

[00:00:01] Richard Miles: Inventivity. What does it mean? The state of being inventive, creating or designing new things or thoughts? Hello, I'm Richard Miles. Welcome to The Inventivity Pod. Join us as we speak to inventors, entrepreneurs and visionaries who are using inventivity to change the world. They will bring us alongside their journey as they share their personal stories from start to finish, including the triumphs, the failures, and everything in between.

[00:00:32] James Di Virgilio: I'm your host, James Di Virgilio, and welcome to our series exploring smart Homes, a look at what it is, who's involved, what the future is going to look like, thanks to innovators and their inventivity. Our guest today is Andrew Gebhart, PC Mags senior analyst covering smart home and wearable devices. Andrew, welcome to the program. Thanks for being here.

[00:00:51] Andrew Gebhart: Well, thank you very much for having me. I'm excited to talk all the ins and outs of smart home stuff.

[00:00:57] James Di Virgilio: Now, I'd be remiss if I didn't open this segment by talking about the carousel of progress at Disney world. I grew up as a Floridian. The carousel of progress starts way back in, you know, the early 19 hundreds, and it goes through these different decades of, like, what the home looks like with regards to technology. And I always imagine smart home stuff from that lens of, like, what is going to happen in the future, how automated is this stuff going to be? But as a way of definition for those that have not got to enjoy the carousel of progress, which I immensely do enjoy what makes a smart home smart nowadays? What are we discussing here? Is it Alexa? Is it Google home? Is it something different? What is this?

[00:01:35] Andrew Gebhart: I tend to avoid gatekeeping. Right. Like, if you have something in your home that's smart, that you enjoy calling your home smart, I'm all for, like, I'll sign off on the dotted line if you want me to. If you have voice controls, if you have a smart tv you can control from your phone, let's make the threshold and the barrier to entry super low. If you brought home a particularly fancy poster from Disney World showing the carousel of progress, let's call that a smart thing. But basic smarts to me, I think, is just like having something that you can control, that's connected, that you can control with your

phone or with your voice, whether that's an Amazon Echo, whether that's a tv, you know, I think the threshold's real basic.

[00:02:24] James Di Virgilio: Yeah. And to your point, we've been trying to improve, like the carousel of progress mentions, our livability at home for a long time, whether it's a light switch, it's an electric lamp versus a gas lantern, whatever the case may be. And now we're able to do so with what is more formally described as technology, wifi devices, et cetera. How smart do you see our homes becoming in the next five to ten years? For a long time, there's been the idea of, like, you walk into your house and you wave your hands around, and stuff starts happening, right? Like, your toast is made, your eggs are cooked. Like, everything happens for you. It's kind of like the Jetsons, if you will. How close are we to having something that is maybe truly automated and beyond even what we're seeing now? Again, with the power of a lot of the home technologies, like Alexa, like others, are we near that? Are we still pretty far away from having, like, a truly automated experience?

[00:03:13] Andrew Gebhart: Probably. We still have a ways to go. That said, almost all of the pieces, like, you can see them there. It just generally takes companies a while to put things together. Like, we're just now. The smart home's been around for a decade, more than a decade, and we're just now getting to the point where different products from different companies are good at talking with each other, like, just now, and it's just happening, and it's still not polished. So, progress can be slow because different companies have different interests and things like that. But the pieces are there. You know, we have at this point, in terms of walking into your kitchen and having a meal ready, we have lots of smart ovens. That's been a thing for a while. And, like, at Ces, you're seeing AI integrated into that cooking. You know, we have smart locks, light bulbs, and then smart robots would maybe be the next big step to actually start really taking some chores off of your plate. And it's funny that you mentioned the Jetsons, because in my dream world of, like, a smart home, I want Rosie the robot. I don't want to do chores at all. And we're getting there. I think we're getting there. I think a lot of the pieces are there. But whether we'll actually see it all come to fruition in a way that everybody's really happy about in five to ten years, you know, I don't know. Fingers crossed.

