



# PRINTING AND COPYING IN SCHOOLS

**This paper analyses the copy and printing needs in schools and universities.**

**A solution is proposed to manage and account paper-usage for the staff and to make copying and printing prepaid for students.**



## INTRODUCTION.

In schools and libraries, copiers and printers are typically used by students at one side and educational staff at the other side. In most cases the students are expected to prepay for the usage (debit system) while the staff may work with a pre-assigned budget or a post-processed accounting (credit system).

The usage of the printers and copiers with the corresponding payment system has to be very robust, user friendly, reliable, yet simple and 'student tolerant'.

Often students and staff have a badge to identify themselves, to get access to the facilities and possibly for other applications.

Ultimately the single badge can be used to account copies and prints and to pay all goods and services in the school to obtain a cashless environment.

## IDENTIFICATION CARDS.

A student or personnel card is used to identify and legitimate the person as part of the closed user group. In principle, it can be a paper card with a picture and ID-number together with other relevant info.

<b>Barcode</b>	The student-ID can be printed as a barcode which can easily be scanned. Although simple and costeffective, the barcode is static, limited and can easily be copied
<b>Magstripe</b>	Through special terminals one read and/or write some of the information on the magstripe. Magcards have proven to be very valuable in the copy, parking and ticketing applications
<b>Smartcard</b>	A smartcards contains a chip which can manage more information in a more secured way. Smartcards are available with or without electronical contacts.
<b>Mifare cards</b>	Mifare has established itself as the European standard for contactless smartcards. The open Mifare standard allows the same smartcard to be shared in a secure way by several applications of different vendors. This makes the Mifare card a future-proof choice for new new projects!

## PRINTING ON ACCOUNT

Gespage (gestion de pages) is a LINUX based printserver to account printjobs for the different classes. Gespage can manage the printjobs of unlimited number of users, using many different printers, assigning cost to virtually unlimited number of classes.

The system keeps track of who printed how much when on which printer for which class.

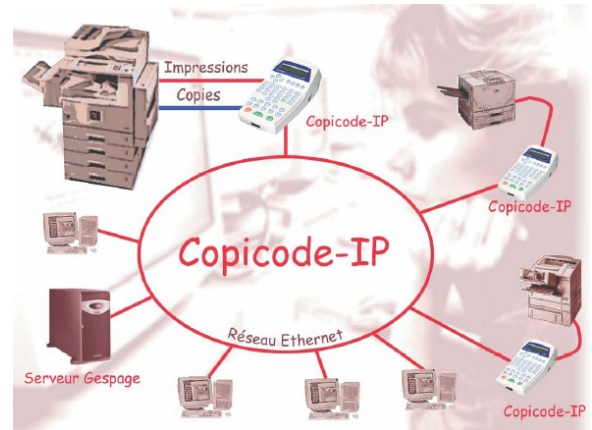


## PRINTING AND COPYING ON ACCOUNT

To include the copies in the accounting system, every copier and multifunctional is equipped with an intelligent control terminal (*copicode-IP*), which can work with codes or can work together with a badge. The control terminal is installed on the LAN and interfaces to the multifunctional in order to grant access and to account copies and prints.

All control terminals are managed through *Gespage* which will now account all prints as well as all copies.

For each printer, copier or multifunctional upto 4 different page prices can be defined (e.g. A3/A4, BW or colour). If some-one wants to make copies, he/she presents the personnel badge to the copier or multifunctional. The copy terminal reads the ID of the user and verifies the authority to copy with the *Gespage* server. When the user is regular and his budget is not exceeded, copies can be made. During the copy-session, the accounts in *Gespage* are updated. If some-one has launched one or several print jobs from a workstation, he/she may go to the printer or multifunctional and present his badge. *Gespage* identifies the user and verifies if there are printing jobs waiting. The user may release all printjobs or select one specific document. *Gespage* will keep track of the action for further accounting.



## PREPAID PRINTING AND COPYING

A safe *Cartadis* e-purse can be configured on a Mifare badge. This purse can be loaded with money at a paystation which accepts coins, banknotes and or bank cards.

Students who wish to make copies simply enter their student card in the copy terminal (*TCP2-Mif*) which will debit the e-purse for each copy made.

A similar terminal can also be connected to a print-paystation where the students can select their printjob provided they have sufficient money on the purse.



## COMBINING BOTH SCHEMES

It is possible to share multifunctionals between students and staff by combining the *copicode-IP* with the *TCP2-mif* as badgereader.

When students enter their card, they automatically make copies with their e-purse. When personnel enter their card, the system will automatically recognise the user and process the accounts.

In this combination, one does not need a paystation any more to select and pay printjobs. When someone has launched a printjob he can present his badge at one of the multifunctionals. The controller will only show and release the printjobs associated with the owner of the card. This way of operation does not only imply important cost-savings but also introduces better productivity and more confidentiality.

## CONCLUSION.

*Gespage* is a vendor independent accounting system for printing and copying. In combination with *Cartadis* copy terminals, it provides a complete solution for paying and accounting copies and prints in schools.

As the e-purse can also be used for other applications like vending and catering, the proposed print and copy solution integrates smoothly in the ultimate private payment system for schools.