

Value Creation and the Internet of Things

How the Behavior Economy will shape the 4th Industrial Revolution (and what you should do about it).

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Introduction

Value in the Behavior Economy

When my son was turning five years old I bought him a desk globe. It had raised reliefs, was illuminated, and had touch controls that allowed one to set it to spin from 5 to 60 minutes.

It had the physical and the political cartography of the Earth, and 12 inches in diameter, with an aluminum die-cast meridian, and a rich cherry wood base. I wanted my son to have a sense of the Earth; I wanted him to learn the relationships between continents and between countries. The Globe had physicality in his room, as well as a practical application. He could show this globe to his friends, and show of his knowledge of the various countries and capitals, by pointing to them with precision on his globe. In the course of time, in less than two years, this thing was no longer a favorite, and found its way slowly to the basement.

A few years later, on his eighth birthday, my father bought him the Leapfrog Quantum Leap interactive 'smart globe', a rotating plastic globe of about 14 inches diameter, that with the simple touch of a 'magic pen' was opening up with facts, phrases, music, games and challenges. You can hear the national anthems of various countries, you can hear about the demographics of the place and population numbers, anything you wanted to know about the geography of the place or the economic system. This globe will teach you about the oceans, the continents, the animals, the languages spoken in the various countries you might be looking at, or be curious about. And just when you thought you were bored, you could start playing a variety of games based on your knowledge of each country's characteristics. This is about as smart a globe can be for its times. It was 2002.

By 2009 we had four personal computers in our house, one for each member of the family, and each one with the full screen version of Google Earth installed. Indeed, the first image on the screen looked just like a spinning globe, but as soon as we started navigating towards a country, everything magically changed. And the magic continued every year since then, with the introduction of more and more features and more and more details, that make Google Earth such a fascinating platform.

People get to create and place their own data on Google Earth, can add three-dimensional buildings, can change content on the platform in ways that were not possible with the Quantum Leap or the classic spinning globe. Add to that the Street View feature, and you can spend hours in any city on the planet, seeing details that were impossible to see before, without going there in person. A new universe of possibility, on everyone's desktop. No longer imagined, but made visible and real, at the touch of the computer's mouse.

Google Earth typifies the behavior economy, by being a platform for intellectual engagement, continually upgrading its value for the user, and involving the user at all times in its growth. By contrast, the products of the industrial economy represented by the first spinning globe, and by the Quantum Leap version, diminish in value, engagement and interest with the passing of time.

Google Earth is just the beginning. It is the new breed of an engagement platform, one that increases its value and its usefulness in somebody's life, with the rate of technological developments that makes its features possible. One could view maps of the Moon or Mars, or could see the depth of the oceans. One could get directions for street names, or fly from one place to another using the flight simulator feature, and obviously, and naturally, one can navigate through the streets of any major city, at street level, in Street View.

Google Earth functions as a knowledge platform with multiple layers of information that can be turned on or off. This is *Value Delivery* in its most intrinsic form. In one's control, at any time.

There are big differences between these three ways of experiencing the world. In a classic rotating globe, the afforded interactions are between a very small group and the product, and they are restricted to the limited functions of the product, and the limited space for allowing information on the surface of a 12-inch globe. The Quantum Leap version is a *tactical value* creation example, where a product is enhanced by the new technology available, and the experience is expanded by the multiple features connected to geography, and the knowledge the user seeks about it which technology now affords. The Quantum Leap is, at best, enhancing and expanding an experience. This is representative of the traditional model of technology development, and as far as strategy, it is an easy prediction to make, using forecasting. Given the number of technology developments of the time, and a reduction in the cost of components, certain features will be present on certain products. If we have a candle that sings 'happy birthday' once lit, how long before we have a spinning globe that speaks, and sings the national anthems of the countries on the globe?

Both the traditional globe and the Quantum Leap version are examples of the industrial economy, where products are used by dedicated users, one at a time, and company growth is proportional to the number of products the producer can sell. Scaling up in this model means really 'scaling up'. Producing and selling more. Consuming more energy, more material and more labor, at every step in the value chain.

