

SolidWorks World 2006

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1/21/06 - 1/25/06

Once again we come to that time where you decide if it's worth spending your time reading this account. I was fortunate enough to attend SWW2006, and had a great time. But it makes me sad that more people couldn't go, so therefore I spend my time collecting my thoughts & notes in the hope that through this virtual tour, you can pick up some nuggets worth remembering. Remember, these were my observations & opinions, so factor that in. So if the thought of learning from someone else's notes sounds like the way to go, then pull up the easy chair, grab the hot coffee, and journey on.

Saturday January 21, 2006

Day 1 (for me) meant getting myself to the Kansas City airport on time to catch my Southwest flight to Las Vegas, NV. Ahh, the land of glitter and charm, illusion and reality, all rolled up so you're not really sure which is which. I had never been there before, so all that I knew about the place, I had learned from the television (reality?) and my mother-in-law (old hand?) Needless to say, I wasn't really prepared to be greeted by so many slot machines as I exited the plane. Then more of them the farther I walked - so many chances for me to leave some money with them. On to baggage claim, yup there's mine, and now to find transportation to Caesars Palace. Hmm, not bad - 5 bucks is all. Does my wee Scotsman's heart good. Walk in the front door of Caesars, and what do I see, but more slot machines - get used to it.

Head for the check-in counter, get my room, and then go roaming. I have learned by experience that it's wise to scope out the place before the next morning rush. Kind of like your first day at a new school - "Now where exactly is my next class??" I noticed on one of the electronic messaging boards that Conisio was having a dinner that evening. Hmm, I thought, the same Conisio that we use as our PDM? I went to find the room, and sure enough, it was. So, another opportunity to extract some information when I had time, rather than during the rush hour. I didn't exactly crash the party since I already knew some of them - wonder if they felt the same way? Isn't SWW wonderful? Finish the wanderings and head to bed - tomorrow will be a hard day.

Oh, for those of you wondering, the name of the place is Caesars Palace, no apostrophe. The original thought was that they wanted to build a place where anyone could feel like a Caesar for a day or so. So thus the plural form of the word.

Sunday January 22, 2006

Day 2 started out with an early, very enjoyable (but all too short) breakfast with my friend Marie Planchard. She just recently left teaching, which she loved, to join with SolidWorks in promoting the use of SW as a way of improving the math and science desire and aptitude of our students. I think we should all ask how we could help her, as we all have a stake in the success of this country's students. She's the right person for the job, and I wish her all the best. Now, time to get down to work!

8:30 am Drawing Discussion Session - Brian Harrison, Marc Leizza

This year the discussion groups were going to be limited to 10 people, and orderly. Neither goal quite made it into happening, but a good discussion nonetheless. These discussions are not meant to be gripe sessions, nor are they to be classes per se. The desire is for SW employees that are responsible for that area of the software, to be able to listen to the future desires of paying customers, and therefore receive some input into where they should focus their resources. These meetings are supposed to be upbeat, polite, and friendly, and that they were.

So we each brought up something that we desired to see worked on. Some of the things were already somewhat possible, but some were quite out there. How do I get a very light 2D sketch representation of a surfaced car body? How do I keep BOM numbers from changing when I suppress parts? How do I insert model items on mirrored components? You get the idea. The session ended way too soon, but time to head to the next one.

9:45 am Machine Design Discussion Session - Gopal Shenoy, Marlon Banta, Sal Lama, Bruce Holway

Same format as the first one, a bit more structured. One of the first things they brought up was to mention that SW employees are charged with making customer visits (about 250 customers are visited every year) throughout

the year, so if you want to participate in that program, let them know. Now, let's talk performance. Their questions about large assemblies are always "How many total components?" and "How many unique components?" One guy said he can have >100,000 - wow! Glad I'm not him... So, they asked what we would think of some large assy "advanced" tools. These would be tools that the experienced user could use, if needed, but they may not be for the faint of heart - would we be interested? Sure - bring 'em on. They also mentioned that they like to receive your examples of large files to play with, so if you have something that fits the bill, send it to them.

Now, pay attention here - this is a nugget I found during this session. There are some serious performance gains to be had in SW2006, but to realize them, you have to save the file in 2006. It's not like the only non-gain time is opening the older version file, you still don't get the gains until you save them in SW2006. This is a change from previous years, and I didn't know about it. You heard it here first, folks.

So, how about this suggestion? When opening a large assy, you go off to lunch in hopes that it will be open when you return. But to your dismay, some error message stopped the process after the first handful of parts. Rats! So how about the ability to go past error messages, try to load everything else, and then handle the problems at the end? Good idea? Or how about a way to replicate to your hard drive, and keep current, any files on your network? Should speed things up a bit. They asked if we were using the 3D services of vendors more than in the past - yup. How about using the SW hole series? Huh? (Go look it up - a well kept secret.) Someone suggested that closing Outlook let SW run better - maybe more memory available?

