



IoT World

Wie aus Wissen Daten entsteht



IoT World

Wie aus Daten Wissen entsteht



Christian Zeh

Product Innovation Manager



Monitoring 4.0

Wie aus Daten Wissen entsteht



Maximilian Fenzl
Business Development Manager

Interconnection



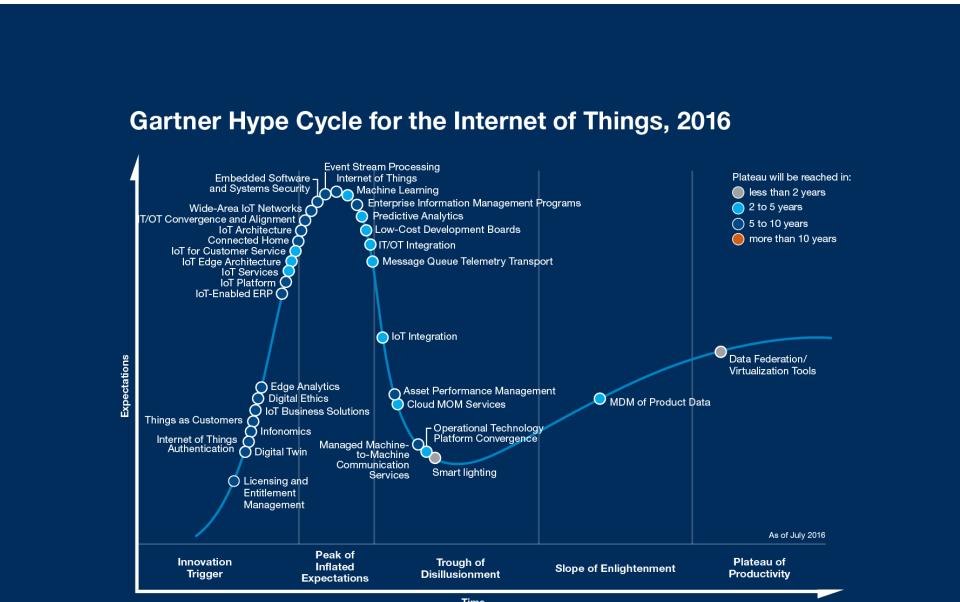
The term
"the Internet of Things"
was coined by Kevin
Ashton of Procter &
Gamble in 1999

Definition

The IoT is an **ecosystem** where sensors, devices and equipment are **connected** to the global network and can transmit and receive data for **tracking, analysis and action**.

8.4 Billion connected „Things“ 2017

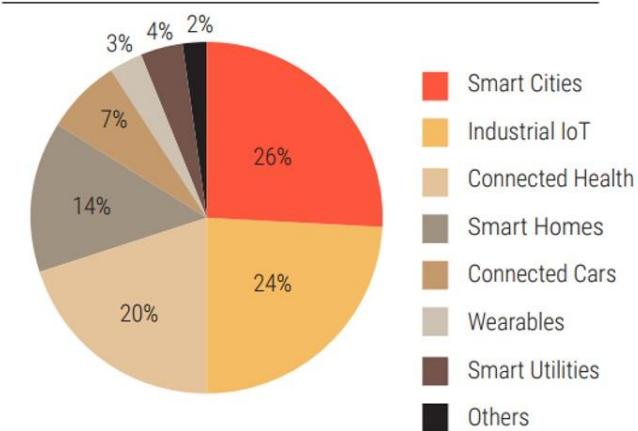
Gartner, Inc. forecasts that 8.4 billion connected things will be in use worldwide in 2017, up 31 percent from 2016, and will reach 20.4 billion by 2020.



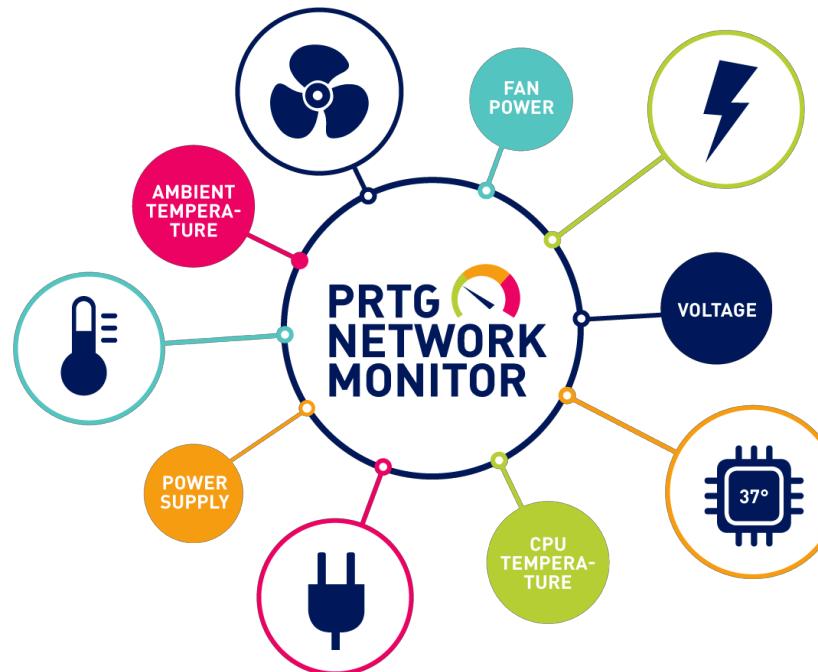
Global IoT Market



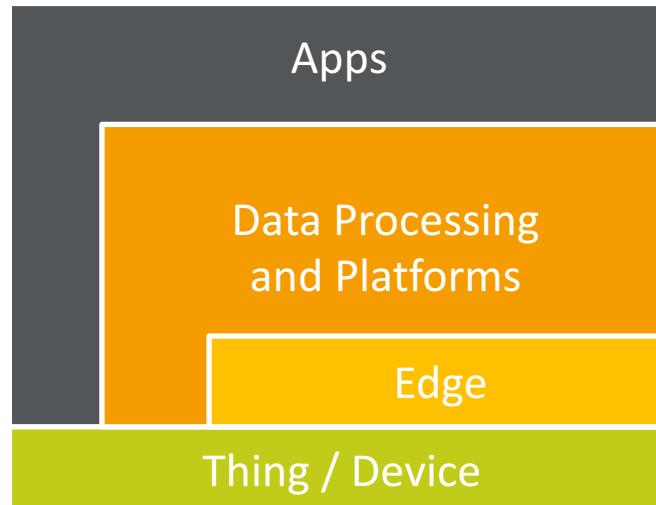
Global IoT Market Share by Sub-Sector



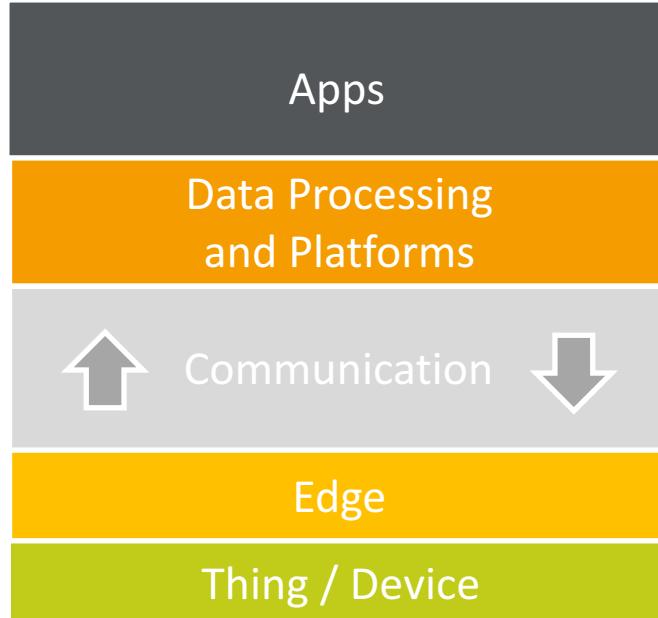
Research



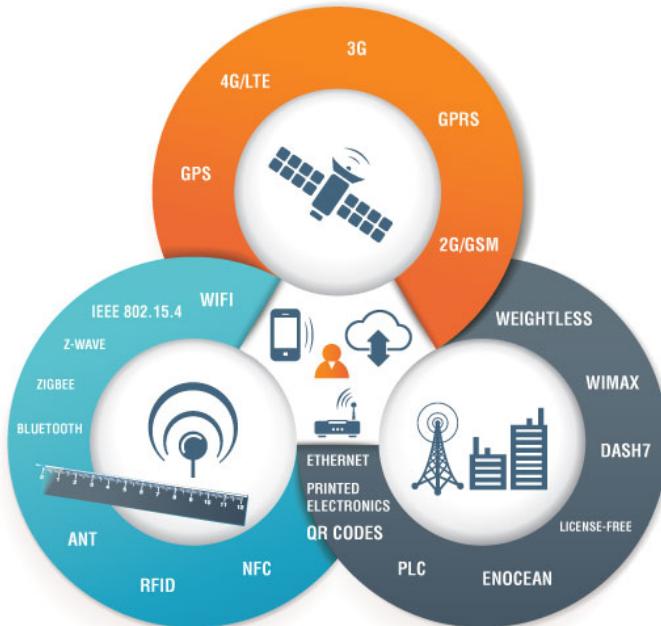
General IoT Architecture



Common Denominator



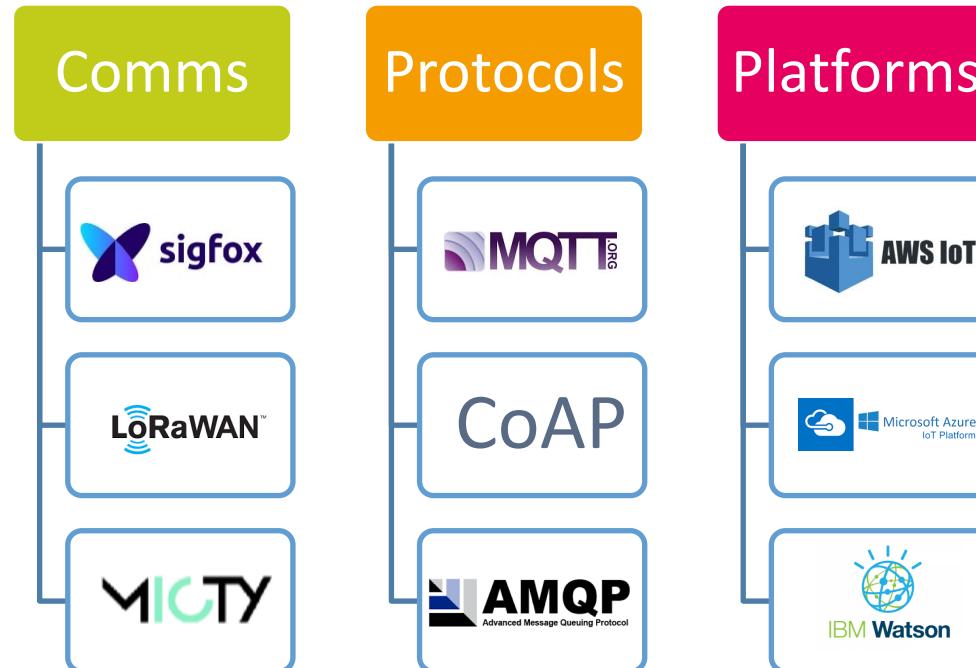
IoT Connectivity Options



There exists an **almost bewildering choice of connectivity** options for electronics engineers and application developers working on products and systems for the Internet of Things (IoT).



