

THE REENGINEERING OF THE PROCESSES IN THE TYPOGRAPHY INDUSTRY

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ABSTRACT

The Reengineering of processes is starting to be considered a concept with an increased degree of incidence among Romanian Companies. There are arguments that a real request of this concept is starting to take shape also in Romania. The increase in the efficiency of the use of material resources is determined by two key factors: the use of the color management systems for the color information exchange between the different equipments and software from a typographic flow chart; the use of performance printing technologies in the integration of typographical flow software. This fact inevitably leads to a reduction of the used material resources and consequently to the increase in the efficiency of their use. The objective of this paper is to highlight the importance and the impact of the reengineering of the processes based upon two fundamental values. In the first place the study will concentrate on obtaining results, on practice and not on theory thus trying to identify the problem that an organization confronts itself with at a given time and to find a real solution; to analyze the dilemma and to take a decision. The other value refers to the fact that the reengineering of the processes works in almost any case: small or large business, production or NGO. Well defined processes represent the key to success for an organization that wishes to adapt to the actual business environment, governed by an increasingly tight competition.

KEYWORDS: *reengineering, process, color management*

1. Introduction

The companies from all the industry fields no matter their size are continuously exposed to changes, and the speed of change is always increasing. The change leads to the permanent necessity to align the organization regarding: online transactions, the management of the relations with clients, post-fusion integration, externalization, shared services, network management, the strategic realignment of the market.

The sustainable competitive success is obtained only if the organization aligns in a flexible manner and in the shortest period possible to the changing requests of the market. This thing requires the existence of some organizational structures that take into account the present and future dynamics of the competition environment.

The Reengineering of the processes offers solutions oriented towards the future for the companies from almost all industries. The designing and the management of the company are part of the integrated approaching manner of the organizational control. The different modules of this approaching manner offer the safety of the successful design and implementation of the right solution that corresponds to the organizational challenge.

The beginning of the 1990's is marked by the appearance of some concepts like reengineering or the improvement of the business processes.

The management of the process refers to the continuous activity of the organization, whose coordinates can be modified anytime this thing is required. All the time we will have to process the complaint of a customer or to operate budget reductions, and for that we need a procedural approach. But we also need a complementary approach that requires the ability to initiate a single project and to complete it knowing that, probably, we won't be managing this project after its finalization.

Today, the successful organizations have the capability to use information in a more efficient manner, to learn faster, to be more dynamic and more innovative. These results require radical transformations of the business processes and implicitly essential organizational transformations. „The world today, dominated by clients, competition and change, to organize yourself on the basis of hierarchies and distinct operations is overrated. The companies must organize their entire activity on the basis of their processes.”¹

2. The reengineering of the processes in the typography industry

The last decade has brought in the printing industry an explosion of the information technology. Ultra-fast processors, incredible software applications, high resolution scanners and cameras, Computer-to-Plate and Computer-to-Press are only few of these accomplishments. The crossing from the analog photo-collecting process and the preparation of the printing form to the almost exclusively digital process has produced radical changes in the printing technology.

The standards for the graphical technology nowadays are not only the attribute of industrial production. Reunited under the ISO TC 1301, the number of the standards dedicated to the graphical technology is pretty large – the most important ones being around 60.

The standardization according to ISO 12647 is still a great fuss all over the world – many typographies already adopting it or being familiar with it. There are many other people for whom it is not clear what this standard represents or how useful this standard is. From the crafting to the industrial process the typographical printing has always been considered a profession reserved to craftsmen. But, in the last 20 years, the typographical community has known irreversible transfiguration, making to disappear a part of the typographical technique jobs (the photographic decomposition of the color, the manual assembly etc.). Nothing is the same anymore and almost everything is made digitally, especially in the prepress area.

Regarding the production perspective, we will see that every typographer tries to regulate and adjust the printing device in order to obtain the best quality of the printed color, on the basis of the “tools” at its disposal: the use of different types of inks, the raster types and sizes, the paper types, etc. Of course, for the typographer this is a very motivating process, many having even the capability and the talent to make exceptional things. But this method can also be a good solution for small companies. No matter the experience of the machinist, the things can go to a wrong direction – especially when the graphical information depends from different suppliers (designers, prepress offices, publicity

agencies, etc.). And in this field of work, when things start wrong, they will progress worse – leading in many cases to the reprinting of the paper, generating a lot of disappointment, frustration and extra costs.

