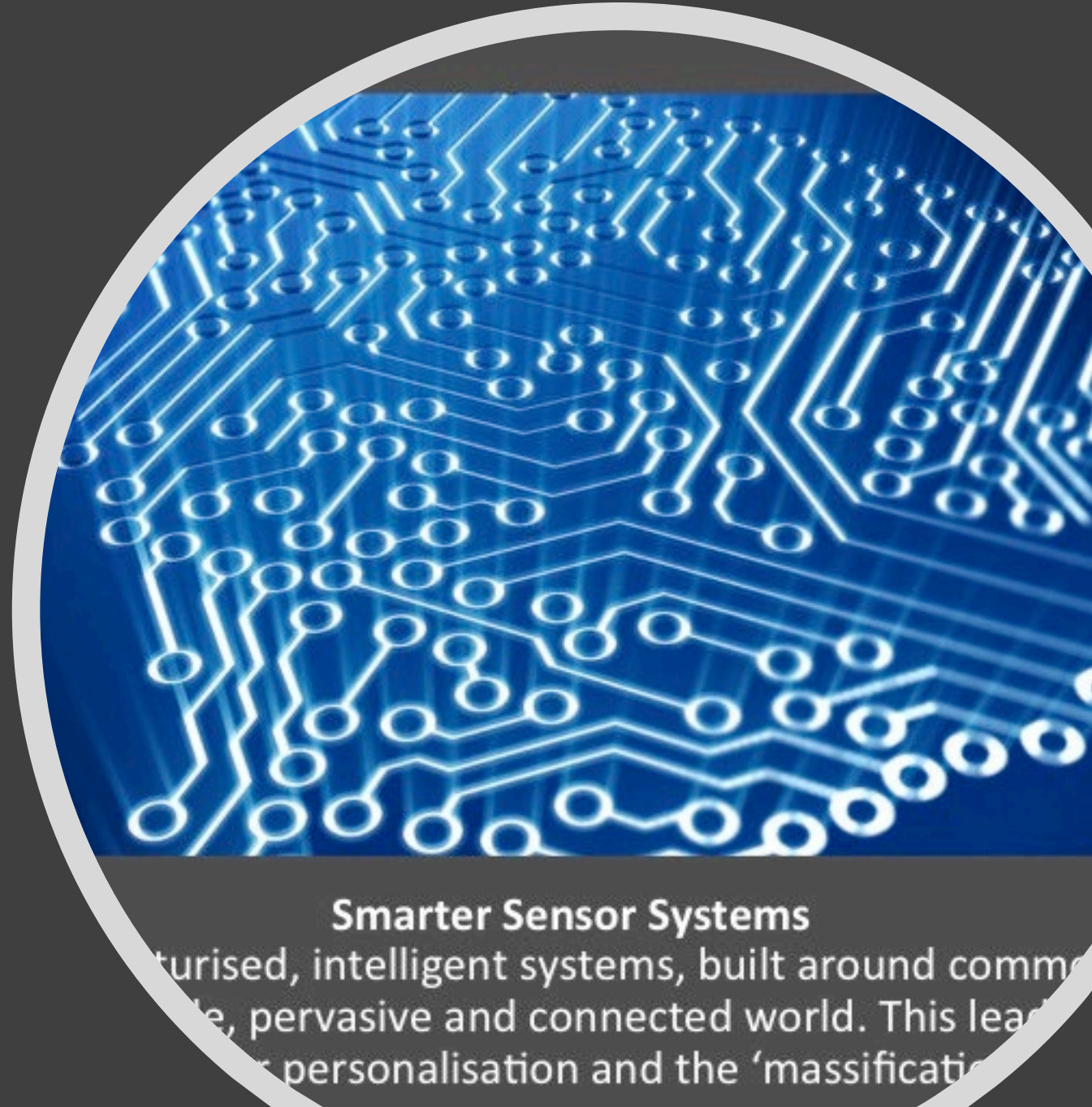


Vincent Claes

# IoT Pilotproject

AllThingsTalk platform



# Data Visualisatie

- Introductie NB-IoT Netwerk
- Introductie AllThingsTalk
- Hands-on labs
- Oefeningen

# NB-IoT Network

- LPWA: **L**ow **P**ower **W**ide **A**rea network
  - NB-IoT: NarrowBand Internet-Of-Things
    - <https://www.gsma.com/iot/narrow-band-internet-of-things-nb-iot/>
  - LoRa
    - <https://lora-alliance.org/>
  - SigFox
    - <https://www.sigfox.com/>
  - Weightless
    - <http://www.weightless.org/>

# AllThingsTalk Quick Introduction



All**Things**TalkMaker

AllThingsTalk Maker is the developer platform by All**Things**Talk to rapidly connect your things and interact with them. AllThingsTalk Maker is free for prototyping purposes.

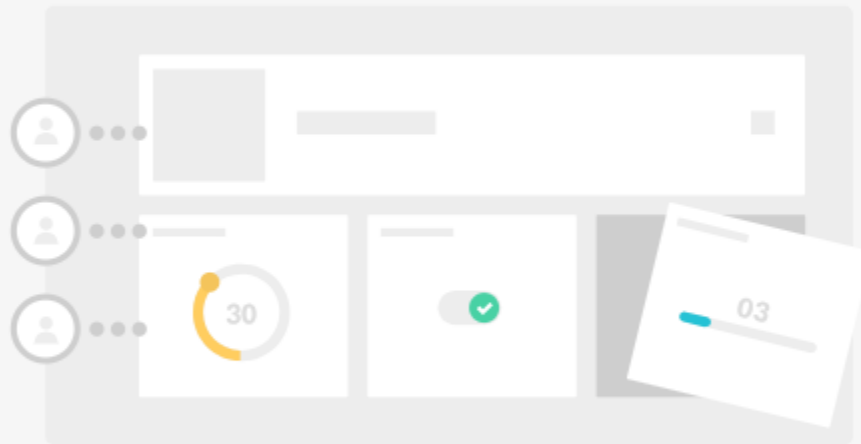
# AllThingsTalk Quick Introduction

Connect and set up your  
devices

Choose a type of device you want to connect. Download and setup your sketches. Create device assets and setup controls based on asset profiles.