Once again we ran out of time, but this time I seized one of the opportunities of SWW to sit down with a SW employee one on one. Actually, there were three of them, and one of me, but that's not important. My point is that one of the purposes of SWW is just this - get SW employees and customers together. So, if you are planning ahead for next year, be prepared, make your list, check it twice, and come ready for action.

2:30 pm User Interface Ease of Use Discussion Session - Jim Wilkinson

At first I struggled with this one because I feel that lots of things are already done well. I like a lot of the existing stuff and I think, for the most part, the UI works pretty well. So, what were the suggestions? How about turning on more toolbar buttons by default? On the other hand, it gets pretty crowded with too many on - a compromise here. How about a way to create your own specialized toolbars, and distribute them to your other users? We learned that an error box that has eyeglasses in it means that they want to show us some visual feedback. How about more detail in error boxes so we have a better chance of figuring out the problem? How about clicking on the part/feature referenced in the error box, and have it go to that part/feature in the tree? Someone asked for hotkey access to turn off automatic sketch relations.

Then we hit hotkeys, and I was in the groove. As the de facto keeper of the hotkey list, I had many requests towards making hotkeys easier to manage. The average person doesn't see these things, but anyone administering them does. How about show me all that are assigned? How about finally telling me what the hotkey Ctrl/Alt/Shift H is? Why is it tied to 23 commands?? How about printing a picture of the keyboard with the hotkeys listed, kind of like the old WordPerfect stuff, I think? Boy, did I run with this topic! But wait, there's more! The next morning, I had the wonderful opportunity to look at the revamped hotkey interface in SW2007, and I really liked it. I added 3/4 of a page of notes for them to work on, but hey, I gave it my best. One of the perks of being persistent at SWW!

So on with the requests. How about adding some specific, commonly used symbol buttons to the note interface, like the centerline symbol? How about being able to override the color of an assigned material? How about a way to tell where a color is applied, rather than having to look in all the cubbyholes to see which one is driving the color? Oh, we can do that now with 2006? Didn't know that one - thanks. (RMB on the model in an area that has the color you want to find, choose Appearance/Appearance Callouts.)

5:30 pm Open House at the Partner Pavilion

This was the first opportunity to see the different booths set up for all the vendors. I had a list that I wanted to go through, but my time didn't exactly go as planned. I ran into old friends, new friends, friends that I didn't know I knew, but knew me, etc. Lots of things to look at, delicious food, good company - a fitting end to a great day.

Monday January 23, 2006

Monday's breakfast started out what would be a continental type of breakfast each morning. They had things arranged well to accommodate the crowds, and even made improvements the next morning. Various types of

fresh fruit, muffins, yogurt, milk, coffee, etc. were the standard fare. I was a bit disappointed to not see eggs, bacon, biscuits, etc, but I am probably healthier for it. :-) I won't dry up and blow away, and what was there was very good.

8:30 am General Session, Passion for Design, Jeff Ray

After the initial cordialities, we learned a few facts: there were >3700 attendees, representing >50 countries, including >90 members of the press. Hey, why do they get front row seats?? The most common usages of SW are Consumer Products, Mechanical Design, and Machine Design. What company had the largest contingent other than SW? Boston Scientific - 23 people - way to go, guys and gals.

We were introduced to some of the more visible companies that use SW, such as Trek Bicycles, and more that went by so fast that I couldn't write them down. Oh, well. How about this - the Norwegian Ministry of Education & Research has announced their intent to purchase 30,000 seats of SW - that's a bunch!

Enough of the dry stuff - on to the fun stuff - Myth Busters!! Jamie Hyneman and Adam Savage were there on stage to tell about how neither one of them has an engineering degree, but having SW & COSMOS on board, feels like having an engineer on staff. Ok, nice endorsement, but what have you learned? Blue is good - red is bad! A nice tie-in to last year, I might add. They told about how they designed a camera with SW and it even worked as expected. Then they introduced their junior assistant, John McEleney, who came out on stage holding a salami-powered rocket. And yes, it most certainly did fly! To wrap up, they pointed out that they have busted over 120 myths - what a job - need help? I was disappointed that we didn't see them wandering around later that day - would have been fun to come home with a picture of me with them to "impress" the kids. Oh, the same kids that called this "Nerd Central" - thank you for your understanding...

John's part of the presentation was to lead us on a retrospective trip back through the 3D CAD world. He has been with SW for 10 years now, but the real CAD revolution started some time ago. Here are some highlights, and if you desire to know more about them, do some research:

1963 - Ivan Sutherland started it all by conceptualizing it.

