



CAT-M1 vs. NB-IoT

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Housekeeping

- Informal Format
- Do Not Save Questions Until The End
- Throw a Hand Up
- Got a Question, Ask a Question
- Interactivity Will Be Rewarded

RULES



What's the Plan?

- NimbeLink Overview
- Cellular technology bifurcation
- Cat M1 & NB-IoT Crash Course
- Live demo
 - (What networks are available in Grand Rapids, MI)



IoT Experts from Edge to Enterprise.

EMBEDDED SOLUTIONS

SKYWIRE®

END-DEVICE CERTIFIED MODEMS BY NIMBELINK®

- ✓ Buy It Certified
- ✓ Connect Easy
- ✓ Deploy FasterSM



- 2G, 3G, 4G LTE, and 5G

SERVICES



Connectivity



IoT Integration



Custom Products



Design Services



Manufacturing

Edge to Enterprise

Partner with us for all your IoT needs.

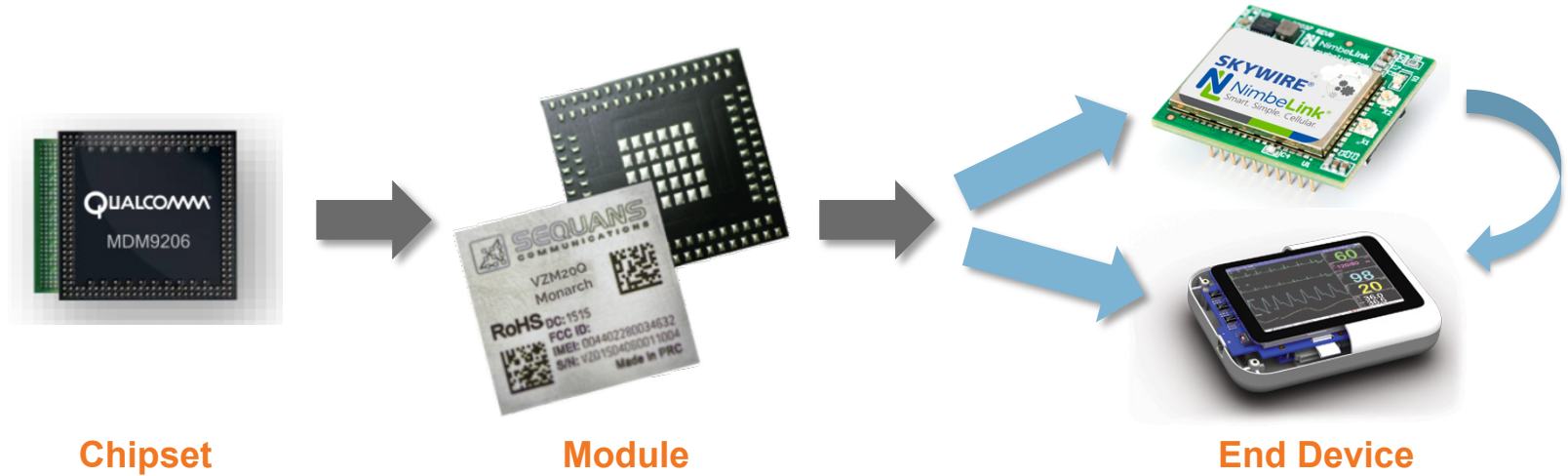
ASSET MANAGEMENT

Track, monitor & manage your assets!