# AllThingsTalk Quick Introduction



## Share with others

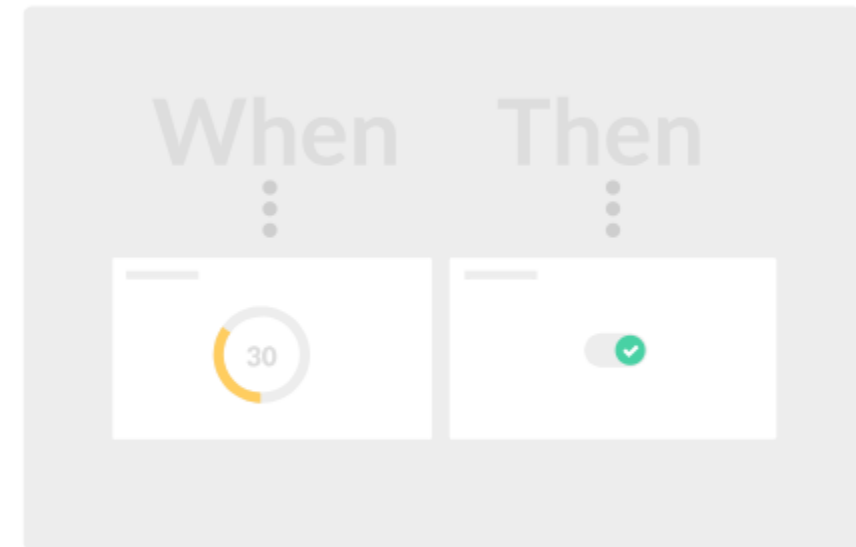
You can share your devices with others. Invite them to become members to your ground and share your device data.

Grounds are your prototyping canvas, everything you do happens in a ground context. We've created a demo ground for you to try out stuff, it's called "Playground".

# AllThingsTalk Quick Introduction

## Automate using rules

Let devices interoperate with **when-then** rules or use time and device state changes as triggers. Get notified when rules are executed.



