

Suggestions, Tips, Help

towards preparing a BUSINESS PLAN

for setting up a wide format printing service





Caption for front cover photographs: (left) Garry Kerr at his fine art print shop, (right) Dr. Hellmuth and Tipos GraficArt owner at print shop with Agfa Grand Sherpa printer.

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Abstract

Sooner or later you may need to finish a Business Plan. If you are a start-up, your bank or loan company will request a Business Plan before they are able to respond to your ideas.

But you also need a Business Plan to survive the practical aspects of wide format inkjet printing. That's where our entire Survival Series is so helpful.

Few people will have an interest in telling you what to expect after you have just paid for your new Wid-getMaster Printer X-0000. The sales rep wants to sell that printer and as many accessories as possible. But if they told you everything else you really needed to buy, you would go into shock and possibly not buy anything at all.

It is probable that you wish to earn a profit from your business. This implies that you learn how to survive the moment of purchase by selecting the appropriate brand and model. But before you get to the actual purchase, you might wish to think things over and do some planning. So as part of our year 2004 educational program, we have added this new title, "Help towards preparing a Business Plan."

This report is appropriate for setting up a print shop in-house in any corporation, for setting up or expanding a sign printing company (primarily with water-based inks), for a screen printer wanting to expand into digital imaging, for photographers, and for artists. We note, however, that many sign shops wish to enter the lucrative market for giclée printing, so we have included many tips for that (plus we have an entire series on giclée printing).

FLAAR does not need to sell you any one particular printer brand. Our goal is to assist you to learn which is the appropriate printer and precisely what additional items you need to go with it. The best brand of printer for a sign shop is not necessarily the best brand for a giclée printer. And if you do billboards, you want a totally different kind of printer (probably solvent ink). These are all reasons why we do not tout any one brand. In our own facility we have Mimaki, ColorSpan, Encad, Epson, Hewlett-Packard, and an Iris 3047 giclee printer.

Comment for wide format printers for corporate in-house use

If you are a corporation and want a simple wide format printer for use in-house, for your department or work group, then you don't really need a business plan.

What you need are the FLAAR Report SERIES on survival (so you know which printer technology to buy, and why), the FLAAR Report SERIES on RIP software and color management. The FLAAR Report SERIES on signs will be helpful since most of what you print in-house will be signage of one kind or another. This report by professor Hellmuth covers all kinds of presentation posters, and all the things that big companies need to reproduce on wide format inkjet printers.



In fact to gather together the survival, RIP, signage, inks and media documentation for you, we have created an Enterprise Series for government agencies, educational institutions, and corporations of any size who seek an in-house printer. You can find the Enterprise Series in the premium second level reports on www.wide-format-printers.NET.

Introduction

Although it is preferable for you to work out your own personal business plan, we can indeed suggest some basic facts of life relative to:

- Physical facilities
- What kind of staff will you need
- What kind of equipment will you need
- What about software?
- And don't forget all the little things that no one else warns you about
- What kinds of things can you print in order to generate income, and profit?

Physical facilities: How much space will you need

The following facts are for commercial companies who wish to install or expand their wide format capability. If you are an individual, buying a printer for home, hobby, or retirement business, see the next section.

If you are in the high rent areas of the New York to Boston corridor, or in San Francisco, your space will be limited. But if you are in an industrial park, your rent will cover more acreage.

Some printers are fed from behind; others from the front. You need enough space in front to take the prints off without getting them ruined with dings.

If you intend to print on flat or thick materials, you need lots of space front and back of your printer.

Older Encad printers tend to be messy, with ink splatter everywhere. I do not know to what degree these infamous features have been overcome with newer models. That means you can't use them on carpet or anything where stains might be ugly, or damaging to the floor materials.

You might not want to put a ColorSpan on a white carpet either. But they are not as messy to work with as older Encads, which were legendary.



Space for trimming, cutting, lamination and mounting is usually overlooked. Finishing your images will require more space than printing them. Finishing is when you trim the images to size. You can print them to size, but then you have to trim the image on a table, by hand. Your printer has a trimmer, but it cuts

only in one dimension, and only roughly. No matter what, you will need a trimmer and a substantial table area to lay out your prints.

If your table is not large enough, and a single millimeter of the print goes over the edge of the table, that edge of the print will pick up a ding. You can't get rid of such a crease, even with lamination.

Most prints can be totally trashed within a few minutes unless someone is really careful. Merely picking the prints up out of the printer can destroy the image in any of the following manners:

- If the image is not yet dry, if one part of a large print touches any other print, it will stick, pulling off the ink.
- If the image is large, it will sag. You will get a ding mark where it sags. You will get countless more ding marks and creases when you attempt to pick it up.

Many clients will not accept a print with this many creases and dings in it. Students at the university here are a bit more forgiving since obviously we don't charge them commercial prices.

Your table will need a cutting mat, or glass, and special cutting rulers (so you don't slice off your finger tips).

Space considerations for using your printer at home or in a small office

I successfully used a wide format HP DesignJet in my small apartment in Germany. Kept it in the living room until my German girlfriend said it had to go. Both the printer and I are now at Bowling Green State University.

Thousands of people keep a wide format printer in their basement, attic, converted garage, or in their work room at home. A basement may be a bit humid for the prints. If the garage is not insulated it too may be very humid for the printers. Humidity is tougher on dye inks than on pigmented inks. But you can buy a dehumidifier at Wal-Mart or Office Depot. You can use pigmented ink to escape some of the problems of humidity on dye inks. Besides, your prints will quickly leave your garage or basement on route to their new locations.

I had no trimmer and no laminator for the first few years but if you intend to operate a commercial venture, you will need a trimmer for sure.

If you are working at home we suggest you consider a printer which loads the media from the front. Canon has perfected front-loading on their imagePROGRAF W7200, W7250, and pigmented ink model, the W8200. FLAAR has reports on the 7000-series and on the 8200. You can order all reports in the-matic series from www.wide-format-printers.NET.



Temperature control

Inkjet prints do not like high heat.

Humidity control

Inkjet prints do not like high humidity; humidity is worse than high heat. Together they will cause serious problems.

You need a dehumidifier, and that may require a system for the water to be drained away by a hose all the way to the outside of your building. If you have to drain it yourself by emptying out the bucket then the machine turns itself off over the weekend when the bucket is full.

Someone wrote and asked about salt spray from a nearby ocean. I am guessing that salt spray is not good for inkjet surfaces either. If you are close enough to worry about salt spray, your humidity is probably your real concern.

Dust control

At trade shows, when I stopped at a Roland trade show booth and asked why their printer was banding and leaving horizontal defect lines all the way across the print, they answered “there is a lot of dust stirred up from the trade show visitors.” Of course a trade show facility is spotlessly clean and scrubbed every night so this glib answer did not convince me.

But at least this shows that Roland itself recognizes that dust is indeed bad for any printhead, but especially bad for piezo printheads (Epson, Mimaki, Mutoh, Roland).