The customers are very interested by the ISO standards. The companies that can fulfill this standard will offer them printing services at a high quality level, consistent and predictable, the same performance for the color of the incidence printing or for the packaging printing. In order to be able to print with a high level of quality predictability it is necessary that the process must be made according to a series of standard norms and specifications. Within the digital production flow there have been already successfully introduced many norms. The color separations, the digital proofing printed or simulated on the monitor (soft proofing) are based on ICC2 profiles. The PDF files for prepress are created and controlled with the help of so called PDF/X1 standards or PDF/X-3 – “Certified” documents.

More and more, the proofs become a reference with contractual value for the printed work (The Proof Contract). On the other hand, it is very important that the persons that generate the digital material, being at the beginning of the production scheme, to know what is happening during the printing process and on what basis does the final printing takes place. This is one of the main reasons for which the industry has created a standard.

For the classical printing processes, more variables have been put together in a standard accepted worldwide: ISO 12647. This standard describes how the standard printing process must be made and how the final result must look like – for each type of paper and for each printing process (offset, headset, etc.), the color range and the Tone Value Increase (TVI). On the basis of this standard, many independent research institutes for the graphical technology have produced ICC color profiles, which imposes that all the people from the graphical production chain must know exactly what each standard represents and to efficiently (a certain part of it) in the process.

Due to this model we can benefit from a transparent work flow. The digital documents can be created according to the accepted color standard – the same standard applying all along the printing process and the prepress process. The behavior of color has become predictable in each step of the production flow – from the digital photography to prepress and printing – reducing the time and the costs for corrections, the quality of the printing being substantially improved.

Because digital files and proofs are produced according to the same standards, the unwanted color changes become visible and can be modified in an early stage. This thing is done in order to have in the printing phase, in the moment when the optimum parameters of the ink layer have been reached, the value of the contours could be equal with the proof values.

There are some intentions for the standardization of the control of the graphical technologies processes at the level of the profile organizations from Europe and abroad starting from the 80's. The standard was introduced in 1996, on the basis of the German model of the standard “ProzessStandard Offsetdruck”³ created by Fogra⁴ for BVD M5. This is an internationally accepted standard, being permanently in a configuration and update phase by the technical committees ISO TC 130. After its introduction, the standard had few updates – the last important one being introduced in 2004. The standard was split in subcategories in order to describe the specific control norms for the different printing technologies, as it follows: Offset in sheet and rotational heat-set (ISO 12647-2), rotational cold-set (ISO 12647-3), roto-engraving (ISO 12647-4), serigraphy (ISO 12647-5), and flexography (ISO 12647-6), as well as digital proofing (ISO 12647-7).

In the ISO certification process, one of the greatest challenges for typographers is the crossing from the control of the graphical production flow using the densitometry measurements to the measurements made using spectrophotometers. The complexity and the large number of variables that is present in the digital preparation process of the works requires the checking of the quality and the consistency of the color on the basis of the spectrophotometer measurements – and this aspect is mandatory for the implementation of the standard ISO 12647.

Although at the first look it seems easy, the procedures that must be fulfilled impose not only the purchase of a spectrophotometer but especially the special training of the employees. They must have enough competences and professional knowledge about the spectral measurement systems and color control – this being the first step in the adoption process of the standards ISO 12647. Any company from the graphical line of work can be certified by the Swiss institute UGRA, by the German institute FOGRA or by the experts and the competent national organizations.

The certification for the standard ISO 12647 implies two major steps. The first step, and the most difficult one, is represented by the alignment of the different preparation and production processes made in the typography, at the level of the norms imposed by the standard. This preparation step includes the forming and the testing of the technical personnel from all the departments of the typography – from the DTP's to the machinists – activities often made in collaboration with external experts. In the second stage, the examining stage, the typography meets the status of “certified according to ISO 12647” if it can demonstrate in an official audit that the materials that it prints are made according to the full compliance of the procedures and methods of the ISO quality control. The validity of the ISO 12647 certificate is usually of 2 years.

