

How to Enhance the Management and Quality of Electronic Publications?

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Abstract. The electronic publication format has become valuable and easy to access for a modern person. Many readers prefer electronic publications to print ones. Publication houses that want to access more customers and enhance their sales should consider including electronic formats in their product offers. Managing a publishing company requires constant modification and diversification of products. To a large extent, the offer of publications in electronic format has a chance to attract more customers than the traditional printed form. It is primarily about easy access to the searched reading items. The customers can purchase the publication in various electronic formats, e.g., PDF, MOBI, or ePUB format, according to their needs. It does not require going to the library, reading room, stationery store, or waiting for the parcel at the place of residence. The purchased product, paid or free, immediately becomes available after downloading to the appropriate device. It is a very convenient and quick way to get to publications. Therefore, publishing houses should keep up with the times and offer publications in electronic format. However, a number of factors must be taken into account before such a product is created. Often, there is a need to convert the print version of publications into electronic format - a need to convert documents on formats of computer editorial systems in electronic formats. In the paper, the method of changing the orientation of the page of the elevation publication is proposed. Then a set of parameters of the arrangement elements is developed. The algorithm for the automatic change of page orientation of the viewing edition is created. Based on this algorithm, tools have been developed to automatically change the edition page as an appropriate prototype of automation tools (Adobe, USA product) in HTML format using JavaScript programming language (Japan). For the qualitative work of the prototype, the basic rules of the set and layout were analyzed. The designed complex of typical page layouts, in terms of laying elements on the page. An orientation change algorithm with its restrictions has been developed for each typical layout.

Introduction

The purpose of the article is to develop a method for the automatic change in orientation of pages of the address, which will allow one to change the page orientation of the viewing publication with the preservation of the volume of information on the page, in accordance with the rules of dialing and managing. The main problem of this study is as follows. The number of rows per page changes while changing the orientation of the addressing edition, which leads to the inconsistency of the initial content on the page, due to an increase in the incomplete coefficient. But with the task of



changing the orientation of the page of the drawing publication in the Folio format, there is a complete matching of the initial layout in terms of content volume on each publication page. The plurality of typical layouts of the page is formulated. On the basis of the analysis of typical layouts, a set of rules for eliminating the disadvantages of an account as a result of changing the orientation of the page of the elevation publication. A system of requirements and restrictions to each rule has been formed.

Under electronic edition, an electronic document (electronic document group) is understood by editorial-publishing elaboration, designed to spread in unchanged form, and has source information. Electronic editions vary with each other by the presence of printed equivalent, thus subdivided into electronic analogs of printed publications and independent editions (digitally born). Electronic editions may be represented by a variety of formats that, in turn, are divided into two groups, if possible, to identify the parameters of the original layout of the printed edition:

- a) formats of electronic publications are not capable of playing the separation to the original-layout of the printed publications (fb2, ePUB, MOBI, PRC and others);
- b) formats are capable of being identical to the original layout Play the division into printed edition pages (ePDF, Folio).

What happens when changing orientation, it decides specific publishing. It is possible to use both orientations to allow the reader to choose how it is more comfortable with reading a magazine, or restrict it to one of the orientations. You can also apply a tablet turn to enhance communication and as an excuse to create an additional visual event, spectacularly adding additional information or new illustrative blocks. Everything depends on the concept of the publication. A set of elements in both orientations may be identical to the reader who chose only one of them, missing nothing. Also, this set may differ - for surprises or (if the reader is notified and knows what to expect) to describe additional content. The simplest example - one can use a tablet turned in a horizontal position to view a video and a slideshow in full-screen mode.

The main requirement for publications that can reproduce the division into pages in accordance with the original layout of the printed publications is to maintain an absolute identity of each page when converting into an electronic appearance.

However, when the electronic edition is designed for viewing on smartphones and tablet PCs, there is a need to change the edition page orientation. Such editions, as a rule, are generated in two variants: with a vertical and horizontal orientation of the page.

In our times, there are software tools that allow partially to automate the process of changing the orientation of the page of the elevation page. Still, they cannot cover the entire volume of tasks that require this process. Therefore, even after the use of automation of the process of changing the orientation of the page of the elevation of the publication, in any case, it is necessary to manually adjust the accretion, which we understand as a "subtle" recruitment.

In the process of changing the edition page, there are many difficulties associated with the preservation of the identity to the original. The machine tool must be performed by a whole range of operations that require phased decision-making and much time spent.

It should be noted that in changing the edition page, the parameters of the means that use a machine tool to preserve the identity of the original are not regulated. Therefore, in this case, the machine is guided only by its own experience and subjective judgments. As a result, the final product may not correspond to the general technical rules of the set and layout.

