

THE TECHNOLOGY IS NOT THE PROBLEM, BUT THE PEOPLE

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Abstract

We actually in printing-industrie have almost everything we could wish for in terms of printing technology. We have the possibility to match the colours to a large extent beforehand and to print in such a quality that the customers are satisfied. Everything is actually there.

The problem, however, is the complexity of the solutions. Suppliers suggest the exact opposite of complexity. The common programmes that are used to create the PDF files that are then sent to the printers for printing, initially give the impression of being child's play to use. The graphic agencies, the largest group of customers of the printers, also think that everything is very simple. In the courses for graphic designers, printing technology is often not even taught as a separate subject. The idea prevails: "If the file looks good on the screen, my job is done!" That this is only about half the job, is known to anyone who has to rework PDF files in the graphic arts industry. And so we have the problem that from the outside everything in the printing industry is quite simple, almost trivial. But if we look more closely, the enormous choices in prepress and production, ultimately create an enormous complexity of all processes, that is difficult to oversee and deal with. Colour management, for example, requires very extensive knowledge. CIP3 cannot be mastered without in-depth IT knowledge. The temptation is to buy in the knowledge from suppliers. As a result, printers have equipment that has been set up once by suppliers and is then only to be operated in a comparatively mindless manner. The slightest error means that technicians have to be called in.

This article examines the real problems in the day-to-day work of printers, in opposite to the problems that manufacturers tell us are a problem. It gives principled suggestions on what should be changed in training, it formulates questions that responsible people in the printing industry should ask themselves. And finally he gives practical advice on what could be done differently in concrete terms.

Keywords: *printing industry, monopolies, open-source, higher education.*

Introduction

We actually in printing-industrie have everything we could wish for in terms of printing technology. We have a wonderful exchange format for our files, namely PDF. The files can not only contain the appearance of the printed matter, but they can even transport metadata of the jobs, such as the client's address, delivery address, print run, formats, deadlines, etc. We can check these files with relatively cheap tools and change them for our purposes: we can convert colours from RGB to CMYK, we can change resolutions, we can compress images, etc. We can also impose the individual pages we get onto large sheets with relatively cheap programs. We have presses that run very fast and we have other presses for which we don't even have to make a printing form. Every print can be different. We can even have our software talk to our presses via CIP3 or CIP4 so that the press already knows from the job data which format with which ink coverage is now coming its way. The cutting machine and the folding machine can also receive this data. We can even use ICC profiles to communicate colours securely across hardware and software boundaries. The software and hardware for all these nice things doesn't even cost an inordinate amount of money. All this technology is available, the standards are defined. Why is it that only in very few printing plants do the machines and the people work together as if by magic, harmoniously and without interference? Why do we still produce tons of waste? Why do we use software and hardware from quasi-monopolists even though we don't have to because of the open standards?

The title of my lecture is the answer to these questions: The problem is not technology, the problem is the people. Of course, this is a somewhat exaggerated title that is not quite right. Current technology is very complicated to understand and it is very complicated to use. I readily admit that. You can learn to understand these techniques, but it takes time and you really have to get involved. Accumulating superficial half-knowledge instead does more harm than good. At this point we are ultimately back to the statement that the problem is people. The knowledge of data structures within PDF. The knowledge about data structures in an ICC profile. Knowledge about XML or databases is frighteningly low and, in my experience, it tends to decrease over the years rather than increase. The right way out of this misery would be to improve education in vocational schools and higher education. This is not happening, at least not in Germany. At the design faculties I know of, there is no subject in which printing technology is specifically taught in its entirety. When I was still working at the Anhalt University of Applied Sciences at the Bauhaus Dessau, the students specially asked me to teach printmaking outside their prescribed lessons. They didn't get any marks for

it, but they saw that they needed this knowledge to act more easily in their professional lives. At universities, training in print technology only takes place in degree programmes that are explicitly called print technology. In graphic arts courses, some of this knowledge would be urgently needed, but this teaching simply does not take place. I hope that with this lecture I can contribute to changing this actually nonsensical state of affairs.

