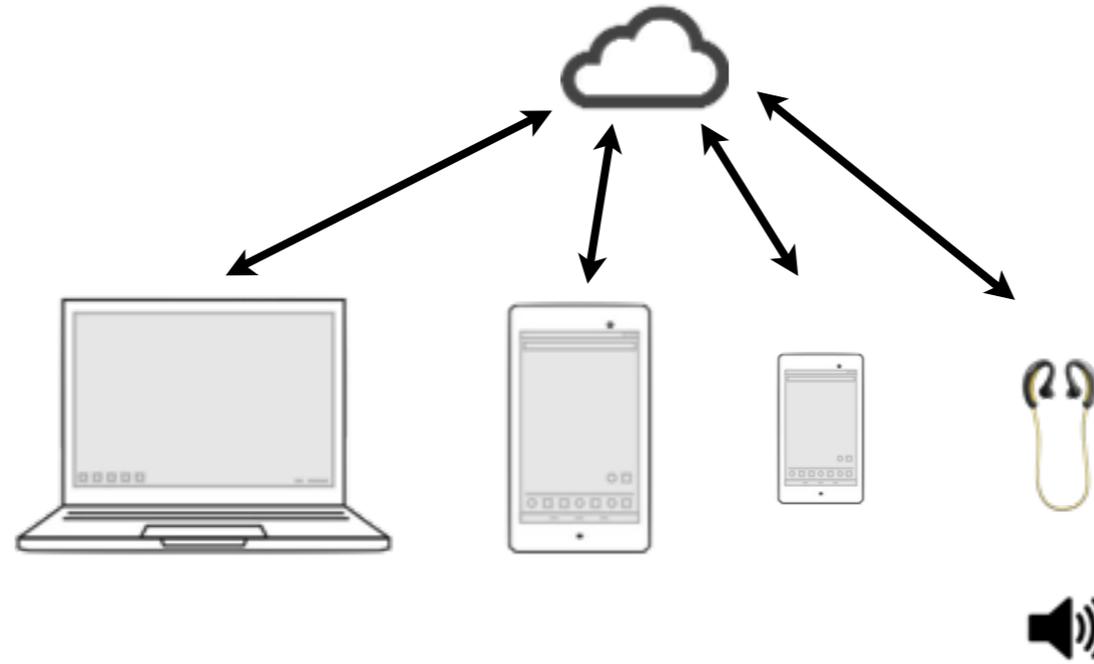


Beyond Mobile Beyond Web

 @scottjenson

 jenson.org

This isn't my normal talk. I tend to jump into specifics about smart devices and the IoT but this talk is a bit more reflective, a bit more personal.



It is an amazing time to be a designer. We are playing around with primal forces, able to create apps that are truly amazing. Take, for example, my Kindle reading experience....



But let me tell a very different story... About these bluetooth headphones



But before I get into that I need to back up a bit. I tinker with my phone, installing all sorts of weird apps on it. This unfortunately means that my phone occasionally makes noise in the middle of the night which understandably frustrates my wife. So I'd worked really hard to calm my phone down so it was allowed back into the bedroom



One night I got up and went to the kitchen and noticed the headphones were on the table and I'd forgotten to turn them off.

How will we approach the Internet of things?



VS



These two approaches show the yin and the yang of design, you can have a nearly invisible, seamless product that can change your life and they you can have a 20 year old technology that should know better capable of having you sleep on the couch. When we build products around the internet of things, which approach will be follow? What are we likely to see?

Sociology of design



I've been fascinated throughout my career by the sociology of design. Trying to understand how we, in our little product groups, understand, discuss and create new products. If we look at computing history, it's easy to see the obvious pattern: S/F/C. This is especially true in the trade press: Most prediction articles are about S/F/C. But that's easy, that's predicting incremental innovation which we already know is going to happen. The s/f/c trend leaves out the huge sea change that occurred with the www and mobile data.

But what I find so interesting is this tendency to see these easy historical patterns and use them to predict the future.



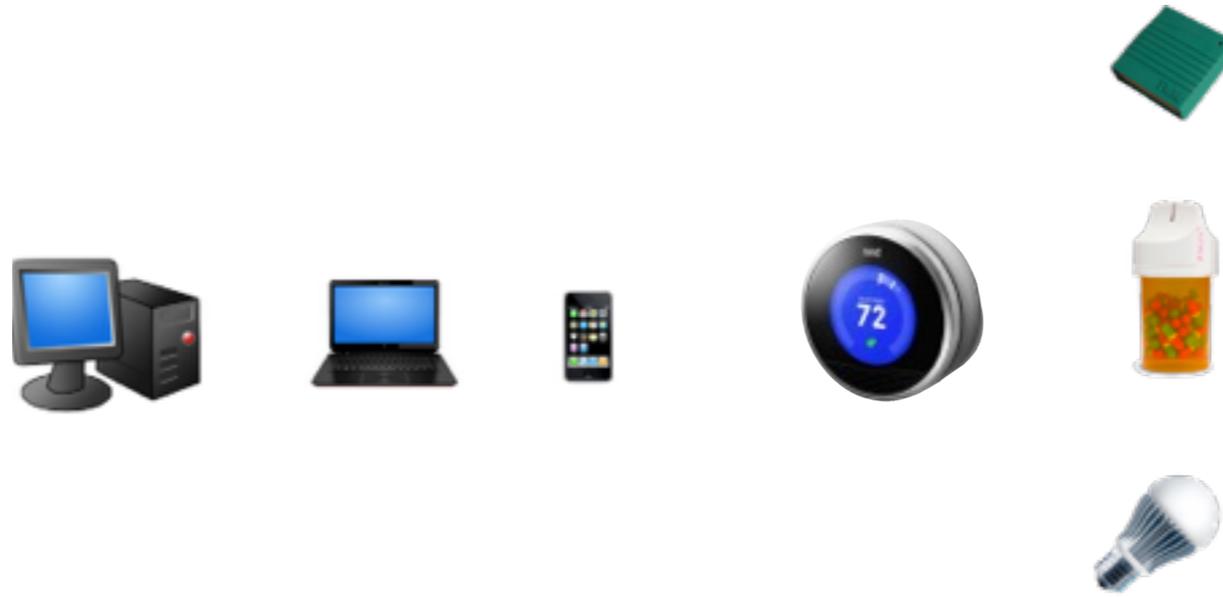
So what are people getting excited about? Clearly it's the iWatch - soon to be followed by the iRing and the iTieTack... There is nothing wrong with these directions but they are extrapolating the obvious. But what have we been seeing instead?



