Let's Talk Tech Podcast #6 transcript – Connecting the Dots: the Internet of Everything

Preview: **Chuck Martin:** "In the future, with what I call the Internet of Everything, the devices themselves will anticipate for us, and they will be providing the knowledge or information before we ask for it, because the technology can know, better than a human can know, what is needed next. So technology can know that a person walks into a store, and know that this is the fourth time they've been to that store, and it's the fifth time they've been to this category of product, so they are likely considering X or Y product. Then [it can] instantly provide information about a product before the consumer actually asks for it. And that's a totally different model than what we have today."

Introduction: **Stacey Kirkland**: Hello, and welcome to *Let's Talk Tech*, a monthly podcast that explores the latest emerging technologies, the people behind them, and how these trends will affect the way we work, live, and play. I'm Stacey Kirkland of C Spire, and in today's episode, show host Dave Miller interviews Chuck Martin, editor of *The Internet of Things Daily* [IoT Daily at Mediapost] and one of the world's foremost experts of the growing world-wide trend of connecting devices and services in homes and businesses to the Internet and consumers. The best-selling author will share his insights on why this trendy tech topic goes beyond the gaudy growth and investment numbers and *really* is about the next wave of hyper-connectivity, all designed to improve business profitability, innovation, and consumer quality of life.

Dave Miller: Welcome to C Spire's *Let's Talk Tech* podcast. I'm Dave Miller, and today we are discussing the Internet of Things, a term that has taken the tech world by storm in recent years. Joining us via phone to talk about this phenomena is Chuck Martin, editor of the IoT Daily for Mediapost and an expert on the growing, world-wide trend of connecting devices and services in homes and businesses to the Internet. Martin, CEO of Mobile Future Institute and a frequent keynote speaker around the world, is a *New York Times* bestselling author and is working on a new book he affectionately calls, *The Internet of Everything.* Welcome, Chuck.

Chuck Martin: Thanks, Dave. Great to be here.

Dave Miller: Well, we're really excited to have you on the program, as we take a deeper dive on this topic. Internet of Things basically refers to any device that is connected to the Internet. For the last 20 years or so, that connectivity has mostly been limited to computers, smart phones, and tablets, but in the last few years, it's evolved to encompass virtually the *entire* U.S. economy, including smart homes, cars, drones, wearables, toothbrushes, smoke detectors, surveillance cameras, ovens, toys, and yes, even robots. And there's a growing trend to use Internet-enabled sensors and chips in a broad swath of business sectors, including industrials like the farm sector, auto manufacturing, factory robots, oil rigs that send data back and forth to each other, jet engines that collect information about fuel efficiency, and even healthcare with skin patch monitors for babies and wearables for adults. In an introductory piece you wrote for the *IoT* Daily earlier this year, you said the big takeaway with the Internet of Things is that the technology can interact with itself, anticipating the needs of consumers in advance, requiring the need for creation of *new* forms of messaging and delivery. Can you explain what you meant by that?

Chuck Martin: Sure. If you look at the way we have communicated with technology for what seems like forever, but since the Internet-networking world started with the web, we actually tell the computer something, or we ask it for something, and then we expect and get something back. These days, you'll be doing a Google or Bing search for something and then finding out the information. Or using a mobile phone, and based on your location, "Show me where the best restaurant is around here." But in all

those cases, we are *actively* asking the technology to give us something. In the future, with what I call the Internet of Everything, the devices themselves will anticipate for us, and they will be providing the knowledge and the information before we ask for it. Because the technology can know, better than a human can know, what is needed next. So technology can know that a person walks into a store and know that this is the fourth time they've been to that store, and it's the fifth time they've been to this category of product, so they are likely considering X or Y product. Then [it can] instantly provide information about a product before the consumer actually asks for it. And that's a totally different model than what we have today.

Dave Miller: Wow, that's definitely cutting edge. There are numerous reports and research from some of the most respected and well-known analysts in the tech industry about the potential growth for what today is really a nascent sector. In one of your recent columns, you cited new research from Gartner that estimates the number of connected objects will grow 30 percent in 2016, to 4 billion IoT devices. That's about 4.4 million *new* things connected *every* 24 hours. By 2020, the number of connected devices will reach anywhere from 21 to 30 *billion*, depending on which study or research you cite. Meanwhile, consumer spending on IoT devices is expected to grow from an estimated $546 million dollars next year to more than $1 trillion dollars by 2020. While they differ on the rate of growth, all of the researchers agree that IoT will be massive, disruptive, and larger than the smart phone and tablet revolutions combined. Tell our listeners, Chuck, if you would, about the implications of this quantum change for consumers and businesses.