Structure IoT





Machina Research | LPWA

Machina Research

GLOBAL ADVISORS ON M2M, THE INTERNET OF THINGS AND BIG DATA

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WITH 3 BILLION CONNECTIONS, LPWA WILL DOMINATE WIDE AREA WIRELESS CONNECTIVITY FOR M2M BY 2023

25 February 2015

Over the past 18 months, Low Power Wide Area (LPWA) networking technologies have emerged from the shadows and are now centre stage. Sigfox recently announced a USD115 million round of funding, Neul was acquired by Huawei in late 2014, and a new alliance of major technology players has coalesced around Semtech's LoRa technology. On the 24th February, Vodafone announced that it will become the first operator to introduce Huawei's Cellular IoT (CIoT) LPWA technology, and Huawei and Vodafone intend that the solution will be published as an open industry standard by 3GPP so that it can be adopted by the wider mobile ecosystem. This is a sub-sector that is on fire. According to the latest forecasts from Machina Research by 2023, there will be over 3 billion LPWA M2M connections, outstripping cellular technologies.

Many M2M applications are potentially well-suited to a range of emerging technologies collectively termed Low Power Wide Area (LPWA) networking technologies. Examples of such technologies and providers include Amber Wireless, Coronis, Huawei's CIoT, LoRa, M2M Spectrum Networks, NWave, On-Ramp Wireless, Senaptic, Sigfox, Weightless, and many more. Many of these technologies have been present in the market for some time, whilst others are relatively new entrants. For instance, GE have effectively been a value-added reseller of On-Ramp connectivity for years (powering connected smart meters), whilst Huawei's CIoT solution has only recently been announced. However, it is really Sigfox's audacious 'Sigfox Network Operator' strategy that has recently kick-started the market, resulting in the entry of industry heavyweights such as Arqiva into the LPWA M2M space and prompting the established cellular industry to respond.

Newsletter

First Name
Last Name
Email

[Newsletter Signup >](#)

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Archive

2017

- February (2)
- January (1)

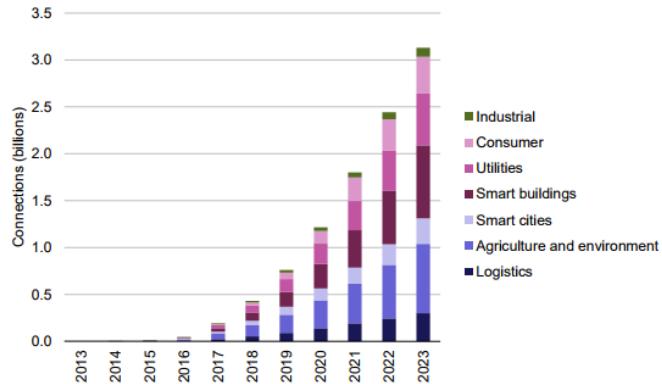
2016

- December (2)
- November (7)
- October (4)
- September (2)

3 BILLION
CONNECTIONS
FOR M2M

MASON | Forecast Revenues LPWA

Figure 2: Forecast for LPWA connections [Source: Analysys Mason, 2014]



While the revenue generated by each LPWA connection will be much lower than a cellular equivalent, the overall size of the market means that, by 2023 we expect it to generate more than USD10 billion globally in connectivity revenues alone. Additional revenues, not forecast here, will be earned from device and application sales. We would expect that, for a typical LPWA service, connectivity would typically account for less than 50% of lifetime revenues³.

Figure 3: Forecast of connectivity revenues from LPWA services [Source: Analysys Mason, 2014]

\$ 34 billion
accumulated
connectivity
revenue by 2023

Which LPWAN technology has the greatest potential?

Gartner says:

Selecting a wireless network for an IoT device involves balancing many conflicting requirements, such as range, battery life, bandwidth, density, endpoint cost and operational cost.

Low-power, short-range networks will dominate wireless IoT connectivity through 2025, far outnumbering connections using wide-area IoT networks. However, commercial and technical trade-offs mean that many solutions will coexist, with no single dominant winner and clusters emerging around certain technologies, applications and vendor ecosystems.

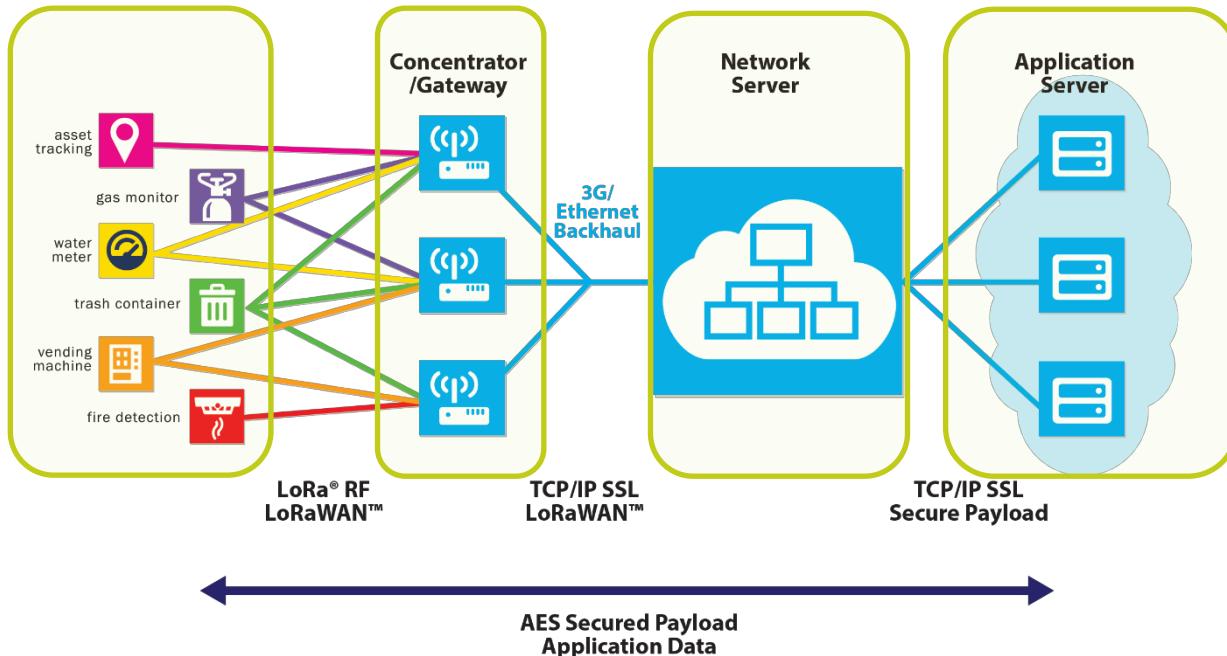
IoT & IIoT Connectivity 2020:

25%

covered via LPWAN



LoRa Architecture





sigfox

A photograph of a winding road at night, illuminated by the headlights of a car, leading towards a town with lights reflected in a body of water. The sky above is filled with long, white star trails and a prominent circular light effect, suggesting a time-lapse or a specific camera effect.

In 2010 we launched Sigfox
to connect any everyday object to the internet
from anywhere in the world



Christophe Fourtet
CSO Sigfox

Ludovic Le Moan
CEO Sigfox

Who is Sigfox

Founded 2010
HQ Paris, France
Employees 420
Offices Boston, San Francisco,
Madrid, Munich, Dubai,
Singapore

50 countries covered (Sept. 18)

Date	Amount / Round	Main Investors	# Investors
Nov, 2016	€150M / Series E	Total Salesforce	12
Feb, 2015	€100M / Series D	SK Telecom Air Liquide	10
Mar, 2014	€15M / Series C	Telefonica	6
Sep, 2012	€10M / Series B	Intel Capital	4
Jun, 2011	€2M / Series A		

