



CAD and BIM Manager's Handbook 2013

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CM3182

CAD/BIM management requires a diverse set of management skills. This class provides tips, tricks, technologies, tools, and strategies to better manage your company's CAD/BIM environment. We discuss problem identification, problem solving, user motivation, senior management support, budgeting, training program justification, objection handling and more. As the class progresses, you complete a self-evaluation to help you prioritize your management action items and quantify the savings you can generate via better management practices. This class is product agnostic, so don't worry about what discipline you support as a CAD manager. If you are frustrated by the management aspect of your job, this class gives you the tools to succeed.

Learning Objectives

At the end of this class, you will be able to:

- Describe CAD/BIM management duties
- Identify, prioritize and fix problems
- Deal with user motivation and training
- Deal with budgeting and senior management

About the Speaker

Robert is head of the Robert Green Consulting Group, and an 18 year veteran speaker at Autodesk University. You have likely read his work in Cadalyst magazine, where he authors the CAD Manager; column, or in his bi-monthly CAD Manager's Newsletter. He holds a degree in mechanical engineering from the Georgia Institute of Technology, and gained his CAD skills from 28 years of AutoCAD®, MicroStation®, and various MCAD software systems. Since starting his own company in 1991, Robert has performed consulting and teaching duties for private clients throughout the United States, Canada and Europe.

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Note on Handouts

I view my course handouts as a resource you can skim before the presentation and read in more detail after the presentation. I also sometimes post revised handouts after AU is completed so be sure to check back for any updates.



Understand the Duties

You may not need to perform all the following tasks, but you'll probably need to perform most of them at one time or another.

Maintaining hardware and software. The most basic function of the CAD manager is to keep the CAD machines running and to coordinate network procedures for storage of CAD data. Sometimes these responsibilities can be shared with a central computer support department, but the CAD manager must always take the lead in solving problems and will always be the responsible party.

Providing primary CAD project support. CAD managers must be able to answer most of the questions that arise daily. This requires familiarization with all software platforms in the company and may require in-depth, self-directed study or training on an ongoing basis. Another way to state this is that the CAD manager becomes the "go to" authority on any CAD problem.

CAD standards formulation. A key part of any CAD department is working to either a company CAD standard or a customer standard. You have to take the lead role in formulating and enforcing CAD standards. The enforcement of CAD standards correlates closely to how effectively you communicate the importance of standards and get upper-level design or engineering management to agree to the standards.

Technology resource/budget planning. More than ever, CAD managers are being required to look into the future to plan for new software releases and decide how to make the CAD department more efficient. CAD managers are much more likely to keep up with new technology now than a few years ago. Remember that planning for resources and new technology isn't just about being a futurist; you'll need to establish budgets and cost justifications to back up your recommendations.

Document/archive management. Increasingly, CAD managers are being thrust into implementing document management solutions as an extension of the CAD standards or procedures portion of their job. The control of CAD information to ensure proper revisioning, archiving and on line access is a rapidly growing part of CAD management.

Staff management. Sometimes CAD managers are responsible for hiring CAD drafters and must oversee temporary staff to ensure that CAD projects are completed on time. In other situations the CAD manager may have influence only. Either way, you either get involved with staff management or your staff will manage you.

Staff training. CAD managers are frequently called upon to orient new employees or to help existing employees beef up their CAD skills. CAD managers should devise a training plan that allows them to leverage standard materials and custom standards rather than teaching the same thing over and over again.



Excelling as CAD Manager

From time to time I get comments from CAD managers such as, “I don’t care about this management stuff; I just want to dig into the technical material.” Although I have sympathy for those who feel that management shouldn’t be a day-to-day portion of the jobs, I must remind you that your job title is CAD Manager. Like it or not, management is a part of the job.

Let’s remind ourselves why we became CAD managers in the first place: We all showed the ability to deal with technology and somehow make it all work. That means we’ve shown the tendency to solve problems, find answers and somehow project enough confidence to make people believe we know what we’re doing. These are the skills that set CAD managers apart from CAD operators, and these qualities are rare. So now the big question: How can we excel at the technical work we’ve come to love while bearing the burdens of management in an industry that changes so fast?

Getting Your Workload Organized

It’s been said that the hardest part of management is simply knowing what you’ve got to manage. You must understand what tasks you need to complete and when your deadlines are. Although it is tempting to just complete tasks as they come to you, you’ll never achieve managerial control if you’re reacting to the situation. You must first understand the variables and chart a course for how you’ll fulfill your obligations. By proactively planning to complete key tasks, you’ll be surprised less often, and when an emergency arises you’ll be less stressed and better able to deal with it.

