SHOALHAVEN PC USERS GROUP

January 2023

Special Interest Group ***Sunday 15*** *at 1.00 pm*

Club Meetings ***Friday 20*** *at 7.30pm*

A New Year and good intentions

Happy New Year

Much of this letter was written as plans were sorted at short notice when a family member tested Covid positive a day or so before Christmas.

I was re-visiting the birth of aviation as the wonders of human flight captured the imagination when the Wright Brothers' first powered 'airplane' flew at Kitty Hawk, North Carolina, on December 17, 1903, making a 12-second flight, traveling 36 metres.

The focus for the letter firmed up when this message arrived from a cousin I've yet to meet but plan to visit in the new year. Her father was aircrew in Lancaster Bombers during WW2.

Almost everything in this picture would be foreign to him.

He survived to see the early days of the personal computer but could not have imagined what we now take for granted.

Everything in this picture is now in your pocket.

...continues on page 2

SunSIG Dec 2022

Ten members met for lunch on December 18, 2022 then adjourned to a very informal and enjoyable special interest group meeting...mainly social!

Several of these members are unable to attend Friday night meetings but still enjoy the technical and other discussion reflected in Russell's minutes.

We each have personal reasons for celebrating Christmas and pause to remember friends and family who have shared the journey with us, some of whom are no longer with us.

Our thoughts are with you.

Frank

From a non-member but a student adjusting to the exceptions allowed in many rules by which we are judged.

I before E

Except after C and when your foreign neighbours Keith and Heidi seize their eight counterfeit heifer sleighs from feisty caffeinated weightlifters of average height in a heist.

Weird

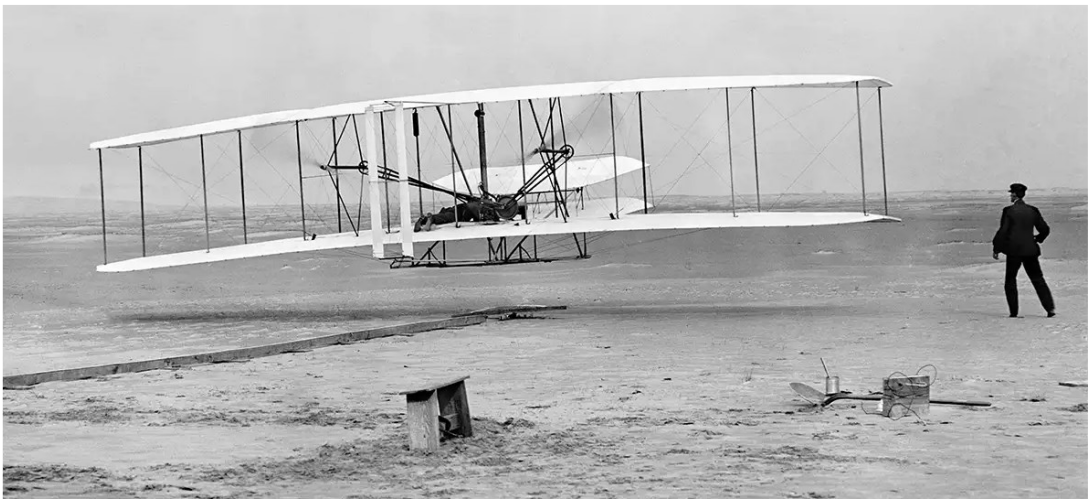
Jack has provided a simplified story of the Covid and politically inspired chip supply chain that we now endure.

You will note four links for those who wish to read the full story from which he gathered and shared it.

Old age is when former classmates are so grey, wrinkled and bald, they don't recognise you.

The story begins 119 years and a few weeks since the Wright brothers inaugurated the aerial age with the world's first successful flights of a powered heavier-than-air flying machine.

