

CHARTING THE COURSE OF WIDE-FORMAT

Four top analysts discuss the market's current trends, and where we appear to be headed.

As printer manufacturers introduce new technologies and machines, and consumables suppliers continue to produce an array of media, substrates, and inks, the print provider is confronted with a dizzying menu of choices. Should he make the switch to eco-solvents? How much competition will he have if he adds a flatbed printer? Is aqueous technology already on the way out? Is it time to seriously begin investigating electronic digital displays?

To help answer these questions and others, we turned to four folks whose business is to know just where wide-format is situated now, and where it is likely headed in the future:



•Michael Flippin, vice president, Web Consulting North America (www.web-na.com)



•Tim Greene, associate director, Visual Communications Technologies Consulting Service, InfoTrends/CAP Ventures (www.capv.com)



•Grey Held, principal analyst, Wide Format Production Printing Advisory Service, Lyra (www.lyra.com)



•Patti Williams, consulting partner, I.T. Strategies (www.it-strategies.com)

We asked each of the four a host of questions; their answers should help you better prepare for the near- and far-future of wide-format.

Which wide-format technologies are "hottest" at present?

Grey Held, Lyra: In the print-for-pay market, eco-solvent and low-end solvent printers are hot. A recent Lyra survey of more than 400 print-for-pay shops shows that of those shops planning to purchase a wide-format printer in the next 12 months, 45 percent say that printer will be a solvent or eco-solvent model.

Michael Flippin, Web Consulting: UV-curable/flatbed printers are also selling better—but at much lower unit volumes. The UV-

curable market will be interesting to watch, not just as these printers relate to the graphics industry but also as they further penetrate into specialty (or industrial) applications.

Patti Williams, I.T. Strategies: Both UV-flatbed and eco-solvent printers appeal strongly to particular print-for-pay (PFP) segments of the market that had been lagging in adoption of wide-format digital printing: screen printers and sign shops.

Screen printers are adopting flatbed printers because the

printer format—the flatbed—is familiar to them. A big application focus for screen printers is the P-O-P market. As screen printers adopt flatbed printers, other PFP segments with a heavy focus on P-O-P—such as photo labs and digital print shops—feel the need to purchase the same type of printer in order to remain competitive.

Eco-solvent printers, meanwhile, appeal to sign shops, which generally are small companies. They're adopting eco-solvent printers—which are much less expensive than large aggressive-solvent printers—to enter new markets and also to bring in-house print work that has previously been outsourced.

Tim Greene, InfoTrends/CAP Ventures: There's no question that solvent and eco-solvent are the hottest print technologies today. The acquisition cost of solvent hardware has come down as performance has improved, and the variety of media available for these systems has broadened. Also, they've become much more reliable than the first generation of equipment.

And the “coldest” technologies right now? Which technologies are likely to contract in the near future?

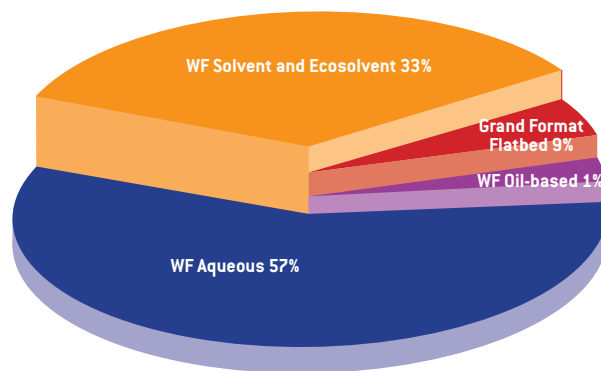
Greene: I think it's a tie between e-stat and thermal transfer. These are largely being replaced by other, more flexible types of wide-format graphics printers—most notably solvent inkjet.

