



Why Standards Stink and How to Fix Them

Robert Green - CAD-Manager.com

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Are you responsible for CAD standards but frustrated because users ignore them? Ever feel like your senior management doesn't back you up on enforcing standards? If so, you are not alone. In this class, you will learn a methodology for identifying what to standardize, concepts for standardizing your CAD programs, how to use server-based standards management to eliminate managing individual machines and laptops, how to document your standards for training, plus more. Along the way, we will maintain a ruthless focus on how standards save users time and the company money to help you sell users and senior management alike on the benefits of standards. If you need to get your standards under control, but have been frustrated by the process, this class is a must.

Learning Objectives

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

- Identify new software methods and tools to pursue
- Test and improve software using a proving ground methodology
- Pass proving ground results on to all users throughout the company
- Constantly improve software via repetitive proving ground sessions

About the Speaker

Robert is head of the Robert Green Consulting Group, and a 17 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 25 years of AutoCAD®, MicroStation®, and MCAD software usage. Since starting his own company in 1991, Robert has performed consulting and teaching duties for private clients throughout the United States and Canada.

Email: rgreen@CAD-Manager.com

Foreword

Before we focus on how to fix your standards environment lets answer the fundamental question of why standards stink. My logic is that once you know what is wrong you can rebuild your standards to work in ways that don't stink. Seems like sound logic, right?

But the problem is a little more complex than I've outlined because you have to know what your standards problems are, why your current standards are ignored, how to create better standards and how to get the new standards working without a huge enforcement hassle. Along the way you have to keep in mind that a big part of the solution will be psychological – not technical!

The bad news is you have to do some homework to analyze your standards environment. The good news is that if you work through the process you CAN fix the problems! Let's get started then.

Why Users Think Standards Stink

Let me start the discussion of CAD standards enforcement with an email message I received from a frustrated CAD manager:

"I've built my standards but for whatever reason I just can't get people to follow them! What's the problem? Why won't people follow the rules? Help!"



We've probably all felt this way at some point in our CAD management careers right? And while everybody needs to vent their frustration occasionally, this email actually allows me to segue into the topic of standards from a user's perspective rather than a CAD manager's perspective. And my experience has always been when you understand the user's perspective you can actually start addressing issues to the user's satisfaction.

The core reasons I see that users think standards stink are as follows:

- Standards are perceived as too hard to follow or hard to read
- Standards make the user work in a way that's uncomfortable for them
- Even good standards sometimes aren't supported by management

Let's tackle these topics one by one by taking the user's perspective and highlighting what the CAD manager can do to overcome the objection.

Too Hard To Follow

If users tell you that your standards are too hard to follow they usually really mean that they don't want to take the time to read through a wordy standards document. In an upcoming section I'll point out ways you can use video recordings to transform boring written standards into watchable/listenable multimedia segments that users can view at their own pace. Want to overcome user avoidance to reading standards? Get rid of the reading!

Also consider ease of use in the equation. Even a step by step video won't make users warm up to an overly complex standard procedure. My benchmark is that if I can't explain/show a procedure to a normal CAD user in 5 minutes or less the procedure is either too complicated or not automated enough. Use your own judgment about ease of use, but do try to adhere to the five minute rule and you'll chip away at user objections.

Changing User Work Methods

When users grumble about changing the way they work they really mean that they feel they're being slowed down. After all, if you show people a way to work faster they're happy to learn but slowing them down is another issue. The CAD manager must strive to create standards that offer the user a faster route to work completion.

Therefore always ask yourself this question: Can you follow your own standards and get your job done as quickly as not using them? If not, you know users will avoid the standards! Use automation, programming or whatever tools you need to make following standards faster than not following them. By putting yourself in the user's chair you'll gain real insight into working with standards.



Just Getting It Done

Many times CAD work teams are told to cut corners to get projects done which often means ignoring standards! Ignoring standards then typically leads to copying old files as noted above. Sometimes "just getting it done" works in direct opposition to your standards program!

