When a knife talks to a toaster, what do they say?

Mike Kuniavsky

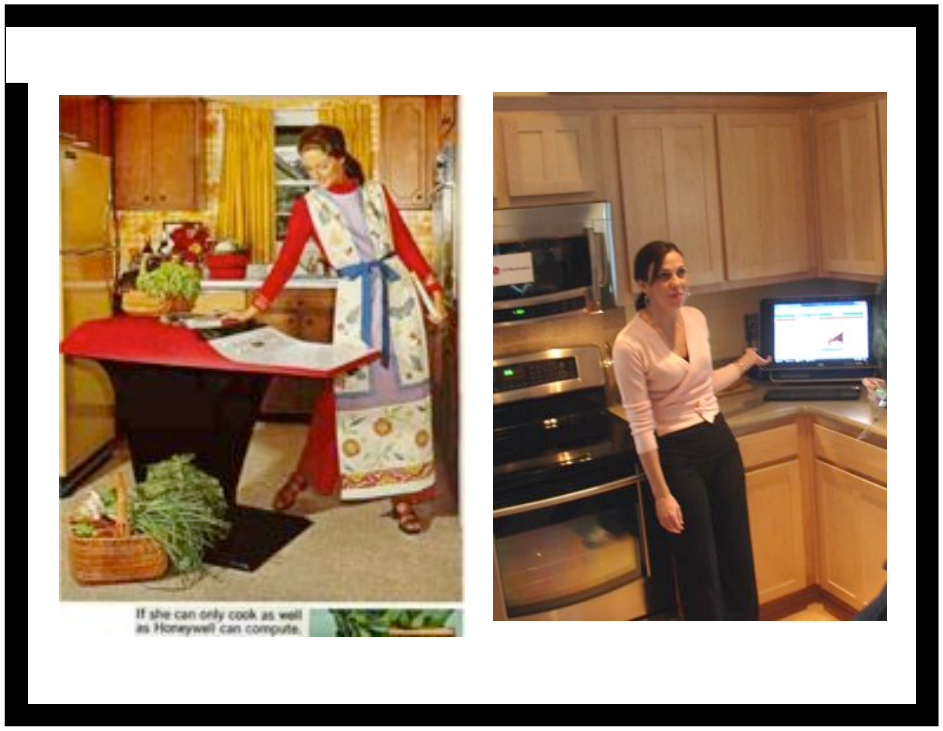
Hi. My name is Mike Kuniavsky, and today I want to talk to you about what I feel are some monumental changes that are about to occur in the world of food preparation thanks to the proliferation of computers in everyday objects, and to show you some examples.

NetBSD controlled toaster interior

Let me start by telling you a bit about who I am. I specialize in experience design and user research for emerging technology. What that means is that I spend a lot of my time thinking about the relationship between technology and people. Over the years, I've worked with organizations like Crayola, National Public Radio and Whirlpool, helping them develop new products by understanding people.

Now I have my own company, called ThingM. We're developing products focusing on the intersection between computers and everyday life.

Part 1: the shoe



Let me start with what I'm NOT going to talk about. I'm not going to talk about putting things that we recognize as computers into the kitchen. Putting a general purpose computer in the kitchen is the classic example of a solution looking for a problem. Computer companies have been trying to sell this stuff for 30 years, and it's always nearly in the same idea: look, let's make a computer for housewies that you can wipe off with Windex! What's the point? I think these may actually be worse than useless in most situations. They create an information management burden than wasn't there before and suddenly you're required to interrupt how you're using your other tools to use them.

There's no value proposition. It just as didn't work in 1969 when Honeywell tried to market their Kitchen Computer, it won't work for HP in 2007. This is from a demo at the Consumer Electronics Show in January.

Honeywell H316 Nieman Marcus Kitchen computer

HP Touchsmart

1989: $900 **2007: $0.53**

There's another way to think about computers. It's called ubiquitous computing. It's driven by the same forces that make today's laptops have all the many gigaherz that we all hear about, but it's on the less glamorous end of the semiconductor industry. Low-end chips may not get as much play in the media, but they get CHEAP at the same rate as high-end ones get powerful. What this means is that today a chip with the same power as a top-end processor in 1989 costs less than a dollar, runs on a fraction of the electricity and is significantly smaller.