That is why forming a complex of models of a "thin" manner is an actual and valuable scientific result. This complex must contain:

- 1) rules for eliminating disadvantages of recruitment as a result of changing the page orientation of the viewing publication;
- 2) system of requirements and restrictions for each rule for eliminating disadvantages of recruitment due to changing the orientation of the page of the election edition.

At present, a large number of techniques are devoted to the development of fonts and the formation of rules for the administration of electronic publications [1-5]. As to the need to change the orientation of the page of the elevation of the publication, then it occurs most often when converting the publication into an electronic format. In accordance with various ways of administering electronic publications in specialized literature [6-11], proposed mechanisms for controlling the quality of content and optimizing the interface of multimedia applications. The entire book design system delivers the choice of one type of layout. The design is determined by the content of the book and its type. In turn, the book's contents and its type must be based on the selection of a composite scheme and a page layout.

Materials and Methods

In the context of the stages of development of the method of automatic change orientation of the page of the presentation of the presentation by research methods are the following:

- 1) investigation of the process of leading editions having two options orientation options:
 - supervise analysis in publishing processes → methods of analysis and synthesis;
 - analysis of layout stages → methods of analysis and synthesis;
- 2) analysis of the process of changing the page orientation of the viewing publication:
 - analysis of the requirements for publications having two-page orientation options;
 - analysis of existing software tools for changing the page orientation of the address; → methods of analysis and synthesis, empirical method (experiment);
 - analysis of problems that arise in the process of changing the page orientation of the viewing publication → methods of analysis and synthesis, deductions;
 - analysis of the technical rules of the set and the recruitment → methods of analysis and synthesis, deductions;
- 3) Formation of a complex of models of "thin" making up:
 - forming a plurality of typical layouts of a page → methods of analysis and abstraction;
 - formation of rules for eliminating disadvantages of recruitment as a result of changes in page orientation of page-proof → methods of analysis and abstraction;
 - formulation of the system of requirements and restrictions for each rule to eliminate the disadvantages of recruitment due to changing the page's orientation of the page-proof. → empirical method (experiment);
- 4) Development of a prototype of an automated system for a "thin" recruitment:
 - development of a software prototype scenario for changing the page orientation of the election edition → methods of analysis and synthesis, modeling;
 - selection of tools and its justification → method of analysis and synthesis;
 - implementation in the prototype of the formulated complex of models of "thin" making up → induction method;
- 5) Prototype testing → empirical method (experiment).

Experiments

The Adobe InDesign software is a powerful tool for acting printing products and a leader in modern computer publishing systems, allowing you to realize the most diverse adventures of the author. However, in addition, InDesign has built-in algorithms for converting documents in Folio, Adobe PDF (Interactive), Adobe PDF (PRINT), EPS, EPUB, Flash, IDML, JPEG, XML. So, the extraordinary functionality of InDesign caused the choice of this system to realize the problems of this study. InDesign CS6 has a developed functionality to create editions with the "elastic belronty", which is extremely necessary at changing the elevation's orientation for further preservation in the Folio format. However, in addition to explicit advantages, InDesign also has several shortcomings at this stage. First, to obtain a qualitative result of changing the page

orientation, it is necessary to pre-conduct several elastic recruitment settings that require too much time and skills, namely:

- the task of the rules of the "elastic recruitment";
- tying text fragments;
- reconciliation of repetitive content and others.

InDesign allows you to deal with the following rules for "elastic recruitment":

- scaling;
- re-centering;
- holding based on guidelines;
- making-up based on objects.

Zoom is most effective when adapting a page to a layout with the same aspect ratio and orientation. Repeated centering is appropriate when changing the content for a similar device and orientation with a task of larger size. Helping based on guidelines is suitable for simpler pages consisting mainly of text and multiple images. By managing objects based on objects, you can configure the method of correcting each object for a new page. However, after changing the page orientation options, the result of the coup, as a rule, requires further editing, because InDesign only performs work on adding pages and copying content. However, the program has not implemented intelligent content placement algorithms on the pages of the publication; the application places materials in the same places where they are on the source pages. As a result, as a result of changing page orientation, the layout loses its identity to the original layout. Therefore, further placement of text and graphic frames, in terms of the rules of the set and laying, and an aesthetic point of view, is necessary. Secondly, an existing algorithm for changing the page orientation of the viewing publication does not allow the implementation of the methods of moisture and grooves of the text to achieve competent placement of content on a layout with a modified page orientation. So, after changing the page's orientation through InDesign, the transactions of the ink and grooves of the text also have to be carried out manually, which we understand as a "thin making-up". Thirdly, in the process of changing the edition page, the parameters of the tools that use the machine tool to preserve the identity of the original are not regulated. Therefore, in this case, the machine is guided only by its own experience and subjective judgments. As a result, the final product may not correspond to the general technical rules of the set and making-up.

At the stage of changing the publication page's page orientation, several problems require solutions. The main ones are:

- mismatch of the number of lines of the initial layout and layout with modified page orientation;
- violation of the aspect ratio of text and graphic frames to page parties.

