Claims

1. System (1) for operating a waste container (2) comprising a waste container (2) having an electronic control device (3), a first communication interface (4) for transmitting and receiving data and a storage device (5), and a server (6) remote from the waste container and having a second communication interface (7),
characterised in that
usage data can be stored in the storage device (5) by the electronic control device (3) after use of the waste container (2), wherein the first communication interface (4) has no device for direct data transmission to the second communication interface (7), wherein an indirect first data transfer between the first communication interface (4) and the second communication interface (7) and between the second communication interface (7) and the first communication interface (4) can be initiated via at least one further communication interface (8, 12, 15), which is provided in a further communication device (9, 11, 14), which is not associated with the waste container (2), wherein the stored usage data are configured to be transferred via the indirect first data transfer (10) to the server (6), wherein the waste container (2) comprises a receiving device (21) suitable for receiving identification data of a user, wherein the received identification data are configured to be transferred via a fourth data transfer (22) by a third communication channel (23) to the first communication interface (4) and the electronic control device (3), wherein the identification data are assigned to authorisation data by the electronic control device (3), the authorisation data are comprised by an access list stored in the storage device (5), wherein the access list can be updated by the indirect first data transfer (10) from the server (6).

2. System according to claim 1,
characterised in that
a first communication device (9, 11) being the further communication device (9, 11, 14) comprises a third communication interface (8, 12) being the at least one further communication interface (8, 12, 15), wherein the bidirectional indirect first data transfer (10) between the first communication interface (4) and the second communication interface (7) can take place via the third communication interface (8, 12), wherein an emptying or service vehicle is equipped with the first communication device (9, 11), wherein the data transfer between the first (4) and the third communication interface (8, 12) takes place via a first communication channel (13).

3. System according to claim 1 or claim 2,
characterised in that
a second communication device (9, 14) being the further communication device (9, 11, 14) comprises a fourth communication interface (8, 15) being the at least one further communication interface (8, 12, 15), wherein the bidirectional indirect first data transfer between the first communication interface (4) and the second communication interface (7) can take place via the fourth communication interface (8, 15), wherein the second communication device (9, 14) is assigned to a user, wherein the second communication device (9, 14) is a portable data processing device, preferably with a display device (16), for example a mobile phone, a smartphone, a tablet or a laptop, wherein the transfer of data between the first (4) and the fourth communication interface (8, 15) takes place via a second communication channel (17).

4. System according to claim 3,
characterised in that
for identifying a user before the use of the waste container (2), a second data transfer (18) can be initiated between the first communication interface (4) and the fourth communication interface (8, 15) and a subsequent third data transfer (19) can be initiated between the fourth communication interface (8, 15) and the second communication interface (7) of the server (6), wherein the second data transfer (18) of identification data between the first (4) and the fourth communication interface (8, 15) takes place via the second communication channel (17), wherein the third data transfer (19) between the fourth communication interface (8, 15) and the second communication interface (7) takes place via an eighth communication channel (20).

5. System according to any of the preceding claims,
characterised in that
the fourth data transfer (22) can be unidirectional or bidirectional, wherein a fifth data transfer (26) of identification data can be initiated for identifying a user between the receiving device (21) and an identification device (24) by means of a fourth communication channel (25) before the use of the waste container (2).

6. System according to any of the preceding claims,
characterised in that

the waste container (2) comprises at least one sensor device (27), wherein a sixth data transfer (28) can take place via a fifth communication channel (29) between the at least one sensor device (27) and the first communication interface (4), wherein the sixth data transfer (28) can be unidirectional or bidirectional.

7. System according to any of the preceding claims,
characterised in that
control data are configured to be transferred to at least one internal device (32) of the waste container (2) or at least one external device (33) from the first communication interface (4) by means of a seventh data transfer (30), wherein the seventh data transfer (30) takes place via a sixth communication channel (31) and can be unidirectional or bidirectional, wherein the control data are generated at least partially by the electronic control device (3) and/or at least partially by a sensor device (27), wherein the at least one internal device (32) or the at least one external device (33) can be an actuator, a locking device, a display device, an output device or a fire extinguisher.

8. System according to claim 1,
characterised in that
a first communication device (9, 11) being the further communication device (9, 11, 14) comprises a third communication interface (8, 12) being the at least one further communication interface (8, 12, 15), wherein the bidirectional indirect first data transfer (10) between the first communication interface (4) and the second communication interface (7) can take place via the third communication interface (8, 12), wherein an emptying or service vehicle is equipped with the first communication device (9, 11), wherein the data transfer between the first (4) and the third communication interface (8, 12) takes place via a first communication channel (13);
a second communication device (9, 14) being the further communication device (9, 11, 14) comprises a fourth communication interface (8, 15) being the at least one further communication interface (8, 12, 15), wherein the bidirectional indirect first data transfer between the first communication interface (4) and the second communication interface (7) can take place via the fourth communication interface (8, 15), wherein the second communication device (9, 14) is assigned to a user, wherein the second communication device (9, 14) is a portable data processing device, preferably with a display device (16), for example a mobile phone, a smartphone, a tablet or a laptop, wherein the transfer of data between the

first (4) and the fourth communication interface (8, 15) takes place via a second communication channel (17);

the fourth data transfer (22) can be unidirectional or bidirectional, wherein a fifth data transfer (26) of identification data can be initiated for identifying a user between the receiving device (21) and an identification device (24) by means of a fourth communication channel (25) before the use of the waste container (2);

