



Why SMS is pupose built for IoT...

Quite a bold statement considering SMS is a technology that's 30 x years old and nobody had heard of IoT 5 x years ago. So how come?

In the first instance the use of SMS to transport data to and from remote devices is not new. We worked with a Swedish carrier in 2003 delivering messaging to and from remote devices used in industrial applications to monitor temperature / pressure etc. This was and still is described as Machine 2 Machine (M2M) messaging.

Aside from the historical perspective that its tried and tested there are both some very practical reasons why IoT developers should consider SMS as well as some more technical ones:



Coverage

Perhaps the most obvious practical reason is the near universal coverage offered by 2G/3G/4G networks upon which SMS is transported.



Maturity

2G / 3G and 4G networks are mature networks deployed over decades and clearly SMS works.



Capacity

There is plenty of capacity in existing networks. In 2014 the death knell for SMS was ringing loud and clear. Those pesky WhatsApp / Messenger etc were disrupting the consumer messaging market and decimating the P2P SMS market. A2P rode to the rescue in 2016 with handy text messages reminding us about dentist appointments or parcel delivery but the volumes of messaging have by no means returned to pre 2014 levels.



Cost

Operators charge for data bundles and large numbers of SMS are offered at a low cost.





Power Usage

Many remote IoT devices will be battery powered and obviously power usage becomes critical. You need to maintain a permanent connection to an IP enabled IoT device. To do this it is problematic over IP for a centralised application to initiate a connection to the remote end device as the packets can get blocked by firewalls in the network. To get around this the remote IoT device needs to routinely “wake up” from a low power state and establish a connection with the central application. Further this “wake up” message has to be authenticated by the centralised application and an acknowledgement relayed to the remote IoT device. This process drains power.

SMS has a far simpler mechanism as at the SMS transport layer there is no idea of a permanent connection. There is at the physical radio layer but this has a very, very low power usage. If you want to send an SMS to a remote device and that device is out of range / turned off then the SMS is simply stored. When the remote device comes in range or is switched back on the SMS is simply forwarded. Further the identity of the device is explicitly carried in the SMS message there is no external authentication and acknowledgement cycle.

Enabling IoT over SMS therefore offers a very low power solution enabling a battery life of years rather than hours.



Data

SMS carries a 140 byte payload which for the vast majority of remote telemetry based applications like sensors is more than enough. Of course more data can be sent over multiple SMS messages.



Thriving Eco System

There is a thriving eco-system of vendors and service providers delivering SMS solutions. If an IoT developer is looking to deliver their service over SMS they can choose from a range of providers offering hosted API's like Twilio or if they feel more adventurous hook up to networks directly with flexible next generation SMSC vendors providing a wide range of API interfaces like the Squire SVI-SMSC.

Quite simply an IoT developer can focus on what they are good at knowing end-to-end transport is taken care of. We know Smart Meter deployments are opting for SMS and in the UK this reversed the decision of one of the major UK mobile operators from decommissioning its 2G network.



The Future

GSMA <https://www.gsma.com/iot/the-gsma-iot-infographic/> predict cellular IoT connections are due to surge from 760 million today to 3.1 billion in 2025. Of the 3.1 billion, 1.3 billion (42%) will run on 2G / 3G / 4G / 5G and the rest will run over LPWA (Low Power Wide Area) networks.

There is some significant barriers to launching an LPWA network such as LoRa, Sigfox, RPMA or Weightless not least of which is the significant investment needed to provide enough base stations to provide adequate coverage.

Of course IoT connections over 3G / 4G / 5G will be IP based as well as SMS but when you simply don't have an IP connection to the remote IoT device or its not guaranteed and you want a fall back mechanism then you are left with SMS.

Legend has it SMS was included in the specs to test end-to-end connections while rolling out the first GSM networks. No one predicted its success in the consumer market, many wrongly predicted its demise in 2014 and with the potential of IoT just starting to materialise it would take a brave pundit to predict anything else than its continued success.

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