# AllThingsTalk Quick Introduction

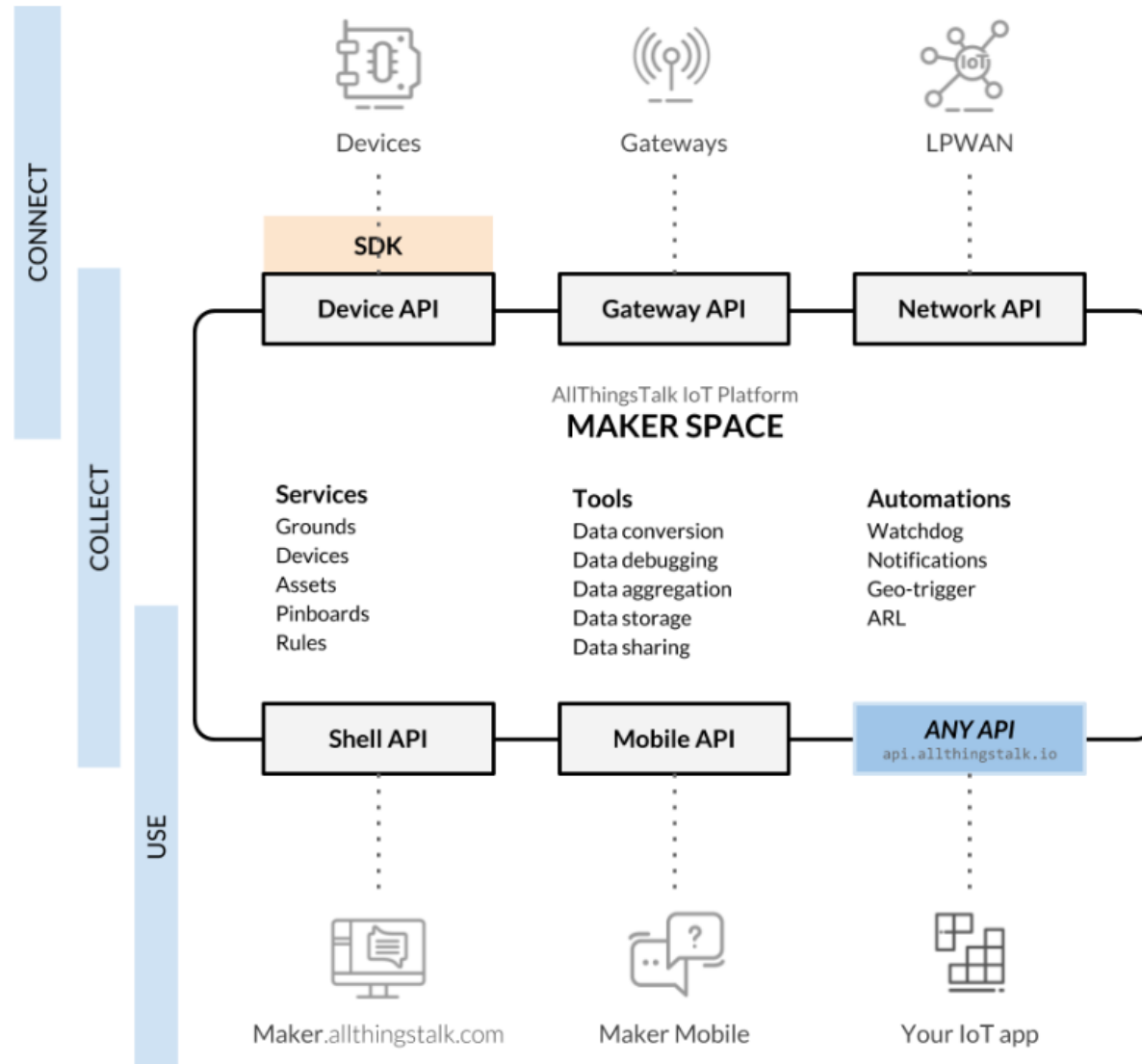


## Get notified

Get notified about device state changes and other events in your grounds.

