

A GUIDE TO

GRAPHIC PRINT PRODUCTION

THIRD EDITION



KAJ JOHANSSON | PETER LUNDBERG | ROBERT RYBERG

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“But I, on the other hand, could perhaps measure the color as well: I might guess it had a wavelength of five hundred forty millionths of a millimeter; and then this green would apparently be captured and nailed to a specific point! But then it gets away from me again, because this ground color also has something material about it that can’t be expressed in words of color at all, since it’s different from the same green in silk or wool. And now we’re back at the profound discovery that green grass is just grass green!”

ROBERT MUSIL IN THE MAN WITHOUT QUALITIES

Musil, Robert, Transl. Sophie Wilkins and Burton Pike. *The Man Without Qualities*, Volume II “From the Posthumous Papers” Part 1, Chapter 46, p. 1185. First Vintage International Edition, 1996, New York.

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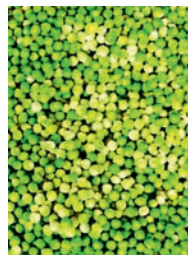
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01.

graphic print production

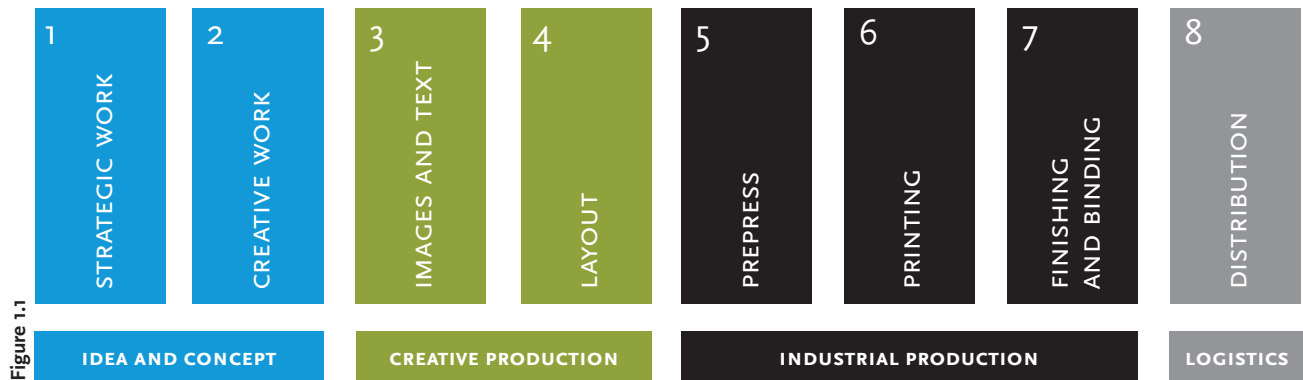
Who actually does what in graphic print production today? What is prepress? What affects the price of a printed product? What should you think about when getting a price quote? How do you avoid additional costs? Who is responsible for what parts of the production?

GRAPHIC PRINT PRODUCTION is a broad concept these days. It covers all the steps that are taken to produce a printed product. Of course it includes printing, finishing, and binding, but it also includes all the steps that precede these, such as outline and execution of a design, photographing and editing images, producing text and layout, and prepress production, which includes creating PDF files, adjusting images for printing, proofing, and preparing printing plates.

In this chapter we will go over the graphic print production flow, giving an introduction to the different steps and providing examples of the roles various participants play. Before we begin, we will present a number of basic questions; the answers to these determine to a large degree how you are going to set up your project.

Graphic print production is more difficult than you might think, since there are many people involved and you are dependent on a functioning partnership with all of them. It is not easy to predict costs, either; it's important to know what kind of information you will have to provide to get an accurate price and avoid the additional costs that are so common in the graphics industry. We will therefore look at the underlying factors that influence the costs of printed products, and review a checklist of what should be included in the price quote. We will also go over how to evaluate and choose suppliers as well as how to plan the graphic print production.

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THE EIGHT STEPS OF GRAPHIC PRINT PRODUCTION

Graphic print production can be divided into eight steps and four phases. The first phase deals with strategic and creative work; the final result consists of idea, concept, and sketches of graphic design. The following phase could be labeled as creative production—here the product is still being designed and changed. The third phase, which consists of prepress, printing, and finishing and binding, is primarily industrial, with a goal of carrying out what has been decided on and formed in the previous steps. The last step deals with distributing the finished printed product.

