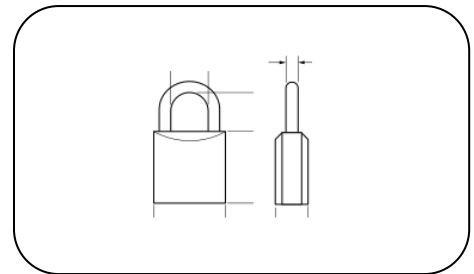
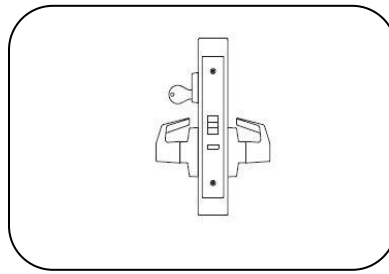
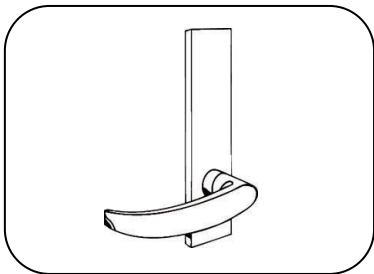


By Digital Keys Pty Ltd



## NB IoT Smart Access Control Systems



## NB-IoT Smart Padlock Manual



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**About This Manual**

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This issue replaces all previous issues. All previous issues are invalid. The information in this manual can be changed without prior notice.

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**Safety and warning instructions**

- This manual outlines the commissioning, installation and operation of a NB IoT Smart padlock
- This equipment may only be used for the purpose specified by the manufacturer.
- This manual should be kept accessible.
- Illegal changes and the use of spare parts as well as accessories that have not been sold or recommended by the manufacturer of this unit can cause fires, electric shocks and injuries. Such measures lead to an exclusion of liability, and the manufacturer accepts no responsibility.
- Repairs may only be carried out by the manufacturer or accredited distributor/re-seller.
- Basis for the guarantee of the manufacturer is the version of the warranty policy for the unit at the time of purchase. No liability is accepted for inappropriate, incorrect manual or automatic setting of the parameters for the device, or its improper use.
- The distributor/re-seller in conjunction with the lock purchaser (if required), is responsible for ensuring that the device is assembled and mounted according to the recognised technical guidelines as well as other valid regulations in the country of use

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## Introduction Summary

This manual outlines the functions of the NB IoT smart padlock, how to install and use the product.

### The technology

The NB IoT smart padlock is operated completely independent of any external cable connections (product is battery powered with 4 standard AA batteries) and can be installed and operated where appropriate including outdoors under most weather conditions.

The operation of the NB IoT smart padlock occurs via NB IoT technology, combined with NFC technology, and with cloud-based software and smartphone apps.

In order to unlock the lock, any smartphone which can connect to the internet, which has also been authorized, can be used. Smartphones which have NFC inbuilt (most Android phones) which have also been authorized, can be held in front of the lock to gain access (within 2-4 centimeters) from armoured glass with NB IoT logo stamp. NFC tokens/keycards, which have been authorised can also be used for unlocking. With these authorized devices/tokens, a mechanical coupling is activated for a few seconds that allows the NB IoT smart padlock to be opened and closed by pulling the shackle up.

### Operation

After the NB IoT smart padlock has recognised a valid digital key, a mechanical coupling is produced for a few seconds between the CPU and the motor and shackle enabling you to release the shackle.

### Flexibility

The NB IoT smart padlock is an autonomous door locking system that can manage an unlimited number of users, on any time-limitable digital keys, and an unlimited number of locks per account. With this, individual time-limited access rights can be assigned to every user. The fact that every digital key can be authorised for every lock, means a high degree of flexibility is reached. Various access profiles can be set within the locking system.

If a digital key on a NFC card/token or smartphone is lost, the digital key can be deleted, and replaced with another digital key, without making it necessary to physically attend to the NB IoT smart padlock.

### The system concept

The NB IoT smart padlock is complemented by;

Lock Management Cloud Based Software

Digital Keys Apps (Android and iOS available for unlimited downloads from online app stores)

Digital Keys NFC keycards and tokens (2 cards provided). Please check with your local distributor to purchase more.

### The security

NB IoT is part of local mobile networks (part of the 5G standards), fully managed with standardized security to guarantee the credential and integrity of all data running through it. NB IoT has passed security protocols as outlined by 3GPP, the organisation responsible for managing global mobile networks.

The NB IoT module chipset included in our NB IoT smart locks applies 2048 bit RSA encryption. All communications are running on HTTPs 128 bit military grade encryption between all the vertical applications including software and hardware. Between the telco's mobile network, and the IoT device management platform a layer of Internet Protocol Security (IPSEC) is provided. The Telecommunication company on some occasions, also provides a dedicated VPN for further security and reliability.

## Technical Data

Display elements:	1 x LED blue
Acoustic signal:	Signal transmitter
Battery:	4AA standard alkaline batteries
Battery life:	approx. 2 years or approx. 20.000 operations
Temperature range:	-50 to 60°C
Relative humidity:	20 to 95% RH
Dimensions:	L10.0mm x W8.2mm x B4.7mm
Surface housing	Black Stainless steel with armoured glass numberplate
NB IoT Module:	U-Blox SARA R410M - NB IoT/LTE-M/CAT M-1/2G 3G
SIM card	NB IoT micro SIM (global roaming or local)
Unlocking methods:	Digital Keys app, NFC keycards (programmed for time-sensitive use with Digital Keys app (and NFC HCE compatible phones), time-sensitive PIN, remote unlock button inside cloud based lock management software (lock management software is provide d for more than 5 locks ordered)



# What's included



**NB-IoT Smart Padlock**



**Protective Rubber Bumper Cover**



**NFC keycards**



**Torx Security Screwdriver**

(for bulk orders screwdriver/tamper proof screws to be selected)



**Micro SIM Card**

NB-IoT/LTE-M SIM card



## General information

### Capacitive wake-up button

The NB IoT smart padlock uses a capacitive wake-up button which must be pressed to unlock the lock. The wake-up button wakes the lock up and prepares it to receive unlock commands over the NB IoT network, from digital keys app unlocking, and from the lock management software unlocking. The wake-up button exists to conserve battery energy so the lock is not always on, waiting to receive commands.

The capacitive wake-up button is the number 1 **1** on the numberpad. see below where green arrow is pointing. The capacitive wake-up button does not need to be pressed for NFC phone unlocking and NFC card unlocking (the NFC in the card and phone wakes up the device when within NFC range 1-5 cm).



### Programming

The programming for the NB IoT smart lock, can be carried out with our Lock Management Software, and the Digital Keys apps (Digital Keys apps are FREE to download from the online app stores Android and iOS). The programming is described in part 2 and part 3 of this manual. When using NFC phones and NFC tokens/cards, programming of the lock is carried out over the NB IoT network on the first time the phone or token/card is presented to the door for unlocking. For all future unlocks with NFC, this will be done locally, and commands do not need to be sent over the NB IoT network everytime. When NFC is used to unlock, the NB IoT is still used for live audits, live battery status, and live notifications.

## Operator guidance

Operation is supported by the blue LED display, as well as by acoustic signals - a buzz sound occurs when the lock has successfully received its command, and the lever handle can then be pulled down to unlock the door.

## LED light display

The NB IoT smart padlock has a blue LED light built in.

There are only 2 different status offered by the LED lights as follow;

1. Flashing blue - lock is awake (after wake-up button is pressed or new batteries inserted) and is connecting to the network (new batteries) or awaiting a command such as an unlock command.
2. Solid blue light - lock has successfully received an authorized unlock command, and is now unlocked, so you can pull shackle up to unlock.

## Information on unlocking

To unlock the lock, please follow the instructions below;

1. Hit unlock button on the app (follow instructions on the app, which should say 'unlock command has been sent' and a further instruction to touch the wake up button)
2. Touch the number 1 **1** on the lock numberpad to wake up the lock to unlock it).
3. Blue light flashes whilst unlock command is finalized
4. A buzz noise occurs, blue lights stop flashing and stays on.
5. Pull shackle up to unlock.

There is a pause of a few seconds between pressing the wake-up number 1 button and the lock making the buzz noise/flashing blue light indicating the shackle is ready to be pulled up and opened.

When unlocking with NFC (NFC phones and tokens) there should not be any delay in the lock being ready to be opened by pulling the shackle up. NFC phones and tokens must be held within 1-4 centimeters from the NB IoT logo on the padlock.

## Time Zones

The NB IoT smart locks use local internet time, which can be set when the locks are first set-up and commissioned by our local distributors. Locks can be programmed to work for a minimal 30 minute timeslot. When the programmed time for the digital keys expires, the unlock icon will disappear from the digital keys app.

## NFC Tokens/cards

The NB IoT smart locks only work with special Digital Keys NFC cards/tokens. The product will not work with any NFC cards bought online from third parties, or from non-certified NB IoT smart lock re-sellers. 2 NFC tokens are provided in every pack. Please contact Digital Keys or your local distributor/re-seller if you need to buy more keycards/tokens.

### Battery replacement

1. Loosen the small screws on each of the four corners on the back of the lock, with provided security screwdriver.



2. Carefully lift the cover and circuit board up to reveal the battery pack.
3. Remove old batteries and place new 4 standard AA batteries correctly into the compartment - any standard AA batteries (alkaline) can be used.
4. Close the cover and screw shut again.

Note: No digital keys are deleted during the battery changeover.

### Battery Notifications/monitoring

A live battery status is shown in the lock management software (please see section 2 User guide for more information). Account administrators can set up email notifications for when battery status gets below 10%.

### Care and maintenance

The NB IoT smart padlocks are maintenance-free. At no time may they be oiled or greased with lubricants containing mineral oil. Cleaning may only be carried out with non-stick, residue-free cleaning and disinfection agents. No abrasive cleaning agents, or acids may be used for care and maintenance. Equally, pressure washers may not be used. Although the NB IoT smart padlock is weatherproof we don't suggest the use of a high pressure hose to spray product, as it can lead to damage and liability exclusion.

## PART 2 – NB IoT SMARTLOCK MANAGEMENT SOFTWARE USER GUIDE

### LOGGING INTO THE SMARTLOCK MANAGEMENT SOFTWARE

When you place your order with Digital Keys, or your local distributor/re-seller you will be asked to provide one name and email address to be your nominated 'account administrator. Only one person can take on the role of account administrator. Other users can roles can be added later in the smart lock management software. Whenever a new user is created in the system to use the digital keys management software they will receive an email from [info@digitalkeys.co](mailto:info@digitalkeys.co) inviting them to set up a username and password. When the cloud-based software account is first set up, the nominated account administrator, will receive an email from [info@digitalkeys.co](mailto:info@digitalkeys.co), inviting them to set up their username and password to access their account as administrator.

NOTE: Please check all inboxes including SPAM for the email invite from [info@digitalkeys.co](mailto:info@digitalkeys.co) to initially set up your password and log in.

