

The Logics of Standardising in Print Workflows

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Abstract

The process from design to a print ready file is mainly handled manually without a standardized workflow. Several applications are and can be used to edit and adapt design for print, but all order specification data are handled in independent systems or on paper. This is a very flexible system, which is adaptable to any graphic workflow, but with poor process control and efficiency.

We have created a web-enabled system for ordering of business stationary. This system is highly automated, with creation and editing integrated with order handling and printing. Savings in time and effort are high. The key lies in restricting variety of products and to standardize the processes.

Introduction

The journey from analogue production of printed products to today's digital production has eliminated many steps in the manufacturing process.

Along with the technology shift we see three other clear trends driven mainly by customers to the printing industry:¹

- More colour, images and illustrations in printed products. A way to get attention.
- We also see that product life cycles get shorter, which give printed products a shorter lifetime. This makes the editions smaller.
- With the lifetime of information being shorter, we will also need shorter lead-times from an idea to a delivered end product.

With an open standard for communication and industry standards for design and layout software, possibilities to develop an integrated system for print production emerged.

Hypothesis

Often in system development the goals and ambitions are set too high. The risk and payback on large IT systems with the ambition to handle all types of graphical products and all activities in the printing workflow is

often too large for the actors in the graphic arts industry. The solution is to develop IT-systems with restrictions in functionality and offerings, as well as standardized processes, but still able handle reasonable amount of flexibility

Method

The primary sources of information used in development of the integrated system for print production have been interviews with users and potential users. The users interviewed have been using early versions, and prototypes of the Printon (PO) System. The PO system is based on the Printon (PO) workflow. (See figure 2 below)

The secondary sources used have been the evaluation of existing digital workflows in the graphic arts industry in Europe and US to gain knowledge of what exists and what needs to be improved. This was done using the Internet, on print exhibitions, interviews with software companies and trade press.

Creating Business Value with IT

A common understanding among people working with IT is that only 10% of systems developed are good investments. How true this is, is of minor importance but the fact remains that managers today are concerned with IT costs and want to make IT investments that create business value.

The "productivity paradox" which questions information technologies contribution to economic output has now been resolved (IT investments have a positive effect on productivity).² However there are still a lot of investments in IT, which give poor returns. Only 50% of business executives use ROI calculations to evaluate IT investments, and even fewer evaluate after implementation.³ With that background a method for successful IT investments is needed. According to today's research the following is to consider in order to make successful IT investments:⁴

- Integrating IT solutions with the business process
- Strong links and added value to external suppliers, customers and business partners.
- Use automation to improve information quality

- Involvement of users in development phase
- Integrating systems
- Minimising level of complexity
- Standardising and simplifying
- Automation
- Computer experience of users

Standardising the Print Workflow

The traditional print workflow goes through a number of points of contact between the customer, designer and printer before the order is ready to be printed. This is in many ways an analogue workflow applied on digital techniques.

This is an effect of a history of traditional proprietary systems and the lack of or slow and expensive communication networks.

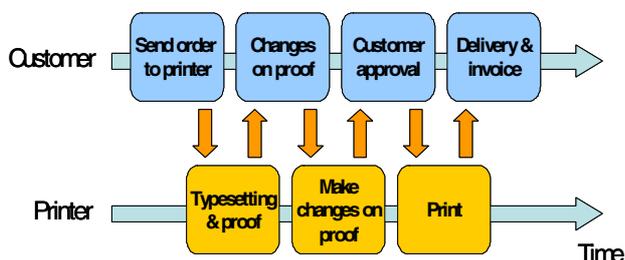


Figure 1. Traditional print order workflow,⁵

The main reason of the inefficiency, illustrated by figure 1, is the lack of a standardized communication of the product definition between the customer and the printer. This results in errors, which have an effect on quality costs.

A way of reducing this inefficiency is to automate parts of the process, minimizing the level of manual human interference.⁶ Automation of the communication process may be obtained if the layout and data is fixed to the highest degree possible, and the customer only may adapt the product at the ordering time using a guaranteed correct predefined layout. The adaptation will not violate any product design or information rules. A workflow using automated communication is illustrated by the following figure.