Here the improvement of the workflow through the use of CIP3/4 is shown:

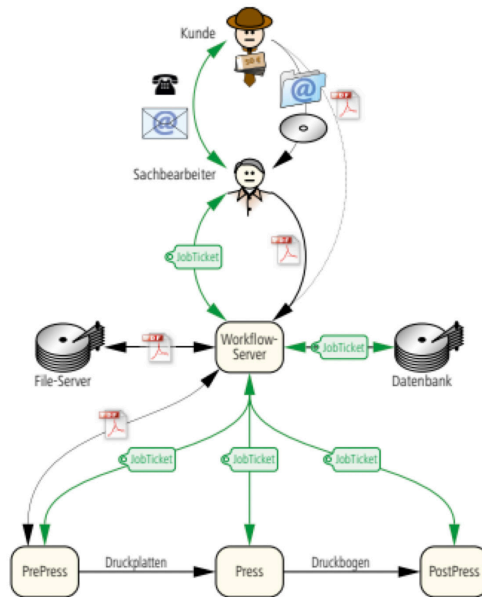


Fig 1. Workflow with CIP3/4

Methodology

I must apologise that it will not be a scientific lecture in the strict sense. I can only say many things from my experience and cannot prove them with statistical figures. Why can I claim that my statements are nevertheless relevant? I not only teach printing technology, but I also place many printing orders every year at the university and privately for associations. As head of the university print shop, I also get a lot of orders and have to process the incoming data. And finally, I talk a lot with printers and users about the jobs. For these reasons, I claim that my assertions go beyond a merely private opinion, even if they are not proved in a strictly scientific sense.

Presentation of research results (Analysis)

After all, everything works without the customers knowing what properties the print files must have! We have to ask honestly why exactly does it work?

First answer: I don't want to argue with a client and correct the file, which is usually quicker than asking the client back. I can do the corrections manually with Acrobat, or you can use tools like PDF Toolbox that do it automatically.

Second answer: PDF files created with the common programmes of a big American manufacturer work in most cases. So I recommend my clients to use the programmes of the big American manufacturer as well. In addition, I now know the common errors that occur when using the programmes of the big American manufacturer and have built appropriate change routines into my programmes.

Third answer: If, for example, the bleed is missing, I have no choice but to tell the customer that I need a new file. So I explain to the customer how to create a file with bleed in his programme. Sometimes I also have to explain what a bleed is and why it doesn't work without one. (Is there anyone here I have to explain this to now?) It can happen that I have to explain this to trained graphic designers.

Perhaps you are now asking, why is he getting so upset? After all, everything works fine without the customers knowing what properties the print files must have! We have to ask honestly why exactly does it work!

So the whole printing technology works without even the professional clients, who are often trained graphic designers, knowing exactly what data they have to supply. We, as printers suffer greatly from this with considerable extra work. And we are ourselves to blame for several reasons:

Firstly, we provide the training service in the feedback to the customers, for which would actually be responsible the universities or the training institutions. I realise that every printing company has to do this because otherwise the customers will go to a competitor. But it could also be, that the customers go to a competitor anyway with the knowledge that I have painstakingly imparted to them before.

Secondly, we limit ourselves, at least in Germany, to the programmes of a very big American manufacturer, because we assume that the files produced with them will work for us in most cases, even if the operators ultimately do not know what exactly they are doing. Whether this is only because we are accustomed to the mistakes made by the big American manufacturer, or whether there might be alternatives, is not asked. I have to admit that in the day-to-day business in the printing plants, there is too little time to try out alternatives.

Thirdly, in the printing plants there is also often only partial knowledge. They are happy if they can somehow get the print jobs through production without any complaints. The actual expert knowledge is often no longer to be found in the printing plants, but rather with the assemblers and in the customer service departments of the manufacturers. My call here would be, to get the basic knowledge back into the print shops. Of course it is tedious to work through a PDF reference manual with over 1000 pages, but afterwards you know exactly how a PDF file is structured and how you can change it. It becomes clear what the respective programmes in one's own print shop do with the files.