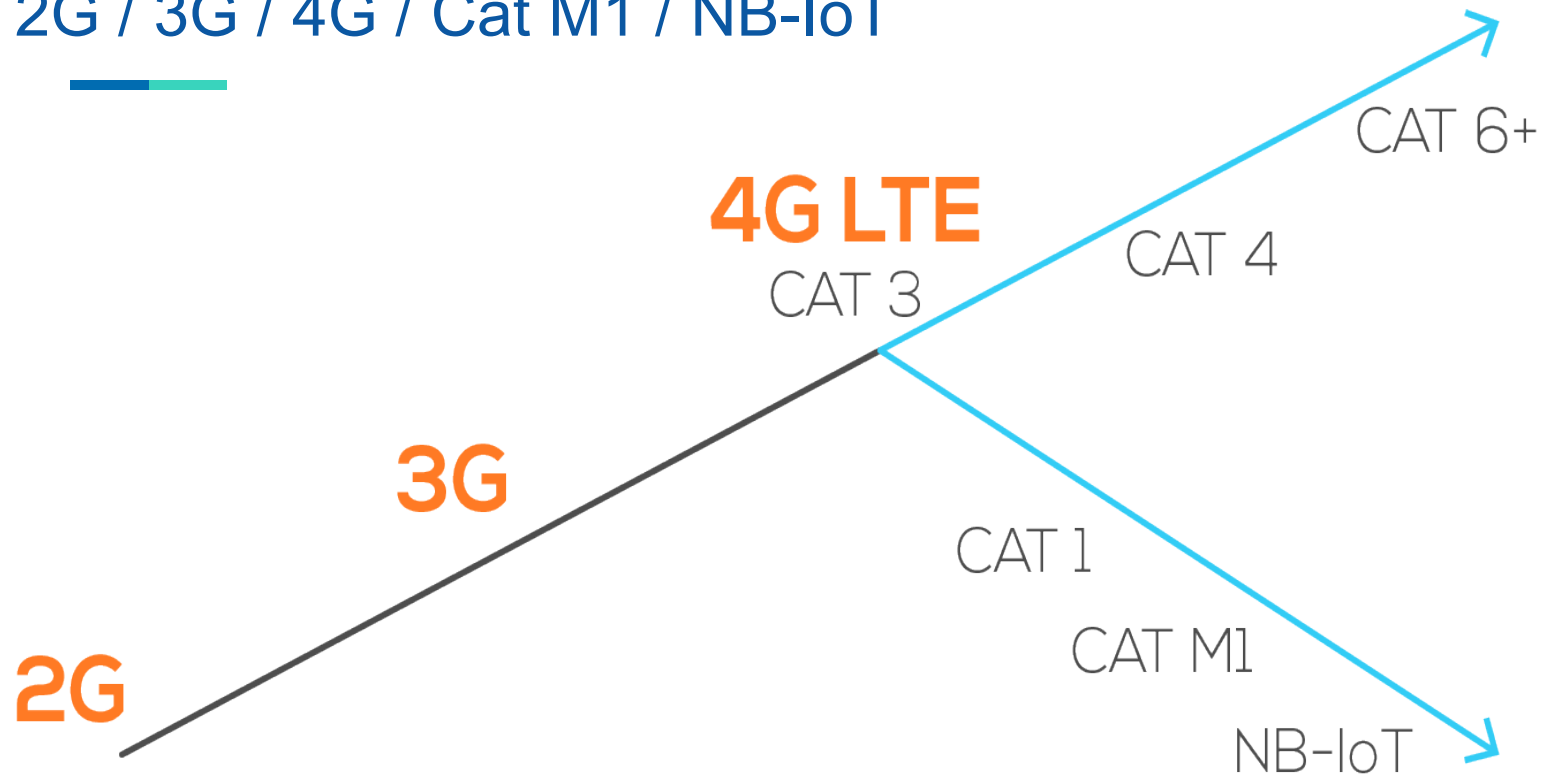
- Improve operational efficiency
- Track more assets
- Manage inventory better
- Improve fleet operations

