

Dialogue on Social Impact Exchange

Stakeholders in social intervention projects discuss scorecard as guide for listing on SIX

AGENCI Inovasi Malaysia (AIM) held a dialogue to gather feedback on how the Social Impact Exchange (SIX) can progress further with the formulation of a dedicated scorecard to help enhance the role of this unique exchange for the rakyat.

The one-day stakeholder engagement session sought to pave the way forward for SIX, Malaysia's first pay-for-impact exchange, which was launched by Prime Minister Datuk Seri Najib Tun Razak last December.

The SIX Stakeholders' dialogue took an initial step towards creating the first standardised SIX scorecard for impact investing in Malaysia, and was attended by more than 20 organisations representing funders, corporations, government agencies and regulators.

The SIX scorecard serves to quantitatively identify strong, impactful organisations and projects for listing on SIX, and provide organisations and projects with a guided path of improvement towards potential listing on SIX.

The relevant information gathered will be incorporated into the design and development of the SIX scorecard, allowing strong monitoring, tracking and transparency. AIM chief executive officer Naser Jaafar stressed that SIX was a platform for impact investing, an investment strategy that aims to generate measurable, beneficial social or environmental impact as well.

"The dialogue was held to enable key stakeholders to provide early input into the development of the SIX scorecard, against the background of global standards for impact investment and exchanges.

"With the development of the SIX Scorecard, AIM will be creating a global benchmark that Malaysia can be proud to call its own," he said.

The dialogue was attended by representatives of private corporations, government agencies, non-governmental organisations (NGOs), social purpose organisa-



The meeting was attended by representatives from Bursa Malaysia, RoS, KWAP, IRD, MaGIC, Maybank Foundation, Maybank Investment Bank, PNB, Petrosains, Securities Commission Malaysia, Companies Commission Malaysia, UKAS, UNCDF and Khazanah Nasional's Yayasan Hasanah.

tions (SPOs) and social enterprises from Bursa Malaysia Bhd, Registrar of Societies (RoS); Kumpulan Wang Persaraan (KWAP); Inland Revenue Department (IRD); Malaysian Global Innovation & Creativity Centre (MaGIC); Maybank Foundation; Maybank Investment Bank Bhd; Permodalan Nasional Bhd (PNB); Petrosains Sdn Bhd; Securities Commission Malaysia; Companies Commission Malaysia; Public Private Partnership (UKAS); United Nations Capital Development Fund (UNCDF) and Khazanah Nasional Bhd's Yayasan Hasanah.

This social intervention project funders platform is an advocate for social economy that cuts across private, public and social sectors, embracing all types of engagements that explore impact investing.

Designed to parallel a stock exchange, SIX will be the focal point for funding SPOs and their social intervention projects.

Prior to listing on SIX, SPOs including NGOs and social enterprises will be evaluated based on their capacity, track record, intended social impact, financial sustainability, measurement and innovative

elements in a process similar to an initial public offering (IPO) listing exercise for a company.

Using the information generated through this process, funders can seek out social intervention programmes that appeal to them and that reflect their companies' corporate goals.

AIM also organised a Funders Workshop that leveraged on AIM's Social Outcome Fund (SOF) and Asia Venture Philanthropy Network's (AVPN) regional expertise to introduce ways in which funders can diversify funding to create social impact beyond traditional donation and grant-making models.

At the workshop entitled "Scaling Up Impact: Evolving Grantmaking and Philanthropy in Malaysia", AIM social innovation vice-president Dr Melissa Foo shared insights into how funders in Malaysia can best support the growth needs of the SPOs in Malaysia through AIM's innovative social financing models and platforms such as the SOF and SIX.

Representatives from the AVPN also presented an up-to-date scenario of the development of impact



Naser (left), who chaired the scorecard dialogue, and Dr Foo who spoke on "Scaling Up Impact: Evolving Grantmaking and Philanthropy in Malaysia".

investing within the region.

AVPN is a funders' network based in Singapore established to build a high impact philanthropy and social investment community across Asia.

The presentation was followed by a discussion to simulate an actionable ecosystem for building

innovative funding models.

AIM encourages and invites all SPOs with high-impact projects to apply to be included in the SIX registry through its selection process, and be matched with potential funders to explore potential partnerships in social intervention work.

LAMPIRAN 2

HARIAN METRO (SETEMPAT) : MUKA SURAT 76

TARIKH : 6 MEI 2018 (AHAD)

KAFE AHAD



Zaman beralih dan masa berlalu namun dadah masih kekal musuh nombor satu negara. Jika dulu, pengedaran dadah hanya fokus kepada dadah konvensional dan dadah sintetik namun kini dengan evolusi baru, new psychoactive substances atau bahan psikoaktif baru (NPS), ancamannya menjadi semakin kompleks.

Merungkilkan senario ini, wartawan KAJIDENI MOGAN KU MARAPPA mendapatkan pandangan Pengarah Jabatan Siasatan Jenayah Narkotik (JSJN) Bukit Aman Datuk Seri Mohamad Salleh.

Bolehkah Datuk Seri kongsi apakah itu dadah NPS dan tahap keseriusan penggunaannya di Malaysia?

NPS adalah yang disalah guna sama ada dalam bentuk bahan mentah atau persediaan yang tidak dapat dikawal di bawah mana mana konvensyen antarabangsa yang bertujuan untuk meniru kesan ubat terkawal dan boleh menimbulkan ancaman kepada kesihatan awam.

