

TheThingsNetwork.org (TTN)

Long Power Wide Area Network (LPWAN)
Long Range Wide Area Network (LoRaWAN)

Ort:
Technologie Stiftung Berlin
Fasanenstrasse 85
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**TECHNOLOGIE
STIFTUNG
BERLIN**

Referent:



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Gliederung



public access: goo.gl/EDyj3L

- **LoRaWAN and LoRa-Alliance**
- **TTN international**
- **TTN local -> Berlin**
- **some limitations**
- **next steps?**

LoRaWAN ?

LoRa - Alliance

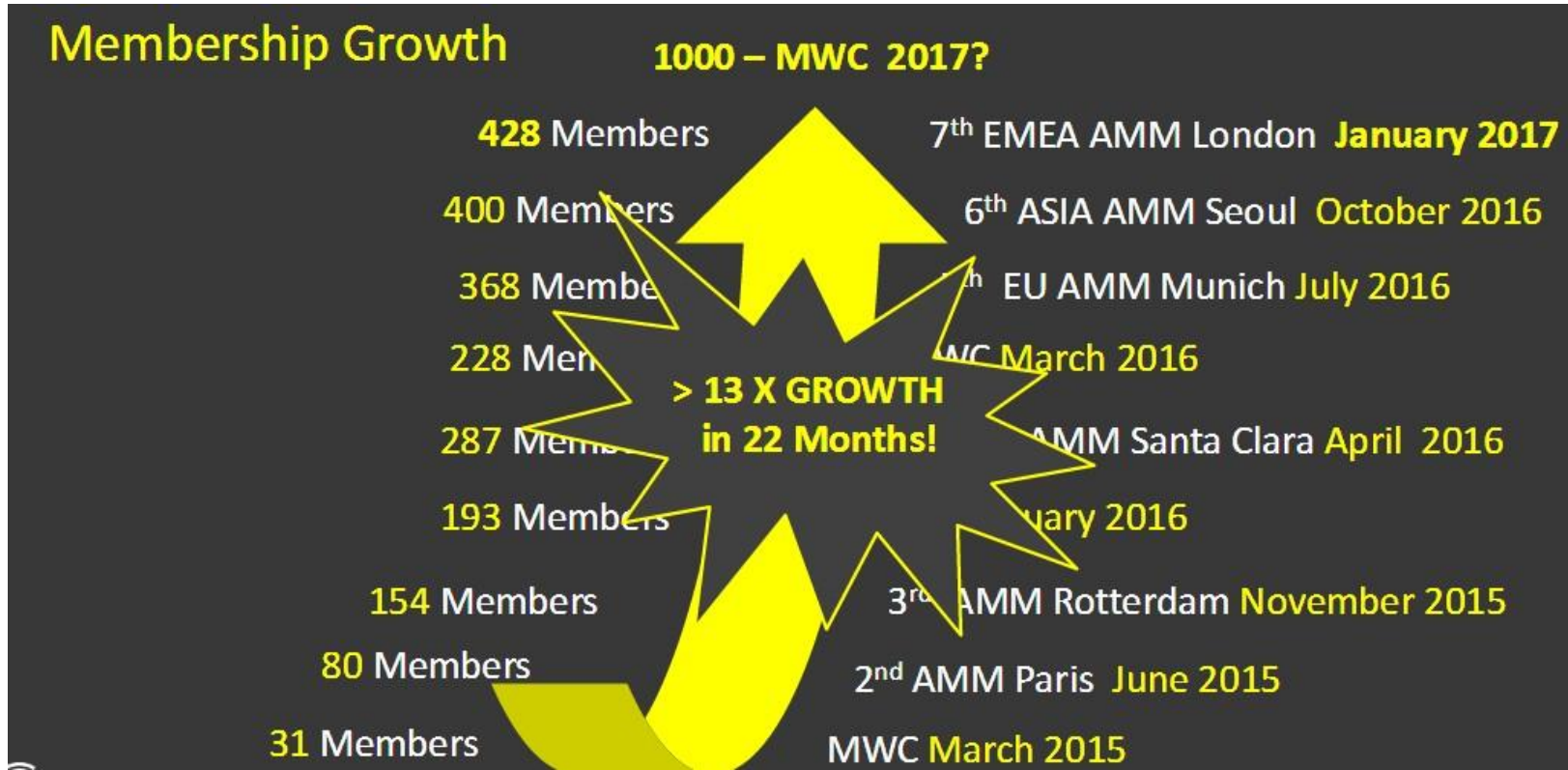
ca. 460 members - strong growing

a global initiative

LoRa - Alliance

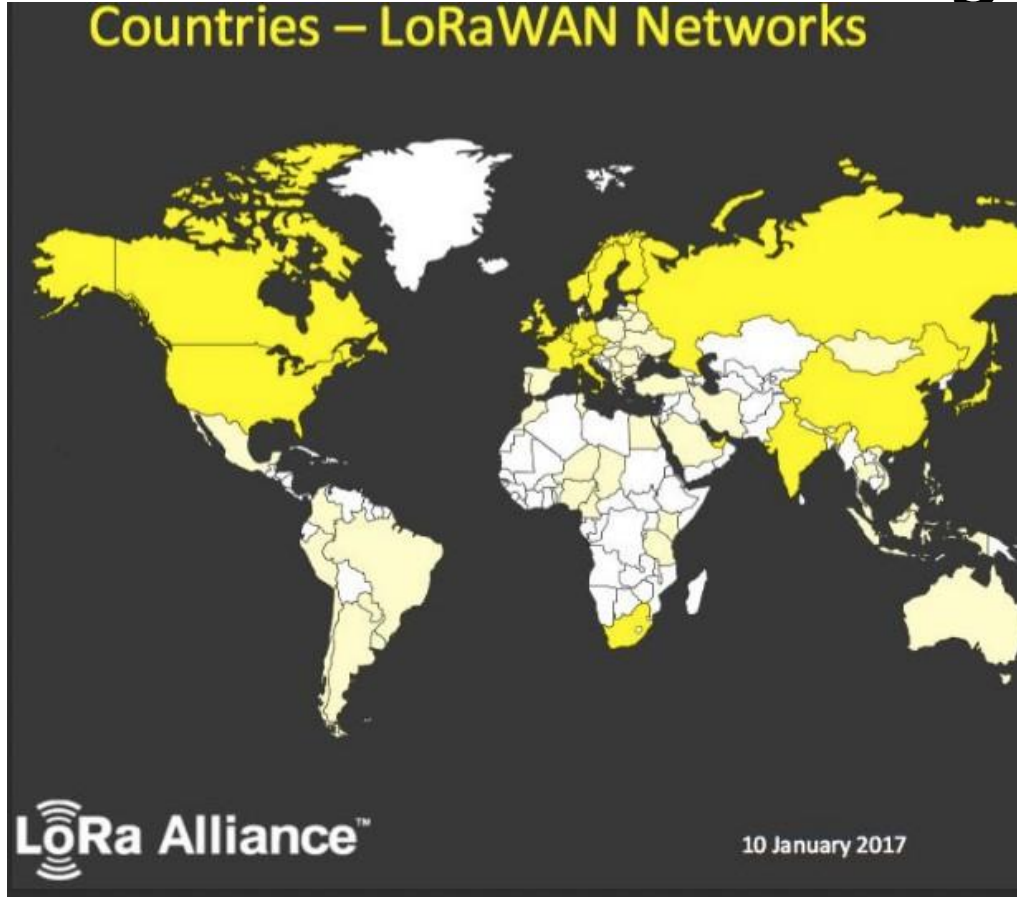


LoRa - Alliance: gigantisches Wachstum



LoRaWAN - Verbreitung

Countries – LoRaWAN Networks



public access: goo.gl/EDyj3L

3 different global ISM - Frequency Bands



About TTN?

