Preventative CAD Management

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Preventative (or proactive) CAD management is the concept of setting up processes and guidelines in order to prevent things from going wrong. In contrast, reactive management responds to problems as they arise. This is part of the job, but can often create a need to constantly respond to (but not avoid) problems. Like the preventative measure of changing the oil in your car, there are preventative CAD management methods you can put into place to avoid having troubles in the future.

Key Topics:
- Having a solid CAD standard that is reviewed regularly
- Do a mid-year checkup on yourself
- Set up teams to help you manage
- Create a technology plan or refresh the one you have
- Create templates for all your file types
- Organize your server

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About the Speaker:
Mark works for HMC Architects in Ontario, California, as Chief Information Officer. With more than 20 years of hands-on experience in CAD technology, Mark has developed corporate CAD standards and guidelines for many firms. As a nationally known speaker and writer, Mark has instructed over 3,700 users at company sites, local colleges, and tech schools, and has been a faculty member at Autodesk University since 1996. He is an Autodesk Certified Trainer, serves as a member of the AUGI Board of Directors, and writes the monthly CAD Manager column for AUGIWorld magazine as well as articles for AUGI HotNews. He is editor of the monthly e-newsletter, "CADD Manager Journal," and publishes the CADD Manager blog at www.caddmanager.com.

Preventative CAD Management

Preventative (or Proactive) CAD Management involves the concept of setting up processes and guidelines in order to prevent things from going wrong.

Reactive CAD Management just responds to problems as they come up. This is part of the job, but can often settle you into the rut of responsiveness. Responding to, but never planning so that you avoid the problems.

Just as changing the oil in your car is a preventative measure, there are some things you can put into place to avoid having troubles later on. So what steps might you take to set up some preventative measures? Some of them are obvious, some are not.

Here is a list of some preventative efforts you should put in place:

1. **A Solid CAD Standard**

2. **Blend your standard into your software**

3. **Develop an Approved Software List**

4. **Do Regular Checkups**

5. **Set up Teams to help you Manage**

6. **Narrow your Focus, Broaden your View**

7. **Create a Technology Plan**

8. **Create Templates for all your File Types**

9. **Organize your server**

10. **Training, Training, Training**

1. A Solid CAD Standard

A solid Standards based on Principles. Users want to know what is required of them and have a logical easy to understand Standard that provides the answers to the questions that they will ask about producing drawings.
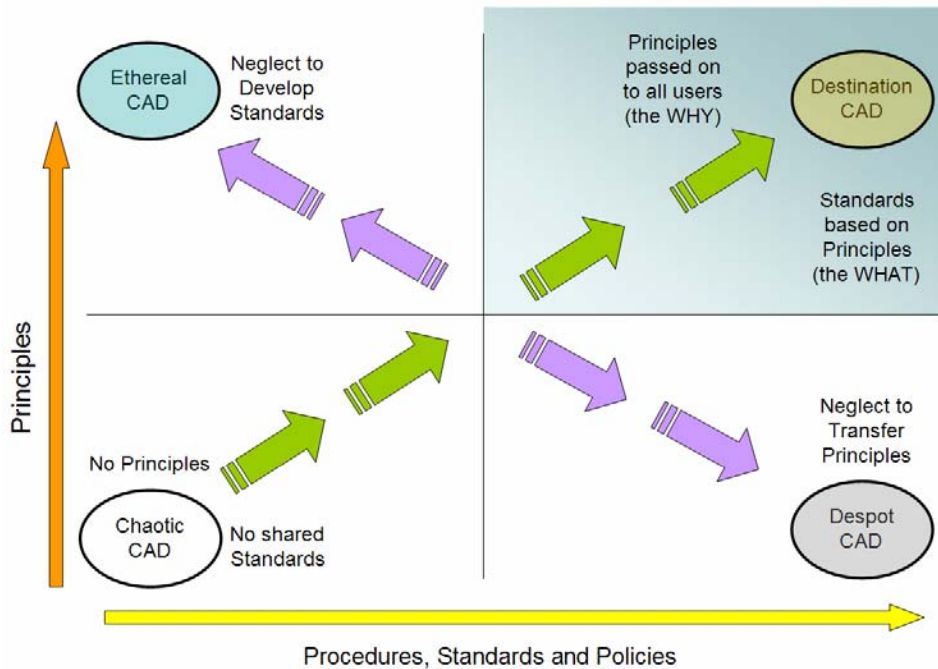
Developing Standards
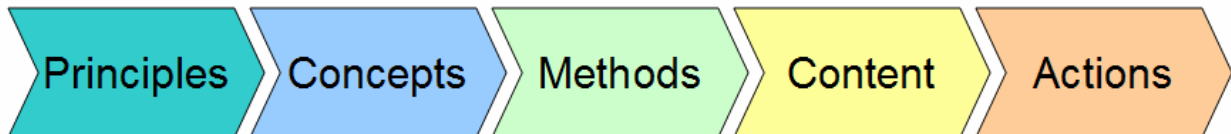
First develop a system of Principles that your standard will be based on.