Therefore, existing problems cause contradictions, which is that changing the orientation of the page of the elevation edition changes the number of rows on the page. This leads to the inconsistency of the initial content on the page, due to an increase in the incomplete coefficient. But at the same time, changing the orientation of the page of the drawing publication in the Folio format is the full correspondence of the initial layout in terms of content volume on each publication page.

Results

To achieve the goal, it is necessary to form a list of rules for eliminating the disadvantages of recruiting as a result of changing the orientation of the page of the elevation publication. To do this, you need to analyze how the volume of content changes on the page depending on the change in the parameters of the layer elements. Fig. 1 presents a general algorithm for designing printed publications. In this scheme, special attention should be paid to the block "Calculation of the number of lines during design." This calculation is carried out in accordance with a mathematical model designed for a text block. As a rule, any band consists of several blocks: graphic, text, block, occupied by the formula, table, etc.

The main text can be divided into parts, subdivisions, and chapters in any combination. Paragraphs separate every new semantic part. The division of the text under paragraphs facilitates the text of the reader. Therefore, the basis of developing a mathematical model is the principle of separating text into paragraphs.

According to the separation of text on paragraphs, the area occupied by the text may be expressed through the area of all paragraphs of the text:

$$S_{\text{общ}} = \sum_{i=1}^N A_i, \tag{1}$$

where A_i – the area occupied by i paragraph;
 N – the number of paragraphs in the text.

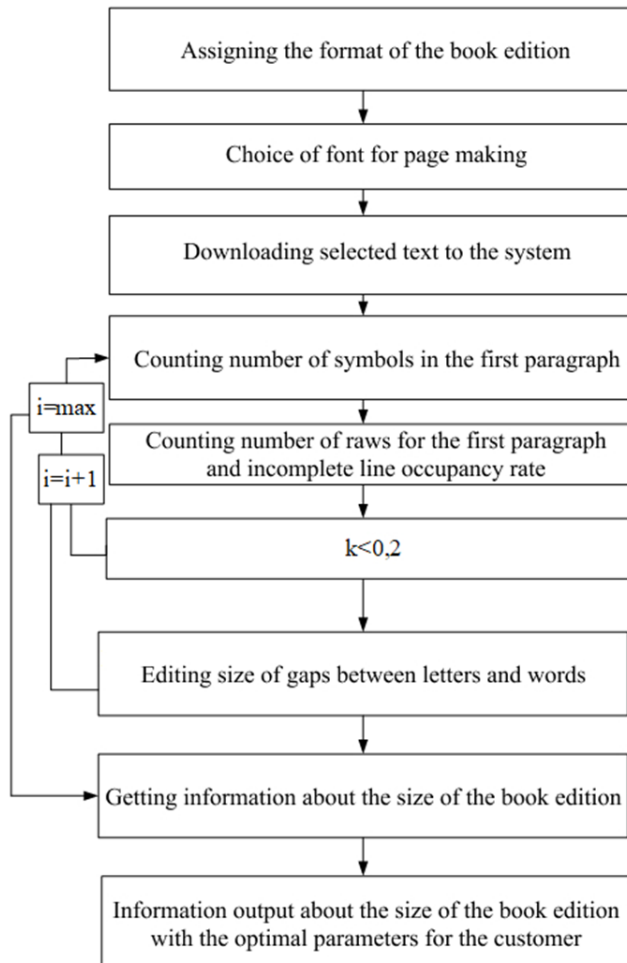


Fig.1. Algorithm for calculating the number of rows when designing.

Considering the area occupied by one paragraph, it should be noted that for the convenience of perception, the beginning of each paragraph must be allocated. The most common way of allocating is the problem of paragraph indentation at the beginning of the first line. In addition, each paragraph includes a basic text with a certain width of signs, letters, and distances between words. As a rule, the number of characters in the future edition is known. Before adjusting, one also specifies the format of the future edition, a font headset, and a keel size for the selected headset. The number of rows N in the paragraph may be presented as a function of text parameters, that is:

$$N=f(F,k,k_0,A,\varphi,\gamma,\omega),$$

where F – edition format;
 k – the value of points;
 k_0 – base point size;
 A – area of paragraph;
 φ – the value of inter-exploin discharge;
 γ – the value of the distance between words;
 ω – the width of the signs.

The following formula can calculate the number of lines in the edition:

$$N = \frac{k}{k_0 \cdot F} \cdot \left[A + \left(\sum_{j=1}^m \sum_{i=1}^n a_{ij} + g \cdot a_k \right) + \sum_j \sum_{i=1}^{n-1} \eta_{ij} + \sum_{j=1}^{m-1} \beta_j + q \right], \tag{2}$$

where F – edition format, mm;
 A – paragraph indentation, mm;
 k – signs point size, points;
 k_0 – base point size, points;
 a_{ij} – width i sign in j word, mm;
 g – the number of transfers
 a_k – the width of the transfer sign, mm;
 n – number of signs in a word;
 m – the number of words on one row of strips;
 q – the value of the magnitude of the gaps that fall in the end of the lines, mm;
 n_{ij} i β_j – width of letters and external distances, mm.