A filter which does not ionize the air is useful; this implies a HEBA filter system. Honeywell makes them. You can buy them at Wal-Mart.

Debris and imperfections on the surface of the media, from the media itself, are also not good for piezo printheads.

Additional suggestions on what to watch out for are included in the FLAAR Series on wide format inkjet media.

Controlling emissions and odors

Some liquid laminators emit unbearable odors. Any other solvents are not healthy either. Solvent ink and UV-ink (photoinhibitors) release unpleasant odors. Vinyl smells bad also. Otherwise, regular water-based printers themselves do not emit noticeable odors which have (so far) caused much comment or regulation. Of course we have no way to certify what is in the emissions that you don't smell. Breathing can be hazardous to your health in our modern world.

Electrical Considerations

If your printer has a heater or drier it may require 220 electrical current. Most professional laminators require 220 electrical wiring. Otherwise, most normal printers operate on regular household and office current.

Staff required

Most start-ups consist of me, myself, and I.

This implies you know Adobe Photoshop version 6, 7 or CS (version “8” without the number). You will need to learn how to operate a RIP, color management software and measurement tools.

You will spend long hours testing paper. I highly recommend taking copious notes. It is actually a shame that no one has published such notes. In effect that is what the overall FLAAR report system is about, but we cover a wide area in overview rather than specific “how to” in detail. However we are moving slowly towards providing more “how to.” Indeed this business plan is a how-to to prepare a business plan.

Once you grow you will probably spend more time on selling and dealing with the clients and thereby require a person to do the printing for you.

Eventually you will need someone to do the packing and shipping, and so on.

Database work, accounting, writing brochures and arranging other advertising also requires someone to spend time.

You will need to work out your own staff job descriptions because each individual situation is different. But practice is a useful ingredient for your staff.

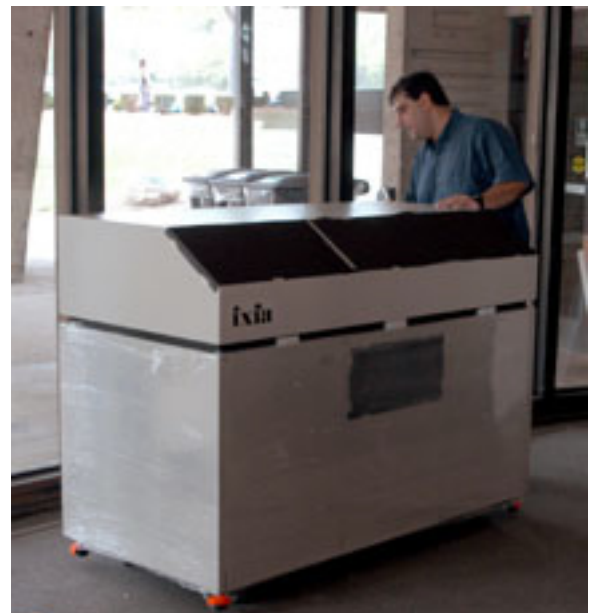
Profitability Projections

Our lawyers would never allow us to publish any profitability projections for the simple reason that we can not be responsible for someone going bankrupt by attempting to blindly follow our suggestions. So realistically in any event, we can only provide guidelines. There are several thousand print shops across the USA. I would guess there are several hundred sizes, shapes and business strategies for them. I would doubt that any two business plans were identical.

Your chances of going bankrupt or otherwise not making a profit are probably about the same as your chances of making a profit. Although we all like to make a profit, lets face it, just printing giclée and photo quality is worth it to many of us. FLAAR sure does not make a profit with giclée printing. But that did not stop us from acquiring a costly Iris 3047G giclée printer. This is because most giclée printing enterprises are retirement businesses or second business. Besides, the experience and ambience is all part of the reason for being for the individuals involved.

But the prime reason why we can't provide profitability projections is that every sector of the country has different cost structure and different clients. Some giclée print studios sell mainly to family and friends. Others deal mainly with mainstream America. A few sell into the wealthy class of collectors and museums. It does not good for us to tell you to sell your Iris giclees for \$350 a print if you are selling Epson prints to your relatives for \$35.

We have no way to know your operating costs. You may work from home, or moonlight at the office. I can't tell you how often someone buying a printer for their company will very clearly indicate that they would also be happy if the office printer could, by the way, be capable of doing an occasional giclée print at night or on weekends. As we do more research we are adding comparative facts on costs. The first such charts, which are unique in the industry for their bluntness, are in the FLAAR Report on the Canon imagePROGRAF W8250.



A major factor in your profitability will be your wastage. Wastage will be massive at the start, especially costly if you use an Iris or Ixia printer. ColorSpan is a tad wasteful. All piezo printers waste costly ink cleaning their heads, something the naïve buyer is not really informed about. Actually the first set of ink, which comes with the piezo printer, will be sopped up just filling the ink lines. Don't be surprised if just a week later you have to suddenly spend several thousand dollars filling up the ink all over again. By February or March 2004 we hope that the results on Prof Hellmuth's documented project on which printers waste the most ink and which printers waste the most media will be available. No trade magazine would dare publish such facts, nor do the pseudo-review web sites either. FLAAR is independent and we are the de facto ombudsman for end users.

You will need to estimate your own cash flow statement, balance sheet, and income statement.

What you can charge

Sign printing associations probably have tables of what you can charge for wide format inkjet printer signs. However in the real world, competition in your area may not allow such rosy prices. Just go on the Internet and look at "prices for inkjet signs," on www.Google.com.

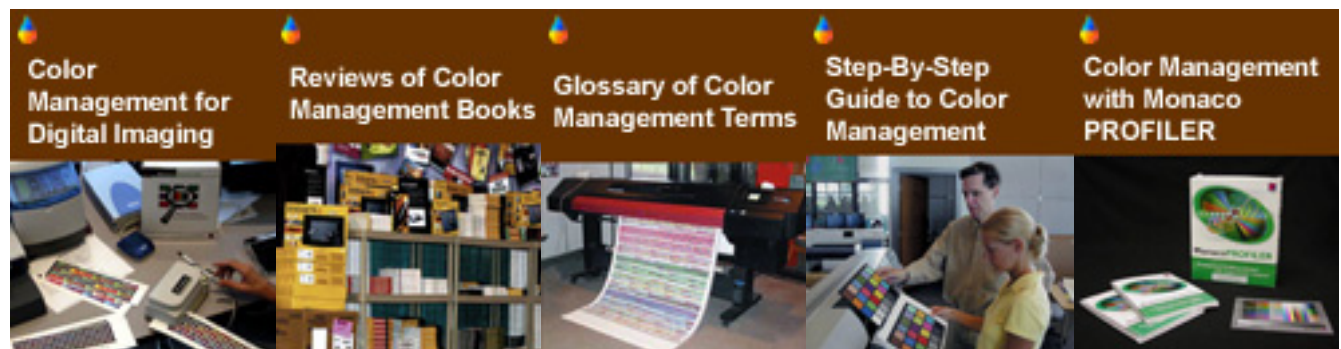
Art Business News can provide some clues as to the going rate for selling giclée prints. You get the best price for an Iris print. But in Middle America your customers will prefer the price of an Epson print. Yet in other parts of the world any paper with the word Epson on the back would not be accepted. Of course these snobs don't realize that the Roland print (which they may accept) uses the identical printheads and its ink is provided by Epson too.