By contrast, Google Earth is a strategic value creation example. This is value creation that redefines the experience a user will have with knowledge, and with geography. Google Earth is not an expansion of the Quantum Leap product, because none of the experiences possible with Google Earth were possible before. *Strategic value always redefines the experience.*

The Quantum Globe was a bridge between the industrial economy and the behavior economy. It was the necessary schooling that our behavior required in order to comprehend and seek the value of Google Earth. Just like the movie Toy Story, which was the bridge to a new form of entertainment, one created exclusively on a digital platform.

A platform where we can tell new stories, in a completely new way. A place where we can imagine worlds that don't exist, but make them real for viewers. Avatar. Gladiator. A new territory for the human narrative, and for the human experience.

Google Earth exemplifies the behavior economy, by being a platform for behavior on which the value increases with a number of behaviors possible. In the behavior economy, platforms *are value variable*. The growth of companies that develop platforms is not connected to how many platforms they make, but to how many users are connected to this platform. Growth in this case is also connected to the depth of engagement and to the relationship a user has to the platform, and the multiple layers of experience that one can participate in while on the platform.

A World where Everything is Connected

The grounding question that will allow organizations to emerge with purpose from these transformative times is simply this: *how many times a day do you use the Internet?*

Answering this question grounds you in the sense of allowing you to understand the importance of the Internet in your life, and in the life of your organization, and thus of the importance of the Internet of Things about to emerge. We are living in monumental times, times in which transformation requires the resetting of our frameworks and mindsets, towards possibilities we can't even describe.

We are looking conveniently at what is about to happen as an extension of what we already have, and what we have is life with the Internet. While saying this, we need to pause and ask a very simple question: *what is the Internet?*

The simple answer is that the Internet is a series of *connected computers*. Another answer would be an attempt at describing the multiple benefits that connected computers might bring into one's life, or into an organization's life. And without thinking too much, we can all make very long lists of how the Internet, the fact that computers are connected between themselves, has affected and shaped our life in the past 25 years. In the Internet's connectivity, what is important is not that computers are connected, but the fact that *people are connected* through computers. The real

definition of the Internet, and the real answer to the question ‘what is the Internet?’ might be something like this: **people connected through computers**.

Now let us look at the meaning of the Internet of Things. A technical definition of the Internet of Things defines it as an ecosystem in which people, places, and objects are connected to one another. In other words, the Internet as we defined it before, but now extended to objects and places.

It is wrong to think of the Internet of Things as connecting people, because people need social objects to connect with other people. People need reasons to connect, they need to understand what is the ‘benefit’, the value of connecting, what we are connecting for? The real definition of the Internet of Things might be: *people connected to people they care about through everything being connected*.

When things are connected they must be connected for a purpose, and that is the purpose of communication, for the purpose of a value exchange between them. At this point we need analogies in order to unpack the potential of the ecosystem of everything being connected, in order to understand its potential, its rules and its benefits.

There are a few models – analogies - we might look at, trying to understand the potential of the ecology of everything connected. Let's look at nature. Take a tree for example: the leaves are connected to the branches, the branches connected to the trunk, the trunk is connected to the roots, and the roots connect to the ground. The human passing by is connected through the sense of smell and touch; the flower nearby is connected through the ground and the air, and the bee that just touched its petals.

These are all organic connections, where contact is made through matter. In an organic connection, everything provides value to everything else. The bee provides value to the flower, the flower provides value to the tree, and the tree provides value to the human. I see the ‘*everything connected*’ ecology much in the same way.

The generative question in the ‘*Everything Connected*’ ecology is:

If Every Person, Object and Place could communicate to one another, What Would be the Subject of their Conversations?

To answer this question we have to further ask:

- How can we add value to each other?
- What do people want to know in places?
- How can a place add value to an object?
- What do places want to know?
- How can two objects add value to each other?
- What do objects want to know in places?
- What do objects want to know about people in places?
- What do objects want to know about objects?

The reality is that we're not ready yet to answer these questions in a comprehensive way that includes a new frame for thinking about what the Internet of Things is. If we assume that life will continue to be what it is, but this time with *'everything connected'* by the Internet of Things, we will be looking at change, and the future, as being nothing more than the status quo plus the new thing. But this is not how change works. We are not looking at *life as it is + the Internet*, post the acceptance of the World Wide Web, we are looking at *life transformed by the Internet*. Change involves transformation. Remember the grounding question at the beginning of this section and your answer to it. Now multiply that answer about 3.1 billion times¹.