The calculation was carried out for 15 headsets. The arbitrary text of historical literature was taken. The formula determined the errors:

$$n = \frac{|N_v - N|}{N_v} \cdot 100\%, \tag{3}$$

where N – number of rows obtained when calculating;
 N_v – number of rows obtained when a page making-up.

The calculation results differ slightly from the layer results, but the error is minimal. For the main headsets used in the development of editions, the error is not more than 2% (Table 1). However, in certain circumstances, the simulation of the text block may occur. In the first place, it concerns incomplete lines. If the string is filled in less than 10%, then you will have to perform the position of the lines manually. To do this, you can change the width of the sign or reduce the distance between characters or words.

Table 1. The experimental value of the calculation error

Font	9	10	11	12	13	14
Times New Roman	-0,29	-0,39	0,48	-0,11	0,30	0,93
Petersburg	-1,19	-0,60	-1,08	0,00	0,00	1,03
Arial	-1,57	0,00	-0,97	0,20	0,18	0,77
Tahoma	-0,92	-0,36	-0,86	0,20	-0,55	0,94
Myriad Pro	-0,99	-1,02	0,12	-0,11	0,88	0,36
Univers	-1,03	-0,23	-0,63	-0,29	0,63	0,83
Miniature	-0,28	0,25	-1,02	-0,21	0,87	1,08
RodeoLight	0,00	1,67	0,43	-0,10	0,82	1,27
a Antiquetrady	-1,26	-1,02	-0,62	0,00	-0,44	0,57
a BodoniNova	-1,57	-0,12	-0,43	0,10	-0,91	0,09
Academy	-0,47	-1,55	-1,80	-0,12	-0,55	0,10
AGGalleon	-0,42	0,63	-0,57	0,31	0,10	1,08
Baltica	0,00	-0,43	-0,49	0,00	0,16	0,38
Verdana	-0,58	-0,84	-0,10	0,09	0,57	1,20
Journal	0,00	-0,23	0,00	0,38	0,18	1,14

Investigation of the impact of the parameters of the publication on the formation of a petroleum set when returned in two stages. The impact of the settlement options for the passage or extension is determined in the first stage. The coefficient of sealing of the PN rows characterizes the degree of moiety and exhibition. The second stage is characterized by the coefficient of filling the text block area – P_S

$$\Delta P_N = (P_N - 1) \cdot 100 \%, \tag{4}$$

$$\Delta P_S = (P_S - 1) \cdot 100 \%. \tag{5}$$

The P_N and P_S coefficients are convenient to determine not an absolute value, but their percentage to $P_N = 1$ and $P_S = 1$ with the output parameters of the set. The positive area of the values of these coefficients corresponds to the value of lines, which leads to an increase in the text block area, and the negative - the moiety of the lines, which leads to a decrease in the square of the text block. Investigation of the influence of distances between words was originally analyzed, and then experimental verification of the results obtained in the text and grooves of lines in the text was carried out. In this case, it is essential to introduce such a publication parameter as a coefficient of the fullness of the k incoming row.

When returning to any publication, it is inevitable for incomplete lines to appear in the text. Such lines are filled in less than 20% and worsen the ease of reading text, leaving additional spaces on the page. If you do not monitor incomplete lines and do not remove them, then there will be a lot of short lines that increase their volume. To combat similar lines, there are several tools, the most important of which is to change the value of external distances. It is a powerful tool for combating hanging lines in aggregate with others. Reducing each degree of each of the parameters can completely get rid of incomplete lines. It will significantly reduce the number of rows in the edition, and when changing the orientation of the elevation, it will allow us to capture the required content on the page. To assess the impact of the size of the external distance in the text of historical literature on the number of lines that need to be driven or expelled, we will use a mathematical model. The residual part of the calculation of the number of rows in the paragraph can determine the fill factor K of the incomplete line. That is, if the calculation of the number of lines was, for

example, 5.155 lines, then the filling coefficient will be the residue value: $k = 0.155$. According to the proposed version of the reading, the entire process can be divided into the following steps:

- calculation of the number of characters in each paragraph;
- definition of the fill factor K in an incomplete line;
- in the case of a small value of the filling coefficient, the string yield, reducing the distance between the letters to the maximum permissible value n_{max} ;

If the result does not suit, use a distance decrease tool between words β ;

- summing up the number of lines and receiving the results of the publication.