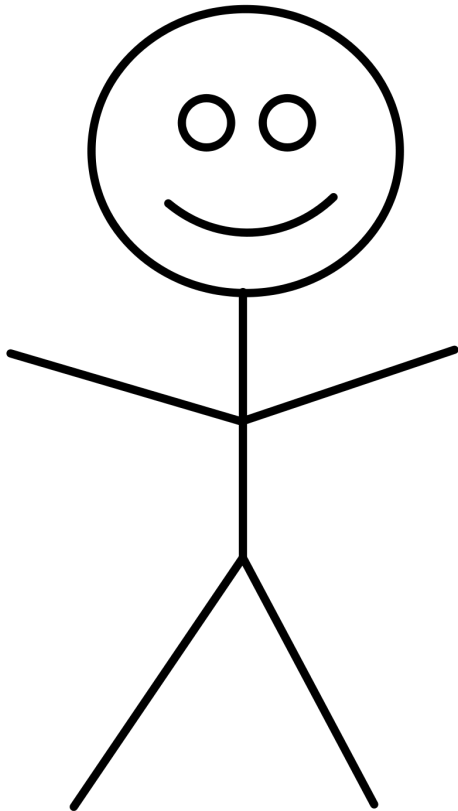


Radio Types & Certifications

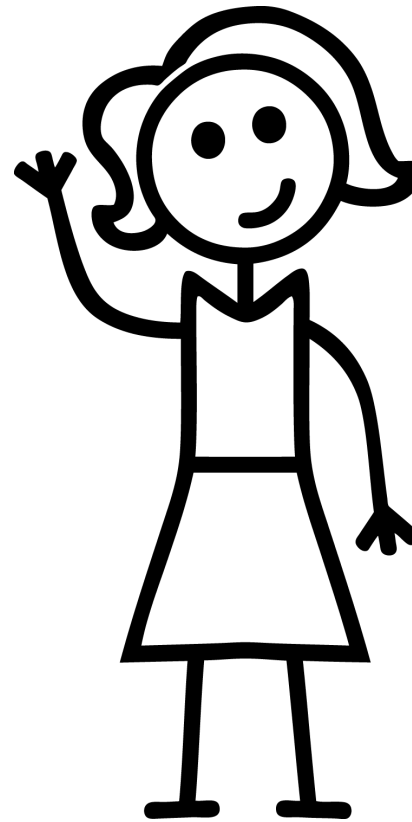


2G / 3G / 4G / Cat M1 / NB-IoT

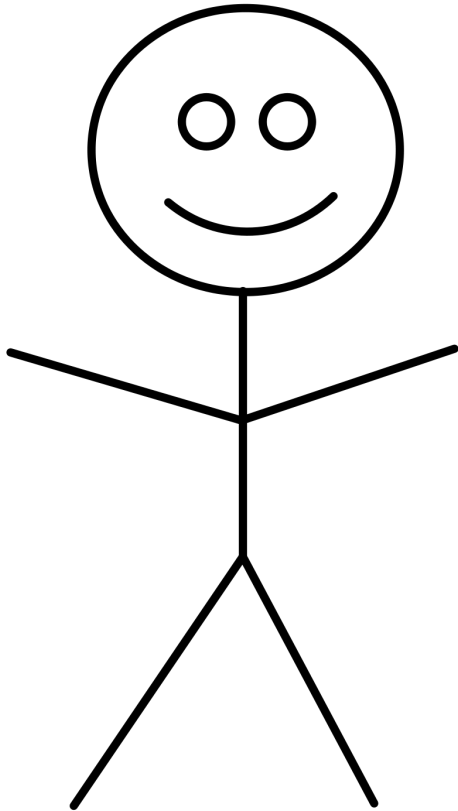




Joe



Sally

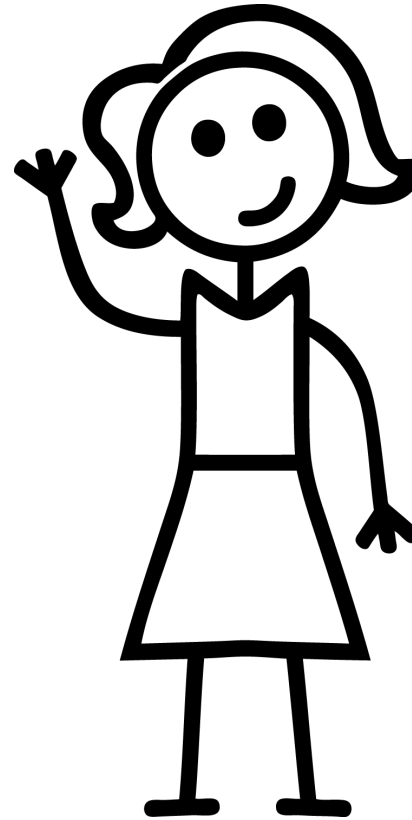


Joe

- Battery-Powered Asset Tracker in France



- Solar-Powered Soil Moisture Monitor in Brazil



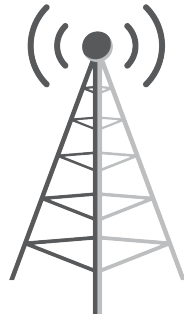
Sally



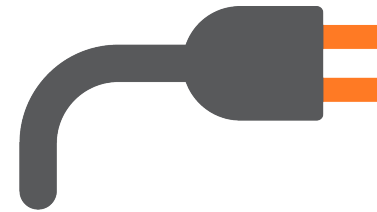
Why Cellular at All?