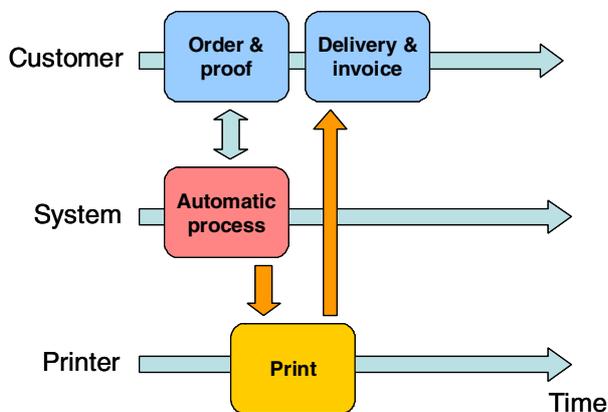


Figure 2. PO workflow.⁵

The communication automation is handled by a system that exists as a tier between the printer and the customer, available through a network such as the Internet. The system allows product adaptation by separating the product layout, formatting and static data from the pure user specific data. This type of separation is ideal for products that are ordered repeatedly with minor changes in for example business cards.

The major benefit of the system is that it allows the customer to place its order and review, modify and accept the proof online in one single contact opportunity. The disadvantage is that not all kinds of creative work are applicable to this process.

Results

In the system development phase the ambition was to create business value in the print workflow. We adapted some of the findings on how to create successful IT-systems and the result is the PO system based on the print workflow presented above.

The time benefits using the PO System are apparent when using it for repeated orders. The initial time cost for product design is larger than traditional design. However, each consecutive order has a lower time cost than a traditional repeated order.

Other results we can show is that the PO system:⁷

- Print errors are at 1% compared to 3% on the traditional workflow for business stationary print.
- In the PO workflow no additional information is required by the printer on repetitive orders. Traditionally the printer requires additional information on 50% of all orders.
- Users can track his orders online
- Ordering history is available and statistics
- Accessibility- System is available 365/24/7
- No skills required to order user defined printed products
- Shorter lead-times
- Less stock that becomes obsolete, since you order print on demand.

Conclusion

By standardizing and simplifying the order process for a limited number of products, large gains in productivity are measured. The PO system is limited in the number of graphical products you can order and to what extent you as user can design your products. This has benefits in that unskilled users can order printed products and the risk of errors in a non-standardized communication is much larger. The productivity gains in the PO system are large. The conclusion is that standardization has effect on successful IT investments.

The Logics of Standards, and the Logics of Business

Productivity is a driver for industrial development. IT has become a tool for productivity advancements.

The graphic arts industry has a long craftsmanship tradition that is now challenged by technical achievements on manual applications. With this in mind

it is possible that the timing and balance between standardisation and flexibility is what made the PO system successful.

If we speculate why these systems are developed now, some hypotheses can be raised. One answer is probably the accessibility to networked computers and basic computer skills, which makes the entry barrier to systems like this low. Another answer lies probably in the general gradual maturity of using IT in the traditionally craftsmanship-oriented graphical industry.

However another kind of answer might be more interesting. It has to deal with the competence coming from combining opportunities for improvement created by:

- A higher degree of specialization,
- Better pattern recognition
- A higher degree of standardisation
- Automation
- Systems

The point is that when new niche actors, like the company Printon, enters the graphical industry and specialise on certain activities in the workflow they might, easier than traditional graphical companies, end up seeing patterns in the activities they work with. These patterns can, in best case, lead to the development of standards, which is the basic ground for automation, and in the end for the development of a new system. One critical explanation behind the existence of Printon is therefore likely to be the competence of following the chain of development - all the way, to a new system.

During the last ten years we have seen several different kinds of actors specialising in certain activities in the graphical industry [for a general description see Ref. 8]. It might have been imaging bureaus, companies developing workflow systems or prepress companies etc. Some have gone well, others have disappeared. One may ask whether the companies that have disappeared have done so only because of customer reluctance to standardize and thus reducing the possibilities continuous artistic changes or if it is a result of the lack of capability to handle the chain of specialising-pattern recognition-standardising-automation.

Taking It One Step Further

Of course there are problems. One of the most important keys to success is however to find the relevant balance between standardisation and flexibility.

One of the drivers in development is certainly customer behaviour, and with more computer awareness integrated standardised workflow systems like the PO system will become more common. It would therefore be interesting to see if the balance point in the particular case that we have discussed here can be moved further during the development of the graphical industry that we have in front of us.

In many non-standardised industries the use of standalone IT systems are common. That has been the case in the graphic arts industry and at hospitals for example.

Research has shown that durable goods companies have better returns on it investments than non-durable goods companies.⁹ Could one reason for this be that durable goods companies are more standardized than non-durable goods companies? And if so, in what directions are different parts of the graphical industry going?

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Biography

Henrik Kihlberg worked five years at Tetra Pak worldwide with business process redesign of prepress after MSc I. After that he started my PhD studies at (KTH). He also did an MBA at Theseus Management Institute in Sophia Antipolis (FR). In 1999 he started Printon, which has developed a patented web enabled system for editing and ordering business stationary print.