

"AI has by now succeeded in doing essentially everything that requires 'thinking' but has failed to do most of what people and animals do 'without thinking' – that, somehow, is much harder!" Computer scientist Donald Knuth, [LINK](#)



Welcome! This month we feature cloud-based network security SASE/SSE, climate technology and some interesting, perhaps surprising facts about electric vehicles (EV).

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Why Elon wants Twitter

"The social network could charge Mr. Musk \$10 million a month and – after making a series of ad hominem attacks on the board/company/CEO – he would pay it". Scott Galloway, Medium, 12th April 2022

Elon Musk announced on 11th April that he is the largest shareholder in Twitter, with a 9.1% stake. Three days later, he made an offer of \$43 billion so that it can be 'transformed as a private company'. Why? Nothing better illustrates the value of Twitter to its users than Tesla and how it is leveraged by its founder and CEO. The carmaker spends almost nothing on advertising (GM spends \$2+ billion per year), yet it has built the best brand in the industry. This is a function of performance (outstanding products, exceeding targets) multiplied by reach. The reach is a function of Elon's 80.9 million PR agents (i.e., his Twitter followers). [LINK](#)

Breaking news: " Musk buys Twitter for US\$44 billion to take it private" . This move follows other billionaires such as Jeff Bezos (Amazon) – Washington Post (2013) and Marc Benioff (Salesforce) – Time (2018). It raises a lot more questions than a simple (but large) privatisation transaction. This is about one man having enormous influence. What can go wrong? We probably won't have to wait long to find out. [LINK](#)

Australian VC explodes 30 times in 10 years, but still not the leader

"In 2012, \$240 million was invested by VCs in Australian startups. By 2021, that increased to \$7 billion". Paul Bassatt, Founder SquarePeg, Investor briefing 13th April 2022

Recently, Paul Bassat, founder of SquarePeg, discussed how the Australian startup investment industry has exploded in the last decade. In 2012, \$240 million was invested by VCs in Australian startups. By 2021, that increased to \$7 billion – thirty times in ten years – but still less per capita than Greater Los Angeles, \$27 billion (population roughly same as Australia) and Israel \$17 billion (population 9.2 million).

Australia: Seven-to-eight-year lag in technology deployment such as AI

"There are some countries that have a zero lag – that's the US, South Korea, Finland and Israel. Every other country has a lag in years. So, the UK has about a three-year lag. Australia has about a seven-to-eight-year lag". Michael Priddis, Founder, CEO of Faethm by Pearson, AFR 13th April 2022

A sobering perspective for Australian innovation optimists. In this article, Michael Priddis discusses how a given country is set up to deploy technology such as artificial intelligence and automation once it becomes available. In Australia's case he estimates that there is a seven-to-eight-year lag! [LINK](#)

5G – Can it provide a profitable return for operators?

"We remain skeptical about the ability to generate revenue from applications based on 5G technology,"
Moody's

Investment in mobile infrastructure is not for the timid. GSMA predicts operators will invest about \$510 billion on 5G-related infrastructure and services from 2022 to 2025. Operators have cumulatively spent \$200 billion globally on 5G spectrum to date. The catch – getting their money back! Wireless carriers' capex as a share of revenue levelled off at 16 percent globally in 2019 and 2020, inched up to 17 percent in 2021, and is expected to hit 18 percent for the next four years, according to Moody's. Despite this uncertain revenue outlook, carriers face an unavoidable period of heightened 5G investment.

"We do not expect material revenue increases in the global telecom sector from 5G in the 2022-2025 period. This is because 5G will mainly evolve around enhanced mobile broadband, which will be broadly similar to 4G". Moody's [LINK](#)

SD-WAN, SASE, SSE – What's in a name? What's changed?

WAAS, SD-WAN: Years ago, Cisco developed a new concept which it called, Wide Area Access Service (WAAS). It was a critical first step away from conventional routing and established a new path towards software-defined network (SDN) infrastructure. Until this point, each router contained its own control plane (intelligence) for tasks such as management, configuration and telemetry. With SDN, the control plane was transferred from the router(s) to a server that was eventually hosted in the cloud. Two new terms and concepts emerged:

- SD-WAN: software-defined wide area networking; and
- IBN: intent-based networking.

SD-WAN enabled organisations to migrate from more expensive MPLS-based WANs (Wide Area Networks) and take advantage of new broadband access options such as enterprise ethernet, direct internet access (say, from branch/home offices) and higher speed mobile access such as 4G/LTE became particularly popular as a backup (however 5G is expected to increasingly be used as the primary connection, commonly referred to as Fixed Wireless Access (FWA)).

IBN was created to improve the operation of the network based on what it was 'intended' to do. This was facilitated by the fact that the control plane (intelligence) was in the cloud/server and could cost-

effectively scale up for very large networks and provide a much easier means of providing a ‘closed loop’ between the infrastructure (data plane) and the intelligent controller in the cloud (control plane). Thousands of SD-WAN deployments in the past few years, have thus benefited from significantly lower costs and much better performance.

