NETEVENTS

GLOBAL PRESS & ANALYST SUMMIT

Debate IV: Let's Redefine the Internet of Things — IoT Means Internet of Profits! Here's How Enterprises Can Tap Into This Shiny New Goldmine

Chaired by: Tam Dell'Oro, Founder & President, Dell'Oro Group

Panel:

Milind Pansare, Director of Strategic Marketing, Aerohive Networks

Tom Ramar, Global Vice President, Sales & Business Development, H3 Dynamics

Will Wise, Managing Director, IoT Institute

TAM DELL'ORO, DELL'ORO GROUP

We track telecommunications infrastructure, network infrastructure and data centre IT.

Taking a look at the last several years, if we look at all the equipment that builds the internet, that builds the voice networks, you can see that sales levels are flattening out, okay? One of the big reasons is because the telecom operators, which are quite a big portion of the folks that are buying all this equipment, their sales levels are starting to slow down and flatten out. If their sales levels are slowing down, well then so is their spending.

So taking a look at that, what does that do? It gets all the brains in the industry, in the networking industry, telecom high tech industry, to start thinking about what new things can we bring to generate revenue? What other opportunities are out there if we use technology and analytics? What businesses can these big customers of ours get into? Taking a look at the pot of gold - there are pots of gold out there. Taking a look at Federal Express, DHL and UPS, their sales

levels in 2015 were $170 billion. Hey, can we use technology to get involved with this?

The automobile industry is hundreds of billions of dollars, okay? There are other conveniences in logistics that folks are working on and these gentlemen are going to talk about some of the examples that either their business is currently involved in or is working towards building to get new revenue opportunities. I am going to ask each of you to introduce yourselves just to make sure I get the pronunciation - or you get the pronunciation correct - who you are and what your company does and then we'll launch into the questions.

WILL WISE, IOT INSTITUTE

Great, thanks Tam. So I'm Will Wise. I'm with Penton's IoT Institute. We're a digital research and event portfolio, heavily focused on industrial IoT and smart cities.

TOM RAMAR, H3 DYNAMICS

Thanks Will. I'm Tom Ramar. I'm with H3 Dynamics. Basically we develop and deploy autonomous Droneboxes in support of the internet of things. We're headquartered in Singapore and we've recently opened up an office here in the US.

MILIND PANSARE, AEROHIVE NETWORKS

I'm Milind Pansare. I'm with Aerohive Networks. We make wireless LAN access solutions that are cloud managed. So for example, if you look up here, you'll see some of our competitors' access points, so you can blame your Wi-Fi on them [laughs] if the Wi-Fi is slow, but that's essentially what we do.

TAM DELL'ORO

Okay, so why don't we look at some of the bigger areas of logistics and perhaps launch into an example of what you see happening in that realm.

WILL WISE

Okay, cool. Yeah I'll start. I think in general we're covering transportation a lot because they're - I mean look at FedEx and UPS. They've been doing IoT and connected services for years, which is why we can get packages in like five hours if we really need to. So one example of a company I've been talking to a lot is BNSF Railway. They're the largest freight railway company in the US with 20,000 miles of track and 23 states and I think it's a pretty good example of

using IoT and connected services of how it really filters through the whole sort of ecosystem.

So first of all, General Electric makes most of the train cars that they sell to BNSF and those are completely loaded up with analytics and sensors. So this is enabling BNSF to monitor their assets through literally 20 different states and then they've also started a drones air force if you will at BNSF to monitor this huge amount of the US that they cover. Do a little Google search on drones air force BNSF, you'll find some pretty cool articles and I think Tom's going to have some great things relative to how drones map into - as another sort of source for this.

So if you think about it, so the train cars, they're monitoring that. It's also enabling much better supply chain. So getting goods and services to all the right places faster but also with much higher quality results, whether that's for food and equipment. The other thing that they've done is like I mentioned with drones is they've actually significantly reduced safety risk on their tracks in terms of crashing, in terms of also theft in all of their properties and these are all things that are all tying together with using IoT and connected services.

The interesting aspect I think also is how this affects people. So think about a huge railway company. They have thousands and thousands of workers that are - a lot of are in a union, so things like technology and who is going to be in charge of the analytics and the drones, that's a big question in terms of training and also even union approval on these new skills. So one example on transportation, there's so many assets to it.