Hence it would not be proper for us to suggest what you can charge because we don't know if you are in St Louis or San Luis Obispo. Print makers with a gallery in Carmel will collect a higher price than a printmaker in Oklahoma.

Help figuring out which printer is best for your specific needs

Pertinent FLAAR reports already cover the basic facts on virtually every kind of printer you could possibly be considering. You need several Series to cover your needs:

- the Series on what you intend to print
 - o signs,
 - o photos,
 - o or giclee,
- the Series on RIP software (which is what drives your printer and where color management and ICC color profiles are handled)
- the new Series on Color Management itself
- and then the Series on Survival (which is pertinent for everyone in every application).



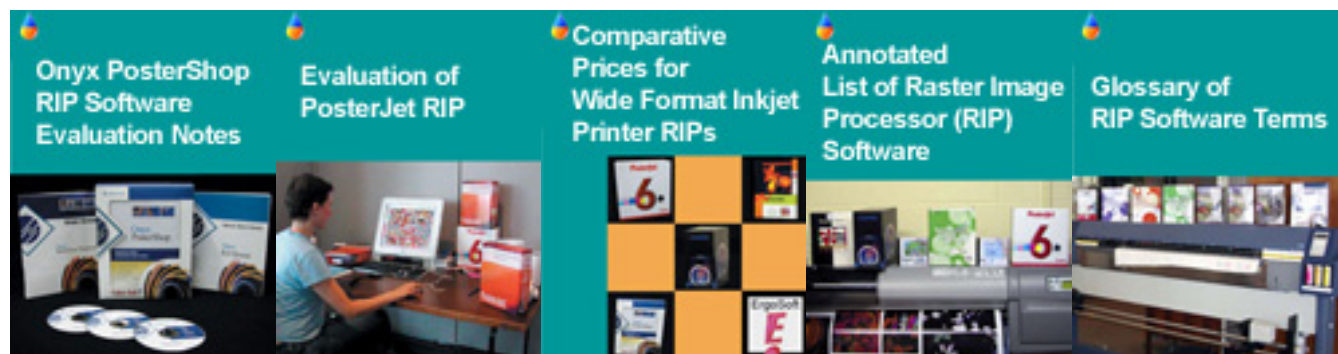
Once you are all set up and actually printing, then you will want the FLAAR series on media.

If you need anything more, then you ought to be signing up for a consulting relationship with FLAAR.

Help understanding what is a RIP and why you want it (and when you can avoid it)

We have devoted considerable effort to prepare broad coverage of RIP software. If you do signs you have to obtain a RIP sooner or later. If you do photos or giclée you will need a RIP for tiling, nesting, and to obtain better control of your ink limits and color management.

But if you are printing at home, only from Photoshop, with no text (no captions) then you can use an Epson alone with its drivers and make do for small files. However if you intend to do commercial production, then you will eventually need a RIP, if for no other reason than to handle color management. For this reason we have several members of our research staff preparing reports on the top RIPs such as PosterShop, Scanvec-Amiable, and our favorites ErgoSoft, PosterJet, and Wasatch. Actually we also discuss EFI Fiery, ColorByte and a total of 70 different brands. All this documentation is readily available in the FLAAR Report Series on RIPs.



Color management is often taken care of within a RIP. For this reason we include a comprehensive report on color management instruments, tools, and software in the series on RIPs. The present review of what you need for a business plan assumes you have the three basic series (RIPs, Survival, and the series on whatever you intend to print: signs, photos, giclée). But we do need to reiterate some basic facts of color management now.

Color Management Costs for a commercial print business

“Color management system” is jargon for everything you need so that the color on your monitor matches the color of the original object and that the output from your printer is likewise the same.

Of course most people presume that you just drop your image into the computer and press the PRINT button and out will come a perfect print. Naturally this seldom happens, usually because you get the wrong colors.

Lousy color is the biggest complaint from new comers and pros alike. The color is largely a factor of what media you use. The identical ink with the identical image will come out with different colors on every different media. Why? Because each media has different chemicals in the complex ink receptor layers (we cover media in an entire FLAAR Series on wide format paper, canvas, etc).

The comprehensive FLAAR Report on color management systems lists and discusses all the hardware and software that you need to consider. This helpful report provides all the contact information for who can provide the tools, software, and training that you need.

Remember to factor the following color management tasks into your start-up costs: you need to profile your monitor, your scanner, and your printer. Probably good to profile your digital camera as well. Your RIP will accept these profiles but will not necessarily allow you to tweak them and probably not to generate them. In other words, you need ICC profile software too. A RIP handles color management, but is not in and of itself, color management software.

You will need a color measuring tool. Get GretagMacbeth or X-Rite brand. The FLAAR Report on color management provides details on the preferred model numbers.

You will eventually want, or need, a course in color management. But struggle through it on your own before you take a course. That way you will recognize what you need help on. Everything else you can learn in advance on your own (no need to pay for that). Our report lists available tutorials (many of which are actually free).

If you use a lot of backlit or other transparent media, you will need a color instrument (such as the T model of the X-Rite DTP-41 T, which can read transmissive media. So factor color management into your business plan. Start your research with the FLAAR Report on color management. Nicholas Hellmuth has put countless hours worth of material into this report to assist you get started.

Once you learn color management yourself, you will gradually accumulate the experience of what colors today's inkjets can reproduce and which colors (such as golds or any metallics) they are not so good at. Specific reds, greens, or blues can be tough to match. Color management does not make it possible to achieve colors that the chemistry of the ink does not allow. Besides, it's not the ink which produces the color of an inkjet print: it's the reaction of the ink and the chemicals in the receptor layer of the media you print on. Surprise, every different media will result in different colors.



Color management for corporate in-house

ColorSpan printers have the equivalent of a densitometer built into the printer. However to do custom ICC color profiles, and tweak them, you may prefer to add a Gretag EyeOne, X-Rite DTP-41 as well as Monaco software (Monaco works with both Gretag and X-Rite color measuring tools).

For two years at Brevard Community College, we handled wide format printing with no color management tools or software whatsoever. At Francisco Marroquin University we print for the entire university, produce traveling art exhibits for museums, and do not yet use color management hardware and software (due to the costs and training involved).

This means that if you wish to install a printer in your building, for your work group or department, you can do just fine with the basic printer. HP DesignJet, with its own ps RIP which is built in, and using HP media, everything is all color balanced within that turnkey system. That is why most in-house corporate use of printers use HP brand.

But if you are a commercial sign shop, you will eventually need to add color management capabilities. We have added X-Rite DTP41-UV and Monaco ICC color profile software to the FLAAR equipment at Bowling Green State University. We are now adding Gretag EyeOne and Monaco software to the FLAAR facility at the other university. In other words, you can start without color management but eventually you will need to become more familiar with it.