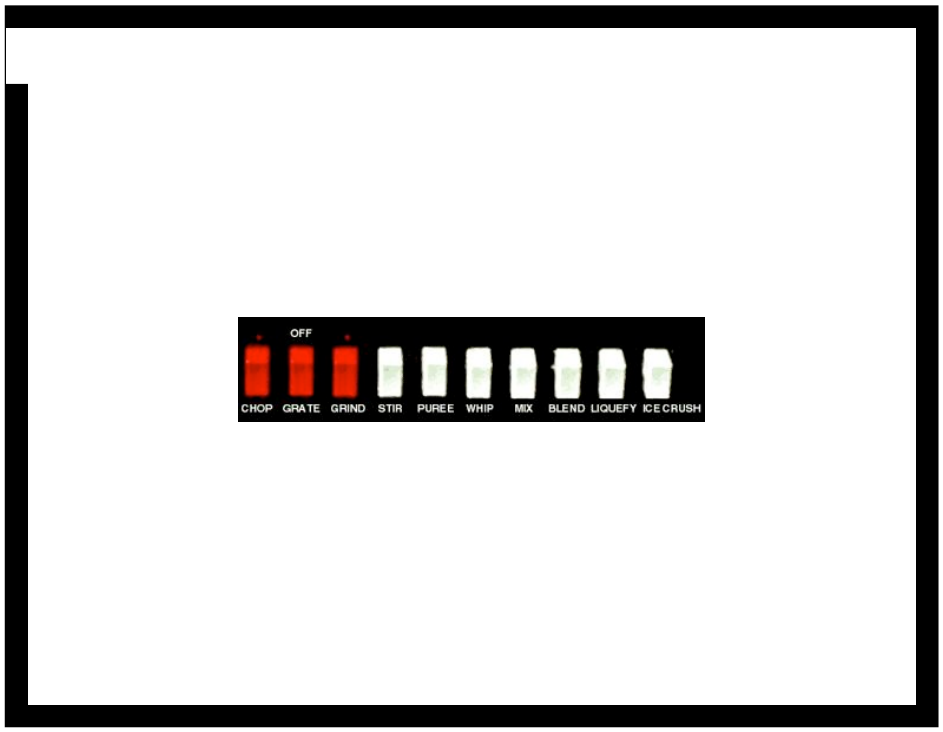
A processor like this won't run the latest games, but that's not the point. It can still process a lot of information and you can stick it inside everyday objects. This means is that embedded information has become a cost-effective competitive advantage among manufacturers. It's like discovering a new kind of material. Now, adding information processing to a thing is akin to choosing whether to make it out of rubber or plastic.

Let me give you an example. This is the Adidas 1 shoe. It's a couple of years old. It changes the springiness characteristics of the heel based on how you're running and the kind of surface you're running on. 20 times a second. In effect, iit can call on the knowledge of physiologists, coaches and runners to adjust your shoe as you're running, tweaking your tool as you use it. You can buy one today. I consider to be one of the first mass market ubiquitous computing products.

Part 2: the blender

Before talking about where technology is going, I like to look at where it's been. Today I'd like to talk about the history of blender controls.

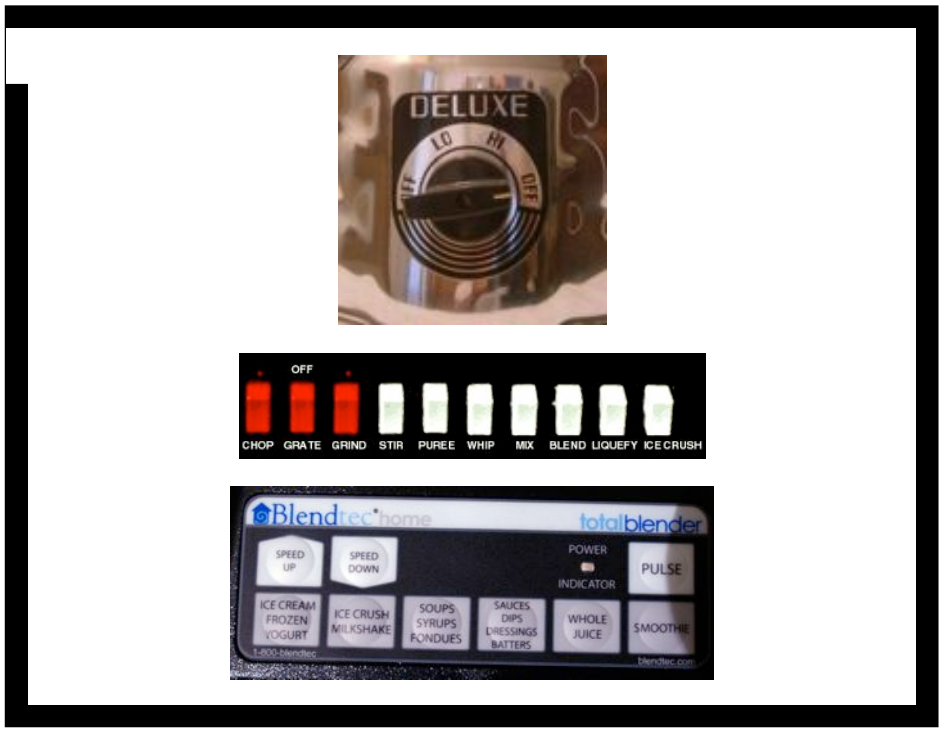
This is the knob from the 1953 Oster Osterizer Deluxe, one of those classic "beehive" blenders that are back in fashion. I really like the typography and the two off positions.



