# Telemetry project documentation gas station network in France

A nationally recognized operator in France awarded a telemetry bulk project to MICROTRONIC in order to equip its Vending Machines in a nationwide Gas Station chain with our telemetry solution.

## Assignment of tasks

The operator manages a large number of gas stations in France.  At every gas station, different coffee vending machines are available and articles (cold drinks, Snacks, souvenirs, etc.), paying at the cash register.  In France, it is very popular to pay with different cashless media. In this case, also a chip card with a loyalty bonus system can be used along with cash and credit cards for the coffee vending machines.  The chip card reader devices are available at each vending machine and at the cash register.  The difficulty of the statement lies therein that each system functions on another type and manner:

a)  credit card entry at the cash register will automatically send the authorized processes and deducted centrally.  Cash transactions at the cash register are sent manually to the central office.
b)  the chip card transaction at the vending machine must be selected manually and must transmit to a computer next to the cash register.  This computer also allows loading of credit balance on the chip card.  These entries are sent manually to the central office.
c)  cash transaction at the vending machine must be selected manually and must transmit at the cash register.  These transactions are sent manually to the central office.

The manual processes are susceptible to mistakes, slow and not perfectly understood.  A new automated solution should replace these manual flows more extensively, should accelerate and prevent any Data Manipulation.

## Solution

MICROTRONIC offers a new, universal telemetry solution, which is compatible with every vending machine, all relevant data automatically grasps and sends, integrates into an existing network infrastructure and guarantees a detailed data analysis.

> The entire telemetry solution consists of the following components:
> - MICROTRONIC Com box (MICROpay6) with vending machine cabling
> - local Router with MICROpay6 networking
> - FTP server
> - Vending management system (VMS)

In every Vending Machine, the MICROpay6 is installed and reports as a normal cashless payment system vis-à-vis the vending machine.  The vending machine, bill validator and coin mech, the Card Reader and cash/coin box sensors are connected to the MICROpay.  External power supply connects the MICROpay6 directly to the vending machine.  Each event in the vending machine is registered over an additional DDCMP connection with the MICROpay6.
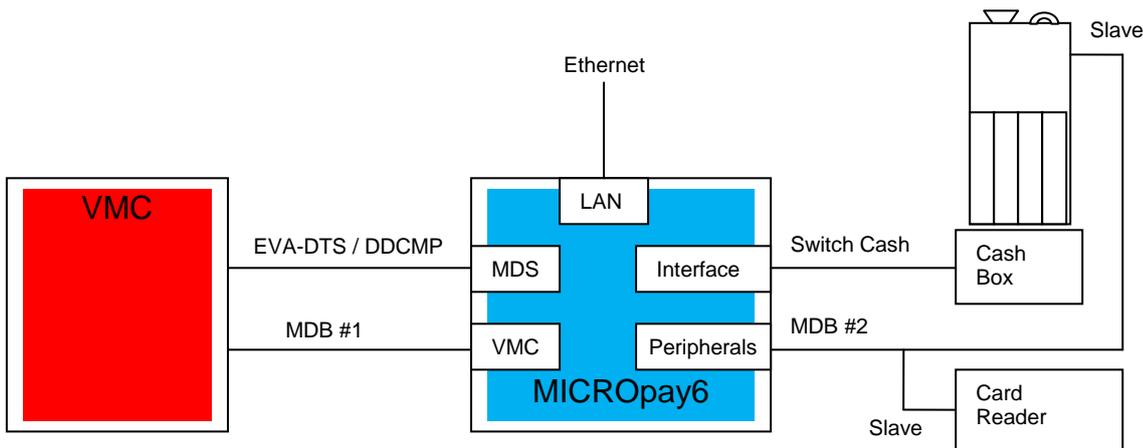
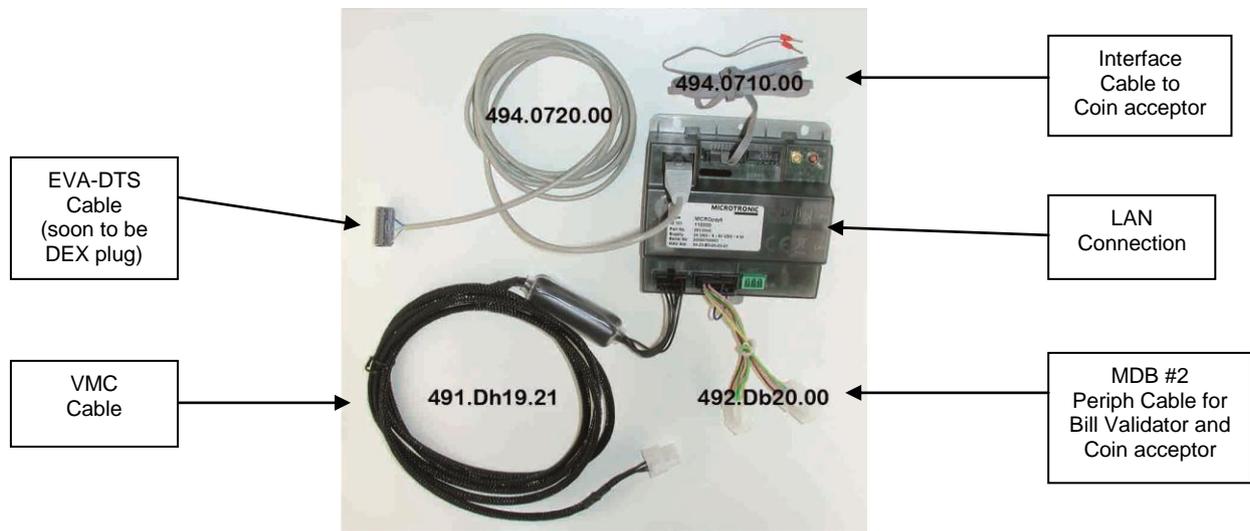FIG1: *Scheme of a MICROpay6 vending machine installation*