Fourthly: What is even worse is that as a print shop manager and lecturer I would certainly know alternative programmes to those of the big American manufacturer, but my professors from the graphics department forbid me to use them because supposedly "everyone" works with the programmes of the big American manufacturer and the students are supposed to be trained in a reality-based manner. In my experience, however, students who have really mastered alternative programmes can very quickly switch to the programmes of the big American manufacturer. I also remember very well when the common programmes used to be called PhotoShop, QuarkXpress and Freehand. The almost complete changeover to the current big American manufacturer happened in the printing industry in Germany within a period of three years. So you can change over if you really want to.

So let us summarise the four reasons why this system of professional incompetence nevertheless works:

- printers provide free educational services.
- graphic agencies and printers prefer a software manufacturer whose products usually deliver usable results even without specialist knowledge
- printers can ultimately only use the products of this big American manufacturer and often have little in-depth expertise themselves.
- because almost everyone lives in this incompetence bubble, even the few who know and master alternatives are tempted or even forced into incompetence.

This somewhat frustrating development is not even noticed in most cases. When I point out this undesirable development, as I have done in this lecture and on other occasions, many reasons are given as to why everything cannot be done differently. If I roughly summarise these reasons, then these are the reasons that I fear are the main reasons for almost everything in Germany only:

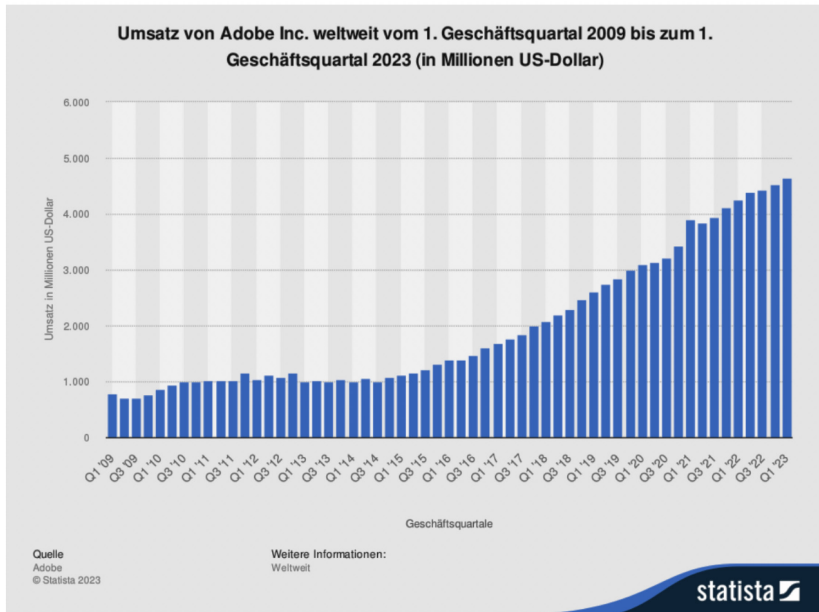
- we have always done it this way!

- we have never done it like this before!
- anyone could say anything!

I fear that there are similarly valid robust arguments in many countries.

Adobe Inc. worldwide revenue from 1st fiscal quarter 2009 to 1st fiscal quarter 2023 in US-Dollar millions:

Fig 2. Adobe Inc. worldwide revenue



The result is that we spend far too much money on not bad, but rather mediocre products. We even let ourselves be forced into a subscription model. You can clearly see in the graph that the big American manufacturer quadrupled its sales after introducing his subscription model. Even our faculty in Mittweida pays a lot of money and indirectly even advertises this monopoly. Similar subscription models are becoming more and more common, even among large printing press manufacturers. Knowledge is shifting more and more away from the users to the manufacturers. This is not only the fault of the manufacturers, but also the fault of those who let this happen to them.