These are the controls of a Oster Galaxie blender. You probably recognize it. This button arrangement didn't change for like 40 years. I think these are the 1980s colors.

These are the controls of a blendtec home blender. It's a couple of years old now. You can see it's been designed to be wiped down so you don't get cruft between the buttons like on the old ones.

Blendtech control photo CC by elvisripley on Flickr.



Let's look at these again.

The first knob describes the state of the machine. It's purely an internal description of WHAT the machine is doing. Is it going fast or slow? The second one describes a kitchen process. It's no longer about WHAT the machine is doing, but about HOW the cook is doing it. The third one goes further, it describes the end state that the cook is trying to accomplish. Now the description has shifted from the machine, to what the person is doing, to the end result they're trying to achieve. From WHAT to WHY.

This sequence represents a key feature of device design in the second half of the 20th century. It shows the progressive encapsulation of knowledge and experience into our tools. This progression, in a nutshell, is what makes the information revolution a revolution.

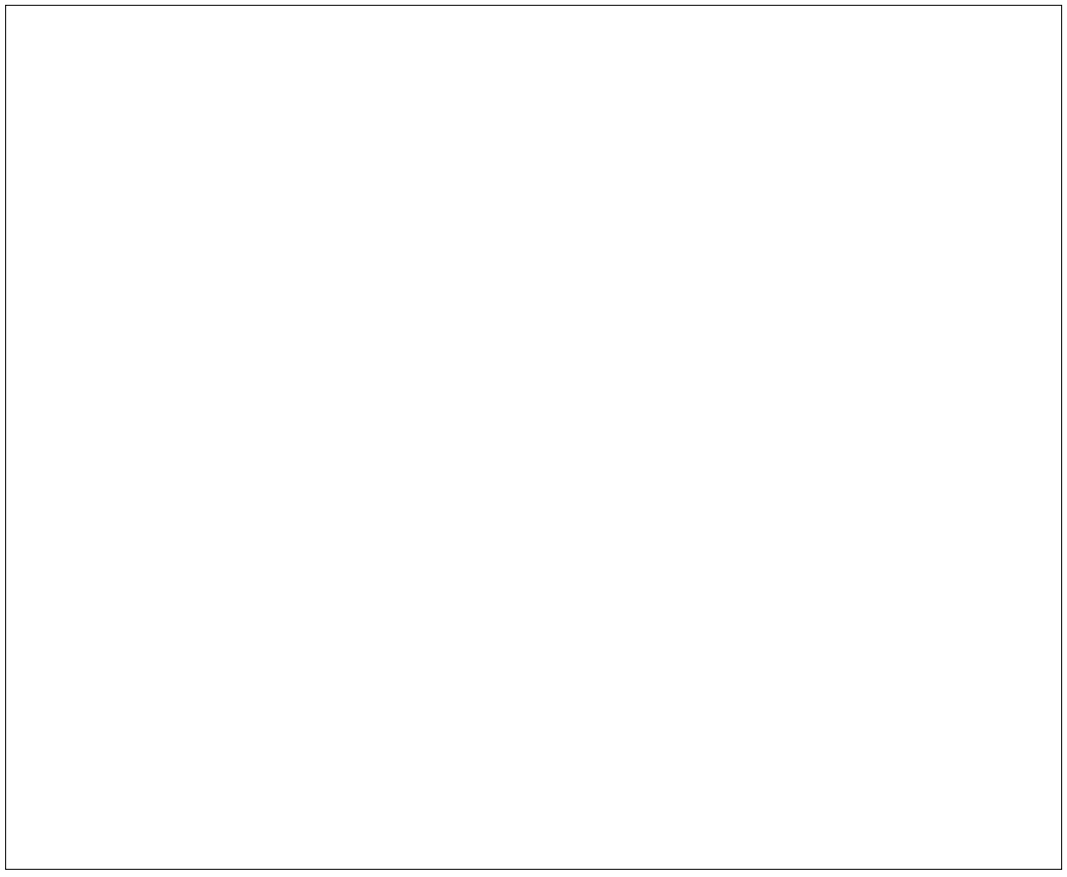
Let’s take it a step further. This is another Blendtec product, the Blendtec ABC 15, it’s about 7 years old. It’s a commercial programmable blender. With it you can program a specific sequence of blender power, speed and duration and associate that sequence with a button on the blender.