So while we're seeing all sorts of confusing and goofy watches trying to fill this space, what has actually been happening?



Nest



and the Twine hobbyist sensor, and GloCap, a smart pill bottle the calls you when you forget to take your pills, and about a dozen smart light bulb projects on kickstarter. These are wacky crazy new directions that don't fit with our current understanding.

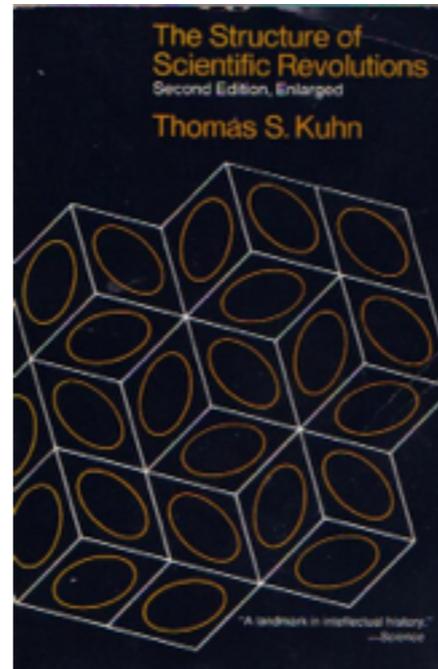


But if you throw in the idea of a smart city, things really start to get confusing. We are in a situation where the world is running ahead of our ability to conceptualize what is happening. The iWatch is a fine product that is extending an old model. It doesn't help us make sense of this crazy explosion of new-ness.

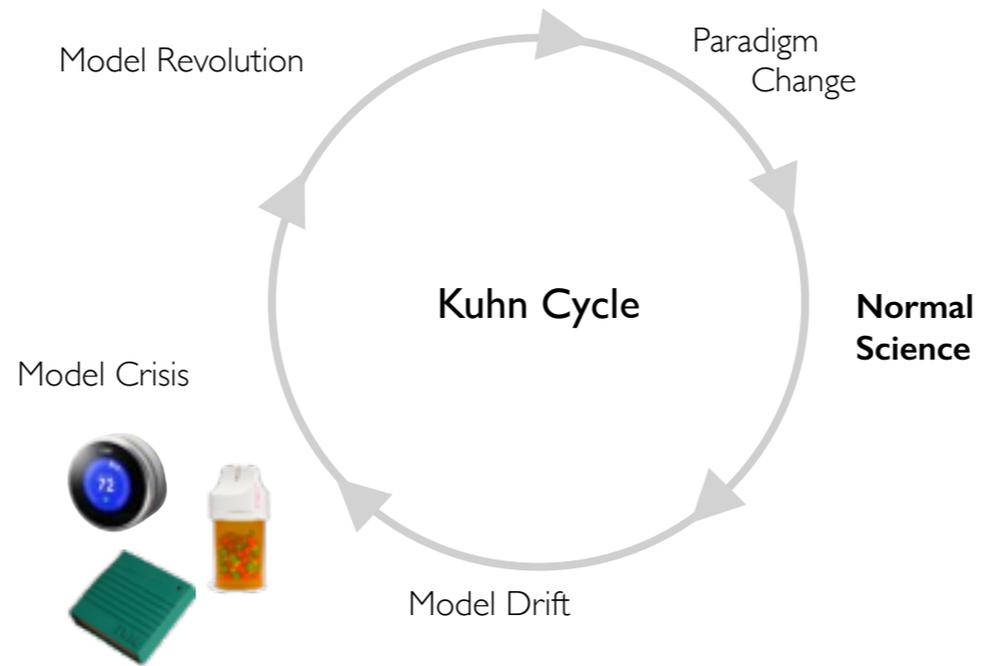


It took us more than 20 years, but computing has finally moved from conserving resources ingeniously to **squandering them creatively.**

David Gelernter



This was one of the most influential books I read at university. I'm NOT recommending you read it, go read the wikipedia page but Kuhn created a structure and vocabulary around how we can talk about how science works and evolves. This same learning pattern applies to technology as design as well



<fill in story>

But the key point I hope is obvious is that when most revolutions happen, the vast majority of thinkers at the time FIGHT THE CHANGE! This is important. People readily accept incremental innovation because it is so easy. Big crazy changes are often a step back, don't initially work as well, and are fought tooth and nail when the first arrive. We don't usually welcome the future, we fight it.



Default Thinking

The term I've used to describe this for product design is "Default thinking". It's this very human approach that we all do. Whenever a new tech comes along we don't immediately use it properly, we tend to apply it to what we were doing before. That classic example of this is TV which...

We evaluate tomorrow's technologies by yesterday's tasks. Now, we eventually figure it out but it takes so much time and effort. We we truly want to be innovative, we need to understand how much this backwards thinking costs us. I had the personally apply to a project I was working on at Symbian...



Perspective is worth 80 IQ points

Alan Kay

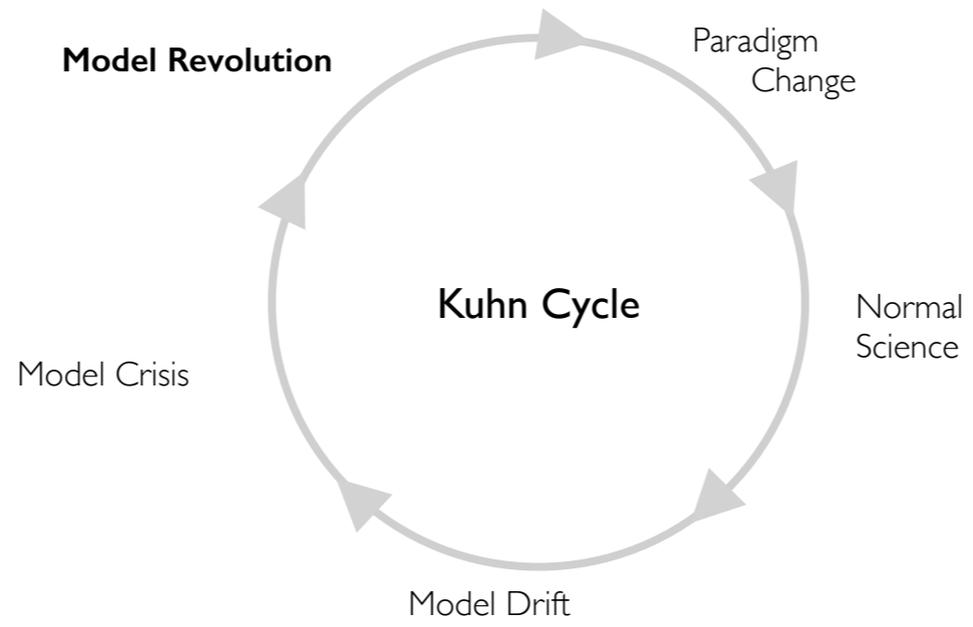
<read it> A project rarely fails because you have bad designers. It's almost always because the team didn't understand the problem they were solving. Default thinking is a perspective killer..