1980's - MIT - Dave Gossard demonstrated one of the first systems - remember the green screens, the pucks, and the thumb/finger wheels?

1993 - John Hirschtick & Bob Zuffante sketched out some 3D CAD skeletons, which included a FeatureManager Tree, which later became SolidWorks 95. We saw copies of the original sketches.

2006 - 1/4 billion dollars in revenue, 1/2 million users, 100 partners - we've come a long way.

The next part of the presentation was to show us a few tidbits from SW2007, the first of which was introduced by a company called Next Engine. This is a personal 3D scanner that can sit on your desktop and scan small objects to a resolution of about .005". Then like magic, push a button, do a dance, and it magically appears inside SW as a full, complete model. Now, I'm sure they had the demo pretty well tailored to run flawlessly, but it was quite impressive, considering the low, low price of \$2495! Ok, no commissions here, but it was pretty cool.

So, what else would we see in SW2007?

Push and pull on surfaces.

Average file size 50% smaller than current versions.

COSMOS Motion bundled with SW Office Premium.

Dynamic animation inside PDFs. (Explains the move to Adobe.)

SWIFT - SolidWorks Intelligent Feature Technology - more on this on Wed.

10:30 am Understanding the Nuts and Bolts of Smart Components - Gopal Shenoy

I have always enjoyed listening to Gopal, and this session was no exception. Smart components are something new for SW2006, and his first statement was that SW is not the center of the user's universe - their own products are. So, how can SW move out of the way, simplify things, let the design intent come through? Create once - automate forever! Smart components are components that you give some smarts to. Seems obvious, but what does it really mean in the real world?

Let's look at one of the examples - a D shaped connector, such as you would find in the back of your computer. They come in different sizes, and each size requires the proper size cutout & bolt holes. If this is a common item, you may want to give it some smarts. Create a training assy, which is disposable, teaching it what config

of the cutout goes with what config of the connector. Then save your smart component in the Design Library as a part. To use it, drag and drop it on your panel, position it with normal methods, and then, when you are ready, tell it to insert the smart features, which in this case are the cutout & the bolt holes. The cutout & holes are placed as features in the part, not the assy, so they show up on the piece part drawings. You also have the option to either keep the part geometry linked to the smart component, or break the connection. The advantage of keeping it linked is that if you move the connector, the holes go with it. For those of you that like to import model dimensions into your drawings, you will be happy to know that any dimension that is part of the smart definition will import properly. And, the smart component doesn't have to be only a part - it can be an assy. Same process, same results. We also saw an example of a shaft that had a snap ring, that properly sized itself, and that in turn properly sized the groove in the shaft. For more info on Smart Components, look it up.

12:00 pm Lunch

Quite interesting conversation at our table this day. Started out the time discussing a variety of topics with a man originally from South Korea. Then as more people joined our table, I realized that I sort of knew one of the other gentlemen. He is Dr. Philippe Guglielmetti, a man from Switzerland that used to keep a pretty good SW site, but then he changed jobs and I lost track of him. But then here he was, in the flesh. One of the finer points of SWW.

1:30 pm SolidWorks Can Do That? - Steve Slowik, Mike Scola

Generating and communicating design intent.

This class covered a variety of topics to remind us of capabilities in SW.

1. Generate concepts – render, show multiple views, multiple configurations, eDrawings, animation, etc.
2. Derived multi-body part – create the complex part, and then slice and dice to portion it out into bite size individual parts. Use thin cuts and put them back together as an assy.
3. Use surfacing tools along with solid modeling tools – split, delete face, move face, fill, etc.
4. Fill pattern – use this feature to fill an area with a pattern of holes, etc. But if the pattern doesn't quite fill as you want, you can divide up the area, apply the fill to each area, and then put them back together.
5. Vary Sketch – lets the pattern geometry change per the boundaries as it repeats.
6. Indent feature – can even use a sketch to produce the cavity.
7. Sketch picture – put a picture on the sketch plane and then use it as a basis for usable sketch geometry.
8. Advanced mates – cam, gear, limit, width
9. Macros – useful for automating repetitive tasks, can be used for goal seeking, etc.
10. Flex/deform tool – can be used to twist and bend geometry.
11. Sketch blocks – work out motion aspects without having to build full solid models.