FIG2: *Survey of the MICROpay6 cabling*

Each gas station has their existng ADSL Router which is used (a cellular 3G-Router can also be used without any problems). Generally there are more than one vending machine in the gas station shops. All MICROpay6s in the vending machines are connected to a Switch with standard Ethernet cables. The Switch is connected to the Router with another Ethernet cable. So every MICROpay6 has Internet access. The Router manages the IP addresses of the MICROpay6s within the local network (LAN); fixed or dynamic IP can be used.
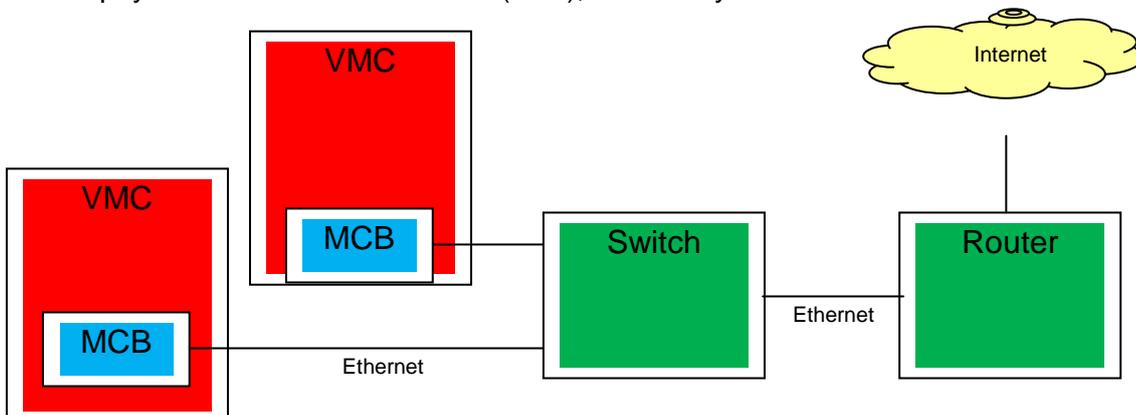


