THE “INTERNET OF THINGS” (IOT) means many things for businesses and consumers, but at the heart of it, we see the promise that products will have intelligence, connectivity and a resulting value that will disrupt most every market.

This is not only inevitable. It is happening right now. If you are one of yesterday’s “unconnected” product companies (a traditional manufacturer) you need to begin making the IoT transition if you hope to remain competitive. But this is far easier said than done.

This paper will share what IoT means for your business (both the threat and opportunity) and how to take three critical first steps that will set you on a path towards smart, connected products your customers will love and a radically transformed business model coinciding with the explosion of “connected everythings.”

Yesterday’s products were mechanical and electrical systems that neither had smarts nor connectivity. Now, product companies are able to integrate sensing, intelligence and digital connection into everyday products, giving them powerful new capabilities by connecting them up to each other and to the Internet. According to one estimate, by 2020 there will be 24 billion devices connected to the Internet, and this doesn’t even include things such as smartphones, tablets and laptops (BI Intelligence, April 2016). This network will connect companies directly to their customers, open new business opportunities, produce vast new data sets, and transform the very nature of competition.

WHAT IS THE INTERNET OF THINGS?
AKA SMART, CONNECTED PRODUCTS OR CONNECTED DEVICES.

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Years ago, you could expect to be on the S&P500 for 60 years once you earned a spot—but now? 17 yrs. Or less.

**THE SCARIEST GRAPH IN THE BUSINESS**

Average Company Lifespan on the S&P500

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**WHY MANUFACTURERS MUST TRANSITION TO THE IoT**

**THE INTERNET IS CHANGING EVERYTHING**

Anyone can start a company today. Economic and geographic barriers have all but disappeared, capital is plentiful and easy to source, and digital technologies are reshaping the economics of doing business. It’s an exciting time to be a startup—and a frightening time to be a billion dollar dinosaur.

These changes render previously held sustainable competitive advantages moot. Proprietary technology, brand equity, a captive market—none of these things can be counted on anymore. The only remaining source of truly sustainable competitive advantage is the ability to offer and continually innovate experiences that customers love. Companies that don’t continually adapt in order to remain meaningful to customers quickly disappear.

Industries such as media, entertainment, banking and retail have felt these shocks already. Just look at newspapers, the record companies, or retailers like BestBuy. Now these same forces are soon to play out in product and manufacturing industries. It’s time to get ready. You don’t want to be the Blockbuster of the product world.

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*DATA: INNOSIGHT/RICHARD N. FOSTER/STANDARD & POOR’S*
We are seeing this first in an explosion of smart, connected product startups. New companies are entering your space all the time and they’re not only intimately familiar with the IoT, they come ready connected in ways you may have yet to consider. Smart connections to consumers is their business model, and it’s why they’re able to disrupt markets dominated by disconnected competitors.

Nest was one of the first to demonstrate this new dynamic. Its smart, connected thermostat makes home comfort more convenient and efficient while giving Nest much deeper insight and connection to users. The Honeywell’s of the world had to rethink their businesses in response. Or take Uber. Essentially, Uber transforms regular cars into IoT cars. The disruption it has brought to the transportation market is profound; we see not only taxis but car companies scrambling to compete. Consumers are turning to Uber for last minute travel needs and daily travel, with many forgoing buying a car all together. According to an Autodata Survey, 22 percent of Uber users aged 18 to 64 who have used the service in the past 6 months, said they were delaying or holding off buying a new car for that reason.

The service has filled a much larger need—possibly even larger than it ever intended.

The explosion of smart, connected products is inevitable, as it offers more accessible, less expensive and more meaningful experiences all around. The disruption that companies such as Netflix, Amazon, and Reddit wrought in the entertainment, retail and media sectors is now coming to product and manufacturing industries.

If you make physical products, the world is shifting beneath your feet. But it’s not all gloom and doom—there are real opportunities here for you as well.

THE IoT IS A THREAT TO PRODUCT MANUFACTURERS

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THE IoT PRESENTS ENORMOUS OPPORTUNITY FOR DIRECT CONSUMER ENGAGEMENT

If product companies can successfully transition, the IoT holds tremendous promise for them.

When comparing how your business model works today, building smart, connected products means you can have much higher engagement with consumers than you do now. The “arms-length” relationship of yesterday is no longer the standard, nor is it acceptable in this hyper competitive market.