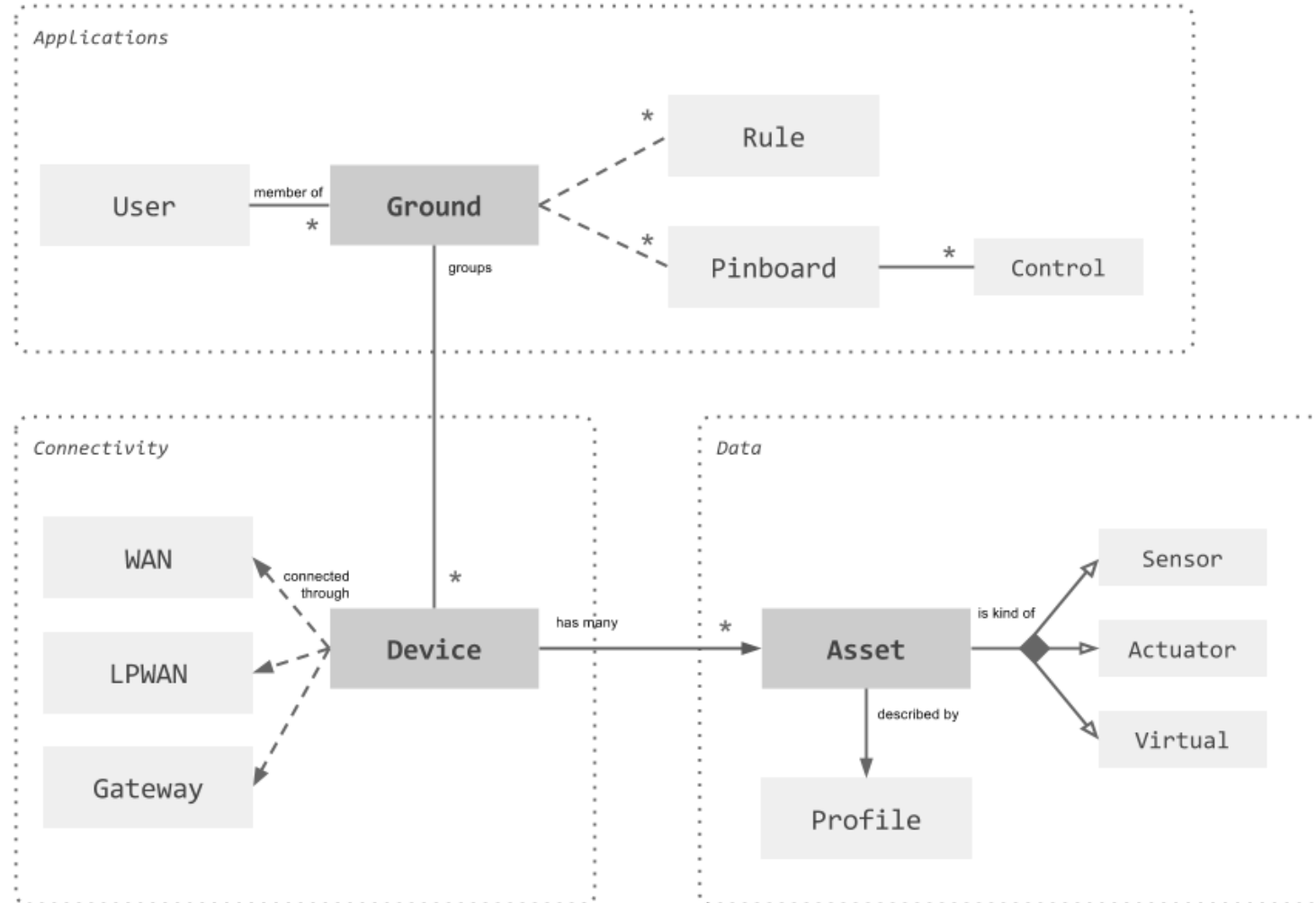


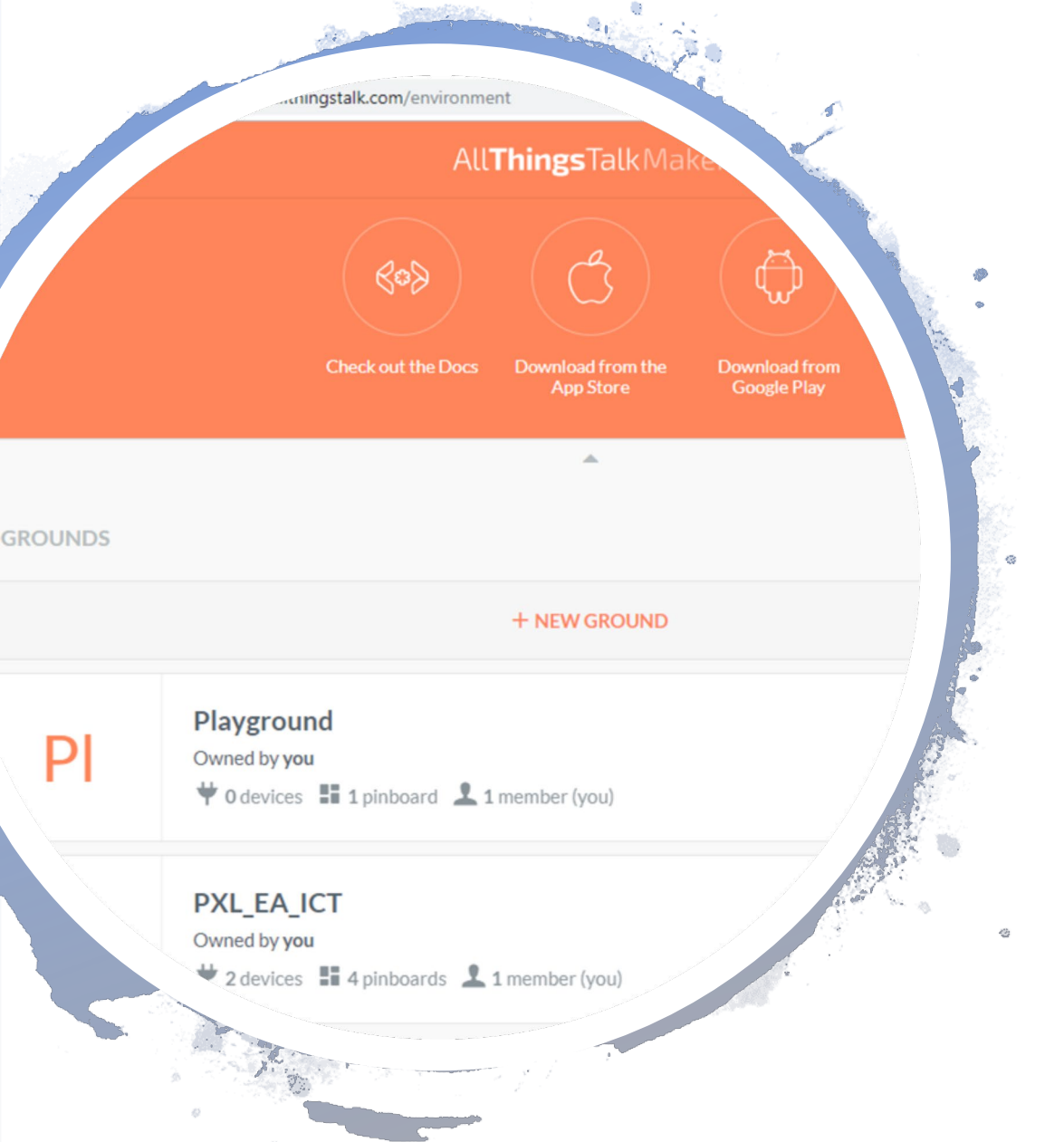
# AllThingsTalk More In-depth



# AllThingsTalk More In-depth

- Domain model

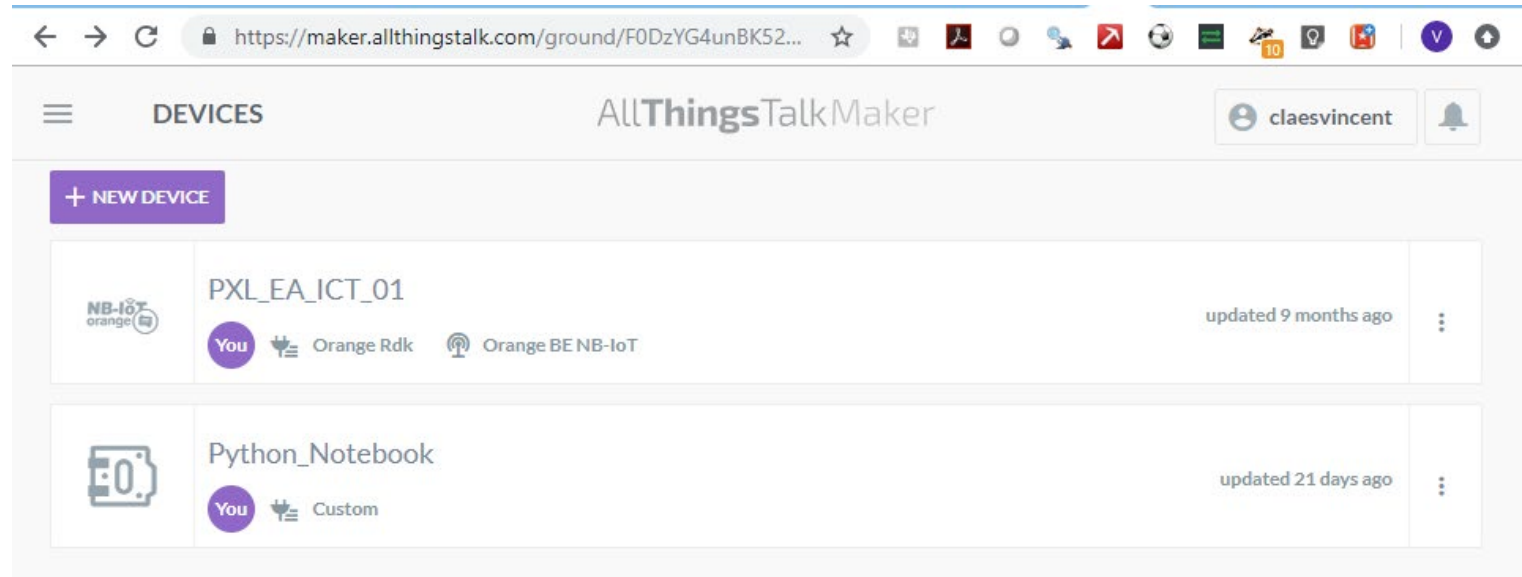




# Grounds

- Delen van geconnecteerde resources
  - Samenwerkingen opzetten
  - Zo heeft iedereen meer resources ter beschikking
- Standaard ground voor een maker account is de “Playground”
  - Ground *owner* (administrator van de ground)
  - Ground *member* (ontvangt notificaties ivm activiteiten die plaatsvinden)
  - *Iedere andere AllThingsTalk gebruiker* (kan devices, assets en members zien)
    - Gebruiker moet in bezit zijn van de url
- Notificaties
  - Ground updates, devices changes, asset state changes
- Ground Pinboards
  - (Multiple) Dashboards

# Devices



- Logische container van *fysische* metingen
  - Hardware en Software die *interactie* heeft met de fysieke wereld
  - Is *geconnecteerd* via een netwerk infrastructuur met de cloud
- Sensoren en Actuatoren => Assets => Controls op een Pinboard

# Gateways

- Voor toestellen die *niet rechtstreeks geconnecteerd* zijn met de cloud of die eigen protocollen gebruiken die niet compatible zijn met die van het AllthingsTalk platform
- Wanneer je toestel een TCP/IP stack geïntegreerd heeft is gateway niet nodig
- REST/HTTP(S) Gateway API

