

Ready for a peek at S'pore 2020?

By Teo Ming Kian

KELVIN was nudged out of bed by his home robot, Simpli™. He had a very important meeting to go to.

On his way to breakfast, prepared by Simpli™, Kelvin peeked into his son's room. The four-year-old was absorbed in a holographic image of a volcano, moving tectonic plates with his hands.

As a researcher, Kelvin knew that digital animation had come a long way and the science and technology used for games development had made it possible to enhance the power of education and maximise people's potential.

For a moment, he reminisced about how all these developments had been spurred by the increased R&D effort driven by the National Research Foundation (NRF), under the direction of the Research, Innovation and Enterprise Council chaired by the Prime Minister.

Sipping vitamin-enriched durian-flavoured Newater, he unrolled his flexible display to scan The Straits Times as it was beamed in via wireless broadband.

One headline stood out, 'Thirsting regions seek Singapore solutions'.

Many countries were now flocking to Singapore, as there was a critical mass of talent, water technology companies and research institutions from all over the world here, conducting research on advanced technologies to bring costs down.

Singapore was now self-sufficient in water and its know-how was much in demand, with 'Made in Singapore' systems, solutions and components contributing a third of the global market.

Kelvin surveyed the concentration of research institutes and facilities at the Portsdown Knoll in Buona Vista's one-north. He pressed a button on his sleeve and dialled his favourite personal-taxi company. The driverless fuel-cell-powered electric car would arrive in five minutes.

He would finally meet in person his partner, Dawn, a Singaporean who had been in the United States under an NRF exchange fellowship. She had been collaborating with him on a project all this while through the Nu-Internet. Kelvin had also been exploring various applications for their new bio-fuel invention, and had met several interested industry figures.

This was their big day. An audience had gathered here, with fellow researchers from around the world connected virtually via video links. They were waiting to hear the duo speak of their invention that could change the world.

A vision too remote? Perhaps. But definitely a possibility.

Singapore's journey

SINGAPORE has come a long way: The 1960s saw a labour-intensive industrialisation strategy, moving to being skills-intensive in the 1970s, and capital-intensive in the 1980s. We emerged with a technology-intensive economy in the 90s, shifting and adapting as the world changed.

We embarked on our first Science and Technology Plan with the setting up of the National Science and Technology Board in 1991. Research institutes were established, research manpower trained and R&D promoted in foreign and local companies. To provide value to investors, we had to have the capability and capacity for companies to create new products and processes.

Having built up a good pool of well-educated people, they became researchers, manufacturing engineers and managers. Thus began our journey towards tapping increasingly into intellectual capital, as it became the new currency of competition.

We want Singapore to be a place where ideas born would be cradled, nurtured and developed into products. We want to do R&D that matters.

An exciting research environment is not enough. It needs the tertiary and research institutions to push their ideas and creations towards commercialisation. This must be complemented by a vibrant community of entrepreneurs, angel investors, venture capitalists, intellectual property (IP) experts and technology transfer professionals.

Add to these ingredients strong governmental support and a ready pool of R&D talent, and we would have achieved a vibrant technopreneurial ecosystem.

Universities are no longer just institutes of learning. They will need to transform themselves into research universities with a substantially higher proportion of graduate students and research activities. Breakthrough research will not only allow them to teach better, but also make a difference to Singapore's material and cultural well-being.

Research universities will also attract the cream of the region's brains. They will add diversity and intellectual capacity to the learning environment, infuse effervescence and an innovative spirit, and spur our own home-grown talent on.

They serve as focal points for collaboration, bringing together other universities and institutes, as well as attracting local and foreign companies to Singapore.

To stretch our young PhD researchers, the best among them should be given the resources and independence to assemble and lead their own teams, to pursue their research passions.

The universities will foster innovations that have practical commercial applications. Good ideas will need support early to be successful commercially. We must have good technology transfer policies to encourage the spinning out of intellectual property to the market.

Inventors must have ownership of their efforts, and bring in professional management to create world-class companies. There has to be a virtuous circle in which commercial success would encourage the creation of more IP, which would in turn be commercialised.

The foundation - comprising venture capital, technology incubators and angels - provides a favourable environment for start-ups to form and grow, or for good IP from research to be licensed, as we build and strengthen our innovation system.

Many local and foreign companies are already conducting a substantial amount of R&D here. This can be further strengthened. A vibrant innovation ecosystem will encourage and attract more of such activities in Singapore.

Underlying all this is the need for the best people. Create - Campus for Research Excellence and Technological Enterprise - an initiative mooted by the NRF, provides Singaporeans with good opportunities to be engaged in cutting-edge R&D.

Create will house research labs from the top research universities, and act as a magnet to attract young graduate and post-doctoral talent to Singapore from all over the world.

This will help nurture a cadre of extraordinary scientists, whose discoveries and innovations can generate new growth engines for Singapore. These top research minds - local and foreign - must want to be rooted in Singapore.

Create will be home to world-class universities, corporate labs, research institutes and start-ups, and a veritable community of innovators. The energy and buzz will be felt beyond the workplace.

Back to the future

Kelvin woke with a start from his deep reverie. His personal-taxi had arrived. He threw his low-sugar apple into an organic solid waste trap, which sucked the

garbage away to the Lim Chu Kang Worm Farm, where the compost from this national-level waste recycling effort was used for the high-tech vegetable farms in the area.

How science and technology had transformed the way we lived and worked, he thought. Opportunities were vast and continued to open up.

Singapore would continue to prosper and have its place in the sun, if we continue to keep pace and do R&D that matters. Already Kelvin had a grand vision of Singapore for the next 15 years.

A dream? Perhaps. But definitely a possibility.

The writer is Permanent Secretary of National Research and Development in the Prime Minister's Office, and of the Ministry of Finance. He is also a board member of the National Research Foundation.

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