TAM DELL'ORO

Thank you Will. Tom?

TOM RAMAR

Nice segue.

WILL WISE

[Yeah].

TOM RAMAR

That was completely unplanned, unscripted. We did meet this morning but that was unscripted for sure. So just to give a little more colour on what we're doing, so we basically develop and design a Dronebox. You could place it out in the field, you can place it by railroad tracks and it launches itself. So it's a box that recharges. It can be on the grid power, off the grid. When it's off the grid, we

have basically solar panels on top and a methanol fuel cell reformer that will recharge it. You can program the waypoints - very easy interface. You program the waypoints, you tell the drone what you want it to do and where. You fly to one waypoint, take a picture, you go to the next waypoint, take a video, go to the next waypoint, you do thermal imaging.

All the while, if you require, it's transmitting 4G LTE. So you talk about the telcos looking for additional opportunities - we have some large telcos right now looking at us as a communications box, translate into revenue box, of deploying drone technology out into the field in support of IoT operations.

Two examples of that are I was just in eastern Washington, meeting with farmers out there and we're talking about high value crops. So honey crisp apples, cherries, wine grapes. How do we increase yield, so crop optimisation? In addition to that, while we were there, we learned about bird control. So deploying the drone boxes out there in support of crop optimisation, Dronebox can launch itself fly around the field - all in support of FAA Part 107 in full compliance of course - fly around the field, collect the data. It'll transmit that data to the farmer, give it NDVI information so the farmer can see where it is being over-fertilised, under-fertilised, over water, underwater, under watered and the farmer can make decisions at that time. Even all the way down to disease control.

That's just kind of one step. The bigger IoT picture here is not just the farmer being able to focus on crop optimisation but in addition to that, it's also about the full IoT package and networking with the truck suppliers that deliver the picking crates for when it's time to harvest. So the drone is telling the farmer here is a date range or day that's the best time to harvest based off rain, based off weather, based off sun, based off humidity. Farmer makes a decision, automatically coordinates with the truck company to bring the picking crates in, pulls the apples off the tree, which is automatically coordinating with the truck companies based off a cycle time, when to pick those apples up, which is automatically coordinating with the processing plant of what trucks are going to arrive and when and how much so they can load balance over time.

So the factory, the receiving plant doesn't have any downtime, the truckers certainly don't have any downtime and your contract, seasonal labour is optimised. One example I was not going to share, we did not discuss this morning that Will just brought up are trains. So there's an opportunity out there with the federal government called positive train control and basically in the wake of recent accidents involving trains and civilians and [in wrecks], trains have had to slow down. Fixed sensors only give you so much mobility, so through positive train control, there's discussions - strategically of course - on how to use Droneboxes to gives conductors greater visibility down the track to increase speed, to Will's point, increase supply chain efficiency and time to market.

So these are two very limited, very narrow examples and I'll pause there to give Milind some time.

TAM DELL'ORO

Great, great. You can see these guys are very enthusiastic and we're going to come back with…

MILIND PANSARE

Yeah each of us can talk about this…

TAM DELL'ORO

Yes, please.

MILIND PANSARE

…[laughs] this for an hour I think. So it's interesting that you brought up the example of farming because the IoT is actually very real in the consumer world today and it's real for small businesses. So I just met with a farmer a couple weeks ago who is concerned about the freezer and what temperature his freezer is at because his beef has to be safe for consumption and if you look at IoT, it's really all about the propagation of things, right, devices. So the moment you take these little sensors which are becoming extremely cheap. I could buy a bunch of them and in fact my home is IoT nerded out to have these little sensors in my wine cooler at home, I have a sensor in the soil and it's all going back to the Wi-Fi network.

What this enables you to do is actually now build intelligence because that farmer might know if his freezer is always at the right temperature, but you take that out to resell Wi-Fi to quick service restaurants like Chick-fil-As or Chipotles and you take that out and let's say some of these are franchised chains, how do you have the intelligence right at the edge of the network with the analytics of all the data coming from those devices to give you a little bit of an edge? How do you make sure you protect your brand and your safety in this particular food example or give yourself a competitive edge going back to the FedExs or the UPSs of the world?