Click "Login" button on the website [www.digitalkeys.io](http://www.digitalkeys.io) to log-in to the software (or as otherwise arranged with your order e.g with third party software log-in set up with API's)

### DASHBOARD PAGE

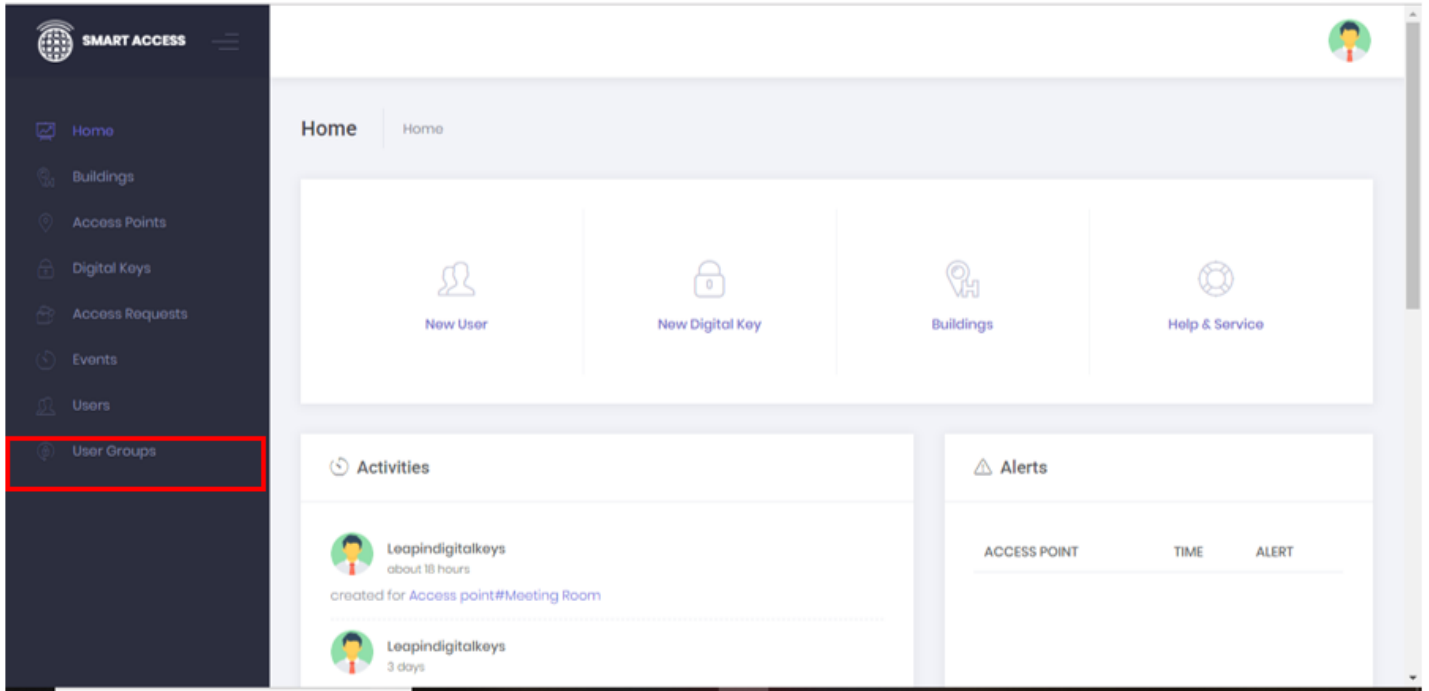
The Dashboard page provides shortcuts to the features of the Smartlock Management Software and also displays live notifications of all activities of the account holders locking system, including new digital keys being generated, locks being unlocked, and digital keys being deleted. Live 'Alerts' are also featured on the dashboard page for any locks in the account system, such as when the battery status gets below 10%. Notifications of alerts can also be sent to account administrators phone or a selected users phone.

### CREATE NEW USERS MENU ITEM

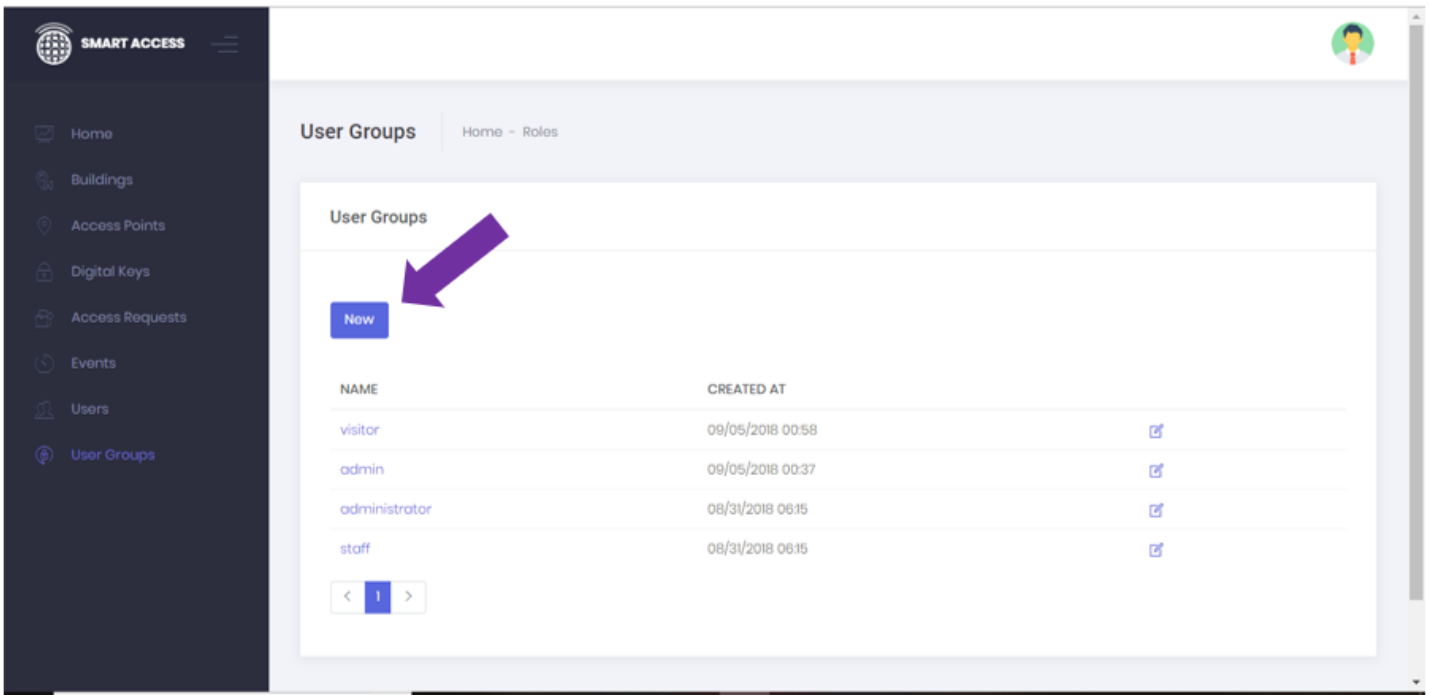
The Create Users feature enables the account administrator to add permanent or semi-permanent users, in addition to being able to great 'user groups' such as visitors or contractors. When using the user groups this only has to be done once, and then digital keys can be created for these user group types, without having to go through the process of entering all the users details each time.

#### Create New User Group

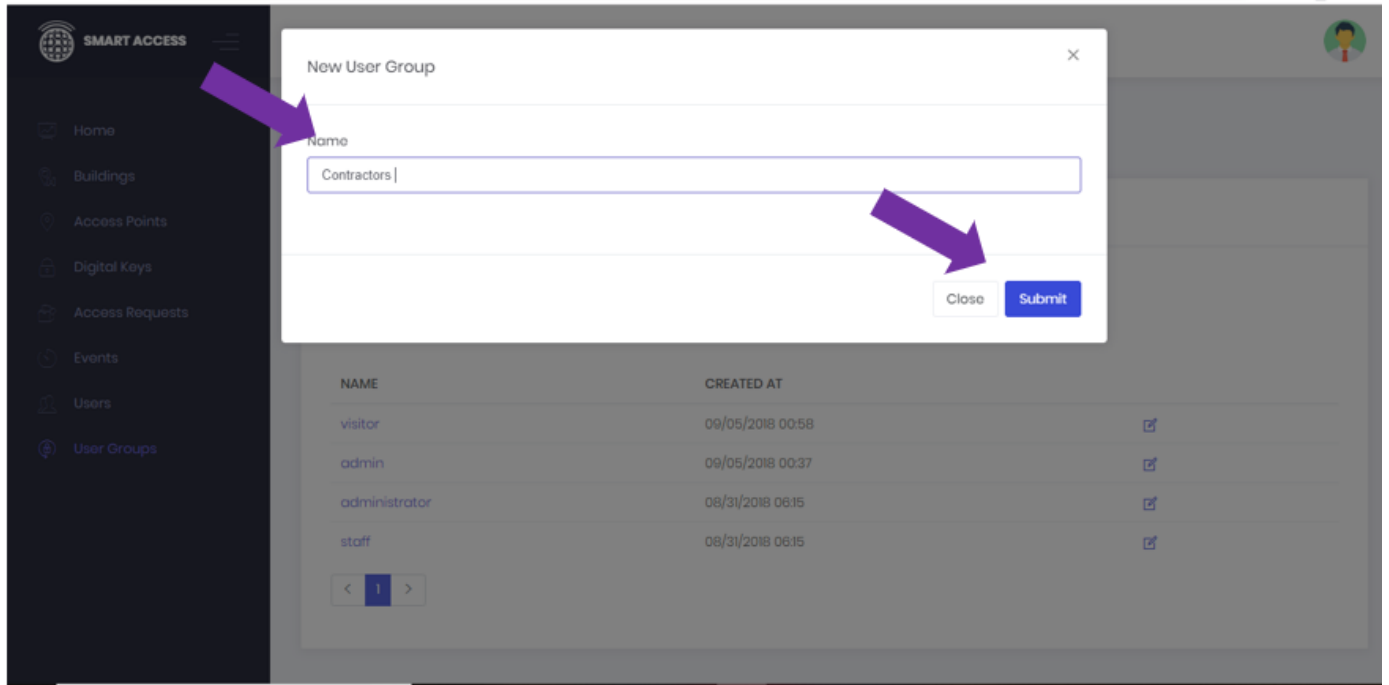
1. Create new 'User Group' by selecting User Groups on left hand side menu



