project financial information so you can make informed decisions. Figure 9-1 depicts a few of the values that a project-based ERP delivers to the business.



Source: Deltek

Figure 9-1: Project-based ERP delivers value to the organization.

Higher Win Rates

When organizations can tell which projects and what type of projects are the most profitable, that information builds a basis for solid cost estimation and a track record of performance that drives efficiencies into your business development processes. This allows you to focus in on the business that is best suited to your skill set. That, in turn, increases your win rates.

Being able to identify and provide past performance information to your customer is a key differentiator in the bid cycle.

Higher Resource Utilization

Because your workforce is one of the biggest assets your organization likely has, you want to make sure that this resource is being used effectively on revenue-generating work. You'll go a long way toward making the organization profitable if you can see where your people are being used — and where they aren't being used. After you have that information, you can make sure they're assigned to work that is actually generating revenue.

Higher Profits

Today more businesses are competing for fewer jobs and projects, and that creates an atmosphere where pricing is as competitive as possible. Profit margins are tight. Setting the right prices for bids is the first half of the equation for managing profit margins. Visibility into actual historical project costs, performance, and risks/opportunities is critical to setting prices that will keep you in the running but won't cause negative profit impacts for the organization in the long run.

The second half of the profit margin equation is ensuring that projects are well run. Manage projects proactively to ensure that they keep costs in line with revenues to maintain expected margins. Financial and project management software solutions enable organizations to create accurate forecasts that support profitable bids and ensure that projects — and changes to projects — are executed in a manner that maintains margins.

Increased Cash Flow

It takes you less time to get paid in a project-based ERP system because the time to create an accurate invoice dramatically improves when your labor and materials costs are connected to the right level of your project. Transactions are validated for accuracy at the point of entry, making invoice creation more automated and predictable, with fewer errors. As a result, your customers are more likely to pay the invoice on time, which greatly accelerates the cash flow.

Automated Compliance

In project-based ERP, the accounting and business rules flow down to the project itself, making compliance more uniform across the business. Generic ERP systems can't always enforce the business and accounting rules upfront, which means any violations are caught on the back end of a transaction's life cycle during reconciliation or audit. Project-based

ERP systems built with compliance in mind have forms and reports (such as a Billing Format) that make life easier and take the guesswork out of compliance.

Visibility and Control

With existing siloed solutions, it can take days or weeks to pull together accurate information about schedules, costs, and profit by project or program. This leaves plenty of room for surprises in terms of missed deadlines, cost overruns, and backlogs that can jeopardize individual projects — and potentially torpedo the profitability of the entire organization.

Financial and project-management software solutions give the entire team complete and timely visibility into project and financial status, as well as risks and opportunities. Alerts proactively warn executives and project/program managers about potential cost overruns and schedule slippage without requiring them to wade through lengthy reports. This timely information reduces surprises and allows organizations to take proactive actions to address issues before they impact schedules, costs, or revenues and margins.

Project-based ERP keeps your projects on track and improves your bottom line

If projects are in your company's DNA, you can benefit from this book. It doesn't matter what your company builds or services — if your revenues and profits are derived from projects, this book explains the benefits of using a purpose-built ERP system to run your business.

- ***ERP 101* — find out exactly what an ERP system is and how one created specifically for project-based businesses will help you**
- ***Manage customers and stay compliant* — see how a project-based ERP helps you better work with clients and keeps your team compliant with regulations**
- ***Increase utilization* — make sure your most important assets are properly balanced among projects and used effectively and efficiently**

Open the book and find:

- **The components of an ERP system built for projects**
- **Key reports and metrics for project-based firms**
- **How customer relationship management shines in a project-based ERP system**
- **How to make sure projects are profitable**
- **The Deltek solutions that can help keep your projects on-track**

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