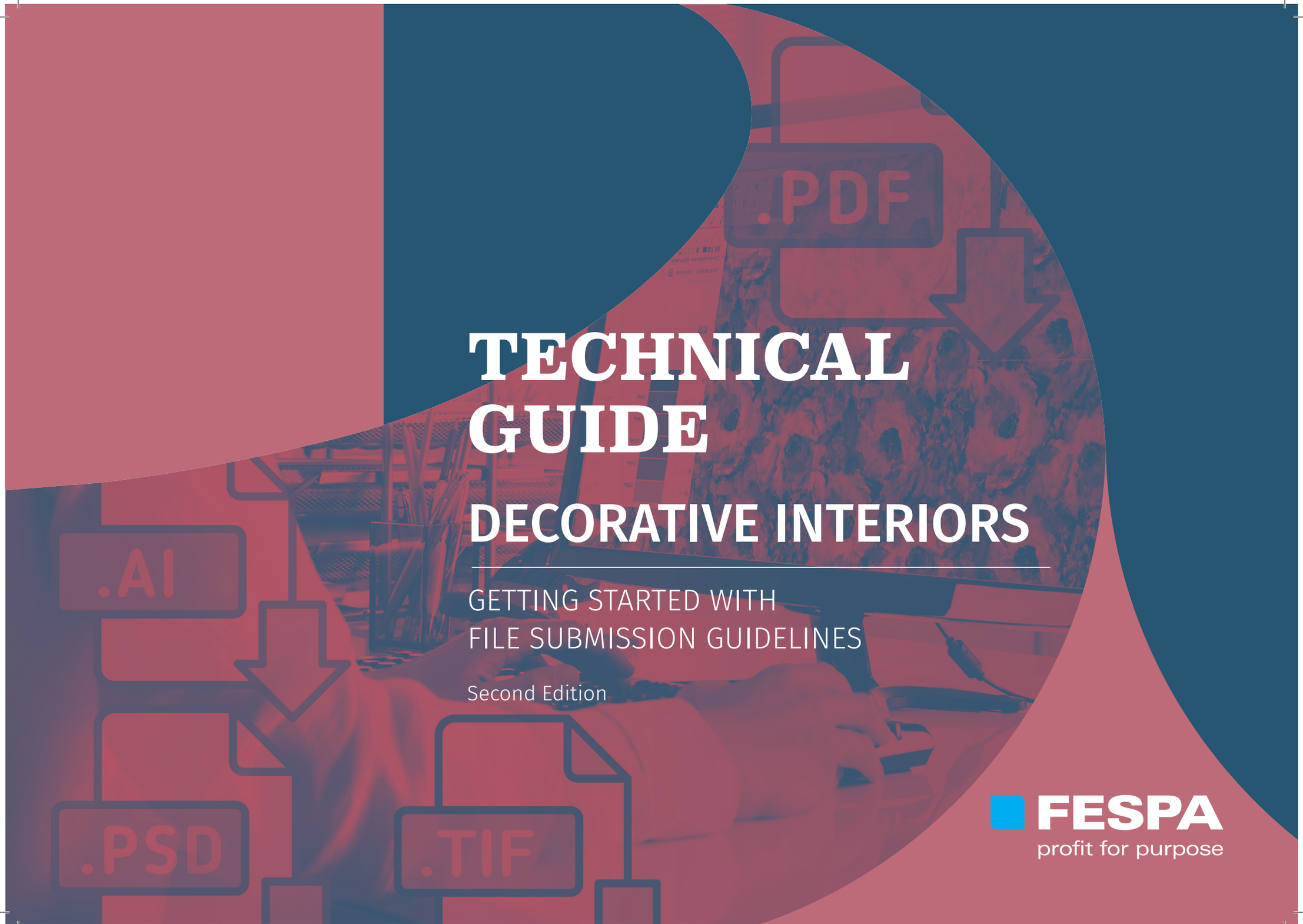


TECHNICAL GUIDE

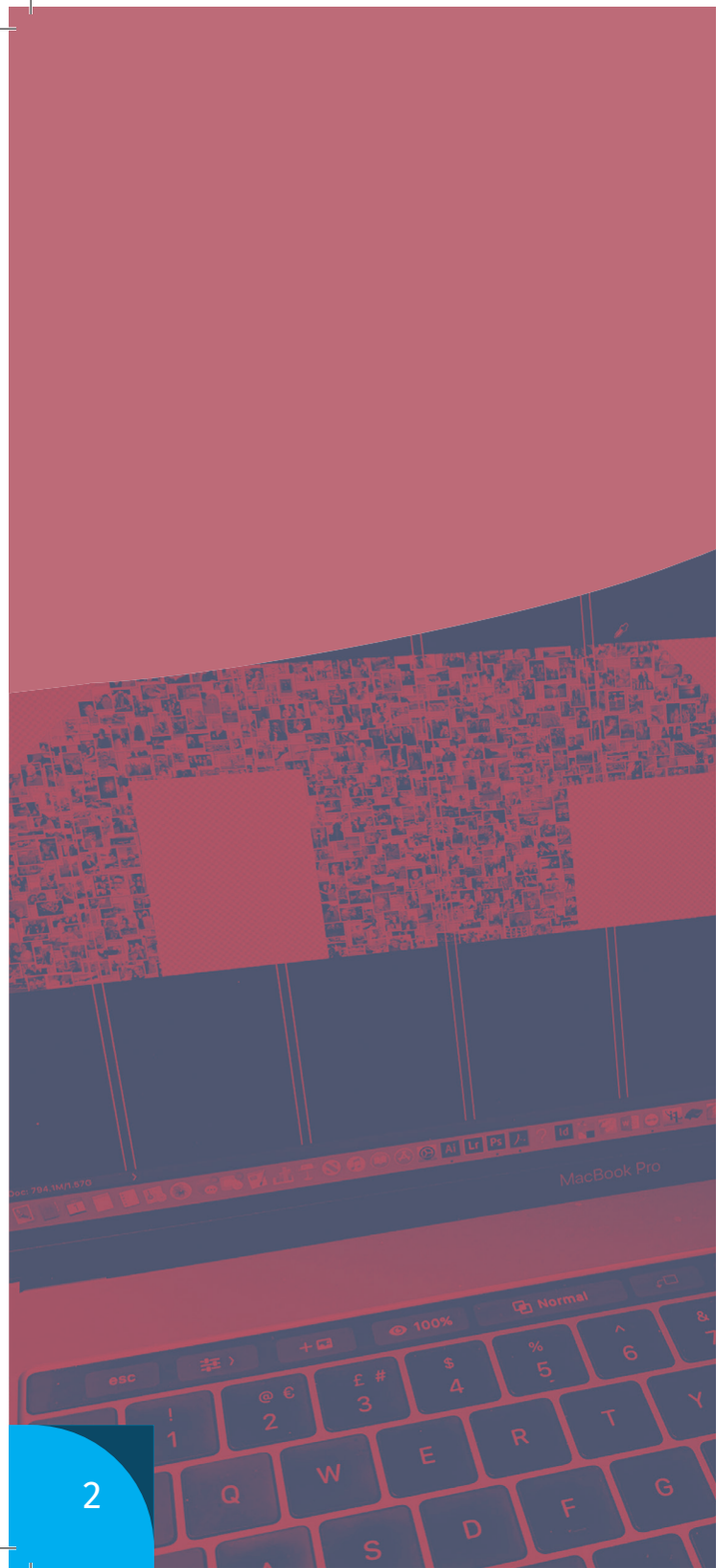
DECORATIVE INTERIORS

GETTING STARTED WITH
FILE SUBMISSION GUIDELINES

Second Edition

FESPA
profit for purpose

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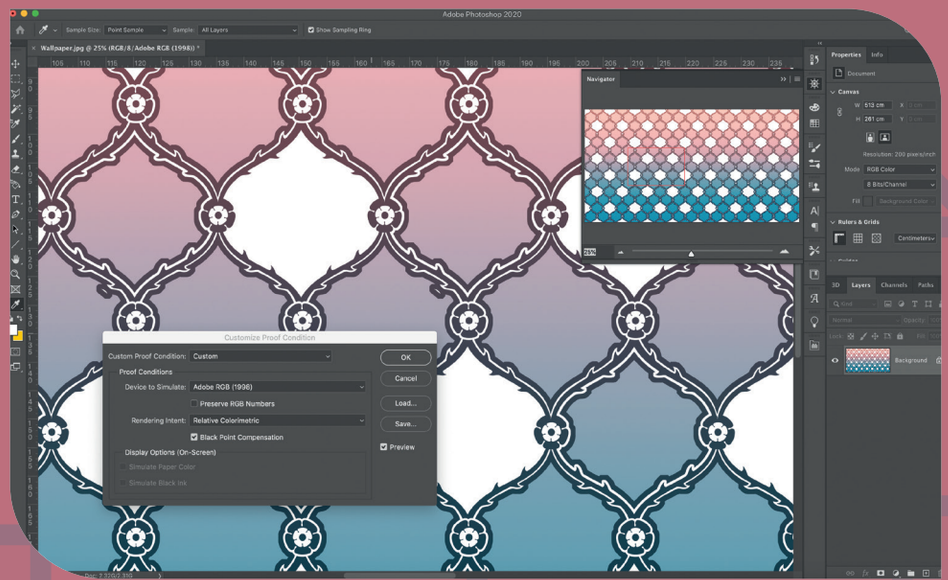


File submission guidelines

Properly prepared artwork is key to every successful print production project, and this is no less crucial when printing across a wide range of interior design applications. While many printers provide guidelines for how to supply artwork, and in detail these may vary somewhat from printer to printer, there are many aspects that are quite generic and commonly accepted. Among them are the image resolution required for high quality print production, and commonly accepted file formats. But when it comes to applied colour management, things often start to get quite complicated, and the instructions may vary a lot. There are different expectations for whether images can be supplied as RGB-images or not, and if so, which RGB colour gamut or profile is preferred. There are several areas of concern but also established best practice for artwork you can follow.

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Whilst there are many image retouching software applications available, it's safe to say that most imaging professionals use Adobe Creative Cloud on subscription. Adobe Photoshop has been around for many years and has reasonably good support for colour management. The only weakness is perhaps how to properly handle spot colours, but more about that later. There are alternatives to Photoshop, of which Affinity Photo may be worth exploring.





Affinity Designer software.

Photoshop is pixel editing software, so it's only suitable for scanned or digitally captured images. For line art, or vector based artwork, Adobe Illustrator is commonly used, however you might also want to look at a challenger, Designer from Affinity which offers great tools at a lower entry cost.

Illustrator was the first software to be able to edit artwork saved as Postscript, and has since been extended to also be able to open and edit PDF files. The PDF/X subset of PDF files excludes features that aren't relevant to printed output, there's no point in