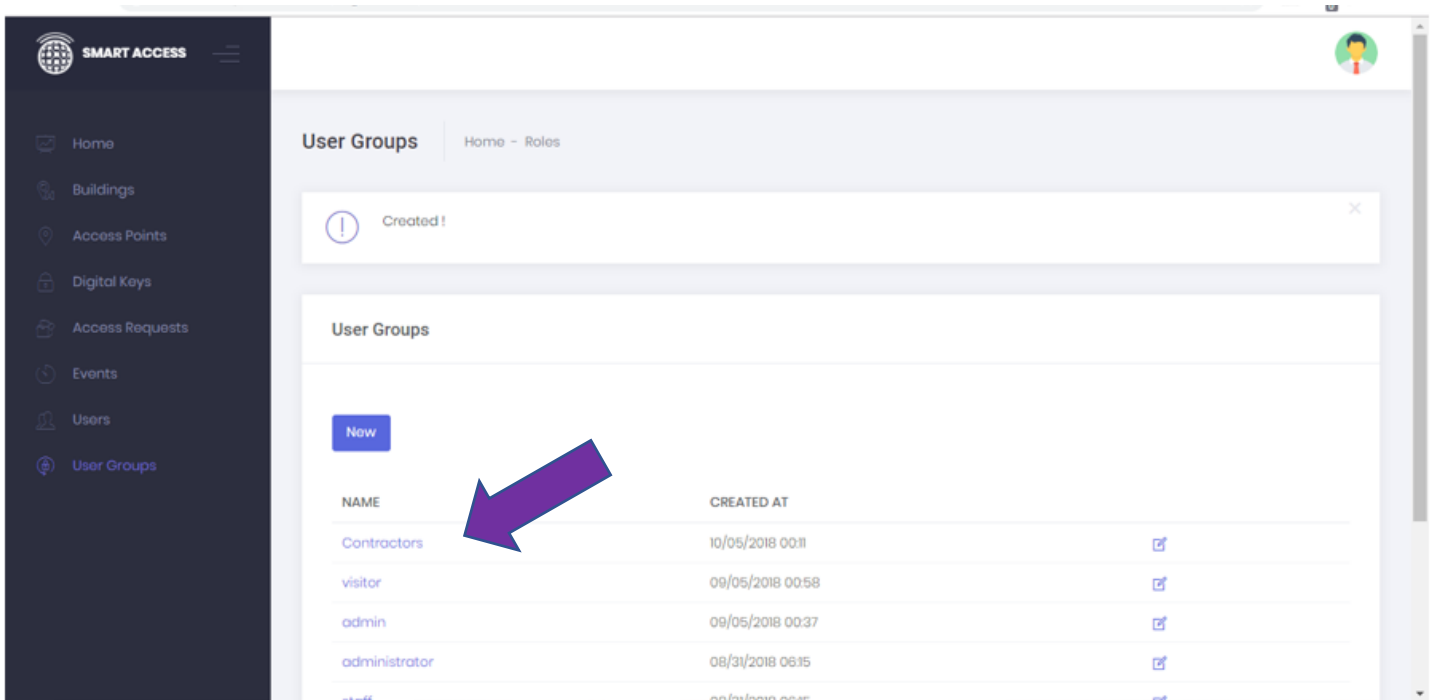
2. Select 'New' button



3. Enter the name of the new user group in the box e.g 'contractors', or 'visitor' and click submit.

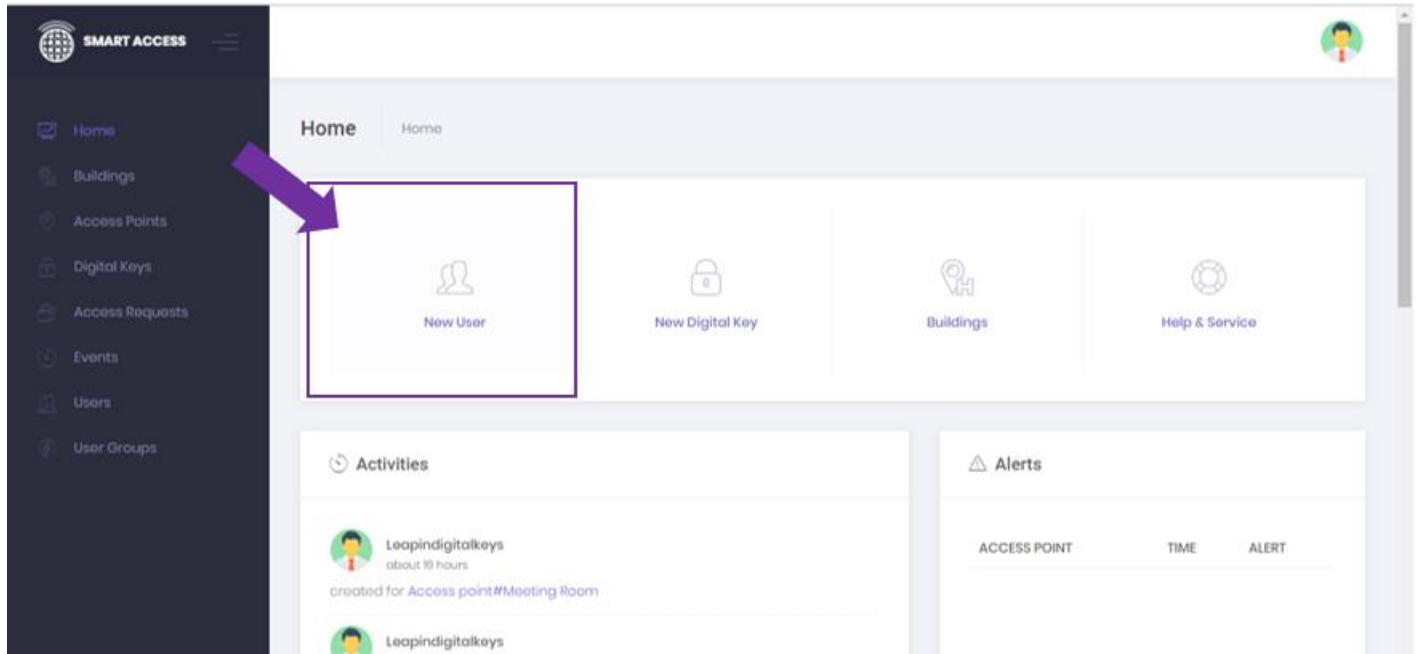


4. A 'created' confirmation message is returned, and you can see the new user group you named in the table.

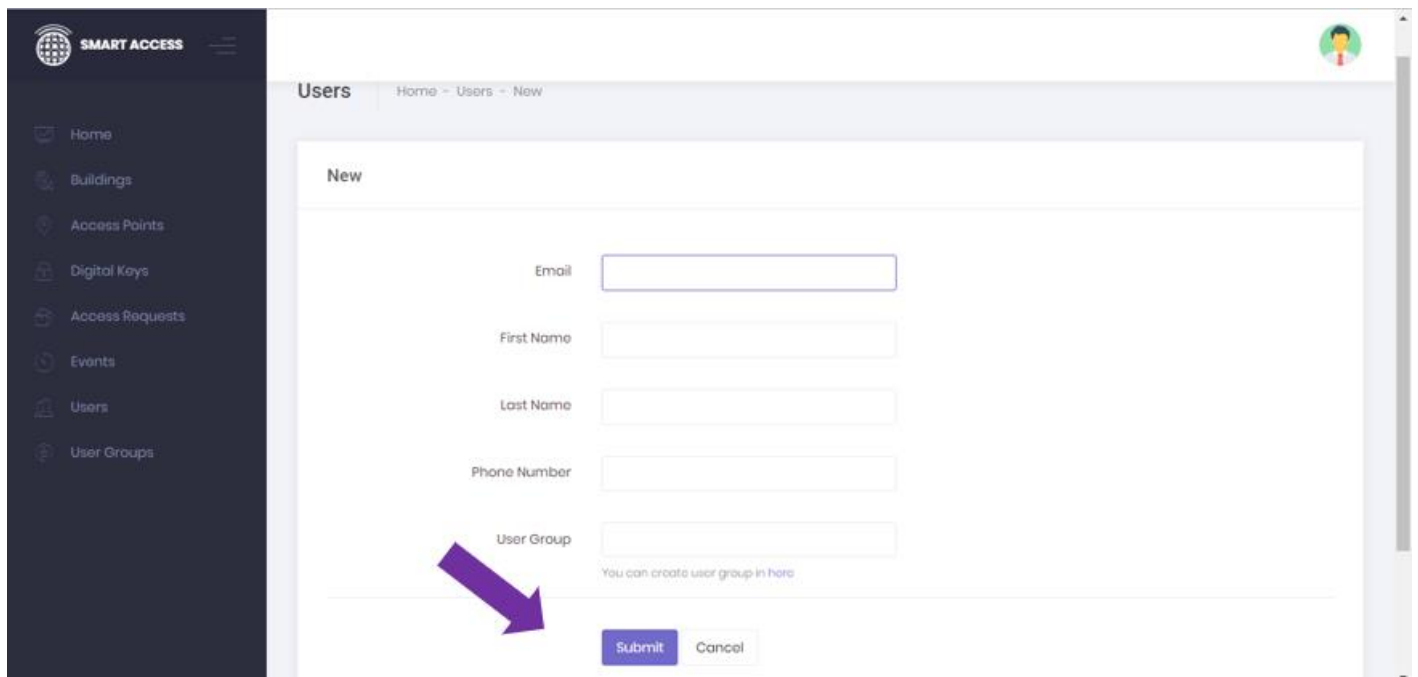


### Create New User (Individual)

1. Select 'New User' from the box on the home page.



2. Enter the users details into the form, and click 'Submit' button when finished.

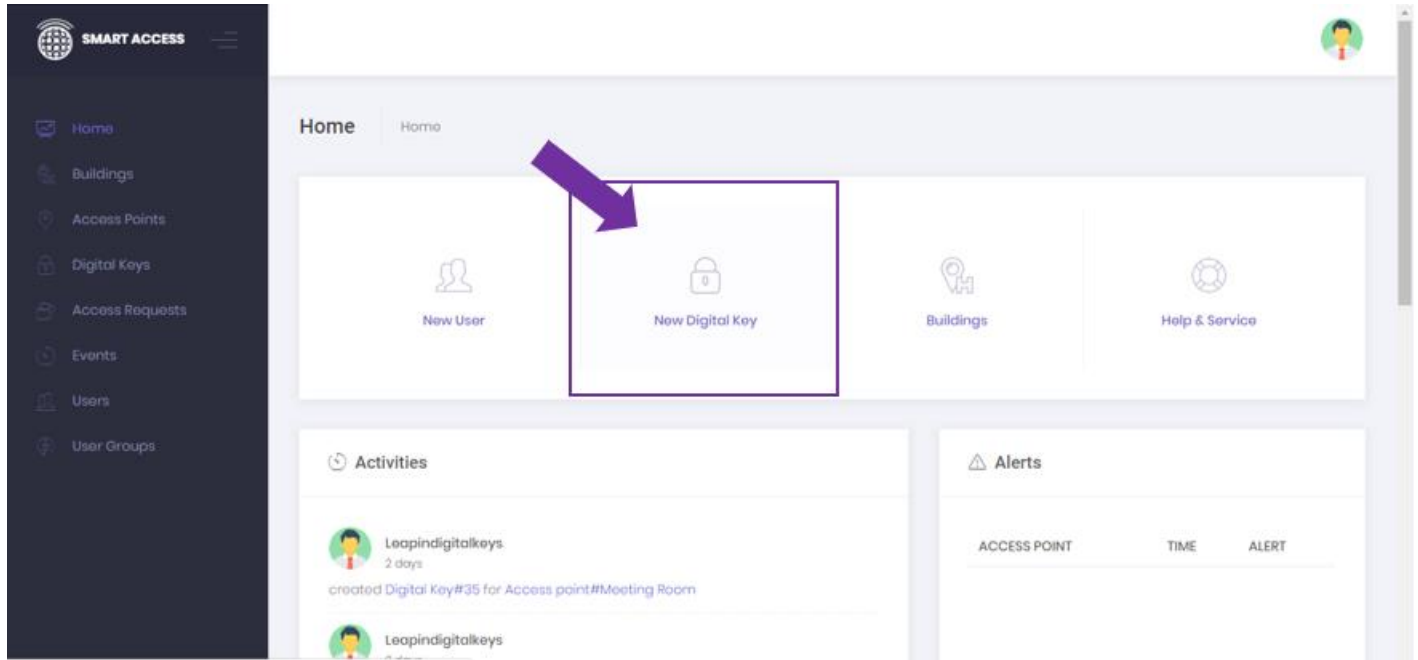


3. A 'created' confirmation message is returned, and the user is listed now in the users table. The users name, or user group can now be selected when generating a time-sensitive digital key as outlined in the next section.

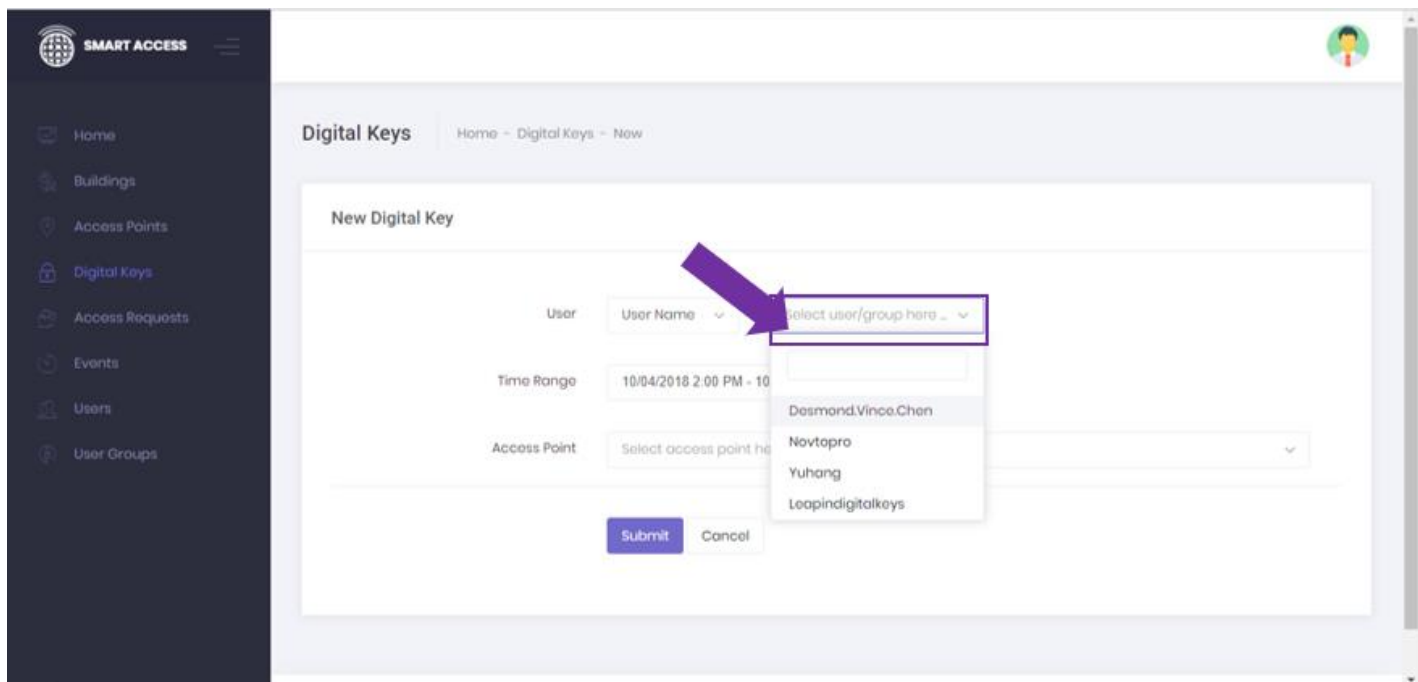
## CREATE NEW DIGITAL KEYS

Account Managers can create time-sensitive Digital Keys for anyone, anywhere at anytime from within the Digital Keys Management Software, as outlined below.