FIG3: *Scheme of the local vending machine networking (LAN)*

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Following data will be transmitted:
- EVA DTS detailed sale statistics of all cash – and Cashless transactions
- EVA DTS detailed filling statistics of the bill validator and coin mech
- EVA DTS price update at vending machine

The delivery of the EVA DTS sale statistics and – filling statistics are sent automatically and is activated with every removal of the coin / bill acceptors through an installed sensor. If no Internet connection exists at the time, an EVA DTS statistics file with all current information in the internal storage of the MICROpay6 is saved. The MICROpay6 will regularly try to send all stored statistics files.

A price update can be sent via internet and is guaranteed through a special application, which sends an EVA DTS Configuration file from the MICROpay6 over the network. The MICROpay6 forwards this Configuration file from the vending machine over the EVA DTS interface. All product prices are defined in the vending machine and are for cash / Cashless identical. Every sale is registered from the MICROpay6, the prices are always from the vending machine.

All functions of the telemetry solution are not used at this time. The operator will gradually expand the application, which must be adjusted respectively with the Main Office (VMS).
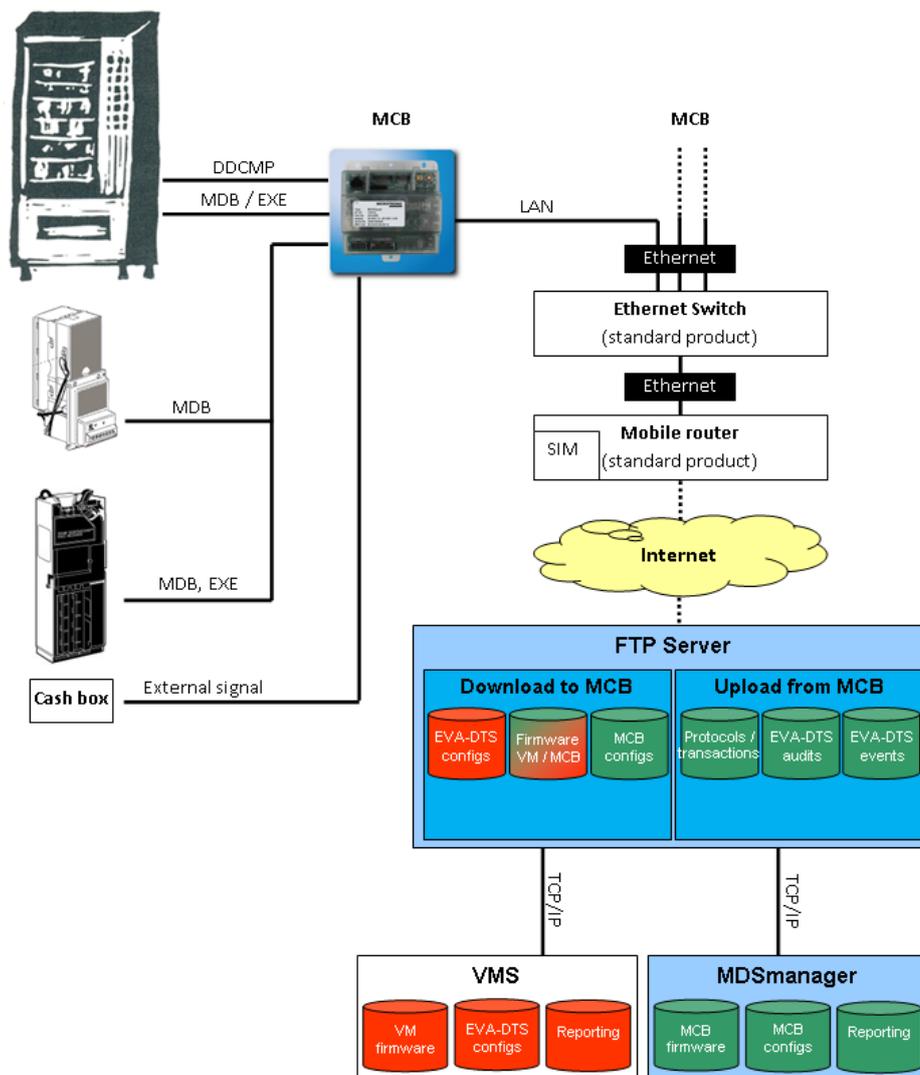


