



Actility
Connecting with intelligence

LoRaWAN®

Technical Features, Application Areas, New Developments

Alper Yegin

CTO, Actility

Vice-Chair, LoRa Alliance

Low-Power & Long-Range



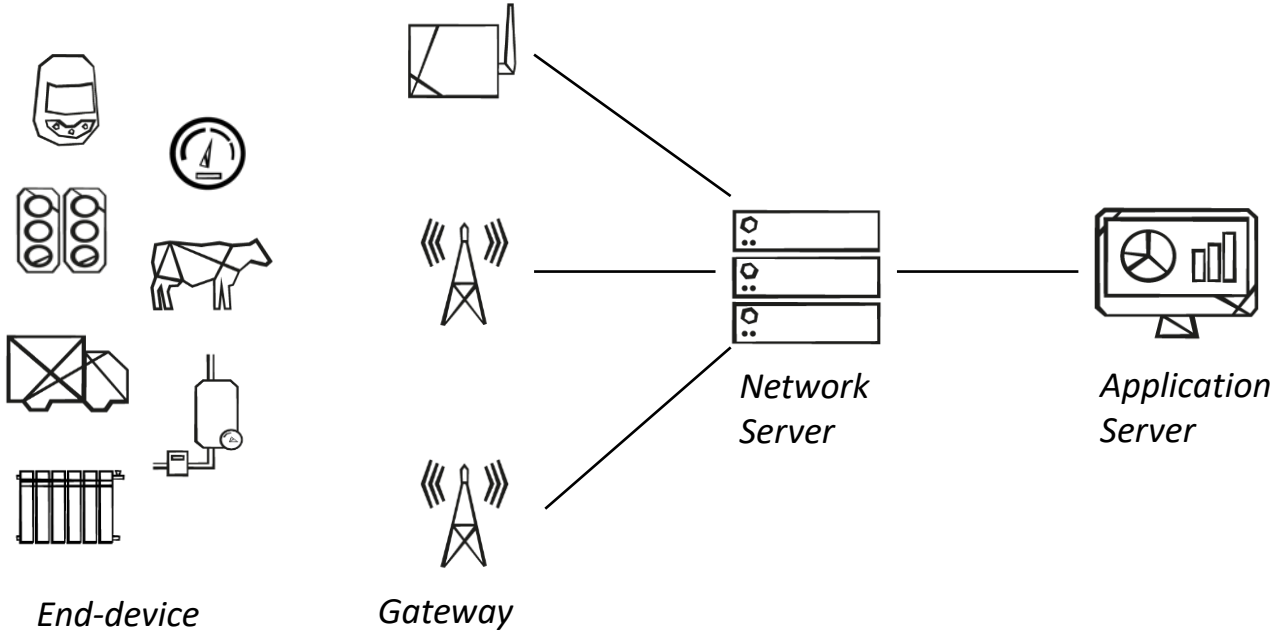
LoRaWAN

Long-range
(2 - 10+ km)

Deep indoor
coverage

Low-power
(10+ year)

Strong
security
(AES128)



Unlicensed
band use

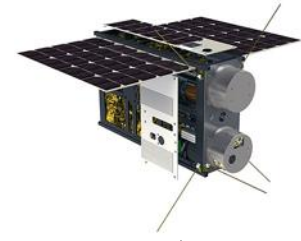
Public/private
networks

Low-cost infra

Open
standards

Range

NYC Field Test Oct 28th-29th 2013
Location: 230 Fifth Ave Roof top



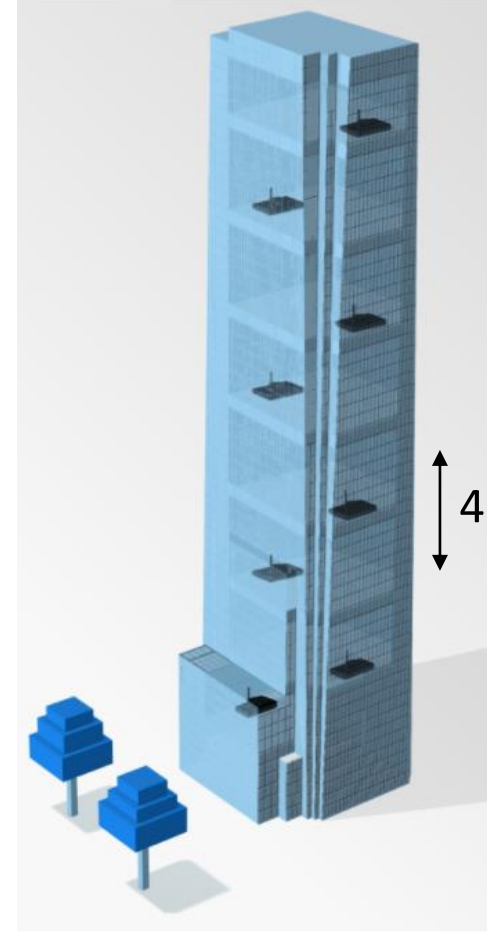
500-600 km



LoRa Range and Coverage



- Coverage map from a single gateway/concentrator
 - Cisco Webex building in San Jose
- >30miles from San Jose to San Bruno



Source: MachineQ

Power

Modulation	LoRa (spread spectrum)
Frequency	Sub-GHz ISM (868/915Mhz)
Channel bandwidth	125-500 KHz
Data rate	300 bps – 50 kbps
Gateway sensitivity	-142 dBm/300bps
Range	10+ km, deep indoor coverage
Payload size	51 – 242 bytes (variable)
Battery consumption	10mA RX / 32mA (14dBm) TX -- 10+ year
Communication type	Bi-directional unicast, network multicast
Interference immunity	Spread-spectrum w/ Forward Error Correction
Scalability	Self-scaling network capability through Adaptive Data Rate
Mobility	Roaming, geo-location



Technical Limitations

- Low throughput
 - Can carry KBs of data per day, but not GB or MB
- No real-time support
 - Milliseconds guaranteed latency not possible

Gateways



Macro-cell



Pico-cell



Development kit

Cisco, Kerlink, Multitech, Tektelic, Gemtek, Milesight, ...

Organic Growth

Low-cost infra + Unlicensed band → Widespread deployments!



