

INTERVIEW

Game of drones

Ailbhe Goodbody caught up with Robert Schena, CEO and chairman of Rajant Corp, at the recent MINExpo 2016 exhibition to talk about how the company is meeting demand for drones

Robert Schena at MINExpo 2016 with a BreadCrumb node that's mounted on a drone

Q How was Rajant Corp started?

Rajant has a couple of founders, and we founded the company right after 9/11 – as a reaction to it. There were obviously tremendous communications problems that day and for many months afterwards, so we set out to create a technology that was easy to set up, easy to deploy, and that, if you were bringing it somewhere where there were no networks, would be easy to set up; so easy that you wouldn't need too many networking people. That was the premise of the company – providing rapid-deploy, easy-to-administer, easy-to-install networks.

From there, we caught the attention of the US military. The military encouraged us to build a network technology – a meshing technology that could grow to a hundred or 200 or 500 nodes, and also have the network be in motion.

When people think of mobility in networking they usually think of their cell phone, which is a client device that roams from Tower A to Tower B.

However, we use infrastructure – those towers, in effect – that also moves; all elements of the network can be in motion. That's really what

Robert Schena, CEO and chairman of Rajant Corp



distinguishes us – there's no aspect of a Rajant network that can't be in motion. That led us to be on vehicles, and as there are a lot of vehicles in the mining industry, that led us to the mining industry.

Q What were the requirements for the mining industry?

We focused on rugged packaging because of the military requirements, and it turned out that the heavy industrial world, such as mining and oil and gas, need rugged packaging too.

Interestingly, there are probably more rugged requirements in the mining industry than there are in the military. When we started talking to folks in the mining industry they said that they're way more active than the military are. The military may have a mission for a couple of hours – however mining equipment might run 24 hours a day, seven days a week for years. That was eye-opening for us, and it's true – the mining industry puts high demands on its equipment.

So we went from the military to the mining industry, and we're on vehicles all over the world now, in almost 60 countries on six continents. We have yet to find a customer in Antarctica!

Our equipment was designed to go on trucks, in mining vehicles, and

in all kinds of ancillary vehicles. People can wear our technology, so a person can become a node on the network.

And then recently, with the declining costs in drones, we've taken our mesh technology – which is designed for two dimensions – and we've moved it into the air on drones, so now we have three dimensional networks.

Q How recently was it you added 3-D options?

It was just this last summer. We've partnered with Morehead State University out of eastern Kentucky [US]. Morehead State, interestingly, has one of five space and science engineering programmes in the US, and they have a programme where students hand-build satellites called CubeSats.

For various reasons we became familiar with them and then partnered with them – the students are fantastic, they actually hand-fabricate the satellites, five of which have been in space. They build and design the computers on the satellites; they write the software for the computers; they design and build the antennas; and they design and build the power supply.

We hired six of their folks who had just graduated, and we brought them

up to Malvern in Pennsylvania, which is our headquarters, this summer. They worked with Don Gilbreath, who I call 'Dr Drone'. They had a scope-work project to take our InstaMesh technology, put it on a very light-weight radio and make it the control system for a drone platform.

We've opened an office in Kentucky, and these graduates, who are full time Rajant employees, will be working as part of their mission to continually develop our drone technology.

Q Do you see this as being a really big growth area?

I do. And because of Morehead's history and current project experience in satellite development and CubeSat development, they will actually be putting a Morehead CubeSat around the moon in 2018 in a partnership with NASA and Lockheed Martin.

Our plan was to take our InstaMesh technology, which was designed for vehicles on the ground, and raise it up to vehicles in the air, and the next step after that will be vehicles in space.

Q For the mining industry, or in general?

For anybody who has really remote communications needs. Because we're so good at connectivity between vehicles, we're trying to expand that to all types of families of vehicles that are in motion. For us, we're taking our core technology and applying it, in effect, in different applications. One application was on trucks, another application was on drones, another application will be satellites.

This would not be space mining;



this would be creating communications platforms temporarily over very remote parts of the earth.

Q Would remote sites be the main area in the mining industry where you think this would be useful?

Well I just think inspection, measurements etc are the most useful. Theoretically you could do regular over-flights of your tailings pond and see whether there's motion – for example, did it move a centimetre? Or even things like stockpile measurements. Basically it's a low-cost aerial sensor plane.

We had a fellow here a few minutes ago [at the Rajant MINExpo booth] who wanted to monitor blast explosions; he wanted to look at the blasts from above so he can see how the rock flows. Some of these applications we'd never have thought of ourselves, so we're just exposing people to technology and saying 'you tell us how to use it'.

Q Which drone manufacturer is Rajant partnered with?

It doesn't matter; we're a generic communications package. Traditionally, drones have a separate communications network for sensors or video, and another one for flight controls. Well we've just integrated them – it's just our normal data network. We partnered with a company out of eastern Europe, which has a flight control system that basically works with about 80% of drones. It's just an app on your laptop. We integrated our InstaMesh technology with their flight control system and it basically created a generic flight control and comms system on a unified basis, and it also can go on ground-based robots, so you can now link ground-based robots to airborne robots.

Q If someone was interested in buying this for their mine, what sort of form would it come in? Would they supply the drone and then you customise it?

We actually have a drone kit now, which comes in a nice giant pelican case, you put it together yourself and you're in business. Or, if you have your own favourite drone, we ought to be able to integrate our flight control and comms package to that particular drone pretty quickly.

Q Is this the main thing that you're showcasing here at MINExpo?

No, we have all of our traditional products, and people are of course interested in that, but there's been a 'big boys with big toys' kind of reaction to the drone so we're pleasantly surprised at the level and enthusiasm of the reaction. We don't know of anybody else who's flying them in swarm formation.

Q So how big would these swarm formations get?

As many as you want - you could have 200 if you want. ♥

The LX5 is Rajant's premier BreadCrumb solution

Left: A drone with an integrated Rajant BreadCrumb module

About Rajant Corp

Rajant Corp is a provider of private wireless networks powered by the Kinetic Mesh network, BreadCrumb network nodes, and InstaMesh networking software. Its users can rapidly deploy a highly adaptable and scalable network that leverages the power of real-time data to deliver on-demand, critical business intelligence. Rajant BreadCrumbs can seamlessly integrate with any Wi-Fi or Ethernet-connected device to deliver low-latency, high-throughput data, voice and video applications across the meshed, self-healing network.