Flippin: If I define 'coldest' as anything not hot, then I'd have to mention aqueous printers in *print-for-pay graphics applications*. Our research suggests that unit sales of aqueous printers for wide-format graphics PFP applications in the US may be declining. Now, this does *not* mean that usage of these printers—the sq ft of media consumed—is declining. Overall unit sales of wide-format aqueous printers may be increasing (as a result of the growing consumer and in-house markets), but from what we see in the wide-format graphics PFP market, aqueous printer sales appear to have slowed to a plateau.

Williams: Aqueous printers might be considered the coldest, but that's only because aqueous printers have been around the longest—and new technologies and printer types generate more hype in the market as they're introduced. In terms of installed base, aqueous printers are still the largest segment of the wide-format graphics market.

Greene: Thermal transfer is most likely to contract in terms of unit shipments because sign shops are shifting print volumes away from that technology to their solvent systems. I think we'll soon add thermal transfer to the list of technologies that inkjet has pushed into a small niche or retired—such as e-stat, pen plotters, and diazo.

PROJECTED WIDE-FORMAT PRINTER PURCHASES



Although aqueous printers make up 57% of projected printer purchases, says Web Consulting, aqueous may have slowed to a plateau as solvents make their impact felt.

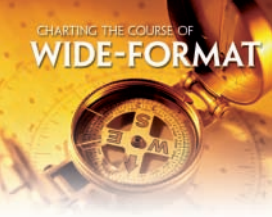
Flippin: Oil is not doing much in the US, although there is some activity with certain Asian manufacturers. In the Korean market, for example, oil-based printers are still very widely used for production of backlit graphics. And e-stat has seen and passed its heyday.

All of you mentioned flatbed printers earlier—have they made the impact on the market you expected them to?

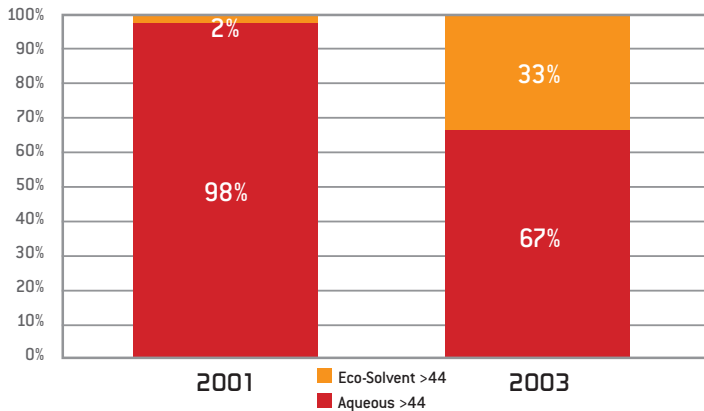
Flippin: Yes, and no. We predicted direct digital printing on rigid substrates of course, because of the output cost advantages—but there's a lot more specialty-use than we might have anticipated at this stage. Also, there's quite a bit more printing on flexible substrates than might have been expected.

Williams: Yes, especially combined with UV technology. Flatbed printers allow PFP establishments to increase productivity by not having to off-line mount signage to rigid substrates, such as corrugated and Sintra

Greene: At this point I'd say “yes.” But I've never really believed that the future would necessarily be about flatbeds as much as about hybrid systems that allow print service providers to produce graphics on both rigid substrates *and* flexible media. For graphics-producing print service providers, it's all about utility—the more prints they can make with the same device, the faster they will start making money with that device. I can see where some pure flatbeds will continue to be made for some specialty applications. But from a graphics-provider standpoint, the volume of work has to justify the space requirement that flatbeds take up. So it seems that the more work you can push through the printer, the higher the upside for that type of printer.



SALES OF >44-IN WIDE-FORMAT PRINTERS Aqueous & Eco-Solvent Models



Eco-solvents have increased their share of the market—33% of printers shipped in 2003 were of the eco-solvent variety, says Lyra.

Hybrid flatbed and roll-to-roll systems allow you to do the widest variety of work.

And UV-curable technologies in general—have these had the impact you expected?

Flippin: Have they made inroads, yes. Have they made serious “impact” on the markets here in the States? Maybe not quite yet, but soon. The longer-term impact is likely to be very significant.