The Faster/Cheaper “Aha” Moment

Notice that every object raised above has to do with standards taking too much time? I've noticed that over the years and it has made me realize the following truths:

Users will only use standards if it makes them faster.

Managers will only support standards if they save money.

The unifying equation that allows you to make users and managers happy is this:



Time = Money

That's truly it! That's the whole secret. The only reason anybody will ever change the way they work is if it makes existing tasks faster or cheaper, hopefully both. Believe me when I say that if we could do engineering with slide rules and paper faster than computers and plotters we would still be doing so.

So the question that all businesses need to look at is how new CAD technologies can best be integrated into the everyday engineering environment in a way that delivers faster, cheaper results. So if you make your standards support the faster/cheaper paradigm you'll have great success.

Now that we know the trick, let's start from scratch and make our standards work.

Tell Management: Why Do We Need Standards?

I once attended a meeting with a staff CAD manager who was trying to make the case for AutoCAD standards to his senior management. When the question of why CAD standards were needed at all came up the CAD manager said the following:

“We need CAD standards because our users are continually putting geometry on the wrong layer which causes the BYLAYER color relationships in our plotting scripts to produce plots with the wrong line weights. Further, many of our users routinely explode title blocks which not only loses embedded attribute information but forces the underlying geometry back onto layer zero which further hampers our plot scripting routines.”

I understood what was said, and I'm sure you do to, but let me assure you that the blank stares coming from the senior management staff clearly demonstrated that they had no clue of what was said.

My Clarification

Seeing the blank stares and sensing that the situation was not moving along well I jumped in and explained the situation like this:

"What your CAD manager is trying to say is that he has automated the plotting process to make things very efficient and save you labor on all your CAD jobs. When users don't follow his standards it often makes the plotting routines fail and costs a lot of time and money in rework. The reason you need CAD standards is to achieve consistency and save money."

The looks I received from the senior management staff were very positive and led to a detailed conversation about other ways CAD standards might generate savings for the company. In other words I told them how CAD standards could make them faster/cheaper.

Believe me when I say that until your senior management understands that CAD standards make them money they won't see the value in them, nor will they help you enforce them. So before you do anything else on the topic of standards you must make sure that your management understands why standards are to their advantage.

Making a List

Now that you've got a handle on how to explain the need for CAD standards you'll want to list the things that should be addressed in your CAD standards. The first pass through creating the list is essentially a brainstorming session with high level concepts, like the following examples:

- Implement vendor CAD standards
- Implement standardized block/detail libraries
- Revise/implement title blocks to new standards

Now you simply expand your list to address the technical issues for each item like this:

- Implement vendor CAD standards
 - DWG file version
 - Policy on use of object enablers
 - Creation of template files for vendor usage
 - Define acceptable delivery formats
 - Implement standard transmittal letter forms for vendors
- etc
- etc

Sell the List by Emphasizing Savings



Now that you know what you need to standardize and what the technical tasks will be it's time to think about explaining the concept to your senior management in financial terms. I'll give you some examples here you can use as a reference:

Implement vendor CAD standards: We need to make sure our vendors are sending us CAD information we can actually use.

Right now we spend a lot of time reformatting CAD files from our vendors and this costs us a substantial amount of labor (plug in your numbers here) thus robbing us of potential profit. By giving the vendors standards tools they can use we'll make it easy for them to use our standards and will give us the leverage we need to enforce the standards later if we need to.

Implement standardized block/detail libraries: Right now our CAD users spend a lot of time (plug in your numbers here) just trying to find the right details and symbology that our customers expect us to use. If you'll allow me to get things organized and then briefly train our users on the new structure we'll save time and money while achieving more consistent drawing results.

Revise/implement title blocks to new standards: Since we're now working with partner companies in the UK and Germany metric compliance is a big issue and we presently rework our drawings to fit on metric style paper layouts. If you'll allow me to rework our standards we'll be able to easily toggle from Imperial to Metric layouts and save our users lots of time (again, plug in your numbers here) and rework, thus saving us money.

