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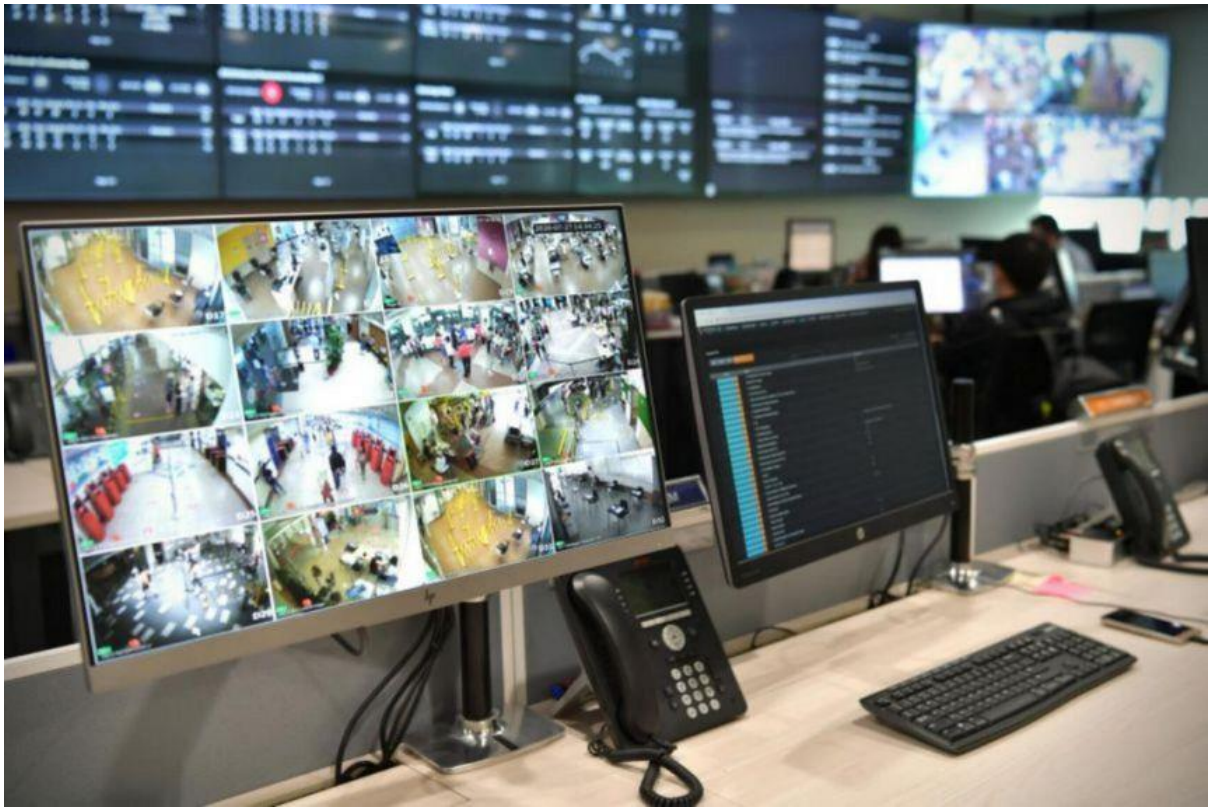

With new Covid-19 cases spiking into the hundreds daily in May last year, a team from the National University of Singapore (NUS) raced against time to develop a system to help government contact tracers identify close contacts of patients.

The high volume of cases had threatened to overwhelm contact tracers, who needed to ensure that those exposed could be quickly identified, tested and isolated to limit further spread of the coronavirus.

Despite their relative inexperience in creating such a large-scale system, the team of six current and former NUS students managed to develop a Web application in under three weeks, with help from the Singapore Armed Forces (SAF).

The app collated information from various sources to provide contact tracers with an overview of the patient's movements and the people he was in close contact with.

The NUS team's efforts were recognised on Thursday (March 18) at the IT Leader Awards 2021, which was themed Tech Heroes From Crisis to pay tribute to people who made a significant positive impact on the community through technology during the Covid-19 crisis.

The awards were organised by the Singapore Computer Society.

At the awards ceremony at the InterContinental Singapore hotel in Bugis, Minister for Communications and Information S. Iswaran said that Singapore needs to nurture more tech heroes like those honoured at the awards.