The standards are a strategic tool for the commercial success, the implementation of the control standards for the graphical technologies allowing an easier access to international markets. From this point of view, being a standard exclusively dedicated to the graphical production processes, ISO 12647 is a strategic element, much more important than the certifications ISO 9001 and ISO 14001, the universal standards valid for almost every type of economical activities. In the same time, this standard is a common resource for the commercial partners from all over the world helping to eliminate the technical restrictions from the commercial exchanges – the standardization having positive effects for an entire spectrum of activities, from research to the marketing of new products.

For typographies, the ones that are the pioneers of the whole ISO 12647 certification process, the benefits mean in the first place a high level of control of the color using the instruments imposed by the standard's norms: the measurement and the control of the color according to the values of the LAB model on the basis of a tridimensional description of the color, the Delta-E control, the trapping and the Tone Value Increase. The ISO certification leads to the efficiency of the production process reducing the preparation time, saving materials (ink and paper), increasing the trust in each process or between processes and last but not least the internal and external communication.

The customers are in fact the engine that drives the standardization process. They are the ones that want to have the guarantee that they can produce their materials at the same quality level in any typography, to obtain the same results of the quality and consistency of colors using different technological printing processes or want that the commercial that they insert in one publication to appear in the same way in other 15 written press products. For the customers, the adopting of the ISO standards by the typographic industry is the good news that the experiments and the negative surprises are about to end.

The major benefits obtained by the customers due to the ISO 12647 standards can be: an increase in their trust in the typography, predictability for the finished product, consistency between works, repeated orders, identical works or works with similar graphic elements printed in many typographies and an improved and a much more uniform communication between the people that generate the information (publicity agencies, designers, etc) and the typography.

3. The color management system (cms)

The color management system represents the key element in ensuring the substantial and predictable color reproductions, by using a large range of equipments and programmes from different producers. Since the substantial reproduction of colors conditions directly the reduction of consumptions in the typographical industry, the utilization of the color management system (CMS) throughout a digital printing flux determines, indirectly, the growth of the efficient use of the material resources in this field.

The color management system defined by the International Color Consortium–ICC, that imposed as standard in the field, being adopted by the majority of the printing equipments and programmes producers, represents a method of reference to the used parameters for describing colors by the input and output equipments to a common or general reference. The key element of this system is represented by the profiles connection space PCS (Profile Connection Space), through which is made the conversion of the information about color between the hardware–Profiles equipment and the software CMM (Color Matching Modules).

At the risk of some individual changes for each type of equipment, the color management system creates the possibility of integrating certain production fluxes by using different types of equipments, from different producers, who ensure the substantial reproduction of the coloured images. Adding new equipment or a new software product in an existing digital flux of typographical or printing production requires only its connection to the common reference.

In general, the main advantage offered by the utilization of color management systems consists of the economic efficiency growth in the typographical industry, being determined by the following factors:

- The price decline per production unit, by the material cost reduction and with the work force;
- The productivity increase, obtained by the production cycle reduction;
- The profitability increase of this type of activities, determined by the increase of the volume of works made in a certain time interval.
- The utilization of the color management systems in integrating digital fluxes of the color images has major advantages, as well for those implied in the production process of the color publications, as for their users or consumers.
- Among the most important ones, we can mention:
 - The substantial and with accuracy reproduction of the colors, being determined by their unitary description, irrespective of the reproduction equipments of a technological flux;
 - The increase of the product's quality, by ensuring a substantial reproduction of colors (identical with the original);
 - The development and increase of the clients' satisfaction, to whom quality printings are offered, with suggestive color images, actually identical with the images that they requested;
 - The cutting off of the technological consumptions, of the listing tests and the rejections, determined by the unitary description of the colors which eliminates the errors

produced by their differentiated representation by the equipments and programmes from a typographical or printing working flux;

➤ The cutting off of the production cycle, by eliminating the color matching times and the proofing of the color tests;

➤ The cutting off of the production expenses, by reducing the consumptions and the working time, etc.

