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Autonomous Vehicles are Not the Only Fruit

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Happy new year everyone.

Over the holiday season, I watched a video clip about Panasonic's Regi-Robo™ (the name stands for 'register robot'). In the video, a shopper goes around a supermarket putting the products they want into a basket. When they have finished, they put the basket onto a special table that opens the bottom of the basket and the goods are automatically scanned as they drop into a carrier bag below. I found myself strangely happy watching the video, then realized why. It was not because I was sure it was absolutely the deepest, best, most disruptive innovation I had ever seen, but because it was *an approach to retail innovation that I hadn't seen before*. Not the same old omnichannel story. Not a repeat of Amazon, Alibaba and others experimenting with stores where you don't explicitly need to checkout.

Image: Lawson, Inc and Panasonic Corporation

I am not 100 percent sure how successful this innovation will be, in Japan or outside, but it was great to see some different thinking/application of technology. I remember having a similar feeling when I learned about Volvo Cars' 'roam delivery' experiment, utilizing the digital connectedness of cars to allow shopping to be delivered to the boot/trunk of your car, wherever it happened to be. Audi, Amazon and DHL did something similar with 'Audi Connect Easy Delivery'.

Image: © Audi

The biggest danger for most companies in 2018 will be a *failure to innovate*, so they do not escape the inertia of their legacy infrastructure, processes, products, business models, customer experiences and company culture. This was poignantly symbolized by Belgian artist Mikes Poppe in November 2017, who chained himself to a marble block representing the legacy of art history he was trying to escape by chiselling his way out. After 438 hours, he sadly admitted failure and had to be cut free.

But a second-order and more subtle danger lies in *innovating in the same way your competitors are, or in the way the media and advisory industry is telling you to do*. To borrow a phrase from Noam Chomsky, the media is 'manufacturing consent' about what digital innovation should be taking place in your industry and in the world in general. But innovation should be contextual: where have you got an advantage? Where have you got vulnerabilities? Where are the 'white spaces' that your competitors are ignoring? Where is the greatest source of profit for you? What special circumstances does your geography and/or regulatory regime create?

So, how can we avoid being digital innovation fashion victims in 2018 and beyond? Those who know Leading Edge Forum will know we are big on developing great proactive sensing and listening capabilities, equipping staff with 21st century human skills, building diverse workforces, adopting agile methodologies and creating cultures, management and measurement systems that tolerate experimentation. But over and above that, we should think about how to encapsulate our business and our goals, in order to focus innovation.

For example, if we are a car company, we might ask the question 'How can we apply digital technologies to make car manufacture and delivery higher quality, lower cost and/or faster?' That is a very laudable goal, which would lead to innovations in the internal processes of the company. But if we extend our ambition to making the customer's buying experience better, that opens up a whole new range of innovations at the front end of the business, such as rich experience of the car in the browsing and customizing process. If we further extend

to the customer's entire driving experience, that encompasses another whole set of innovative possibilities. Longer-term questions about how we fit in to a world where people don't need to drive leads to the hot topic of autonomous vehicles. And thinking how we can create more value for drivers, when what they are driving is an always-connected mobile computer, leads to a completely orthogonal set of innovations such as 'product delivery to the car'.

It is important to note here that the crucial (if tiresome) adage 'Start with user/customer needs' is insufficient to target innovation. For example, if you frame the customer of a car as a driver, you will tend to focus on their needs as a driver. If you focus on your current customer base's needs, you will never innovate towards digital business extensions that have nothing to do with them. And if you focus on the needs that customers know they have, you are less likely to reach those digital blue oceans – scratching itches B2B or B2C customers haven't yet worked out that they have.

We can draw inspiration from a fascinating branch of theoretical computer science called *predicate transformer semantics*, whose practitioners seek a way to formally prove that programs are correct. Springing from this domain is the concept of Strongest Postcondition (SP) – the most specific thing you can say that will be true once a program has finished running. Let's take the classic example of a sorting algorithm – a program that takes an unsorted list (such as the shopping list 'eggs, bread, cake, rice, cheese, milk') and turns it into an alphabetically sorted list ('bread, cake, cheese, eggs, milk, rice'). We could define our goal, our SP, to be that once we have finished running the program, every element of the list is alphabetically less than the element immediately following it. This results in a program called a bubble sort, which runs through the list flipping pairs of items that are out of order, and repeats until they are in order. If, on the other hand, we define our SP to be that once the program has run, if we choose any random element of the list, every element before it will be less than it and every element after it will be more than it, then we get a sorting algorithm called quicksort. There are plenty of other sorting algorithms (including insertion sort, shell sort, merge sort, bucket sort, comb sort and the fascinating sleep sort). Parallel processing generates new considerations, and quantum computing will create new sorting possibilities. Each of the sorts performs best in different circumstances. You need to choose your sorting algorithm depending on what is important to you: best case performance, average performance, worst case performance, memory usage, minimizing number of changes, inspectability/simplicity, susceptibility to parallel processing, performance with a particular type of data. Each of these goals leads to a different framing of the problem, and a different choice of algorithm. In other words, the way you conceptualize the purpose and the goal drives the innovation.

The 'so what' of all this is that in 2018 we should consider putting much *more energy into the innovation questions we are asking*, not just experimenting with or developing the answers to those questions. In the past, technologists have been criticised for being too supply-side in their innovation thinking, going after problems like 'How can we make the perfect IT architecture?' or 'What can we do with blockchain?' I would like to extend that criticism, and say that companies have been too focused on solving relatively simple, unimaginative, same-as-everyone-else innovation problems.

We should actively rebalance our innovation efforts, so we spend significant amounts of effort on innovating the innovation question itself – innovating the *why?* as well as innovating the *what?* and the *how?* Maybe we could even create different innovation teams around different *why?*s. And, of course, populate them with a diverse set of people that balance deep contextual knowledge with fresh, challenging thinking.

Game on.