Simple techniques like keeping a manual list of tasks with you will help you plan your time. Unlike electronic calendar programs and PDA’s that tend to be out of date or run out of batteries, the trusty notepad always works, never locks up, and is always in front of you. Since management is the art of juggling details with apparent ease, you’ve got to keep track of the details!

Organization: Plan for Increasing Production Demands

There’s an old management adage that says, “Give your hardest work to the person who’s working the hardest.” This means that the person who is already pulling more than their weight will get more work. Why? Because that person somehow finds a way to get the work done. As CAD manager, you will most likely be that person. Take this new load of work as a compliment — if you weren’t good, they wouldn’t be asking you for more!

If you’re effective at meeting deadlines and somehow getting the work done, you’re cultivating the best management reputation you can have. When people say things like, “How does he do it?” or “She just gets things done!” you’re building a great reputation. Just understand that as your reputation for doing the impossible grows, you’ll be asked to do more impossible things. The increased demands on your time will emphasize the need for the scheduling and planning we’ve talked about if you’re to live up to your increasing management burden.



Budget for the Tools You Need

Getting all your budget down on paper is a giant step towards understanding your budget and being able to present it to your boss later. The only thing I can guarantee is that if you don't write everything down you'll miss something! I recommend starting a spreadsheet document to organize all your budgeting needs which can be refined over time. Our goal at first is to simply capture everything and get it in a rough format for our own checking purposes. Here are a few hints that I use to get my draft budget document in order:

Create tabs for each major budget area. One tab for hardware, one for software, etc. This system keeps everything separated and makes each area a manageable size. I also find that separating my budget helps me keep my mental approach to budgeting more organized but that may just be me.

Prioritize items. In each budget area start with the "must have" items and make your way down to the "we may need" items. This approach allows me to show my boss that I understand that money is limited and that I've thought through the budget carefully. I've also found senior management appreciates the honesty of admitting that not everything on a budget is mission critical.

Assign costs and quantities. For each budget item you'll now need a cost and quantity estimate. These estimates may be collected from web sites, written quotes, old purchase orders or even phone call records. Don't trust your memory for cost numbers or how many rolls of paper you used last year because you'll almost certainly remember something wrong sooner or later.

Analyze for value. As you create your budget think like an accountant and make sure that everything you ask for makes sense – don't ask for gingerbread items that have no real financial justification.

Build a budget folder. Every time you get a quote document or collect data on the web make sure to print a hard copy and put it in your budgeting documentation folder. Collecting hard copy prints may seem old school but you know somebody in accounting will want this information sooner or later and you'll be able to provide it without having to look up the information again.

Total it all up. Now you'll have a good handle on how much money you'll need for each area of your CAD management duties over the next year. Here's where you'll be glad you put everything in a spreadsheet as all your math is done automatically!

Refine as needed. Forget something? Go back, add and adjust as much as required. Personally, I've never written a good budget document without spending at least two weeks and tweaking it 10 to 15 times.



Identify User Problems – Suggest Solutions

CAD managers enjoy an interesting view of the engineering landscape – the view from the end of the process. Development, engineering and design have already been largely completed, so the chances are that as CAD manager you already know the snags and bottlenecks in your company's work methods. This means you are in an excellent position to take an active role in solving the problems before they arise for your department.

If you can suggest a way that CAD work can be done in parallel with engineering, for example, you may provide a way to get your work product out the door faster. If you can find faster methods of checking or routing documents to cut rework, you'll lower costs. If you can solve user problems via CAD management you'll look like a hero to your users and be cheered by management alike.



List the User Problems to Attack

Now write down some of the problems you see sapping productivity in your environment and think about how to make that problem go away. Go with your gut and write things down quickly – if you don't write it down you'll never remember it later.

Problem	Solution
1 _____	_____
2 _____	_____
3 _____	_____
4 _____	_____
5 _____	_____

By focusing on user problems I've chosen to make my number one priority that of making users more efficient. But how do I sell these concepts to users, to managers? How do I get the authority to actually make the changes? These are the questions we must now ponder.



Market Your Ideas with Faster/Cheaper

The only reason CAD users will change the way they work is when they believe they'll get their work done faster. Management will only approve making changes to work processes when they believe they'll save money doing so. Thus – faster/cheaper.

Since users like faster it is obvious that we should focus on selling ideas to users in terms of speeding up the daily CAD work flow. But since making users faster also saves money (time=money) management will love it too!

Getting back to your action list from earlier: Which problems can you solve that will make users faster? We'll know achieve a ruthless focus on solving these problems and convincing our users that we've got their best interests at heart. Sounds simple, right? It is simple. It just requires us to identify the problems, sell solutions and keep management in the loop as we do so.