[00:04:44] James Di Virgilio: Yeah. The dream often exceeds the reality. But to your point, like, when we stop and take the temperature, the fact that the Roombas and products like that, now, they actually work. If you have a level surface and a floor, like, I don't have one.

My friends have some, they have level houses with level floors. I do not. But they rave about how these latest generations seem to actually work. And when you think about it, it's kind of outrageous. This robot sits in its charger. You let it free, and it can go through your entire house and make sure that it's cleaning it up. And with AI now being able to better guide what it's missed, what it hasn't, you're not far away from being able to at least clean your floors regularly with reliability. And that is truly, to me, still kind of amazing if you look at all of human history, but also it can feel slow if you're imagining what you were saying, which is like, I don't want to do a single chore again. I want them all to be done as well as I do, then maybe not there yet, but hit me with a few of your maybe favorite technologies on the immediate horizon that might be in our homes soon.

[00:05:39] Andrew Gebhart: Sure. So, let's talk robot vacuums. They're getting better, and they're getting to the point where they can mop and vacuum all in one. And so those exist, and a couple of them are pretty good at doing it. And what we're going to see on the near-term horizon is they're going to get better at doing it without cross contamination. So right now, there isn't a perfect solution between mopping and vacuuming at the same time. Like, the mop's either are attached and there's Ecovacs and Roborock, they'll do a little lift, but that's still, if you have carpets that unless they're like really low pile, even the lift, it's going to drag it over the carpet a little bit. And then Roomba has this mop arm that, like, lifts it up and over, and so it sits on top of the robot, so no cross contamination. But Ecovacs and Roborock can clean their own mop pads, and Roomba can't, right, because it's still sitting in there. So, what you want is the one that's gonna do all the things, avoid any cross contamination, clean all the floors. And we're getting close. You know, at CES, a couple mentioned the ability to remove their own mop pads in the base station, you know, and so then they go out, they come back, they get them, you know, we're talking like a pit stop and on a racing track, but if you don't have to do any of it, then it's fine, just let it go. And then. And then robots. So, Rosie the robot is the ideal and we're far away from that. But Amazon Astro was real, and Samsung Bali showed off at CES where it's just this little yellow robot friend and robot vacuums are getting cameras on them to roam and double as security cameras. Some of these things, whether it's home robots or vacuums, like fixing the little gaps in their functionality to effectively take chores out or double up what the things can do, whether it's robovac and security camera in the same device is all very exciting and it's steps on all of those parameters are coming in the very near future.

[00:07:52] James Di Virgilio: Yeah, it's really, it's amazing just to hear you talk about a robot that, like you said, with a pit stop, can mop, can vacuum, it can also change itself, give

itself, retire, so to speak, with regards to the mop like that. That is an amazing reality that's actually being developed. As you said, right now it's a problem people are working on solving. And then you also have things, of course, like the ring doorbell, which I think is maybe second to like an Alexa or Google Home, maybe the most known devices, a lot of notoriety both, you know, pro and con, at least with people looking at having security and also a way with Amazon deliveries and things that you can just sort of keep track of what's happening with the ring. But I want to then pivot for a second before you reenter into what's being invented scenario, into privacy, because with the ring, I think there's a lot of privacy concerns people may have with neighbors, other stuff, et cetera, with all of these devices now that they are becoming so sophisticated. And a lot of them, as you mentioned on the mopping robots, have cameras. What are some concerns that are being frequently brought up with consumers in the industry? Just about privacy in general as we move towards a more automated end goal.

