Intelligence is not enough

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The emergence of cheap, powerful microchips has enabled us to build intelligence into everyday objects, from washing machines that sense dirt to refrigerators that order food. We are seemingly only steps away from building computers that can leave the desktop and take care of our chores. It is worthwhile to take a moment to look at what are creations are designed for, as that may determine their destiny.

Adding brains to our devices seems like it would solve most of problems with the device –"Then the fridge could order food itself." Unfortunately, our devices solve physical problems, not intellectual problems. Intelligent devices won't be useful until they can take action to achieve their tasks. This may be more difficult than making the device intelligent.

Let's look at the different stages of a device to see what we expect from each, using a simple coffee maker as an example.

Mechanical
To start out, each device is created to solve a task, in this case: brew coffee. Filtering hot water through coffee produces coffee. This has come to be formed as a counter top appliance with a water heater and a paper filter.

Intelligence
After a product accomplishes its basic task, we then add some intelligence to let it accomplish the task without us having to be there, such as a timer to make coffee in the morning. More intelligent devices sense their operating conditions and modify their program cycle, for example brewing coffee at the right strength.

Communication
The next stage comes with the realization that the intelligence of the device is based upon the information it processes -connecting the device to other devices increases the pool of information. If your schedule organizer knows you have an early meeting, it could tell the coffee maker to brew the coffee earlier.

The next 5 years will witness a revolution in device communication. Companies will get communication standards, reducing the hassle of getting those devices to talk to each other. A wireless system, such as Bluetooth, will reduce the need for communication wires. Automatic configuration protocols, such as Jini, will allow a the coffeemaker to figure out how to work with the fridge.

Independent action
Adding intelligence and communication to our devices is only a partial solution: they do not deal with bits, they deal with atoms. Brewing coffee is not a data problem, but a physical problem. A coffeepot that knows when to make more coffee is not much more convenient then one that doesn't, unless it can get the water and grinds to make it. Only when devices are capable of independent action will the promise of the intelligence be fulfilled.

The trouble with the physical
Moving atoms around is much harder than moving bits. Ingredients go bad, moving parts require maintenance, raw materials have to come from somewhere. Many of difficult problems have yet to be explored. If a coffeemaker has to be filled with ingredients for every brew, intelligence is not worth very much.

Native abilities
A more likely alternative is that intelligent devices will be designed for the fields that computing devices have always excelled at: data manipulation and storage. Dealing with data includes many areas previously thought to be physical, including music CD's and television. Phones, rolodexes, personal organizers , recipe

books are all ways to manage and store information. Items like these are primed for computing devices to replace them.

MP3 players and are two products that have been designed to treat television and music as what it really is: data, rather than dealing with the hardware manifestations of it: video cassette and CD's.

The Rio MP3 player replaces the Discman as a portable way to listen to recorded music. Instead of CD's, the music is copied from a computer onto RAM chips in the device, leading to a lighter device with no moving parts. The MP3 format is a popular file standard that is relatively small and can be played on one's computer as well as sent to other people. This open standard has allowed everyone to share the effort of promoting the technology and the frictionless movement of the music is reshaping the music industry.

How much more is an intelligent coffee maker worth than an basic one? If the user's need is not great enough, the communication between the intelligent devices may be limited to getting rid of the blinking 12:00.