Greene: Not yet, but market adoption of new technologies tends to happen in phases. Usually, only a small number of companies will adopt new technology just on the promise of increased business or reduced cost. The vast majority of companies are like people from Missouri—“show me.” They want someone else to work out the bugs, to take the chances and prove there is a market there. When it comes to wide-format graphics, UV-curable inkjet “fixes” something by allowing users to print on rigid substrates. So far, however, it’s failed to provide the utility that I think is important for print service providers, in that they are limited when it comes to flexible substrates.

Solvents seem to get the lion’s share of the attention these days, even though aqueous printers are probably producing more work. Are solvents coming on that strong?

Held: Yes, in certain categories. For example, of all the 44- to 72-in. wide-format printers that shipped in 2003, 33% were eco-solvent. This is up significantly from 2001, when eco-solvent accounted for only 2% of shipments in this category.

Flippin: In certain markets, the use of solvents may now represent the lion’s share—in China, in fact, solvent is very dominant. But in the US market, aqueous is still dominant from a printer-installed base and media-usage perspective. In looking forward a few years, though, this dominance is unlikely to remain—particularly with regard to media consumption.

Williams: Aqueous printers used to get the lion’s share of the attention. Introduced in the early 1990s, aqueous printers focused on indoor application such as P-O-P and trade shows. As that market developed, PFP shops seeking to expand looked to outdoor signage. Solvent printers are mainly targeted at outdoor markets and therefore were—and are—a good avenue of growth for PFP shops. Because it’s a new application, it gets more attention.

Greene: Solvents are getting a lot of attention for two main reasons: One, they enable a new application that potentially expands the type of work print service providers can do and therefore can potentially expand their business. Two, on the aqueous side, three major players dominate the market in terms of installed base and shipments—Encad, Epson, and HP. The fact that none of these players has a major role in the solvent market (notwithstanding the use of modified Epson heads in some popular solvent printers) means there is this large market with great growth potential that is more or less up for grabs. Aqueous inkjet printers *are* producing more work—aqueous inkjet printers will out-ship solvent inkjet printers this year 3 to 1.

Have eco- or mild solvents all but replaced traditional solvents in many users’ minds?

Greene: That could be the case. We did some research showing that the use and care of solvent-based inks for wide-format graphics printing was of very low concern among print service providers who were considering getting a solvent or eco-solvent printer. So maybe they think of them interchangeably.

Flippin: The difficulty in looking forward may well be the differentiation of an eco-solvent and a traditional (aggressive) solvent. The chemistries are becoming more and more similar (so that eco can adhere to uncoated vinyl), so how do we differentiate? If it smells, it’s solvent? If it doesn’t smell (or doesn’t smell too bad) then it’s eco? Perhaps more to the point, from the point of view of solvent emissions regulations into the atmosphere, solvent is solvent.

Williams: Eco-solvent printers are applicable to particular segments of the market: small shops that focus on outdoor applica-

tions as well as small shops that want to purchase one printer for outdoor and indoor work. A recent I.T. Strategies survey of eco-solvent printers showed that these adopters are using their eco-solvent printers for both indoor and outdoor applications.

Are OEMs scrambling to get a white-ink printer?

Greene: I don't know if "scrambling" is the right word, but certainly there is a lot of development going on in that area because of the potential it offers in a variety of applications, ranging from graphics to packaging. There are already a couple of white-ink systems on the market, like Durst's, and I've heard their customers are quite happy with the new capabilities white ink offers.

Flippin: There are certain applications in wide-format graphics where white is useful, particularly when printing onto rigid transparent plastics or window graphics, and in the future there are likely to be many industrial applications. Yet in the graphics part of the screen-printing industry, white is more a niche product, and the same may emerge to be true in digital graphics as that sector evolves. However, there is probably a greater need for spot colors than is generally appreciated by the digital industry today, and even 6- or 8-color printers are not a total solution for that need.

Let's switch lanes here—what specific media trends have you been noting?