2:45 pm Using SW as a 3D Game Engine - Dan Schuman

What?? Why would I want to? Why would I waste my time on a class like this? Hmm, I had some of the same thoughts myself when deciding on my class schedule. But the more I thought about it, the more I thought it would be a good one to go to. Think about this - how often do you use SW by the book? Probably most of the time? And what did you do the last time you really got stuck? Tried something a bit unusual, and maybe it even worked? I figured that this class might show me something about SW that I hadn't thought of, and therefore be worth going to. Dan was quick to point out that using SW as a game engine probably isn't the smartest thing to do. It's a bit overkill on price, and not well suited for it either. But can it work? We saw a game of FroggerWorks running that looked like it worked, so guess so. He created all the cars & logs as parts, and then controlled them with a running macro. The frog was a part that moved with the arrow keys. He said he tried using interference detection, but it was too slow. So then he decided to mathematically calculate the bounding box territories, and if the frog box interfered with the wrong thing, you lose. Now, I wonder if I can use that same logic to work on some event-based motion that I've had in mind for some time. That would be interesting...

4:30 pm SWUG (SolidWorks User Group Network) Meeting - All of us

Each year at SWW, there is a meeting for user group leaders and members to get together, hear about what's going on, ask questions, and learn a few things. As many of you know, Richard Doyle took a job with SW as their official user group person and this left a big hole in the Southern region that was then unmanaged. I don't know how those poor group leaders survived through it, but eventually Richard asked if I would take over that region's responsibilities. Sure, why not, add one more log to the fire. But, I have always believed in the user groups, so this was the time to put up or shut up, so I took it. I stood up at the meeting and asked if all the leaders in my region would raise their hands - I didn't know many of them by sight. No tomatoes thrown, so this might be a good night.

Each of the region coordinators gave a short report on the goings-on in their region, we had a lot of suggestions, we had a lot of questions. We also had two guests. The first was John McEleney, who stopped in to say that he

appreciated all the work that the group leaders put into their groups - I agree. The other guest was Marie Planchard, who implored us to figure out how to reach our young people of today and get them more involved in math and science.

If you aren't already involved in a user group, find one and get involved. They are usually a lot of fun, have good food, and you might even learn something. All that, for little or no money - can't beat that. Go to www.swugn.org and take a look. Oh, I also got to meet Jerry Steiger, a newsgroup person that I had previously known by name only. Thanks Jerry for stopping by.

7:30 pm CSWP Special Event

This year's event, only for those that have taken and passed the CSWP test, was at a place called ESPN Sports Zone. This is another casino on the ground floor (what else??) with a game room upstairs. They had a great food table laid out, and gave each one of us a card to be used to play any game until it was time to go home. The variety was great, but most of them had some sort of sports related theme. Hmm, a connection here? There was a drawing for some great prizes - video cards, a SpacePilot, etc, but you had to be present to win. Oh, I didn't win anything - darn the luck. Had a fun evening playing games, eating food, and visiting with people from around the world. Might even have arranged a customer visit for our COSMOS products?

Tuesday January 24, 2006

8:30 am General Session, Future vision, Vic Leventhal

Vic opened with a few pleasantries and then he reminded us that the first SWW was in Waltham, MA in 1995 and how much things have changed since that one. This year we had 133 breakout sessions available to attend - that's a bunch! We saw some video of some of the showcased products designed with SW, and then he introduced Richard Seymour & Dick Powell, of the television show Better By Design. They were quite the entertaining duo, telling how they came to be so successful. I will do my best here to bring you their message, but unfortunately, it's only going to be bits & pieces.

You have to have a passion for design - put yourself into it. To develop a product, you have to have an Idea, you have to have Belief, and you have to have Embodiment - a way to make it happen. But before you can have the Idea, you have to have Knowledge. So how do you gain knowledge? Go watch people. Watch how they do things, watch how they use their stuff. Look, rather than see - looking is active, seeing is passive. Watch for emergent behavior - new trends coming of age, and be ready for them, or even make them happen. There is more to designing a successful product than just the engineering portion - there's the people part. Involve the art side of the brain. Do you think beauty, or feel beauty? Pay attention to that other side. (Maybe that's why I don't do consumer products - no art side here.)

Design is a process, and generally not a straight line - sometimes leading to the unexpected but relevant solution. Don't overlook the obvious, but unexpected. Start with a creative event - bring people together & roast the ideas, throw them around a bit. The question has been asked, "Why should a company go to an outside firm for a new design?" Einstein put it well: "Problems cannot be solved by thinking within the framework in which the problems were created." A fresh look without the baggage of previous knowledge is sometimes helpful.

So how do you create a new, killer product? Sometimes you need a paradigm shift - change the rules - he who gets there first, sets the rules. Form doesn't follow function - it is function. Ask a lot of "whys" - why does it have to be that way? A great product will grab a person's attention before they have a chance to analyze the details. Grab their heart, and their mind will follow.