[00:08:54] Andrew Gebhart: Filmed home reality, mentioning privacy and ring in the same sentence. I mean, they go hand in hand because rings had the occasional leak. And then there's always been this partnership that they've had with police to like share footage from sidewalks, from neighborhoods of people passing by and that is shared without their consent. Now ring is finally nixing that program, which is a good thing. But I mean, the smarter our homes get, the more generally speaking info that they need in order to be able to do their jobs. So, it is a double-edged sword. It's absolutely a double-edged sword because they need that info to do their jobs. But at the same time, that info of yours is being sent to the cloud and processed and smart locks. Smart doorbells can recognize neighbors and faces, and smart locks can open the door with your face or your palm or your fingerprint or whatever. All of that is really cool and convenient, but all of it requires biometric data. So, it's a double-edged sword, and it is intimidating to an extent. And it's something that, if you are very concerned about privacy, is maybe something you should, in fact, be cautious of. And I think different people have thresholds at different places. Like, you don't want an Amazon astro if you actually know what's roaming around your place with the camera. But I want to see where that progress is going to lead and then, you know, feel it out once we're in there. So, I am for pushing forward on these sort of things. You just have to do it in a reasonable manner. But privacy concerns are incredibly real.

[00:10:42] James Di Virgilio: Yeah. And obviously, the history of technological innovation is often fear. At the beginning, something is new and different. It does lead to more connectivity, as you mentioned. And then, generally speaking, I'm a big human naturalist, I

think that it's most often in most things, not the tool itself, but the human nature behind it, that can make something good, bad or indifferent. And I think that's true here. I just came back in from the country a week ago, and I have global entry. And so, biometrically, I walked into the new system, and I've done global entry for ten years now, but not like this, where I didn't even make it to the camera bay and the system recognized me and let me go through. I didn't stop, I didn't stand still. It was unreal. You're just like, okay. I mean, that is kind of awesome. And I suppose I've reached a point where it's like, at some point, if everyone has the same data on everyone, what happens with that? It's weird. You sort of become like, well, I guess at some point, I'm already filmed and noted, and every website and thing requires all the same stuff. If one has it, they all have it. And perhaps there's a weird level of acceptance from, like, if I can't keep it from everyone, then who am I keeping it from? Maybe I take the technological upgrade, but with that, you mentioned that there are ways people do this by sending it to the cloud. But some people, I think, are working on some technologies that don't send images and things into the cloud. Tell us a little bit about some of those, perhaps in the marketplace.

[00:12:08] Andrew Gebhart: Yeah, of course. So along with the push to innovate and gain biometric data, there is an equal push, thankfully, from some companies, to maintain privacy. A big example, I was talking about interoperability earlier and matter is this unifying sort of protocol that a lot of companies are on board. So, Apple, Amazon, Google and the like are all signed on to get things working together. And matter has code, has protocol in there to help as many things as possible function locally and different devices, so different robot vacuums and different companies and different even like smart devices. Your Amazon Echo is getting better at processing voice commands without sending the ping to the cloud. It can store certain commands and certain answers locally, which a, speeds things up and b, pings the cloud less often, which is only a good thing if you're concerned about privacy because you mentioned that it's up to the individual. But really what we're talking about, you, what we're concerned about isn't like your neighbor with an Amazon Echo, it's Amazon. It's not the individual, it's the company that is collecting all this data. So, the more that they can play nice and the more that they can come forward and say, hey, no, we hear, the concerns ring. Backing down from sharing info with police and Amazon, doing things to store information locally, the more these companies agree to play nice because people are voicing their concerns is a good, viable means of pushback and of balancing the scales. And it's a great way of, there's now a handful of different ways you can do smarts, at least with basic sensors and things like that that are processed locally entirely.

[00:14:13] James Di Virgilio: And it's sort of like if you have a computer, you know, back in the old days, and still to this day, if you store something locally and you're not attached to a network, nobody can get a hold of that to actually have the physical hard drive, right? These are the old movies back in the day where you're bringing your hard drive with you, or you bring it on a flash stick and you're trying to transport what you have, then you have the cloud now, which is way more efficient, much more simple, of course, to utilize. But now that data is there, and once it's there, it's no longer just on your computer as you're mentioning it. So, it's not local, it can be accessed by others. And if others access it, it's up to them to what they may do with it for good or bad purposes. So, I think it's, as you mentioned, it's great that you obviously have a marketplace that's trying to figure out what may be favored in the future. And near-term is working on solutions, obviously, to make that work. So, as we look at smart homes, in my own home, I have Echo devices everywhere. I utilize them all the time. I love asking Alexa some fun questions, like, are you listening to me? All the time? Like anybody else might do, in the privacy realm. But I can't imagine already a world where I have to go back and turn all my own lights off. In fact, when I go places and I have to flip the switches, it's kind of crazy to think that I'm like, I can't believe I have to walk across this room to flip a switch. So as this technology gets adopted, as you're going to these conferences, like, how quickly are you seeing people just get really adjusted to these automated life rhythms? And how quickly is sort of the way we used to live not that long ago, becoming, I don't want to say a nuisance, but almost for me, it's like, a nuisance. Like, I can't believe I have to go do this myself. I mean, it's so quickly becoming the norm, right?