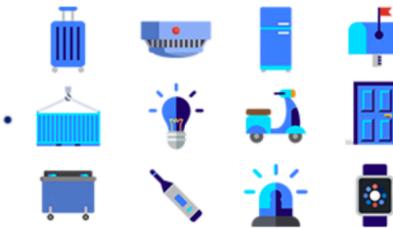
Total: 277 Mio €





50
Countries & Regions

3.4M
Registered Devices



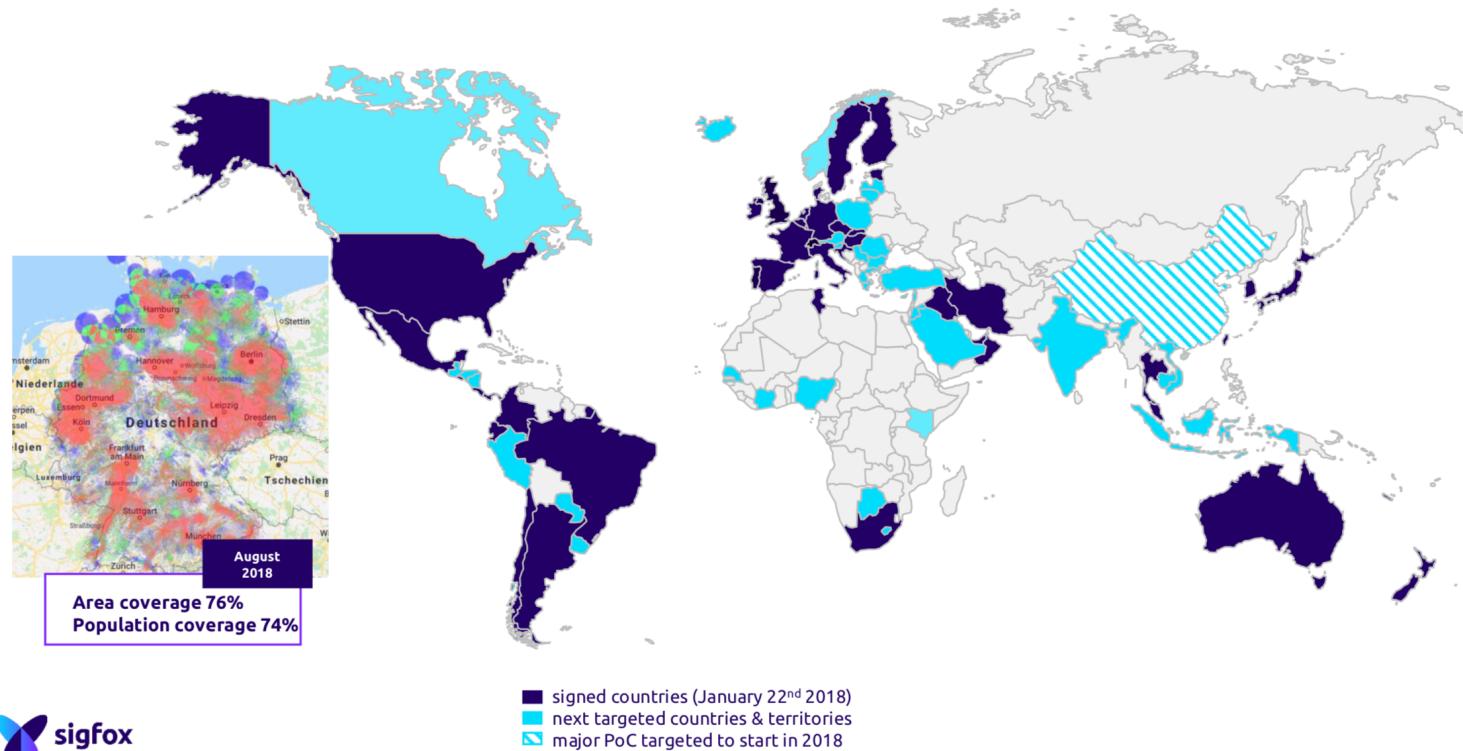
908
Million People Covered



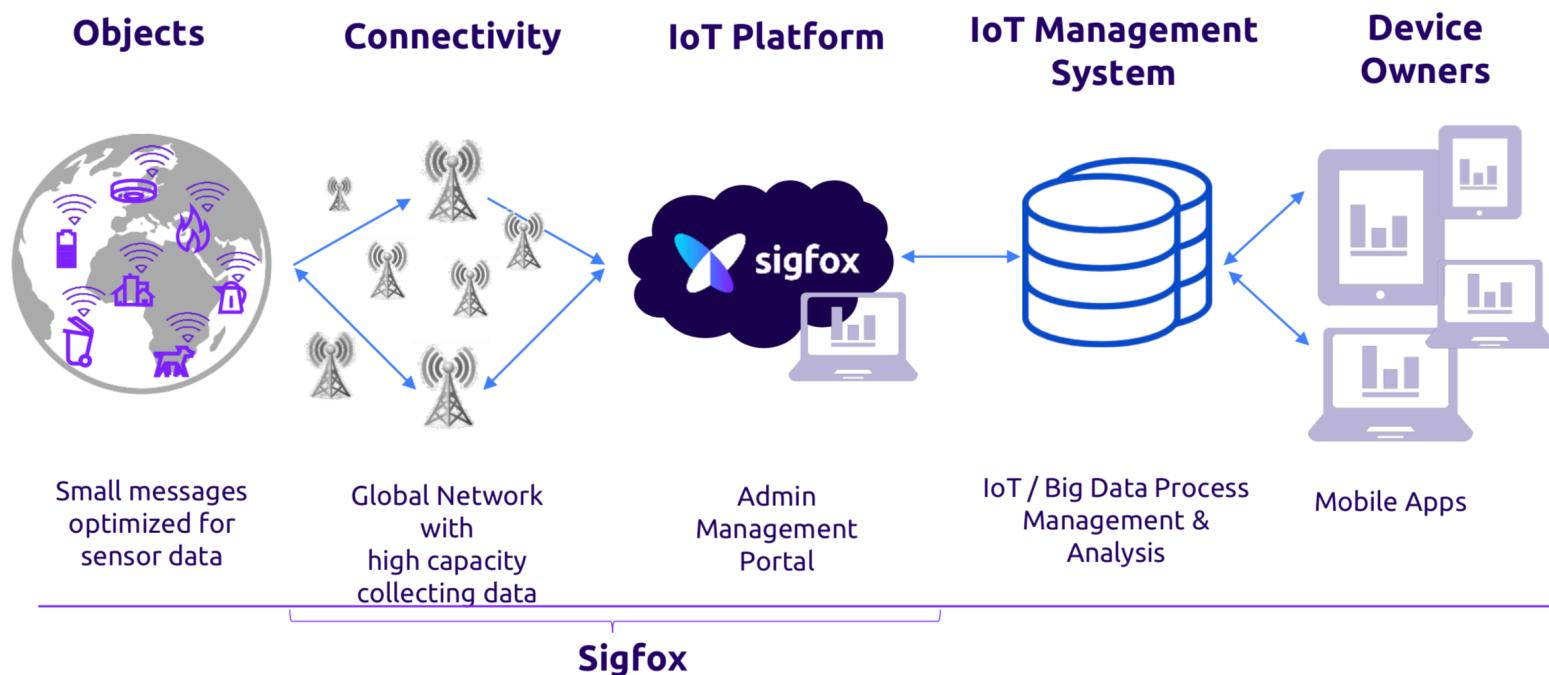
4.0
Million Km² Covered

423
Sigfox Certified Devices

50 countries signed to date with plan to reach 60+ by end 2018

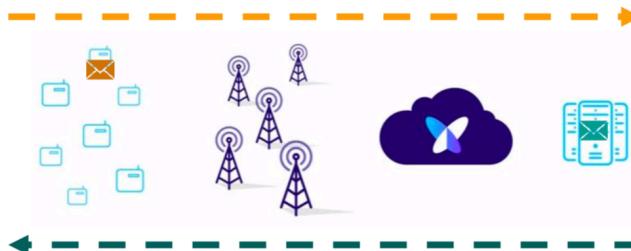


From Object to Useful Data – IoT Service Provider



Sigfox Messages and Service Overview

A connectivity service to transport data between devices and the IT systems.



Allowed number of messages per day per device

Subscription level	UPLINK	DLINK
PLATINUM	140	4
GOLD	100	2
SILVER	50	1
ONE	2	0

Examples Of Data A Sigfox Message Can Carry

UPLINK (12 Bytes)



6 Bytes



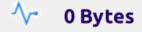
2 Bytes



2 bytes



1/8 Bytes



0 Bytes

DOWNLINK (8 Bytes)

- Change configuration
- Adjust sensor scale
- Adjust messages frequency
- Request additional data
- Request firmware update (through high throughput connection)

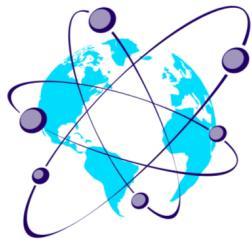
Subscription cost: 1-8€/yr & device

- Defined by subscription Level, number of connected objects and duration
- No roaming costs

Additional services:

- Geolocation services (Atlas)
- Globetrotting devices (Monarch)
- Payload encryption level
- Certifications
- Professional Services & Consultancies





Global & Reliable

- One contract, One network
- Managed Network with high Quality of Service
- Highly resistant to interference & jamming



Overall TCO at lowest

- Device: Enabling the simplest, lowest cost radio chips
- Network: One central network
- Integration: comprehensive API and IoT platform provider



Simple

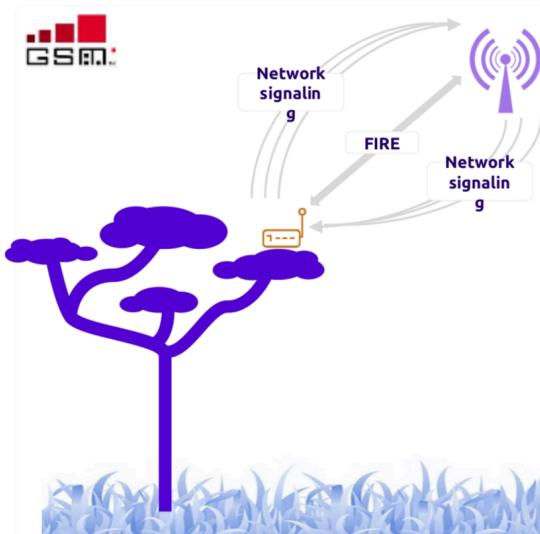
- One central system: No pairing, no configuration
- No connection.
- No protocol: the simplest and most efficient link between objects and the Internet



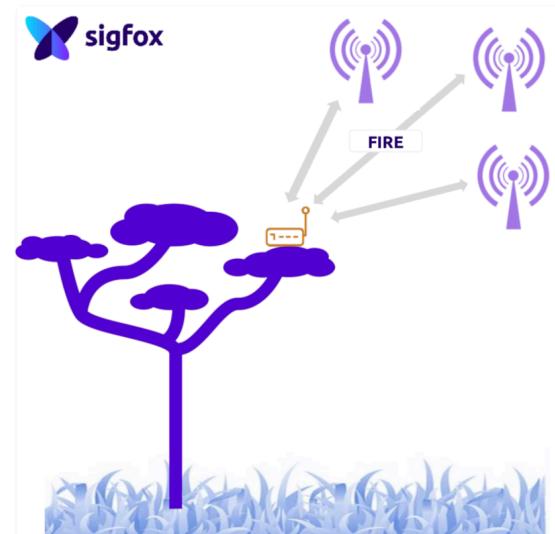
Low Energy

- Device in sleep mode most of the time
- Small messages (up to 12 bytes)
- Few messages per hour or day
- Smart cooperation between network and device

Patented Technology Optimized for Battery Powered Devices



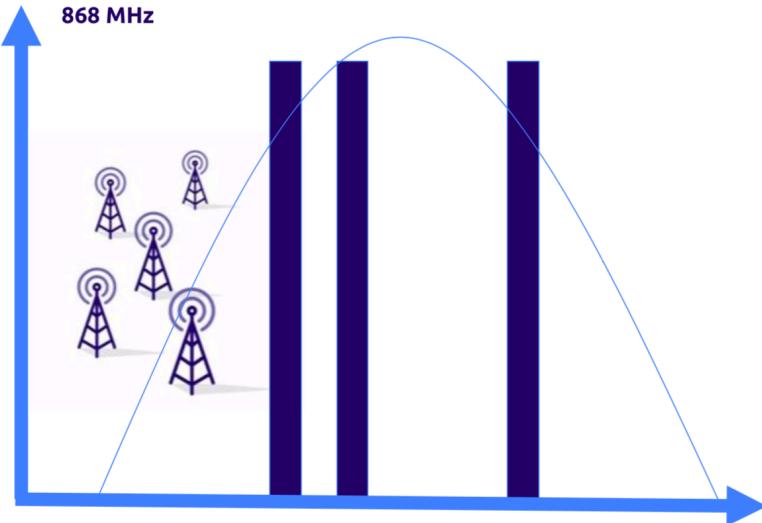
Autonomy: DAYS & WEEKS



Autonomy: MONTHS & YEARS

SIGFOX message redundancy

(high level)



- Free ISM band 868 (no licence costs)
- 25mW send with a high peak (good indoor coverage & range)
- Every message is send 3 times (send redundancy)
- 3 different channels (frequencies) used
- Every Sigfox base station receives the messages (receive redundancy)



SIGFOX – Large Partner Ecosystem

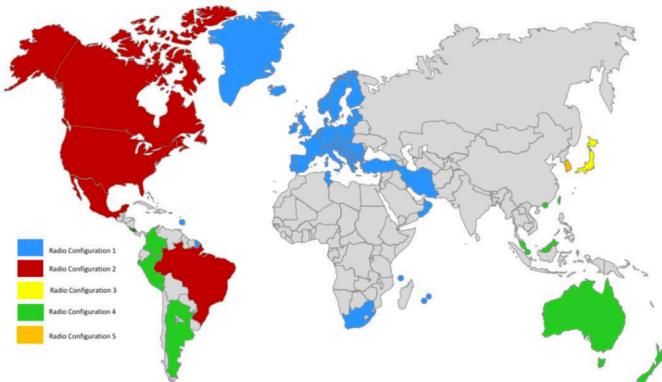


Technology Overview



Radio configurations

- Different ISM frequencies used worldwide due to regulation constraints:
5 Radio Configurations exist today.