1. Click on the 'New Digital Key' box on the homepage

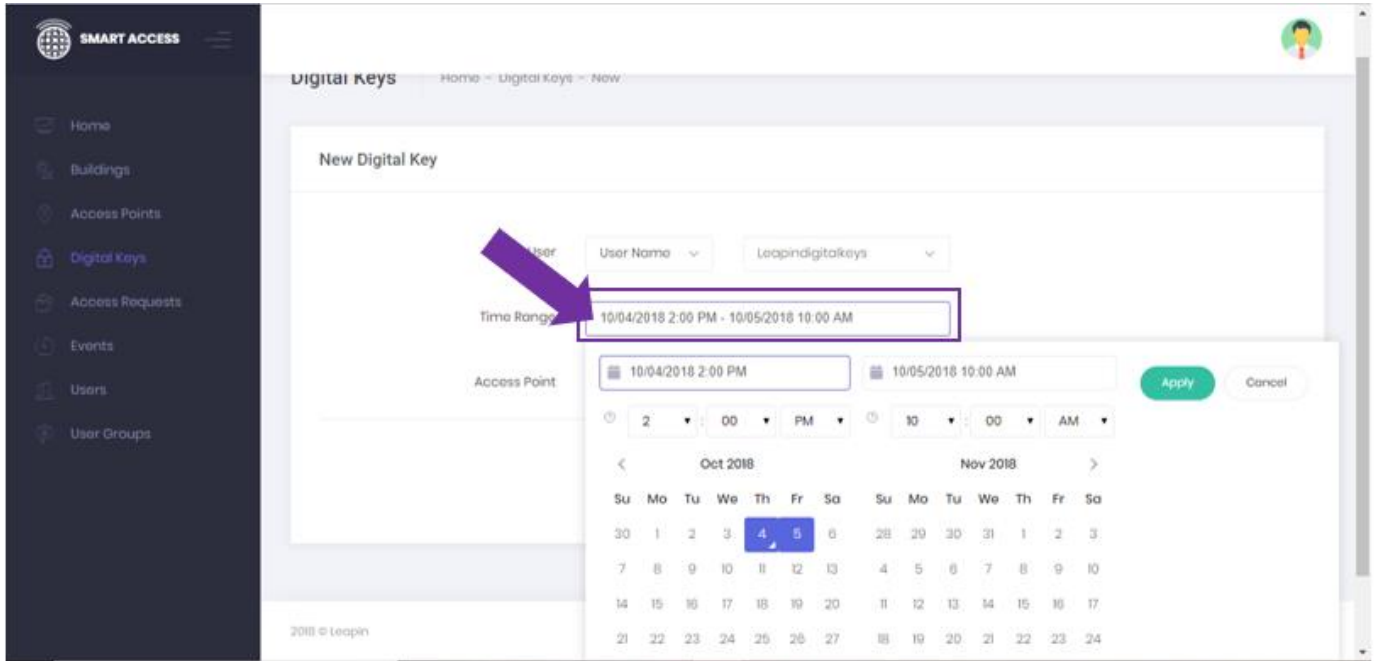


2. Select user name or user group from drop down menu.



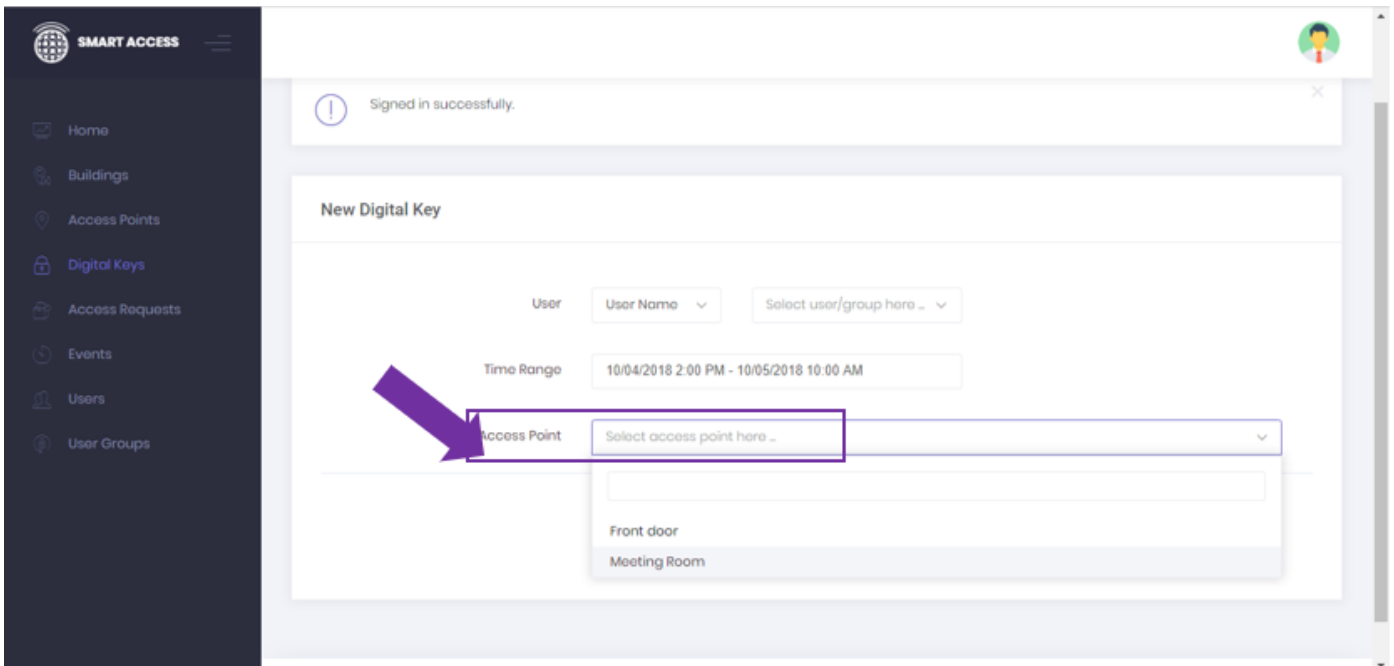


3. Select the date and time you want the digital key to work for.

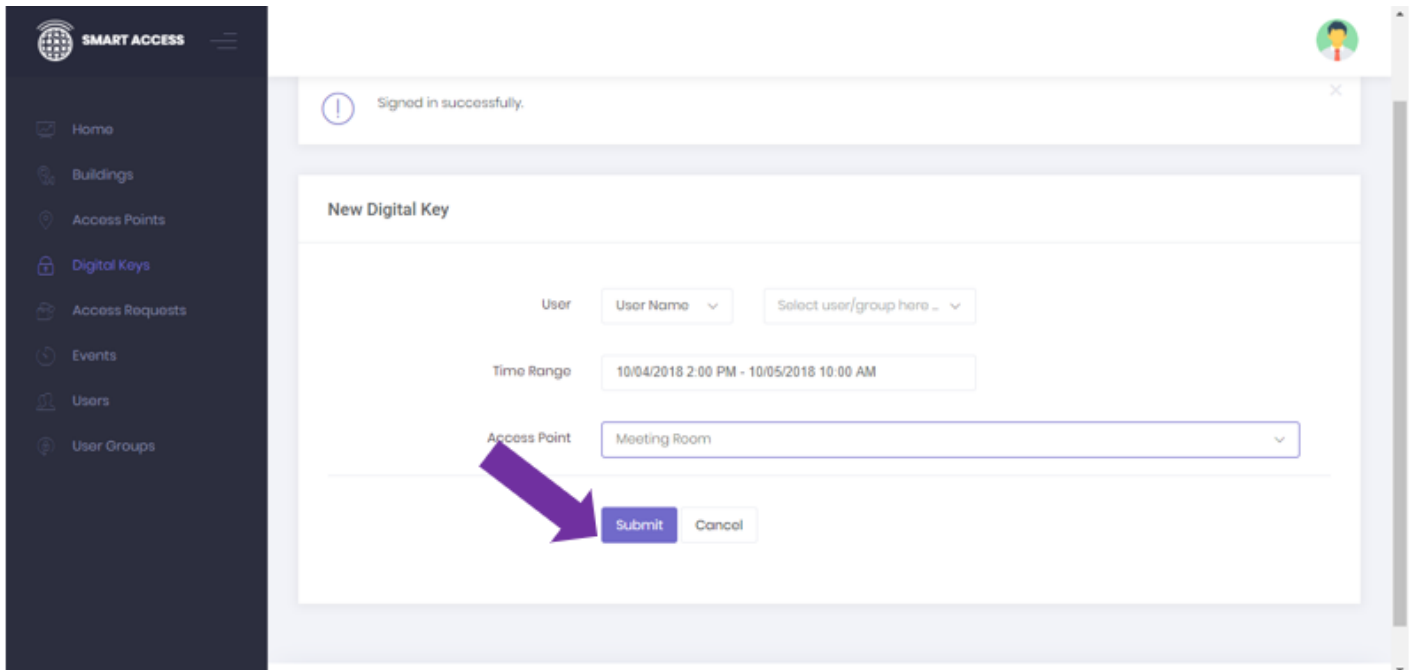


NOTE - The Digital Keys are pre-set with default times to work from 2pm on the first date of choice, to 10am on the final date of choice. You can easily change these times by selecting in the time box.

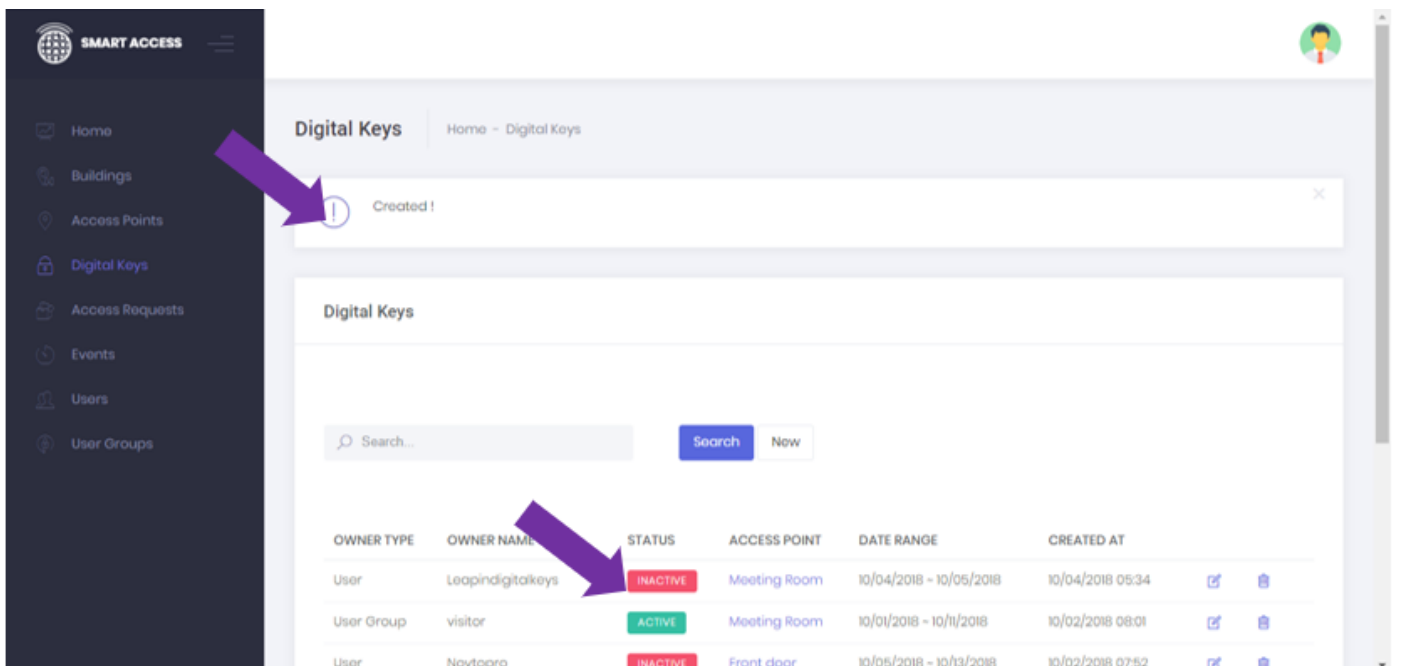
4. Select the access point (that is room/lock) for where you want to make the digital key work for from the drop-down menu as shown below.