In addition to the output patterns of the impact of changing the values of the parameters of the distance between the letters and between the words on the effectiveness of the abomination and grooves of the text, the algorithm for changing the orientation of the page of the drawing publication was formulated.

This algorithm is based on the coefficient of proportionality of the k_{np} , which displays the proportional ratio of the parties of the element elements:

$$k_{pr} = \frac{W}{H}, \tag{6}$$

where k_{pr} – coefficient of proportionality of the parties;

W – freum width;

H – freum height.

Therefore, the scheme of operation of the algorithm for changing the page orientation of the page is as follows:

calculation of the coefficient of proportionality for page parameters;

creation if a document with a new page orientation;

calculation of the new size of the elements of the page using the coefficient of proportionality of the k_{np} (multiplication of the coefficient in case of a decrease in the height of the page and division in the event of an increase in the width of the page, and vice versa).

As for the typesetting and forcing of the text, the following algorithm was displayed. If necessary, to manage the text, use the coefficient of k_{fit} .

$$k_{fit} = \frac{V_{par}}{V_{last\ line}}, \tag{7}$$

where k_{fit} – typesetting paragraph coefficient;

V_{par} – a paragraph volume;

$V_{last\ line}$ – volume of the last line of the paragraph.

Table 2. *The formation of rules for eliminating the disadvantages of recruitment as a result of changing the orientation of the page of the page-proof*

№	Case	Operations
1	Page, general parameters	1) Creation of a document using a coefficient of proportionality
2	Text in one column	1) Creation of a document using a coefficient of proportionality; 2) Typesetting of text by the algorithm of the typesetting coefficient
3	Text in several columns	1) Typesetting of text by the algorithm of the typesetting coefficient; 2) If necessary - an increase in the number of columns
4	Strip illustration	1) Horizontal version request; 2) Placing an image on the center of the page, fitting at the height of the page; 3) Proportional image wrapping in graphic frame
5	Open illustration on page width	1) Horizontal version request; 2) Checking the image to the width stock, if any, then create a graphic frame with an output height and width of the size band + proportional image wrapping; 3) Typesetting – forcing of the text
6	Open illustration by page height	1) Request a horizontal version of the image; 2) Creating a graphic frame with an output width and height by size of a band set + proportional image wrapping; 3) Typesetting – forcing of the text
7	Closed illustration	1) Placing an image with an attachment to the edge of the set of a set, with the preservation of the indentation ratio from the top and bottom of the page field, as well as the flow parameters; 2) Typesetting – forcing of the text
8	Deaf illustration	Placing an image with an attachment to the edge of the set of a set, with the preservation of the indentation ratio from the top and bottom of the page field, as well as the flow parameters
9	Text in a few columns + illustration in destination	1) Request a horizontal version of the image; 2) Sllustration on the width of the column with a decrease in height, then fit the contents of the graphic frame + typesetting of the text; 3) Typesetting of the text + proportional reduction of illustration
10	Illustrations of proper geometric forms	Prohibition to change the aspect ratio, placement of frames in the necessary coordinates
11	Several vertical images	Placing illustrations to left – right
12	Several horizontal images	Proportional placement of an image with an attachment to the edge band, with the preservation of the ratio of indentation from the top and bottom of the page field, as well as the flow parameters

For each paragraph, it is necessary to calculate the coefficient of k_{fit} , after which, to achieve maximum efficiency, it is precisely the paragraph in which the coefficient of k_{fit} is the largest. Based on the results of empirical studies, it has been proved that using this coefficient of k_{fit} ink gives significant energy efficiency compared to using the rule of the shortest line on the page. In

accordance with the formed set of page layouts, the rules of possible elimination of the disadvantages of an account as a result of changes in the orientation of the page of the elevation edition (Table 2) were formed.

Thus, based on the results of empirical studies, a number of cases of an acute, as well as options for maintaining the volume of content on the page, were considered. As a result, rules were formulated to change the orientation of the elevation of specific layout cases. The following system of requirements and restrictions allows for avoiding errors and discrepancies in the original layout as a result of changing the orientation of the page of the elevation publication.

As for the publication's text, before changing the orientation of the page of the elevation edition, it is necessary to draw attention to the unilcurrent prepositions and dashes. After all, after changing the orientation of the page, the text will be performed. The specified redemption can lead to the emergence of hanging prepositions and transferring the dash to the following line as the first character. It is not allowed relative to the rules of a set and a manner. For this reason, you should also pay attention to fixed transfer in words.

During typesetting and forcing text, the following restrictions for distillation agents were formed. When grossly typesetting, one uses the tracking tool, which can be reduced by a maximum of up to 30 thousand estimates of conditional units of em and increased according to +30 thousand conditional units of em.

When uniformly typesetting, the text uses several means, such as the distance between words and symbols and scaling characters.