So how do we get this perspective?



Everyone wants innovation
but no one wants risk

Let's start by realizing that we are only human. As a creative director at frog design, our clients always wanted big innovative ideas but after we would bring them in and do our thing, they would so often push back like those engineers did at symbian. Everyone WANTS innovation but no one wants risk either..



This is why Default Thinking becomes so entrenched.
Kuhn Cycle 90%

“dreadful camera”

“Was Steve Jobs too optimistic?”

“no games”

“the large screen and animated
menu gloss over what is a fairly
standard device”

“style over substance”

“Unrealistically priced”



When the iPhone first came out, it was attacked in the press...
Innovation isn't obvious and it certainly isn't safe.





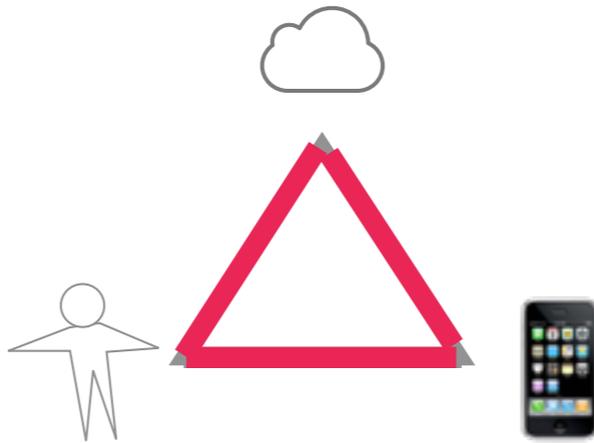
OK, enough philosophy. Let's start making this real. Here is a recent article about the IoT and it shows how sloppy our thinking has become. <walk through> It's so clear that technology is driving the discussion. We're getting excited because it's possible, we're not thinking it through. We're suffering from a massive case of default thinking



But let's explore this a bit. What exactly do I mean by default thinking? Here is how we have historically looked at computation. A single person with a single device. For all that has changed with smart phones, what stuns me is what hasn't: We still have general purpose devices, with apps we have to install and tend to. The basic packaging of functionality is still fairly monolithic and structured.



But this simple model got much more interesting with the advent of 'the cloud'. Initially the cloud was just a feature of our devices. But as we got more devices our relationship with the cloud transcended them. And as our devices got smarter they started using it without our direct involvement.



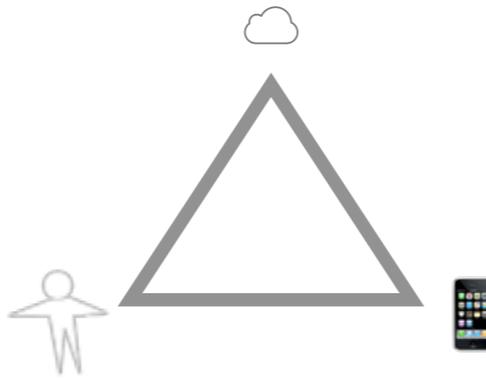
Each side of the triangle represents a new type of interaction. Me to the cloud, me to my device and my device to the cloud. Each of these sides represents new challenges to our old model.



And if that wasn't enough, each corner has grown rapidly. The cloud was originally about device independence, I could check my email from both my work and home computer. But as my devices grew, Dropbox allowed me to keep them all in sync. And then came social sights that let me share with not just my devices, but with my friends as well.



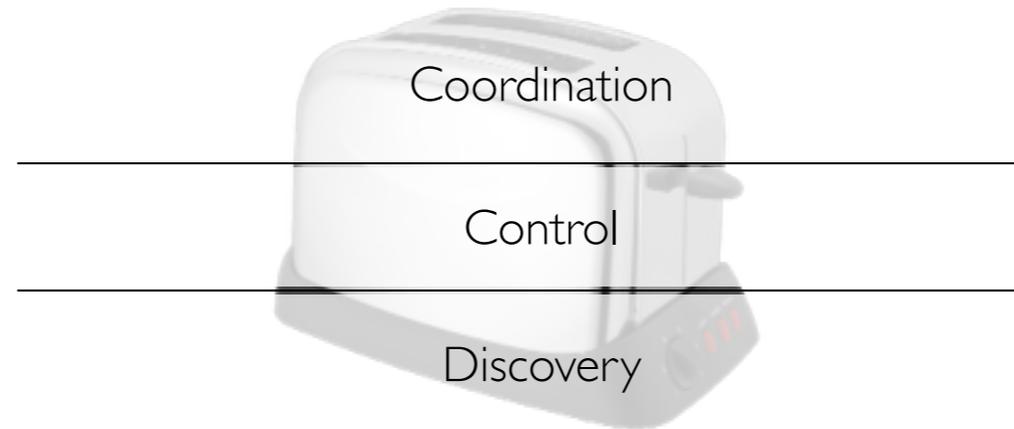
But even though we have all of this AMAZING potential happening around us, we still, in our heart, think of this problem as this simple little model.



Using this triangle and viewing it from each corner helps, as Alan Kay might say, give us a little more perspective



Here



Every time I talk about the IoT I get questions that show that people really, deeply don't understand what it is about. My favorite example is the smart toaster, the derogatory poster child of the IoT. When people say that "I don't want apps on my toaster" I want to shake them by their shoulders! "That's *your* old paradigm, not mine. It's too easy to criticize a new technology using old concepts. Smart devices are not about apps! They are about 3 basic layers of functionality: Discovery, Control, and Coordination

Discovery: Finding my devices nearby. Most companies would kill for just this basic feature. Depending on how clever they are with the URL it can span goofy marketing page (boring) to SPIME like deep interaction with my device history.

Control: A small increment in cost lets me control the device. This same URL model has moved us from web site directly to Nest because now I'm talking to MY device. While prices are still high, finding the right balance will be tricky but as the costs fall, the choice will become trivial. This needs 'another Apple' to take the chance because once it becomes clear it is possible, EVERYONE will want to jump into the pool.

Coordination: This is the hard one as it involves so much cooperation. I love the overall vision but it will take time for companies to get on board with enough standards to make this happen. Think about today. I can hardly get Mint.com to access all of financial records, it's constantly breaking down. We expect massive data and control settings to work across every world wide manufacturer?

