

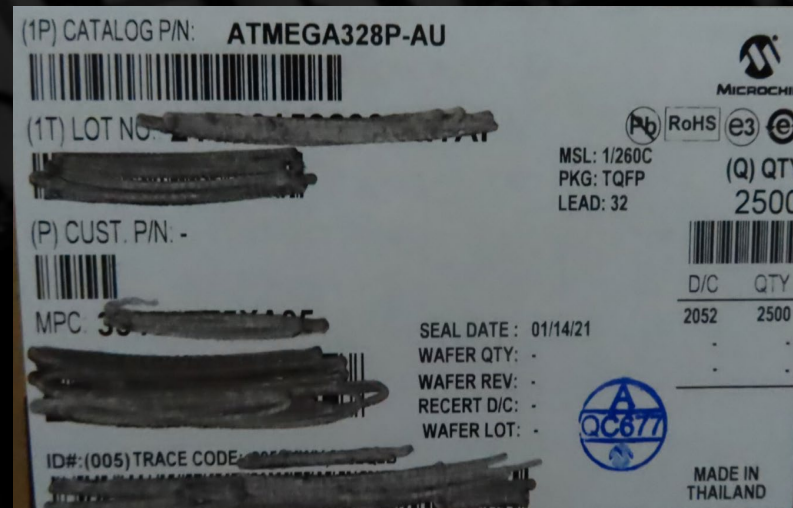
Ivent Solutions Market Trend Update

May 2021

Leadtimes and Supply Chain Update

Feedback from our supplier base is indicating that there is no expectation for short to medium term relief from the current tight supply chain situation. Leadtimes are continuing to extend, some beyond 52 weeks. As discussed in previous reports, the current situation is affecting most products in the technology sector. From our perspective, worst hit in terms of leadtime are colour TFT LCD's, power supplies, passive and active components and inter-connection products. Other products such as solar panels, cable assemblies and batteries are still offering reasonable production leadtimes, however pricing is extremely unstable. Quotes for battery cells and packs for example is generally valid for only one day. In one instance a price on a Panasonic Lithium cell rose 17% in only 24 hours. This seems to be driven by surging demands for Lithium battery products with factories unable to keep up. Most factories and suppliers are suggesting that leadtime issues and price increases will continue until the end of 2021 and possibly now into early 2022.

Ivent will continue to monitor the situation, provide monthly updates via our Market Trends Report and also increase stock holdings in our Auckland Distribution Centre. We also recommend for customer purchase orders to be placed at least 6-9 months into the future to ensure continuity of supply. As mentioned last month, the counterfeit product market is heating up so much caution must be exercised when product is purchased in the grey market. As an example we were recently offered "genuine" Atmel product but the original packaging had all production dates, serial numbers and batch codes removed. In this instance it is best to buy from trusted sources, and preferably to sample first to confirm what you think you are buying is actually what is contained in the packaging.



New Chief of Security at Ivent

Ivent welcomes our new Chief of Security, Poppy, to our team. Poppy brings with her a wealth of experience in her focus areas of property theft and destruction, demolition, black ops, stealth attack, advanced martial arts and bomb/ball location and retrieval. Although only 9 weeks old, Poppy already has shown her ability, boasting a stacked criminal record and a trail of destruction. Burglars and spies beware... Poppy takes no prisoners...



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Unravelling Electronics Supply Chain Management in 2021 and Beyond...

Back in the good ol' days of 2019 and earlier, the supply chain discussion tended to revolve around product lifecycles, the occasional component shortage, and counterfeiting. Today, in the wake of COVID-19 and the second wave of cases sweeping the industrialized world at present, those problems now seem easy compared to factory closures, widespread shortages, and ongoing supply and pricing uncertainty. Although attention has shifted, those earlier supply chain challenges will still need to be confronted after modern life returns to normal. Manufacturing and sourcing problems from COVID-19 aside, professional associations, research firms, and manufacturers in the industry were already discussing some important electronics supply chain manufacturing challenges. Ever since March 2020, the conversation has become almost entirely centered around COVID-19. The broader, long-lasting supply chain challenges aren't going away anytime soon. Here are some of the important challenges the industry will need to confront to create a more responsive, less risky and more diversified electronics supply chain.

Major Electronics Supply Chain Management Challenges

The current landscape for electronics sourcing was in turmoil during 2020 and is likely to remain this way well into 2021 and possibly 2022. Today's "Just-In-Time" global supply chain is designed to allow buyers to identify the perfect tradeoff between minimum lead time and lowest possible price. Higher prices might be tolerated if it means we can meet a production schedule with higher volume, or you might be willing to accept a longer lead time if it saves you a few cents per part.