Home



Commercial building



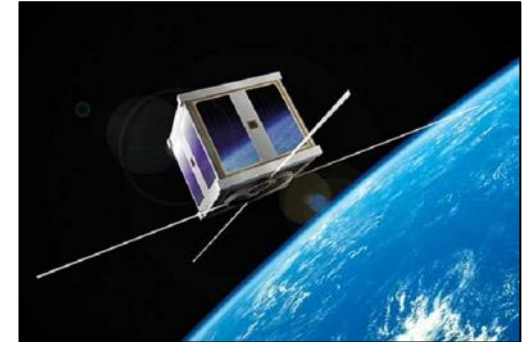
Campus



City



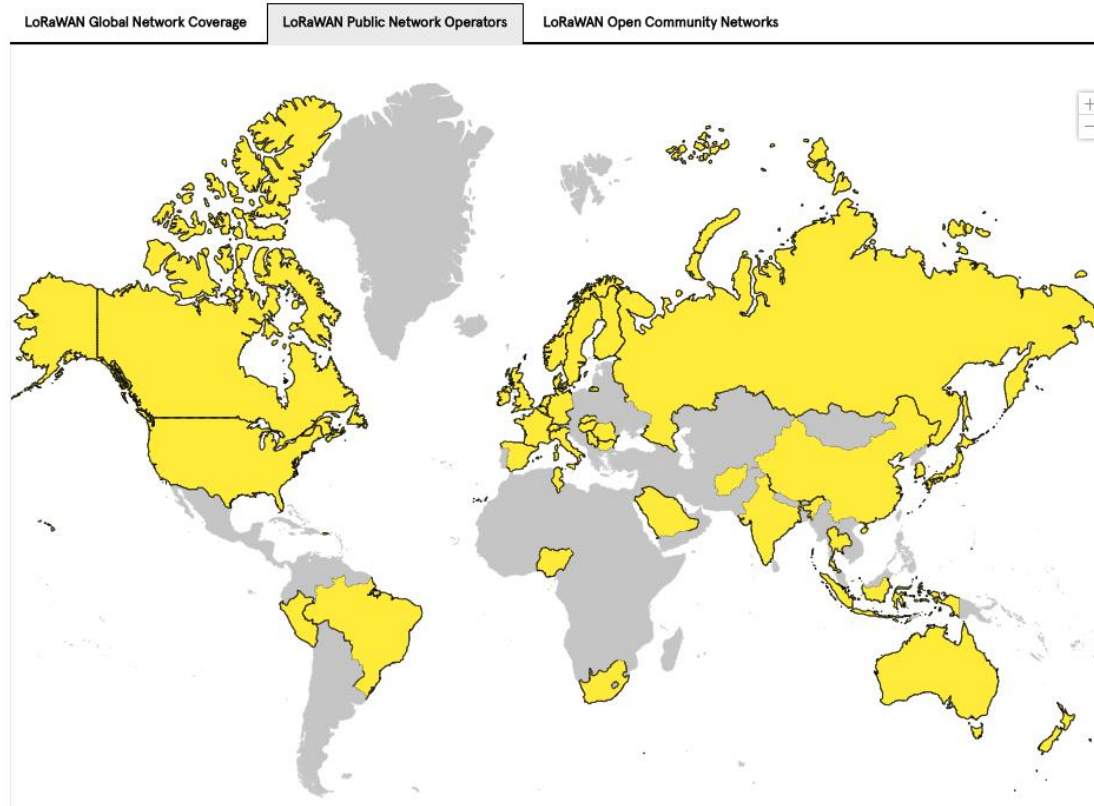
Country



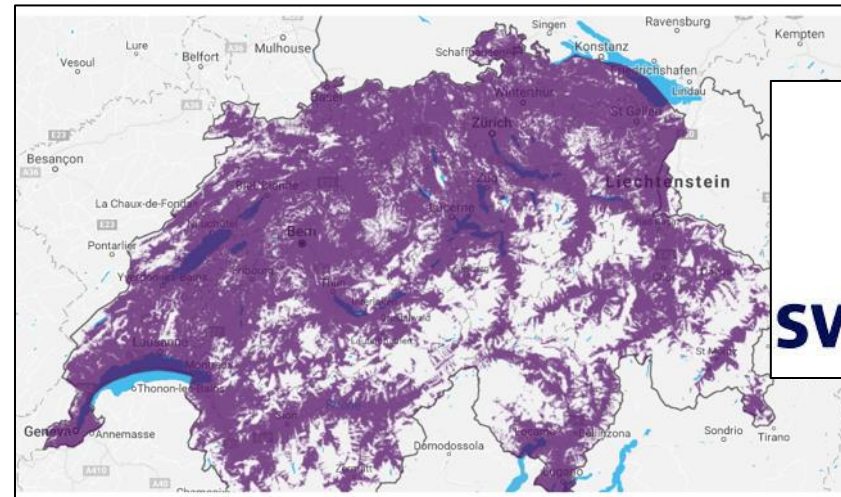
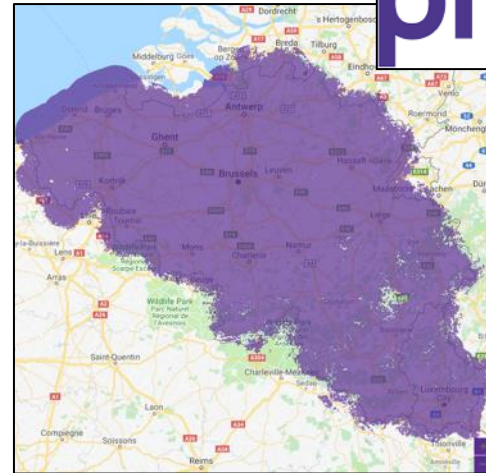
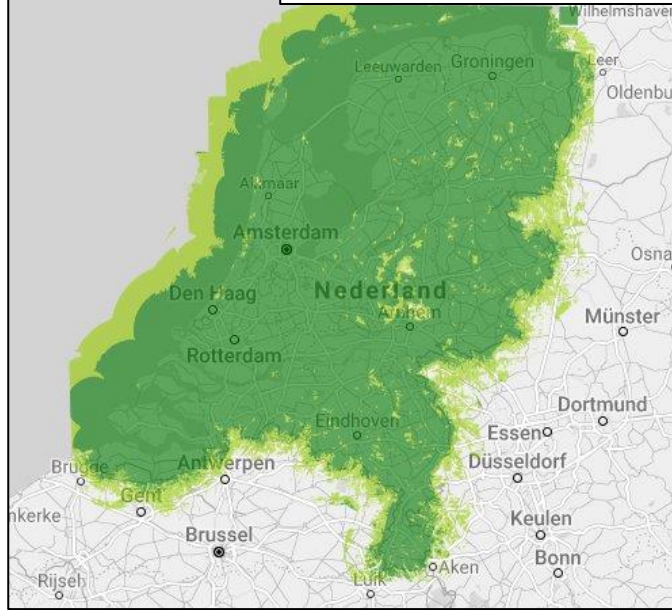
Planet

Operator Deployments

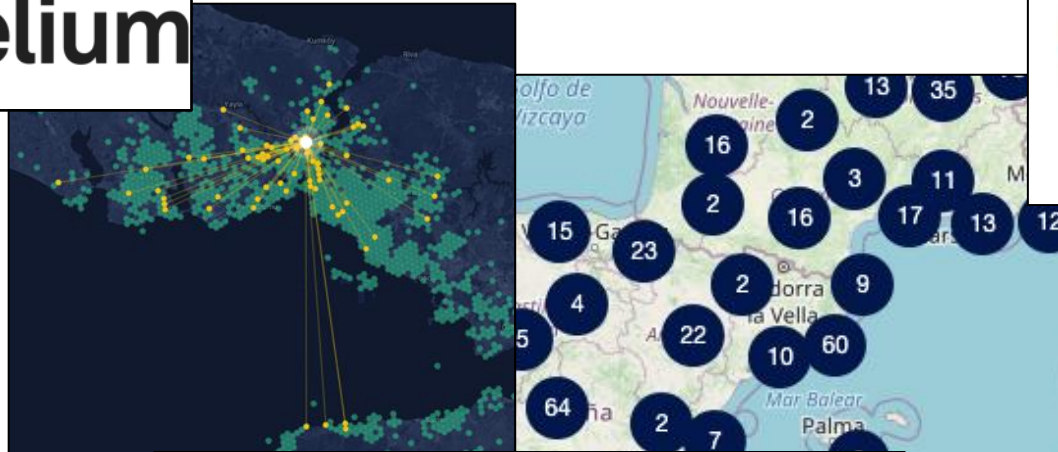
163 LoRaWAN Network Operators in **177** Countries



