NB-IoT

Internet of things in mobile network

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Etteplan NB-IoT Breakfast
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One Network for IoT

Critical IoT

Fast, reliable and low latency connections

Massive IoT

Machine type communications

Key Benefits of NB-IoT

Low cost of modules

Low power consumption

Long range

Large scale

How does NB-IoT compare to other LPWAN technologies?

Business aspects

	Modules	Scalability	Lock-in
NB-IoT	Vendor agnostic modules based on open 3GPP standard.	Amount of devices is limited only by base station's capacity. Adding more base stations increases the amount of devices that can be supported.	No lock-in. Customer may change freely between operators.
LTE M (Cat-M1)	Vendor agnostic modules based on open 3GPP standard.	Amount of devices is limited only by base station's capacity. Adding more base stations increases the amount of devices that can be supported.	No lock-in. Customer may change freely between operators.
LoRa	All the radios have to be bought from Semtech. Vendor agnostic modules based on open LoRa standard.	Operates on free spectrum so other LoRa and SigFox etc. solutions fight for same capacity.	Medium lock-in. Customer can build and operate their own LoRa network or lock-in to national Finnish LoRa operator.
SigFox	SigFox has to approve all the modules.	Operates on free spectrum so other LoRa etc. solutions fight for same capacity.	High lock-in. SigFox operator has exclusivity on geographical area.

Technical comparison

	Bandwidth	Coverage	Battery life	Device's per cell	Peak Throughput	Security (encryption)	Mobility	Voice
NB-IoT	200 kHz	164dB (+20dB)	10+ years	200K	227/250 kbps (21/63 kbps)	Yes	Idle mode	Not supported
LTE M (Cat-M1)	1,4MHz	160dB (+15dB)	10+ years	1M+	0,8/1 Mbps (300/375 kbps)	Yes	Connected & idle mode	Supported
LoRa	125kHZ	155dB	10+ years	20K	0.3 kbps to 50 kbps	Yes	Yes	No
SigFox	100 Hz	156dB	10+ years	70K	100-600 bps Max 140 messages of 12 bytes a day sent and 4 messages received	No	No	No

Topics you should consider before decision

	Do you want to send little data seldom?	Do you want bi-directional communication? Do you want to update your devices over the air?	Do you want to operate your own network?	Do you want to keep your data in Finland?	Do you need roaming?
NB-IoT	Good	Poor	Not possible	Good	Good. Supported to all other NB-IoT networks globally.
LTE M (Cat-M1)	Good	Good	Not possible	Good	Good. Supported to all other LTE M networks globally.
LoRa	Good	Poor	Good	Good	Poor. No roaming support.
SigFox	Good	Poor	Not possible	Not possible	Medium. Support to other SigFox operators.

NB-IoT in DNA Network

Core network already updated

Base stations require SW/HW update

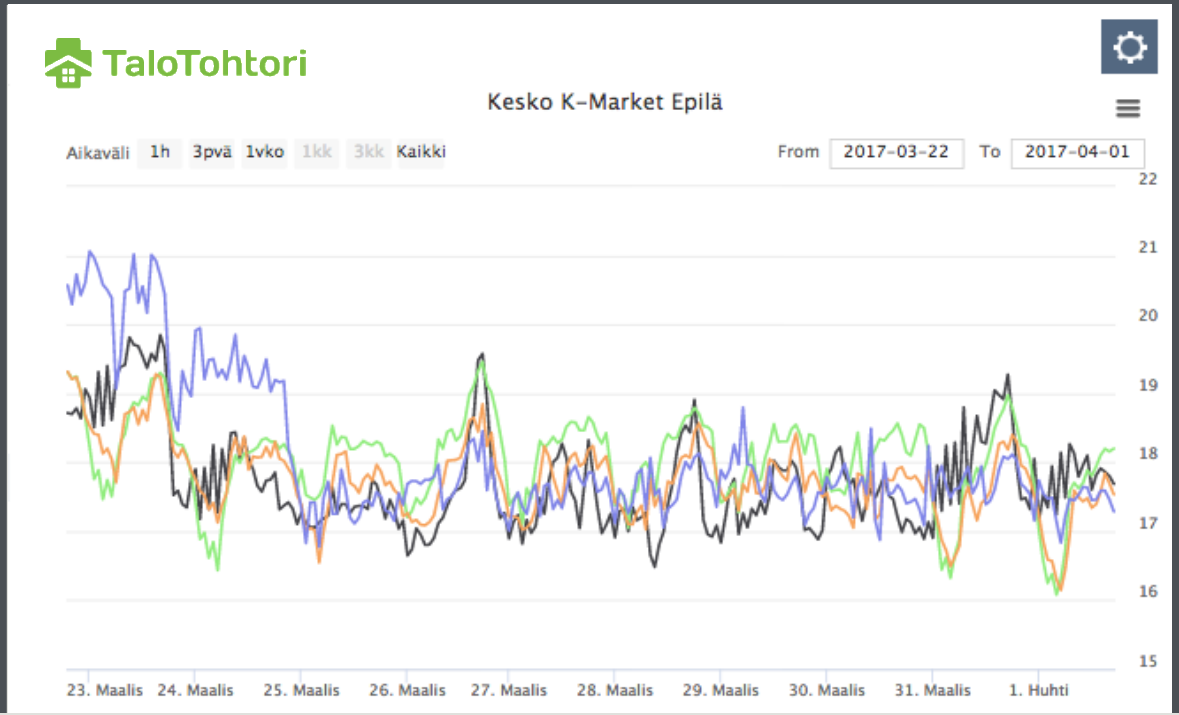
New release in mid November

Case by case updates to coverage

Frequency bands

Productized during 2017

CASE ENERMIX



CASE: K-Market indoor temperature monitoring

Low cost of modules

Low power consumption

Long range

Large scale

Thank you.