At the same time, based on analysis of the technical rules of the set and a manner, as well as expert opinion of professional machines, the parameters of the uniform moisture of the text may vary in the following limits.

The distance between words can be changed from 80% to 110%, with a step of 5%. The distance between characters is allowed to change from -3% to 3%. Scaling characters can be changed to the opposite side to 95%.

If it is not possible to dig or drive the text using the above limits, an additional increase or decrease is technically impossible; then, in the first place, one should increase the distance:

- after a dot at the end of the sentence;
- after exclamation marks and questions;
- after a semicolon and a colon.

When using tracking, it is recommended to consider several features of a person's perception of a typographic text. For example, the text typed in large font, looks better if the letters in words are more closely (than using a standard interval). It is especially noticeable when the word is typed in full letters. The degree of the necessary correction of interlist passes depends on the goat and the headset. Some headsets require more tangible tracking, while others can do practically without such. Particularly useful tracking in situations when there is a need for a dense set of some parts of the text, for example, in separate graphs of the table. The interlink change is used only when it was impossible to dig or drive the text above the specified methods. As for illustrations, their main requirement is to preserve the type of completion. Changing the type of illustrations on the page is possible only if none of the other content saving on the page did not help. Also, the change in the type of illustrations maybe if this does not contradict the basic design of the publication and the rule of the uniformity of the recruitment throughout the publication. As for the placement of illustrations in text frames, there are several options for completion. First, it is important to check whether the graphic frame will not remain a significant part of the image when it comes to illustrations to a frame with preservation of proportions. Otherwise, you need to perform a manual fitting image in an edition with a modified orientation. Or it is necessary to go to the second way of completing the illustration on the page, namely, an image options request for the corresponding page orientation.

And suppose the illustration has equal width and height (square, circle). In that case, it is prohibited to change the ratio between the width and height by the coefficient of proportionality when changing the orientation of the page of the election edition. Thus, a list of requirements and restrictions on each rule for changing the orientation of the page of the election edition were formed. These requirements and regulations apply to each element of the recruitment and describes the order and variant of actions when using an alternative layout.

Discussion of the results

Based on the developed complex of typical layouts, the support of the pages was developed by the next scenario of the prototype of the means of automatic change in the orientation of the page of the elevation edition. Each type of layout of the page When changing the orientation, there are a number of problems inherent in this type of layout. These problems require certain rules for eliminating the disadvantages of recruitment due to changes in the orientation of the page of the elevation publication. As a result, it was decided to build a system of automation on the principle of individual modules and functions that will meet the necessary layout types. To solve each problem, the decades of recruitment as a result of changing the orientation of the page of the elevation publication may be used several rules. Therefore, creating multiple modes with a specific set of parameters is necessary. Among such parameters, the user program can select the most suitable for a specific type of original edition layout. Thus, the concept of a means of automation of the process of changing the orientation of the page of the elevation publication includes a certain sequence of actions that can be divided by steps:

- choosing the user of a specific mode program (set of settings);
- analysis of the original layout of the publication;
- formation of a script from individual modules and functions required for the layout of type types involved;
- launching the script to change the page orientation of the viewing edition;
- demonstration of the result of the script;
- output information about problem pages to pay attention to.

In addition, it is necessary to reproduce the developed knowledge base in itself:

- complex of typical page layouts;
- list of problems that may arise at the stage of changing the page orientation of the address;
- list of rules necessary to solve problems in the process of changing the page orientation of the viewing publication;
- the system of requirements and restrictions for each rule for solving problems in the process of changing the page orientation of the viewing publication.

Thus, a software product has been developed for practical and scientific value because it will help machine tools avoid many errors when changing the page of the elevation edition. To implement an effective user interaction with the software product, creating a convenient, intuitive interface executed on the usability principles is necessary.

To solve the task of automatic change in the orientation of the eligible publication based on the developed scenario, the use of JavaScript language will be optimal.

Software products such as Folio Producer and Folio Builder are used to create folio products.

The Folio Producer Instrument Instrument Sets Overlay Creator Palette, Mandatory External InDesign Module and Desktop Viewer application.

The Windows Forms or Web application can be used as a prototype interface.

The first stage of the script is the user selection of a program of a specific mode (set of settings). So, the system of recommendations and restrictions was implemented as three modes of prototype operating modes that can be selected from the drop-down list.

Each mode is implemented in the prototype as a separate module, changing each parameter in the form of separate functions.

The «Default» mode is used in the rough municipality and exhibition of the text when using the tracking tool that can be reduced by a maximum of up to 30 thousand estimates of conditional em units and increased in accordance with +30 thousand conditional units of em.

Images in this mode are fitted in proportion to graphic frames.

«Advanced» mode is used with a uniform position of the text when using multiple means of moisture and grooves of the text, such as the distance between the words, the distance between symbols, and scaling characters. At the same time, based on analysis of the technical rules of the set and a manner, as well as expert opinion of professional machines, the parameters of the uniform moisture of the text may vary in the following limits.

