

*For clients looking to use technology and software to help them manage off-street parking efficiently and cost-effectively, we have developed this free template for data export requirements. We recommend that you use it to ensure reliable registration of data generated by your PMS.*

## **Data export requirements template - parking apparatus and parking management systems**

Parking operators optimize parking operations and revenues. This requires reliable registration of data generated by the Parking Management System (PMS). In addition, it is essential, from a cost perspective, that both PMS and parking apparatus (PA) are easily accessible by parking operators, for monitoring purposes, using a standard software<sup>1</sup> database. Finally, all information gathered by PMS and PA should be readily available for a data warehouse at the lowest resolution level (raw data). This data should also be available per parking facility.

This document describes the intended application and use of raw data generated by parking apparatus and parking management systems and lists the data export requirements.

When using the term Client this article refers to the party that owns the PMS, most often this is the parking operator or owner. When using the term Contractor this article refers to the party that delivers, installs and implements the PMS in an off-street parking facility.

### **Purpose**

The standardized recordings of raw data are to be used for:

- Tracing of all actions per parking transaction. It should also be possible to identify every incomplete transaction. Moreover, for short-stay users, the amount paid and method of payment must be recorded.
- Gaining insight into the per hour occupancy level per parking facility per user type (short-stay, permit holder, or any other type of user).
- Transferring and interpreting data in a simple and clear manner.

<sup>1</sup> Microsoft or conventional open source software

## List of requirements

### Transaction data

1. All data is saved in the PMS in a generally accessible Data Management System such Oracle, MS SQL, MySQL, SQL or PostgreSQL.
2. All generated data is saved in the PMS for a minimum period of 2 years. It is possible to make number plates anonymous and to delete camera footage after a chosen period, to be chosen at the discretion of the Client.
3. Access to the database is by means of a 'user ID' that provides reading rights only for tables and views. This information can be accessed using conventional tools (e.g. SQL Management Studio in case of MS SQL).
4. On commencement of a project, the relationship between and the structure of tables and views is made available by the Contractor.
5. A back-up of the complete database is made once every 24 hours. This back-up is stored in another physical location than the location of the actual server. The Client only provides a connection, the back-up is not stored on Client's servers. The Contractor is responsible for and supplies any additional IT infrastructure, including virtual LANs, firewall settings, Ftp settings etc.
6. The format of records is fixed during the lifespan of the PMS and PA. This entails that the output file, which is automatically imported to the data warehouse, does not change during the lifespan of the PMS and PA. Therefore, for example, in case of software updates or changes, the records will remain unchanged.

### Transaction information record

7. Content of the record (this information may be distributed over multiple records, providing that these records can be matched per parking transaction). Table 1 gives an overview of the required records.

Table 1 - Transaction information record

Field	Name	Description	Explanation
1	Device code	Unique identification entry terminal	
1.1	Time of entry	Time/date of entry (with an accuracy of max. one second)	Belongs to device code 1
2	ID transaction	A unique ID to link actions to the corresponding parking transactions.	For example: <ul style="list-style-type: none"><li>• Customer ID (e.g. permit holder card number)</li><li>• Card number of short-stay users (e.g. unique barcode number) or</li></ul>

			<ul style="list-style-type: none"> <li>Unique credit card ID, other than the full credit card number (with a unique addition to make the credit card usable for multiple parking transactions)</li> </ul>
3	Card type	Type of transaction	Short-stay users, permit holders, or any other possible user
4	Number plate	Number plate of parked vehicle	
5	Device code	Other unique identification	e.g. for door access control. This device code has nothing to do with entry, payment or exit.
5.1	Time	Accuracy max. one second	Belongs to the device code of point 5
6	Device code	Unique identification point-of-sale terminal	
6.1	Time of payment	Time/date of payment (accuracy max. one second)	Usually will not be available for permit holders. Belongs to device code, sub 6
7	Payment amount	Amount paid (accuracy of one cent)	
8	Payment method	Method of payment used	For short-term users - payment method: cash, credit card, PIN, vouchers, discount vouchers or any other method of payment. Even if a customer paid part cash and part with a voucher, it should be recorded as single ID transaction, as meant in sub 2
9	Device code	Unique identification exit terminal	
9.1	Time of exit	Time/date of leaving (accuracy of max. one second)	Belongs to device code, sub 9

### Occupancy statistics

8. The number of vehicles present in off street parking facilities as measured by the PA. This data is generated every hour (24 times per day).

Table 2 – User statistics

Field	Name	Description	Explanation
1	Time	00.00 hours through to 23.00 hours	
2	Number of SUs	Number of short users present	
3	Number Permit A	Number of permit A holders present	
4	Number Permit B	Number of permit B holders present	
5	Number Permit N	Number of permit N holders present	
6	Manual corrections	Corrections made by operator	For instance in case of calibration of PA or time adjustments

## Incidents and notifications

9. The required fields are listed below in Table 3.

Table 3 – Incidents and notifications

Field	Name	Description	Explanation
1	Time of incident	date/time of commencement of event or incident accuracy of max. one second)	
2	Device code	Unique ID code for device	e.g.: entry gate number, payment machine number
3	Error/incident code	Unique ID error code with a description of the incident	Only records errors/incidents as a result of which part of or a complete device fail
4	End of incident	date/time of termination of event or incident accuracy of max. one second)	

## Collection of parking revenues and monitoring cash change levels

10. The required fields are listed below in Table 4


Table 4 – Data collection parking revenues and monitoring cash change levels

Field	Name	Description	Explanation
1	Time	date/time of commencement (accuracy of max. one second)	
2	Device code	Unique device ID	e.g. number of payment machine
3	Action	Which action has been undertaken (addition of cash change / removal of cash receipts)	Pin and credit card payments are not considered as cash deposits
4	Money added/withdrawn	Amount (accuracy of one cent)	
5	Cash change level	Amount (accuracy of one cent)	

## Accessing transaction data

For the processing of the transaction data, Contractor must offer at least one of the following:

11. The PMS sends a fully automated, daily report of all new transaction data to the Client in CSV (flat file) format. The data may be sent in compressed format (e.g. zip, rar) but never, for, instance, as Access of Excel file. Data can be sent via FTP, SFTP, as attachment in e-mails or any other agreed upon industry standard. The files, which contain the daily transactions



obtained from various locations, should have unique, unambiguous names and include the pertinent date.

12. Contractor makes access available to databases, where Client (or his delegate) can access the data with a read only User ID/password at any time.

### **Contact**

If you would like to learn more about our free data export template, contact [Mark Riemslag](mailto:markriemslag@spark-parkeren.nl) at [markriemslag@spark-parkeren.nl](mailto:markriemslag@spark-parkeren.nl) or call him on +31 70-31 77 005.