In other words, it allows you to embed experience and knowledge about food processing into the tool, rather than requiring the operator to have that knowledge and develop the experience.

Jamba Juice uses these extensively. Some master food scientist in Jamba’s food labs has figured out a sequence that represents a “good enough in most situations” way to prepare their product. This way, their staff don’t have to be trained in the fine points of blending, which lets them focus on other things. It may seem like a small thing, but consistent blending is the cornerstone of their company and this embedding of knowledge into the tool wouldn’t have been possible without ubiquitous computing.

Let’s move from blending to grinding for a minute. Here’s a tool for making expressos. It’s called the Magimix Robot Cafe and it’s a beans-to-cup automatic desktop coffee factory. Apart from clever mechanics, the key quality of it is that it depends on the software it runs. It is an encapsulation of knowledge into a tool and it may not make coffee as well as a good barista, but it makes very good espresso every single time.

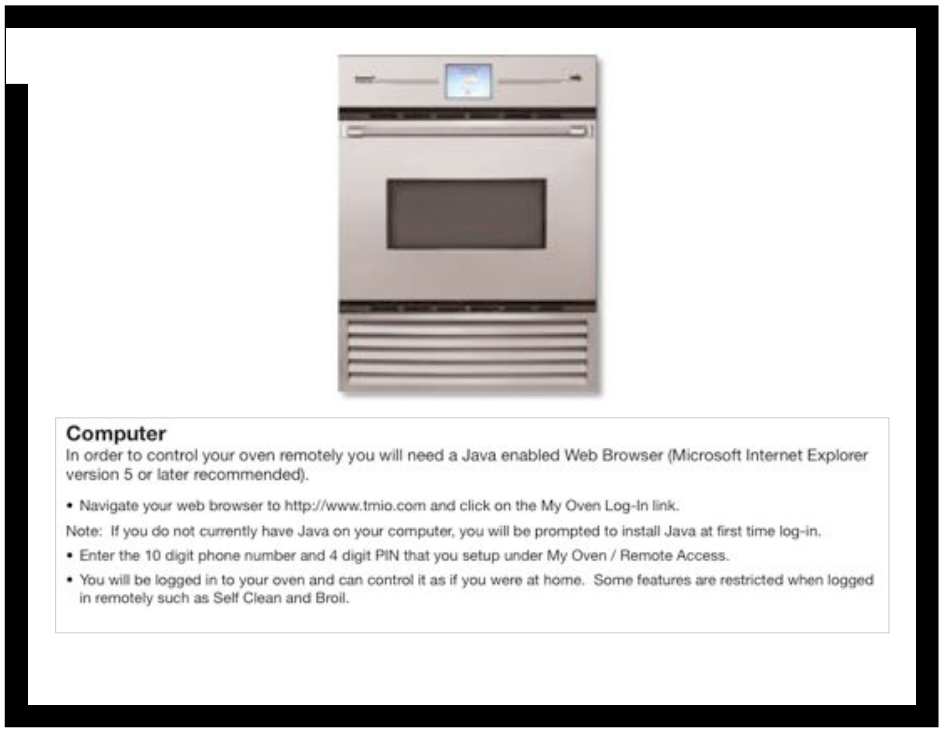
Part 3: the oven



The first major concept of ubiquitous computing is embedded processing. The second is networking.