By actually changing the characteristics of your network, that gives you a slight edge on the kind of data you have and where things are. That's made possible by putting all these little devices. So today there's about 10 billion, 12 billion endpoints on IoT so it's very real today and that's going to expand to about 30 billion depending on which analyst firm you want to pick in about four years.

So that's a lot of data and we'll talk about data a little bit more, but let me pass it on back to you.

TAM DELL'ORO

Okay.

WILL WISE

I'm just going to just add one 10 second comment. So translating into this sort of chain of different service revenue opportunities. So the other thing on the railway company, again they're across 23 states. They're starting to develop a safety monitoring business for all of the businesses that are along that 20,000 miles of track. So all of a sudden they can provide services to those businesses throughout their region. So I think you start to see this sort of ripple effect of services business that happens.

TAM DELL'ORO

One of the things that we were talking about this morning on our roundtable was how businesses, particularly the telecom operators, are going to have to transform. Their sales on voice are coming down like this, they're getting a lot of pressure on prices for data. So we're looking at what other services - maybe through analytics - what other services can we make available to them? Why don't we talk…

WILL WISE

Yeah, I'll comment. I mean one example, I had a meeting with Verizon about a month ago and Verizon's obviously a massively huge company and the group I was talking to is developing - has launched recently more services for smart cities. So traffic management, parking management, public safety. I said oh wow, what are your business objectives? Maybe $100 million in the first year? He goes no, as a new business entity, we're expected to generate $1 billion of new revenue and this is a new business group. So I think that gives you an idea of the scale here of what's going on.

Some of this does come down to things that I think in 10 years, we're just going to assume should be just normal. Whether you're in a factory environment, being able to read the health of your equipment automatically, equipment health as you would call it, all the way to public services that we have. Like Tam brought up, just the efficiency of parking more easily will actually reduce traffic by 30 per cent right away.

So these kind of services, the telecoms have a massive opportunity because of the connection points they already have in these huge metropolitan areas. The challenge there is do they have the right talent and organisational structure set up now? Do they have the right analytics experts? All of a sudden they've got to know about sensors and embedded system, so do they have that right army of talent in the organisation is absolutely key.

TOM RAMAR

Yeah. Excuse me. It's actually just to stem off that Will.

WILL WISE

Yeah.

TOM RAMAR

It's actually non-linear. It's government policy, it's regulation, it's organisational behaviour, how quickly people are able to fundamentally adapt to the technology and understanding. Just the last six months I've talked to no less than 1000 people about IoT and literally less than one per cent really understand. There's about 10 per cent that oh yeah, I've heard about IoT and they really have no understanding how it's going to change their life, how it's going to impact their life.

Two examples I want to give on that, on the industry and changing business models. One is related to driverless cars, a big topic here in the valley. Because driverless cars and autonomous drones are basically the same thing. So as it relates to driverless cars and IoT, it's - the class IoT example is Ford has announced they're going to manufacture driverless cars within the next 60 months will be commercially available.

How does that change their business model? So no longer will you see a check engine light in your car and then you go into the dealership or you have a little sticker in the upper left corner of your windshield that says in 2000 miles, you need to drive into the dealership and pay for an overpriced oil change. Rather what IoT is going to do from my perspective for cars is you're going to have sparkplug number three that's been running 56 degrees over its manufactured setting of tolerance for 26 hours and here's the impact, not only on that sparkplug but the rest of the car and here's when your car is expected to breakdown, or here is when it's going to incur additional costs for that car and automatically go into the shop based off an approval from you.

As it relates to Dronebox and H3 Dynamics, for us the future is integration of robotics. So that's fixed wing UAVs - just on a side note, we make fuel cells for fixed wing UAVs for long run endurance. It's the Dronebox, it's Groundbots…

TAM DELL'ORO

Okay.

TOM RAMAR

…it's underwater robotics. All connected to a domain expertise platform that anybody in the world can tap into.

TAM DELL'ORO

Thank you, Tom. Milind?

MILIND PANSARE

Yeah I think if you look at IoT and go back to what is IoT, it's really all about devices talking to devices on a network using the internet protocol. So these are connected devices. If you think about that, that actually disrupts every part of the network. That's what gives us companies like Aerohive an opportunity to disrupt Hewlett-Packard and Cisco which have 60 per cent of the Wi-Fi market and that gives us as a number three to come in and come up with new business models. It also, when you go back to the - you know, you go back one layer, it creates new business models for how - so the second part of IoT is really the networks of networks.