Transformation requires rethinking of possibility. Rethink what is possible and what new benefits we can bring into our lives when everything is connected. When applied to sectors of the economy, the future of entertainment, as an example, is not *entertainment + 'Everything Connected'*, but entertainment redefined by *'Everything being Connected'*. And the same about the future of gaming, or the future of education. It will not be education as usual but now in a new ecology, it will be education *transformed by everything being connected*.

We need a great deal of foresight, and a lot less forecasting when thinking about the potential of the Internet of Things. Forecasting allows us to make a prediction about when a technology becomes affordable and mainstream, and how it is to be used to add value to an existing product.

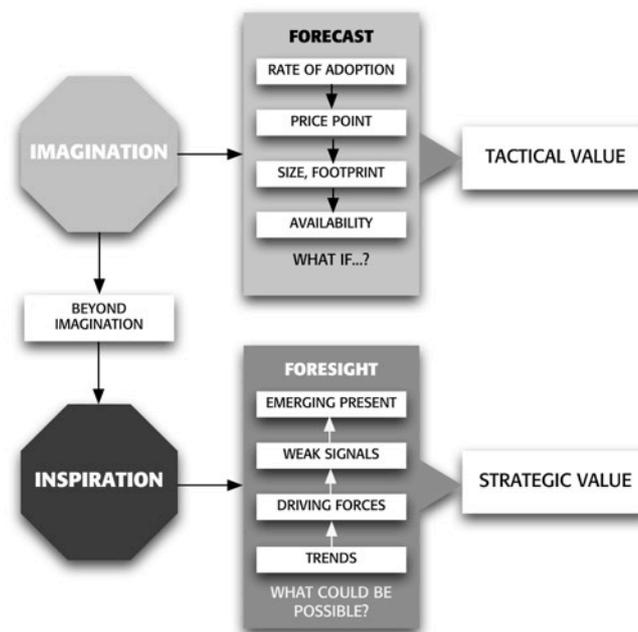


Figure 0.1. Beyond Imagination

¹ <http://www.internetlivestats.com/internet-users/>

The forecasting question is simple and precise: *'How will this technology allow me to expand and enhance the experience users have with my product?'* The Quantum Leap desk globe is one such example of expanding and enhancing an existing experience. By contrast, the foresight question is ambiguous: *'What could be possible?'* While answering this question with foresight, we are creating strategic value, reframing life and redefining our capabilities.

'Everything being connected' is forcing us to reconsider our limits, and most of all the limits of our imagination. In the Internet of Things, the rate and speed of possibility is far surpassing the rate and speed with which we can imagine it. We need to move beyond imagination, into a state of inspiration, triggered by the sheer possibility we can sense.

Strategic foresight is a methodology that creates strategic value. By contrast, forecasting results in a prediction – by such a date, at this rate of, these features will be available at this cost - which creates tactical value, exemplified as a new and enhanced interaction between users and a product. The Internet of Things will result in a massive release of possibility, transforming organizations into a behavior economy enterprise, because most things will be connected, and they would have to behave as if they are.

Our imagination is no longer enough because we can only imagine what we've experienced. The imagination is the place in the brain where we create images of objects and concepts not present to the senses. The prerequisite for this ability is for us to have an understanding and previous experience of the thing we are imagining, or what is called apperception. A past experience or the memory of an experience of what the thing looks like, or feels like. If you think of the Statue of Liberty, you can see it even if it's not present to your senses; you see it in the imagination. Which means we cannot imagine things we have not experienced, seen, or we remember. This also means that everything you are thinking right now about a possible future, the most outrageous scenario you can imagine about is actually doable right now. Tomorrow. And why? Because you can only think of what you know, of what you have perceptually experienced. The task here is to surpass the limits of our imagination, to turn off our disbelief in things, and to start designing benefits for people's lives not based on what we know, but based on what we know to be right and necessary.

Imagination is about answers to the question *'what if?'* Inspiration is about answers to the question *'what could be possible?'*

Intrinsic Behavior as a New Economic Model

There is a perplexing reality for economists and media commentators in regards to the Internet economy, what is it, and how is it different than the economy which we understood – the industrial model of production and consumption, in which value was a combination of labor + materials + marketing + profit = price. Do business schools explain to their MBA cohorts how Google makes \$100,000,000 dollars a day (that's right, 100 million dollars per day)? This observation is not about millions in revenue, but about what that means. Google is making 100 million dollars a day because we, the users of Google, engage in behavior worth \$100 million dollars to someone.