[00:15:44] Andrew Gebhart: Kind of, you know, I love that idea of, like, what a burden to get off the couch and flip the light switch. And that's sort of the way that when I hear people making fun of the smart home, they talk about that exact great tragedy or inconvenience of it. And to me, it sort of depends on who you ask and where you are. Like, I, at the moment, couldn't really imagine going back. There's so much convenience in the smarts and the voice commands. I mean, voice commands in particular. Think five years ago and how bad they were. Like, before Amazon Echo, before Google Assistant, voice commands were a joke for a sitcom. They didn't do anything. And now the fact that they can recognize a huge variety of commands is super cool. And I think that's the way, in particular, that it's permeated everywhere. And everyone knows what an Amazon Echo is. Everybody knows who Alexa is. Everybody knows what a nest thermostat is, a ring doorbell. Like, there's a handful of things that have permeated entirely, but there's a fine line between the people

you talk to at CES and where they are. And when I go home and visit my family in Michigan or, like, I go out and away from the world that is inundated in tech because I will still get questions from older relatives, like, and why don't you want to get off the couch to flip the light switch? You know, because there isn't. It hasn't permeated everywhere to the same extent once you escape the people who live this as part of our lives. But voice commands have, and there is that knowledge that's getting everywhere. But I do think that there are two different pools of people in terms of how far and how much the technology has integrated.

[00:17:40] James Di Virgilio: Yeah, that's perfect. Segue into my follow up question to that, which is, where are we in the adoption curve or lifecycle, would you say? For home tech, for smart home tech? Are we still in the early adoption phase?

[00:17:52] Andrew Gebhart: Where are we in that, the boundary of early adoption? I think we're a little past that because I don't think it's niche anymore, because you can find nest thermostats everywhere, because you can find Amazon Echoes everywhere. And there was a time where the smart home was niche, right. For a long time, because it sort of came onto the scene well after some other established things. And I remember in my early days covering it, you were sitting there watching at WWDC or Google IO or some of these other big tech conferences and be like, oh, please mention smart home. Oh, please. That would give me something cool to talk about here and to write about. But whether or not it came up was a gamble. And now just those digital assistants and matter support comes up all the time. Like, there are these big headline topics that come up all the time. So, I think we're at whatever the phase after early adopter, I don't know if there's as good of a name, sophomore adopter. I don't know. We're in step two, where certain aspects of it have indeed permeated the wide breadth of tech adopters. And things like Amazon Echo and your smart tvs and smart locks and doorbells and thermostats, they aren't as janky as they used to be, where it's like, hey, go get this smart light switch, and half of the time, you'll just be able to turn it on from your app, and then the other time, you're gonna have to do some troubleshooting. But half of the time, it's gonna be super cool. Never. When your family and friends are over and you're trying to show it off, it's always gonna mess up when you do that. But the other half of the time is going to be really cool. We've gotten past that. I think things are consistent now, at least from the big names. And so, sophomore adopters, ah, is the term. I think we're at that next stage where everybody owns a smartphone. Everybody owns a smartphone. And we're not anywhere close to that with smart home tech, but it's not early adopter anymore.