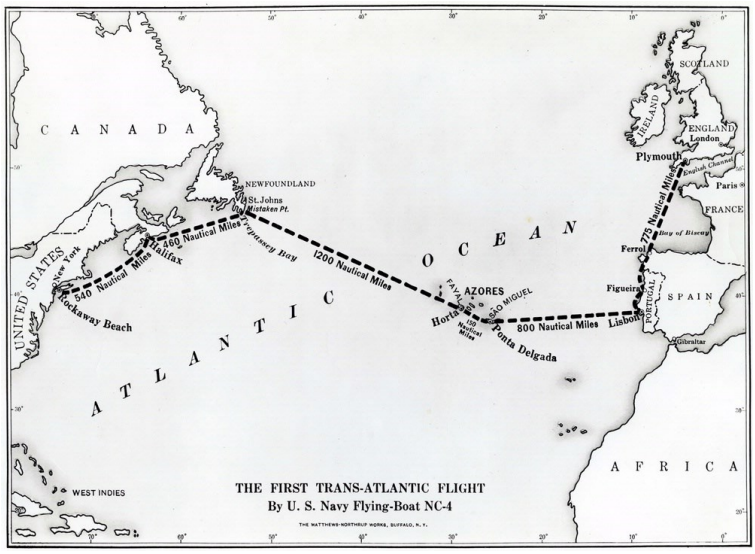
The Wright Flyer was the product of a sophisticated four-year program of research and development conducted by Wilbur and Orville Wright beginning in 1899. After building and testing three full-sized gliders, the Wrights' first powered airplane flew at Kitty Hawk, North Carolina, on December 17, 1903, making a 12-second flight, traveling 36 m (120 ft), with Orville piloting. The best flight of the day, with Wilbur at the controls, covered 255.6 m (852 ft) in 59 seconds.



Sixteen years later...

The U.S. Navy achieved the first transatlantic flight, eight years before Charles Lindbergh became world famous for crossing the Atlantic nonstop and alone. Three Curtiss flying boats, each with a crew of six, were involved: NC-1, NC-3, and NC-4. The Navy wanted to prove the capability of the airplane as a transoceanic weapon and technology.

The five-leg flight began on May 8, 1919, at the naval air station at Rockaway Beach, New York. It followed a route to Nova Scotia; Newfoundland; the Azores in the middle of the Atlantic; Lisbon, Portugal; and Plymouth, England. Only NC-4, commanded by Albert C. Read, flew the whole way. **The entire trip took 24 days.**



Navy destroyers stationed along the route guided the Curtiss flying boats on their journey across the Atlantic.

More detail images on:

https://pioneersofflight.si.edu/content/route-ncs-across-atlantic

A short time before the 1903 flight, George W. Melville, Engineer-in-Chief of the U.S. Navy, wrote a scathing article about the pursuit of manned flight. He began with a Shakespeare quote that implied the goal was a childish “vain fantasy” that “is as thin of substance as the air”. *It takes courage at times to persist with new ideas!*

And now, as 2023 dawns upon us, we learn:

[The Mayhem drone will aim to collect intelligence at hypersonic speeds (msn.com)]

Mayhem is an odd name for a spy, but it's a pretty good name for a superfast jet.

On December 16, the Department of Defense awarded contractor Leidos $334 million to develop a hypersonic flying scout. The award is technically for the "Expendable Hypersonic Multi-mission ISR (intelligence, surveillance, and reconnaissance) and Strike program," but it's also known as Mayhem. It will be uncrewed—a drone.

The Pentagon just awarded $334 million to a contractor to develop this new uncrewed spy aircraft.

"The Mayhem system will use a scramjet engine to generate thrust, propelling the vehicle across long distances at speeds greater than Mach 5," Leidos said in a release.

Hypersonic is the threshold defined as five or more times the speed of sound. Many of the recent developments in hypersonic technology have focused on weapons such as missiles that fly fast to evade detection and interception. Speed is profoundly useful for a weapon, as the force of a fast impact can be tremendously deadly even without a warhead on board.

What sets Mayhem apart from more outright destructive designs is that, while still intended to be expendable, the hypersonic Mayhem is a tool more for finding out than flying around.