NPS bukan saja menjadi ancaman di Malaysia, malah secara global yang mana terdapat lebih 100 negara sudah melaporkan penemuan dadah jenis ini.

Dari 2009 hingga tahun 2017, terdapat lebih 739 jenis dadah yang disyaki mengandungi NPS sudah dilaporkan seluruh dunia.

Di Malaysia, Jabatan Kimia Malaysia mengesahkan terdapat 27 jenis NPS dikesan sejak 2012 hingga 2017 berdasarkan rampasan dadah oleh JSJN dan juga dari senarai antarabangsa NPS yang dikemas kini mengikut *Convention on Psychoactive Substances 1972* oleh Suruhanjaya Dadah Narkotik (CND).

Bahagian Penguat Kuasa Farmasi Kementerian Kesihatan Malaysia (KKM) sudah menyenaraikan sembilan daripada 27 NPS itu sebagai bahan psikotropik untuk dikuatkuasakan dalam Jadual Ketiga Akta Racun 1952.

NPS yang paling banyak dikenal pasti oleh Jabatan Kimia Malaysia adalah dari jenis cathinone manakala paling sedikit adalah phenethylamines.

Kebanyakan sampel dadah yang disyaki mengandungi NPS adalah dalam bentuk pil menyertai ekstasi dan tumbuhan kering menyertai ganja.

Terdapat juga kes di mana wujud dua atau lebih NPS terkandung dalam satu dadah berbentuk pil.

NPS yang ditemui di pasaran mempunyai kesan yang sama seperti dadah berbahaya

yang dikawal seperti ganja, heroin, ekstasi dan syabu, malah lebih memudaratkan lagi ia dicampurkan dengan pelbagai bahan kimia berbahaya yang tidak diketahui kandungannya.

Dunia tanpa sempadan menjadikan ancaman NPS lebih meluas dengan adanya pengaruh media sosial dan melalui Internet yang sukar dikesan atau dark web.

NPS dikhuatiri menjadi dadah alternatif kepada penyalahgunaan bahan terlarang pada masa ini dan akan datang oleh kerana ada sesetengah dadah NPS belum lagi dikategorikan sebagai dadah terdapat dalam Akta Dadah Berbahaya 1952.

Dengan mengetahui bahawa bahan aktif dalam NPS tidak dapat dikesan oleh pihak berkuasa sama ada menggunakan kit ujian atau melalui ujian air kencing maka golongan tersebut akan mengambil peluang untuk beralih kepada NPS.

Mereka akan membelinya melalui dalam talian dalam kuantiti minimum bagi mengelak ia dikesan dan menerimanya hanya melalui pos biasa atau syarikat kurier.

Sekarang ini JSJN beriya mengesan tujuh kes yang mana rampasan dadah disyaki mengandungi NPS hasil analisis oleh Jabatan Kimia Malaysia yang semua sampel dadah tersebut berasal dari bahan disyaki dadah berbentuk pil menyertai ekstasi.

Walaupun trend pengedaran dan penyalahgunaan bahan terlarang disyaki NPS ini sudah wujud di negara ini namun perkemangannya adalah terkawal.

Pengetahuan berkaitan NPS dalam kalangan warga JSJN khususnya sentiasa diperingkatkan melalui pelbagai usaha di peringkat jabatan. Ini diperkasakan lagi dengan siasatan dan maklumat risikan yang profesional serta pelaksanaan operasi JSJN yang proaktif supaya lebih ke hadapan mengatasi sindiket dadah yang dikenal pasti dalam usaha membendung ancaman dadah rentas sempadan yang semakin kompleks dan mencabar masa kini dan akan datang.

Jelaskan mengenai perubahan trend dadah daripada berasaskan opiate (heroin, morfin, ganja) ke dadah sintetik dan yang terkini bahan NPS?

Trend dadah di negara ini sudah berevolusi dan hanya dapat dilihat berdasarkan empat gelombang dadah.

Dalam gelombang pertama, dadah berbentuk berasaskan opiate iaitu candu bermula pada pertengahan abad ke 19 sewaktu era penjajahan British di Tanah Melayu.

Pengaruh dadah candu dibawa masuk oleh buruh dari China yang bekerja di sektor perlombongan. Pada waktu itu pemerintah British membenarkan penjualan dadah candu di *Government Charndu Shop* mengikut peruntukan *Charndu Shops Enactment 1906* bagi mereka yang berdaftar untuk menghisapnya.

Gelombang kedua berlaku pada lewat 1960an di mana fenomena penyalahgunaan dadah muncul semasa perang Vietnam apabila tentera laut Amerika Syarikat membawa tabiat penyalahgunaan dadah heroin ketika mereka datang bercuti di Pulau Pinang. Pengaruh penyalahgunaan dadah heroin ini menular dalam kalangan masyarakat tempatan dan masalah dadah heroin ini masih terus membelenggu negara hingga ke hari ini.

Selain heroin, dadah jenis morfin dan ganja juga diperkenalkan pada ketika ini dan menjadi trend dalam kalangan penagih dan pengedar dadah.

Gelombang ketiga berlaku pada pertengahan 1990 an, negara dilanda satu lagi trend penyalahgunaan dadah baru iaitu dari jenis

Secara keseluruhan pula, sepanjang tempoh tiga bulan pertama tahun ini, sebanyak 6,752 orang sudah ditahan
Mohamad Salleh

PERANGI
DADAH
HABIS-HABISAN

Amphetamine Type Stimulants (ATS), ianya bermula dengan penyalahgunaan pil dadah ekstasi pelbagai logo (Mercedes, Butterfly dan Rolex) dan warna yang digilai oleh muda mudi di pusat hiburan.