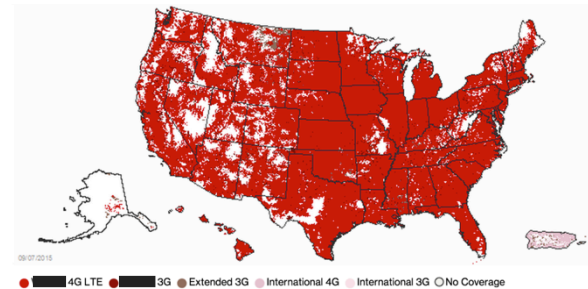
Direct Connectivity



Managed Network



Pre-Configured



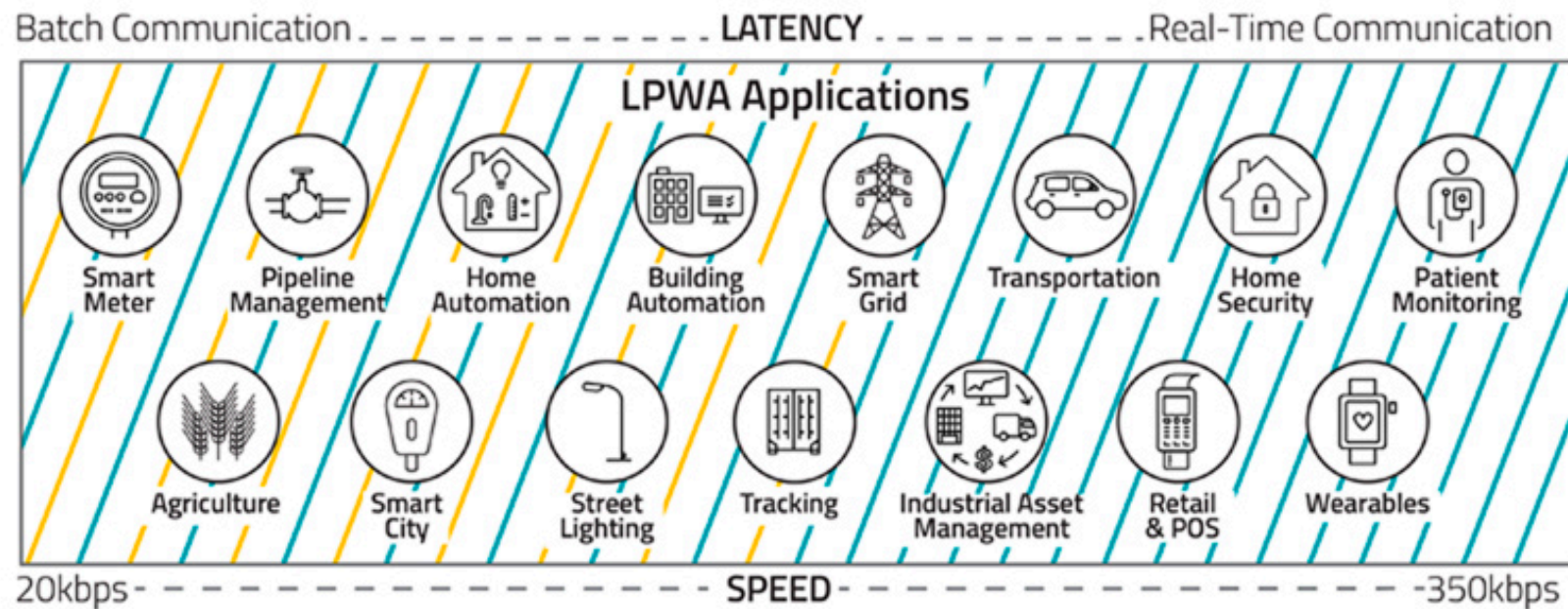
Ubiquity

Battle of the Specs

LTE Category M1 (LTE-M)	NarrowBand - IoT
3GPP Release 13/14	3GPP Release 13/14
1.4MHz Bandwidth	200kHz Bandwidth