Nationwide Coverage



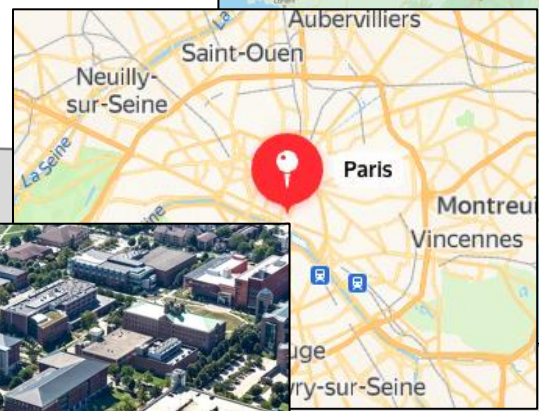
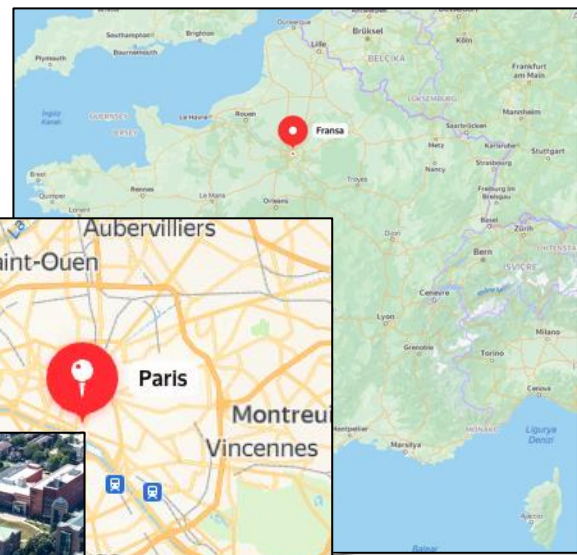
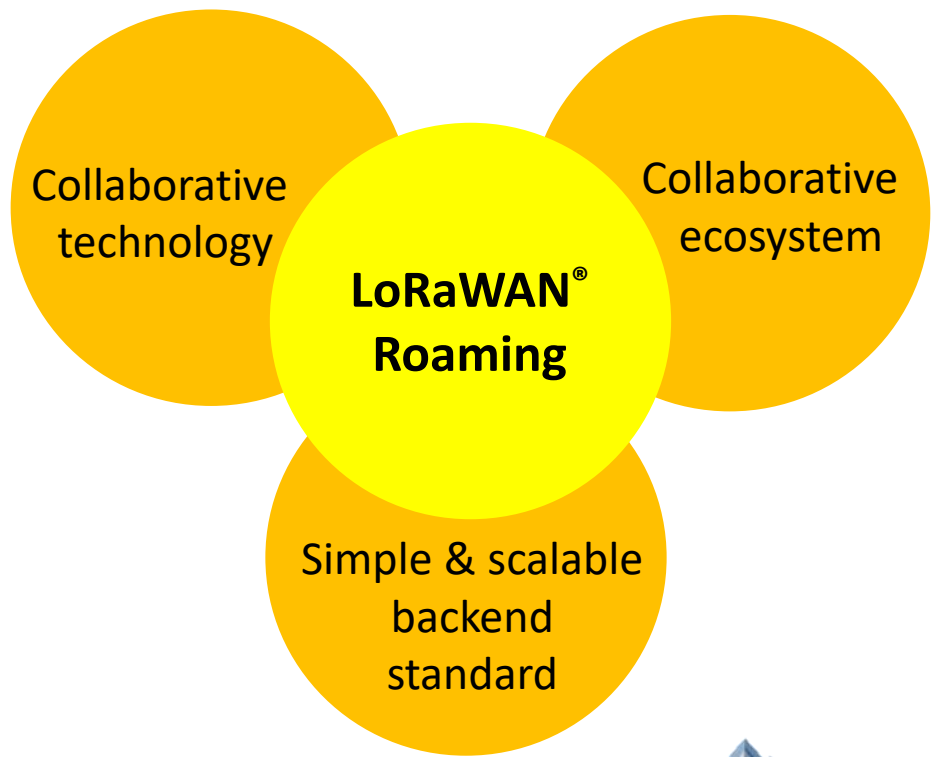
Community Networks



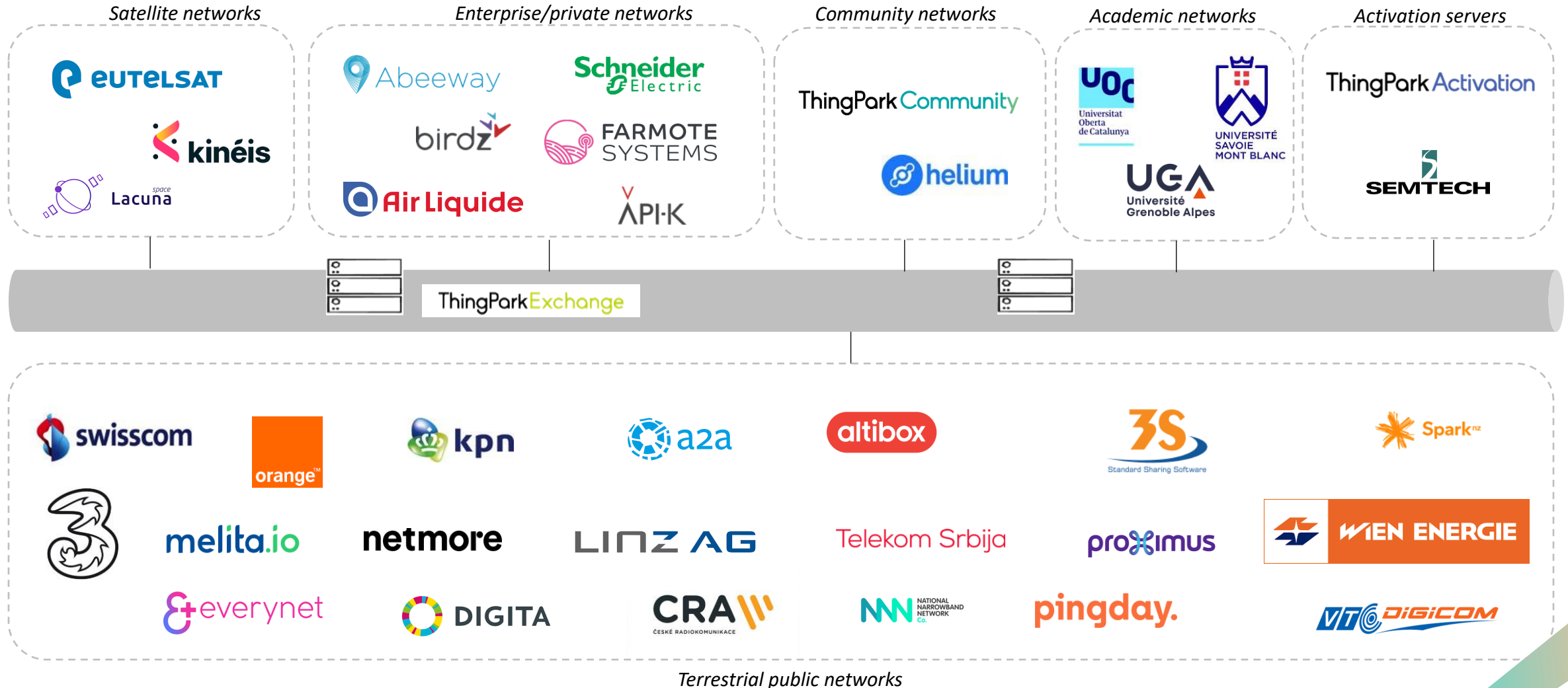
ThingPark Community
Connecting the LoRaWAN™ ecosystem
Connect the dots of the LoRaWAN™ ecosystem and unleash the potential of Industrial IOT w
[Join ThingPark Community](#)