Standards via Automation

Many times when I tell CAD managers to automate their standards I get the "oh no not programming" expression of doom. However, not all automation has to mean programming. Let me articulate a few things that you can automate without using anything more complex than a macro in AutoCAD or loading pre-existing customization:

Fix block/component/family libraries. The key is to make sure there is only ONE latest version of any given file and that users only have access to that version. This task requires cleaning, documentation and focus but no programming.

Archive old jobs. If old jobs are archived offline then it becomes almost impossible to copy files from old projects that propagate non-standards issues. Again, this requires elbow grease not programming.

AutoCAD Tool Palettes. Now that you have your files fixed and old projects off line create tool palettes so users only insert the correct blocks into AutoCAD based projects. The added benefit is that layer placement can be programmed into palettes to make standards a non issue.

Deploy from Network Servers. Anything that you want standardized must be deployed from a server so that there is ONE standard way to do things for EVERYONE. Depending on the CAD tools you use you may be editing profiles, INI files, or a combination of the above but the point is to standardize all your components, drivers, plotters, families, blocks, standard content, etc, from network servers.

Training to Achieve the Faster

If I tasked you with explaining a new CAD standard process to a user and restricted you to simply showing the user what to do and talking them through the process I bet you'd be able to do so easily. After all, you're comfortable with the CAD software you manage and since you do user support all the time you should be pretty good at explaining things.

Now, if you're explaining a new concept to a user you'd probably want to take a little time to prepare some sample files and think about the best way to explain the process and, thus, you'd have to do some preparation work to really be effective in your explanation, right? Having done your preparation work you'd then be able to sit down with a user and really show them how to perform the new CAD process and provide a thorough explanation. In fact, you'd be prepared to run a solid training class for multiple users at that point!



Congratulations, you've just done exactly what a good CAD standards document should do, that being:

- Illustrate the standard concept
- Show the user how to execute the concept (process)
- Provide examples of how to do so
- Answer common questions from the user

Now Capture the Results

So now that you know how to explain a process to a user and have the example files in mind, you need to illustrate to a user it is time to actually document the process and turn it into a CAD standard. I make the leap from explaining a concept to written standards in two phases, the first of which I'll outline here:

Record yourself: Use a video capture utility like Camtasia (www.camtasia.com) to capture the exact presentation you would give to a user.

Listen to and watch the recording: Go back and listen to the recording you just did and evaluate how well the explanation flowed. Listen for redundancy, unclear topics, glitches in your presentation, etc. Watch how well the example files you used illustrated concepts, etc.

Revise: Based on how well you liked the sample recording you may want to make revisions to the presentation. If so, fix your sample files, rehearse your new presentation and then ...

Repeat the process: Now repeat the record, listen and revise cycle as needed until you've really nailed explaining the process.

Keep the best recording: Once you've got a recording you're happy with keep the recording as a video standard lesson that you can use for standards training later.

You should now be able to take these concepts and modify them to help you substantially improve your standards document. Feel free to improvise with software utilities but make sure that you capture the essence of your verbal training.

Now Transcribe It

Now comes the fun part, the creation of the written standard! Since you've expertly crafted an explanation of your new CAD standard process along with all the example files you'll need writing your CAD standard is easy. Here's the process step by step:

Start a document: Simply open Microsoft Word, name a file, set your margins and fonts and you're ready to go.

Get your screen captures: Run through your teaching examples step by step and get a screen capture at every logical point where you would want to demonstrate something to a user. At minimum every dialog box, command prompt, menu selection and command result should be documented

Now type in the text: All you have to do now is type in the verbal instructions you would give the user when training them. You can probably type in most of the instructions from memory but you can always listen to your recording to be sure.

Finish it off: Spell check, align margins, set headers/footers, and make sure your page breaks are correct and you're done!

Proof read: Print out a copy of your document and follow along with it while listening to your standard recording. If anything seems incorrect in the document fix it!

You'll obviously find your own set of best practices for making the creation of written documents, but I think you'll see that this basic procedure works very well.