The distance between words can be changed from 80% to 110%, with a step of 5%. The distance between characters is allowed to change from -3% to 3%. Scaling characters can be changed to the opposite side to 95%.

The third "Custom" mode suggests that the user performs the selection of settings to change the page orientation of the viewing publication. The choice can be done according to the following parameters:

- distance between words;
- distance between characters;
- scale characters;
- trekking;
- allow/prohibit altering;
- allow/prohibit change number of columns per page;
- format image freight in graphic frames;
- choosing a directory with image variants for modified orientation.

In addition, users can familiarize themselves with the parameters of modes, basic rules, and restrictions for changing the page orientation for each of the typical layouts by passing "Help".

The next stage of the prototype is the analysis of the original layout of the publication. This process occurs due to reading the values of the styles of the layer elements (Fig. 2 and Fig. 3).

```
for(pStylesIndex=2;pStylesIndex<myDocument.paragraphStyles.length;
pStylesIndex++){
  horDocument.paragraphStyles[pStylesIndex].appliedFont =myDocument.paragraphStyles[pStylesIndex].appliedFont;
  horDocument.paragraphStyles[pStylesIndex].capitalization =myDocument.paragraphStyles[pStylesIndex].capitalization;
  horDocument.paragraphStyles[pStylesIndex].fontStyle=myDocument.paragraphStyles[pStylesIndex].fontStyle;
```

Fig. 2. Reading parameter values for text frames.

```
horDocument.paragraphStyles[pStylesIndex].pointSize=myDocument.paragraphStyles[pStylesIndex].pointSize;
horDocument.paragraphStyles[pStylesIndex].spaceBefore=myDocument.paragraphStyles[pStylesIndex].spaceBefore;
horDocument.paragraphStyles[pStylesIndex].tracking=myDocument.paragraphStyles[pStylesIndex].tracking;
horDocument.paragraphStyles[pStylesIndex].underline=myDocument.paragraphStyles[pStylesIndex].underline;
horDocument.paragraphStyles[pStylesIndex].leading=myDocument.paragraphStyles[pStylesIndex].leading;
horDocument.paragraphStyles[pStylesIndex].justification=myDocument.paragraphStyles[pStylesIndex].justification;
horDocument.paragraphStyles[pStylesIndex].dropCapCharacters=myDocument.paragraphStyles[pStylesIndex].dropCapCharacters;
horDocument.paragraphStyles[pStylesIndex].dropCapLines=myDocument.paragraphStyles[pStylesIndex].dropCapLines;
horDocument.paragraphStyles[pStylesIndex].firstLineIndent=myDocument.paragraphStyles[pStylesIndex].firstLineIndent;
```

Fig. 3. Reading parameter values for text frames.

Regarding the formed coefficients of the k_{pr} proportionality and the k_{fit} , then in the prototype they are implemented as follows (Fig.4 and Fig. 5).

```
Koef_K[pCounter]=Sum_chars/last_chars;  
}  
for(pCounter=0;pCounter<horDocument.textFrames  
[frameCounter].paragraphs.length;pCounter++)  
  
var max=Koef_K[0];  
var max_counter=0;  
canchange=false;
```

Fig. 4. Implementation in the prototype of the coefficient of typesetting k_{fit} .

```
for(i=1;i<horDocument.textFrames[frameCounter].paragraphs.length;i++)  
{  
  if(Koef_K[i]>max && ParagraphChanged[i]==false)  
  {  
    max=Koef_K[i];  
    max_counter=i;  
    canchange=true;  
  }  
}  
if(max_counter==0 && ParagraphChanged[0]==false)  
canchange=true;  
if(canchange==false)  
break;
```

Fig. 5. Implementation in the prototype of the algorithm on the basis of the coefficient of typesetting k_{fit} .

The alternative orientation page is also formed by the coefficient of proportionality (Fig. 6).

```
ratio=myWidth/myHeight;  
myPages=myDocument.pages;  
var rectangle=0;  
for(pageIndex=0;pageIndex<myDocument.pages.length;pageIndex++) {  
  myPages[pageIndex]=myDocument.pages[pageIndex];  
  with (horDocument.pages[pageIndex].marginPreferences) {  
    var columnCount=myColumnCount;  
    var columnGutter=myColumnGutter;  
    var top=myMarginTop*ratio;  
    var left= myMarginLeft/ratio;  
    var bottom=myMarginBottom*ratio;  
    var right=myMarginRight/ratio; }  
}
```

Fig. 6. Implementation in the prototype of page forming on the basis of the coefficient of proportionality k_{pr} .