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He added that the Government is investing heavily in equipping people with digital know-how, and creating good jobs for Singaporeans. They cut across the skills spectrum, ranging from deep tech to tech-lite roles.

Mr Iswaran noted that the SGUnited Jobs and Skills programmes launched last year have placed more than 12,400 job seekers into infocomm technology jobs and skills opportunities as at the end of January 2021.

There are still more than 18,700 jobs, company-hosted traineeships, attachments and training opportunities available.

Other winners recognised at the awards included a team from the Integrated Health Information Systems (IHiS).

The team developed a Command, Control and Communications (C3) system at Tan Tock Seng Hospital (TTSH) that helped the National Centre for Infectious Diseases (NCID) to quickly make bed space available for patients and safely manage the crowd flow as Covid-19 numbers surged.

The C3 system was officially launched in December 2019, and there were plans drawn up to develop, over a 12-month period, more features for pandemic management.

"But, of course, when it was quite clear (the Covid-19 pandemic) was coming our way in January last year, we finished this in about four months," said Mr Bruce Liang, IHiS' chief executive.

The rapid deployment was done progressively, with 21 versions of the system, or one to two releases a week.

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This contrasts with systems that might get upgraded once or twice a year, or patched once every month or so, noted Mr Liang.

The amount of work involved was huge, requiring the IHiS team to integrate information from sensors and real-time data with IT systems, process the data and make sense of it visually.

Using artificial intelligence and data analytics, the C3 system helps healthcare workers to predict demand for hospital beds and other healthcare resources, as well as identify bottlenecks such as long waiting times for patients and crunch at laboratories performing a large number of patient tests.

This allowed TTSH and NCID to better control the flow of resources across both institutions, which are closely sited and share the same pool of manpower.

The C3 system has over 1,500 indicators, including tracking of hospital equipment and how congested beds and wards are, many of which are monitored in real time.

For the NUS team, its Web app pulls information on patients from various sources, such as a person's travel history, family information and TraceTogether and SafeEntry contact tracing data.

The data compiled would also go on to help the Ministry of Health with its daily updates to the public on the Covid-19 patient situation.

Mr Zhu Hanming, 23, who was the co-team lead of the NUS team, said that the Web app converted an existing contact-tracing process, involving manually updating patient activity in a spreadsheet, into a digital form that could be automatically updated.

This was needed to cope with a large number of Covid-19 cases because the previous manual updating process, from the days of the 2003 severe acute respiratory syndrome (Sars) outbreak, was incapable of handling the high patient numbers.

The app was built off a concept version that SAF had initially developed.

SAF had sought the help of NUS computing Associate Professor Ben Leong in May to create such an app.

Prof Leong then assembled a team from a Computing for Voluntary Welfare Organisations initiative, sponsored by the sovereign wealth fund GIC, which helps voluntary welfare groups build IT systems.

The NUS team comprises five computer science students - four in Year 1 and one in Year 3 - and a computer engineering graduate.

The most difficult challenge they faced was that they had little time to develop a functioning app, said Mr Zhu, a first-year computer science student.

"The time period we had to deploy the app and make any changes to it was overnight.

"We couldn't possibly have the contact tracers wait for us to finish deployment in the day," said Mr Zhu, adding that there were also last-minute changes due to the ever-changing situation on the ground.

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But being able to deploy the app in June last year in under three weeks was satisfying for the team and worth the sleepless nights.

"It was incredibly fast for the scale of the application we built," said Mr Zhu.

There were 13 winners for this year's Tech Heroes From Crisis awards.

There were also seven winners from last year's IT Leader Awards recognised on Thursday as the 2020 ceremony had to be postponed owing to Covid-19.

The winner of the IT Youth award for 2020 was Mr Goh Jin Qiang, a system analyst at the Urban Redevelopment Authority.

When Mr Goh, 29, was a student assistant at an infocomm tech lab in the Singapore Management University in 2019, he led an initiative called Project ShineSeniors.

It analysed data on senior citizens living alone in their homes to try to improve their well-being.

He did this by collating information on their daily living patterns to identify any unusual activities - like long periods of inactivity by a senior - so that community care providers can be activated to help.

Winning the IT Leader of the Year award for 2020 was Mr Howie Lau, the assistant chief executive for media and innovation at the Infocomm Media Development Authority.

Mr Lau was credited with launching a number of programmes to better support tech professionals, help mid-career professionals who were displaced and increase the digital skills of non-tech professionals.