Dadah jenis ini lebih dikenali sebagai *club drug* atau *party drug* yang diseludup masuk dari negara Eropah seperti Belanda dan Belgium.

Pada gelombang keempat trend penyalahgunaan dan penagihan dadah berubah mengikut perkembangan masa terhadap permintaan.

Terkini, sindiket pengedaran dadah sering memperkenalkan pelbagai bahan psikoaktif baru atau *legal high* yang mempunyai kesan sama seperti dadah yang popular disalah guna, tetapi tidak semua NPS disenaraikan sebagai menyalahi undang-undang.

Kewujudan bahan psikoaktif baru ini me-

rupakan cabaran kepada JSJN untuk membantulas penyalahgunaannya dalam kalangan masyarakat.

Apakah faktor yang menyumbang kepada perubahan trend dadah di negara ini?

Secara kesimpulannya, dapat dirumuskan bahawa faktor berikut adalah punca kepada berlakunya perubahan trend dadah iaitu pengenalan dadah baru dan pengedaran yang dipengaruhi oleh pasaran dunia, faktor keuntungan yang mana dadah sintetik khususnya memberikan keuntungan lebih kepada pengedar, keberkesanan yang lebih memuaskan yang menyebabkan permintaan dan penggunaan dadah khususnya dadah jenis sintetik dan NPS yang menggalakkan kepada pengedaran yang lebih meluas dalam kalangan penagih.

Selain itu, kewujudan dadah baru dan NPS

METRO AHAD

SAMBUNGAN
HARIAN METRO (SETEMPAT) : MUKA SURAT 77
TARIKH : 6 MEI 2018 (AHAD)



DADAH EVOLUSI BARU

‘DI MALAYSIA, JABATAN KIMIA MALAYSIA SAHKAN TERDAPAT 27 NPS SEHINGGA 2017’

yang mudah diperoleh seperti pembelian melalui dark web dalam kuantiti yang kecil sukar dikesan oleh agensi penguatkuasaan.

Pembuatan dan pemrosesan dadah sintetik serta NPS lebih mudah dan selamat kerana bahan asasnya bukan tergolong di bawah bahan terkawal dan tidak memerlukan wang yang banyak iaitu hanya berkonsepkan makmal mini berbanding pembuatan dadah tradisional yang memerlukan kos, ruang dan masa yang lebih lama untuk dihasilkan.

Apakah cara yang boleh digunakan untuk mengatasi NPS di Malaysia?

Melalui surat rasmi bertarikh 3 Jun 2016, JSN sudah menyatakan persetujuan dan menyokong sepenuhnya cadangan yang dikemukakan oleh Pengarah Bahagian Penguat kuasa Farmasi KKM bagi menyenaraikan sembilan jenis dadah NPS sebagai bahan psi-

kotropik dalam Jadual Ketiga Akta Racun 1952.

Ini adalah selaras dengan keputusan pihak CND pada 13 Mac 2015 yang mana mengambil keputusan untuk memasukkan sembilan racun tersebut di bawah kawalan antarabangsa dan disenaraikan di bawah *Convention on Psychoactive Substances 1972*.

Di bawah konvensyen yang sama pada Artikel 2 Perenggan 7 menyatakan bahawa sebarang keputusan yang dibuat oleh CND disampaikan oleh Setiausaha Agung dan berkuatkuasa sepenuhnya bermula 4 November 2015.

Sehubungan itu, Lembaga Kawalan Narkotik Antarabangsa (INCB) meminta semua negara untuk melaksanakan kawalan sewajarnya di peringkat nasional.

Di samping itu, beberapa langkah berikut juga penting dalam menangani permasalahan

dadah khususnya NPS di negara ini antaranya mempertingkatkan pengetahuan mengenai ancaman dan kemudaratan NPS bukan saja dalam kalangan warga agensi penguat kuasa malah ke semua peringkat termasuk sekolah, masyarakat terutamanya ibu bapa sama ada melalui kempen secara langsung mahupun media massa dan sebagainya.

Kerjasama secara kolektif melalui Strategi Lautan Biru Kebangsaan (NBOS) semua pihak berkuasa yang terbabit melalui perkongsian maklumat risikan amat penting dalam usaha menyekat ancaman kemasukan pelbagai dadah baru dari semua pintu masuk ke negara ini (laut, darat dan udara) dan pemantauan secara maya ke atas apa jua transaksi mencurigakan membabitkan dadah dalam talian termasuk dark web.

Penyenaaran dadah disyaki NPS di bawah Akta Dadah Berbahaya 1952 adalah penting ke

arah tindakan penguatkuasaan yang lebih efektif dan seterusnya membolehkan hukuman yang lebih berat dikenakan ke atas semua pesalah dadah membabitkan NPS.

Adakah berlaku peningkatan atau penurunan dari segi penagih muda dan apakah puncanya?

Sepanjang 2012 hingga 2015, wujud peningkatan saban tahun membabitkan tangkapan penagih muda yang bermula seawal 13 hingga 40 tahun.

Bermula 2016, tangkapan kategori yang sama menunjukkan penurunan sehingga kini. Terdapat pelbagai faktor dipercayai menjadi punca kepada peningkatan itu yang bergantung kepada tujuan penyalahgunaan dadah termasuk sifat ingin tahu yang kadangkala didorong pengaruh kawan, penggunaan rekreasi yang terhad pada hujung minggu atau semasa majlis tertentu dan sering dianggap menyeronokkan dan tidak mempunyai kesan negatif.