[00:20:01] James Di Virgilio: Yeah, you might say that we're in, to use your smartphone analogy, that we're in sort of the late BlackBerry stages, where there's not a true smartphone yet. People are becoming aware of them. They'll be getting their first BlackBerry, and the next thing that happens, of course, are smartphones, and then fears after that everyone has one. Right? And so, I think that's a good point to illustrate of where we are, which means we've come a long way. Smart homes have been talked about, again, in the carousel of progress. One of the opening scenes is people doing laundry on a farm, and it takes them 10 hours a day just to do their stuff. And then the next scene is, wow, I have like 5 hours of free time. But we are getting really close to where home builders are going to start doing this more at the normal level, where they're going to put in smart tech. It's going to be something that is just a normal feature. Vehicles already have some of this, etcetera. But, there's one part we've left out that I saved for the end, because I think it could become perhaps the controller of many things. But that is where our wearables are, obviously at home, you can have sleep aids, you can have things tracking your own biometric data, your heartbeat, et cetera. How important do you see wearables becoming in home tech? Are they going to link these together? Maybe your watch that you wear or something even else becomes sort of the master controller of all things, along with your voice, like, what does that look like and what are people working on?

[00:21:16] Andrew Gebhart: Yes, I think wearables are extremely important because smartwatches and things like that are becoming more common. Samsung showed off a smart ring at their unpacked event, and so that category is sort of entering the mainstream conversation after being a little bit on the fringe. And smartwatches are very much mainstream right now. And in terms of the overlap between wearables and smart home right now, for the most part it's incidental because the wearable has the app on it, the Google Home app, the Amazon Alexa app, the wearable has the assistant on it. So, you can activate the same smart home command with your voice to your watch that you could with your phone. The overlap at the moment is incidental, and right now, I'm not seeing wearables. The push I'm seeing with wearables is more and more health stuff. You know, they want the gap between those fitness tracker focused devices and the actual smart watch to shrink and shrink and shrink. And that's what's happening because smartwatches are being able to track fancy things like Vo two, Max and Spo two. And when you run, they can track your vertical oscillation and your ground contact balance and on your watch, your heart rate and things like that. The Samsung Galaxy six could track your body fat percentage and things like that. So, to me that is where wearables are pushing right now.



And then the smart home integration is just kind of coming along for the ride. But one of the things that's going to happen, were going to get an AI assistant where it's not just Alexa and Google Assistant and what they're capable of, but you're going to actually get a generative AI like a Chat GPT that is built into a smart ring or a smartwatch. And then being able to have an actual conversation with your wearable is going to incidentally make smart home controls on those devices significantly better, even if it's not the focus. And at some point, maybe it turns into the focus. The Amazon Echo caught everybody by surprise. The Nest thermostat caught everybody by surprise. Nobody knew these devices were coming or that this was a thing. And so, the next big smart home gadget could be something we're not watching for. And it could come from the wearable space, but from what I'm seeing right now, it's incidental progress, but it's progress, nonetheless.

[00:23:54] James Di Virgilio: Yeah, you mentioned a lot of really good stuff there. It comes to mind when you talked about AI, of course, in the home space and other stuff is like do we have Jarvis from Iron man? Do we have Hal, you know, from 2001 Space Odyssey? Or do, or do we even have Skynet? Right, from Terminator. It all depends on what you look at, where maybe things will go with those options, but to your point, they will certainly be coming and certainly can make things a lot more streamlined and simple. All right, hit me with three recommendations for someone that has no experience at all with smart home stuff. Like here's three things you could look at buying that would be a good starter and then three for like the expert level. Maybe you haven't heard of this yet, but this is going to be like a bleeding edge tech.

