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Tech Talk

The Internet of Things, Part 2©

by John McCarthy

The Internet of Things. A rough estimate of between 50 and 80 billion devices connected to Internet by 2020. The potential to change our everyday lives, hopefully for the better. At its very core, IoT is simple: it's about connecting devices over the Internet and allowing them to communicate with us, applications, and each other. Welcome to Tech Talk, brought to you by EnglishWaves.fr.

Where IoT is arguably currently most common is in the field of home automation, particularly home heating and energy use, ranging from lights which click on when someone enters the room and off when the person in question leaves, to smart washing machines which select the appropriate cycle and time for a load of clothing. With an ever-increasing number of governments pushing energy companies to elaborate and install smart meters, these will enable us to turn on heating remotely, set it to reduce the temperature if it's a sunny day and even turn off when there's nobody at home. Here in France, 35 million new smart meters will be installed in every home and business over the next five or six years, hopefully leading to substantial savings from better household energy management.

Being able to control your home appliances from your office has become a big area of growth for the Internet of Things. For example, steam ovens now exist where consumers can start the cooking process through a mobile device and also respond instantly, changing temperature and humidity level or switching function, with a simple touch or swipe on the smartphone or iPad and allow users to watch their food cooking from their smartphone via an interior-mounted camera. Smaller appliances let you make a cup of freshly ground coffee while you're still in bed, while in other areas of domotics mobile devices are increasingly used for identity management. A smart lock can bypass the need for keys, allowing you to gain access to your home with the simple tap of a smartphone or electronic key-ring, and sends you a text when the locks are activated. It can take photos of visitors at your door and automatically sends real-time

picture alerts to your mobile phone, thereby reducing the likelihood of illegal ingress into your cherished abode.

On a grander scale, IoT is far more than smart phones and connected appliances. It's currently scaling up to include smart cities. For the Internet of Things verily to become a reality, the connectivity has to go beyond the products we use and become integrated into the environment around us, using trillions of tiny networked computers embedded in everything. From traffic lights that adjust their waiting time based on congestion levels to parking systems that help drivers find a free parking space using a smartphone app, cities are becoming smarter by the day, making our lives easier and society more efficient.

The one area of IoT which will surely concern all of us one day is in the field of health and healthcare. Smart pills to detect gastro-intestinal anomalies and connected monitoring patches are already available, underlining the life-saving potential of IoT, and of course people wearing smartwatches to track their steps or heartbeat while running have become a common sight. Other very promising connected health ideas: a wearable device developed by the Michael J Fox foundation and Intel that tracks shake patterns of patients with Parkinson's disease, providing immediate and accurate data; *Sonamba* monitors daily activities of senior or ill people, keeping track of medications and can send out periodic wellbeing alerts via SMS to family members; people with heart disease can use *AliveCore* ECG monitor to detect abnormal heart rhythms, by sending wirelessly ECG readings to their doctor or cardiologist, and perhaps reducing the risks of a major heart attack. Advances in nanotechnology will perhaps involve injecting tiny robots into the body for instant and precise blood analysis which could help detect certain cancers in their very early stages, thereby making them more treatable, allow non-invasive surgical procedures in the most inaccessible parts of the human body, and a whole host of other possibilities that will enable us to extend and increase the quality of life. The advantages of IoT in healthcare are considerable, but of course our health is also one of the most sensitive areas of our lives, so the necessity for privacy and security becomes primordial and may decelerate the rhythm of progress.

The boundaries delimiting the Internet of Things is an exercise in imagination. Its promise is that it won't merely connect homes, streets, hospitals, educational establishments and cities – it's much more than that and will ensure a whole new range of interactions that we haven't as yet even envisioned, and thus it's not just about things *per se*, but also about the people and environments that influence them. I'm sure many fear that we're becoming over-reliant on technology and therefore increasingly vulnerable not only to its potential abuses, but also to newfound existentialist questions

concerning the changing nature of our so-called humanity. But that, I'm afraid, is outside the scope of this Tech Talk.