Held: For eco-solvent printers, the most popular medias are self-adhesive vinyl and banner materials. Many of these materials are now being sourced from China [and] average prices continue to fall. For wide-format printers that use aqueous ink, photo paper is the number-one media. Plus, there has been significant growth this year in instant-dry photo papers that use a microporous coating.

Flippin: The media industry is in something of a state of flux at the moment, and many companies have been caught relatively unawares by the rapid shifts in usage patterns between aqueous, eco-solvent, solvent, and now UV media. The ink manufacturers want to build more value into their offerings, by making inks as media-independent as possible, and this is part of the drive toward solvent and UV-curable. Media manufacturers want to keep as much added value in their media by using proprietary coatings with extra attributes.

These two strategies are on a collision course, and there will be casualties. If we take the analog print market as a guide, and this has evolved to its most cost-effective structure over many decades, it would suggest that more often than not, the ink companies will win most of these battles.

Greene: Many substrates that have been used in aqueous inkjet printers [are now being] engineered for use on solvent inkjet printers—coated-product market leaders like Intelicoat and Sihl have launched product lines for solvent inkjet printers and eco-solvent inkjet systems. We're hearing that these new products have been great for the top coaters in this industry. We see leading suppliers to the traditional signage market jumping into the solvent space as well.

Held: The need for wide-format vinyl substrates specially coated for use with aqueous inks is declining. Coated vinyl costs about \$13/sq m, but uncoated vinyl costs about \$3/sq m. Eco-solvent printers, because of the nature of the eco-solvent ink, can print on uncoated vinyl. And with the growing installed base of eco-solvent and low-end solvent printers, uncoated vinyl sales are up and coated vinyl sales are in decline.

Greene: Also, we see a lot of outsourcing going on. Many suppliers of media are examining the opportunity to produce media elsewhere and import products into the markets in Europe and North America, which places a premium on image quality and durability.

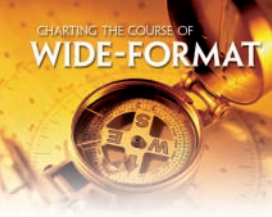
And, I'd be remiss if I didn't say that I see media prices coming down overall, but part of that is the introduction of economy products from market leaders that compete with the low-priced dealer brands.

What about fabrics?

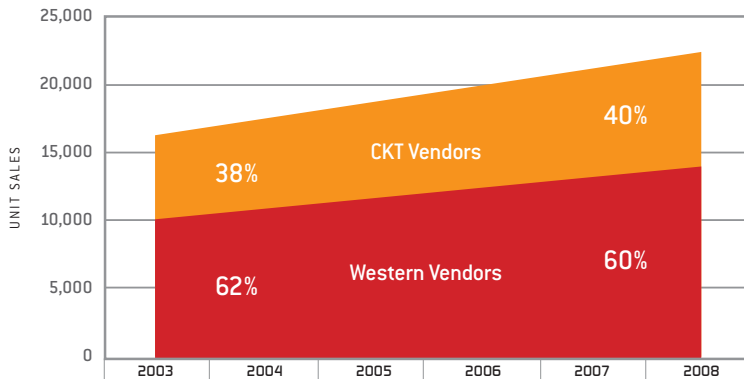
Williams: Fabrics are being used for signage applications, both indoors and out. And in some cases, fabric signage/banners are replacing vinyl. Fabric is less expensive to mail and it can be folded, plus it's replacing something that was already there [vinyl]. It's new and different—two attributes customers are looking for in signage.

Greene: For a while, I believed that fabrics would be big, but I really don't think so anymore. Fabrics certainly are useful in some important ways—such as banner materials—but as a component of the media mix, I believe they'll remain a relatively small piece of the total. The reason is simple: Fabric media has many of the same characteristics that other banner substrates offer but cost more. Where users place a lot of value on the other characteristics that fabrics offer—such as drape—they are unwilling to pay the premium for fabrics.

