LET'S BUY A PROJECTOR

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What fun! I love to spend other people's money, so let's get started. Way back in Winter, 2003, my article "*Presentations and Projectors*" appeared in the Solo & Small Firm Section Newsletter. It had a heavier emphasis on presentation skills than on projectors, but nonetheless covered the essential features of projectors. But it's been a long time, and maybe you didn't even see it, so let's review the basics first.

One of your first considerations is the ***lumens***, or brightness of the projector. What will determine your needs will be how much light will typically be present in the environment where you are projecting. The brighter the ambient lighting, the more lumens you will need to make sure your image is easily seen, unless the room is very small. In a very small room, your projector will be closer to the projection screen or surface, and you can get away with less lumens and still have a bright and clear image.

When you price projectors, be sure to price the spare lamp bulb, and ask how long it will probably take to get a replacement. Some bulbs can run as high as $400 to $600 dollars. Bulbs are guaranteed for a certain number of hours, so be sure to keep a log of time the bulb is on if you want to take advantage of that warranty!

The problem is that often there is a backorder on bulbs, because most are manufactured offshore. I've waited as long as six months for a replacement bulb, on more than one occasion. That means you need to order a spare and have it handy well before the anticipated expiration of your current bulb. Bulbs degrade over time, even if unused — like a battery sitting in the drawer — so it's a balancing act between being prepared, and losing some of the useful life of your expensive bulb. Here's a little hint learned the hard way: don't forget to take your spare bulb with you if you are doing a presentation where equipment failure could spell disaster.

Another very important consideration is the ***throw distance*** you will require. This is the space between the projector and the screen / projection surface. For example, if you will typically be using the projector in small conference rooms, you want to make sure that it has a short enough throw distance to focus clearly with a decent image size even though it may be situated very close to the screen. If

you've ever seen someone struggling to increase distance between the projector and the screen in order to get a clear image at the right size, you know they didn't take throw distance into consideration when making their purchase. You don't want the image so large it blurs off the edges of the screen. On the other hand, if you're going to be in a large room where the projector is very far from the screen, you will need a long throw distance. A large ***throw ratio*** enables a projector to display a big image in a small room. The throw ratio is obtained by dividing the diagonal size of the projected image by the distance from the front surface of the lens to the screen. The more flexibility you need in throw distance and throw ratio, the more expensive the projector will be.

Weight and ***size*** are becoming increasingly unimportant considerations as projectors are getting more powerful and smaller. However, if you must transport it on planes or carry it around town, the extra cost of the ultralight and/or downsized model may be justified. I've also noticed that the noise level of projectors is rarely a factor discussed anymore in product reviews, and isn't even noted on some product specification sheets. My guess is that the decibel levels have become much more controlled (lower) over the years as the technology has improved. But in a very small room, differences in operation noise may be very noticeable.

Increasingly one must consider the types of ***media connections*** that will be needed, and make sure the projector is equipped to handle that media with the types and sufficient quantities of connector ports available, and the necessary cables to plug into them.

Projectors have both input ports and output ports. Input ports support such things as computers, and video devices such as VCRs or DVD players. Output connections enable the projector to serve as a connector between the computer and other display sources, such as ELMO or DOAR document projectors, or to connect to external HDTVs, white boards, sound speakers and more.

Some projectors offer remote control and mousing. Some come with cables, and some don't. A few even provide the ability to project from a flash drive, and leave the computer at the office. I wouldn't base my decision on these factors, but I would certainly take them into account when doing a final compare of specific models.

Another consideration is the ***native resolution*** of the projector. For simple presentations with a few lines of text on the screen, you probably don't need anything more than SVGA (800 x 600). For presentations that may include, say, a

spreadsheet or PDF image that you want the audience to be able to read, or maybe a video clip, a better choice is XGA (1024 x 768). This matches most of today's laptops.

Aspect ratio — the ratio of the image's width to its height — goes hand in hand with resolution. Most of today's laptops are trending toward wide-screen display. However, most projectors come with a native aspect ratio of 4 x 3. Depending on what you are projecting, if you need to ensure that a wide-screen image doesn't look squeezed, you may need to pay closer attention to this consideration and pay a little more. For a typical PowerPoint presentation, however, 4 x 3 aspect ratio will look perfectly fine.

A consideration which wasn't even around when I wrote my 2003 article is that of which ***engine technology*** best suits your needs. There are three basic options: **DLP** (digital light processing), **LCD** (liquid crystal display), and **LCoS** (liquid crystal on silicon). Each has its own strengths.

Single-chip DLP projectors tend to be small and lightweight. And they tend to be the most affordable. However, single-chip DLP projectors suffer from what's called "the rainbow effect", where light areas break up into little rainbows of red, green, and blue when you shift your gaze or an object moves on screen. It's been known to give some viewers a headache. Three-chip DLP projectors avoid this problem, but they're far more expensive.