FIG4: Entire survey of the telemetry solution

The central clearinghouse and checkpoint can see in a contemporary manner (nearly realtime) all money movements and product movements and can as required, change prices in the vending machine on a product.

The Main Office application (VMS) was newly developed and comprises extensive reporting with the most variable arrangement possibilities. All basis data from the sales point are telemetered for the analyses described, transmits and imports into the VMS- database. All Inventory data is separated and is taken in the VMS and assigned the sales points.

FIG5: Example sale statistics per month

FIG6: Example sale statistic per week

*FIG7: Example Product statistic per week*



*FIG8: Example Product statisic per day*

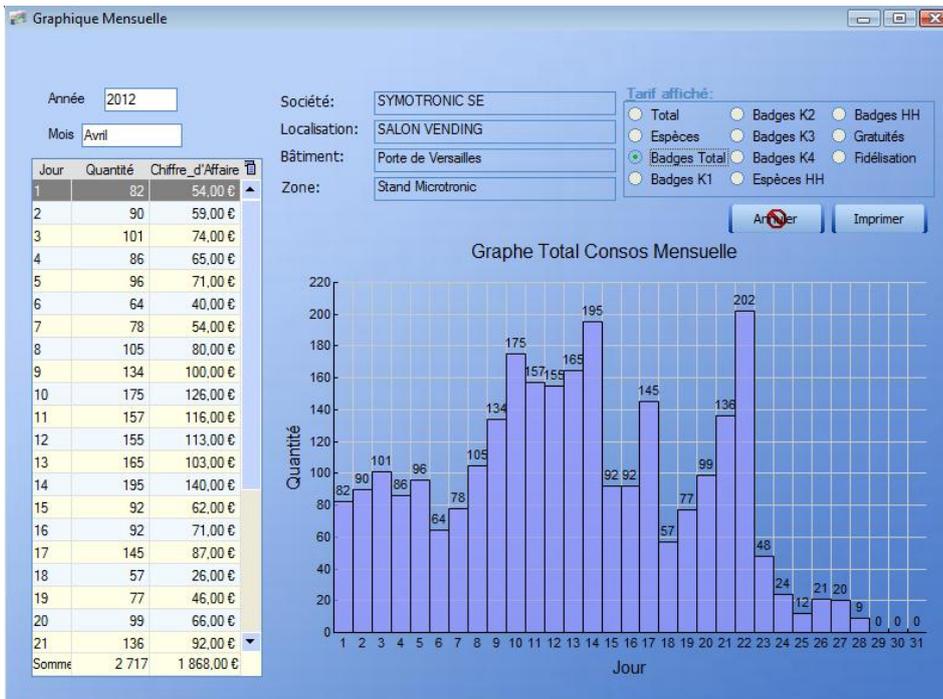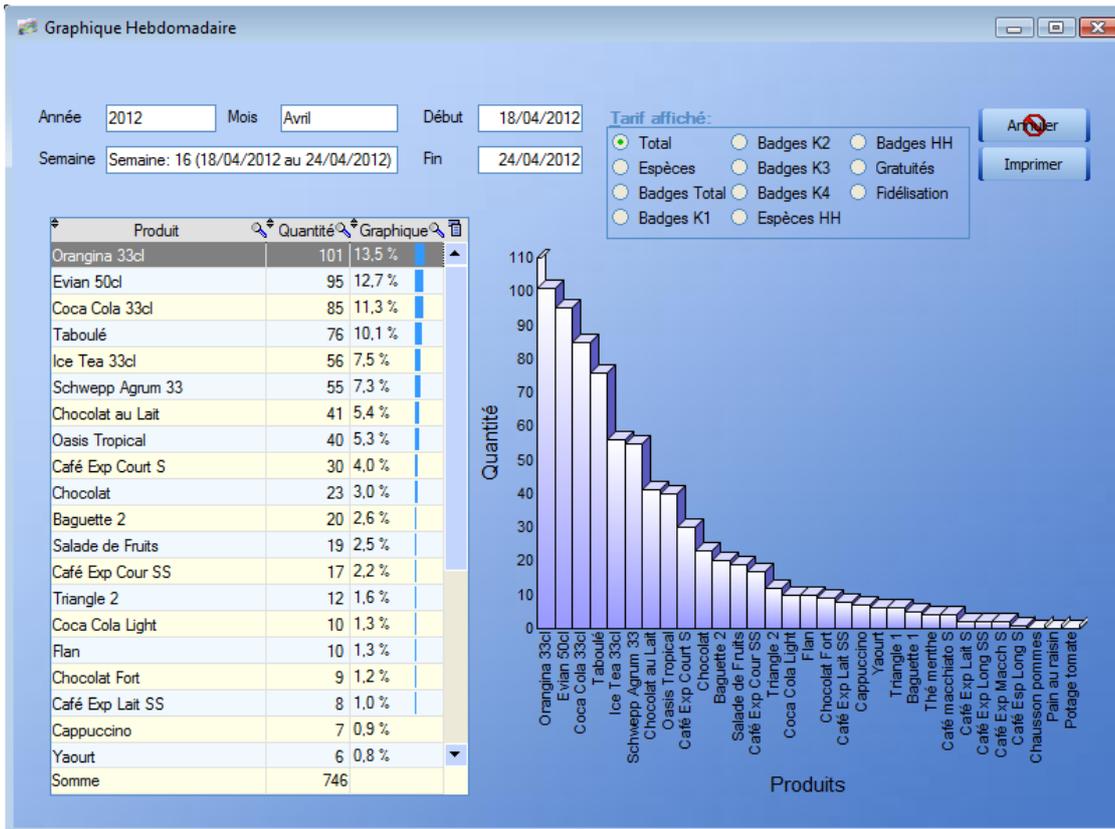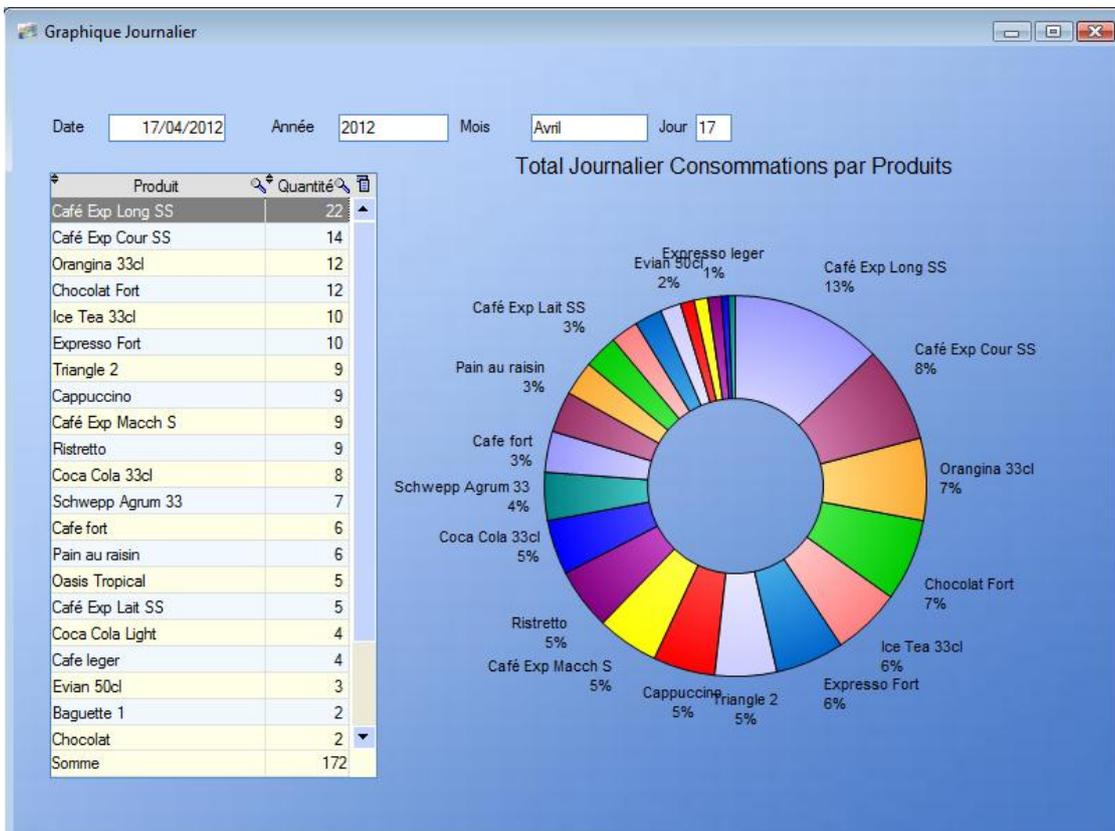MICROTRONIC AG – Dünnernstr. 32, 4702 Oensingen, www.microtronic.ch          02. Apr. 2013