5. Click the submit button



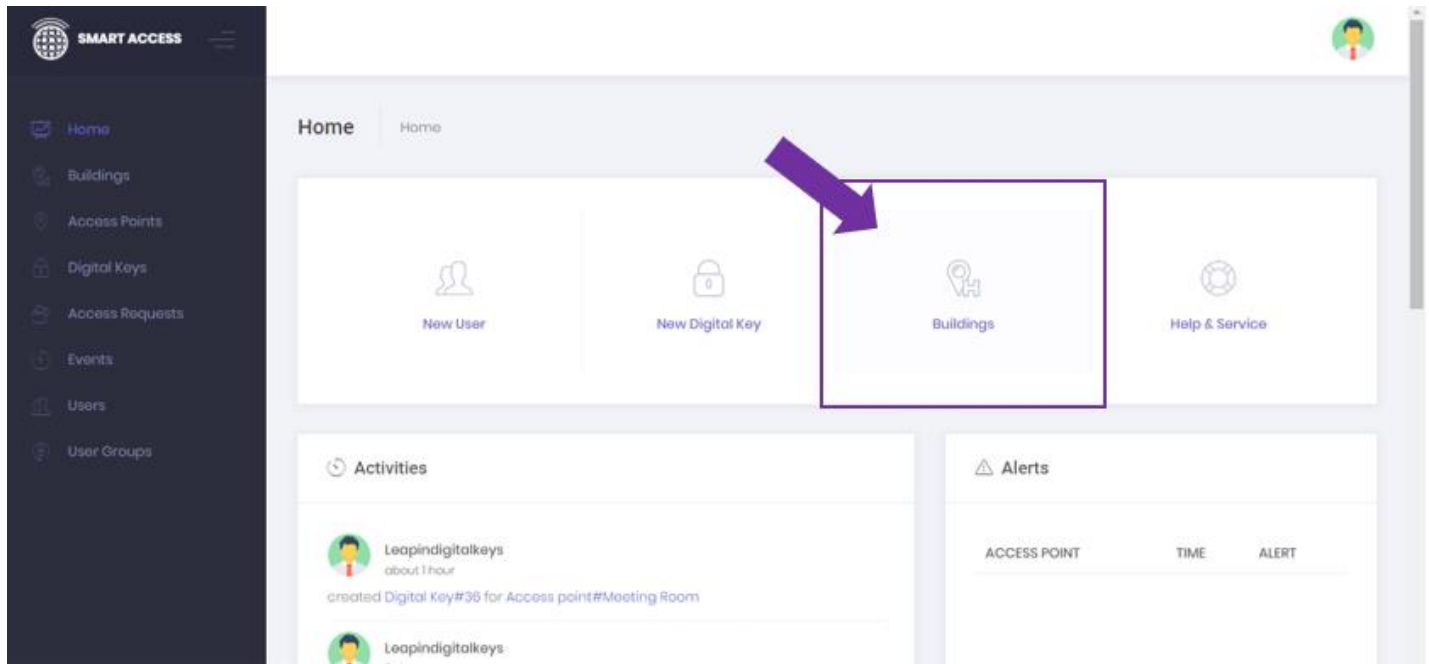
6. A message will appear on the next screen that says created, and the digital keys will appear in the 'created digital keys table' (this is a list of all digital keys that have been created/in use) - if the dates for the digital key created is current, the digital key will display as "ACTIVE". The user will then receive their digital key immediately on the digital keys app in the form of an unlock button in a tab with the access point selected. If a digital key has been created for a time in the future, it will display in the list of digital keys as "UPCOMING". Digital Keys that have expired are displayed in the table as "INACTIVE"



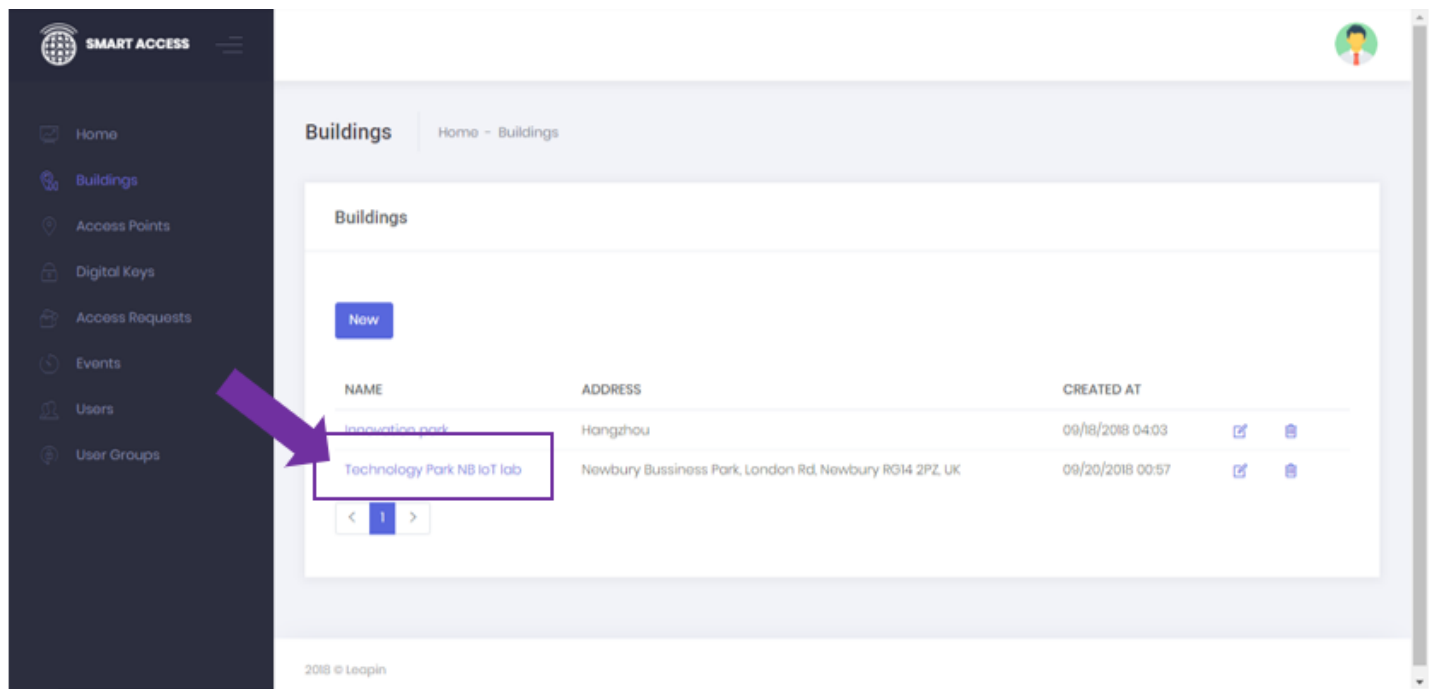
## UNLOCK ANY DOOR

The 'Unlock Door' feature enables authorized users to unlock their locks/doors at anytime as outlined below.

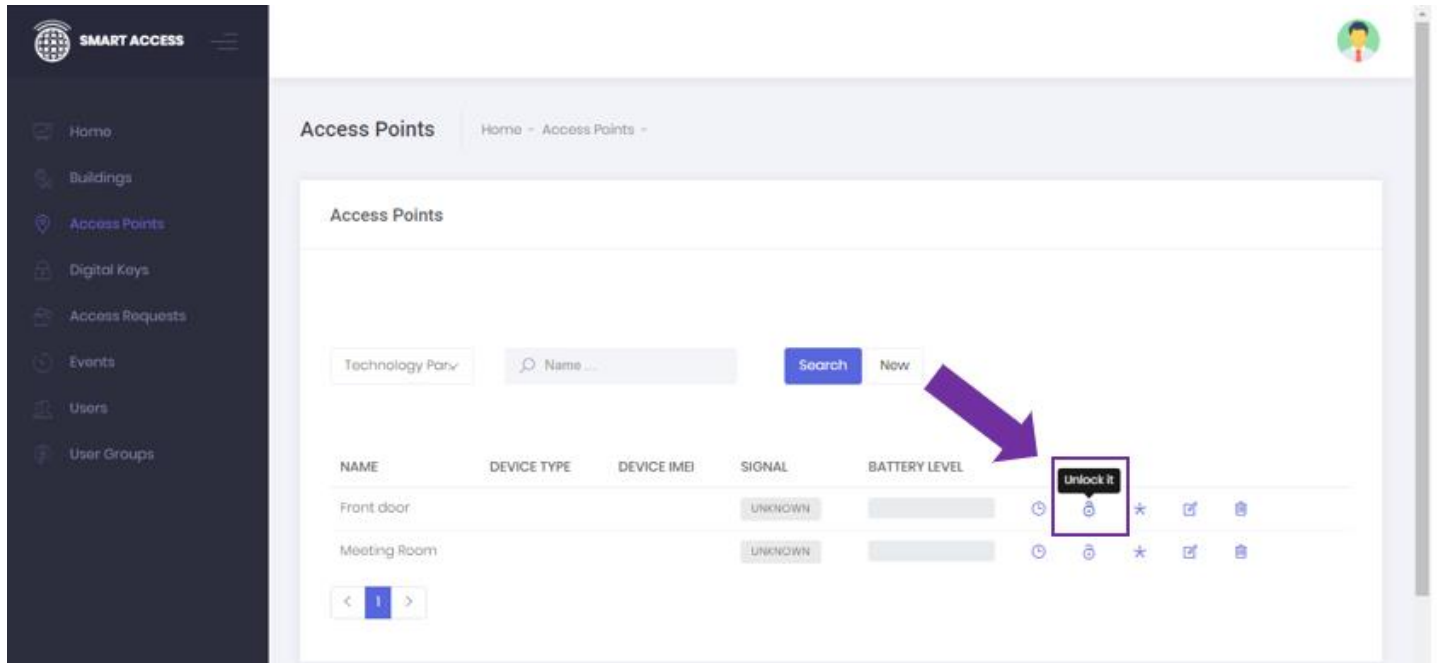
1. Select buildings box on the home page (to drill down to the lock you want to unlock)



2. Select the Building name of where the lock is that you want to open



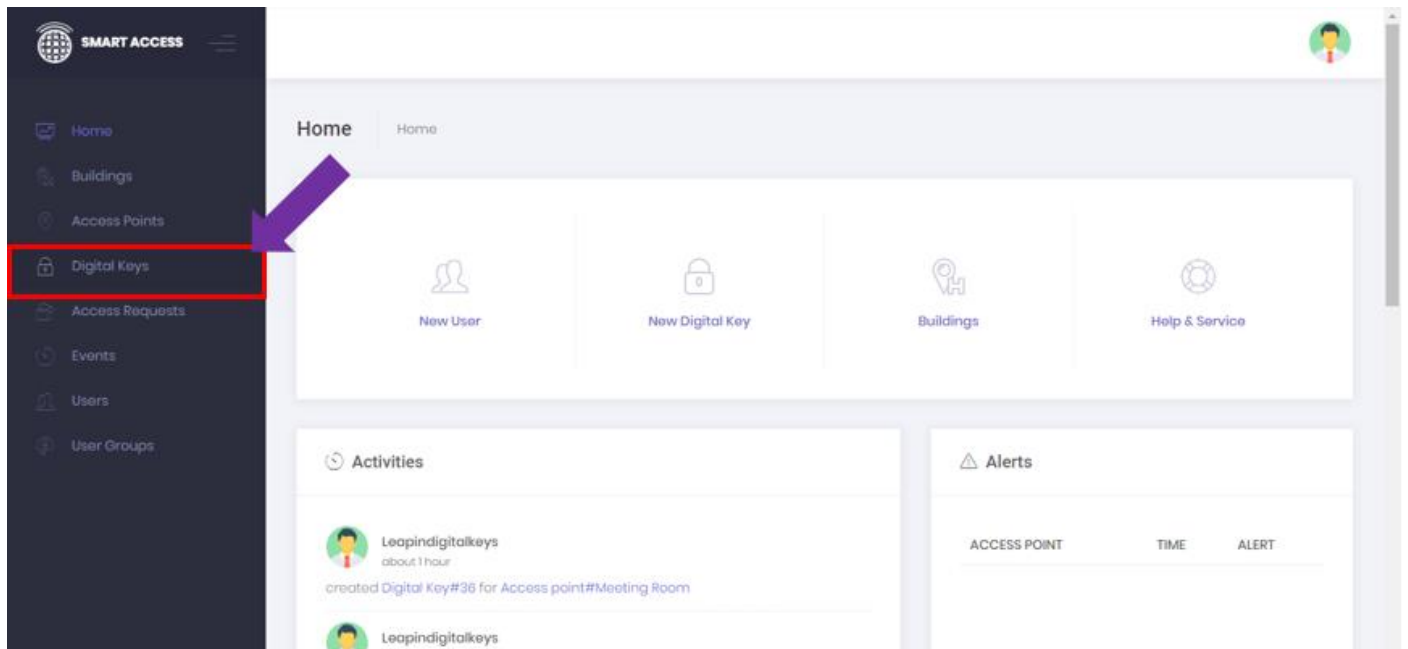
3. Click the 'unlock' button of the lock/access point you want to unlock (hover mouse over the padlock icon). Padlock will open.