1.1 The Graphic Print Production Flow

The technology in graphic print production has become cheaper and more accessible in the last fifteen to twenty years, and as a consequence, many specialized jobs have disappeared. Today, the same person can carry out work that previously required a number of different specialists. The boundaries that traditionally existed between different kinds of graphic print production companies have blurred, and the distribution of roles has been changed; it is no longer entirely clear who does what. There are advertising agencies that edit images and printing houses that arrange layouts; there are prepress companies that do photography and purchasers of printed products who do a large part of the production themselves. Materials, production, and information flows have also changed, which has led to a certain amount of ambiguity as to who is responsible for what.

One way to sort out the areas of responsibility is to break down the graphic print production flow into eight basic steps:

- *Strategic work*
- *Creative work*
- *Images and text*
- *Layout work*
- *Prepress*
- *Printing*
- *Finishing and binding*
- *Distribution*

The first two deal with ideas and with concept and outline work. These initial steps are the time to consider the project as a whole and determine if a printed product is what is really needed. Ideas, sketch work, and graphic design are a separate field, and we will cover these steps briefly. We will, however, go over the following two steps—image and text, and layout—more thoroughly; in these creative phases the product is still being formed and changed. The last four steps are mainly industrial, and their aim is to carry out what has been decided and formulated during the previous steps. We will take a closer look at these last steps, except for the final one, distribution, which we will only touch upon.

The same company can carry out many of these functions. The important thing is that you know who is responsible for what, and what information and competence each function requires. Although the technology is more accessible today, it still demands special competence within many areas if you want to present a high-quality printed product. Different productions set different demands, which means that roles and responsibilities, as well as production and information flows, look different from project to project.

1.1.1 Strategic Work

In the first step you should ask questions that will help define more clearly the product you want to create. What are the goals of this project? For whom is this product intended? What will this product be used for? In this phase you also determine if a printed product is really needed. The typical participants in this phase are the marketing and information departments, but it may also include advertising and design departments as well as media advisors.

1.1.2 Creative Work

The creative step is about developing the design—determining the message of the work and how best to communicate with the audience for whom the message is intended. More questions bring the project into focus: What type of printed product should be created? What should this product say? What should this product look like?

1.1.3 Images and Text

Nowadays digital images may be created and edited by just about anybody, with help from digital cameras, scanners, cell phones with cameras, and widely available image editing programs that run on ordinary computers. As a result, traditional reproduction companies, which previously did most of the image editing, have almost disappeared.

Those who work with digital images today are not always as knowledgeable as their predecessors, since they often have other work responsibilities. At the same time greater demands are being placed on image editing when the only existing original is digital and you don't have the opportunity to go back to a negative or slide.

The fact that an image is digital doesn't mean, unfortunately, that the image is technically of high enough quality to be used in print. Therefore, you always need to check and adjust digital images before they are printed, even images that originally come from a professional supplier.

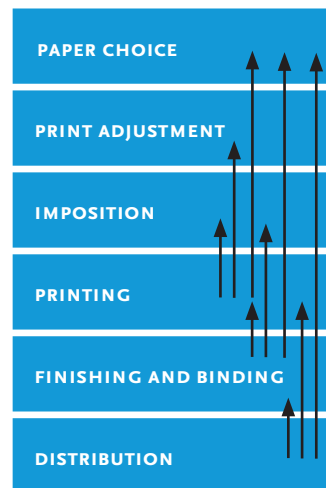


Figure 1.2

CHOICES ARE MADE IN REVERSE ORDER

In each production phase, you need to know what the following steps will require, and adjust your work accordingly. Distribution can account for a large part of a printed product's costs, and it is common to choose a paper with a lower weight to reduce costs. This can affect finishing and binding as well as printing. The requirements of finishing and binding can determine the choice of paper; at the same time, the choice of paper and printing methods determines how the image will be prepared for printing, and so on.

THE GRAPHIC PRODUCTION FLOW

The graphic print production process consists of eight steps. In this book we focus on steps three through seven. The flow in these phases is illustrated at right.