[00:24:34] Andrew Gebhart: Sure, if you're just starting in the smart home, you want something with voice controls. Go get either an Amazon Echo Dot, go get an Amazon Echo show for something with a screen. Or, you know, thankfully Google has the Nest hub and the Nest mini so you have options there. And simple voice controls with simple touchscreens. You'll be surprised how often you want to give a voice command to do something simple like set a timer or check a recipe. And those smart displays, a lot of the times they can also do sunrise alarms, which are really neat. Robot vacuums are another obvious choice, so. And that one is, is relatively harmless, especially if you don't get one with a camera. You know, some of the more advanced ones have the cameras and have the advanced navigation, which can give folks the heebie jeebies. But if you get, like, a mid tier one, it's usually using Lidar, and then, so it'll still be efficient in navigation, but then it's cleaning your home. There's not a whole lot of data coming out. So, let's say a robot vacuum, a smart speaker or a smart display. And then if you want the, if you want your

medium tier, honestly, I think smart doorbells are pretty cool too, you know, and there's, there's just a lot going on there. For more advanced stuff, there's a lot of, like, smart home security kits out there, like Simplisafe and things like that are pretty good. And outfitting your home with all of that is a nice big project that someone could undertake that would make your home way smarter really quickly. I still think, even for the advanced folks, if you don't have a voice assistant, go get yourself a voice assistant. But maybe instead of going and getting the Echo Dot, you go get the Echo show, or you go get the nest hub max, go get something bigger with better speakers. Because if you know this is something that you want to invest in, then having the bigger devices, usually they have the exact same digital functionality, but what you get is a bigger screen, better hardware, better speakers. So, if you're not a beginner, go spend the more money and get to something that when you play your rock and roll music, you want to be able to feel it. So, something bigger there. A smart home security system. And then if you're advanced and you're feeling comfortable with it, go get yourself an actual smart lock. This is something that gives people some, again, heebie jeebies jitters, because if it's hacked, blah, blah, blah, blah. But most of these companies have so many fail safes in place, especially around the smart locks. And it's just so convenient with geofencing and Bluetooth and all these different metrics, to be able to lock your door when you leave or, oh, my gosh, I don't know if my door was locked. Oh, there, I checked it on my phone. And then when you get home, unlocking it with your palm or your fingerprint or unlocking it in your car before you grab the loads of groceries. Smart entry as a whole. So, there are smart garage door openers and things like that that can make your home so much more convenient without necessarily adding, you know, the cameras and everything like that that do facial biometrics and things that can really make people concerned.

[00:27:59] James Di Virgilio: Yeah, those are some great recommendations. And perhaps to be too reductive, I will say, when you look at smart locks and other things and the fear that exists with those, as we went to the human nature side earlier, plenty of people can pick a lock, whether you have a deadbolt or something else. If they want to get in, they can get in. But I think I like to look at the hurdles or barriers to entry. Will the average person have a harder time getting into your home if you have biometric security? Does it take more sophistication? Is it more difficult? I think the answer to that question is, generally speaking, yes, when compared to a regular lock. And so there are always trade offs. As one of my favorites, writers and thinkers of all time, Thomas Sowell, says, it's rarely a pure solution. It's always a trade. You choose the trade off that you want. And what you've talked about today, Andrew, has been just a million different ways that you could look at trade offs between how you're living now and how you could live here. But we have more

choice than ever right in our homes, thanks to these smart homes. And you've done an excellent job, I think, canvassing so many things in a way that is fascinating, interesting. So again, thank you for being with us. You can catch Andrew on PCMag, where he's your senior analyst covering smart home and wearable devices. He's frequently contributing and writing there, so you can find a lot more of him on the internet as well. Just Google his name and you'll see him there. But Andrew, thanks so much for being with us. Really insightful podcast today.

[00:29:16] Andrew Gebhart: Well, thank you very much for having me. It was great to get to talk to you about all of these, different smart home avenues and the waves of the future to make Disney World proud.

[00:29:25] James Di Virgilio: Well, I certainly hope you've enjoyed this episode. Until next time, I'm James Di Virgilio.

[00:29:31] James Di Virgilio: The Inventivity Pod is produced by the Cade Museum for Creativity and Inspiration Invention, located in Gainesville, Florida. Richard Miles and me, James Di Virgilio, are your podcast hosts. Podcasts are recorded at the Heartwood Soundstage in Gainesville and edited and mixed by Rob Rothschild. Be sure to subscribe to The Inventivity Pod wherever you get your podcast and leave a comment or review to let us know how we're doing. Until next time, be inventive.