Conclusions: What can we change?

It is really about education.

- all those connected to the printing industry should push for sufficient print technology to be included in the training courses for graphic designers.
- the problems would be solved if there were degree courses that taught print IT or IT for printing technology and were then also attended by many students. However, I fear that too few young people will be enthusiastic about this.

All those who train should always ask themselves the following questions:

- do I really understand what the software I use does?
- is there other software that does similar or better? Am I really able to work professionally with alternative software? Do I have the time?
- is there perhaps even open source software that does something comparable? What would have to be improved in the open source software in order to work with it more professionally? Who could finance this? Could we perhaps develop plug-ins in our faculty to improve OpenSource?
- in all my software and hardware decisions, do I make sure that everything works with open interfaces as much as possible? (For example: PDF, CIP3/4, database connection, ICC profiles).
- Is there hardware that does similar or better and is cheaper? Do I really give smaller companies a chance?
- am I prepared to think myself into my machines to such an extent that I can carry out minor repairs and maintenance work myself? Will the manufacturer even let me do that?

More practical conclusions:

1. LibreOffice instead of Microsoft programmes. For example, if you are doing a conference proceedings, almost everyone has a different version of Word. Unfortunately, the versions on Mac and PC differ and there is no Word at all for Linux. If you then have to combine several documents into one, there are often terrible problems. That's why I usually converted everything in LibreOffice for such projects, fixed the format errors and then combined them into one document. Also, vector graphics can be embedded and output well throughout LibreOffice as SVG graphics. Word can only do EMF and WMF, which can lead to very strange effects with fonts. Only Word for Mac can really embed PDF.

2 Scribus, VivaDesigner, Affinity Publisher instead of InDesign. Admittedly, Scribus is much more difficult to use than InDesign and it is also less comfortable. But it has two big advantages: firstly, it is free and secondly, the source code is open so that you can program your own extensions or commission them easily. It is also interesting to see the sales development of a big American manufacturer, especially since it has only been selling its software on a subscription basis since 2011. If we in the printing industry would have spent only 5% of these extra costs on developing plug-ins for Scribus, we would today have a wonderful tool for free, which we could also give to our customers. VivaDesigner is already a very old clone of InDesign that can even handle *.inx files. It is very cheap, especially for educational institutions. The Affinity products should be known everywhere by now. Unfortunately, there are no Linux versions of them.

3. InkScape, CorelDraw, Affinity Designer instead of Illustrator . InkScape has three major disadvantages:

a) only the RGB colour space is supported throughout. However, if you are good at colour management, this should not be a big problem.

b) it can only do one page. The latest version can already handle multi-page documents in a rudimentary way.

c) it can't do automatic line breaks with separations at the moment. It would actually be no problem to integrate the separating mechanisms of LibreOffice into InkScape.

CorelDraw is an established programme and a leader in Germany for stamps and automotive lettering, for example.

4 Gimp, Krita, PhotoPaint, Affinity Photo instead of PhotoShop. With Gimp all standard cases like colour space transformations, colour cast corrections, contrasts, resolutions can be done well by now. Writing your own filters is no problem and there are many plug-ins. Corel Photopaint is a bit easier to use than Gimp, but it costs money and cannot be extended.

5 Myiro, Datacolor instead of X-Rite. Myiro is a subsidiary of KonicaMinolta. The fastest colourimeter for the graphic arts industry, Myiro-9 was formerly sold by KonicaMinolta as FD-9. The software of Myiro is based on the software of Basiccolor, which unfortunately went bankrupt. <https://www.myiro.com/myiro-9>. Datacolor offers a good and above all much cheaper alternative to the X-Rite devices. <https://spyderx.datacolor.com/shop-products/>.

I apologise if that all was a little provocative. But I think I owe it to an international professional audience, if I may speak freely here as an employee of a public institution without pressure from a company, to describe honestly

the problems that really bother many colleagues and me, simply because we care about the printing industry.

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