ICES			
AllThingsTalkMaker			
01   Orange BE   You			
CHARTS    DEBUG			
+ NEW ASSET			
	<b>Gps</b> gps	sensor   object	
	<b>Motion</b> motion	sensor   boolean	
	<b>Air quality</b> air_quality	sensor   integer	9 mont
	<b>Light</b> light	sensor   number	9 mont
	<b>Loudness</b> loudness	sensor   number	9 mont
	<b>Humidity</b> humidity	sensor   number	9 mont
	<b>Pressure</b> pressure	sensor   number	9 mont
	<b>Temperature</b> temperature	sensor   number	9 mont
	<b>Counter</b> counter	sensor   integer	9 mont

# Assets

- Actieve componenten die een fysische of virtuele meting bijhouden
- Fields
  - Sensoren geven informatie ivm de omgeving => temperatuur, licht,...
  - Actuatoren interageren met de omgeving => motoren, LEDs,...
  - Virtueel (houden resultaten van berekeningen bij) => health status, consumption,...
- Name
  - Identificeert een asset op het device
- Profile
  - Beschrijft het type data dat opgemeten wordt door de asset (integer, complex, custom objects,...)
- Asset Payload
  - Data Rate
  - Maximum Packet Size

# Asset Details

ASSET DETAILS

Id

0NqfB3rsCqDtBSrtdTijJeNN

Name

air\_quality

Kind

sensor

Title

Air quality

Profile

Choose type

Advanced

Integer


State

Last known state of the asset

```
{  "at": "2018-05-22T13:00:24.12698Z",  "value": 61}
```

