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## Workflow and process management in printing and publishing firms

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### Abstract

This paper examines the effects of the dramatic changes incurred in the sector of printing and publishing after the introduction of digital printing. The print production process is rapidly shifting from analogue to digital technologies as the infrastructure (or basis) for workflows. The efficiency of the production process requires the digitalisation of all steps and elimination of analogue methods and materials from the process flow apart from the starting and finishing phase. Across networks, printing will be a dial tone service simple, reliable, ubiquitous, fast, and cheap. The combination of all these aspects offers very important competitive advantages to printing and publishing firms, which will be able to adapt their business processes, according to the technological and organisational framework of digital printing. This includes both the improvement of the already offered services in terms of best-value-for-money publishing and printing as well the introduction of new services. In this article, we present a workflow solution over the web that allows printing and publishing firms to capitalise fully the opportunities offered by digital printing. We also present results from performance measurement and reorganisation after the introduction of the D-PRINT solution to three printing and publishing firms.

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*Keywords:* Digital printing; Workflow systems; Performance measurement; Publishing

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## 1. Introduction and state of the art

The publishing and printing market is going through a period of crisis during the last 5 years especially regarding small printing–publishing firms mainly due to

- *Intense Competition in a shrinking market*, due to the creation of small printing and publishing firms, which offer services of questionable quality in very low prices.
- *The cost of offset printing machines* (up to 2 MECU), which is considered prohibitive by most small firms.

Due to intense competition and the low investment in key technological advances, the future of printing and publishing firms is considered very problematic with many firms facing at present very serious economic difficulties. With the introduction of digital printing companies investing in this technology are expected to

- *Gain competitive advantage with the introduction of new services* like distributed, personal and just-in-time printing.
- *Overcome the problem of low investments in key technologies* as the cost of digital colour presses is much lower (0.4 MECU) compared to that of the offset printing machines.

The introduction of digital printing through the integration of digital colour presses and DTP systems imposes very substantial changes in the overall printing process and causes the emergence of new ways of publishing as it satisfies the following needs:

- **Print-On-Demand:** Because of the direct-to-paper solutions offered, it is possible to adjust the quantity of printed material to the actual needs with high accuracy. This has many consequences both for business and ecology. In terms of the publishing and printing business this means that one can: (1) Offer very competitive pricing for small print jobs, since there are no costs associated with the initial set-up of traditional printing presses. Since there is an identified market trend towards smaller print jobs, it is essential for SMEs to cope with it. (2) Avoid unnecessary costs, caused through “overprinting”, i.e., the printing of more than required material, just for being able not to start a whole new print job, in case some more copies are required. In ecological terms, it means that there is an enormous saving in paper production, since only the required material is printed.
- **Just-in-time-printing:** The direct-to-paper printing solution allows the direct linking of the DTP and the printing process. It is thus possible to print immediately material that has been approved by a customer, avoiding all operations and waiting time that is necessary today for preparing films and sending them to the printing press. This will dramatically improve customer satisfaction, since a customer will be able to receive the exact quantity of printed material with no delay at all.
- **Distributed printing:** Through the interconnection of digital presses to international networks, it is possible to introduce remote printing. This implies substantial changes in the distribution of printed material throughout the world, since it deletes transportation costs and allows the immediate remote printing of the actually required quantity. Especially for manuals accompanying equipment and software this leads to significant improvements in

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