Ada juga yang menggunakan dadah mengikut keadaan di mana ia bertujuan melakukan sesuatu jenis pekerjaan atau aktiviti contohnya seorang pelajar yang membuat persediaan peperiksaan.

Generasi muda juga mengambil dadah pada dos tinggi dalam masa yang singkat iaitu dalam tempoh dua hingga 10 hari. Dua lagi kategorinya adalah penggunaan berkala yang menyebabkan kebergantungan psikologikal dan fizikal terhadap dadah akibat kekerapan pengambilannya yang mungkin mengganggu kesihatan serta kehidupan harian.

Dalam kategori ini biasanya, berlaku ketagihan dalam kalangan penagih dan yang terakhir adalah penggunaan pelbagai dadah dalam satu masa yang mana ATS sering di ambil bersama dengan alkohol, benzodiazepine dan opioid.

Cara ini selalunya digunakan untuk meningkatkan kesan ATS atau mengurangkan kesan sampingan ATS. ATS seperti syabu dan ekstasi akan diambil bersama alkohol untuk meningkatkan kesan dadah kepada pengambilnya semasa berhibur manakala Eramin 5 diambil selepas itu untuk mengurangkan kesannya.

Apakah statistik terkini tangkapan berkaitan kes dadah di negara ini?

Sepanjang 2017, seramai 166,872 orang ditahan atas pelbagai kesalahan dadah meliputi bekalan, memiliki dan penagihan. Jumlah tangkapan ini merosot sebanyak 17 peratus berbanding tangkapan seramai 200,706 orang tahun sebelumnya.

Ini berpunca daripada penurunan sebanyak 93 peratus tangkapan di bawah Seksyen 3(1) Akta Pencegahan Dadah 1983 iaitu sejumlah 3,081 orang berbanding tempoh yang sama tahun sebelumnya iaitu seramai 43,027 orang.

JSN memberi lebih tumpuan kepada tugas memberantas kingpin, sindiket pengedaran dan pemrosesan dadah berskala besar bagi menghasilkan operasi berimpak tinggi ke arah memberantas bekalan dadah.

Secara keseluruhan pula, sepanjang tempoh tiga bulan pertama tahun ini, sebanyak 6,752 orang sudah ditahan dalam kategori bekalan yang disiasat mengikut Seksyen 39B Akta Dadah Berbahaya (ADB) 1952, Seksyen 39A(2), Seksyen 39A(1) dan Seksyen 68 akta yang sama.

Bagi kategori memiliki pula, seramai 16,289 orang ditahan dalam tempoh yang sama dan untuk mereka yang ditahan atas kesalahan memasukkan dadah dalam badan yang di kesan melalui ujian air kencing seramai 19,162 orang ditahan di seluruh negara.

LAMPIRAN 3
HARIAN METRO (NUANSA) : MUKA SURAT N34
TARIKH : 7 MEI 2018 (ISNIN)

SSM BANTU BANGUN PRODUK INOVASI



ZAHRAH (tiga dari kiri) menghadiri program geran Bizgrant.

Suruhanjaya Syarikat Malaysia (SSM) mengumumkan pemberian Bizgrant iaitu geran perniagaan dalam bentuk perkakasan bernilai RM3,000 kepada individu atau kumpulan pelajar yang dapat menghasilkan idea perniagaan berupaya direalisasikan.

Ketua Pegawai Eksekutif SSM, Datuk Zahrah Abd Wahab Fenner mengumumkan perkara itu ketika siri keempat jelajah Student Entrepreneurship Programme (1st Step) di Kolej Vokasional Kuala Kangsar, Perak.

Pada pengumuman itu, beliau turut menyatakan hasrat SSM untuk membantu pelajar atau pihak Kolej Vokasional yang mempunyai produk inovasi unik dengan mengkomersialkannya.

Katanya, SSM mengalu-alukan penyertaan pelajar atau kolej vokasional yang

mempunyai produk inovasi dan perlu dibentangkan pada pengakhiran keseluruhan program 1st Step untuk pemberian dana.

Program 1st Step menyaksikan penyertaan hampir 1,000 pelajar sekitar kawasan Kuala Kangsar.

Malah ia adalah karnival berkonsepkan seminar dan aktiviti keusahawanan bertujuan untuk memupuk sikap keusahawanan sejak dari bangku sekolah lagi.

Zahrah berkata, bertemakan Perniagaan Satu Kerjaya, program itu dipenuhi dengan pelbagai aktiviti yang menarik dan bermanfaat untuk peserta.

"Sepanjang program, peserta mengikuti taklimat keusahawanan daripada pakar motivasi termasuk daripada SSM dan agensi lain.

"Penganjuran Program 1st Step adalah inisiatif kerjasama antara SSM dan Bahagian Pendidikan

Teknik dan Vokasional (BPTV), Kementerian Pendidikan Malaysia," katanya.

Sebanyak 10 sekolah atau kolej dikenal pasti untuk siri jelajah program 1st Step pada tahun ini yang merangkumi tujuh kolej vokasional (KV) dan tiga sekolah menengah teknik (SMT).

Siri jelajah pertama dianjurkan di Kolej Vokasional Gombak manakala SMT Kuantan dipilih sebagai lokasi kedua, sementara lokasi ketiga adalah Kolej Vokasional Matang di Sarawak.