For example, a manufacturer of kitchen appliances spends millions on marketing and product development, but relies on retailers to make the sale. The manufacturer doesn’t know who bought its product and struggles to make a meaningful connection with them. They may not see or touch that customer again for five or ten years, assuming the customer returns at all. But if that kitchen appliance company created a valued smart, connected experience, they could learn who their customer is, collect data on product usage, connect customers within communities and open new revenue streams like subscriptions to recipe services or even delivery of ingredients.

This potential for direct consumer engagement means you cannot only sell directly to them, but also learn directly about their needs and behaviors. This makes your company more agile in product development and innovation, while creating more loyal customers, increasing revenue potential and ultimately increasing profitability.

You’ll know when customers make a purchase, what they’ve purchased and if there’s a problem or specific success to capitalize on (or fix). You’ll be able to react, anticipate and personalize product and service offerings. The sum of these parts can mean the difference between an enviable or bankrupt bottom line.

Such is the promise of the IoT for product manufacturers. But to seize this opportunity you must create smart, connected products that customers want.

Enhanced connectivity offers the ability to disintermediate distribution channels and connect directly to consumers, allowing you to build business models with higher frequency of revenue, deeper customer understanding, and ultimately higher customer loyalty. Essentially, it can transform product companies into “product as a service” companies.

Internet Of Things Opportunities

- Increased brand attachment
- More revenue opportunities
- Greater agility in product development and innovation
- Greater control of overall value chain

This potential for direct consumer engagement means you cannot only sell directly to them, but also learn directly about their needs and behaviors. This makes your company more agile in product development and innovation, while creating more loyal customers, increasing revenue potential and ultimately increasing profitability.
Smart, connected products fundamentally change the relationship between a product company and consumers, by creating much higher direct engagement. And numerous research studies have shown that higher consumer engagement has direct, measurable business impact.
The IoT is inevitable. If you are a product manufacturer, you can either be wiped out by it, or use it to transform your business. It’s clear which one you’d rather do. The question is: How? The key is creating smart, connected products that customers truly value.

3 STEPS TO A MEANINGFUL IoT PRODUCT OFFERING

The winners in the smart, connected product race will be those companies that are able to create products that aren’t just smart and connected, but that give people truly valuable and meaningful experiences. Companies poised to capture the lion’s share of consumers five or more years from now will use this window of time wisely, as they begin to grasp the Internet of Meaningful Things. Because that is something to get excited about.

The full transition to being an IoT company is going to be incredibly difficult and will require answering lots of other tough questions—like these. But for now, they can wait.

Instead, as you get serious about transitioning your company from products to smart, connected products, the search for customer value and the creation of meaningful experiences should be your primary focus.

AVOIDING GIMMICKS, FINDING VALUE

When manufacturers are faced with transitioning to IoT there’s a huge temptation to just act: quickly throw a Bluetooth chipset into your existing product and build an app to control the product. A lot of this is happening, but it doesn’t seem to be working. Many consumers aren’t excited about the IoT. As research from the likes of Nielsen has shown, people view IoT as an overhyped buzzword, a shiny gimmick that’s produced few useful products—and they’re right. People don’t want tweeting fridges. They want real value.

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What is our pricing model? How do we ensure consumer privacy? What level of network do we need? How much network bandwidth do we need? Should we have an open or closed system? How much functionality in the device vs. in the cloud? What kind of radio access technology should be used? Do we need hub-and-spoke or many-to-many connectivity? How will we build in redundancy? Should we sell data to outside partners? Should we embrace an emerging IoT platform standard? How do we handle authentication? What kind of data security is required? Who owns the data? What do we build internally vs. externally? Are we going to disintermediate our current channels?
THREE STEPS TO CREATING A TRULY MEANINGFUL SMART, CONNECTED PRODUCT OFFERING

**STEP 1**
**REFRAME**
Shift your perspective from what you make to why you make it, and reframe your business around the jobs you can do for people.

**STEP 2**
**ENVISION**
Create an inspiring vision of the future customer experience.

**STEP 3**
**EXPERIMENT**
Build-and-test your way to that vision by creating an Experience Laboratory.
Many of IoT-billed things that companies are creating aren’t resonating with consumers. These businesses are approaching development from their OWN perspective, not the consumer’s. They’re adding features that enhance a product but not necessarily features that enhance a user’s experience or add value. They’re focusing on offering technology, not on offering what works best to get the job done. They’re stuck on the “what” when the real question is “why.”

For example, when Altitude set out to discover what innovation in the digital age could mean for a spirits company, we didn’t start by asking “How can we add technology to a bottle of vodka?” Instead, we asked, “Why do people enjoy cocktails? And why aren’t they making more at home?” Through deep qualitative research with consumers we were able to articulate four home cocktail opportunity spaces (or jobs to be done) and designed of an exciting new Connected Cocktail offering and business.