In normal times, buyers largely have the freedom to pick and choose their sources and can take advantage of a healthy logistics system, despite shortages, counterfeits, and tariffs. However at the beginning of 2021 the following effects are being noticed...:

- EMS companies and OEMs experienced long component lead times and shortages during 2020
- The components industry felt erratic demand, leading to erratic supply, but was in a growth state by the end of 2020



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- The industry overall fared very well compared to industries like retail, tourism and hospitality
- Fundamental parts made with legacy technologies are still experiencing shortages
- Electronics buyers are now concerned there will be new shutdowns and restricted activity throughout 2021
- With these results in mind, we can see three critical electronics supply chain management challenges faced by the industry in 2021:

Lack of Diversity

Although there are dozens of primary and secondary electronics distributors, some of whom have official relationships with major component makers, there are comparatively fewer major manufacturing centers for components. Geopolitical turmoil in the form of a global pandemic and tariffs have helped make this lack of manufacturing diversity painfully obvious. In addition, the Just-In-Time supply chain model we've come to love relies on predictability; this model is slow to adapt to sudden shocks like widespread lock-downs.

Shorter Product Lifecycles

Shorter lifecycles come about due to more rapid advances in technology and changes in consumer behavior, which then create inventory management headaches. Companies have to carry extra inventory to address customer demand, and they have to turn over inventory more often. This increases inventory carrying costs and risks to the bottom line, particularly if a product fails. Reliance on a centralized manufacturing base then makes it difficult for companies to procure the components they need in the event of obsolescence or global supply chain disruptions.

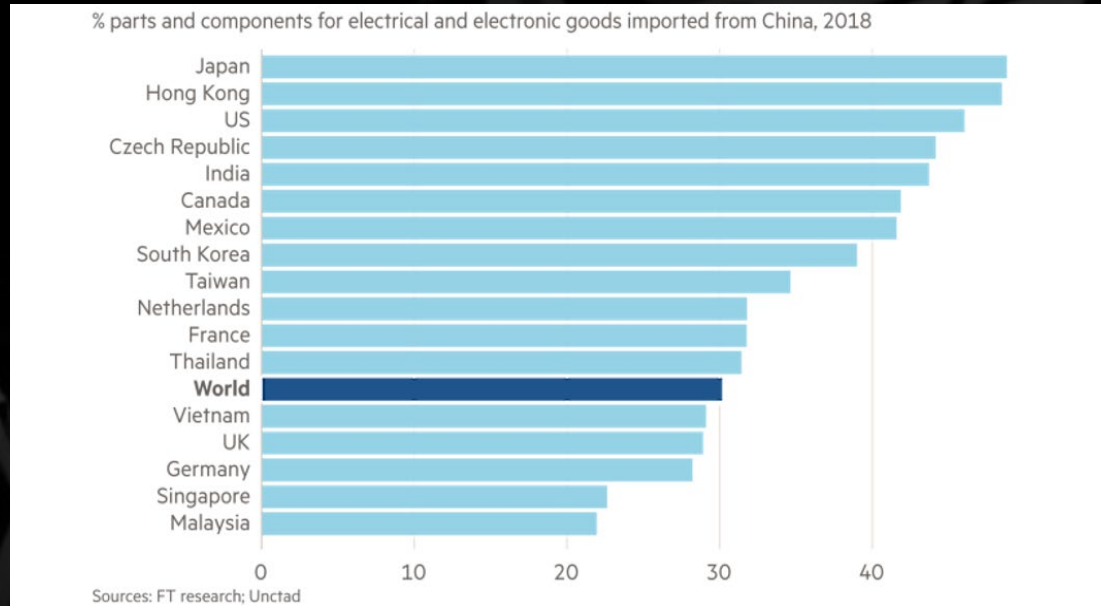
Commoditization and Product Complexity

This partially explains shorter product lifecycles; every portion of the supply chain and design chain has become commoditized, and companies keep pushing newer and more complex product variants in order to remain competitive. This is great for the consumer and the end customer as it drives competition, pushes down prices, and helps enable the features we all enjoy in consumer products. However, it has forced OEMs to outsource just about everything except the most critical IP, as long as regulations (e.g., ITAR) don't prevent this.



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The graph above shows just how much everyone relies on China as the world's factory. Even though the conversation in mid-2020, including by the IPC as a driving lobbying force, focused on moving capacity away from China and accelerating on-shoring, China still ended 2020 with a record trade surplus. This probably shouldn't surprise anyone as Chinese exports are supporting the new stay-at-home "normal" in the COVID-19 era. Addressing all three challenges is all about reducing risk and diversifying the electronics supply chain away from Asia, particularly China.