My point is that we need to start with the first two: Discovery and Control. They are very much within our reach and offer significant value.

Swarm		
Device		
	Direct	Background

Direct Device



Direct Device

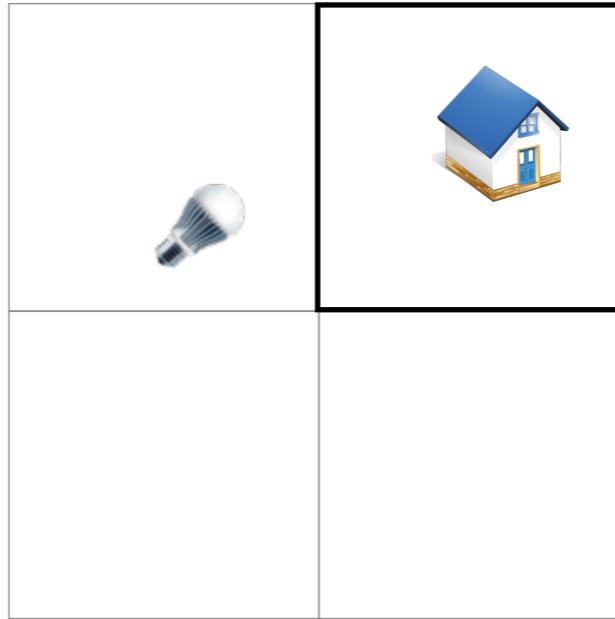


Direct Swarm

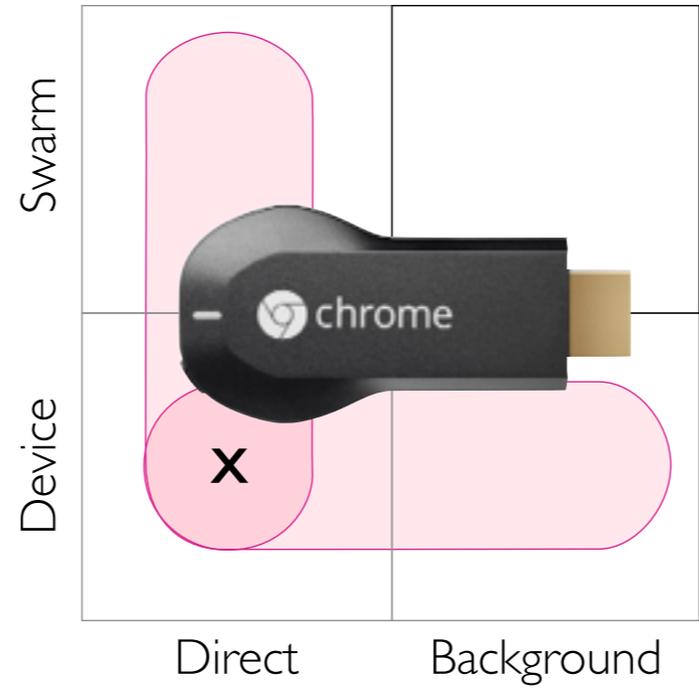




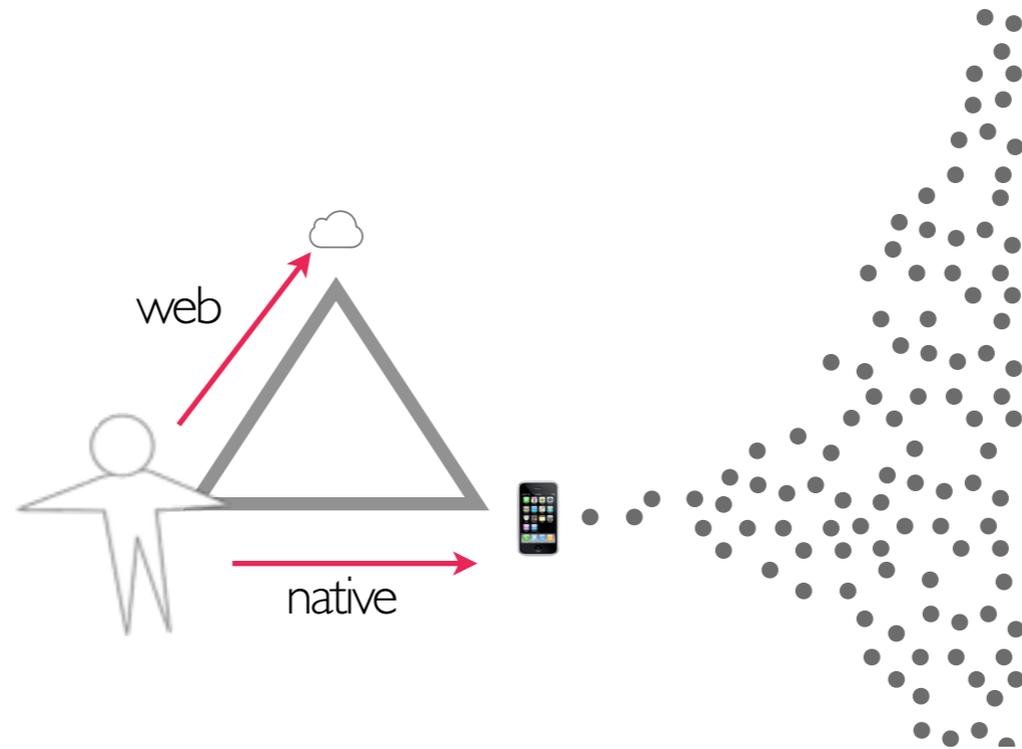
Background
Device



Background
Swarm







Using this triangle and viewing it from each corner helps, as Alan Kay might say, give us a little more perspective. Let's start with the user's corner. Right now the established thinking is that, for the most part, you access the cloud with a web browser and smart devices with native apps. That's for a good reason, there isn't any other choice. If you are Nest you MUST build an app in order to build a product. But if you believe in Moore's law in any way, you know this can't continue.