~350kbps – 1Mbps	~50kbps – 150kbps
10 – 15ms Latency	1.5 – 10s Latency
Low Power*	Lower Power**
Mobile & Stationary	Stationary
Long Range (Up to 4x)	Longer Range (Up to 7x)

Cat M1 (LTE-M) or NB-IoT??

- Power, Mobility, Throughput

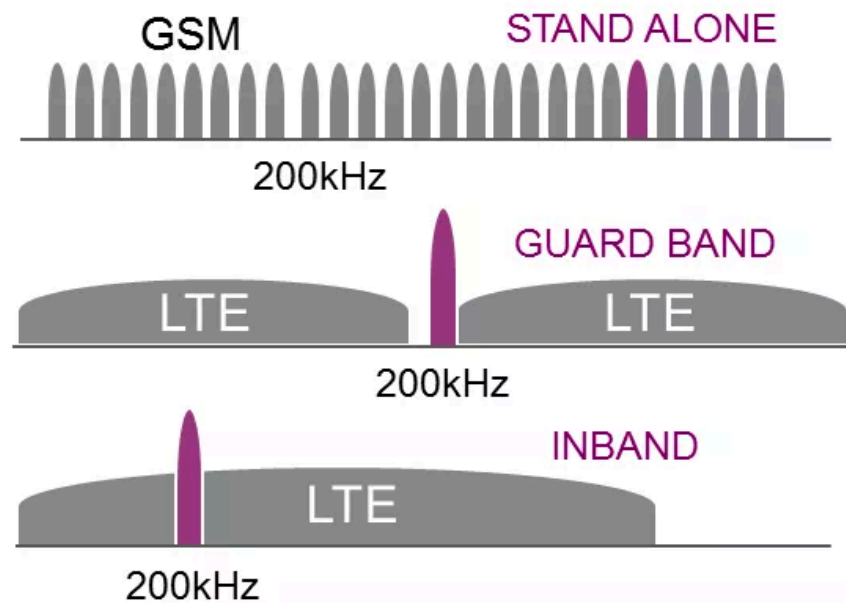


Why Does Bandwidth Matter?

