

A guide to mobile IoT: How to choose between LTE-M and NB-IoT for global deployments

1 WHICH ONE IS THE BEST CHOICE FOR YOUR APPLICATION?

For the first time dedicated networks have been developed dedicated to the needs of connecting things.

LTE-M and NB-IoT will be the obvious choices for global companies looking for 2G and 3G replacements for devices with long lifecycles, requiring extended device battery life and increased coverage.

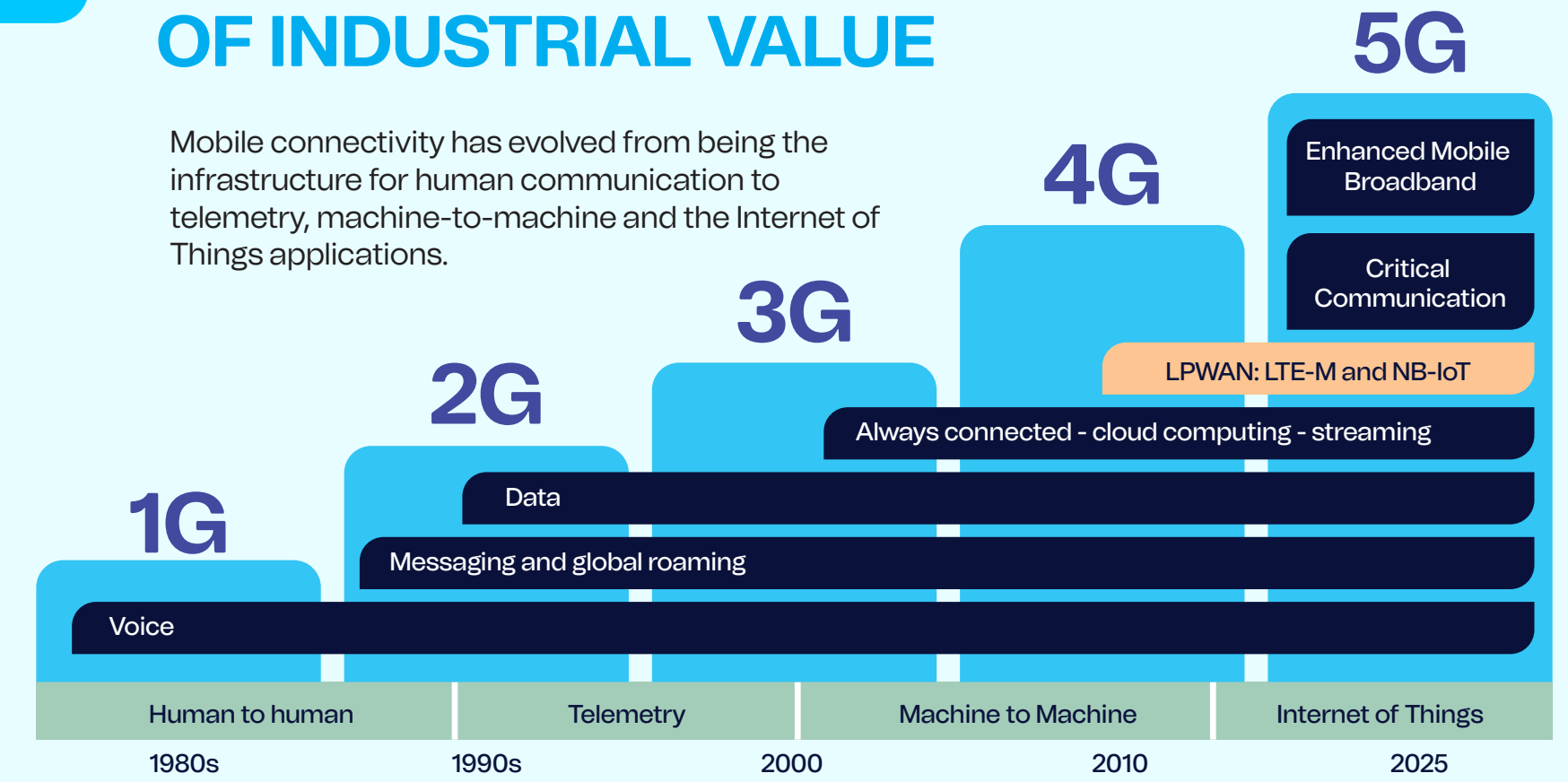
What are LTE-M and NB-IoT technologies?

These are new network technologies that support LPWAN. They are starting to become globally available in the form of LTE-M and NB-IoT - also referred to as Mobile IoT. LTE-M and NB-IoT are standardized, secure, and operator-managed in licensed spectrum. They are designed for IoT applications that are low cost, use low data rates and require long battery lives.