Figure 1.3

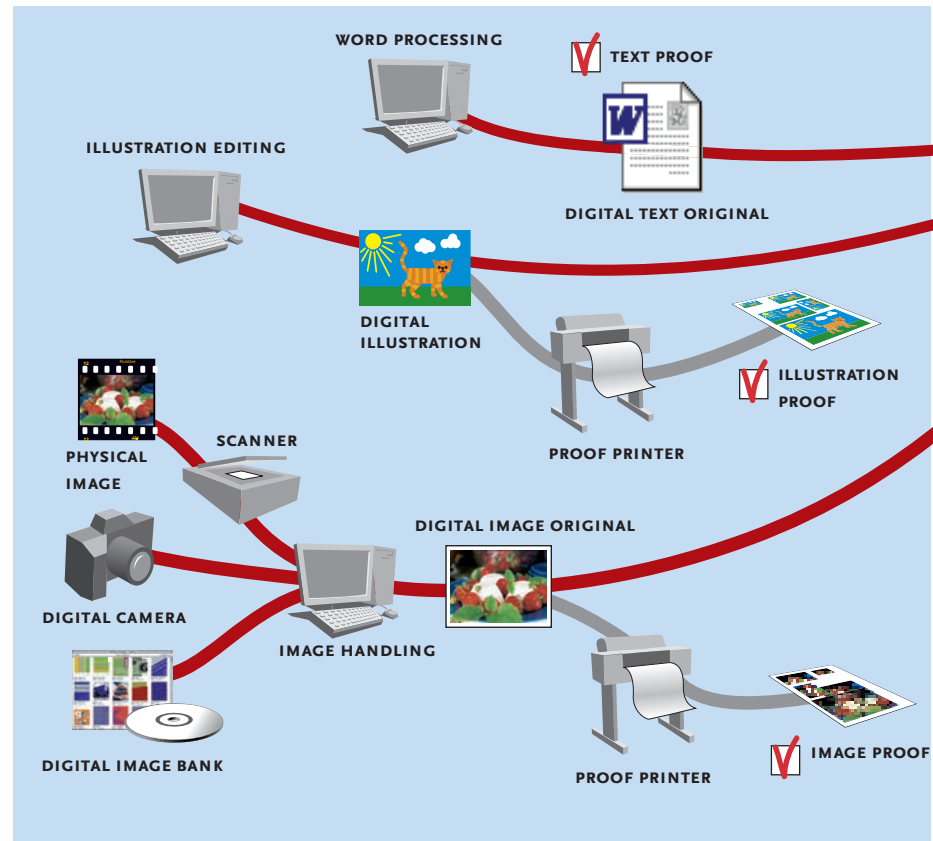


IMAGE AND TEXT

In this step the images are produced. They are scanned, digitally photographed, or obtained from image banks or CDs. They are checked, adjusted, and retouched; usually you work in Adobe Photoshop. This is when illustrations are drawn, most typically in Adobe Illustrator. In addition, texts are written, edited, and checked in a word processing program, usually Microsoft Word.

CHECKING AND PROOFS

There are a number of checkpoints in the graphic print production process. It is important that these controls be made as early as possible so that errors do not occur later on. Errors identified late cost more to correct and risk causing delays, sometimes even the entire delivery. On the right we see which controls have to be done and when, how they are done, who approves them, and what should be checked.

Text proofing is done by the customer on a laser printout or directly in the word processing program. Language, spelling, content, and facts are checked as well as the text's technical structure—for example, text intended to be a heading should be formatted as a heading.

The customer also does an *illustration proof* by checking details, colors, and text in the illustrations. This is done on a high-resolution laser printer.

Colors, sharpness, touch-ups, and quality of *photographic images* are also checked by the customer on an image proof done on a high-resolution laser printer.