	UL (MHz)	DL (MHz)
RC1	868.13	869.525
RC2	902.20	905.20
RC3	923.20	922.20
RC4	920.80	922.30
RC5	923.25	922.250

- For each RC, frequency range, maximum radiated power and RF front end have their specificities.

Ultra narrow band – Sigfox is a Broadcasting Technology

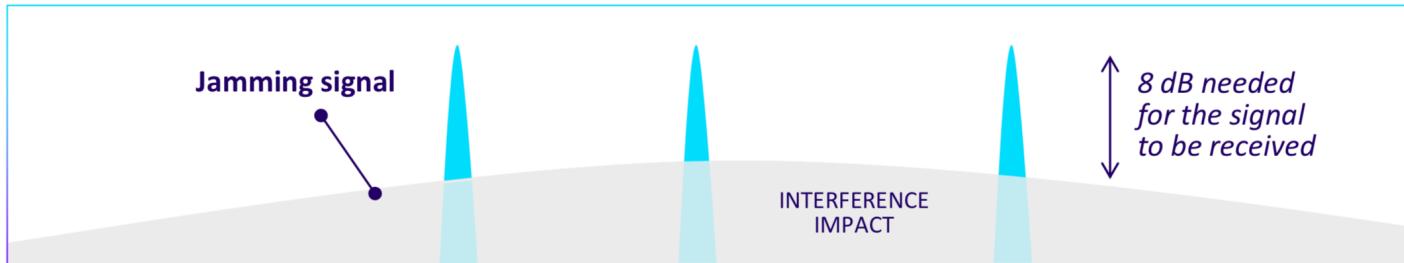
- ❖ Currently spreads on a 200KHz part of the spectrum
- ❖ Each message is ~100Hz wide



High resilience to interferences

- Ultra Narrow Band and spatial diversity are the DNA of Sigfox technology.
- It allows very good resilience to interferences which is used :
 - For long distance communication,
 - For communication over shared ISM band
 - For communication in areas that have exceptional level of noise.

➔ **Sigfox used in Security use cases where Jamming resistance is a must.**





USE CASES

www.sigfox.com/usecases

Worldwide Sea
Container Tracking
with:



ARGON
CONSULTING





Sigfox connects your
alarm system and
secures your home
with



Sigfox is the communication network for track and trace the logistic flow of



AIRBUS



Sigfox bringing
Social Solutions and
Benefits to people by
deploying fall-detectors to
seniors living alone





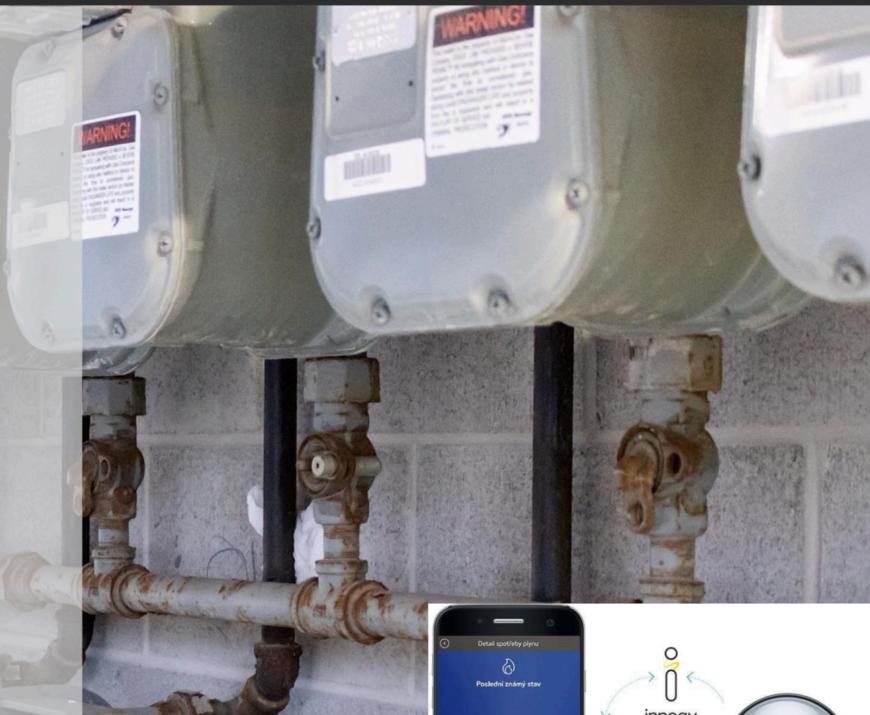
Sigfox monitors
and connects
gas bottles with

ALIZENT

&

 **Air Liquide**

Plug & Play – innogy uses Sigfox to monitor gas usage in Prague





Travellers can track their luggage globally* with Sigfox



* In 100 Airports



INNOVATION
AWARD
AGRITECHNICA
SILVER MEDAL

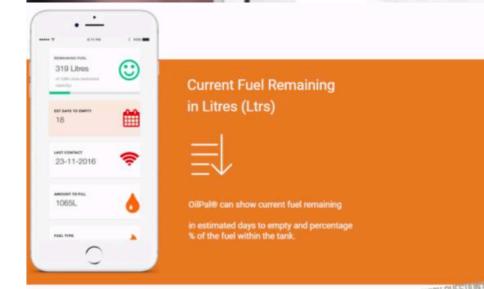
Sigfox enables smart
farming with

Fliegl
AGRTECHNIK

&



PÖTTINGER

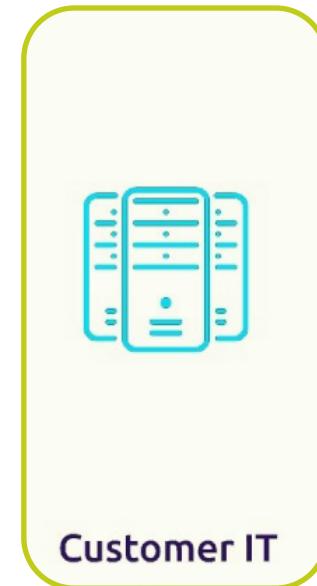
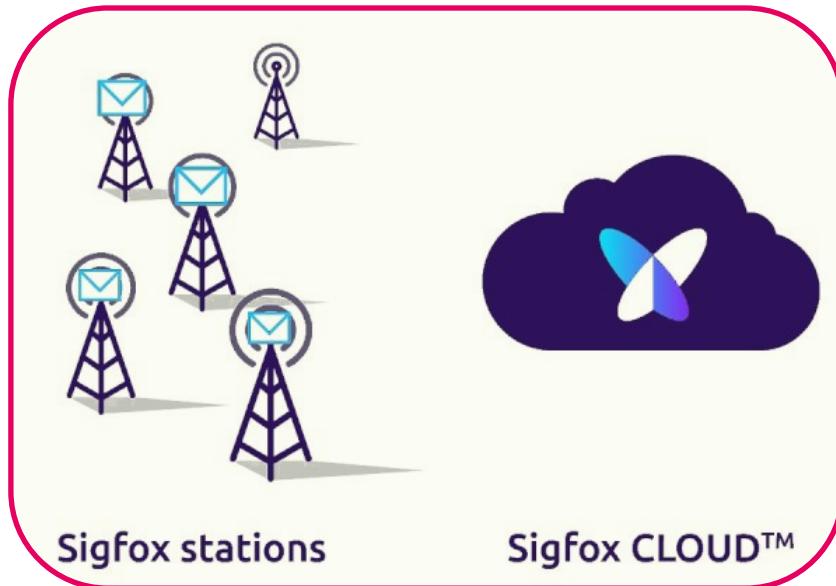
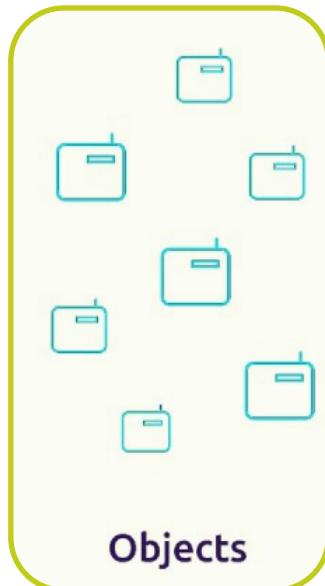