Integration via Roaming



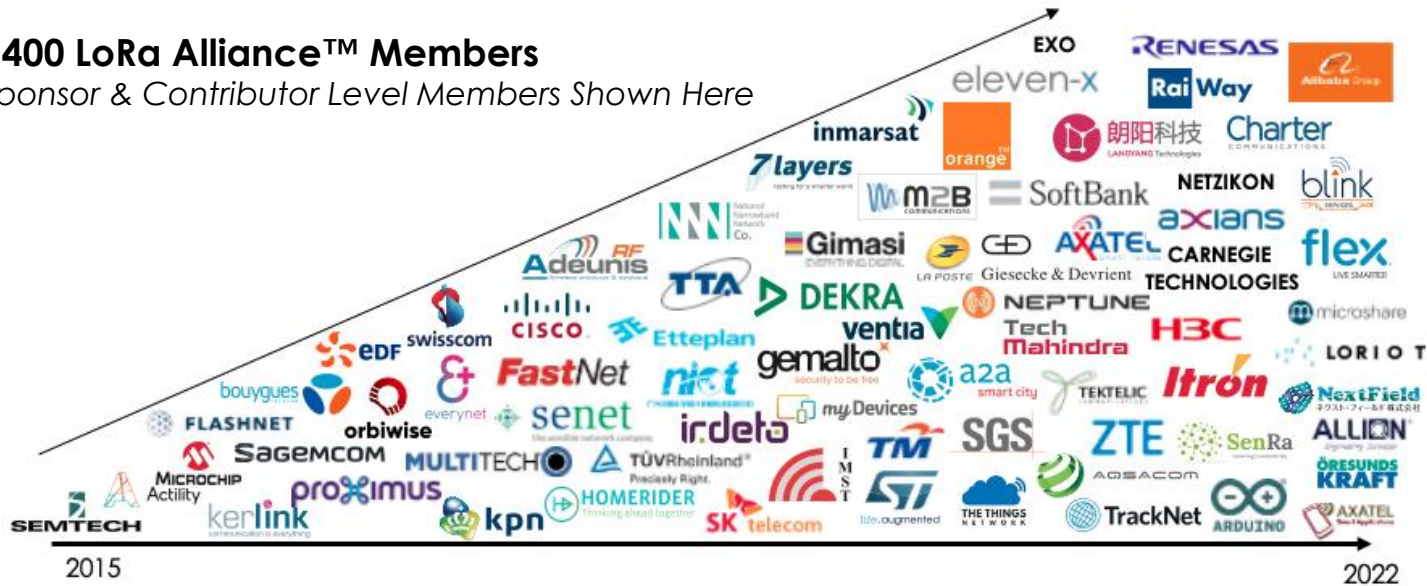
LPWAN Backbone



Open & Global Standard

~400 LoRa Alliance™ Members

Sponsor & Contributor Level Members Shown Here



Recommendation ITU-T Y.4480
“Low power protocol for wide area wireless networks”

Nationwide Network

Telekom Srbija uses Actility's ThingPark access technology-agnostic LPWAN management platform to operate both unlicensed LoRaWAN and licensed NB-IoT networks in Serbia



Telekom Srbija

Street Lighting

70,000 LED streetlights to be connected in Montevideo, Uruguay, using LoRaWAN[®] and ThingPark[®]



Actility



200 square kilometers coverage

1.3 million people

improving community and road safety, and **reducing carbon emissions by up to 80%.**

Car Tracking / Driver Safety

An unjammable GPS tracking protection for cars, now widely available in France, powered by LoRaWAN®



Actility



LoRaWAN®

The first IoT taxi drivers' safety project in Latin America deployed using LoRaWAN® trackers



Actility



Abeeway



Tunja City, Colombia

Elderly Care

Protecting Patients with an Efficient Medical Alarm Systems using LoRaWAN® Abeeway tracking devices and novaalert

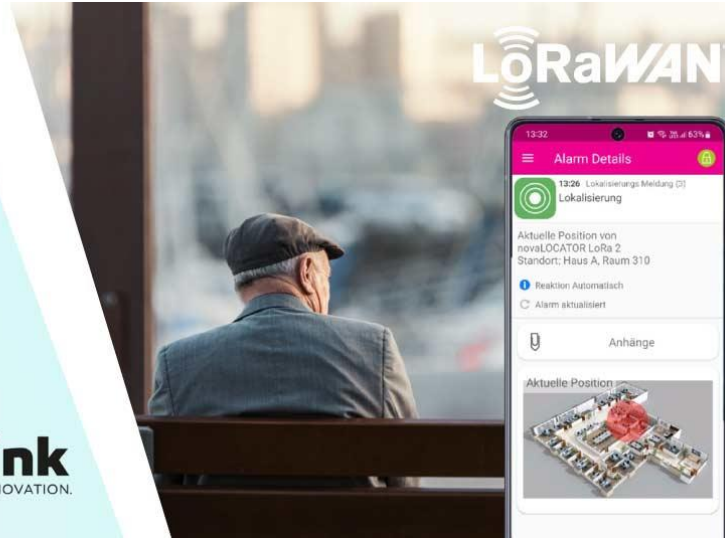


Actility



Abeeway

novalink
EXPERIENCE INNOVATION.



Major French Senior Living Provider Domitys uses IoT and LoRaWAN® to ensure residents safety and well-being with Life Plus and Actility



Actility



DOMITYS
vivre l'esprit libre



Life Plus
mon assistant santé



Fill Level Monitoring

Remotely monitor the fill levels in your containers, tanks, and silos with a new fully integrated IoT solution!