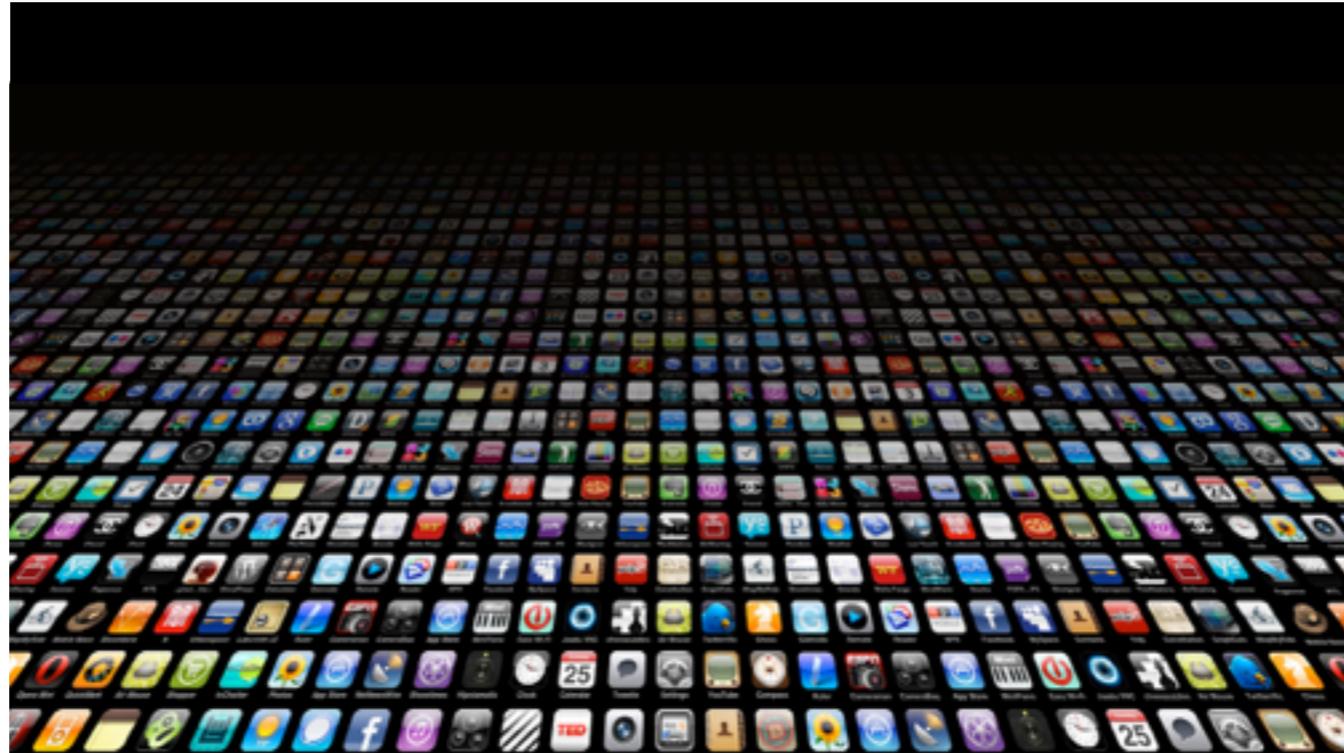
Just in Time Interaction

There is a wide range of devices from the nest down to bus stops (which are just a steel pole stuck in concrete) There is a continuum of device from standalone processor to a tagged object that points to a web page. But, from a design point of view, they are all the same: they want your attention and you need to interact with them. The problem is that we are still using our old school paradigm of 'native apps' to deal with them. While I might be fine with an app for my Nest, am i going to download an app for ever store I enter, every smart poster to see, or every smart museum I enter? As we move to single use experiences, apps become hopelessly quaint.



Why mobile apps must die?

This is why I wrote “Why mobile apps must die” 2 years ago. People keep thinking that I care about the silly web vs native debate which is silly. Native apps have a better UI and are easier to monetize but that’s not the issue.



Apps just can't be the only tool in the tool kit. Are we really going to have an app for every store we go to, every product we buy and every new interactive device that is coming our way?

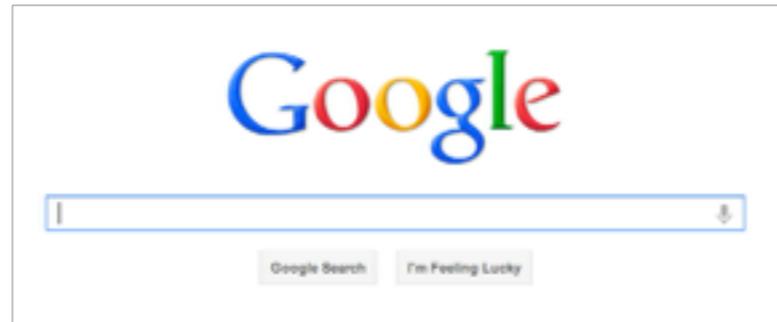
How many of you, in the last few weeks, have gone through your phones, deleting the old apps you're not using any more? It's a rhetorical question, we ALL do this! We are gardening our phones. But why? We're rational beings, what is the motivation? It's simple, dead apps get in the way. Have any of you walked into a store and seen a sign 'We're in the app store!' and just shrugged, you couldn't be bothered? At first, that type of user pain/apathy was design gold, you kill for that type of insight but here we are experiencing this nearly every day.

There is a 'thin crust of effort' that is forming around apps, there is a certain amount of pain that is involved in using them today! Imagine when we are surrounded by 100s of more smart devices, it's clearly unsustainable.



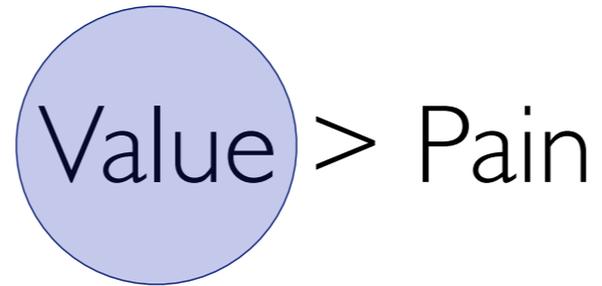
There is a subtle force at work here, it's not always about technology, sometimes it's also about design. There is a basic design axiom that is at the heart of almost all design: Value must be greater than pain. Let me give you an example. In the 1990's The UX for SMS was *horrible* but it's value was so high that people persevered

Value > Pain



At about the same time Google was able to reduce the page weight of google.com and got it to load 4 TENTHS of second faster. It was to the pixel, exactly the same. What happened, usage went up multiple percentage points (That's actually a REALLY big deal for Google) In this case Value was identical but just by reducing pain, the product was improved.

Triumph of the Mundane


$$\text{Value} > \text{Pain}$$

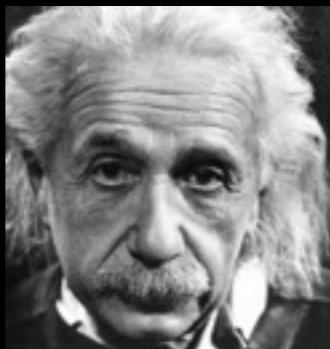
When pain goes to zero, value can go to zero as well. I call this Triumph of the Mundane as it's the LITTLE things that are going to have value, as long as we can make them very very easy to use.