Plug & Play –
Sigfox helps end
customers track
their oil storage and
usage

Dunraven Systems
Innovative Monitoring Solutions

CONFIDENTIAL 23

Sigfox Network Architecture



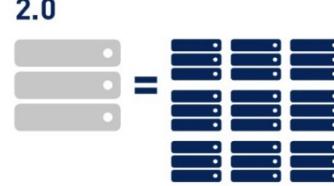
Monitoring

History of Monitoring

MONITORING
1.0



MONITORING
2.0



MONITORING
3.0

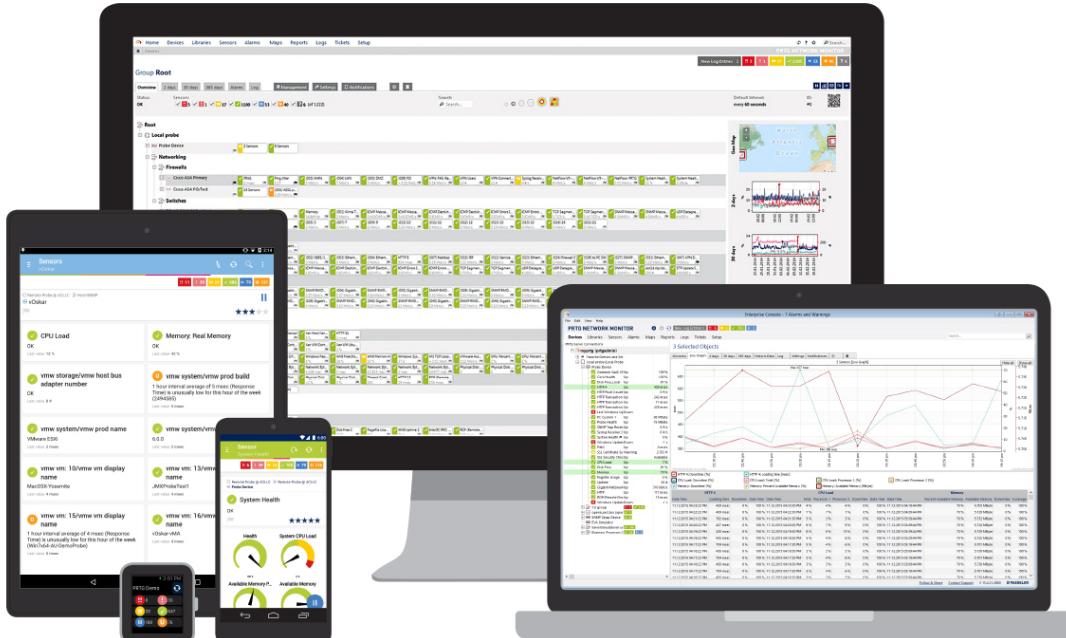


MONITORING

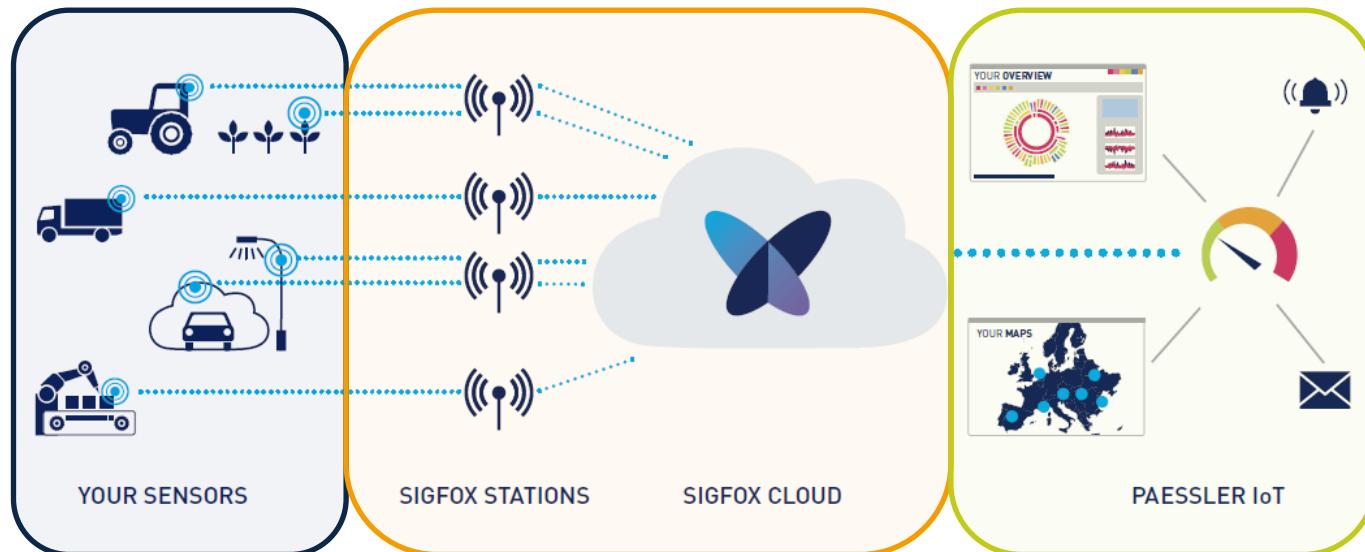
4.0



Multiple Interfaces



Sigfox Monitoring



PRTG On-Prem

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Congrats! This Is Your Free License Key For
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License Key:

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7K8VAC-5CAREH

Please save this license key as you will need it during the installation of
the software.

Free Software Download

If you haven't done so already please download PRTG Network Monitor
now.

[DOWNLOAD HERE >>](#)

Please note: For the first 30 days you can try PRTG with unlimited
sensors. Then you'll be able to continue using 100 sensors for free
forever.



<https://www.paessler.com/download/prtg-download>

PRTG In The Cloud



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Sign up for our cloud option and get started in no time.

YOUR DOMAIN:

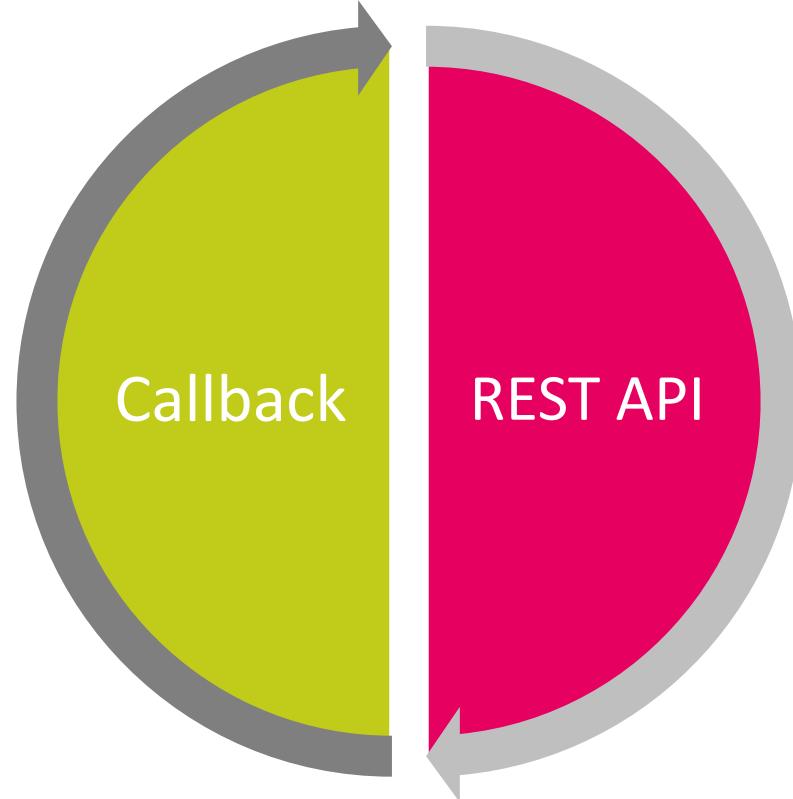
.my-prtg.com

START FREE TRIAL NOW

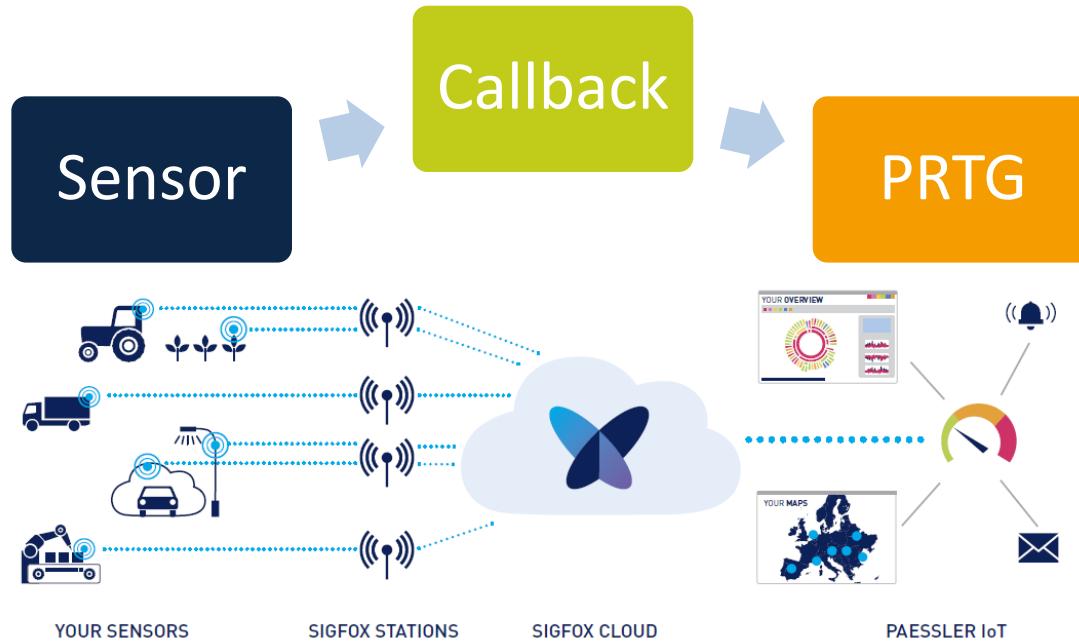
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<https://www.paessler.com/prtg/sign-up>



Sigfox Callbacks



Sigfox Monitoring



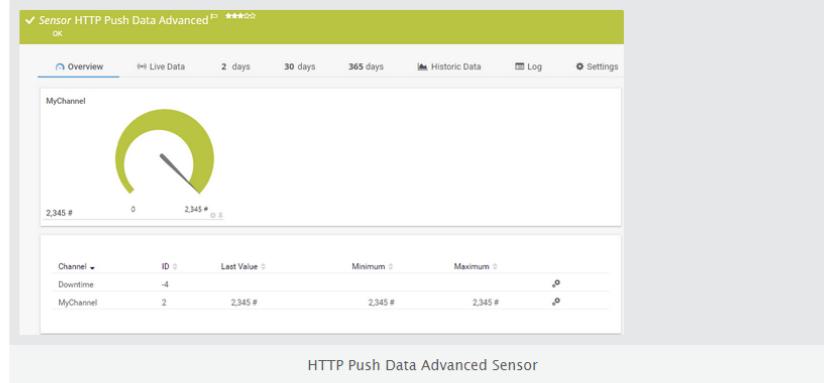
PREVIOUS

NEXT

PRTG Manual: HTTP Push Data Advanced Sensor

The HTTP Push Data Advanced sensor displays data from received messages that are pushed via a Hypertext Transfer Protocol (HTTP) request to PRTG. It provides a URL that you can use to push messages to the PRTG probe system via HTTP (insecure or TLS 1.2 encrypted).

- This sensor can show received values and a message encoded in valid XML or JSON in multiple channels.
- For details about the return value format, see section [Custom Sensors](#).



Channel	ID	Last Value	Minimum	Maximum
Downtime	-4			
MyChannel	2	2,345 #	2,345 #	2,345 #

HTTP Push Data Advanced Sensor

Sensor in Other Languages

Dutch: [HTTP Push Data geavanceerd](#), French: [Données avancées Push HTTP](#), German: [HTTP Push–Daten \(Erw.\)](#), Japanese: [HTTP ブッシュデータ（アドバンスト）](#), Portuguese: [Dados HTTP Avançado via Push](#), Russian: [HTTP: Данные push-объекта \(Расширенный\)](#), Simplified Chinese: [HTTP 高级推送数据](#), Spanish: [Datos Push de HTTP avanzados](#)

Remarks

- For details about the usage, see manual section [HTTP Push Data Advanced Sensor—How to Use](#)

Take Your Monitoring to the Next Level



FREE TRIAL

-  [Quick Start Guide \(HTML\)](#)
-  [Download Full PRTG Manual \(PDF\)](#)
-  [Download Full PRTG Manual \(EPUB\)](#)

