NICTA weighs in on low-spec M2M nets

Commentary from National ICT Australia technology strategist Dr Dean Economou has added further weight to the idea of building or repurposing cheap, low performance mobile nets specifically for machine-to-machine applications. And he has pointed out that Australian firm Taggle is already going about constructing new infrastructure for that exact purpose.

In an interview with Market Clarity CEO Shara Evans, posted on her blog, Economou – who guides NICTA R&D in the digital economy, broadband applications, transport, infrastructure and logistics fields – discussed large-scale transport sensor networks, with sensors both in vehicles and on the roads. While acknowledging the high data rates of the 4G networks currently being deployed – and the possibilities of 5G technologies currently under development – Economou noted that M2M applications such as those smart transport systems actually needed to transmit relatively little data.

"The sort of data you need to transmit in order to coordinate transport with engines moving around is actually not a lot of information. It's just some coordinates and how fast you're going and what kind of vehicle you're in. It's really not a very large amount of data," he said. "There are lots of small points of data that are changing quickly, but compared to video or voice communication, it's actually rather small. So a very high-value communication can be easily carried on the current network."

Of course, commercially, current SIM card contact models might not fit well with a shift to an environment with thousands of connected sensors transmitting small amounts of data. But Economou pointed out that new models were beginning to emerge. "One approach is that you slave everything off the phone, so the car itself doesn't actually have any mobile data on it, and when it gets near a phone, the phone takes over for you," he said. "There's also something happening where manufacturers are actually getting the telcos to do special deals on SIM cards, where it's a very low volume of data over five years or something, and it's prepaid, so at the point of manufacture, you actually get a very simple data plan. That's another way to do it."

"Then the third approach, which is quite an intriguing one, is that there are companies like, which is actually an Aussie company. They're saying what we need is 0.5G, which is a very low bandwidth, very low cost and very widespread network for all these millions of devices which don't say much very often, but you want them connected and you want to know where they are. Taggle's actually building entirely new infrastructure that will allow you to locate things like water meters, and tags on sheep, and stuff like that."

Economou's comments came as TrueNet Communications and M2M Spectrum Networks in the US forge a partnership specifically to deploy a purpose-built M2M network – while noting that wireless carriers' current plans to decommission legacy 2G nets were actively impeding industry from exploring the possibilities of M2M.

"The other issue for these very large numbers of devices is battery life," added Economou. "You don't want to be plugging these things into power points. You don't want to be recharging batteries. You want something which extremely low power, and 3G and 4G tech is actually fairly high-power... this makes the case for an alternative infrastructure, which is specifically designed for some of these devices."

"The other clever thing I've seen... is that you have an intermediate system where you have a gateway to the same 3G, 4G network, which is a device which has a very big battery and maybe is a bit more expensive. But, it's got a very low-power radio interface

and it can basically act as a catchment for thousands and thousands of very low-powered devices using a special radio protocol that's designed for low-power-distributed devices."

While Economou did suggest that such large-scale, networks would still use class licensed spectrum bands, he also pointed out that the amount of spectrum actually required would be very small, commensurate with the devices' very limited bandwidth requirements.

Petroc Wilton