Make Changes Permanent with Standards

Is there any CAD manager out there who can honestly say they really control CAD standards to perfection? At some user group meetings I spoke at recently I asked this question and didn't get a single positive response. A frequent comment is that CAD standards are easy enough to come up with but hard to enforce. Sometimes we have to deal with users who won't follow the plan and are frustrated with our upper management for not enforcing the rules or helping set a tone of compliance.

I'll now draw a couple of conclusions:

- Users want to get done faster with greater ease of use.
- Management wants savings.

So if we create a standards environment that codifies user time savings the users won't argue with the standards. And if we create a standards environment that saves money for the company management won't argue.

This is what I call the FASTER/CHEAPER standards argument and I've found it to be extremely powerful over the years. The key is to approach users and management on their terms and make the changes permanent by modifying your standards.

I'll now make some recommendations:

- Talk to users about saving clicks and picks and show them how your standards prevent mistakes that used to be common. Do this and the users will see the time savings.
- Talk to management about time savings (scheduling) and reduced rework due to better standards. Do this and management sees savings.



Broaden the Standards Discussion

When you've achieved some success with your initial push into faster/cheaper CAD management it is time to have a more philosophical discussion with your management about standards. The time is now to make management realize how much you understand about standardization and how profitable it can be for management to empower you.

Since CAD managers always tell me the core problem they have with standards is getting the standards enforced, let me give you this key equation:

Management understanding standards = Your ability to enforce

Here's how you spell it out for management point by point:

Standards = consistency

Consistency = automation

Automation = faster/cheaper

Faster/faster = more profit for the company

More profit = everyone (especially you) look like a genius

The reason I go out of my way to outline how you gain upper management's support is to be sure you'll have the political support required when some user(s) decides not to follow the standards

Now that you've demonstrated how well standards can solve problems and make you more efficient, don't lose momentum. Talk with your management and make sure they know the success you're having with your new emphasis on standards. Don't be bashful in advertising what you've been able to achieve, and be sure to point out any cost savings you've gained.



Objection Handling

So what should you do when you've created good standards, explained them, quantified the time/money savings and people still object to following them? If you've approached standards in the way I've outlined objection handling is actually easy. Here's how:

Restate the problem. Focus on the wasted time you used to experience working the old way.

Restate the solution. Demonstrate how effective the new standard work method is.

Ask for an alternative. If the user/manager can come up with a better way to do things – great! But if they can't you then have the upper ground.

Restate the goal and outcomes. You can now handle the objection by simply stating that not following the standards costs time and money and that nobody can make an argument why the company should spend more time or more money just because someone doesn't want to follow procedure.

Go to the top if needed. If objections still persist take the issue to upper management and walk them through the exact process I did above. When management comes to understand that standards are in their financial best interest they'll handle the objections for you.



Push for Cost Effective Training

I receive a lot of email that asks, "How do I get my management to approve training?" To answer this question in one phrase I'd say, "Tell management your users will be more efficient and streamlined after the training is complete, so the company can save money." Of course it will be up to you to live up to these compelling promises, so you'd better be

ready for the challenge.

Get the Ball Rolling

While formulating your training regimen, ask yourself the following questions and you'll automatically focus on the right areas for training:

- What are the questions I get asked the most about our CAD software?
- Are there any CAD procedures or repetitive tasks that people have problems with?
- Where do we lose the most time, and what could we do in a training environment to cut our losses?

Now that you've created a list of questions and time-sapping problems you'd like to address with training, you can put the items in a list with the greatest savings potential at the top. This prioritized list now becomes your training table of contents that you will show to management to get your training program approved. You may even want to write a short paragraph on each topic, explaining how training will eliminate the problem and roughly how much time can be saved to demonstrate the cost savings potential.

You may only get approval to train on certain topics on your list or you may get a certain number of training hours approved, so be sure you prioritize in a way that saves the company the most and gets you the best value for your training time.



Tell Management What You're Doing (Reporting)

With all the tasks you juggle as CAD manager the last thing you want to worry about is writing reports to your management right? I sympathize. Writing reports can be drudgerous but there are some very compelling reasons to do so. Specifically, the benefits CAD managers enjoy when they engage their senior manage staffs via good reporting are better communication, fewer misunderstandings and generally better rapport. Let's be honest, you're the only CAD manager at your company and nobody else really understands what you do that well right? This lack of understanding means you operate in a vacuum where you and only you know why you're doing what you're doing. And when nobody else understands what you're up to those around you can form incorrect perceptions that can make you job even more difficult.

In order to target what facets of your job you should report on you need to combat the misperceptions that exist in your company. Each case is, of course, different but the common misperceptions I've seen CAD managers suffer through include the following:

CAD management is easy. When people don't understand the details of what you do they will almost always underestimate how hard your job is. And when users or management think your job is easy they'll try to load more tasks on you thus reducing your effectiveness even more.