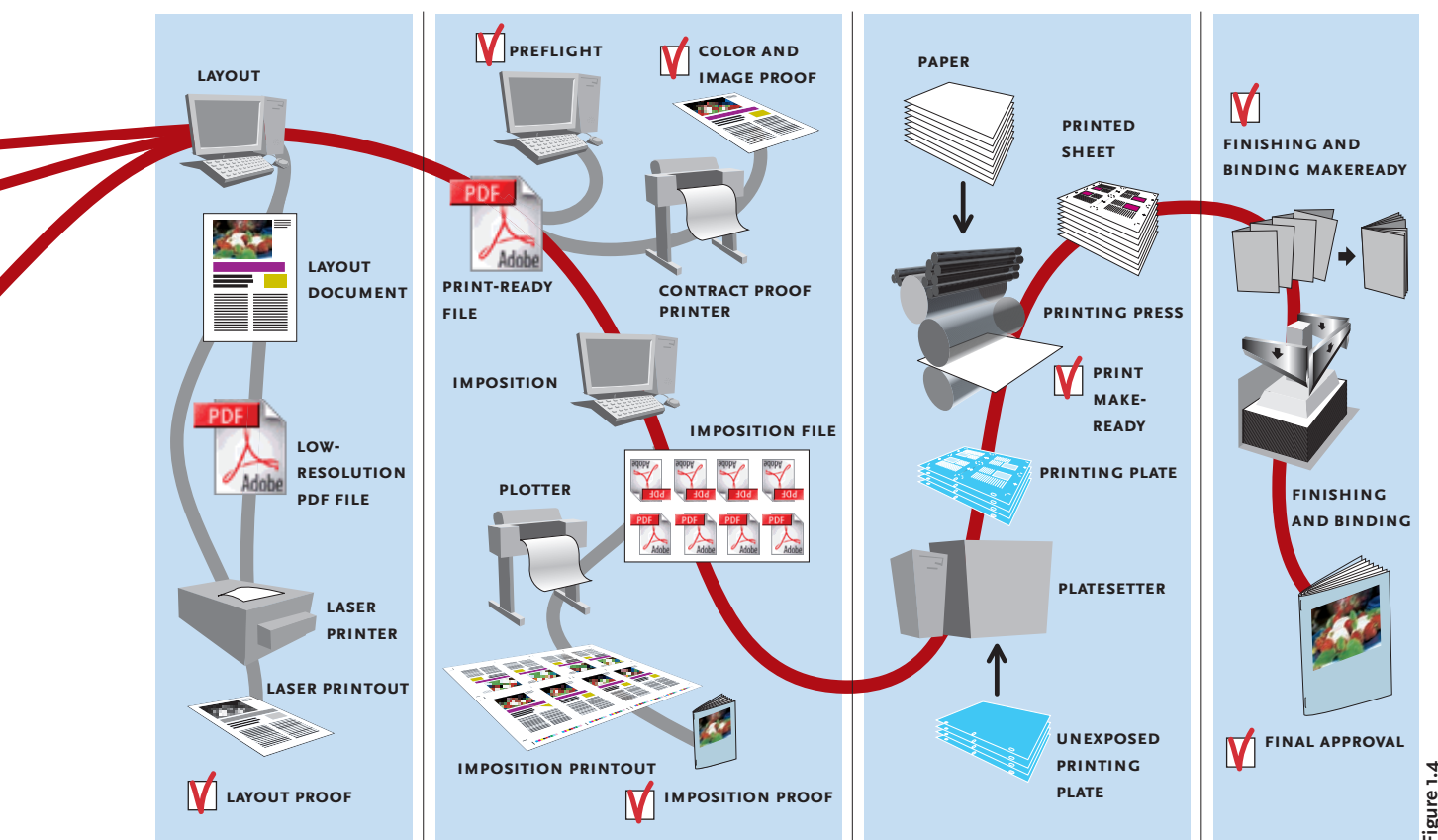


Figure 1.4

LAYOUT

Images, illustrations, and text are placed together in QuarkXpress or Adobe InDesign. The text is typed and a layout created. A low-resolution PDF file of the layout is often created for examination. The layout document or PDF file is printed for proofing.

The customer creates a layout proof on a laser printer, often in color, to check that the placement, typography and design, sample point, etc. are correct. Colors and image quality cannot, however, be checked in this phase.

PREPRESS

From the layout, a print original (a high-resolution PDF file) is created. In preflight, it is proofed with the help of Adobe Acrobat or Enfocus PitStop. Then the pages are placed as they are going to be printed on the sheet of paper, an imposition, in a program such as Preps or INposition. When the imposition is done you can produce printing forms—in offset printing these are printing plates.