By starting with the Principles you can get everyone on the same page from the beginning. It is best to work through and talk about the overarching principles of your CAD environments. First develop a system of Principles that your standard will be based on.

Example: Our firm is production based and will drive productivity to the max. Therefore our standard will be focused on increasing productivity by reducing the steps it takes to get things done. This means that woven throughout our standard is the focus of speed and productivity

Example: Our environment embraces the full use of the tools we use. Therefore our standard will address every tool that is in the box.

Example: Our firm does not believe that we need to update the standard unless we update our version of software. Therefore we will stabilize our standard for the version we are currently using and not upgrade it at all until we move to a new release.

What should your Standard cover?

Here is a brief list of the major topics that should be covered by every CAD Standard.
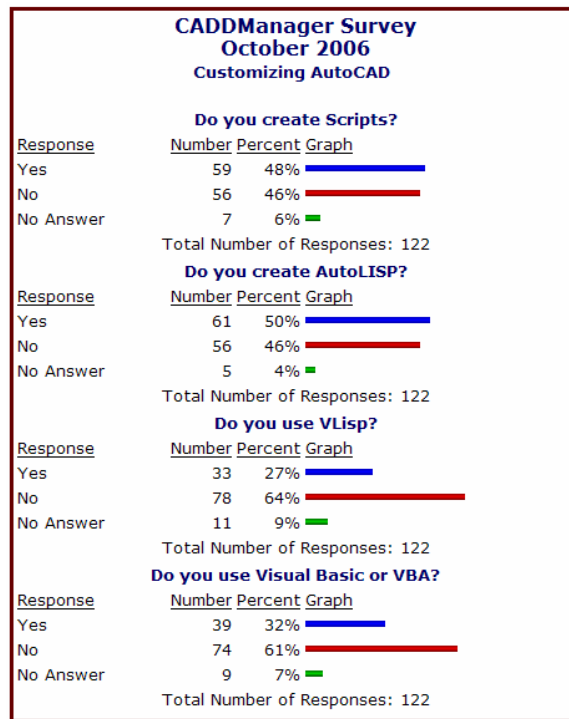
10 Essentials

The list below is what I consider the bottom line. These issues need to be fully defined and articulated. Go to whatever lengths to get these outlined completely to provide efficiency for your firm.

1. Standard Folders - names, locations, relationships, contents
2. Project Names - numbering, names
3. File Names - complete definition, how they are created, what folder they go in
4. Layer Names, Line styles, Pen Weights
5. Pen Tables - CTB, STB
6. Lettering Fonts and Sizes - when used, fonts, style names
7. Dimension Styles - exact names, all terms defined
8. Drafting Symbols - your basic symbology
9. Xref Usage - naming, content, attachment method
10. Layout tabs - names, format, page setup

2. Blend you standard into your software through custom content and tools

I call it Critical Customization. Customization that works may include the following principles:

- Only customize the stuff you have to
- Only customize when it returns major benefits
- When customizing, use the programming tools that are provided via the AutoCAD GUI
- Look for the easiest method for customization and use that
- Only escalate to another (harder) customization method when you have too
- Do not replace any Out of the Box commands
- Jettison your old stuff as soon as it is replaced by AutoCAD

Autodesk
University
2007

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                    CADDManager Survey
                       October 2006
                    Customizing AutoCAD

                    Do you create Scripts?
Response            Number Percent Graph
Yes                    59    48%  ━━━━━━━
No                     56    46%  ━━━━━━━
No Answer               7     6%  ▪
                Total Number of Responses: 122
                   Do you create AutoLISP?
Response            Number Percent Graph
Yes                    61    50%  ━━━━━━━
No                     56    46%  ━━━━━━━
No Answer               5     4%  ▪
                Total Number of Responses: 122
                    Do you use VLisp?
Response            Number Percent Graph
Yes                    33    27%  ━━━━
No                     78    64%  ━━━━━━━━━
No Answer              11     9%  ▪▪
                Total Number of Responses: 122
                Do you use Visual Basic or VBA?
Response            Number Percent Graph
Yes                    39    32%  ━━━━━
No                     74    61%  ━━━━━━━━━
No Answer               9     7%  ▪▪
                Total Number of Responses: 122
```

3. Develop an Approved Software List

An Approved Software list is just a listing of the software that has already been tested and used and proven effective in your office. Each piece of software on the list has been verified to work with other tools you have. When someone wants buy software, if it is on the list then it can easily be purchased, installed and put into production. If is not on the list then you should have some steps defined as to how it get reviewed and approved for addition to the list.

Starting the List

You can start a list by just documenting what you are using right now. List everything that you have installed. The next time someone wants to add a new tool, refer to the list. Work toward refining and eliminating those tools that are outdated, under supported or have few trained users. If there are multiple tools that essentially do the same thing, then work toward selecting one tool and removing the others from use. Slowly you will see a consolidation and shorting of the list. Sometimes just getting the list on paper will make you realize why you are so tired – you are juggling a lot more than you think.

Advantages of an Approved Software Lists

Not every user will have every tool. Not every user needs every tool. The list is a compilation of all tools used "somewhere" in the firm. The list will not be used the

refuse anyone software. It is more of a starting point for getting software approved for purchase. You should seek to purchase and support items that are on the list. The list will expand as new tools are added. In order for someone to purchase an item that is not on the list, they should get it approved and added to the list.

The List will also help when someone is wondering **what tool is use for what function**. By reviewing the list they can see which tools are used.   Software policy should also include the fact that users can only run software that is purchased by your firm.

The second level of use for the list is to **help with training efforts**. The training may come in the form of formal classes or it may be a video conference presentation, webinar, phone call or buying a book. Training will be limited to the tools on the list.

The third level of use for the list is to develop **a listing of software experts for each tool**. The list can be expanded to include the names of employees who are considered experts, you can encourage them to share expertise with others and funnel questions to them.

The goal is to apply technology to business needs and problems that may arise. You do not want to create a restrictive environment. You should strive to balance the needs and desires of the users with your ability to support, develop and maintain the systems. You also must keep the legal requirements of the software licensing and seat counts in mind.

Support the List

The list is a guideline for what is purchased and supported. Strive to support any and all tools that are needed by your users. What this will do (hopefully) is slow down someone from purchasing software that has not been tested, or at least refine their expectations related to your supporting the tool. Talk to management and the users as to what they can expect in the way of support for each tool. Some require more than others. Some will need expanded CAD Standards and others will need only small amounts of guidance.