Innovation theory - with an idea comes a point of view. However, don't get stuck there. Practice the thousand yard stare - look at the problem from a loooong way back. Get started earlier, look farther forward, make your future happen as you want it to be. Good designers keep good sight of the parts, and also the whole - one is not more important than the other. Creative people say "Why not?" and "What could it be?" But most of all, remember that people are more important than things - anthropology comes before technology, and not just in the dictionary.

10:30 am SWUGN booth at the Pavilion

This was my time in the fish bowl, so to speak, but it was fun. At first it was a bit slow, and we put together balsa wood airplanes. That was fun, but then I had the opportunity to talk with several people about why I think they should be involved in a user group. Most said they would "get right on it" when they got home.

Hmm, maybe. But if even one or two of them actually realized the benefits of participating, and pursue it, then my time there was worth it. Maybe next year we'll even get to have our own banner so people can find us??

12:00 pm Lunch

At the SWUGN meeting the night before, a lot of us decided that we hadn't had enough time to compare notes, go panning for nuggets, etc., so we decided to meet for lunch. Did you ever try to find someone in a crowd of 3700? I arrived just a bit late, because of my SWUGN duties, but eventually found the rest of the group clear over on the other side of the banquet room. We had a nice lively discussion about how to increase attendance, what to do with a VAR that doesn't play nicely in the sandbox, how to pay for stuff, etc. I think we ended up hijacking 3 or 4 tables, but we also felt that next year, we need to be better organized and get our own tables set up ahead of time.

1:30 pm Modeling & Animating a New Hydrostatic Transmission - Ingo Valentin

I really didn't know what to expect here. I am familiar with hydrostatic transmissions, and felt it might be good to see some of the steps someone else went through to bring a product to market. So, he started out explaining the advantages and disadvantages of using hydrostatic power for an automobile. Then he went through and explained the details of the various parts and construction, all the while capitalizing on the benefits of modeling in SW to produce & show what's desired. During his development, he modeled just a small subset - one cylinder, piston, and shoe, and then ran flow analysis on that model to refine the details. He also pointed out his use of COSMOSWorks to analyze the retention of the shoe ball in the piston socket, such that he was able to press it in, rather than having to swage it in. This allowed him to achieve much better fit tolerances for better operation. He told us that during development, be aware of the little areas that change as they could be indicating possible issues that will need to be dealt with down the road. Finally, put together animation to show the operating principles - nothing speaks better than watching it move.

2:45 pm Troubleshooting from a Support Perspective - Tammy Love

I am the type of person that will always go straight to the tips and tricks portion of a computer magazine, because I want the nitty-gritty of what's going on under the hood. And since I am the go-to person in our company (chief SW nerd?) I figured this class would be right up my alley. And yes, it was. In fact so much so, that when it ran over time, I didn't make it to my next class on time. Oh, well. A lot of it was review, but I certainly picked up enough nuggets to be worth the time. So here's what I wrote down - hopefully you will find a few underused items yourself.

Install problems:

1. Know your product - what's supposed to be installed - what's licensed?
2. Know your serial number. A number that starts with 0000 is a standalone license. One that starts with 0010 is a network license. One that starts with 97XX is an educational license.
3. A registration code is only needed for a stand-alone installation.
4. All valid registration numbers are already stored on the install CDs - that's why it's able to auto generate.
5. Flex IDs - always needed for network installs. 6-A for a parallel key, 9- for a USB key

Can't install problems:

1. Windows Installer Error - write down the number and look it up - you might find a clue. (msdn.microsoft.com)
2. Look for general fixes - permissions, bad CDs, bad drives, etc.
3. Copy the CD set to a network drive. Copy each CD individually, and when it asks if you want to overwrite the existing files with the same names, choose yes. However, install the COSMOS CD to its own folder. (This item is valid even if you don't have any install problems. Each service pack update will find all the original files - no more CD shuffle! I've been doing it this way for several years - it works.)
4. If you don't get any error message but are still having a problem, try turning on Verbose Logging. It will then log everything that tries to happen, and hopefully you can see what it was trying to do when it stopped. The log file will be in the system/temp folder and looks something like MSI...log. In order for you to read it, you will have to use a verbose log decoder - Google for one. Verbose logging can be turned on from the SW install splash screen - click on the little CD icon way up in the upper LH corner, and then select Advanced Settings.

Can't Remove SW problems:

If you get a message that says your install or image file was deleted, try to fix it with the Windows Installer Cleanup Utility.

Antivirus & SW:

1. AV software generally tries to stop Visual Basic Scripting, and unfortunately, that conflicts with the way SW uses it. Disable the AV checking during an install, or tell it to exclude the SW install folder.

2. If you are having problems, and think it might be related, the best solution is to uninstall SW & reinstall.
3. During SW operation, try to set your AV software to not scan SW files – probably not necessary.