If you truly believe native apps are the future, then you have to then put up with pain of installing apps whenever you need them and then organize and launch them when you need it. You can argue that this isn't so bad for up to 50 apps, but what about 500, or 5000? At some point, it has to break down.

Haven't we seen this before?

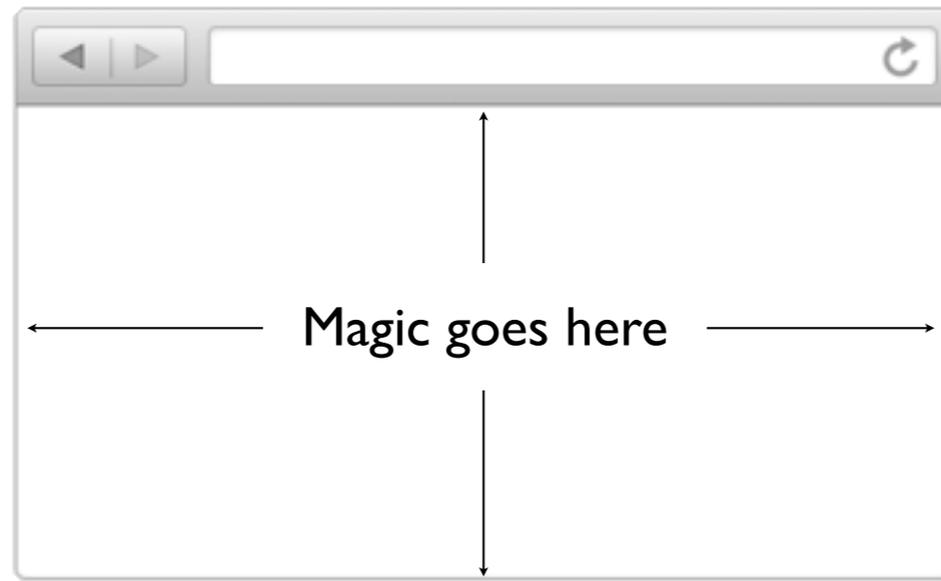


Indexing vs Ranking



Insanity is doing exactly the same thing...
and expecting a different result.

Einstein

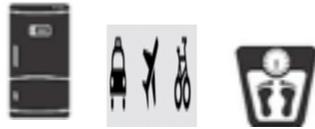




and attention and that silly URL bar at the top, that thing you have to type into in order to go anywhere. What's wrong with this picture? We taken the most amazing rendering engine on the planet and strapped a command line UI on top of it!



Smart Commuting

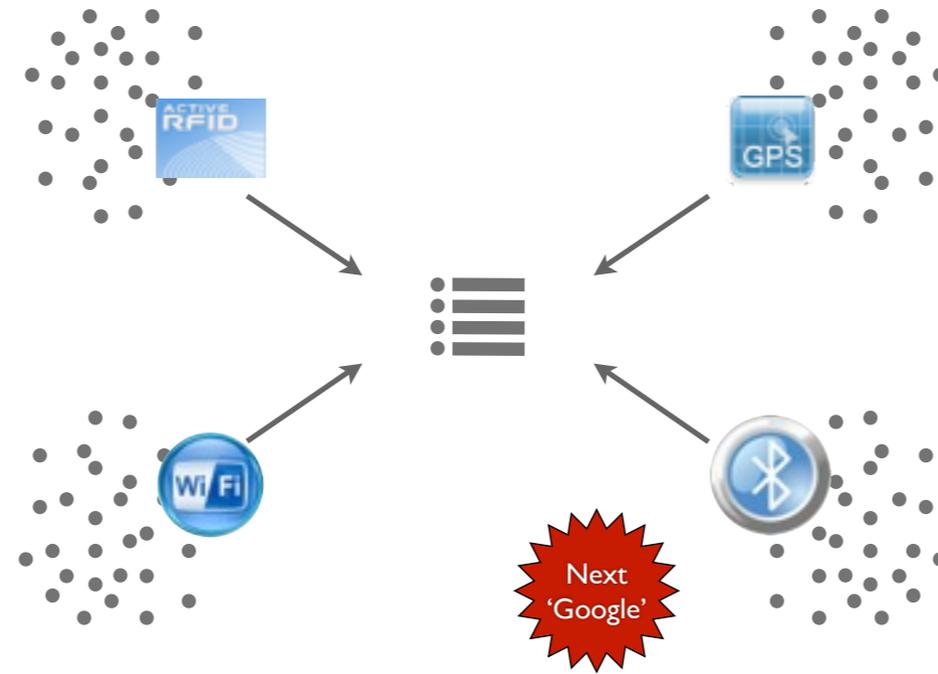


Smart Appliances



Smart Spaces

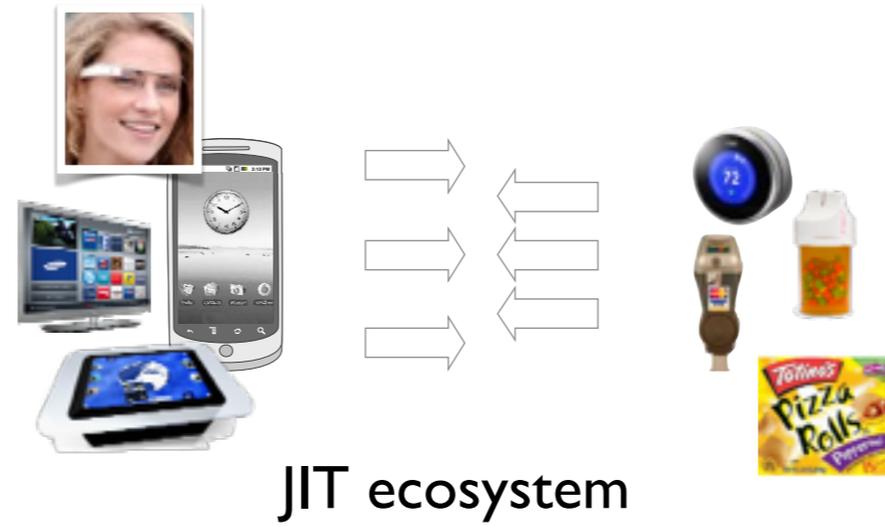
The super power of the web is that interaction can be like water, it can flow anywhere. You can talk to any device with any device but instead of solving this physical discovery problem, we just write up hundreds of apps, one for each device. This clearly can't scale.