Pada program yang sama, SSM turut mengagihkan zakat korporat berjumlah RM10,000.

Sebanyak RM30,000 wang zakat diagihkan kepada 100 orang pelajar yang tergolong dalam kalangan asnaf, sementara RM10,000 diagihkan kepada Surau Kolej Vokasional Kuala Kangsar.

Nasa's new lander to study Mars quakes

TAMPA: Nasa is poised to launch its first lander to Mars since 2012, an unmanned spacecraft called InSight that aims to listen for quakes and unravel the mystery of how rocky planets like Earth form.

It is scheduled to launch today at 7.05am US Eastern time from Vandenberg Air Force Base in California, and if all goes as planned, it should land on the Red Planet on Nov 26.

Since the Earth and Mars likely formed by similar processes 4.5 billion years ago, the US space agency hopes the lander – officially known as Interior Exploration using Seismic Investigations, Geodesy and Heat Transport (InSight) – will shed light on what made them so different.

“How we get from a ball of featureless rock into a planet that may or may not support life is a key question in planetary

science,” said Bruce Banerdt, InSight principal investigator at Nasa’s Jet Propulsion Laboratory in Pasadena, California.

“We’d like to be able to understand what happened.”

On Earth, these processes have been obscured over billions of years by earthquakes and the movement of molten rock in its mantle, he said.

But Mars, the fourth planet from the Sun and Earth’s smaller and less geologically active neighbour, may yield more clues.

InSight aims to rest in an isolated spot and detect “mars-quakes”, which Nasa described as “like a flashbulb that illuminates the structure of the planet’s interior”.

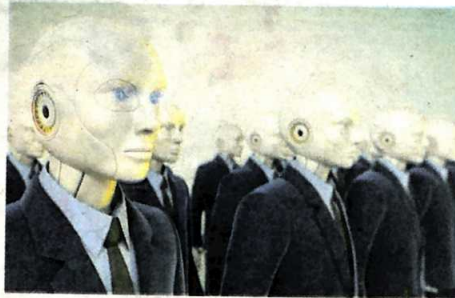
The lander will gather information using three instruments, including a seismometer, called the Seismic Experiment for Interior Structure, made by CNES, the French space agency. — AFP

Robot mula ganti tugas tujuh kakitangan bank



ST. GALLEN, Switzerland – Pihak pengurusan Bank St. Galler Kantonal (SGKB) di sini melakukan satu transformasi dengan menggantikan tugas tujuh orang pekerjaanya dengan lima unit robot yang dikatakan boleh membantu mempercepatkan aliran kerja dengan lebih efektif.

Pengurus besar SGKB, Felix Buschor berkata, projek perintis yang dilaksanakan oleh syarikatnya itu membolehkan robot tersebut melaksanakan tugas seperti pekerja manusia namun, boleh bekerja sehingga 24 jam seminggu



ROBOT mampu untuk bekerja sehingga 24 jam seminggu tanpa rehat dan dapat meningkatkan produktiviti syarikat.

AGENSI

tanpa henti sekali gus meningkatkan produktiviti.

"Para pekerja juga risau akan kehilangan pekerjaan apabila robot mengambil alih tugas mereka. Bagaimanapun, pekerja tidak perlu risau kerana

kini mereka boleh bekerja bersama teknologi baharu," katanya.

Tambahnya, ujian terhadap robot tersebut telah dijalankan pada tahun lepas pihak SGKB juga berhasrat untuk mengambil lebih



GAMBAR HIASAN

IMEJ menunjukkan seorang pekerja boleh melakukan tugas bersama teknologi baharu.

banyak robot pada akhir bulan ini.

Menurut satu laporan, sebanyak 800 juta pekerja dalam pelbagai sektor bakal digantikan dengan robot dalam tempoh 13 tahun.
– Agensi

Driving up data transparency

Driverless cars are growing in number, but makers don't want to reveal how they sometimes fail.

ON MARCH 18, a robot-driven Volvo operated by Uber hit and killed a pedestrian in Arizona.

Advocates for automation maintained that the tragedy shouldn't detract from the likelihood that driverless technology is eliminating human error and making driving safer.

But the death, and a fatality five days later that involved Tesla's Autopilot driver-assist system, were unusual in another way. They were rare instances in which driverless-car companies were forced to share data about how their systems work, in this case with investigators.

A schism is developing in the driverless-car world - but not between fans and foes of robot cars.

Instead, on one side are driverless-car advocates who believe data transparency will lead to safer deployment of driverless vehicles and help alleviate public fears about the strange and disruptive new technology. On the other are some automobile and technology companies that, for good commercial reasons perhaps, prefer to keep their workings cloaked in mystery.

The lack of transparency about the workings of sensors, logic processors, mapping systems and other driverless technology, like the debate over robot-car regulation, could shape public perception of the nascent industry, said Bryant Walker Smith, a law professor at the University of South Carolina.

"Essentially, (the public will be) looking to see whether these companies are trustworthy," he said.

The stakes are high. Driverless-vehicle technology is expected to roll major segments of the world economy and market forecasters predict several hundred billion dollars a year in revenue for the winners.

Already semi-autonomous technologies such as Tesla Autopilot are operating on US public roads, with deployment of driverless ride-hailing services from Waymo (a subsidiary of Google's parent, Alphabet), Lyft, Cruise Automation and others due this year or next.