the waste container (2) comprises at least one sensor device (27), wherein a sixth data transfer (28) can take place via a fifth communication channel (29) between the at least one sensor device (27) and the first communication interface (4), wherein the sixth data transfer (28) can be unidirectional or bidirectional;

control data are configured to be transferred to at least one internal device (32) of the waste container (2) or at least one external device (33) from the first communication interface (4) by means of a seventh data transfer (30), wherein the seventh data transfer (30) takes place via a sixth communication channel (31) and can be unidirectional or bidirectional, wherein the control data are generated at least partially by the electronic control device (3) and/or at least partially by a sensor device (27), wherein the at least one internal device (32) or the at least one external device (33) can be an actuator, a locking device, a display device, an output device or a fire extinguisher; and

all the data transfers via the first to sixth communication channels (13, 17, 23, 25, 29,) are based on wireless technology, wherein the wireless technology has a range below 300 m, preferably below 100 m, preferably below 50 m, preferably below 30 m, preferably below 10 m, preferably below 5 m, preferably below 3 m, preferably below 1 m, particularly preferably below 50 cm, wherein the wireless technology is selected from a group comprising NFC technology, RFID technology, WLAN technology, Bluetooth® technology and optical transmission technology.

9. System according to claim 2,
characterised in that

the data transfer between the third (8, 12) and the second communication interface (7) takes place via a seventh communication channel (34), wherein the data transfer between the fourth (9, 14) and the second communication interface (7) takes place via an eighth communication channel (20), wherein the seventh (34) and the eighth communication channel (20) are based at least partially on a wireless technology with a maximum range of over 30 m, preferably over 100 m, preferably over 500 m, preferably over 1 km, more

preferably several km, and a transmission technology selected from a group comprising WLAN connection, wireless connection, mobile connection, 2G connection, 3G connection, GPRS connection, 4G connection, 5G connection.

10. System according to any of the preceding claims,
characterised in that
the further communication device (9, 11, 14) has a data processing device (37) which is used for modulation of data for transmission on different communication channels (13, 17, 34, 20) and/or for a coding and/or for a decoding of the data received by the respective communication interfaces (4, 7, 8, 12, 15) before the data are forwarded to the respective other communication interface (4, 7, 8, 12, 15).

11. Method for identifying a user of a waste container (2) in a system comprising the waste container (2) having an electronic control device (3), and a first communication interface (4) for transmitting and receiving data and a storage device (5); a server (6) remote from the waste container (2) and having a second communication interface (7); and a receiving device (21), the method comprising the steps of:
- establishing a data connection by means of a communication channel (13, 17) between the first communication interface (4) and at least one further communication interface (8, 12, 15) of a further communication device (9, 11, 14), which is not part of the waste container (2);
- authorising the data connection;
- initiating an indirect first data transfer (10) between the first communication interface (4) and the second communication interface (7) and between the second communication interface (7) and the first communication interface (4) via the at least one further communication interface (8, 12, 15), wherein an access list stored in the storage device (5) can be updated by the indirect first data transfer (10) from the server (6);
- receiving, by the receiving device (21), identification data of the user;
- transferring the received identification data to the first communication interface (4) and the electronic control device (3); and
- assigning, by the electronic control device (3) the identification data to authorisation data, wherein the authorisation data are comprised by the access list.

12. Method according to claim 11,

characterised in that

a first communication device (9, 11) being the further communication device (9, 11, 14) comprises a third communication interface (8, 12) being the at least one further communication interface (8, 12, 15), wherein the bidirectional indirect first data transfer (10) between the first communication interface (4) and the second communication interface (7) can take place via the third communication interface (8, 12), wherein an emptying or service vehicle is equipped with the first communication device (9, 12), wherein the data transfer between the first (4) and the third communication interface (8, 12) takes place via a first communication channel (13).

13. Method according to claim 12,

characterised in that

the indirect first data transfer (10) can take place both via the third communication interface (8, 12) of the first communication device (9, 11) and via a fourth communication interface (8, 15) being the at least one further communication interface (8, 12, 15) of a second communication device (9, 14) being the further communication device (9, 11, 14), wherein the second communication device (9, 14) is assigned to a user, wherein the second communication device (9, 14) is a portable data processing device, preferably with a display device (16), such as a mobile phone, a smartphone, a tablet or a laptop, wherein the transfer of data between the first (4) and the fourth communication interface (8, 15) takes place via a second communication channel (17).

14. Method according to claim 13,

characterised in that

all the data transfers via the first and second communication channels (13, 17) are based on a wireless technology, wherein the wireless technology has a range below 300 m, preferably below 100 m, preferably below 50 m, preferably below 30 m, preferably below 10 m, preferably below 5 m, preferably below 3 m, preferably below 1 m, particularly preferably below 50 cm, wherein the wireless technology is selected from a group comprising NFC technology, RFID technology, WLAN technology, Bluetooth® technology and optical transmission technology.

15. Method according to claim 13 or 14,

characterised in that

the data transfer between the third (8, 12) and the second communication interface (7) takes place via a seventh communication channel (34), wherein the data transfer between the fourth (8, 15) and the second communication interface (7) takes place via an eighth communication channel (20), wherein the seventh (34) and the eighth communication channel (20) are based at least partially on wireless technology with a maximum range of over 30 m, preferably over 100 m, preferably over 500 m, preferably over 1 km, particularly preferably several km, and a transmission technology selected from a group comprising WLAN connection, wireless connection, mobile connection, 2G connection, 3G connection, GPRS connection, 4G connection, 5G connection.