These revenues are tied to people's curiosity and thirst for discovering the right thing at any given time; people are chasing something that leads them to a Google search. And what people are chasing is value; value in the products and services they purchase, value in their relationships with enterprises, value for their travel or entertainment expenditures and so on.

We are all chasing value and what Google does is provide it, one search at a time. And so do Facebook, YouTube and Netflix. These are all enterprises taking full advantage of the new ecosystems of interconnected data; these are all platforms for behaviors that transform data into individual value for each user. They are also platforms for revenue 'extraction', which is a different metric than revenue 'generation'. Generating revenue is the result of an exchange of extrinsic value: *I want to have* something you have, and I will exchange for it. On the other hand revenue extraction is the result of intrinsic behavior. *I want to be* on Facebook.

We now live more and more in a behavior economy, an intertwined eco-system in which people no longer engage with brands by just purchasing things, but they look for engagement with services that allow them to behave, to leave a mark, to participate with others. In this economic space, people seek the best value for their engagement, in unprecedented numbers and with unprecedented empowerment. And by 'value' they do not mean 'value for the money' – most of these activities are delivered for free – but the satisfaction of multiple dimensions of value, from physical to emotional, from social to intellectual, and from spiritual to occupational.

One could argue that we always lived in a behavior economy, as it is human behavior that generates economic transactions: our desires, wants and needs motivating our actions. But what we are witnessing today is passive behaviors originating in *intrinsic motivation* – passive in the sense that no material value is exchanged between the parties – triggering vast economic transactions between multiple parties. One's presence on Facebook triggers a series of transactions that benefit both Facebook and third parties. Without us being there, these transactions will not exist. *Our time is our new currency*. And this currency has more and more value, as we are moving through a new space in which the physical and the digital are linked not through dedicated and stationary nodes, but through every person, place and object. Yes, the Internet of Things and the imperative of connecting at multiple layers of engagement.

On the user side, mobility, location proximity and full accessibility on any number of possible displays, makes content delivery a unique new opportunity as well as a unique new user experience.

Add to this the convergence of a few technologies – Google Glass, Near Field Communication, Augmented Reality – and I see in the very near future an explosion of location specific experiences - *destination broadcast streams* - with content that will invite the participation of all senses, or what I call later in this book, a Full Spectrum Experience, engaging the user in multiple layers of experience.