- 1.4MHz vs 200kHz

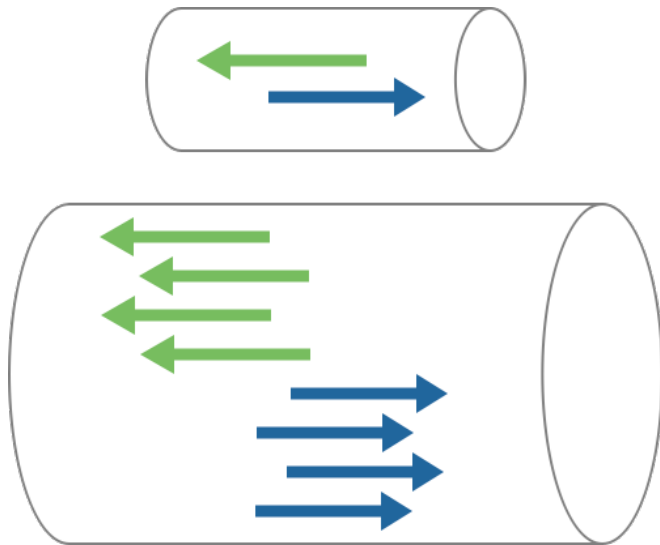


NB-IoT



Speed & Latency

- ~350kbps – 1Mbps vs. ~250kbps – 50kbps
- 10 milliseconds vs. 10 seconds



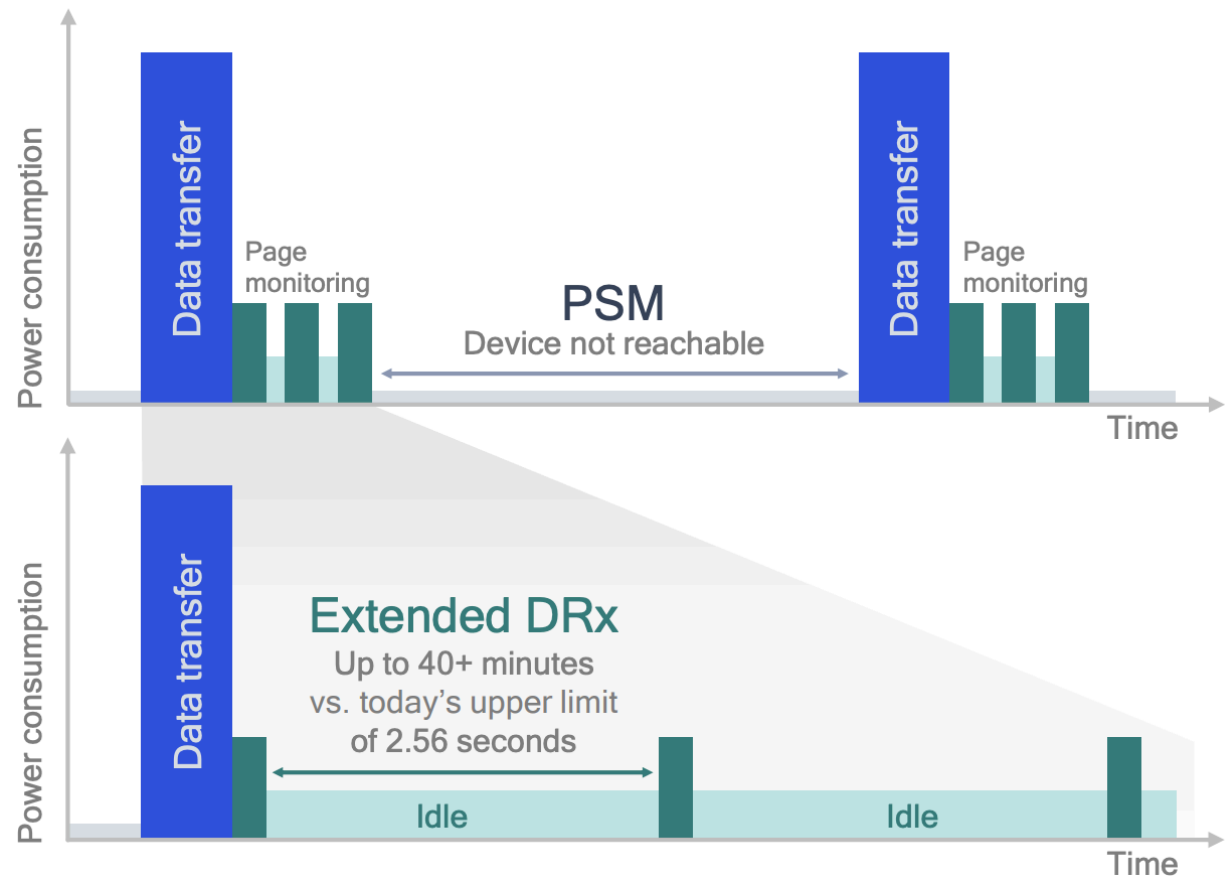
Range

- M1 up to 4x Cat 1+ LTE
- NB-IoT up to 7x
- M1 CE Mode A vs. CE Mode B



Power

- Registration, Transmission
- PSM/eDRX



Carrier Deployments (Availability)