Flippin: Digital printing has certainly opened up new opportunities to use textiles for banners, exhibition graphics and P-O-P,



AGGRESSIVE -SOLVENT UNIT SALES Asia vs. The West



Asian vendors will continue to increase their percentage of the solvent-printer market, says I.T. Strategies. Projected unit sales will reach almost 9000 units in 2008.

and there is noticeable growth in these segments. While we don't see a revolution happening here, we do predict good long-term growth in the usage of fabrics for graphic printing—perhaps to a point where it becomes 5% or so of the market.

Have third-party consumables (media or ink) made an impact on the market?

Held: It varies by printer brand. Encad printer users are more likely to opt for third-party ink, whereas few HP Designjet users do so; Epson Stylus Pro 9000 and 10000 users are quite loyal to Epson media. In our recent wide-format survey, we asked shops that use Epson brand media, "If your current media dealer stopped selling Epson media would you switch dealers or switch brands?" The majority of these users said they'd switch dealers to keep using Epson brand. In general, dealer brands, like LexJet in the US and Emblem in Germany, are gaining in market share, primarily at the expense of mill brands.

Greene: Indeed, third-party suppliers of media are a crucial part of the market. Major third-party suppliers like 3M, Avery, Schoeller, IntelliCoat, and Arkwright have all introduced products in the past that have allowed digital printers to produce everything from photo-quality graphics to bus and train wraps. We think that applications drive the market, and media enables those applications.

IntelliCoat's glossy paper for solvent inkjet systems is a good example, as is view-through film, latex papers, etc., which have enabled outdoor applications. Then there is proofing media, with companies such as DuPont developing inkjet print media that

closely matches commercial paper grades—they have enabled high-quality wide-format inkjet proofing. And what about fine art? Companies like Hahnemühle have been developing the market for digitally printed fine art for years using their high-quality and long-lasting art papers. Name an application and advanced media has been what made it possible.

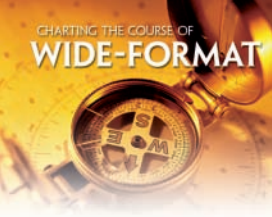
Flippin: Arguably, the majority of media consumed can be described as "third-party media." End users are driven mainly by price, and there is limited brand loyalty here. Also, use of other media does not usually affect the printer or printhead warranty. So "third-party media" is actually dominant in most sectors, except perhaps proofing. When it comes to third-party inks, many printers still primarily use OEM inks. However, there's a sizeable and growing market for third-party inks, and the solvent boom is likely to accelerate this trend.

Will there be a rise in third-party UV-curable inks?

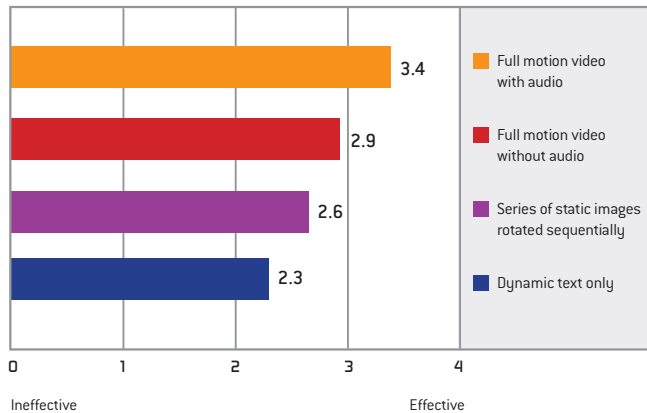
Williams: There will always be companies that will offer third-party inks to the market. However, there are more than 80 types of UV-curable inks offered in the market today and it's a complex chemistry to manufacture. It will be difficult for third-party manufacturers to offer the value that they have been able to offer with aqueous and solvent inks.

Flippin: Not initially like in solvent inks. The IP and patents are much tighter and held by fewer companies in UV technology, so that may hinder the development and growth of a third-party UV-curable inkjet ink market. Also, the new UV flatbed printers are often supplied by companies with very sophisticated distribution networks, and they may fight very effectively to prevent loss of UV-ink sales. Price reductions on printer purchase price are inevitably linked to signing of ink-supply contracts. And, technically, it's also more difficult to reverse-engineer UV-curable jet inks, because they're more machine specific.