So if you think about your car, it has a whole bunch of IoT sensors and there's a little local area network in there talking to it. There's local intelligence. Then you're taking some of that and that's what Tesla is using, to actually create a much more powerful autonomous driving algorithm because they're taking all that data and they're sharing that. Each of these - the driverless car is a great example because Google has a slightly different approach. If you look at their cars, living in Silicon Valley is great because I was being tailgated by a Google self-driving car and then you have……an Uber…

WILL WISE

Self-driving car road rage, look out for that.

MILIND PANSARE

The point here is these are networks of networks. So you've got analytics going on inside the car. So there's new business models on how you can disrupt the servicing of the car. There is also new services that service providers like the Comcast, Verizons et cetera can provide because now instead of just providing

connectivity and managed services for Wi-Fi or networking to the branches, they can actually have an ecosystem built out around them that can say hey we'll manage your buildings more effectively because we know how to manage this building and that building and the other building and we've reduced energy by X per cent.

So we have real use cases we see where people can go in and create new managed providers, managed service providers and new kinds of [wires] and I think that's an important aspect of this. New business models are actually going to be the disruptor in here.

WILL WISE

Absolutely.

TAM DELL'ORO

We have about five minutes and I would let the audience ask questions. I'll take the first row here.

TAM DELL'ORO

Okay.

Unidentified Female

Sorry, just you are speaking about IoT, [about] a lot of things and what I was thinking is the networks itself, how many networks may we have to - may be have in the same area, how many [AP] for example? Just there are a lot of exchanges on the networks. Are we ready? What will be the new - the future of the networks? Because the network of the networks, okay, but the bandwidth is limited at a certain [moment].

MILIND PANSARE

Well that's actually a perfect question. Someone must have asked you to ask me this question - yes [laughs]. You know, what we are seeing is if you are going to have from 10 billion to 30 billion devices at the edge of the network, then the edge of the network has to be adaptable because you don't know when you put these access points today, what's going to be connected to them. It could be sensors out in the grapes, at each of the grapevines that's sending periodic data or it could be people wandering around in a big party that are slamming that network right now.

So what you started seeing is you have intelligent access points that can see what applications are running and they know what endpoints are connecting and they know if that thermostat is supposed to connect to a person or it's only supposed to connect back to a particular device. So what we are doing is something called software defined at the edge. So that's software defining the network. So you can make it - it's called SD-LAN. You can basically make the entire network programmable and you can swap out components because you really don't know today what you're going to need in terms of network capacity a year from now.

So you've got to design your network in a way that it's agile. They've been doing it in the data centre. That's what gave Facebook and Google an advantage a few years ago. It's time to do the same thing on the edge of the network because of IoT. That's what's pushing that.

TAM DELL'ORO

Thank you Milind.

TOM RAMAR

So is it fair to say peer-to-peer as opposed to device and protocol?

MILIND PANSARE

I think it's a bit of both, yeah.

Unidentified Female

That [unclear] and people to sell those [unclear] to, so everything will be on the same networks?

MILIND PANSARE

In fact a lot of the [edge] traffic is on the same network but you start segmenting it out as virtual network. So we already do that in wireless where you start putting it into VLANs and you have to have very specific policies that say hey, between nine and six o'clock in a school for example, you want to have kids maybe who are connecting their devices, are maybe not doing a lot of Facebook [with you], but maybe you have some mission critical process automation going on in your manufacturing organisation. How do you allow that traffic to have bandwidth priorities?

So there are some dynamic application based optimisations and policies that you can set on wireless networks today and even on wired networks at the edge, which I think [becomes important].

TAM DELL'ORO

Thank you Milind. Question there?

[Unidentified Female]

Yes a question for Tom please. Now you've all mentioned quite interesting case studies of how maximising the full potential of IoT can generate revenue. I mean Will spoke about how one organisation is expecting to make a billion dollars in revenue. So - but how do you actually weigh or measure the return on investment because some of these technologies don't come cheap?