“People don’t want to buy a drill bit. They want to buy a hole.”- THEODORE LEVITT.

Your customers don’t care about what you make, how you make it, or how you make money. They care about getting functional, social and emotional “jobs” done. Thinking through how to help consumers make holes is a very different model than sorting out how to make a better drill bit.
Developing empathy and insights like these are the right starting point for any innovation, but are beyond critical when transitioning your company from products to smart, connected products. With IoT, your offering can be so much more than a product—bottle of vodka, or an appliance, or a car, or a tool—it can be a true experience, a system. Our learnings about people and cocktails led us to envision an ambitious IoT solution that would enhance the magic of at-home cocktails, remove the barriers, and give a spirits company a decided advantage in customer intimacy and revenue generation. Such a system is simply impossible to imagine without the deep understanding of why your customer would want it to begin with.

**STEM: A SMART, CONNECTED COCKTAIL SYSTEM**

“Smart caps” are placed in your spirits and paired with an app, allowing the app to know what’s in your bar. It can then help you plan a drink menu based on your ingredients and order you what you’re missing. When a guest chooses a drink to make, the caps on the appropriate ingredients light up and automatically dispense the right volume when pouring. At the end of the party, the app automatically alerts you to what’s run out so you can order replenishment.
In fact, Michael Porter and Jim Heppelmann, in their seminal piece on smart, connected products, took the IoT thinking even further. They predict that the IoT will fundamentally reshape industries from “product based” to “system based.” “As products become components of larger systems, the customer value proposition broadens. Product quality and features need to be supplemented by interoperability with related products. Companies must decide where to play in this new world.”

They are suggesting that industries will completely realign around jobs-to-be-done, rather than around the products that people use to do them. The Uber example speaks to this. Millennials want transportation, that’s the “job to be done.” They don’t want a taxi or a new car; just reliable, economical transportation that’s easy to connect with. Uber fills that bill. Now, imagine what happens when we have connected, self-driving cars. Will anyone actually buy them or will we just consume “transportation” when we need it? Is there such thing as a “car industry” or is it a “personal transportation” industry?

The first step in your company’s transition to IoT is not to make a connected version of the product you have today, but to fundamentally reframe how you think about what business you are in and the opportunity space open to you through smart, connected products. You have to forget about what you make and focus on why you make it. You have to discover what jobs your customers really want to get done.

Shifting from a company perspective to a consumer perspective requires empathy and understanding. And empathy takes time. Reframing your thinking around the WHY instead of WHAT isn’t easy. It entails observing and talking to consumers, on their turf where they’re comfortable. It means spending time with the data you collect, looking for patterns, and boiling down the true meaning and opportunities. It’s the only way to see the world through your customers’ eyes and authentically understand them so that you can imagine future IoT offerings that fit in, create value, and have meaning.

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As products become components of larger systems, the customer value proposition broadens. Product quality and features need to be supplemented by interoperability with related products. Companies must decide where to play in this new world.”
Now that you know what customers really care about, you get to imagine a future state in which you help them achieve it. Project out 10 or 20 years and create a vision of what your offering is, how it helps customers get their jobs done, and how it’s good for business. The point of this exercise isn’t to precisely describe where your company is headed. Instead, the goal is to inspire action, clarify what’s most important, and align teams on a shared objective. The vision should be used early and often to keep everyone motivated and pointed in the same direction.

IoT offerings and businesses are very complicated, so it’s critical that this vision also goes well beyond words and really brings your future to life. Use immersive, multisensory media to tell the story. This isn’t about PowerPoint charts and Excel sheets. There are many options, from quick and inexpensive like storyboards or videos made from narration and stills, to the more robust and expensive, like live action videos with computer animated or fully-modeled prototypes.

While the media you choose should depend on what works best in your organization and how dramatic a change of course you are looking for, some things about the vision are musts. It’s critical that the vision satisfy the three criteria on the right.

It’s Desirable
It does valuable jobs for people. The future vision must be something you feel strongly customers will want. Make sure that in telling the story, you focus as much on the people as your solution and that your argument is based on deep qualitative research.

It’s Feasible
At this stage you don’t have to work out every nut and bolt, but the vision shouldn’t strain credulity. It should be based on technology that has a reasonable chance of existing within the envisioned time frame. It’s also wise to avoid tying the vision to any one particular platform technology, and instead emphasize that flexibility will be critical to success.