Greene: Once we reach critical mass we'll see more ink technology suppliers from the offset world getting into digital UV. A couple of the big guys are already in it—Sericol and Flint Ink, for instance. These guys have a world of expertise in UV-curing technology and access to many of the companies expected to adopt UV-curable inkjet printers in the future. Just as we have seen third-party ink suppliers crowd into the solvent market, we'll see it in UV-curable. Also, just as we have seen in the solvent market, those that make the best inks—not those that offer lowest prices—will be the ones that are around the longest.



PERCEIVED EFFECTIVENESS OF DIGITALLY DISPLAYED MESSAGES



When it comes to electronic digital displays, those displays incorporating full-motion video and audio outpull those with dynamic text only, says InfoTrends/CAP Ventures.

Many print providers still seem wary of the Asian printers that have burst on the scene. Will these printers make even more of an impact in 2005?

Flippin: Yes they will—on a global basis. Our Shanghai office reports that there are now more than 25 Chinese inkjet printer manufacturers, and some of the best of these are developing supply relationships with American, European, and Japanese distributors and OEMs. Inevitably, only the best of these manufacturers will survive, but some may have the potential to become serious players in the global market, including the US.

Williams: The Chinese, Korean, Taiwanese (CKT) vendors total unit sales make up 38% of the total units sold worldwide in 2003; the Western vendors make up the remaining 62%. The CKT vendors are selling more units than most had previously expected—but most of the units are going into their internal markets, where quality and reliability are less of an issue than hardware price. The result: Although the CKT vendors are succeeding in unit sales, the price points are falling so quickly they are struggling to survive.

In the last year, CKT vendors have improved their understanding of international business. In 2003, the Chinese vendors assumed that they would sell their products overseas by simply going to trade shows and signing up distributors. They assumed it would be easy to obtain quality distributors who would sell and service their products. They assumed that their products were reliable and easy to use and the end users would buy them because of their low hardware price points. After a year of limited

success (selling mainly into developing markets), these vendors have learned that gaining international distribution is not a simple task, and to get into major wide-format markets (US, Europe, and Japan) will take a lot more work on their part.

Greene: To date, the Asian suppliers, while offering a very competitive product from a “speeds and feeds” standpoint, are not able to support their products as are the established solvent and eco-solvent players. It’s taken Roland, Mutoh, Mimaki, Gerber, VUTEK, and the others a long time building up a brand and an infrastructure that end users know they can rely on. While some more cost-conscious users will inevitably stray from those brands, we think that in many ways the Chinese and other Asian suppliers add to the confusion, and may actually increase the probability that print service providers will stick with the brands they know.

The biggest impact that they have here in North America, and in Europe, is the effect they have on prices for competitive equipment. We’ve seen price cuts from many of the solvent inkjet suppliers and, no question, part of the reason for that is to be competitive with some of the Chinese and Asian solutions.

Those touting electronic digital displays sometimes say that once that technology takes off, wide-format printing is dead. How do you see this shaking out?

Williams: Certainly electronic display signage will have some impact on signage. However, I would not say that wide-format printing is going to die. First, not all signage will go electronic. Second, new applications in decorative printing, packaging, and other industrial applications are developing and will grow in the future. Printing is not going away.

Greene: There’s no question that dynamic signage will have a role in future advertising campaigns—this is a whole new medium. But this is not the end of wide-format digital print, not by a long shot. Did the Internet kill television? Did television kill radio? Did radio kill newspapers? It has never worked that way in media. Some places where wide-format digital print will no doubt be affected are P-O-P and backlit—where there is already a power supply and usually a captive audience. The advantages of wide-format digital print are too numerous—it’s a transportable, disposable medium, and will be with us for a long time to come.

Flippin: In the past, when a new disruptive technology enters the market, it often rapidly wins market share before settling back to a sustainable market position. TV never eliminated radio or newspapers—they all live alongside each other. We might expect the same in graphic advertising. **BIG**