2 MOBILE CONNECTIVITY - AN EVOLUTION OF INDUSTRIAL VALUE

Mobile connectivity has evolved from being the infrastructure for human communication to telemetry, machine-to-machine and the Internet of Things applications.



3 HOW ARE THE NEW TECHNOLOGIES DIFFERENT?

Low Power - Long battery life



Battery life is increased when devices can enter sleep mode or listen less often to the network. LTE-M and NB-IoT both offer better coverage than 4G in, for example, deep indoor or remote areas.

Wide Area - Better coverage



LTE-M and NB-IoT both use simplified versions of regular 4G which reduces hardware complexity and cost once the technology is operating at scale.

Future Proof - part of 5G



"NB-IoT and LTE-M, as deployed today, are part of the 5G family"

GSMA

5 CHOOSING LTE-M OR NB-IOT ? FACTORS TO CONSIDER

ADAPTABILITY TO NEW USE CASES

LTE-M

Due to its wider bandwidth LTE-M provides more adaptability to new use cases where the use cases of the IoT solution will develop over time.

NB-IoT

NB-IoT is an alternative when the requirements are more static and known from the start.

SUITABILITY FOR 2G/3G REPLACEMENT

LTE-M

As LTE-M meets or exceeds the technical characteristics of 2G/3G services, it appears to be a natural, evolutionary step.

NB-IoT

NB-IoT has lower responsiveness and limitations in mobility and may be relevant for use cases with lower requirements that fit the NB-IoT specifications.

MOVING DEVICES

LTE-M

LTE-M is the better choice for moving devices as it has been designed for this from the start.

NB-IoT

NB-IoT is designed for static devices and it can lead to interruptions if devices are moved.

TIME TO MARKET - INTERNET COMPETENCE

LTE-M

LTE-M is using standard IP protocols which makes it straight forward to develop applications.

NB-IoT

NB-IoT is using tailor-made protocols requiring specific application development and competence.

VOICE READINESS

LTE-M

LTE-M is designed for voice with Voice over LTE and can also be used for Voice over IP with full duplex.

NB-IoT

Future versions of NB-IoT can add push to talk technology but only at half duplex.

REMOTE CONTROL DEVICES

LTE-M

LTE-M is needed for a fast and consistent response.

NB-IoT

NB-IoT can handle use cases where a delay of minutes is acceptable.

GLOBAL AVAILABILITY

LTE-M

LTE-M has been designed for roaming from the start and can leverage existing roaming and wholesale business models between operators. It is expected that LTE-M will be relevant for international IoT solutions earlier than NB-IoT.

NB-IoT

NB-IoT will require new business models to be a good alternative for global connectivity.

SOFTWARE UPDATES AND SECURITY

LTE-M

LTE-M is considerably better at handling device updates driven by security improvements and software development, as its higher bandwidth can handle more data.

NB-IoT

The characteristics of NB-IoT mean it is not suitable for upgrading large fleets of IoT devices.

SIM LOCALISATION

LTE-M

The bandwidth of LTE-M is also more suitable for transmission of SIM profiles, just like software updates. Enterprises considering eUICC should therefore also consider LTE-M.

NB-IoT

Not all operators support the combination of NB-IoT and SMS which means that eUICC cannot be initiated in many networks.

4 GLOBAL AVAILABILITY AND OUTLOOK

LTE-M and NB-IoT are both locally available and on their way to becoming globally available. We expect LTE-M and NB-IoT to be available during the complete lifecycle of 5G.

Region	First focus	Secondary focus
Asia	NB-IoT	LTE-M
Europe	NB-IoT / LTE-M	
North America	LTE-M	NB-IoT

CONCLUSIONS & RECOMMENDATIONS

	Firmware updates	Indoor coverage	Remote control devices	Suitability for moving devices	Voice readiness	Possibility to grow with new use cases
LTE-M	●●●	●●●	●●●	●●●	●●●	●●●
NB-IoT	●	●●●	●●	●	●	●

For most international IoT solutions LTE-M will be the preferred connectivity standard as it can be expected to be globally available faster and to be more straightforward to develop and maintain applications. NB-IoT may still be the better choice for some applications, for example for very large scale sensor networks where the requirements are known at deployment and the best possible indoor coverage is absolutely essential. As of today

neither LTE-M nor NB-IoT are deployed widely enough to be solely relied on for international fleets of devices. For now it is recommended to use hardware that is able to use LTE-M or NB-IoT as well as networks with mature footprints, e.g., 2G and/or 4G. The deployment status of mobile IoT network is developing rapidly and therefore the right setup will vary over time.