Electrify Your Standards

At this point you have a collection of standards documents that are typically stored as DOC files as well as the audio/video recordings you've stored. Now we'll combine these two pieces of data into a unified multimedia standards document that will allow anyone on your network to view, print and watch all your standards documents! Here's how the process works:

Amend the DOC files to include a hyperlink: Let's say that you've got all your DOC files in R:\STANDARDS\DOCS and all your videos in R:\STANDARDS\VIDEOS and that all your videos are in a WMV (Windows Media Video) format. Open your standard DOC file and create a Hyperlink (do this via right click in Microsoft Word) and make the Hyperlink point to the corresponding WMV file.

Test the hyperlink: Inside Microsoft Word you use Ctrl-Click to activate the Hyperlink and make sure that the video will actually invoke your Windows Media Player and play the video segment.

Create a PDF: Assuming that the hyperlink works you now save the DOC file into the R:\STANDARDS\VIDEO folder you created on your network drive. After saving the DOC file use Adobe Acrobat to create a PDF version of the file and also store it in the multimedia format.

Get Everything Organized

In order to create a great training and standards library you'll need to get all your electronic files in a protected network location that is readable (but not editable) by all users. Therefore a little organizational planning is in order which should include the following action steps.



Get a network repository setup: Create a network directory that can be "seen" by everyone who will need your CAD standards and/or training materials. I recommend breaking this directory into a few more subdirectories for written standards, videos, templates, etc.

Secure the network repositories: Set permissions to all folders to have read/execute privileges for all users and administrative privileges for you and your trusted

assistants. If this doesn't make sense to you, or if your IT administrators won't let you set privileges, you'll need to get your IT staff involved. Don't proceed until you're sure the network privileges are setup correctly!

Map the network repository to a drive letter everyone can use: In fact, you may already have a mapped drive letter you can place your CAD standards in and that'll work just as well. I do recommend using a drive letter as opposed to a complex UNC path because all users understand how to go to the R: drive but a lot won't be able to find the \\DOMAIN1\CAD\Standards_Share location (as an example).

Building the Standard Catalog

After a while you'll end up with a well populated collection of PDF files that combine written standards with show and tell videos – a true multimedia approach! You can see how those who simply want the standard can print the PDF file while those who want to use the standard as a tutorial can simply trigger the video via the hyperlink in the PDF file. Congratulations – you've now got a complete multimedia standards and training library that, via network security, provides self serve access from anywhere around the network.

All you have to do now is make a document or web page that shows users what standards you have right? Here's a process that makes it easy:

Create a DOC file that lists your standards: Create a new Word document and list the names of the standards documents you've saved in PDF format with a brief description for each standard.

Add hyperlinks: Now select the text for each standard and use right click to add a hyperlink to the text of each standard. In the hyperlink simply put the full path and name of each PDF file.

Test the hyperlinks: Use Ctrl-Click to activate the Hyperlink and make sure that the PDF file pops up in your Acrobat reader.

Save the DOC file as PDF or HTML: If you want to distribute a master PDF file of all standards simply save the DOC file to PDF just as you did when creating each separate standard. Alternately, if you want to deploy your list of standards as an Intranet page you can use Microsoft Word's SAVEAS command to save to HTML format for integration into your corporate Intranet.

Enlist IT's help when in doubt: I realize all this PDF, HTML and hyperlinking business may be new to some of you but that doesn't mean it's hard to learn. Your IT department should be able to help you overcome the initial learning curve if you have questions. Trust me, this knowledge is worth acquiring even if it does take some work to do it.

Create a PDF: Assuming that the hyperlink works you now save the DOC file into the R:\\STANDARDS\\VIDEOS folder you created on your network drive. After saving the DOC file use Adobe Acrobat to create a PDF version of the file and also store it in the multimedia format.

Getting User Input

Once you have control of the standards environment and things are working the question logically becomes: What now?



At this point your users can start to suggest standards based automation projects for you that you may never have thought of. The trick is to get users to find the things that make them “Faster” and suggest it to you so you can make the process “Cheaper” for your company. See how that faster/cheaper concept just keeps coming up?