Actility



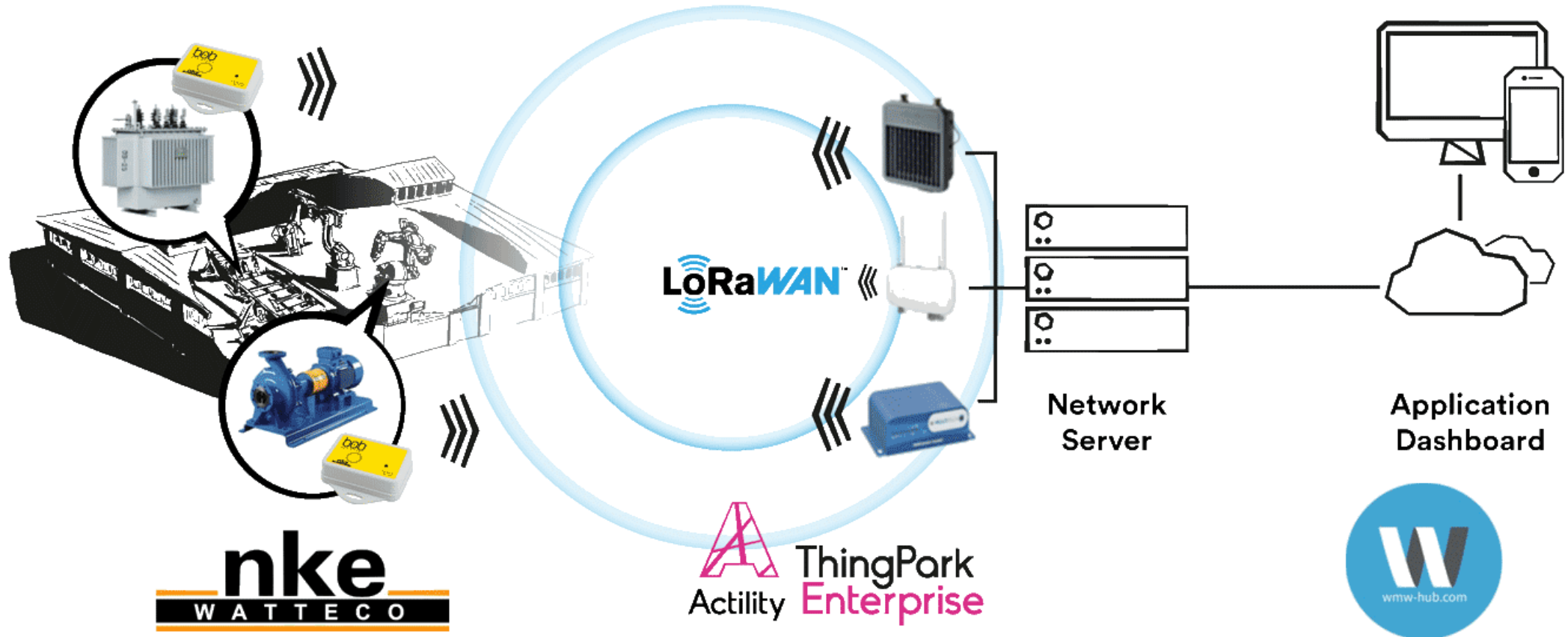
PEPPERL+FUCHS



akenza.io



Predictive Maintenance



Industrial Zones

Turkiye's first smart industrial zone adopts IoT to optimize its gas usage using LoRaWAN®



Actility

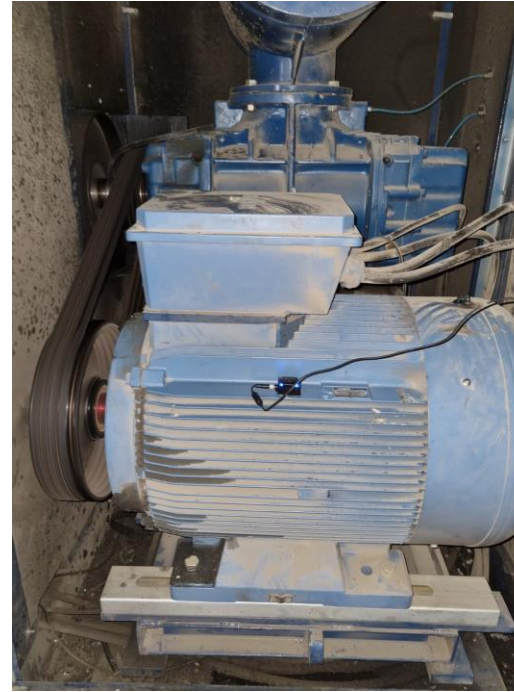


midsoft



- Connected gas meters at 700 factories
- Connecting water and electric meter – ongoing
- Predictive maintenance at 10 factories
- info@midsoft.com.tr

Industrial Zones



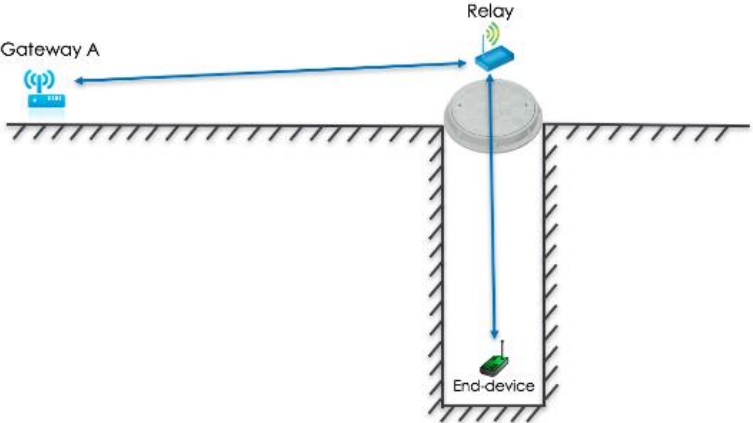
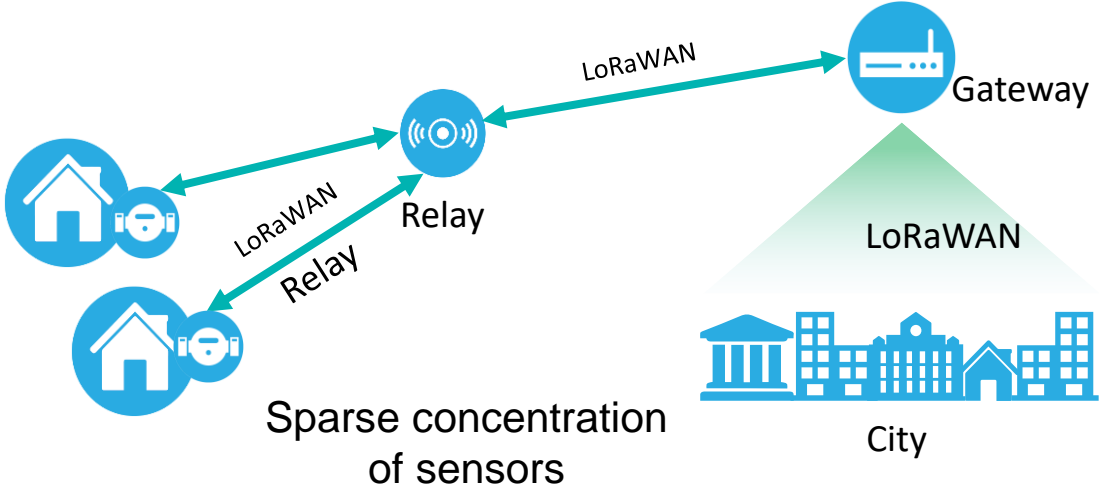
- Connected gas meters at 700 factories
- Connecting water and electric meter – ongoing
- Predictive maintenance at 10 factories

