Claims

1. A method for controlling sequential access to a premise comprising a plurality of electronic locks each associated with a physical barrier, each electronic lock comprising a lock controller, a lock processor, and a memory storing executable instructions within the electronic lock, the method comprising the steps of:

    assigning, by a lock control device, a sequential unlock mode to two or more electronic locks among the plurality of electronic locks to define a first group, the sequential unlock mode defining a predetermined sequential order of unlocking of the two or more electronic locks within the first group;

    configuring, by the lock control device, an unlock trigger on a lead electronic lock for sequentially unlocking one or more remaining electronic locks in the first group;

    generating an unlock event by the lead electronic lock within the first group, wherein the unlock event is configured for unlocking the lead electronic lock;

    determining if the unlock event matches the unlock trigger for the lead electronic lock;

    transmitting, by the lock control device, an unlock command to the one or more remaining electronic locks within the first group if the unlock event matches the unlock trigger to activate the sequential unlock mode thereby unlocking the one or more remaining electronic locks within the first group in the predetermined sequential order.

2. The method according to claim 1, wherein the first group is configured for ingress to the premise.

3. The method according to claim 1, wherein the first group is configured for egress to the premise.

4. The method according to claim 1, wherein the sequential unlock mode includes assigning the two or more electronic locks in a predetermined sequential order.

5. The method according to claim 1, wherein the unlock event includes an authentication input that includes one or more of the following: PIN codes, biometric data, RFID card scans, and digital key inputs.

6. The method according to claim 1, wherein the unlock event includes a physical action performed on the electronic lock, including one of the following: a back exit button and a thumb turn.

7. The method according to claim 1, wherein the unlock trigger includes an authentication input that includes one or more of the following: PIN codes, biometric data, RFID card scans, and digital key inputs.

8. The method according to claim 1, wherein the unlock trigger includes a physical action performed on the electronic lock, including one of the following: a back exit button and a thumb turn.

9. The method according to claim 1, wherein the lock control device comprises a display, a processor, an input unit, a communication unit and a memory, wherein the processor is in electrical communication with the display, the input unit, the communication unit and the memory.

10. The method according to claim 9, wherein the communication unit is configured to communicate wirelessly with the plurality of electronic locks via wireless communication protocols.

11. The method according to claim 1, further comprising the steps of:

generating an access credential for each of the two or more electronic locks, wherein the access credential is configured for unlocking each respective two or more electronic locks;

transmitting the access credential to the respective two or more electronic locks.

12. The method according to claim 1, wherein the lock control device includes one of the following: a computer, a laptop, a handheld computer, a mobile device, a smartphone, a tablet, an IoT device, a key fob and a hardware token.

13. An access management system for controlling access to a plurality of electronic locks within a premise, each electronic lock associated with a physical barrier, comprising:

a lock control device comprising a communication unit in wireless communication with the plurality of electronic locks, an input unit, a processor in electrical communication with the communication unit and the input unit, wherein the processor is configured to:

assign a sequential unlock mode to two or more electronic locks among the plurality of electronic locks to define a first group, the sequential unlock mode defining a predetermined sequential order of unlocking of the two or more electronic locks within the first group;

configure an unlock trigger on a lead electronic lock configured for sequentially unlocking one or more remaining electronic locks in the first group;

generate an unlock event by the lead electronic lock, wherein the unlock event is configured for unlocking the lead electronic lock;

determine if the unlock event matches the unlock trigger for the lead electronic lock;

transmit an unlock command to the one or more remaining electronic locks if the unlock event matches the unlock trigger to activate the sequential unlock mode thereby unlocking the one or more remaining electronic locks within the first group in the predetermined sequential order.