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including a hyperlink for print! An appropriate choice may be PDF/X-4:2008 which supports colour managed mixed content, CMYK, RGB, Greyscale and transparency. PDF/X 4 files require a CMYK output intent that the printer can provide for the final printing device. PDF/X-1a:2001 is still beneficial where the output print profile is known at the point of artwork creation. By eliminating unnecessary elements in the file structure better processing reliability can be expected through RIP servers. A strong link still exists between Postscript and PDF, but Illustrator uses its own internal file format and can save or export file formats such as PDF/X, EPS and Scalable Vector Graphics (SVG).

Most prepress departments will accept incoming artwork as native Illustrator files. Illustrator can place pixel based images into the artwork, but this only works with single page documents unless you create multiple artboards in the same document and export as PDF/X.

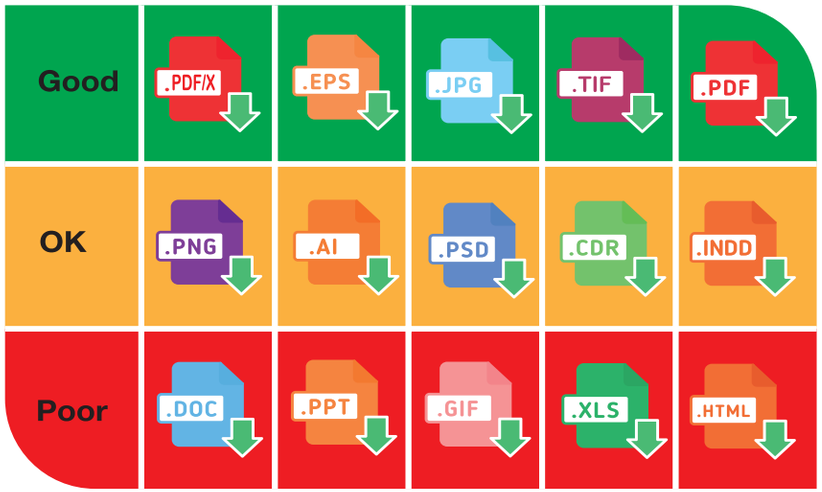
It's important to tell your printed interiors customers the file formats you prefer. Also if they want to create multi-page documents the norm is to use Adobe InDesign or Quark Xpress (or Affinity Publisher) rather than Illustrator. Customers should be aware that InDesign can place both pixel and vector graphics, and although like Illustrator it has its own file format, InDesign can export artwork in a wider range of file formats. Most of the time the safest choice is to submit files as PDF/Xs.

Customers should also have the professional version of Adobe Acrobat Pro DC, since the free Reader version lacks the range of features of pre-flight and soft-proofing which are useful additions. But accurate soft-proofing demands a high quality monitor, and this should be properly calibrated, brands like Eizo, NEC and BenQ all offer monitors that are worth profiling. It should also be noted that soft-proofing stations would usually be situated in an area surrounded by N8 neutral grey paint with D50 or an alternative lighting condition.

While the fonts may be embedded when customers supply artwork as a PDF, it's better to ask them to always supply fonts with their files. Some fonts contain a hidden flag telling InDesign and/or Acrobat NOT to embed them. To avoid problems with fonts



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This table offer a quick view guide to which file types work and the ones that should be resupplied.

in an Illustrator file you might prefer to convert all text to outlines once there are no further edits to make. It is necessary to embed fonts before making PDF/X 4 files or they will error. When recieving InDesign files ensure they are supplied as an InDesign Package to include all the fonts and images which will be linked to the InDesign file.

