

Industry is fighting the 5G war using obsolete tactics learnt from the introduction of previous generations of mobile comms technology.

By William Webb

Comment



Mobile users may not even notice the difference when data rates exceed 1Mbit/s

COMMUNICATIONS

Outdated strategies are the wrong approach to implementing 5G

THERE'S A SAYING that generals are always preparing to fight the previous war. They've learnt successful strategies from prior experience and are inclined to use them in the next battle. Learning from experience is critically important, but previous strategies can be inappropriate when other factors change.

It might be that the mobile community is fighting a 5G war with lessons learnt from previous generations – a conclusion drawn in my recent book 'The 5G Myth'.

In the past, introductions of new generations of mobile technology have concentrated on faster speeds and greater capacity. Many are assuming that 5G will continue this trend. Ericsson, for example, has said there is a general industry consensus "that traffic volumes will be multiplied 1,000 times; 100 times more devices will require connectivity; some applications will demand data rates 100 times the speeds that average networks

currently deliver; some will require near-zero latency; and the entire system will work to enable battery lives of up to 10 years."

But there are good reasons to think that things have changed. Regarding speed, we now have sufficient. Surveys suggest that once data rates to the mobile handset exceed 1Mbit/s users don't notice any real difference. At these rates video streaming is satisfactory and web browsing becomes constrained by network delays, not mobile speed. Our 4G systems already routinely deliver 10Mbit/s and trials have shown rates approaching 1Gbit/s. There is little need for 5G to raise the bar even further.

As for capacity, we may not need much more in the 5G era, and even if we did we may not be able to afford it. There is probably a limit to the capacity we need from our handsets. Data consumption is dominated by watching videos and there are only so many hours in the day we can dedicate to doing it. Further, much of our video consumption

will be at home, or with our mobile connected via Wi-Fi. Machines, as part of the Internet of Things, will generate traffic, but their data volumes only add to something like 0.03 per cent of total network traffic. It is likely that our mobile data usage will grow around 10-fold, but by the time we get to widespread 5G deployment we will be heading towards a plateau. Of course, new uses will materialise, but as an example, even Pokemon Go only added 0.1 per cent loading to our networks.

But if we did assume more capacity is needed then we would have to ask how to achieve it. Capacity gains are typically delivered with better technology. Years of optimising networks have taken us to a point where gains from new technology are small and unlikely to deliver materially improved capacity. Another approach is more spectrum, but with much already allocated, additional bands have less percentage impact, and in any case can be used by 4G. Finally, we show little propensity to pay more for our mobile connection – average monthly fees have been falling slowly over the last five years. This makes any investment case difficult; why build an expensive 5G network if there is no improvement in revenue?

This implies that the previous battles of cost and capacity may have been won. However, as we become ever more reliant on mobile devices, a new front is opening up – the need for consistent connectivity. Most people would rather be connected everywhere than have higher speeds where they are already connected. Problematic areas include trains, rural roads, remote areas and within some buildings. Ensuring a consistently good connection regardless of location would be a much better role for 5G.

There are some promising signs. A recent report by the UK's National Infrastructure Commission recommended concentrating on coverage in trains and alongside roads. Ofcom has recently challenged mobile operators to improve their coverage. And the tools to deliver coverage in trains and buildings using Wi-Fi which integrated seamlessly into the mobile handset are now available with early deployments by companies like EE. IoT capabilities are being deployed by Vodafone and others using emerging technologies within 4G.

To arrive at an alternative vision of 5G we need to dispel some myths. For example, the idea that autonomous cars need excellent connectivity is flawed – they're called autonomous for good reason. Of course, they will use whatever connectivity they find, but our safety cannot be dependent on some master computer controlling every vehicle on the road. And many users find it hard to believe that their consumption of data will plateau in around 10 years. Dispelling myths and setting out a better vision is the reason for the book.

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