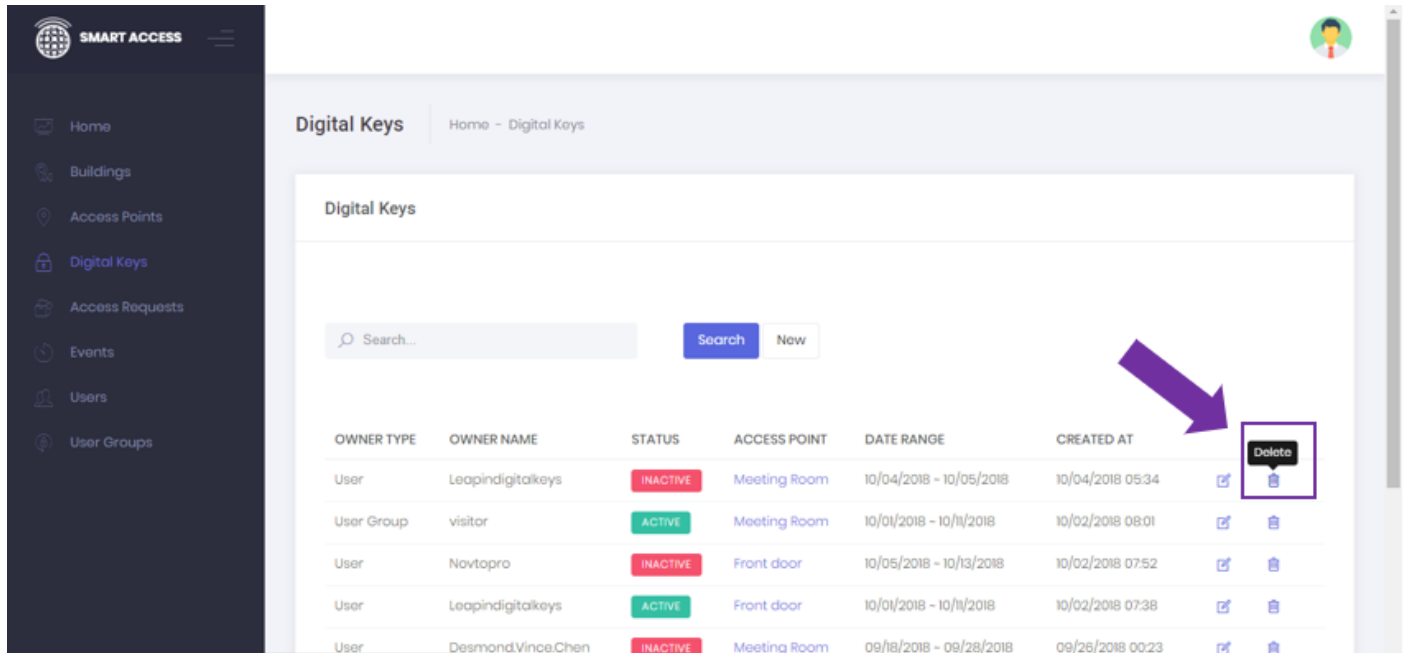
NOTE: After you hit unlock, someone will need to be on site at the padlock to touch the 'wake-up button' on the lock (number 1 on the numberpad) which wakes it up, so it can unlock.

### DELETE DIGITAL KEY

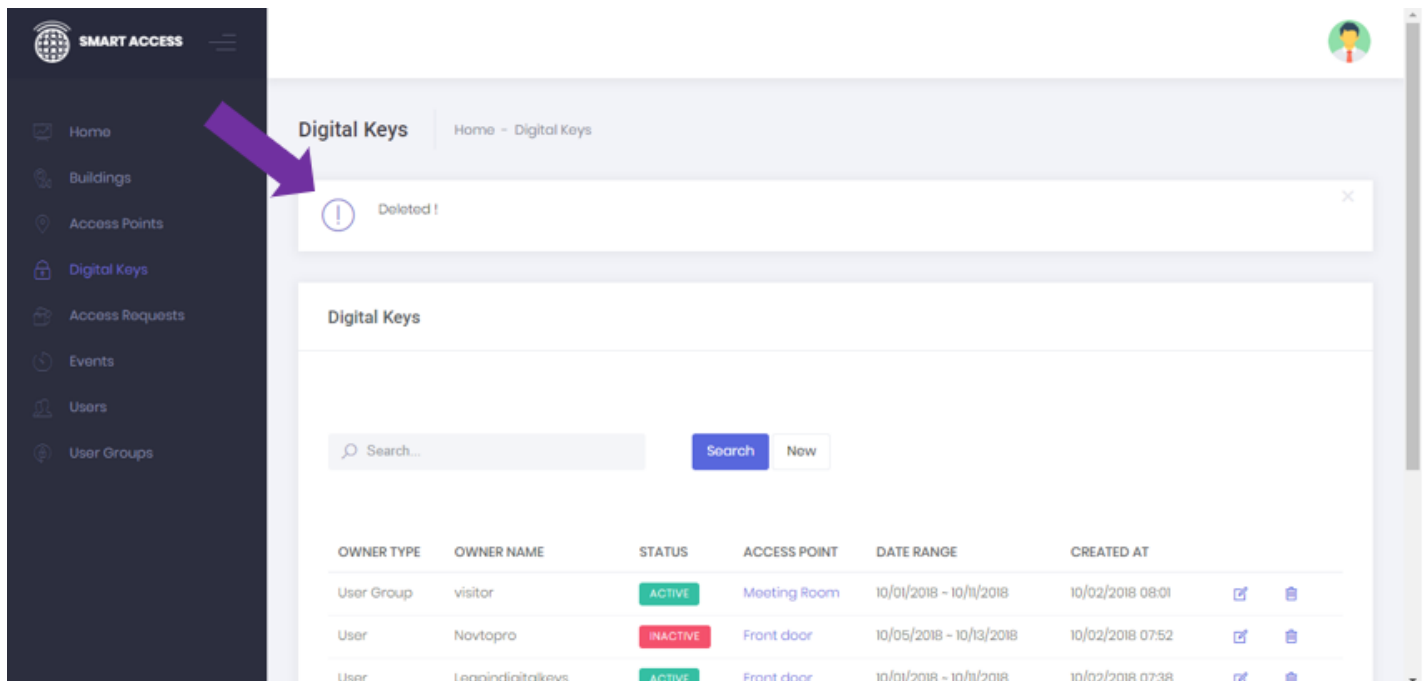
The Delete Digital Key feature enables authorized users to delete a users digital key at any time. To delete a digital key select Digital Keys from side menu bar as shown below.



1. All the Digital Keys created will be listed in a table. Select the 'Delete/rubbish bin' icon, to delete the digital key.



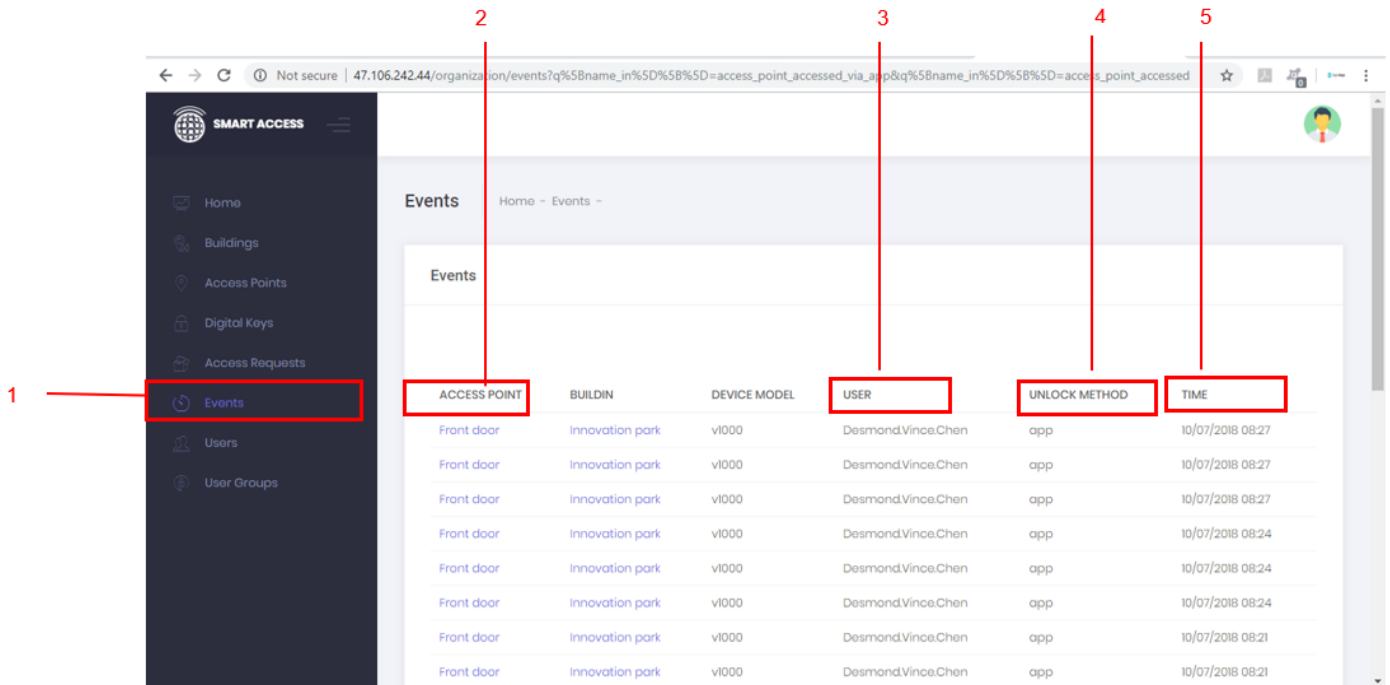
2. A message will appear at the top of the screen confirming the digital key has successfully deleted.



Of course to delete a digital key, you need to first generate a digital key – see previous section titled 'Generate time-sensitive digital key'.

### VIEW LOCK EVENTS/LIVE AUDIT

The Live Audit feature shows who opened which door(lock/access point) at which time. The Live Audit is useful for tracking movements of users throughout buildings, and for arriving and leaving sites -for knowing who has entered a room/space secured by the padlock at what time – similar to a time-card punch-in system.