This is the Beyond Smart Microwave by Salton, the people who brought you the the George Forman Grill. It uses a wand to read the bar code off of something like 4000 different products and then sets the cooking parameters appropriately. It's not a tool for people who want to cook, it's a tool for people who HAVE to cook, and in a hurry. Frankly, I'm not sure how great the barcode reader idea is--I mean, we can all read the instructions from the back of the box--but it has another interesting component. It has a network interface. Imagine that every time you used this, it quietly told a database somewhere--say, in your iPod--how many calories you just ate. Then your iPod could query your shoes about how much you had run the previous day. The next time you went for a run, your iPod would pick songs with a different tempo to encourage you burn off that Mac and Cheese. Now that's starting to get interesting. It is now possible for our tools to automatically encapsulate knowledge and share it with each other.

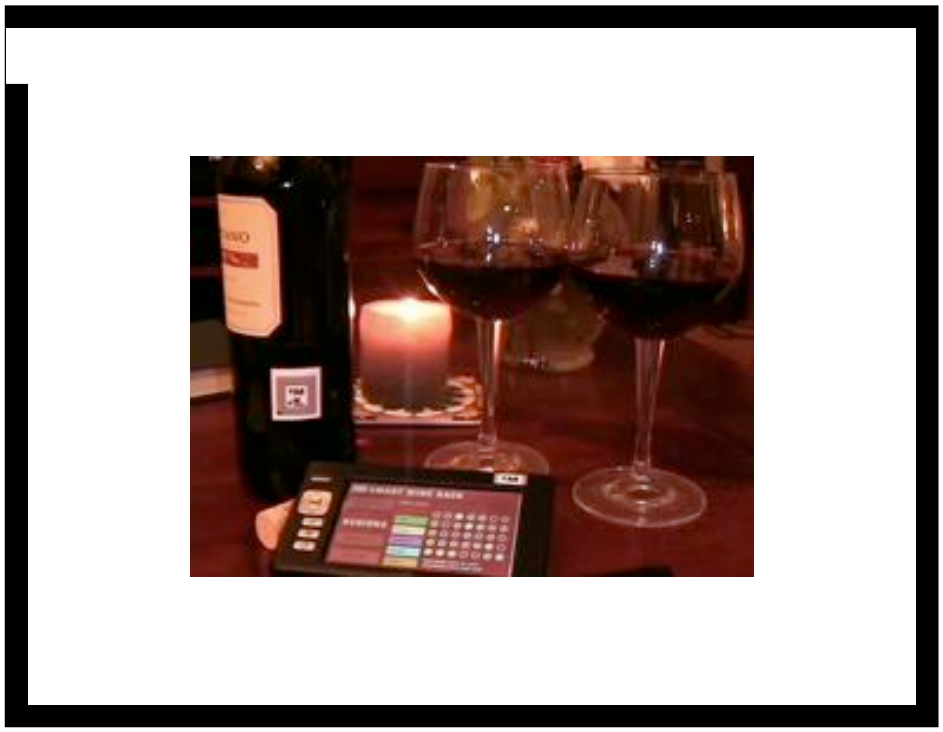
All these technologies exist today, they just haven't been connected. In a few years, they will be.



This is the TMIO Plus Remote Oven/Fridge. It's a programmable oven with compartments that can both heat and cool. Its manual also has a note in it that I find particularly telling. Here it is. Notice how you can't broil remotely.

This stuff isn't coming, it's here.