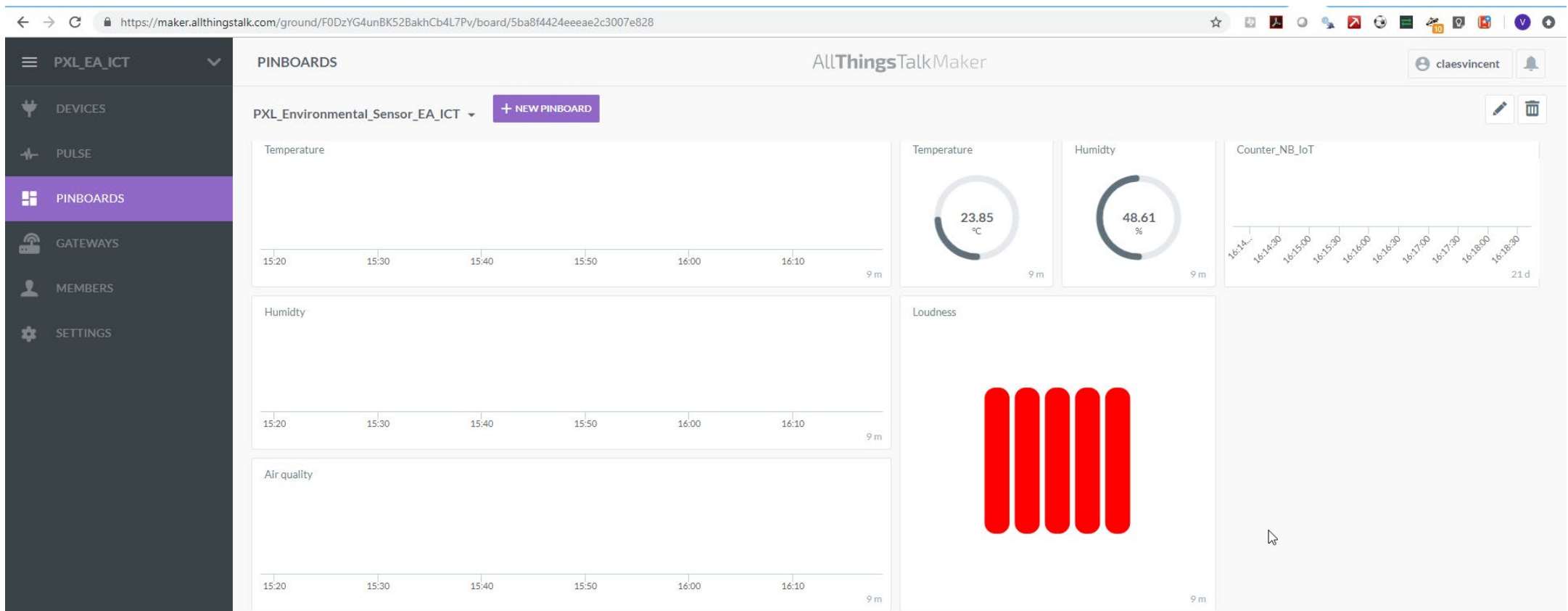
Management

Manage your asset

 Delete asset

# Pinboards

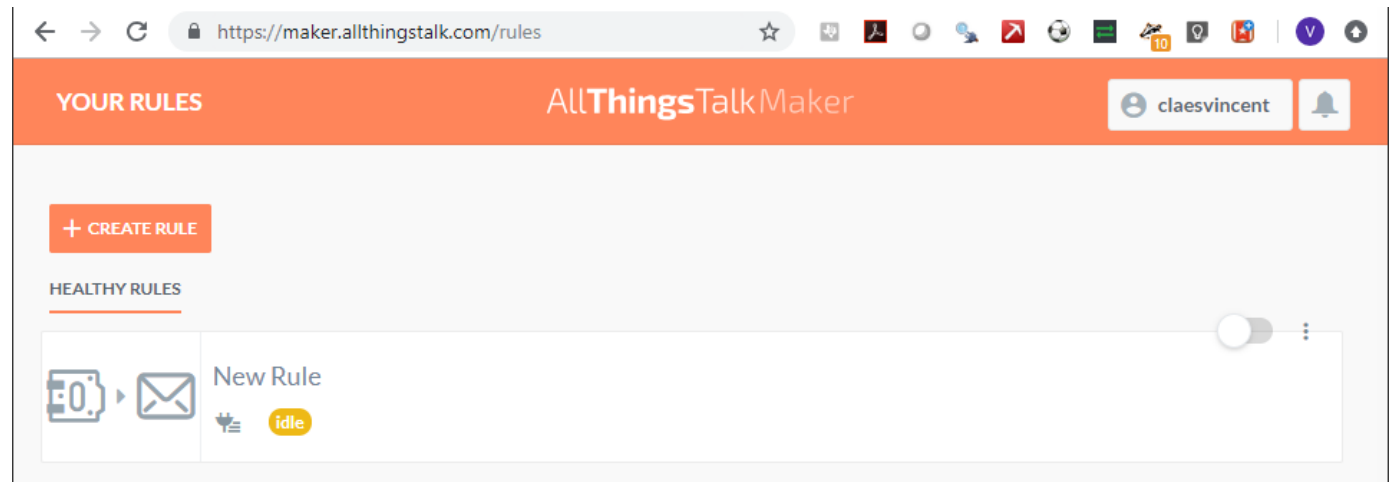
Worden gebruikt om assets te visualiseren => pin them to a ground board using a control