Further comprehensive details are in the FLAAR Report Series on color management, with additional information in the Series on RIPs.

Color management for home, hobby, or second business

We have done printing for two museums on campus. Being a non-profit organization means we have to keep costs down, so for the first years we avoided making any expense in color management. Everyone likes the colors and we too are content.

But if you are printing an artist's work, they want accurate color. With archaeological objects the original artist is not around to complain. Besides, we use a BetterLight digital camera to take the original photos. Grayscale balance on a Macbeth ColorChecker produces impressively accurate color with no extra equipment required.

When you first start, you can do okay with none of the costly color management extras. But as your clients get more sophisticated, and as you gather more experience, you will wish to begin to use color management.

Better to get started and skip the expense at first. Then add and update your system in the future as time and budget allows.

Media costs

Not all printers can use all media. You can't merely find a nice media and assume it will work.

- Some media works only on piezo printers.
- Some media works only on piezo printers with pigmented ink.
- Some media works only on Epson piezo printer of one model with one pigmented ink. Epson printers are very picky (Epson makes them this way). Epson wants you to buy their own media so they fix it so Epson media works best on their ink. The printers are given away at bargain prices to get you to become an ink-and-media buyer month after month. All printer manufacturers know that you will spend much more on ink and media than the total cost of the printer itself.
- Most media will not work with oil-based ink (Seiko or XES printers). So if you intend to use oil-based ink your media costs may be high.
- Roland SolJet is labeled as solvent ink printer but does not use media for a true solvent ink printer. SolJet requires its own special media. Thus you may not be able to compete with a sign shop using a true solvent ink printer which can take raw (low cost) vinyl.



- The more specialized or unusual the ink, the more expensive the media.
- The lower the cost of the printer, the higher the cost of the ink and media.

I would wager that media for thermal printhead machines, in general, is less costly and more available in much wider assortment, than media for piezo printers.

FLAAR editors have prepared several reports to assist you. “Media” is any material, paper or synthetic, which has been coated with chemicals so that inkjet ink will look nice on it. Basic facts about media are included in the FLAAR Report series on media.

If you know printer technology inside out, but forget to learn about media, you will have many a painful experience, especially when you attempt to print on after-market media. With over several hundred distinct kinds of media available, we can’t warn you about all the individual pitfalls, but at least we can alert you to the standard most common problems which first-time users have with media.

Now you can see why we have prepared an entire series on inkjet papers, canvas, watercolor paper, vinyl, photobase, and other materials.

Inks and Colorants

Sure helps to know a bit about the various kinds of inks, as well as jargon about inks.

Although media will influence color gamut more than inks, obviously the ink is the limiting factor also. The FLAAR Report on inks is in the series on media.

Ink costs

The more honest of the printer manufacturers admit that the ink usage figures generated by the software of their printers is merely an estimate based on statistical averages. It does not necessarily actually measure the ink which jets out of the printheads for any one given job.

We do not know whether this situation is the same for all ink usage software. But if you were a lamb, would you trust the wolf’s count of how many units of blood the wolf will squeeze from your defenseless body?

But the real reason that ink usage costs are misleading to the extreme is that the printer manufacturer does not warn you about how much ink their printer very carefully flushes down the toilet ever time it decides to clean its own printheads.

My question is, why is the design so shoddy that it has to use liquid money to clean up its act?

Epson printers have the expensive habit cleverly programmed into them to clean the printheads often. This is partially to reduce banding, a generic problem with piezo technology (air gets into the printhead; see the FLAAR Report–Series on “Survival...”). So your printer is purging liquid money, frequently and repeatedly.



The other hidden ink costs are all the trial prints. I don't mean proofs, I mean trials to get the damn thing to print right to begin with. I see acres of media used by the ColorSpan though that pales in comparison to the amount of ink wasted by the Epson, Roland and other piezo printers cleaning their frequently clogged piezo printheads.

Your ink-media wastage expenses will be especially high the first few months. As you learn more about color management you will not waste as many consumables. As you learn how to set the ink limit in your RIP, that may cut down on excess ink laydown as well.

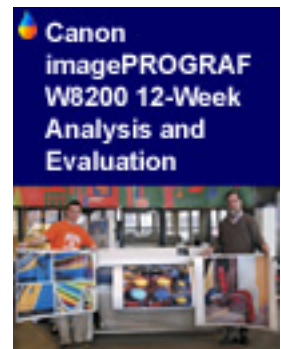
Piezo printers in general (which means Epson) suck up the close to the entire set of ink merely loading the printer. To translate: you buy the printer, you get one set of ink. All that ink goes into filling the tubing and printheads and initial testing. There is effectively not much left over to actually print anything you can sell. In other words, bluntly, the first thing you need to do after buying an Epson printer is to buy an entire additional set of ink. Epson at least discretely sort of mentions this now, though not precisely in their ads. You only find out when you have bought the printer.

We did not notice this expensive habit with Encad or HP or ColorSpan (all use thermal printheads).

If you need assistance with inks in general, FLAAR has a separate report on this subject. It is in the series on media, since inks and media are a system which interact together.

We are also adding comparative ink costs in our new 2004 FLAAR Reports. These charts show ink costs for Canon, Encad, Epson, and HP. By February we hope to have the ink costs for Roland, Mutoh, Mimaki, and ColorSpan included as well. Apparently no trade magazine would dare reveal these surprising facts, but all you have to do is look up the ink costs on the Internet; this is all public information. Kind of hard to buy ink if you don't know the price.

The first ink cost revelations are in the FLAAR Report on the Canon imagePROGRAF W8200, which by coincidence is the first new report of the new year 2004. Ink cost charts will be added as we finish other reports. FLAAR Reports have become the de facto reference standards for the industry, so we want to be sure our material is comprehensive.



INPUT

Your wide format printer, RIP, inks, and media need digital input in order to create their output. So you may need a scanner and/or a digital camera. FLAAR has several reports to help you plus an entire course. The course on digital photography explains what you need to know about pixels and resolution, both in the camera and what your printer needs.

Scanning vs direct digital photography

If you scan over 3200 dpi you will get film grain. If your original is a 35mm color transparency you will get film grain since you have to scan over 3200 to get a reasonable size to print. We easily get 24 x 36 inch prints from a 35mm slide (taken with a Leica, using a tripod; scanning with \$54,000 professional scanner or \$60,000 drum scanner). In some cases you can achieve 36 x 42 inches if the original is outstanding.

We have a report on "how much resolution does your printer really want." There are also several companion reports on scanning: what scanners to acquire, what scanner software is best.

For digital photography FLAAR offers an entire course with more than 30 reports which form chapters in Nicholas Hellmuth's acclaimed textbook.

After you have your printer, you might like help on:

Training

The FLAAR editors personally attend the key training programs in the USA and Europe. Our editors attend dozens of trade shows in Germany and across America. Out of this experience we have prepared a report which lists, describes, and rates all the trade shows. This same report lists, describes, and rates the training programs, seminars, and courses that are most useful for you.