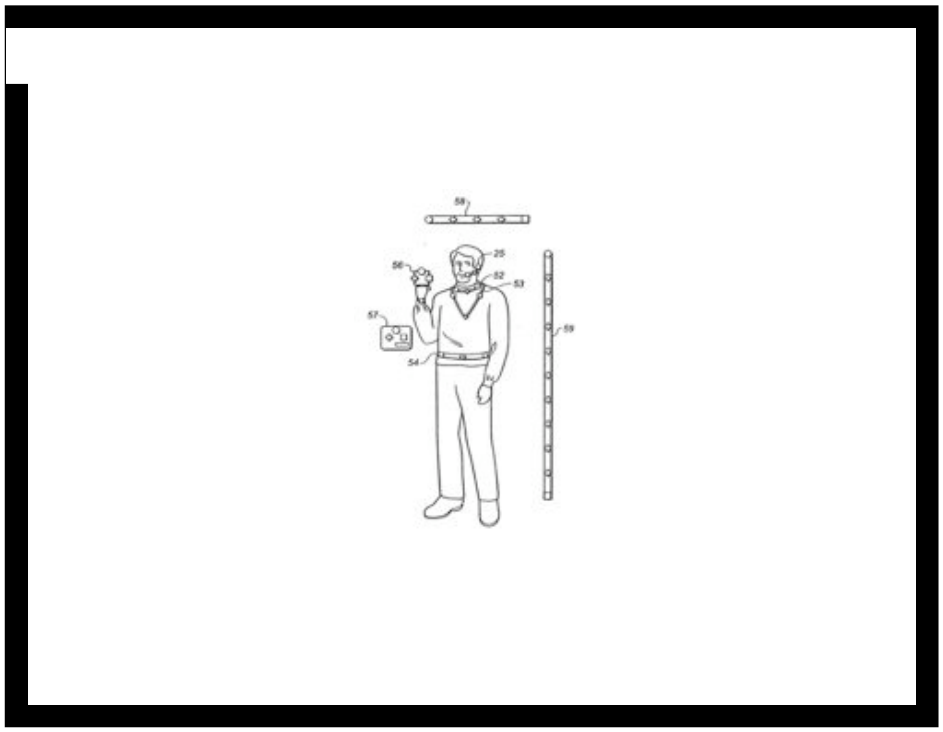
Part 4: the future



Since we're here in wine country, I'd like to show you a video for a product that my company is working on. It's a Radio Frequency ID-enabled wine rack. You're probably familiar with RFIDs as proximity cards for security. The RFIDs we're using are similar, but stickers.

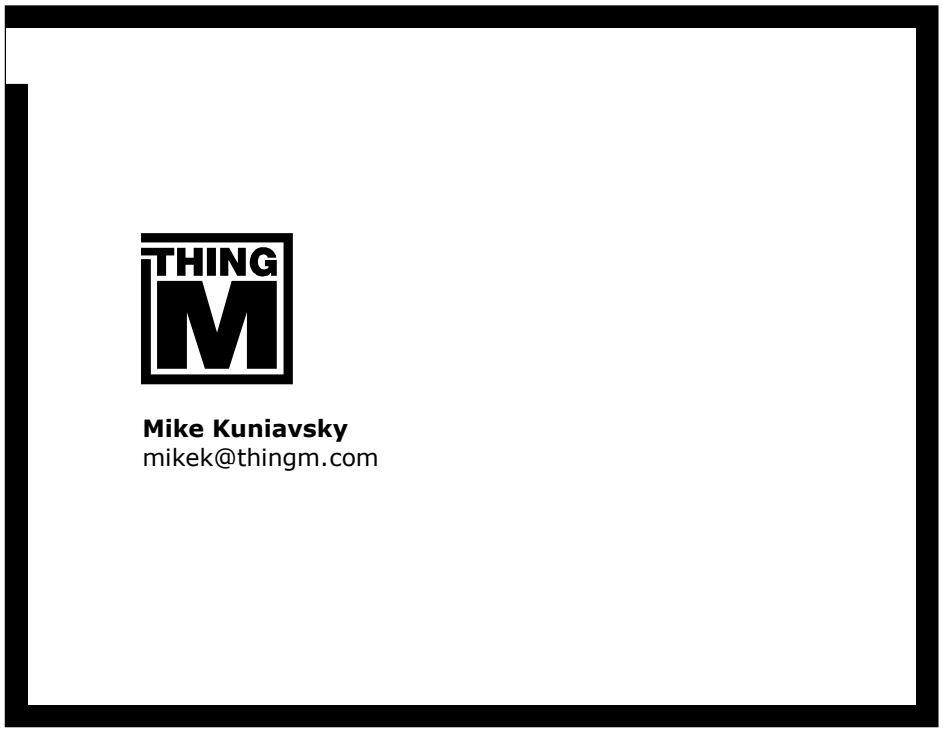
[play WineM video]

WineM is a ubiquitous computing tool for managing your wine. It keeps track of what wine you have and where it is in the rack, dynamically. It makea all of the information that's available about your wine collection available to you, displayed on the bottles. For example, you can light up all california wines in different color by varietal, then narrow that down to only the ones that are drinkable right now, then select the ones currently worth less than $50, have a high level of procyanidin, and are different than the wines your friends have, so you know who to invite over.



Let me finish with this. This is an image from a patent application for tiny, digestible RFIDs from Kodak. If your knife had an RFID reader and could tell your toaster which cow made the milk that went into the butter that you're spreading and the toaster could reply with the gluten content of the wheat in the bread, what would that mean?

Frankly, I don't know. Ultimately, it'll be up to the cooks of the world to decide which of these ideas will be white elephant gadgets like the kitchen computer and which will be genuinely interesting tools. But without a doubt the landscape of what's in the kitchen is changing and changing fast.



Thank you.