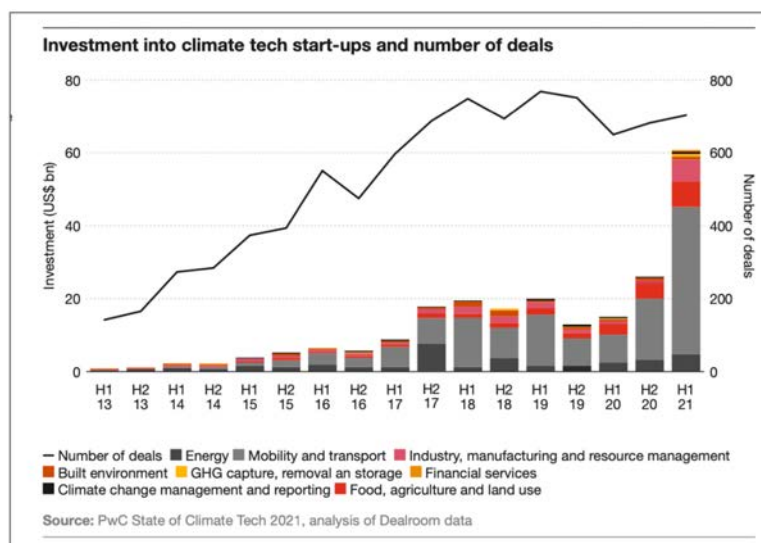
SASE/SSE: SD-WAN however, also made organisations more vulnerable to cyberattack. Centralised security appliances such as firewalls were of less or no use as the security perimeter had moved outwards to the endpoint, or as some would say, to ‘the edge’. Several vendors saw this coming and cobbled together existing cloud-based security capabilities and instigated rapid acquisition initiatives. The most important of these security functions included CASB (Cloud Access Security Broker), DLP (Data Leakage Protection), SWG (Secure Web Gateway), DNS (Domain Name Servers), Web APIs, FWaaS (Firewalls as-a-Service) and ZTNA (Zero Trust Network Architecture). This ‘grab bag’ of functions, along with their inherent complexity, prompted Gartner in August 2019, to coin the umbrella term “SASE” (Secure Access Services Edge), to refer to the cloud-based approach to securing a WAN. Vendors quickly re-badged and re-branded their capabilities accordingly, scrambling to make their disparate products look like they were all carefully planned and curated years before (yeah right!).

So where did SSE (Secure Services Edge) come from? SSE is simply all the cloud security features encompassed by SASE without the edge networking or SD-WAN baggage – it’s a decoupling of SASE from SD-WAN. SSE opens further opportunities for vendors who have one or other of SD-WAN or SASE to offer standalone. Likewise, some organisations who already have deployed SD-WAN, can now select a different vendor for cloud-based security (SSE) and vice versa. [LINK](#)

Climate Tech attracts 14 percent of Venture Capital (VC) investment, 2021

The reinvention of our economies around principles of greater sustainability and lower resource usage is well-underway. From clean cement to nuclear fusion, circular economy to improved recycling, better batteries to improved manufacturing – commercial innovation in the climate tech sector is booming. In 2021, 14 percent of VC investment went into climate tech, more than 200% higher than the previous year.

[LINK](#), *Exponential View 22.1.22*



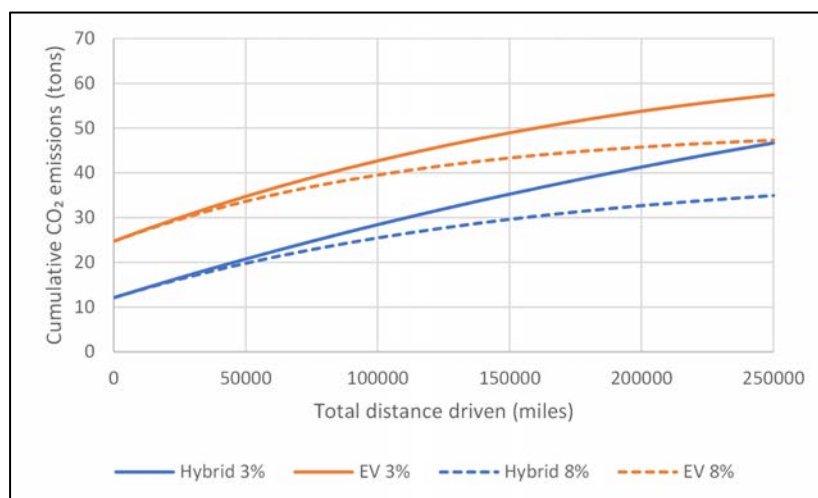
Via Exponential View

Photovoltaic capacity in 2022, equivalent to two-thirds of world's nuclear capacity

BloombergNEF estimated that the world will build about 245 gigawatts of photovoltaic capacity in 2022 – that's a third more than was installed in 2021 and a 7.5% increase over a previous estimate for this year. Figures on that scale are staggering: 245 GW for instance, is equivalent to about two-thirds of the world's total installed nuclear capacity at the start 2020. A cumulative 651 gigawatts of solar panels had been installed in all human history. About 12 months from now we are likely to have double that figure in just over 3 years. [LINK](#)