File corruption problems:

1. First question – is the file really corrupted? SW crashing due to an unhandled error is generally not the cause of a corrupted file. I just recently had a drawing that the guy had just saved to a DWG, made some changes, saved, and closed the drawing. Then a few minutes later wanted to make another change and couldn't save to a DWG any more – it came out totally weird. We finally figured out that the problem was caused by the drawing having a block in it, with a note in it, with the note having a blank value. So, it's not always a corrupt file that causes the problem.
2. Check for poor network connections – you might be getting data loss during saving or backing up.
3. If you find you do have a corrupt file, and you have the time, submit it to SW to see if they can recover any of it. They usually take about 24 hours, but it might be worth it.
4. Try deleting the temporary ~ files – sometimes they cause a problem with a particular file.

Video problems:

1. If the problem appears to be video related, turn on the Use Software OpenGL switch. (Tools/Options/system Options/Performance) Keep in mind that you can't change that setting if you have any documents open. Also, if you see that box checked and grayed out, it means that SW has turned it on for lack of finding proper video hardware. Or, it could be that the driver was not proper. We had an issue with two machines that we had updated the video driver to the latest and greatest SW certified at the time. Then a couple days later noticed that the Software OpenGL box was checked and grayed on both machines. I checked video cards, settings, etc. and finally figured out that it was the new driver that had done it. Reverted back to the previous version, and all was well again. I was not a happy camper!
2. Make sure your resolution and color depth are set high enough. Too low can cause problems.

General troubleshooting:

1. Is the problem software specific? Try it on different service packs, different versions.
2. Is it repeatable?
3. Is the problem only with that file, or can it be any file, a new file, etc?
4. Does the problem occur on any machine, or just one? If unique, try reseating cards, swapping memory, etc. Use Windows Memory Diagnostic to test memory. We just recently had a machine that would freeze if the user rotated his part too quickly. Rotate slowly and all was well. Mouse or arrows – no difference. A large part had to go slower than a simple part. Give up? The video card fan had stopped. When he tried to rotate quickly, the video processor overheated, and froze, only to revive after it cooled.
5. Don't forget about document templates. Just because the user says it also fails with a new file, it could be a problem with the template – make sure you try a clean, unmodified one.
6. Try logging on as another user. Try destroying/renaming the current user key to recreate the settings.
7. Try copying network files locally. Try copying files in the PDM vault locally. Any changes?
8. Use SolidWorks Rx to check stuff, record the problem in a video, annotate it, and send it in. It also gives you the opportunity to start SW without any of the current settings, so you don't have to go into the registry and do it yourself.

6:30 pm Offsite Event - Las Vegas Motor Speedway

In spite of what you may have heard, I thought the evening was fun. The pre-conference advertising had mentioned going down the drag strip in "high performance race cars." Well, not quite - how about Enterprise cars. The ride around the track also didn't quite meet the advertising, since we didn't learn any "techniques used by leading racecar drivers." But you know what, I still had a fun time. Even though the choice of cars wasn't what we were expecting, I got to drive down the professional drag strip, and I got to ride around the big league track, and that's a whole lot more than I have ever done before! Once again, lots of good food, good conversation, played a few games of pool. So I call the evening a success.

Wednesday January 25, 2006

8:30 am General Session, Driven to Innovate, Jeff Ray

CSWP – Certified SolidWorks Professional – now there are 3000 of them. Hmm, I wonder why the SW site map shows only 3 in Missouri? Jeremy Luchini was called up on stage and they held up the banner that we signed this year, and I could even see my signature – amazing. Jeff also mentioned that they were working on a Customer Self-Service Portal, where you could search the database for prior issues to see if you could find a solution yourself. We'll see how well it works.

Ok, then out came Chris Garcia, head of R&D, for the unveiling of the new features of SW2007. This year's presentation was the SolidWorks Dating Game, with contestant Anita BetterCAD, who is always looking for better, faster CAD performance from her dates. So, on with the show. Oh, unfortunately, I didn't write down the questions, only the answers, so you'll have to imagine the rest yourself.

Drawings:

1. Balloons can also be linked to custom properties.
2. Hole tables in drawings can combine information from various views.
3. You can pull information from a dimension to populate a callout?? (I'm not real sure about this one.)
4. Annotation leaders – add a jog point to an existing leader and pull. Yeh!
5. Chamfer callouts – can have multiple arrows.
6. Sketch blocks got rack and pinion, belt, and cam relations.
7. A drawing palette will show you a preview of the various views so you can pick and choose from there.
8. When inserting model dimensions, they will auto space and snap into position.