Expect More Diversified Supply Chains

Globalization has been great for consumers in advanced countries and has helped raise wages and improve livelihoods in poorer countries, although the ethical questions around labour

cost differentials in China and other countries in the region have started to close, and recent global turmoil is forcing OEMs and EMS companies to rethink the benefits of a wage differential: lower labour costs bring increased risk, which can be unacceptable for critical components.

The gradual rise of labour costs and the emergence of a Chinese middle class caused the industry to rethink the use of China as the world's manufacturing hub. The discussion centered around developing regional manufacturing and distribution hubs to eliminate China as the single source for many components and cheap assembly services. It's possible the effort was not seen as being worth the time and capital investments simply because no one likes to think about Black Swan events. In addition, the entire network of suppliers is still located in Chinese hubs.

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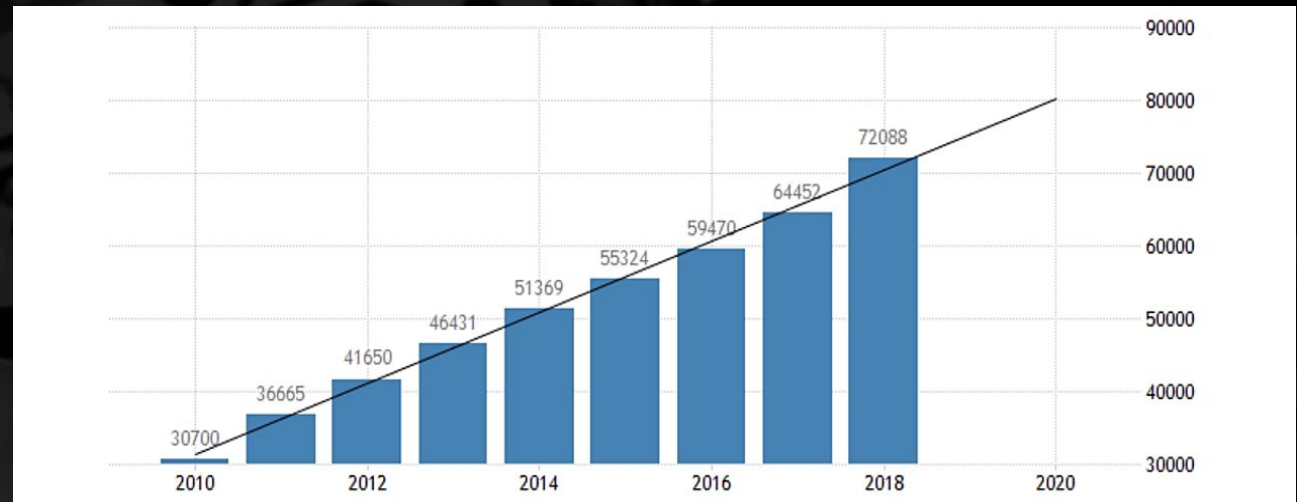
Now, new tariffs, COVID-19, and the relative failure of global Just-In-Time logistics create new motivation for the regionalization of critical manufacturing and distribution systems. If systems integrators, assemblers, and component suppliers can diversify their supply chain risk away from Asia and bring supply chains closer to home, they can see a number of benefits:

More sources brings less risk: - The strategic spreading of manufacturing capacities over a broader geographic region, and bringing them closer to home, greatly reduces the risk of regional disruptions (such as tariffs).

Traceability: When components move through fewer hands, there are fewer opportunities for counterfeiting. This also makes components and raw materials easier to trace.

Easier to protect IP: Spreading different portions of a new product's manufacture and assembly to different regions, or bringing it in-house, reduces the risk of IP theft. IP theft may also become easier to trace when the supply is more localized.

The U.S. is already moving in this direction. Onshoring received less attention in 2019 than in 2020, and the Trump administration was pushing an initiative to onshore industrial supply chains in order to reduce reliance on China. It remains to be seen how Biden's proposed trade policies will affect the dynamic or drive further onshoring. The EU is working towards the same goal, particularly for pharmaceutical manufacturing. This is a complex challenge, but it is worth undertaking in the face of supply chain disruptions and shifting manufacturing capacity that was seen in 2020.



Changes in average Chinese manufacturing wages since 2010 (in CNY). Source: Trading Economics.