- info@midsoft.com.tr

Relay



Relaying messages for an end-device behind an extra-thick wall of a building

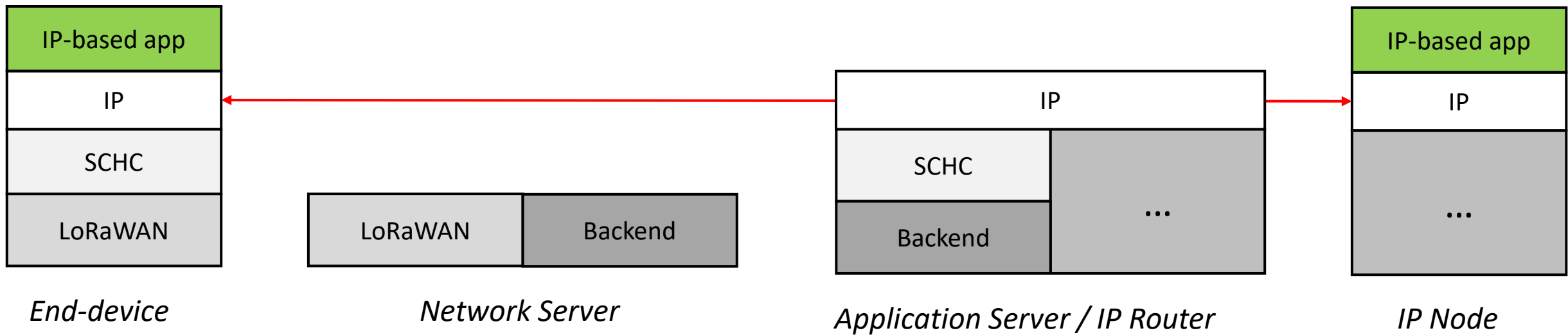


Relaying messages for an end-device under a deep well



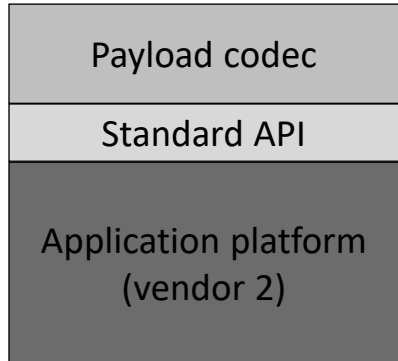
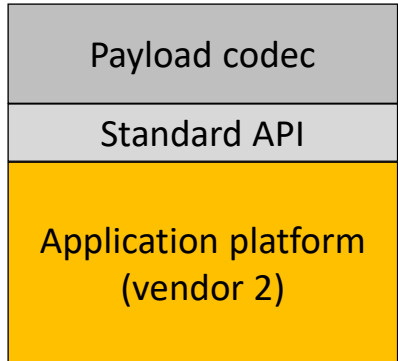
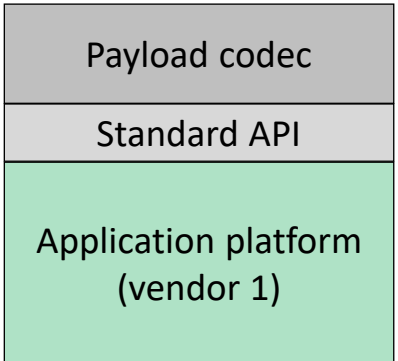
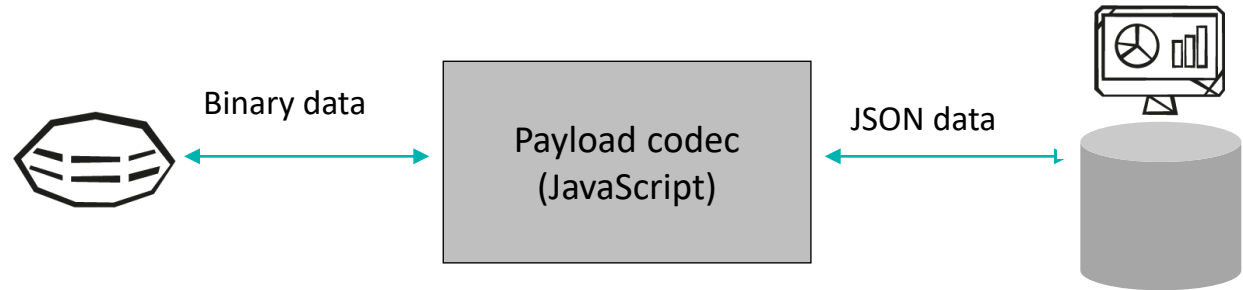
Compact tracker/relay node

End-to-end IPv6



SCHC: Static Context Header Compression and Fragmentation (RFC 8724 + RFC 9011)