ISR, which stands for intelligence, surveillance, and reconnaissance and is generally the Pentagon's acronym for everything involved in discovering, observing, and monitoring activity below, is a mission often associated with slow-moving vehicles.

Drones, like the medium-altitude Reaper or the ultra long-endurance Global Hawk, are built to keep watch on activity below, informing how soldiers, sailors, and pilots below all respond. Yet some missions cannot be done at the ponderous speeds of Reaper's prop engine, or wait for an overhead satellite to be in place.

It is likely in that void, where the need is urgent and the information collection is dangerous, that Mayhem will work best.

We see various technologies integrated to give almost real-time feedback on global events. We live in remarkable times!

Shoalhaven PCUG Inc.
Extract from Minutes of General Meeting held December 16 2022 for those unable to attend the meeting.

Questions and Answers:

President Richard opened up a discussion about the prevalence of phone scams at the moment and noted the large number of calls being received by people from Victoria or Tasmania wanting to sell solar energy systems. To try and address the issue he said he has opened a contact called *'Spammer'* and adds any unwanted phone numbers to that contact which he has blocked. However, because the unwanted callers change their numbers often he still keeps getting calls although hopefully less frequently than would otherwise be the case.

The discussion continued with many telling of experiences they have had. The main thing to come from the general discussion was that it is important to be wary of anything that one receives that has not been solicited.

Other:

Geoff Spencer showed us a short video he had made of an old gramophone working with the Christmas song *'Silver-bells'* sung by Bing Crosby.

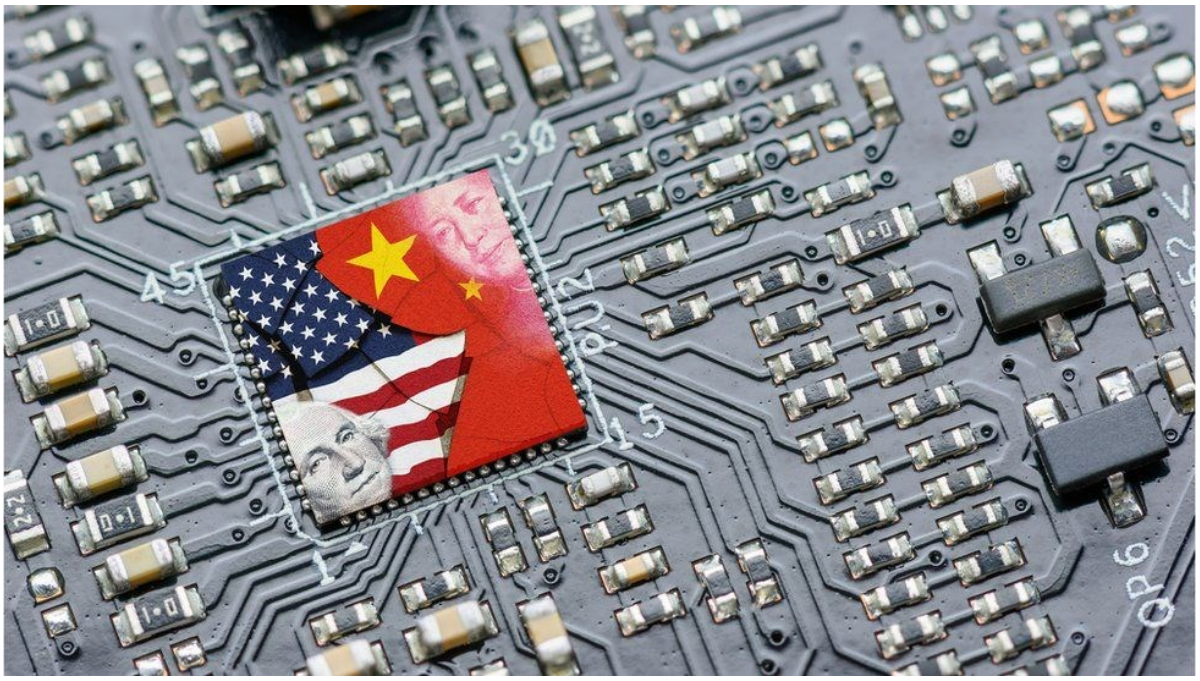
Following the short music video Geoff showed us a video of birds he had recorded during his bird-watching times. It covered in particular the development of a young male Bowerbird which went from initially learning how to build a bower whilst it was still in its immature plumage until it was eventually fully mature and had completed its bower. The video showed females inspecting the bower and a rival male stealing blue items and bower- building materials from the bower Geoff had been monitoring. It was not only informative but also showed the dedication Geoff has had to watching birds over his lifetime.