Agree that support will be focused on the approved software. If someone has a tool that is not on the list then you should not be expected to provide support. It may not even be correct for users to have tools that are not on the list. You should get up to speed and trained on the tools on the list and be ready to expand their use and provide relief to users.

Add it, Remove it or Review it

If a tool is not on the list, you can either add it to the list after approval, or uninstall it, or grant a temporary waiver while it is being investigate it. As a matter of policy all unlicensed software or software that is not owned by your firm should be removed or purchased. No tool that someone brought from home should be used on your company equipment. Check all the licensing guidelines for the tools you own.

If you are having someone test out a tool, then make sure that they let you know what they are doing. Use a rigorous process for review and documentation of the testing. Let several people test out the tool not just the one that is requesting it. Once the testing is done you can seek to add the item to your list and push forward with purchases.

Publish the List

When you have developed the list – Publish it. Make sure that everyone knows what the options are in the toolbox you have approved. Use the list to help users define what tools are allowed and which are not. Move everyone in the direction of using the approved tools.

4. Do Regular Checkups

Check up on your Standards, your environment and yourself.

Have you been reading whenever you can? I am now quite amazed by the level of information available on Autodesk and other CAD packages via web sites and blogs. You can easily get your daily dose of tech tips and pointers.

Action Item: Check out the blogs. Check out the AUGI forums.

When was the last time you opened a CAD file that you did not create? For those CAD Managers that are not involved with production, this is essential. For those involved in production, check out other peoples work.

Action Item: Open a few files randomly on the server. Take a look at how they are put together. Look at the layer list. Is what you are seeing making you feel good about the level of attention that is paid to CAD efforts by the staff?

Have you taken an honest look at your standard lately (since AutoCAD 2008 came out)? If you have upgraded the software - you need to upgrade the standard.

Action Item: Get out the standard for review. Gather a team of reviewers and get them started. Ask someone to take a look at it that just hired into the firm. They will see things that your existing users may miss. They are not part of the "insider" network yet since they don't know the unspoken standards that fill in the gaps of your documentation.

Have you gotten any training lately? If you fall behind - the whole company falls behind.

Action Item: Schedule some training for yourself and your team. Go to AUGI CAD Camp. Get out to your local ATC to get some focused training. At least get your reseller to provide and upgrade class or demo for you. Anything!

Have you been sharing? Mother always told you it was good to share. Keep all those around you up to date also.

Action Item: Schedule a lunch time demo of one facet of the software that you have had the most questions about. Write up a one page newsletter explaining some new feature.

Do you take time to play? Do you fiddle with software? Do you toy with technology?

Action Item: Take an afternoon to download a tool and check it out. Save a buck or two on lunch and pack a sandwich so you have a lunch hour to try out the DWF tools. Come in early or stay late (and avoid traffic) to get some free time to test new utilities or hardware.

When was the last time you attended a User Group meeting?

Don't underestimate the tips you will get from talking with others. You can share your tips also. Talking with other users lets you verify what you are thinking and doing. How else are we to check our ideas and concepts?

Action Item: Find a User Group in your area and get involved. Check www.augi.com to find them.

5. Set up Teams to Help you Manage

Set up a system of small groups to assist in the Management of CAD

Having a strong CAD decision-making structure in place can force business people to think of CAD's role in the overall enterprise (not just location or division by division). It can also better align CAD strategy with corporate strategy—making sure that they are one and the same.

> I have several groups of people that input into my CAD Management goals, plans, process and standards.

Office CAD Liaisons/Reps/SuperUsers

Two people from each discipline. We get together on a regular basis and discuss new software, Standards, Projects, LISP Routines, etc. These people are pivotal to getting my job done. They are an extension of me. I commission them to be my deputies. I pour into them the need for holding the line on CAD Standards. I gather information from them on the impact of my decisions. Consider one for each software title. (CAD, BIM, PDF)

Teams you should join

Project Management teams – if the PM's get together for staffing, project proposals, whatever – get involved

Project teams – join the big project teams – especially the kickoff meetings

The IT Team – if you are not part of it – get involved.

