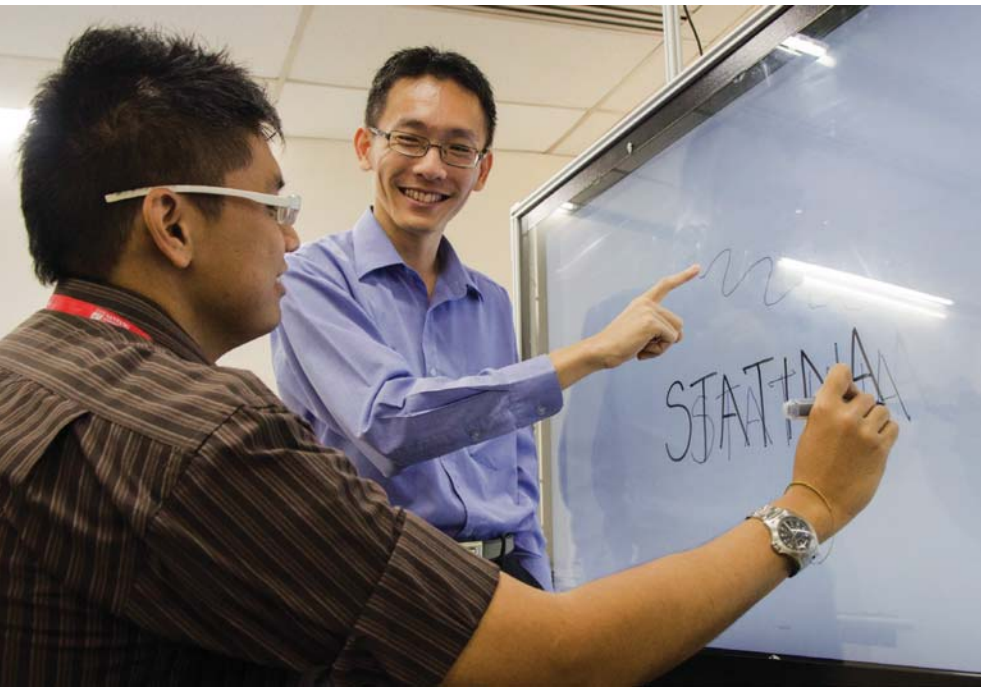

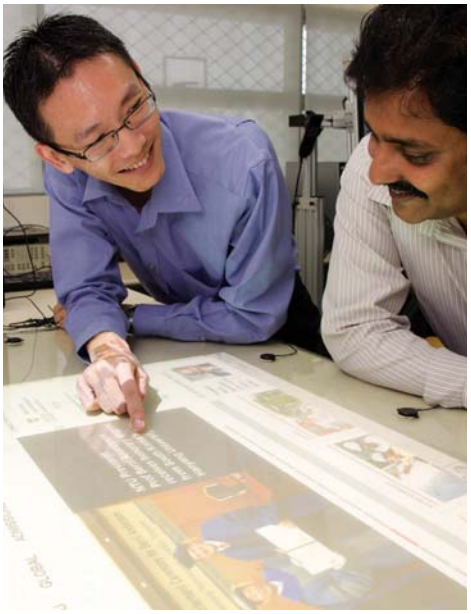

Next Generation Human Computer Interface for Everyday Objects

"The world is your canvas." This saying has now taken on a more literal meaning.

STATINA, which stands for "Speed Touch and Acoustic Tangible Interfaces for Next-generation Applications", is the latest touch-sensing technology developed by NTU. This system transforms any hard surface—wood, metal or glass—into a touchscreen, as if by means of some arcane magic!

After four years in the making, Asst Prof Andy Khong was finally able to unveil the fruits of his labour in July 2013. He and his team were knee-deep in the research of the propagation of vibration waves on solid surfaces. Through the use of low-cost vibration sensors and a wholly unique signal processing algorithm, the system can determine with precision the location of a light tap on a surface. Hook it up to a web camera and the movement of fingers or objects on the surface can be tracked. "Since sound waves propagate through matter at a certain speed, it is possible to derive the location of the touch based on when each sensor picks up the signal," explains Asst Prof Khong.

The practical uses of STATINA are many. Retrofit the system onto a flat-panel TV and the latter becomes a touch-sensitive display screen. Connect it to a computer and it can double up as interactive billboards, mall directories and even as a digital whiteboard to draw on.

"In future, you could play computer games or draw sketches on walls or windows since almost all surfaces can be made touch-sensitive with our system," says Asst Prof Khong.

STATINA uses low-cost equipment and this translates to considerable savings. The current display screens fetch a price to the tune of thousands of dollars—utilising STATINA will only cost users a fraction of this hefty price.

Already making headlines around the world, this trailblazing technology has also been published in several academic publications and conference papers. The research findings were also documented in the journal by the Institute of Electrical and Electronics Engineers, the world's largest professional association in this industry. In December 2012, the team also won the Prestigious Engineering Achievement Award, which is recognised by The Institution of Engineers Singapore.

In the pipeline are plans to commercialise this invention by developing a more compact system. Asst Prof Andy Khong and his team are also looking to expand STATINA's capabilities to include the tracking of movements using optical cameras.

01 02

01 Asst Prof Andy Khong with his undergraduate student Zaw Lin demonstrating the touch interface technology on a 50" flat panel display
02 Asst Prof Andy Khong and Research Fellow Dr V. G. Reju using their prototype