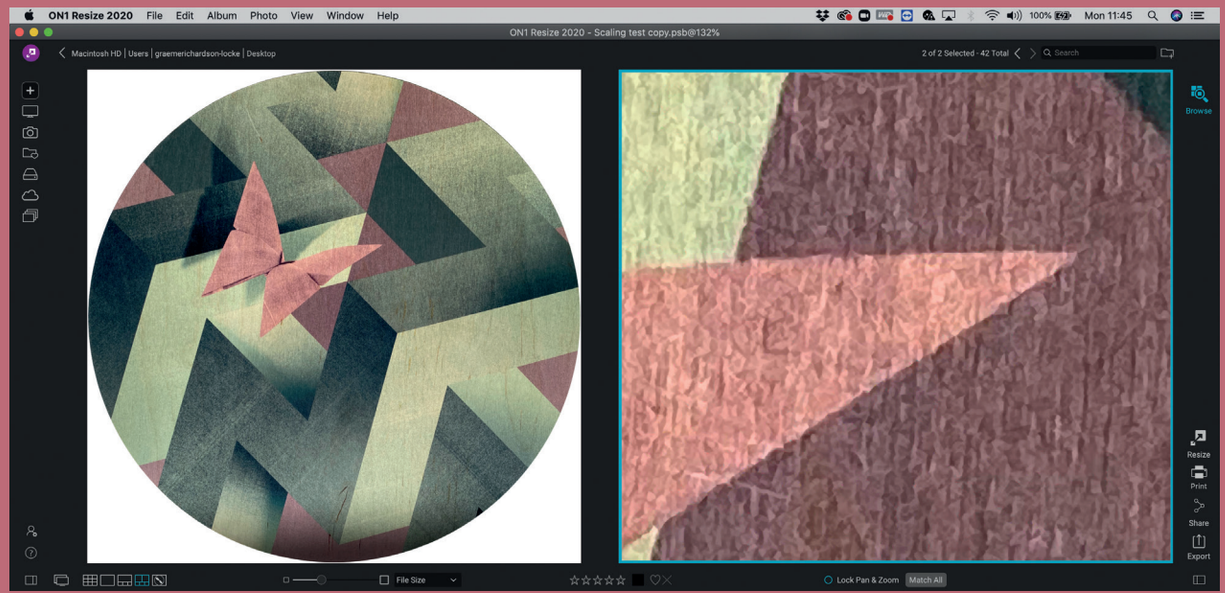


Image resolution

Having files supplied at the correct resolution for printing makes all the difference between a great looking job and a thoroughly substandard one. Where files are supplied as vector images as PDF-X 4 you have the optimal structure to provide easy scaling and best processing of 4 colour process and spot colours. Where files are submitted as JPG, TIF or PNG for bitmap or pixel images there is a good deal of care needed to obtain the best quality print.

There is often confusion about DPI, PPI and LPI as expressions of resolution. DPI refers to dots per inch which denote the output resolution for printers, in the Decorative interiors space where prints may be judged at close viewing distance a minimum of 720dpi – 1200dpi would be expected. If a lower DPI printer is used at say, 360dpi the potential for grainy image with poor gradients falls below par. PPI means pixels per inch, the higher the number the more the detail providing that comes from the original source. For example a high resolution photo is only as good as its native resolution and no matter what you do to a small jpeg to scale it up you can't make a bad file good. There are circumstances where using the ON1 Resize applications either standalone or as a Photoshop plugin will enable very high quality enlarging. It achieves this by re-rendering the file using Genuine Fractal™

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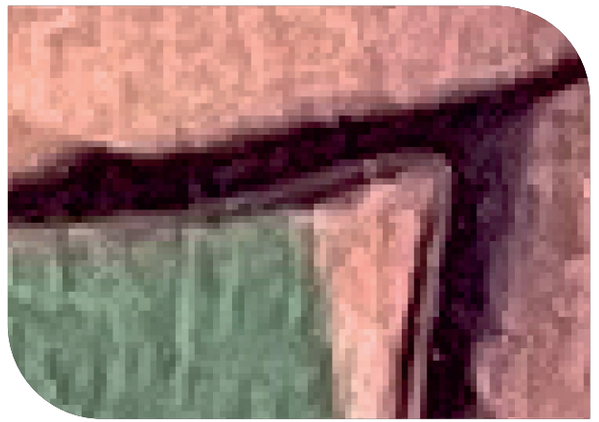


ON1 Resize 2020 software is an affordable toolset for scaling. This image was taken on a smartphone at 240x240mm at 72ppi and scaled to 2400x2400mm for a wall graphic.

geometry and can facilitate enlargement up to 1000%. For mural production this can really help as most customers in a B2C context won't necessarily have the best files.

In wallcoverings you would usually be able to create a decent print quality from a 150ppi file at 100% scale. If you work at 25% scale for a mural remember to request the file at 600ppi.

LPI is used to qualify the number of halftone dots plotted onto film positives for screen or plate making in this case a range between 85 and 100lpi. If your are using conventional printing processes you'll have to determine the optimal combination of screen ruling, dot shape and the tonal value increase curve of the press conditions.



This extreme close up shows pixilation and artefacts when scaled in InDesign from the smartphone jpg.

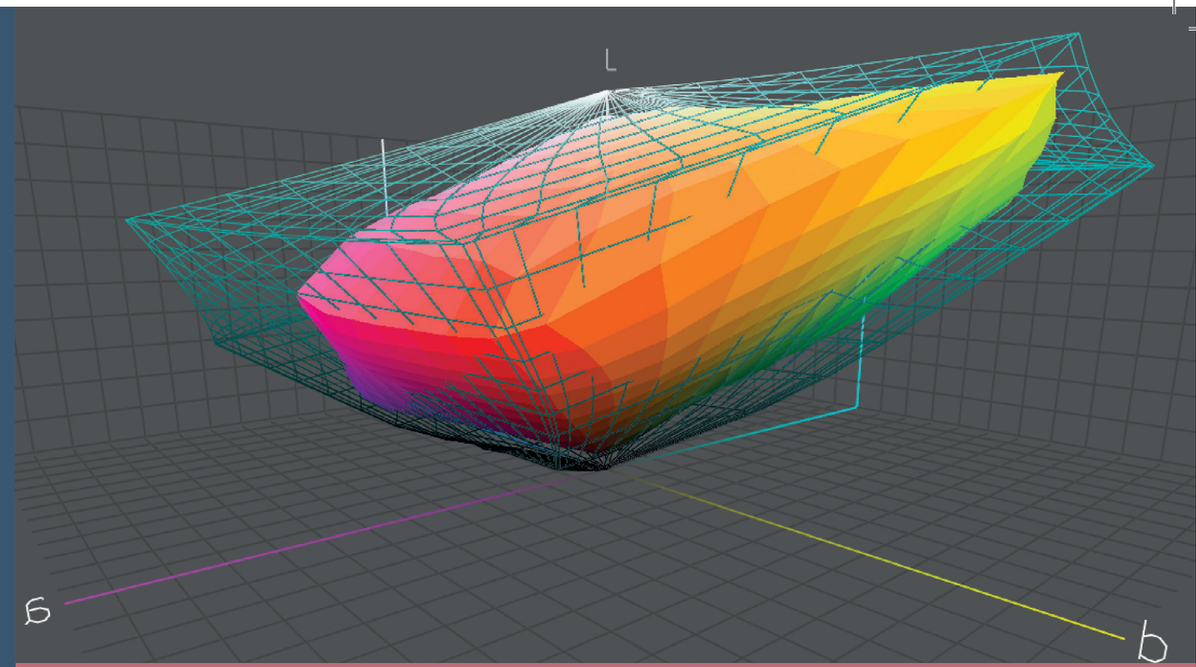


This extreme close up shows the image structure of a fractal based interpolation using ON1 Resize. When saved as jpg there is a file size reduction that is also helpful.