14. An access management system for controlling sequential access to a premise comprising a plurality of electronic locks each associated with a physical barrier, each electronic lock comprising a lock controller, a lock processor, and a memory storing executable instructions within the electronic lock, comprising:

a lock control device comprising an input unit, a communication unit in wireless communication with the plurality of electronic locks, a processor in electrical communication with the communication unit and the input unit;

a server configured to communicate wirelessly with the lock control device and each electronic lock via a communication network, wherein the server is configured to:

assign a sequential unlock mode to two or more electronic locks among the plurality of electronic locks to define a first group, the sequential unlock mode defining a predetermined sequential order of unlocking of the two or more electronic locks within the first group;

configure an unlock trigger on a lead electronic lock configured for sequentially unlocking one or more remaining electronic locks in a first group;

receive an unlock event by the lead electronic lock, wherein the unlock event is configured for unlocking the lead electronic lock;

determine if the unlock event matches the unlock trigger on the lead electronic lock for sequentially unlocking the one or more remaining electronic locks;

transmit an unlock command to the one or more remaining electronic locks in the first group if the unlock event matches the unlock trigger to activate the sequential unlock mode thereby unlocking the one or more remaining electronic locks in the predetermined sequential order.

15. An access management system for controlling sequential access to a premise comprising a plurality of electronic locks each associated with a physical barrier, each electronic lock comprising a lock controller, a lock processor, and a memory storing executable instructions within the electronic lock, comprising:

a lock control device comprising an input unit, a communication unit in wireless communication with the plurality of electronic locks, a processor in electrical communication with the communication unit and the input unit;

a server configured to communicate wirelessly with the lock control device and each electronic lock via a communication network;

wherein the lock control device is configured to:

assign a sequential unlock mode to two or more electronic locks among the plurality of electronic locks to define a first group, the sequential unlock mode defining a predetermined sequential order of unlocking of the two or more electronic locks within the first group;

configure an unlock trigger on a lead electronic lock configured for sequentially unlocking one or more remaining electronic locks;

receive an unlock event by the lead electronic lock, wherein the unlock event is configured for unlocking the lead electronic lock;

determine if the unlock event matches the unlock trigger on the lead electronic lock for sequentially unlocking the one or more remaining electronic locks;

transmit an unlock command to the remaining electronic locks if the unlock event matches the unlock trigger to activate the sequential unlock mode thereby unlocking the one or more remaining electronic locks in the predetermined sequential order.

16. An access management system for controlling sequential access to a premise comprising a plurality of electronic locks each associated with a physical barrier, each electronic lock comprising a lock controller, a lock processor, and a memory storing executable instructions within the electronic lock, comprising:

a lock control device comprising an input unit, a communication unit in wireless communication with the plurality of electronic locks, a processor in electrical communication with the communication unit and the input unit;

a gateway device arranged in wireless communication with the plurality of electronic locks;

a server configured to communicate wirelessly with the lock control device and the gateway device via a communication network;

wherein the lock control device is configured to:

assign a sequential unlock mode to two or more electronic locks among the plurality of electronic locks to define a first group, the sequential unlock mode defining a predetermined sequential order of unlocking of the two or more electronic locks within the first group;

configure an unlock trigger on a lead electronic lock configured for sequentially unlocking one or more remaining electronic locks;

receive an unlock event by the lead electronic lock, wherein the unlock event is configured for unlocking the lead electronic lock;

determine if the unlock event matches the unlock trigger on the lead electronic lock for sequentially unlocking the one or more remaining electronic locks;

transmit an unlock command to the remaining electronic locks if the unlock event matches the unlock trigger to activate the sequential unlock mode thereby unlocking the one or more remaining electronic locks in the predetermined sequential order.

17. A method for controlling sequential access to a first electronic lock and a second electronic lock that are not connected to the network, each electronic lock comprising a lock controller, a processor, and a memory storing executable instructions within the electronic lock, the method comprising:

establishing a secure wireless connection between the first electronic lock and the second electronic lock to define a group pair;

generating, at each electronic lock, a local access credential unique to that electronic lock for unlocking itself;

transmitting, during the secure wireless connection, the local access credential of each electronic lock to the other electronic lock, and terminating the secure wireless connection thereafter;

configuring, at the first electronic lock, an unlock trigger for unlocking the other electronic lock in the group pair;

generating an unlock event by the first electronic lock, wherein the unlock event is configured for unlocking the first electronic lock;

determining, at the first electronic lock, if the unlock event matches the unlock trigger for unlocking the second electronic lock in the group pair; and

transmitting, by the first electronic lock, an unlock command to the second electronic lock within the group pair if the unlock event matches the unlock trigger, thereby unlocking the second electronic lock, wherein after termination of the secure wireless connection, the unlocking of the second electronic lock is conditioned upon the first electronic lock generating a matching unlock event and transmitting the unlock command.