CLAIMS

1. Access device for accessing an underground or overground civil engineering infrastructure, comprising an access door (1) having a closed position in which it shuts a chamber (4) and an open position in which it gives access to said chamber (4),

said door (1) comprising a communication module (3) comprising at least one antenna (32) enabling the emission of a signal over at least one wireless communication network,

characterized in that the communication module (3) is of multi-protocol type so as to be able to emit a signal in accordance with at least two wireless communication protocols or in accordance with at least one wired communication protocol and at least one wireless communication protocol,

and in that the communication module (3) is adapted to evaluate the availability of the communication networks respectively employing the different protocols in accordance with which said communication module is configured to communicate, and to select the communication protocol for the sending and/or the receiving of data according to the evaluated availability.

2. Access device ~~Device~~ according to claim 1, wherein the protocols are chosen from:

- wired communication protocols,
- short-range wireless communication protocols, and
- medium-range or long-range communication protocols.

3. Access device according to claim 2, wherein

the wired communication protocols are configured for communication by optic fiber or cable,

the short-range wireless communication protocols are chosen from: NFC, RFID, Bluetooth, in particular Bluetooth Low Energy, Lifi, Zigbee; and

the medium-range or long-range communication protocols are chosen from 4G, 5G, LoRa, Sigfox, NB-IoT, LTE-M, GPRS, GSM.

4. Access device ~~Device~~ according to one of the preceding claims, wherein the communication module (3) is adapted to bi-directional communication.

~~5. Access device according to one of the preceding claims, the communication module (3) being adapted to evaluate the availability of the communication networks respectively employing the different protocols in accordance with which said communication module is configured to communicate, and to select the communication protocol for the sending and/or the receiving of data according to the evaluated availability.~~

~~6~~5. Access device according to one of the preceding claims, wherein the communication module (3) communicating over a first network is adapted to change its communication to a second network at the time of a rupture in communication over the first ~~wireless~~ network.

~~6~~7. Access device according to one of the preceding claims, comprising at least one sensor (34) chosen from: a sensor of opening or closing of the door, a sensor of at least one environmental parameter of the chamber, a sensor of intrusion in the vicinity of the door, a sensor of intrusion or attempted intrusion into the chamber, each sensor being configured to deliver a signal to the communication module, the communication module being configured to transmit the signal or the signals, or information derived from said signal or from said signals.

~~8~~7. Access device according to claim ~~6~~7, comprising at least one sensor of opening or of closing of the door (1) from: a contact sensor, a sensor of angular position of the door, an accelerometer, an optical sensor.

~~9~~8. Access device according to claim ~~6~~7 or claim ~~7~~8, comprising at least one sensor of at least one environmental parameter of the chamber from:

a sensor of temperature, humidity, particle presence or concentration, water level or presence, gas concentration or presence.

~~10~~9. Access device according to one of the claims ~~6~~7 to ~~8~~9, comprising at least one sensor of intrusion in the vicinity of the door from: a vibration sensor, a heat sensor, an optical sensor, an audio sensor and/or at least one sensor of intrusion or of attempted intrusion into the chamber, from: a shock sensor, a vibration sensor, a temperature sensor, an audio sensor.

~~11~~10. Access device according to one of the preceding claims, wherein the communication module (3) comprises an antenna (32) integrated indissociably with the door.

~~12~~11. Access device according to one of the preceding claims, comprising a battery (36) enabling the supply, as main supply or in the event of a fault in a main electric source, of the communication module.

~~13~~12. Access device according to one of the preceding claims, wherein the door comprises a rigid outer skin (11) under which is provided a set of ribs (12) substantially at right angles to said outer skin (11), the ribs (12) being disposed so as to form at least one compartment (13) in which is installed the communication module (3), with the exception, as may be appropriate, of the antenna (32) of said communication module (3), the compartment (13) being closed by a rigid inner skin (14) providing the mechanical protection of said communication module (3).

~~14~~13. System for managing a set of access devices for accessing one or more underground or overground civil engineering infrastructures, the system comprising a group of access devices (A1, A2) according to one of the preceding claims and a server, each access device (A1, A2) being configured to communicate with the server (S) via at least two communication networks.

~~15~~14. System for managing a set of access devices according to claim ~~14~~13, wherein each access device (A1,A2) is associated with an identifier communicated at the time of any communication between the access device and the server (S), said server (S) being configured to retrieve geolocation information on said access device from a memory.

~~16~~15. System for managing a set of access devices according to claim ~~14~~13, or claim ~~15~~14, comprising at least one computer accessing system for accessing said server (S), the accessing system executing a computer program referred to as management platform (P), said management platform being configured to provide information on the state of each of the access devices (P) or on environmental data coming from the sensors equipping the access devices (A1, A2).

~~17~~16. System for managing a set of access devices according to claim ~~16~~15, wherein said platform (P) comprises a differentiated access to the information coming from said access devices according to at least two user profiles.