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The final point on this topic is that careful use of file compression is worth exploring, saving a maximum quality JPEG over a full sized TIFF will lead to more efficient processing speed and reduced storage overhead without sacrificing quality. You should also research the RIP software and whether it needs 8bit, 16bit, 32bit or 64bit files and if using LZW compression may create a processing issue.

While it's common to let InDesign resample images when exporting the artwork to PDF, it's safer to ensure the images are used in the artwork without scaling and to switch off the conversion to JPEG in the export. This will make sure that there is no risk that images become jagged in the PDF. So it's better to suggest customers to scale (resample) the images in Photoshop, and place them at 100% in the artwork. In this way the risk of jaggedness is avoided, since Photoshop has much better algorithms in the downsampling than the export function in InDesign has.



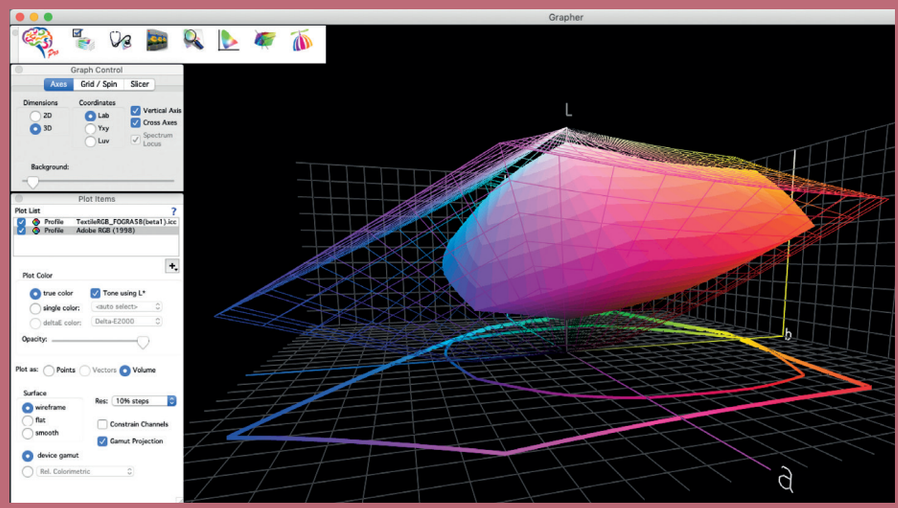
Colour management

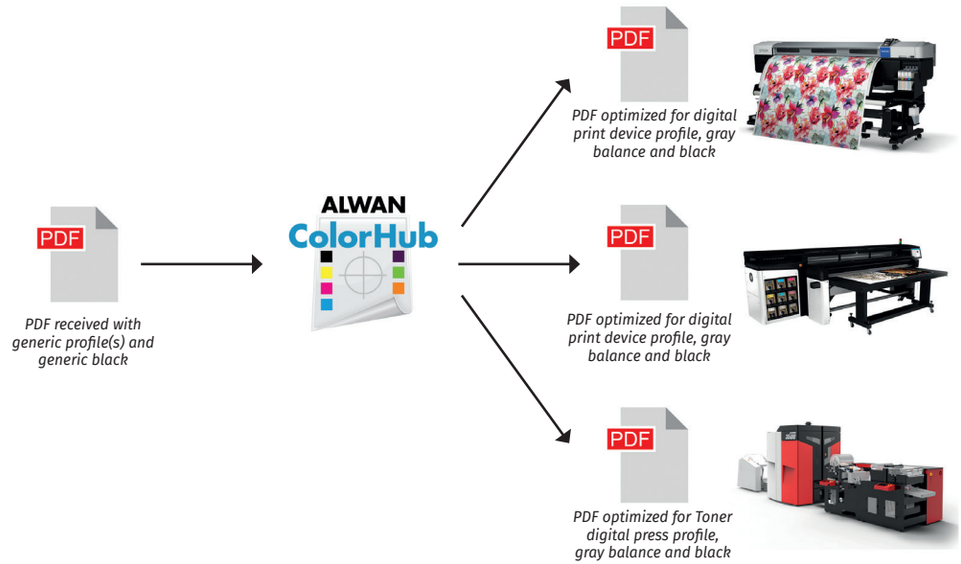
This is perhaps the trickiest issue for artwork submission guidelines, and there are often strong feelings among prepress operators of what is the right or wrong way to handle colour management. It's very common that printers require incoming artwork to be pre-separated CMYK files, while not always being very clear on what type of CMYK gamut this represents. Other printers prefer images as RGB, but may not be specific on what type of RGB gamut or ICC profile they want. With proper colour management in place you should actually be able to accept artwork either in RGB or CMYK, as long as it's absolutely clear what colour gamut (what ICC profile) is used. And you can even accept files with special colours, which are neither in RGB or CMYK.

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One advantage of using RGB is that it's close to how the original images were captured, either by scanning original artwork like a painting or hand made illustrations, or images digitally created or captured using a digital camera. But it's important that when images are edited and adjusted for colour, it's done on a high end monitor calibrated to its maximum gamut. In this way everyone is sure that the colours are what's required and what is seen on the screen. When the images are saved in the Adobe RGB colour gamut, your prepress department will know how best to convert them to CMYK, adjusted and optimised for the printer, ink and substrate to be used in production. Where you need to process large volumes of files, automation tools exist to handle colour management in the workflow, Alwan's ColorHub colour server will adjust files to suit their destination automatically.

Fogra have released Textile RGB Fogra58 beta for textile printers to use as a common working space in RGB. It has a smaller colour gamut than Adobe RGB (1998) but retains the gamuts of many inkjet presses in this area. It presents an alternative solution to the challenges of transforming from the established Adobe RGB (1998) or sRGB to a smaller printer output profile.