As of March 2019:

- 102 operators in 52 countries had deployed/launched **at least one** NB-IoT or LTE-M network
- 20 operators in 19 countries had deployed/launched **both** NB-IoT and LTE-M
- 28 countries have deployed/launched NB-IoT networks **only**
- 2 countries have deployed/launched LTE-M networks **only**

Mobile IoT Open Labs

Mobile IoT Deployments

<https://www.gsma.com/iot/deployment-map/>

Small states ▼

+

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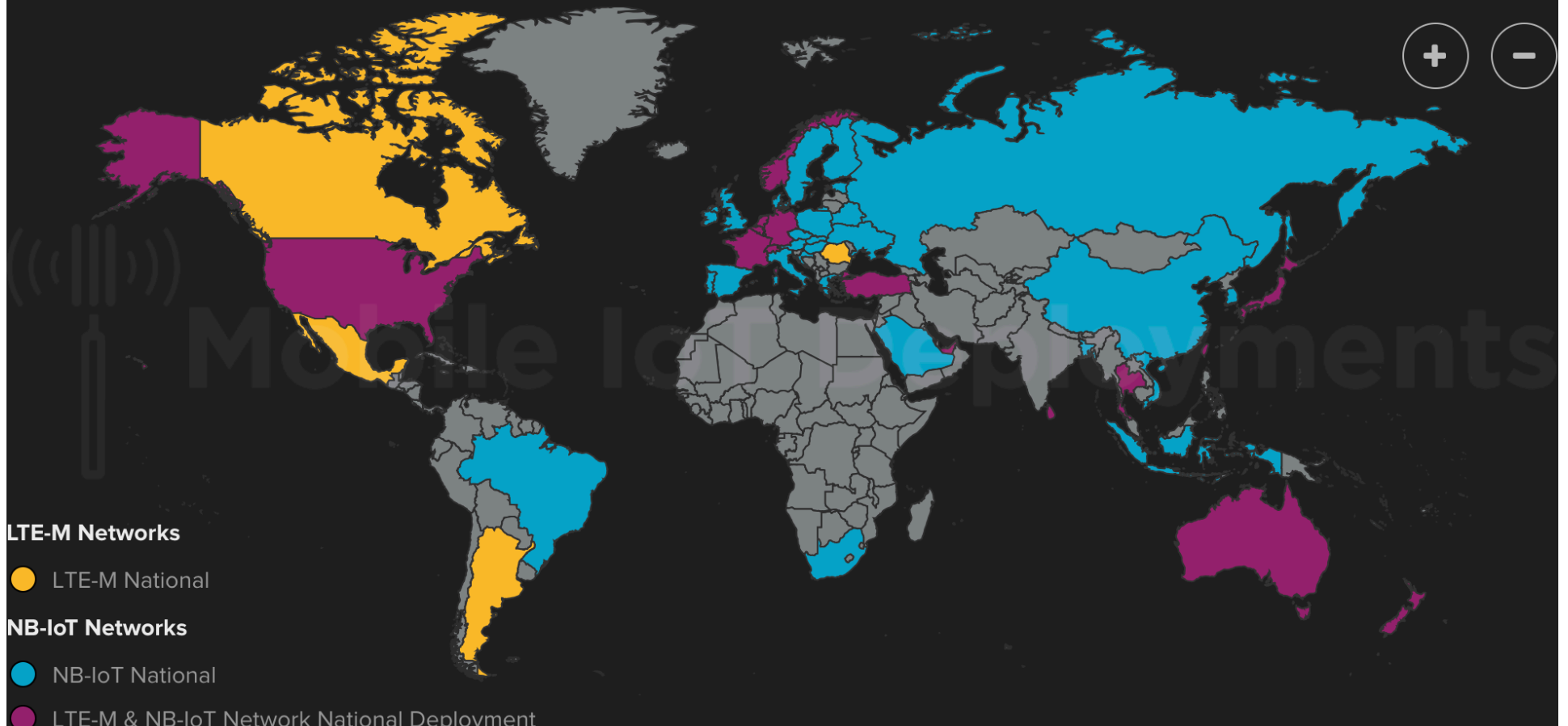
LTE-M Networks