1 Welcome to PRTG Network Monitor

2 Quick Start Guide

3 Using PRTG Hosted by Paessler

4 Installing the Software

5 Understanding Basic Concepts

6 Ajax Web Interface—Basic Procedures

7 Ajax Web Interface—Device and Sensor Setup

7.1 Auto-Discovery

7.2 Create Objects Manually

7.3 Manage Device Tree

7.4 Root Group Settings

7.5 Probe Settings

7.6 Group Settings

7.7 Device Settings

7.8 Sensor Settings

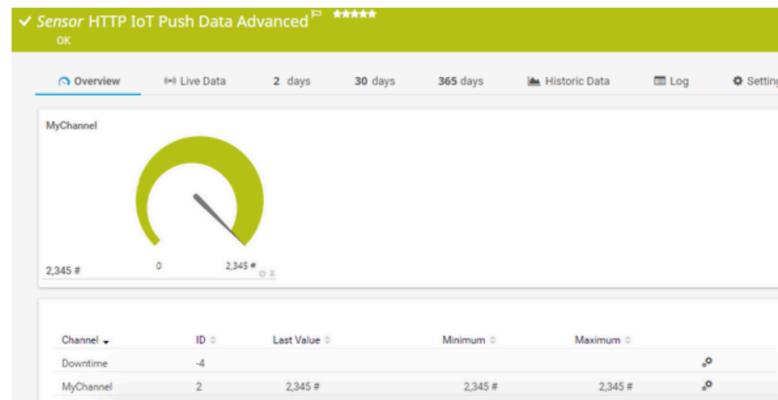
7.8.1 List of Available Sensor Types



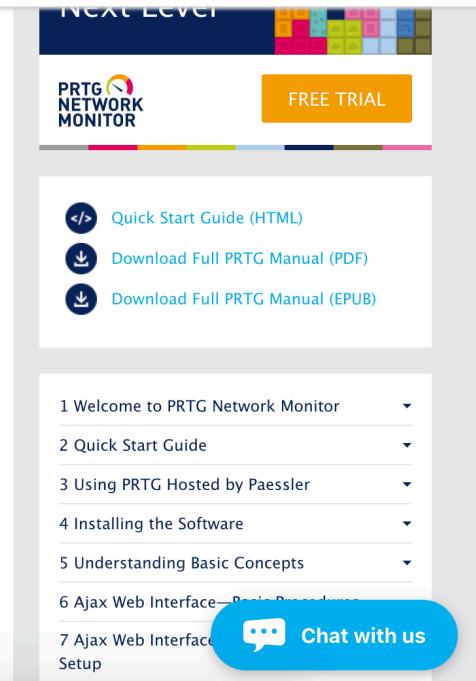
PRTG Manual: HTTP IoT Push Data Advanced

The HTTP IoT Push Data Advanced sensor displays data from messages received from IoT-capable devices (for example, Sigfox devices) that are pushed via a Hypertext Transfer Protocol Secure (HTTPS) request to PRTG. It provides a URL that you can use to push messages to the PRTG probe system via HTTPS (TLS 1.2 encrypted). This sensor type is especially useful when you want to push data to a PRTG hosted by Paessler instance.

- This sensor can show received values and a message encoded in valid XML or JSON in multiple channels.
- For details about the return value format, see section [Custom Sensors](#).



The screenshot shows the PRTG Network Monitor interface. At the top, there's a green header bar with the sensor name 'Sensor HTTP IoT Push Data Advanced' and a status of 'OK'. Below this are navigation tabs: Overview, Live Data, 2 days, 30 days, 365 days, Historic Data, Log, and Settings. The main area features a large green gauge with the value '2,345 #'. Below the gauge is a table with columns: Channel, ID, Last Value, Minimum, and Maximum. The table has two rows: 'Downtime' with ID '-4' and 'MyChannel' with ID '2'. The 'MyChannel' row also includes a small gear icon indicating it's a custom sensor.



The sidebar on the right contains a 'NEXT LEVEL' section with a 'FREE TRIAL' button, followed by three download links: 'Quick Start Guide (HTML)', 'Download Full PRTG Manual (PDF)', and 'Download Full PRTG Manual (EPUB)'. Below this is a vertical list of chapters: 1 Welcome to PRTG Network Monitor, 2 Quick Start Guide, 3 Using PRTG Hosted by Paessler, 4 Installing the Software, 5 Understanding Basic Concepts, 6 Ajax Web Interface – Basic Examples, 7 Ajax Web Interface – Advanced Examples, and 7.1 Auto Discovery. At the bottom right is a blue 'Chat with us' button with a speech bubble icon.



INFORMATION

LOCATION

ASSOCIATED DEVICES

DEVICES BEING REGISTERED

STATISTICS

EVENT CONFIGURATION

CALLBACKS

BULK OPERATIONS

Device type Arduino_DevKit_2 - Callback edition

Send duplicate

Custom payload config moduleTemperature::int:16:little-endian dhtTemperature::int:16:little-endian dhtHumidity::uint:16:little-en 

URL syntax: <http://host/path?id={device}&time={time}&key1={var1}&key2={var2}...>

Available variables: device, time, duplicate, snr, station, data, avgSnr, lat, lng, rssi, seqNumber

The feature send duplicate and the following information: snr, station, avgSnr, lat, lng, rssi, will not be available anymore for customers in the DATA callback feature from [the first of June 2019](#).

Custom variables: customData#moduleTemperature, customData#dhtTemperature, customData#dhtHumidity, customData#laststatus

Url pattern <https://web-week-2.my-prtg.com:5051/{device}-DHT22>

Use HTTP Method [POST](#) 

Send SNI (Server Name Indication) for SSL/TLS connections

Headers header value

Content type application/json

Body

```
{  
    "prtg": {  
        "text": "OK",  
        "result": [  
            {  
                "channel": "Temperature",  
                "value": {customData#dhtTemperature},  
                "float": "1",  
                "unit": "custom",  
                "customunit": "°C"  
            }  
        ]  
    }  
}
```

Add Sensor to Device Callback [127.0.0.1]

(Step 2 of 2)

[Cancel](#)

Basic Sensor Settings

Sensor Name ⓘ Sensit New

Parent Tags ⓘ

Tags ⓘ

PushSensor X PushData X HttpPushSensor X

Priority ⓘ ★★★☆☆

[Continue](#) >

HTTP Push

SSL Settings ⓘ HTTP (unsafe) HTTPS (TLS 1.2 only)

SSL Port ⓘ 5051

Request Method ⓘ ANY GET POST

Identification Token ⓘ sensit

HTTP Push Data

No Incoming Data ⓘ Ignore and keep last status (default)
 Switch to "Unknown" status
 Switch to "Error" after x minutes

Scanning Interval

 inherit fromCallback
(Scanning Interval: 60 seconds.
Set sensor to ...)

✓ Sensor Sensors

ID: 1D25CA Status: 0

Overview

Live Data

2 days

10 days

100 days

Historic Data

Log

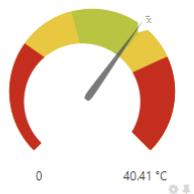
Settings

Notifications

Comments

History

Temperature



Humidity



Light



SPL



UV-Level



Last Scan:	10 s
Last Up:	14 m 57 s
Last Down:	
Uptime:	100.0000%
Downtime:	0.0000%
Coverage:	83%
Sensor Type:	HTTP Push Data Advanced
Dependency:	Parent
Interval:	every 15 m
ID:	#2548

Channel ▾

ID ▾

Last Value ▾

Minimum ▾

Maximum ▾

Downtime

-4

Humidity

3

45.28 %

16.68 %

58.28 %

Light

6

9.16 lux

0 lux

54,611 lux

SPL

5

35 dB

35 dB

40 dB

Temperature

2

25.53 °C

21.71 °C

40.41 °C

UV-Level

4

0

-50

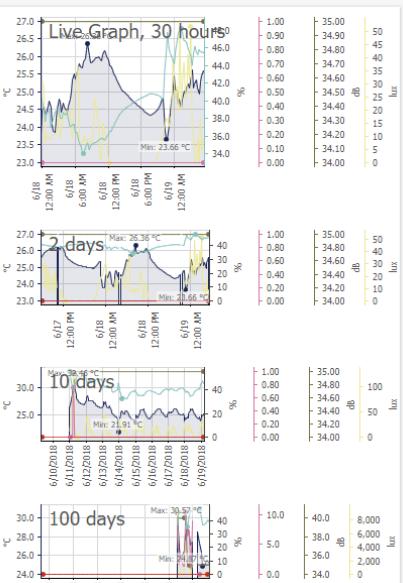
49

Similar Sensors

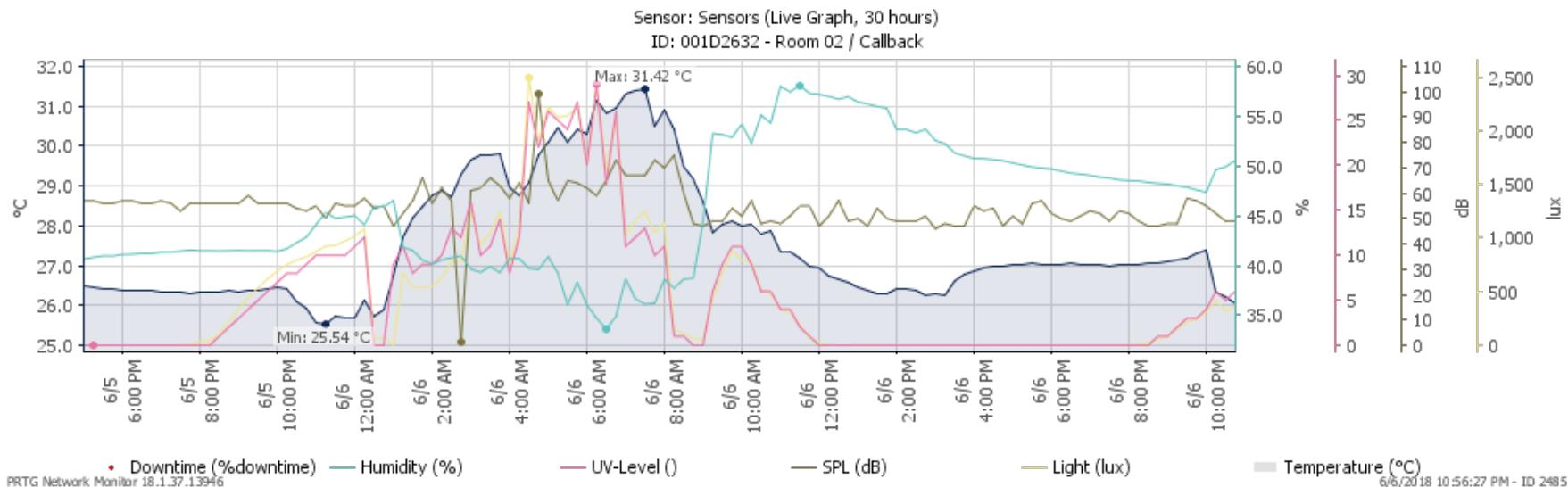
Similarity

Channel

Similar Channel

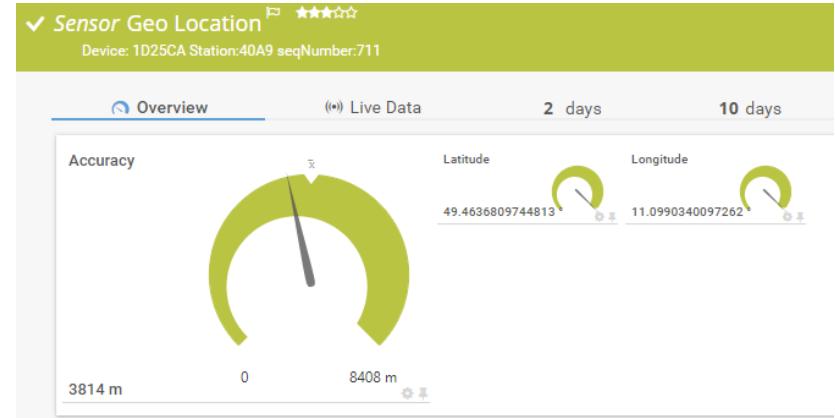
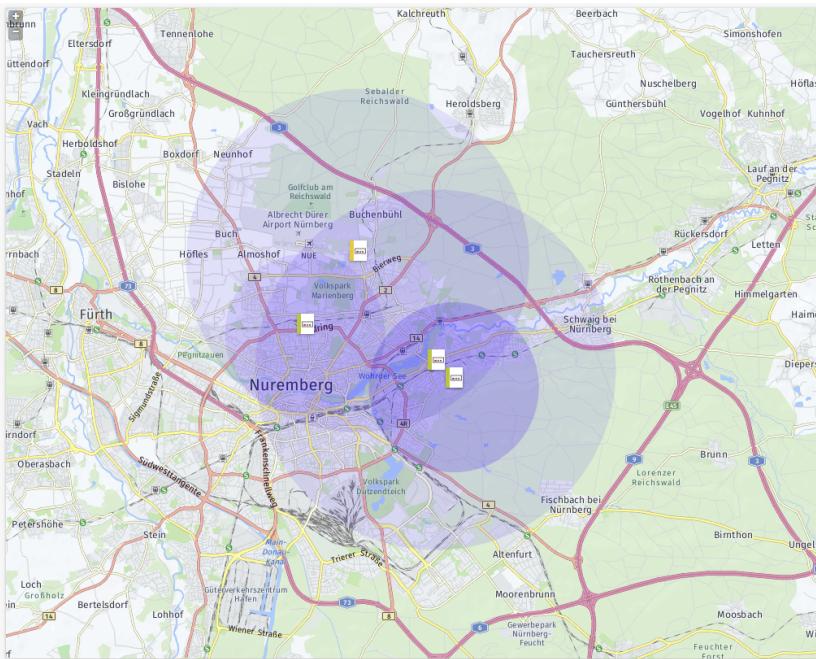