The features of the audit include

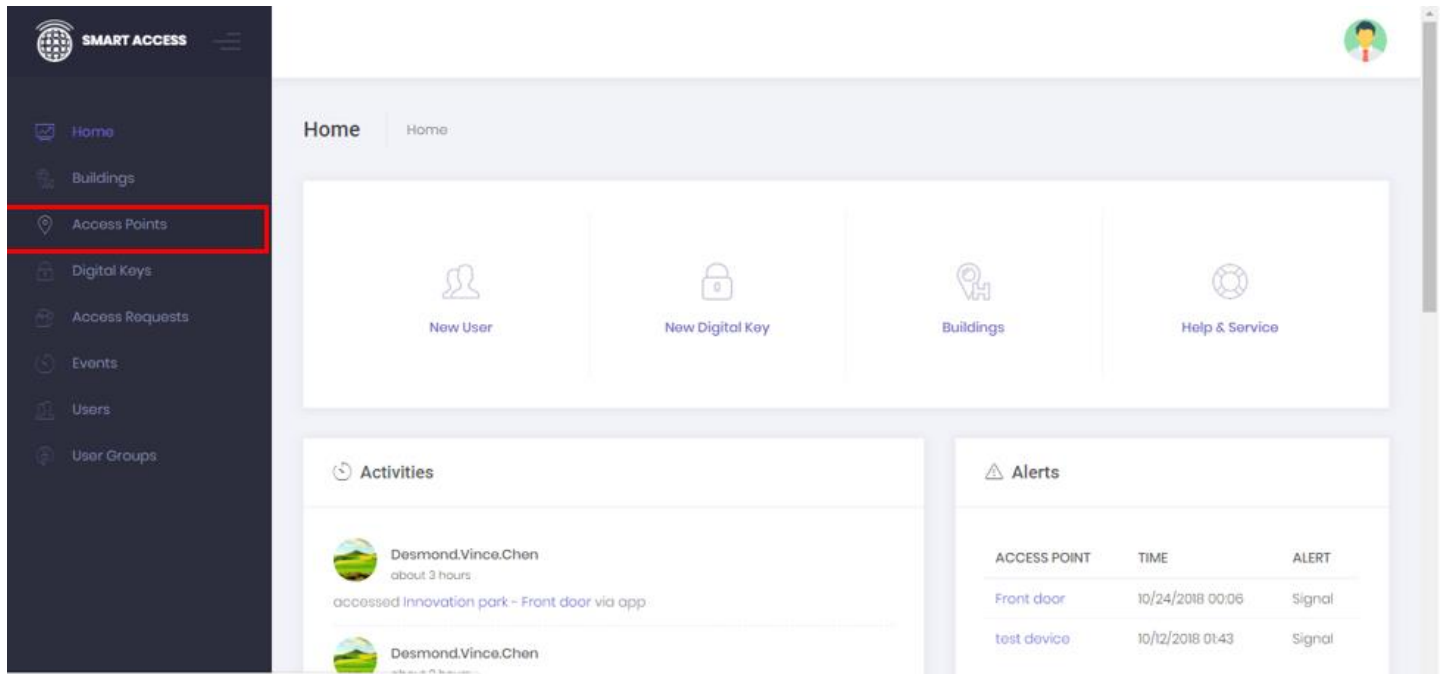
- 1 Events menu bar
- 2 Access point – lock/room name
- 3 User – lock opened by user with users name as identifier
- 4 Unlock Method – NFC unlock (by NFC on phone or NFC token), APP unlock on Digital Keys smartphone app (over NB IoT network), SOFT on Digital Keys management software
- 5 Time - the time the lock was unlocked

NOTE: The unlock event automatically updates into the table within a few seconds of someone unlocking the door. This a view only feature.

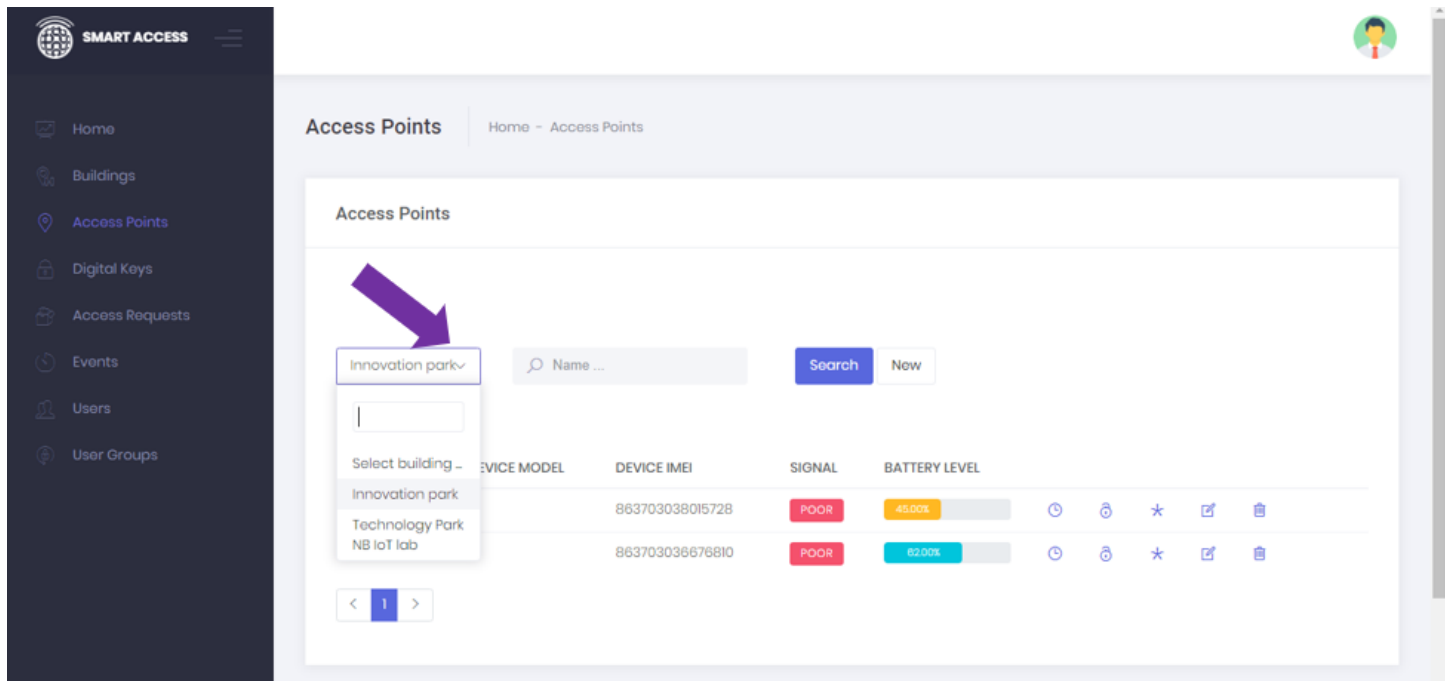
### LOCK STATUS REPORT

You can view the status of the lock at anytime including seeing the battery status, and the signal strength/see that lock is online.

- 1. Select 'Access Points' from the side menu bar.



2. Select the building from the drop down menu



3. The locks and their signal strength and battery levels will be displayed as outlined below.

Signal strength is defined as;

POOR = NB IoT Network ECL2

FINE = NB IoT Network ECL1

EXCELLENT = NB IoT network ECL0^

\*Extended Coverage Level as defined by the 3GPP - the authority charged with managing the global mobile phone network) ^Recommended Signal Strength for NB IoT Smart locks

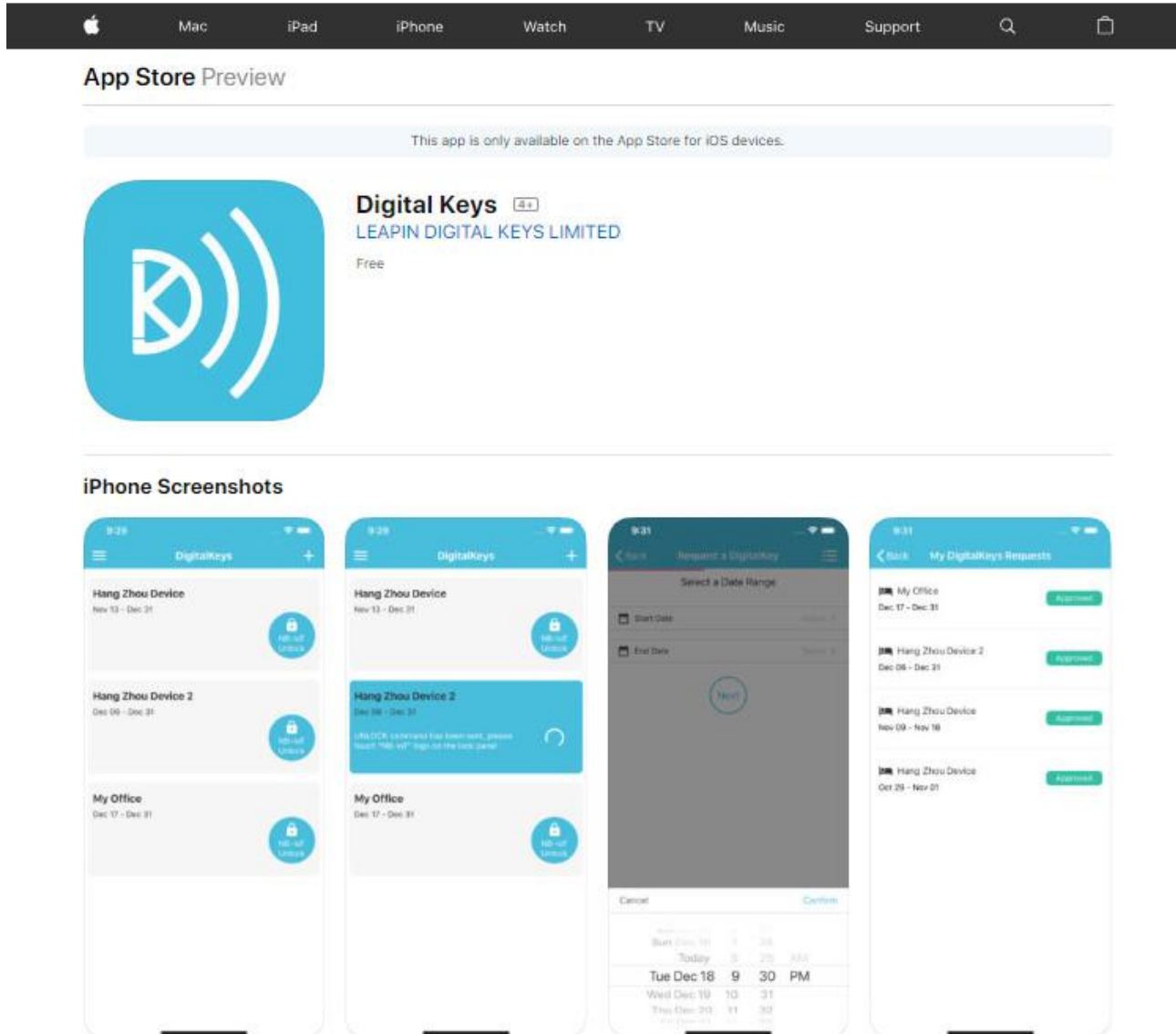


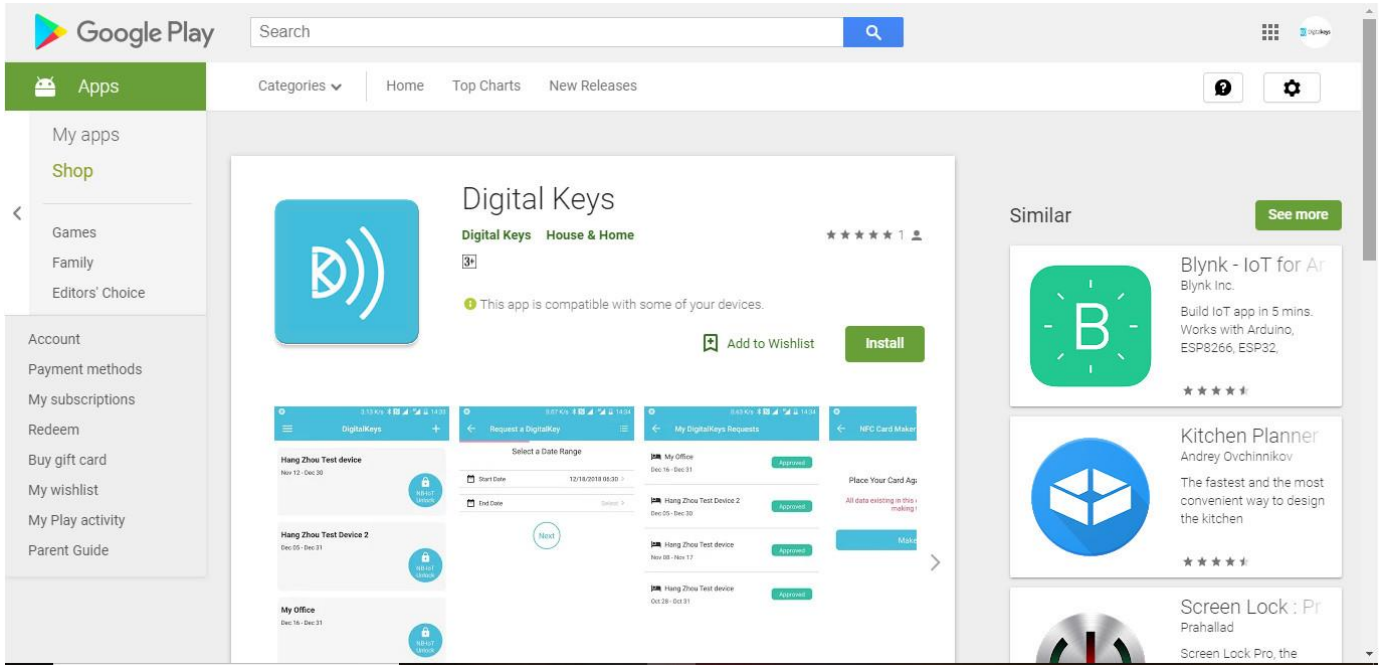


# PART 3 - DIGITAL KEYS MANAGEMENT APPS USER GUIDE

## DOWNLOAD AND LOG IN

Download the Digital Keys Universal App from the online stores, and hit 'sign-up' and follow instructions to sign-up. If you are account administrator, or you have been given access to the Digital Keys Management account, please use the same email and password you used for signing in to the Digital Keys Management Software. NOTE only invited users can download the app (invited by your account administrator or by Digital Keys or a Digital Keys authorized re-seller.