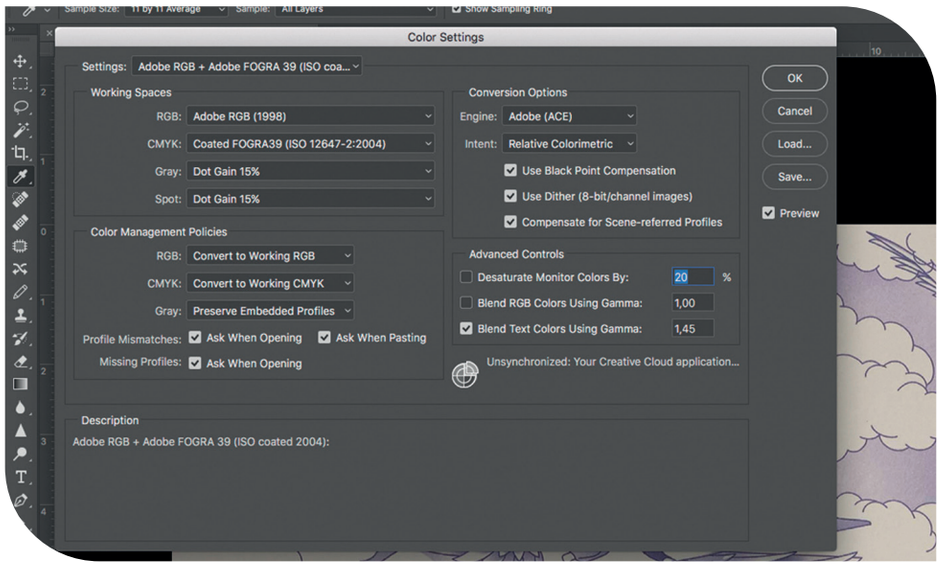




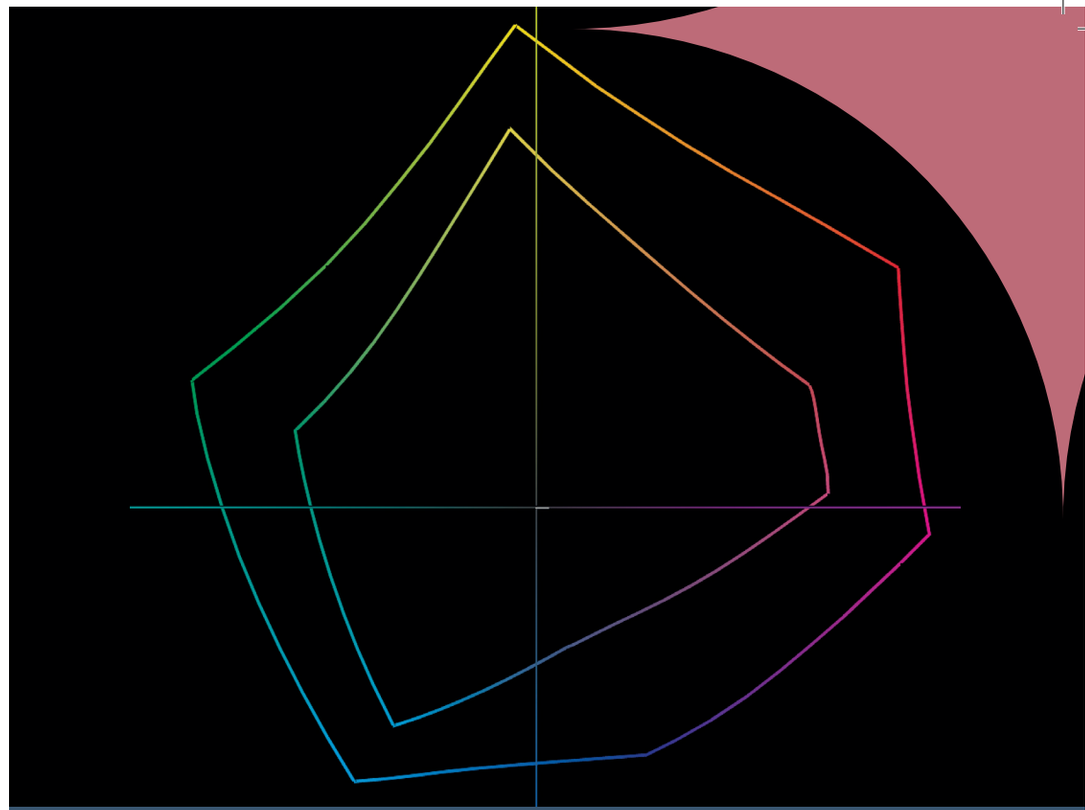
Alwan ColorHub is an automatic colour management server to process files to any output device without having to manually convert file by file.

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If you want to insist that artwork is supplied in CMYK, you need to tell customers which CMYK ICC profile you intend to use, since it's the ICC profile that describes and determines the colour space you work in. The advantage of using CMYK as the colour space for artwork is that it can be soft-proofed for how it will look in print by telling Photoshop, Illustrator, InDesign and Acrobat Pro to use this particular ICC profile.



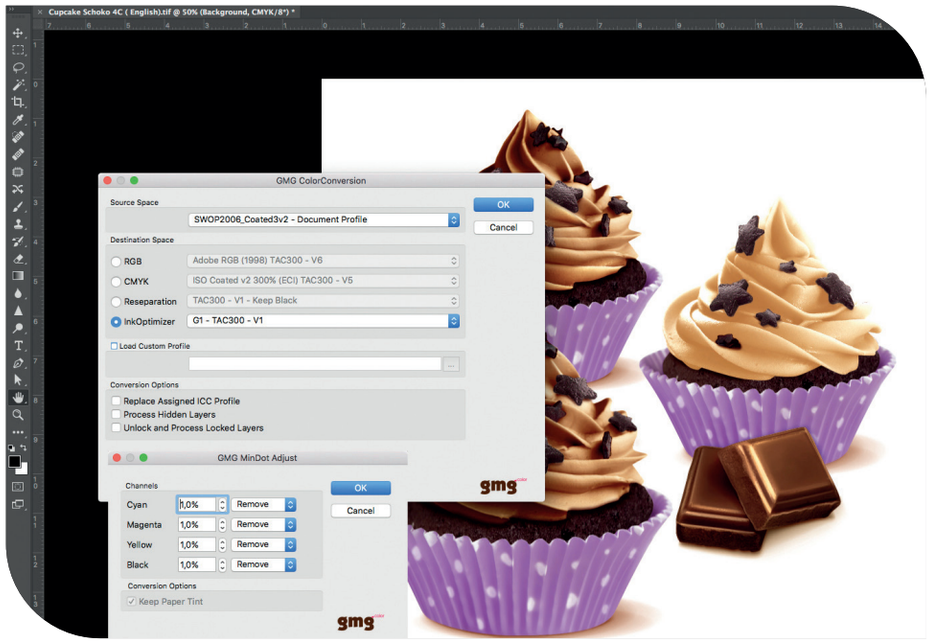
If you use Adobe Creative Suite (or Creative Cloud) for image retouching, you should create a specific colour management setting for the jobs. It is commonplace to use Adobe RGB as the colour space for RGB images, and an ISO 12647-2 compliant profile for the CMYK images, as shown in this screen capture .



This simple comparative slice through CMYK ICC profiles for coated (outer) and uncoated (inner) stock indicates that considerable colour loss can occur if you select an inappropriate profile for the substrate and print conditions you choose.

Customers should be able to do this even with the artwork as Adobe RGB: the difference is that it will only be shown temporarily as CMYK, in the soft-proofing stage. But be aware that if you change to another CMYK ICC profile the appearance will most likely change. You should notify the customer, if you change the colour settings and/or profiles and explain why the original profile wasn't suitable.

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When working with spot colours, there are other tools than Photoshop to use. For example GMG's plugin ColorConversion shown here.