For example, we have attended four training programs by one company during 2001. Prior to that we had never heard of their programs; it turns out they are outstanding. So if we had not heard of them it is probable that many of our over 252,000 readers this year will also not know about these informative seminars. All the details are in this free FLAAR Report on trade shows and training.



Help on finishing: trimming and laminating

Earlier in this report, in the section on how much space you will need, we mentioned you need to be sure to recognize the space requirements for your finishing the prints. Your prints will be damaged if you attempt to move them across the room. Large prints get pinched, creased, scraped very easily (especially on some media). If your layout table is too small and the print goes over the edge, it may pick up the long mark of where it flopped over the corner of the table.

So be prepared to lose money at first in laminating. You have to learn, sooner or later. And you will reach a point where you get it perfect. But at the beginning you will get ripples, bubbles, ridges, media that feeds into the laminator crooked, and all other kinds of problems during the learning curve.

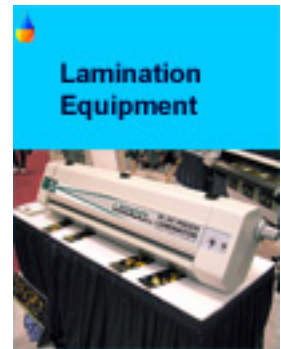
Then you will get laminated jobs back, from irritated clients. They will wish to know why the laminate came unstuck!



This means you need to learn how to reduce ink load. Lamination will not readily stick to excess ink laydown. To reduce ink laydown entails learning color management and having the proper densitometer or spectrophotometer, ICC color profile software, and everything that goes with this in your RIP software. Sounds intimidating, but a lot depends on how picky your clients are. Artists are demanding clients because they want the colors in the print to reproduce their inspiration. Corporate clients need their logos precisely the same color as the original. However many other clients will be more flexible, especially if you let them know the true costs to match a color.

FLAAR does not laminate very much nor do we allow any liquid laminate materials in our facilities due to the stink and related health issues. This is all the more reason to ally yourself with a good dealer (who knows giclée inside out) and make friends with other giclée printers. Look at them as allies not as competitors.

This FLAAR Fast Facts on laminating and trimming lists recommended places for training and instruction in lamination. But lamination, especially spray and liquid laminating (including dipping when they are small enough prints) gets very complex very quickly. You can ruin a giclée print quite easily by smearing it with some lacquer or varnish which turns a tacky yellow with age.



Space needs for storage

Storage of media and laminate is another space guzzler. You need acres of space for storing stuff. If you lay your rolls of media flat, it may develop the flat tire bump.

Foamcore and other types of mounting board is tough to store. If you stand it on its long edge it will sag, which means you can't every get that curve out of it. If you lay it flat it will take up lots of costly space but at least it won't curl as much.

If your mounting board does sag or curl, and you wish to print directly on it, the raised edge may cause a head strike... that will cost you between \$550 and \$1000 to have repaired. It is not a user-replaceable accident either. So you are down and out of business until a service technician can schedule to come and get your printheads replaced.

Of course if you have thermal heads, you can just unplug them, toss them in the wastebasket, and plug the replacement head into the socket. 5 minutes, costs less than \$200. But you still want to avoid head crashes.

Media and ink has a short shelf life, especially pigmented ink. The particles may settle out eventually.

Considerations on packing and shipping

Remember that large prints get dinged very easily (especially on some media). If your layout table is too small and the print goes over the edge, it will pick up the line of where it flopped over the edge of the table. You will therefore need a table larger than the size of your largest print.

Oily fingers of your packing crew can ruin a print. Wear gloves at all times.

Packing and shipping a large inkjet print is a service you need to charge for.

Prepare your clients

Help your clients learn how to send files

Accept files on Zip and CD. We recommend not using Jaz. Actually Zip can be a pain but lots of people have them. Realize that a PC may not always read a Zip written on a Mac, and vice versa.

When people use a CD, be sure they burn in the appropriate dual-platform mode. So have a little "how to" blurb to send them as instructions. Explain all the ways a CD can become unreadable in a few seconds: greasy fingers from butter cookies is one way. Scratching or dropping the disk is another. And I would guess that spilling a cola on a CD disk would run the disk and the reader if you even tried to put something so gooey into a CD reader.

Prepare a brief explanation how to send a file to a FTP site. Tell them where to get FTP software and how to use it.

Warn them not to convert to CMYK, not ever. Warn them that if by mistake the file is already in CMYK, never to convert it back to RGB.

Explain that every time you save an image in Photoshop, you can never return to the original raw file unless you have the original file on a non-rewritable CD.

Explain the difference in dpi and ppi (explained in the FLAAR course on digital photography).

Explain that clip art and stock photos usually do not have enough dpi to enlarge to wide format sizes.

Explain that scanned images have film grain. When they see this grain in the resultant image, they need to know beforehand that is not entirely the fault of your printhead.

Do not accept a JPEG file unless that is the only copy in the world of the needed image. You also don't want a GIF.

Patiently explain why the image from any point-and-shoot digital camera is useless above 24" enlargement (and probably not much good even at 19 inches). It makes no difference how many thousands of dollars they paid... 3 megapixels is not enough. 5 megapixels is barely enough for 24" and only if you are standing far enough away that you don't notice the pixellation. Of course lots of innocents are so proud of their photography that they won't even notice the pixellation.

In some areas an educated client can become a pain. But generally the client finds out sooner or later.

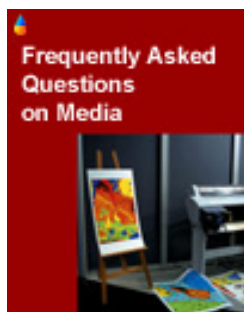
The leading giclée printer in the USA sent me a Roland print of one of my photographs. But I compared it with a 600 dpi print from an HP and at 6 foot viewing distance few of the test jury could tell the difference. They had to look close to recognize the Roland was better.

That's because the fancy giclée printing establishment ran the image off at 720 dpi instead of taking the time and effort to print at 1440 dpi.

If you have a piezo printer, realize that not all media accept 1440 dpi and definitely not 2880 dpi. Those figures are advertising hype anyway; few people would be willing to waste the extra ink and the excessive time it takes to print at this resolution.

The amount of ink you use for 360 dpi is notably less than the substantially higher cost of printing at 1440 dpi. Few manufacturers provide you actual figures on that: the truth could be embarrassing. Cost goes up dramatically as you squirt 2880 drops per inch. In general some printers and some RIPs tend to encourage excess ink usage. We cover these serious cost issues in our Report Series on RIPs.

Explain to your clients the differences in dye ink and pigmented ink. This implies you know the differences yourself. We have learned from our own experience and include our experiences in our report on inks (included in the FLAAR SERIES on media).



Preventative Maintenance of your clients

Show your clients a Pantone comparison swatch book: the difference between the colors they want and the colors inkjet is capable of. Be sure the client realizes that color gamut and inability to duplicate a color is not your fault.