Payload Codec API

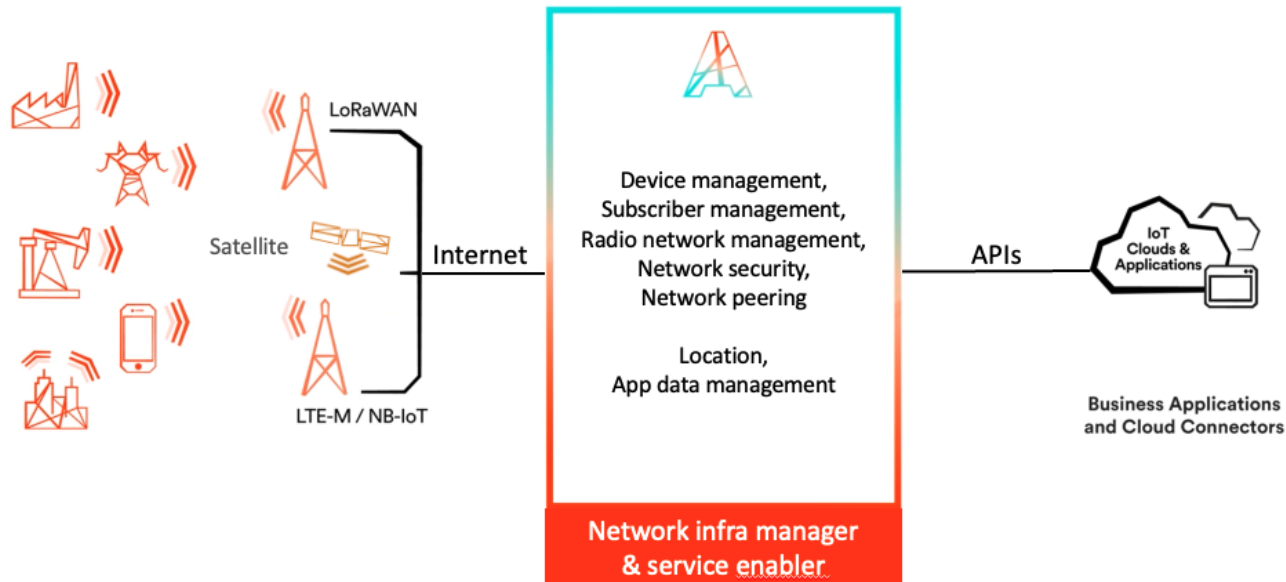


Implement the codec ONCE, deploy on ANY application server

LoRaWAN + Sigfox Integration

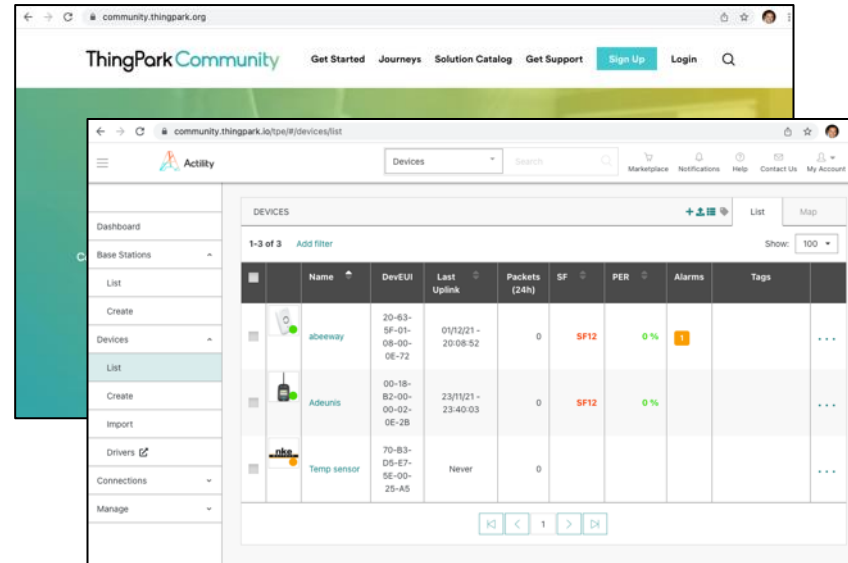


Actility & ThingPark



- Co-inventor of LoRaWAN
- Founding & permanent board member of LoRa Alliance
- Chairing Technical Committee
- Member with the **most** technical contributions
- Largest** R&D among infra vendors
- First** to implement and deploy almost all new features
- Widest & most mature** infra product portfolio
- Largest** public operator footprint

Try!



Azure IoT Central



+ several others

1

Buy a **device** on market.thingpark.com

2

Buy a **gateway** on market.thingpark.com (EU868, pre-configured for “ThingPark Community“ or supporting Basic Station)

3

Create free account on community.thingpark.org, and access ThingPark Enterprise (**Network Server**)

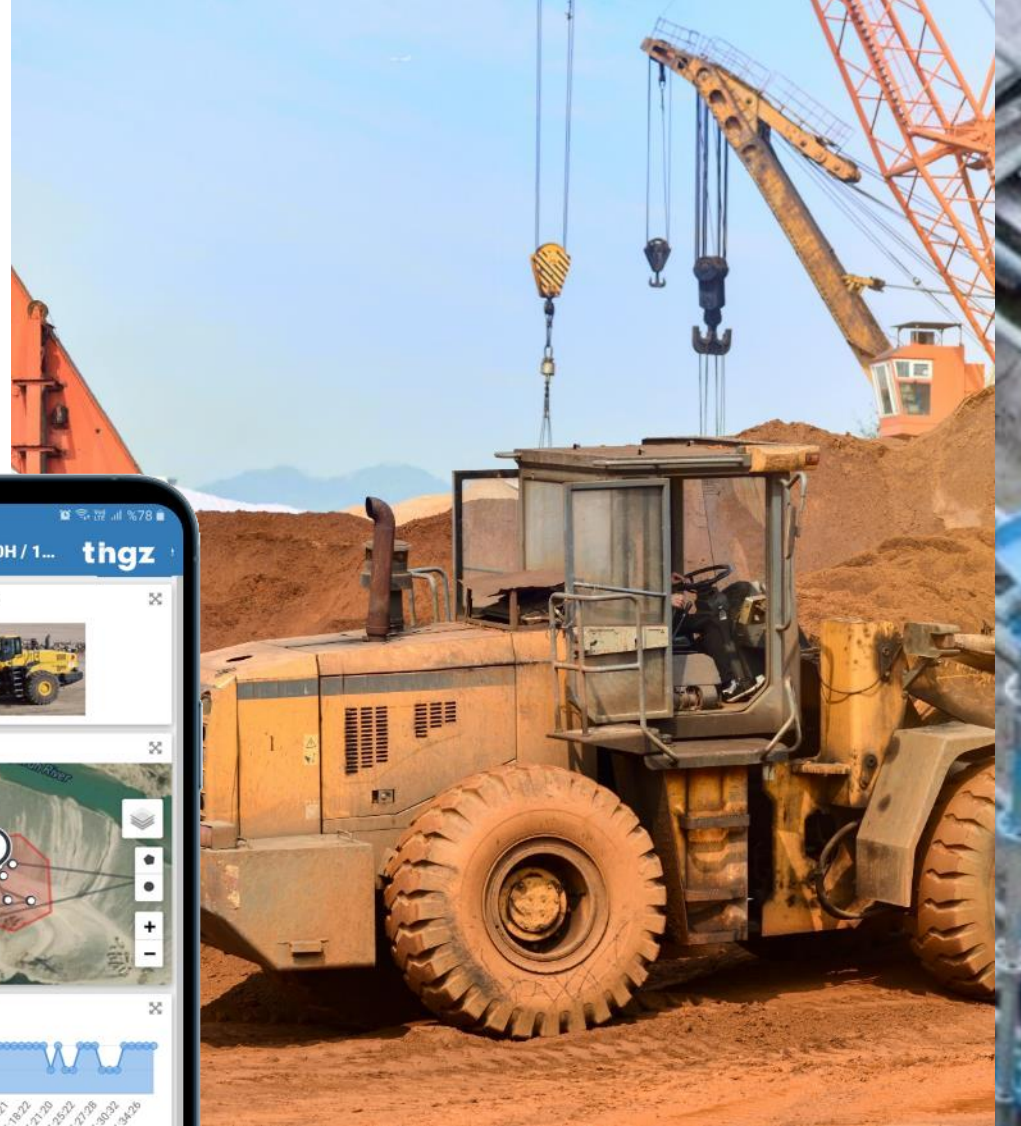
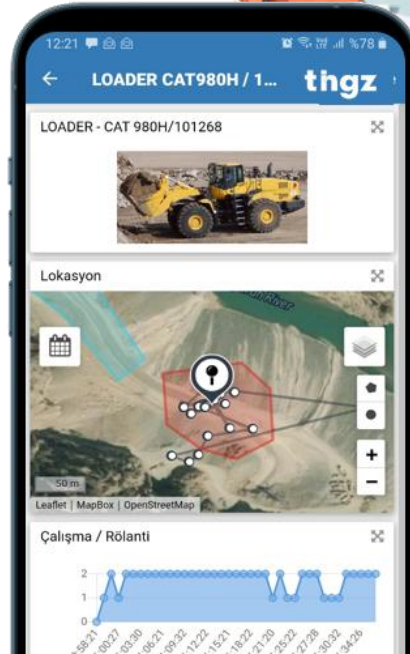
4