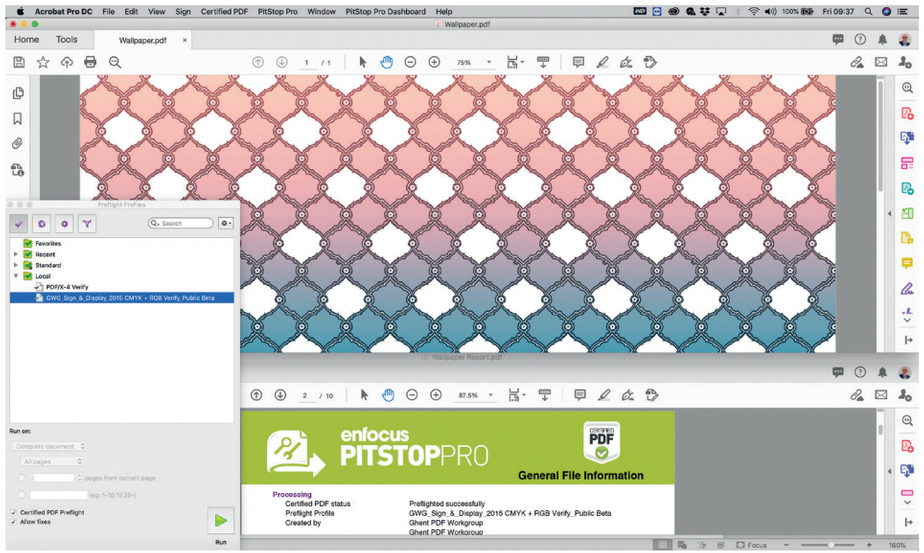
For artwork where spot colours are used, the Adobe Creative suite software does a reasonable job of colour managing those spot colours, but some special solutions have additional benefits. A plugin to Photoshop from GMG called ColorConversion offers a better preview of the spot colours in artwork, and also has good tools when editing the use of spot colours. Caldera and Esko also provide sophisticated solutions for advanced handling of spot colours.

To be sure that incoming artwork is handled correctly in the prepress process you can offer an ISO 12647-7 compliant hard copy proof as confirmation of visual appearance that is objective. ISO 12647-7 is the most commonly used standard for contract proofs and whilst not required is all circumstances remains a useful method of providing clear communication. Another method is to provide a proof that simulates the output of the production printer by using a simulation profile. The only important consideration here is to ensure the simulation profile gamut is smaller than that of the proofer. The latest Epson proofing printers have large gamuts as they use CMYKOVG inksets. Of course the alternative with digital that is pretty straightforward is too print a sample on the press and printing material. They key is be clear with your customers and ensure agreement has been reached and signed off before full production begins.

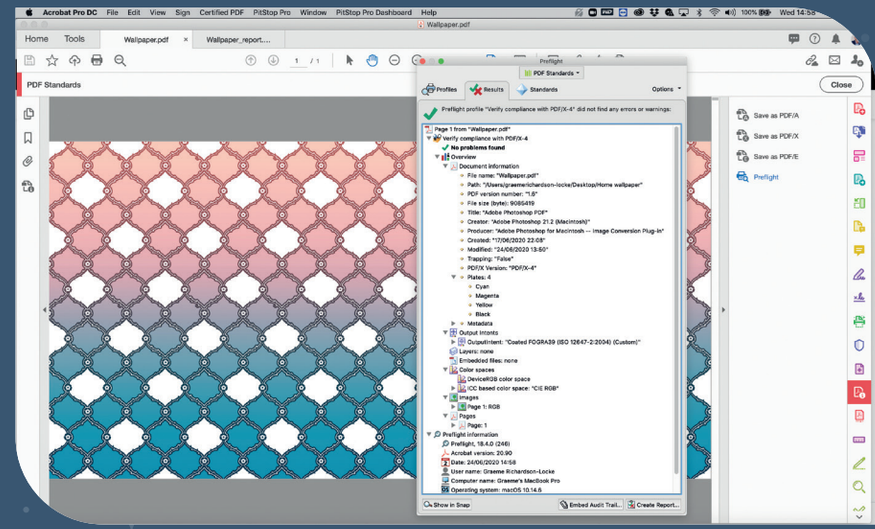
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Preflight

As you've read, file submission in any sector of printing is complex and fraught with potential headaches and streamlining workflows is increasingly important. In a market with so many forms of conventional and inkjet printing it is important to establish clear paths for files to follow. Once you've defined the process steps for any given product you can present customers with a specification.



This capture shows a successful report from Enfocus Pitstop Pro where a mural file has been checked against the Ghent Workgroup (GWG) preflight specification for Sign and Display.

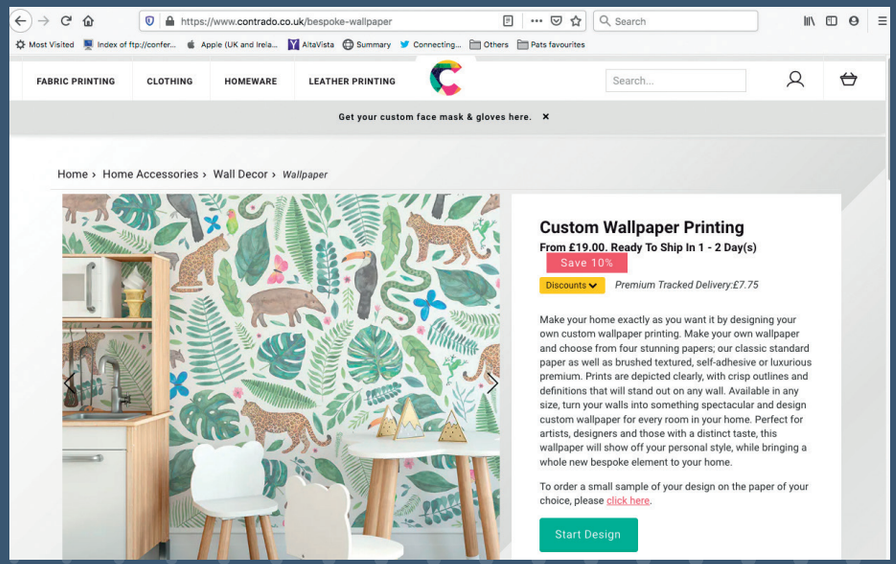


Users of Acrobat Pro DC can benefit from the built in pre-flight tools, however when compared to Pitstop Pro it lacks the range of in PDF editing tools and actions that really help users to increase efficiency.

There is great value to be gained in pre-flighting files before production and now in digital workflows there are so many small orders that the need to automate and prevent bad files reaching any press are a pre-requisite for success.

If you're aim is to build a web to print platform then these tools and others such as Enfocus Switch to connect scripts together need to be explored. These scripts are written in code used to automate processes that would otherwise need to be executed individually in multiple stages.