Chuck Martin: Well, there's never been anything like it. Eleven books ago, I was talking about the Internetworking of Everything. In those days, it was basically the beginning of the commercial web, and people missed the point. They thought it was really about getting online to sell something, when that was simply one aspect of the Internetworking of Everything. What's happening now is when you look at TVs—you've got something like a billion TVs worldwide, you've got a couple billion PCs, you've got 8 *billion* phones and a couple billion of those are smart phones, but ultimately we're moving to all smart phones. Those are basically the hub of connectivity in terms of connected objects. So IoE is allowing all these little things—sensors that can transmit information to each other and can process information—to operate everywhere from streetlights in LA to appliances so that they can self-monitor. So a lot of this activity will be technology monitoring itself without people having to involve themselves in it. And what that does for the world—and again, even if these numbers are off by a few billion, the numbers are stratospheric, no matter how you look at it, no matter whose estimates you take, they're all very, very large. We're really moving to a different environment—and this is everywhere in the world, by the way, not just the U.S. So this is a truly global phenomenon, where weather is being predicted in real time, based on where a person is, and then all of the sudden, the information is being provided to that person based on what the weather is going to be, even though the consumer hasn't checked the weather. The technology is basically checking it for them and providing, in advance, information or services that they are going to need, based on what the weather is going to be, even though the consumer has no idea what it's going to be.

Dave Miller: That's amazing. It really is. However, a few of the innovations and advances being discussed don't seem to make a lot of sense. For instance, a sensor for the Crock-Pot seems to fly in the face of the very reason Crock-Pots were developed in the first place. To borrow a phrase from direct

response TV marketer Ron Popeil, shouldn't we just "set it and forget it" when it comes to home appliances like the Crock-Pot? Is this an example of a broader challenge with the IoT, in that some of the products appear to be solutions in search of problems?

Chuck Martin: Yeah, some of the technology that's being created is borderline silly. But there's other technology that's really profound and has a lot of implications. The silly stuff is everything from the idea that your refrigerator is going to talk to your oven, and heaven knows what that conversation would be. What's happening is that people can create stuff. I go to CES (Consumer Electronics Show) in Las Vegas every year and a couple of years ago, everything was IoT, Internet of Things, and you could go through the hall and say, "That company's gonna be gone in a year. That company's gonna be gone in a year. That company's gonna be gone in a year." And then last year when I went, all those companies were gone, and there were different companies. And what's happening is that, fortunately, the market actually decides what makes sense and what doesn't. It's not the creators of the stuff or the technology; it's really the human behavior that will or won't accept some of these—what I consider—ridiculous uses of connected objects.

Some of the useful things, though, are the idea of being on the network all the time. That's been a real challenge for anybody going into a department store or big-box retailer trying to get Wi-Fi to work all the time. You would think that by now that's totally perfected, but it's really not. Someone goes to a concert, and all the sudden, there's not enough Wi-Fi for everybody there to be able to transmit photos or use Periscope, where people are transmitting something, essentially broadcasting live from their phone. So for those kinds of things, we're moving to something called 5G where the speed of the network is going be *many* times what it is today. And what that does is allow all these connected objects to essentially provide information and data that can be analyzed in real time in the cloud, and get that information to a consumer in time so that they can actually use it. So we're looking at extremely high speeds. And that's why you can put so many objects on this Internet of Everything.

By the way, the distinction I make between the IoT and the Internet of Everything is the IoT I view as all of these physical connected objects, which are happening—as you mentioned—by the billions. The Internet of Everything involves all that interaction connected to consumers and what it does to consumer behavior in terms of how people are going to go through their daily lives, how they are going to be working in the future. That's really what happens after all this physical technology gets done. Then the usage, the messaging, the communication, that's going to be riding on this totally new platform.

Dave Miller: Thanks for that clarification, Chuck. I have a follow up question along those same lines. According to some skeptics, the IoT, despite all its bluster and potential, is still largely a collection of possibilities. They say product sales and consumer adoption face many challenges, including conflicting wireless communication standards and uncertainty about the amount and type of processing power to put in these new-age gadgets. For example, in home automation, there are over a half a dozen technologies for device-makers to choose from, including Insteon, WiFi, Bluetooth, Zigbee, Z-Wave, and others. Do you have any sense of how quickly standards will be set and agreed upon by the industry?

Chuck Martin: Yeah, that stuff will all get sorted out in time. I don't really worry about that sort of thing. And it's not that it will be Standard A vs. Standard B vs. Standard C. It's going to be more of a model of "Here's how objects are going to work with each other." Basically, the objects will be adapting, as opposed to, a consumer having to fit a standard. This is not Betamax kind of stuff, or CD-R vs. CD-W. This is pretty sophisticated stuff that's coming down the pike. And consumers that are starting in this stuff, they don't necessarily start and say, "I need to go get 15 objects for a smart home." They more logically consider questions like, "Would a smart thermostat save me money?" That's sort of how it begins. Or, "Would I be healthier if I wore a fitness tracker?" I'm wearing multiple fitness trackers right now because I'm comparing multiple devices. I get read-outs all the time of what the activity is, and I'm not looking at which standard I am using, because they are all basically going into common databases. There are companies that don't even make a fitness tracker that has a database that will aggregate all this information. I see much more of *that* approach happening, where there's umbrella things that manage all that for you.