# Rules

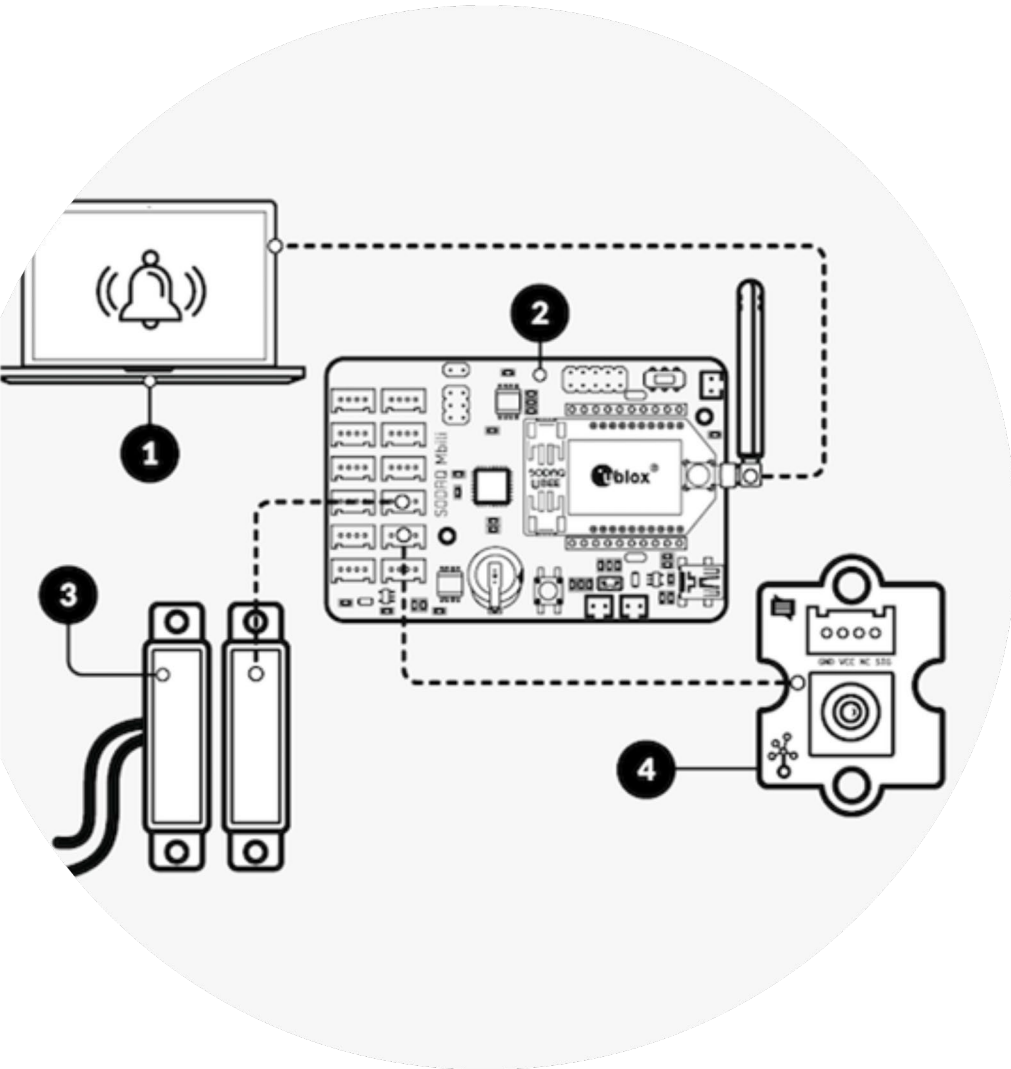
<https://maker.allthingstalk.com/rules>



# Hands - On

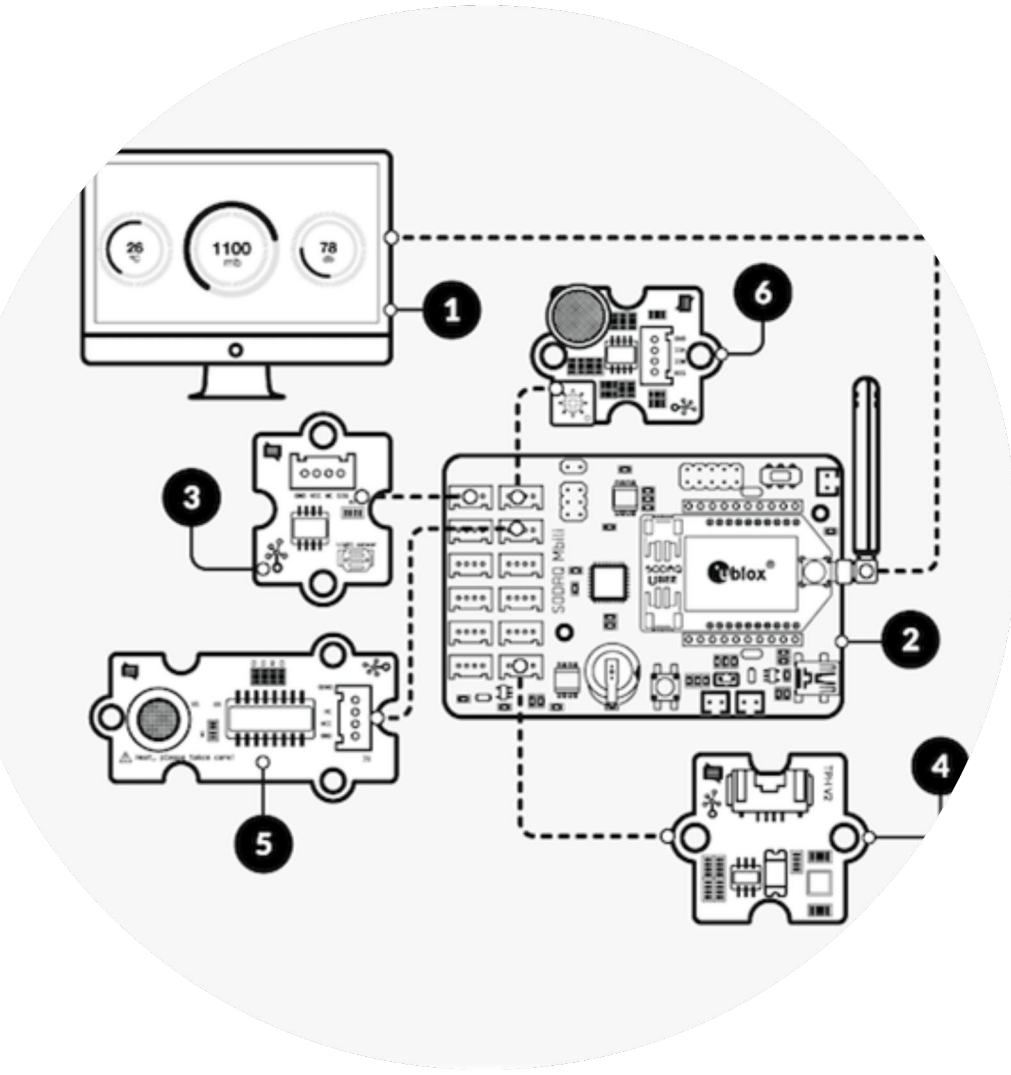
- <https://orange.allthingstalk.com>
- <https://maker.allthingstalk.com/environment>
- <https://docs.allthingstalk.com/examples/kits/orange-nbiot-rdk/>