It’s Viable
The center of the story must be the value delivered to people, but you also must show that it’s good for business. Pay attention to new revenue streams, learning about customers, increased agility and deeper brand loyalty.
FAIL EARLY AND FAST

Along the way, you are likely to fail, so fail early and fail fast. Rapidly prototype solutions—including the business model—and test it with real customers. This could involve storyboarding, creating a mockup app, videos, or even a foam model, and then going out and testing with your target audience.

Iterating early and often is much less expensive than realizing you have a faulty or misguided product too late in the game.

For example, Altitude was hired to develop a service offering that would help United States active duty military members to find recreational activities during their free time (they have lots of challenges—such as unfamiliarity with surroundings and an ever changing operational tempo—that makes this difficult today). We quickly mocked up an app on paper and tested it on base. The app was designed to make it easy to search and find recreational activities, but the testing quickly revealed that the first filter service members apply is “what are my buddies doing?” With this fast learning under our belts, we were able to easily adapt the app design before even a single line of code had been written.
BUILD A NIMBLE, CROSS-FUNCTIONAL TEAM AND GIVE THEM A PLACE TO WORK

To do these experiments, you need a team. This should be a small, cross-functional and multi-disciplinary team, capable of prototyping and testing complete experiences. They will need to look at problems from the Desirability, Viability and Feasibility perspectives simultaneously. They will need to be able to imagine, design and experiment with all the aspects of a complete connected experience: brand, communications, hardware, software, services, data analytics and pricing. They will need to be creative and analytical. And they’ll need to be exceptionally motivated and hard working. Think about building a startup inside your company.

They need a place to work. A physical location that facilitates collaboration, prototyping, and bonding. It doesn’t have to be fancy, but it also can’t be a cubicle farm. Think: open plan, lots of light, well-designed furniture and the right tools to do the job. Lots of wall space—to hang pictures and post-its—and white boards are also a must. A question we hear often from companies starting out in IoT is “How do we transition to a business of the future while still maintaining the one we have today?” This is a critically important consideration. The key is to keep the Experience Laboratory both separate from, and connected to, the rest of the company. Thinking about WHY not the WHAT, and experimenting with new offerings and business models in an IoT development process, is going to challenge all the existing norms and models of your current business.

You can’t ask everyone to do this or the meat and potatoes of your business will come crashing to a halt. So the Experience Laboratory needs to be a distinct group, in a distinct space, with distinct measurements and incentives, reporting outside the normal chain of command. At the same time, if it’s “too distinct” it will be resented and ignored by the rest of the business and its solutions will never find their way into the business units and out to the market. The Experience Laboratory should be staffed by people who have deep personal relationships with the rest of the business. They should be good communicators and well respected. They need to be encouraged to keep their relationships alive by frequently reconnecting with the business units, inviting them into existing processes, sharing results, and asking for their opinion.
The transition to an IoT-based model may take longer to happen than the hype machine would have us believe. But it will happen. To survive, manufacturers will have to adapt and transform. Otherwise, they’ll be easy pickings for nimble and well-funded new startups and for companies who are transitioning to IoT successfully. Customers have specific needs and “jobs to be done” that the winners in the new connected world need to understand. Identifying these needs now, building a vision for the future, and establishing a means of experimenting on it, will set you on a path towards a successful IoT transition. Or you could just wait for the Netflix of your industry to get there first.

THE TIME IS NOW!
Altitude, an award-winning design and innovation firm, creates breakthrough products and experiences that deeply resonate with users and build lasting business success for clients. We believe that true innovation arises when talent and spirited intellectual engagement meets business acumen and a deep understanding of consumer needs and desires. With expertise in strategy, design, and technology, Altitude uncovers powerful opportunities and transforms them into solutions in the market that move business forward. Since 1992, Altitude has worked with companies worldwide, including Bose, Black & Decker, Briggs & Stratton, Colgate, DeWalt, Margaritaville, Nike, Thermo Scientific, and Under Armour.

ABOUT THE AUTHOR

Dan Ostrower is the Chief Executive Officer of Altitude. Dan’s passion is the creation of new products, services, and businesses that improve people’s lives and help companies prosper. He has done so through a career that spans technology and strategy, leadership and execution, big company and startup.

Prior to Altitude, Dan was a leader and founder of startups for over 10 years. He helped raise over $40M in venture financing and brought multiple new technologies and products to markets. Before his startup career, Dan was a consultant with Monitor where he helped transform Fortune 500 companies in a variety of industries. Dan has a Bachelor’s degree in Engineering from Harvard and an MBA and MSE from Stanford.

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