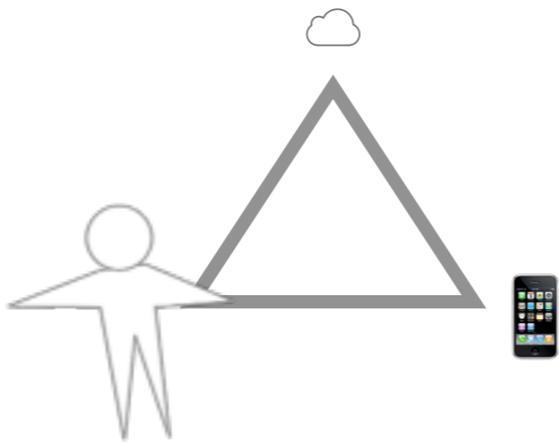
We need an open source 'Growth' like app that finds all devices nearby and presents them to me. Eventually, this service will need a cloud component to rank it but this too should be open so that Google, Bing, etc can all play. Indexing the physical world is the next google



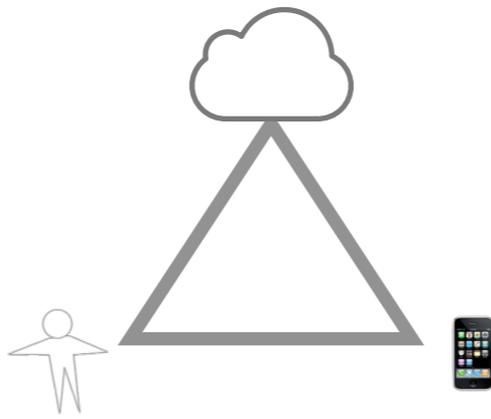
Here is a quick example but it applies just as much to Google Glass as to Smart phones, or even smart TVs... But if it were to find something smart nearby, it just lists it in the notification bar. When I click on it, it just shows a browser 'chrome' (with no browser overhead) This is fast, quick and involves no app download. Yes, the mobile web isn't as functional as native apps but we're talking about simple devices, we don't need the power of WorldOfWarcraft to turn on a light bulb. HTML5 is more than enough for the vast majority of needs. I'm not against native apps, I just pro instant-interaction. Anything that allows that is a good step forward.



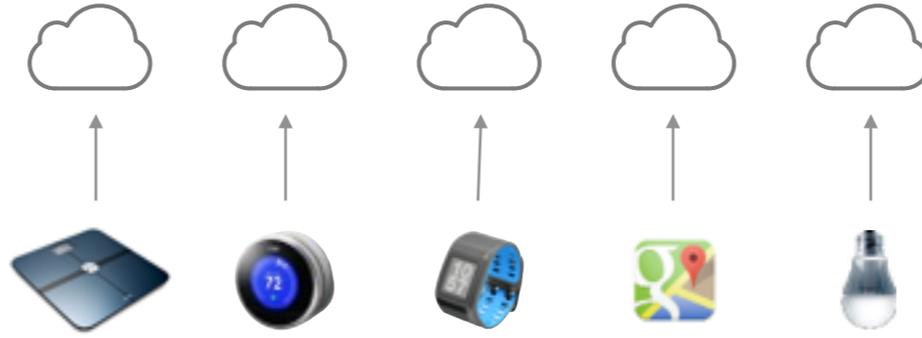
But this is a bit naive, I'll admit but what I'm ultimately asking for is a just in time ecosystem where many smart displays are looking for many more smart objects.

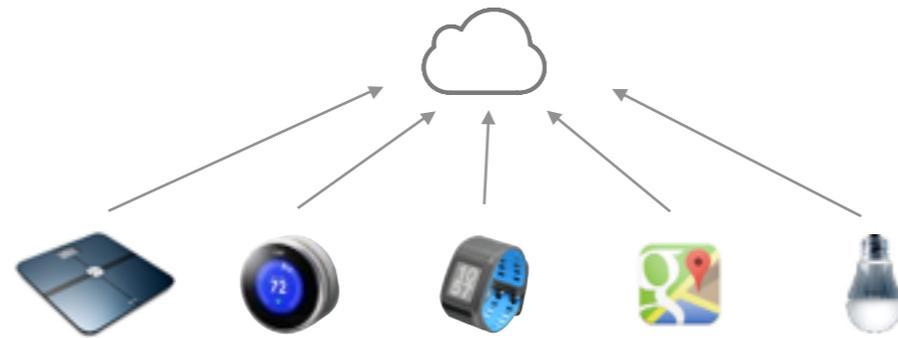


Here



Here

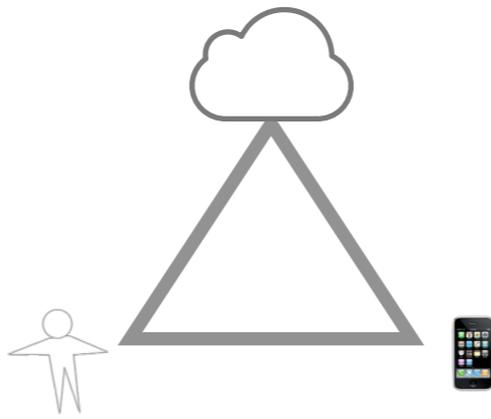




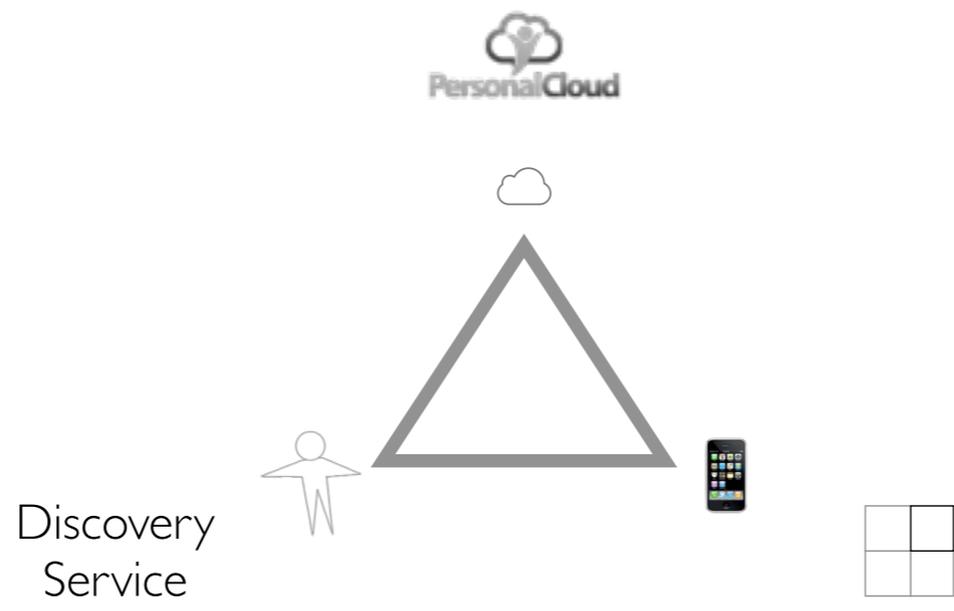
We need to work towards a model where we have a single API that connects to OUR cloud. It's not the devices' data, its MY data. There are some great companies that are exploring the personal storage space that are beginning to make this happen. I strongly suggest you check out Spark Devices as they are building this model correctly. You can use their servers to store data but you can easily choose someone else.