Room Conditions



Geolocation

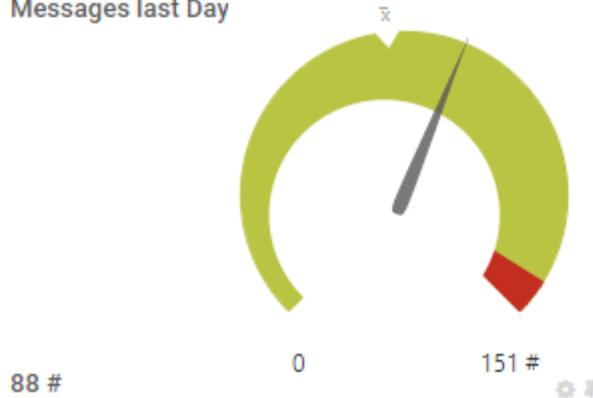
Sigfox Geolocation



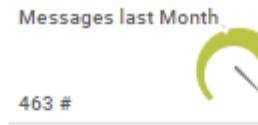
REST API

Messages

Messages last Day



Messages last Month



Messages last Week



Response Time



Pos	Sensor	Status	Message	Graph	Priority	
+ 1.	<input checked="" type="checkbox"/> Device	Up	OK	 OK		
+ 2.	<input checked="" type="checkbox"/> Messages sent	Up	OK	 88 #		
+ 3.	<input checked="" type="checkbox"/> Devices	Up	OK	 001D2		
+ 4.	<input checked="" type="checkbox"/> Keep Alive	Up	OK	 No (0)		
+ 5.	<input checked="" type="checkbox"/> Token	Up	OK	 OK		

Device Health

State



OK

Average RSSI

-130 dBm



Average Signal

11 dB



Average SNR

11 dB

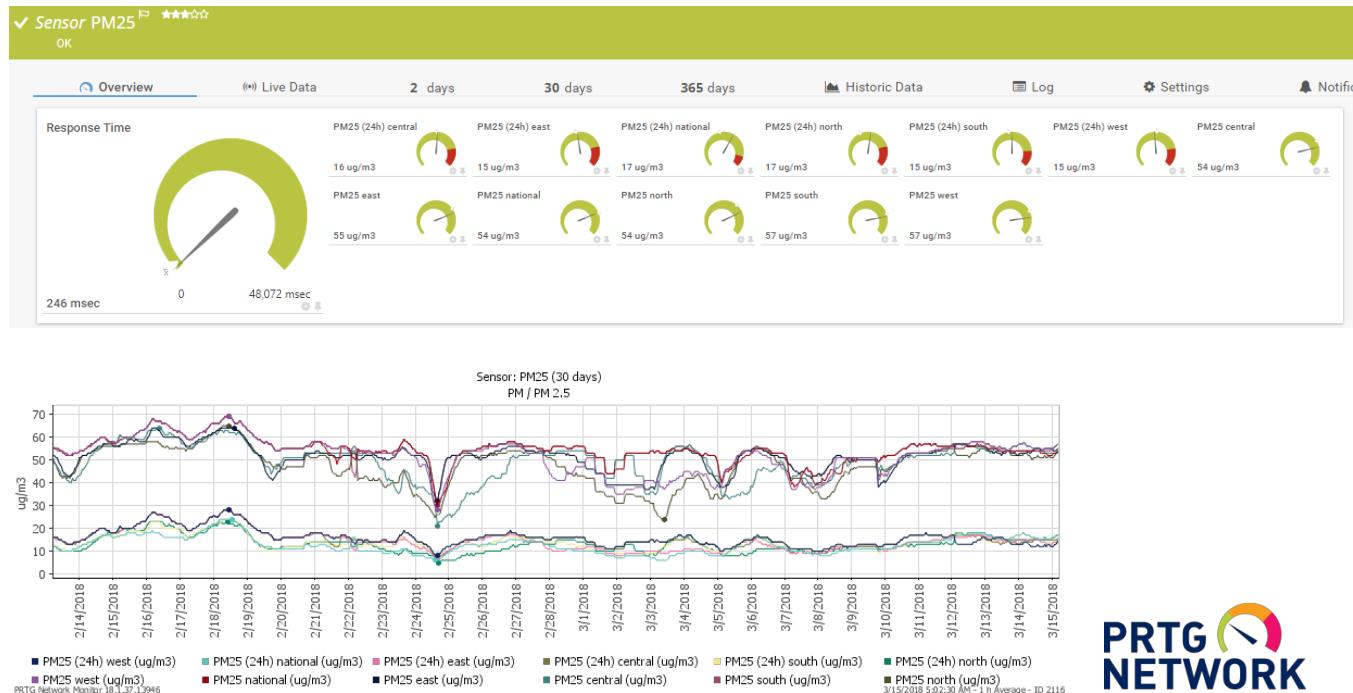
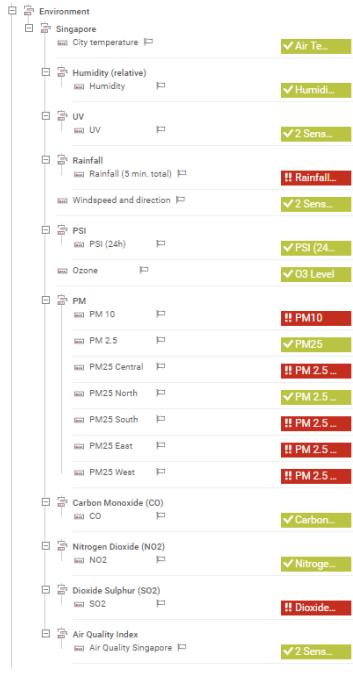


Keeping an Eye on Singapore

A huge Monitoring Challenge



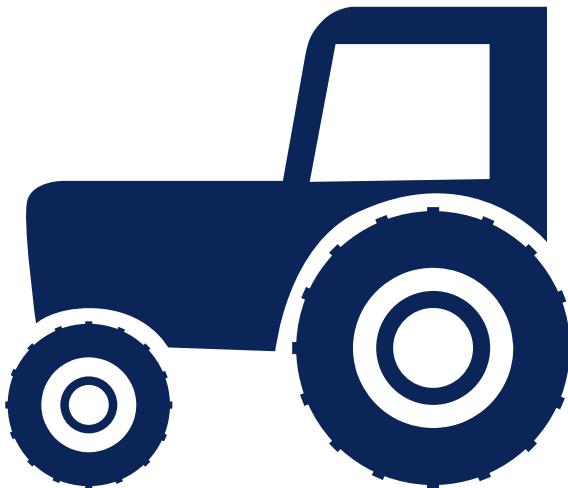
Environmental Monitoring Singapore



Visualisazion: PM 2.5 & PSI



Smart Agriculture

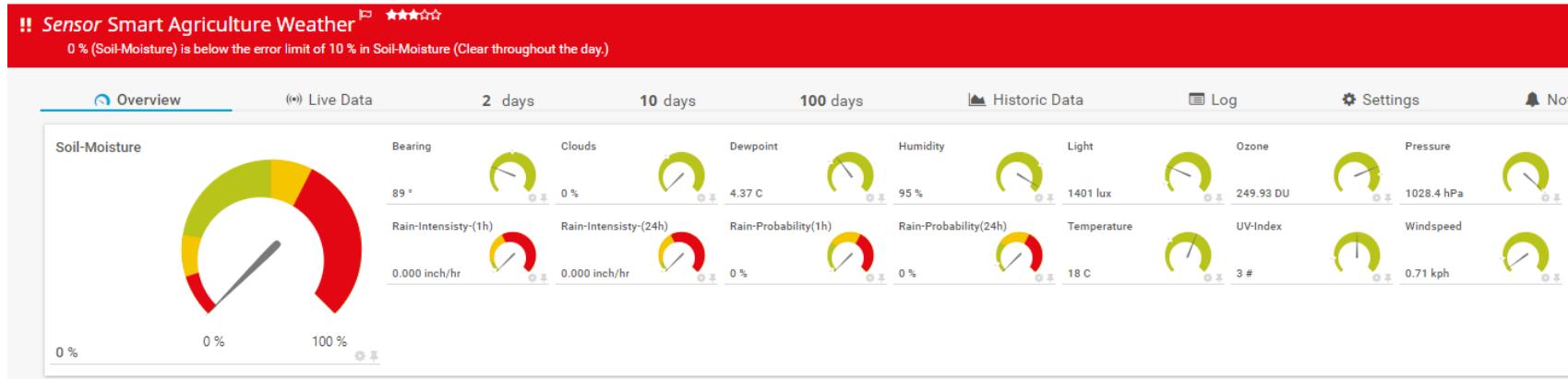


Smart agriculture | Smart Farming

The agricultural sector is going to face enormous challenges in order to feed the 9.6 billion people that the FAO predicts are going to inhabit the planet by 2050:

- food production must increase by 70% by 2050, and this has to be achieved in spite of the limited availability of arable lands,
- the increasing need for fresh water (**agriculture consumes 70 percent of the world's fresh water supply**) and other less predictable factors.

All sensors at a glance





By Patrick Gebhardt • Sep 26, 2018

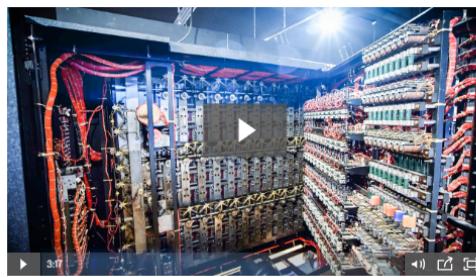
MONITORING INSIGHTS

Sigfox & PRTG: A Practical Case Study in the Most Unusual Environment



Experience PRTG and Sigfox in a very unique LPWAN Case Study.