Anyway, here are some techniques I’ve used with success in the past:

Evangelize faster/cheaper: Repeat the following mantra to anyone who’ll listen: CAD standards are simply a way to get everyone in sync, cut errors and save the company valuable time and money as we all work smarter, not harder. When users see standards as something that helps them they can get on board.

The suggestion box: Start a “suggestion box” program where users can give you ideas about how to speed up CAD work processes then follow through by incorporating the good ideas into your standards. When you take user input seriously and embrace good user ideas users feel a sense of ownership and are more likely to follow the rules precisely because they helped create the rules!

Gift cards for suggestions: Give some incentive for your users to submit a well researched idea to you by giving everyone who participates a \$5 Starbucks card. It’s amazing what people will do for a small reward and you’ll get some positive peer pressure working for you as users see that standards suggestions are taken seriously.

Real rewards for great ideas: For those great ideas that bring the “faster/cheaper” consider a more substantial reward like a \$100 Amex prepaid card or an official bonus check. After all if an idea saves money why not share the savings right?

Management Enforcement

Finally, if you adhere to all the guidelines I’ve outlined and users STILL aren’t following standards then it is time to call in your senior management and ask them to enforce. And since you will have already gone to great lengths to make standards deliver faster/cheaper there’s no reason that management won’t see things your way.

Here are some of the common scenarios I’ve encountered that required management intervention:

The stubborn “I won’t work that way” user. This person is easy to deal with because their refusal to work with the standards is simply costing the company money. All you have to do is point out the problems the stubborn user is causing and how much time/money it takes to fix it and management should be happy to intervene.

The “just get it done” project manager. This project manager can usually be dealt with by pointing out that getting things done fast and loose today always creates problems that have to be fixed later. Just like the stubborn user above, focusing on costs is the way to get senior management to intervene.

Departments who refuse to coordinate standards. Every so often I’m confronted by two departments that each have their own standards but who refuse to cooperate with each other. These “standards islands” cause rework as CAD users struggle to get work from one department formatted for usage in another department. In this case you get senior management to understand how much time/money is being spent due to lack of standards compliance – at which point they’ll intervene.

Notice how no matter what the problem was the solution was to focus on the financial ramifications of not following standards?

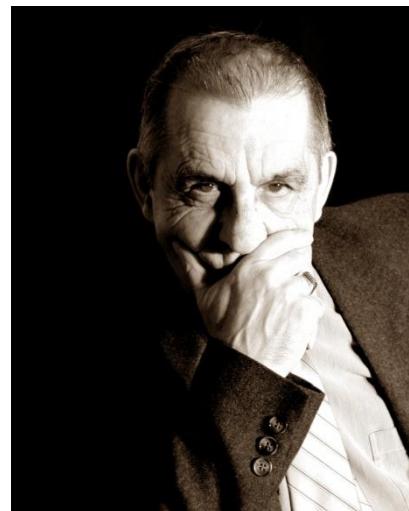
Cross Examination

Do expect that management will ask you questions as to why they should get involved with the CAD standards enforcement problem. When they ask be ready to show increased efficiency, lower error rates and smoother processes as a result. When management sees that CAD standards can save them labor dollars they’ll be motivated to help you enforce.

Senior Management’s Role

Well, I think that it really is senior management’s job to set the tone for following standards! I’m not trying to pass the buck or upset anyone in senior management, I’m just trying to be realistic about where the expectation of following standards gets set.

It is the CAD manager’s job to educate senior management on the value of, and need for, standards but once those concepts are explained senior management must tell everyone, in no uncertain terms, that following standards makes everything work better, faster and with fewer errors.



Keep At It!

I realize we covered a lot of ground in this class and that you've had to think about standards from a more financial and multimedia angle but I think you'll find this approach to standards works much better than what you've been doing.

Start working to make things faster/cheaper and keep at it and watch your world change!

Updated Materials and PowerPoints

You can download updated materials (with any additional notes, corrections or supporting files) for this presentation at the AU web site using your AU user name and password. I will also post course summaries at my web site at this URL: www.CAD-Manager.com/au2012

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 I'll get back to you as soon as I get back from AU.