Frankly, I have yet to see any giclée printer who can match all the colors of all the paintings. But you have to match most of them. Artists will have to learn digital reality sooner or later.

Explain that pigmented ink is inherently perhaps 10% less colorful than dye ink, but that in return that pigmented ink will last many years longer. Although all Iris prints are with dye ink (since no pigmented ink will fit through a Hertz continuous inkjet nozzle) it is no longer legitimate to offer fine art prints with any dye ink. I was very surprised to see a giclée print shop offering Epson dye inks for giclée. Epson dye inks are legendary for fast-fade.

Be honest with your clients about fading. Realize that fading is not dependent on the ink, nor on test results from imaginary test conditions. Fading varies based on the humidity, heat, and media you print on. Frankly, I can't imagine someone actually keeping an image on the wall for 200 years anyway. The wall itself won't be there in 100 years, much less 200 years.

The most common cause of grief for artists and photographers who like to print on canvas is the surface coming off the canvas. If you move the prints around among shows, the inkjet receptor layer will scrape off almost no matter what. Fixative and/or lamination may help unless the entire surface comes off the canvas surface (inkjet layer, the color in the inkjet layer, and the lamination on top of all this). Remember, the canvas is not what you are printing on. You are printing on a bunch of inkjet receptor layers on top of the canvas.

If the print is not laminated or otherwise protected, it is the responsibility of the owner to keep it from oily fingerprints, smudging, scratching, and so on. It may be a reproduction, it may be an inkjet print, but it needs to be treated with even more care than the original.

Frequent Causes for having to Eat what you just printed

It helps to recognize what may cause your client to refuse to accept what you so laboriously printed. Failure to match the artist's favorite colors is the main cause of strife. Just show them reality and tone them down (the colors and the artist both).

Any print which changes color in the first months is indeed not acceptable. That will tend to be a problem resulting from the coating of the media.

When you deliver the print to the client, include a list of all the things that can potentially cause problems (see preventative maintenance). Rapid fading you will have to reprint unless the image was hung in a sunny window. But most of the other causes of collapse of an inkjet print will tend to be the fault of the owner's inexperience with knowing how to care for the inkjet print.

High humidity and lots of ozone are seriously bad for most inkjet prints, especially if you use dye ink. Ozone comes from laser printers, refrigerators. Cigarette smoke may not be healthy for inkjet prints either.

Pricing your product

Prices vary by geographical region. What you charge in Monterrey California is probably 10x more than you can charge in Monterrey, Mexico.

Whatever price structure, be sure to factor in everything that contributes to covering your costs. Ink and media are only a tiny fraction of the actual cost of producing a print. But for ink and media aspects, you might add a cost-calculator program such as used by www.artistprintshop.com/price_list.html (at the bottom, their price calculator).

Be sure to calculate wastage into your costs. No matter what you will waste considerable amounts of ink and media (and time). If you start laminating you will waste even more ink and media from ripples, bubbles, and other inherent problems with the learning curve with laminators.

For these above reasons you need to work out your own regional price sheet. Besides, we don't know your expenses in producing a print.

You will tend to earn more profit if you can keep costs down. Thus FLAAR is working at figuring out which printers are most economical to operate. So far it appears that Canon imagePROGRAF printers have the lowest ink costs. They are also fastest, beating the competition handily. All the facts and figures are in the new FLAAR Report on the Canon imagePROGRAF W8200.

Pricing your giclée prints

You can charge significantly more for a print from an Iris than you can for an Epson print (the difference has less to do with quality than with brand name status: Iris is the Rolls Royce of printers; Epson is the Yugo; HP is the Ford or Chevy).

Add a charge for everything you do to the print, such as fixing (clearcoat lamination), stretching, framing, packing, etc.

Marketing

Every part of the world is different. There are probably more artists who need giclees printed in New York and San Francisco, then in Springfield, Missouri.

There is more need for solvent ink outdoor signs in Latin America and China than in the USA (since market here is relatively saturated). Although few collectors would want a giclée printed with solvent ink, there are actually some solvent ink printers which, if done on rough canvas, produce impressive output.

So it is essential for you to do sufficient background research. That is one aspect of a Business Plan that we can't do for you.

- Does a market exist at all?
- Will you be the first person to serve this market?
- Do you have to educate potential customers on your products before they desire your product?
- Or do you have to take market share away from a well established company already in your area?
- Are your start up funds sufficient to see you through a few surprises, disappointments, or unexpected expenses? We witnessed one start-up going bust because he thought the RIP was the only software needed to handle color management. After all the RIP software lists color management and ICC color profiles. So have enough start-up funding so that you can acquire, and learn how to use, everything that is needed.

We know several print shops who experienced financial difficulties due to their Roland printers banding, requiring frequent ink-flushes, and dropping colors (ruining the media and further wasting ink). Yet we know other Roland users who are absolutely content with their printers and do not experience banding defects. We know owners of Epson 9000 printers who found this model was so slow they could not compete because the printer was not productive enough. Other owners of that era of Epson printers have constant trouble with after-market ink clogging the arteries of the piezo system. Fortunately Epson printers get better with every new generation: just be sure to be wary of any used Epson printer because there may be good reason why the original owner wanted to get rid of it.

Remember, the cost of your printer is only one line item. The cost of the ink and media in the first year will probably total more than the entire printer cost, especially for a cheaper printer such as an Epson 7600 or desktop Epson model such as 2200.

Experience suggests that the cheaper the printer, the more expensive the ink and the paper.

Do you intend to compete on the basis of cost (lowest price in town) or quality (best quality available bar none) or service, or some aspects of all of the above?

Do you intend to sell locally, nationally, or potentially internationally?

Are you after a niche market for specialty items, or standard items such as trade show graphics, POP signs, and the like?

If you are competing against someone else, what equipment do they have? If they have an electrostatic printer, that is simultaneously good news and bad news. The good news is you can beat them on quality. The bad news is they can beat you on price. After all, their relic of a dinosaur printer is already long ago paid for. They already know how to color manage the output.

Do you intend to operate face to face (bricks and mortar) or via e-commerce, or a mixture of both? If you intend to sell over the internet you better learn Macromedia DreamWeaver, the best web site software. Personally I like Adobe GoLive but designers prefer DreamWeaver. An immature web site makes you look unprofessional.

You do need to learn how to do it yourself, because you can't just pay someone else to design you site and expect that site to function. FLAAR has several full-time in-house web designers on staff. Our system would not last a month without them. We work on the site every single day; have for many years. The site is never, ever, finished.

Doing your own Research

Trade magazines are good, albeit perhaps a bit sugary as though all equipment works great and earns a million bucks for a company. That's why success stories are called success stories. Trade magazines don't make a point of publishing "failure stories."

Modern Reprographic, The BigPicture, and DigitalOutput are the main trade magazines for wide format printing. Just realize that all news releases and most articles are written by, or at least for, industry. Art Business Today is good for giclée printers. But if you prefer independent assessments of facts you may



find the FLAAR reports by Bowling Green State University and Francisco Marroquin University more realistic.