One of the big obstacles for consumers, by the way, is not the technology but the cost. What is it worth? "OK, I'm going to spend $200 on this. What do I get? What's the value to me?" It's really going to come down to the *value.* It's not going to come down to the standard, "Well, I'm going to pick this one vs. that one." It's going to be much more of, "OK, if I buy this, I can save this much on my heating bill every year. Or, "If I buy this, when I'm running, I can actually see on my Fitbit my heart rate in real time, as opposed to having to look at a phone for it." Or, "I'm going to get a smart watch that will give me haptic feedback, so that I get a little vibration if I've been sitting down for too long, and it's reminding me to get up so that I stay healthy and exercise a little bit."

So it's going to be starting with *little* things. It's not going to be one day the Internet of Everything just arrives. It's going to be more like one thing at a time, and then there will be a wave of those things, like we went through the fitness tracker craze where there was just a wave. Now what's going to be the big gift this holiday season? Well, probably a lot of drones are going to be sold, for sure. And drones are connected objects, by the way. Those are not up there by themselves. They are basically connecting to other things, and they're going to be all interconnected, and ultimately there will be all these drones that work together and are communicating with each other, telling each other where they are, so there will be sort of a fleet of drones. It won't be *a* drone doing something controlled by an individual; it'll be drones controlled by themselves.

Dave Miller: Speaking of drones, on a related note, looming just around the corner are serious privacy and security concerns on how companies will use all of the data generated by these billions of new sensors and Internet-connected video cameras. I know I wouldn't want my car insurance rates boosted just because my carrier had access to some sensors in my car on how well I operate or do not operate my car. And what happens to the family when the infant wearing a baby monitor dies from SIDS? Will business practices, privacy policies, and liability requirements be adjusted to bring consumers the benefits of this technology without the Big-Brother worries and concerns?

Chuck Martin: First, it's going happen over time. The manufacturers are extremely aware of these issues. I'm in the marketplace all the time. It's not like this is a secret in the industry. It's really more of a secret to consumers. They don't understand. You've got things like televisions that are capturing what people are watching on a second by second basis, and they can report that to advertisers so that they can look at viewing habits. And consumers have no idea that's what their connected television does. The new Barbie doll has technology in it where the processors are just like Siri in iPhones. They've got processors in the cloud, essentially analyzing the voice of the child and creating a conversation with the child. So all that kind of stuff is already here. That's not futuristic stuff. Samsung TV has had that stuff for a long time. It's not magic, it's just interactive technology.

What's happening is that the consumer knowledge is not yet keeping pace with the technological development, so that has to even out, and it will from a marking standpoint. And then for security and privacy, they're totally different issues. Security is a *really* big issue and privacy is a *really* big issue as well. In the future, from a security standpoint, this stuff is going to get hacked, there's no way around it. There have been cases already, and when those cases come up, it becomes a really big deal because it gets a lot of publicity. But there are going to be many, many of those kinds of things that will come up. And what happens is that then the industry says, "Oh, we need to fix that." And what it's doing is finding problems that maybe people didn't know were going to exist, and then they fix them. So these TVs, for example, they have patches so that they can't do that. So that the default is that it doesn't capture information, and then if you want it to, you can tell it to. So a lot of it is a learning curve, and the financial services companies and the attorneys—anywhere there is big money involved - they are all over this stuff. It's part of their DNA, so security is not something they add in at the end, it's something they build in right from the core part of it.

So the big companies—the Intels and the Ciscos—they're all extremely aware of this stuff and totally on top of it. On the privacy issue, it's likely that in the future, because of all this information flow and big data, that consumer information is going to be of higher value to a company, and consumers ultimately are going to realize this, and they are going to start to be the owner and marketer of this information about their behavior. So it's going to be, "OK, you, company, I like you and I trust you, so you can have these kinds of things for information from me. You, this other company, I'm not too sure about you, so you can't actually have any information about me." So that's where it's going to be controlled.

Dave Miller: Well, this has all been fascinating. I appreciate the time you spent with us on the program today, Chuck. Obviously we've been delving into the IoT and how this emerging tech trend really redefines and reorders what it means to live and work in the 21st century. I f you'd like to learn more about the IoT, follow Chuck Martin on Twitter @chuckmartin, or read his IoT daily column at **www.Mediapost.com**. Thanks again for coming on the program, Chuck, and we'll look forward to catching up with you soon.

Chuck Martin: You bet. Thanks so much Dave.

Episode #7 Preview: **Stacey Kirkland**: Thanks for listening to today's podcast. You can follow Chuck Martin on Twitter @chuckmartin, or read his columns at **www.Mediapost.com**. If you like the show, subscribe through Soundcloud, iTunes, Stitcher, or TuneIn. Join us next time as we talk with one of the nation's leading experts on the front lines of efforts to integrate computer science in the classroom and a Mississippi entrepreneur who is co-founder of the non-profit Base Camp Coding Academy, which provides minority youth with a fast-paced, year-long vocational training program in computer programming. Learn how these specialized classroom and vocational training programs promise to help alleviate the shortage of skilled programmers in the U.S. workforce and enable students to develop more critical thinking and problem solving skills.

###