COSMOSWorks:

1. Will support beam elements.
2. Auto cross section. (??)
3. COSMOS Express will include a Factor of Safety optimizer. Tell it to get down to 2, what it can change, and it will solve for it.

Sheet Metal:

1. Lofted bend – will now add the bend lines to guide you.
2. You can add an edge flange to a curved edge. Then when you flatten it, it gives you the cut pattern. (Since this flatten is basically for a die-formed flange, I would like to see an option to flatten to a cut & weld pattern.)

Free form:

1. Push and pull on the surfaces to move them like putty.
2. Also works on imported models – not just native SW ones.

General:

1. SWIFT - SolidWorks Intelligent Feature Technology. This looked amazing! Think about this: you build a model, get about half of the fillets to work, rework the fillets to get them all to work, then realize you need to add draft, and that screws up half of your fillets. So, instead, you let the wizard try different orders of fillets until it finds a combination that will work. Then you let it put in the draft - it properly puts it back up before the fillets and then fixes them. Then, think about analyzing all your tolerance stackups to see if things really will work if the finished parts vary one way or another. Again, let the wizard do it. Supposedly that was just a taste of what the technology will do. I can see it being a real benefit to those that have to do that kind of stuff occasionally, but don't do it enough to really be good at it. I can hardly wait.
2. Multi mate - pick up all the bearings, sprockets, hubs, etc that go on a shaft and make them all concentric to the shaft in one mate.
3. Toolbox sharing - it will automatically generate needed parts if it can't find them.
4. Rack and pinion mate.
5. Copy your stuff - zip & email the parts, assemblies, and the drawings!
6. Belts and chains - you can create them in the assy by picking the shafts. Then you can rotate one shaft, and the others rotate properly.

Their goal was to get the CAD overhead out of the way, and let the person concentrate on the design. Sounds like some neat stuff toward that end.

Then Joe Dunne came out to announce the winners of the model design contest, and that the contest is worth entering - \$150,000 worth of prizes.

Next was Gopal Shenoy to talk about enhancement requests, pointing out that 84% of the last 50 top tens have been implemented. Here's this year's list:

1. Recreate all mates when mirroring components.
2. Clearance-check in assemblies similar to interference detection.
3. Select subassembly via right-click on one of its parts.
4. Represent items such as grease, adhesive, and paint in Bill of Materials.
5. Link balloons parametrically to text in a note.
6. Copy entire drawing sheet or a portion of it, into the same drawing or a different one.

7. Create component patterns based on curve/sketch driven patterns.
8. Select cylindrical surface to specify axis of a circular pattern.
9. Provide more options to create reference planes and axes.
10. Provide the same printing options in Task Scheduler as in SolidWorks.

The Model Mania 2006 contest winners were announced:

Customer: 1. Brian Dennis, 2. Avihay Menashe, 3. Jay Patterson

Reseller: 1. Jason Pancoast, 2. Juan Jose Jimenez, 3. Joel Quizon

And finally, SolidWorks World 2007 will be Feb 4-7, 2007 at New Orleans, LA.

10:30 am Hybrid Modeling - Matt Lombard

As I use SW, for the most part, I do my work with solids. I also know that in using solids, I am also using surfaces, since SW uses surfaces to define solids, but does a lot of the extra work for me behind the scenes. So, why take this class? I figure that the more I know about how SW creates geometry, the better I can do my job. So in we go.

The first clue to watch for is if you are creating sketch entities that don't produce any geometry, you should maybe be using some surfacing techniques. Surface cuts, replace face, move face. These are all techniques that can reduce rebuild time. Move face works on surfaces & solids, and can either add or remove material. Replace face – create a planer surface, use it, and then hide the surface body. Use delete face to remove junk. Even on a single imported part, you can use the untrim function to remove holes, etc. and SW will know what the underlying surface was supposed to look like.

So, which should you be using – solids or surfaces? Surface techniques will give you faster rebuild times, but they take more time to build. So the proper answer is both – whichever is the most appropriate for the situation. Go investigate.

1:30 pm Design Automation for Your Customers (SW Configurations & Excel) – Steve Hoffer

Most people that have used SW for much of any time at all are familiar with configurations, but not as many people are familiar with design tables. Many of those tables are static tables – a row in a table for every configuration. While that is certainly a good use of a table, there's another way you can use them to generate your geometry.

A design table is an Excel spreadsheet that is used to control variables, dimension values, formulas, etc. When thinking about whether or not to use a table, ask whether or not there would be any advantage to using the capabilities of Excel in this instance. Are you going to have similar data among configurations? Do you want to control parameters with equations and logic? If so, create your part and insert a design table. Oh, make sure your cells are formatted as general to be able to insert formulas.