We thank Geoff for his interesting presentation.

There being no further business the meeting closed at 8:55pm and was followed by cakes and savouries that members had brought to celebrate the end of the year and the festive season.

US-China chip war: America is winning

By Suranjana Tewari **Edited version by Jack Korten**
Asia Business Correspondent



The fight for dominance in the semiconductor sector is reshaping the global economy

For more than a century the scramble for oil unleashed wars, forced unusual alliances and sparked diplomatic rows.

Now the world's two biggest economies are battling over another precious resource: semiconductors, the chips that literally power our daily life.

These tiny fragments of silicon are at the heart of a $500bn industry that is expected to double by 2030. And whoever controls the supply chains - a tangled network of companies and countries that make the chips - holds the key to being an unrivalled superpower.

China wants the technology to produce chips. That's why the US, a source of much of the tech, is cutting Beijing off.
For now, the US is winning - but the chip war it has declared on China is reshaping the global economy.

The chip-makers
The manufacture of semiconductors is complex, specialist and deeply integrated.
An iPhone has chips that are designed in the US, manufactured in Taiwan, Japan or South Korea, then assembled in China. India, which is investing more in the industry, could play a bigger role in the future.

Semiconductors were invented in the US, but over time East Asia emerged as a manufacturing hub, largely because of government incentives, including subsidies.
This allowed Washington to develop business ties and strategic alliances in a region vulnerable to Russian influence during the Cold War. It's just as useful now, in the face of Beijing's growing influence in the Asia Pacific.

The race is on to make the best and most efficient chips at scale - and the smaller, the better. The challenge: how many transistors - tiny electrical switches that can turn a current on or off - can you fit onto the smallest bit of a silicon wafer?

"It's what the semiconductor industry calls Moore's law, essentially doubling the transistor density over time, and that's a hard goal to achieve," said Jue Wang, a partner at Silicon Valley at Bain & Company.

"It's what enables our phones to get faster, our digital photo archive to get bigger, our smart home devices to get smarter over time and our social media content to get richer."

Getting there is not easy even for the top chip-makers. In mid-2022, Samsung became the first company to start mass producing three-nanometre chips at scale. Later that year, Taiwan Semiconductor Manufacturing Company (TSMC) - the world's biggest chip-maker and a major supplier to Apple - followed.

How narrow is that? Much narrower than a strand of human hair, which is about 50 to 100,000 nanometres.

These smaller "leading edge" chips are more powerful, which means they go into more valuable devices - supercomputers and AI, the internet of things. The market for "lagging edge" chips - which power the more mundane bits of our lives, such as microwaves, washing machines and refrigerators - is lucrative too. But demand will likely wither in the future.

Most of the world's chips are currently being made in Taiwan, giving the self-ruled island what its President calls a "silicon shield" - in other words, protection from China, which claims the territory.

Beijing too has made chip production a national priority and is investing aggressively in supercomputers and AI. It is nowhere near being a global leader but has been catching up quickly in the past decade, especially in its chip design capabilities, Mr Miller says. "What you find historically is that whenever powerful countries have advanced computing technology, they deploy them to intelligence and military systems," he added.

This, and the dependence on Taiwan and other Asian countries for supply, is rattling America.

How is the US hobbling China's progress?