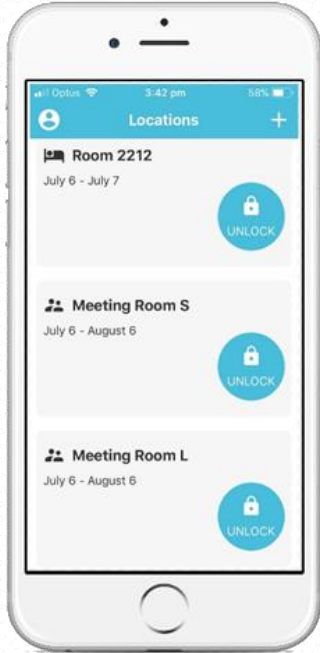
Digital Keys app in the Google Play store

## USING YOUR DIGITAL KEYS TO UNLOCK OVER NB IOT NETWORK

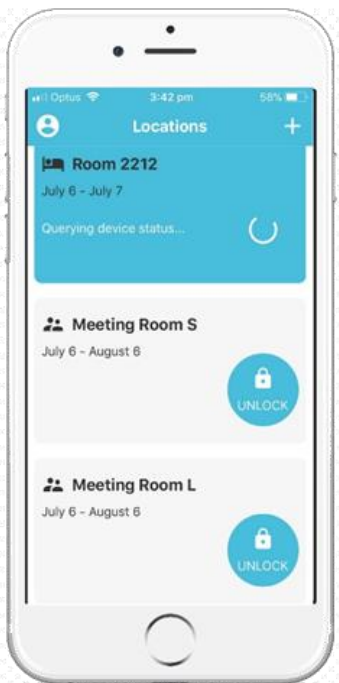
Sign into the digital keys app (only need to do this once, or after a new digital key is generated for you).



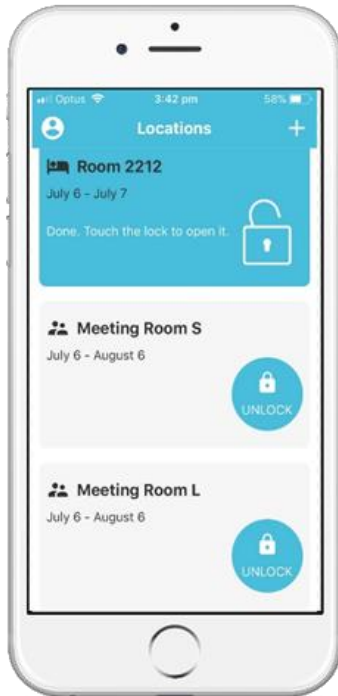
When you sign in, you list of digital keys which has been created for you by your account administrator will appear - e.g see below. Touch the 'unlock button' for the door you want to unlock.



Wait 1-3 seconds for unlock command to go over NB IoT network/query device status.



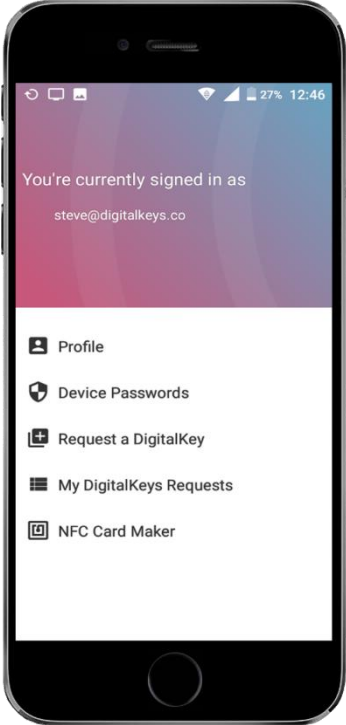
After 1-3 seconds a message will appear saying, 'Done touch the NB IoT logo on lock to open it' - see below. Your door will be unlocked and you can enter.



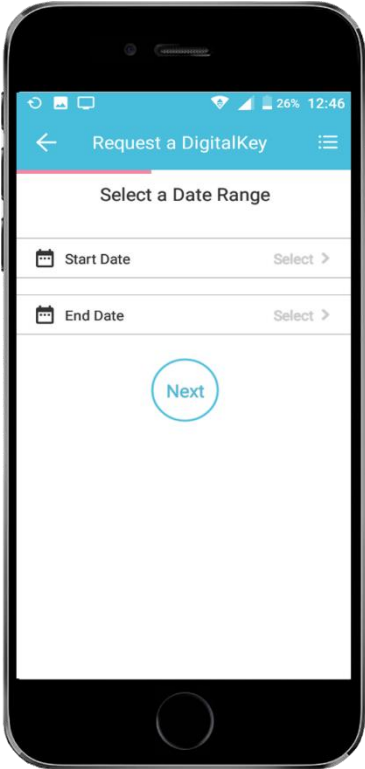
## REQUEST DIGITAL KEYS

You can request at anytime a digital key from inside the digital keys app. Upon making a request for a digital key, after choosing date/time and lock, your account administrator will receive an email asking to approve your request. The account administrator can approve the request simply by hitting an approve button inside their email. The idea of this function is to make management of the locks and system the most efficient it can be, so the account administrator does not have to worry about logging into the software and generating new digital keys each time for authorised users. The end-user can 'generate the digital key' themselves inside the app and all they have to do to get access to a lock is to seek the approval of the account administrator, by getting them to hit one button inside their email.

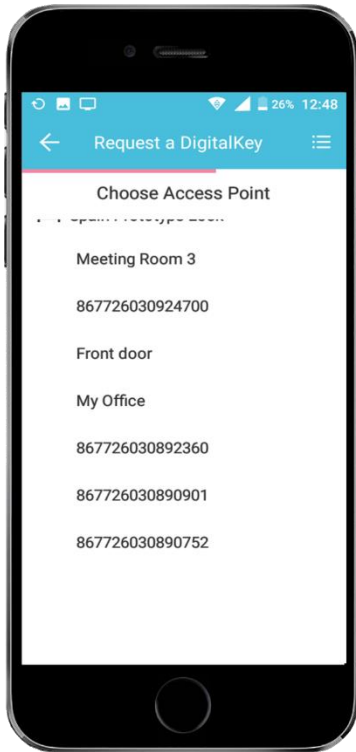
1. To make a request for a digital key, firstly select 'Request a Digital Key' from the menu bar - as shown below (swipe right for menu list)



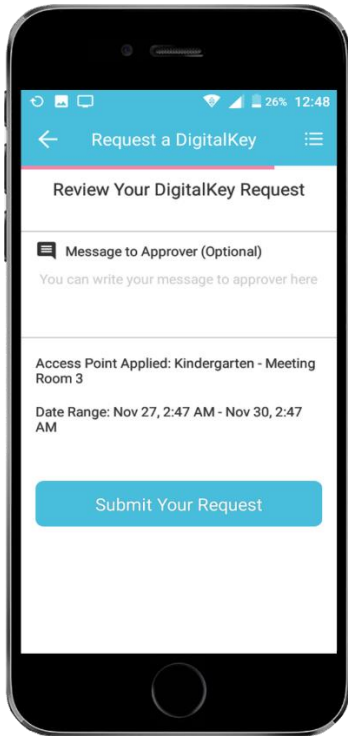
2. Select the date and time for the digital key to work.



3. Choose from the list the locks/access points which you want a digital key for. This list will be made available for you to choose from when the distributor/re-seller/account administrator first sets you up as a regular user in the digital keys management software account. If the lock you want access to is not on the list, then please follow up with your account administrator.



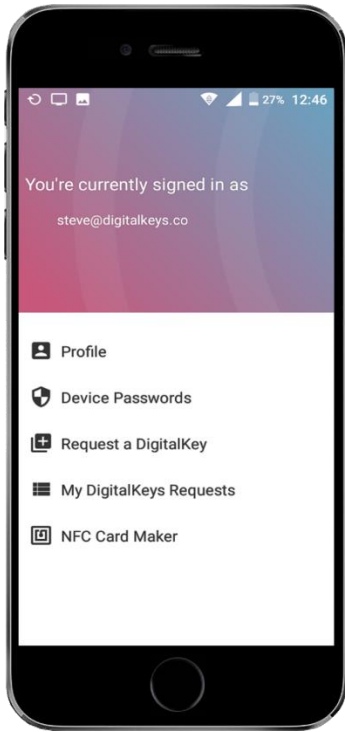
4. Review your Digital Key request, and if you like, give a message to your account administrator stating why you need the digital key for the date/time you have requested. For example you could say, "I'm opening the shop tomorrow as John is on leave, and so I need the digital key, or "I need to get to the server room tomorrow between 2-3pm to upload some updates of the software", or whatever reason it is you need to get a digital key. After you hit the 'Submit your request' button, your account administrator will immediately receive an email, and if they approve by hitting the one button in the email, then your digital key will appear within a few seconds. You will need to refresh the screen if you have the app open to see your new digital key(s).



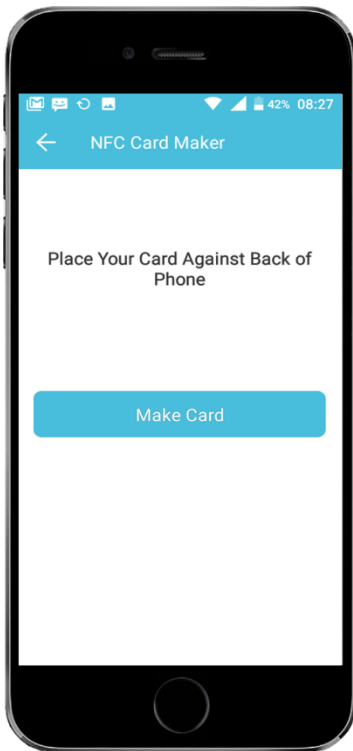
### MAKE NFC CARDS/TOKENS

If you would like to use your NB IoT smart access control solution just like a typical keycard system, such as those commonly used in hotels and offices, then follow the steps below to make a NFC card/token work for a specific lock/room for a specific time period for a specific person.

1. Generate the digital key in the digital keys management software (as outlined above) or make a digital keys request in the app (see section above).
2. Select the NFC card maker menu item.



3. Place one of our supplied NFC card/tokens\* to the back of the phone (Android phone operating system version 5.0 and above) and hit the 'Make Card' button. The digital key will then copy to the card/token, and you are ready to use the card/key for the time/date/lock you are authorised to access. You can write to this card 100,000 times, and you cannot copy the digital keys from this card once it has been written.





FOR MORE INFORMATION PLEASE CONTACT DIGITAL KEYS



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