CAD Standard Review Committee

The CAD Staff and 1-2 users from all of our offices gather once a week via conference call to develop and refine our corporate CAD Standard. We haggle and argue sometimes, but come away in agreement as to how the company will standardize CAD use.

Corporate Management Team

Much less formal team of office managers and division managers. I interact with them on a one on one basis since it is hard to get them all together in one place at one time. I find out the current flow of production between offices and if each location needs special attention.

The Inner Circle

Leaders have an inner circle - This is not a negative thing. These people are key to your success. A smaller group to gain insight, get things done and rally the troops.

Keys to good groups

- Build 'em before you need 'em
- Gather people with different talents
- Engender Loyalty
- Delegate responsibility based on ability

6. Narrowing your Focus, Broaden Your View

Narrow your Focus. Sometimes we have to narrow our focus to be more effective. Often we find ourselves burdened with jobs that we never volunteered for because we take on roles that dilute our impact on the firm. Many times these functions are thrust upon us and we cannot get away from them, but sometimes just a little clarification of focus will help make your influence on the firm more effective.

I am not saying that you only perform what is written on your job description. By doing that and constantly refusing to assist in any efforts that are not explicitly defined by some paper that was handed to you when you hired on could prove fatal in your career.

What I am suggesting is that we focus our efforts on the areas that will make the most impact on the firm. The area you choose might be one of the following:

1. Speed
2. Quality
3. Production
4. Design
5. Creativity
6. Cost reduction
7. Expertise expansion
8. Client acquisition or retention
9. Customer Service
10. Technology Refresh
11. Standardization

The list could go on, but the point is that you sometimes need to focus on one area over another. You can jettison or ward off tasks that do not support your focus.

Getting practical it may look like this.

I have chosen to focus this years budget on software expansion and increasing our expertise. My firm spent a great deal on hardware over the last few years so we are at a good point to slide into a short maintenance mode on some of the tools. I will be focused on new software tools for a while. Being in the Architectural arena, the tool of expansion is Revit.   I let everyone know that it is my short term goal for a season and my energy will be spent on that effort.

I am not letting the other areas flounder. Far from it. I need to support the firm in all of these areas, but I am deflecting or postponing some initiatives to focus on the software issues. That is my area of attention. My area of improvement. When I get to a point where I feel that the improvements are in place, I will shift to another area of effort.

So by focusing my efforts I can make great progress and not just respond to other peoples agendas because I have my own.

There are several areas that a CAD Manager has to focus their thinking. If a CAD Manager is just running from fire to fire, then having the time to think about these kinds of things may be difficult. You may have to do it after hours or during lunch when no one will interrupt your train of thought.

Broaden your View

I am convinced that focusing your efforts should start by broadening your view. When the need comes to get things done, make sure that the Principles are in place and then move from there to Concepts to Methods to Content and finally to Action.
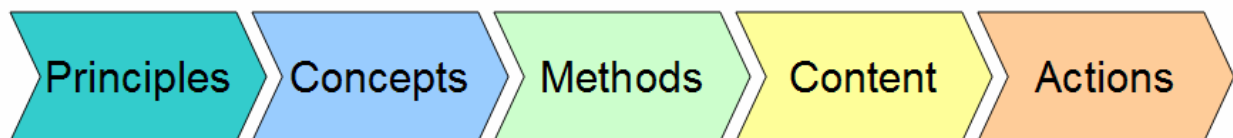
Remember this chart?

Planning and organizing – We looked at Standardizing through this lens and now we look at other areas.

Customer Service – I want to focus on better CAD support (customer service). Our Support efforts are in three areas (Principles): Quality, Responsiveness and Respect. We do this because our internal users deserve the best at all times (Concept). We listen to the problems (Method) and provide the best answer to the problem (Content) as fast as possible (Action).

7. Create a Technology Plan

You need to create a Technology Plan. This plan will help you define your efforts and check your progress throughout the year. Here are the steps you need to take to get your thoughts down on paper.

Start making a list of possible options. Include hardware, software, training, staff issues, production needs, etc. Do not worry about if it is possible or cost effective, just list them all out. Add your wish list items, blue sky dreams and "they will never go for that" items. Add other people wish list items. Get input from everyone you can. Listen to users, ask your reseller, look on AUGI, pull in items from all over the place. This is not just a list of things to spend money on. Add updates to you standards, writing out policies, developing procedures, etc. This is a giant "to do" list.

