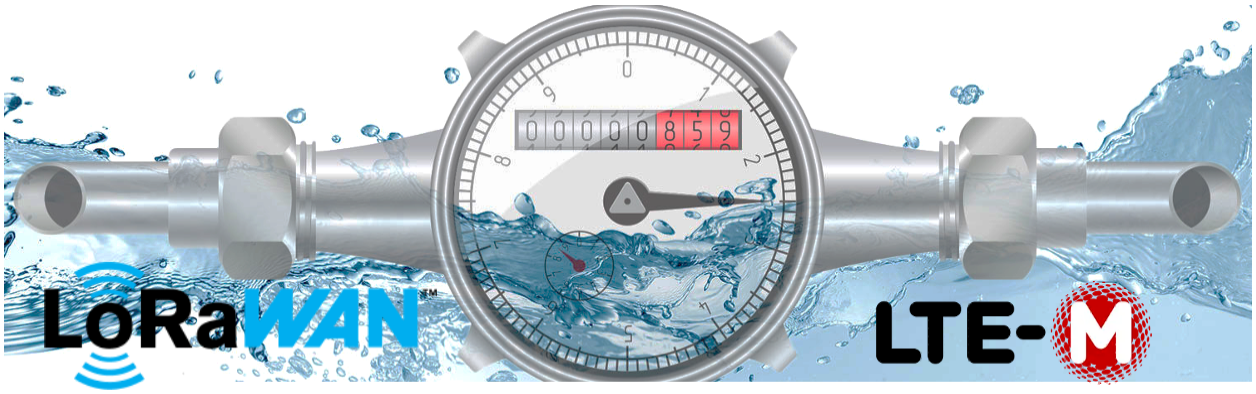
LoRaWAN vs LTE-M to read water meter?



Clearly, both technologies allow for remote reading of water, electricity or gas meters. But if you dig a little deeper, it's clear that for this use case, being less energy consuming is a big advantage since the transmitter (wireless sensor) that reads the water meter runs on batteries. Then there are the monthly operating costs for the connectivity which have a significant impact if we evaluate the costs over 10 years or more. Finally, the ability to penetrate basements, concrete, metal or glass is an important attribute for reading water meters, often installed in basements.

According to an independent study published at the end of 2021 by a group of renowned universities including the University of California

Berkeley, LoRaWAN would consume 6 times less energy than LTE-M. Therefore, to have the same battery life, LTE-M would have to have 6 times more battery capacity. This is really not surprising since there is a direct link between bandwidth (the amount of information that can be sent per second) and power consumption. LoRaWAN bandwidth is 290 bps - 50 Kbps while LTE-M is 200 kbps - 1 Mbps. Other use cases requiring higher bandwidth than water meter reading or general telemetry could then be better served by LTE-M.

Since LTE-M is a cellular technology, each connected meter comes with a monthly subscription for cellular connectivity that costs several times more than LoRa connectivity. In addition, this connectivity cannot be used to carry data from other sensors as each meter's cellular plan cannot be shared.

Secondly, as LoRaWAN is a highly secure, bi-directional protocol, it can do remote configuration changes of deployed modules just like LTE-M.

Finally, LoRaWAN's penetration capacity and resistance to interference is far superior to that of LTE-M. This is a significant advantage, since if LTE-M connectivity is poor in a basement, there is not much to be done. On the other hand, with LoRa, you can always add an inexpensive LoRa gateway in the neighborhood to improve coverage if needed. Needless to say, this new LoRa gateway can also be used to carry data from hundreds of other types of LoRa sensors for all sorts of applications.

Finally, LoRaWAN is now used in almost every country in the world to read electricity, water or gas meters. Currently in France, 64% of the 60 million connected meters are using LoRa (or Sigfox), while only 7% are using LTE-M. The same is true in many industrialized countries for obvious reasons.

Another very important aspect to consider when choosing a communication technology to read water meters is the availability of the data. Indeed, there are two approaches on the market:

1- The open approach where the manufacturer of the wireless module provides what is called the decoder which is in fact the recipe to extract the data from the encoded message that is received.

2- The proprietary or closed approach where only the radio module manufacturer can decode the message in its portal.

In the first case, the customer can have direct access to his raw meter reading data and do what he wants with it. He can, for example, use a platform of choice to manage his meter readings and decide after a few years to switch to another platform, still having access to the raw data without having to pay a subscription to retrieve it. In the case of a proprietary approach (which we often see from water meter manufacturers who want to tie their customers down for the long term), the only way to have access to the raw data is by retrieving it from the manufacturer's portal via a proprietary API. As long as you pay a subscription fee, you have access to your data, but you are

captive for the life of the water meter which is really not a great idea in my opinion.

When it comes to competing technologies, there are always those who push their solution by spreading falsehoods about the competing technology, so it's important to do your homework and draw your own conclusions.

Eric Bourbeau, B.Eng, MBA,

X-TELIA

March 2022

© 2022 X-TELIA