We need to work towards a model where we have a single API that connects to OUR cloud. It's not the devices' data, it's MY data. There are some great companies that are exploring the personal storage space that are beginning to make this happen. I strongly suggest you check out Spark Devices as they are building this model correctly. You can use their servers to store data but you can easily choose someone else.



Here



Using this triangle and viewing it from each corner helps, as Alan Kay might say, give us a little more perspective. The 2x2 matrix is something we can all do, we can think outside the box and realize that there is a huge range of smart products that fall outside our normal thinking.

However it's the other two: discovery service and personal cloud that require special attention. These require open thinking and cooperative systems. Something we see very rarely in business today. The reason the web has succeeded is most likely due to the fact that it was open, a new playing field and not a proprietary system that locked out competition.



Now are these ideas utopian, even a bit naive? Absolutely. This isn't an easy way of looking at the world, it's full of stumbles and dead ends. It's not enough to be open source, it has to be big and audacious, just like the original internet



our time horizon for innovation has become weeks not decades



Remember these guys? They were the 'pre-web', for a while, they were much better than the web. They competed, tried to encourage people to come to them. The web, at least initially, was quite bad, but it eventually overran all of them for the simple reason of scope and reach: they all couldn't have everything.



Truck idea



Road idea

Look at this this way: FedEx couldn't exist without a municipal road system. Great companies are built on great infrastructure, usually public infrastructure. It's actually very simple, the world is really only split into two groups: truck ideas and road ideas.

The problem is that everyone wants to build trucks. Building roads just doesn't seem very sexy.



Apple



Samsung



Cisco



Facebook

The other problem with truck ideas is that they they tend to build their own trucks often with their own roads! In order to maximize profit, they build an ecosystem that locks out others.

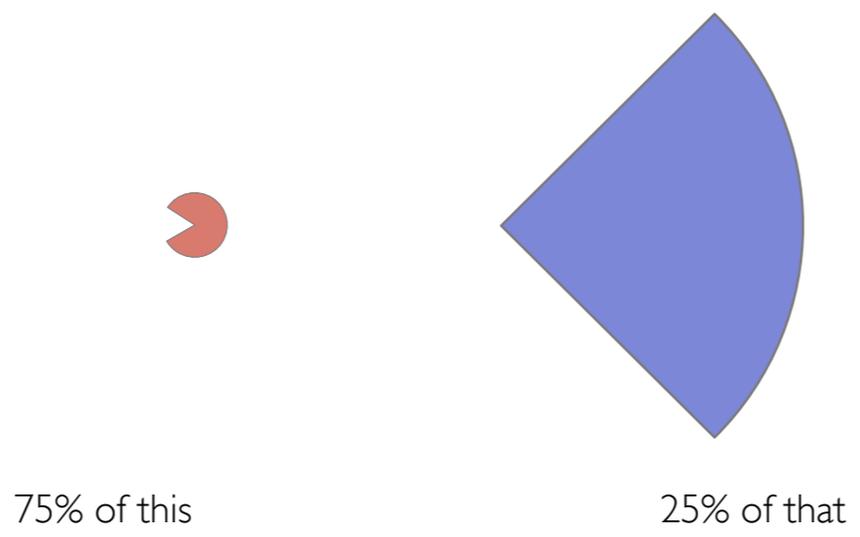
I'm not naive, I appreciate the business world is VERY competitive and if you don't protect yourself, you're vulnerable. But it's such a colossal waste of energy. Maybe it's such a dog eat dog world BECAUSE everyone is trying to play king of the mountain?



Malcom McLean

Do you know this guy? He is my hero! He single handedly invented the container ship business and then, realizing that it would only work if the world standardized, he GAVE AWAY ALL OF THIS PATENTS! Of course this was very enlightened self interest as his company reaped the benefit of this but it was still an overall plus for the world. He was voted 'Maritime Man of the Century!' for his work.

What would you rather have?



We need more communism if only to break out of our little dog eat dog world and grow a bigger pie. What would you rather have 75% of this or 25% of that?



G
P
R
V
A
C
A
P
P

In thinking about the future, it's easy to be blinded the the giants of the day. The iPhone is great, it was a major step forward but to keep worshiping it, copying it's model is just default thinking.

Much of what I've talked about is big, even grandiose but when a paradigm shift comes along everything looks a little crazy, it is a revolution after all. While a discovery service and personal cloud may seem far fetched, If we don't know what we want, that's what we're going to get. The internet of things is an amazing vision of the world but it will be very seriously challenged by companies that want to rope you into their close system. A system that is inherently, purposely done for the companies benefit not yours. Just as AOL had to eventually give way to the internet, so to will proprietary systems. The only real issue is how much bullshit are we willing to put up with until we get there. But it's not going to be given to us on a platter. We are the ones that will invent and nurture the future. Some of us by starting companies but just ask importantly by supporting those companies, demanding the big guys support open standards and even something as simple as discussing it at conferences like this. All of the pieces we need to create an open cooperative eco system are already lying around at our feet, we just have to agree to use them. It's up to us. Power to the people.



Power to the people

 scott@jenson.org

 [@scottjenson](https://twitter.com/scottjenson)

 jenson.org

	Bears	...Big Screen + General OS
	Bats	... focused function device
	Bees	...only data

As a designer, I feel strongly there is power in words. The IoT is such a messy ball of stuff that it's hard to talk about it. It's useful to break it up into three basic groups: Bears, bats, and bees.

<http://jenson.org/of-bears-bats-and-bees-making-sense-of-the-internet-of-things/>



.... focused function device

Both Bears and Bees are somewhat old school. What they are trying to do is fairly well established. What I find most interesting are Bats as they are breaking new ground and creating not only new product concepts but how to even things about functionality.