Next - sort it by dates. When do you think they need to be completed or purchased. Make categories for 3 months, 6 months, one year and two years or beyond. I push this out for two years, but not beyond. It is very hard to predict where your industry will go after the next two years. But I include 2 year items because I want my firm to know that I am thinking that far out and I want them to know what I am thinking about. I start selling the concepts long before I start budgeting for them.

Now refine it down to a plan for CAD technology. Make it flexible, but keep it focused. Define items in your plan by date and timeline. 3 month goals, 6 month goals and 1-2 year goals. Include items that are not software or hardware, like training and general procedures and process that need to be updated. Set the long range goals under the 1-2 year plans. Place the immediate needs under the 3 month plan.

Tech Plan Topic Example:

Technology Software
We have pockets of high tech groups, but not every office may not have access to all tools needed. Many may be using outdated technology.

> *Recommendation:*
> *The push to upgrade software should be expanded and focused. Software sharing between offices may reduce the need to purchase higher tools and provide a unified platform for all.*
>
> *Move to MS Vista for all users*
> *Deploy Adobe CS3 platform for graphics*
> *Ramp up use of Microsoft Project*
> *Move away from CorelDraw to Adobe CS3*

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8. Create Templates for all your File Types

A drawing template file contains standard settings. Select one of the template files supplied, or create your own template files.

Drawing template files have a *.dwt* file extension.

When you create a new drawing based on an existing template file and make changes, the changes in the new drawing do not affect the template file. You can use one of the template files supplied with the program, or you can create your own template files.

When you need to create several drawings that use the same conventions and default settings, you can save time by creating or customizing a template file instead of specifying the conventions and default settings each time you start. Conventions and settings commonly stored in template files include:

Plotting setups
Layout Tabs
Borders
Fonts
Dimensions
Layers
Units and Precision
Linetypes
Snaps & Grids
Blocks
Scale settings

Set them up and define standard names. Place them in a single location for all users.

9. Organize your server

Place shared files on the server – plot configs, fonts, content

Place commonly used files that do not change much on local. Put all out of the box content on local and only remove those items that you have placed on the server. Adjust the file locations in the Options dialog to reflect the locations

Set up securities and permissions on the server and check them often.

Define all of the project folders in the CAD Standard.

10. Training, Training, Training

There are difficulties arising from new employees not following the company standards on project files. There is also a concern related to adopting new tools in the software.

1. Set up training for new hires within 2 weeks of joining the company. Training to include new software releases and company standards.

2. Hire a consultant to provide training for advanced tools. Training to be provided to project teams lasting no more than 4 hours per topic.

You should schedule internal training and send people to things like CAD Camp and AU and reseller training and online web casts and more.

Learning is one of the most essential environmental characteristics of Preventative CAD Management. Learning should be woven into everything. Every chance you get you are passing on information, tips, tricks and more.

- Start an internal CAD Newsletter.
- Start a blog
- Print out tips from the internet and post them on the cubicle walls
- Have your vendor come in and do "Lunch and Learn"
- Go to CAD Camp and make copies of the hand outs for everyone
- Set up training classes during lunch – 30 minute classes on one topic
- Copy articles from Cadalyst magazine for people to read

Training Budgets:

- Always include training with every purchase.
- Always over-budget for training
- Always cut another area to save your training budget.

Training Time:

1. The triple whammy – away from work, not billable, and it costs money
2. Carve it out in small chunks
3. Keep it focused
4. Make it valuable
5. Make it stick

Super Glue – making it stick

1. Have handouts – a training class without a handout is just a "demo"
2. Make the handouts a reference to use after class
3. Know what they already know and start from there
4. Provide step by step information
5. Relate everything to some work or project experience
6. Tell them "Why" as well as "How to"
7. Make sure they understand even the most common "jargon" of the tool
8. Ask them about the training a week or so after
9. Get them involved in setting up the next training session
10. Ask them what they need training on
11. See who sticks around after the training is done – focus on these folks
12. Remember – it sticks because you make it stick

PASS IT ON...

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