Most LCD projectors are bigger and heavier than equivalent DLP projectors. They tend to cost a little more. Bulb life is shorter, too. But there is no rainbow effect, and images usually remain crisp and clear with very little annoying waiver in clarity. However, some low-end LCD projectors produce a slightly pixilated image when viewed in close proximity to the screen.

LCoS projectors avoid both the rainbow effect and image pixilation. However, they tend to be bigger, heavier and far more expensive than equivalent DLP and LCD projectors. For the vast majority of you reading this article, you don't need LCoS.

You can't realistically set a budget for your projector until you determine what your needs are. For example, if you need a projector to use in courtroom, you need something that will do well in bright light, has great clarity, can be positioned relatively close to the projection surface without sacrificing size of image, and can be hooked up for presentation on other mediums, such as TV. You will probably need

sound capability, too. On the other hand, if you have a small to midsize conference room and you want to use it for in-house CLE or client presentations, you won't need as bright a projector, and you will know precisely the size of projected image you want, and the throw distance from approximately where it will consistently be situated. You may or may not need sound capability.

Once you know your needs, there will be a range in price for projectors that will get the job done for you. And you can be confident you won't pay for capabilities you don't need.

Now it gets really easy. Just take a look at reviews from reliable sources, and compare specs of suggested top models side-by-side. Your price range will guide you to the one which hits your sweet spot and provides the most bang for your hard-earned buck.

Ok, let's get going. We need to locate a projector which will be used in relatively small conference rooms, where the lighting can usually be dimmed. That means we don't need a lot of lumens. Probably 1000 – 1500 will be more than adequate. We won't have the ability to situate the projector far from the screen, so we need a relatively short throw distance. We want to make sure that the size of the viewable image will be large enough even though there isn't a lot of distance between projector and screen, so our throw ratio has to have some variability. We'll be doing primarily PowerPoint, with some images here and there. However, we're occasionally going to do a live demonstration of what's on the computer screen, meaning we need an image sufficiently detailed for the viewer to read and follow mouse movements without strain. So, an XGA resolution is needed.

Finally, we know that we're not going to be hooking up to a lot of fancy equipment. This is a projector for basic educational presentations in small venues. So the usual ports provided will be sufficient. We don't need sound now, but want to make sure that we can at least hook up to external speakers later if that need changes.

All right, our needs are determined. Now where to go for reviews? We start at the search engine using the keywords "projector review" and make sure we're searching only for items which contain *both* words.

Reviews will abound. Here are the sources I trust the most:

- CNET
- PCMAG.COM
- ProjectorCentral.com
- ProjectorReviews.com

We want to look at the most current reviews. No sense reading about equipment ratings from 2008, is there? We visit PCMAG.COM first and search for projectors priced at $1,000 or less. In reality, based on our needs, we can expect to pay under $500, but that isn't available as a category. We sort by price, low to high, to quickly take a look at all the listed models which have been reviewed in the desired price range.

As we go, we check off several models to compare side-by-side. When we're done reviewing, we are provided with a neat chart that easily lets us compare all the models by feature. If we don't like a model after reviewing the full specs, we can remove it easily from the comparison. (Not all models listed have been reviewed, and in fact we had to visit another of the review sites above to get reviews on some models.) We can print to PDF or paper and look it over later. But that's not necessary. We narrow the search quickly to several models of DLP projectors, all under $500.

Next, we go to one or more trusted vendor sites to compare price. I buy quite a bit from Tiger Direct, and have always been satisfied with delivery, product, and service issues, so we head there first. Sure enough, one of the models we've selected is in stock, and the price point is a satisfying $369.97. For that price we can get an Optoma EP728 DLP Projector with 2700 lumens, XGA native resolution, an image size range from 24.6" to 300" inches diagonal, and a highly adaptable throw distance range of 3.9 to 39.3 feet. The projector comes with a 1 watt speaker, a carrying case and remote control, has a small footprint, and weighs only 4 pounds. There is a 12 month parts/labor warranty.

Equally reassuring was an overall review of Optoma, identified as one of the world's largest manufacturers of DLP projectors. According to the review, not only are they one of the best selling brands in the world, but their manufacturing arm has manufactured projectors for other well known brands, including HP/Compaq and Dell.

So, there you have it. A successful shopping experience. We've actually gotten a bit more than needed — for example, 1000 lumens would have been sufficient but wasn't offered on any of the models — at a satisfying price. Oh, and did I mention the replacement lamp is only $175 and was in stock at several vendor sites?

We've added the projector to our Tiger Direct shopping cart. Now all I need is your credit card number and address for checkout, and this shopping lesson will be concluded. No? Well, you can't blame a gal for trying! Happy shopping, folks.