Each parameter of the administering elements is checked for existence, and in the event that the style does not contain information about some parameter, the value of this parameter is taken from the base style. Similarly reads information about character style and tables. Placing illustrations occurs according to the following algorithm (Fig 7, Fig. 8).

```
for(gFrameIndex=0;gFrameIndex<myPages[pageIndex].  
rectangles.length;gFrameIndex++)  
{  
  try  
  {  
    filename =File(myDocument.pages[pageIndex].rectangles[gFrameIndex].graphics[0].itemLink.filePath);  
    image=true;  
  }  
  catch(error)  
  {  
    image=false;  
  }  
myGraphicFrames[gFrameIndex]=myPages[pageIndex].rectangles[gFrameIndex];  
var horY=myGraphicFrames[gFrameIndex].geometricBounds[0]*ratio;  
var horX=myGraphicFrames[gFrameIndex].geometricBounds[1]/ratio;  
var horY2=myGraphicFrames[gFrameIndex].geometricBounds[2]*ratio;  
var horX2=myGraphicFrames[gFrameIndex].geometricBounds[3]/ratio;  
myGFrameWidth=horX2 -horX;  
myGFrameHeight=horY2 - horY;  
imageFrame=horDocument.pages[pageIndex].rectangles.add();  
imageFrame.geometricBounds=[horY, horX, horY2, horX2];
```

Fig. 7. Algorithm for reading and placing illustrations.

```
imageFrame.fillColor=myDocument.pages[pageIndex].rectangles  
[gFrameIndex].fillColor.name;  
  }// end for(gFrameIndex=0;gFrameIndex<myPages[pageIndex].rectangles.  
length; gFrameIndex++)
```

Fig. 8. Read algorithm and tasks of frames.

Thus, we get information about the color model and its data on each color paint or sample.

So, after analyzing the elements of the recruitment, the script is formed from individual modules and functions necessary for the layout. As a result of the prototype, one obtains an InDesign document with a modified page orientation (Fig. 9–11).



Fig. 9. The result of the automated change of the page of the InDesign document with the vertical orientation of the page: a - in the horizontal orientation of the page; b - using the prototype created.



Fig. 10. The result of the automated change of the page of the InDesign document with the vertical orientation of the page: a - in the horizontal orientation of the page; b - using the prototype created.



Fig. 11. The result of the automated change of the page of the InDesign document with the vertical orientation of the page: a - in the horizontal orientation of the page; b - using the prototype created.

Thus, the resulting layout corresponds to the initial content. For a prototype, an interface for interacting with the user has been developed for the auto-edition orientation of the page. Within the framework of this interface, a logo for a software product was also created, a name was given, and a well-designed generic concept of prototype design.

Summary

Some empirical research within the framework of this article allowed analyzing most cases. As a result, the rules for eliminating the disadvantages of recruitment as a result of changing the orientation of the page of the elevation publication in specific cases of a layout. In addition, a certain regularity of the possibility of moisture and grooves of the text was found at certain values of the parameters of the moisture and exhibition, the coefficient of proportionality of the kpr and the coefficient of kfit text is formulated. In addition, scientific research was analyzed to identify the boundary limits of the possibility of changing the parameters that affect the scope of text on the page. The analysis of technical requirements for the original - publication layout was also carried out. As a result, a system of requirements and restrictions on the rules for eliminating the disadvantages of recruitment due to changing the orientation of the page of the elevation publication.

The resulting scientific result can be used at the stage of administering electronic editions in a folio format for a tablet PC, namely, in the process of changing the orientation of the elevation page. As a result, compliance with the final layout of the technical requirements of the set and a recruitment is provided.

The resulting scientific result can be used at the stage of administering electronic editions in a

folio format for a tablet PC, namely, in the process of changing the orientation of the elevation page. As a result, compliance with the final layout of the technical requirements of the set and a recruitment is provided:

- a) formulated separate modules and functions used for a particular type of page layout;
- b) the designed set of parameters of the elements, which fully describes the following elements of the academic as a page, paragraph, symbol, table, and object;
- c) the three prototype operating modes are developed, which are characterized by sets of parameters to automatically change the orientation of the page of the elevation edition;
- d) an algorithm for automatic change of page orientation of the viewing of the publication is developed;
- e) developed toolkits to change the page orientation of the viewing publication automatically;
- f) a formulated knowledge base containing a set of rules and restrictions to eliminate the disadvantages of automatic change of page orientation of the viewing publication;
- g) The logo for the software product is developed, and the general design concept of the interface is formulated.

The developed system of automatic change in the orientation of the page of the elevation publication allows to:

- a) read the necessary information about the style and formatting of the text and its content from the InDesign document;
- b) change the page orientation to preserve the identity of the original layout;
- c) provide information about problem pages to pay attention to after the orientation change.

The scientific result of the study is to formulate the method of automatic change in the orientation of the page of the drawing publication. The practical effect is the realization of the developed method in the prototype of the automated system for a «thin layer».

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