A museum full of old computers, from the 1940s, the beginnings of the computer age, to the modern time, including special problems. For instance, the question of how to keep these old computers and exhibits, which are fully operational, sufficiently cooled and thus alive in the long term. Of course this is a task for IoT. And through the partnership between PRTG and Sigfox, we have developed a practical solution of devices and monitoring that shows what is possible with LPWAN today. We hope that this video will give you a good insight.



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Patrick Gebhardt

Content Copywriter

Hi, I'm Patrick. My grandma once said that the Internet is up to no good, and I believe she's right about that. Nevertheless, I love my job as a Content Copywriter and intend to do it until a smartass

✓ Sensor Sensors

OK

Overview

Live Data

2 days

10 days

100 days

Historic Data

Log

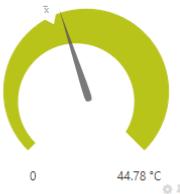
Settings

Notifications

Comments

History

Temperature



Humidity



Light



SPL



UV-Level



19.40 °C

44.78 °C

Channel ▾

ID

Last Value

Minimum

Maximum

Downtime

-4

Humidity

3

55.83 %

10.02 %

72.65 %

Light

6

11 lux

0 lux

44,951 lux

SPL

5

42 dB

0 dB

90 dB

Temperature

2

19.40 °C

11.64 °C

44.78 °C

UV-Level

4

0

-35

38

Similar Sensors

Similarity

Channel

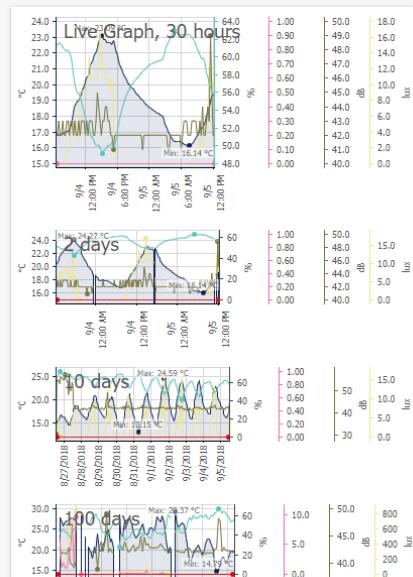
Similar Channel

The similar sensors analysis is a heuristic calculation that shows similar behavior of all sensors across your entire PRTG configuration. This way, PRTG can detect relationships between different components in your network that you might have never thought of and optimize your sensor usage.

Why can't I see any sensor similarities here?

- Similar Sensors Analysis is turned off because of your current configuration. You can enable the analysis in section [Similar Sensors Detection](#) of PRTG's System Administration
- For more information about Similar Sensors Analysis, please see [PRTG Manual: Similar Sensors](#).

Last Scan:	16 s
Last Up:	13 m 55 s
Last Down:	
Uptime:	100.0000%
Downtime:	0.0000%
Coverage:	88%
Sensor Type:	HTTP Push Data Advanced
Dependency:	Parent
Interval:	every 15 m
ID:	#2524

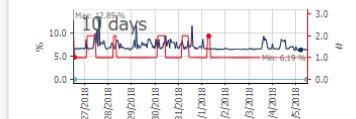


Group Root
[Overview](#)
[2 days](#)
[10 days](#)
[100 days](#)
[Alarms](#)
[Log](#)
[Management](#)
[Settings](#)
[Notifications](#)
[Comments](#)
[History](#)
!! 1 W 1 ✓ 107 II 16 (of 125) S M L XL

Search...



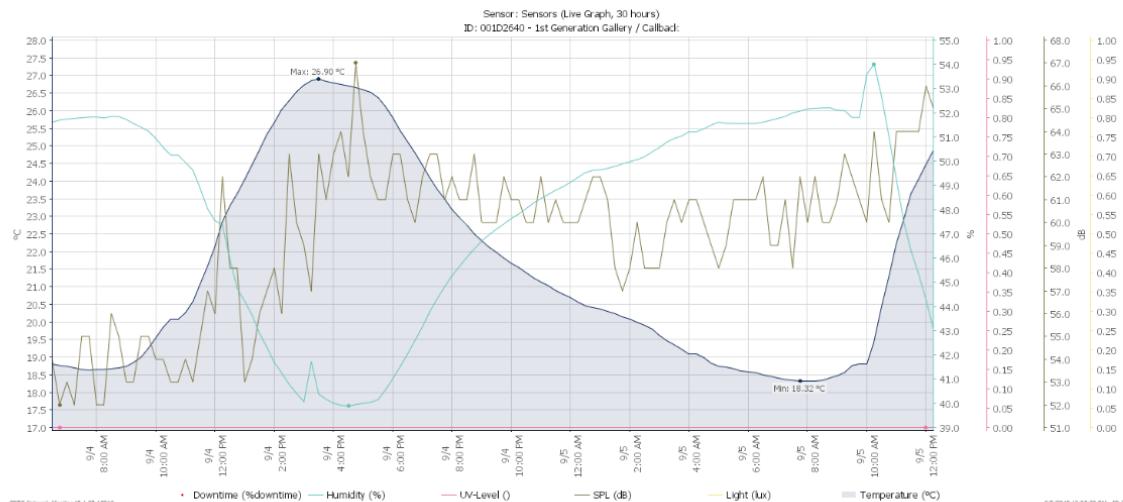
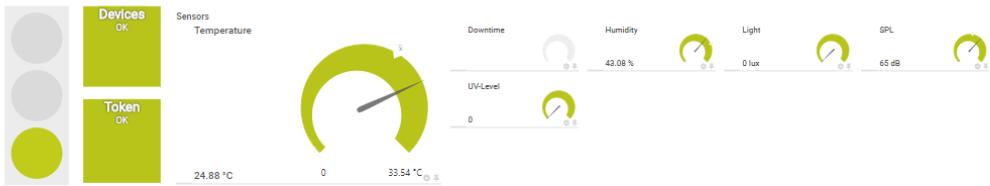
Status: OK
 Default Interval: every 60 seconds
 ID: #0

+ Add Sensor


Alarms (#) Response Time (%)
 CPU Load Ind... (%) Traffic Index (%)

National Museum of Computing

Floor Plan: 1st Generation Gallery

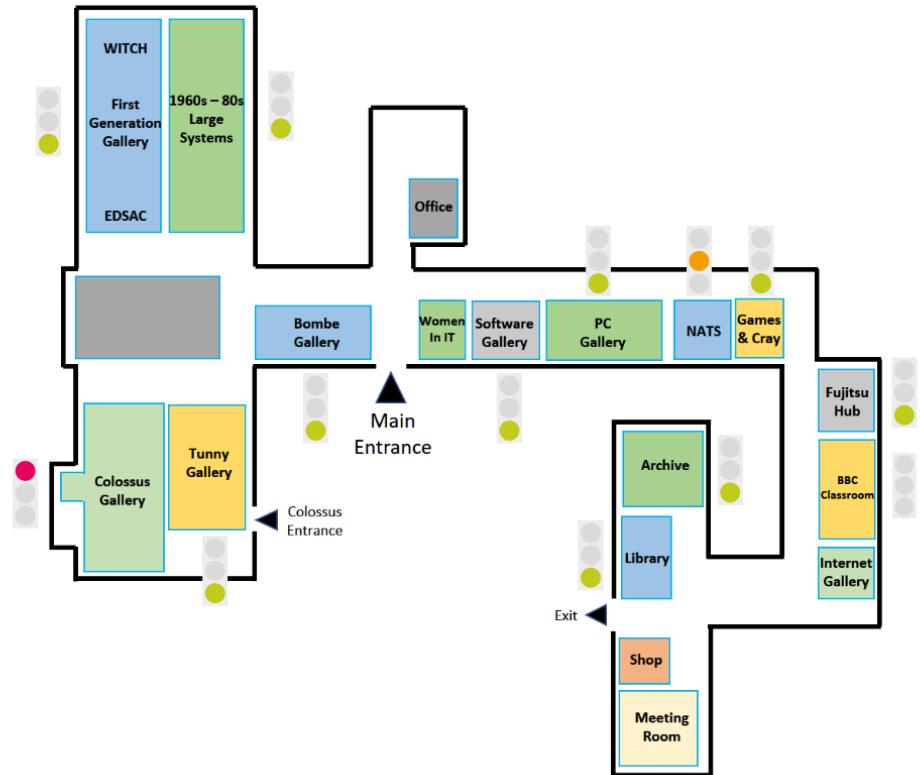


[View Map](#)[Map Designer](#)[Settings](#)[Get HTML](#)[Comments](#)[History](#)

National Museum of Computing

Sensor Status

!! 1 ✓ 96 II 16



IoT World

What Is LPWAN?

LPWAN stands for **Low-Power Wide-Area-Network**. It does not refer to any one specific technology, but rather serves as a generic term for any network designed to **communicate wirelessly with lower power** than other networks such as cellular, satellite, or WiFi. Moreover, LPWANs communicate over greater distances than other low-power networks that use Bluetooth or NFC.

Typically communicating over long distances with low power allows less data to be transmitted at a time. Whereas modern cellular networks are pushing into gigabit per second territory with LTE Advanced and the forthcoming 5G networks, LPWA networks often **transmit just a few kilobits per channel**. Many LPWA technologies can communicate over greater distances, sometimes up to 500 miles or more.



LPWAN – Examples – Why Monitoring? – Case Study

LPWA Transceivers, Sigfox and Overlaps with IIoT

LPWA Transceivers

There are essentially two approaches that make the high sensitivity of LPWA possible. On the one hand, virtually all systems are **narrow-banded**. LPWA can therefore be used to achieve a high coverage in communication.

Secondly, the **net data rates are low**, so that a lot of energy per bit can be integrated. LPWA is an extremely energy-efficient way of communication, far more economical than other standards currently in use.

The combination of range and required energy makes LPWA an unparalleled transmission path.

What Is Sigfox?

Sigfox sets up its own global wireless network to **wirelessly connect low-power objects** to the Internet. Sigfox provides its modules and terminals at very competitive prices, and the use of the Sigfox infrastructure is cost-effective and flexible.

The infrastructure used is completely **independent of existing networks**, such as mobile phone networks. Currently, a total of 45 countries and regions are either fully or partially covered (the goal is 60 by the end of 2018).

The aim of Sigfox is to establish a worldwide, uniform network structure via its own network, which focuses on the networked object and its data.

LPWAN and IIoT

Wireless-data transmission systems are the ideal starting point for intelligent devices and machines in product manufacturing. Here we are entering the IIoT sector, which is the industrial version of IoT.

While IoT usually combines applications from other customer segments, such as Smart City or Smart Home, IIoT is **all about networking objects or work equipment**.

This makes it possible to automatically **analyze, monitor and optimize various processes**. Since equipment in larger industries has a high purchase price, LPWAN offers a very broad potential market because it is easier to retrofit.





Sigfox CONNECT

📍 Berlin, Germany

⌚ October 24 - 25, 2018

sigfoxconnect

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THANK YOU

VIELEN DANK

MERCI GRACIAS TAK

고맙습니다

GRAZIE OBRIGADO

非常感谢