What kinds of things can you print in order to generate income, and profit?

Every specialty kind of printing will entail a learning curve. Some of the applications are highly specialized and we don't have experience in all of them.

Each application may require its own kind of media. Some applications require a dedicated printer just for that application.

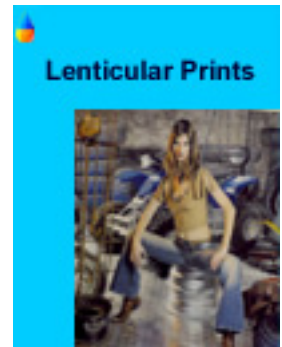
When you see all the great applications you can print, don't assume that your make and model of printer can handle them. An Epson, for example, may be too slow; ink and media may be too expensive, to seriously compete as a sign printer.

Lenticular prints

Lets take lenticular prints just as an example. Does your printer have enough DPI?

Be sure you have enough clients who really want lenticular prints. In other words, don't set your hopes on a fad. Do common sense research to see if a market really exists for your applications.

Be sure to obtain the FLAAR Fast Facts on lenticular prints; available at no cost from our university.



Total Cost of Ownership

Individuals who are about to buy a printer for their hobby look only at the price of the printer. They buy the lowest priced model they can find.

Companies who are about to buy a printer look at the total cost of ownership. That means the cost of

- the extras and accessories
- consumables (ink and media)
- hidden expenses that no one warns you about

Costs of extras and accessories are cleverly kept separate by Epson. You often have to pay for the stand, you have to pay extra for the network card. With HP all these things are included in the original purchase price.

Costs of hidden expenses are the inks for any piezo printer. The ink that comes with the printer is soaked up by priming the system. Sometimes you have to buy a complete new extra set of ink (costing over a thousand dollars) within a week of installing your printer. Ahhh, the miscellaneous items that no one may have told you. Or if they have it buried in small print, the implications (meaning the cost) were not clear. So suddenly the \$2,800 printer becomes a \$4,000 printer.

Another hidden expense is the constant wastage of ink in flushing out the printheads to keep them from becoming clogged. This flushing of liquid money down the drain is necessary in all printers using Epson piezo printheads. We tend to get complaints from owners of Epson and Roland. We have experienced this first hand with our Epson 7500. On several occasions a single flush was not enough. Sometimes

six complete ink purges were necessary to get rid of banding and other defects such as dropped colors (an entire color which simply refuses to print, usually half way through the print, ruining the entire image and wasting all the ink and media).

Cost of consumables may be higher for a piezo printer, especially those which do not work well with most media. Epson is best known for this habit.

To understand the true cost of ink, compare the cost per liter. Multiple that by the number of colors.

Then realize that printing at 1440 dpi means more ink is squirted onto your paper than at 600 dpi. If you are buying a 2880 dpi printer, your ink costs could soar. Fortunately printing at 2880 is so slow that not many commercial companies could compete with anyone using a thermal printer at 600 dpi. We found out that most giclee printing places cheat and print at 720, figuring the end user will never notice the difference. We learned this when the largest giclee printing company in America sent us samples from their Roland. They were only 720 dpi. Roland is too slow at higher resolution.



Now you can see why both our universities prefer thermal printhead technology. Uses less ink. You can select from a vastly superior range of media, much at very low cost. Plus, if you use a RIP and know color management, you can lower the ink laydown percentage and save even more.

Cost of software, you need to calculate both RIP software and color management software.

Some RIPs can not be upgraded. Hence you are stuck with the entire \$3,000 to \$5,000 cost, and can never update, upgrade, or even use that RIP on any other printer. Yet if you have the FLAAR Report SERIES on RIPs, you can learn which other RIPs can easily be updated, upgraded, and some of which can run as many extra other printers as you wish.

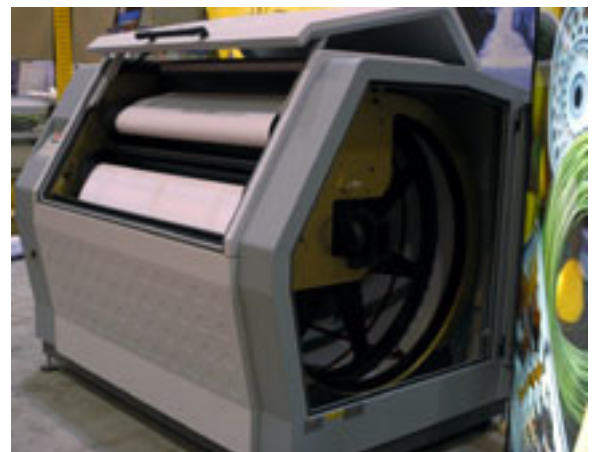
Color management is covered with a special report on this subject in the same FLAAR series on RIPs.

The little things no one may have told you about

Solvent residues come not only from your solvent ink printer but also from liquid lamination process. Some liquid laminating processes emit fumes many times more harmful than a solvent ink printer. The most offensive liquid laminators may require a separate room. If not, every neighbor in your building may file a suit to have you evicted as a public health nuisance. But other liquid lamination machines are UV cured and result in little or no fumes.

Lambda and LightJet printers use chemicals which must be stored and disposed of properly.

Be sure your cost estimates include the actual expense of handling chemicals and exhausting or cleaning up the nasty smelling fumes.



Find a good supply of lint-free white gloves. You should never pick up inkjet media without gloves. Your fingers will leave an imprint of their oil; that part of the media will not print (actually it will print, your complete fingerprint).

Most people devote effort to figuring out which printer to buy. But few eager buyers think of checking out the place they buy the printer from.

We get many horror stories from people who purchase a printer, RIP, inks, or media from a place which could not provide support. The buyer usually blames the situation on the printer. But in most cases where we know the printer's capabilities, we suspect the problem was that the dealer was either uninterested in spending any time helping the client once they paid the invoice, or was incapable of providing technical support even if they wanted to.

The art department on our campus bought their Epson printer before the FLAAR evaluation facility arrived. The art department was unable to obtain what they felt was adequate service to get the printer up and going. Six months later we were able to use clout to have Epson resolve the issue directly.

When our Epson printer gets indigestion, the tech support staff at Parrot Digigraphic has been able to get it fixed much quicker than even Epson America itself.

Just realize that if you did not buy your printer at a place which also offers service, the service center is generally not available to provide assistance. Their tech staff is dedicated to their own customers. For these reasons we recommend you select your dealer carefully. That's why we have a recommended dealer for Epson and two for HP.

Consulting with Nicholas Hellmuth

If you wish to make an appointment to consult with Nicholas in person at an upcoming trade show, next opportunity is PMA, ISA, DRUPA in Duesseldorf, then Photokina in September-October (Cologne), SGIA, then PhotoPlus Expo East in New York. A consulting fee is required in advance. The easiest time to be sure he is not on the move is during breakfast, lunch, or dinner.