Dealing with data

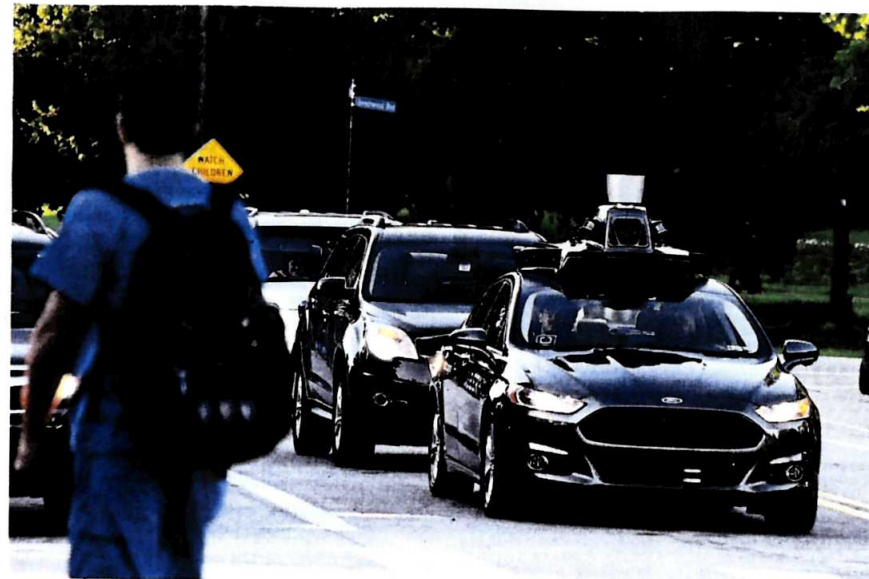
To understand the controversy, and the effect on public safety, it helps to know what data are being collected and how such information might be put to use if it were made more visible.

Most people are familiar with the idea of a "black box," technically known as an event data recorder. They've been used for decades in the airline industry to help investigators evaluate crashes.

But similar devices have become common in cars and trucks to record data on speed, steering, braking and the like over the few seconds before, during and after a crash.

The data issue today goes far beyond the black box, however. It now extends to cutting-edge robotic systems that use sophisticated sensors, complex computer chips and advanced software to take over some or all of the driving tasks that a human being would normally perform.

The technology companies that create them are taking different



Polls have consistently shown the public is wary about driverless technology but most companies still appear reluctant to engage with the public. — TNS

approaches to engineering the systems. Industry and government have yet to determine how to use the data they generate after a crash.

In the Uber death, a video recorded by a dashboard camera - turned over to and released by Tempe, Arizona, police - showed the driverless-car system failed to brake for the pedestrian. It left open the question of whether the system sensors might have failed to notice the pedestrian at all.

Uber's reaction was to apologise, then dip into some of its US\$15bn (RM\$8.9bn) in investment capital to pay the victim's family in a legal settlement, thus avoiding a public trial.

Uber declined to make a company executive available to discuss data and transparency on the record, as did Waymo, Tesla and Lyft. Other companies - including Zoox, Nuro and General Motors, parent of Cruise Automation - agreed to talk.

Even driverless-car advocates are growing concerned about the silence from the industry's major players. Graydon Brulte, a well-known consultant in the driverless industry, worries that recent polls have consistently shown the public is wary about driverless technology, while companies appear reluctant to engage with the public.

"They're like Rapunzel up in the tower," he said. "They have to let down their hair and climb down."

Public or private?

Alain Kornhauser, who heads the driverless-vehicle programme at Princeton University, said he believes that robot cars will

improve safety, reduce driver stress, add productive time to the day and offer the elderly and disabled more independence. But the technology is far from perfect, he said, and some robot-induced deaths are inevitable.

Rather than wall off the lessons learned in fatalities such as the recent Uber and Tesla incidents, Kornhauser said, the companies should be sharing crash data with one another, with outside researchers and with the general public. And not just black-box data, but driverless system data as well. That would make driverless cars safer and faster, he said.

"Uber should not gain a safety advantage over everyone else because they were involved in this crash," Kornhauser said. "All of the video, radar, lidar and logic trails in the seconds leading up to the crash should be released to the public."

"If this reveals some of Uber's intellectual property, so be it. If they want to protect their intellectual property, they shouldn't crash on public roads."

Current policy in some ways confuses the situation further, Kornhauser said. After the Tesla Model X fatality in Mountain View, California, on March 23, Tesla chief executive Elon Musk defended the Autopilot system and seemed to blame the driver. He also repeated Tesla safety numbers that statistics experts have described as problematic.

Musk's words caused a public spat with Robert Sumwalt, head of the US National Transportation Safety Board, who kicked Tesla off the investigative team.

Kornhauser suggested that transportation officials might be better

off allowing objective data to be released while banning speculation that might favour a company or other party involved in a crash.

Karl Iagnemma, chief executive of driverless-technology company Nuro, said he believes a solution is possible. There is a concern, as in any other industry, that "if you share knowledge with a competitor, you might enable them to move more quickly." But if the trade-off is a higher level of safety, he said, "I'm fine with that."

Elements of the aviation safety model could be applied to driverless technology, he said. Airlines face far stricter requirements than automobiles on black box data, and they confidentially share data with one another to improve safety. Eventually, government investigators reach conclusions and some of the data is made public.

"The promise of sharing data is that if data can be shared industry wide there's a chance that you will not have that same crash happen again," Iagnemma said. If federal authorities required such data from all industry players, "we would certainly use that information to improve our systems, absolutely."