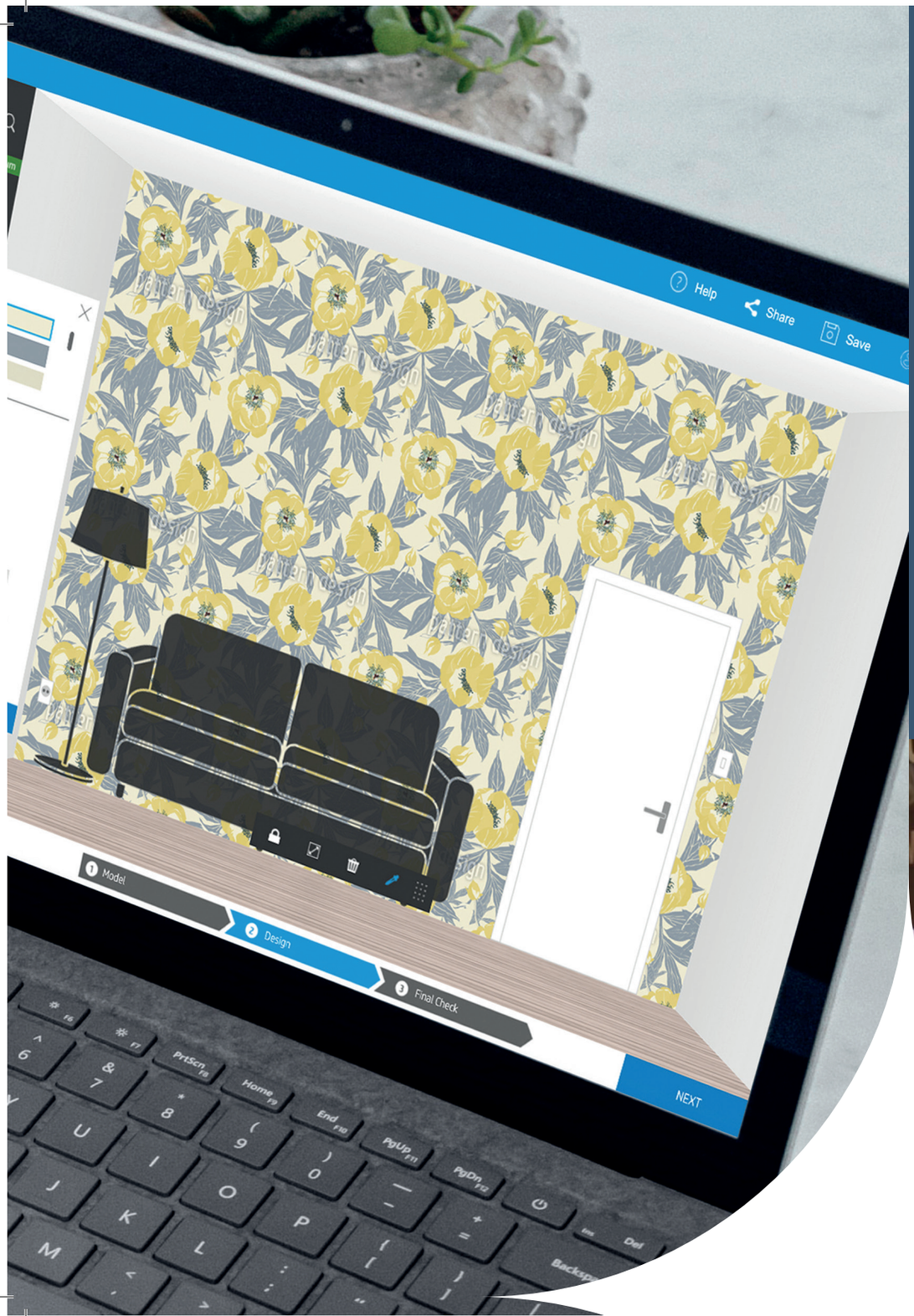
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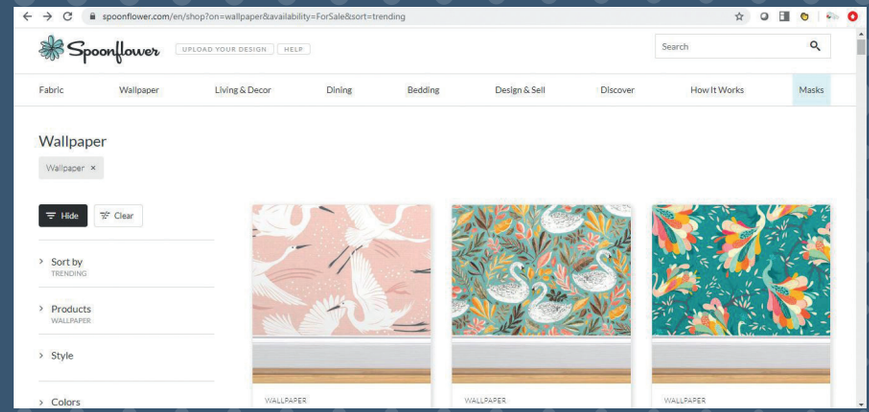


Contrado are amongst the large number of businesses who make it easy for customers to order from a wide range of interior applications online. These straightforward interfaces are underpinned by a great deal of workflow automation.

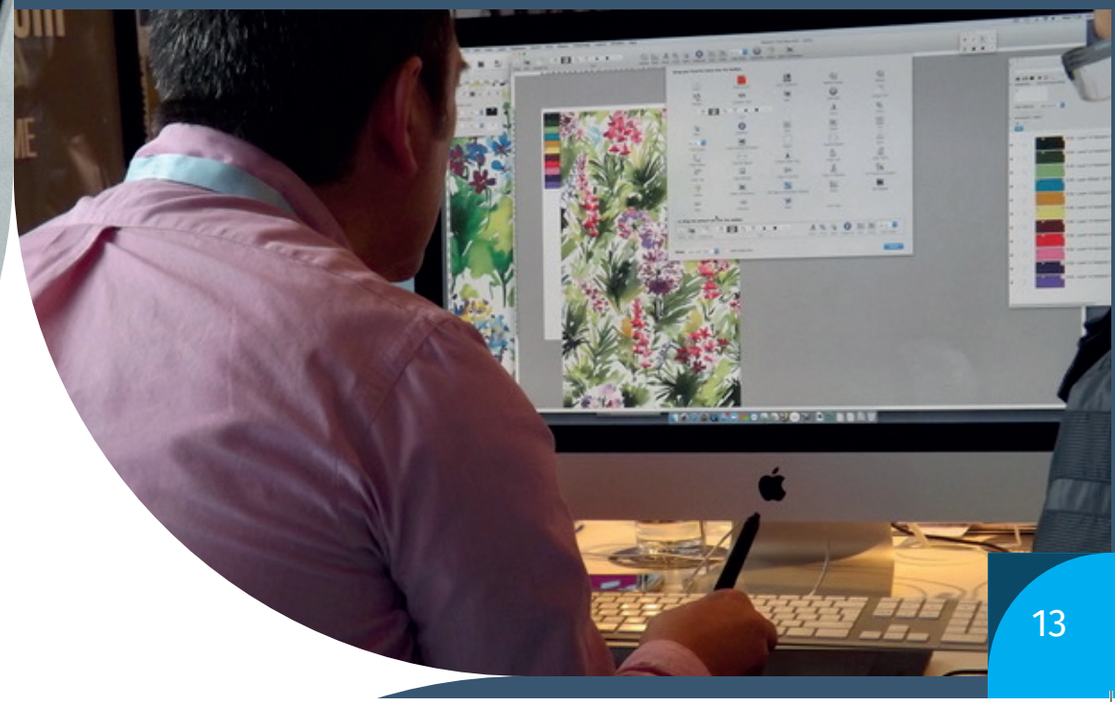
If you use HP inkjet printers you have access to HP Application Centre. HP Wallart (right) is the wallcovering app that can be configured to allow customers to plan, scale and upload their print orders. There are an increasing number of eco-systems to encourage printers to stick with one vendor.

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Spoonflower is a very successful printing business offering a range of opportunities from community based selling of surface print to a standard print for pay model.