Preflight checking of the PDF file is done by the printer. The technical quality of the PDF file is checked for things such as fonts, image resolution, color saturation, and printing colors.

The customer makes a *color and image proof* on a high-resolution laser printer or dye sublimation printer. Now you check that everything looks the way you want before it goes to print.

The *imposition proof* is made by the printer. It is a large laser printout on which they check that all the pages are laid the right way.

PRINTING

Printing occurs with the help of a printer or a printing press. Printing forms are necessary for printing presses, while a printer can print directly from digital information. Different printers and printing techniques require different papers, which means that you have to choose a paper that fits the production technique you have chosen.

The *first approved printed sheet* is approved by the customer or the printer. On it everything should look like the color and image proof and the registration of the type should be good.

FINISHING AND BINDING

Here is when the printed product is finished by treating the surface of the printed sheets, folding and cropping them, and then finally binding them. They are packed, stamped, addressed, etc., in preparation for distribution.

The *first approved printed product* is approved by the printer or the book-binder together with the finishing and binding makeready. Technical errors and registration are looked for here.

Final approval of the finished printed product and its packaging is done by the customer.

Figure 1.5

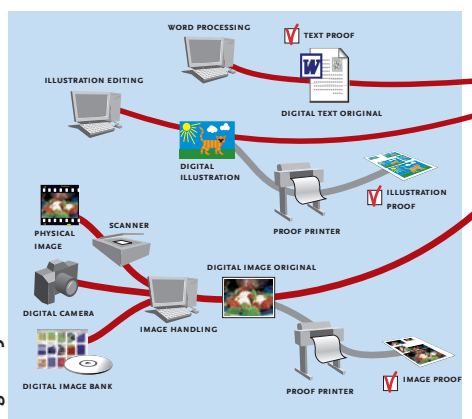


IMAGE AND TEXT

In this step the digital original images, illustrations, and text that are going to be used in the printed product are produced. Involved in this stage may be photographers, illustrators, journalists, authors, retouch specialists, prepress companies, and printing houses. In this phase the customer approves all text, illustrations, and image proofs.

In order to carry out these controls and adjustments in the right way, you need knowledge, good methods, and a goal for your image editing. What are the elements of a digital image that make it of good quality? This is when a technical image standard—that is, specifications regarding the technical requirements for an image—can be useful in order to effectively produce high-quality color prints. Image editing does not only involve ensuring technical quality; it also involves achieving creative goals. There are few images published today that have not been retouched to a greater or lesser degree. One of the most common image editing steps, for example, is to select the image in order to transfer it to a white or transparent background.

When we talk about digital images, we usually divide them into pixel-based images and object graphics. Pixel-based images are photographic images, while object graphics are illustrations, logotypes, and other graphics of various kinds. Pixel-based images are constructed of a number of small image elements in the computer, called pixels, while object graphics are made up of mathematical curves and objects. Object graphics, in principle, can be enlarged endlessly, while pixel-based images, in principle, cannot be enlarged at all. The program most often used for editing pixel-based images is Adobe Photoshop, while Adobe Illustrator is usually used for object graphics.

It is important that pixel-based images have a high enough resolution to be able to be reproduced in print with high quality. A simple rule of thumb is that pixel-based images should have a resolution of 300 pixels per inch. TIFF and EPS are typical image formats for printed production, but PDF and PSD are also becoming common image formats. Object graphics are generally saved in EPS or PDF format, but the AI format is also increasingly commonly used.

The number of digital images these days has created the need to store images in different kinds of archives and image banks. To then be able to find the images requires that they be named in a standardized way, and labeled with key words, image descriptions, and copyright information. This area has been developed much more recently, and now Adobe Photoshop has integrated support for labeling images according to the International Press Telecommunications Council (IPTC) standard. There are also several simple and inexpensive image bank programs, such as Cumulus from Canto or Portfolio from Extensis.

At the same time as you produce images you usually compose text, which is generally produced in Microsoft Word. We advise against using any of Word's layout features to create the printed materials. The program is excellent for producing and editing text, but it is not suitable for print production.