If you have purchased any four FLAAR Series you can have 30 minutes telephone consulting with Dr Hellmuth in person, or lab manager Brent Cavanaugh, for a flat \$300, or an entire hour for \$400 or visit with Nicholas at a trade show; same fee plus the meal cost.

If you have purchased any five FLAAR Series you get 30 minutes telephone consulting for \$200, or an entire hour for \$300. Or, you can drop in and visit us in person for \$300 per hour or visit with Nicholas at a trade show; same fee plus the meal cost.

If you have purchased any six FLAAR Series you get 30 minutes telephone consulting for \$100 or an entire hour for \$200. Or, you can drop in and visit us in person for the same fee the first hour, \$300 per hour thereafter or visit with Nicholas at a trade show; same fee plus the meal cost.

If you wish Dr Hellmuth and/or Brent Cavanaugh to visit your facility, anywhere in the world, fax 419 372 8283 or e-mail FLAARtest@aol.com for price list for on-site consulting.

If you wish complete training in color management, this is available only on-site (your place or ours), and is best done over two days.

Telephone consulting can explain what tools and software you need, but we can't rectify your ICC profiles by telephone (but we sure can by on-site visit at your place).

Telephone consulting is primarily to answer your general questions as best we can and to assist in deciding what makes and models of hardware and software would be optimal for your specific situation. We can also answer your questions about scanners and digital cameras. Assuming you have already read the FLAAR Reports, we can usually resolve your situation in 30 minutes on the telephone as follow-up.

If you wish to walk the trade show floor and get Prof. Hellmuth to explain the pros and cons of each printer one after the other, with the printer in front of you, cost for a 1-day six-hour experience is \$3,000, or \$2500 if you have already purchased five or more FLAAR Report Series.

Obviously consulting fees are non-refundable.

Dr Nicholas M. Hellmuth, FLAAR
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fax 419 372 8283. Please fax your complete list of questions. Indicate whether this is a new first-time enterprise or list what equipment you already have or are about to buy if you are an established company. Our services are equally available for newbies as well as for Fortune 500 corporations, Ma and Pa print shops, or individuals who wish to establish their own printing system for their own work. Everyone is welcome.



Your comments are welcomed

You may be facing additional hurdles that we did not consider. Our comments based on our experience may not be appropriate in your different situation. Thus we welcome your feedback, both positive and negative. Constructive critique is always appreciated. Send to FLAARtest@aol.com.

Let us know whether you wish us to publish your name, or not.

Bibliography

FAST, Duane (dfast@artcft.com)

Laminating Room Makeover: A guide to keeping a dust-free, well-stocked finishing room. *Digital Graphics*, January 2002, pp. 49—51.

Resources: Trade magazines

Modern Reprographics often has success stories. It would help to have histories also of companies which have failed, but I can understand why they don't appear.

Sources and Resources on the Internet

www.egraphicscompany.com/Articles/theartofgiclee.html (includes some of the kinds of information you need to know if you are going to set up a giclée printing business).

<http://islandart.com/artists/guide.pdf> (nothing on giclee, as though coming from a time warp, but is interesting nonetheless, on how artists should self-publish)

www.micropubnews.com/pages/issues/1999/699_largeform_mpn.shtml (FOCUS ON: LARGE-FORMAT PRINTING: The Big Decision. Inkjet systems are better and cheaper, but should creatives buy them or continue to outsource? by Mark Smith. Although it was not the author's intent, he actually gives the start of a list of what you need to survive in large format inkjet printing).

Bibliography specifically on generic Business Plans

Plenty of old stogy books readily available in your library and Barnes & Noble also. But nowadays the basics are readily available, for free, on the Internet.

www.bizaccountingsolutions.com/business_planning.htm#Sample%20BP (sample outline of a business plan)

www.ksu-sbdc.org/PDF/bp_guidelines.pdf (business plan guidelines)

www.planware.org/bizplan.htm (White Paper, writing a business plan).

www.venturea.com/business.htm#OUTLINE (outline of a business plan)

www.wisewomen.org.nz/words/BUSPLAN/plan2.htm (outline and some useful tips)

Legal notices

Inclusion in this study by itself in no way endorses any printer. Equally, exclusion from this study in no way is intended to discredit any printer. The same is true for the RIP, ink and media choices.

Advisory

We are quite content with the majority of the specific printers, RIPs, media, and inks we have in the two FLAAR facilities at the two universities. We would obviously never ask for hardware, software, or consumables that we knew in advance would not be good. However even for us, a product which looks good at a trade show, sounds good in the ad literature, and works fine for the first few weeks, may subsequently turn out to be a lemon.

Equally often, what at first might be blamed on a bad product, usually turns out to be a need of more operator experience and training. More often than not, after learning more about the product it becomes possible to produce what it was intended to produce.



But we can't guarantee or certify any make or model nor its profitability in use because we don't know the conditions under which a printer system might be utilized in someone else's facility. As a result, products are described "as is" and without warranties as to performance or merchantability, or of fitness for a particular purpose. There is no certainty that your enterprise will make a profit even if you adhere to all aspects of these tips for a business plan. That is simply because we do not know all the factors surrounding your facility, your market area, the amount of competition awaiting you, nor the general state of the world economic situation. Any such statements in our reports or on our web sites or in discussions do not constitute warranties and shall not be relied on by the buyer in deciding whether to purchase and/or use products we discuss because of the diversity of conditions, materials and/or equipment under which these products may be used. Thus please recognize that no warranty of fitness or profitability for a particular purpose is offered.

The user is advised to test products thoroughly before relying on them. The user must assume the entire risk of using any described hardware, software, accessory, service, technique or products. Do your tests in advance of needing to produce a high priority job which requires instant turn-around.

We have no idea of your client's expectations. What students on our campus will accept may not be the same as your Fortune 500 clients. In many cases we have not ourselves used the products but are basing our discussion on having seen them at a trade show, during visiting a print shop, or having been informed about a product via e-mail or other communication. Trade shows are idealized situations, with full-time tech support to keep things running. The same equipment may not work as well in your facility as we, or you, see it at a trade show. All the more reason to test before you buy; and keep testing before you make your final payment. Your ultimate protection is to use a gold American Express credit card so you can ask for your money back if the product fails.

Heat, humidity, dust, experience level of your workers (whether they are new or have prior years experience): these are all factors that will differ in your place of business as compared with our two universities.

CLICK HERE TO ACQUIRE FLAAR REPORTS



Digitizing



Color Managing



RIPing



Printing



Laminating



Trimming

Please realize that all reports are in Adobe Acrobat PDF format. The reader software is free from www.adobe.com/products/acrobat/readstep2.html PDF files are intended to be read on your computer monitor. Naturally you can print them if you wish, but if the photographic images within the reports were high enough dpi for a 1200 dpi laser printer it would not be possible to download them. So the images are intended to be at monitor resolution, naturally in full color. FLAAR itself makes the files available only in PDF format because that is the international standard. We have no mechanism to print them out and mail them. Obviously if you have downloading problems we will try to help, but please realize that we assume you have a 56K modem (or better) and capabilities to handle a basic PDF file.