Push for change

The information released to the public need not be highly technical and should avoid being defensive, according to law professor Smith. His suggestion: "Something went wrong. These are the things that went wrong. Here's why they went wrong. Here's what we're going to do about it."

But there's no sign of that happening anytime soon, voluntarily or via regulation.

Trump administration agencies have not said much about driverless-vehicle policy. Legislation is working its way through the Senate that would allow manufacturers to sell thousands of driverless cars each year to individuals, but the bill barely touches on data transparency. A similar bill quickly passed the House of Representatives last September.

The non-profit Advocates for Highway and Auto Safety, which represents a broad range of safety advocates, is pushing for changes in the Senate bill, including the creation of a public database that would publicise defects and operational issues with commercial driverless and driver-assist systems - similar to the National Highway Traffic Safety Administration's safecar.gov site.

In a letter sent recently to Mitch Bainwol, chief executive of the lobby group Alliance of Automotive Manufacturers, the safety group noted that the Senate bill requires only that driverless-car companies "describe" their systems. "As such, manufacturers will continue to submit slick marketing brochures ... instead of providing actual data and documentation that will allow the public and NHTSA to accurately evaluate the safety of the technology," the letter said.

"We are pro technology," said Cathy Chase, the advocacy group's president. "We do want to see this technology succeed. We do want to see fewer people being killed and injured."

But if driverless-vehicle companies retain full control of system safety data, she said, "you have the fox guarding the henhouse". — Los Angeles Times/Tribune News Service

LAMPIRAN 7 THE STAR (SCIENCE) : MUKA SURAT 9 TARIKH : 7 MEI 2018 (ISNIN)



Scientist Karen Xavier holds a petri dish containing a stool sample of small bacteria colonies in Denver. DNA from samples like these are extracted and sequenced to help health investigators more quickly determine the source of a foodborne illness outbreak. — Photos: AP



Lab technician extracts DNA for whole genome sequencing at the Colorado Department of Public Health & Environment's Molecular Science Laboratory.

By MIKE STOBBER

Genetic frontiers

Biological sleuthing bolsters food poisoning searches in the United States.

DISEASE hunters are using genetic sequencing in their investigation of the ongoing food poisoning outbreak linked to romaine lettuce, a technique that is revolutionizing the detection of germs in food.

The genetic analysis is being used to bolster investigations and in some cases — connect the dots between what were once seemingly unrelated illnesses. It also is uncovering previously unfathomed sources of food poisoning, including one outbreak from apples dipped in caramel.

So far, most of the work has largely focused on one germ, *listeria*. But it is expanding. By the end of this year, labs in all 50 states in the United States are expected to also be using genetic sequencing for much more common causes of food poisoning outbreaks, including salmonella and the *E. coli* bacteria linked to recent lettuce outbreak.

That means the number of identifiable outbreaks are likely to explode even if the number of illnesses don't.

"There are a lot of outbreaks where they don't connect the dots. Now they're going to be connected," said Michael Doyle, a retired University of Georgia professor who is an expert on foodborne illness.

Not only that: The new DNA testing is enabling disease detectives to spot food contamination before anyone is aware of a resulting human illness — the equivalent of starting a murder investigation by finding a gun first and then looking for someone with a gunshot wound.

"It's turning around how outbreaks are figured out," said Bill Marler, a prominent Seattle lawyer who has made a business of suing companies whose products sicken people.

Marler added that the programme is in its early stages and it's too early to call it a success. But he said the new approach has the potential to transform how and when outbreaks come to light.

The Centers for Disease Control and Prevention is driving the programme. It estimates that 48 million Americans get sick — and 3,000 die — from food poisoning each year.

The new technique relies on whole genome sequencing, which has been used in biology for more

than two decades. The laboratory process determines nearly all of an organism's DNA, the genetic material needed to build and maintain an organism. And scientists use software to compare the DNA of specimens to see if they are the same strain and how resistant they are to current medicines.

The technique allows the analysis to become faster, cheaper and more automated, said Dr Robert Tauxe, one of the CDC's leading experts on food poisoning.

Plans are to use the technology against several germs that cause food poisoning, but so far all the work has concentrated on *listeria*. The bacteria cause around 1,600 illnesses each year, a tiny fraction of US foodborne disease diagnoses. But it is a particularly lethal infection, killing nearly one in five people who get it.

Historically, *listeria*-caused outbreaks were known as "the graveyard of epidemiology". It could take weeks for people to develop symptoms, meaning food evidence was discarded — and some of the patients were dead — by the time officials began to sort things out.

From 1983 to 1997, only five *listeria* outbreaks were identified in the US. They were obvious and large — with a median of 54 cases per outbreak.

That's how it was with other food poisoning outbreaks, too.

"Most foodborne outbreaks were detected because it happened in one place," like in a town where a popular restaurant's customers grew ill, Tauxe said.

Outbreaks were investigated by asking people what they ate before they got sick, and then comparing notes to see what patients had in common.

The field took a big step in the 1990s, after a frightening outbreak erupted in the Seattle area. Four deaths and more than 700 illnesses in four states eventually were traced to undercooked Jack in the Box restaurant hamburgers con-



This 2002 electron microscope image shows the kind of *listeria* bacteria that causes some food poisoning outbreaks.

taminated with *E. coli*.

The outbreak prodded the CDC to develop a programme that relied on a technique called pulsed-field gel electrophoresis in which investigators could look at a germ's DNA in clumps. It helped health officials more easily link illnesses, but it was imperfect: It couldn't make exact matches and sometimes missed when cases were related.