TOM RAMAR

Yeah I think the academic answer is you have to model and deploy and try. I mean you have these emerging technologies across the board, whether it's again a methanol fuel cell reformer out in a field that's now a telecommunications box for a farmer or it's a driverless car. So it's an academic exercise that's deployed and measured over time.

TAM DELL'ORO

Okay thank you. We have another question right over here. I'll hand off my mic.

AREG ALIMIAN, IXIA

Hi, Areg Alimian with Ixia. You mentioned about connected cities and just a connected infrastructure and how can you monetise new revenue streams. Do you see - like if you take connected smart homes, that's a huge industry by itself or connected buildings, retail market, when will it become mainstream to where you can use for example RF fingerprinting data to track location and even identify people and push them content or make sense of health care applications for senior living for example? It's really not mainstream yet but do you see this happening?

WILL WISE

I think we talked a lot about security earlier in the day here. I think that the security concerns of the wider population are going to be the biggest difficult thing to get people over. I'll give you an example. The city of Chicago is doing

a massive IoT project, essentially putting a Fitbit on the whole city. Well it took them a whole extra year longer because the wider population was really, really concerned about that data privacy across the city.

So I think it can get there, but this next five years is going to be a lot of that, getting the wider population comfortable with it.

TOM RAMAR

I would just say, going back to the last question too, I think over time, from an IoT perspective, the hardware is going to have to be free and the revenue is really going to be in the data and the analytics at the end of the day. What - and predictive analytics too. I mean that's really - I don't think anyone is quite there. People are trying to be there in a very limited scope, but analytics and predictive analytics are where the revenue are going to be and the hardware is just the platform to collect.

MILIND PANSARE

Right. I think just to add to that, I think this is happening right now. In fact, we see [use] cases where it's the most - it's most in retail right now where people are using location and presence. As you carry these devices around, you have an IoT device in your pocket. You don't know it. When it's off, it's an IoT device. It's sending a beacon out to these Wi-Fi access points and they know whether you're inside or outside. They don't know exactly who you are until you log in but they know how many people are in here and retailers are using this today in an anonymised way and they have to be careful about data privacy concerns to actually know how many people are in a venue who are passers-by, how much footfall traffic gets generated and how it flows.

Real large retail chains are using that and we have examples where that's being done.

TAM DELL'ORO

Thanks. We're going to do one last question…

WILL WISE

Yep.

TAM DELL'ORO

We'll make the answer quick and then…

[Unidentified Male] A quick question for Will Wise. If you take the smart cities, you still have the question of business model and who is going to pay for what. So

you have different categories of application, you have the one that will help the city to save money, so that's easy to do, but then you have the other one that the city will have to build infrastructure for company to use and make money on that infrastructure. Do you think the cities are ready to do that and do you have examples of big cities that are ahead and that…

WILL WISE

Yeah, the question is yeah, there's a big challenge. Let's face it, most city governments are a challenge with their budgets and their expenses and all of that. So the cities that are doing - charging forward with getting government funding for IoT projects, tend to be ones that define two or three key areas, but it's got to be a public and private sector convening in terms of who is investing in it, because I don't know any one government that's just going to say great, we can invest a billion dollars in those services.

So the other thing with cities I think, our focus is, it's a journey. You can't just click, snap your fingers and it's a smart city. First you have to have smart [gig] connectivity set up. Then you can start to layer in the applications, but the good thing I'm seeing in the US is there's a lot of White House and US government funding going on. A recent example was Columbus, Ohio, which usually wouldn't be thought of as the first cutting edge city to get $40 million of funding to do a smart transportation system, but they won a $40 million bid from the US government to do a smart transportation system and they beat out like Austin, Texas, San Francisco.

So it really is public private sector combination, but I think there will be more funding that can be generated once these use cases start to emerge from places like Columbus, Copenhagen. These are some of the case studies we've been looking at.

TAM DELL'ORO

Thank you Will. Thank you Will and thank you all. These are just some examples. Please, during lunch time or any of the breaks, come ask these fellows more questions about how are you executing and making these services happen. Thank you.

[Applause]

MANEK DUBASH, NETEVENTS

Thank you Tam. Thank you to the panel and it's a fascinating topic and one we will no doubt return to, like so many others. Now we're going to move onto the next session and it's our Innovation Award…

[End]