# Count Visits



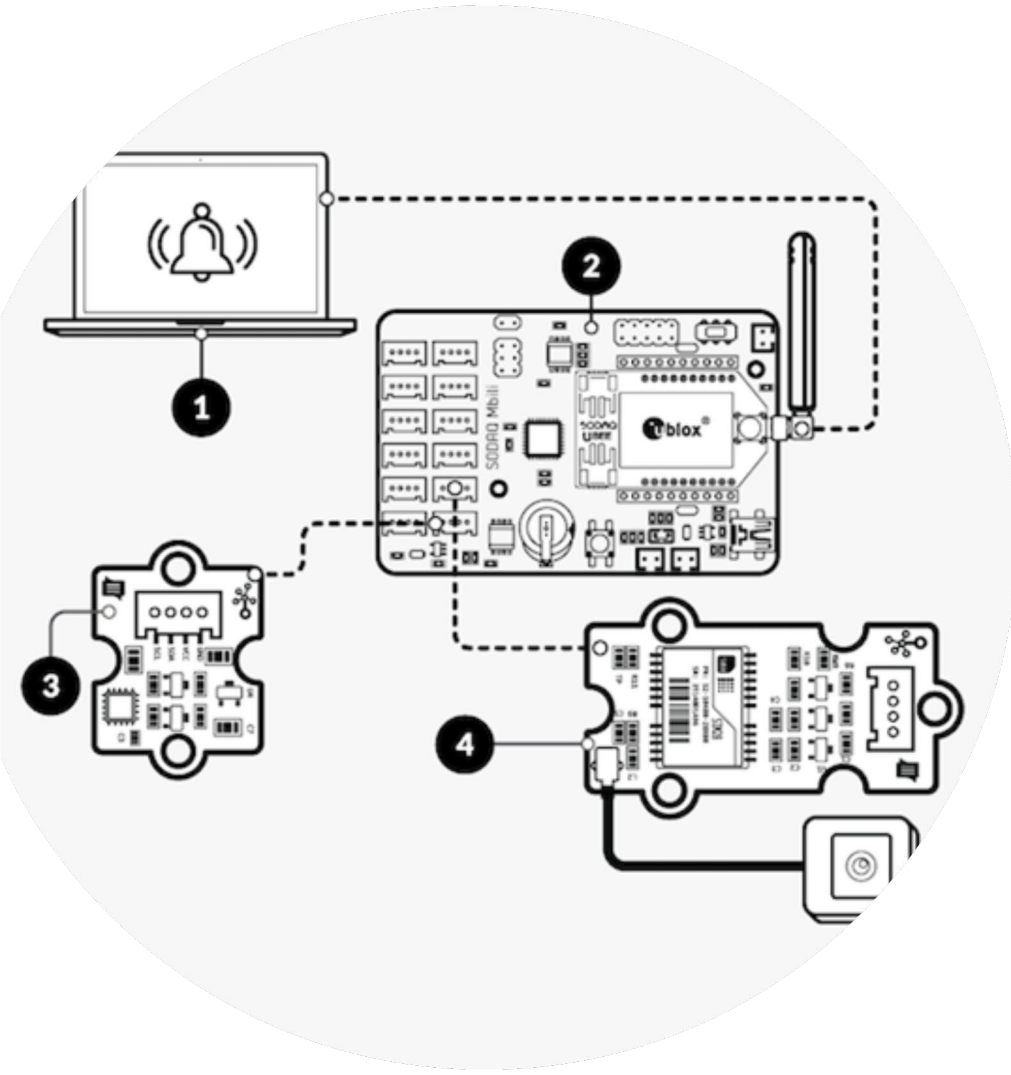
- Improve facility management by taking into account actual usage based on real time measurements. This example shows how a sensor can count visits to optimise cleaning based on usage rather than rigid fixed schedules. Now you can measure the number of toilet visits and inform you when this number exceeds 20 visits. Facility services can indicate by pushing the button when their cleaning job is done, and this action will reset the counter.
- <https://docs.allthingstalk.com/examples/kits/orange-nbiot-rdk/sodaq-mbili-count-visits/>

# Environmental Sensing



- This example shows how NB-IoT can be used to monitor the quality of your surrounding environment. Measure air quality, noise levels and temperature to provide stakeholders a dashboard to support their decision making to improve quality of living. This experiment will send every 5 minutes an updated value of the sensors.
- <https://docs.allthingstalk.com/examples/kits/orange-nbiot-rdk/sodaq-mbili-environmental-sensing/>

# Guard Your Stuff



- Get notified when someone is tampering with one of your favourite paintings. This example shows how an NB-IoT device can be used to detect unexpected movement of an object and send out notifications to its owner. Furthermore, it shows how you can track the object using its Geo-location when in open air.
- <https://docs.allthingstalk.com/examples/kits/orange-nbiot-rdk/sodaq-mbili-guard-your-stuff/>

# Oefeningen

- Ontwerp een NB-IoT dashboard waar je de locatie van je device kan volgen, zorg ook dat hij de temperatuur op deze locaties laat zien
  - Zie ook: [https://blog.allthingstalk.com/visualize-the-location-history-of-your-device?utm\\_content=110833050&utm\\_medium=social&utm\\_source=facebook&hss\\_channel=fbp-399421223463508](https://blog.allthingstalk.com/visualize-the-location-history-of-your-device?utm_content=110833050&utm_medium=social&utm_source=facebook&hss_channel=fbp-399421223463508)
- Ontwerp een systeem waar je een mail ontvangt indien de tilt sensor bedient werd op je NB-IoT systeem
- Zelf experimenteren met rules en dashboards.