## Ventes Payantes par Badges

**Ventes Payantes par Badges**

Année : 2012  Société : SYMOTRONIC SE  
Mois : Avril  Service : Généraux  
Type Utilisateur : Personnel

Choix Visualisation: ◉ Quantités ○ Chiffre d'Affaires — Valider

Fermer — Imprimer — Exporter

| Badge | Nom | Prenom | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Badge Badge 1 | P P 1 | 6 | 1 | 1 | 4 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| 3 | Badge Badge 3 | P P 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 6 | Badge Badge 6 | P P 6 | 2 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 7 | Badge Badge 7 | P P 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 8 | Badge Badge 8 | P P 8 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 9 | Badge Badge 9 | P P 9 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 10 | Badge Badge 10 | P P 10 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 12 | Badge Badge 12 | P P 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14 | Badge Badge 14 | P P 14 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15 | Badge Badge 15 | P P 15 | 2 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 16 | Badge Badge 16 | P P 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 18 | Badge Badge 18 | P P 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 21 | Badge Badge 21 | P P 21 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 22 | Badge Badge 22 | P P 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 26 | Badge Badge 26 | P P 26 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 27 | Badge Badge 27 | P P 27 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 29 | Badge Badge 29 | P P 29 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 30 | Badge Badge 30 | P P 30 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 32 | Badge Badge 32 | P P 32 | 0 | 1 | 3 | 4 | 2 | 0 | 0 | 1 | 2 | 1 | 2 | 2 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| Somme | | | 82 | 90 | 101 | 86 | 96 | 64 | 78 | 105 | 134 | 175 | 157 | 155 | 165 | 195 | 92 | 92 | 145 | 57 | 77 | 99 | 136 | 202 | 48 | 24 | 12 | 21 | 20 | 9 | 0 | 0 | 0 | 2 717 |

FIG9: *Example sale statistic per user (chip cards number)*

**Benefits**

- uniform statement relevant data of the entire Vending bank
- complete inspection of the cash and cashless transactions
- enormous acceleration of the data collection
- dependable data transmission
- mistake sources are minimum
- data manipulation has the most extensive security
- simplest integration into existing application environment
- excludes central supervision of the Vending banks
- central control of all products-/price points
- through automation - quick recognition of problems / clear, detailed evaluation