THE THINGS NETWORK



**BUILDING A GLOBAL INTERNET OF
THINGS NETWORK TOGETHER.**

The Things Network

10/2015 ff



The Things Network is a global, crowdsourced, open, free and decentralized internet of things network.

Pre-order

Erstellt von

Wienke Giezeman

934 Unterstützer haben 295.331 € beigetragen, um dieses Projekt zu verwirklichen.



460 worldwide local communities. Berlin is one of those!

JOIN THE THINGS NETWORK

Do you want to be part of The Things Network?

Learn more about the world of the Internet of Things or discuss with fellow enthusiasts on the forum, contribute by writing about your experience on Labs or start a community to expand our network.

There's one account to rule them all.

Join **15130** members



Kickstarter TTN gateway - 1500 units soon to come :)

public access: goo.gl/EDyj3L

some challenges of TTN:

- big PR....
- some delay in delivery kickstarter campaign units
- initiative really technically or business driven
- remember: TTN initiator guys are consultant elitarists
- no guaranty, this business model will be sustainable
- some limitations, inherent in LoRaWAN guidelines
- “community driven” may be a limit also
- hopefully not a “trojan horse” using willing people, paying for infrastructure, place and energy

TTN in Germany?

Just in their beginnings

about 30 communities

about 100 gateways

Germany

- Berlin ✓
- Biberach ✓
- Bonn ✓
- Dortmund ✓
- Erfurt
- Frankfurt
- Hamburg ✓
- Hassfurt
- Hennef
- Ingelheim am Rhe
- Ingolstadt
- Jena
- Karlsruhe
- Lünen ✓
- Mönchengladbach
- Munich
- Münster ✓
- Oldenburg
- Paderborn
- Recklinghausen
- Rhein-Neckar
- Schleswig ✓
- Stuttgart ✓
- Udenheim



Berlin ✓

25 contributors

6 gateways



Biberach ✓

11 contributors

2 gateways



Bonn ✓

8 contributors

0 gateways



Dortmund ✓

10 contributors

5 gateways



Erfurt

1 contributor

0 gateways



Frankfurt

4 contributors

3 gateways



LoRaWAN für/in Berlin

Welchen Mehrwert kann das erzeugen?

Für den Mittelstand?

Für die Bevölkerung?

Für öffentliche Aufgaben/ Administration?