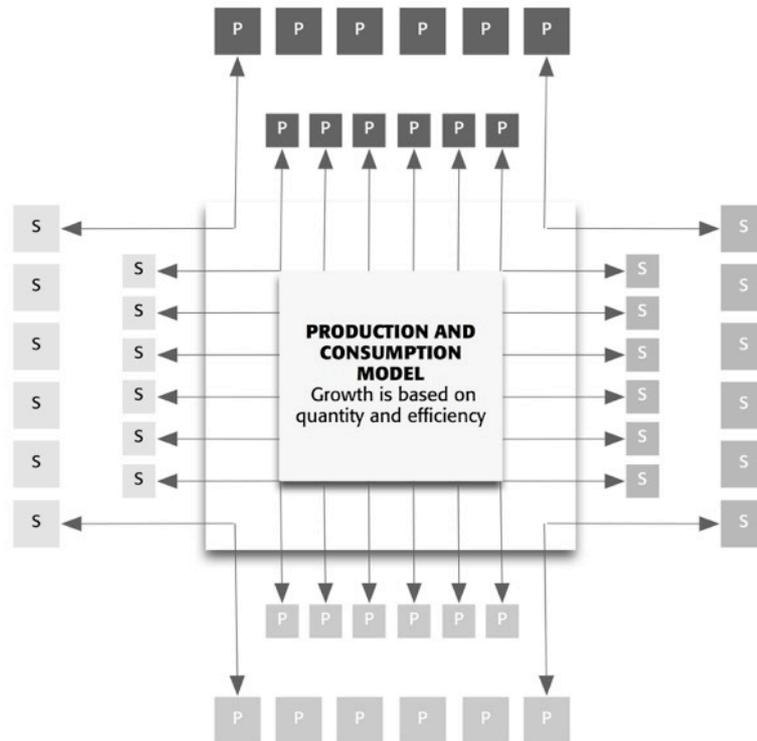


Figure 1. Production and Consumption Model

On the enterprise side, there is visible value shift from traditional enterprises – which performed in the economic model of production and consumption (Figure 1), in which people exchanged money for the purchase of products (P) and services (S)– to enterprises that do not offer goods, but rather they offer ‘platforms’. These enterprises are models of the Data Enabler Organization and a new type of business now made possible by digital technologies: the networked data business. A new form of a company is being born (Figure 2), a company that does not grow along traditional metrics – more products, more sales, more efficiencies – but grows in relationship with the user engagement with the platform it controls, along new metrics being redefined by the network size and the quality of each node. (N)

Once the up-front costs have been incurred and the platform is established, the more people there are who are sharing the benefits, the greater the net present value of the whole value system becomes. A platform company is as open, as accessible and as supportive as possible, to as many users as possible. Optimum value creation means attracting as many users as possible to a behavior platform that gives them multiple opportunities, in both the breadth and the depth of engagement.

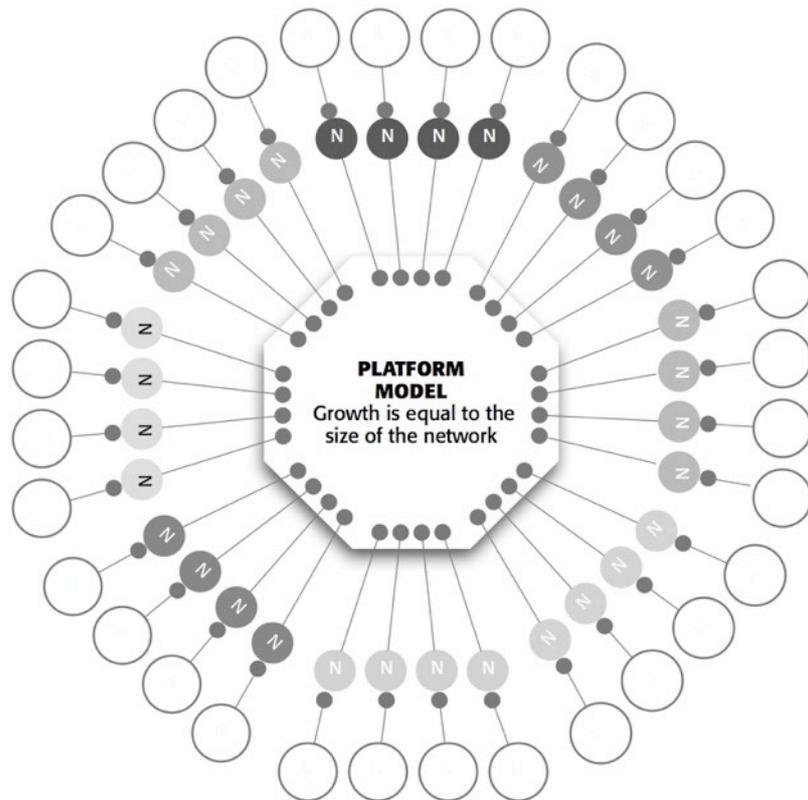


Figure 2. Platform Model

In such a context, a company does not have to physically grow; what need to grow are the depth of engagement with users, the duration and the equality of the experience.

Extrinsic and Intrinsic Models

I mentioned earlier the industrial model of production and consumption, one in which value was produced by manufacturing goods or creating services that might be beneficial to identified users. In this model value is often extrinsic to the user, it is a feature of the product or service, it concerns the physical attributes of the system, its mechanical performance, or the performance of the personnel engaged in the service. All these are components of a system, and because they are parts they can be improved in terms of material quality or fabrication process, in visible ways, giving a user the sentiment of ‘value for the money’.

All of these aspects of a product are extrinsic to an individual user. They need to be explained, advertised, promoted, and learned. Once a user learns the operational principles of the product, he or she engages in a short-term behavior. However, behavior is not the goal here, the goal is the accomplishment of a specific task, for example making coffee, mixing dough, cutting the grass, and so on.