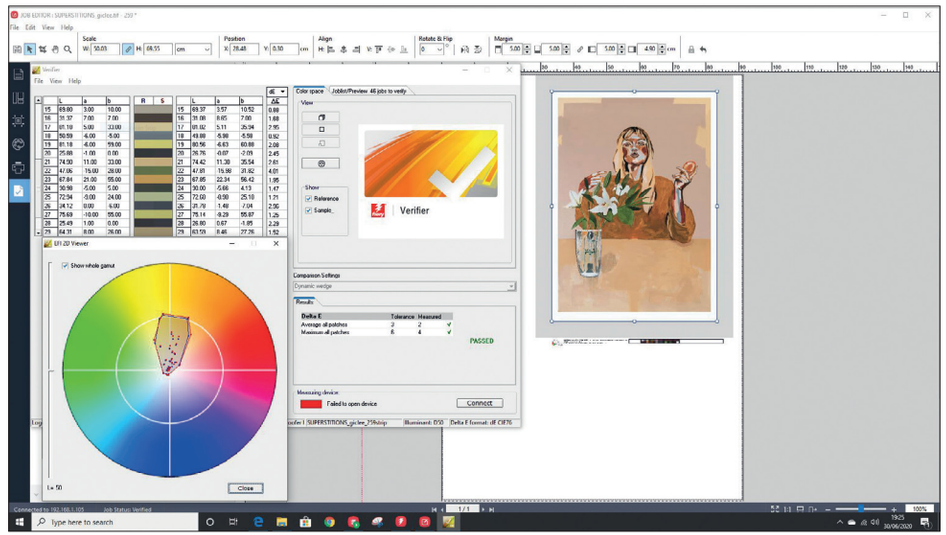
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Quality Validation

Many production RIP's now include very good tools to validate the quality of the printing process. Once you've printed a file and viewed it in a lightbox with the correct illumination it may appear perfectly acceptable but it is and worth considering the extra security of having evidence that supports it.

Essentially, the system needs to be able to compare the colour data in the file with that of measured data from the print. Once these two data sets are available then a comparison against a chosenΔE - (Delta E, dE) which is the measure of change in visual perception of two given colours. The Delta E value will range from 0 to 100, anything less than 1 is not perceptible to the human eye. Between 1-2 can be seen under close observation, whereas 2-10 can be noted at a glance.

There are 3 commonly used calculations for Delta E, they are dE76, dE94 and dE2000. The various iterations represent the improvements to better match human perception and the key point is not to mix them as they aren't compatible. There are a range of tolerances that are applied to

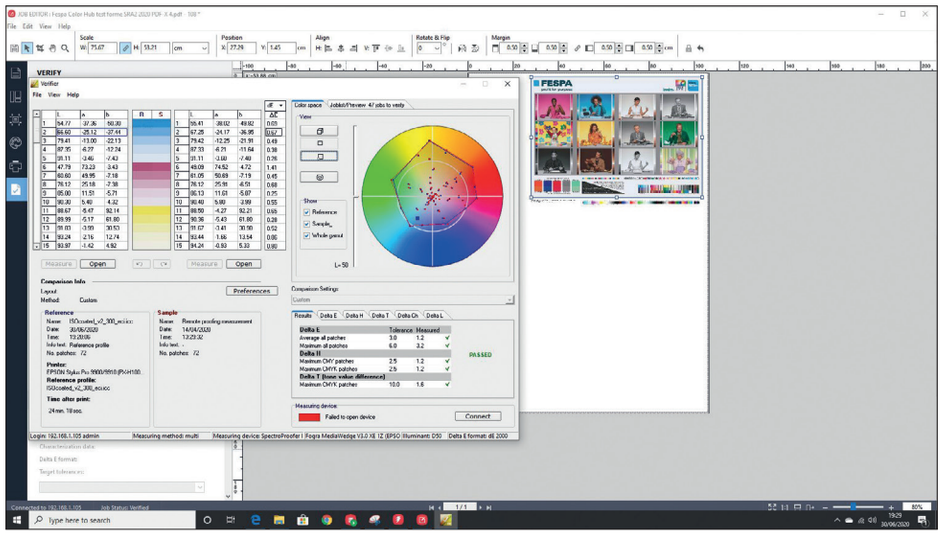


This example from Efi Verifier shows its PASS/FAIL for print quality control. In this case we printed a set of colour patches using the dynamic wedge which extracts key colours to measure. It is useful and allows for adjustment of tolerance settings to meet any customer expectation.

printed products, spot colours are usually set below Delta E of 2.5 and full colour images are expected to be below a maximum of 5 dE76 as stated in ISO 12647/2.

We've featured the Efi Verfier solution but there are of course many to choose from at varying levels of complexity, Agfa Bodoni PrintTune Pro is another that can be configured to present data reports to customers to demonstrate

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In this example a contract proof was produced using a PDF/X-4 source file which included four Pantone colours.

compliance to international standards for print production. These tools offer great insight into how your production workflow is performing and where you need to focus to produce even better work.

There are other considerations for the artwork, especially when printing on fabrics or wallpaper, if you have repeated patterns. But those requirements are often so specialised

EFI Color Verifier

Print created by:	admin	**Measuring device:**	SpectroProofer ILS30
Last calibration:	09.01.2020 18:52:36	**Measurement conditions:**	-
Proofing system:	Fiery XF 7.1	**Measuring underlay:**	-
Control strip:	Fogra MediaWedge V3.0 XE 1Z (EPSO)	**Printer:**	EPSON Stylus Pro 9900/9910 (PX-H100.
Delta E format:	dE 2000	**Proof profile:**	Contract_proof_semi_matt_250gsm_14c
Reference profile:	ISOcoated_v2_300_eci.icc	**Proofing substrate:**	-
Reference data:	ISOcoated_v2_300_eci.icc	**Colorant:**	EPSON UltraChrome HDR
Reference printing conditions:	-	**Job ID/Name**	108 / Fespa Color Hub test forme SRA2 d
Fogra PSD Visual Assessment	-		

Summary

Criteria		Difference			Tolerance	Status
Average all patches		1.2	dE	-	3.0	OK
Maximum all patches		3.2	dE	Patch 25	6.0	OK
Paper white		0.9	dE	Patch 69	3.0	OK
Cyan		0.7	dE	Patch 1	5.0	OK
Magenta		1.4	dE	Patch 6	5.0	OK
Yellow		0.6	dE	Patch 11	5.0	OK
Black		1.4	dE	Patch 21	5.0	OK
Hue difference - CMY		1.2	dH	-	2.5	OK
Hue difference - CMYK		1.2	dH	-	2.5	OK
Hue difference - CMYRGB		3.7	dH	-	4.0	OK
Hue diff. average gray		0.4	dH	-	1.5	OK
Tone value diff.		1.6	%	Patch 14	10.0	OK
Average CMYK patches		0.7	dCh	-	2.5	OK
Maximum weighted CMY scale		1.2	dCh	-	3.0	OK
Average weighted CMY scale		0.6	dCh	-	1.5	OK
Maximum weighted K scale		0.8	dL	-	3.0	OK
Average weighted K scale		0.4	dL	-	1.5	OK
Maximum weighted CMY scale		0.3	dL	-	3.0	OK
Average weighted CMY scale		0.2	dL	-	1.5	OK

Overall Result

PASSED

Efi Colour Verifier generates PDF reports to send on to clients to demonstrate the agreed standards have been met.

that they need to be agreed with the client before they finish their artwork. They must take into account the size of pattern repeats, overlaps, shrinkage and trim requirements. Once these are clarified, file submission conforming to these guidelines should be a breeze.

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