ABOUT THIS COMMUNITY

7

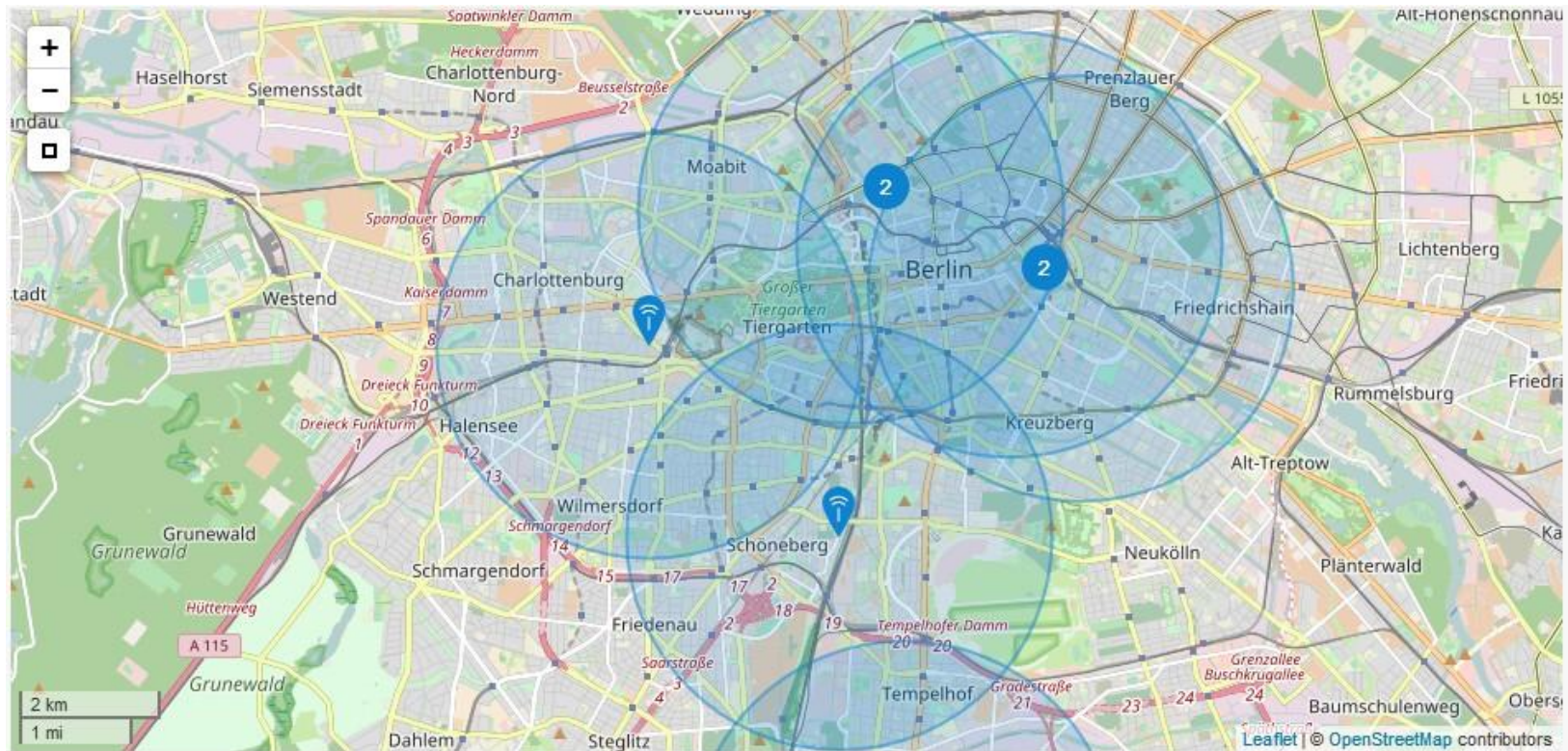
Gateways

25

Contributors



Official community





Es gibt viel zu tun!

2 Ansätze für LoRaWAN gateways:

A: Profigeräte...

- Kerlink, Microtech, Lorank, etc. -> 1.500 €/Stck.

B -community driven:

- TTN - Gateway; kickstarter; delay; ~ 300€ zzgl.
- Raspberry Pi 2/3 und IC880A - IMST (155€ + 50€).

Challenges!

Challenges, as I see:

- ALOHA -Methode: nur 18.4 % Effektivnutzen
- 8 x 2 parallel Empfang, zzgl. Zeitmultiplex
- AABER: Wenn Sendung, dann kein Empfang
- 1 % Limit, gesetzlich vorgegeben
- offenes Frequenzband/-spektrum
 - non exclusive
- Secure Applications/medical: NOT really!

Usecases & Visions

Usecases/business cases, e.g.:

- z.B. Bahnhofsuhren und andere Uhren
- Parkplatzmanagement [Magnetometersensor]
- Güter/Containerverfolgung [Temp.alarm; HACCP]
- kostensparendes GPS-tracking:
 - **ÖPNV, TAXI, Lastenfahrrad, e-bike, Pflegedienst**
- Mülltonne voll; Fussgängerzone;
 - **Leerfahrten vs Leerungsfahrten**
- Umgefallene Baustellen-Strassenschilder :)

Visionen:

Ballon
14km altitude
2016
325 KM Reichweite

#sodaqlora
<https://sodaq.com>
<http://janvanloenen.com>



Max. number of gateway for a single message: 84
 Max. distance: 325 km

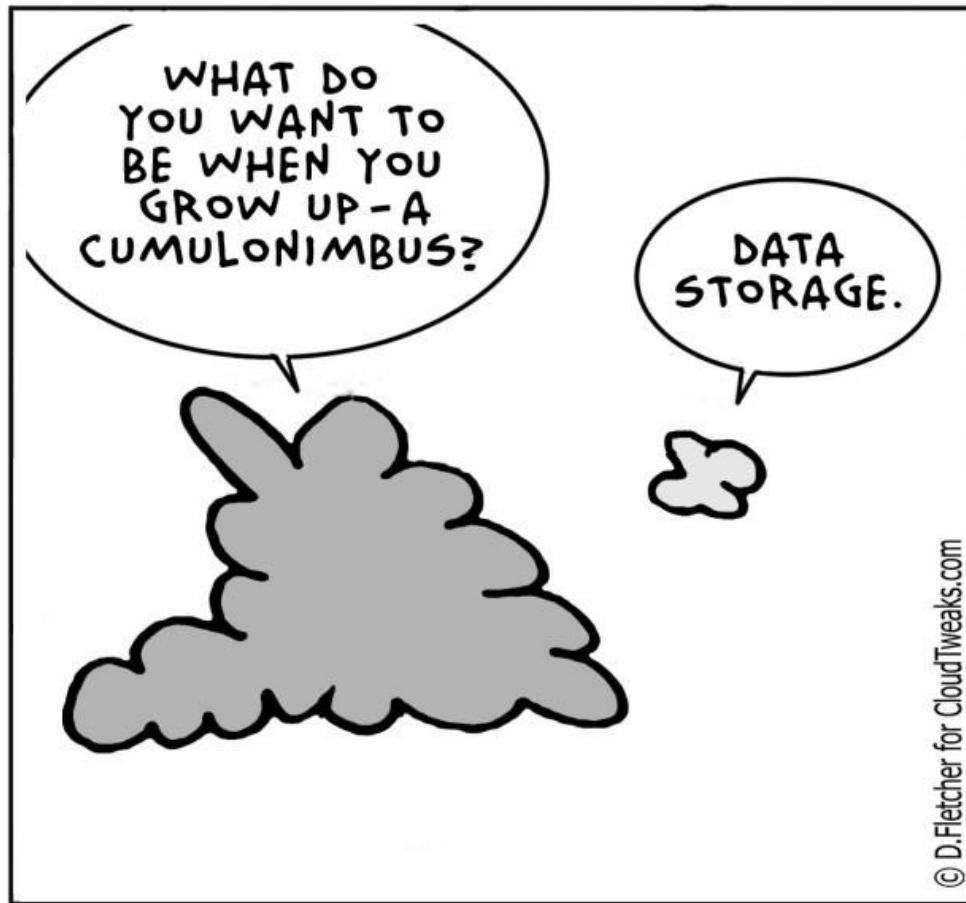
Visionen:

LEO - Satelliten & LoRaWAN

- **IRIDIUM** kommt auf den IoT-Geschmack
 - <http://www.telecomtv.com/articles/iot/iot-takes-to-the-skies-as-iridium-looks-to-get-in-on-the-action-13015/>
 - It has announced the successful demonstration of LoRaWAN backhaul communications for IoT devices via satellite.
- auch **INMARSAT** steigt ein (8.2.17)
 - <http://www.inmarsat.com/press-release/inmarsat-actility-deliver-worlds-first-global-lorawan-iot-network-empowering-business-applications>
 - Inmarsat and Actility deliver world's first global LoRaWAN™ IoT network empowering business applications

next steps ?
think global .
act local
:)

public access: goo.gl/EDyj3L



Vielen Dank!

Ihre Fragen, bitte.



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- **Thomas Telkamp, v. 7.12.2016**
- **https://twitter.com/TTN_Berlin**
- **<https://www.thethingsnetwork.org/community/berlin/>**
- **“The TTN Berlin daily”: http://paper.li/TTN_Berlin/1473924780#/**
- **<https://www.lora-alliance.org/portals/0/documents/alliance/LoRaOverview.pdf>**