In the behavior model – Facebook or Twitter as examples – behavior *is the only goal*. There is little value in the physicality, the material, or the technical features of the system. The user is only interested in these as a bridge between himself and the behavior platform. How do we create value here? The value we can create is the *value of the experience*. More dimensions of experience we can fulfill the more compelling the value we create. The two models have two different value metrics: Intrinsic Value is what the thing is worth to you, and its meaning. Extrinsic Value is what the thing is made of, what it does, and how it does it.

The two models illustrated here are models of two economic systems where *motivation is key*. The consumption economy operates in a discourse of monetary value, which is a media of exchange of physical goods or services that must be measured in order to achieve fair trade: how many ships do you need to trade for a pile of wood to heat you up during the winter.

The platform economy operates where direct exchange is possible - we are talking about the direct exchange of stimuli between individuals that takes the form of:

- Spiritual exchange (beliefs about the universe and meaning of humanity)
- Mental exchange (attention, inspiration, ideation)
- Emotional exchange (love, aspirations, admiration)
- Power exchange (feeling of empowerment, teamwork)
- Passion exchange (desires and wants - it feels good when you resonate with someone who's passionate about the same thing as you)
- Safety and well being

Platforms allow for this exchange at the interpersonal level. You feel the need and you get it resolved - not via a purchase of goods or a service from someone, but via engagement with other individual who either can give you the stimuli you need, or can consume the stimuli that you have in abundance.

Why this book now?

Because the Internet of Things is not an elective for enterprises operating in the behavior economy. Just like the Internet was not an option, just like social media participation is not an option anymore. The platforms for new behavior that the Internet of Things will make possible, will increase considerably the footprint of the behavior economy at the expense of the old industrial model, with casualties in the rank of any incumbent not willing or able to adapt to the behavior economy. It is Polaroid who should have invented Instagram, not Kevin Systrom and Mike Krieger. It is Blockbuster who should have developed Netflix. And so on. The fact they did not shows that these companies did not fundamentally understand that they were in the business of behavior, and they did not understand the motivation at the root of that behavior. Why users choose their products or services. It is by looking at the behavior of users that a company will truly understand what business it is *really* in. What is it that you have that the user wants? And why?

Apple is *not in the computer business*. Apple is in the *empowerment business*. Nike is *not in the sneakers business*. It is in the personal goals business. Heineken is *not in the beer business*. It is in the party business.

Forgetting where the economic system comes from – I want something you have and I am willing to exchange value for it – distances corporations and individuals from the perceptible reality, keeping them in the world of abstracts and theories. If an oil producer cannot connect oil extraction with Facebook or YouTube, then we cannot expect the economists to do it either. Why is it hard to connect a decline in economic activity – retail sales in a month – with 5 billion videos being watched on YouTube the same month in the same territory? Exactly who do you think is watching these videos? If their consumption time is taken over by an exchange that does not register on the GDP, why is the downturn a surprise?

This book describes the mechanisms by which new value is captured and created in enterprises dedicated to play a role in the behavior economy. It all starts with learning a new language – the language of ideas – and with establishing frameworks of possibility in the ideology of the enterprise. Value creation is the expansion of relationships enabled by a disruptor media and the creation of new behaviors as a result. This opens two needed capabilities for a business: *The first is upstream*, creating the platform services people want to engage with. *The second is downstream*: marketing, distributing and selling these platforms as services.

By the nature of the activities involved, the upstream and downstream capabilities are quite different in scope, inputs and outputs. The downstream calls for *methodology* – what do we have to do and how? - while the upstream calls for *ideology* - why and for whom are we doing this? In the context of enterprise, ideology is a way of being, behaving and influencing the world. An attitude. A mindset.

This is also a book about *enterprise* in the true sense of the word. ‘Enterprise’ means a bold and courageous undertaking. What is the difference between a business and an enterprise? Business takes care of the day-to-day mitigation of the affairs of the company. Enterprise is an undertaking that aims towards permanently outdoing its latest accomplishments. Businesses are run by pragmatism, enterprises are run by poetic visions. The incomparable Steve Jobs had it right in 1983, when he made his memorable pitch to entice John Scully – at that time the youngest president in the history of PepsiCo - to leave his position and join Apple Computer as President: ‘*Do you want to sell sugared water for the rest of your life? Or do you want to come with me and change the World?*’

This book is the culmination of ten years of practice and research in the potential of the Internet of Things; it is also the culmination of my early belief that the Internet of Things will reframe the existence of the ones enriched by it.