Visualize data on an **application platform**

Actility



Yusufeli Baraj Projesi LoRaWAN Uygulaması



Çalışma Sahası: Yusufeli Baraj Projesi



Çalışma Sahası: Yusufeli Baraj Projesi



Çalışma Sahası: Yusufeli Baraj Projesi



KAPSAMA ALANI



KULLANILAN SENSÖRLER





GSM'den bağımsız
ekonomik iletişim altyapısı



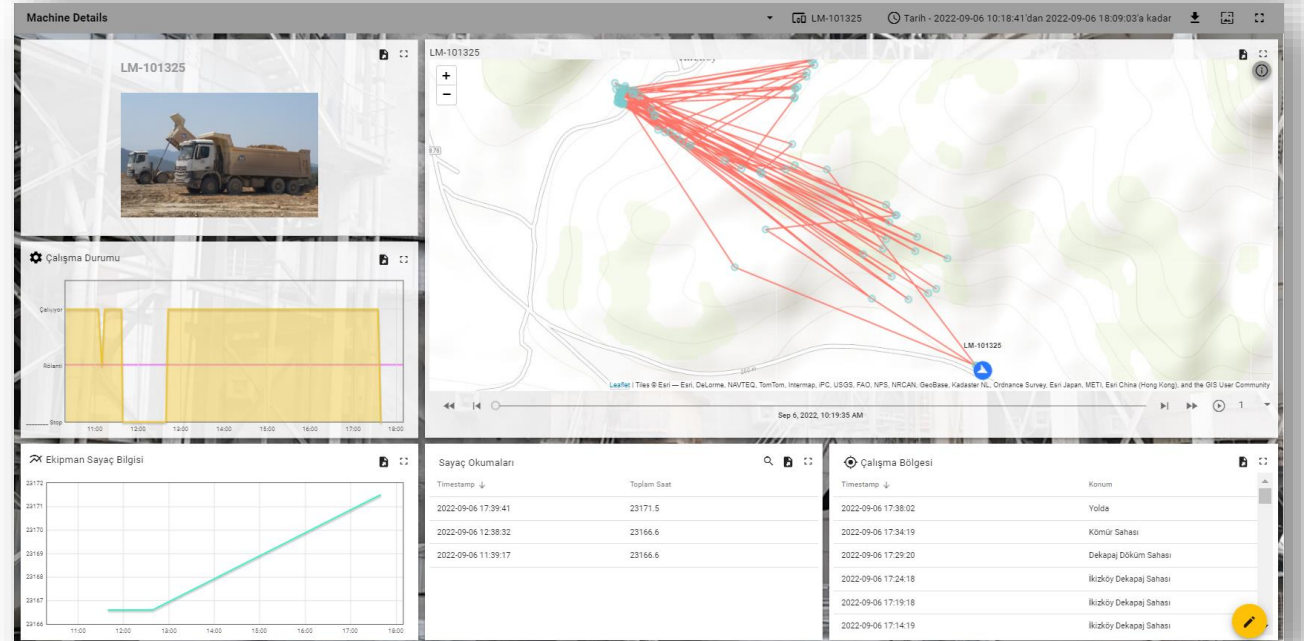
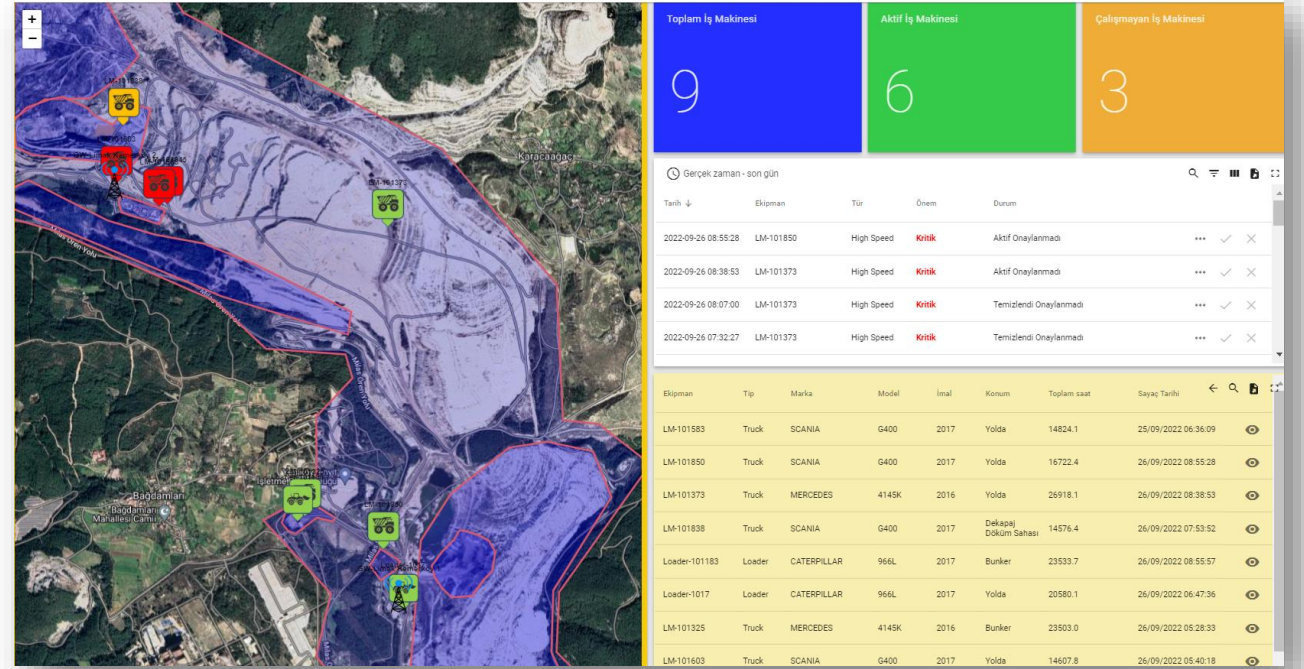
Montaj, Simcard ve bağlantı
maliyeti gerektirmeyen
sensörler



Faaliyet analizi yapabilen
özel algoritmalar



- GSM'den bağımsız çalışabilen iletişim alt yapısı
- Rölanti, çalışma, durma, yükleme vb. makine aktivitelerini ayırt edebilen algoritmalar
- %100'e yakın doğruluk ile puantaj raporlaması
- İş makinesi takibi, rota ve sefer sayılarının hesaplanması
- Gelişmiş bakım planlaması





Baraj
Projeleri



Yeraltı
Madenleri



Açık
Madenler



Kentsel
& Geniş Alana
Yayılmış
Projeler

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Q&A!

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