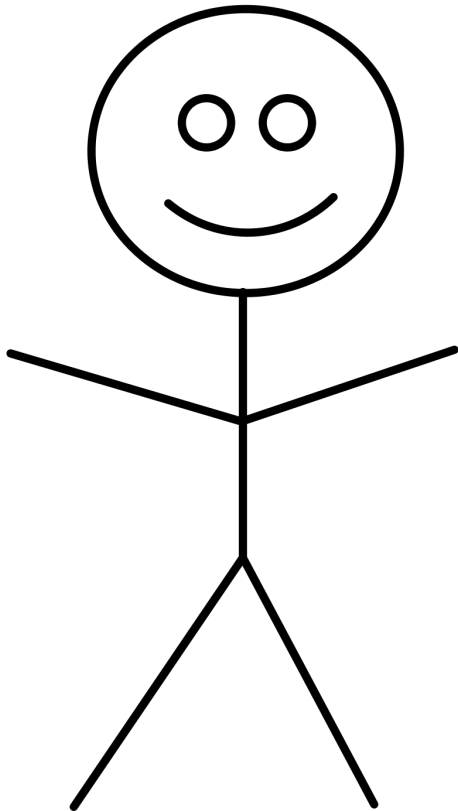
● LTE-M National

NB-IoT Networks

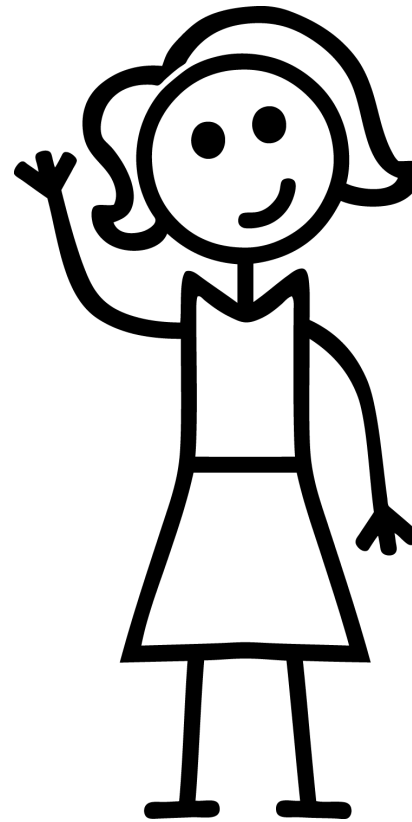
● NB-IoT National

● LTE-M & NB-IoT Network National Deployment



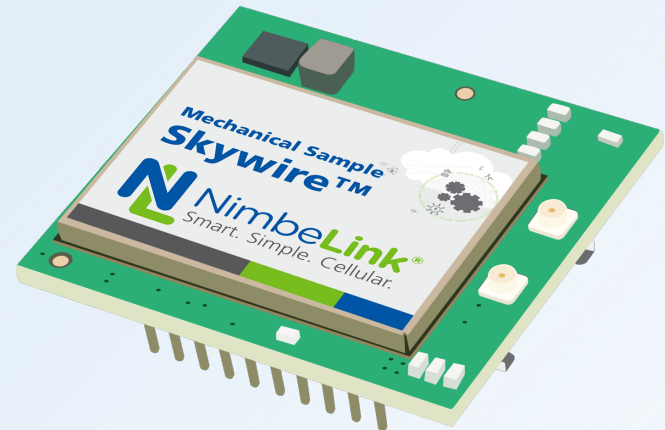


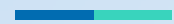
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Demo time... It's alive!!!





Thank you

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