But what if the product range is great with options, such that the number of combinations could approach a million configurations? In that instance, the rebuild time would kill you. So, another option is to use the design table to generate a desired configuration on the fly. The design table will have one line in it, and the geometry is created by supplying the key pieces of info. This technique really doesn't apply to a file that you want to have as a static reference, but rather it's for the case where you want the ability to generate a particular configuration on the fly. One main use is to drive model generation from a web site – use in conjunction with 3D PartStream.

Here are some thoughts to remember about design tables.

1. Part design tables control dimensions, feature suppressions, and values.
2. Assembly design tables control part states and part configuration selections.
3. Pay attention to how you mate parts – as parts change configurations, change size, etc, make sure the adjacent parts are attached such that they don't get left out in space.
4. The syntax for variables in the design table is \$PRP@<input variable name here>
5. You can concatenate (string together) the values in cells to drive other values.
6. Color your columns to help you remember the function of that column, whether that column has formulas, if it's an input area, etc.
7. If you have set up your part names, etc properly, you can drive sub entries in the table with variables, such as using a descriptive concatenation to select the proper configuration of a part.
8. Don't forget about using the Lookup and Index functions.

2:45 pm Automating with Library Features and API – Michael Jolley

Using API to generate geometry is a very powerful automation tool. But what about when your best programmer doesn't know much about SW geometry, and the SW person doesn't know much about programming? A good match then is to use the API code to insert the geometry as a library feature. That way the insertion code can be modified without worrying about them changing something in the geometry. And conversely the programmer doesn't have to worry about the SW person messing up the code – they each do what they do best.

So where do you start? Create your library feature and drop it in the Design Library. As you create the feature, keep it simple – keep as many references internal as possible. Decide what dimensions you want to be prompted, which to override, which to not be shown. Utilize the power of tool tips when the user places the mouse over the feature – provide valuable information. Named items in the model are easier and more intuitive to program, less cryptic than D1@something. Use perpendicular and parallel relations rather than horizontal and vertical – which way is up??

3:45 pm Official end - me

Whew! Full of information, tired, worn out, etc. But what a trip! Now I have free time, but the pavilion is being torn apart, lots of people are leaving, some people are going to a show, I went for a walk. During the conference, I had not had time to venture out on the town, so I went on a walking tour for a while. It was fun to see the glitter and lights of everything, but after a while, they all started looking alike. I think fatigue was a part of this.

So was this trip worth the cost & effort? You bet! The training, the face time with SW employees, the contacts made, the fun, all added to the value. Should you go next year? Take a good look at the advantages and see how the trip could benefit you.

One more thing I like about the people at SolidWorks. Back at the airport on Thursday morning, I was sitting there at the gate waiting for my Southwest flight to board, sitting next to a friend that had also attended SWW. I was watching the people go by, and thought I saw someone I knew - Vic Leventhal. Could it be? No way, I was told - why would he be flying Southwest? I decided I just had to find out, so I caught up with him, and sure enough, it was Vic. I like it when an executive of the company proves his total commitment to the company and, in this case, lack of extravagance.

Last year I ended with a list to keep in mind when planning for the next year. I looked at that list again and it's still so relevant, I have repeated it here, with just a very few updates. Take a look.

1. Register very early to get a spot in the Discussion Groups & hands-on sessions. Too late and they are all full.
2. When you check into your accommodation, take the time to find out where to park your bags on the last day, if need be.
3. Study the agenda before registering to see what classes fit your schedule, your type of work, your experience level, and your interest. Sometimes you will want to attend a class just to see what it's all about.
4. If you want to meet with a SW employee, try to arrange it ahead of time. Everyone is quite busy, but they are there to listen to you, so grab the opportunity and plan for success.
5. Take specific examples of questions & issues. It's easier to call up a model to discuss, than to draw a picture.
6. Take along pictures of some of your work. When people ask what you do, "a picture is worth a thousand words."
7. Take a camera, digital if possible. You will enjoy sharing the pictures back home.
8. Keep in mind that you don't need to write down everything you see in a breakout session. If you hear it, write it down. If you see it on a slide, it will be on the presentation CD, or downloadable before the official copy arrives.
9. Wear comfortable shoes & clothing – lots of walking, sitting, interacting with people. No ties needed. ☺
10. There is generally plenty of food once the conference starts. Make sure you check out all the offerings.
11. This year there were 8 laptop computers set up with internet access, however, some of the time they were all busy. A WiFi equipped laptop would have been handy.
12. Take plenty of business cards – I didn't run out this year, but thought I had plenty – until the end!
13. Don't forget to make your voice heard on the different subjects – enhancement surveys, customer satisfaction surveys, etc.

Wayne Tiffany, CSWP