Five Reasons Why Electric Vehicles Will Only Worsen Our Oil Problems

"As a rule of thumb, each 12 kWh of battery capacity emits about 1 ton of CO₂ before the electric car drives its first mile". Schalk Cloete, Medium, 11th March 2022



Cumulative lifecycle CO₂ emissions of a hybrid (45 MPG) and a large EV (90 MPG) over 20 years using discount rates of 3% and 8% and Chinese electricity (linear decline from 0.6 to 0.3 ton/MWh over the vehicle lifetime)

The hype surrounding electric vehicles (EV) is at an historic peak. An alternative, objective and perhaps counter-intuitive point of view from a recent article caught my attention. [LINK](#)

The graph above shows the cumulative CO₂ emissions of EVs compared to Hybrids using two different discount rates. Based on the contemporary press, one would have thought the Hybrid/EV graphs were mistakenly labelled. The article itself highlights five key points about EV emissions accounting, the latter three of which are commonly ignored:

1. Almost all electricity used to charge electric cars today involves plenty of CO₂ emissions, especially in the largest global car markets in Asia.
2. Each 12 kWh of battery capacity emits about 1 ton of CO₂ before the electric car drives its first mile.
3. Electric cars often use more aluminium to keep weight down, further increasing their embodied energy and emissions.
4. Incentive structures and the difficulty of taxing EV "fuel" makes them particularly prone to the Jevons paradox, further increasing embodied emissions and lowering efficiency by incentivising ever-larger vehicles.

5. The time-value of energy and CO₂ (represented by the discount rate) makes embodied emissions much more important than the effect of cleaner electricity toward the end of the electric vehicle's lifetime.

"It is estimated that the manufacturing of an ICE automobile requires about 125 GJ of energy, and because it is a little heavier and the batteries are more complicated to produce, 200 GJ for an EV. That's 50-60,000 kWh. If you were driving that EV at an efficient 300 Wh/mile, that means you must drive the car for 200,000 miles before the energy used in moving it would equal the energy used in making it". [LINK](#)

Now that you may have second thoughts about going electric, please don't as you will see in the next section, Saul Griffiths has a plan....

Book: Electrify: An Optimist's Playbook for Our Clean Energy Future

"With fossil fuels, you save now and pay later; with renewables, you pay now and save later".

Saul Griffith, 2021 Massachusetts Institute of Technology [LINK](#)

Saul Griffiths has a plan. In this book, Griffiths, an Australian engineer and inventor, leans on real data, much of which was assembled in an unprecedented analysis of the US energy economy undertaken under contract with the US Department of Energy. He lays out a detailed blueprint – optimistic but feasible – for fighting climate change while creating millions of new jobs and a healthier environment. Griffith's plan can be summed up simply: *electrify everything*. For a world trying to bounce back from a pandemic and economic crisis, there is no other project that would create as many jobs – up to 25 million, according to one economic analysis. Is this politically possible?

Some interesting counter-intuitive statements include:

- *"We need less than half of the primary energy that we think we do, which makes the task of generating it with renewables twice as easy".*
- *"It surprised me to learn that nearly half of all the tonnage of stuff that is moved by rail is coal".* By not using coal, half of US rail transport, that itself generates massive amounts of CO₂, will no longer be required. Amazing!

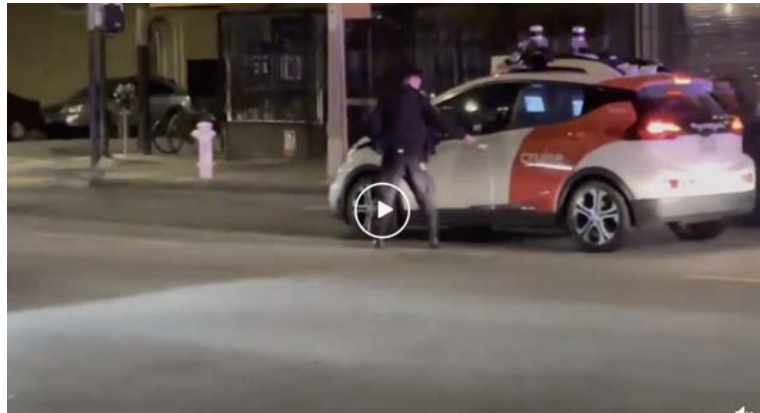
Maths: Try this!

$$nnn / (n+n+n) = 37$$

(eg for n=1, 111/ 1+1+1 = 37, go on try it!)

Police pull over driverless vehicle

[LINK](#)



Stay connected.

Kevin



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Kevin Bloch is the founder and principal of Bloch Advisory. Bloch Advisory provides tactical advice and strategic guidance to help its clients in both the current business climate and the long term. It delivers research and insight to the following constituents: end-user IT and network managers; vendors of IT hardware, software and services; and members of the financial community looking to invest in innovative technology companies.

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