1.1.4 Layout

Working with layouts involves putting together text and images to create finished original pages. Whoever prepares the layout document for printed products has to be conscious of the fact that creating an attractive layout isn't enough. It is just as important that the document works well both as a print-out and for preparing a printing plate. Documents that are not properly produced can increase costs, delay production, or have unintended final results. The most common programs for professional layout work are Adobe InDesign and QuarkXPress.

Some important areas within layout work are typography, manuscript, image editing, and logotypes, as well as the choice of colors and color combinations. In this book we will not deal with typography from the point of view of aesthetics, but instead will discuss the handling of fonts as well as how they are made, which are important when creating a layout. When you create your layout you also need to know something about the printing process; we will discuss some common terms such as *overprint* and *bleeds* [see 6.11.4 and 6.11.1].

When you work with color you will encounter different color systems, such as RGB, CMYK, and Pantone. RGB (red, green, blue) is the color system of computers and monitors, while CMYK (cyan, magenta, yellow, black) is that of printing. Pantone is a system for special printed colors that are used as complements to the four print colors since they are difficult to reproduce in CMYK. Gold, silver, Reflex Blue, and bright orange are examples of shades for which Pantone colors are often used.

When you work with layout you often handle a number of different files, especially images. It is important to organize your work and have a good basic structure for naming your files and where they are saved so that it is easy to find the right file. Previously, low-resolution images were often used during layout work, since software and computers were not powerful enough to handle high-resolution images, but this is rarely a problem today. If you want to have well-structured document files, it is possible to automate the layout work using templates or plug-ins for layout programs. This works when you are producing a printed product with a rather simple layout, such as novels or catalogues, and you can save a lot of time this way.

During layout work it is often necessary for several proofs to be sent to different interested parties for examination and approval before a final product is prepared. The PDF format has become a standard for distributing proofs, and the Acrobat program from Adobe also has a number of practical functions that allow you to attach comments and instructions about changes you want carried out.

1.1.5 Prepress

Prepress is a rather clumsy collective name for all the work steps that you carry out before you begin the actual printing. *Repro* is an older term that has often been used as a synonym for *prepress*. The boundaries between prepress, layout, and image editing are unclear and can create a lot of problems and misunderstandings, practically speaking, as to who is responsible for what. There used to be prepress companies that dealt with prepress, layout, and image editing, something that leads to even greater confusion as to what prepress really is.

Today layout is generally done by advertising agencies or in-house departments. Image editing has begun to be done by photographers or specialized image retouch companies. So, what is prepress? In this book we have chosen to define *prepress* as those work steps and techniques required to create print-adjusted digital files that can be the foundation for the production of a printing form. In practice this includes work steps such as creating high-resolution PDF files, print adjustment of images and documents, proofing, imposition, and rasterizing, as well as technologies such as PostScript, PDF, JDF, and different kinds of printed proofs.

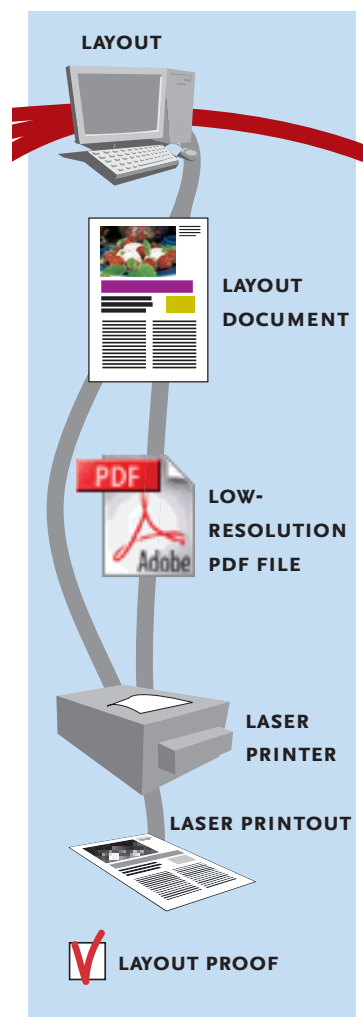


Figure 1.6

LAYOUT

Layout work deals with putting together text and images to make finished original pages. Some important areas within layout work are manuscript, typography, handling images and logotypes, and choice of colors and color combinations.

Layout work is done in advertising bureaus, design studios, printing houses, marketing departments, and publishing companies. In this step the customer approves the finished layout.