PRC HOLIDAYS

Events	Dates Observed
New Year's Day	January 1-3
Chinese New Year	February 11-17
Tomb Sweeping Day	April 3-5
Labour Day/May Day	May 1-5
Dragon Boat Festival	June 12-14
Mid-Autumn Day	September 19-21
National Day	October 1-7

- Minimal production impact.
- High production impact and requires planning accordingly.
- Note that factories typically take two weeks for Chinese New Year but may vary.

JANUARY

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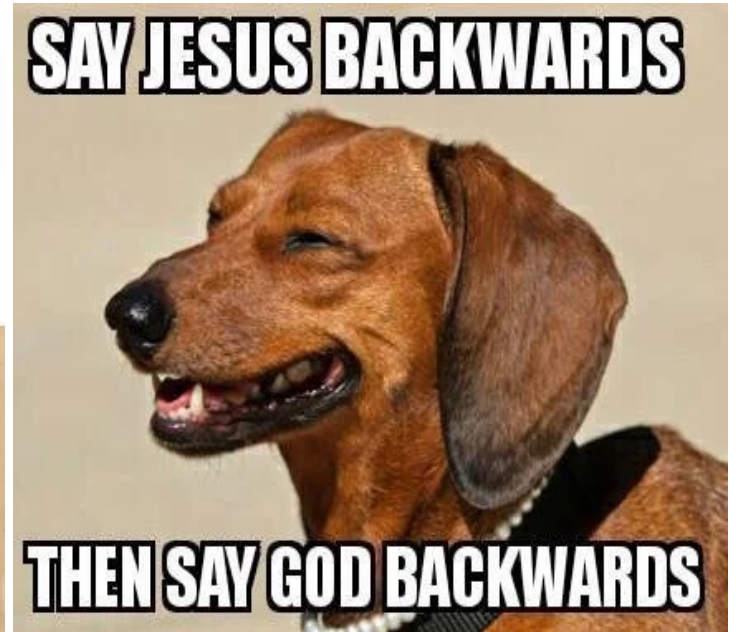
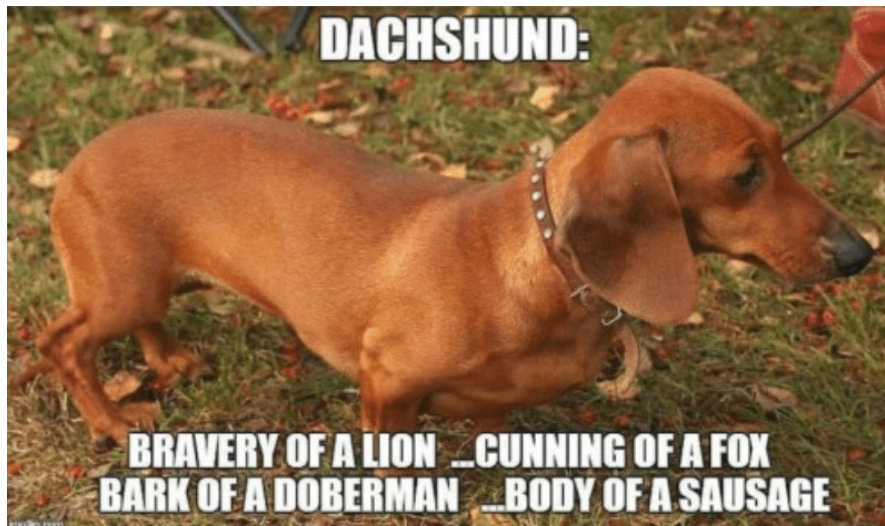
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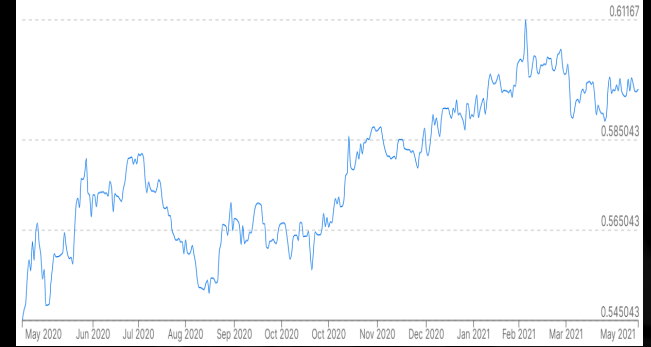
NZD versus AUD - AU\$0.925 vs NZ\$1.00