The Biden administration is trying to choke China's access to the technology that makes chips.
Last October, Washington announced sweeping export controls making it virtually impossible for companies to sell chips, chip-making equipment, and software containing US tech to China, no matter where they are based in the world.

It also banned US citizens and permanent residents from supporting the "development or production" of chips at certain factories in China.

For images and more, open these links
How the US-China chip war is playing out
US tries to take on China with huge tech investment

This hits China hard because it imports both the hardware and the talent that fuels its nascent chip-making industry.

The Netherlands' ASML stands to lose about a quarter of the revenue it used to earn from China. It's the only company that makes the most advanced lithographic machines - the tools that make "leading edge" chips.

China buys more than 50% of the chips manufactured globally

Micron, the largest US-based manufacturer of memory chips - essential for supercomputers, military hardware and any device that has a processor - has announced plans to spend up to $100bn over the next 20 years in a computer chip plant in upstate New York.

China's play

The US's restrictions are hitting China where it hurts.
Apple reportedly shelved a deal to buy memory chips from one of China's most successful chip companies, Yangtze Memory Technologies Corp (YMTC), in the wake of the restrictions.

The Huawei experience is how this is likely to play out, according to Mr Bao. The communications giant went from being the second-largest smartphone maker in the world, after Samsung, to "essentially dead", Mr Bao says.
"So that's how easy it was for Washington to cripple a Chinese tech company. China doesn't really have a good option to respond to that. Previously, the US was targeting individual Chinese companies. But this time, the scope has expanded to the entire country."

US bans sale of Chinese tech amid security fears

Two Huawei 5G kit-removal deadlines put back

Beijing has complained to the World Trade Organization (WTO) but a resolution could take years.

"We will focus national strategic needs, gather strength to carry out indigenous and leading scientific and technological research, and resolutely win the battle in key core technologies," President Xi Jinping said at the Chinese Communist Party's 20th Congress in October.

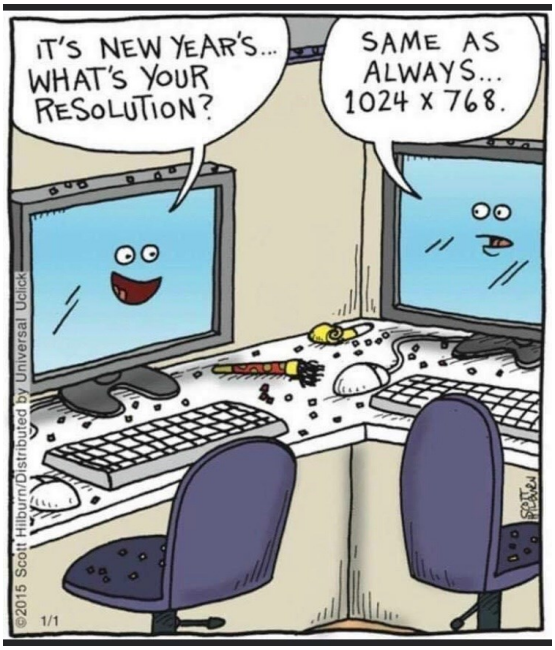
What comes next?

In the short term, the industry has to contend with a global slowdown because of the war in Ukraine, rising inflation and a bumpy re-opening of China's economy.
Beijing will want to tread carefully given that its economy took a huge hit through the Covid pandemic.

"There will still be a lot of back and forth between US companies, Taiwanese companies, Chinese companies and firms from other countries. It's really only at the cutting edge in logic and memory chips, where we're going to see a concerted effort by the US to cut China out of innovation networks and an effort by China to build up its own US-free supply chain," Mr Miller said.

That has huge ramifications for the global economy. It will force players to pick sides, possibly cutting many off from accessing the Chinese market.

Thanks Jack



NASA successfully hurled an object into an asteroid at 14,000 mph to see if it could be knocked off course.

The James Webb telescope took a detailed image of the impact site.

... if you were writing the letter,
what would you have done
to fill this blank space?