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BOTS

THE recent increase in Covid-19 cases among locals is indeed worrying. After the country successfully brought down the number of new cases, we surely do not want to see the number go up again.

Aside from adhering strictly to the standard operating procedures, like wearing masks at public places and practising social distancing, the use of technology, such as the geographic information system (GIS), can better help the authorities conduct a more effective contact tracing.

BIG CHALLENGE

According to Esri Malaysia's chief technology strategist Joanne Loh, the Covid-19 pandemic is a big challenge to the authorities. "Currently we gather tonnes of data through the various QR code platforms, but what do we do with those data?" she asks.

That is why Esri believes the person-to-person approach in the traditional contact tracing should be expanded to include person-to-person-to-place, as this will make it easier to track people with symptoms and who are positive with the virus.

"We appreciate the initiatives taken by the government and private sector in providing the QR codes. With the usage of smartphones, QR codes are easier to scan to help the government detect and battle Covid-19.

"However, what is the next step? What do we do with the data we have collected from the QR codes?" says Loh.

Including place or location makes sense in today's highly complex, highly mobile and interconnected world. All that is required is to enable contact addresses and community locations during the data collection process.

STREAMLINING DATA

Esri Malaysia believes that the collated data

Geographic information system can help authorities better curb the spread of Covid-19 infection, writes Izwan Ismail

For more effective contact tracing

needs to be streamlined and processed in one singular platform to create a bigger and more accurate picture about one particular location or area.

For example, in the management of monitoring the spread of Covid-19, people are required to scan the QR codes and fill up their name and telephone number. This set of information can be stored as a unique ID.

"The ID can be used to track the places these people have been to, the time of check-in, how many stops are made and the estimated time spent at each premises until the next check-in is recorded. By using GIS, we can identify if the individuals have visited places outside their regular routes or if they have been to any areas tagged as the yellow or red zone," says Loh.

"The overlapping data can create a pattern that allows us to monitor if there's an increase of cases in an area. Imagine if this smart mapping system is applied nationwide — the government can quickly identify

new clusters and plan the next course of action accordingly," she adds.

"By analysing this data, GIS can also predict the capacity shift requirements based on the trends. These smart predictions can help the Health Ministry to provide hospital capacity, for example, number of medical personnel, beds and facilities," says Loh.

"Therefore, it is vital for every member of the public to scan the QR codes, regardless of the platform used. The most important thing is to ensure all local authorities receive the same data and the same updates in real time," she adds.

LOCATION 'ENABLEMENT'

Tools like link analysis and centrality can identify places that may connect cases and contacts otherwise unknown to one another.

"For example, maybe the person who is a confirmed case shops at the same home improvement store as a contact. When places of transmission are identified, the

authorities can take action, be it cleaning and disinfecting or tightening social distancing measures in and around that location," says Loh.

She says the authorities can use GIS to achieve location "enablement" and perform location analytics.

Location enablement includes managing data in a system of record and digitising and streamlining data collection.

Meanwhile, location analytics involves examining collected data to identify potential contacts and determine where specific cases might originate.

SUPPORTING LARGE-SIZED DATA

Loh says Esri's GIS platform has the capacity to support large-sized data that can help government agencies to monitor, isolate and analyse the information needed efficiently while battling this outbreak.

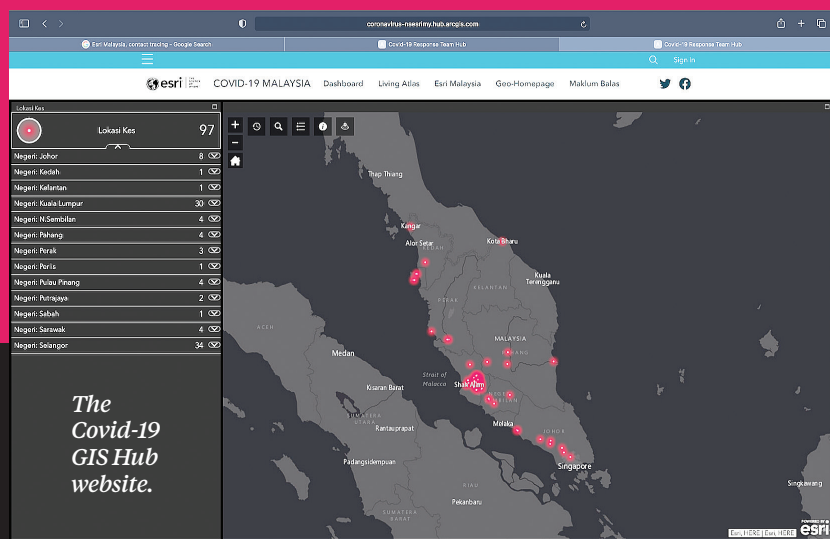
"For example, Individual A and Individual B, who do not show any symptoms such as fever, coughing and sneezing, may appear to be healthy.