CAD management is only a software issue. When management thinks CAD management is just about software they clearly don't know how many training, support, negotiation and human resource problems CAD managers deal with.

Not understanding upcoming dangers. Let's say you have a large volume plotter is that is outmoded and a maintenance problem but replacing it will be expensive so the issue just keeps getting put off. If you, and only you, understand the consequences of having a major plotting failure then everyone will be in shock when the problem actually happens. And believe me when I say that you'll hear the following question, "Why didn't you tell us?"

CAD management is all overhead. When management thinks CAD management is all overhead they start to question why CAD management is needed at all. And when your senior management questions if they even need you then there's clearly a misperception of what you're actually doing.

Why Reporting is Crucial

So if you'd like to avoid all the nasty consequences of your management not understanding your job what should you do? You should educate them with the right types of reports so that they never again mischaracterize what you do, that's what! Therefore, you should find ways to keep your management in the loop using the most economical reporting format you can – more on that shortly.

Remember, you're the only person who can report on what's happening with CAD management so if you don't do it who will? In fact, the biggest reason that CAD management misperceptions exist is precisely because most CAD managers don't report to their management in a regular format that is easy for senior management to understand. So let's see how to make reporting really work for you with minimal effort.

A Format that Works

A simple way that I've found to report involves using a rolling diary style format on a weekly basis. In this reporting scheme you track what you've done and what you plan to do in a brief one page memo and publish it to your management team on a fixed day each week (Monday's or Friday's tend to work best).

The advantages to this reporting style for you are:

- You form a diary of tasks that documents the wide range of material your work on that will serve to reinforce your value when it comes time for your performance review.
- You get the benefit of review what you've actually achieved each week which keeps you focused on what you're trying to accomplish. This sort of mental discipline is hard to maintain when fighting the common fires of CAD management, but a written weekly report will help keep you on track.
- You raise the awareness of what CAD management really is and how valuable it is by simply listing your tasks for management to read about. In a sense you can brag on yourself without actually bragging if your weekly report shows your boss how much you do.
- You demonstrate to your management team how technical you are by documenting technical tasks while the very report you write demonstrates your management prowess. Again, this sort of self promotion just tends to happen when you present a well crafted weekly report.

The advantages of this reporting style for your management are:

- They are able to keep up with a lot of information very quickly since the report is written in a very brief style.
- They are able to keep up with how tasks you work on affect projects since your report is chronologically written. Remember that your management is probably more worried about how technology problems affect schedules than they are about how you actually resolve the problem!
- They are able to gain all these benefits on their own timeframe wherever they may be. This means that when you meet with your management in person you'll be able to really focus on key issues rather than having to answer a bunch of task based questions that you've already reported on.
- They actually start to understand the huge range of tasks you work on and come to understand that you have one foot in CAD space, one in production and yet another in management. They will come to this realization as they read multiple reports over a fairly long time span but the realization will sink in, trust me.



Do Not Be Seen as Overhead

In addition to educating your management on what you're doing it is key that you address the issue of billable time versus overhead. Since many CAD managers are working engineers, architects and designers that battle over what's overhead and what's job billable will always be an issue. One way to reduce your overhead is simply to make CAD management tasks report to jobs and to demonstrate that in your reports.

To make the concept of overhead reduction clear in your reports take care to emphasize which tasks in your report facilitated job production and versus which ones are overhead. You'll note in my sample report that even for tasks like standards formulation or project kickoff coordination I've stressed which job the tasks reported to. By stressing CAD management tasks that actually facilitate job completion you'll be more able to bill the time to actual jobs than overhead.

Think Like Management

I know it runs counter to the technologist instincts that CAD managers usually harbor, but it is imperative to align your thinking with that of management. Try to remember that management's focus is keeping the business going and emerging from slow periods in good shape to win new business and drive profits back up.

If you harmonize your CAD management plan to be efficiency focused, thrifty and business savvy you'll get a lot more recognition from management than you will by being a techno nerd. Right? Of course we all know we'll still be the alpha nerd – we'll just be the alpha nerd that can speak management and succeed. And isn't success the whole point?

Don't Quit!

CAD management is an ongoing process that never stops and is never easy.

However, if you attack the job from the angles I've described you'll stay saner and get better results with less effort. So keep at it and never quit becoming a better CAD manager.

PowerPoints and Materials

You can download updated course handouts (with any additional notes or corrections) for all my presentations at my web site www.CAD-Manager.com on the **AU013** page. You can find a wide range of information on customization, programming and CAD management elsewhere on my web site.

I will send you a PDF copy of the session PowerPoint presentation if you request it. Just send an email to me at rgreen@cad-manager.com and be sure to put the course title in the subject line of your message so I'll know which class you want.

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