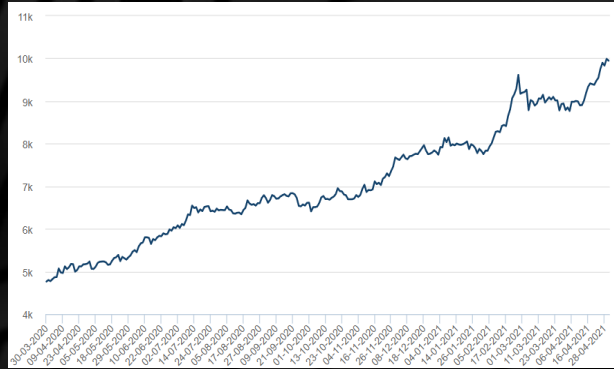
NZD versus USD - US\$0.715 vs NZ\$1.00



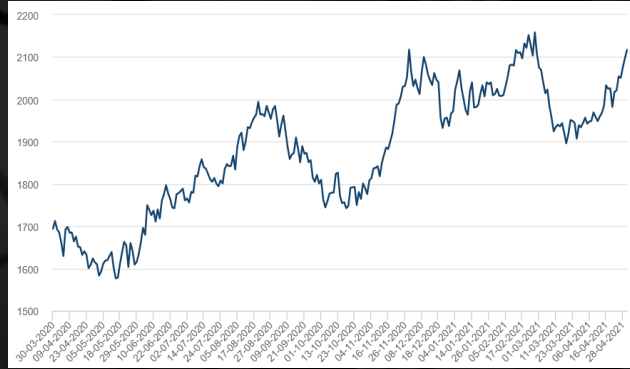
NZD versus EUR - EU\$0.600 vs. NZ\$1.00



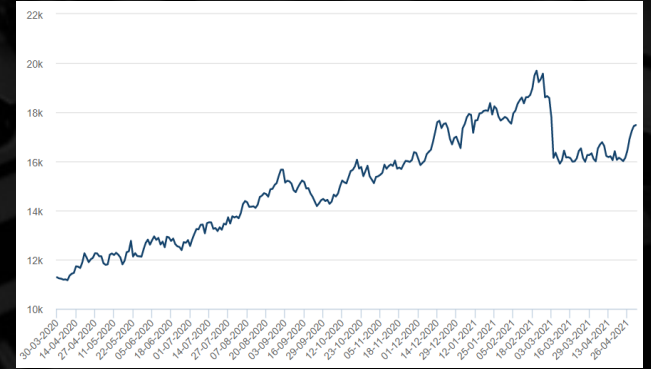
Copper - USD10000 / tonne



Lead - USD1950 / tonne



Nickel - USD17400 / tonne



This Month in Tech History...

May 30, 1896 – The first auto accident on record occurs in New York City when a Duryea Motor Wagon driven by Henry Wells collides with a bicycle ridden by Evylyn Thomas. New Yorkers probably accused Henry of being from Jersey, but he was actually from Massachusetts.

May 22, 1906 – Orville and Wilbur Wright are granted the first airplane patent in the U.S. for their “new and useful improvements in Flying Machines.” (US No. 821,393).

May 28, 1929 – The Warner Brothers’ film *On With the Show*, the first talking movie that is all in color, debuts at New York City’s Winter Garden theater. The film uses two-color Technicolor and Vitaphone sound.

May 19, 1980 – At the National Computer Conference in Anaheim, California, Apple Computer introduces the Apple III. It is the company’s first attempt at a business computer, its first departure from the Apple II architecture, and it will also become Apple’s first real failure. Apple expects the Apple III to be released in July, but in one of the worst cases of delay in tech history, the system wouldn’t reach stores until January. Once released, the Apple III will be plagued by component failures that would ultimately lead to large recalls. The Apple III never recovered from its original negative reception and was discontinued by Apple in 1984.

May 21, 1980 – The sequel to the Evelyn smash success *Star Wars*, *The Empire Strikes Back* is released on this day, almost exactly 3 years after the release of the original film. The pioneering use of special effects technology in the *Star Wars* Trilogy transformed the movie industry.

May 2, 1983 – Microsoft introduces the Microsoft Mouse for IBM and IBM-compatible PCs. The mouse featured two buttons and is available by itself or will later be bundled with the new Microsoft Word software. Microsoft will manufacture nearly 100,000 of the device, but only sells 5,000 before introducing a second, more popular version of the device in 1985.

May 17, 1991 – The first server “web server” in history is set up by Tim Berners-Lee on a NeXTcube at CERN, the European Particle Physics laboratory in Geneva, Switzerland. The launch of this first server is considered the public release of the World Wide Web.

May 1, 2000 – The U.S. government removes Selective Availability from its Global Positioning System, improving the accuracy of civilian GPS devices from 100 meters to 20 meters.