"However, when they enter a shopping mall, individual A could be exposed to a Covid-19 patient who has yet to show any symptoms. If individual A later goes to the same shop with individual B, then there is a risk that Individual B might be infected too," she says.

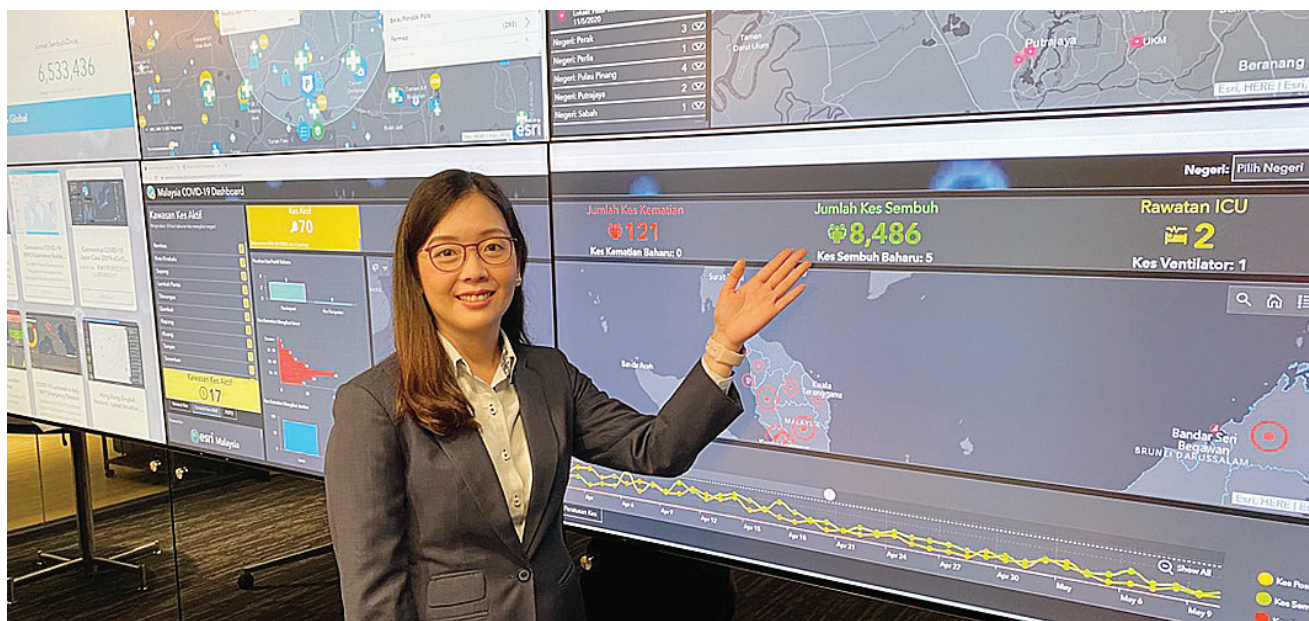
Based on the location data that is gathered, GIS technology can identify the close contact that took place between the individuals who might have been infected to get treatment immediately.

Currently, Esri has established a Covid-19 GIS Hub website (<https://coronavirus-nseesri.my.hub.arcgis.com>) to collate official information from government authorities.

Using its ArcGIS System, which is a system for working with maps and geographic information, Esri also maps facilities so people can identify where medical resources, equipment, goods and services are located so as to better and more effectively respond to current or potential impacts of an outbreak.



The Covid-19 GIS Hub website.



Loh showing how GIS can better help the authorities in contact tracing.