The color management system can be implemented dependent or independent of the equipments and software applications that compose the technological flux of color reproduction.

Usually, the components of a color management system, made up on the basis of the main concepts that define it, are implemented incorporated in the computers' operating systems, in their communication interfaces with the marginal equipments of color processing (driver-e) but also in the software applications of editing and publishing the color images.

The open platforms, independent of the equipments and programmes implied in the process of reproduction of the color images, use for the color management in a digital production flux either the standard system of the color management created by ICC, either compatible systems ICC. ICC is the industrial consortium that defined the open standard of color management made up or formed of a CMM (Color Matching Module) at an operating system level and color profiles for equipments (ICC profiles) and PCS (Profile Connection Space). According to the ICC standard, the color profiles specific to the equipments implied in a reproduction process of the color images are component and integrant parts of the formats of graphic files of the TIFF, JPEG, PDF type, etc.

A flexible implementation solution, used for ensuring the color exactness, consists of adopting the paradigm *what you see is what you get* that the color management system offers – WCMS (What Color Management System). In contrast with the conventional color management, that pursuits, mainly, to obtain a matching of colours that is pleasant to people (correctly perceived by the human visual system), WCMS pursuits the provision of a good visual matching for different technologies, different reproduction circumstances and environments and different visualization conditions. This thing has the following major implications:

The visual matching of the color (almost colorimetric) for different technologies and reproduction circumstances and environments, as well as multiple visualization conditions, thing that implies the utilization of a representation model of the color;

The most performing color management system is being implemented at the level of the user interface of the operation system that contains profile selections for equipments (drivers for scanners, monitors or printers) and configurable working space.

The analysis of the actual implementation of the color management at the level of the operating system, drivers and graphic applications shows that it still exist some confusion between the manufacturers of the operating systems, drivers and graphic applications used in the process of digital reproduction of color images.

Conclusions

Romania's integration in the European Union has constituted, at the same time, a threat as well as an opportunity for the Romanian organizations depending upon their preparation level in order to face the new challenges and conditions. We refer here to the competitiveness of the Romanian organization measured through its capacity to offer quality products at a more accessible price for the consumer, which entered into an open competition with the offerers on the European market. In this context, we consider

interesting and absolutely necessary the analysis of the implications that the Romania's integration in the European Union had, the most important ones being the following:

- The exacerbation of the competition through the entrance of some new competitors on the Romanian market as a result of the growth of its attraction on the one hand due to the growth of the purchasing power, and on the other hand due to the general stability and the safety of the investments in Romania;

- New legislative regulations that imposed certain quality standards and environment ones to the market bidders for the purpose of ensuring the quality of the consumers' life;

- The increase of the consumers' exigencies and demands, who are more and more familiarized with the quality standards practiced in UE;

- The elimination or abolition of customs charges from the trade with the UE countries, appliance that is going to have an important role in the protection of the internal producers;

- The reduction of the weight of the black economy/ invisible economy, that constituted an important profit source for the Romanian organizations, some of them surviving only because of it;

- The reduction or elimination of the fiscal credit, thus creating the premises of a competitive environment that will determine the disappearance of certain organizations as a result of the new conditions.

In our opinion, the most important factors of success of the Romanian organization from the printing /typographic industry are:

The process reengineering refers to the continuous activity of the organization, whose coordinates can be modified each time it is being imposed. But we also need a complementary approach that implies the ability to initiate a unique project and to finish it. The printing organizations from Romania must implement a performant system of internal organization, thus ensuring better and better services and products. In Germany it is being introduced a standardization system of the offset printing, standards that are very hard to master and learn, and this is the reason for which there are still not a lot of printing houses to apply them.

A successful organization on the printing or typographic market must adopt the process reengineering through which to offer a product or a service that should satisfy its customers, a relationship based on constant quality, delivery terms kept correctly and short enough, a motivated and well-organized team, that takes permanently into account the customers' demands.

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