Then came whole genome sequencing.

The CDC began using the technique in food poisoning investigations in 2013. Initially state labs sent samples to a CDC lab in Atlanta for testing. Now, the CDC is working to get labs in all 50 states up and running.

Last year, the federal agency awarded about US\$32m (RM126m) to state and city health departments to work on foodborne, waterborne and fungal disease outbreaks. That included US\$12m to help them set up whole genome sequencing technology.

Since whole genome sequencing began, the CDC says it's catching more *listeria* outbreaks with a food source identified. By that measure, the number rose from about two per year to an average of more than six per year from 2014 to 2016.

One of the first success stories came a couple of weeks after Halloween in 2014, when *listeria* cases began popping up in Arizona, New Mexico and the

Midwest. Through whole genome sequencing, investigators discovered about three dozen people had been sickened.

In interviews, patients and their families didn't mention foods commonly associated with *listeria*. But most did say they had eaten packaged caramel apples.

Scientists hadn't considered them a threat, because apples and caramel aren't hospitable to *listeria* individually. But it turns out that putting a stick in a caramel-covered apple gives germs a door into tiny spaces between caramel and the apple's skin.

Besides fingering foods previously seen as unthreatening, whole genome sequencing has the potential to turn investigations around. In several outbreaks recently, germs found in food plant inspections prompted product recalls before anyone knew about an outbreak. Then whole genome sequencing helped find and confirm illnesses.

In 2015, state officials in South Carolina and Texas found *listeria* in tests of Blue Bell brand ice cream products. Investigators used pulsed-field gel electrophoresis to find 11 illnesses with a similar genetic pattern, but whole genome sequencing definitively linked 10 and caused one to be tossed out as unrelated. Some of the illnesses had happened as far back as 2010.

"They're picking up cases that are five years old. This is revolutionary," Doyle said.

Whole genome sequencing is becoming increasingly important, but it's not yet the basis of outbreak solving. It was used in the current investigation of *E. coli* bacteria found in romaine lettuce grown in Arizona, which has sickened at least 84 people in 19 states, according to a CDC update. But "that's not how we first detected the outbreak," said Matthew Wise, a CDC food poisoning investigator.

It was more crucial in an investigation last year of a 21-state salmonella outbreak that ultimately was linked to ground beef. Whole genome sequencing allowed health officials to wade through a wave of cases to parse out the illnesses that were most closely matched and then look for a common origin, Wise said.

"Using our previous technology," Wise said, "we would have had a really difficult time solving that one." — AP

Banks don't want to be weakest link in blockchain revolution

LONDON: Blockchain, the cutting-edge technology behind virtual currencies like bitcoin, has the potential to play a disruptive role in the global finance sector, experts say, as banking behemoths seek to connect with its opportunities.

While banks could reduce their costs, the gains could eventually shift to consumers who could benefit from quicker and cheaper services.

"Any disruptive shock – be it technology, economic or political – tends to result in winners and losers, and blockchain is no different," Colin Ellis, managing director for credit strategy at Moody's, told AFP.

"It could reduce costs for banks but at the same time could foster more competition that would put downward pressure on fees."

A shared, encrypted "ledger" that cannot be manipulated, blockchains offer the promise of secure transactions that allow anyone to get an accurate accounting of money, property or other assets.

Much like it underpins trading in bitcoin

and other cryptocurrencies, blockchain or so-called distributed ledger technology could also support trading of other assets, thus posing a risk to banks who earn hefty fees helping their clients trade currencies and other assets.

Key areas of financial services where blockchain could have an impact are the settlement and clearing of transactions.

But a recent report by Moody's found that while blockchain technology could slash cross-border transaction costs for financial institutions, it would likely ramp up competition among banks.

Anish Mohammed, a cryptography expert and academic at Berlin University, told AFP that the losers would be those who failed to adapt to the latest technological trend.

"There will be winners and losers, the losers will be those who do not make any changes."

The world's biggest financial institutions are already experimenting with blockchain, although recent data indicates that they risk

lagging behind other sectors in its use.

Two months ago, Dutch bank ING and its Swiss peer Credit Suisse successfully traded securities through a blockchain-style network.

The pair transmitted 25 million euros of bonds almost instantaneously.

The deal would normally have taken one day or more.

Ellis believes that international transactions are an area where banks could cut their costs by using blockchain technology.

Currently international bank transfers often take several days as several banks are often needed to act as intermediaries.

But a blockchain could eliminate the need for those intermediaries, thus speeding service and reducing costs.

Santander last month began using a blockchain to allow its retail customers in Spain, Britain, Brazil and Poland to complete international transfers the same or following day.

"One Pay FX uses blockchain-based technology to provide a fast, simple and secure

way to transfer money internationally – offering value, transparency, and the trust and service customers expect from a bank like Santander," the bank's chief executive Ana Botin said at the launch of the service.

One Pay FX uses a blockchain service for banks developed by Ripple, a start up firm with offers a cryptocurrency with the same name.

Around US\$2.1bil will be invested via blockchain globally in 2018, according to US-based consultancy IDC.

One third of that will represent the financial services industry, IDC said.

Other notable sectors using blockchain include distribution and services, retail and professional services, and manufacturing and resources.

"The technology is still at a relatively early stage" so "it is too soon to know what the final impact will be," said Ellis.

"But it could ultimately make banking cheaper and quicker for consumers," he concluded. — AFP