Claims

1. Method for operating an access system (1) that comprises an access device (2), in particular for a refuse container (3), said method comprising the following steps:

   a. registering the user (4) using a communication apparatus (5) of a data management system (6) by means of a first communication channel (7);
   b. sending a data record to the communication apparatus (5) by means of the data management system (6) via the first communication channel (7), wherein the data record comprises authentication data and validation data;
   c. initiating the exchange of data between the communication apparatus (5) and the access device (2) via a second communication channel (8), wherein at least the authentication data are transferred to the access device (2), wherein the second communication channel (8) is a wireless connection;
   d. checking the authentication data for the authorisation of the user using a control means (9) of the access device (2);

wherein the registration is carried out only once and the authentication data authorise access to the access device (2) in a predetermined validity range, wherein, when data are exchanged via the second communication channel (8), the communication apparatus (5) does not have to be connected to the data management system (6) by means of a first communication channel (7) and wherein the communication apparatus (5) automatically queries the authorisation of the user from the data management system (6) within a predetermined period, the authentication data on the communication apparatus (5) being deleted and no longer transferred to the access device (2) if the user does not have authorisation.

2. Method for operating an access system (1) according to claim 1, characterised in that
the communication apparatus (5) is a portable data-processing apparatus, which is a mobile phone, a smartphone, a tablet or a laptop, the communication apparatus (5) comprising a control means (10) on which software is installed, which makes it possible to register the user with the data management system and/or by means of which the exchange of data between the communication apparatus (5) and the access device (2) via a second communication channel (8) can be controlled.

3. Method for operating an access system (1) according to either claim 1 or claim 2, characterised in that
the first communication channel (7) is a mobile connection and the wireless connection of the second communication channel is an NFC connection or an RFID connection, the mobile connection being a GSM connection or a UMTS connection or a GPRS connection or an LTE connection.

4. Method for operating an access system (1) according to any of the preceding claims, characterised in that,
in step a), user identification data, device identification data relating to the communication apparatus and a registration code, which is provided by an operator, are transmitted to the data management system (6) by means of the communication apparatus (5), the user identification data and the registration code being read in by means of a QR scanner of the communication apparatus (5).

5. Method for operating an access system (1) according to any of the preceding claims, characterised in that,
when the communication apparatus (5) is used on the access device (2), the communication apparatus (5) is not connected to the data management system (6) via the first communication channel (7).

6. Method for operating an access system (1) according to any of the preceding claims, characterised in that
the communication apparatus (5) comprises a control means (10), which controls the transmission of the authentication data on the basis of the validity data.

7. Method for operating an access system (1) according to any of the preceding claims, characterised in that
the user (4) can deregister himself by means of the communication apparatus (5), the control means (10) of the communication apparatus (5) deleting the authentication data on the communication apparatus (5), the data management system (6) continuing to assign the deregistered authentication data to the user (6).

8. Method for operating an access system (1) according to any of the preceding claims,

characterised in that
the user (4) can block the authentication data assigned to a communication apparatus (5), the access device (2) sending commands to overwrite the authentication data on the communication apparatus (5) by means of the second communication channel (8) when the communication apparatus (5) is used for the first time since the authentication data were blocked.

9. Method for operating an access system (1) according to any of the preceding claims, characterised in that
the communication via the second communication channel (8) is an HCE (Host based Card Emulation) communication, the contact between the access device (2) and the communication apparatus (5) being made by means of an ISO 7816 Select AID command.

10. Method for operating an access system (1) according to claim 9, characterised in that,
by means of a command, the access device (2) actively asks the communication apparatus (5) whether a response on the communication apparatus (5) is given, the communication apparatus (5) responding directly.

11. Method for operating an access system (1) according to either preceding claim 9 or preceding claim 10,
characterised in that,
the exchange of data between the communication apparatus (5) and the access device (2) consists of transmitting application commands, which consist of both a command and data to be transmitted.

12. Method for operating an access system (1) according to any of preceding claims 9 to 11,
characterised in that,
in order to transmit application commands, a transport protocol is used, by means of which the application commands are broken down into one or more segments, depending on the data size of the application command, and transmitted.

13. Access system (1) for carrying out a method according to any of the preceding claims.