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Chip revolution

By Seelen Sakran

IT IS what one would call a heart-warming tale of national pride. The arduous task of one man to nudge his country towards achieving developed status by 2020. This is the story of former Prime Minister Tun Dr Mahathir Mohamad and his vision for Malaysia.

Exemplifying this is the Malaysian Microchip (MMChip) - considered the most advanced microchip in the world. Through Dr Mahathir's initiative Malaysia acquired the property rights to design, produce and market this chip. The good news is that it only costs US$ 0.10 or 38 sen to produce each chip.

Currently, the radio frequency identification (RFID) chips available globally cost about US$ 0.50 per chip, while the external antenna costs another US$ 1.00.

To quote Dr Mahathir: `The project is a national strategy to achieve Vision 2020. The project targets to enrich the Malaysian community and create greater value in the Malaysian economy in the distribution sectors, import and export, environmental and other potential sectors.'

So what is the MMChip all about? Measuring 0.25 sq mm - and about the size of a decimal point, it can be embedded in paper or almost anything. `It also has a built-in antenna, quite unlike other microchips available', says Dr Mahathir.

This technology is useful in several ways. According to FEC Inc, the Japanese research and development company which designed the chip, `It can be used for a variety of purposes, such as the replacement for barcode tags in retail goods, differentiating between genuine and counterfeit currency notes, mobile phones and airport luggage tags.' What some people do not know is that this chip can also be embedded into bullets and the human body.

`Some even believe this embedded bullet technology can be a preventive measure for terrorist acts,' notes one senior official at FEC Sdn Bhd, a 50-50 joint venture between the Malaysian government and FEC Inc of Japan.

One question that crops up is, `If this chip is so advanced why is it that the United States or even Europe did not grab it? Well, Kunioki Ichioka, the chief executive officer of FEC (M) Sdn Bhd, explains the MMChip is actually a multi-band RFID - a next-generation radio frequency identification chip.

Why did FEC Inc not partner the US for this project? Simply because Malaysia was the first country to call it - to use it as a national project. `If we had chosen a US company it would not have had the same impact as what Malaysians aspire to be - to be an ICT informed society. Malaysia as a country could then take centrestage in this technology.'

Having said this the US, United Kingdom, Israel and even Japan are also working on a new low-cost chip, to be out sometime in 2005 - but it will not be multi-band, as Malaysia has the patent for such a chip.

In that sense, where both the US and Europe have adopted a single RFID frequency infrastructure, the MMChip will no doubt have great potential in both continents readily.

Can these countries not change the infrastructure? Ichioka says to change it from the root will not be easy. `Because of the MMChip's flexibility in its frequency range it can be accepted by these countries', he says.

RFID is also dependent on existing radio laws of a country. As such,

Europe uses UHF 868MHz - 870MHz, the US uses 902MHz - 928MHz and Japan uses 950 MHz - 956MHz. Malaysia uses about the same band as the US. It is understood that the Japanese are at the forefront of RFID technology.

So, how much did Malaysia pay to FEC Inc for this cutting-edge technology? Dr Mahathir declines to say how much except that it `is reasonably priced'. But reports indicate the design of such chips can run into hundreds of millions - as much as US$ 300 million to US$ 400 million.

Dr Mahathir feels what is important is not recouping the investment, but knowing and understanding the technology that is useful for the country.

Not surprisingly, he has been quoted as saying: `We are not looking at the money but rather the technological advancement.'

Which comes to the question; Who will manufacture this advanced chip and where? Dr Mahathir explains that initially the chip will be produced in Japan by FEC Inc, and some time in October this year it will be produced locally by Silterra Malaysia Sdn Bhd (Silterra), a Malaysian semi-conductor manufacturer based in the Kulim Technology Park in Kedah. Khazanah Nasional Bhd and Bank Industri (M) Bhd hold a 68% and 8% stake in Silterra respectively.

When will this chip be commercially available? At the moment, Iris Corporation Bhd is working closely with FEC Sdn Bhd for its ID card system. Other government agencies will be roped in at a later stage. Countries like China, Taiwan, Canada, the US, Australia and Mexico have shown interest. Ichioka says a UK-based organisation active in RFID technology, Auto-ID Labs, is also interested in the MMChip for the UK market. Unfortunately, no date has been set for the chip's commercial availability, locally or abroad. An announcement will be made later.

One thing is certain. Dr Mahathir is certain it works. `I have actually seen it work,' he says.

National aspirations aside, is there a downside to this technology? Some believe metal or aluminium, or any conductive material can shield the radio signals.

For example, if a soft drinks company intends to put an RFID tag on every can of soda it sells, it can have a hard time getting around the metals, plastics and liquids that block the radio signals from the tags.

This, Ichioka frankly admits, can be a problem but he maintains there is a solution. `As the signals read by the antenna can change between metal or paper, the customer needs to identify what are his specific needs and tell us. We can then custom-make the chip to read for what substance it is embedded into. In other words, customers need to state their specifications.'

How about the disadvantages of the MMChip? Suffice to say, preventive measures have been taken and the new generation of the chip has `anti-collision' technology. `Anti-collision' refers to the simultaneous reading of many tags in the same radio frequency field. This will, for example, allow it to have the ability to scan books on the shelves without tipping them over or removing them. A hand-held inventory reader can be moved rapidly across a shelf of books to collect all of the unique identification information. Using wireless technology, it is possible not only to update the inventory, but also to identify which items are out of proper order. It is that simple.

So, who says Malaysia cannot beat the market in new technology? This time with its patented RFID technology, with a little help from its `Look East' partner, it certainly can.

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